

NC Department of Transportation Preliminary Site Assessment State Project: R-3405 WBS Element: 35579.1.1

> Gary Bruce Miller Property Parcel #207 March 1, 2011

AMEC Earth and Environmental, Inc. of North Carolina AMEC Project: 562113405

Troy L. Holzschuh

**Engineering Technician** 

Helen P. Corley, L.G.

Senior Project Manager



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### 1.0 INTRODUCTION

In accordance with the North Carolina Department of Transportation (NCDOT) Request for Proposal, dated November 19, 2010, AMEC Earth and Environmental, Inc. of North Carolina (AMEC) has performed a Preliminary Site Assessment (PSA) for the Gary Bruce Miller Property (the Site) to be effected by a road improvement project along NC 18, Sparta Rd. The Site which is located at 3333 Sparta Rd currently is a vacant retail store. Historically the site appears to have operated as a gas station. The property is located on the western side of Sparta Road in North Wilkesboro of Wilkes County, North Carolina. The investigation was conducted in accordance with AMEC's Technical and Cost proposal dated December 3, 2010.

NCDOT contracted AMEC to perform a PSA on the Gary Bruce Miller Property due to NCDOT's request for proposal stating the site may have operated as a gas station. According to NCDENR"S Underground Storage Tanks (UST) section registry there are no known Facility IDs or Groundwater Incidents associated with this site. The PSA was performed to determine if soils have been impacted by petroleum compounds as a result of past and present uses of the property within the proposed design project area. The entire parcel will be taken. This parcel will be affected by construction activities associated with road widening and new drainage features along Sparta Rd.

The following report summarizes the site history, geophysical survey, location and capacities of any USTs, and describes our field investigation with results of chemical analyses. The report includes the evaluation of the analytical data with regards to the presence or absence of soil contamination within the NCDOT design area of parcel #207 and estimates the extent of soil contamination.

### 1.1 Site Location and Vicinity

The Gary Bruce Miller Property parcel is located on the western side of Sparta Road in North Wilkesboro, Wilkes County, North Carolina, as shown in Figure 1. The properties to the north and southeast are residential with single family homes. The property to the east is agricultural. The property to the northeast is Roby's Furniture. The property to the south is Mulberry Elementary school and the property to the west appears to be an inactive church building.



### 1.2 Site Description and History

The Site is currently unoccupied and there is a vacant building, which was most recently used as a comic store. The geophysical survey identified one UST near the southeastern corner of the single story brick building with a piping segment from the tank exiting through the overlying flower pot. There is an Aboveground Storage Tank (AST) at the northwestern corner of the building. The proposed ROW will parallel the eastern property edge of Parcel #207 along Sparta Rd and cut through the building footprint; therefore the entire parcel will be taken. Appendix A includes a photo log for the Site.

AMEC studied the NCDENR UST Registered Tanks Database and the NCDENR Incident Management Database. No registered tanks or incidences are listed for this site.

### 2.0 GEOLOGY

### 2.1 Regional Geology

The Gary Bruce Miller Property is located within the Alligator Back Formation of the Ocoee Supergroup located in the Blue Ridge Physiographic Province of western North Carolina. The Alligator Back Formation comprises metamorphic sedimentary rocks that are 750 million years in age. The rocks include mica schist and phyllite that are interlayered with minor biotite. The Alligator Back rocks were named for the large sections of gneiss that descend from the peak of Bluff Mountain that resemble an alligator.

### 2.2 Site Geology

Site geology was observed through the sampling of 6 shallow direct push probe soil borings (SB) onsite. Borings had a total depth of ten feet below ground surface (bgs). Native soils generally consisted of orange, well sorted and clayey silt. Boring logs are presented in Appendix B.

Damp soil conditions were typically first encountered at a depth of 0.5 feet (ft) bgs.



### 3.0 FIELD ACTIVITIES

### 3.1 Preliminary Activities

Prior to commencing field sampling activities at the site, several tasks were accomplished in preparation for the subsurface investigation. The Health and Safety Plan (HSP) was modified to include the site-specific health and safety information. On January 17, 2011 a private utility locating company, Priority Underground Locating of Huntersville, North Carolina cleared the proposed drilling locations that were marked in the field by AMEC North Carolina-1-Call was contacted on January 19, 2011 to report the proposed drilling activities and subsequently notify all affected utilities for the parcel. Carolina Soil Investigations, LLC (CSI Drilling) of Olin, North Carolina was retained by AMEC to perform the direct push drilling and sampling. AMEC coordinated with Schnabel Engineering South (Schnabel) who performed two types of geophysical survey (electromagnetic and ground penetrating radar) onsite during December. The geophysical results were reviewed and discussed at the completion of each survey. Laboratories, Inc. was contacted for acquisition of sample bottles. Soil boring locations were focused just beyond the existing ROW. Boring locations were strategically placed as close to or around the probable USTs and along the front of the parcel to maximize the likelihood of intercepting any potential soil contamination.

### 3.2 Site Reconnaissance

AMEC personnel completed site reconnaissance on November 22, 2010. During reconnaissance, the area was visually examined for the presence of any UST or areas/obstructions that could potentially affect the subsurface investigation and the number of boring locations was discussed. Boring locations were marked on January 17, 2011.

### 3.3 Geophysical Survey

Schnabel performed the geophysical surveys from December 6 to 22, 2010 for the Sparta Rd corridor. Schnabel utilized a Geonics EM61-MK2 to perform the electromagnetic induction surveys and a Geophysical Survey Systems SIR-3000 to conduct the ground-penetrating radar (GPR) investigations. These instruments are specifically calibrated to detect metal anomalies that are buried and are characteristically large. The data collected



by Schnabel indicates the presence of one UST within the proposed design area. A 560 gallon capacity UST is approximately 3.5 feet in diameter and 7.5 feet long and is buried 2.5 to 3.5 feet bgs. The complete geophysical survey report can be found in Appendix C and the UST location is shown in Figure 2.

### 3.4 Well Survey

No well survey was performed as part of this PSA and no monitoring wells were observed on the parcel.

### 3.5 Soil Sampling

Soil boring occurred on January 24, 2011 at Parcel #207. Six direct push soil borings were conducted within the NCDOT design project on Parcel #207, which includes the eastern side of the site. Figure 2 presents the Site Map with boring locations and identifications. These samples were placed to optimize the likelihood of intercepting any potential soil contamination by targeting probable UST-1 at the southeastern edge of the site and the proposed drainage features which runs parallel to Sparta Rd. The first boring, P207-SB-1, was placed between the southeastern building corner and the proposed drainage feature. Soil borings P207-SB-2 and P207-SB-3 targeted probable UST-1. Soil boring P207-SB-4 was placed down gradient of probable UST-1. AMEC personnel noted and photographed a possible heating oil stain at the northeastern end of the building. The leak appears to come from a 1-inch PVC pipe that runs from the AST located at the northwestern corner of the Consequently AMEC personnel placed boring P207-SB-5 near the stained ground surface at the northeastern corner of the building. Soil boring P207-SB-6 targets the drainage structure at the northern end of the site. Soil borings did not exhibit elevated PID readings; therefore AMEC personnel concluded that adequate coverage of the site had been attained.

Soil samples were collected in accordance with EPA protocols in laboratory-supplied containers. The soil samples for Total Petroleum Hydrocarbons (TPH) –Gasoline Range Organics (GRO) analysis were collected using the 5030 prep method with methanol preservation. Samples for TPH-Diesel Range Organics (DRO) analysis were collected in 4oz. glass containers. Once placed in the containers, the samples were labeled with the sample number, time of collection, date of collection, name of the collector, and the requested analysis. The samples were packed on ice, and then hand delivered to Prism



Laboratories in Charlotte, a North Carolina Certified Laboratory following proper chain-ofcustody procedures.

### 4.0 SOIL SAMPLING RESULTS

AMEC conducted soil sampling at the Site on January 24, 2011. The purpose of the sampling was to determine if releases of petroleum hydrocarbons had occurred, and if so, to estimate the volume of soil that might require special handling during construction activities. The sampling was accomplished using direct push methods accompanied by field screening for organic vapors with a PID. The laboratory results with PID readings are tabulated in Table 1.

A minimum of one soil sample was collected from each of the 6 completed soil borings from Parcel #207. Typically, if impacted soil is identified, then additional soil samples are obtained. No soil borings produced elevated PID readings consequently additional soil samples were not warranted. No results of for DRO or GRO analyses reported any TPH detections and thus the NC Action Level of 10 mg/kg was not exceeded in ay sample. Figure 3 shows the Site Map with Analytical Data.

Since the field investigation and the Laboratory analytical report did not indicate contamination, an estimation of contamination was not warranted.

Copies of the original laboratory report and chain-of-custody documentation are included as Appendix D.

### 5.0 CONCLUSIONS

The following conclusions are based upon AMEC's evaluation of field observations and laboratory analyses of samples collected from the Site on January 24, 2011.

- The property is currently vacant. Most recently the site operated as a comic store.
- The NCDENR's UST Registered Tanks Database does not list any USTs or Groundwater Incidents associated with this parcel.



- The geophysical survey did identify one UST with a 560 gallon capacity.
- Six soil samples were collected and analyzed for TPH GRO and DRO.
- Laboratory analyses did not indicate DRO and/or GRO detections above the analytical method reporting level.

### 6.0 RECOMMENDATIONS

The one UST is within the proposed ROW or construction easement. Removal of the UST and any associated piping by the UST owner is recommended. Visual observations indicate a possible leak from piping associated with the AST. Since the entire site is to be taken AMEC recommends removal of the AST and associated piping as well.

Since a party other than NCDOT may implement these recommendations, NCDOT should remain cautious of intercepting contaminated soil during road construction activities. If potentially impacted soils are intercepted, AMEC recommends the following action:

 Segregation, followed by proper assessment and handling, of potentially petroleum-impacted soil during roadway improvement construction operations.



### Table 1 Soil Sampling Analytical Results, DRO-GRO Parcel 207, Gary Bruce Miller Property NC DOT

### North Wilkesboro, Wilkes County, North Carolina

	SAMPLE	SAMPLE DEPTH	PID	EPA Method 8015B	
SAMPLE ID	DATE	(ft bgs)	READINGS (ppm)	DRO (mg/kg)	GRO (mg/kg)
NC Action Levels				10	10
P207-SB-1	1/24/2011	6 - 8	0	<7.6	<4.4
P207-SB-2	1/24/2011	6 - 8	0	<8.9	<6.0
P207-SB-3	1/24/2011	6 - 8	0	<8.2	<5.1
P207-SB-4	1/24/2011	6 - 8	0	<7.7	<4.9
P207-SB-5	1/24/2011	6 - 8	0	<9.2	<5.4
P207-SB-6	1/24/2011	6 - 8	0	<8.5	<5.3

### NOTES:

ft bgs = feet below ground surface; ppm = parts per million

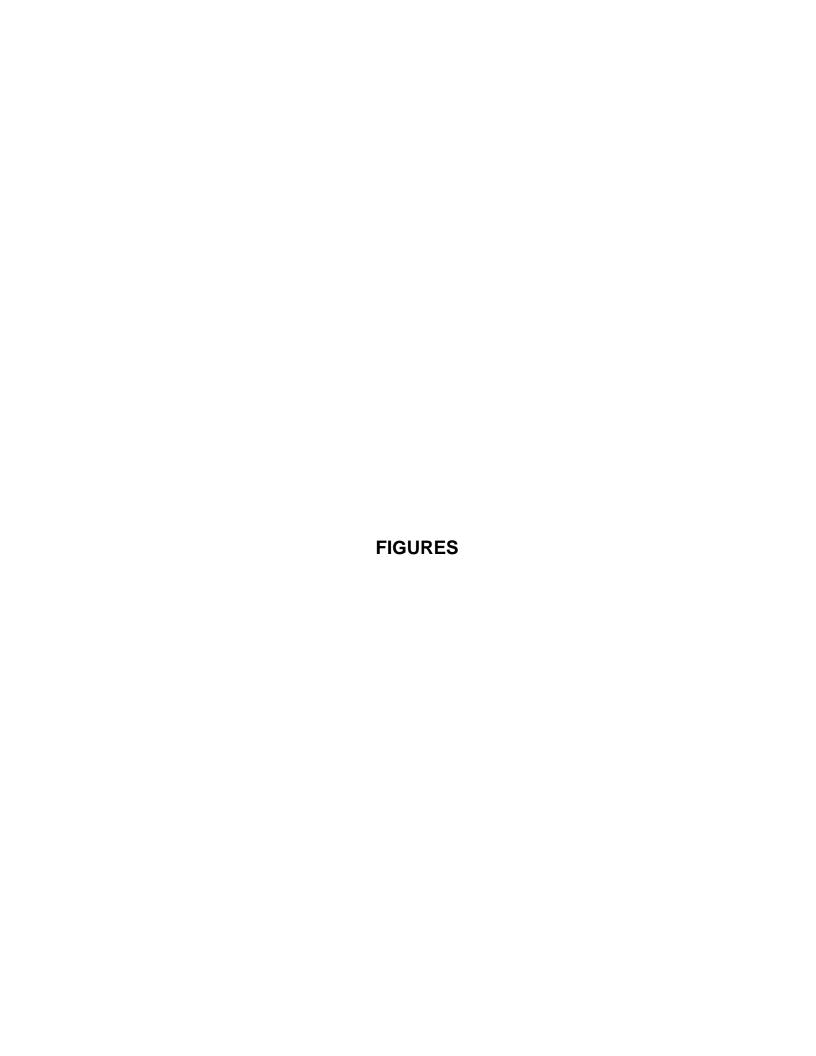
mg/kg = milligrams per kilogram

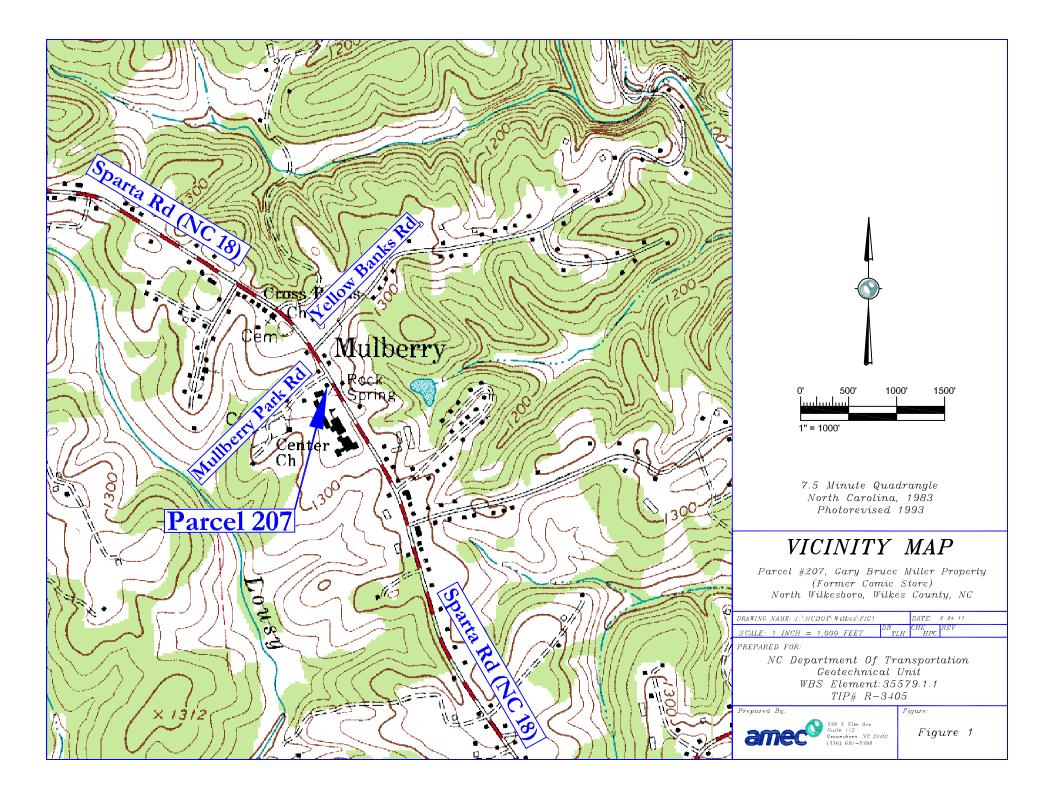
**Bold** Concentrations Exceed Action Levels

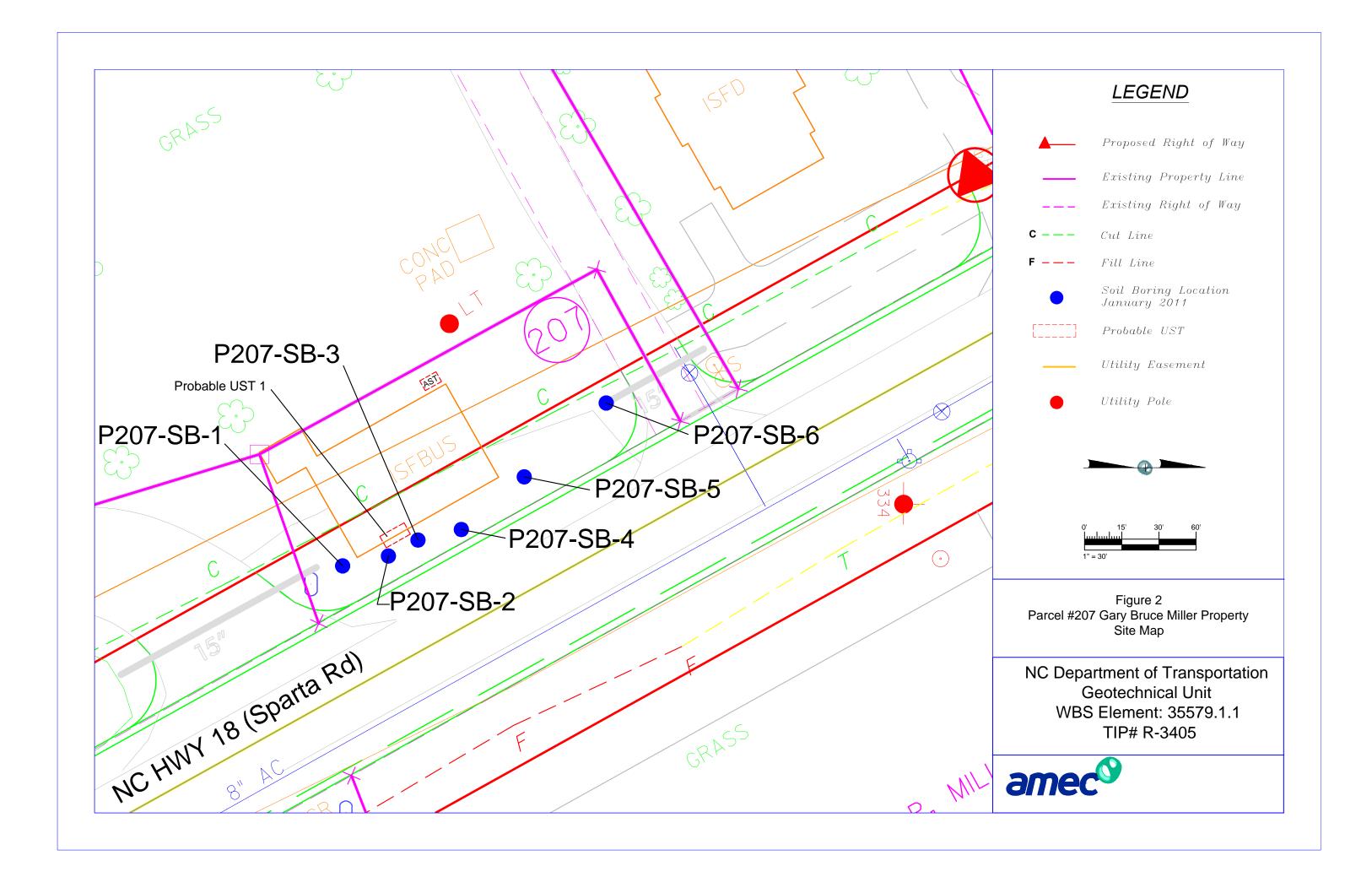
DRO = Diesel Range Organics

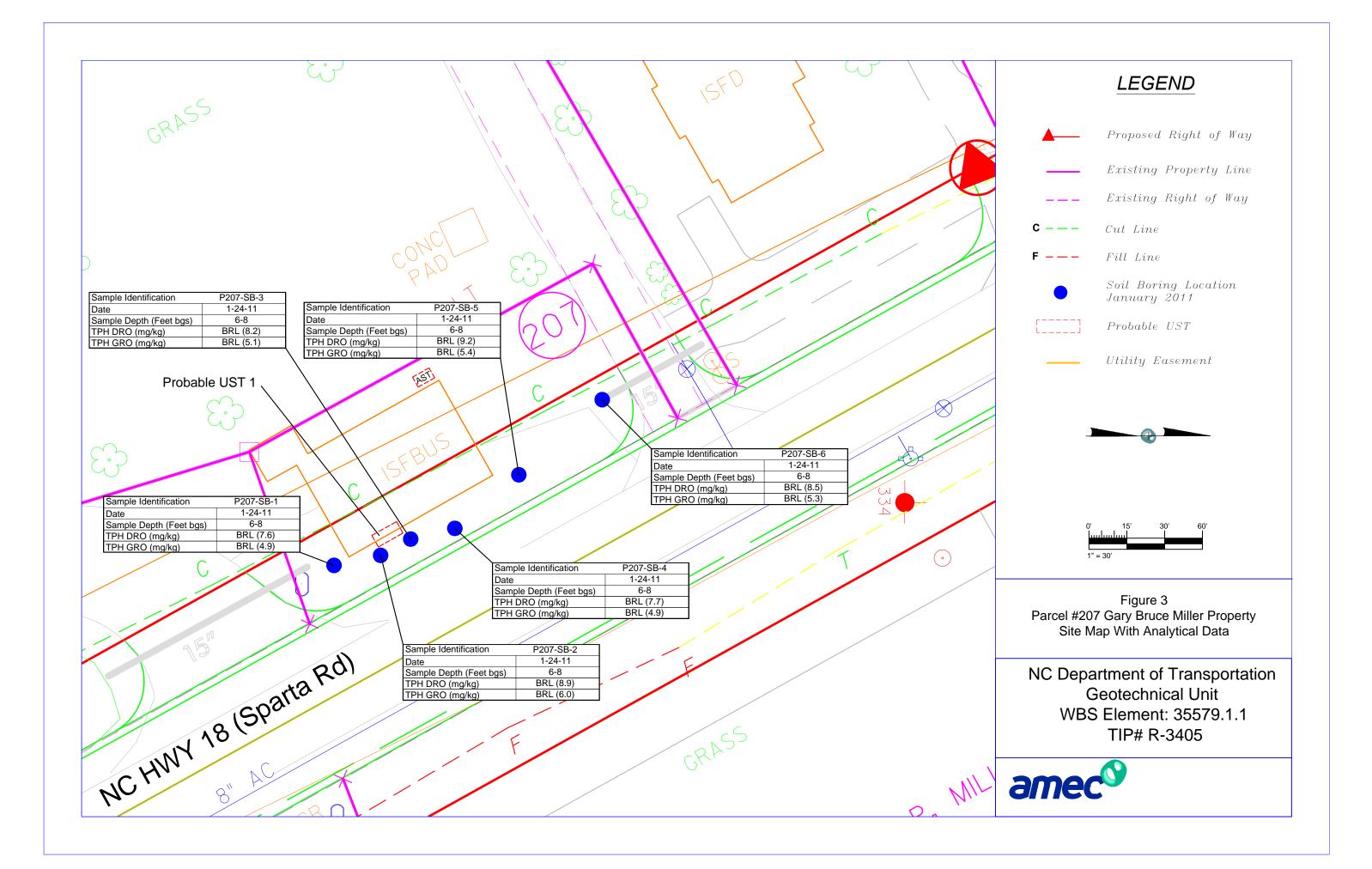
GRO = Gasoline Range Organics

Standards derived from the North Carolina UST Section Guidelines for Assessment and Corrective Action









**APPENDIX A** 

**PHOTO LOG** 



### Photo 1

Viewing north from the south eastern corner of the parcel.



### Photo 2

Viewing west from the eastern portion of the site. The photo shows one UST's near the front and southeastern corner of the building.



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DATE January 2011
PAGE 1

Preliminary Site Assessment Parcel 207, Gary B. Miller Property North Wilkesboro, NC



### Photo 3

Viewing southwest from northeastern portion of the site. Photo shows staining on the northeastern corner of the building. Piping or source appears to go to an AST on the northwestern corner of the building.



### Photo 4

Viewing southwest from northern portion of the site. Photo shows an AST at the northwestern corner of the building.



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DATE January 2011
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PHOTOGRAPHIC LOG

Preliminary Site Assessment Parcel 207, Gary B. Miller Property North Wilkesboro, NC APPENDIX B

**BORING LOGS** 



Boring/Well No.: P207-SB1	Site Name: Parcel 207
	Location: North Wilkesboro, Wilkes Co., NC
Job No.: 562113405	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: CSI	Driller Name/Cert #: Keith Speece - 2856-A

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	·
0-0.5			Asphalt/Aggregate
0.5-2.5	0		Orange, Well Sorted, Clayey Silt, Damp
2.5-6	0		Orange/Red, Well Sorted, Silty Sand, Fine, Damp
6-8	0		Yellow, Well Sorted, Silty Sand, Fine, Damp
8-10	0		Yellow, Well Sorted, Silty Sand, Fine, Damp
	<u> </u>	WELL CONS	TRUCTION DETAILS (If Applicable)
Well Type/Diameter:			Outer Casing Interval:
Total Depth:			Outer Casing Interval.  Outer Casing Diameter:
Screen Interval:			Bentonite Interval:
Sand Interval:			Slot Size:
Sand Interval:			الالالالالالالالالالالالالالالالالالال



Boring/Well No.: P207-SB2	Site Name: Parcel 207
	Location: North Wilkesboro, Wilkes Co., NC
Job No.: 562113405	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: CSI	Driller Name/Cert #: Keith Speece - 2856-A

Remarks:

Grout Interval:

Depth (ft BLS) PID/OVA Reading (ppm) Blow Counts Soil/Lithologic Description			
0-0.5 Asphalt/Aggregate			
0.5-2.5 0 Brown/Red, Well Sorted, Clayey Silt, Damp			
2.5-6 Orange, Well Sorted, Silty Sand, Fine, Damp			
6-8 0 Pink, Well Sorted, Silty Sand, Fine, Damp			
8-10 0 Tan, Well Sorted, Sandy Silt, Damp			
WELL CONSTRUCTION DETAILS (If Applicable)			
Well Type/Diameter: Outer Casing Interval:			
Total Depth: Outer Casing Diameter:			
Screen Interval: Bentonite Interval:			
Sand Interval: Slot Size:	Slot Size:		



Boring/Well No.: P207-SB3	Site Name: Parcel 207
Date: 1-24-11	Location: North Wilkesboro, Wilkes Co., NC
Job No.: 562113405	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: CSI	Driller Name/Cert #: Keith Speece - 2856-A

Remarks:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	Soil/Lithologic Description
0-0.5			Asphalt/Aggregate
0.5-1.5	0		Red, Well Sorted, Clay, Damp
1.5-4	0		Orange/Red, Well Sorted, Clayey Silt, Damp
4-6	0		Yellow, Well Sorted, Silty Sand, Fine, Damp
6-8	0		Tan/Yellow, Well Sorted, Silty Sand, Fine, Damp
8-10	0		Tan/Yellow, Well Sorted, Silty Sand, Fine, Damp
1			
1			
1			
		WELL CONS	STRUCTION DETAILS (If Applicable)
			Outer Casing Interval:
Total Depth:			Outer Casing Diameter:
Screen Interval:			Bentonite Interval:
Sand Interval:			Slot Size:
Grout Interval:			Static Water Level:



Boring/Well No.: P207-SB4	Site Name: Parcel 207
Date: 1-24-11	Location: North Wilkesboro, Wilkes Co., NC
Job No.: 562113405	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: CSI	Driller Name/Cert #: Keith Speece - 2856-A

Remarks:

Grout Interval:

PID/OVA				
Depth (ft BLS)	Reading (ppm)	Blow Counts	Soil/Lithologic Description	
0-0.5			Asphalt/Aggregate	
0.5-4	0		Red/Orange, Well Sorted, Clayey Silt, Damp	
4-6	0		Orange, Well Sorted, Silty Sand, Fine, Damp	
6-8	0		Yellow, Well Sorted, Silty Sand, Fine, Damp	
8-10	0		Tan, Well Sorted, Silty Sand, Fine, Damp	
		WELL CONS	TRUCTION DETAILS (If Applicable)	
Well Type/Diameter:			Outer Casing Interval:	
Total Depth:			Outer Casing Diameter:	
Screen Interval:			Bentonite Interval:	
Sand Interval:			Slot Size:	



Boring/Well No.: P207-SB5	Site Name: Parcel 207
	Location: North Wilkesboro, Wilkes Co., NC
Job No.: 562113405	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: CSI	Driller Name/Cert #: Keith Speece - 2856-A

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	Soil/Lithologic Description
0-0.5			Asphalt/Aggregate
0.5-2	0		Red/Orange, Well Sorted, Clayey Silt, Damp
2-4	0		Red/Brown, Well Sorted, Clayey Silt, Damp
4-4.5	0		Orange, Well Sorted, Clayey Silt, Damp
4.5-6	0		Red, Well Sorted, Silt, Damp
6-8	0		Red, Well Sorted, Clayey Silt, Damp
8-10	0		Yellow, Well Sorted, Silty Sand, Fine, Damp
		WELL CONS	TRUCTION DETAILS (If Applicable)
Well Type/Diameter:			Outer Casing Interval:
Total Depth:			Outer Casing Diameter:
Screen Interval:			Bentonite Interval:
Sand Interval:			Slot Size:



Boring/Well No.: P207-SB6	Site Name: Parcel 207
	Location: North Wilkesboro, Wilkes Co., NC
Job No.: 562113405	Sample Method: Direct Push
AMEC Rep: Troy Holzschuh	Drilling Method: Direct Push
Drilling Company: CSI	Driller Name/Cert #: Keith Speece - 2856-A

Remarks:

Grout Interval:

Depth (ft BLS)	PID/OVA Reading (ppm)	Blow Counts	Soil/Lithologic Description
0-0.5	,		Asphalt/Aggregate
0.5-1.5	0		Red/Orange, Well Sorted, Clayey Silt, Damp
1.5-4	0		Red/Orange, Well Sorted, Silt, Damp
4-6	0		Tan/Yellow, Well Sorted, Silt, Damp
6-8	0		Pink, Well Sorted, Silt, Damp
8-10	0		Pink, Well Sorted, Silt, Damp
		WELL CONS	TRUCTION DETAILS (If Applicable)
Vell Type/Dian	neter:		Outer Casing Interval:
otal Depth:			Outer Casing Diameter:
otal Boptili.			
Screen Interval	•		Bentonite Interval:

### APPENDIX C GEOPHYSICAL SURVEY REPORT



January 28, 2011

Ms. Helen Corley, LG AMEC Earth and Environmental of North Carolina, Inc. 101 W. Friendly Avenue, Suite 603 Greensboro, NC 27401

RE: State Project: R-3405

WBS Element: 35579.1.1 County: Wilkes

Description: NC 18 from SR 1002 (Mountain View Road) to SR 1717 (Yellow Banks

Road)

Subject: Project 09210013.34 Report on Geophysical Surveys

Parcel 207, Wilkes County, North Carolina

Dear Ms. Corley:

**SCHNABEL ENGINEERING SOUTH, PC** (Schnabel) is pleased to present this report on the geophysical surveys we conducted on the subject property. We understand this letter report will be included as an appendix in your report to the NCDOT. The report includes two 11x17 color figures and three 8.5x11 color figures.

### INTRODUCTION

The work described in this report was conducted on December 6 and 22, 2010, by Schnabel under our 2009 contract with the NCDOT. The work was conducted over the accessible areas of the parcel as indicated by the NCDOT to support their environmental assessment of the subject property. Photographs of the parcel are included on Figure 1. The property is located on the west side of Sparta Road just south of the intersection with Mulberry Park Road in North Wilkesboro, NC. The purpose of the geophysical surveys was to locate suspect metal underground storage tanks (USTs) in the accessible areas of the right-of-way and/or easement.

The geophysical investigation consisted of electromagnetic (EM) induction surveys using a Geonics EM61-MK2 instrument. The EM61 metal detector is used to locate metal objects buried up to about eight feet below ground surface. Ground-penetrating radar (GPR) investigations of selected EM61 anomalies, including areas of reinforced concrete, were conducted using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna. Photographs of the equipment used are shown on Figure 2.

#### FIELD METHODOLOGY

Locations of geophysical data points were obtained using a sub-meter Trimble Pro-XRS DGPS system. References to direction and location in this report are based on the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 83 datum, with units in US survey feet. The locations of existing site features (monitoring wells, signs, etc.) were recorded for later correlation with the geophysical data and for location references to the NCDOT drawings.

The EM61 data were collected along parallel survey lines spaced approximately 2.5 feet apart. The EM61 and DGPS data were recorded digitally using a field computer and later transferred to a desktop computer for data processing. The GPR data were collected along survey lines spaced one to two feet apart in orthogonal directions over areas of reinforced concrete and anomalous EM readings not attributed to cultural features. The GPR data were reviewed in the field to evaluate the possible presence of USTs. The GPR data also were recorded digitally and later transferred to a desktop computer for further review.

#### **DISCUSSION OF RESULTS**

The contoured EM61 data collected over Parcel 207 are shown on Figures 3 and 4. The EM61 early time gate results are plotted on Figure 3. The early time gate data provide the more sensitive detection of metal objects. Figure 4 shows the difference between the response of the top and bottom coils of the EM61 instrument (differential response). The difference is taken to remove the effect of surface and very shallowly buried metallic objects. Typically, the differential response emphasizes anomalies from deeper and larger objects such as USTs.

The early time gate and differential results show anomalies of unknown cause, in addition to those apparently caused by reinforced concrete, buried utilities, or known site features (Figures 3 and 4). The GPR data collected near the southeastern building corner indicated the presence of a probable UST located approximately 10 to 20 feet north of the building corner. The probable UST is inside the limits of the planned right-of way and/or easement. Example GPR images showing the reflections from the probable UST are shown on Figures 3 and 4. Figures 3 and 4 also include the location of the probable UST as marked in the field. The GPR data indicate that the probable UST is buried approximately 2.5 to 3.5 feet below ground surface, and is about 3.5 feet in diameter and about 7.5 feet long, equivalent to a capacity of about 560 gallons. Photographs of the probable UST location, as marked in the field, are included on Figure 5.

### **CONCLUSIONS**

Our evaluation of the geophysical data collected on the subject property on Project R-3405 in North Wilkesboro, NC indicates the following:

The geophysical data indicate the presence of a probable UST on Parcel 207. The probable UST is inside the planned right-of-way and/or easement. The probable UST is about 560-gallon capacity and is buried about 2.5 to 3.5 feet below ground surface.

### NCDOT, Geotechnical Engineering Unit State Project R-3405, Wilkes County

#### **LIMITATIONS**

These services have been performed and this report prepared for AMEC Earth and Environmental of North Carolina, Inc. and the North Carolina Department of Transportation in accordance with generally accepted guidelines for conducting geophysical surveys. It is generally recognized that the results of geophysical surveys are non-unique and may not represent actual subsurface conditions.

We appreciate the opportunity to have provided these services. Please call if you need additional information or have any questions.

Sincerely,

SCHNABEL ENGINEERING SOUTH, PC

Jeremy S. Strohmeyer, LG

Project Manager

Edward D. Billington, LG Senior Vice President

JW:JS:NB

Attachments: Figures (5)

FILE: G:\2009 PROJECTS\09210013 (NCDOT 2009 GEOTECH UNIT SERVICES)\09210013.34 (R-3405, WILKES COUNTY)\REPORT\PARCEL 207\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 207 (R-3405).DOCX



Parcel 207 - Gary Bruce Miller Property, looking northwest



Parcel 207 - Gary Bruce Miller Property, looking northeast



STATE PROJECT R-3405 NC DEPT. OF TRANSPORTATION WILKES CO., NORTH CAROLINA PROJECT NO. 09210013.34

PARCEL 207 SITE PHOTOS

FIGURE 1



Geonics EM61-MK2

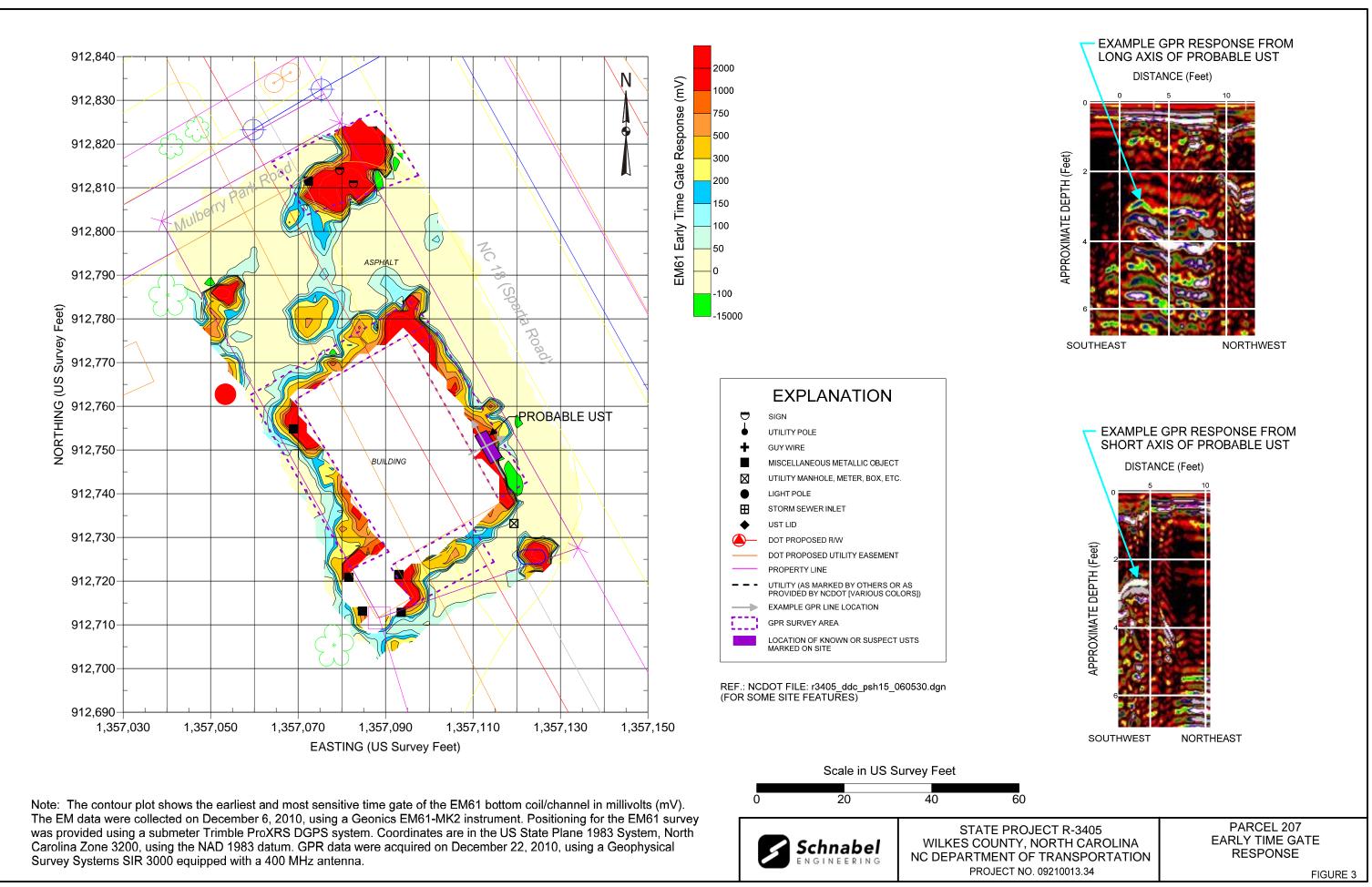


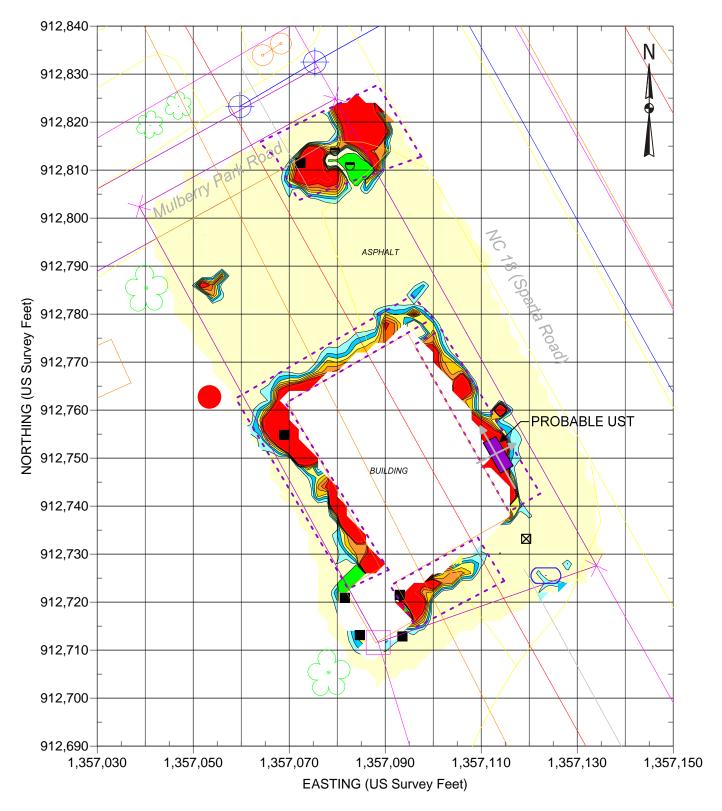
GSSI SIR-3000

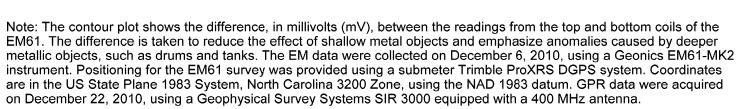


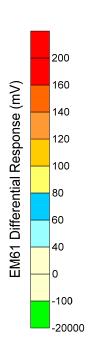
STATE PROJECT R-3405 NC DEPT. OF TRANSPORTATION WILKES CO., NORTH CAROLINA PROJECT NO. 09210013.34 PHOTOS OF GEOPHYSICAL EQUIPMENT USED

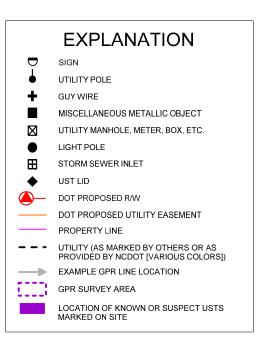
FIGURE 2



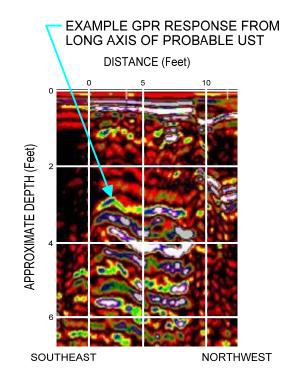


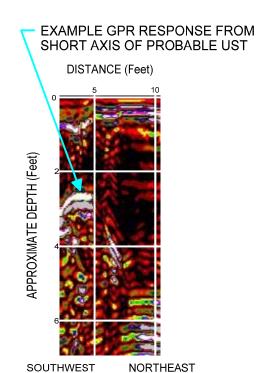


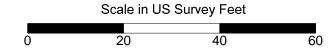














STATE PROJECT R-3405 WILKES COUNTY, NORTH CAROLINA NC DEPARTMENT OF TRANSPORTATION PROJECT NO. 09210013.34 PARCEL 207 DIFFERENTIAL RESPONSE

FIGURE 4



Parcel 207 – Gary Bruce Miller Property, looking west. Photo shows approximate marked location of the probable UST near the easternmost building corner.



Parcel 207 – Gary Bruce Miller Property, looking south. Photo shows approximate marked location of the probable UST near the easternmost building corner.



STATE PROJECT R-3405 WILKES CO., NORTH CAROLINA NC DEPT. OF TRANSPORTATION PROJECT NO. 09210013.34 PHOTOS OF
PROBABLE
UST LOCATION
\_\_\_\_\_\_ FIGURE 5

### **APPENDIX D**

LABORATORY ANALYTICAL RESULTS



NC Certification No. 402 SC Certification No. 99012 NC Drinking Water Cert No. 37735 **Case Narrative** 

02/03/2011

AMEC Earth & Env. Inc.(DOT Gree) Helen Corley 338 North Elm St. Suite 112 Greensboro, NC 27401 Project: NCDOT: Wilkes County Parcel 207

Project No.: WBS #35579.1.1 Lab Submittal Date: 01/26/2011 Prism Work Order: 1010537

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

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

Respectfully,

PRISM LABORATORIES, INC.

President/Project Manager

Reviewed By

Korri a.

#### Data Qualifiers Key Reference:

A Surrogate recovery above the control limits. GRO was not detected in the sample. No further action was taken.

BRL Below Reporting Limit
MDL Method Detection Limit
RPD Relative Percent Difference

\* Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.



### **Sample Receipt Summary**

02/03/2011

Prism Work Order: 1010537

Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
P207-SB-1(6-8)	1010537-01	Solid	01/24/11	01/26/11
P207-SB-2(6-8)	1010537-02	Solid	01/24/11	01/26/11
P207-SB-3(6-8)	1010537-03	Solid	01/24/11	01/26/11
P207-SB-4(6-8)	1010537-04	Solid	01/24/11	01/26/11
P207-SB-5(6-8)	1010537-05	Solid	01/24/11	01/26/11
P207-SB-6(6-8)	1010537-06	Solid	01/24/11	01/26/11

Samples received in good condition at 2.7 degrees C unless otherwise noted.







AMEC Earth & Env. Inc.(DOT Gree) Attn: Helen Corley 338 North Elm St. Suite 112 Greensboro, NC 27401 Project: NCDOT: Wilkes County

Parcel 207

Project No.: WBS #35579.1.1

Sample Matrix: Solid

Client Sample ID: P207-SB-1(6-8)
Prism Sample ID: 1010537-01
Prism Work Order: 1010537
Time Collected: 01/24/11 13:00
Time Submitted: 01/26/11 13:12

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID									
Diesel Range Organics	BRL	mg/kg dry	7.6	1.2	1	*8015C	2/1/11 22:20	JMV	P1A0520
			Surrogate			Recov	ery	Control	Limits
			o-Terphenyl			97	· %	49-124	
Gasoline Range Organics by GC/FID									
Gasoline Range Organics	BRL	mg/kg dry	4.4	0.57	50	*8015C	1/31/11 18:10	) HPE	P1A0526
			Surrogate			Recov	ery	Control	Limits
			a,a,a-Trifluo	rotoluene		98	3 %	55-129	
General Chemistry Parameters									
% Solids	92.0	% by Weight	0.100	0.100	1	*SM2540 G	1/27/11 16:00	) JAB	P1A0475







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Parcel 207

Project No.: WBS #35579.1.1

Sample Matrix: Solid

Client Sample ID: P207-SB-2(6-8) Prism Sample ID: 1010537-02 Prism Work Order: 1010537 Time Collected: 01/24/11 13:10 Time Submitted: 01/26/11 13:12

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID									
Diesel Range Organics	BRL	mg/kg dry	8.9	1.4	1	*8015C	2/1/11 22:56	JMV	P1A0520
			Surrogate			Recov	very	Control Limits	
			o-Terphenyl			10	6 %	49-124	
Gasoline Range Organics by GC/FIE	)								
Gasoline Range Organics	BRL	mg/kg dry	6.0	0.78	50	*8015C	1/31/11 18:42	2 HPE	P1A0526
			Surrogate			Recov	very	Control	Limits
			a,a,a-Trifluo	rotoluene		10	6 %	55-129	
General Chemistry Parameters									
% Solids	77.9	% by Weight	0.100	0.100	1	*SM2540 G	1/27/11 16:00	) JAB	P1A0475



02/03/2011



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Parcel 207

Project No.: WBS #35579.1.1

Sample Matrix: Solid

Client Sample ID: P207-SB-3(6-8) Prism Sample ID: 1010537-03 Prism Work Order: 1010537 Time Collected: 01/24/11 13:20 Time Submitted: 01/26/11 13:12

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID	
Diesel Range Organics by GC/FID										
Diesel Range Organics	BRL	mg/kg dry	8.2	1.3	1	*8015C	2/2/11 6:36	JMV	P1A0520	
			Surrogate			Recov	very	Control Limits		
			o-Terphenyl			10	1 %	49-124		
Gasoline Range Organics by GC/FII	)									
Gasoline Range Organics	BRL	mg/kg dry	5.1	0.66	50	*8015C	1/31/11 19:1	3 HPE	P1A0526	
			Surrogate			Recov	very	Control	Limits	
			a,a,a-Trifluo	rotoluene		10	8 %	55-129		
General Chemistry Parameters										
% Solids	85.1	% by Weight	0.100	0.100	1	*SM2540 G	1/27/11 16:00	) JAB	P1A0475	







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Parcel 207

Project No.: WBS #35579.1.1

Sample Matrix: Solid

Client Sample ID: P207-SB-4(6-8) Prism Sample ID: 1010537-04 Prism Work Order: 1010537 Time Collected: 01/24/11 13:30 Time Submitted: 01/26/11 13:12

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID	
Diesel Range Organics by GC/FID										
Diesel Range Organics	C/FID   BRL   mg/kg dry   7.7   1.2   1   *8015C   2/1/11   23:31   JMV   P1A	P1A0520								
			Surrogate			Recov	very	Control Limits		
			o-Terphenyl			93	49-124			
Gasoline Range Organics by GC/FID										
Gasoline Range Organics	BRL	mg/kg dry	4.9	0.64	50	*8015C	1/31/11 19:4	5 HPE	P1A0526	
			Surrogate			Recov	very	Control I	Limits	
			a,a,a-Trifluo	rotoluene		13	7 %	55-129	Α	
General Chemistry Parameters										
% Solids	90.6	% by Weight	0.100	0.100	1	*SM2540 G	1/27/11 16:00	) JAB	P1A0475	







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Parcel 207

Project No.: WBS #35579.1.1

Sample Matrix: Solid

Client Sample ID: P207-SB-5(6-8) Prism Sample ID: 1010537-05 Prism Work Order: 1010537 Time Collected: 01/24/11 13:40 Time Submitted: 01/26/11 13:12

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID									
Diesel Range Organics	BRL	mg/kg dry	9.2	1.5	1	*8015C	2/2/11 0:06	JMV	P1A0520
			Surrogate Recovery		very	Control Limits			
			o-Terphenyl			98	3 %	49-124	
Gasoline Range Organics by GC/FID	)								
Gasoline Range Organics	BRL	mg/kg dry	5.4	0.71	50	*8015C	1/31/11 21:1	9 HPE	P1A0526
			Surrogate			Recov	very	Control	Limits
			a,a,a-Trifluo	rotoluene		12	8 %	55-129	
<b>General Chemistry Parameters</b>									
% Solids	75.8	% by Weight	0.100	0.100	1	*SM2540 G	1/28/11 15:0	) JAB	P1A0512



02/03/2011



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Parcel 207

Project No.: WBS #35579.1.1

Sample Matrix: Solid

Client Sample ID: P207-SB-6(6-8) Prism Sample ID: 1010537-06 Prism Work Order: 1010537 Time Collected: 01/24/11 14:00 Time Submitted: 01/26/11 13:12

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID	
Diesel Range Organics by GC/FID										
Diesel Range Organics	BRL	mg/kg dry	8.5	1.4	1	*8015C	2/2/11 6:01	JMV	P1A0520	
	Su		Surrogate			Recov	very	Control Limits		
			o-Terphenyl			10	3 %	49-124		
Gasoline Range Organics by GC/FII	)									
Gasoline Range Organics	BRL	mg/kg dry	5.3	0.69	50	*8015C	1/31/11 21:5	) HPE	P1A0526	
			Surrogate			Recov	very	Control	Limits	
			a,a,a-Trifluo	rotoluene		11	3 %	55-129		
General Chemistry Parameters										
% Solids	81.4	% by Weight	0.100	0.100	1	*SM2540 G	1/28/11 15:00	) JAB	P1A0512	



AMEC Earth & Env. Inc.(DOT Gree) Attn: Helen Corley

338 North Elm St. Suite 112 Greensboro, NC 27401

Project: NCDOT: Wilkes County Parcel

Project No: WBS #35579.1.1

Prism Work Order: 1010537

Time Submitted: 1/26/11 1:12:00PM

### Gasoline Range Organics by GC/FID - Quality Control

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch P1A0526 - 5035										
Blank (P1A0526-BLK1)			F	Prepared	& Analyze	ed: 01/31/1	1			
Gasoline Range Organics	BRL	5.0	mg/kg wet							
Surrogate: a,a,a-Trifluorotoluene	5.05		mg/kg wet	5.00		101	55-129			
LCS (P1A0526-BS1)			F	repared	& Analyze	ed: 01/31/1	1			
Gasoline Range Organics	39.8	5.0	mg/kg wet	50.0		80	67-116			
Surrogate: a,a,a-Trifluorotoluene	5.15		mg/kg wet	5.00		103	55-129			
LCS Dup (P1A0526-BSD1)			F	Prepared	& Analyze	ed: 01/31/1	1			
Gasoline Range Organics	41.2	5.0	mg/kg wet	50.0		82	67-116	3	200	
Surrogate: a,a,a-Trifluorotoluene	5.10		mg/kg wet	5.00		102	55-129			



AMEC Earth & Env. Inc.(DOT Gree) Attn: Helen Corley 338 North Elm St. Suite 112 Greensboro, NC 27401 Project: NCDOT: Wilkes County Parcel

207 Project No: WBS #35579.1.1 Prism Work Order: 1010537

Time Submitted: 1/26/11 1:12:00PM

### Diesel Range Organics by GC/FID - Quality Control

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch P1A0520 - 3545A										
Blank (P1A0520-BLK1)			ı	Prepared	: 01/31/11	Analyzed	: 02/01/11			
Diesel Range Organics	BRL	7.0	mg/kg wet							
Surrogate: o-Terphenyl	1.43		mg/kg wet	1.60		89	49-124			
LCS (P1A0520-BS1)			ı	Prepared	: 01/31/11	Analyzed	: 02/01/11			
Diesel Range Organics	60.6	6.9	mg/kg wet	79.4		76	55-109			
Surrogate: o-Terphenyl	1.43		mg/kg wet	1.59		90	49-124			
LCS Dup (P1A0520-BSD1)			ı	Prepared	: 01/31/11	Analyzed	: 02/01/11			
Diesel Range Organics	56.7	6.9	mg/kg wet	79.4		71	55-109	7	200	
Surrogate: o-Terphenyl	1.43		mg/kg wet	1.59		90	49-124			



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Project: NCDOT: Wilkes County Parcel

Project No: WBS #35579.1.1

Prism Work Order: 1010537

Time Submitted: 1/26/11 1:12:00PM

### **General Chemistry Parameters - Quality Control**

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch P1A0475 - NO PREP										
Blank (P1A0475-BLK1)				Prepared	& Analyze	ed: 01/27/1	1			
% Solids	100	0.100	% by Weigh	t						
Duplicate (P1A0475-DUP2)	Sou	rce: 101053	7-04	Prepared	& Analyze	ed: 01/27/1	1			
% Solids	87.6	0.100	% by Weigh	t	90.6			3	20	
Batch P1A0512 - NO PREP										
Blank (P1A0512-BLK1)				Prepared	& Analyze	d: 01/28/1	1			
% Solids	100	0.100	% by Weigh	t						

### **Sample Extraction Data**

### Prep Method: 3545A

Lab Number	Batch	Initial	Final	Date
1010537-01	P1A0520	25.13 g	1 mL	01/31/11
1010537-02	P1A0520	25.16 g	1 mL	01/31/11
1010537-03	P1A0520	25.13 g	1 mL	01/31/11
1010537-04	P1A0520	25.12 g	1 mL	01/31/11
1010537-05	P1A0520	25.08 g	1 mL	01/31/11
1010537-06	P1A0520	25.17 g	1 mL	01/31/11

#### Prep Method: 5035

Lab Number	Batch	Initial	Final	Date
1010537-01	P1A0526	6.16 g	5 mL	01/31/11
1010537-02	P1A0526	5.32 g	5 mL	01/31/11
1010537-03	P1A0526	5.77 g	5 mL	01/31/11
1010537-04	P1A0526	5.63 g	5 mL	01/31/11
1010537-05	P1A0526	6.07 g	5 mL	01/31/11
1010537-06	P1A0526	5.8 g	5 mL	01/31/11

#### NO PREP

Lab Number	Batch	Initial	Final	Date
1010537-01	P1A0475	30 g	30 mL	01/27/11
1010537-02	P1A0475	30 g	30 mL	01/27/11
1010537-03	P1A0475	30 g	30 mL	01/27/11
1010537-04	P1A0475	30 g	30 mL	01/27/11
1010537-05	P1A0512	30 g	30 mL	01/28/11
1010537-06	P1A0512	30 g	30 mL	01/28/11

PR	ISM
	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  Client Company Name: AMEC E4E  Report To/Contact Name: Helen Corley Reporting Address: 338 N Flm St  Greenshare, NC 27401  Phone: 336-641-5348 Fax (Yes) (No): Email (Yes) (No) Email Address Aplen Corley & American Site Location Name: Farcel Other  Site Location Physical Address: Morth Wilkesborg			1/2 CO ** 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 =						Sain Bee	PROPER PRESERVATIVES indicated?  PROPER PRESERVATIVES indicated?  Received WITHIN HOLDING TIMES?  CUSTODY SEALS INTACT?  VOLATILES rec'd WOUT HEADSPACE?  PROPER CONTAINERS used?  D BE FILLED IN BY CLIENT/SAMPLING PERSONNEL					
				"Working Days"						Certification:         NELAC USACE FL NC           SC OTHER N/A           Water Chlorinated:         YES NO					
							TIONS REGARDING ES, INC. TO CLIENT)		s ´				ollection: YES	_	-
CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPL *TYPE SEE BELOW	E CONTA	SIZE	PRESERVA- TIVES	/2	ANA PO PO	ALVSES REC	QUESTE	D	REMA	.RKS	PRISM LAB ID NO.
P207-5B-16-8	) 1-24-11	1300	Soil	6/voa	4	26		X	X						01
1207-58-2(68)		1310		l	ì			X	X						UZ
1207-58-3(6-8)		1320						X	X						03
P207-58-4/6-8)		1330						X	X						७५
P207-5B-516-8	)	1340						X	X						0.5
P207-5B-6(6-8)	<b>V</b>	1400	$\sqrt{}$					X	X						06
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Sampler's Signature	120g L 1	& prhwl		y (Print Name)			beschuh			1EC			PRESS DOW	AN ERRIWIE I	- 3 COPIES
Upon relinquishing, this submitted in writing to the	Chain of Custo he Prism Projec	dy⁄is your auth ct Manager. Th	orization for ere will be cl	Prism to proce narges for any	eed with changes	the analyses after analys	as requested a es have been in	bove. Aı itialized.	ny changes i					PRISM	USE ONLY
Relinquished By: (Signature)	2 A	Sohn	Rece	ived By: (Signature)	}	•			Date 1-26-1	Military/H	Jurs .	Addition	nal Comments:	Site Arrival	Time
Relinquished By: (Signature)				peived By: (Signature)  Date								Site Departu	ire Time:		
Relinquished By: (Signature)  Rev  Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC				peived For Prism Laboratories By:  Date    Column					13/2				Field Tech F Mileage:	Reference to the state of the s	
☐ Fed Ex ☐ UPS XI Hand-de	elivered 🚨 Prism		Other						101053	37					
NPDES: UST:  NC SC NC S  *CONTAINER TYPE COI	_	sc 🔲		NC	WASTE SC = Teflor	O NC	SC NC	SC			SC			TERMS 8	everse for e conditions ge 12 of 12