




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

**Steven L. Jarvis and Margaret C. Jarvis, Trustees Property  
Parcel #199  
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 Stephen L. Jarvis and Margaret C. Jarvis, Trustees Property (the Site) to be effected by a road improvement project along NC 18, Sparta Rd. The Site which is located at 3148 Sparta Rd currently operates as a convenience store and gas station, Village Market Exxon. The property is located on the eastern 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 Stephen L. Jarvis and Margaret C. Jarvis, Trustees Property due to NCDENR's Underground Storage Tanks (UST) section registry reporting five tanks currently in use and four tanks listed as removed in 1993. The PSA was performed to determine if soils within the expanded ROW have been impacted by petroleum compounds as a result of past and present uses of the property within the proposed design project area. 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 #199 and estimates the extent of soil contamination, if applicable.

### **1.1 Site Location and Vicinity**

The Stephen L. Jarvis and Margaret C. Jarvis, Trustees Property parcel is located on the eastern side of Sparta Road in North Wilkesboro, Wilkes County, North Carolina, as shown in Figure 1. The properties to the north and south are residential with single family homes. The properties to the east and west are agricultural and the property to the northwest is Mulberry Elementary school.

## 1.2 Site Description and History

The Site is currently operating as a convenience store and a gas station. The Site has one line of three pump islands each with one dispenser, and all under the cover of a canopy. The building is a single story brick structure which operates as a convenience store. The proposed DOT project will parallel the western property edge of Parcel #199 along Sparta Rd. Five USTs were observed at this facility. Appendix A includes a photo log for Parcel #199.

AMEC studied the NCDENR UST Registered Tanks Database, which listed a total of nine tanks associated with this parcel. One tank was installed January 1, 1964 and three of the tanks were installed on November 5, 1966 and their information is tabulated below.

UST capacity in gallons	UST contents
550	Kerosene, Kerosene Mix
1,000	Gasoline, Gasoline Mix
1,000	Gasoline, Gasoline Mix
2,000	Gasoline, Gasoline Mix

The aforementioned tanks were all permanently closed on July 13, 1993 according to the NCDENR Database. The replacement five tanks were installed July 16, 1993 and are all currently in use. Their information is tabulated below.

UST capacity in gallons	UST contents
1,000	Kerosene, Kerosene Mix
2,000	Diesel, Diesel Mix
3,000	Gasoline, Gasoline Mix
4,000	Gasoline, Gasoline Mix
8,000	Gasoline, Gasoline Mix

AMEC also reviewed the NCDENR Incident Management Database Groundwater incident #11204 has been assigned to this parcel. NCDENR received the closure report April 18, 1994.

## **2.0 GEOLOGY**

### **2.1 Regional Geology**

The Stephen L. Jarvis and Margaret C. Jarvis, Trustees 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 5 shallow direct push probe soil borings (SB) onsite. Borings total depth were 10 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 personnel. 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 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 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 10 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 does not indicate the presence of any USTs within the proposed design area. The complete geophysical survey report can be found in Appendix C.

### **3.4 Well Survey**

No well survey was performed as part of this PSA. Monitoring wells were observed on the parcel, but were not accessible.

### **3.5 Soil Sampling**

Soil boring occurred on January 24, 2011 at Parcel #199. Five direct push soil borings were conducted within the NCDOT design project on Parcel #199, which includes the western side of the site. 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 western edge of the site and the proposed drainage features which runs parallel to Sparta Rd. The first boring, P199-SB-1, was placed at the southern

end of the site on the proposed drainage feature. The remaining soil borings P199-SB-2 through -SB-5 followed the proposed drainage in a northerly direction in 25 foot intervals. 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-of-custody 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 5 completed soil borings from Parcel #199. 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. None of the soil sample results from DRO or GRO analyses reported values higher than the laboratory detection limit or the NC Action Level of 10 mg/kg or the . 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 presently operates as a Convenience store and a gas station.
- The NCDENR's UST Registered Tanks Database lists four USTs as permanently closed as of July 13, 1993 and five USTs as currently operational. The USTs are situated in two tank beds that are both located outside of and east of the proposed expanded ROW.
- The geophysics investigation surveyed only within the area of the proposed expanded ROW and no UST were identified.
- Five 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 five USTs currently in use are not within the proposed ROW or construction easement. Removal of USTs and any associated piping by the UST owner is not recommended. The Incident Management database received a closure report on April 18, 1994 and field observations and laboratory analysis did not indicate contamination.

NCDOT should nevertheless be 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.

## **TABLES**

**Table 1**  
**Soil Sampling Analytical Results, DRO-GRO**  
**Parcel 199, S.L. Jarvis and M.C. Jarvis, Trustees Property**  
**NC DOT**  
**North Wilkesboro, Wilkes 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>
P199-SB-1	1/24/2011	3 - 5	0	<9.0	<4.5
P199-SB-2	1/24/2011	8 - 10	1	<9.4	<5.3
P199-SB-3	1/24/2011	3 - 5	0	<9.1	<5.0
P199-SB-4	1/24/2011	3 - 5	0	<9.1	<4.1
P199-SB-5	1/24/2011	3 - 5	0	<9.1	<4.9

**NOTES:**

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

mg/kg = milligrams per kilogram

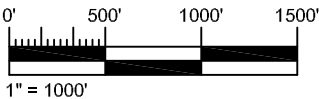
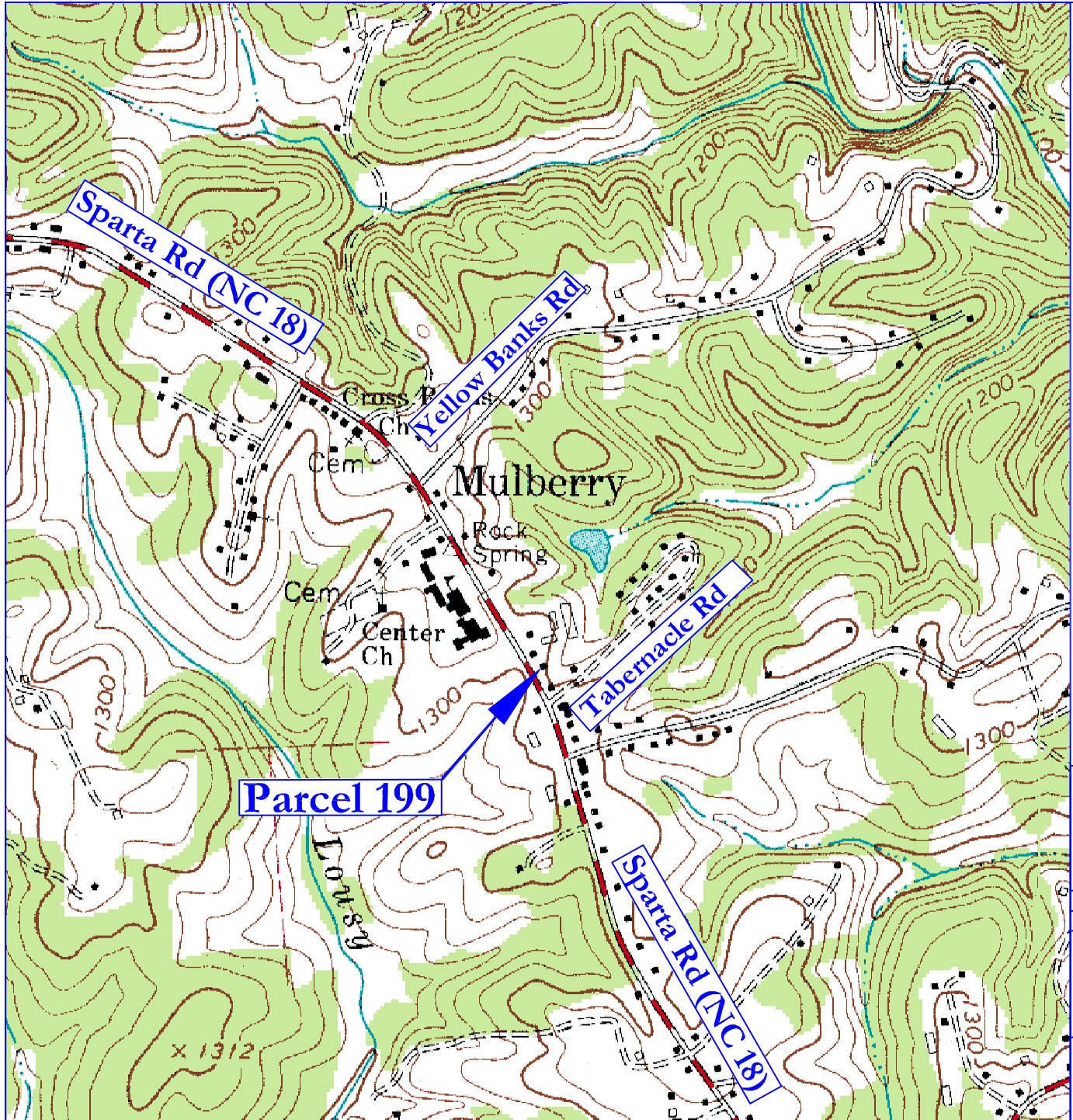
**Bold** Concentrations Exceed Action Levels

DRO = Diesel Range Organics

GRO = Gasoline Range Organics

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

## FIGURES



7.5 Minute Quadrangle  
 North Carolina, 1983  
 Photorevised 1993

### VICINITY MAP

Parcel #199, Steven L. Jarvis &  
 Margaret C. Jarvis Trustees Property  
 (Village Market Exxon)  
 North Wilkesboro, Wilkes County, NC

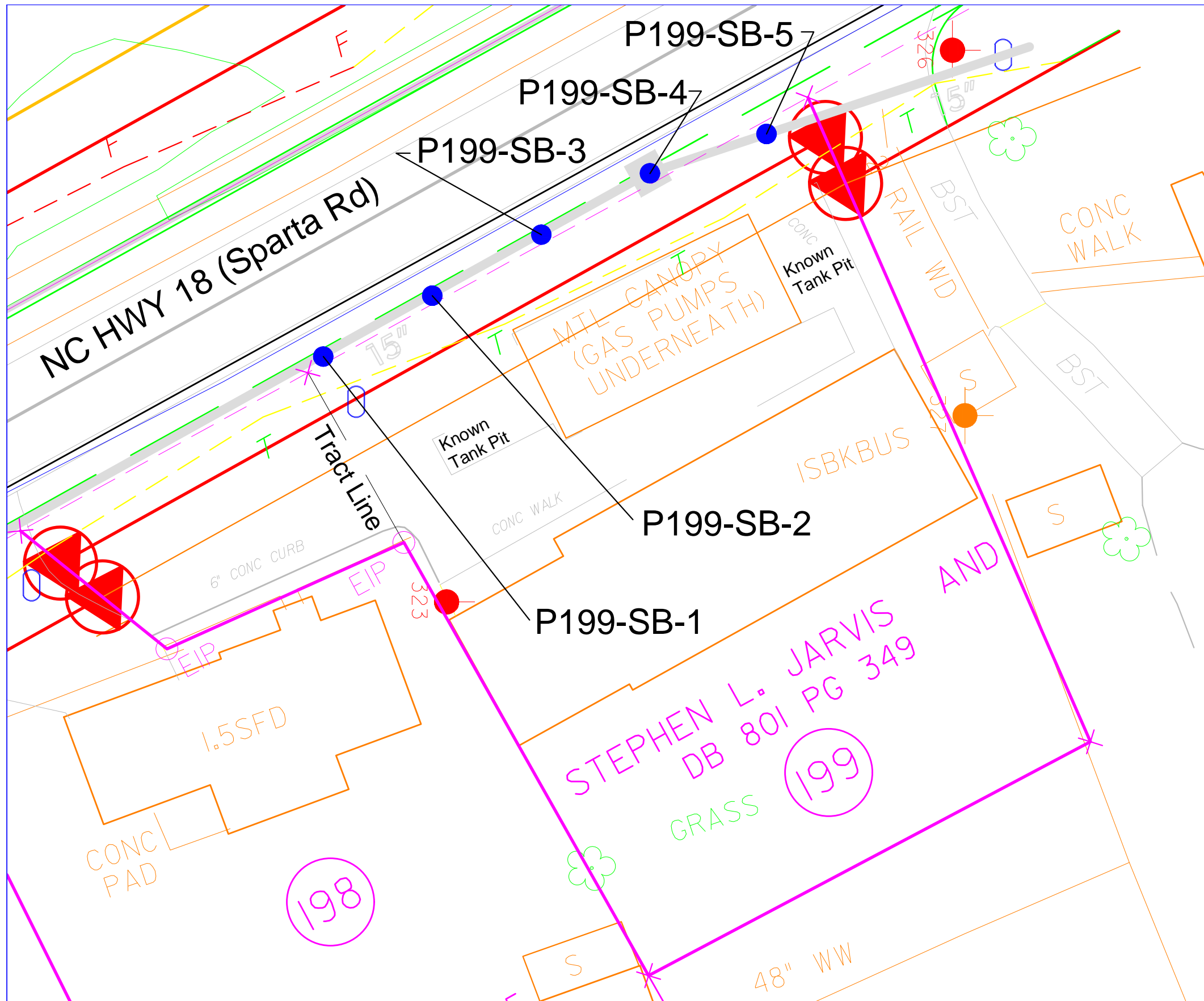
DRAWING NAME: J:\NCDOT\Wilkes\FIC1 DATE: 2-24-11

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











PREPARED FOR:  
 NC Department Of Transportation  
 Geotechnical Unit  
 WBS Element: 35579.1.1  
 TIP# R-3405

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
-  C Cut Line
-  F Fill Line
-  T Transition Line
-  Soil Boring Location January 2011
-  Probable UST
-  Utility Easement
-  Utility Pole

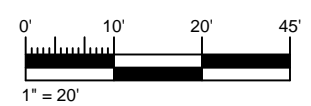
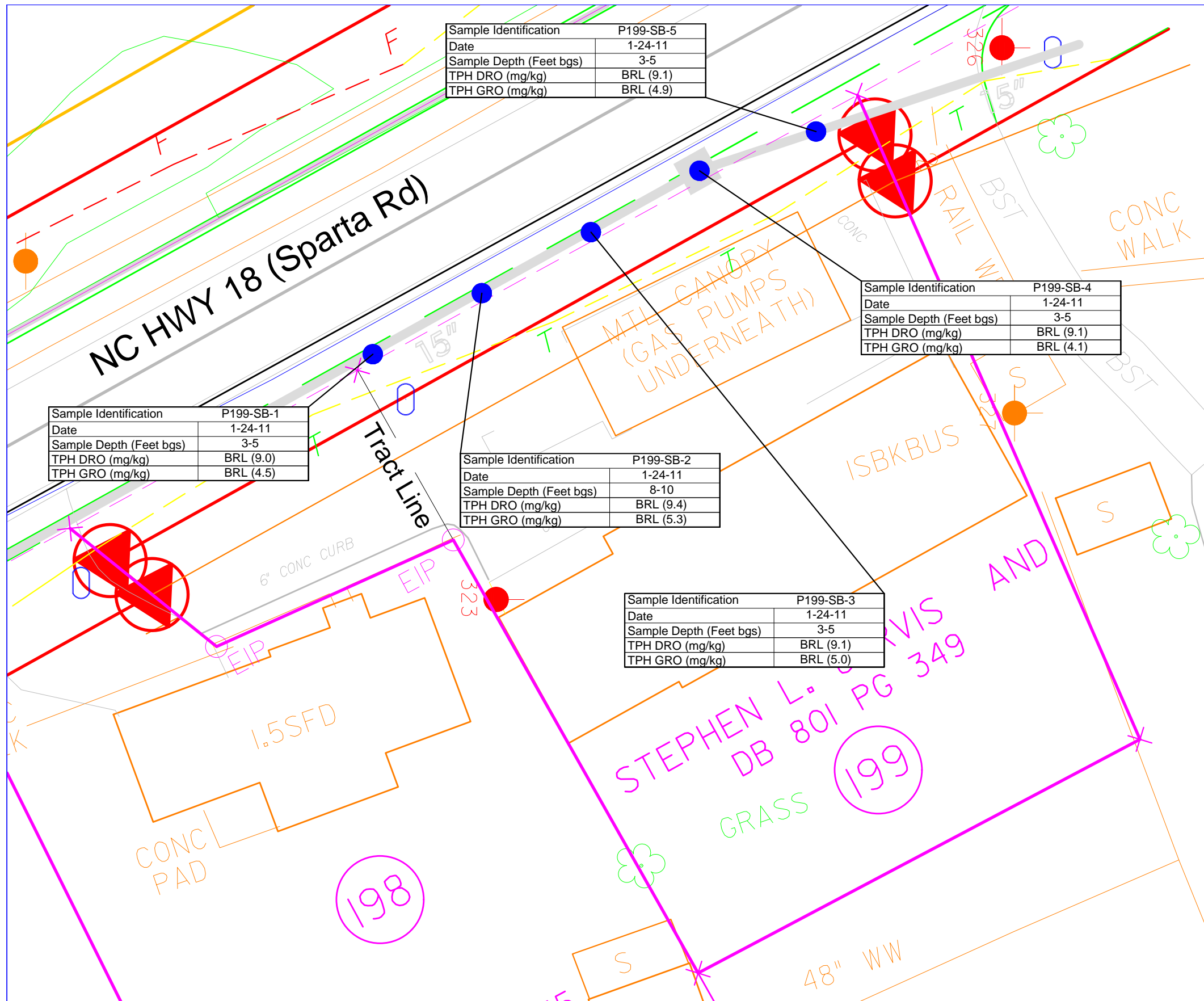


Figure 2  
Parcel #199 S.L. Jarvis & M.C. Jarvis,  
Trustees Property  
Site Map

NC Department of Transportation  
Geotechnical Unit  
WBS Element: 35579.1.1  
TIP# R-3405





**LEGEND**

- Proposed Right of Way
- Existing Property Line
- Existing Right of Way
- Cut Line
- Fill Line
- Transition Line
- Soil Boring Location January 2011
- Probable UST
- Utility Easement

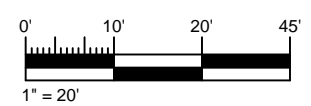


Figure 3  
Parcel #199 S.L. Jarvis & M.C. Jarvis,  
Trustees Property  
Site Map With Analytical Data

NC Department of Transportation  
Geotechnical Unit  
WBS Element: 35579.1.1  
TIP# R-3405



**APPENDIX A**

**PHOTO LOG**





**Photo 1**

Viewing north from the southwestern corner of the parcel.



**Photo 2**

Viewing north from the southwestern corner of the site. The photo shows CSI patching asphalt in an area blocked off with cones for safety.



338 North Elm Street, Suite 112  
Greensboro, NC 27401

W.O. 562113405  
PROCESSED TLH  
DATE January 2011  
PAGE 1

PHOTOGRAPHIC LOG

Preliminary Site Assessment  
Parcel 199, Gary B. Miller Property  
North Wilkesboro, NC



**Photo 3**

Viewing east from western portion of the site. Photo shows ROW point set by NCDOT.



**Photo 4**

Viewing east from western portion of the site. Photo shows known UST and fuelports



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DATE January 2011  
PAGE 2

PHOTOGRAPHIC LOG

Preliminary Site Assessment  
Parcel 199, Gary B. Miller Property  
North Wilkesboro, NC

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















**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 199, 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 10 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 east side of Sparta Road, just north of Tabernacle Road, in North Wilkesboro, NC. The purpose of the geophysical surveys was to locate known and 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 199 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, known site features (Figures 3 and 4). The GPR data collected over the known tank pit did not image the tank. The depth penetration of the GPR signal was likely restricted by the recently poured concrete above the known tank. It is possible that the known tank is partially within the proposed easement. Photographs of the known UST location are included on Figure 5.

## **CONCLUSIONS**

Our evaluation of the geophysical data collected on Parcel 199 of Project R-3405 in North Wilkesboro, NC indicates the following:

The EM data indicated the possible presence of a known metallic UST in the areas surveyed on the subject property. During the EM61 surveys, an area above the known UST was excavated and repairs or upgrades were being made by others (Figure 5). After the repairs were completed and a new slab was poured over the known UST, we attempted to image the known UST with GPR but were not successful due to the attenuation of the GPR signal by the fresh concrete. The location of the known UST could not be verified with GPR but it may be partially within the proposed easement.

**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 199\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 199 (R-3405).DOCX



Parcel 199 – S.L. Jarvis & M.C. Jarvis Property, looking southeast



Parcel 199 – S.L. Jarvis & M.C. Jarvis Property, looking northeast

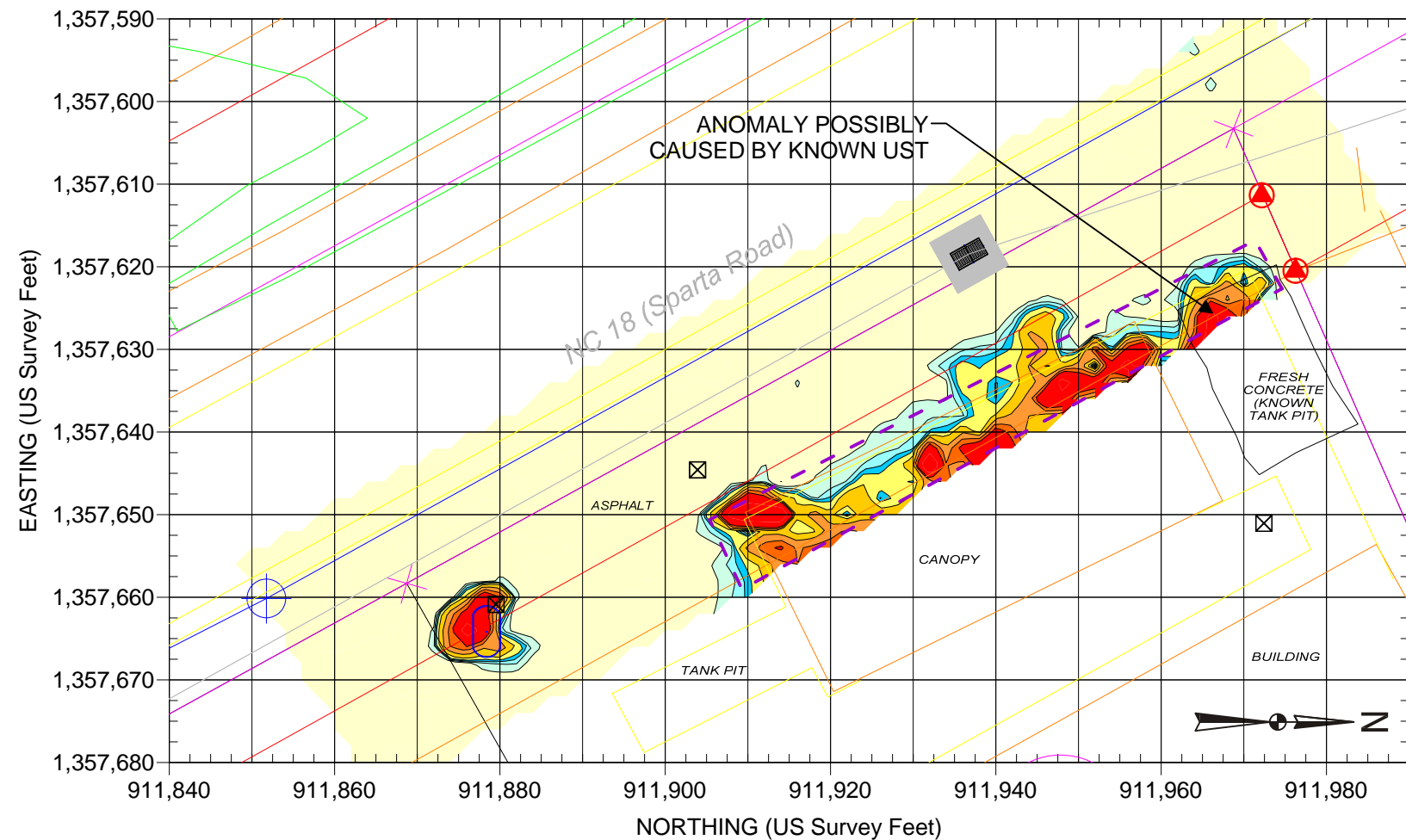




Geonics EM61-MK2

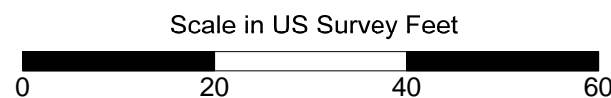
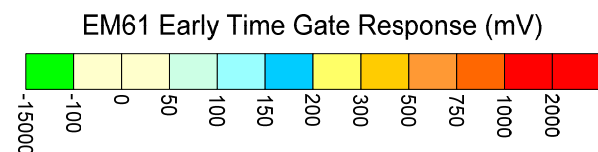


GSSI SIR-3000



EXPLANATION	
	SIGN
	UTILITY POLE
	GUY WIRE
	MISCELLANEOUS METALLIC OBJECT
	UTILITY MANHOLE, METER, BOX, ETC.
	LIGHT POLE
	STORM SEWER INLET
	UST LID
	DOT PROPOSED R/W
	DOT PROPOSED UTILITY EASEMENT
	PROPERTY LINE
	UTILITY (AS MARKED BY OTHERS OR AS PROVIDED BY NCDOT [VARIOUS COLORS])
	EXAMPLE GPR LINE LOCATION
	GPR SURVEY AREA
	LOCATION OF KNOWN OR SUSPECT USTS MARKED ON SITE

REF.: NCDOT FILE: r3405\_ddc\_psh14\_060530.dgn  
(FOR SOME SITE FEATURES)

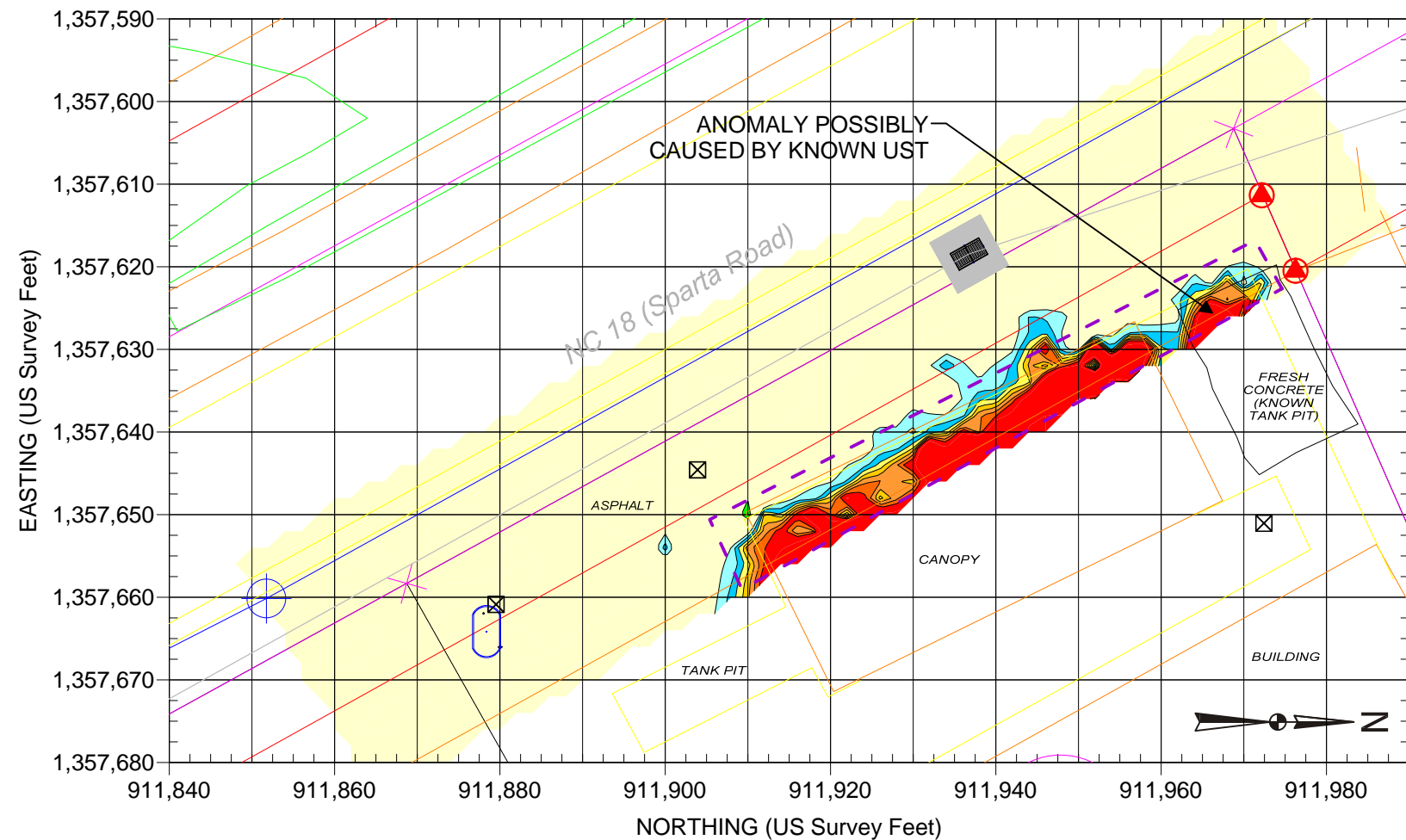


Note: The contour plot shows the earliest and most sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on December 10, 2010, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina Zone 3200, using the NAD 1983 datum. GPR data were acquired on December 22, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.



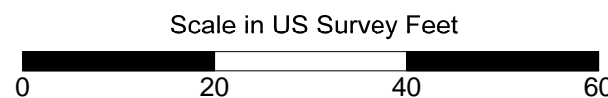
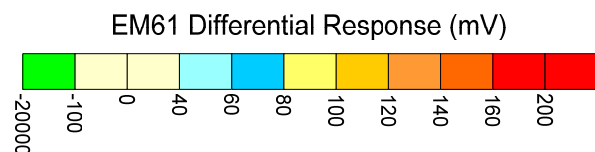
STATE PROJECT R-3405  
WILKES COUNTY, NORTH CAROLINA  
NC DEPARTMENT OF TRANSPORTATION  
PROJECT NO. 09210013.34

PARCEL 199  
EARLY TIME GATE  
RESPONSE



EXPLANATION	
	SIGN
	UTILITY POLE
	GUY WIRE
	MISCELLANEOUS METALLIC OBJECT
	UTILITY MANHOLE, METER, BOX, ETC.
	LIGHT POLE
	STORM SEWER INLET
	UST LID
	DOT PROPOSED R/W
	DOT PROPOSED UTILITY EASEMENT
	PROPERTY LINE
	UTILITY (AS MARKED BY OTHERS OR AS PROVIDED BY NCDOT [VARIOUS COLORS])
	EXAMPLE GPR LINE LOCATION
	GPR SURVEY AREA
	LOCATION OF KNOWN OR SUSPECT USTS MARKED ON SITE

REF.: NCDOT FILE: r3405\_ddc\_psh14\_060530.dgn  
(FOR SOME SITE FEATURES)



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 10, 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 22, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.



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

PARCEL 199  
DIFFERENTIAL  
RESPONSE

FIGURE 4





Parcel 199 – S.L. Jarvis & M.C. Jarvis Property, looking northwest. Photo shows location of known UST on north side of building during repairs by others.



Parcel 199 – S.L. Jarvis & M.C. Jarvis Property, looking southeast. Photo shows location of new slab poured over the known UST near the north side of the property.

## **APPENDIX D**

### **LABORATORY ANALYTICAL RESULTS**

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

Project: NCDOT: Wilkes County Parcel 199  
Project No.: WBS #35579.1.1  
Lab Submittal Date: 01/26/2011  
Prism Work Order: 1010536

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:**

- 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

02/02/2011

Prism Work Order: 1010536

Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
P199-SB-1(3-5)	1010536-01	Solid	01/24/11	01/26/11
P199-SB-2(8-10)	1010536-02	Solid	01/24/11	01/26/11
P199-SB-3(3-5)	1010536-03	Solid	01/24/11	01/26/11
P199-SB-4(3-5)	1010536-04	Solid	01/24/11	01/26/11
P199-SB-5(3-5)	1010536-05	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 199  
 Project No.: WBS #35579.1.1  
 Sample Matrix: Solid

Client Sample ID: P199-SB-1(3-5)  
 Prism Sample ID: 1010536-01  
 Prism Work Order: 1010536  
 Time Collected: 01/24/11 10:30  
 Time Submitted: 01/26/11 13:12

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	9.0	1.5	1	*8015C	1/29/11 20:27	JMV	P1A0511
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			111 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	4.5	0.58	50	*8015C	1/28/11 19:43	HPE	P1A0482
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			86 %		55-129	
<b>General Chemistry Parameters</b>									
% Solids	77.5	% by Weight	0.100	0.100	1	*SM2540 G	1/27/11 16:00	JAB	P1A0475

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

Project: NCDOT: Wilkes County  
Parcel 199  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P199-SB-2(8-10)  
Prism Sample ID: 1010536-02  
Prism Work Order: 1010536  
Time Collected: 01/24/11 10:45  
Time Submitted: 01/26/11 13:12

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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### Diesel Range Organics by GC/FID

Diesel Range Organics	BRL	mg/kg dry	9.4	1.5	1	*8015C	1/29/11 21:02	JMV	P1A0511
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			105 %		49-124	

### Gasoline Range Organics by GC/FID

Gasoline Range Organics	BRL	mg/kg dry	5.3	0.69	50	*8015C	1/28/11 20:15	HPE	P1A0482
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			168 %		55-129	A

### General Chemistry Parameters

% Solids	74.4	% by Weight	0.100	0.100	1	*SM2540 G	1/27/11 16:00	JAB	P1A0475
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AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 199  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P199-SB-3(3-5)  
Prism Sample ID: 1010536-03  
Prism Work Order: 1010536  
Time Collected: 01/24/11 11:00  
Time Submitted: 01/26/11 13:12

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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### Diesel Range Organics by GC/FID

Diesel Range Organics	BRL	mg/kg dry	9.1	1.5	1	*8015C	1/29/11 21:38	JMV	P1A0511
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			113 %		49-124	

### Gasoline Range Organics by GC/FID

Gasoline Range Organics	BRL	mg/kg dry	5.0	0.66	50	*8015C	1/28/11 20:47	HPE	P1A0482
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			106 %		55-129	

### General Chemistry Parameters

% Solids	76.4	% by Weight	0.100	0.100	1	*SM2540 G	1/27/11 16:00	JAB	P1A0475
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AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 199  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P199-SB-4(3-5)  
Prism Sample ID: 1010536-04  
Prism Work Order: 1010536  
Time Collected: 01/24/11 11:15  
Time Submitted: 01/26/11 13:12

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	9.1	1.5	1	*8015C	1/29/11 22:13	JMV	P1A0511
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			112 %		49-124	
<b>Gasoline Range Organics by GC/FID</b>									
Gasoline Range Organics	BRL	mg/kg dry	4.1	0.54	50	*8015C	1/28/11 21:19	HPE	P1A0482
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			172 %		55-129	A
<b>General Chemistry Parameters</b>									
% Solids	77.0	% by Weight	0.100	0.100	1	*SM2540 G	1/27/11 16:00	JAB	P1A0475



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338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County  
Parcel 199  
Project No.: WBS #35579.1.1  
Sample Matrix: Solid

Client Sample ID: P199-SB-5(3-5)  
Prism Sample ID: 1010536-05  
Prism Work Order: 1010536  
Time Collected: 01/24/11 11:30  
Time Submitted: 01/26/11 13:12

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
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### Diesel Range Organics by GC/FID

Diesel Range Organics	BRL	mg/kg dry	9.1	1.5	1	*8015C	1/29/11 22:49	JMV	P1A0511
			Surrogate			Recovery		Control Limits	
			o-Terphenyl			109 %		49-124	

### Gasoline Range Organics by GC/FID

Gasoline Range Organics	BRL	mg/kg dry	4.9	0.63	50	*8015C	1/28/11 21:50	HPE	P1A0482
			Surrogate			Recovery		Control Limits	
			a,a,a-Trifluorotoluene			112 %		55-129	

### General Chemistry Parameters

% Solids	76.6	% by Weight	0.100	0.100	1	*SM2540 G	1/27/11 16:00	JAB	P1A0475
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AMEC Earth & Env. Inc.(DOT Gree)  
Attn: Helen Corley  
338 North Elm St. Suite 112  
Greensboro, NC 27401

Project: NCDOT: Wilkes County Parcel  
199  
Project No: WBS #35579.1.1

Prism Work Order: 1010536  
Time Submitted: 1/26/11 1:12:00PM

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
<b>Batch P1A0482 - 5035</b>									
<b>Blank (P1A0482-BLK1)</b>									
Prepared & Analyzed: 01/28/11									
Gasoline Range Organics	BRL	5.0	mg/kg wet						
Surrogate: a,a,a-Trifluorotoluene	5.25		mg/kg wet	5.00		105 55-129			
<b>LCS (P1A0482-BS1)</b>									
Prepared & Analyzed: 01/28/11									
Gasoline Range Organics	41.6	5.0	mg/kg wet	50.0		83 67-116			
Surrogate: a,a,a-Trifluorotoluene	5.30		mg/kg wet	5.00		106 55-129			
<b>LCS Dup (P1A0482-BSD1)</b>									
Prepared & Analyzed: 01/28/11									
Gasoline Range Organics	41.2	5.0	mg/kg wet	50.0		82 67-116	1	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  
199  
Project No: WBS #35579.1.1

Prism Work Order: 1010536  
Time Submitted: 1/26/11 1:12:00PM

**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 P1A0511 - 3545A</b>										
<b>Blank (P1A0511-BLK1)</b>										
					Prepared: 01/28/11 Analyzed: 01/29/11					
Diesel Range Organics	BRL	7.0	mg/kg wet							
Surrogate: <i>o</i> -Terphenyl	1.51		mg/kg wet	1.60		95	49-124			
<b>LCS (P1A0511-BS1)</b>										
					Prepared: 01/28/11 Analyzed: 01/29/11					
Diesel Range Organics	61.9	7.0	mg/kg wet	79.9		78	55-109			
Surrogate: <i>o</i> -Terphenyl	1.67		mg/kg wet	1.60		104	49-124			
<b>LCS Dup (P1A0511-BSD1)</b>										
					Prepared: 01/28/11 Analyzed: 01/29/11					
Diesel Range Organics	61.7	7.0	mg/kg wet	80.0		77	55-109	0.5	200	
Surrogate: <i>o</i> -Terphenyl	1.54		mg/kg wet	1.60		96	49-124			

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

Project: NCDOT: Wilkes County Parcel  
199  
Project No: WBS #35579.1.1

Prism Work Order: 1010536  
Time Submitted: 1/26/11 1:12:00PM

**General Chemistry Parameters - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch P1A0475 - NO PREP**

**Blank (P1A0475-BLK1)**

Prepared & Analyzed: 01/27/11

% Solids	100	0.100	% by Weight							
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**Sample Extraction Data**

**Prep Method: 3545A**

Lab Number	Batch	Initial	Final	Date
1010536-01	P1A0511	25.02 g	1 mL	01/28/11
1010536-02	P1A0511	25.14 g	1 mL	01/28/11
1010536-03	P1A0511	25.12 g	1 mL	01/28/11
1010536-04	P1A0511	25.01 g	1 mL	01/28/11
1010536-05	P1A0511	25.01 g	1 mL	01/28/11

**Prep Method: 5035**

Lab Number	Batch	Initial	Final	Date
1010536-01	P1A0482	7.2 g	5 mL	01/28/11
1010536-02	P1A0482	6.36 g	5 mL	01/28/11
1010536-03	P1A0482	6.49 g	5 mL	01/28/11
1010536-04	P1A0482	7.86 g	5 mL	01/28/11
1010536-05	P1A0482	6.71 g	5 mL	01/28/11

**NO PREP**

Lab Number	Batch	Initial	Final	Date
1010536-01	P1A0475	30 g	30 mL	01/27/11
1010536-02	P1A0475	30 g	30 mL	01/27/11
1010536-03	P1A0475	30 g	30 mL	01/27/11
1010536-04	P1A0475	30 g	30 mL	01/27/11
1010536-05	P1A0475	30 g	30 mL	01/27/11



Full-Service Analytical & Environmental Solutions

449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543  
Phone: 704/529-8364 • Fax: 704/525-0409

Client Company Name: AMEC E+E  
Report To/Contact Name: Helen Corley  
Reporting Address: 338 N Elm St  
Greensboro, NC 27401  
Phone: 336-691-5348 Fax (Yes) (No):  
Email  (Yes) (No) Email Address: helen.corley@amec.com  
EDD Type: PDF  Excel  Other  
Site Location Name: Parcel 199  
Site Location Physical Address:

# CHAIN OF CUSTODY RECORD

PAGE 1 OF 1 QUOTE # TO ENSURE PROPER BILLING: WBS 35579.11

Project Name: Wilkes 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: Same

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>2.7</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/OUT HEADSPACE?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
PROPER CONTAINERS used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Purchase Order No./Billing Reference WBS 35579.11  
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)

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		DRD	GR0/503					
P-199-SB-1(3-5)	1-24-11	1030	soil	6/voa	4	2G 2 VOA		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					01
P199-SB-2(8-10)	↓	1045	↓	↓	↓	↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					02
P199-SB-3(3-5)	↓	1100	↓	↓	↓	↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					03
P199-SB-4(3-5)	↓	1115	↓	↓	↓	↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					04
P-199-SB-5(3-5)	↓	1130	↓	↓	↓	↓		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					05

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

**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)	Date <u>1-26-11</u>	Military/Hours <u>1312</u>
Relinquished By: (Signature)	Received By: (Signature)	Date	
Relinquished By: (Signature)	Received For Prism Laboratories By: <u>J. R. B.</u>	Date <u>1/26/11</u>	Hours <u>1312</u>
Method of Shipment: <input type="checkbox"/> Fed Ex <input type="checkbox"/> UPS <input checked="" type="checkbox"/> Hand-delivered <input type="checkbox"/> Prism Field Service <input type="checkbox"/> Other		COC Group No. <u>1010536</u>	

Additional Comments:

### PRISM USE ONLY

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

### 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)