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August 10, 2007

Mr. Don Moore
North Carolina Department of Transportation
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Reference: Preliminary Site Assessment
Danny Clayton and Linda Carver Property (Parcel #007)
1047 Madison Boulevard
Roxboro, Person County, North Carolina
NCDOT Project R-2241A
WBS Element 34406.1.1
Earth Tech Project No. 100407

Dear Mr. Moore:

Earth Tech of North Carolina, Inc., (Earth Tech) has completed the Preliminary Site Assessment conducted at the above-referenced property. The work was performed in accordance with the Technical and Cost proposal dated June 6, 2007, and the North Carolina Department of Transportation' s (NCDOT' s) Notice to Proceed dated June 6, 2007. Activities associated with the assessment consisted of conducting a geophysical investigation, collecting soil samples for laboratory analysis, and reviewing applicable North Carolina Department of Environment and Natural Resources (NCDENR) records. The purpose of this report is to document the field activities, present the laboratory analyses, and provide recommendations regarding the property.

Location and Description

The Danny Clayton and Linda Carver Property (Parcel #007) is located at 1047 Madison Boulevard in Roxboro, North Carolina. The property is situated on the northwest quadrant of the intersection of N. Main Street (SR 1601), Madison Boulevard (US 501) and Virgilina Road (NC 49) (Figure 1). Based on information supplied by the NCDOT and the site visit, Earth Tech understands that the site is a former gas station/convenience store that is being operated as D&D Auto Sales. Seven underground storage tanks (USTs) reportedly have been removed from the property (Parrott Estate) in 1992. According to available information, the USTs consisted of one 10,000-gallon gasoline tank, two 6,000-gallon gasoline tanks, one 2,000-gallon gasoline tank, and three 1,000-gallon petroleum tanks.. The structure on the property is a single-story block building with an asphalt parking area. The former USTs were located directly in front of the building and on each side of the building. Patched asphalt indicated the area from where the USTs and contaminated soil were removed. Earth Tech was advised that the proposed right-of-way will not affect the building, but will affect the

former UST area in front of the building and on the southeast side of the building. As a result, the NCDOT requested a Preliminary Site Assessment.

Earth Tech reviewed the North Carolina Department of Environment and Natural Resources (NCDENR) Incident Management database and incident number 9814 was assigned to the site. According to the Report of Underground Storage Tank Closure prepared by Environmental Investigations dated August 1992, seven USTs were removed from the site in June 1992. Following the UST closure, 12 soil samples were collected from the pits and analyzed for gasoline total petroleum hydrocarbons. Nine of the 12 samples contained petroleum concentrations above 10 mg/kg. Consequently, Environmental Investigations performed a Comprehensive Site Assessment (CSA) dated November 1993. The CSA was conducted by installing six shallow monitoring wells, one deep monitoring well, and 13 soil borings. The CSA findings suggested that soil contamination exists on virtually all the site with the exception of the western edge of the property. The groundwater monitoring wells at the site indicate a groundwater depth of about 1.0 to 1.5 meters (3 to 5 feet) below ground surface and a groundwater flow direction to the north-northeast. Contaminants detected above the groundwater quality standards in samples from the wells include benzene, ethylbenzene, toluene, xylenes, and MTBE. A benzene isoconcentration map suggests that groundwater contamination has migrated off-site toward the north.

Following the NCDENR' s review of the CSA, the Parrott Estate was notified that the CSA had not fully delineated the contamination and a second CSA was performed by East Coast Environmental and dated December 1995. The additional CSA was conducted by installing six more shallow monitoring wells and two more deep monitoring wells. Soil samples were collected from three hand auger borings and from the additional wells. The CSA findings indicate that the soil contamination has been delineated. The analysis of groundwater samples from the wells appears to define the groundwater contamination. No additional assessment or remediation was conducted at the site. Copies of selected portions of the reports are presented in Attachment A.

Earth Tech also reviewed the UST registration database to obtain UST ownership/responsible party information. According to the database, the USTs on the property were operated under Facility Number 0-018910. The USTs operated under this facility ID are noted as being permanently closed. The operator and owner of the tanks are listed as follows:

Owner	Operator
Central Carolina Bank (Parrott Estate Trust)	Parrott Trust (former Mobil gas station)
PO Box 931-L	1047 N. Madison Boulevard
Durham, North Carolina 27702	Roxboro, North Carolina 27573

Geophysical Survey

Prior to Earth Tech' s mobilization to the site, Pyramid Environmental conducted a geophysical survey as part of this project to evaluate if additional USTs, other than the ones identified or removed, were present on the proposed right-of-way. The geophysical survey consisted of an

electromagnetic survey using a Geonics EM61 time-domain electromagnetic induction meter to locate buried metallic objects, specifically USTs. A survey grid was laid out at the property with the X-axis oriented approximately parallel to Madison Boulevard and the Y-axis oriented approximately parallel to Main Street. The grid was located to cover the accessible portions of the proposed right-of-way. The survey lines were spaced 1.5 meters (5 feet) apart. Magnetic data was collected continuously along each survey line with a data logger. After collection, the data was reviewed in the field with graphical computer software. Following the electromagnetic survey, a ground penetrating radar (GPR) survey was conducted to further evaluate any significant metallic anomalies if such a survey was considered necessary.

Several anomalies were detected in the geophysical survey. However, these anomalies were generally attributed to buried utility lines, conduits, or parked vehicles. The survey concluded that no metallic USTs were present on the proposed right-of-way or easement. A detailed report of findings and interpretations is presented in Attachment B.

Site Assessment Activities

On July 12, 2007, Earth Tech mobilized to the site to conduct a Geoprobe® direct push investigation to evaluate soil conditions within the proposed right-of-way and easement. Continuous sampling using direct push technology (Regional Probing of Wake Forest, North Carolina) resulted in generally good recovery of soil samples from the direct-push holes. Soil samples were collected and contained in 1.2-meter (4-foot) long acetate sleeves inside the direct push sampler. Each of these sleeves was divided in half for soil sample screening. Each 0.6-meter (2-foot) interval was placed in a resealable plastic bag and the bag was set aside for a sufficient amount of time to allow volatilization of organic compounds from the soil to the bag headspace. The probe of a flame ionization detector/photo ionization detector (FID/PID) was inserted into the bag and the reading was recorded. After terminating the sample hole, the soil sample from the depth interval with the highest FID/PID reading was submitted to Prism Laboratories, Inc., in Charlotte, North Carolina, using standard chain-of-custody procedures. The laboratory analyzed the soil samples for total petroleum hydrocarbons (TPH) in the diesel range organics (DRO) and gasoline range organics (GRO).

Six direct-push holes (CL-1 through CL-6) were advanced within the proposed right-of-way to a depth of 3 to 3.6 meters (10 to 12 feet) as shown in Figure 2 and Attachment C. The borings were located to evaluate the area adjacent to the former UST pit and the proposed easement (Attachment D). Borings CL-1, CL-4, and CL-5 were located to evaluate the soil conditions surrounding the former UST pit and excavation within and along the right-of-way and easement line; and borings CL-2, CL-3, and CL-6 were placed to assess the horizontal extent of potential contamination. In addition, borings CL-4 and CL-6 were placed to evaluate soil conditions near proposed drop inlets. The lithology encountered by the direct-push samples generally was consistent throughout the site. The ground surface was covered with about 20 centimeters (8 inches) of asphalt, concrete, gravel, or topsoil. Below the surface treatment to a depth of about 2.4 meters (6 feet) was a medium to reddish brown silt/clay that likely represents fill material. Below this fill to a depth of about 2.4 to 3.0

meters (8 to 10 feet) was a mottled medium brown, reddish brown, and yellow silt/clay. All the borings were terminated at a depth of 3.6 meters (12 feet) or equipment refusal, whichever was shallower. All of the borings except Cl-5 and CL-6 were terminated at 3.6 meters (12 feet). Borings CL-5 and CL-6 were terminated at equipment refusal at a depth of 3.0 meters (10 feet) below ground surface. Although previous assessments indicated groundwater at a depth of less than 1.5 meters (5 feet), no free groundwater was encountered in the borings. Based on field screening, soil samples were submitted for laboratory analysis, which are summarized in Table 1.

Analytical Results

Based on the laboratory reports, summarized in Table 1 and presented in Attachment E, petroleum hydrocarbon compounds identified as DRO and/or GRO were detected in all of the eight soil samples collected from the site (Figure 3). According to the North Carolina Underground Storage Tank Section' s Underground Storage Tank Closure Policy dated August 24, 1998, the action level for TPH analyses is 10 milligrams per kilogram (mg/kg) for both gasoline and diesel fuel. However, that agency' s "Guidelines for Assessment and Corrective Action," dated April 2001, does not allow for use of TPH analyses for confirmation of the extent of petroleum contamination or its cleanup. As a result, while TPH concentrations are no longer applicable in determining if soil contamination is present, this analysis is a legitimate screening tool. Based on the TPH action level for UST closures, the assumed action level for this report is 10 mg/kg. Soil samples collected from borings CL-1 (130 mg/kg), CL-2 (19 mg/kg), CL-3 (30 mg/kg), CL-4 (180 mg/kg), and CL-5 (14 mg/kg) contained a DRO concentration above the 10 mg/kg assumed action level. Soil samples collected from borings CL-1 (1400 mg/kg), CL-2 (1300 mg/kg), CL-3 (430 mg/kg), CL-4 (850 mg/kg), and CL-5 (120 mg/kg) contained a GRO concentration above the assumed action level.

Conclusions and Recommendations

A Preliminary Site Assessment was conducted to evaluate the Danny Clayton and Linda Carver Property (Parcel #007) located at 1047 N. Main Street in Roxboro, Person County, North Carolina. Six soil borings were advanced to evaluate the soil conditions with respect to the areas adjacent to the former USTs and within the proposed right-of-way. The laboratory reports of the soil samples from these borings suggest that DRO and/or GRO concentrations were present above the assumed action level in five of the six soil samples analyzed.

To evaluate the volume of soil requiring possible remediation, the soil samples with TPH concentrations above 10 mg/kg were considered. The analytical results of the soil samples suggest that the soil from borings CL-1 CL-2, CL-3, CL-4, and CL-5 contained TPH concentrations identified as DRO and/or GRO above the assumed action level. A review of the field screening readings (Table 1) and Figure 3 suggests that the thickness of the potentially contaminated soil is a consistent 3.0 meters (10 feet) throughout the site. In order to complete estimate volumetric calculations, a planimeter was used to obtain a total square meter (square foot) measurement for each thickness interval. This measurement was then multiplied by the potential contaminant thickness for a total volumetric calculation. Based on the planimetric measurements and contaminated soil

thickness, Earth Tech estimates a total contaminated soil volume for the site to be approximately 708 cubic meters (925 cubic yards). However, this volume includes the potentially contaminated soil on both the Clayton and Carver property and the existing right-of-way, but excludes the soil backfill for the UST excavation in front of the building. The volume of potentially contaminated soil on the Clayton and Carver Property only is estimated to be approximately 159 cubic meters (207 cubic yards). The volume of potentially affected soil was estimated based on the 10 mg/kg isoconcentration contour shown on Figure 3 and the planimetric measurements within that boundary. This volume is estimated from TPH analytical data, which are no longer valid for remediation of sites reported after January 2, 1998. After this date, MADEP EPH/VPH and EPA Method 8260/8270 analyses will likely be required to confirm cleanup. However, these analyses do not correlate exactly with TPH data and, as a result, the actual volume of contaminated soil may be higher or lower.

Earth Tech appreciates the opportunity to work with the NCDOT on this project. Because compounds were detected above the applicable action levels in the soil samples, Earth Tech recommends that a copy of this report be submitted to the Division of Waste Management, UST Section, in the Raleigh Regional Office. If you have any questions, please contact me at (919)854-6238.

Sincerely,

Michael W. Branson, P.G.
Project Manager

Attachments

c: Project File

TABLE 1

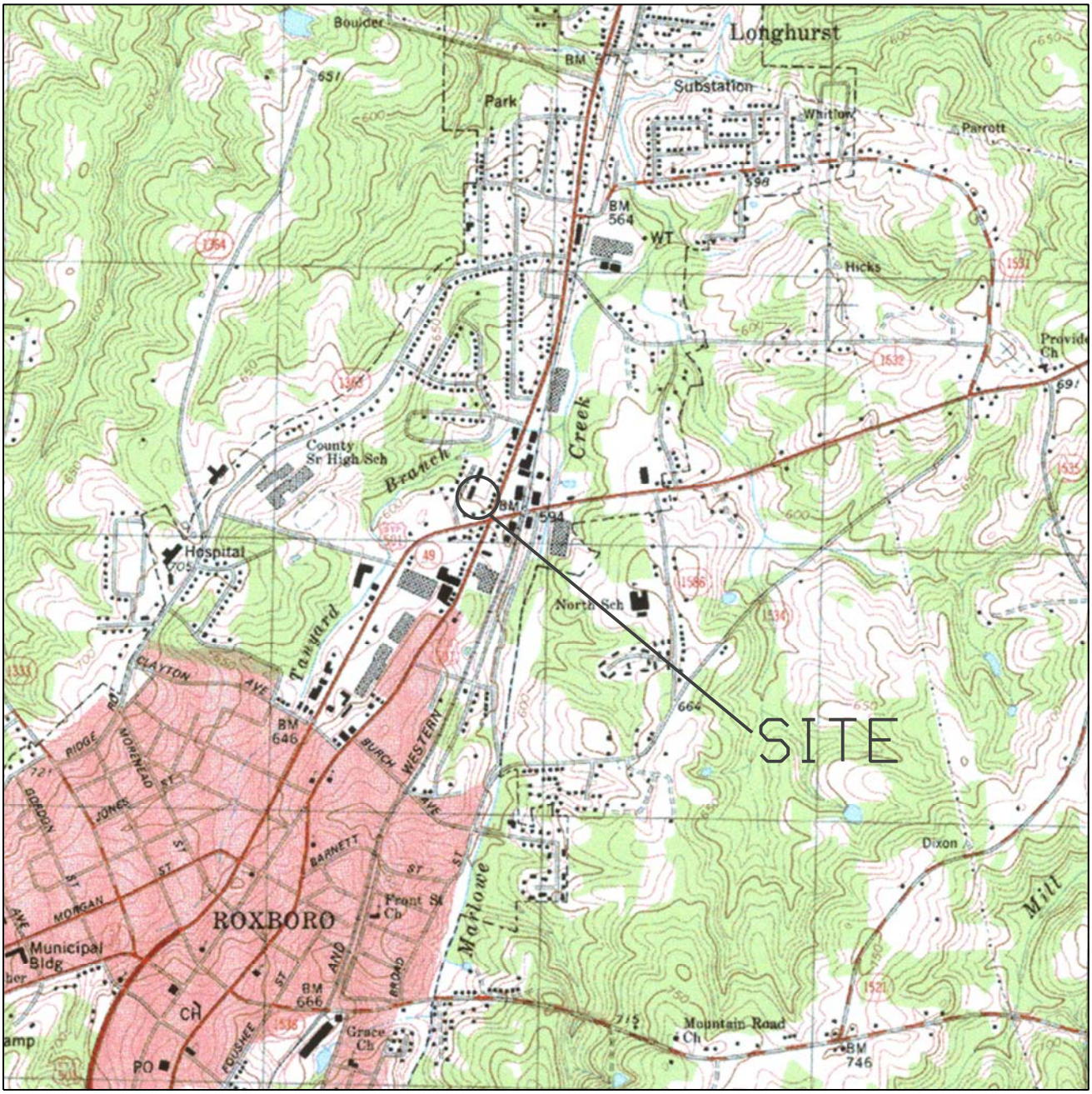
SOIL FIELD SCREENING AND ANALYTICAL RESULTS
DANNY CLAYTON AND LINA CARVER PROPERTY (PARCEL #7)
ROXBORO, PERSON COUNTY, NORTH CAROLINA
NCDOT PROJECT NO. R-2241A
WBS ELEMENT 34406.1.1
EARTH TECH PROJECT NO. 100407

LOCATION	DEPTH (m)	FID READING (ppm)	SAMPLE ID	ANALYTICAL RESULTS (mg/kg)	ASSUMED ACTION LEVEL (mg/kg)
CL-1	0 - 0.6	134			
	0.6 - 1.2	579			
	1.2 - 1.8	294			
	1.8 - 2.4	2,488			
	2.4 - 3.0	NA			
	3.0 - 3.6	29,800	CL-1	**DRO (130)** **GRO (1400)**	10 10
CL-2	0 - 0.6	56			
	0.6 - 1.2	717			
	1.2 - 1.8	133			
	1.8 - 2.4	485			
	2.4 - 3.0	36,000	CL-2	**DRO (19)** **GRO (1300)**	10 10
	3.0 - 3.6	20,300			
CL-3	0 - 0.6	66			
	0.6 - 1.2	201			
	1.2 - 1.8	73			
	1.8 - 2.4	480			
	2.4 - 3.0	874			
	3.0 - 3.6	11,700	CL-3	**DRO (30)** **GRO (430)**	10 10
CL-4	0 - 0.6	71			
	0.6 - 1.2	254			
	1.2 - 1.8	44			
	1.8 - 2.4	1,004			
	2.4 - 3.0	13,400	CL-4	**DRO (180)** **GRO (850)**	10 10
	3.0 - 3.6	10,200			
CL-5	0 - 0.6	202			
	0.6 - 1.2	285	CL-5	**DRO (14)** **GRO (120)**	10 10
	1.2 - 1.8	216			
	1.8 - 2.4	32,700			
	2.4 - 3.0	1,345			
CL-6	0 - 0.6	3.98			
	0.6 - 1.2	4.23			
	1.2 - 1.8	1.67			
	1.8 - 2.4	0.55			
	2.4 - 3.0 3.0 - 3.6	5.01		DRO (6.2^{J}) GRO (BQL)	10 10

Soil samples were collected on July 12, 2007.

DRO - Diesel range organics.
GRO - Gasoline range organics.
BQL - Below quantitation limit.
ppm - parts per million.
mg/kg - milligrams per kilogram.
J = Estimated value.
BOLD values are above the assumed action level.

FIGURES



SCALE 1:24,000

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

SOURCE: U.S. GEOLOGICAL SURVEY 7.5 MIN QUADRANGLE: ROXBORO, NC (1982)

EARTH TECH

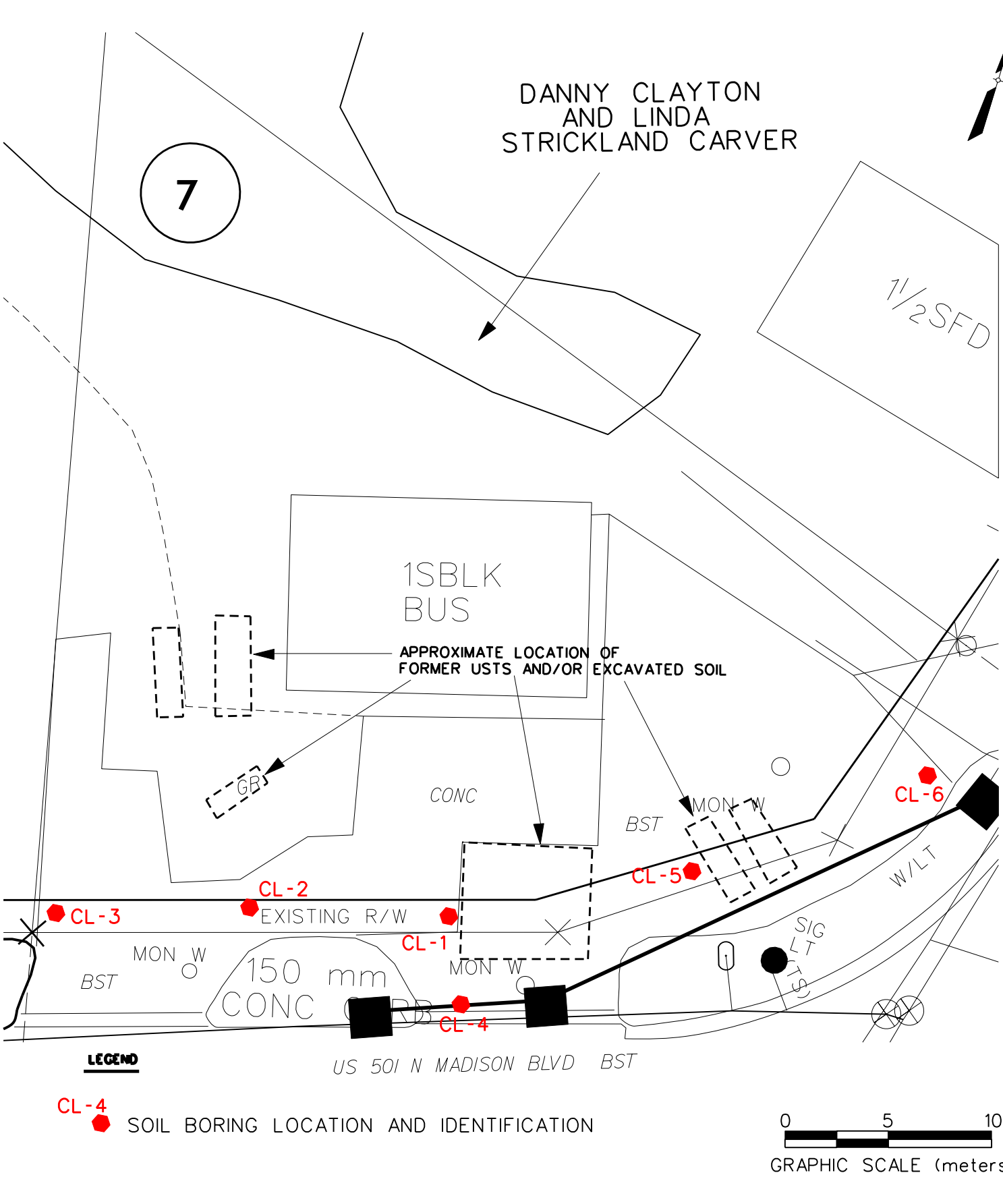
FIGURE 1

VICINITY MAP

DANNY CLAYTON AND LINDA CARVER PROPERTY (PARCEL #007)
ROXBORO, PERSON COUNTY, NORTH CAROLINA

JULY 2007

100407



EARTH TECH

FIGURE 2
SITE MAP
DANNY CLAYTON AND LINDA CARVER PROPERTY (PARCEL #007)
ROXBORO, PERSON COUNTY, NORTH CAROLINA

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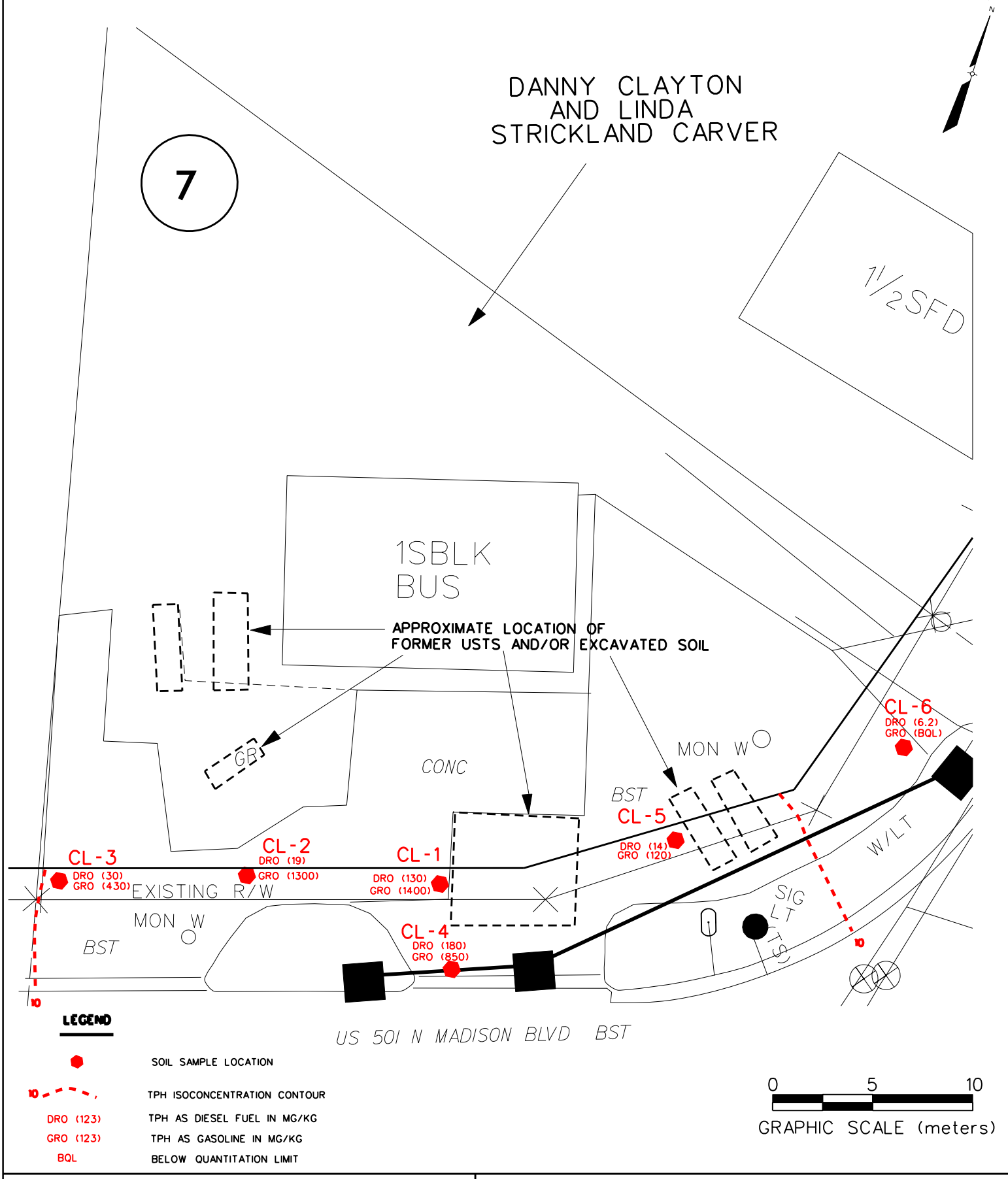

EARTH TECH

FIGURE 3
ANALYTICAL RESULTS MAP
DANNY CLAYTON AND LINDA CARVER PROPERTY (PARCEL #007)
ROXBORO, PERSON COUNTY, NORTH CAROLINA

JULY 2007 100407

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ATTACHMENT A

REPORT OF UNDERGROUND STORAGE TANK CLOSURE
PARROTT ESTATE
1047 NORTH MADISON BOULEVARD
ROXBORO, NORTH CAROLINA
EI PROJECT NO. 203867

Prepared
for

L.W. Edwards
Central Carolina Bank
P.O. Box 931
Durham, N.C. 27702

ENVIRONMENTAL INVESTIGATIONS
TEL (919) 544-7500 • FAX (919) 544-2199
1911 Meredith Drive • Suite 250
Durham, NC 27713

August 1992

(GW/UST-2) Site Investigation Report For Permanent Closure or Change-in-Service of U.S.T.

FOR TANKS IN **NC**

Return Completed Form To:
The appropriate DEM Regional Office according to the county of the facility's location. [SEE MAP ON REVERSE SIDE OF OWNER'S COPY (PINK) FOR REGIONAL OFFICE ADDRESS].

State Use Only
I.D. Number _____
Date Received _____

INSTRUCTIONS

Complete and return within (30) days following completion of site investigation.

I. Ownership of Tank(s)

Central Carolina Bank L.W. Edwards (Trustee)
Owner Name (Corporation, Individual, Public Agency, or Other Entity)
P.O. Box 931
Street Address
Durham
County
Durham NC 27702
City State Zip Code
919 683-7570
Area Code Telephone Number

II. Location of Tank(s)

Former Gas Station (vacant)
Facility Name or Company
Facility ID # (if available)
1047 North Madison Blvd.
Street Address or State Road
Person
County City Zip Code
Area Code Telephone Number

III. Contact Person

L.W. Edwards — Name
VP-Senior Trust Officer — Job Title
(919) 683-7570 — Telephone No. (Area Code)

Closure Contractor (Name) ~~Environmental Investigations Inc.~~ 1911 Meredith Dr. Durham (Address) (919) 544-7500 Telephone No. (Area Code)

Lab (Name) GeoChem, Inc. 2500 Gateway Centre Blvd. suite 300 (Address) (919) 460-0167 Telephone No. (Area Code)

IV. U.S.T. Information

Tank No.	Size in Gallons	Tank Dimensions	Last Contents
T-1	10,000	8' X 26'	gasoline
T-2	6,000	8' X 16'	gasoline
T-3	6,000	6' X 20'	gasoline
T-4	2,000	5' X 12'	gasoline
	See attached sheet for additional tanks		

V. Excavation Condition

Tank No.	Water In Excavation Yes	Water In Excavation No	Free Product Yes	Free Product No	Notable Odor or Visible Soil Contamination Yes	Notable Odor or Visible Soil Contamination No
T-1	X		X		X	
T-2	X			X	X	
T-3	X		X		X	
T-4		X		X	X	

VI. Additional Information Required

See reverse side of pink copy (owner's copy) for additional information required by N.C. - DEM in the written report and sketch.

Page 1 of 2

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VII. Check List

Check the activities completed.

DEHNR-RAL RO

- [X] Contact local fire marshall
- [X] Notify DEM Regional Office before abandonment.
- [X] Drain & flush piping into tank.
- [X] Remove all product and residuals from tank
- [X] Excavate down to tank.
- [X] Clean and inspect tank.
- [X] Remove drop tube, fill pipe, gauge pipe, vapor recovery tank connections, submersible pumps and other tank fixtures.
- [X] Cap or plug all lines except the vent and fill lines.
- [X] Purge tank of all product & flammable vapors.
- [X] Cut one or more large holes in the tanks.
- [X] Backfill the area.

Date Tank(s) Permanently closed: 6/3/92
Date of Change-in-Service: _____

ABANDONMENT IN PLACE

- [ ] Fill tank until material overflows tank opening;
- [ ] Plug or cap all openings;.
- [ ] Disconnect and cap or remove vent line
- [ ] Solid inert material used - specify: _____

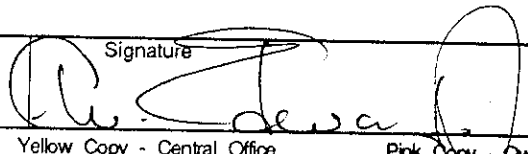
REMOVAL

- [X] Create vent hole
- [X] Label tank
- [X] Dispose of tank in approved manner

Final tank destination: Cut up for scrap metal

VIII. Certification (Read and Sign)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Print name and official title of owner or owner's authorized representative	Signature	Date Signed
L.W. Edwards VP-Senior Trust Officer (CCB)		8-10-92

(GW/UST-2) Site Investigation Report For Permanent Closure or Change-in-Service of U.S.T.

FOR TANKS IN **NC**

Return Completed Form To:
The appropriate DEM Regional Office according to the county of the facility's location. [SEE MAP ON REVERSE SIDE OF OWNER'S COPY (PINK) FOR REGIONAL OFFICE ADDRESS].

State Use Only
I.D. Number _____
Date Received _____

INSTRUCTIONS

Complete and return within (30) days following completion of site investigation.

I. Ownership of Tank(s)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)

Street Address

County

City State Zip Code

Area Code Telephone Number

II. Location of Tank(s)

Facility Name or Company

Facility ID # (if available)

Street Address or State Road

County City Zip Code

Area Code Telephone Number

III. Contact Person

Name Job Title Telephone No. (Area Code)

Closure Contractor _____

(Name) (Address) Telephone No. (Area Code)

Lab _____

(Name) (Address) Telephone No. (Area Code)

IV. U.S.T. Information / V. Excavation Condition

Tank No.	Size in Gallons	Tank Dimensions	Last Contents	Water In Excavation		Free Product		Notable Odor or Visible Soil Contamination	
				Yes	No	Yes	No	Yes	No
T-5	1,000	4' X 10'	Petroleum	X		X		X	
T-6	1,000	4' X 10'	Petroleum	X		X		X	
T-7	1,000	4' X 10'	Petroleum	X		X		X	

VI. Additional Information Required

See reverse side of pink copy (owner's copy) for additional information required by N.C. - DEM in the written report and sketch.

Page 2 of 2

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VII. Check List

Check the activities completed.

- ☐ Contact local fire marshall
- ☐ Notify DEM Regional Office before abandonment.
- ☐ Drain & flush piping into tank.
- ☐ Remove all product and residuals from tank
- ☐ Excavate down to tank.
- ☐ Clean and inspect tank.
- ☐ Remove drop tube, fill pipe, gauge pipe, vapor recovery tank connections, submersible pumps and other tank fixtures.
- ☐ Cap or plug all lines except the vent and fill lines.
- ☐ Purge tank of all product & flammable vapors.
- ☐ Cut one or more large holes in the tanks.
- ☐ Backfill the area.

Date Tank(s) Permanently closed: _____
Date of Change-in-Service: _____

ABANDONMENT IN PLACE
- ☐ Fill tank until material overflows tank opening;
- ☐ Plug or cap all openings;.
- ☐ Disconnect and cap or remove vent line
- ☐ Solid inert material used - specify: _____

REMOVAL
- ☐ Create vent hole
- ☐ Label tank
- ☐ Dispose of tank in approved manner

Final tank destination: _____

VIII. Certification (Read and Sign)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Print name and official title of owner or owner's authorized representative	Signature	Date Signed
L.W. EDWARDS, Jr VICE PRESIDENT & Sr. Trust Officer	L. W. Edwards	8-10-92

REPORT OF UNDERGROUND STORAGE TANK CLOSURE
PARROTT ESTATE
1047 NORTH MADISON BOULEVARD
ROXBORO, NORTH CAROLINA
EI PROJECT NO. 203867

Prepared
for

L.W. Edwards
Central Carolina Bank
P.O. Box 931
Durham, N.C. 27702

August 1992

ENVIRONMENTAL INVESTIGATIONS, INC. • 1911 Meredith Drive • Suite 250 • Durham, NC 27713 • TEL (919) 544-7500 • FAX (919) 544-2199

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APPENDIX A Analytical Results
APPENDIX B Photographs

EXECUTIVE SUMMARY

Environmental Investigations, Inc. of Durham, North Carolina was contracted by Central Carolina Bank of Durham, North Carolina to conduct the closure of four underground storage tanks (USTs) at a site located at 1047 North Madison Boulevard in Roxboro, North Carolina. Three additional USTs, which had been filled with sand, were discovered at the site during the UST excavations. The three additional USTs were also removed during the site activities.

The tank closure was initiated on June 1, 1992 and concluded on June 3, 1992. All remaining liquids in the USTs (designated as T-1, T-2, T-3 & T-4) were pumped out by Noble Oil Services and degassed using dry ice and removed by Jerry's Backhoe Service representatives. The tanks were also disposed of by Jerry's Backhoe Service.

A total of twelve soil samples were obtained, ten from the base the UST pits and two from the pump island/product line trench. The samples were tested for total petroleum hydrocarbon (TPH) content by EPA Method 5030 (purge and trap) techniques. The North Carolina Division of Environmental Management (DEM) has established soil clean up levels at 10.0 parts per million (ppm) of (TPH). Soils with TPH concentrations above 10.0 PPM require additional assessment and remediation. Nine of the twelve soil samples collected resulted in TPH levels which exceeded the threshold limit of 10.0 ppm. Therefore, remediation of the contaminated soil in these areas is recommended.

An approximately 20 ft^2 area located behind (north) the gas station building was stained with waste oil which originated from overflow from an above ground storage tank (AST). Approximately 10 yards of contaminated soil was excavated from the spill area. Due to an overhead powerline limiting overhead space, the soil excavations in this area could only be made 3 to 4 feet deep. Laboratory analysis of confirmation samples collected at the base of the excavation indicated the samples contained TPH levels of oil and grease which exceeded the 10.0 PPM DEM threshold. Additional excavation of waste oil contaminated soil will is recommenced after the overhead powerline is removed. The excavated soil is presently stockpiled and covered with plastic at the site.

REPORT OF UNDERGROUND STORAGE TANK CLOSURE
PARROTT ESTATE
1047 NORTH MADISON BOULEVARD
ROXBORO, NORTH CAROLINA
EI PROJECT NO. 203867

1.0 INTRODUCTION

Mr. L.W. Edwards of Central Carolina Bank contracted with Environmental Investigations, Inc. to conduct the closure of four underground storage tanks (USTs). Three additional USTs were found during the excavation activities at the former gas station site located at 1047 North Madison Boulevard in Roxboro, North Carolina (Figure 1).

One (1) 10,000 gallon, two (2) 6,000 gallon and one (1) 4000 gallon UST were located at the project site. The age of the tanks is unknown but was estimated to be fifteen to twenty years old according to the client. The tank systems were used for product storage in a retail sales operation. Three additional 1000 gallon USTs were found at the side during the excavation operations. The tanks were believed to have been installed at the time the facility was constructed in 1946.

Environmental Investigations, Inc. contracted an excavation subcontractor and began the UST excavation on June 1, 1992. A sampling plan was established to evaluate potential petroleum hydrocarbon contamination in the subsurface soils surrounding each UST. The closure activities were conducted as outlined in Federal guidelines 40 CFR, Part II Subpart G 280.72 and 280.74, Underground Storage Tanks; Technical Requirements and State Of North Carolina regulations 15A NCAC 2N sections .0802, .0803 and .0805. All soil samples were collected in accordance with U.S. Environmental Protection Agency (U.S. EPA) protocols as described in " Test Methods for Evaluating Solid Waste - Physical/ Chemical Methods" SW-846, 3rd Edition. Analytical methods utilized during confirming testing were selected based on those compounds and clean-up objectives as established by the implementing agency.

The following sections describe the field activities, observations, analytical testing procedures, data analysis, conclusions and recommendations for further assessment. Photographs of the site activities are included as Appendix B.

1.1 Scope of Services

The scope of work for this project consisted of coordinating and supervising the removal of four USTs (plus the three additional USTs found during excavation), collecting soil samples from appropriate locations per guidelines, photo documentation of the closure, analytical testing of the soil samples, data analysis and preparation of the UST closure report.

1.2 Authorization

Environmental Investigations, Inc. was authorized to perform the scope of work described in section 1.2, by Mr. L.W. Edwards of Central Carolina Bank via EII Proposal Number 203867, dated April 20, 1992.

2.0 SITE GEOLOGY

2.1 General Geology

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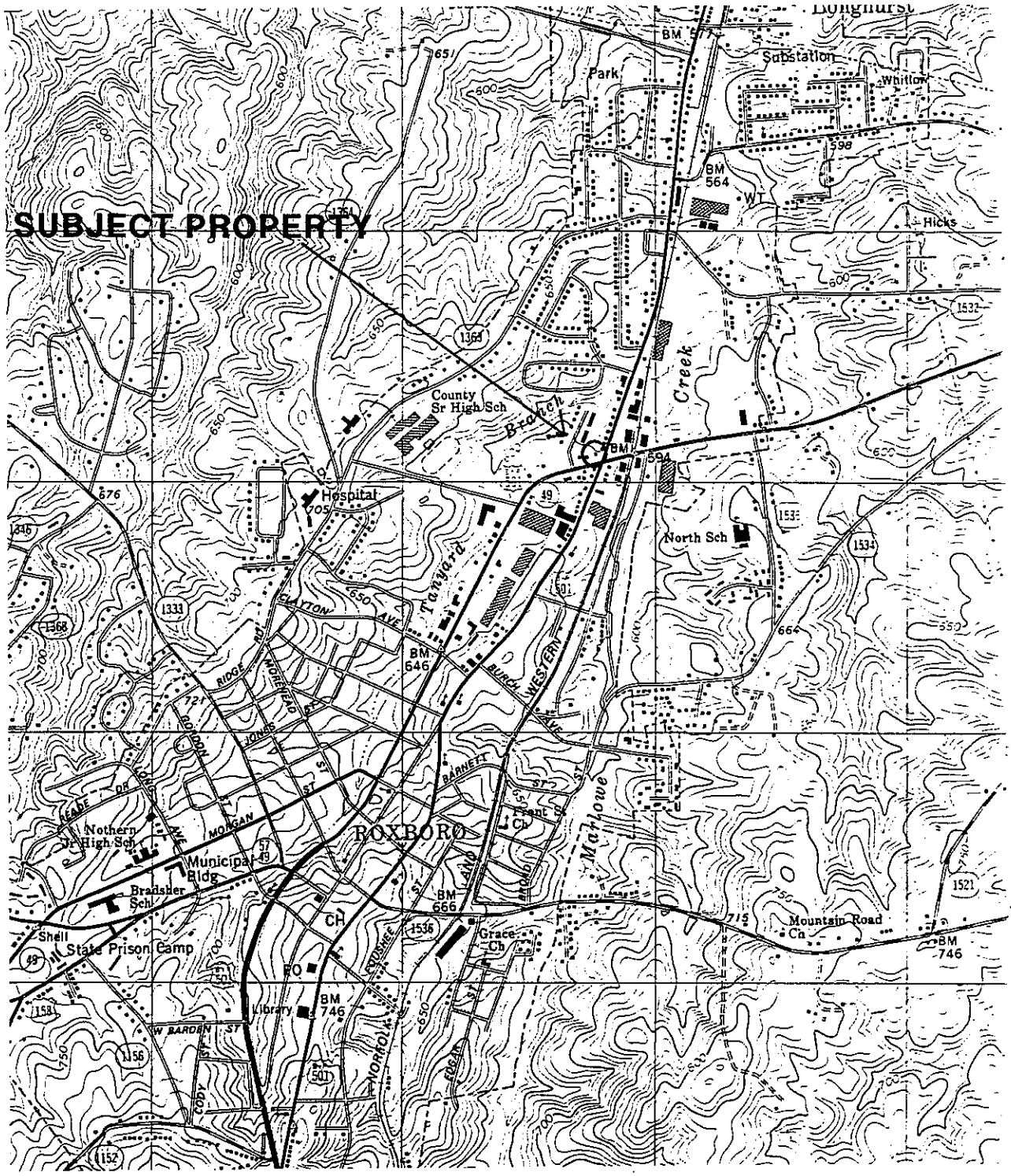
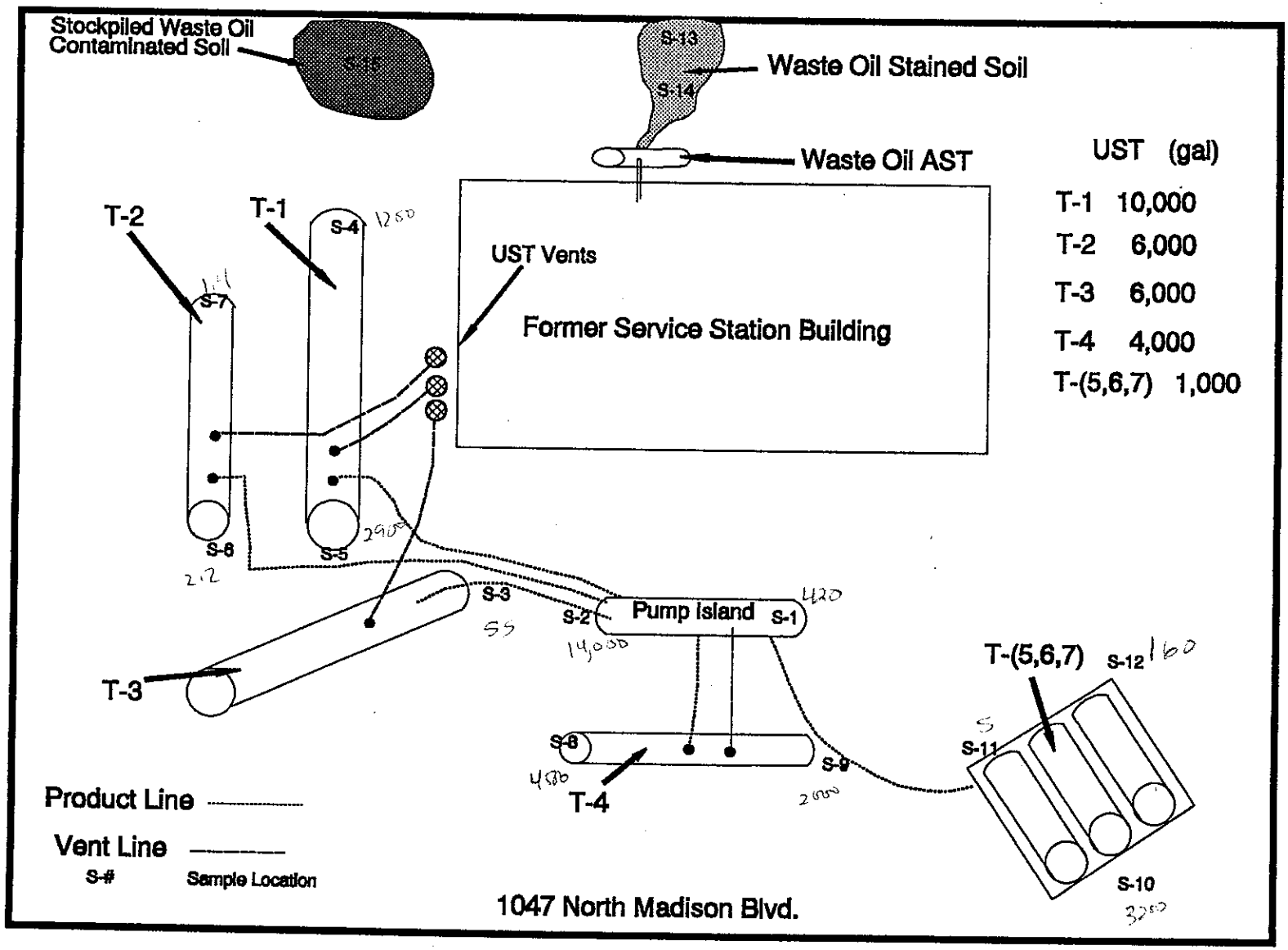


ENVIRONMENTAL INVESTIGATIONS 1911 Meredith Drive • Suite 250 Durham, NC 27713	PROJECT TITLE: Location Map Parrot Estate 1033 N. Madison Blvd. Roxboro, NC	PROJECT NO.: 203867 CHECKED BY: DRAWN BY: USGS	DRAWING NO.: Figure 1 SCALE: 1/24,000 DATE: 8/1



ENVIRONMENTAL INVESTIGATIONS, INC. 1911 Meredith Drive • Suite 250 Durham, NC 27713	PROJECT TITLE: Site Plan Parrott Estate 1047 N. Madison Blvd. Roxboro, NC	PROJECT NO.: 203867	DRAWING NO.: Figure 2
		CHECKED BY:	SCALE: NTS
		DRAWN BY: JWSD	DATE: 8/1

The project site is located in the piedmont physiographic province of North Carolina. Surficial soils at the site are underlain by rock of the Carolina Slate Belt. The bedrock in the vicinity of the project site consists Felsic Metavolcanic rock.

2.2 Hydrogeology

The shallow groundwater aquifer in the area of the site is shallower than would be expected for the area and may represent perched water table conditions. In general, the water table conforms to the surface topography and may be influenced by recharge and discharge capabilities, permeability and storage capacity of the underlying soils, seasonal and climatic variations and topography. Based on the topographical map, the groundwater may flow to the west northwest in the vicinity of the project site. Groundwater in Person County is principally a calcium bicarbonate type suitable for most domestic, municipal and industrial purposes. Wells which penetrate the metavolcanic rock to depths beyond 100 ft can yield up to 12 gallons per minute.

3.0 SITE CHARACTERIZATION

3.1 Physical Site Conditions

The subject site is located at 1047 North Madison Boulevard in Roxboro, North Carolina (Figure 1, Vicinity Map). The site is bounded to the east by North Main Street (Highway 501 North) and North Madison Boulevard (Highway 501) to the south. Residential homes were located to the north of the subject property. Topographically the site appears to have originally sloped down to the north and has been leveled by infilling with soil, as much as six feet of fill at the northern boundary of the property. Locally, overland flow appears to be to the north.

An intermittent tributary which flows into Tanyard Branch is located adjacent to the northwest corner of the project site. Tanyard Branch is located 800 feet to the north of the project site and flows northeast eventually joining Marlowe Creek which discharges into the Hyco River and eventually the Roanoke River.

The site is comprised of a one story concrete block building constructed on a concrete pad. The building was operated as a gasoline service station since 1946. The building was vacant at the time the excavations were conducted. Surficial cover includes asphalt driveways with concrete over the UST areas.

Four (4) steel constructed underground storage tanks (USTs) were located to the west and south of the building. The nearest UST was approximately 3.0 feet away from the structure. According to the property owner, the tanks were between fifteen and twenty years in age.

Three additional 1000 gallon USTs were discovered during the course of the excavations. The USTs were estimated to have been installed when the station was built in 1946. The USTs had been ripped open and filled with sand.

Surficial soil exposed during the excavation of the USTs consisted of a 2.0 ft. to 4.0 ft. thick layer of fill material composed of light brown to reddish brown silty clay fine sand. Below this fill layer, a reddish brown to red clay and silty clay was present.

3.2 Field Activities

A geologist was present on site to supervise the excavation and closure of the seven USTs. The relative locations of the USTs on the subject site are shown in Figure 2. The closure activities began on June 1,

1992 and concluded on June 3, 1992. The closure was performed by Ell personnel.

All remaining product, sludge and water and was removed by Noble Oil Service personnel prior to the initiation of the tank closure. The excavation, and removal of the USTs was conducted by Jerry's Backhoe Service of Oxford, NC. A Caterpillar trackhoe and John Deer Backhoe were used to remove the USTs. The USTs were disposed of by Jerry's Backhoe Service.

Each UST was inspected for obvious structural defects, leaking connections, rusted areas, stained soil, etc. prior to removal from site. No structural defects were noted and the USTs appeared to be in fair to good condition after having been removed from the ground.

The USTs were removed and secured on a flat bed trailer for transport to Jerry's Backhoe Service operations yard in Oxford, NC. Ell retains the disposal manifests and when the tank disposal certificate is recieved a copy will be included in an addendum to this report. Table 1 presents physical data obtained from each UST.

TABLE 1

TANK NUMBER	VOLUME (gal)	PRODUCT TYPE	DIMENSIONS
T-1	10,000	Gasoline (type unknown)	8 'x 26'
T-2	6,000	Gasoline (type unknown)	8' x 16'
T-3	6,000	Gasoline (type unknown)	6' x 20'
T-4	2,000	Gasoline (type unknown)	5' x 12'
Orphaned Tanks			
T-5	1,000	Unknown	4' x 10'
T-6	1,000	Unknown	4' x 10'
T-7	1,000	Unknown	4' x 10'

After each UST was removed from the excavation, soil samples were obtained from each tank pit. Each sample was collected from natural soil two (2) feet below the base of each tank. Each sample was placed in an appropriate container and preserved on ice. The samples were delivered to a local laboratory for analysis by EPA approved methods (5030, sonication extraction and purge and trap) for the presence of total petroleum hydrocarbons (TPH). No contaminated soil was removed from the excavations at this time due to the large volume of contaminated soil and stockpile area limitations of the project site.

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4.0 SAMPLING AND LABORATORY ANALYSIS

4.1 Analytical Results

The analytical testing of the soil samples resulted in nine (9) of the twelve (12) samples indicating total petroleum hydrocarbon (TPH) levels exceeding the DEM standard of 10.0 ppm. Six samples indicated TPH levels greater than 1,000 PPM. Table 2 summarizes the results of the laboratory analysis. Copies of the analytical results are included as Appendix A.

TABLE 2

SAMPLE NUMBER	TPH/GAS(PPM)
S-1 PI	420.0
S-2 PI/PL	14,000.0
S-3 T-1	55.0
S-4 T-1	1,200.0
S-5 T-3	2,900.0
S-6 T-2	2.2
S-7 T-2	1.1
S-8 T-4	4,500.0
S-9 T-4	2,000.0
S-10 T-(5,6,7)	3,200.0
S-11 T-(5,6,7)	5.4
S-12 T-(5,6,7)	160.0

PI-Pump Island
PL-Product Lines
PPM-Parts Per Million

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5.0 SURFICIAL CONTAMINATION

5.1 LOCATION

An approximate 20 ft^2 area of surficially stained soil is located in the rear of the former gas station building (north). The surficial stain is due to the overflow of a waste oil AST located in the rear of the building. The AST appears to have overflowed numerous times over a long period of time. The waste oil appears to have ponded in a depression located in the rear of the building and flowed into a narrow strip of wooded area located along the north boundary of the property. The spill does not appear to have flowed off the subject property.

5.2 EXCAVATION

Approximately 10 yds^3 of stained soil was excavated from the area and stockpiled on plastic on the property. Space limitations due to an overhead powerline restricted the depth which soil could be safely excavated. The removal of the surficial contamination in the wooded area was restricted by trees in the area. Additional soil excavation will require the removal of the overhead powerline and several trees.

5.2 ANALYTICAL RESULTS

Two confirmation samples were collected at the base of the excavation (S-13 & S-14) and one composite sample was collected from the stockpiled soil (S-15) for waste characterization for disposal purposes. Laboratory analysis of samples S-13 and S-14 indicated the samples contained petroleum constituents which exceed the DEM 10 PPM action level. Table 3 summarize the results of the laboratory analysis of samples S-13 and S-14. Copies of the laboratory analysis are included in Appendix A.

TABLE 3

Sample Number	Oil & Grease TPH (PPM)
S-13	2,900.0
S-14	180.0

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6.0 CONCLUSIONS

Environmental Investigations, Inc. has reviewed the information obtained during the closure of the seven USTs at the subject property. Based on the field activities, site observations and soil sample analyses, the subsurface soil surrounding the former UST locations has been severely impaired by petroleum hydrocarbon contamination. As the USTs appeared to be in fair to good condition, the petroleum contamination is likely to be the result of the pressurized product line leakage over time.

At this time the horizontal and vertical extent of contamination is unknown.

Due to the proximity of the building to the location of UST #1 (T-1), soil excavation in this area may be limited or not be possible.

Additional excavation of the surficially contaminated soil located in the rear of the building is recommended after the overhead powerline and several trees are removed to provide clear access.

7.0 RECOMMENDATIONS

Environmental Investigations, Inc. recommends conducting a series of soil borings to determine the lateral and vertical extent of petroleum contamination. The borings should be placed in strategic locations and advanced to the water table. Soil samples should be taken at five foot intervals using split spoon methods. The samples from the soil borings should be monitored for the presence of petroleum hydrocarbon contamination using a Organic Vapor Analyzer (OVA) meter. Any contaminated soil should stored on plastic on site for later disposal.

After the vertical and horizontal extent of contamination has been determined and a total volume of contaminated soil has been calculated, the best method of remediation should be determined. If excavation of the contaminated soil is determined as the best remediation option, the removal of contaminated soil should continue until the OVA meter indicates the contamination levels are below the DEM threshold limit of 10.0 ppm, or until groundwater or bedrock is encountered or until it becomes impractical to excavate any further. At the point that further excavation is terminated, confirmation soil samples shall be collected for analysis. The samples will be analyzed for TPH content by extraction and purge and trap methods.

No cleanup to SSC level

The final status of the project will depend upon the results of the soil sampling, and on how close to the groundwater table the excavation extends. Should the DEM threshold limits be exceeded or if groundwater is within 5.0 feet of the base of the excavation or if the excavation is terminated due to bedrock being encountered, additional site investigations which delineate the vertical and horizontal extent of contamination will be required. Additional investigations would include monitoring wells to evaluate the possible impact to groundwater due to the release.

A copy of this report should be submitted to the Groundwater Section of the NCDEM Raleigh Regional Office, located at 3800 Barrett Drive in Raleigh, NC 27609.

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COMPREHENSIVE SITE ASSESSMENT REPORT
PARROT TRUST PROPERTY
1047 NORTH MADISON AVENUE
ROXBORO, NORTH CAROLINA

Prepared by:

Environmental Investigations, PA
2327 Englert Drive, Suite 1
Durham, North Carolina 27713

November, 1993

John W. S. Davis, Jr. P.G.
Project Manager

Gary D. Babb, P.G.
Vice President

COMPREHENSIVE SITE ASSESSMENT
PARROTT ESTATE PROPERTY
1047 NORTH MADISON AVENUE
ROXBORO, NORTH CAROLINA

1.0 INTRODUCTION

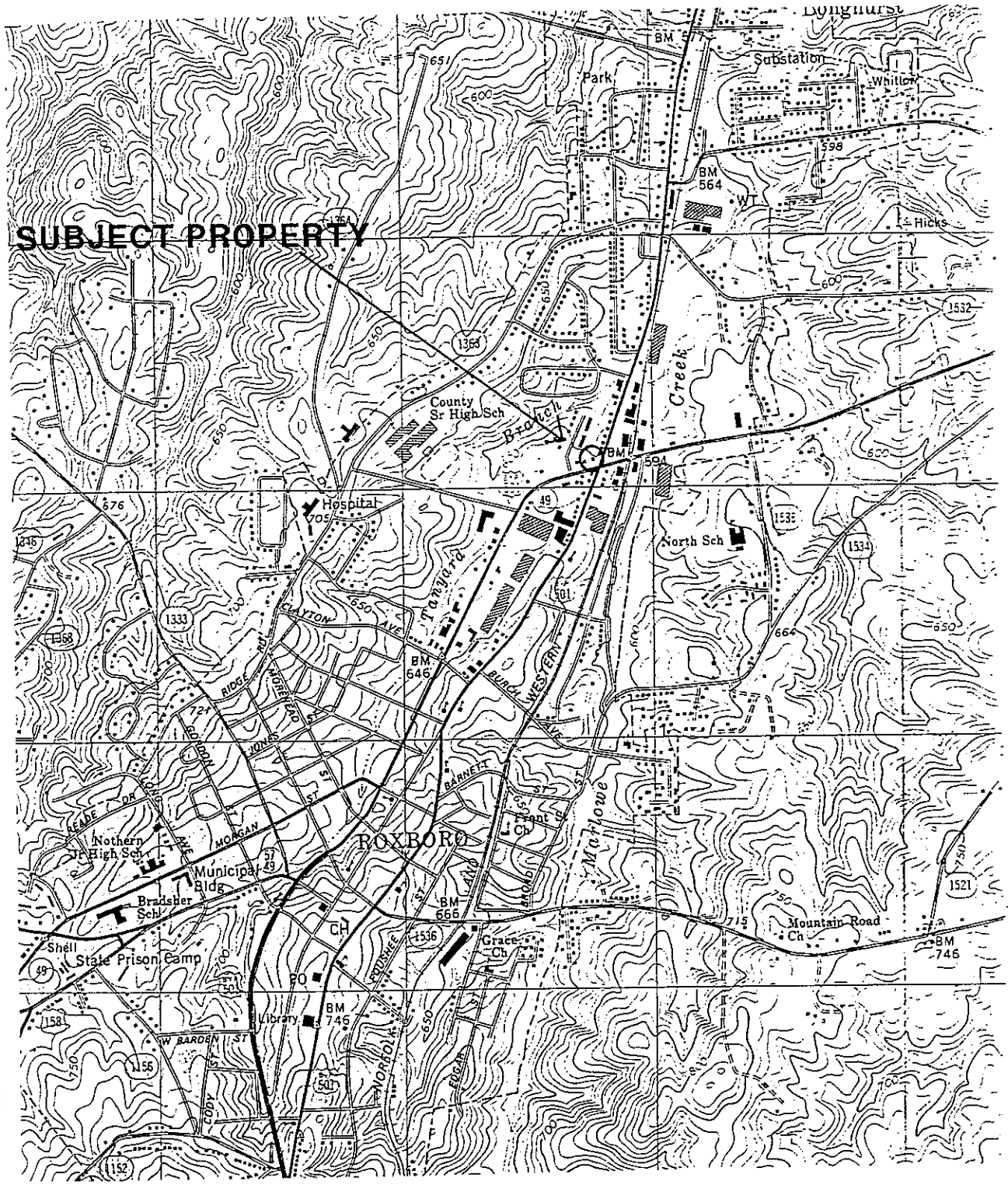
A Comprehensive Site Assessment (CSA) was conducted at the Parrott Estate property located at 4710 North Madison Avenue in Roxboro, North Carolina (Figure 1). The objective of the CSA was to characterize the extent of soil and groundwater contamination resulting from a petroleum release at the site so that a Corrective Action Plan (CAP) recommending the most appropriate remedial action may be developed. Figure 2 presents the general layout of site and the location of the USTs, pipelines and pump island.

2.0 SITE HISTORY/PREVIOUS INVESTIGATIONS

2.1 History of Ownership and Underground Storage Tank (UST) Operations

Mr. Jack Thomas Parrott owned and operated a Mobil retail gasoline station on the site beginning in the early 1960s after purchasing the property. A small gas station was formerly operated on the site and was reportedly constructed in the mid to late 1940s. The ownership information of the property prior to purchase by Mr. Parrott was unavailable. Mr. Parrott demolished the former gas station building and constructed the present building. The site was operated under the trade name as a Mobil Oil Company. Mr. Parrott installed four underground storage tanks in association with the construction of the gas station in the 1960s, 1-10,000, 2-6,000, and 1-4,000 gallon UST. The specific contents of each UST was unknown, but it is presumed that the USTs contained three grades of leaded gasoline. Only one pump island was observed on the property which contained three pumps. No indication of dispensing of diesel fuel was observed at the facility.

Mr. Parrott ceased managing the operations at the facility sometime in the late 1970s and then leased the property. The date the USTs were taken out of operation is not specifically known. The property was most recently operated as a car repair facility which did not retail gasoline.



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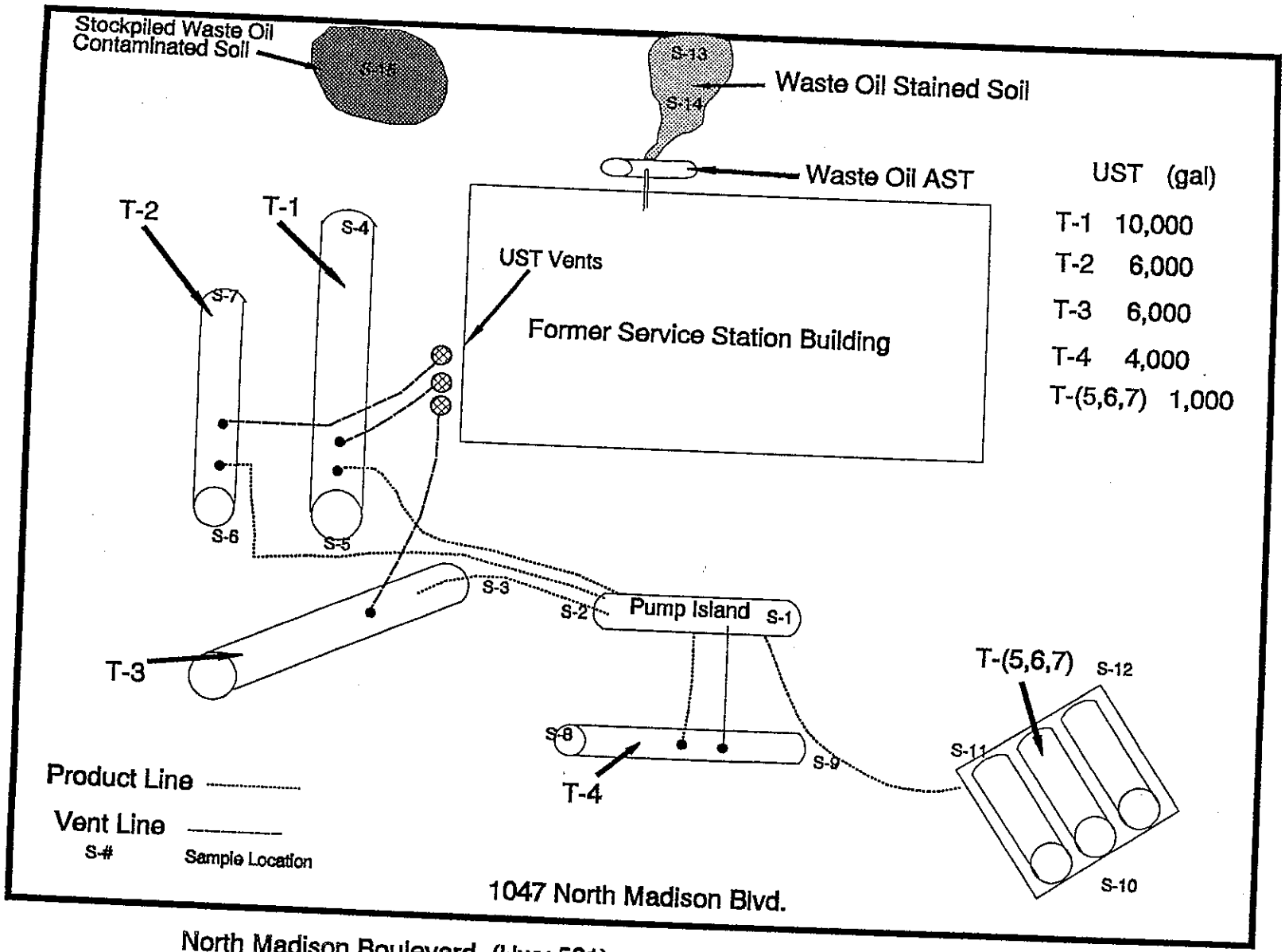
PROJECT TITLE:
Location Map
Parrot Estate
1033 N. Madison Blvd.
Roxboro, NC

PROJECT NO.:	DRAWING NO.: Figure 1
CHECKED BY:	SCALE: 1/24,000
DRAWN BY: USGS	DATE:



ENVIRONMENTAL INVESTIGATIONS 1911 Meredith Drive • Suite 250 Durham, NC 27713	PROJECT TITLE: Site Plan Parrott Estate 1047 N. Madison Blvd. Roxboro, NC	PROJECT NO.:	DRAWING NO.: Figure 2
		CHECKED BY:	SCALE: NTS
		DRAWN BY: JWSD	DATE: 8/1

2.2 Release Scenario

During a routine UST excavation, petroleum hydrocarbons were discovered to have been released to the soil in association with the product lines and plumbing system. The product delivery system utilized product pumps which were attached to the USTs and supplied petroleum products to the delivery and meter systems mounted on the pump island. Pressurized product delivery systems were preferred by petroleum retail operators because they rarely lose their prime, unlike the alternative vacuum/suction systems. Minor leaks in pressurized systems are difficult to detect unless the petroleum products become visible to the surface or inventory discrepancies are detected.

High levels of petroleum hydrocarbons were detected in the soils surrounding the product lines where they were attached to the USTs, product line trenches and the pump island.

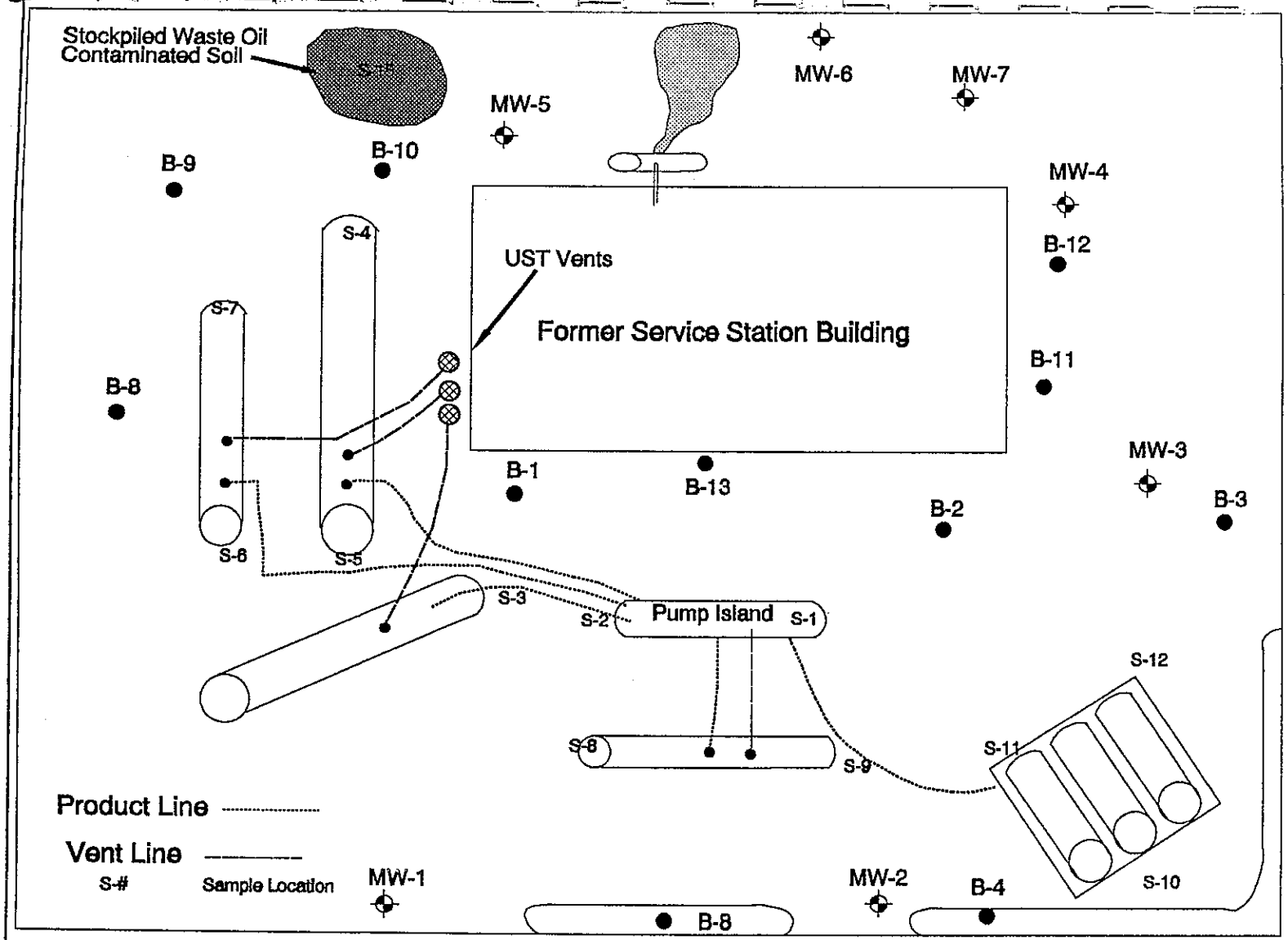
During the UST excavation, three abandoned USTs were discovered, presumably associated with the first gas station which operated on the site. The USTs had been cut open and filled with sand. There was a strong indication that the remaining petroleum product and sludge had not been removed from the UST's before the sand was placed in the USTs. The USTs were filled with petroleum saturated sand and water.

2.3 Work to Date, Preliminary Corrective Action and Results of Initial Assessments

Environmental Investigations, P.A. personnel supervised the closure of the USTs on June 1, 1992. During the closure, the USTs were found to be in good condition and petroleum contaminated soil was encountered in the tank pits, product lines and pump island. Due to site limitations and the extent of the contamination, the contaminated soil was placed back in the ground. The USTs were transported to Jerry's Backhoe service yard in Oxford, NC for cleaning and proper disposal.

The contaminated soil contained in the excavation was monitored with an organic vapor analyzer (OVA) which measured levels of petroleum vapors at over 1,000 parts per million (ppm) over much of the area of the USTs, product lines and pump island.

Confirmation soil samples were collected from the base of the UST pits, product line trenches and pump island (Figure 3). Laboratory test results for TPH by EPA Method 3550 detected levels in the samples ranging up 14,000 ppm. Table I presents the results of the TPH analysis of the samples collected during the UST excavation.



ENVIRONMENTAL INVESTIGATIONS P A	PROJECT TITLE: BORING LOCATION MAP PARROTT ESTATE 1047 NORTH MADISON BLVD. ROXBORO, NC	PROJECT NO.: 14-211-152	DRAWING NO.: FIGURE 3
		CHECKED BY: CAR	SCALE: NTS
		DRAWN BY: JWSD	DATE:

TABLE I
SUMMARY OF ANALYTICAL RESULTS
UST CONFIRMATION SAMPLES

SAMPLE NUMBER	TPH 3550 Diesel	TPH 5030 Gasoline
S-1	BQL	420 ppm
S-2	N/A	14,000 ppm
S-3	N/A	55 ppm
S-4	N/A	1,200 ppm
S-5	N/A	2,900 ppm
S-6	N/A	2.2 ppm
S-7	N/A	1.1 ppm
S-8	N/A	4,500 ppm
S-9	N/A	2,000 ppm
S-10	N/A	3,200 ppm
S-11	N/A	5.4 ppm
S-12	N/A	160 ppm

Soil Sample S-1 was also analyzed for BETX, TOX and Total Lead. Table II shows the analytical results of those analyses.

TABLE II
SUMMARY OF ANALYTICAL RESULTS
ADDITIONAL ANALYSIS

ANALYSES	SAMPLE NUMBER	COMPOUND	RESULT
BETX (602)	S-1	benzene	290 ppb
"		ethylbenzene	5,800 ppb
"		toluene	2,100 ppb
"		xylene	44,00 ppb
TOX		organic halogens	BQL
Total Lead		lead	31.0 ppm

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An area of waste oil contaminated soil was also observed behind the former service station building. The contamination was the result of an overflow from a 580 gallon waste oil AST that was filled via a fill port located within the former service station building (Figure 2). Contaminated soil was excavated and stockpiled on the site on plastic and bermed with bales of straw.

Two confirmation soil samples (S-13 & S-14) were collected at the base of the excavated area (Figure 2). Sample S-15 is a composite sample collected from the stockpiled waste oil contaminated soil. Table III shows the analytical results of various parameters for the waste oil contaminated soil.

TABLE III
SUMMARY OF RESULTS
WASTE OIL CONTAMINATED SOIL AREA

Analyses	S-13	S-14	S-15 Composite
TPH Diesel	N/A	N/A	830 ppm
TPH-Oil	2,900 ppm	180 ppm	N/A
8240	N/A	N/A	Acetone 600 ppb Benzene 34 ppb Toluene 450 ppb Ethylbenzene 210 m,p-Xylene 920 ppb o-xylene 520 ppb
8270	N/A	N/A	Naphthalene 1,000 ppb 2-Methynaphthalene 2,500 ppb Pyrene 1,500 ppb Bis(2-Ethylhexyl)Phthalate 7,100 ppb
RCRA Metals	N/A	N/A	BQL
8080-PCB's	N/A	N/A	BQL

In response to the UST closure report completed in August of 1992, the DEM issued a Notice Of Violation and a Notice of Regulatory Requirements to Mr. Jack Parrott.

The results of the Initial Abatement Measures and Initial Site Check conducted at the site were submitted to the DEM in a letter report dated October 8, 1992.

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3.0 CONTAMINANT SOURCE INVENTORY

3.1 Potential On-Site Petroleum Hydrocarbon Sources

As previously noted, four USTs were used to store petroleum products for retail sale on the property by the present owners. Three additional USTs were discovered on the property during the UST excavation, which were presumed to have been used by previous owners of the property for the storage of petroleum products. Contamination was discovered in association with both sets of USTs. Figure 3 illustrates the former locations of both sets of USTs at the site.

3.2 Potential Off-Site or Up-Gradient Petroleum Hydrocarbon Sources

A gas station operated by the Little Huff Oil Company of Roxboro, NC is located slightly upgradient and to the south of the subject property. Petroleum releases have been detected in association with USTs formerly located on the property. There is no direct evidence that petroleum products have migrated in the soil and groundwater north across North Madison Boulevard and onto the Parrott Estate Property.

4.0 POTENTIAL RECEPTORS/SITE UTILITIES

Local land use in the immediate vicinity of the subject property is primarily commercial/retail. Three single family residences are located to the north of the subject property. Several multifamily housing units are located 500 yards to the northwest of the subject property, across a small intermittent stream. The Parrott property is serviced by municipal water and sewer services. Buried natural gas, water and sewer lines are located on the subject property, however, their depths do not exceed 3.0 feet.

5.0 SITE TOPOGRAPHY AND SURFACE WATER FEATURES

Figure 1 presents a USGS 7.5-minute topographic quadrangle showing the topography of the region in the area of the project site. The site appears to be located adjacent to a small tributary of the Tanyard Branch of Marlowe Creek. The tributary is the outlet for storm drains located on North Madison Avenue in the vicinity of the Parrott property. The general topographic trend in the area is to the north.

6.0 SITE SOILS AND GEOLOGY

6.1 Regional Geology

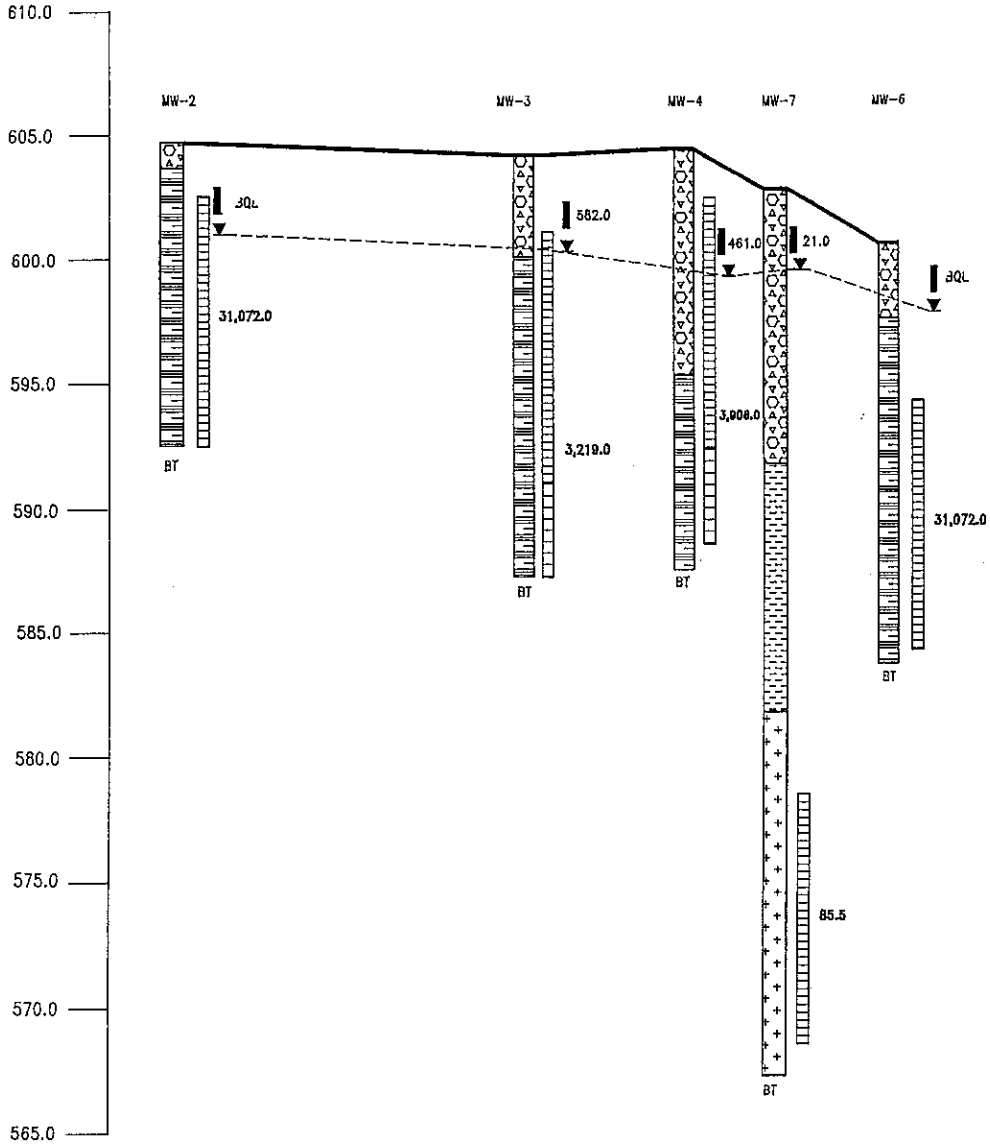
According to the Geologic Map of North Carolina, the subject property is located in the Piedmont Physiographic Province of North Carolina. The subject property is underlain by rocks of the Carolina Slate Belt and consists of felsic metavolcanic and metasedimentary rocks of Precambrian to Cambrian age (570-500 million years old). In the area of the Parrott Estate, the Carolina Slate Belt also consists of metagranitic rocks of the Roxboro Suite.

6.2 Site Geology

The stratigraphy at the subject site consists of red silty clay fill material ranging in depth from two feet to 10 or 12 feet in thickness. A layer of residuum soil was visible below the fill material which graded down to saprolite and weathered rock of the Carolina Slate Belt. The Type III monitoring well (MW-7, Figure 3) encountered bedrock at a depth of 21 feet. The bedrock was cored for 20 feet, down to a depth of 41 feet. The bedrock consisted of green/black massive fine grained metaintrusive rock. Approximately four feet of core was recovered during the first 10 foot coring interval (21 - 31 feet), indicating the upper portion of the bedrock is highly fractured. Approximately six feet of core was recovered from the lower core (31 - 41 feet) interval, indicating less fracture density. Numerous small faults and fractures and quartz veins were observed in the recovered sections of bedrock core.

The site stratigraphy, as determined from the monitoring well and soil boring logs, is illustrated in the north to south trending hydrogeologic profile (cross-section A - A') presented in Figure 4. The location of the hydrogeologic profile across the site is shown in Figure 5. Drilling logs for the soil borings are found in Appendix A and the boring logs for the monitoring wells are provided in Appendix B.

Generally, the fill material at the site can be divided into two zones which are distinguished by varying textures and colors. The two zones represent two episodes of infilling and expansion of leveled area for the gas station building and paved areas. The original fill zone ranges from approximately 2 to 6 feet in thickness and consists of a tan/brown weathered silty clay which is underlain by a green/brown residuum soil layer grading to green/brown weathered rock and then to fractured bedrock. The second fill zone lies to the north and represents the fill material that brings the property up to its present day grade. The second fill zone consists of tan/orange silty clay which ranges to 8 feet in depth. Below the fill zone lies the green/black residuum soil.



EXPLANATION:

- Fill – Silty to Sandy Clay
- Residuum – Silty Clay
- Residuum – Clayey Silt
- Fractured Metagranite
- MW-2 — Monitoring Well Number
- BQL — Soil Sample Interval And TPH Concentration (ppm)
- 31,072.0 — Groundwater Samples Total BETX Concentration (ppb)
- Depth to Groundwater From Top of Casing
- BT — Boring Termination
- Screened Section

0 10 20

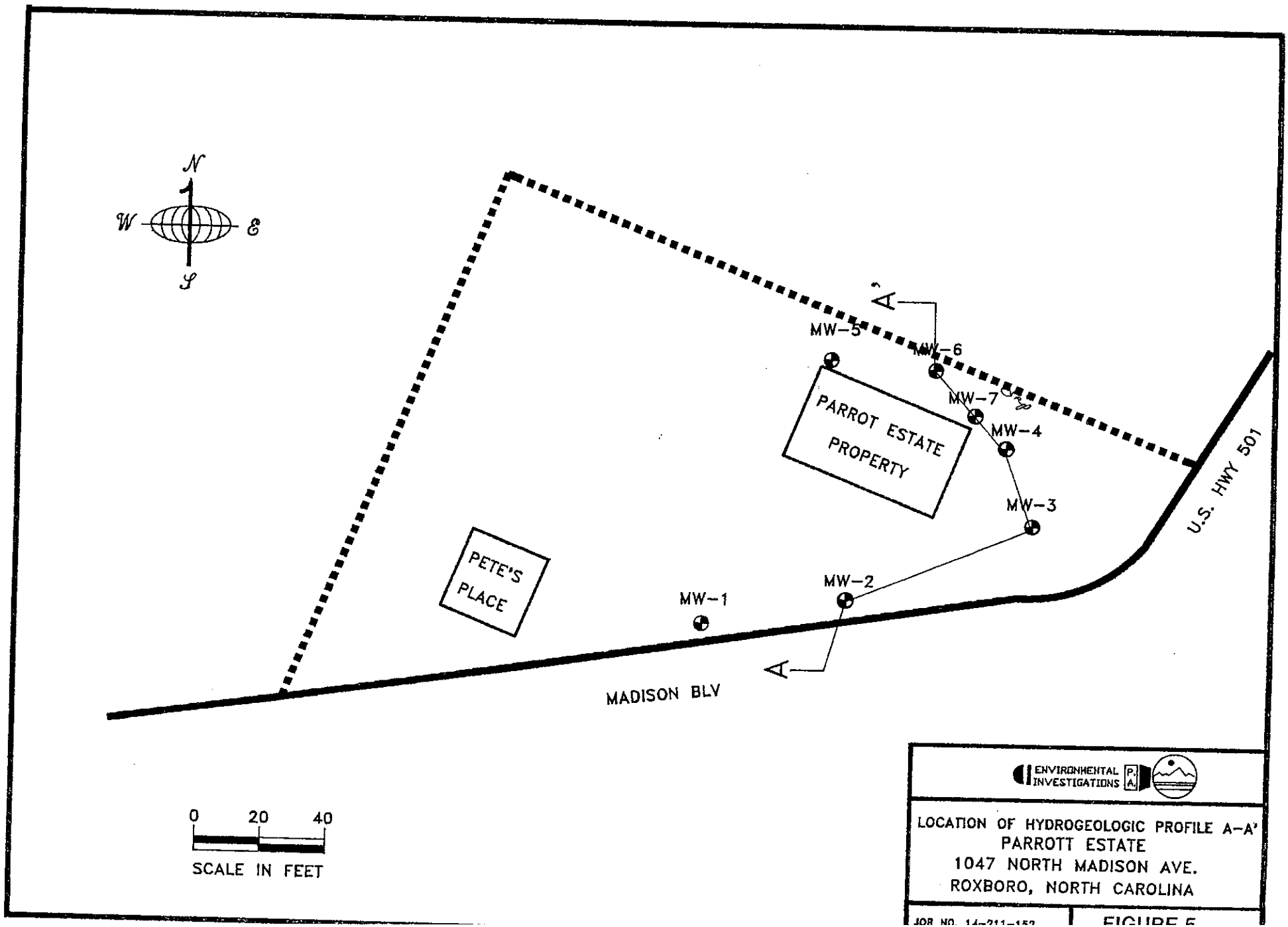
SCALE (FEET)

ENVIRONMENTAL INVESTIGATIONS P.A.

HYDROGEOLOGIC CROSS SECTION A–A'
PARROT ESTATE
1047 NORTH MADISON AVENUE
ROXBORO, NORTH CAROLINA

JOB NO. 14-211-152

FIGURE 4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MW-7
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MW-3
MW-2
MW-1
PARROT ESTATE PROPERTY
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40
SCALE IN FEET
ENVIRONMENTAL INVESTIGATIONS P.A.
LOCATION OF HYDROGEOLOGIC PROFILE A-A'
PARROTT ESTATE
1047 NORTH MADISON AVE.
ROXBORO, NORTH CAROLINA
JOB NO. 14-211-152
FIGURE 5

7.0 EXTENT OF SOIL CONTAMINATION

7.1 Soil Sampling and Analysis

Thirteen soil borings were drilled on the site. The locations of the soil borings are shown in Figure 3. The soil borings were advanced with hollow-stem augers on a truck-mounted drilling rig. The soil borings were drilled to an average depth of 18 feet. Soil samples were collected with split-spoons at the soil/water interface. As the borings were advanced, random samples of cuttings as well as the split-spoon samples from the soil water interface were visually inspected, screened with an OVA meter for the presence of volatile organic hydrocarbons (VOCs) to determine which sample would be selected for laboratory analysis. Generally the soil samples collected between 6 feet and the soil/ water table indicated the highest OVA readings.

Head space screening of the soil samples collected from the soil borings was conducted by filling a Ziploc baggie approximately two-thirds full with the soil collected in the split-spoon. The sample was allowed to equilibrate inside the baggie for ten to fifteen minutes before taking a reading with the OVA meter. The results of the headspace screening did detect the presence of VOCs in all samples except B-5, B-8, B-9. One soil sample from each soil boring was retained for laboratory analysis.

Soil samples selected for laboratory analysis were placed in laboratory-supplied jars, labelled, preserved on ice, and transported to the laboratory overnight with chain-of-custody documentation. The soil samples were analyzed for TPH content by EPA Methods 3550 for the detection of diesel fuel and by EPA Method 5030 for the detection of gasoline.

7.2 Results of Soil Analyses

No TPH diesel was detected in any of the soil samples and no TPH gasoline was detected in soil samples B-8, B-9, B-10 and the borings for MW-1, MW-2 and MW-6. TPH (gasoline) levels were detected in all of the other soil samples. These results define the horizontal boundaries of the soil contamination for three sides of the contaminated area.

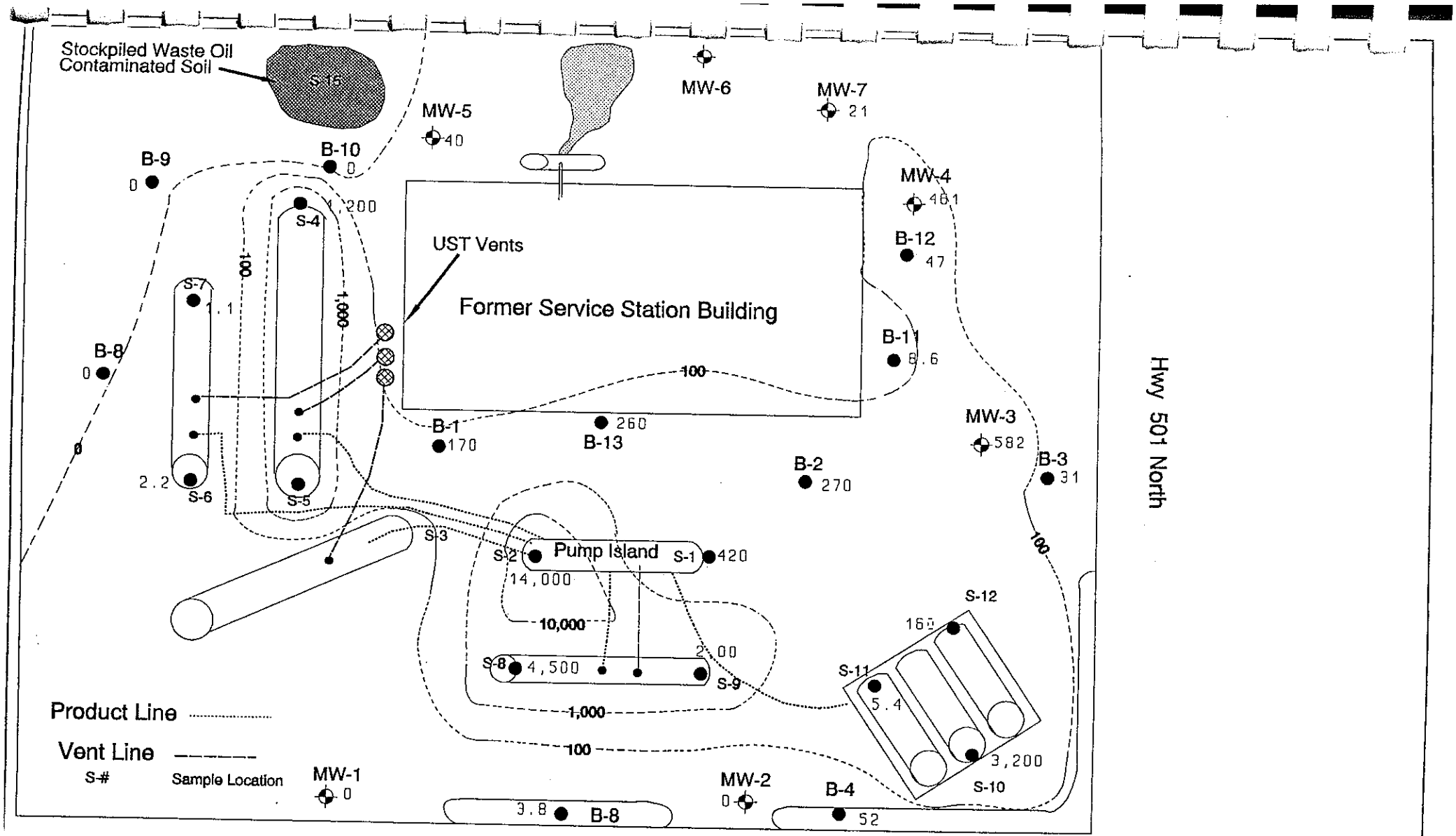
Split-spoon soil samples were collected from the soil/water interface (between 6 and 10 feet). The samples were split, with a portion being screened with an OVA meter for the presence of volatile organic compounds (VOCs), and the other retained for laboratory analysis for TPH. The OVA readings were greater than 1,000 ppm which exceeded the range of the instrument. The samples which indicated the highest reading or were located above the groundwater interface were submitted for laboratory analysis. Results of the soil borings are listed in Table IV.

Gasoline contamination was found in significant quantities down to the water table in several locations. Soil samples collected from eight of the 14 soil borings indicated low

to minor levels of petroleum contamination. The extent of horizontal soil contamination has been defined on all sides of the tank pit area except to the north, the downgradient direction.

7.3 Soil Contamination Contour Map

Figure 6 is a contour map of the composite of all soil analyses collected at the site (confirmation, delineation borings and monitoring well borings). The contour map illustrates the boundaries of the horizontal extent of the contamination. A zero line is present on the west side of the property. The gasoline concentrations on the other sides of the property boundary are defined to within 100 ppm. The contour map shows a zone of contamination that is greater than 10,000 ppm in the area of the former pump island. Laboratory results of soil samples are presented in the laboratory data sheets in Appendix C, D and E.



ENVIRONMENTAL INVESTIGATIONS P A

PROJECT TITLE: TPH ISOCONCENTRATION MAP PARROTT ESTATE 1047 NORTH MADISON BLVD. ROXBORO, NORTH CAROLINA	
PROJECT NO.: 14-211-152	DRAWING NO.: FIGURE 6
CHECKED BY: CAR	SCALE: NTS
DRAWN BY: JWSD	DATE:

TABLE IV
SOIL BORINGS &
SOIL SAMPLES COLLECTED DURING MONITORING WELL INSTALLATION

BORING NUMBER	TPH 5030 GASOLINE	TPH 3550 DIESEL	DEPTH SAMPLE COLLECTED
B-1	170 ppm	BQL	8.5'-10.0'
B-2	270 ppm	BQL	6.0'-7.5'
B-3	31 ppm	BQL	6.0'-7.5'
B-4	52 ppm	BQL	8.5'-10.0'
B-5	3.8 ppm	BQL	8.5'-10.0'
B-6	37 ppm	BQL	8.5'-10.0'
B-7	15 ppm	BQL	8.5'-10.0'
B-8	BQL	BQL	6.0'-7.5'
B-9	BQL	BQL	6.0'-7.5'
B-10	BQL	BQL	8.5'-10.0'
B-11	8.6 ppm	BQL	8.5'-10.0'
B-12	470 ppm	BQL	8.5'-10.0'
B-13	260 ppm	BQL	11.0'-12.5'
Bld-E	9.8 ppm	BQL	9.5'-10.0'
MW-1 (B-1)	BQL	NA	8.0'-10.0'
MW-2 (B-2)	BQL	NA	8.0'-10.0'
MW-3 (B-3)	582 ppm	NA	8.0'-10.0'
MW-4 (B-4)	461 ppm	NA	8.0'-10.0'
MW-#5 (B-5)	40 ppm	NA	8.0'-10.0'
MW-6 (B-6)	BQL	NA	8.0'-10.0'
MW-7 (B-7)	21 ppm	NA	8.0'-10.0'

Note:
NA = Not Analyzed

8.0 SITE HYDROGEOLOGY

8.1 Monitoring Well Installation and Sampling

A total of seven monitoring wells were installed on the site during the CSA. Locations of the monitoring wells are shown in Figures 2 and 3.

Monitoring wells MW-1 through MW-3 were installed on January 11, 1993. Monitoring wells MW-4 and MW-5 were installed on January 12, 1993. These wells were properly developed and sampled. An attempt was made to gain access to the location of MW-6 on the north border of the property by entering from the adjacent property on February 1, 1993. Due to wet soil conditions, the drilling rig became stuck and had to be pulled out with a wrecker. On February 10, 1993, the location for MW-6 was subsequently cleared with a backhoe and a powerline had to be removed. MW-6 was successfully installed on February 11, 1993.

Monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, and MW-6 were completed as shallow monitor wells in the saprolite aquifer and deep well MW-7 was completed as a Type III deep well in the upper bedrock zone. The wells were constructed in accordance with North Carolina well construction standards. Monitor well logs, well construction records, well completion diagrams, and results of the well survey are provided in Appendices F.

The monitoring wells were constructed of 2.0 inch diameter Schedule 40 threaded flush-joint PVC casings and screens. Each well contains a 10.0 foot section of 0.010 inch mill-slotted PVC screen. A 2.0 inch diameter casing extends from the top of the screen in each well to approximately 6 inches below ground level. A clean silica sand pack was poured in-place around the screen and a one to two foot seal of pelletized bentonite was placed immediately above the sand pack. A neat cement grout was poured in-place above the bentonite seal to the ground surface. Cement pads were constructed around the flush mount manhole covers to protect the wells and prevent infiltration of surface water. MW-5 and MW-6 were completed with above ground protective well covers.

The deep well MW-7 is equipped with 4.0 inch diameter outer surface casing from ground level to a depth of 21 feet to prevent surficially contaminated soils from being carried down during drilling. Within the 4.0 inch diameter casing, is a 2.0 inch diameter monitoring well installed to a depth of 36.5 feet. A 10.0 foot long section of 0.010 well screen was installed from a depth of 35.0 feet to a depth of 25.0 feet.

The top of each PVC casing elevation was surveyed relative to a survey datum located across North Madison Boulevard in conjunction with a survey of the monitoring wells located on the Little Huff Oil Company property to facilitate comparison of groundwater flow directions.

Following the installation of the monitoring wells, each well was developed in order to remove drill cuttings or other materials introduced during drilling operations. Approximately 15 to 20 gallons of water were evacuated from each well with a bailer.

In order to determine the horizontal and vertical extent of groundwater contamination on the site, groundwater samples were collected from all the monitor wells. Prior to sample collection, depth to groundwater measurements were made to the nearest one hundredth of a foot using an electric water level indicator. Table V summarizes water table depths and elevations. No free product was noted in any of the wells.

TABLE V
WATER TABLE DEPTHS

DATE	LOCATION	DEPTH TO WATER	NORMALIZED ELEVATION	MLS ELEVATION
2/11/93	MW-1	4.10	98.83	601.82
2/11/93	MW-2	3.65	98.81	602.25
2/11/93	MW-3	3.82	97.58	600.85
2/11/93	MW-4	5.15	98.08	600.02
2/11/93	MW-5	4.47	97.96	600.58
2/11/93	MW-6	2.81	93.91	598.19
2/11/93	MW-7	3.30	96.22	600.01
2/11/93	Benchmark	N/A	100.00	607.01

Notes:

BENCHMARK = 607.09
MSL = Mean Sea level

Following water level measurements, each monitor well was purged by bailing at least three well bore volumes of water using dedicated, disposable Teflon bailers and clean nylon rope.

The samples were placed in laboratory-supplied jars, labelled, preserved on ice and shipped overnight with chain-of-custody documentation. The samples from monitor wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, and deep well MW-7 were analyzed for purgeable aromatics by EPA Method 602 (benzene, toluene, ethylbenzene and total xylenes), and MTBE. Sampling, handling, and preservation was conducted in accordance with accepted EPA protocols.

8.2 Aquifer Testing

The Raleigh Regional Office of the DEM stated that aquifer testing is not reimbursable through the State Trust Funds, therefore, no tests were conducted at the site to determine these characteristics. The DEM requested our best estimate of what the aquifer characteristics would be.

According to published literature, fractured granitic rock has a hydraulic conductivity which ranges from 10^{-2} to 10^{2} in gpd/Ft^2. Environmental Investigations' prior experience with wells drilled in the piedmont in similar type of rock, indicates that are able to obtain yields of 2-3 gallons per minute or more.

8.3 Groundwater Conditions and Aquifer Parameters

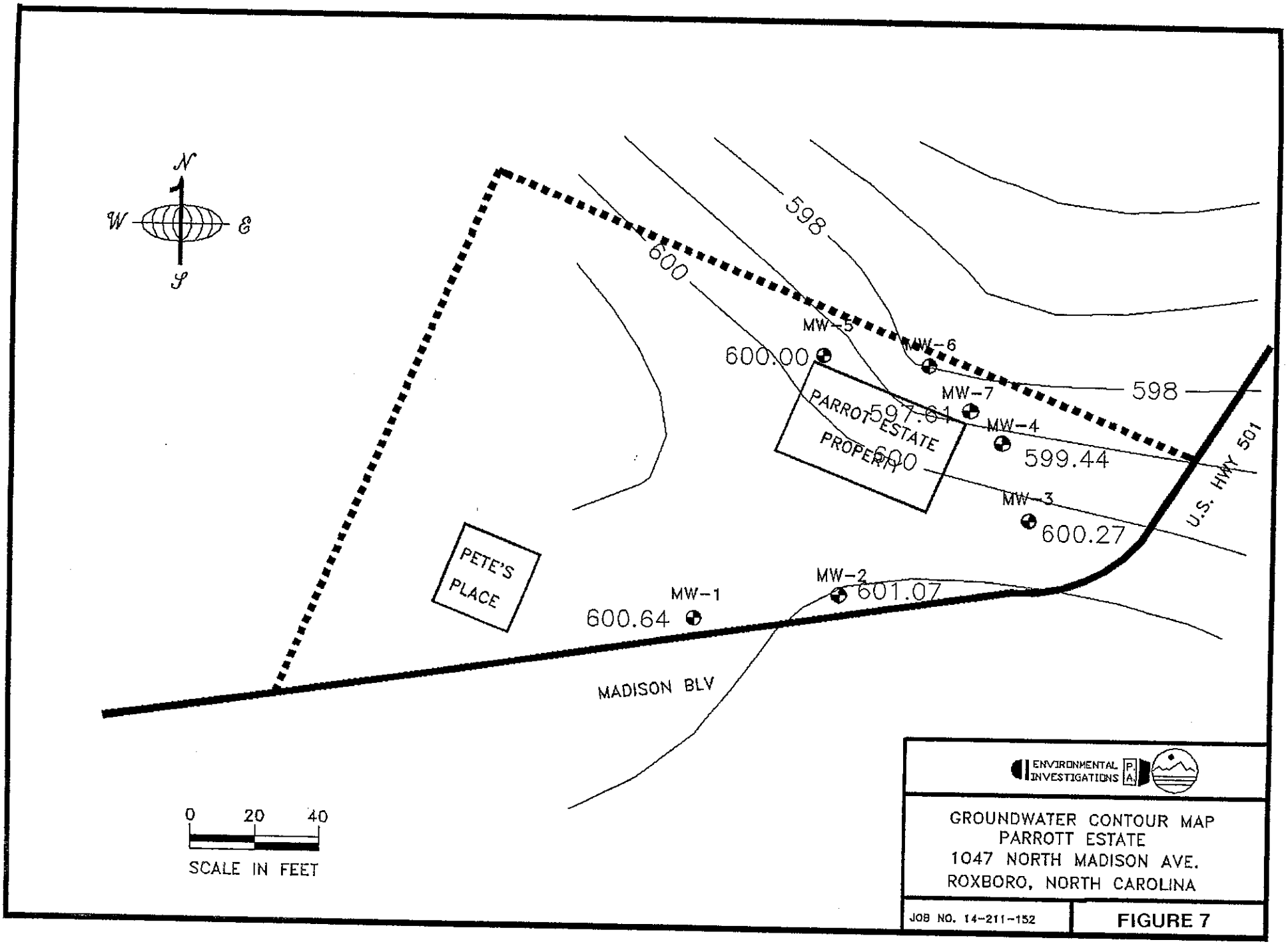
A shallow water table occurs in the compact weathered granite zone and begins at a depth of approximately 7.3 feet in MW-3. The saprolite aquifer appears to be hydraulically interconnected with the bedrock aquifer, which is illustrated by the nearly identical water level elevations in the monitor wells and deep well MW-7. Water table measurements from the monitoring wells ranged from 7.26 feet (MW-3) to 16.55 feet (MW-4) below the top of the well casing level.

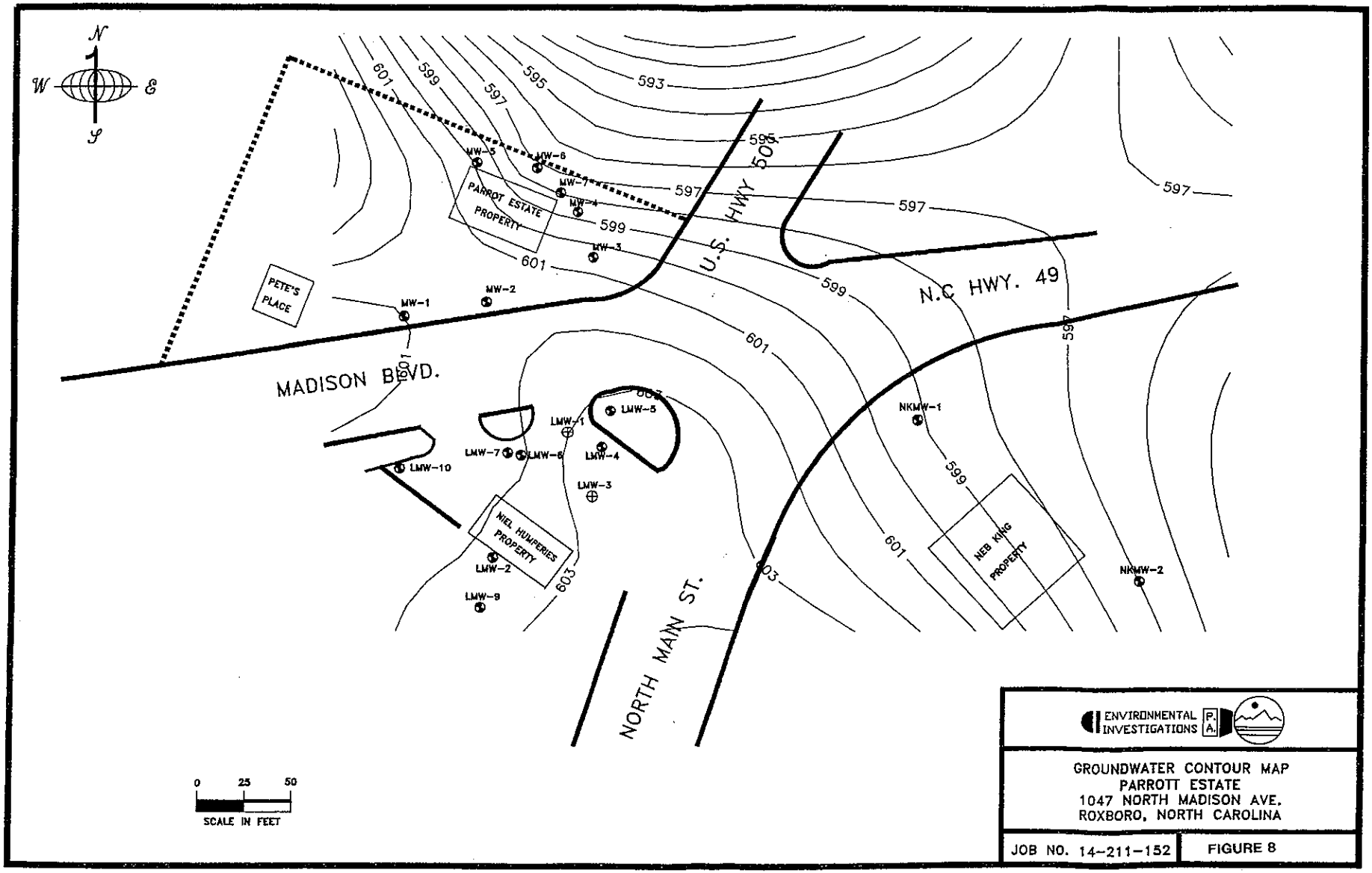
The horizontal hydraulic gradient of the water table aquifer, as measured between MW-1 and MW-4 is .014 ft/ft and between MW-2 and MW-6 is .054 ft/ft. The vertical hydrologic gradient between the saprolite aquifer and bedrock aquifer was determined to be 0.038 ft/ft downward at shallow well MW-4 and deep well MW-7 and 0.101 ft/ft downward between deep well MW-7 and shallow well MW-6.

8.4 Groundwater Elevation Contour Maps

Groundwater elevations for the subject property were contoured using an automatic contour software package. Figure 7 indicates the groundwater flow direction at the site is to the north-northeast.

Figure 8 is a groundwater contour map which includes groundwater elevation data for adjacent properties. Groundwater elevation measurements were collected for the Neil Humpferies property and the Neb King property on the same day as the Parrott Estate property. The intersection wide groundwater elevation map indicates groundwater flow direction ranges from northwest to northeast in the vicinity of the Neil Humpferies property. The groundwater flow direction in the vicinity of the Neb King property is to the northeast and groundwater flow direction at the Parrott Estate Property is to the north and northeast.


N
W
E
S
598
600
MW-5
600.00
MW-6
MW-7
597.61
598
PARROT ESTATE PROPERTY
MW-4
599.44
600
MW-3
600.27
U.S. HWY 501
PETE'S PLACE
MW-2
601.07
MW-1
600.64
MADISON BLV
0 20 40
SCALE IN FEET
ENVIRONMENTAL INVESTIGATIONS P A
GROUNDWATER CONTOUR MAP
PARROTT ESTATE
1047 NORTH MADISON AVE.
ROXBORO, NORTH CAROLINA
JOB NO. 14-211-152
FIGURE 7


N
W
E
S
MW-1
MW-2
MW-3
MW-4
MW-5
MW-6
MW-7
PARROT ESTATE PROPERTY
PETE'S PLACE
MADISON BLVD.
U.S. HWY 501
N.C HWY. 49
NORTH MAIN ST.
LMW-1
LMW-2
LMW-3
LMW-4
LMW-5
LMW-7
LMW-8
LMW-9
LMW-10
NIEL HUMPERIES PROPERTY
NKMW-1
NKMW-2
NEB KING PROPERTY
601
599
597
595
593
603
0 25 50
SCALE IN FEET
ENVIRONMENTAL INVESTIGATIONS P.A.
GROUNDWATER CONTOUR MAP
PARROTT ESTATE
1047 NORTH MADISON AVE.
ROXBORO, NORTH CAROLINA
JOB NO. 14-211-152
FIGURE 8

9.0 EXTENT OF GROUNDWATER CONTAMINATION

9.1 Results of Groundwater Analyses

The results of laboratory analyses of groundwater samples collected from the seven monitoring wells in January 1993 are summarized in Table VI.

TABLE VI
GROUNDWATER SAMPLING RESULTS
Results in ppb

Contaminant	MW-#1	MW-#2	MW-#3	MW-#4	MW-#5	MW-#6	MW-#7
Benzene	3,860	8,350	1,140	568	BDL	5	78
Ethylbenzene	265	1,040	346	618	BDL	BDL	BDL
Toluene	5,600	11,452	451	504	BDL	BDL	7.5
Xylene	2,970	10,230	1,282	2,216	BDL	BDL	BDL
MTBE	415	1,530	963	875	BDL	559	1,012

Elevated levels of volatile organic compounds (BETX plus MTBE) were detected in all wells except MW-5. Analysis of a groundwater sample collected from MW-6, the most down gradient well, indicated 5 ppb benzene and 559 ppb MTBE. Groundwater sample analysis from MW-2 indicated the highest concentrations of contaminants of all seven wells with a total BTEX concentration of 31,072 ppb.

Table VII lists the North Carolina groundwater standards for the compounds detected at the project site. Deep well MW-7, located hydraulically down gradient of the former UST excavation, contained 79 ppb benzene, 7.5 ppb toluene and 1,012 ppb MTBE. Benzene and MTBE concentrations in MW-7 exceed North Carolina groundwater standards. North Carolina groundwater standards for benzene, toluene, ethylbenzene and MTBE were exceeded in shallow wells MW-1, MW-2, MW-3 MW-4 and MW-6.

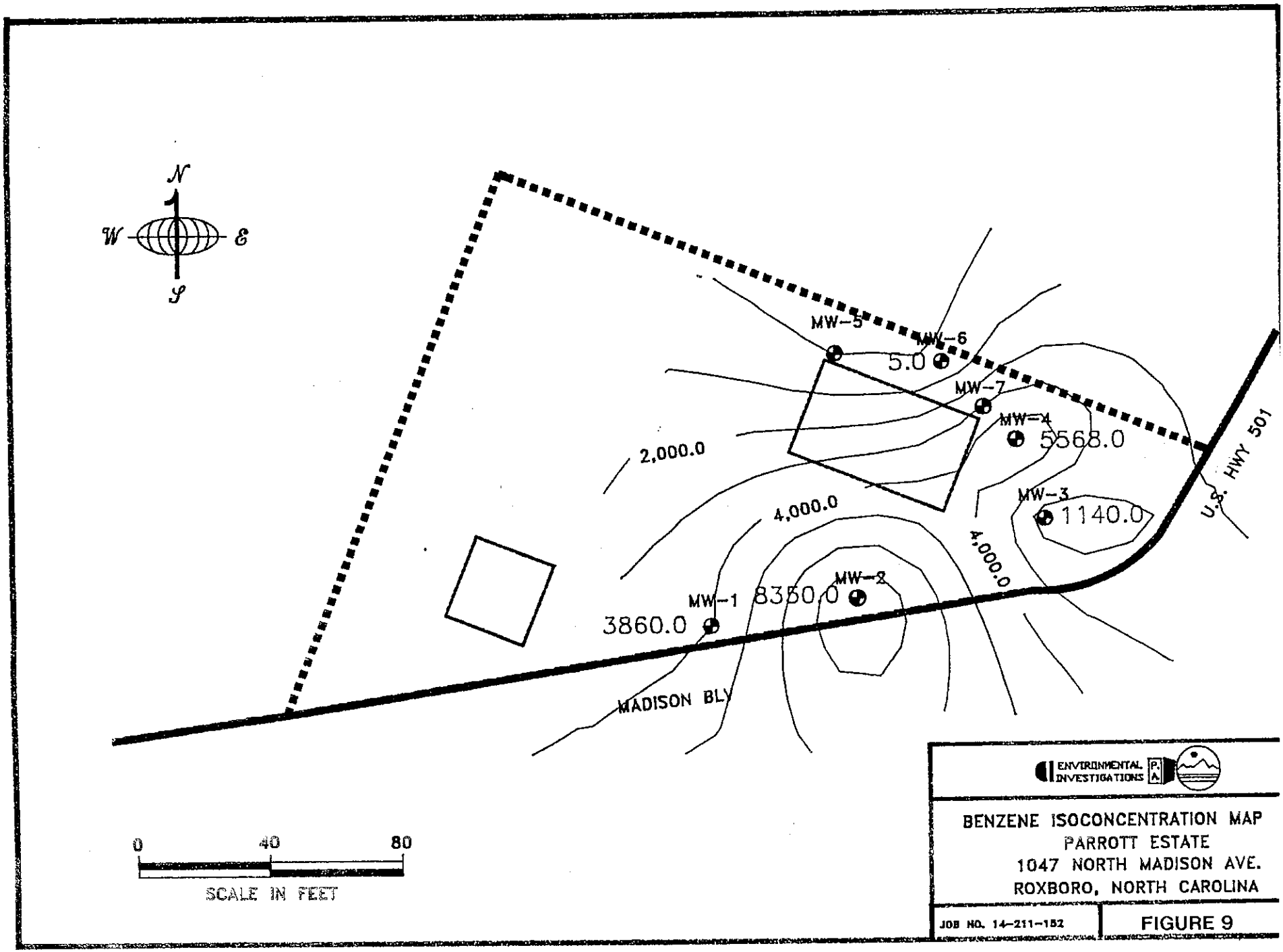
TABLE VII
NORTH CAROLINA GROUNDWATER STANDARDS FOR
PARAMETERS DETECTED AT PARROTT ESTATE PROPERTY
ROXBORO, NORTH CAROLINA

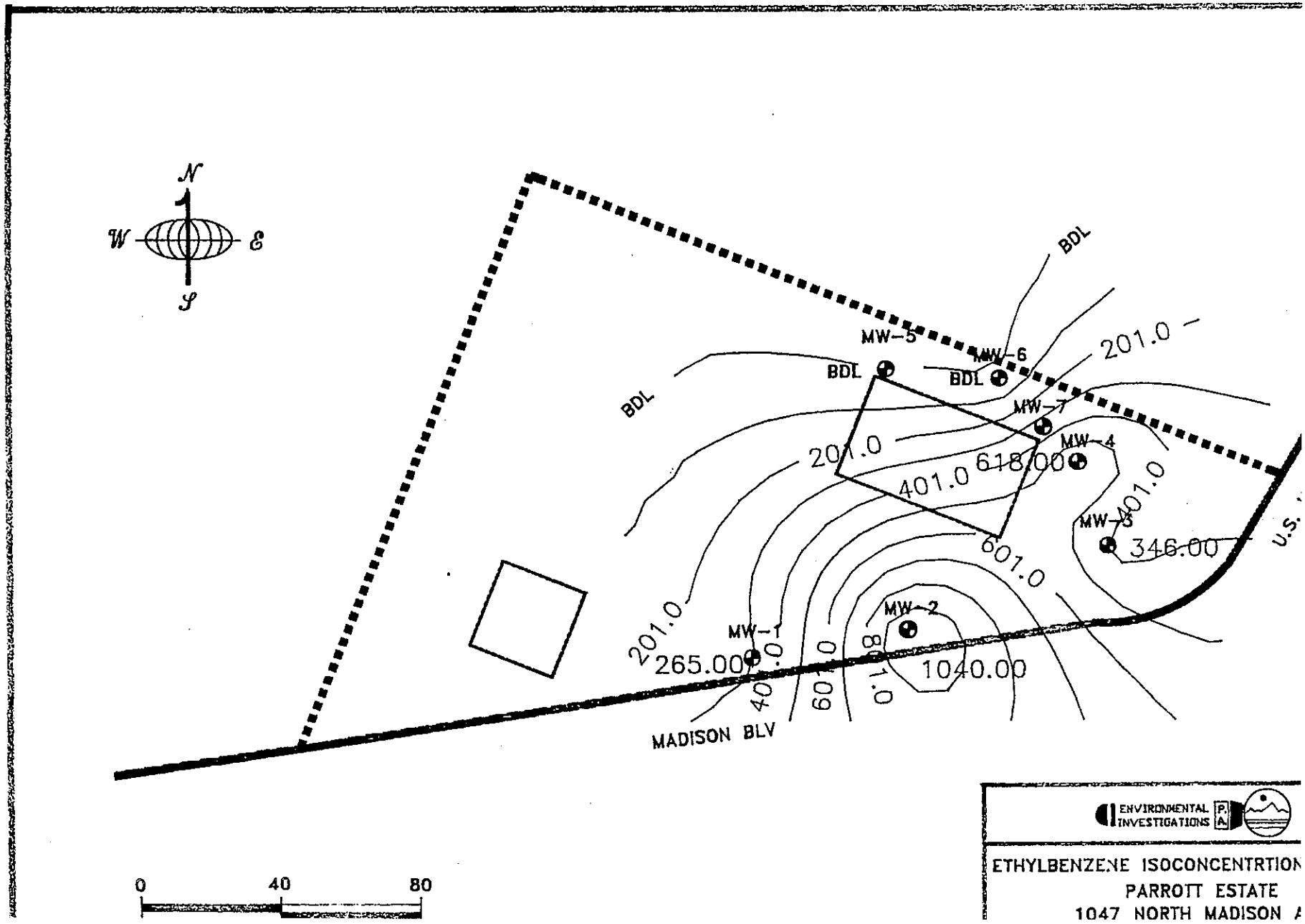
COMPOUNDS DETECTED IN WELLS AT SITE	NORTH CAROLINA GROUNDWATER STANDARD (ppb)
MTBE	200
Benzene	1
Toluene	1,000
Ethylbenzene	29
Xylenes	400

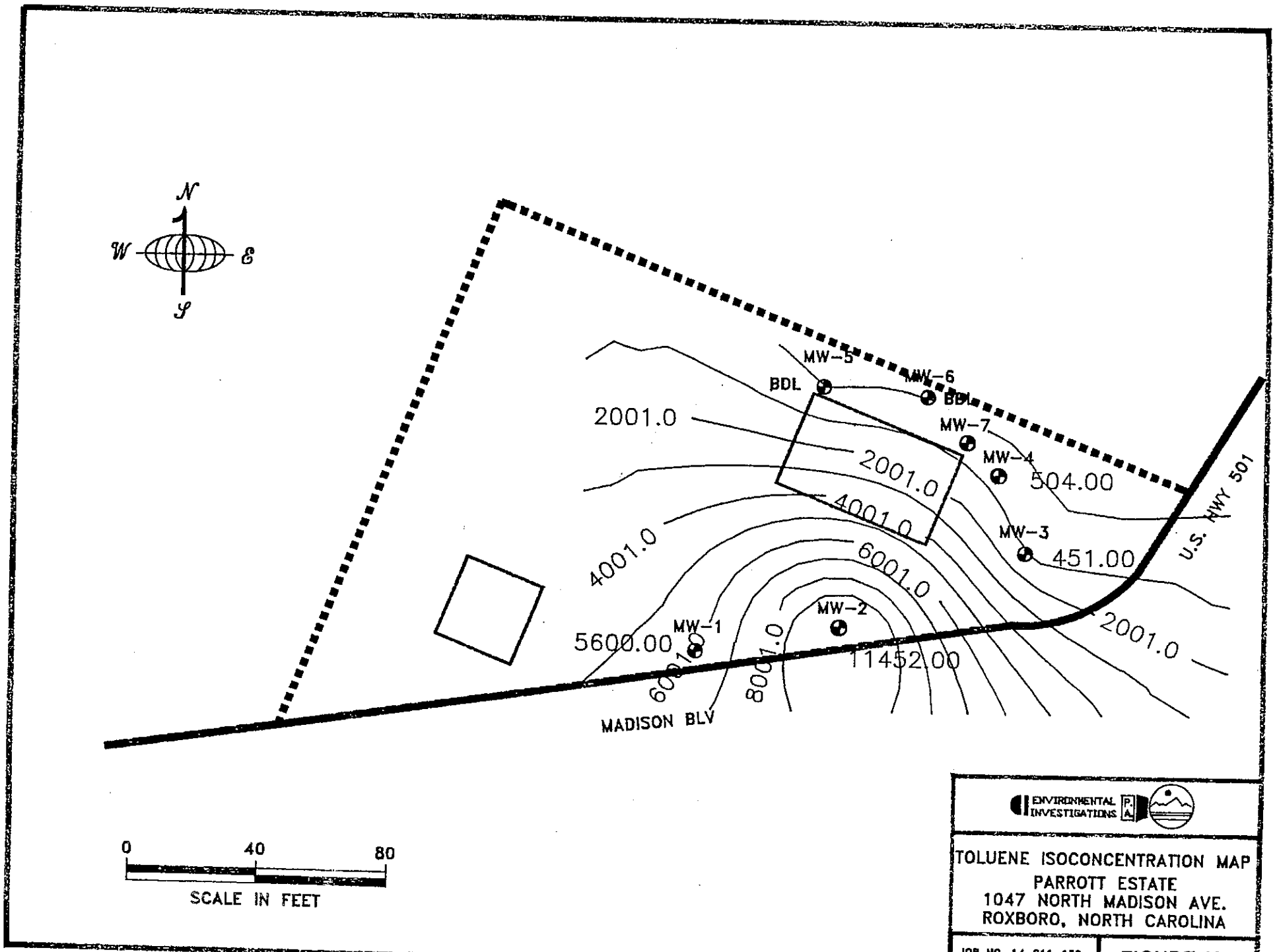
9.2 Isoconcentration Contour Maps

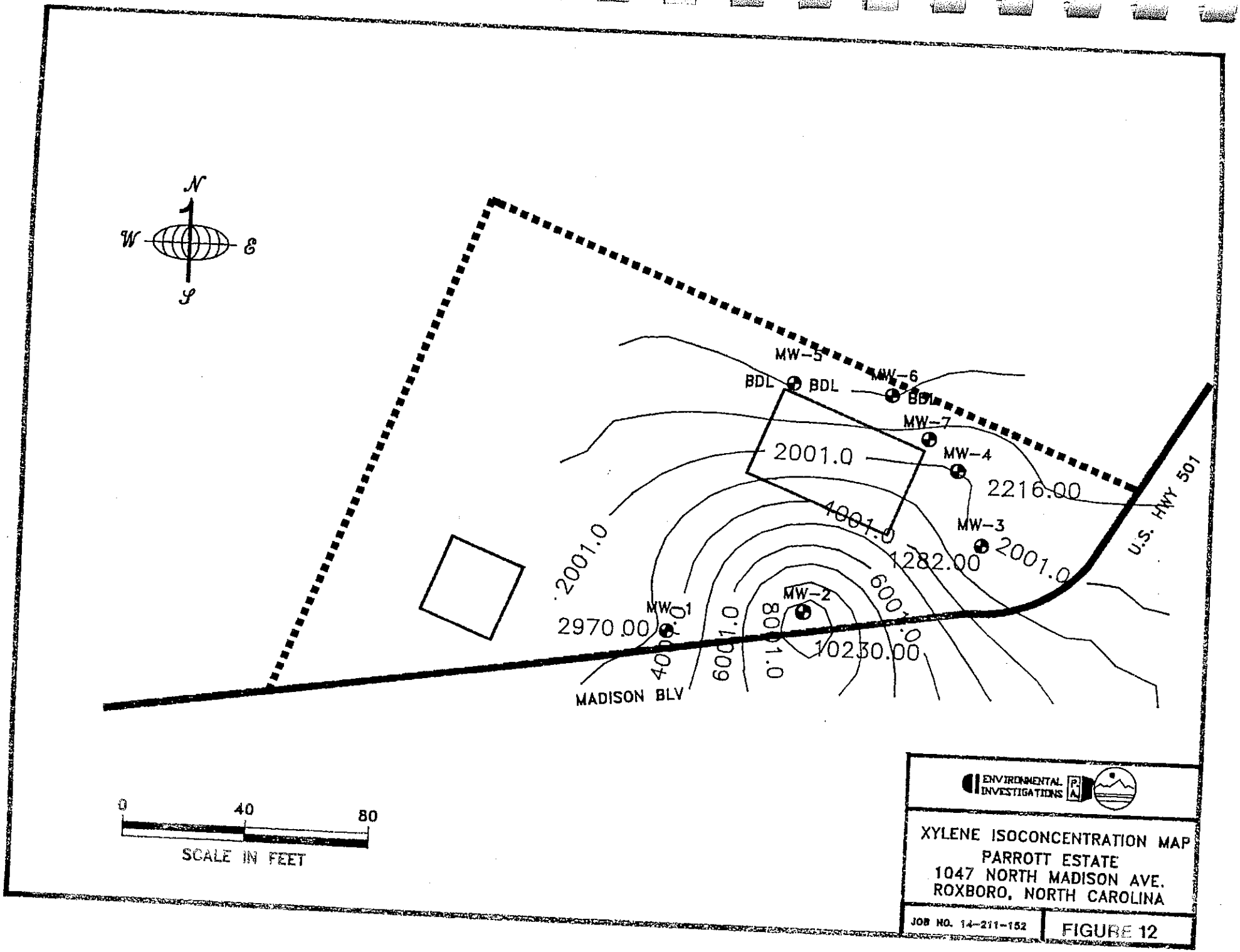
Maps contouring the concentration of benzene, ethylbenzene, toluene and total xylenes and the gasoline additive MTBE in the wells on the project site are presented in Figures 9-13. The concentration patterns are similar for all parameters except MTBE and indicate a contaminant plume in the shallow aquifer which may originate from the vicinity of the former pump islands and underground storage tanks T-5, T-6 and T-7. The plume appears to be generally radiating from the location of MW-2 to the northwest to the northeast.

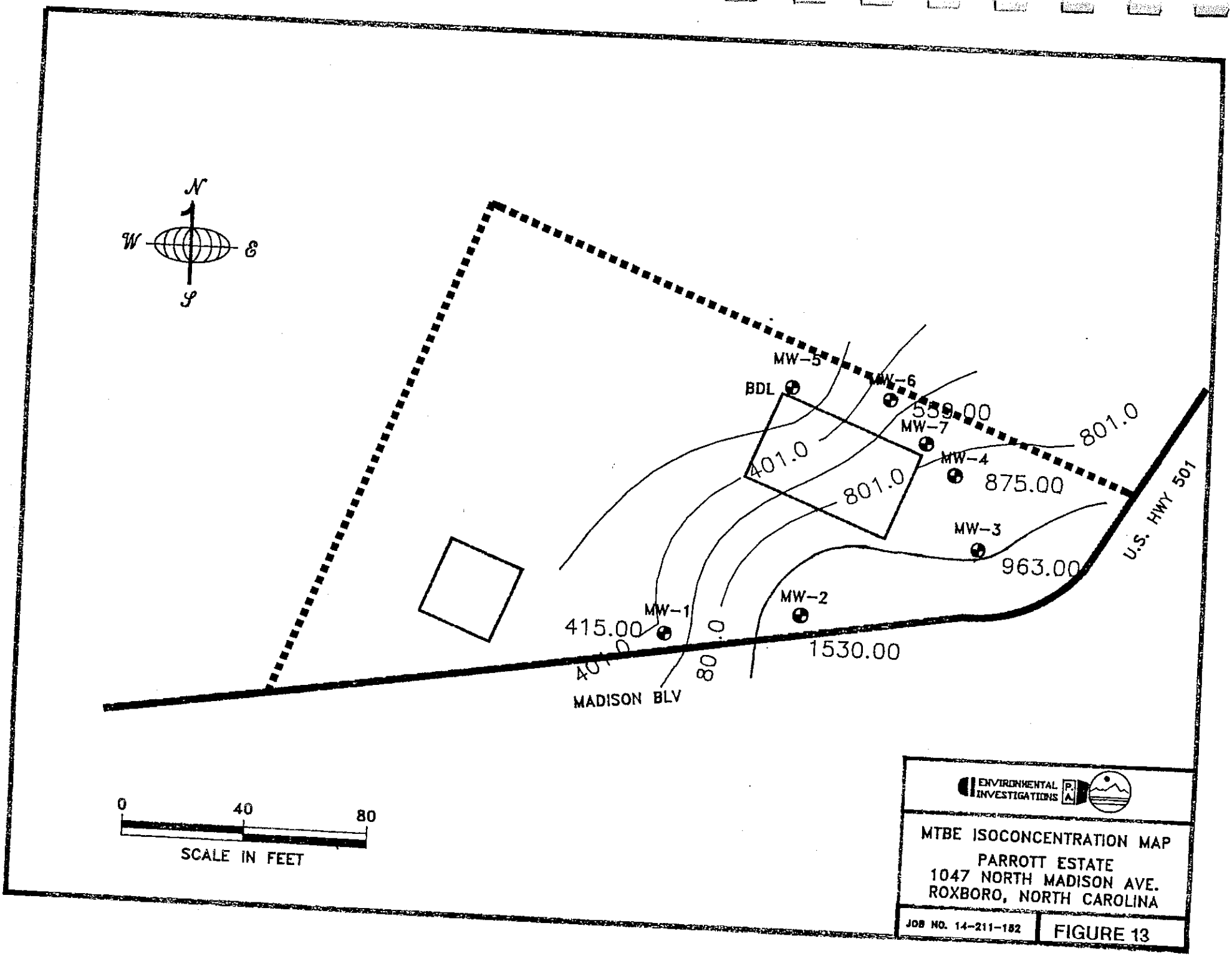
The horizontal extent of petroleum contamination in the shallow aquifer has not been fully delineated. The plume extends beyond the Parrott property boundary to the north northeast and onto the DOT highway right-of-way on both North Madison Boulevard and U.S. Highway 501 North. The results of laboratory testing on the groundwater sample from the deep well MW-7 indicate that the vertical extent of groundwater contamination has not yet been delineated. Elevated levels over the NC DEM action level of benzene and MTBE were present in the analyzed groundwater sample.


N
W
E
S
MW-5
MW-6
5.0
MW-7
MW-4
5568.0
2,000.0
4,000.0
MW-3
1140.0
U.S. HWY 501
4,000.0
MW-2
MW-1
8350.0
3860.0
MADISON BLV
0
40
80
SCALE IN FEET
ENVIRONMENTAL INVESTIGATIONS P.A.
BENZENE ISOCONCENTRATION MAP
PARROTT ESTATE
1047 NORTH MADISON AVE.
ROXBORO, NORTH CAROLINA
JOB NO. 14-211-152
FIGURE 9


N
W
E
S
MW-5
MW-6
MW-7
MW-4
MW-3
MW-2
MW-1
BDL
BDL
BDL
201.0
201.0
401.0
618.00
401.0
346.00
601.0
201.0
265.00
401.0
601.0
801.0
1040.00
MADISON BLV
U.S.
0
40
80
ENVIRONMENTAL INVESTIGATIONS P.A.
ETHYLBENZENE ISOCONCENTRTION
PARROTT ESTATE
1047 NORTH MADISON A


N
W
E
S
MW-5
BDL
MW-6
BDL
MW-7
MW-4
504.00
MW-3
451.00
MW-2
11452.00
MW-1
5600.00
2001.0
2001.0
4001.0
4001.0
6001.0
6001.0
8001.0
2001.0
U.S. HWY 501
MADISON BLV
0
40
80
SCALE IN FEET
ENVIRONMENTAL INVESTIGATIONS P.A.
TOLUENE ISOCONCENTRATION MAP
PARROTT ESTATE
1047 NORTH MADISON AVE.
ROXBORO, NORTH CAROLINA
JOB NO. 14-211-152
FIGURE 11


N
W
E
S
MW-5
BDL
MW-6
BDL
MW-7
MW-4
2216.00
MW-3
2001.0
2001.0
2001.0
1001.0
1282.00
MW-2
MW-1
2970.00
4001.0
6001.0
8001.0
6001.0
10230.00
U.S. HWY 501
MADISON BLV
0
40
80
SCALE IN FEET
ENVIRONMENTAL INVESTIGATIONS
XYLENE ISOCONCENTRATION MAP
PARROTT ESTATE
1047 NORTH MADISON AVE.
ROXBORO, NORTH CAROLINA
JOB NO. 14-211-152
FIGURE 12


N
W
E
S
MW-5
BDL
MW-6
559.00
MW-7
801.0
401.0
MW-4
875.00
801.0
MW-3
963.00
U.S. HWY 501
MW-2
MW-1
415.00
401.0
80.0
1530.00
MADISON BLV
0
40
80
SCALE IN FEET
ENVIRONMENTAL INVESTIGATIONS P.A.
MTBE ISOCONCENTRATION MAP
PARROTT ESTATE
1047 NORTH MADISON AVE.
ROXBORO, NORTH CAROLINA
JOB NO. 14-211-152
FIGURE 13

10.0 PRELIMINARY EXPOSURE ASSESSMENT

Table IV presented the results of laboratory analysis conducted on groundwater samples obtained from the shallow monitor wells and the deep monitoring well at the project site. All of the compounds detected in the wells are soluble in water. MTBE is very soluble in water. Most of the compounds are toxic by either ingestion, inhalation or absorption through the skin. Benzene is a known carcinogen.

Based on the laboratory results of the groundwater samples, additional hydraulically downgradient shallow monitoring wells are warranted. No known domestic water wells have been identified downgradient from the project site. The area is served by the City of Roxboro municipal water supply system.

Potential for human exposure to the compounds found in the groundwater at or downgradient to the site is low because the shallow aquifer is not currently being utilized for domestic potable water.

An intermittent tributary to the Tanyard Branch of Marlow Creek is located on the project site. A large area of storm drainage is piped to the intermittent stream located on the project site. Marlowe Creek ultimately discharges to Hyco and Roanoke Rivers, both sources of surface impounded drinking water. However, given the distance from the site to these reservoirs, it is unlikely that the waters would be impaired by the contaminants found at the project site.

11.0 PRELIMINARY EVALUATION OF REMEDIAL ALTERNATIVES

No contaminated soil associated with the release from the USTs on the site has been excavated. An area of approximately 6,648 square feet of the most severely petroleum impacted soil down to a depth of ten feet was estimated to be equivalent to 2,500 cubic yards or 3,125 tons of material.

No free petroleum product was ever noted at the project site and, therefore, will not be a factor in the design the remediation system.

Excavation of the contaminated soil is one option for remediation of the contaminated soil at the site. After the soil excavation, disposal options are: 1) shipment to a brick making facility for incineration, 2) shipment to a bioremediation facility for treatment or 3) incineration on-site with a mobile soil incineration unit. All forms of disposal are very costly. Estimates range as follows:

1) Excavation/transportation/incineration at
   Cherokee Brick located in Sanford, NC $ 175,000.00

2) Excavation/transportation/bioremediation at
   Terradyne, Inc located in Fayetteville, NC $ 116,000.00

3) Excavation/incineration on-site with mobile incinerator
   Four Seasons, Inc. $ 150,000.00

A potential alternative remediation option is soil ventilation. Due to the high quantity of clay fill material that was used to level the grade at the site, pilot ventilation studies should be conducted to properly evaluate if sufficient quantities of air/soil vapor could be extracted from the soil on the site. Cost estimates are difficult and vary due to the uncertainties of the subsurface soil conditions.

Several technologies exist to remediate the groundwater at the site. Two options considered for groundwater remediation at the site are carbon adsorption and air stripping. Although highly effective in clean-up efforts, the carbon adsorption option was not considered because of the long term costs of carbon replacement and disposal costs associated with the spent carbon. Eventually the carbon would be depleted and the costs for replacement are high.

The most practical and cost effective solution for groundwater remediation at this site is to pump groundwater from a large diameter (4-6 inches) recovery well or wells, through an air stripper and discharge the effluent through the municipal wastewater system or through the installation of an infiltration gallery. Although the initial start-up costs are high, the long term costs become negligible which further justifies this option. The following table shows the expected performance of one type of stripper, the low profile

by Shallow Tray, model 1331 operating at 1.0 gpm on the typical example of contaminant levels found at sites contaminated with petroleum hydrocarbons. The actual contaminant levels at the project site are less.

CONTAMINANT	UNTREATED ppb	AFTER 1ST TRAY ppb	AFTER 2ND TRAY ppb	AFTER 3RD TRAY ppb
Benzene	2,900	46	1	<1
Ethyl benzene	680	9	<1	<1
MTBE	4,400	270	17	2
Xylene	3,300	39	1	<1
Toluene	3,600	71	2	<1
Naphthalene	300	24	2	<1

The costs to install the recovery well(s), air stripper, associated external items and labor are estimated to be between $40,000.00 and $60,000.00. The costs of connection to the municipal waste water system are negligible. Installation of an infiltration gallery would be significantly more due to the depth to original soil horizon.

12.0 CONCLUSIONS

- The horizontal extent of soil contamination has been defined in all directions on the property, except to the northeast. The vertical extent of contamination of groundwater on site and the vertical and horizontal extent of the groundwater off-site have not been determined. Permission from both NC Department of Transportation (DOT) and a private citizen would have to be secured to install additional groundwater monitoring wells. An additional down-gradient deep well will have to be installed on the adjacent privately owned property.

- The acceptable NC groundwater standards for benzene, total xylenes, ethylbenzene, toluene and MTBE have been exceeded in wells MW-1, MW-2, MW-3, MW-4 and MW-6. MW-7 exceeds the NC groundwater standards for benzene and MTBE.

- The lateral extent of petroleum contamination in the shallow aquifer appears to be defined to the area of the former pump island with a plume extending down-gradient to the north and northeast.

- The vertical extent of petroleum contamination has not been defined.

13.0 RECOMMENDATIONS

- Install a deeper (50 foot to 100 foot) well to determine the vertical extent of contamination. A second deep well of similar depth may be required down gradient to the project site.

- Excavate and properly dispose of the soil stockpiled at the site.

- Install a recovery well in the most strategic (contaminated) location and depth to collect contaminated groundwater.

- Once all additional wells have been installed, resample all shallow and deep monitoring wells. This will allow a comparison between shallow conditions and conditions at depth in the aquifer. The water samples should be tested by EPA Method 602 and MTBE. Additional tests may be required per DEM requirements.

- Pending DEM review of this report and their acceptance of the proposed remedial method for the groundwater at the site, a Corrective Action Plan (CAP) site should be developed. This plan would include detailed specifications concerning the equipment to be used, cost structure and estimated construction schedule for the system. Completion of the non-discharge permit for the installation of an infiltration gallery or a negotiated terms with the municipal waste water system for disposal of the treated water would be included.

ENVIRONMENTAL INVESTIGATIONS, P.A. • 2327 English Drive, Suite L, Durham, NC 27713 • PH (919) 544-7506 • FAX (919) 544-2899

EAST COAST
Environmental, P.A.

COMPREHENSIVE SITE ASSESSMENT

PARROTT TRUST PROPERTY

1047 NORTH MADISON BOULEVARD

ROXBORO, NORTH CAROLINA

GROUNDWATER INCIDENT # 9814

DECEMBER 1995

Prepared for
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1.0 EXECUTIVE SUMMARY

1.1 Historical Investigations

East Coast Environmental, P.A. (ECE), on behalf of the ***Parrott Trust Property (Parrott),*** has prepared this *Comprehensive Site Assessment (CSA)* report in order to achieve compliance with *NCAC Title 15A Subchapter 2N, Section .0706 and NCAC Title 15A Subchapter 2L, Section .0106(g).* Parrott is also proceeding with the preparation of a *Corrective Action Plan (CAP)* in accordance with the requirements of *NCAC Title 15A Subchapter 2N, Section .0707 and NCAC Title 15A Subchapter 2N, Section .0106(I).*

The Parrott Trust Property is located at the northwest corner of Madison Boulevard and North Main Street, inside the Roxboro city limits. A release of petroleum product to the soils and groundwaters of the Site was discovered during permanent Underground Storage Tank (UST) closure activities on June 1, 1992. On September 18, 1993, the *North Carolina Department of Environment, Health, and Natural Resources (NCDEHNR), Division of Environmental Management (DEM)* issued a *Notice of Regulatory Requirements (NRR) and a Notice of Violation (NOV).* The NRR stipulated what activities should be undertaken at the Parrott site. These activities were supervised by *Environmental Investigations, Inc. P.A. of Durham, NC (EI).* A CSA of the Site was competed by EI in November of 1993.

The following is a summary of the findings and conclusions of EI's CSA:

- Seven USTs were removed under the direction of EI on June 1, 1992. These consisted of four gasoline USTs which were installed by Jack Parrrott, in addition to three abandoned USTs of unknown origin.
- Soil contamination, as determined by *EPA Method 5030*, was found to range up to 14,000-ppm. (All soils excavated during the removal of the USTs were returned to their respective excavations.) Soil contamination, as determined by *EPA Method 3550*, was found to range up to 2,900-ppm.
- Groundwater contamination in excess of the NC groundwater standards for *Benzene, Toluene, Ethylbenzene, and MTBE* was detected in five of six monitoring wells.
- An area of waste oil contaminated soil (approximately 20 sq. ft) was present on Site. A portion of these soils (10 cu. yds) was excavated and stockpiled on Site. Closure samples of this excavated area were analyzed by *EPA Method 3550* and indicated concentrations of *TPH* as oil up to 2,900-ppm.

EI's CSA was reviewed by the NCDEHNR and found to be insufficient in delineating the extent of contamination. In October 1994, ECE was employed by *Central Carolina Bank and Trust Company, (CCB)* the Trustee of the Parrott Estate, to complete a new CSA.

1.2 Summary of ECE Investigation

1.2.1 Summary of Groundwater Investigation

In an effort to further delineate the areal extent of impacted groundwater, ECE installed seven additional type II shallow monitoring wells (MW-8 through MW-14, Figure 3). In an effort to further delineate the vertical extent of impacted groundwater, ECE also installed two deep wells (DMW-2 and DMW-3, Figure 3). Prior to initiating any off-site work, ECE obtained access to adjacent landowners' property. ECE was, however, unable to obtain permission to place monitoring wells on the property owned by Top Investments, Inc., which is located hydrologically downgradient of the subject site. Repeated attempts to get a response from Top Investments, Inc. have been ignored.

After the installation of six of the additional type II monitoring wells (MW-8 through MW-13), and one of the deep type III wells (DMW-2), a complete sampling synopsis was conducted by ECE on July 13, 1995 (DMW-2 was sampled July 21, 1995). After the installation of MW-14 (type II), and DMW-3 (type III), another complete sampling synopsis was conducted on December 6, 1995. Sampling activities included the collection of water level data in addition to the collection of groundwater samples. Groundwater samples collected those days were submitted to *GeoChem, Incorporated (GeoChem)* and analyzed using *EPA Methods 601, 602, 3030*. Each sample was also analyzed for Methyl-Tert-Butyl-Ether (MTBE), Ethylenedibromide (EDB), and for Di-Isopropyl Ether (IPE). A summary of all groundwater analyses to date (including samples collected by EI) is shown as Table I (Section B). The shaded cells in Table I indicate which analyte concentrations exceed the action levels for groundwater established by *NCAC Title 15A, Subchapter 2L, Section .0202 (Water Quality Standards for Class GA Waters).*

1.2.2 Summary of Soils Investigation

Three soil samples (SB-1, SB-2, SB-3) were collected from hand auger locations across the subject site (Soil Sample Location Map, Figure 5). Soil samples were also collected from four of the new monitoring wells during their installation. All soil samples were submitted to GeoChem for laboratory analyses using *EPA Method 5030*. A summary of all soil laboratory results (including samples collected by EI) is shown as Table II, Section B.

1.2.3 Surface Water Investigation

Analytical results for a surface water sample collected from an open drainage ditch located northwest of the subject site reported detectable concentrations of 1,1-Dichloroethene (1,1-DCE), Chloroform, 1,1,1-Trichloroethane, Tetrachloroethene (TCE), Toluene, and Xylene. The drainage ditch originates at the outlet of a storm sewer pipe located immediately west of the Parrott site. ECE visually traced the storm sewer upgradient past a lot where a coin operated car wash is presently located. It is probable that drains located in each of the car wash bins empty to this storm sewer. It is possible that the some of the degreasers used at the car wash contain some, if not all of the chlorinated solvents found in the groundwater samples on site and in the surface water sample collected further downstream.

1.3 Conclusions/Recommended Corrective Actions

The downgradient areal extent of groundwater contamination has been successfully delineated. However, ECE was not able to fully delineate the areal extent in the upgradient direction. One possible explanation for this is that groundwater contamination is migrating onto the Parrott site from upgradient sources. There are at least three adjacent sites (Roxboro Maintenance Facility, Neb King Oil, and Boulevard Kwik Pik), one or more of which may be located hydrologically upgradient, that have had reported petroleum releases in the last ten years. This leads to the possibility that Parrott may be only partially responsible for groundwater contamination present beneath the site. The fact that **multiple** adjacent sites have reported petroleum releases greatly inhibits ECEs' ability to fully assess the impacted groundwater beneath the Parrott site due to the many unknowns. The three upgradient wells (MW-1, MW-2, and MW-14) all have analyte levels above the 2L standards for groundwater. Of the three wells, MW-2 generally had the highest concentrations of petroleum-related contaminants (BTEX, etc.) and MW-14 generally had the highest concentrations of chlorinated halocarbons.

In order to implement a CAP, ECE believes that a comprehensive water level survey should be conducted at the four sites (Neb King Oil, Parrott, Boulevard Kwik Pik, and Roxboro Maintenance Facility) located at the intersection of North Main and North Madison. Prior to sounding wells, top of casing elevations for the wells at each site should be resurveyed to a common datum to ensure accuracy for all. Water level data from each site should be collected contemporaneously and made available to the consultants representing adjacent sites. ECE feels this information is needed to ensure proper selection of remedial alternatives.

2.0 SITE HISTORY AND SOURCE CHARACTERIZATION

2.1 History of Property Ownership and Use

The Site is located at the intersection of North Madison Boulevard and North Main Street, in Roxboro, N.C. (See Section A, Figures 1 and 2 for topographic and county road maps). Presently the Site consists of two buildings on a parcel of land approximately 0.56-acre in size. The western-most building is *Pete's Sandwich Shop*. The eastern-most building is presently a used car lot and detail shop known as *D&D Auto Sales*.

The history of *Pete's Sandwich Shop* is unknown. A retail gasoline station was reportedly constructed on the Site in the mid-to-late 1940's and operated up until the Site was purchase by Mr. Parrott. Ownership of the property prior to its purchase by Mr. Parrott in the early 1960's is unknown. Mr. Parrott razed the former structure and put up the existing building. At this time he also installed four USTs, 1-10,000 gallon, 2-6,000 gallon, and 1-4,000 gallon UST. (It is believed that all of these USTs contained various grades of leaded gasoline). He operated a retail gasoline facility on the Site up until the late 1970's, during which time he leased the facility. The exact date the USTs were taken out of service is not known.

2.2 Previous Environmental Investigations

2.2.1 EI Closure Investigation

The first reported release of petroleum products was reported by EI during a routine excavation and removal of four USTs on June 1, 1992 (See Closure Report, Section F). While the tanks were found to be in good condition, petroleum contaminated soils were encountered in the areas of the tank excavations, product lines and pump islands. During these removal activities, three additional abandoned USTs were discovered and removed. Former tank locations are shown on the Soil Sample Location Map, Figure 5. The seven USTs were reportedly transported to *Jerry's Backhoe* service yard in Oxford, NC for cleaning and proper disposal. All soils excavated during the closure activities were placed back in the ground. Soil samples collected after UST removal were sent to GeoChem and analyzed, using *EPA Method 5030*. Soil sample S-1 was also analyzed for petroleum hydrocarbons, using *EPA Method 3550*, for organic halogens, using the TOX analysis, for BETX, and for Total Lead. Laboratory analyses of the soil samples reported levels of Total Petroleum Hydrocarbons (TPH) ranging up to 14,000-ppm in S-2. An isoconcentration map (TPH (Gas) Isoconcentration Map, Figure 7) was generated, using laboratory results from the closure samples coupled with laboratory results from 13 soil borings located across the subject site. Table II shows a summary of laboratory analyses for all soil samples collected to date, including those collected by EI and by ECE during

2.2.1 EI Closure Investigation cont.

the present investigation. Complete copies of laboratory analytical results are shown in Section D.

An area of waste oil contaminated soils was discovered behind the former service station (Soil Sample Location Map, Figure 5). The contamination was believed to be the result of an overflow from a 580 gallon waste oil AST that was filled via a fill port located within the former service station building. A portion (approximately 10 cu. yds) of these soils was excavated and stockpiled on site. Two confirmation samples (S-13, S-14) were collected at the base of the excavated area. Laboratory analysis of these samples confirmed that contaminated soils (2,900-ppm of TPH as oil in S-13) still remained in the area. A composite soil sample (S-15) was also collected from the soils stockpiled on site. This sample was analyzed using *EPA Method 3550, 8240, 8270 BNA*, for PCP using *EPA Method 8080*, and for TCLP RCRA metals. The stockpiled soil is still presently located behind the former gas station located at the subject site.

In response to EI's UST closure report, the *North Carolina Division of Environmental Management (NCDEM)*, Raleigh Regional Office issued a NOV and a NRR to Mr. Parrott. The NRR prompted EI to perform the Initial Abatement Measures and Site Check required by *15A NCAC 2N .0703*, the Initial Site Characterization required by *15A NCAC 2N .0704* and the CSA required by *15A NCAC 2N .0706*.

2.2.2 EI Groundwater Investigation

In order to satisfy the requirements of the CSA, EI installed 6 shallow type II monitoring wells (MW-1 through MW-6) and one deep type III monitoring well (MW-7). A site base map, Figure 3, shows the locations of all monitoring wells installed to date. The original seven monitoring wells were installed between January 11, 1993 and February 11, 1993. Monitoring well logs, well construction records, and well completion diagrams are shown in Section C. Top of casing (TOC) elevations were surveyed relative to a survey datum located across North Madison Boulevard.

Each monitoring well installed by EI was developed by purging approximately 15 to 20 gallons of water. Prior to sample collection, depth to groundwater measurements were made using an electric sounding device. No free product was noted during the survey. Following water level measurements, each monitoring well was purged again by bailing at least 3 well volumes of water using dedicated, disposable Teflon bailers and clean nylon rope. The samples were placed in laboratory supplied jars, labeled, preserved on ice and

2.2.2 EI Groundwater Investigation cont.

shipped overnight to Hydrologic, Inc. with chain-of-custody documentation. The samples from monitoring wells were analyzed for purgeable aromatics by *EPA Method 602* and MTBE. Sampling, handling, and preservation was reportedly conducted in accordance with accepted EPA protocols.

Benzene concentrations ranged from BDL in MW-5 to 8,350 ppb in MW-2. Ethylbenzene concentrations ranged from BDL in MW-5,6 and 7 to 1,040 ppb in MW-2. Toluene concentrations ranged from BDL in MW-5 and 6 to 11,452 ppb in MW-2. Xylene concentrations ranged from BDL in MW-5, 6, and 7 to 10,230 ppb in MW-2. MTBE concentrations ranged from BDL in MW-5 to 1,530 ppb in MW-2. Section B, Table I summarizes the results from this sampling event and indicates which analytes (shaded cells) are above the 2L Standards. Copies of groundwater analytical results are shown in Section E.

2.3 Corrective Actions to Date

The seven USTs associated with the operation of the former gas station have been removed. Approximately 10 cubic yards of waste oil contaminated soil have been removed from the ground and stockpiled on site.

3.0 POTENTIAL RECEPTORS AND MIGRATION PATHWAYS

3.1 Water Supplies

All homes, businesses, institutions, etc. which use water in the vicinity of the Site are supplied by the Roxboro city water supply system. There are no private water supply wells located within 1500 feet of the subject site.

If groundwater beneath the subject site is discharging into the drainage ditch located northwest of the subject site, the ditch becomes a potential migratory pathway. It may be possible to place piezometers along the drainage ditch to determine if groundwater is discharging into the ditch or if surface water is the primary source of flow.

3.2 Neighboring Property Owners

Properties within 1,500 feet of the Site are a mix of residences and retail businesses. The Site is located on the northwest corner of the intersection of North Main Street and North Madison Boulevard. Neb King Oil (Union 76) occupies the southeast corner of the intersection. In 1989 a telephone vault adjacent to the tank field at the Union 76 was found to contain free product. Little Huff (Roxboro Maintenance Facility) occupies the southwest corner of the intersection. Petroleum contaminated soil and groundwater were encountered during tank removal activities at the Roxboro Maintenance Facility in August of 1992. The Boulevard Kwik Pik occupies the northeast corner of the intersection. In November of 1994, contaminated soil and groundwater were encountered during tank removal activities at the Kwik Pik. The property immediately to the north is a private residence. Immediately to the west is a *Kentucky Fried Chicken* Restaurant and to the northwest is an apartment complex. A corresponding tax map which identifies the locations of neighboring properties is provided in Section A on Figure 4 of this report.

3.3 Locations of Subsurface Utilities

Using maps supplied by the Roxboro City Engineer's Department, ECE located subsurface utilities in the immediate area of the Site. Eight inch diameter water lines are located in the right-of-way along the north side of North Madison Boulevard and in the right-of-way along the west side of North Main Street. A six-inch diameter sanitary sewer is located in the right of way along the east side of North Main Street. An eighteen-inch diameter storm sewer runs in a north-south direction beneath the western area of the Site. This storm sewer empties into a drainage ditch also running approximately north-south along the western edge of the subject site. Underground telephone conduits are located along the south side of North Madison Boulevard and the east side of North Main Street. A natural gas line runs from North Main Street, along the north side of *D&D Auto Sales* and over to *Pete's Sandwich Shop* (Person County Tax Map with Utilities Location, Figure 4).

3.4 Preferred Pathways of Contaminant Migration

Based on a review of the subsurface soils and utilities located beneath the subject site, there appears to be two possible preferential pathways of contaminant migration. One of the possible pathways is the drainage ditch located west of the subject site. If groundwater is discharging into this ditch, then it would become a preferred pathway for migration. Further investigation should be undertaken during the CAP phase of the investigation. A second area concerns the highly fractured bedrock present beneath the subject site. In some cases, fractures represent areas of secondary (higher) hydraulic conductivity. Contaminants present in this fractured zone may be transported downgradient at a faster rate than the contaminants present in the saprolitic layer. This finding should be taken into account if a pump and treat system is found to represent the best remedial alternative.

4.0 SOILS INVESTIGATION

4.1 Regional Geology

According to the Geologic Map of North Carolina, the subject site is located in the Piedmont Physiographic Province of North Carolina. The subject property is underlain by rocks of the Carolina Slate belt, which consists of felsic metavolcanic and metasedimentary rocks of Precambrian to Cambrian age (500-570 million years old). In the area of the Parrott Estate, the Carolina Slate Belt also consists of metagranitic rocks of the Roxboro Suite.

4.2 Site Geology

The stratigraphy at the subject site consists of red silty clay fill ranging in depth from two feet to 10 to 12 feet in thickness. A layer of residuum soil was visible below the fill material, which graded down to saprolite and weathered rock of the Carolina Slate Belt. Bedrock was encountered at a depth of approximately 21 feet in MW-7. This bedrock consisted of green/black massive fine-grained metaintrusive rock. Approximately four feet of core was recovered during the first 10 foot coring interval (21-31 feet bls), indicating that the upper portion of the bedrock is highly fractured near MW-7. Approximately six feet of core was recovered from the lower core (31-41 feet bls) interval, indicating less fracture density. Numerous small faults and fractures and quartz veins were observed in the recovered sections of bedrock core.

The site stratigraphy, as determined from the soil boring logs (located in Section C), is illustrated in the hydrologic profiles (cross-section A-A' and B-B', figures 6B and 6C respectively), the locations of which are shown on Figure 6A, Cross-Section Location Map.

Generally, the fill material at the site can be divided into two zones which are distinguished by varying textures and colors. The two zones represent two episodes of infilling and expansion of leveled area for the gas station building and paved areas. The original fill zone ranges from approximately two to six feet in thickness and consists of a tan/brown weathered silty clay which is underlain by a green/brown residuum soil layer grading to green/brown weathered rock and then to fractured bedrock. The second fill zone lies to the north and represents the fill material that brings the property up to its present day grade. The second fill zone consists of tan/orange silty clay which ranges to eight feet in depth. Below the fill zone lies the green/black residuum soil.

4.3 Soil Sampling and Analysis

In an effort to further delineate the areal extent of soil contamination, ECE collected seven soil samples, four during monitoring well installation and three from borings located across the subject site. The soil samples were collected from the area just above the water table, placed in laboratory supplied sample jars, placed on ice in a cooler, and sent to GeoChem for TPH (Gas) analysis. The only soil sample with detectable concentrations of TPH (Gas) was sample MW-8, which had a concentration of 9.7 mg/kg (ppm). A summary of all soil sampling activities to date, EI and ECE, is shown on Table II in Section B. Copies of complete laboratory reports can be found in Section D.

5.0 GROUNDWATER INVESTIGATION

5.1 Introduction

In order to further delineate the areal extent of impacted groundwater, ECE installed seven additional shallow type II, and two additional deep type III monitoring wells between March 16,1995 and December 5, 1995. The locations of these new wells are shown on Figure 3, Site base Map, and were chosen based on: a review of the previous investigation by EI; estimated direction of groundwater flow; and the ability to gain access to neighboring properties.

5.2 Well Construction

5.2.1 Shallow Well Construction

A truck mounted drill rig was used to advance 6 ¼ inch i.d. hollow stem augers (HSA). Soil samples were collected during drilling activities using a 2-inch diameter split-spoon sampling barrel. Permanent groundwater monitoring wells were constructed of two inch I.D. Schedule 40 casing and 0.010-inch slotted PVC screen. The PVC screen length for wells is between five and fifteen feet in length. Well screens were placed at such a depth that they would straddle the water table so that contaminants with a specific gravity less than one could be effectively monitored. A sand pack was placed in the annulus around each screen to a point approximately one foot above the top of the screen. To prevent surface water runoff from entering the wells, a seal consisting of ¼" bentonite chips approximately one foot in thickness was placed on top of the sand pack and hydrated. To complete construction, the wells were grouted to the surface with Portland cement and a steel lockable protective casing placed on top. Well construction logs for all wells are presented in Section C.

5.2.2 Deep Well Construction

DMW-2 was constructed as a type III groundwater monitoring well. After drilling and coring to a depth of 23.5 feet, a 4 inch o.d. outer casing was set from land surface to the terminal depth. Grout was then placed in the casing and allowed to set for approximately three days. The grout was then cored and drilling continued to a depth of approximately 29 feet . A three foot section of 2-inch, 10-slot well screen was place at a depth of 25.9 feet to 28.9 feet. A 2-inch riser to land surface completed the well. A sand pack was placed in the annulus around the screen to a point approximately one foot above the top of the screen. To prevent surface water runoff from entering the wells, a seal consisting of ¼" bentonite chips approximately one foot in thickness was placed on top of the sand pack and hydrated. To complete construction, DMW-2 was grouted to the surface with Portland cement and a steel lockable protective casing placed on top.

DMW-3 was also constructed as a type III groundwater monitoring well. After drilling and air-hammering to 37 feet (bedrock encountered at 23 feet below ground surface (bgs)), a 6-inch o.d. outer casing was set from land surface to 37 feet. Grout was placed in the annulus around the PVC casing and allowed to set for several days. Air-hammering continued through the casing to a depth of 50 feet bgs. A coring bit was used to core to the final depth of 60 feet bgs. The core was removed from its housing and inspected for water-bearing fractures. A five foot section of 2-inch, 10-slot well screen was placed between 55 and 60 feet. A 2-inch riser to land surface completed the well. A sand pack was placed in the annulus around the screen to a point approximately two feet above the top of the screen. A bentonite seal was placed on top of the sand and was brought up to a depth of 17 feet bgs. To complete construction, DMW-3 was grouted to the surface with a Portland cement and a steel lockable protective casing placed on top. Well construction logs and relevant permits for all wells installed for completion of this CSA are presented in Section C.

5.3 Surveying/Water Table Mapping

A registered land surveyor was retained to survey horizontal and vertical control for each well. A temporary benchmark was placed on a telephone pole and set to 500 feet in elevation. TOC elevations for each well are relative to this mark. A geodetic marker located nearby was used to survey horizontal locations for each well and for buildings located on and near the subject site.

Water level data was collected from each well during the sampling events which occurred on July 6 and July 13, 1995. The shallow well data were placed in a spreadsheet program along with the survey information. Water table elevations relative to the 500 foot benchmark were then generated.

5.3 Surveying/Water Table Mapping cont.

These elevations, along with the horizontal locations, were transferred to a contour mapping program called *SURFER.* The *Krigging* method was chosen as the interpolative method for producing the grid file used by Surfer to generate the contour maps. After generating each map, a *DXF* file format version was transferred to *AutoCad.* The contour map could then be overlaid onto the relevant site map. Contour maps for the July 6 and July 13 sampling events are shown on Figure 16 and Figure 17, respectively.

Relative water table elevations ranged from a high of 495.72 in MW-2 to a low of 484.65 in MW-11 during the July 6 sampling event. The average gradient across the subject site was calculated to be approximately 0.04 ft/ft. Groundwater flow direction, which is shown on each figure, generally trends to the northwest. Surface topography at the subject site also trends toward lower elevations to the northwest.

5.4 Groundwater Sampling

Groundwater monitoring wells were located and installed as described above in order to determine the horizontal and vertical extent of petroleum contaminants emanating from the former UST system locations. Prior to sampling, each monitoring well was purged of at least three well volumes. The wells were then sampled using dedicated, disposable, Teflon bailers and clean nylon string. The samples were placed in their respective laboratory supplied sample jars, labeled, and placed on ice in a clean cooler. All samples were sent to GeoChem for laboratory analyses. ECE sampling protocols and handling procedures can be found in Section F.

5.4.1 December 5, 1994 Sampling Event

The first groundwater sampling event performed by ECE included MW-1 through MW-7 and was performed on December 5, 1994. A summary of the laboratory analytical results, including the 2L standard, for this sampling episode is found in Section B, Table I. Copies of the laboratory reports for this sampling event are located in Section E. Samples collected during this sampling event were analyzed using *EPA Method 601 and 602.* Samples were also analyzed for MTBE, IPE, and for Total Lead. Benzene concentrations ranged from 0.8 ppb in MW-6 to 6,540 ppb in MW-3. Ethylbenzene concentrations ranged from bdl in MW-5 and MW-6 to 2,310 ppb in MW-2. Toluene concentrations ranged from bdl in MW-5 and MW-6 to 18,900 ppb in MW-2. Xylene concentrations ranged from bdl in MW-5 and MW-6 to 10,400 ppb in MW-2. An isoconcentration map showing Total BETX concentrations for this sampling event is shown on Figure 15. Elevated levels of Trichloroethene (TCE), were reported for the sample from MW-1.

5.4.1 December 5, 1994 Sampling Event cont.

Elevated levels of various other chlorinated solvents were also reported for MW-5, MW-6, and MW-7 (Table I, Section B).

5.4.2 March 27, 1995 Sampling Event

The second sampling event performed by ECE included MW-8 through MW-11. The laboratory analytical results for this sampling event are summarized in Section B, Table I. Copies of the laboratory reports for this sampling event are located in Section E. Samples collected during this sampling event were analyzed using *EPA Method 601 and 602.* Samples were also analyzed for MTBE, IPE, and for Total Lead. Benzene concentrations ranged from 0.5 ppb in MW-10 to 596 ppb in MW-9. Ethylbenzene concentrations ranged from bdl in MW-10 and MW-11 to 122 ppb in MW-8. Toluene concentrations ranged from 0.6 ppb in MW-11 to 330 ppb in MW-8. Xylene concentrations ranged from bdl in MW-10 to 536 ppb in MW-8. Elevated levels of various chlorinated solvents were found in MW-9, MW-10, and MW-11 (Table I, Section B).

5.4.3 June 26, 1995 Sampling Event

This sampling event performed by ECE included MW-12 and MW-13. The laboratory analytical results for this sampling event are summarized in Section B, Table I. Copies of the laboratory reports for this sampling event are located in Section E. Samples collected during this sampling event were analyzed using *EPA Method 601 and 602.* Samples were also analyzed for MTBE, IPE, and for Total Lead. The only analytes present above the 2L standards were various chlorinated solvents found in both wells.

5.4.4 July 5, 1995 Sampling Event

The deep well DMW-2 was the only well sampled during this event. The laboratory analytical results for this sampling event are summarized in Section B, Table I. Copies of the laboratory reports for this sampling event are located in Section E. The sample collected during this sampling event was analyzed using *EPA Method 601 and 602.* The sample was also analyzed for MTBE, IPE, and for Total Lead. Analyte levels above the 2L standards were reported for both the 601 and 602 analyses. MTBE levels were also above the 2L standard of 200 ppb.

5.4.5 July 13, 1995 Sampling Event

This sampling event performed by ECE included MW-1 through MW-13. The laboratory analytical results for this sampling event are summarized in Section B, Table I. Copies of the laboratory reports for this sampling event are located in Section E. Samples collected during this sampling event were analyzed using *EPA Method 601 and 602.* Samples were also analyzed for MTBE, IPE, EDB, and for Total Lead. An isoconcentration map showing the areal extent of Benzene is displayed as Figure 8, Section B. The 2L standard for Benzene was used to delineate the edge of the contaminant plume. Figures 9, 10, and 11 show the areal extent of Ethylbenzene, Toluene, and Xylene, respectively. For each of those maps, the 2L standard for each respective analyte was used to delineate that plume. Total BTEX concentrations are shown on Figure 12, and MTBE values can be found on Figure 13. Two additional Total BTEX isoconcentration maps were generated using analytical data from the February 11, 1993 sampling event to generate Figure 14, and the analytical data from the December 5, 1994 sampling event to generate Figure 15. These maps were generated so that comparisons of analytical results from different sampling events could be done graphically. The analytical data for DMW-2 were generated from the July 21 sampling event and coupled with the values generated during the July 13 sampling event.

5.4.6 July 21, 1995 Sampling Event

The deep well DMW-2 was the only well sampled during this event. The laboratory analytical results for this sampling event are summarized in Section B, Table I. Copies of the laboratory reports for this sampling event are located in Section E. The sample collected during this sampling event was analyzed using *EPA Method 601 and 602.* The sample was also analyzed for MTBE, IPE, EDB, and for Total Lead. Analyte levels above the 2L standards were reported for both the 601 and 602 analyses. MTBE levels were also above the 2L standard of 200 ppb.

5.4.7 December 6, 1995 Sampling Event

This sampling event performed by ECE included MW-1 through MW-14, DMW-2 and DMW-3. The laboratory analytical results for this sampling event are summarized in Section B, Table I. Copies of the laboratory reports for this sampling event are located in Section D. Samples collected during this sampling event were analyzed using *EPA Method 601 and 602.* Samples were also analyzed for MTBE, IPE, EDB, and for Total Lead. An isoconcentration map showing the areal extent of Benzene is displayed as Figure 8A, Section B. The 2L standard for Benzene was used to delineate the edge of the contaminant plume. Figures 9A, 10A, and 11A show the areal extent of Ethylbenzene, Toluene, and Xylene, respectively. For each of those maps, the 2L standard for each respective analyte was used to delineate that plume. Total BTEX concentrations are shown on Figure 12A, and MTBE values can be found on Figure 13A.

5.5 Contaminant Isoconcentration Contour Cross-Sections

Isoconcentration cross-section maps were generated for analytical data from the July 13, and December 6, 1995 groundwater sampling events. Analytical data and survey information were assembled in a spreadsheet program and downloaded to Surfer. The cross-sectional isoconcentration maps were generated in much the same manner as the areal isoconcentration maps preceding them. Levels of 1,1-Dichloroethene (1,1-DCE), 1,2-Dichloroethane (1,2-DCA), Tetrachloroethene (PCE), Benzene, Ethylbenzene, and MTBE were present at levels above the 2L standards for each particular analyte. Cross-sectional isoconcentration maps were generated for Benzene (Figures 18, 18A, 23, and 23A), for Ethylbenzene (Figures 19, 19A, 24, and 24A), for Toluene (Figures 20, 20A, 25, and 25A), for Total Xylenes (Figures 21, 21A, 26, and 26A), and for MTBE (Figures 22, 22A, 27, and 27A). In some cases, seeded values (equivalent to the values found in the deeper wells) were placed at random horizontal locations in order to better represent suspected conditions present at the Parrott site.

5.6 Justification for Well Locations

A summary of the justifications for all monitoring wells installed for completion of this CSA is listed below:

MW-1 through **MW-7** were installed by Environmental Investigations, P.A.

The locations for **MW-8** through **MW-11** were chosen in order to delineate the downgradient extent of the contaminate plume. ECE was unable to gain access to Top Investment which is located north of **MW-9** (See Figure 3).

5.6 Justification for Well Locations cont.

The locations for **MW-12** through **MW-14** were chosen in order to delineate the cross-gradient extent of the contaminate plume.

DMW-2 is a type III well that was installed in attempt to help delineate the vertical extent of groundwater contamination. Laboratory analyses of samples collected from MW-7, a deep well already present on site, revealed analyte levels above the 2L standards. ECE felt that there was a possibility that improper well construction for MW-7 could have caused surficial contaminants to be transported to the deeper zone during its installation.

DMW-3 is a type III well that was "nested" near MW-3 and DMW-2 in order to help delineate the vertical extent of groundwater contamination.

6.0 CONCLUSIONS

The presence of three adjacent (probably upgradient) sites, all of which have recently reported petroleum releases, made the task of fully delineating the areal extent of groundwater contamination at the Parrott site somewhat impossible.

Neb King Oil (Union 76) occupies the southeast corner of the intersection of North Main and North Madison (Site Base Map, Figure 3). In 1988, Neb King reported a petroleum release during UST removal activities. In 1989, the Roxboro Fire Department Chief reported the presence of free product in a telephone vault located adjacent to a tank field owned by Neb King. A subsequent hand augered boring located between the tank field and the telephone vault revealed high levels of gasoline contamination. In July of 1993, another release was reported to the DEM, the cause of which was reported to be a faulty pump shut-off valve.

Little Huff Oil (Roxboro Maintenance Facility) occupies the southwest corner of the intersection (Site Base Map, Figure 3). Petroleum contaminated soil and groundwater were encountered during tank removal activities at the Roxboro Maintenance Facility in August of 1992. Monitoring wells were installed across the site to determine the extent of petroleum impact to soils and groundwater. In a Applied Environmental Services report dated December 3, 1991, analyses of groundwater samples collected from six monitoring wells revealed high levels of petroleum related constituents. Total BTEX concentrations ranged from 1010 ppb in MW-2 to 76,300 ppb in MW-6 (located approximately 40 feet south of North Madison Boulevard directly across from the Parrott property.

The Boulevard Kwik Pik occupies the northeast corner of the intersection (Site Base Map, Figure 3). In a UST closure report (ENSCI) dated December 20, 1994, the presence of petroleum contaminated soil and groundwater was reported. In an ENSCI report dated February 10, 1995, levels of Benzene, Toluene, Ethylbenzene, Xylene, and MTBE were all reported above the NCAC 2L groundwater standards in MW-1. MTBE levels in MW-2 were also reported above the NCAC 2L groundwater standards.

6.0 CONCLUSIONS cont.

Analyte levels above the NCAC 2L standards are present in all three "deep" wells located at the Parrott site. It is also possible that the highly fractured nature of the upper bedrock, coupled with its shallowness, is acting as a conduit containing a secondary (higher) hydraulic conductivity. The highly fractured nature of the bedrock also makes it very difficult to "case off" the upper level contaminants. Some of the chlorinated halocarbons present in groundwater samples, including the deep well samples, may also have originated upgradient of the Parrott site. Dean Gokel (GeoChem) reported that some of the solvents present in the Parrott samples are also present in degreasers commonly used at car washes. The presence of chlorinated halocarbons in the surface water sample "CDS" may have confirmed that the source of these chlorinated solvents could be traced upgradient.

A review of Table I, Section B, seems to indicate that a relatively high percentage of the groundwater samples collected during the December 6, 1995 sampling event revealed lowered analyte concentrations when compared to those results from the July 13, 1995 and December 5, 1994 sampling events. This may be attributed to both the removal of several "sources" nearby and the possibility that natural attenuation is occurring. This trend may be confirmed with additional sampling during the CAP phase of the investigation.

7.0 RECOMMENDATIONS

In order to implement a CAP, ECE believes that a comprehensive water level survey should be conducted at the four sites (Neb King Oil, Parrott, Boulevard Kwik Pik, and Roxboro Maintenance Facility) located at the intersection of North Main and North Madison. Prior to sounding wells, top of casing elevations for the wells at each site should be resurveyed to a common datum to ensure accuracy for all. Water level data from each site should be collected contemporaneously and made available to the consultants representing adjacent sites. ECE feels this information is needed to ensure proper selection of remedial alternatives.

A copy of this CSA should be submitted to Mr. Jay Zimmerman of the NCDEHNR Raleigh Regional Office for his review. This CSA report was prepared in order to achieve compliance with 15A NCAC 2N .0706, 15A NCAC 2L .0106(g) and the Notice of Regulatory Requirements letter issued to the Parrott Trust by the North Carolina Department of Environment, Health and Natural Resources (NCDEHNR) on September 18, 1993. Parrott will immediately begin preparation of a corrective action plan in accordance with the requirements of 15A NCAC 2N .0707 and 15A NCAC 2L .0106(I) if the NCDEHNR determines that such a plan is necessary.

8.0 REFERENCES

Geologic Map of North Carolina, Department of Natural Resources and Community Development, Division of Land Resources

Groundwater Section Guidelines for the Investigation and Remediation of Soils and Groundwater, North Carolina Department of Environment, Health and Natural Resources, Division of Environmental Management, Groundwater Section, March 1993.

North Carolina Administrative Code, Title 15, Subchapter 2L, Section .0100 and .0200.

North Carolina Department of Environment, Health and Natural Resources, Division of Environmental Management, Groundwater Section, Pollution Control Branch.

North Carolina Department of Environment, Health and Natural Resources, Division of Environmental Management, Emergency Management.

Soil Survey of Person County, North Carolina. United States Department of Agriculture, Soil Conservation Service.

9.0 LIMITATIONS

This report has been prepared for the exclusive use of Parrott Trust Property and/or its designees. It has been prepared in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made. ECE's conclusions and recommendations are based on information supplied by others, together with ECE's own site observations. Although ECE cannot be responsible for the accuracy of data supplied by others, ECE has no reason to suspect that any of the information is inaccurate. The observations described herein are based upon conditions readily visible at the site at the time of ECE's visit.

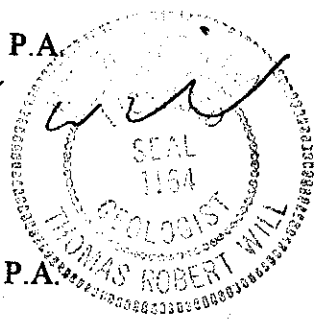
ECE cannot assume responsibility for the person(s) in charge of the site, nor otherwise undertake responsibility for reporting to any local, state or federal public agencies any conditions at the site that may present a potential danger to public health, safety or the environment. It is the responsibility of the Parrott Trustees to notify the appropriate local, state or federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety or the environment.

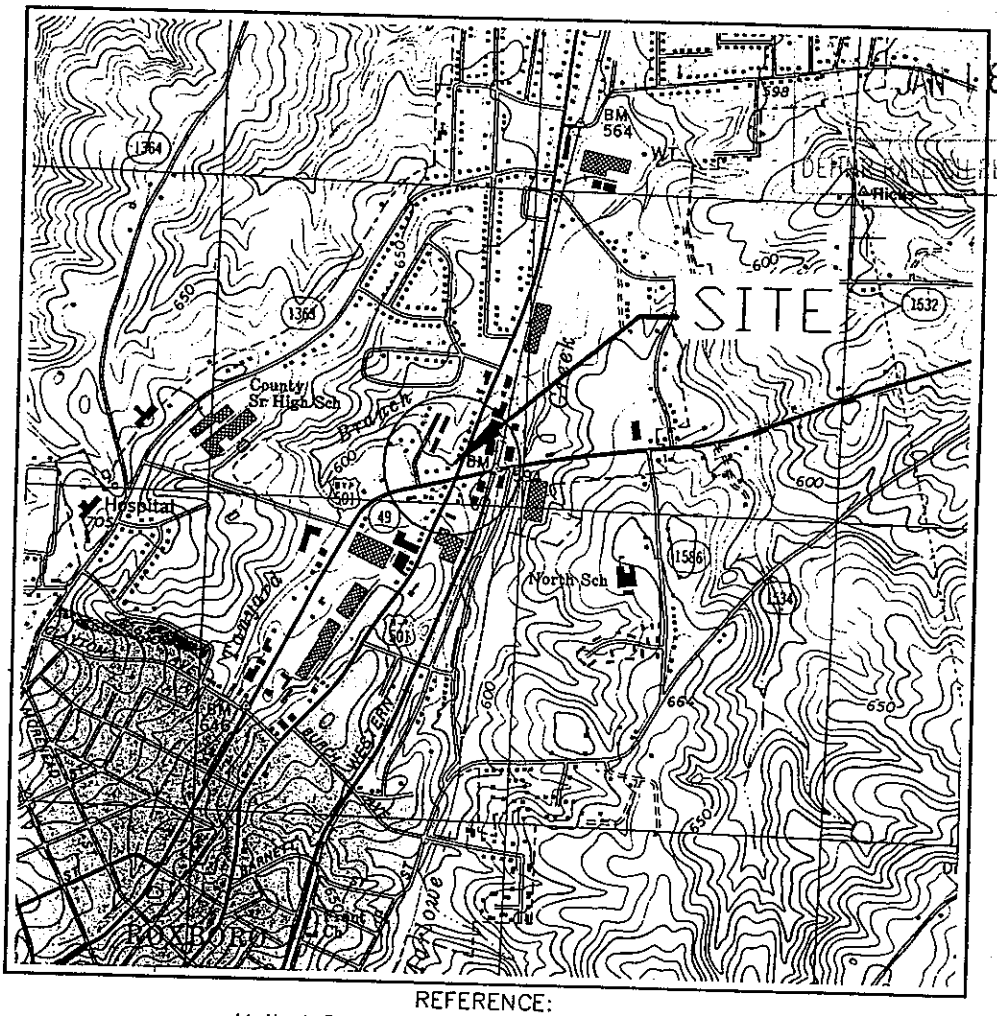
East Coast Environmental, P.A. appreciates this opportunity to provide environmental services to Parrott Trust. If you have any questions concerning the contents of this report, please contact Lowell Dallas at (919) 772-0268.

Sincerely,

Lowell Dallas
Project Manager
East Coast Environmental, P.A.

Thomas R. Will, P.G.
President
East Coast Environmental, P.A.

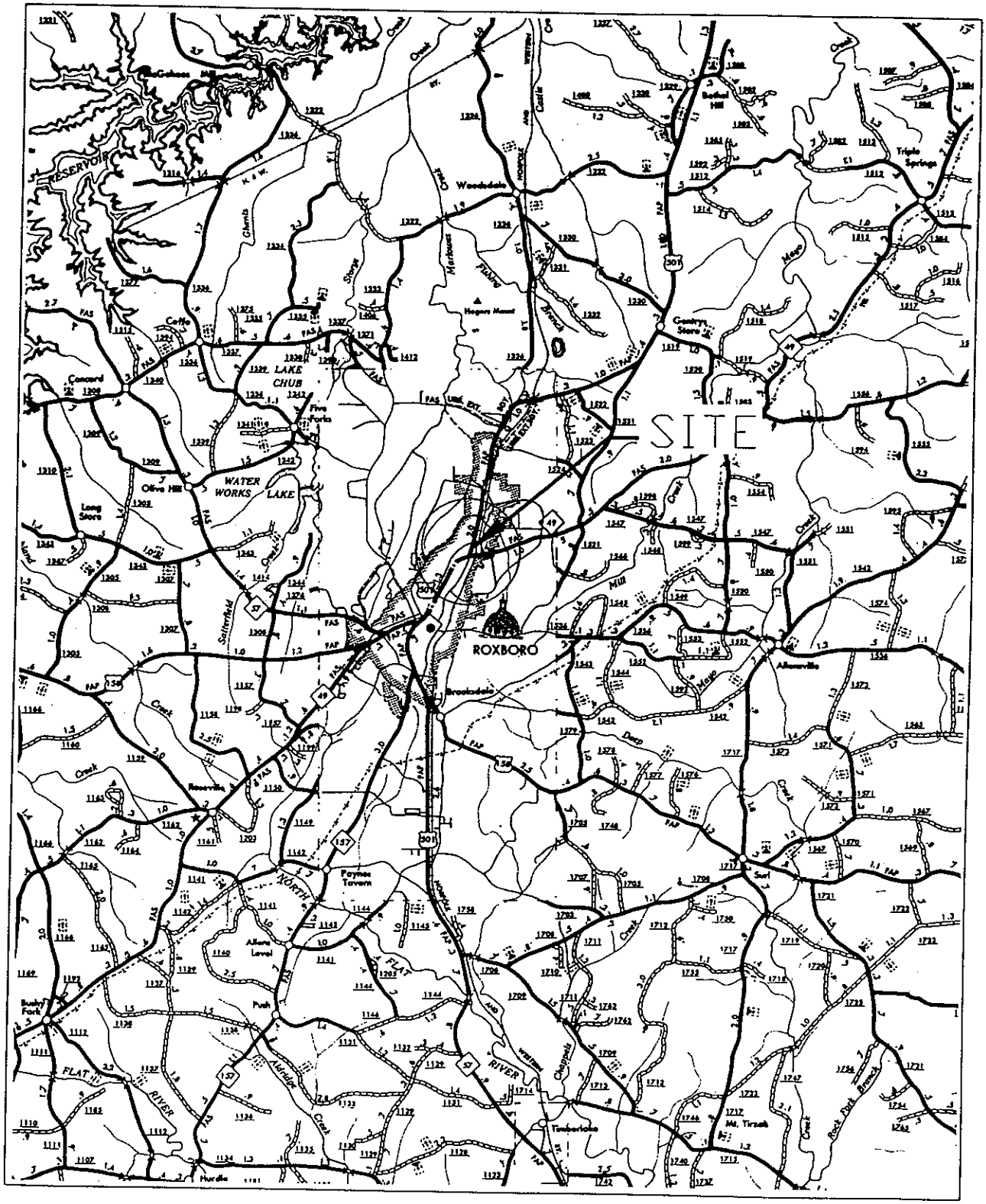




REFERENCE:
United States Department of the Interior,
Geological Survey
U.S.G.S. Quadrangle for:
ROXBORO, NC
1982
SCALE 1:24000

NOTES:	TITLE: Figure 1: Topographic Location Map Roxboro, NC Quadrangle Map Parrott Estate Project 1047 North Madison Blvd. Roxboro, Person County, NC	East Coast ENVIRONMENTAL, P.A.

CAD FILE:	PREP. BY	REV. BY	DATE:	PROJECT NO.
E:\ece\projects\parrott\maps\border.dwg	WHW	TRW	5-4-95	9435



NOTES:

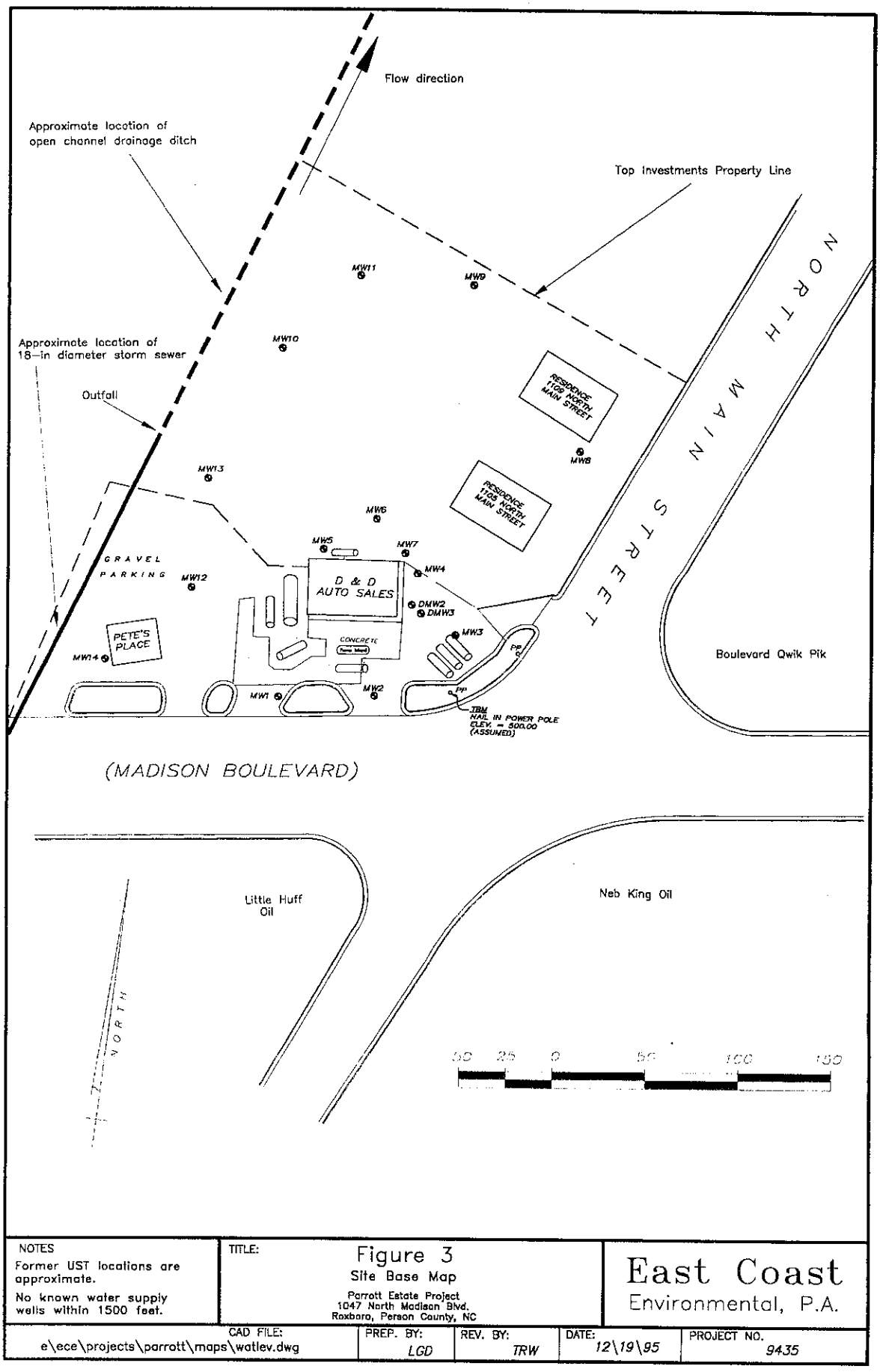
Scale: 1-in = 2.25-miles

TITLE: Figure 2: Person County Road Map

Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC

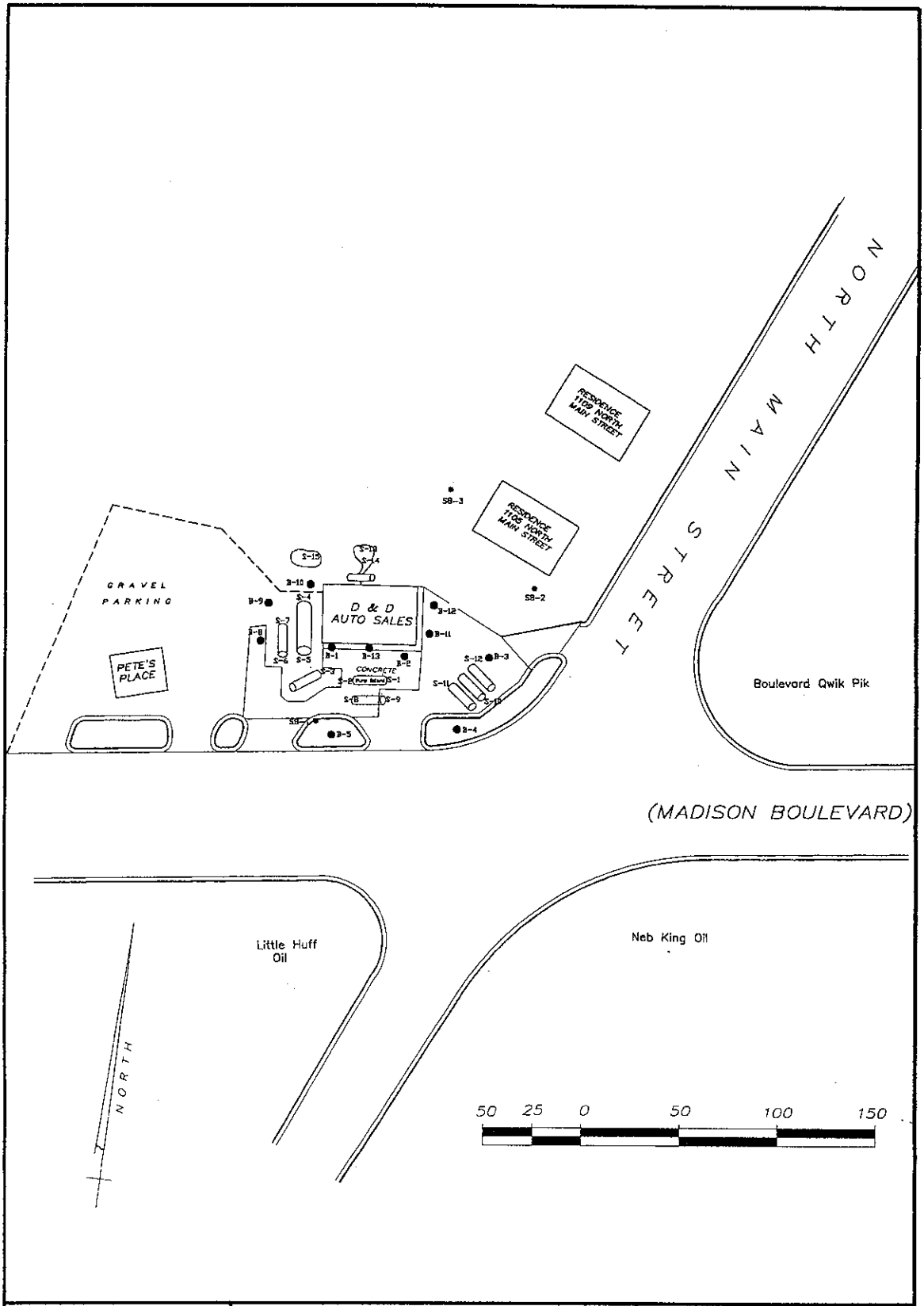
East Coast
ENVIRONMENTAL, P.A.

CAD FILE:	PREP. BY	REV. BY	DATE:	PROJECT NO.
E:\ece\projects\parrott\maps\border.dwg	WHW	TRW	5-4-95	9435



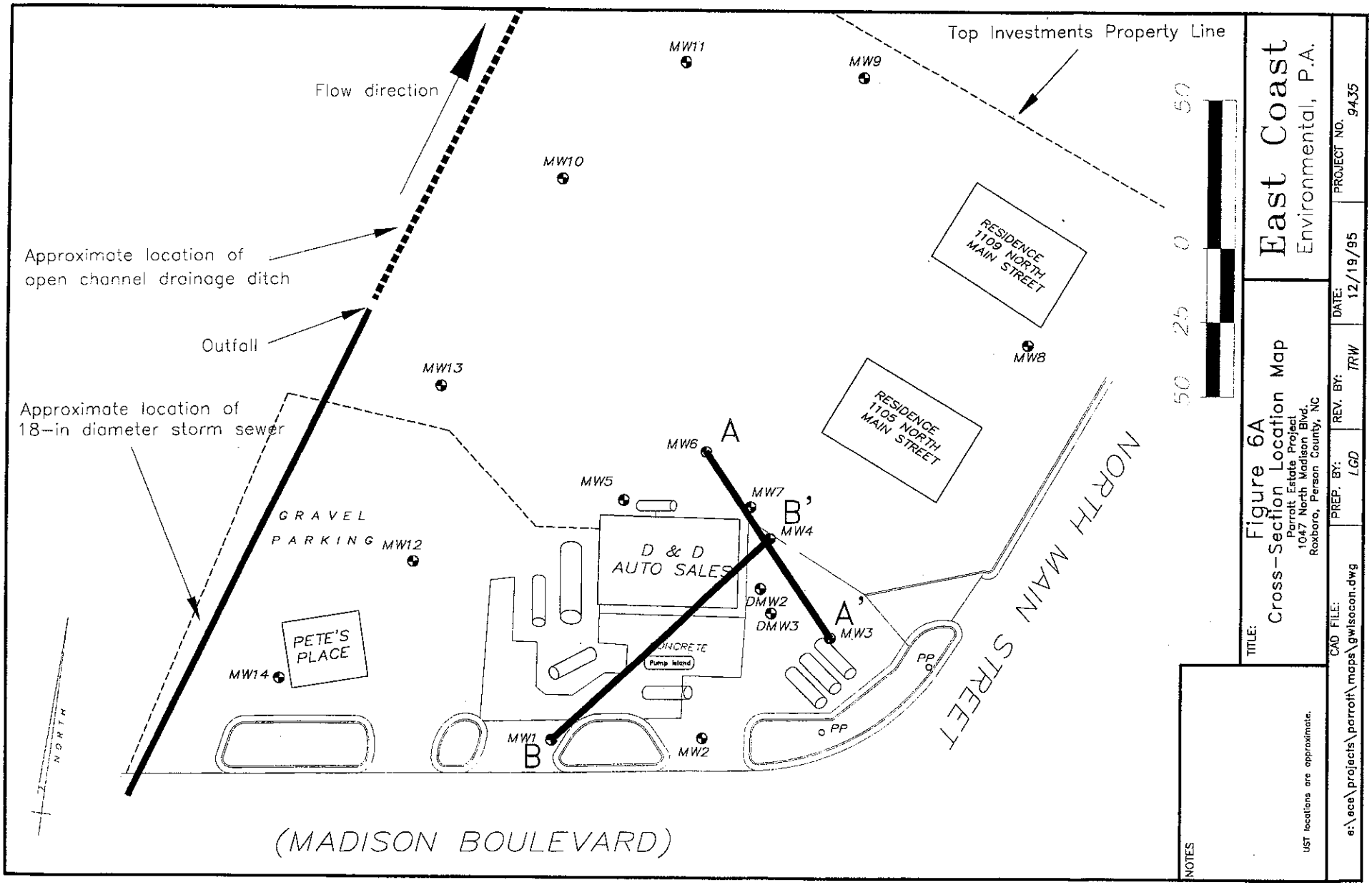
NOTES	TITLE:	
Former UST locations are approximate. No known water supply wells within 1500 feet.	Figure 3 Site Base Map Parrott Estate Project 1047 North Madison Blvd. Roxboro, Person County, NC	East Coast Environmental, P.A.

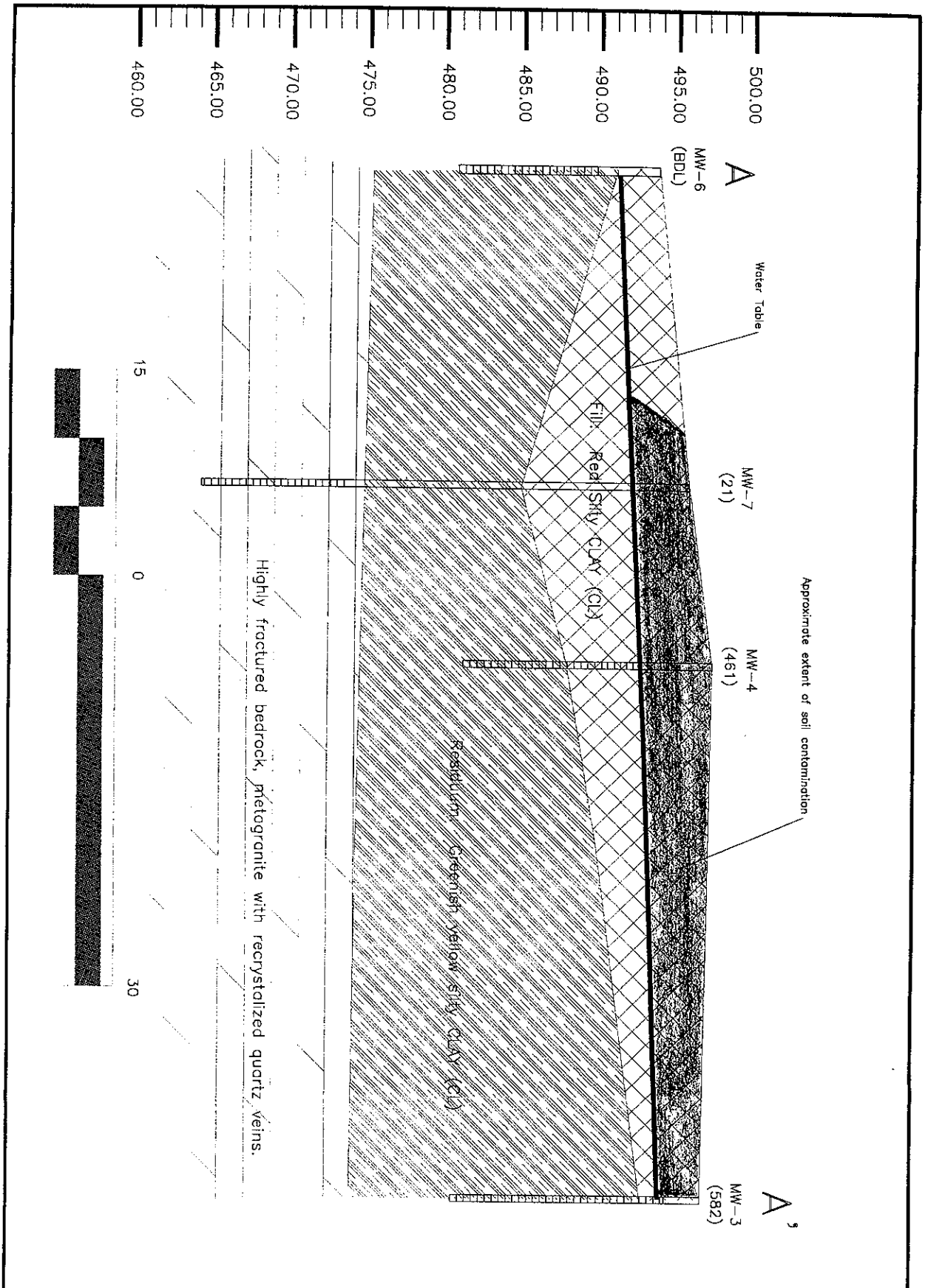
CAD FILE:	PREP. BY:	REV. BY:	DATE:	PROJECT NO.
e\ece\projects\parrott\maps\watlev.dwg	LGD	TRW	12\19\95	9435



NOTES	TITLE:	
Former UST locations are approximate. No known water supply wells within 1500 feet.	Figure 5 Soil Sample Location Map Parrott Estate Project 1047 North Madison Blvd. Roxboro, Person County, NC	East Coast Environmental, P.A.

CAD FILE:	PREP. BY:	REV. BY:	DATE:	PROJECT NO.
e\ece\projects\parrott\maps\watlev.dwg	LGD	TRW	7\31\95	9435


Top Investments Property Line
Flow direction
MW11
MW9
MW10
Approximate location of
open channel drainage ditch
Outfall
RESIDENCE
1109 NORTH
MAIN STREET
MW8
MW13
Approximate location of
18-in diameter storm sewer
RESIDENCE
1105 NORTH
MAIN STREET
MW6
A
MW5
MW7
B'
MW4
GRAVEL
PARKING
MW12
D & D
AUTO SALES
DMW2
DMW3
A'
MW3
CONCRETE
Pump Island
PETE'S
PLACE
MW14
PP
PP
MW1
B
MW2
NORTH MAIN STREET
NORTH
(MADISON BOULEVARD)
50
0
25
50
East Coast
Environmental, P.A.
PROJECT NO. 9435
DATE: 12/19/95
REV. BY: TRW
PREP. BY: LGD
TITLE:
Figure 6A
Cross-Section Location Map
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC
CAD FILE:
e:\ece\projects\parrott\maps\gwlsacon.dwg
NOTES:
UST locations are approximate.

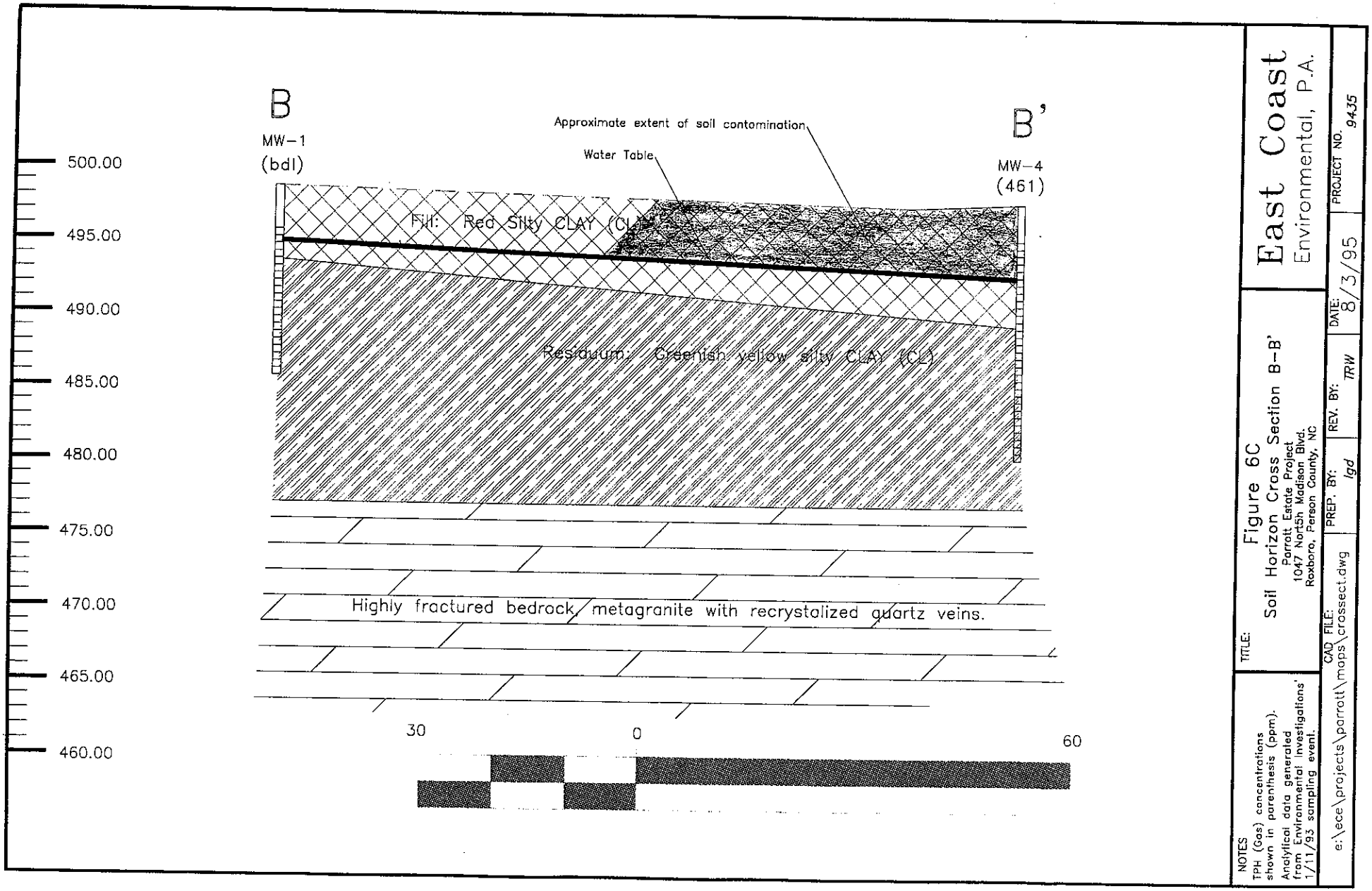


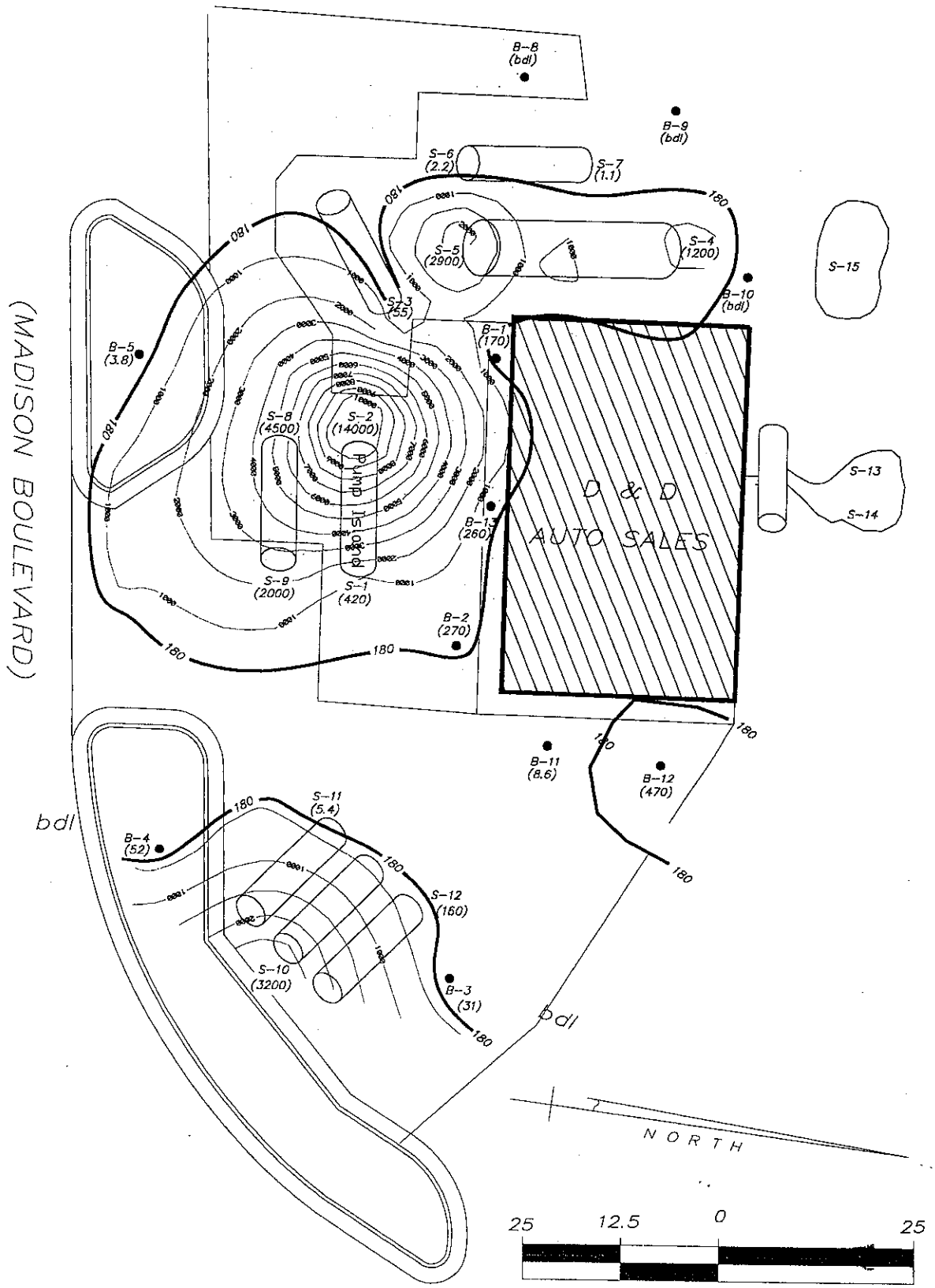
NOTES
TPH (Gas) concentrations shown in parenthesis (ppm).
Analytical data generated from Environmental Investigations' 1/11/93 sampling event.

TITLE:
Figure 6b
Soil Horizon Cross Section A-A'
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC

East Coast Environmental, P.A.

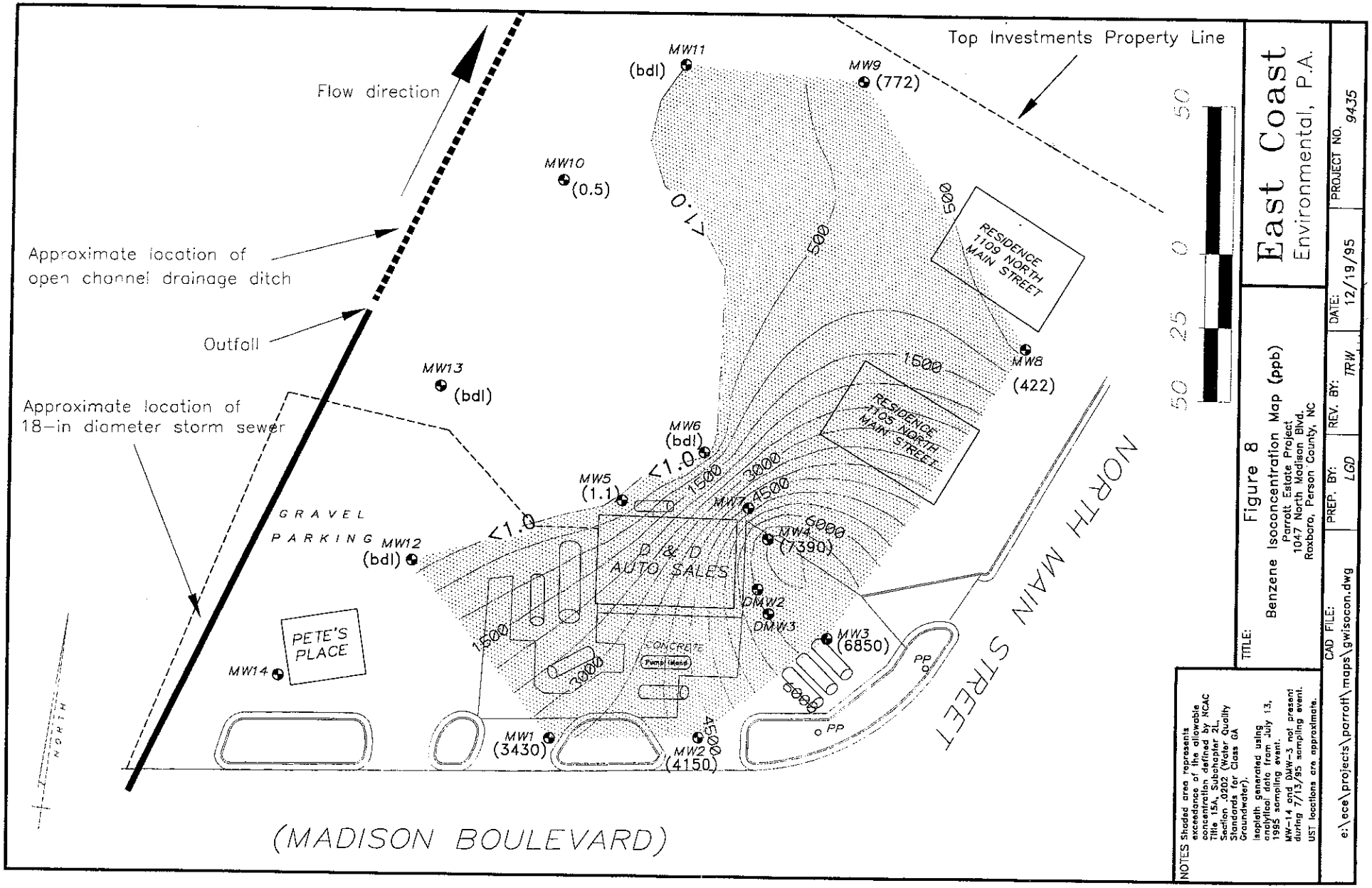
CAD FILE:	PREP. BY:	REV. BY:	DATE:	PROJECT NO.
e:\ece\projects\parrott\maps\crossect.dwg	lgd	TRW	8/3/95	9435

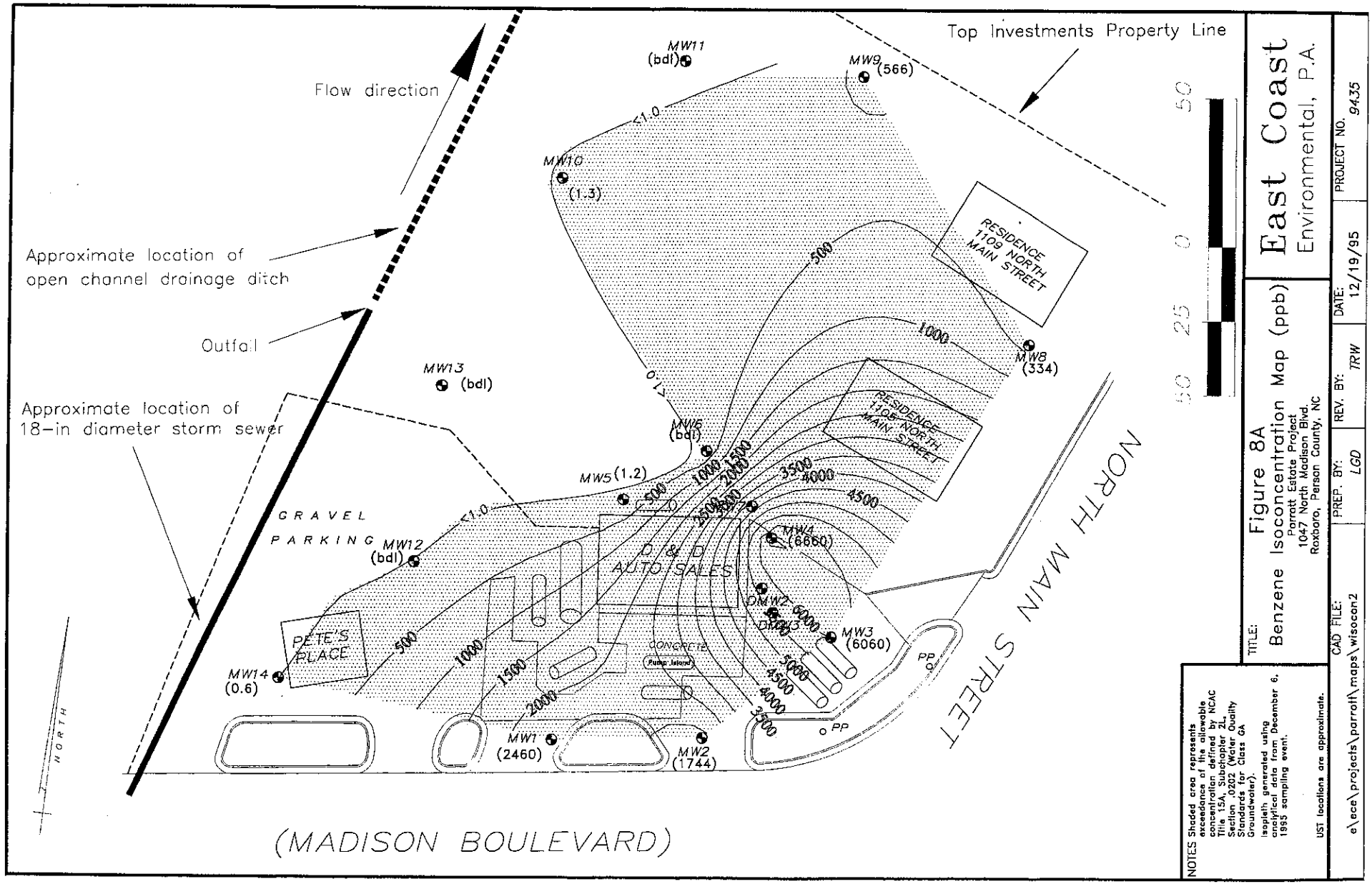

B
MW-1
(bdl)
B'
MW-4
(461)
Approximate extent of soil contamination
Water Table
Fill: Red Silty CLAY (CL)
Residuum: Greenish yellow silty CLAY (CL)
Highly fractured bedrock, metagranite with recrystalized quartz veins.
500.00
495.00
490.00
485.00
480.00
475.00
470.00
465.00
460.00
30
0
60
East Coast
Environmental, P.A.
Figure 6C
Soil Horizon Cross Section B-B'
Parratt Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC
TITLE:
PREP. BY: lgd
REV. BY: TRW
DATE: 8/3/95
PROJECT NO. 9435
CAD FILE: e:\ece\projects\parratt\maps\crossect.dwg
NOTES
TPH (Gas) concentrations shown in parenthesis (ppm).
Analytical data generated from Environmental investigations 1/11/93 sampling event.

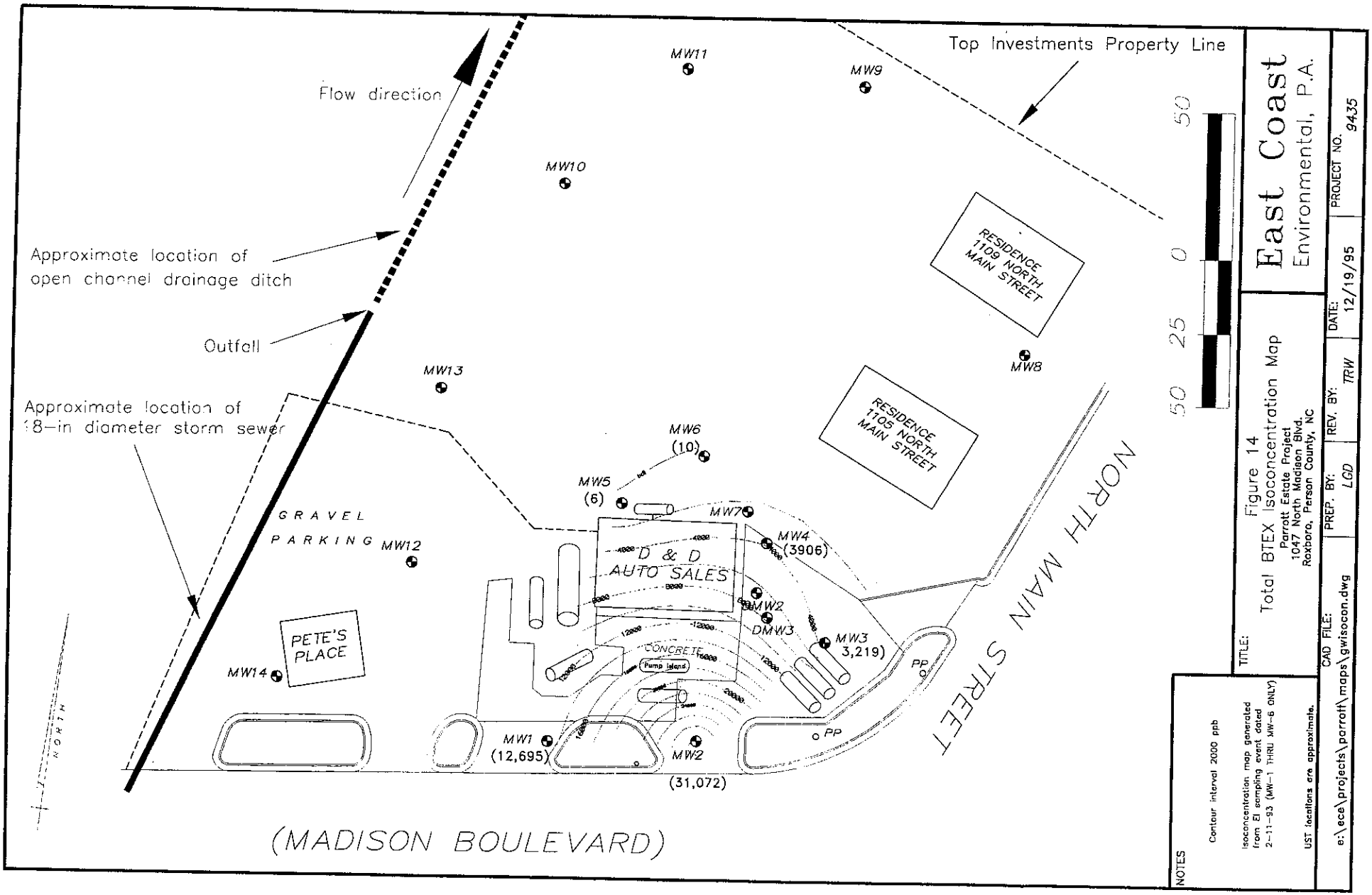


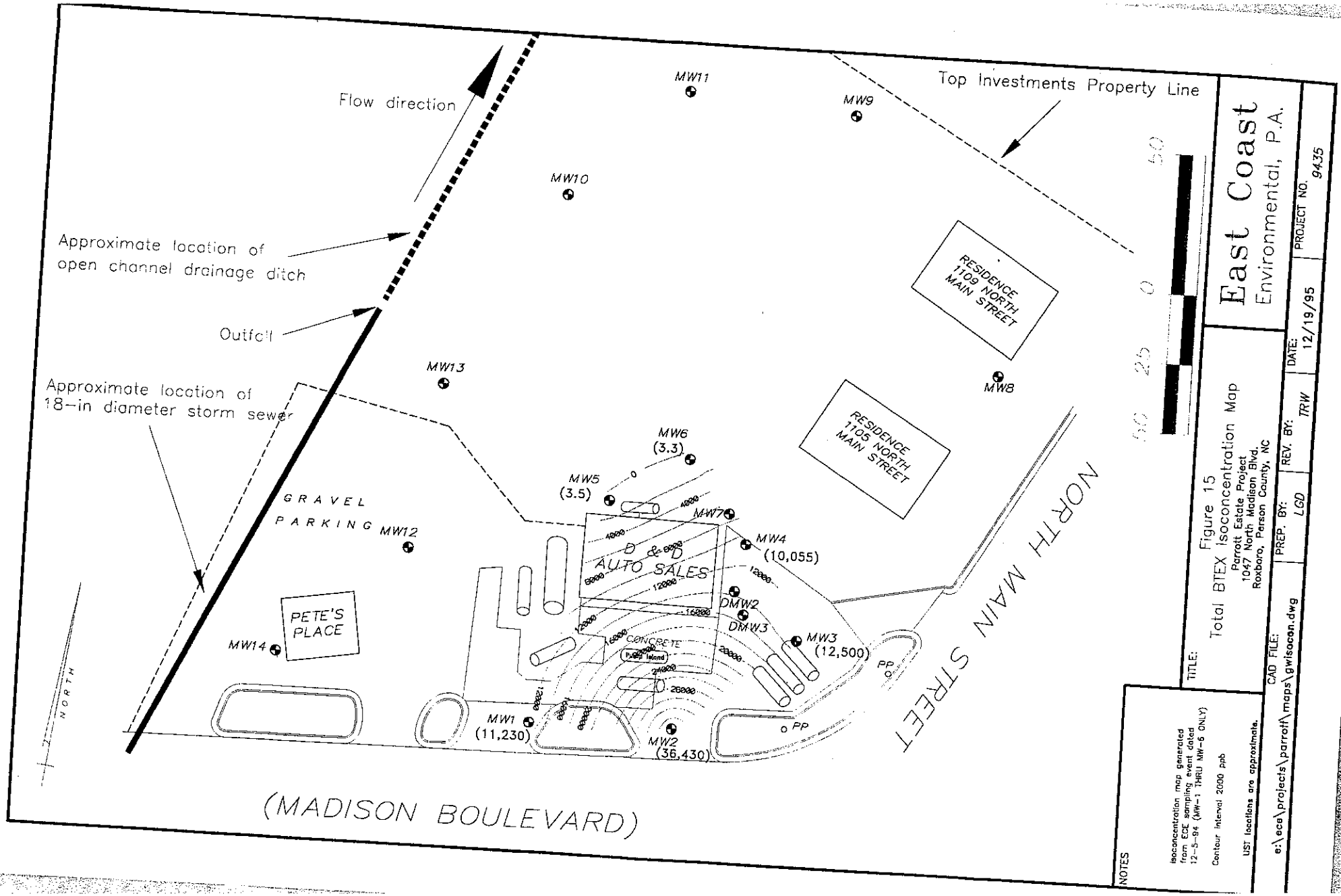
UST Locations are approximate
Contour values in mg/kg (ppm)

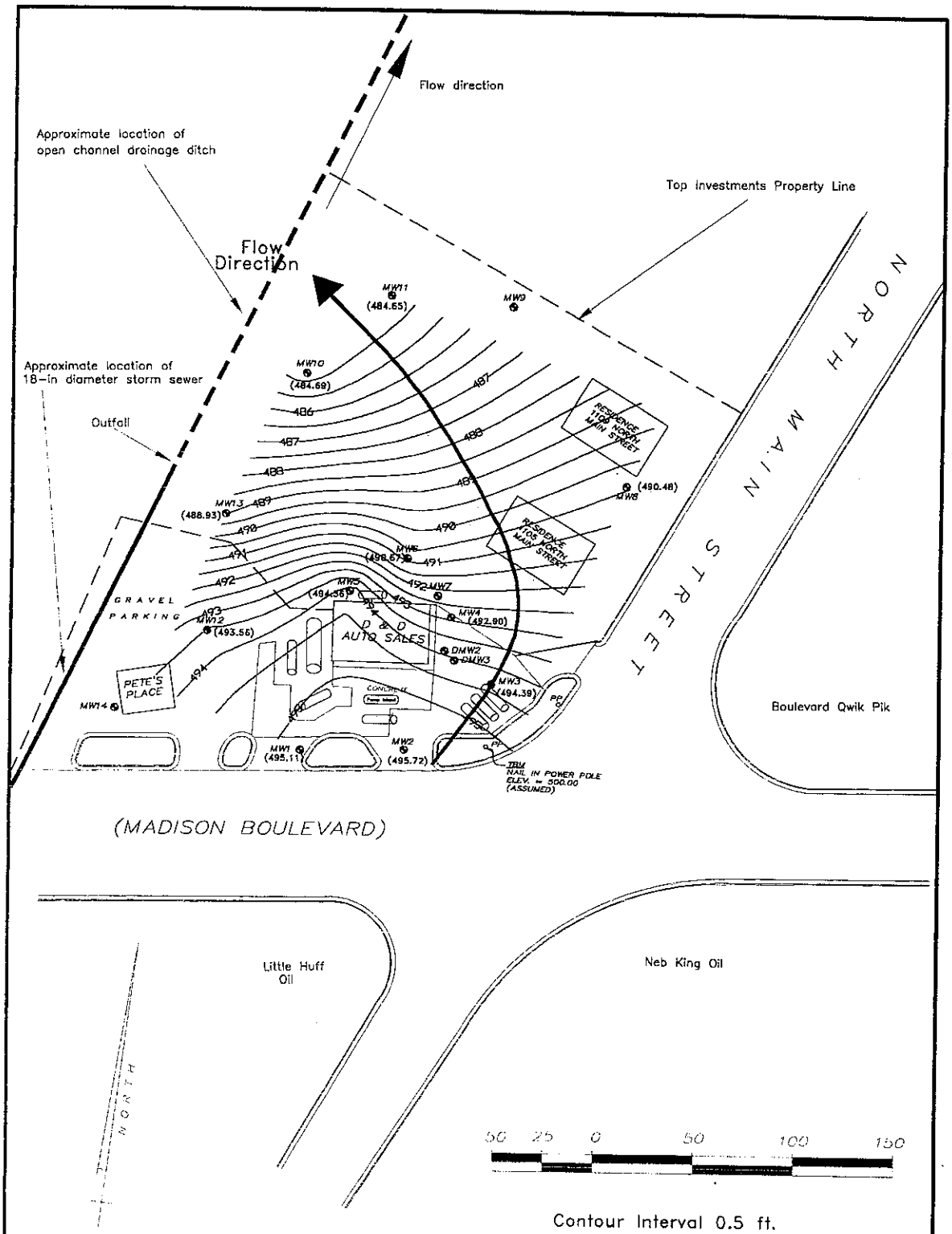
NOTES: SSE cleanup level is shown as 180 ppm contour. S-13,14, and S-15 were not used to generate contour.	TITLE: Figure 7 TPH (Gas) Isoconcentration Map — Parrott Estate Project, 1047 North Madison Blvd., Roxboro, Person County, NC	East Coast Environmental, P.A.			
CAD FILE: e:\ece\projects\parrott\maps\isocon.dwg	PREP. BY: lgd	REV. BY: TRW	DATE: 8/3/95	PROJECT NO. 9435	


Top Investments Property Line
Flow direction
MW11
(bdl)
MW9
(772)
MW10
(0.5)
Approximate location of
open channel drainage ditch
Outfall
MW13
(bdl)
Approximate location of
18-in diameter storm sewer
RESIDENCE
1109 NORTH
MAIN STREET
RESIDENCE
1105 NORTH
MAIN STREET
MW8
(422)
MW6
(bdl)
MW5
(1.1)
MW7
MW4
(7390)
MW12
(bdl)
GRAVEL
PARKING
P & D
AUTO SALES
CONCRETE
Pump Island
DMW2
DMW3
MW3
(6850)
PETE'S
PLACE
MW14
MW1
(3430)
MW2
(4150)
PP
NORTH MAIN STREET
(MADISON BOULEVARD)
NORTH
<1.0
500
1000
1500
3000
4500
5000
6000
50 25 0 50
East Coast
Environmental, P.A.
Figure 8
Benzene Isoconcentration Map (ppb)
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC
TITLE:
PREP. BY: LGD
REV. BY: TRW
DATE: 12/19/95
PROJECT NO. 9435
CAD FILE: e:\ece\projects\parrott\maps\gwisocon.dwg
NOTES Shaded area represents exceedance of the allowable concentration defined by NCAC Title 15A, Subchapter 2L, Section .0202 (Water Quality Standards for Class GA Groundwater).
Isopleth generated using analytical data from July 13, 1995 sampling event.
MW-14 and DMW-3 not present during 7/13/95 sampling event.
UST locations are approximate.

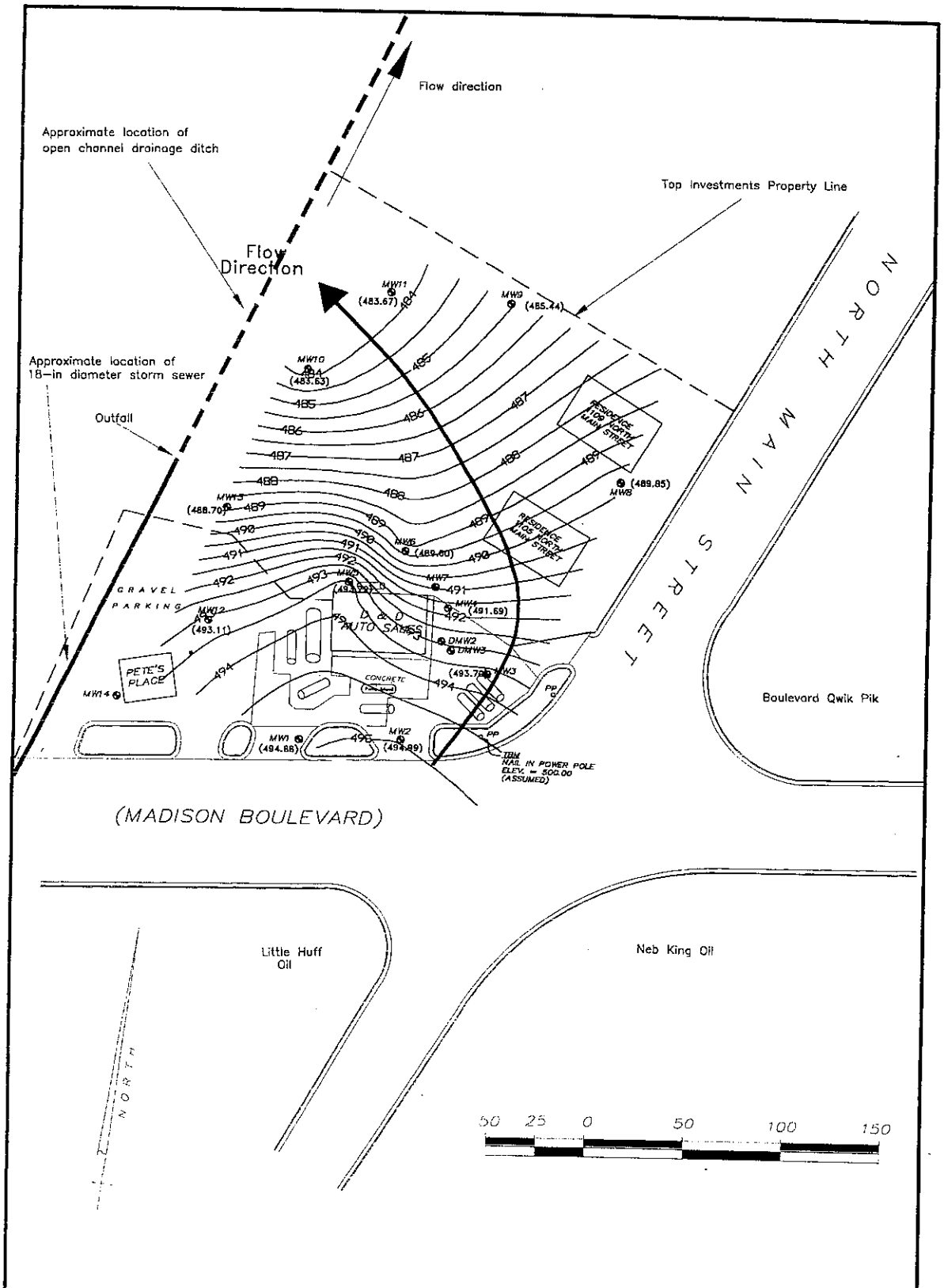

Top Investments Property Line
Flow direction
Approximate location of open channel drainage ditch
Outfall
Approximate location of 18-in diameter storm sewer
MW11 (bdl)
MW9 (566)
MW10 (1.3)
MW13 (bdl)
MW8 (334)
MW6 (bdl)
MW5 (1.2)
MW12 (bdl)
MW4 (6660)
MW7 (6000)
MW3 (6060)
MW14 (0.6)
MW1 (2460)
MW2 (1744)
RESIDENCE 1109 NORTH MAIN STREET
RESIDENCE 1105 NORTH MAIN STREET
D & D AUTO SALES
PETE'S PLACE
GRAVEL PARKING
CONCRETE
Pump Island
PP
NORTH MAIN STREET
(MADISON BOULEVARD)
NORTH
<1.0
0.1
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
50 25 0 50
East Coast Environmental, P.A.
Figure 8A
Benzene Isoconcentration Map (ppb)
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC
TITLE:
PREP. BY: LGD
REV. BY: TRW
DATE: 12/19/95
PROJECT NO. 9435
CAD FILE: e\ece\projects\parrott\maps\wisocon2
NOTES: Shaded area represents exceedance of the allowable concentration defined by NCAC Title 15A, Subchapter 2L, Section .0202 (Water Quality Standards for Class GA Groundwater).
Isopleth generated using analytical data from December 6, 1995 sampling event.
UST locations are approximate.


Flow direction
Top Investments Property Line
Approximate location of open channel drainage ditch
Outfall
Approximate location of 18-in diameter storm sewer
MW11
MW9
MW10
RESIDENCE 1109 NORTH MAIN STREET
MW8
MW13
RESIDENCE 1105 NORTH MAIN STREET
MW6 (10)
MW5 (6)
MW7
MW4 (3906)
GRAVEL PARKING
MW12
D & D AUTO SALES
MW2
DMW3
MW3 3,219)
CONCRETE
Pump Island
PETE'S PLACE
MW14
PP
PP
MW1 (12,695)
MW2 (31,072)
NORTH MAIN STREET
NORTH
(MADISON BOULEVARD)
50
0
25
50
East Coast Environmental, P.A.
PROJECT NO. 9435
DATE: 12/19/95
REV. BY: TRW
PREP. BY: LGD
CAD FILE: e:\ece\projects\parrott\maps\gwisocon.dwg
TITLE: Figure 14 Total BTEX Isoconcentration Map
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC
NOTES
Contour interval 2000 ppb
Isoconcentration map generated from EI sampling event dated 2-11-93 (MW-1 THRU MW-6 ONLY)
UST locations are approximate.


Flow direction
Top Investments Property Line
Approximate location of open channel drainage ditch
Outfall
Approximate location of 18-in diameter storm sewer
MW11
MW9
MW10
MW13
MW8
MW6 (3.3)
MW5 (3.5)
MW7
MW4 (10,055)
MW12
GRAVEL PARKING
D & D AUTO SALES
DMW2
DMW3
MW3 (12,500)
MW14
PETE'S PLACE
CONCRETE
MW1 (11,230)
MW2 (36,430)
PP
RESIDENCE 1109 NORTH MAIN STREET
RESIDENCE 1105 NORTH MAIN STREET
NORTH MAIN STREET
(MADISON BOULEVARD)
NORTH
East Coast Environmental, P.A.
Figure 15
Total BTEX Isoconcentration Map
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC
TITLE:
PREP. BY: LGD
REV. BY: TRW
DATE: 12/19/95
PROJECT NO. 9435
CAD FILE: e:\eca\projects\parrott\maps\gwisocon.dwg
NOTES
Isoconcentration map generated from ECE sampling event dated 12-5-94 (MW-1 THRU MW-6 ONLY)
Contour interval 2000 ppb
UST locations are approximate.



NOTES: MW7, MW9, MW14, DMW2, and DMW3 were not used in generating water table contour map. Temporary Benchmark on telephone pole (see dwg.) set to 500 ft. Average Gradient = 0.04 ft/ft	TITLE: Figure 16 Water Table Contour Map (From 7/6/95 Data) Parrott Estate Project 1047 North Madison Blvd. Roxboro, Person County, NC				East Coast Environmental, P.A.
CAD FILE: e\ece\projects\parrott\maps\watlev.dwg	PREP. BY: LGD	REV. BY: TRW	DATE: 12\19\95	PROJECT NO. 9435	



NOTES: MW7, MW14, DMW2, and DMW3 were not used in generating this contour map.

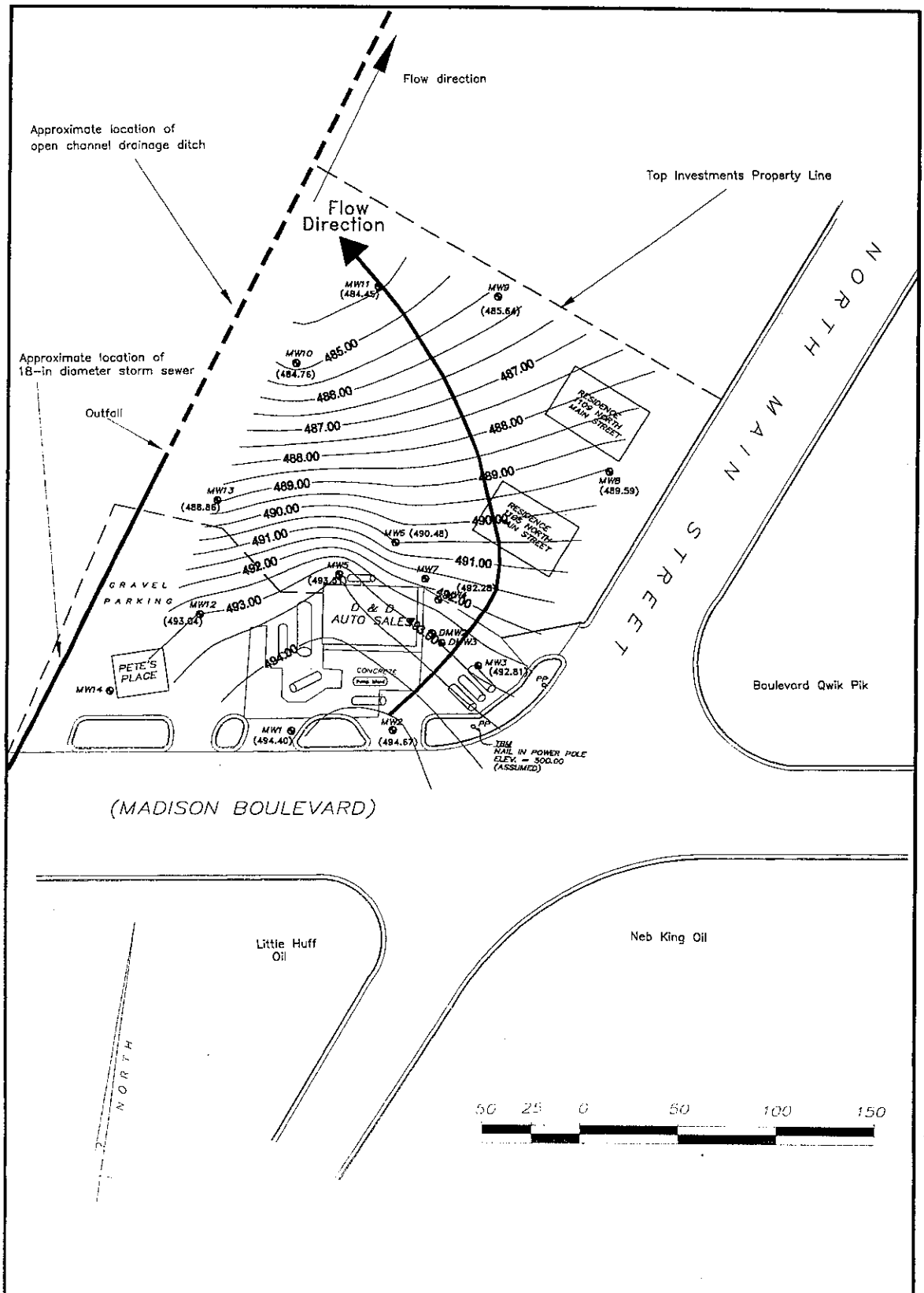
Temporary Benchmark on telephone pole (see dwg.) set to 500 ft.

Average Gradient = 0.044 ft/ft

TITLE: Figure 17
Water Table Contour Map
(From 7/13/95 Data)
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC

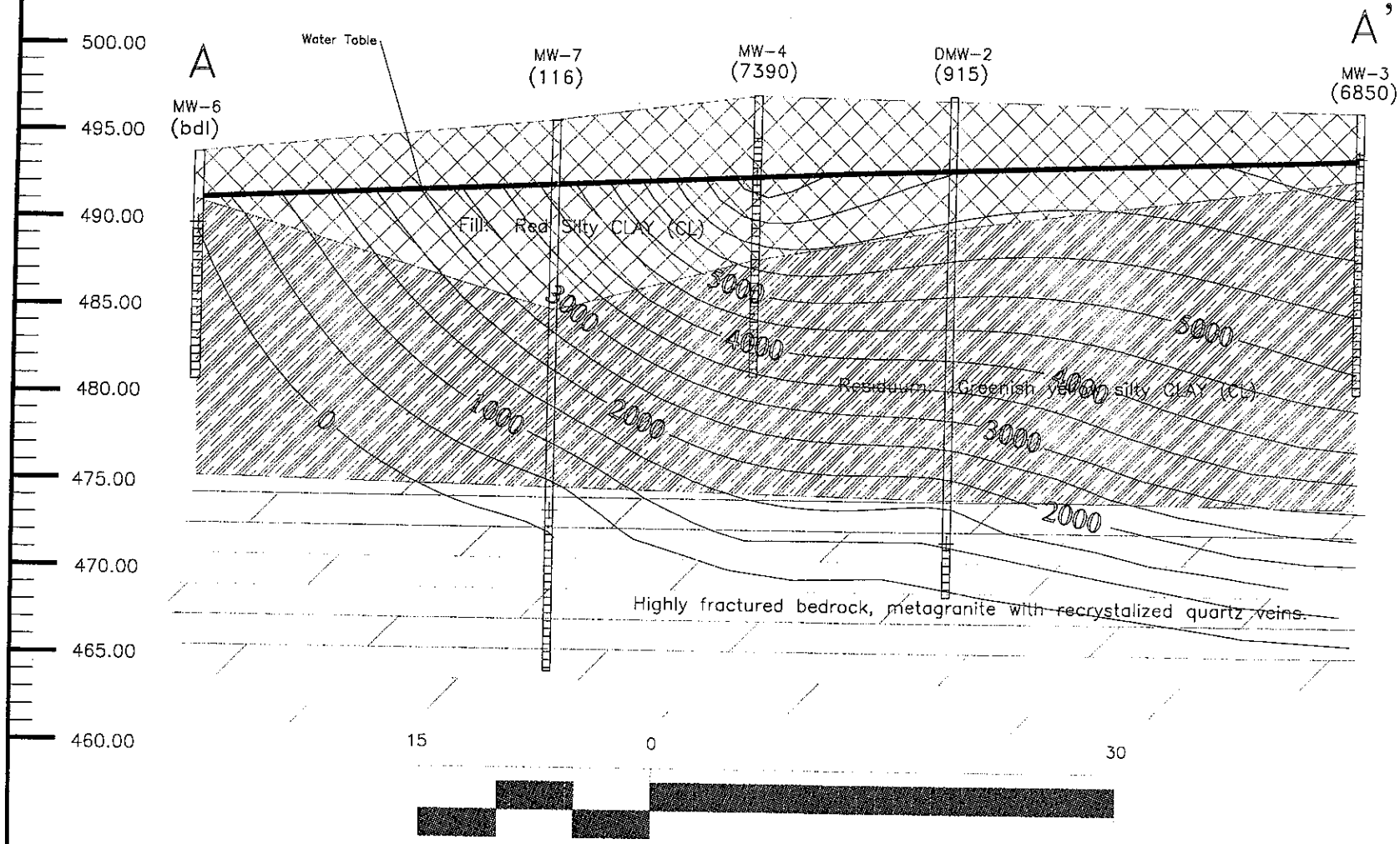
East Coast Environmental, P.A.

CAD FILE:	PREP. BY:	REV. BY:	DATE:	PROJECT NO.
e\ece\projects\parrott\maps\watlev.dwg	LGD	TRW	12\19\95	9435



NOTES: MW7, MW14, DMW2, and DMW3 were not used in generating this contour map. Temporary Benchmark on telephone pole (see dwg.) set to 500 ft. Average Gradient = 0.041 ft/ft.	TITLE: Figure 17A Water Table Contour Map From 12/6/95 data) Parrott Estate Project 1047 North Madison Blvd. Roxboro, Person County, NC	East Coast Environmental, P.A.			
CAD FILE: e\ece\projects\parrott\maps\watlev.dwg	PREP. BY: LGD	REV. BY: TRW	DATE: 12\19\95	PROJECT NO. 9435	

All values in parts per billion (ppb)



East Coast Environmental, P.A.

Figure 18
Benzene Cross Section A-A'
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC

TITLE:

PROJECT NO. 9435

DATE: 8/3/95

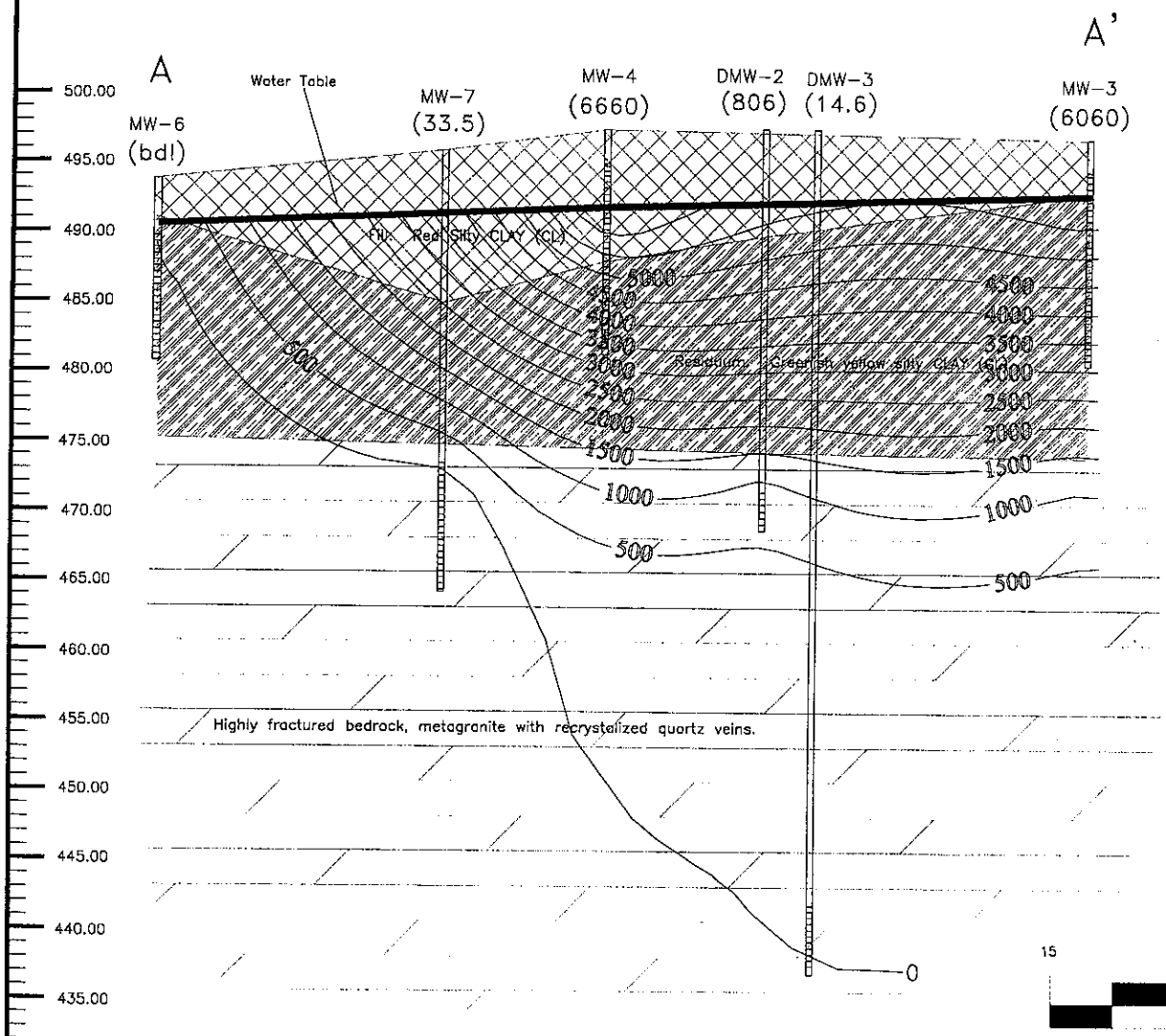
REV. BY: TRW

PREP. BY: lgd

CAD FILE: e:\ece\projects\parrott\maps\crossect.dwg

NOTES
Analytical data collected from July 13 and July 21 1995 sampling event.
Values for DMW-2 were projected on A-A' cross-section.

All values in parts per billion (ppb)



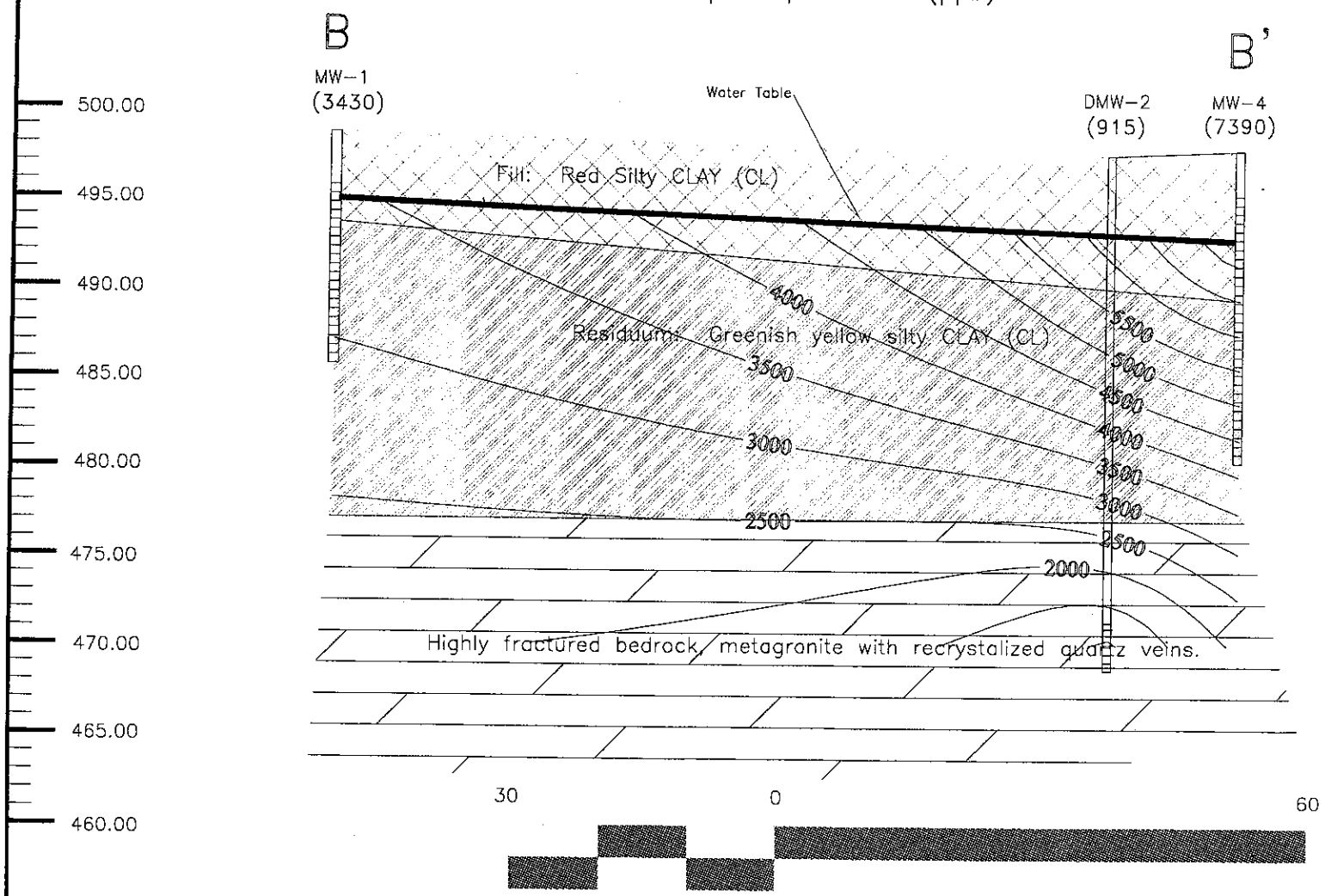
NOTES
Analytical data collected from December 6, 1995 sampling event.
Values for DMW-2 and DMW-3 were projected on A-A' cross-section.

TITLE:
Figure 18A
Benzene Cross Section A-A'
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC

East Coast
Environmental, P.A.

PROJECT NO. 9435
DATE: 8/3/95
REV. BY: TRW
PREP. BY: lgd
CAD FILE: e:\ece\projects\parrott\maps\crossect.dwg

All values in parts per billion (ppb)

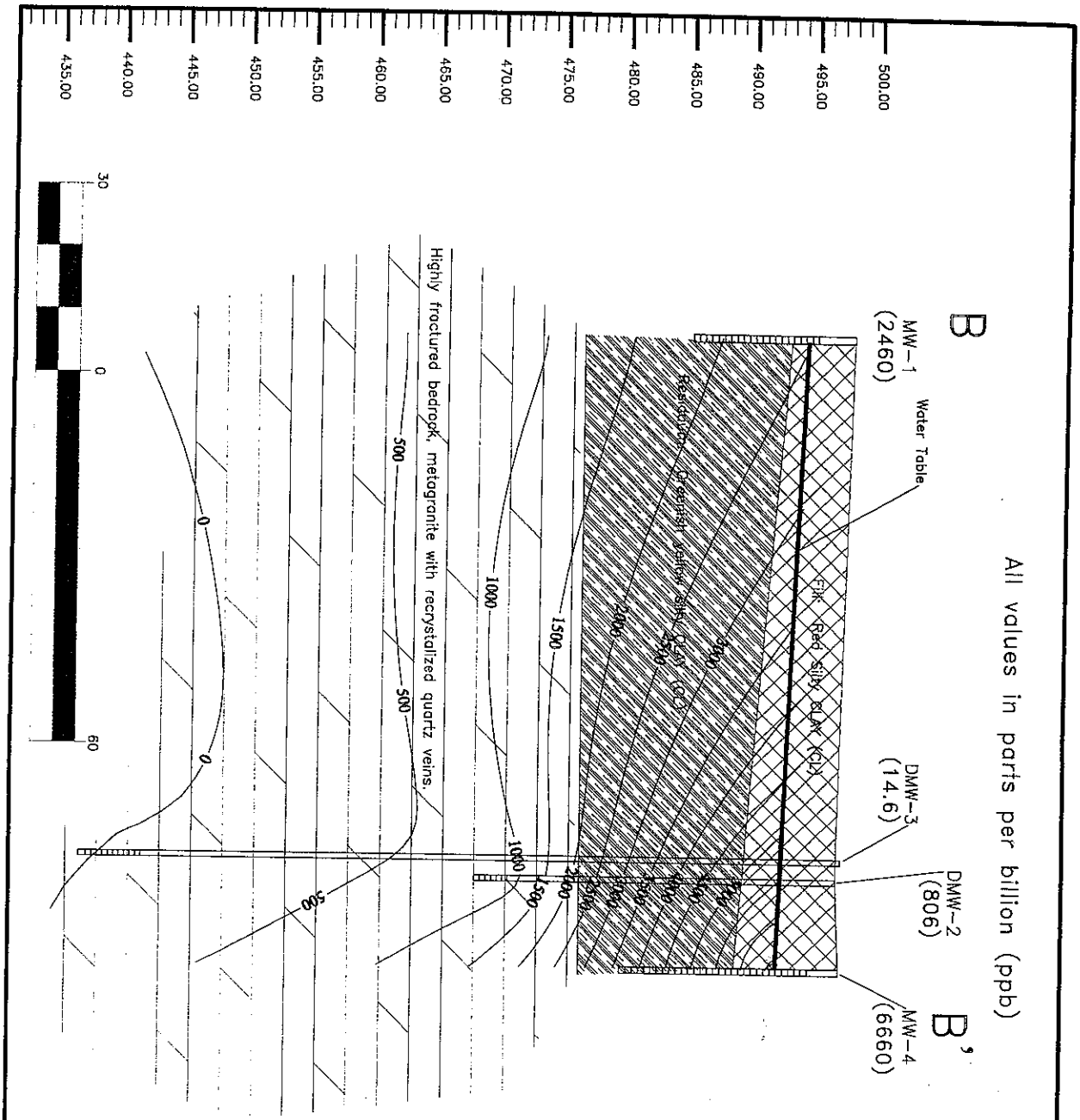


NOTES: Analytical data collected from July 13 and July 21 1995 sampling event.
Values for DMW-2 were projected on B-B' cross-section.

TITLE: Figure 23
Benzene Cross Section B-B'
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC

East Coast Environmental, P.A.

PROJECT NO. 9435
DATE: 8/3/95
REV. BY: TRW
PREP. BY: lgd
CAD FILE: e:\ece\projects\parrott\maps\crossect.dwg



NOTES
Analytical data collected from December 6, 1995 sampling event.

Values for DMW-2 and DMW-3 were projected on B-B' cross-section.

TITLE:
Figure 23A
Benzene Cross Section B-B'
Parrott Estate Project
1047 North Madison Blvd.
Roxboro, Person County, NC

East Coast
Environmental, P.A.

CAD FILE:	PREP. BY:	REV. BY:	DATE:	PROJECT NO.
e:\ece\projects\parrott\maps\crossect.dwg	lgd	TRW	8/3/95	9435

Table I
Parrott Trust Property
Summary of Analytical Data
from Groundwater

Analyte	Well #	2/11/93 SDL (ug/l)	2/11/93 Result (ug/l)	12/5/94 PQL (ug/l)	12/5/94 Result (ug/l)	7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	1	na	na	50	bql	25	bql	10	bql	7
1,1-Dichloroethane	1	na	na	50	bql	25	bql	10	bql	700
Chloroform	1	na	na	50	bql	25	bql	10	bql	0.19
1,1,1-Trichloroethane	1	na	na	50	bql	25	bql	10	bql	200
1,2-Dichloroethane	1	na	na	50	bql	25	bql	10	bql	0.38
Trichloroethene	1	na	na	50	3640	25	bql	10	bql	2.8
Tetrachloroethene	1	na	na	50	bql	25	bql	10	bql	0.7
602										
Chlorobenzene	1	10	bdl	50	bql	25	bql	10	bql	50
1,2 Dichlorobenzene	1	5	bdl	50	bql	25	bql	10	bql	nrs
1,3 Dichlorobenzene	1	5	bdl	50	bql	25	bql	10	bql	nrs
1,4 Dichlorobenzene	1	5	bdl	50	bql	25	bql	10	bql	nrs
Benzene	1	10	3860	50	3120	25	3430	10	2460	1
Ethylbenzene	1	10	285	50	1040	25	771	10	740	29
Toluene	1	10	5600	50	2810	25	3230	10	940	1000
Xylene (Total)	1	30	2970	150	4260	75	4110	30	3040	530
MTBE	1	50	415	100	424	50	bql	20	234	200
IPE	1	na	na	100	bql	50	151	20	114	nrs
EDB	1	10	bdl	na	na	50	bql	20	bql	0.0004
Lead	1	na	na	15	17	15	20	15	bql	15
Analyte	Well #	2/11/93 SDL (ug/l)	2/11/93 Result (ug/l)	12/5/94 PQL (ug/l)	12/5/94 Result (ug/l)	7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	2	na	na	50	bql	25	bql	bql	46	7
1,1-Dichloroethane	2	na	na	50	bql	25	bql	bql	bql	700
Chloroform	2	na	na	50	bql	25	bql	bql	bql	0.19
1,1,1-Trichloroethane	2	na	na	50	bql	25	bql	bql	bql	200
1,2-Dichloroethane	2	na	na	50	bql	25	bql	bql	bql	0.38
Trichloroethene	2	na	na	50	bql	25	bql	bql	bql	2.8
Tetrachloroethene	2	na	na	50	bql	25	bql	bql	bql	0.7
602										
Chlorobenzene	2	10	bdl	50	bql	25	bql	bql	bql	50
1,2 Dichlorobenzene	2	5	bdl	50	bql	25	bql	bql	bql	nrs
1,3 Dichlorobenzene	2	5	bdl	50	bql	25	bql	bql	bql	nrs
1,4 Dichlorobenzene	2	5	bdl	50	bql	25	bql	bql	bql	nrs
Benzene	2	10	9360	50	4820	25	4150	10	1744	1
Ethylbenzene	2	10	1040	50	2310	25	1690	10	1118	29
Toluene	2	10	11452	50	16900	25	20300*	50	6040	1000
Xylene (Total)	2	30	10230	150	10400	75	11300	150	7950	530
MTBE	2	50	1530	100	1580	50	176	20	208	200
IPE	2	na	na	100	bql	50	209	20	92	nrs
EDB	2	10	bdl	na	na	50	bql	20	bql	0.0004
Lead	2	na	na	15	20	15	bql	15	bql	15
					*					

PQL = practical quantitation limit due to matrix effects.
bdl = below methos detection limit.
bql = below quantitation limit.
na = not analyzed.
SDL = sample detection limit.
nrs = no reported standard.
* = value reported considered min conc.

Table I
Parrott Trust Property
Summary of Analytical Data
from Groundwater

Analyte	Well #	2/11/93 SDL (ug/l)	2/11/93 Result (ug/l)	12/5/94 PQL (ug/l)	12/5/94 Result (ug/l)	7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	3	na	na	50	bql	25	bql	10	bql	7
1,1-Dichloroethane	3	na	na	50	bql	25	bql	10	14	700
Chloroform	3	na	na	50	bql	25	bql	10	bql	0.19
1,1,1-Trichloroethane	3	na	na	50	bql	25	bql	10	bql	200
1,2-Dichloroethane	3	na	na	50	bql	25	bql	10	bql	0.38
Trichloroethene	3	na	na	50	bql	25	bql	10	bql	2.8
Tetrachloroethene	3	na	na	50	bql	25	bql	10	bql	0.7
602										
Chlorobenzene	3	10	bdl	50	bql	25	bql	10	bql	50
1,2 Dichlorobenzene	3	5	bdl	50	bql	25	bql	10	bql	nrs
1,3 Dichlorobenzene	3	5	bdl	50	bql	25	bql	10	bql	nrs
1,4 Dichlorobenzene	3	5	bdl	50	bql	25	bql	10	bql	nrs
Benzene	3	10	1140	50	6540	25	6850*	50	5060	1
Ethylbenzene	3	10	348	50	1120	25	1320	10	1050	29
Toluene	3	10	451	50	1790	25	2410	10	1356	1000
Xylene (Total)	3	30	1282	150	3060	75	6040	150	3730	530
MTBE	3	50	963	100	2440	50	1040	20	1640	200
IPE	3	na	na	100	527	50	374	20	446	nrs
EDB	3	10	bdl	na	na	50	bql	20	bql	0.0004
Lead	3	na	na	15	37	15	15	15	bql	15

Analyte	Well #	2/11/93 SDL (ug/l)	2/11/93 Result (ug/l)	12/5/94 PQL (ug/l)	12/5/94 Result (ug/l)	7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	4	na	na	50	bql	25	bql	10	bql	7
1,1-Dichloroethane	4	na	na	50	bql	25	bql	10	bql	700
Chloroform	4	na	na	50	bql	25	bql	10	bql	0.19
1,1,1-Trichloroethane	4	na	na	50	bql	25	bql	10	bql	200
1,2-Dichloroethane	4	na	na	50	bql	25	bql	10	bql	0.38
Trichloroethene	4	na	na	50	bql	25	bql	10	bql	2.8
Tetrachloroethene	4	na	na	50	bql	25	bql	10	bql	0.7
602										
Chlorobenzene	4	1	bdl	50	bql	125	bql	10	bql	50
1,2 Dichlorobenzene	4	0.5	bdl	50	bql	125	bql	10	bql	nrs
1,3 Dichlorobenzene	4	0.5	bdl	50	bql	125	bql	10	bql	nrs
1,4 Dichlorobenzene	4	0.5	bdl	50	bql	125	bql	10	bql	nrs
Benzene	4	1	668	50	3670	125	7390	50	6660	1
Ethylbenzene	4	1	815	50	765	125	937	10	872	29
Toluene	4	1	504	50	3690	125	8580	50	7000	1000
Xylene (Total)	4	3	2216	150	2930	375	4950	150	4330	530
MTBE	4	5	875	100	4840	250	7390	100	4930	200
IPE	4	na	na	100	698	250	788	20	766	nrs
EDB	4	1	bdl	na	na	250	bql	20	bql	0.0004
Lead	4	na	na	15	18	15	bql	15	bql	15

PQL = practical quantitation limit due to matrix effects.
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Table I
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Summary of Analytical Data
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Analyte	Well #	2/11/93 SDL (ug/l)	2/11/93 Result (ug/l)	12/5/94 PQL (ug/l)	12/5/94 Result (ug/l)	7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	5	na	na	0.5	87.6	0.5	104*	0.5	128	7
1,1-Dichloroethane	5	na	na	0.5	4.6	0.5	4.5	0.5	5.2	700
Chloroform	5	na	na	0.5	9.2	0.5	7.8	0.5	11.9	0.19
1,1,1-Trichloroethane	5	na	na	0.5	17.8	0.5	21	0.5	21.1	200
1,2-Dichloroethane	5	na	na	0.5	bdl	0.5	0.7	0.5	1.1	0.38
Trichloroethene	5	na	na	0.5	bdl	0.5	bdl	0.5	0.8	2.8
Tetrachloroethene	5	na	na	0.5	16.7	0.5	14.4	0.5	22.3	0.7
602										
Chlorobenzene	5	1	bdl	0.5	bdl	0.5	bdl	0.5	bdl	50
1,2 Dichlorobenzene	5	0.5	bdl	0.5	bdl	0.5	bdl	0.5	bdl	nrs
1,3 Dichlorobenzene	5	0.5	bdl	0.5	bdl	0.5	bdl	0.5	bdl	nrs
1,4 Dichlorobenzene	5	0.5	bdl	0.5	bdl	0.5	bdl	0.5	bdl	nrs
Benzene	5	1	bdl	0.5	1	0.5	1.1	0.5	1.2	1
Ethylbenzene	5	1	bdl	0.5	bdl	0.5	bdl	0.5	bdl	29
Toluene	5	1	bdl	0.5	bdl	0.5	bdl	0.5	bdl	1000
Xylene (Total)	5	3	bdl	1.5	bdl	1.5	bdl	1.5	bdl	530
MTBE	5	5	bdl	1	5	1	5.3	1	4.2	200
IPE	5	na	na	1	bdl	1	bdl	1	bdl	nrs
EDB	5	1	bdl	na	na	1	bdl	1	bdl	0.0004
Lead	5	na	na	15	bql	15	bql	15	bdl	15
Analyte	Well #	2/11/93 SDL (ug/l)	2/11/93 Result (ug/l)	12/5/94 PQL (ug/l)	12/5/94 Result (ug/l)	7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	6	na	na	0.5	61.2	0.5	50.2	0.5	15.5	7
1,1-Dichloroethane	6	na	na	0.5	9.7	0.5	9.1	0.5	3.4	700
Chloroform	6	na	na	0.5	bdl	0.5	1.7	0.5	0.9	0.19
1,1,1-Trichloroethane	6	na	na	0.5	4	0.5	6.5	0.5	bdl	200
1,2-Dichloroethane	6	na	na	0.5	bdl	0.5	1	0.5	bdl	0.38
Trichloroethene	6	na	na	0.5	0.8	0.5	1.7	0.5	1	2.8
Tetrachloroethene	6	na	na	0.5	5.1	0.5	6.7	0.5	bdl	0.7
Vinyl Chloride	6	na	na	0.5	bdl	0.5	bdl	0.5	0.7	0.015
602										
Chlorobenzene	6	1	bdl	0.5	bdl	0.5	bdl	0.5	bdl	50
1,2 Dichlorobenzene	6	0.5	bdl	0.5	bdl	0.5	bdl	0.5	bdl	nrs
1,3 Dichlorobenzene	6	0.5	bdl	0.5	bdl	0.5	bdl	0.5	bdl	nrs
1,4 Dichlorobenzene	6	0.5	bdl	0.5	bdl	0.5	bdl	0.5	bdl	nrs
Benzene	6	1	6	0.5	0.8	0.5	bdl	0.5	bdl	1
Ethylbenzene	6	1	bdl	0.5	bdl	0.5	0.7	0.5	bdl	29
Toluene	6	1	bdl	0.5	bdl	0.5	1.2	0.5	0.7	1000
Xylene (Total)	6	3	bdl	1.5	bdl	1.5	bdl	1.5	bdl	530
MTBE	6	5	559	1	125	1	153	5	159.5	200
IPE	6	na	na	1	6.3	1	8	1	9.7	nrs
EDB	6	1	bdl	na	na	1	bdl	1	bdl	0.0004
Lead	6	na	na	15	bql	15	bql	15	bql	15

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Analyte	Well #	2/11/93 SDL (ug/l)	2/11/93 Result (ug/l)	12/5/94 PQL (ug/l)	12/5/94 Result (ug/l)	7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
Vinyl chloride	7	na	na	0.5	bdl	0.5	1.3	0.5	1.9	0.015
1,1-Dichloroethene	7	na	na	0.5	30.4	0.5	82.4	0.5	80.8	7
trans-1,2-dichloroethene	7	na	na	0.5	bdl	0.5	0.5	0.5	bdl	70
1,1-Dichloroethane	7	na	na	0.5	8.1	0.5	7.1	0.5	9.3	700
Chloroform	7	na	na	0.5	bdl	0.5	1.9	0.5	3.6	0.19
1,1,1-Trichloroethane	7	na	na	0.5	13.8	0.5	17.2	0.5	16.3	200
1,2-Dichloroethane	7	na	na	0.5	1.1	0.5	1.7	0.5	1.7	0.38
Trichloroethene	7	na	na	0.5	3.7	0.5	1.7	0.5	1.7	2.8
1,2-Dichloropropane	7	na	na	0.5	bdl	0.5	0.7	0.5	bdl	0.56
Tetrachloroethene	7	na	na	0.5	5.3	0.5	11.6	0.5	13.8	0.7
1,4-Dichlorobenzene	7	na	na	0.5	1.6	0.5	bdl	0.5	bdl	nrs
602										
Chlorobenzene	7	1	bdl	0.5	bdl	0.5	bdl	0.5	bdl	50
1,2 Dichlorobenzene	7	0.5	bdl	0.5	bdl	0.5	bdl	0.5	bdl	nrs
1,3 Dichlorobenzene	7	0.5	bdl	0.5	bdl	0.5	bdl	0.5	bdl	nrs
1,4 Dichlorobenzene	7	0.5	bdl	0.5	bdl	0.5	bdl	0.5	bdl	nrs
Benzene	7	1	78	0.5	35	0.5	116	0.5	93.5	1
Ethylbenzene	7	1	bdl	0.5	4.6	0.5	15.5	0.5	1.4	29
Toluene	7	1	7.5	0.5	1.7	0.5	13.9	0.5	1.7	1000
Xylene (Total)	7	3	bdl	1.5	3.5	1.5	16.2	1.5	3.8	530
MTBE	7	5	1012	1	272	1	217	5	202.6	200
IPE	7	na	nrs	1	21.4	1	28.5	1	22.8	nrs
EDB	7	1	bdl	na	na	1	bdl	1	bdl	0.0004
Lead	7	na	na	15	bql	15	bql	15	bql	15

Analyte	Well #	3/27/95 PQL (ug/l)	3/27/95 Result (ug/l)	2L Standard (ug/l)		7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	8	2.5	bql	7		25	bql	10	bql	7
1,1-Dichloroethane	8	2.5	bql	700		25	bql	10	bql	700
Chloroform	8	2.5	bql	0.19		25	bql	10	bql	0.19
1,1,1-Trichloroethane	8	2.5	bql	200		25	bql	10	bql	200
1,2-Dichloroethane	8	2.5	bql	0.38		25	bql	10	bql	0.38
Trichloroethene	8	2.5	bql	2.8		25	bql	10	bql	2.8
Tetrachloroethene	8	2.5	bql	0.7		25	bql	10	bql	0.7
602										
Chlorobenzene	8	2.5	bql	50		25	bql	10	bql	50
1,2 Dichlorobenzene	8	2.5	bql	nrs		25	bql	10	bql	nrs
1,3 Dichlorobenzene	8	2.5	bql	nrs		25	bql	10	bql	nrs
1,4 Dichlorobenzene	8	2.5	bql	nrs		25	bql	10	bql	nrs
Benzene	8	2.5	141	1		25	422	10	334	1
Ethylbenzene	8	2.5	122	29		25	176	10	160	29
Toluene	8	2.5	330	1000		25	638	10	496	1000
Xylene (Total)	8	7.5	836	530		75	908	30	692	530
MTBE	8	2.5	200	200		50	318	20	398	200
IPE	8	2.5	21.1	nrs		50	31.5	20	62	nrs
EDB	8	na	na	0.0004		50	bql	20	bql	0.0004
Lead	8	15	bql	15		15	bql	15	bql	15

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bql = below quantitation limit.
na = not analyzed.
SDL = sample detection limit.
nrs = no reported standard.
* = value reported considered min conc.

Table I
Parrott Trust Property
Summary of Analytical Data
from Groundwater

Analyte	Well #	3/27/95 PQL (ug/l)	3/27/95 Result (ug/l)	2L Standard (ug/l)		7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	9	2.5	80.1	7		2.5	57	10	bql	7
1,1-Dichloroethane	9	2.5	16.1	700		2.5	5.9	10	16	700
Chloroform	9	2.5	bql	0.19		2.5	bql	10	bql	0.19
1,1,1-Trichloroethane	9	2.5	5.3	200		2.5	6.6	10	bql	200
1,2-Dichloroethane	9	2.5	bql	0.38		2.5	bql	10	bql	0.38
Trichloroethene	9	2.5	bql	2.8		2.5	bql	10	bql	2.8
Tetrachloroethene	9	2.5	bql	0.7		2.5	bql	10	bql	0.7
602										
Chlorobenzene	9	2.5	bql	50		2.5	bql	10	bql	50
1,2 Dichlorobenzene	9	2.5	bql	nrs		2.5	bql	10	bql	nrs
1,3 Dichlorobenzene	9	2.5	bql	nrs		2.5	bql	10	bql	nrs
1,4 Dichlorobenzene	9	2.5	bql	nrs		2.5	bql	10	bql	nrs
Benzene	9	2.5	598*	1		2.5	772	10	688	1
Ethylbenzene	9	2.5	64.7	29		2.5	83.2	10	62	29
Toluene	9	2.5	18.5	1000		2.5	37.1	10	16	1000
Xylene (Total)	9	7.5	39.9	530		7.5	72.5	30	52	530
MTBE	9	2.5	807*	200		50	1160	20	814	200
IPE	9	2.5	141	nrs		50	120	20	146	nrs
EDB	9	na	na	0.0004		50	bql	20	bql	0.0004
Lead	9	15	bql	15		15	bql	15	bql	15

Analyte	Well #	3/27/95 PQL (ug/l)	3/27/95 Result (ug/l)	2L Standard (ug/l)		7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	10	0.5	36	7		0.5	45.6	0.5	96.8	7
1,1-Dichloroethane	10	0.5	4.7	700		0.5	3.4	0.5	4.9	700
Chloroform	10	0.5	5.3	0.19		0.5	2.8	0.5	12.2	0.19
1,1,1-Trichloroethane	10	0.5	5.1	200		0.5	6.8	0.5	21.2	200
1,2-Dichloroethane	10	0.5	bdl	0.38		0.5	bdl	0.5	0.8	0.38
Trichloroethene	10	0.5	bdl	2.8		0.5	bdl	0.5	0.8	2.8
Tetrachloroethene	10	0.5	bdl	0.7		0.5	5.3	0.5	18.7	0.7
602										
Chlorobenzene	10	0.5	bdl	50		0.5	bdl	0.5	bdl	50
1,2 Dichlorobenzene	10	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
1,3 Dichlorobenzene	10	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
1,4 Dichlorobenzene	10	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
Benzene	10	0.5	0.5	1		0.5	0.5	0.5	1.3	1
Ethylbenzene	10	0.5	bdl	29		0.5	bdl	0.5	bdl	29
Toluene	10	0.5	0.7	1000		0.5	bdl	0.5	0.7	1000
Xylene (Total)	10	1.5	bdl	530		1.5	bdl	1.5	1.7	530
MTBE	10	1	8.9	200		1	21.1	1	44.1	200
IPE	10	1	bdl	nrs		1	bdl	1	5.5	nrs
EDB	10	na	na	0.0004		1	bdl	1	bdl	0.0004
Lead	10	15	121	15		15	96	15	26	15

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Table I
Parrott Trust Property
Summary of Analytical Data
from Groundwater

Analyte	Well #	3/27/95 PQL (ug/l)	3/27/95 Result (ug/l)	2L Standard (ug/l)		7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
Dichlorodifluoromethane	11	0.5	bdl	1400		0.5	1.8	0.5	bdl	1400
Chloromethane	11	0.5	bdl	nrs		0.5	0.7	0.5	bdl	nrs
1,1-Dichloroethene	11	0.5	66.7	7		0.5	95	0.5	55.4	7
trans-1,2-dichloroethene	11	0.5	1.2	70		0.5	bdl	0.5	bdl	70
1,1-Dichloroethane	11	0.5	7.3	700		0.5	5	0.5	5.1	700
Chloroform	11	0.5	6.6	0.19		0.5	9.6	0.5	4.3	0.19
1,1,1-Trichloroethane	11	0.5	14.6	200		0.5	26.7	0.5	6.3	200
1,2-Dichloroethane	11	0.5	bdl	0.38		0.5	1.4	0.5	bdl	0.38
Trichloroethene	11	0.5	bdl	2.8		0.5	0.5	0.5	bdl	2.8
Tetrachloroethene	11	0.5	10.1	0.7		0.5	16	0.5	8.2	0.7
602										
Chlorobenzene	11	0.5	bdl	50		0.5	bdl	0.5	bdl	50
1,2 Dichlorobenzene	11	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
1,3 Dichlorobenzene	11	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
1,4 Dichlorobenzene	11	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
Benzene	11	0.5	2.6	1		0.5	bdl	0.5	bdl	1
Ethylbenzene	11	0.5	bdl	29		0.5	7.8	0.5	bdl	29
Toluene	11	0.5	0.6	1000		0.5	bdl	0.5	bdl	1000
Xylene (Total)	11	1.5	4.1	530		1.5	bdl	1.5	bdl	530
MTBE	11	1	68.8	200		1	bdl	1	14.5	200
IPE	11	1	6.1	nrs		1	120	1	bdl	nrs
EDB	11	na	na	0.0004		1	11.3	1	bdl	0.0004
Lead	11	15	36	15		15	76	15	bql	15

Analyte	Well #	6/26/95 PQL (ug/l)	6/26/95 Result (ug/l)	2L Standard (ug/l)		7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	12	0.5	124*	7		0.5	117*	0.5	151	7
trans-1,2-dichloroethene	12	0.5	bdl	70		0.5	0.9	0.5	bdl	70
1,1-Dichloroethane	12	0.5	1.7	700		0.5	2.4	0.5	2.6	700
Chloroform	12	0.5	12.1	0.19		0.5	10.6	0.5	15.5	0.19
1,1,1-Trichloroethane	12	0.5	24.5	200		0.5	23.9	0.5	25.2	200
1,2-Dichloroethane	12	0.5	0.7	0.38		0.5	1.7	0.5	1.3	0.38
Trichloroethene	12	0.5	bdl	2.8		0.5	bdl	0.5	bdl	2.8
Tetrachloroethene	12	0.5	18.2	0.7		0.5	15.3	0.5	21	0.7
602										
Chlorobenzene	12	0.5	bdl	50		0.5	bdl	0.5	bdl	50
1,2 Dichlorobenzene	12	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
1,3 Dichlorobenzene	12	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
1,4 Dichlorobenzene	12	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
Benzene	12	0.5	0.5	1		0.5	bdl	0.5	bdl	1
Ethylbenzene	12	0.5	bdl	29		0.5	bdl	0.5	bdl	29
Toluene	12	0.5	0.5	1000		0.5	bdl	0.5	0.7	1000
Xylene (Total)	12	1.5	bdl	530		1.5	bdl	1.5	1.6	530
MTBE	12	1	bdl	200		1	bdl	1	bdl	200
IPE	12	1	bdl	nrs		1	bdl	1	bdl	nrs
EDB	12	na	na	0.0004		1	bdl	1	bdl	0.0004
Lead	12	15	bql	15		15	bql	15	bql	15

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Table I
Parrott Trust Property
Summary of Analytical Data
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Analyte	Well #	6/26/95 PQL (ug/l)	6/26/95 Result (ug/l)	2L Standard (ug/l)		7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
Vinyl chloride	13	0.5	bdl	0.015		0.5	2	0.5	bdl	0.015
1,1-Dichloroethene	13	0.5	72.2	7		0.5	95.6	2.5	116	7
1,1-Dichloroethane	13	0.5	6.2	700		0.5	6.2	0.5	6.2	700
Chloroform	13	0.5	9	0.19		0.5	6.7	0.5	8.6	0.19
1,1,1-Trichloroethane	13	0.5	19.6	200		0.5	21.1	0.5	22.5	200
1,2-Dichloroethane	13	0.5	0.6	0.38		0.5	0.6	0.5	0.6	0.38
Trichloroethene	13	0.5	bdl	2.8		0.5	0.6	0.5	0.7	2.8
2-Chloroethylvinyl Ether	13	0.5	bdl	nrs		0.5	0.7	0.5	bdl	nrs
Tetrachloroethene	13	0.5	11.3	0.7		0.5	11.7	0.5	20.4	0.7
602										
Chlorobenzene	13	0.5	bdl	50		0.5	bdl	0.5	bdl	50
1,2 Dichlorobenzene	13	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
1,3 Dichlorobenzene	13	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
1,4 Dichlorobenzene	13	0.5	bdl	nrs		0.5	bdl	0.5	bdl	nrs
Benzene	13	0.5	0.6	1		0.5	bdl	0.5	bdl	1
Ethylbenzene	13	0.5	bdl	29		0.5	bdl	0.5	bdl	29
Toluene	13	0.5	0.6	1000		0.5	bdl	0.5	1.1	1000
Xylene (Total)	13	1.5	bdl	530		1.5	bdl	1.5	bdl	530
MTBE	13	1	bdl	200		1	bdl	1	bdl	200
IPE	13	1	bdl	nrs		1	bdl	1	bdl	nrs
EDB	13	na	na	0.0004		1	bdl	1	bdl	0.0004
Lead	13	15	bql	15		15	bql	15	bql	15
Analyte	Well #	6/26/95 PQL (ug/l)	6/26/95 Result (ug/l)	2L Standard (ug/l)		7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
Vinyl chloride	14	na	na	na		na	na	0.5	bdl	0.015
1,1-Dichloroethene	14	na	na	na		na	na	0.5	79.3	7
1,1-Dichloroethane	14	na	na	na		na	na	0.5	5.2	700
Chloroform	14	na	na	na		na	na	0.5	3.9	0.19
1,1,1-Trichloroethane	14	na	na	na		na	na	0.5	10.5	200
1,2-Dichloroethane	14	na	na	na		na	na	0.5	0.6	0.38
Trichloroethene	14	na	na	na		na	na	0.5	bdl	2.8
2-Chloroethylvinyl Ether	14	na	na	na		na	na	0.5	bdl	nrs
Tetrachloroethene	14	na	na	na		na	na	0.5	13.4	0.7
602										
Chlorobenzene	14	na	na	na		na	na	0.5	bdl	50
1,2 Dichlorobenzene	14	na	na	na		na	na	0.5	bdl	nrs
1,3 Dichlorobenzene	14	na	na	na		na	na	0.5	bdl	nrs
1,4 Dichlorobenzene	14	na	na	na		na	na	0.5	bdl	nrs
Benzene	14	na	na	na		na	na	0.5	0.6	1
Ethylbenzene	14	na	na	na		na	na	0.5	bdl	29
Toluene	14	na	na	na		na	na	0.5	0.6	1000
Xylene (Total)	14	na	na	na		na	na	1.5	bdl	530
MTBE	14	na	na	na		na	na	1	1.2	200
IPE	14	na	na	na		na	na	1	1.4	nrs
EDB	14	na	na	na		na	na	1	bdl	0.0004
Lead	14	na	na	na		na	na	15	bql	15

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Analyte	Well #	7/5/95 PQL (ug/l)	7/5/95 Result (ug/l)	2L Standard (ug/l)		7/21/95 PQL (ug/l)	7/21/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	DMW2	0.5	93.6	7		0.5	74	10	80	7
trans-1,2-dichloroethene	DMW2	0.5	bdl	70		0.5	0.6	10	bql	70
1,1-Dichloroethane	DMW2	0.5	7.4	700		0.5	8.4	10	14	700
Chloroform	DMW2	0.5	bdl	0.19		0.5	bdl	10	bql	0.19
1,1,1-Trichloroethane	DMW2	0.5	13.5	200		0.5	15.1	10	12	200
1,2-Dichloroethane	DMW2	0.5	2.4	0.38		0.5	3	10	bql	0.38
Trichloroethene	DMW2	0.5	2.3	2.8		0.5	1.4	10	bql	2.8
1,1,2-Trichloroethene	DMW2	0.5	0.6	nrs		0.5	bdl	10	bql	nrs
Tetrachloroethene	DMW2	0.5	7.4	0.7		0.5	8.6	10	bql	0.7
602										
Chlorobenzene	DMW2	0.5	bdl	50		0.5	bdl	10	bql	50
1,2 Dichlorobenzene	DMW2	0.5	bdl	nrs		0.5	bdl	10	bql	nrs
1,3 Dichlorobenzene	DMW2	0.5	bdl	nrs		0.5	bdl	10	bql	nrs
1,4 Dichlorobenzene	DMW2	0.5	bdl	nrs		0.5	bdl	10	bql	nrs
Benzene	DMW2	0.5	986*	1		0.5	915*	10	806	1
Ethylbenzene	DMW2	0.5	230*	29		0.5	153*	10	124	29
Toluene	DMW2	0.5	196*	1000		0.5	217*	10	100	1000
Xylene (Total)	DMW2	1.5	229*	530		1.5	245*	30	168	530
MTBE	DMW2	1	1390*	200		1	851*	20	750	200
IPE	DMW2	1	127*	nrs		1	108*	20	116	nrs
EDB	DMW2	na	na	0.0004		1	bdl	20	bql	0.0004
Lead	DMW2	15	bql	15		15	bql	15	bql	15

Analyte	Well #	7/5/95 PQL (ug/l)	7/5/95 Result (ug/l)	2L Standard (ug/l)		7/13/95 PQL (ug/l)	7/13/95 Result (ug/l)	12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	CDS	na	na	na		0.5	14.5	na	na	7
1,1-Dichloroethane	CDS	na	na	na		0.5	bdl	na	na	700
Chloroform	CDS	na	na	na		0.5	1.5	na	na	0.19
1,1,1-Trichloroethane	CDS	na	na	na		0.5	2.9	na	na	200
1,2-Dichloroethane	CDS	na	na	na		0.5	bdl	na	na	0.38
Trichloroethene	CDS	na	na	na		0.5	bdl	na	na	2.8
1,1,2-Trichloroethene	CDS	na	na	na		0.5	bdl	na	na	nrs
Tetrachloroethene	CDS	na	na	na		0.5	24.1	na	na	0.7
602										
Chlorobenzene	CDS	na	na	na		0.5	bdl	na	na	50
1,2 Dichlorobenzene	CDS	na	na	na		0.5	bdl	na	na	nrs
1,3 Dichlorobenzene	CDS	na	na	na		0.5	bdl	na	na	nrs
1,4 Dichlorobenzene	CDS	na	na	na		0.5	bdl	na	na	nrs
Benzene	CDS	na	na	na		0.5	bdl	na	na	1
Ethylbenzene	CDS	na	na	na		0.5	bdl	na	na	29
Toluene	CDS	na	na	na		0.5	0.9	na	na	1000
Xylene (Total)	CDS	na	na	na		1.5	1.9	na	na	530
MTBE	CDS	na	na	na		1	bdl	na	na	200
IPE	CDS	na	na	na		1	bdl	na	na	nrs
EDB	CDS	na	na	na		1	bdl	na	na	0.0004
Lead	CDS	na	na	na		15	bql	na	na	15

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Analyte	Well #							12/6/95 PQL (ug/l)	12/6/95 Result (ug/l)	2L Standard (ug/l)
601										
1,1-Dichloroethene	DMW3							0.5	44	7
trans-1,2-dichloroethene	DMW3							0.5	bdl	70
1,1-Dichloroethane	DMW3							0.5	5.3	700
Chloroform	DMW3							0.5	4.7	0.19
1,1,1-Trichloroethane	DMW3							0.5	8.5	200
1,2-Dichloroethane	DMW3							0.5	1.6	0.38
Trichloroethene	DMW3							0.5	1.5	2.8
1,1,2-Trichloroethene	DMW3							0.5	bdl	nrs
Tetrachloroethene	DMW3							0.5	5.6	0.7
602										
Chlorobenzene	DMW3							0.5	bdl	50
1,2 Dichlorobenzene	DMW3							0.5	bdl	nrs
1,3 Dichlorobenzene	DMW3							0.5	bdl	nrs
1,4 Dichlorobenzene	DMW3							0.5	bdl	nrs
Benzene	DMW3							0.5	14.6	1
Ethylbenzene	DMW3							0.5	0.6	29
Toluene	DMW3							0.5	bdl	1000
Xylene (Total)	DMW3							1.5	2.8	530
MTBE	DMW3							5	250	200
IPE	DMW3							1	31.6	nrs
EDB	DMW3							1	BDL	0.0004
Lead	DMW3							15	BQL	15

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Table II
Summary of Soil Analytical Results
Parrott Trust Property
Roxboro, N.C.

ANALYTE	SAMPLE #	DEPTH (FT)	6/1/92 PQL (mg/kg)	6/1/92 RESULT (mg/kg)
TPH/gas	S-1	nr	4	420
TPH/diesel	S-1	nr	1	bdl
Benzene	S-1	nr	7	290
Toluene	S-1	nr	7	5800
Ethylbenzene	S-1	nr	7	2100
Xylenes	S-1	nr	7	44000
TOX	S-1	nr	7.5	bql
Total Lead	S-1	nr	0.5	31

ANALYTE	SAMPLE #	DEPTH (FT)	6/1/92 PQL (mg/kg)	6/1/92 RESULT (mg/kg)
TPH/gas	S-2	nr	290	14000
TPH/gas	S-3	nr	6	55
TPH/gas	S-4	nr	150	1200
TPH/gas	S-5	nr	150	2900

ANALYTE	SAMPLE #	DEPTH (FT)	6/2/92 PQL (mg/kg)	6/2/92 RESULT (mg/kg)
TPH/gas	S-6	nr	1	2.2
TPH/gas	S-8	nr	150	4500
TPH/gas	S-9	nr	150	2000

ANALYTE	SAMPLE #	DEPTH (FT)	6/3/92 PQL (mg/kg)	6/3/92 RESULT (mg/kg)
TPH/gas	S-7	nr	1	1.1
TPH/gas	S-10	nr	150	3200
TPH/gas	S-11	nr	1	5.4
TPH/gas	S-12	nr	5.7	160
TPH/Oil	S-13	nr	2	2900
TPH/Oil	S-14	nr	1	180

nr - depth not reported
PQL - pratical quantitation limit
bql - below quantitation limit

Table II
Summary of Soil Analytical Results
Parrott Trust Property
Roxboro, N.C.

			6/3/92	6/3/92
ANALYTE	**SAMPLE #**	**DEPTH (FT)**	**PQL (ug/kg)**	**RESULT (ug/kg)**
8240				
Acetone	S-15	nr	250	600
Benzene	S-15	nr	25	34
Toluene	S-15	nr	25	450
4-Methyl-2-Pentanone	S-15	nr	250	850
Ethylbenzene	S-15	nr	25	210
Xylene (Tot)	S-15	nr	25	1440
8270				
Naphthalene	S-15	nr	6000	1000J
2-Methylnaphthalene	S-15	nr	6000	2500J
Pyrene	S-15	nr	6000	1500J
Bis-2-EthylhexylPhthalate	S-15	nr	6000	7100
			PQL (mg/kg)	**RESULT (mg/kg)**
TPH/diesel	S-15	nr	2	830
			9/23/92	**9/23/92**
ANALYTE	**SAMPLE #**	**DEPTH (FT)**	**PQL (mg/kg)**	**RESULT (mg/kg)**
TPH/gas	B-1	8.5-10	6.1	170
TPH/gas	B-2	6-7.5	6.1	270
TPH/gas	B-3	6-7.5	6.7	31
TPH/gas	B-4	8.5-10	1	52
TPH/gas	B-5	8.5-10	1	3.8
TPH/gas	B-6	8.5-10	1	37
TPH/gas	B-7	8.5-10	1	15
TPH/gas	B-8	6-7.5	1	bdl
TPH/gas	B-9	6-7.5	1	bdl
TPH/gas	B-10	8.5-10	1	bdl
TPH/gas	B-11	8.5-10	2	8.6
TPH/gas	B-12	8.5-10	2.9	470
TPH/gas	B-13	11-12.5	2.5	260
TPH/gas	BLD-E	9.5-10	1	9.8
			1/11/93	**1/11/93**
ANALYTE	**SAMPLE #**	**DEPTH (FT)**	**SDL (mg/kg)**	**RESULT (mg/kg)**
TPH/gas	B-3 (MW-3)	8.0-10	1	582
TPH/gas	B-4 (MW-4)	8.0-10	1	461
TPH/gas	B-5 (MW-5)	8.0-10	1	40
TPH/gas	B-7 (MW-7)	8.0-10	1	21
			3/16/95	**3/16/95**
ANALYTE	**SAMPLE #**	**DEPTH (FT)**	**PQL (mg/kg)**	**RESULT (mg/kg)**
TPH/gas	MW-8	nr	5	9.7

nr - depth not reported
PQL - pratical quantitation limit
bql - below quantitation limit

Table III

Site Sensitivity Evaluation (SSE)

Site Characteristics Evaluation (Step 1)

Parcott Trust Property / Roseburg

Characteristic	Condition	Rating	
Grain Size*	Gravel Sand Silt Clay	150 100 50 0	50
Are relict structures, sedimentary structures, and/or textures present in the zone of contamination and underlying "soils"?	Present and intersecting the water table. Present but <u>not</u> intersecting the water table. None present.	10 5 0	10
Distance from location of deepest contaminated soil** to water table.	0 -5 feet (C, D & E sites only) 5 - 10 feet >10 - 40 feet > 40 feet	20 20 10 0	20
Is the top of bedrock or transmissive indurated sediments located above the water table?	Yes No	20 0	0
Artificial conduits present within the zone of contamination.	Present and intersecting the water table. Present but <u>not</u> intersecting the water table. Not present.	10 5 0	10
		Total Site Characteristics Score:	90

* **Predominant** grain size based on Unified Soil Classification System or U.S. Dept. of Agriculture's Soil Classification Method.

** (>10 ppm TPFH by Method 5030; >40 ppm TPFH by Method 3550; >250 ppm O&G by Method 9071)

Table III

Site Sensitivity Evaluation (SSE)

Initial Cleanup Level (Step 2)

Final Cleanup Level (Step 3)

EPA Method 5030 for Low Boiling Point Hydrocarbons such as Gasoline, Aviation Fuels, Gasohol

Total Site Characteristics Score	**Initial** Cleanup Level TPFH (ppm)
>150	≤10
121-150	20
91-120	40
61-90	60
31-60	80
0-30	100

Select Site Category*

	Final Cleanup Level
Category A & B (Multiply initial cleanup level by 1)	1 x ____ = _____ ppm
Category C & D (Multiply initial cleanup level by 2)	2 x ____ = _____ ppm
Category E (Multiply initial cleanup level by 3)	3 x 60 = 180 ppm

EPA Method 3550 for High Boiling Point Hydrocarbons such as Kerosene, Diesel, Varsol, Mineral Spirits, Naphtha

Total Site Characteristics Score	**Initial** Cleanup Level TPFH (ppm)
>150	≤40
121-150	80
91-120	160
61-90	240
31-60	320
0-30	400

Select Site Category*

	Final Cleanup Level
Category A & B (Multiply initial cleanup level by 1)	1 x ____ = _____ ppm
Category C & D (Multiply initial cleanup level by 2)	2 x ____ = _____ ppm
Category E (Multiply initial cleanup level by 3)	3 x 240 ~~320~~ = 720 ppm

EPA Method 9071 for Heavy Fuels - Oil & Grease (O&G) such as Fuel Oil #4, #5, #6, Motor Oil, Hydraulic Fluid

Total Site Characteristics Score	**Initial** Cleanup Level O&G (ppm)
>150	≤250
121-150	400
91-120	550
61-90	700
31-60	850
0-30	1000

Select Site Category*

	Final Cleanup Level
Category A & B (Multiply initial cleanup level by 1)	1 x ____ = _____ ppm
Category C & D (Multiply initial cleanup level by 2)	2 x ____ = _____ ppm
Category E (Multiply initial cleanup level by 3)	3 x 700 = 2100 ppm

* See Site Category Descriptions, Table 3

ATTACHMENT B

Pyramid Project # 2007163

GEOPHYSICAL INVESTIGATION REPORT

EM61 & GPR SURVEYS

CLAYTON & CARVER PROPERTY (PARCEL 7)
Roxboro, North Carolina

July 16, 2007

Report prepared for: **Michael Branson**
Earth Tech, Inc.
701 Corporate Center Drive, Suite 475
Raleigh, North Carolina 27607

Prepared by: _____
Mark J. Denil, PG

Reviewed by: _____
Douglas Canavello, PG

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
700 NORTH EUGENE ST.
GREENSBORO, NC 27401
(336) 335-3174

Earth Tech of North Carolina, Inc.
GEOPHYSICAL INVESTIGATION REPORT
CLAYTON & CARVER PROPERTY (PARCEL 7)
Roxboro, North Carolina

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1.0 INTRODUCTION

2.0 FIELD METHODOLOGY

3.0 DISCUSSION OF RESULTS

4.0 SUMMARY & CONCLUSIONS

5.0 LIMITATIONS

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Figure 2 EM61 Bottom Coil Results
Figure 3 EM61 Differential Results

1.0 INTRODUCTION

Pyramid Environmental conducted geophysical investigations for Earth Tech of North Carolina, Inc. within the proposed Right-of-Way (ROW) area at the Danny Clayton and Linda Strickland Carver property (Parcel 7) located along the north side of NC 49 (Virginia Road) in Roxboro, North Carolina. The site consists of an active auto repair garage surrounded primarily by an asphalt/concrete-covered lot and two grass islands. The geophysical investigation was conducted during the period of June 22, 2007 to determine if unknown, metallic, underground storage tanks (USTs) were present beneath the proposed ROW area of the property. The work was done as part of the North Carolina Department of Transportation (NCDOT) road-widening project.

Earth Tech's representative Mr. Michael Branson, PG, provided site maps that outlined the geophysical survey area (ROW area) of the site and visited the site with a Pyramid Environmental representative prior to conducting the investigation. Photographs of the Danny Clayton and Linda Strickland Carver property (Parcel 7) and the geophysical equipment used at this site are shown in **Figure 1**.

2.0 FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 10-foot by 10-foot survey grid was established across the proposed ROW area of Parcel 7 using water-based marking paint and pin flags. These marks were used as X-Y coordinates for location control when collecting the geophysical data and establishing base maps for the geophysical results.

The geophysical investigations consisted of electromagnetic (EM) induction-metal detection surveys and ground penetrating radar (GPR) surveys. The EM surveys were performed on June 22, 2007, using a Geonics EM61-MK1 metal detection instrument. According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. The EM61 data were digitally collected along easterly-westerly parallel survey lines spaced five feet apart. The

data were downloaded to a computer and reviewed in the office using the Geonics DAT61W and Surfer for Windows Version 7.0 software programs.

Contour plots of the EM61 bottom coil results and the EM61 differential results for Parcel 7 are presented in **Figures 2 and 3**, respectively. The bottom coil results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The bottom coil response can be used to delineate metal conduits or utility lines, small, isolated metal objects, and areas containing insignificant metal debris.

The differential results are obtained from the difference between the top and bottom coils of the EM61 instrument. The differential results focus on the larger metal objects such as drums and USTs and ignore the smaller insignificant metal objects.

Preliminary contour plots of the EM61 bottom coil and the differential results for the site were emailed to Mr. Branson during the week of July 2, 2007.

3.0 DISCUSSION OF RESULTS

The linear high amplitude EM61 anomalies centered along grid line Y=40 are probably in response to the numerous vehicles that were parked on the lot during data acquisition. The linear EM61 anomalies along the edge of the roads and intersecting grid coordinates X=50 Y=12 and X=180 Y=60 are probably in response to buried utility lines and utility-related equipment.

The EM61 bottom coil anomaly centered near X=162 Y=65 is probably in response to a buried conduit or miscellaneous debris. The remaining EM61 anomalies are probably in response to known cultural features or buried, insignificant metal debris. Due to the absence of EM61 differential anomalies that were not in response to known cultural features, ground penetrating radar (GPR) surveys were not conducted at this site.

The geophysical investigation conducted at Parcel 7 suggests that the proposed ROW area does not contain metallic USTs.

4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 data collected across the proposed ROW area at the Danny Clayton and Linda Strickland Carver property (Parcel 7) located in Roxboro, North Carolina, provides the following summary and conclusions:

- The EM61 surveys provided reliable results for the detection of metallic USTs within the surveyed portions of the proposed ROW area of the site.

- The linear high amplitude EM61 anomalies centered along grid line Y=40 are probably in response to the numerous vehicles that were parked on the lot during data acquisition.

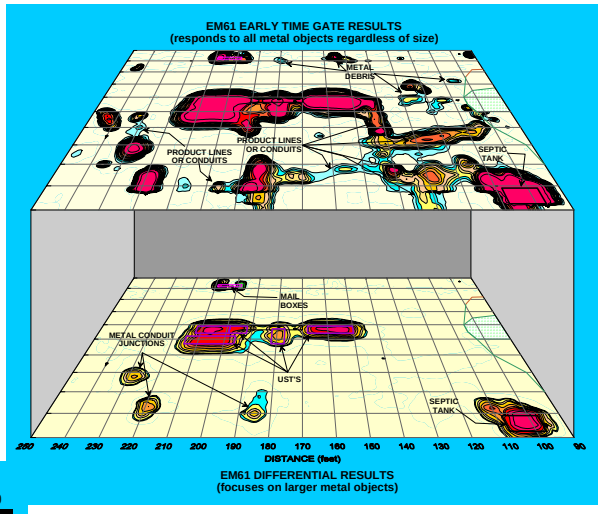
- The linear EM61 anomalies along the edge of the roads and intersecting grid coordinates X=50 Y=12 and X=180 Y=60 are probably in response to buried utility lines and utility-related equipment.

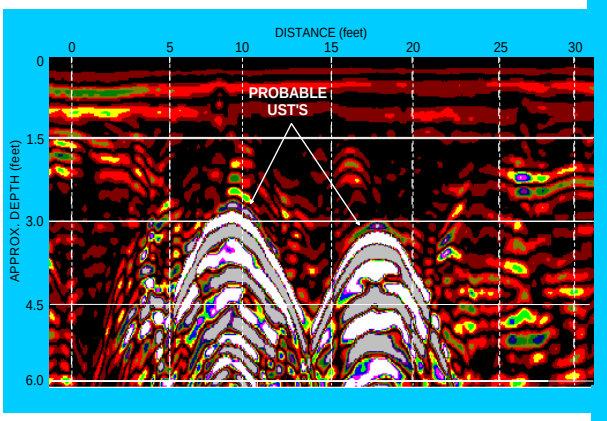
- The remaining EM61 anomalies are probably in response to known cultural features or buried, insignificant metal debris.

- The geophysical investigation conducted at Parcel 7 suggests that the proposed ROW area does not contain metallic USTs.

5.0 LIMITATIONS

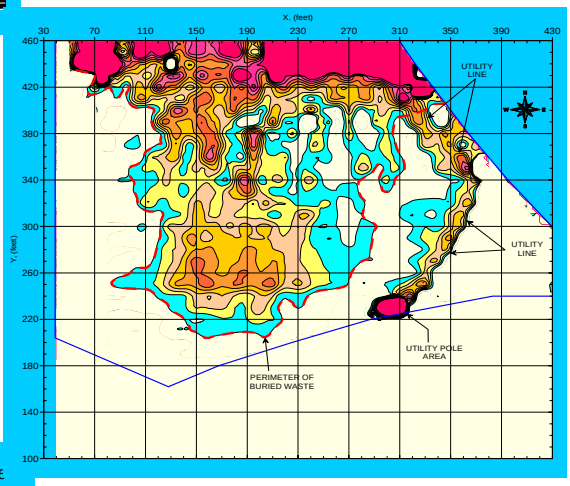
EM61surveys have been performed and this report prepared for Earth Tech of North Carolina, Inc. in accordance with generally accepted guidelines for EM61surveys. It is generally recognized that the results of the EM61 are non-unique and may not represent actual subsurface conditions. The EM61 results obtained for this project do not conclusively determine that the proposed ROW area does not contain metallic USTs but that none were detected.

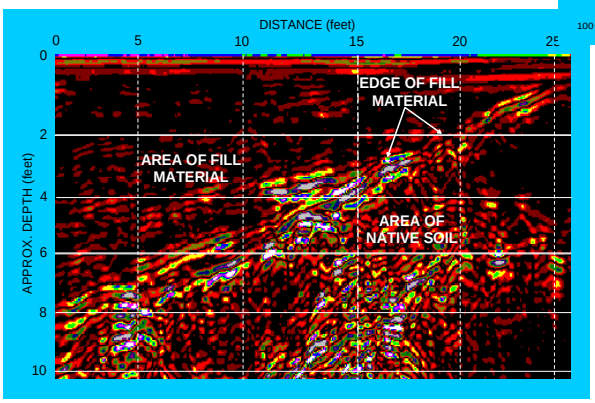




FIGURES

(on the following pages)





The photo shows the Geonics EM61 metal detector that was used to conduct the metal detection survey at Parcel 7 on June 22, 2007.

The photograph shows a portion of the geophysical survey area located at Parcel 7. The photo is viewed in a westerly direction.

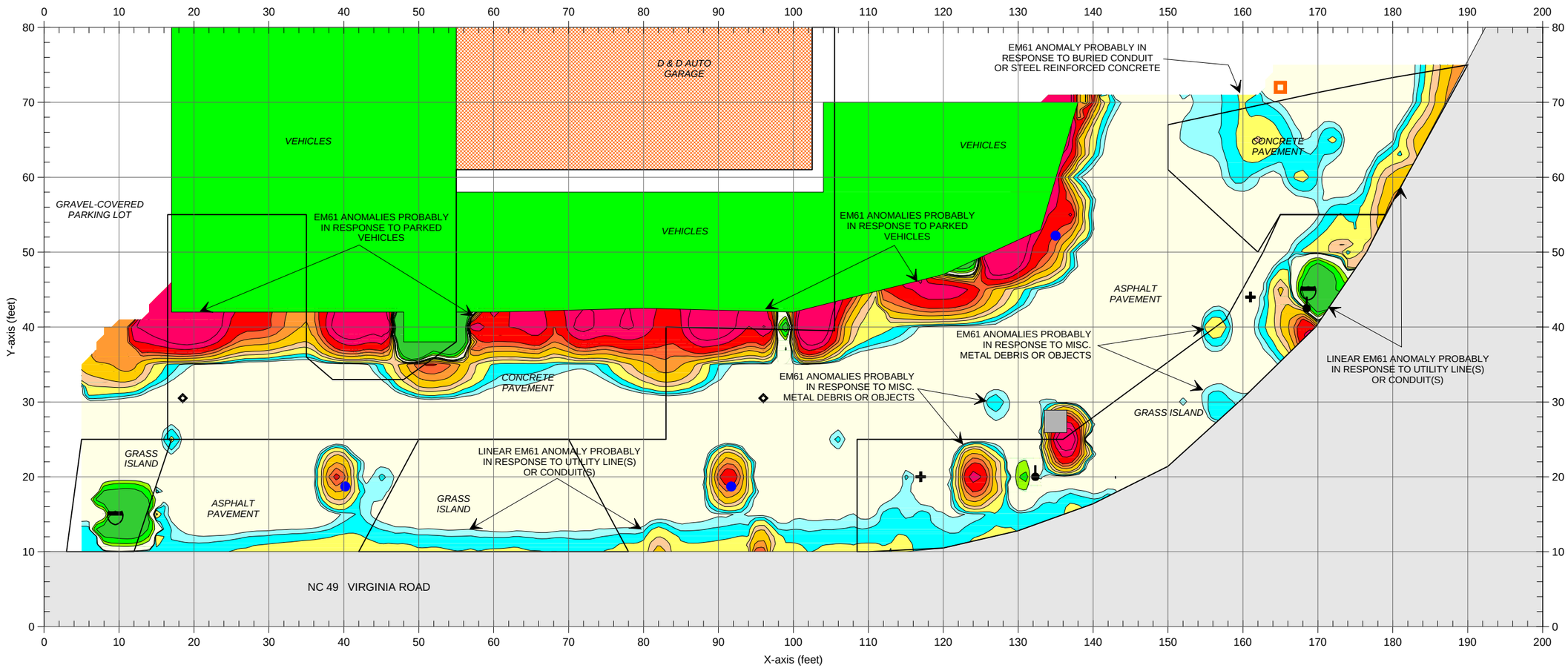
PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	EARTH TECH OF NORTH CAROLINA, INC.	DATE	07/13/07	DRWN	MJD
SITE	CLAYTON & CARVER PROPERTY - PARCEL 7	LAY		CHKD	
CITY	ROXBORO	STATE	NORTH CAROLINA	DWG	
TITLE	GEOPHYSICAL RESULTS	JNO	2007-163	FIGURE	

GRAPHIC SCALE IN FEET

PHOTOGRAPHS OF GEOPHYSICAL EQUIPMENT & SURVEY AREA

FIGURE 1



LEGEND

- SURVEY AREA: EM61 DATA ACQUIRED ALONG EASTERLY-WESTERLY TRENDING LINES SPACED 5 FEET APART
- TCE Marker
- CONCRETE SIGN ABUTMENT
- MONITORING WELL
- GUY WIRE
- LIGHT OR UTILITY POLE
- MAIL BOX
- ROAD SIGN

N W E S

APPROXIMATE NORTH

EM61 BOTTOM COIL RESPONSE (MILLIVOLTS)

-5000 -400 -200 -100 -90 -55 -60 -75 -100 -150 -200 -300 -400 -500 -750 -1000

Note: The contour plot shows the bottom coil (most sensitive) response of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The EM metal detection data were collected on June 22, 2007 using a Geonics EM61 instrument. Ground penetrating radar (GPR) surveys were not conducted at this site.

The geophysical investigation suggest that the surveyed portion of the site does not contain metallic USTs.

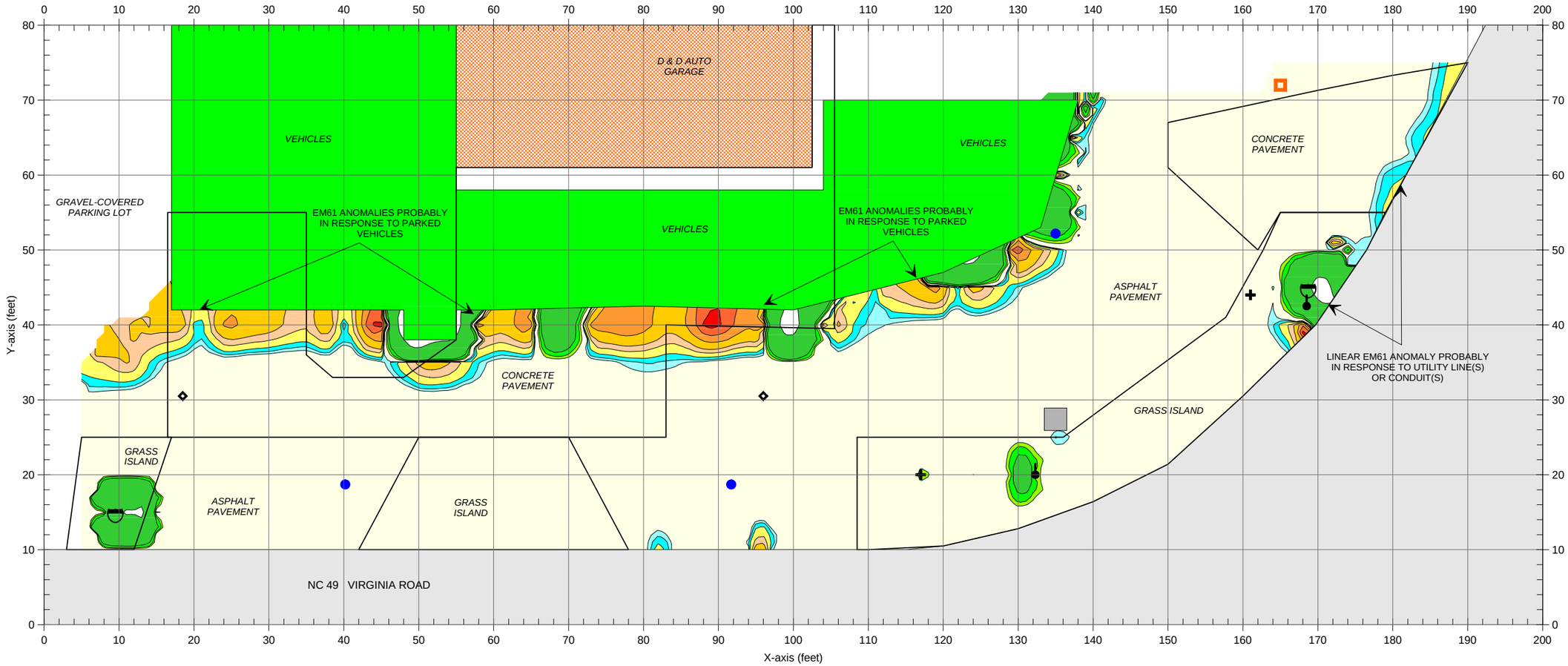
PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	EARTH TECH OF NORTH CAROLINA, INC.		DATE	07/13/07	DRWN MJD
SITE	CLAYTON & CARVER PROPERTY - PARCEL 7		LAY		CHKD
CITY	ROXBORO	STATE NORTH CAROLINA			DWG
TITLE	GEOPHYSICAL RESULTS		JOB NO.	2007-163	FIGURE

GRAPHIC SCALE IN METERS

EM61 BOTTOM COIL RESULTS

FIGURE 2



LEGEND

- SURVEY AREA: EM61 DATA ACQUIRED ALONG EASTERLY-WESTERLY TRENDING LINES SPACED 5 FEET APART
- TCE Marker
- CONCRETE SIGN ABUTMENT
- MONITORING WELL
- GUY WIRE
- LIGHT OR UTILITY POLE
- MAIL BOX
- ROAD SIGN

N W E S

APPROXIMATE NORTH

EM61 DIFFERENTIAL RESPONSE (MILLIVOLTS)

-5000 -400 -200 -100 -90 -85 -80 -75 100 150 200 300 400 500 750 1000

Note: The contour plot shows the differential response between the bottom and top coils of the EM61 instrument in millivolts (mV). The differential response focuses on larger, buried metallic objects such as drums and UST's and ignores smaller miscellaneous, buried, metal debris. The EM61 data were collected on June 22, 2007 using a Geonics EM61 instrument. Ground penetrating radar (GPR) surveys were not conducted at this site.

The geophysical investigation suggest that the surveyed portion of the site does not contain metallic USTs.

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	EARTH TECH OF NORTH CAROLINA, INC.	DATE	07/13/07	DRWN	MJD
SITE	CLAYTON & CARVER PROPERTY - PARCEL 7	LAY		CHKD	
CITY	ROXBORO	STATE	NORTH CAROLINA	DWG	
TITLE	GEOPHYSICAL RESULTS	JNO.	2007-163	FIGURE	

GRAPHIC SCALE IN METERS

EM61 DIFFERENTIAL RESULTS

FIGURE 3

ATTACHMENT C

TEST BORING REPORT

PROJECT CLAYTON PROPERTY (PARCEL 7)
CLIENT NCDOT (R-2241A)
PROJECT NUMBER 100407 (34406.1.1)
CONTRACTOR REGIONAL PROBING
EQUIPMENT GEOPROBE

BORING NUMBER CL-1
PAGE 1
ELEVATION
DATE JULY 12, 2007
DRILLER OPPER
PREPARED BY BRANSON

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			134		4" CONCRETE/GRAVEL, MEDIUM BROWN SILT/CLAY, DRY, SLIGHT ODOR.
			579		AS ABOVE, DRY, SLIGHT ODOR.
			294		MOTTLED MEDIUM BROWN AND GRAY PLASTIC CLAY, MOIST, MODERATE ODOR.
5.0					
			2488		AS ABOVE, MOIST, MODERATE ODOR.
					NO RECOVERY
10.0					
			29,800		AS ABOVE, DRY, MODERATE ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
					BORING TERMINATED AT 12 FEET. NO GROUNDWATER ENCOUNTERED.
15.0					
20.0					

TEST BORING REPORT

PROJECT CLAYTON PROPERTY (PARCEL 7)
CLIENT NCDOT (R-2241A)
PROJECT NUMBER 100407 (34406.1.1)
CONTRACTOR REGIONAL PROBING
EQUIPMENT GEOPROBE

BORING NUMBER CL-2
PAGE 1
ELEVATION
DATE JULY 12, 2007
DRILLER OPPER
PREPARED BY BRANSON

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			56		4" CONCRETE/GRAVEL, MEDIUM BROWN SILT/CLAY, DRY, SLIGHT ODOR.
			717		MEDIUM TO DARK BROWN SILT/CLAY, DRY, SLIGHT ODOR.
			133		MOTTLED MEDIUM BROWN AND GRAY PLASTIC CLAY, MOIST, SLIGHT ODOR.
5.0					
			485		AS ABOVE, DRY, MODERATE ODOR.
			36,000		MOTTLED MEDIUM BROWN, RED BROWN, AND YELLOW SILT/CLAY, HAED, DRY, STRONG ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
10.0			20,300		AS ABOVE, DRY, STRONG ODOR.
					BORING TERMINATED AT 12 FEET. NO GROUNDWATER ENCOUNTERED.
15.0					
20.0					

TEST BORING REPORT

PROJECT CLAYTON PROPERTY (PARCEL 7)
CLIENT NCDOT (R-2241A)
PROJECT NUMBER 100407 (34406.1.1)
CONTRACTOR REGIONAL PROBING
EQUIPMENT GEOPROBE

BORING NUMBER CL-3
PAGE 1
ELEVATION
DATE JULY 12, 2007
DRILLER OPPER
PREPARED BY BRANSON

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			66		4" CONCRETE/GRAVEL, MEDIUM BROWN SILT/CLAY, DRY, NO ODOR.
			201		AS ABOVE, DRY, NO ODOR.
			73		AS ABOVE, DRY, SLIGHT ODOR.
5.0			480		MOTTLED MEDIUM BROWN AND MEDIUM GRAY PLASTIC CLAY, DRY, MODERATE ODOR.
			874		AS ABOVE, DRY, STRONG ODOR.
10.0			11,700		MOTTLED MEDIUM BROWN, RED BROWN, AND YELLOW SILTY CLAY, HARD, DRY, STRONG ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
					BORING TERMINATED AT 12 FEET. NO GROUNDWATER ENCOUNTERED.
15.0					
20.0					

TEST BORING REPORT

PROJECT CLAYTON PROPERTY (PARCEL 7)
CLIENT NCDOT (R-2241A)
PROJECT NUMBER 100407 (34406.1.1)
CONTRACTOR REGIONAL PROBING
EQUIPMENT GEOPROBE

BORING NUMBER CL-4
PAGE 1
ELEVATION
DATE JULY 12, 2007
DRILLER OPPER
PREPARED BY BRANSON

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			71		4" ASPHALT/GRAVEL, MEDIUM TO DARK BROWN SILT/CLAY FILL MATERIAL, DRY, SLIGHT ODOR.
			254		MEDIUM BROWN SILT, DRY, SLIGHT ODOR.
5.0			44		MOTTLED MEDIUM BROWN AND GRAY PLASTIC CLAY, MOIST, STRONG ODOR.
			1004		AS ABOVE, DRY TO MOIST, STRONG ODOR.
			13,400		AS ABOVE, DRY, STRONG ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
10.0			10,200		MOTTLED MEDIUM BROWN, RED BROWN, AND YELLOW SILT/CLAY, HARD, DRY, STRONG ODOR.
					BORING TERMINATED AT 12 FEET. NO GROUNDWATER ENCOUNTERED.
15.0					
20.0					

TEST BORING REPORT

PROJECT CLAYTON PROPERTY (PARCEL 7)
CLIENT NCDOT (R-2241A)
PROJECT NUMBER 100407 (34406.1.1)
CONTRACTOR REGIONAL PROBING
EQUIPMENT GEOPROBE

BORING NUMBER CL-5
PAGE 1
ELEVATION
DATE JULY 12, 2007
DRILLER OPPER
PREPARED BY BRANSON

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			202		4" ASPHALT/GRAVEL, MULTICOLORED, MULTILAYERED FILL MATERIAL, DRY, NO ODOR.
			285		MOTTLED MEDIUM BROWN AMD MEDIUM GRAY SILT/CLAY, DRY, NO ODOR.
			216		AS ABOVE, PLASTIC, DRY, STRONG ODOR.
5.0			32,700		MOTTLED MEDIUM BROWN, RED BROWN, AND YELLOW SILT/CLAY, DRY, STRONG ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
			1345		AS ABOVE, BECOMING HARD, REFUSAL AT 10 FEET, DRY, STRONG ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
10.0					REFUSAL AT 10 FEET. NO GROUNDWATER ENCOUNTERED.
15.0					
20.0					

TEST BORING REPORT

PROJECT CLAYTON PROPERTY (PARCEL 7)
CLIENT NCDOT (R-2241A)
PROJECT NUMBER 100407 (34406.1.1)
CONTRACTOR REGIONAL PROBING
EQUIPMENT GEOPROBE

BORING NUMBER CL-6
PAGE 1
ELEVATION
DATE JULY 12, 2007
DRILLER OPPER
PREPARED BY BRANSON

DEPTH IN FEET	CASING BLOWS FOOT	BLOWS PER 6 INCHES	OVA (ppm)	SAMPLE DEPTH RANGE	FIELD CLASSIFICATION AND REMARKS
			3.98		4" ASPHALY/GRAVEL, REDDISH BROWN SILT/CLAY FILL MATERIAL, DRY, NO ODOR.
			4.23		MOTTLED MEDIUM BROWN AMD MEDIUM GRAY SILT/CLAY, DRY, NO ODOR.
5.0			1.67		AS ABOVE, DRY, NO ODOR.
			0.55		MOTTLED MEDIUM BROWN, RED BROWN, AND YELLOW SILT/CLAY, DRY, STRONG ODOR.
			5.01		AS ABOVE, BECOMING HARD, REFUSAL AT 10 FEET, DRY, NO ODOR. SUBMIT TO LABORATORY FOR ANALYSIS.
10.0					REFUSAL AT 10 FEET. NO GROUNDWATER ENCOUNTERED.
15.0					
20.0					

ATTACHMENT D

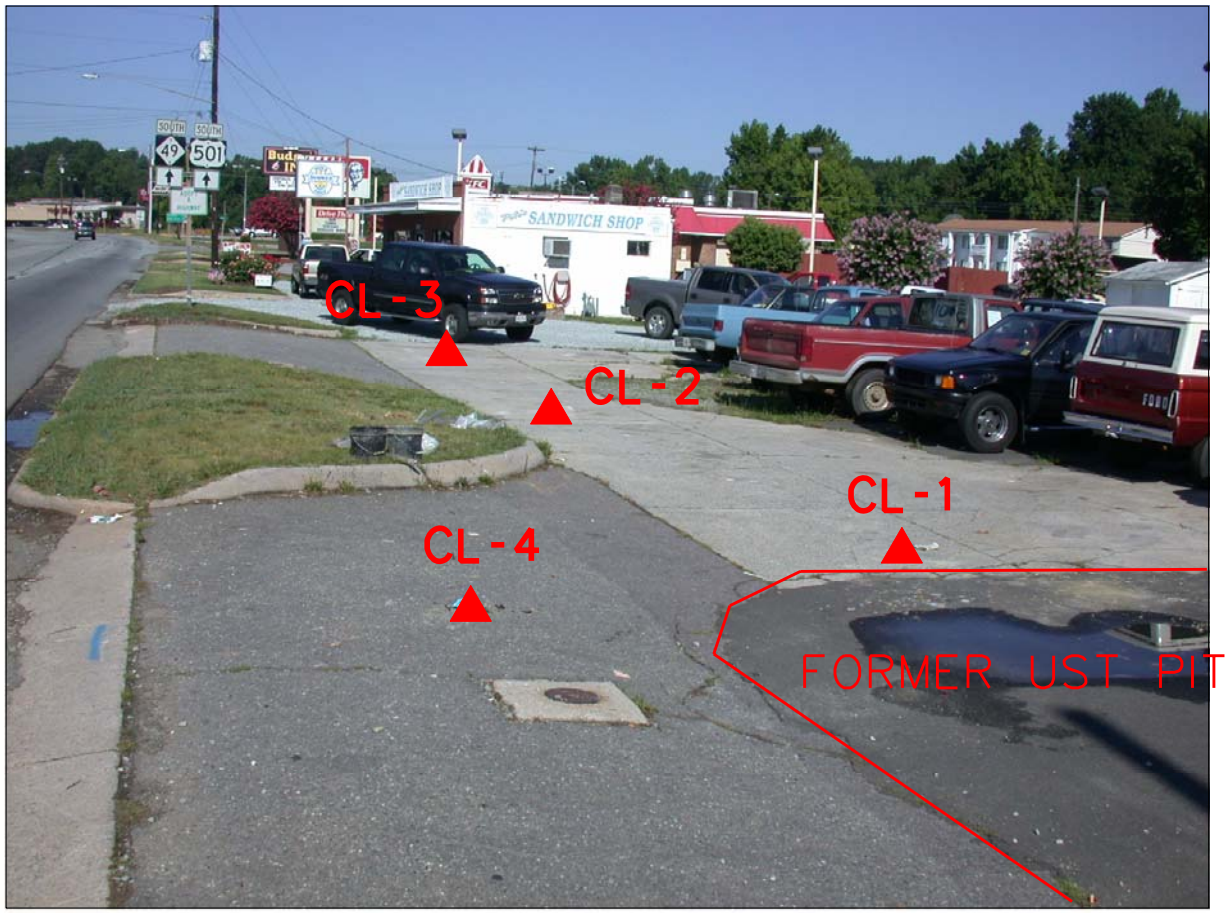


PHOTO 1 - BORINGS AT CLAYTON PROPERTY LOOKING WEST FROM STREET

PHOTO 2 - BORINGS AT CLAYTON PROPERTY LOOKING EAST FROM STREET

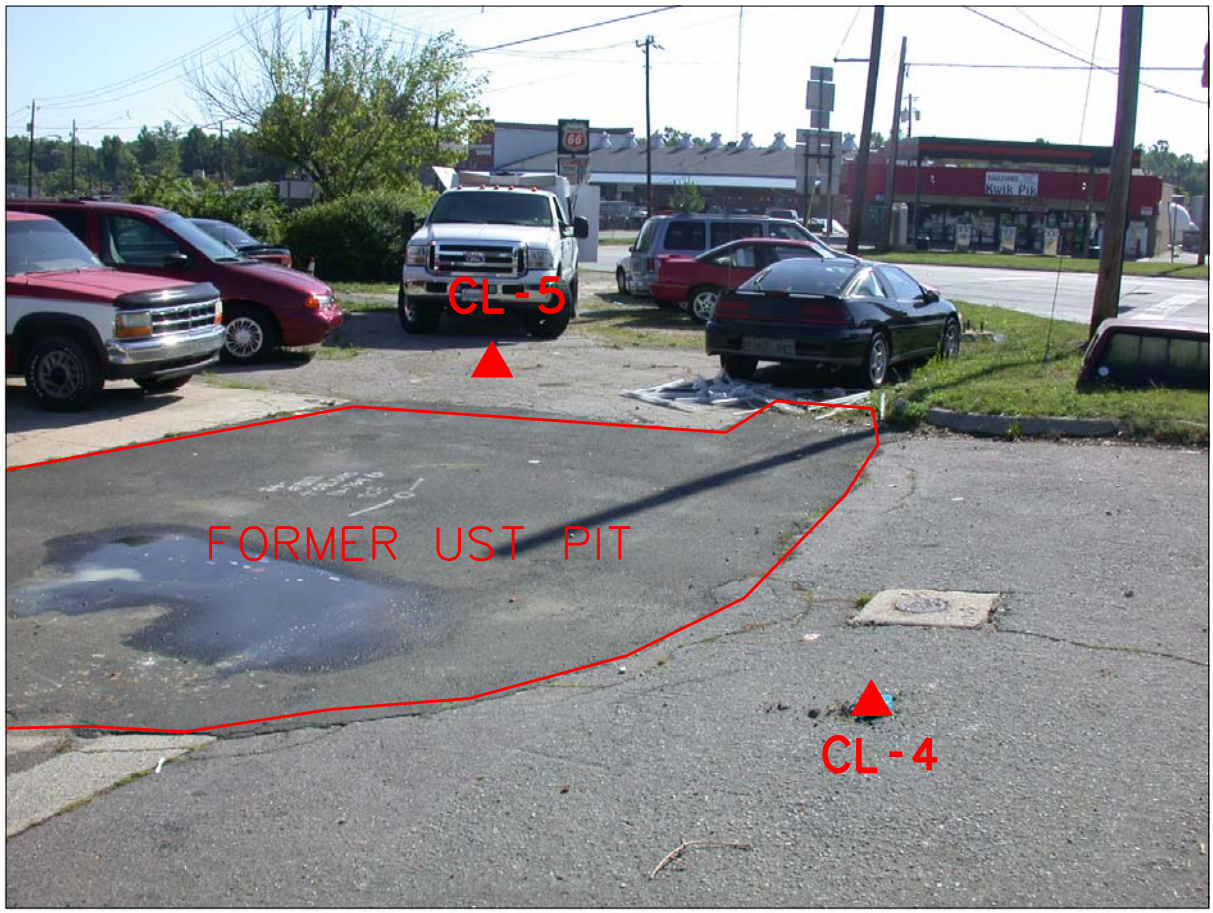


PHOTO 3 - BORINGS AT CLAYTON PROPERTY LOOKING EAST FROM STREET

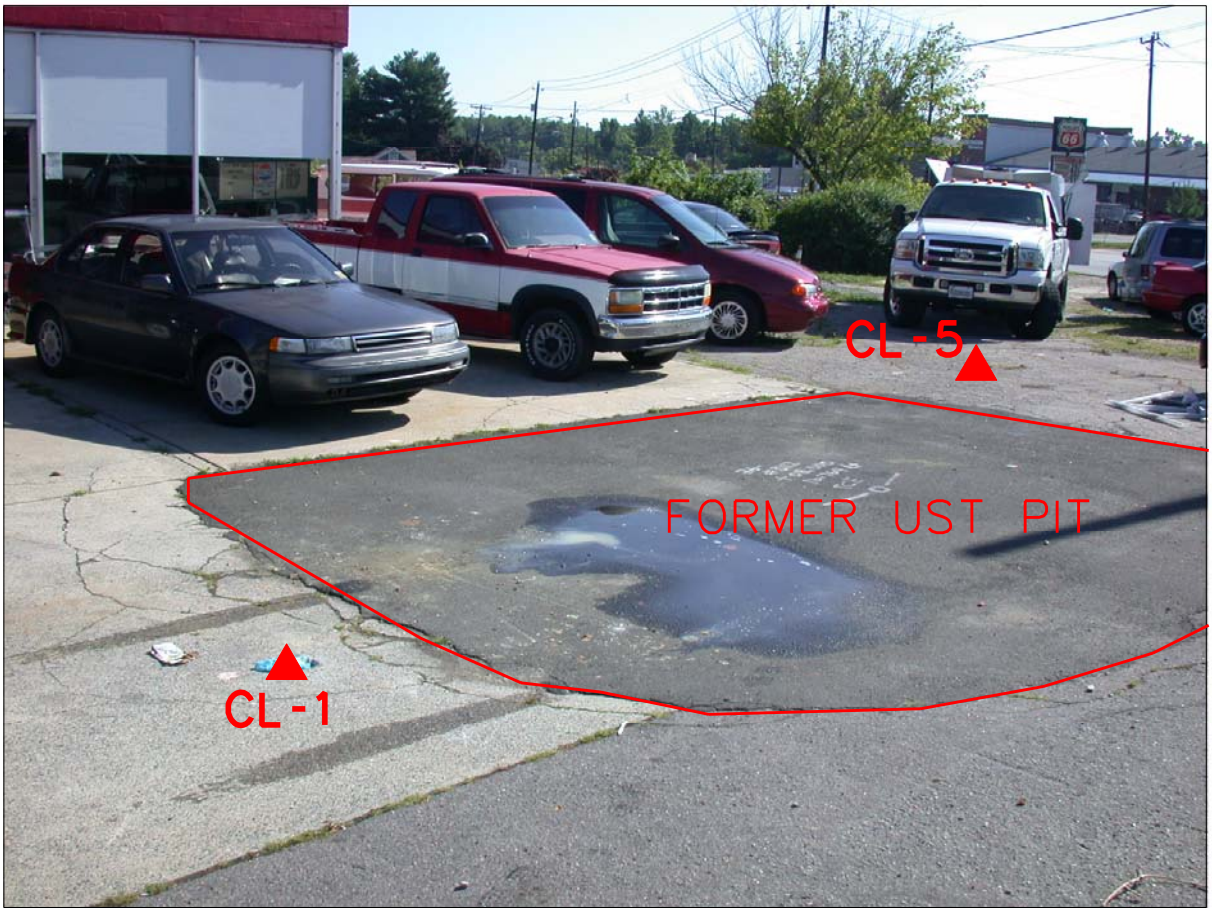


PHOTO 4 - BORINGS AT CLAYTON PROPERTY LOOKING EAST FROM STREET

PHOTO 5 - BORING AT CLAYTON PROPERTY LOOKING SOUTHEAST FROM PARKING LOT

ATTACHMENT E

PRISM
LABORATORIES, INC.

Case Narrative

Date: 07/30/07
Company: N. C. Department of Transportation
Contact: Mike Branson
Address: c/o Earth Tech Remediation
701 Corporate Center Dr. Ste 475
Raleigh, NC 27607

Client Project ID: NCDOT - WBS# 34406.1.1
Prism COC Group No: G0707334
Collection Date(s): 07/12/07
Lab Submittal Date(s): 07/12/07

Client Project Name Or No: WBS# 34406.1.1

This data package contains the analytical results for the project identified above and includes a Case Narrative, Laboratory Report and Quality Control Data totaling 8 pages. A chain-of-custody is also attached for the samples submitted to Prism for this project.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative. Quality control statements and/or sample specific remarks are included in the sample comments section of the laboratory report for each sample affected.

Semi Volatile Analysis

No Anomalies Reported

Volatile Analysis

No Anomalies Reported

Metals Analysis

N/A

Wet Lab and Micro Analysis

N/A

Please call if you have any questions relating to this analytical report.

Date Reviewed by: Paula A. Gilleland
Signature: Paula A. Gilleland
Review Date: 07/30/07

Project Manager: Angela D. Overcash
Signature:
Approval Date: 07/30/07

Data Qualifiers Key Reference:

B: Compound also detected in the method blank.
#: Result outside of the QC limits.
DO: Compound diluted out.
E: Estimated concentration, calibration range exceeded.
J: The analyte was positively identified but the value is estimated below the reporting limit.
H: Estimated concentration with a high bias.
L: Estimated concentration with a low bias.
M: A matrix effect is present.

PRISM LABORATORIES, INC.
Full Service Analytical & Environmental Solutions

NC Certification No. 402
SC Certification No. 99012
NC Drinking Water Cert. No. 37735

Laboratory Report

07/27/07

N. C. Department of Transportation
Attn: Mike Branson
c/o Earth Tech Remediation
701 Corporate Center Dr. Ste 475
Raleigh, NC 27607

Project ID: NCDOT - WBS# 34406.1.1
Project No.: WBS# 34406.1.1
Sample Matrix: Soil

Client Sample ID: CL-1
Prism Sample ID: 186963
COC Group: G0707334
Time Collected: 07/12/07 7:20
Time Submitted: 07/12/07 17:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	**75.8**	%			1	SM2540 G	07/24/07 17:45	ddixon	
Diesel Range Organics (DRO) by GC-FID									
Diesel Range Organics (DRO)	**130**	mg/kg	45	5.7	5	8015B	07/26/07 17:24	jvogel	Q25290
Sample Preparation:				25.4g /	1 mL	3545	07/25/07 10:00	wconder	P18997

Surrogate	% Recovery	Control Limits
o-Terphenyl	91	49 - 124

Sample Weight Determination									
Weight 1	**5.28**	g			1	GRO	07/17/07 0:00	lbrown	
Weight 2	**5.98**	g			1	GRO	07/17/07 0:00	lbrown	
Gasoline Range Organics (GRO) by GC-FID									
Gasoline Range Organics (GRO)	**1400**	mg/kg	66	6.9	500	8015B	07/23/07 19:18	hwagner	Q25198

Surrogate	% Recovery	Control Limits
aaa-TFT	DO #	55 - 129

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543

Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409

PRISM LABORATORIES, INC.
Full Service Analytical & Environmental Solutions

NC Certification No. 402
SC Certification No. 99012
NC Drinking Water Cert. No. 37735

Laboratory Report

07/27/07

N. C. Department of Transportation
Attn: Mike Branson
c/o Earth Tech Remediation
701 Corporate Center Dr. Ste 475
Raleigh, NC 27607

Project ID: NCDOT - WBS# 34406.1.1
Project No.: WBS# 34406.1.1
Sample Matrix: Soil

Client Sample ID: CL-2
Prism Sample ID: 186964
COC Group: G0707334
Time Collected: 07/12/07 7:50
Time Submitted: 07/12/07 17:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	**88.0**	%			1	SM2540 G	07/24/07 17:45	ddixon	
Diesel Range Organics (DRO) by GC-FID									
Diesel Range Organics (DRO)	**19**	mg/kg	7.9	0.98	1	8015B	07/26/07 20:29	jvogel	Q25290
Sample Preparation:					25.17g / 1 mL	3545	07/25/07 10:00	wconder	P18997

Surrogate	% Recovery	Control Limits
o-Terphenyl	101	49 - 124

Sample Weight Determination									
Weight 1	**5.14**	g			1	GRO	07/17/07 0:00	lbrown	
Weight 2	**5.05**	g			1	GRO	07/17/07 0:00	lbrown	
Gasoline Range Organics (GRO) by GC-FID									
Gasoline Range Organics (GRO)	**1300**	mg/kg	57	5.9	500	8015B	07/23/07 19:49	hwagner	Q25198

Surrogate	% Recovery	Control Limits
aaa-TFT	DO #	55 - 129

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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Laboratory Report

07/27/07

N. C. Department of Transportation
Attn: Mike Branson
c/o Earth Tech Remediation
701 Corporate Center Dr. Ste 475
Raleigh, NC 27607

Project ID: NCDOT - WBS# 34406.1.1
Project No.: WBS# 34406.1.1
Sample Matrix: Soil

Client Sample ID: CL-3
Prism Sample ID: 186965
COC Group: G0707334
Time Collected: 07/12/07 8:00
Time Submitted: 07/12/07 17:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	**89.7**	%			1	SM2540 G	07/24/07 17:45	ddixon	
Diesel Range Organics (DRO) by GC-FID									
Diesel Range Organics (DRO)	**30**	mg/kg	7.7	0.97	1	8015B	07/26/07 19:15	jvogel	Q25290
Sample Preparation:				25.4g /	1 mL	3545	07/25/07 10:00	wconder	P18997

Surrogate	% Recovery	Control Limits
o-Terphenyl	110	49 - 124

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Weight Determination									
Weight 1	**6.84**	g			1	GRO	07/17/07 0:00	lbrown	
Weight 2	**6.73**	g			1	GRO	07/17/07 0:00	lbrown	
Gasoline Range Organics (GRO) by GC-FID									
Gasoline Range Organics (GRO)	**430**	mg/kg	56	5.8	500	8015B	07/23/07 20:21	hwagner	Q25198

Surrogate	% Recovery	Control Limits
aaa-TFT	DO #	55 - 129

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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Angela D. Overcash, V.P. Laboratory Services

PRISM LABORATORIES, INC.
Full Service Analytical & Environmental Solutions

NC Certification No. 402
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Laboratory Report

07/27/07

N. C. Department of Transportation
Attn: Mike Branson
c/o Earth Tech Remediation
701 Corporate Center Dr. Ste 475
Raleigh, NC 27607

Project ID: NCDOT - WBS# 34406.1.1
Project No.: WBS# 34406.1.1
Sample Matrix: Soil

Client Sample ID: CL-4
Prism Sample ID: 186966
COC Group: G0707334
Time Collected: 07/12/07 8:20
Time Submitted: 07/12/07 17:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	**73.3**	%			1	SM2540 G	07/24/07 17:45	ddixon	
Diesel Range Organics (DRO) by GC-FID									
Diesel Range Organics (DRO)	**180**	mg/kg	9.4	1.2	1	8015B	07/26/07 19:52	jvogel	Q25290
Sample Preparation:				25.27g /	1 mL	3545	07/25/07 10:00	wconder	P18997

Surrogate	% Recovery	Control Limits
o-Terphenyl	109	49 - 124

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Weight Determination									
Weight 1	**5.51**	g			1	GRO	07/17/07 0:00	lbrown	
Weight 2	**5.93**	g			1	GRO	07/17/07 0:00	lbrown	
Gasoline Range Organics (GRO) by GC-FID									
Gasoline Range Organics (GRO)	**850**	mg/kg	68	7.1	500	8015B	07/23/07 20:52	hwagner	Q25198

Surrogate	% Recovery	Control Limits
aaa-TFT	DO #	55 - 129

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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PRISM LABORATORIES, INC.
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Laboratory Report

07/27/07

N. C. Department of Transportation
Attn: Mike Branson
c/o Earth Tech Remediation
701 Corporate Center Dr. Ste 475
Raleigh, NC 27607

Project ID: NCDOT - WBS# 34406.1.1
Project No.: WBS# 34406.1.1
Sample Matrix: Soil

Client Sample ID: CL-5
Prism Sample ID: 186967
COC Group: G0707334
Time Collected: 07/12/07 8:45
Time Submitted: 07/12/07 17:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	**86.9**	%			1	SM2540 G	07/26/07 17:10	ddixon	
Diesel Range Organics (DRO) by GC-FID									
Diesel Range Organics (DRO)	**14**	mg/kg	8.0	1.0	1	8015B	07/27/07 7:47	jvogel	Q25290
Sample Preparation:					25.24g / 1 mL	3545	07/25/07 10:00	wconder	P18997

Surrogate	% Recovery	Control Limits
o-Terphenyl	94	49 - 124

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Sample Weight Determination									
Weight 1	**5.23**	g			1	GRO	07/17/07 0:00	lbrown	
Weight 2	**6.10**	g			1	GRO	07/17/07 0:00	lbrown	
Gasoline Range Organics (GRO) by GC-FID									
Gasoline Range Organics (GRO)	**120**	mg/kg	5.8	0.60	50	8015B	07/23/07 16:40	hwagner	Q25198

Surrogate	% Recovery	Control Limits
aaa-TFT	86	55 - 129

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

449 Springbrook Road - P.O. Box 240543 - Charlotte, NC 28224-0543

Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409

PRISM LABORATORIES, INC.
Full Service Analytical & Environmental Solutions

NC Certification No. 402
SC Certification No. 99012
NC Drinking Water Cert. No. 37735

Laboratory Report

07/27/07

N. C. Department of Transportation
Attn: Mike Branson
c/o Earth Tech Remediation
701 Corporate Center Dr. Ste 475
Raleigh, NC 27607

Project ID: NCDOT - WBS# 34406.1.1
Project No.: WBS# 34406.1.1
Sample Matrix: Soil

Client Sample ID: CL-6
Prism Sample ID: 186968
COC Group: G0707334
Time Collected: 07/12/07 9:10
Time Submitted: 07/12/07 17:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	**91.0**	%			1	SM2540 G	07/26/07 17:10	ddixon	
Diesel Range Organics (DRO) by GC-FID									
Diesel Range Organics (DRO)	**6.2 J**	mg/kg	7.7	0.96	1	8015B	07/27/07 8:20	jvogel	Q25290
Sample Preparation:				25.07g	/ 1 mL	3545	07/25/07 10:00	wconder	P18997

Surrogate	% Recovery	Control Limits
o-Terphenyl	101	49 - 124

Sample Weight Determination									
Weight 1	**5.54**	g			1	GRO	07/17/07 0:00	lbrown	
Weight 2	**5.09**	g			1	GRO	07/17/07 0:00	lbrown	
Gasoline Range Organics (GRO) by GC-FID									
Gasoline Range Organics (GRO)	**BRL**	mg/kg	5.5	0.57	50	8015B	07/21/07 4:09	hwagner	Q25198

Surrogate	% Recovery	Control Limits
aaa-TFT	85	55 - 129

Sample Comment(s):

BRL = Below Reporting Limit

J- Estimated value between the Reporting Limit and the MDL

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All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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Phone: 704/529-6364 - Toll Free Number: 1-800/529-6364 - Fax: 704/525-0409

PRISM LABORATORIES, INC.
Full Service Analytical & Environmental Solutions

NC Certification No. 402
SC Certification No. 99012
NC Drinking Water Cert. No. 37735

Level II QC Report

7/30/07

N. C. Department of Transportation
Attn: Mike Branson
c/o Earth Tech Remediation
701 Corporate Center Dr. Ste 475
Raleigh, NC 27607

Project ID: NCDOT - WBS# 34406.1.1
Project No.: WBS# 34406.1.1

COC Group Number: G0707334
Date/Time Submitted: 7/12/07 17:00

Gasoline Range Organics (GRO) by GC-FID, method 8015B

Method Blank

	Result	RL	Control Limit	Units	QC Batch ID
Gasoline Range Organics (GRO)	ND	5	<2.5	mg/kg	Q25198

Laboratory Control Sample

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Gasoline Range Organics (GRO)	48.75	50	mg/kg	98	67-116	Q25198

Matrix Spike

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
186952	Gasoline Range Organics (GRO)	36.15	50	mg/kg	72	57-113	Q25198

Matrix Spike Duplicate

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
186952	Gasoline Range Organics (GRO)	42.6	50	mg/kg	85	57-113	16	0 - 23	Q25198

Diesel Range Organics (DRO) by GC-FID, method 8015B

Method Blank

	Result	RL	Control Limit	Units	QC Batch ID
Diesel Range Organics (DRO)	ND	7	<3.5	mg/kg	Q25290

Laboratory Control Sample

	Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
Diesel Range Organics (DRO)	78.2	80	mg/kg	98	55-109	Q25290

Matrix Spike

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	QC Batch ID
187202	Diesel Range Organics (DRO)	76.9	80	mg/kg	87	50-117	Q25290

Matrix Spike Duplicate

Sample ID:		Result	Spike Amount	Units	Recovery %	Recovery Ranges %	RPD %	RPD Range %	QC Batch ID
187202	Diesel Range Organics (DRO)	67.6	80	mg/kg	75	50-117	13	0 - 24	Q25290

#-See Case Narrative

CHAIN OF CUSTODY RECORD

PRISM LABORATORIES, INC.

Full Service Analytical & Environmental Solutions

449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543
Phone: 704/529-6364 • Fax: 704/525-0409

PAGE ___ OF ___ QUOTE # TO ENSURE PROPER BILLING: _____

Client Company Name: EARTH TECH
Report To/Contact Name: MIKE BRANSON
Reporting Address: 701 CORPORATE CENTER DR STE 475 RALEIGH NC 27607
Phone: 9198546238 Fax (Yes) (No): 9198546259
Email (Yes) (No) Email Address: MIKE.BRANSON@EARTHTECH.COM
EDD Type: PDF ___ Excel ___ Other ___
Site Location Name: _____
Site Location Physical Address: _____

Project Name: _____
Short Hold Analysis: (Yes) (No) UST Project: (Yes) (No)
*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements
Invoice To: NCDOT
Address: _____

Purchase Order No./Billing Reference WBS# 34406.1.1
Requested Due Date ☐ 1 Day ☐ 2 Days ☐ 3 Days ☐ 4 Days ☐ 5 Days
"Working Days" ☐ 6-9 Days ☒ Standard 10 days ☐ Rush Work Must Be Pre-Approved
Samples received after 15:00 will be processed next business day.
Turnaround time is based on business days, excluding weekends and holidays.
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received ON WET ICE? Temp 1.6	✓		
PROPER PRESERVATIVES indicated?	✓		
Received WITHIN HOLDING TIMES?	✓		
CUSTODY SEALS INTACT?			✓
VOLATILES rec'd W/OUT HEADSPACE?			✓
PROPER CONTAINERS used?	✓		

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL

Certification: NELAC ___ USACE ___ FL ___ NC X
SC ___ OTHER ___ N/A ___
Water Chlorinated: YES ___ NO ___
Sample Iced Upon Collection: YES X NO ___

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER *TYPE SEE BELOW	NO.	SIZE	PRESERVATIVES	ANALYSES REQUESTED DRO	GRO					REMARKS	PRISM LAB ID NO.
CL-1	7/12/07	0720	SOIL	CG	3	4oz/VOA	MeOH	✓	✓						186963
CL-2	7/12/07	0750	SOIL	CG	3	4oz/VOA	MeOH	✓	✓						186964
CL-3	7/12/07	0800	SOIL	CG	3	4oz/VOA	MeOH	✓	✓						186965
CL-4	7/12/07	0820	SOIL	CG	3	4oz/VOA	MeOH	✓	✓						186966
CL-5	7/12/07	0845	SOIL	CG	3	4oz/VOA	MeOH	✓	✓						186967
CL-6	7/12/07	0910	SOIL	CG	3	4oz/VOA	MeOH	✓	✓						186968

Sampler's Signature: M Branson
Sampled By (Print Name): M BRANSON
Affiliation: EARTH TECH

PRESS DOWN FIRMLY - 3 COPIES

Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.

		Date	Military/Hours
Relinquished By: (Signature) M Branson	Received By: (Signature) Alex Lessiter	7-12-07	1300
Relinquished By: (Signature) Alex Lessiter	Received By: (Signature) David Mann	7-12-07	1350
Relinquished By: (Signature) David Mann	Received For Prism Laboratories By:	7/12/07	1700

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.

☐ Fed Ex ☐ UPS ☐ Hand-delivered ☒ Prism Field Service ☐ Other _____

COC Group No. GP707334

Additional Comments: INVOICE NCDOT UNDER BLANKET PO

PRISM USE ONLY

Site Arrival Time:
Site Departure Time:
Field Tech Fee:
Mileage:

NPDES:	UST:	GROUNDWATER:	DRINKING WATER:	SOLID WASTE:	RCRA:	CERCLA	LANDFILL	OTHER:
☐ NC ☐ SC ☐ ___	☒ NC ☐ SC ☐ ___	☐ NC ☐ SC ☐ ___	☐ NC ☐ SC ☐ ___	☐ NC ☐ SC ☐ ___	☐ NC ☐ SC ☐ ___	☐ NC ☐ SC ☐ ___	☐ NC ☐ SC ☐ ___	☐ NC ☐ SC ☐ ___

*CONTAINER TYPE CODES: A – Amber C – Clear G – Glass P – Plastic TL – Teflon Lined Cap VOA – Volatile Organics Analysis (Zero Head Space)

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL