

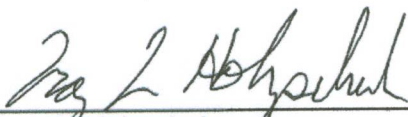


**NC Department of Transportation  
Preliminary Site Assessment  
State Project: U-2551  
WBS Element: 34832.1.1**

**Timothy & Charlotte Buff Property  
(Historic Dale's Market)  
Parcel #66  
January 31, 2011**

**AMEC Earth and Environmental, Inc. of North Carolina  
AMEC Project: 562112551**



  
\_\_\_\_\_  
Troy L. Holzschuh  
Engineering Technician

  
\_\_\_\_\_  
Helen P. Corley, L.G.  
Senior Project Manager



## TABLE OF CONTENTS

<b>1.0 INTRODUCTION.....</b>	<b>1</b>
<b>1.1 Site Location.....</b>	<b>1</b>
<b>1.2 Site Description.....</b>	<b>2</b>
<b>2.0 GEOLOGY.....</b>	<b>2</b>
<b>2.1 Regional Geology.....</b>	<b>2</b>
<b>2.2 Site Geology.....</b>	<b>2</b>
<b>3.0 FIELD ACTIVITIES.....</b>	<b>3</b>
<b>3.1 Preliminary Activities.....</b>	<b>3</b>
<b>3.2 Site Reconnaissance.....</b>	<b>3</b>
<b>3.3 Geophysical Survey.....</b>	<b>3</b>
<b>3.4 Well Survey.....</b>	<b>4</b>
<b>3.5 Soil Sampling.....</b>	<b>4</b>
<b>4.0 SOIL SAMPLING RESULTS.....</b>	<b>4</b>
<b>5.0 CONCLUSIONS.....</b>	<b>5</b>
<b>6.0 RECOMMENDATIONS.....</b>	<b>6</b>

## **TABLES**

Table 1	Soil Sampling Analytical Results, DRO-GRO
---------	---

## **FIGURES**

Figure 1	Vicinity Map
Figure 2	Site Map with Sample Locations
Figure 3	Site Map with Analytical Data

## **APPENDICES**

Appendix A	Photo Log
Appendix B	Boring Logs
Appendix C	Geophysical Report
Appendix D	Laboratory Analytical Data

## 1.0 INTRODUCTION

In accordance with the North Carolina Department of Transportation (NCDOT) Request for Proposal, dated November 3, 2010, AMEC Earth and Environmental, Inc. of North Carolina (AMEC) has performed a Preliminary Site Assessment (PSA) for the Timothy and Charlotte Buff Property (the Site) to be effected by a road improvement project along Old Shelby Rd. at the Old Shelby Rd. and Dale Circle intersection. Parcel #66 spans across Dale Circle and two businesses are located at the address, 100 Dale Circle. Within the parcel, an abandoned business lies on the north side of Dale Circle and a grocery store (B&S Discount Foods) is located on the south side of Dale Circle. The portion of the property which is located south of Dale Circle is zoned as a historical site. Parcel #66 is located north of I-40, and is in Morganton of Burke County, North Carolina. The investigation was conducted in accordance with AMEC's Technical and Cost proposal dated November 3, 2010.

NCDOT contracted AMEC to perform a PSA on the Timothy and Charlotte Buff Property due to their prior observation of two fill ports on the northern side of the B&S grocery store. The PSA was performed to determine if soils have been impacted by petroleum compounds and volatile organic compounds as a result of past and present uses of the property within the proposed design project area. This parcel is a historic site so the ROW should not expand; however the site may be affected by construction activities associated with new drainage features for the NCDOT road improvement project along Old Shelby Road.

The following report summarizes the geophysical survey, presents location and capacities of any Underground storage Tanks (USTs), and describes our field investigation, with results and recommendations. 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 #66 and estimates the extent of soil contamination.

### 1.1 Site Location and History

The Timothy and Charlotte Buff Property parcel is located on the north and south corners of the intersection of Old Shelby Rd with Dale Circle, north of I-40 Morganton, Burke County, North Carolina. It is located within the metamorphic sediments of the Inner Piedmont

Physiographic Province of western North Carolina. Figure 1 shows the site location and vicinity.

According to the store owner, a kerosene pump is located on the western side (front porch) of B&S grocery. Two UST's are currently on site and are located on the northern side of the B&S grocery store approximately 18 feet from the centerline of Old Shelby Rd. The store owner thought that another UST exists beneath the front porch of B&S grocery; however, it was not confirmed by the geophysical data. AMEC studied the NCDENR UST Registered Tanks Database and no tanks are registered in association with this property. AMEC also reviewed the NCDENR Incident Management Database and did not find any incident numbers associated with this property.

## **1.2 Site Description**

The portion of the Site located on the south side of the Old Shelby Rd intersection is currently operating as a grocery store, while the portion of the Site located on the north side of the intersection is an abandoned building. The proposed DOT project will traverse the property along Old Shelby Rd. and Dale Circle of Parcel #66. Appendix A includes a photo log for Parcel #66.

The surrounding properties are residential and municipal. The parcels to the south, east and north of the Site are residential, each with single family homes. Municipal buildings for the city of Morganton are located on the property to the west of Parcel #66.

## **2.0 GEOLOGY**

### **2.1 Regional Geology**

The Timothy and Charlotte Buff Property is located within the metamorphic sediments of the Inner Piedmont Physiographic Province of western North Carolina. The Inner Piedmont belt is the most intensely deformed and metamorphosed segment of the Piedmont. The metamorphic rocks range from 500 to 750 million years in age. They include gneiss and schist that have been intruded by younger granitic rocks. The northeast-trending Brevard fault zone forms much of the boundary between the Blue Ridge and Inner Piedmont belts.

## **2.2 Site Geology**

Site geology was observed through the sampling of 5 shallow direct push probe soil borings (SB) onsite. Borings were extended to a depth of 10 feet below ground surface (bgs). Native soils generally consisted of orange well sorted clayey silt. Boring logs are presented in Appendix B.

Damp soil conditions were typically first encountered at a depth of 0.5 feet (ft) below ground surface (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 necessary for the field activities. On December 2, 2010 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 personnel. North Carolina-1-Call was contacted on December 6 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 sampling for soil borings. AMEC coordinated with Schnabel Engineering South (Schnabel) who performed two geophysical surveys (electromagnetic and ground penetrating radar) onsite during December. The geophysical results were reviewed and discussed at the completion of each survey. Prism Laboratories, Inc. was contacted for acquisition of sample bottles. Soil boring locations were focused just beyond the existing ROW. Boring locations were strategically placed around the two UST's 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 11, 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 December 2, 2010.

### **3.3 Geophysical Survey**

Schnabel performed the geophysical surveys on December 1 and 3, 2010. 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 deeply and are characteristically large. The data collected by Schnabel indicated the presence of two probable USTs within the proposed design area. The two UST's are denoted in Figure 2. Based on the geophysics report UST-1 is expected to be 1,000 gallon in capacity and buried 2-3 feet bgs. UST-2 is expected to be 270 in capacity and buried 2.5 to 3.5 feet bgs. The complete report can be found in Appendix C.

### **3.4 Well Survey**

No well survey was performed as part of this PSA.

### **3.5 Soil Sampling**

Soil boring occurred on December 8, 2010 at Parcel #66. Five direct push soil borings were conducted within the NCDOT design project on Parcel #66, which includes the western side of the site and a portion of Dale Circle. Figure 2 presents the Site Map with boring locations and identifications. These samples were located to optimize the likelihood of intercepting any potential soil contamination by targeting the two UST's and the western edge of the site which runs parallel to Old Shelby Rd. The first two borings, P66-SB-1 and -SB-2, were placed adjacent to the two probable UST's. Boring P61-SB-3 was placed on the southern side of the discount food store. Boring P61-SB-4 was placed across Dale Circle on the southern side of the abandoned building and P66-SB-5 was placed on the Old Shelby Rd side of the abandoned building. Boring locations did not exhibit elevated PID readings; therefore AMEC personnel believed to have adequate coverage of the site.

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-of-custody procedures.

## **4.0 SOIL SAMPLING RESULTS**

AMEC conducted soil sampling at the Site on December 8, 2010. 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 and shown on Figure 3.

A minimum of one soil sample was collected from each of the 5 completed soil borings from Parcel #66. Typically, if impacted soil is identified, then additional soil samples are obtained; however, at Parcel #66 PID readings did not warrant any additional soil samples. Analyses of soil samples for DRO and GRO did not indicate any sample locations with detections above the reporting limit.

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 December 8, 2010.



- One building on the property presently operates as a Discount Food Store. The other building is vacant.
- No UST are registered with the NCDENR UST Registered Tanks Database.
- Two probable USTs are located end-to-end on the northern side of the Discount Food Store Building. The western tank, UST-1, is expected to be 1,000 gallon in capacity and buried 2 to 3 feet bgs. The eastern tank, UST-2, appears to have a 270-gallon capacity and be buried 2.5 to 3.5 feet bgs.
- Five soil samples were collected and analyzed for TPH GRO and DRO from the parcel.
- Laboratory analyses of these five soil samples for DRO and GRO did not yield detections >10 mg/kg, the NC Action Level.

## 6.0 RECOMMENDATIONS

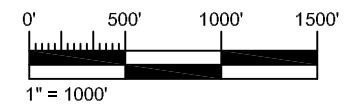
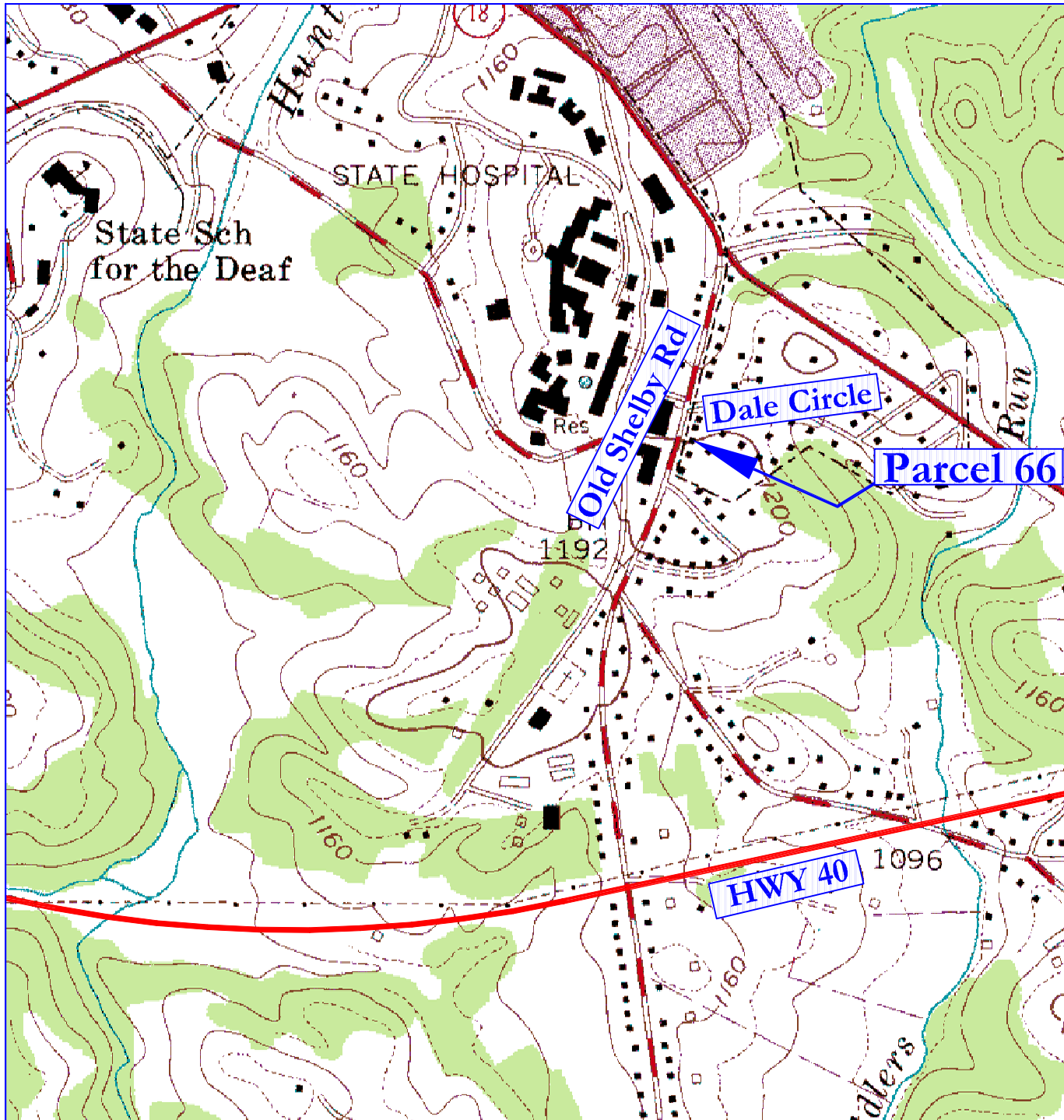
If the ROW does indeed not expand then no further action is suggested at this time for NCDOT since the UST are outside of the current ROW. However, if a proposed ROW or easement gets established and it overlaps the UST locations then the USTs and any associated piping must be properly closed by removal. Soil will have to be sampled during closure activities and handled following NCDENR's Tank Closure Guidelines.

## **TABLES**

**Table 1**  
**Soil Sampling Analytical Results, DRO-GRO**  
**Parcel 66, Timothy Charlotte Property (B and S Discount Foods)**  
**NC DOT**  
**Morganton, Burke County, North Carolina**

SAMPLE ID	SAMPLE DATE	SAMPLE DEPTH (ft bgs)	PID READINGS (ppm)	EPA Method 8015B	
				DRO (mg/kg)	GRO (mg/kg)
<b>NC Action Levels</b>				<b>10</b>	<b>10</b>
P8-SB-1	12/8/2010	8 - 9	0	<9.4	<5.4
P8-SB-2	12/8/2010	10 - 12	0	<8.5	<5.4
P8-SB-3	12/8/2010	6 - 8	0	<9.7	<6.4
P8-SB-4	12/8/2010	4 - 5	0	9.1	<4.5
P8-SB-5	12/8/2010	4 - 5	0	<8.4	<4.8
<b>NOTES:</b> bgs = below ground surface; ppm = parts per million <b>Bold</b> 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					

## FIGURES



7.5 Minute Quadrangle  
 North Carolina, 1983  
 Photorevised 1993

## VICINITY MAP

Parcel #66, Timothy & Charlotte Buff Property  
 (Historic U.S.B. Dale's Market & House)  
 Morganton, Burke County, NC

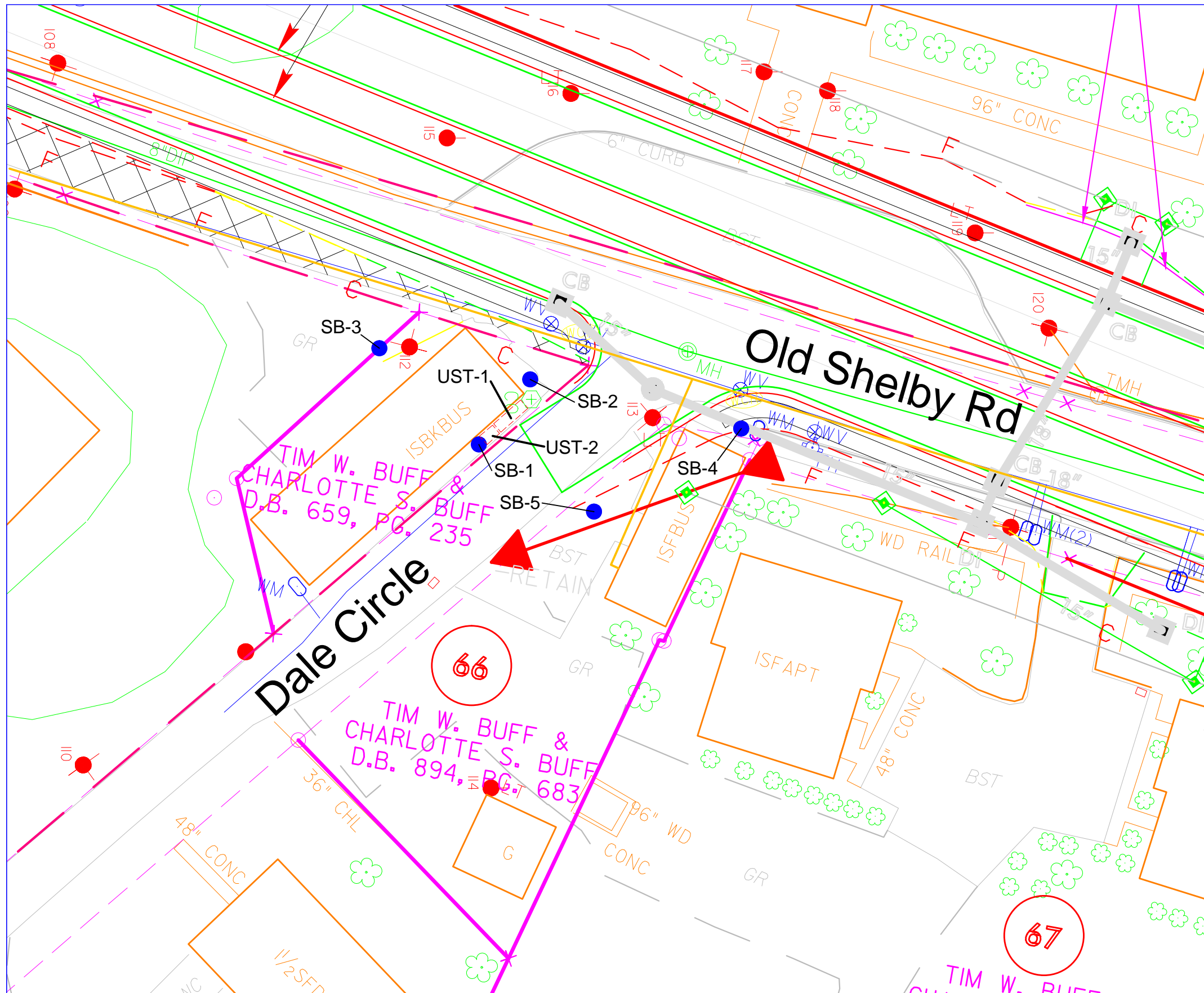
DRAWING NAME: J:\NCDOT\Burke\FIG1 DATE: 1/14/11

SCALE: 1 INCH = 1,000 FEET DR TLH CHK HPC REV










PREPARED FOR:  
 NC Department Of Transportation  
 Geotechnical Unit  
 WBS Element: 34832.1.1  
 TIP# U-2551

Prepared By:  
 338 N Elm Ave  
 Suite 112  
 Greensboro, NC 27401  
 (336) 691-5398

Figure:  
 Figure 1



**LEGEND**

-  Proposed Right of Way
-  Existing Property Line
-  Existing Right of Way
-  Cut Line
-  Fill Line
-  Soil Boring Location  
December 2010
-  Probable UST
-  Underground Gas Line
-  Underground Water Line

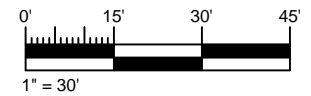
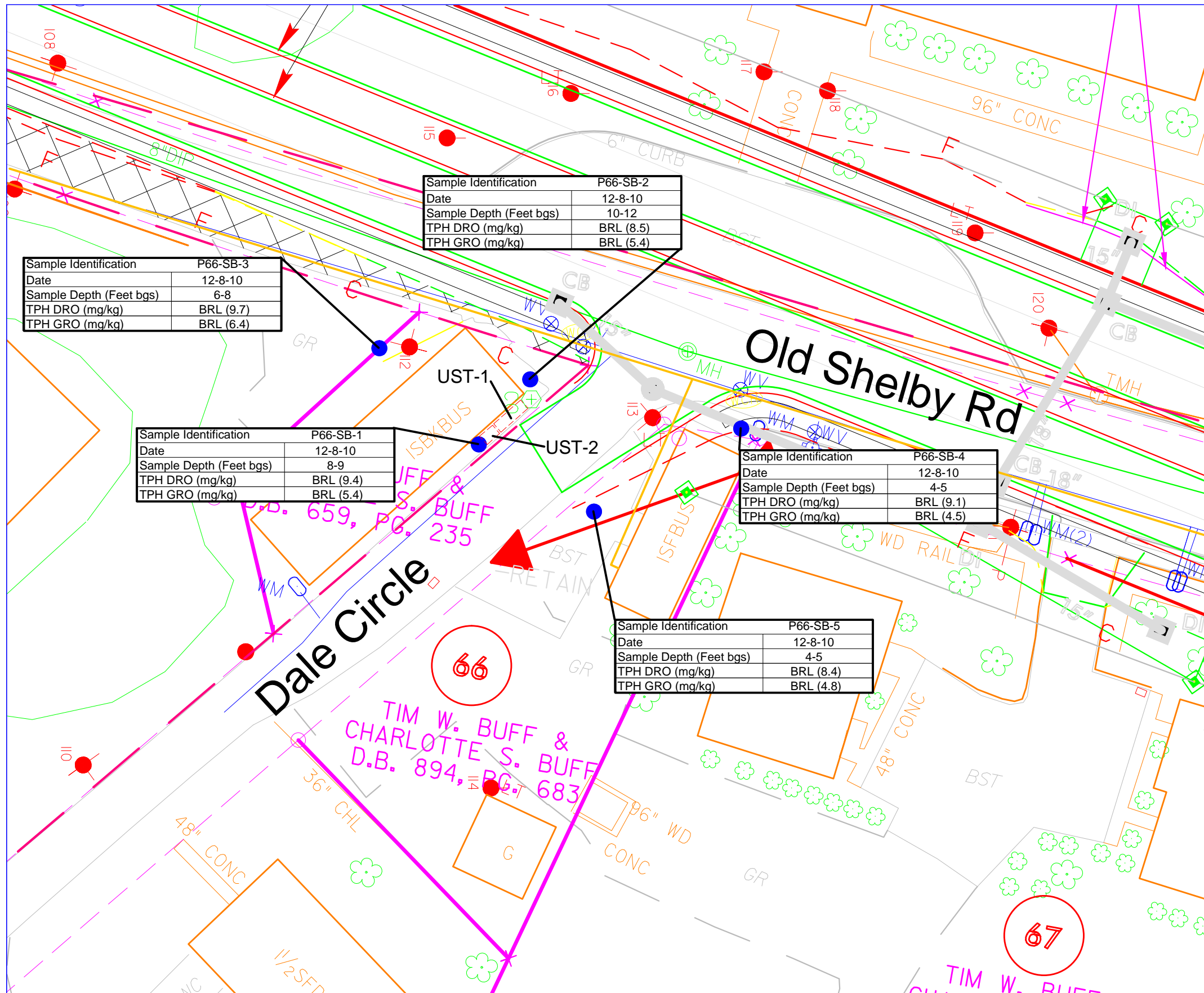


Figure 2  
Parcel #66 Timothy & Charlotte Buff Property  
Site Map With Sample Locations

NC Department of Transportation  
Geotechnical Unit  
WBS Element: 34832.1.1  
TIP# U-2551





Sample Identification	P66-SB-3
Date	12-8-10
Sample Depth (Feet bgs)	6-8
TPH DRO (mg/kg)	BRL (9.7)
TPH GRO (mg/kg)	BRL (6.4)

Sample Identification	P66-SB-2
Date	12-8-10
Sample Depth (Feet bgs)	10-12
TPH DRO (mg/kg)	BRL (8.5)
TPH GRO (mg/kg)	BRL (5.4)

Sample Identification	P66-SB-1
Date	12-8-10
Sample Depth (Feet bgs)	8-9
TPH DRO (mg/kg)	BRL (9.4)
TPH GRO (mg/kg)	BRL (5.4)

Sample Identification	P66-SB-4
Date	12-8-10
Sample Depth (Feet bgs)	4-5
TPH DRO (mg/kg)	BRL (9.1)
TPH GRO (mg/kg)	BRL (4.5)

Sample Identification	P66-SB-5
Date	12-8-10
Sample Depth (Feet bgs)	4-5
TPH DRO (mg/kg)	BRL (8.4)
TPH GRO (mg/kg)	BRL (4.8)

### LEGEND

- Proposed Right of Way
- Existing Property Line
- Existing Right of Way
- Cut Line
- Fill Line
- Soil Boring Location December 2010
- Probable UST
- Underground Gas Line
- Underground Water Line

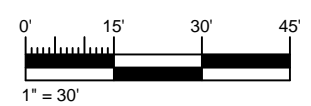


Figure 3  
Parcel #66 Timothy & Charlotte Buff Property  
Site Map With Analytical Data

NC Department of Transportation  
Geotechnical Unit  
WBS Element: 34832.1.1  
TIP# U-2551



**APPENDIX A**

**PHOTO LOG**





**Photo 1**

Viewing south from the north western corner of the parcel.



**Photo 2**

Viewing east from the northwestern corner of the site. The photo shows two UST's and the fuel ports.



338 North Elm Street, Suite 112  
Greensboro, NC 27401

W.O. 562112551  
PROCESSED TLH  
DATE December 2010  
PAGE

PHOTOGRAPHIC LOG

Preliminary Site Assessment  
Parcel 66, Southeast Corner of Old Shelby Road  
and Dale Circle, Morganton, NC



**Photo 3**

Viewing north from southwestern corner of the site.



**Photo 4**

Viewing west from northeastern portion of the site.



338 North Elm Street, Suite 112  
Greensboro, NC 27401

W.O. 562112551  
PROCESSED TLH  
DATE December 2010  
PAGE

PHOTOGRAPHIC LOG

Preliminary Site Assessment  
Parcel 66, Southeast Corner of Old Shelby Road  
and Dale Circle, Morganton, NC

**APPENDIX B**  
**BORING LOGS**













**APPENDIX C**  
**GEOPHYSICAL SURVEY REPORT**



## 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 66 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 apparently caused by reinforced concrete, buried utilities, or known site features (Figures 3 and 4). The GPR data collected over the EM61 anomaly near the northern building corner indicate the presence of two probable USTs located within about 15 feet of the northern building corner. The USTs are inside the limits of the planned right-of way and/or easement. Example GPR images showing the reflections from the probable USTs are shown on Figures 3 and 4. Figures 3 and 4 also include the locations of the probable USTs as marked in the field. Probable UST No. 1 is located approximately 2 feet east of the northern corner of the building. The GPR data indicate that probable UST No. 1 is buried approximately 2.0 to 3.0 feet below ground surface and is about 4 feet in diameter and about 10.5 feet long, equivalent to a capacity of about 1,000 gallons. The GPR data indicate that probable UST No. 2 is located approximately 10 to 15 feet southeast of the northern building corner and is buried approximately 2.5 to 3.5 feet below ground surface and is about 3 feet in diameter and about 5 feet long, equivalent to a capacity of about 270 gallons. Photographs of the probable UST locations, as marked in the field, are included on Figure 5.

## CONCLUSIONS

Our evaluation of the geophysical data collected on the subject property on Project U-2551 in Morganton, NC indicates the following:

The geophysical data indicate the presence of two probable USTs on Parcel 66 located within approximately 15 feet of the northern corner of the building. The USTs are inside the planned right-of-way and/or easement. Probable UST No. 1 is about 1,000-gallon capacity and is buried about 2.0 to 3.0 feet below ground surface. Probable UST No. 2 is about 270-gallon capacity and is buried about 2.5 to 3.5 feet below ground surface.

## 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)\09210013.32 (U-2551, BURKE COUNTY)\REPORT\PARCEL 66\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 66 (U-2551).DOCX



Parcel 66 – Timothy & Charlotte Buff Property, looking southeast



Parcel 66 – Timothy & Charlotte Buff Property, looking east





Geonics EM61-MK2



GSSI SIR-3000





Parcel 66 – Timothy & Charlotte Buff Property, looking northwest. Photo shows approximate marked location of probable UST Nos. 1 and 2 near the northern corner of the building.



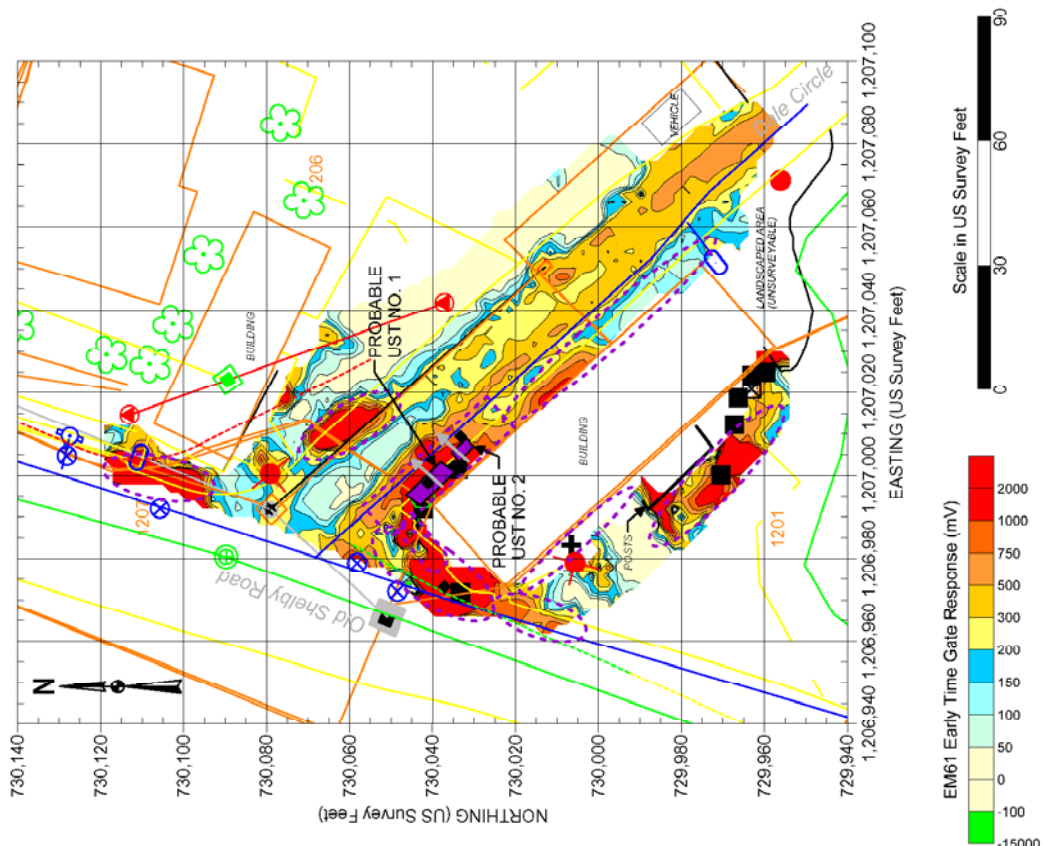
Parcel 66 – Timothy & Charlotte Buff Property, looking south. Photo shows approximate marked location of probable UST Nos. 1 and 2 near the northern corner of the building.



STATE PROJECT U-2551  
NC DEPT. OF TRANSPORTATION  
BURKE CO., NORTH CAROLINA  
PROJECT NO. 09210013.32

PHOTOS OF PROBABLE  
UST LOCATIONS  
PARCEL 66

FIGURE 5

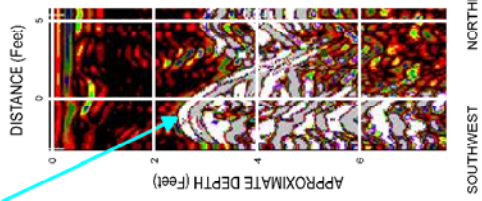
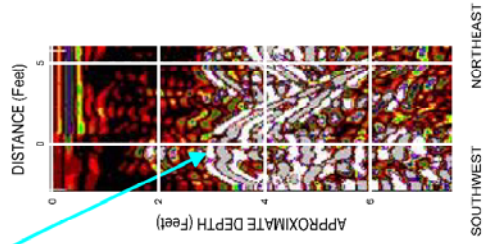


EXAMPLE GPR RESPONSE FROM PROBABLE UST NO.1

EXPLANATION	
	SIGN
	UTILITY POLE
	GUY WIRE
	MISCELLANEOUS METALLIC OBJECT
	UTILITY LID
	LIGHT POLE
	STORM SEWER INLET
	UST LID
	DOT PROPOSED RW
	DOT PROPOSED UTILITY EASEMENT
	PROPERTY LINE
	UTILITY (AS MARKED BY OTHERS OR AS PROVIDED BY NC DOT (VARIOUS COLORS))
	EXAMPLE GPR LINE LOCATION
	GPR SURVEY GRID
	LOCATION OF UST MARKED ON SITE

REF.: NCDOT FILES: u2551\_roy\_psh\_12.dgn  
(FOR SOME SITE FEATURES)

EXAMPLE GPR RESPONSE FROM PROBABLE UST NO.2



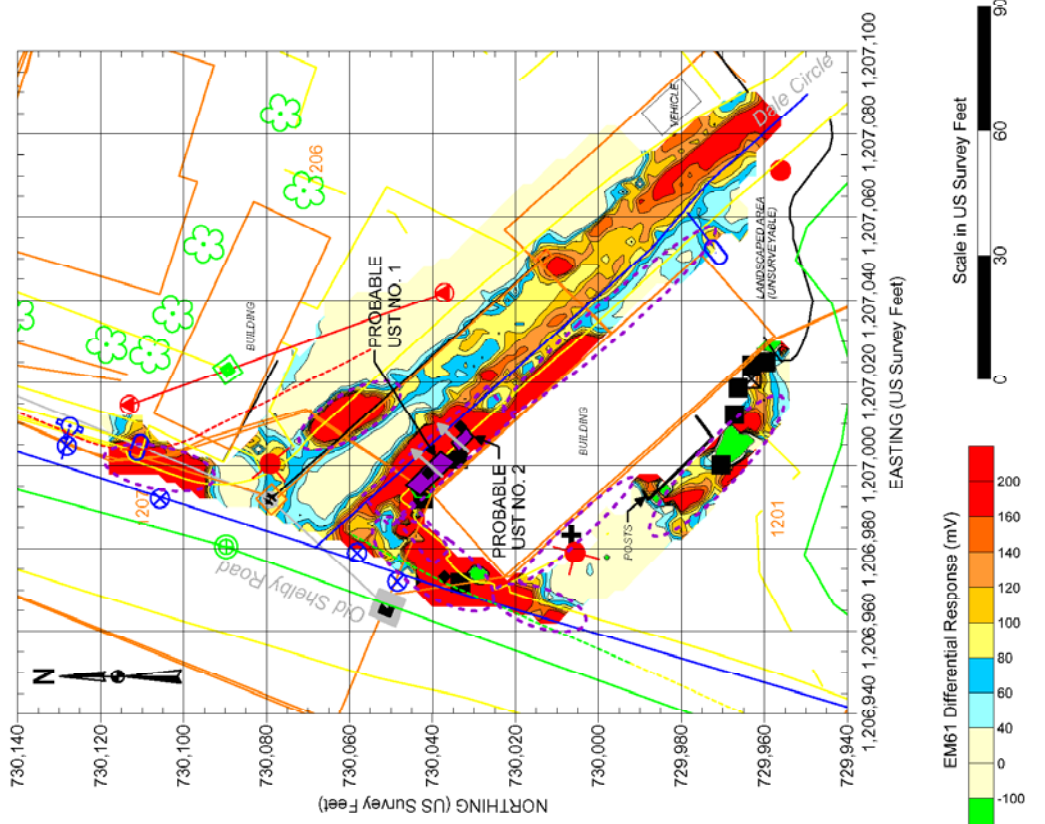
Note: The contour plot shows the earliest and most sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on December 1, 2010, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXR5 DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina Zone 3200, using the NAD 1983 datum. GPR data were acquired on December 3, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.



STATE PROJECT U-2551  
BURKE COUNTY, NORTH CAROLINA  
NC DEPARTMENT OF TRANSPORTATION  
PROJECT NO. 0821.00-3.32

PARCEL 66  
EARLY TIME GATE  
RESPONSE



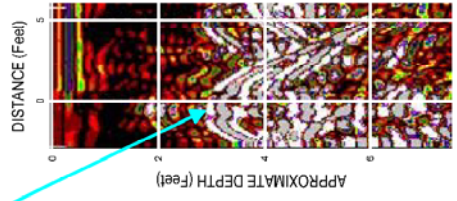
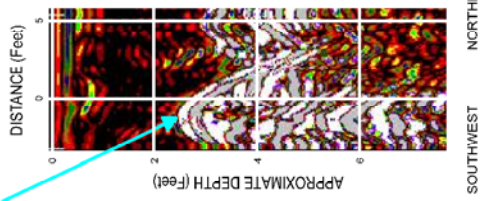


EXAMPLE GPR RESPONSE FROM PROBABLE UST NO.1

EXPLANATION	
	SIGN
	UTILITY POLE
	GUY WIRE
	MISCELLANEOUS METALLIC OBJECT
	UTILITY LID
	LIGHT POLE
	STORM SEWER INLET
	UST LID
	DOT PROPOSED RW
	DOT PROPOSED UTILITY EASEMENT
	PROPERTY LINE
	UTILITY (AS MARKED BY OTHERS OR AS PROVIDED BY NC DOT (VARIOUS COLORS))
	EXAMPLE GPR LINE LOCATION
	GPR SURVEY GRID
	LOCATION OF UST MARKED ON SITE

REF.: NCDOT FILES: u2551\_roy\_psh\_12.dgn  
(FOR SOME SITE FEATURES)

EXAMPLE GPR RESPONSE FROM PROBABLE UST NO.2



Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on December 1, 2010, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 1983 datum. GPR data were acquired on December 3, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.



STATE PROJECT U-2551  
BURKE COUNTY, NORTH CAROLINA  
NC DEPARTMENT OF TRANSPORTATION  
PROJECT NO. 0821.00-3.32

PARCEL 66  
DIFFERENTIAL  
RESPONSE



Parcel 66 – Timothy & Charlotte Buff Property, looking southeast



Parcel 66 – Timothy & Charlotte Buff Property, looking east





Geonics EM61-MK2



GSSI SIR-3000





Parcel 66 – Timothy & Charlotte Buff Property, looking northwest. Photo shows approximate marked location of probable UST Nos. 1 and 2 near the northern corner of the building.



Parcel 66 – Timothy & Charlotte Buff Property, looking south. Photo shows approximate marked location of probable UST Nos. 1 and 2 near the northern corner of the building.



STATE PROJECT U-2551  
NC DEPT. OF TRANSPORTATION  
BURKE CO., NORTH CAROLINA  
PROJECT NO. 09210013.32

PHOTOS OF PROBABLE  
UST LOCATIONS  
PARCEL 66

FIGURE 5

## **APPENDIX D**

### **LABORATORY ANALYTICAL RESULTS**

AMEC Earth & Env. Inc.(DOT Gree)  
Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Burke County Parcel 66  
Project No.: WBS #34832.1.1  
Lab Submittal Date: 12/10/2010  
Prism Work Order: 0120337

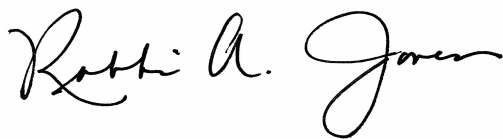
This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

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

**Data Qualifiers Key Reference:**

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.

Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
P-66-SB-1 (8-9)	0120337-01	Solid	12/08/10	12/10/10
P-66-SB-2 (10-12)	0120337-02	Solid	12/08/10	12/10/10
P-66-SB-3 (6-8)	0120337-03	Solid	12/08/10	12/10/10
P-66-SB-4 (4-5)	0120337-04	Solid	12/08/10	12/10/10
P-66-SB-5 (4-5)	0120337-05	Solid	12/08/10	12/10/10

Samples received in good condition at 2.0 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: Burke County  
 Parcel 66  
 Project No.: WBS #34832.1.1  
 Sample Matrix: Solid

Client Sample ID: P-66-SB-1 (8-9)  
 Prism Sample ID: 0120337-01  
 Prism Work Order: 0120337  
 Time Collected: 12/08/10 15:00  
 Time Submitted: 12/10/10 10:43

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.4	1.5	1	*8015C	12/17/10 21:17	JMV	P0L0363
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			72 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	5.4	0.70	50	*8015C	12/15/10 18:49	HPE	P0L0294
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			113 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	73.7	% by Weight	0.100	0.100	1	*SM2540 G	12/15/10 16:15	JAB	P0L0336



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

Project: NCDOT: Burke County  
 Parcel 66  
 Project No.: WBS #34832.1.1  
 Sample Matrix: Solid

Client Sample ID: P-66-SB-2 (10-12)  
 Prism Sample ID: 0120337-02  
 Prism Work Order: 0120337  
 Time Collected: 12/08/10 15:10  
 Time Submitted: 12/10/10 10:43

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	12/17/10 21:52	JMV	P0L0363
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			83 %		49-124	

**Gasoline Range Organics by GC/FID**

Gasoline Range Organics	BRL	mg/kg dry	5.4	0.71	50	*8015C	12/15/10 19:21	HPE	P0L0294
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			116 %		55-129	

**General Chemistry Parameters**

% Solids	81.8	% by Weight	0.100	0.100	1	*SM2540 G	12/15/10 16:15	JAB	P0L0336
----------	------	-------------	-------	-------	---	-----------	----------------	-----	---------

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

Project: NCDOT: Burke County  
Parcel 66  
Project No.: WBS #34832.1.1  
Sample Matrix: Solid

Client Sample ID: P-66-SB-3 (6-8)  
Prism Sample ID: 0120337-03  
Prism Work Order: 0120337  
Time Collected: 12/08/10 15:20  
Time Submitted: 12/10/10 10:43

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	BRL	mg/kg dry	9.7	1.6	1	*8015C	12/18/10 2:00	JMV	P0L0363
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			82 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	6.4	0.83	50	*8015C	12/15/10 19:52	HPE	P0L0294
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			114 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	72.1	% by Weight	0.100	0.100	1	*SM2540 G	12/15/10 16:15	JAB	P0L0336

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

Project: NCDOT: Burke County  
Parcel 66  
Project No.: WBS #34832.1.1  
Sample Matrix: Solid

Client Sample ID: P-66-SB-4 (4-5)  
Prism Sample ID: 0120337-04  
Prism Work Order: 0120337  
Time Collected: 12/08/10 15:40  
Time Submitted: 12/10/10 10:43

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<b>Diesel Range Organics by GC/FID</b>									
Diesel Range Organics	9.1	mg/kg dry	8.6	1.4	1	*8015C	12/18/10 1:25	JMV	P0L0363
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			91 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	4.5	0.59	50	*8015C	12/15/10 20:23	HPE	P0L0294
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			93 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	81.4	% by Weight	0.100	0.100	1	*SM2540 G	12/15/10 16:15	JAB	P0L0336

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

Project: NCDOT: Burke County  
Parcel 66  
Project No.: WBS #34832.1.1  
Sample Matrix: Solid

Client Sample ID: P-66-SB-5 (4-5)  
Prism Sample ID: 0120337-05  
Prism Work Order: 0120337  
Time Collected: 12/08/10 16:10  
Time Submitted: 12/10/10 10:43

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	8.4	1.4	1	*8015C	12/18/10 0:49	JMV	P0L0363
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			82 %		49-124	

### Gasoline Range Organics by GC/FID

Gasoline Range Organics	BRL	mg/kg dry	4.8	0.62	50	*8015C	12/15/10 20:54	HPE	P0L0294
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			121 %		55-129	

### General Chemistry Parameters

% Solids	82.3	% by Weight	0.100	0.100	1	*SM2540 G	12/15/10 16:15	JAB	P0L0336
----------	------	-------------	-------	-------	---	-----------	----------------	-----	---------



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

Project: NCDOT: Burke County Parcel  
 66  
 Project No: WBS #34832.1.1

Prism Work Order: 0120337  
 Time Submitted: 12/10/10 10:43:00AM

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P0L0294 - 5035</b>										
<b>Blank (P0L0294-BLK1)</b>										
Prepared & Analyzed: 12/15/10										
Gasoline Range Organics	BRL	5.0	mg/kg wet							
Surrogate: a,a,a-Trifluorotoluene	5.70		mg/kg wet	5.00		114	55-129			
<b>LCS (P0L0294-BS1)</b>										
Prepared & Analyzed: 12/15/10										
Gasoline Range Organics	52.6	5.0	mg/kg wet	50.0		105	67-116			
Surrogate: a,a,a-Trifluorotoluene	5.70		mg/kg wet	5.00		114	55-129			
<b>LCS Dup (P0L0294-BSD1)</b>										
Prepared & Analyzed: 12/15/10										
Gasoline Range Organics	53.4	5.0	mg/kg wet	50.0		107	67-116	1	200	
Surrogate: a,a,a-Trifluorotoluene	5.70		mg/kg wet	5.00		114	55-129			

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

Project: NCDOT: Burke County Parcel  
66  
Project No: WBS #34832.1.1

Prism Work Order: 0120337  
Time Submitted: 12/10/10 10:43:00AM

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P0L0363 - 3545A</b>										
<b>Blank (P0L0363-BLK1)</b>										
					Prepared: 12/16/10 Analyzed: 12/17/10					
Diesel Range Organics	BRL	7.0	mg/kg wet							
Surrogate: <i>o</i> -Terphenyl	1.35		mg/kg wet	1.60		84	49-124			
<b>LCS (P0L0363-BS1)</b>										
					Prepared: 12/16/10 Analyzed: 12/17/10					
Diesel Range Organics	51.5	7.0	mg/kg wet	79.9		64	55-109			
Surrogate: <i>o</i> -Terphenyl	1.59		mg/kg wet	1.60		99	49-124			
<b>LCS Dup (P0L0363-BSD1)</b>										
					Prepared: 12/16/10 Analyzed: 12/17/10					
Diesel Range Organics	55.4	7.0	mg/kg wet	79.9		69	55-109	7	200	
Surrogate: <i>o</i> -Terphenyl	1.71		mg/kg wet	1.60		107	49-124			

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

Project: NCDOT: Burke County Parcel  
66  
Project No: WBS #34832.1.1

Prism Work Order: 0120337  
Time Submitted: 12/10/10 10:43:00AM

**General Chemistry Parameters - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch P0L0336 - NO PREP**

**Blank (P0L0336-BLK1)** Prepared & Analyzed: 12/15/10

% Solids	100	0.100	% by Weight							
----------	-----	-------	-------------	--	--	--	--	--	--	--

**Duplicate (P0L0336-DUP2)** Source: 0120337-05 Prepared & Analyzed: 12/15/10

% Solids	82.3	0.100	% by Weight		82.3			0	20	
----------	------	-------	-------------	--	------	--	--	---	----	--

**Sample Extraction Data**

**Prep Method: 3545A**

Lab Number	Batch	Initial	Final	Date
0120337-01	P0L0363	25.15 g	1 mL	12/16/10
0120337-02	P0L0363	25.05 g	1 mL	12/16/10
0120337-03	P0L0363	25 g	1 mL	12/16/10
0120337-04	P0L0363	25.12 g	1 mL	12/16/10
0120337-05	P0L0363	25.17 g	1 mL	12/16/10

**Prep Method: 5035**

Lab Number	Batch	Initial	Final	Date
0120337-01	P0L0294	6.31 g	5 mL	12/15/10
0120337-02	P0L0294	5.63 g	5 mL	12/15/10
0120337-03	P0L0294	5.44 g	5 mL	12/15/10
0120337-04	P0L0294	6.77 g	5 mL	12/15/10
0120337-05	P0L0294	6.35 g	5 mL	12/15/10

**NO PREP**

Lab Number	Batch	Initial	Final	Date
0120337-01	P0L0336	30 g	30 mL	12/15/10
0120337-02	P0L0336	30 g	30 mL	12/15/10
0120337-03	P0L0336	30 g	30 mL	12/15/10
0120337-04	P0L0336	30 g	30 mL	12/15/10
0120337-05	P0L0336	30 g	30 mL	12/15/10



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: AMEL E+E  
Report To/Contact Name: Helen Corley  
Reporting Address: 338 N Elm Street  
Greensboro, NC 27401  
Phone: 336-691-5398 Fax (Yes) (No):  
Email (Yes) (No) Email Address: helen.corley@amel.com  
EDD Type: PDF  Excel  Other  
Site Location Name: Parcel 66  
Site Location Physical Address: Morganton, NC

# CHAIN OF CUSTODY RECORD

PAGE 1 OF 1 QUOTE # TO ENSURE PROPER BILLING: WBS: 34832.1.1

Project Name: Burke County  
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: Helen Corley  
Address: 338 N Elm Street  
Greensboro, NC 27401

Purchase Order No./Billing Reference WBS: 34832.1.1  
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?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Received ON WET ICE? Temp <u>2.0</u>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
PROPER PRESERVATIVES indicated?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Received WITHIN HOLDING TIMES?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
CUSTODY SEALS INTACT?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
VOLATILES rec'd W/O HEADSPACE?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PROPER CONTAINERS used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL  
Certification: NELAC  USACE  FL  NC   
SC  OTHER  N/A   
Water Chlorinated: YES  NO   
Sample Iced Upon Collection: YES  NO

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER OR SLUDGE)	SAMPLE CONTAINER			PRESERVATIVES	ANALYSES REQUESTED				REMARKS	PRISM LAB ID NO.	
				*TYPE SEE BELOW	NO.	SIZE								
<u>P-66-SB-1(8-9)</u>	<u>12.8-10</u>	<u>1500</u>	<u>Soil</u>	<u>vac/G</u>	<u>3/2</u>	<u>vac/G</u>	<u>none methanol</u>	<u>X</u>	<u>X</u>					<u>01</u>
<u>P-66-SB-2(10-12)</u>	<u>↓</u>	<u>1510</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>					<u>02</u>
<u>P-66-SB-3(6-8)</u>	<u>↓</u>	<u>1520</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>					<u>03</u>
<u>P-66-SB-4(4-5)</u>	<u>↓</u>	<u>1540</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>					<u>04</u>
<u>P-66-SB-5(4-5)</u>	<u>↓</u>	<u>1610</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>	<u>↓</u>					<u>05</u>
<u>P-66-SB</u>														

Sampler's Signature Troy L Holzschuh Sampled By (Print Name) Troy L Holzschuh Affiliation AMEL

**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.

Relinquished By: (Signature) <u>Troy L Holzschuh</u>	Received By: (Signature) <u>Troy L Holzschuh</u>	Date <u>12-10-10</u>	Military/Hours	Additional Comments:
Relinquished By: (Signature)	Received By: (Signature)	Date		
Relinquished By: (Signature)	Received For Prism Laboratories By: <u>[Signature]</u>	Date <u>12-10-10</u>	10:43	
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.			COC Group No. <u>0126337</u>	

PRISM USE ONLY	
Site Arrival Time:	
Site Departure Time:	
Field Tech Fee:	
Mileage:	

NPDES: <input type="checkbox"/> NC <input type="checkbox"/> SC	UST: <input type="checkbox"/> NC <input type="checkbox"/> SC	GROUNDWATER: <input type="checkbox"/> NC <input type="checkbox"/> SC	DRINKING WATER: <input type="checkbox"/> NC <input type="checkbox"/> SC	SOLID WASTE: <input type="checkbox"/> NC <input type="checkbox"/> SC	RCRA: <input type="checkbox"/> NC <input type="checkbox"/> SC	CERCLA: <input type="checkbox"/> NC <input type="checkbox"/> SC	LANDFILL: <input type="checkbox"/> NC <input type="checkbox"/> SC	OTHER: <input type="checkbox"/> NC <input type="checkbox"/> SC
--	--	--	---	--	---	---	---	--

**SEE REVERSE FOR TERMS & CONDITIONS**

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