Mr. Cyrus Parker, P.E., L.G. North Carolina Department of Transportation Geotechnical Unit 1020 Birch Ridge Drive, Bldg D Raleigh, NC 27610

### **Preliminary Site Assessment Reports** Re:

- 1. Parcel # 3 ~ BEBCO LLC Property
- 2. Parcel # 10 ~ All Points Trucking Inc.
- 3. Parcel # 19 ~ HH Downs LLC Property (Formerly Known as the Billy Stegall Jr. Property)
- 4. Parcel # 22 ~ Gerald Rhyne Property.

**WBS Element:** 34948.1.1 State Project: U-3447 Mecklenburg County: AMEC Project: 693003447

2005 CONTRACT

Dear Mr. Parker:

AMEC Earth & Environmental, Inc. of North Carolina (AMEC) is pleased to furnish the North Carolina Department of Transportation (NCDOT) with four copies of the above referenced reports. We will deliver digital copies of these reports after your review.

If you have any comments or questions concerning these reports, please do not hesitate to call me at 704.875-3570.

Regards,

AMEC Earth & Environmental, Inc. of North Carolina

Helen Corley, L.G.

Program Manager

Helen Colley

# Preliminary Site Assessment

BEBCO LLC Property, Parcel #3
Mecklenburg County, North Carolina

NCDOT State Project: 34948.1.1 (U-3447)

**AMEC Project: 693003447** 

July 26, 2006

## Prepared for:

North Carolina Department of Transportation Geotechnical Unit 1020 Birch Ridge Drive Raleigh, NC 27610 Telephone: 919-250-4088

# Prepared By:

AMEC Earth and Environmental, Inc. of North Carolina 9800 West Kincey Avenue, Suite 190 Huntersville, North Carolina 28078 (704) 875-3570

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Mecklenburg County, North Carolina
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(704) 875-3570

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Helen P. Corley, L.G. Senior Geologist/Project Manager

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### 1.0 INTRODUCTION

In accordance with the North Carolina Department of Transportation (NCDOT) Notice to Proceed dated May 26, 2006, AMEC Earth and Environmental, Inc. of North Carolina (AMEC) has performed a Preliminary Site Assessment (PSA) for portions of the BEBCO LLC Property (Parcel # 3) to be acquired for drainage improvements along Hwy 51. The property is located at 12640 Pineville - Rock Hill Road (Hwy 51), Pineville, Mecklenburg County, North Carolina. The investigation was conducted in accordance with AMEC's Technical and Cost proposal dated May 22, 2006.

NCDOT contracted AMEC to perform a PSA on the BEBCO LLC Property due to suspected previous use of the property. The property was suspected as having been previously operated as a gas station and underground storage tanks (USTs) were a potential concern at the site. The PSA was performed to locate any USTs within the proposed right-of-way (ROW) and to determine if soils have been impacted by petroleum compounds as a result of past or present uses of the property. The investigation was specifically completed to determine the presence or absence of petroleum hydrocarbons and estimate the volume of impacted soil within the proposed ROW.

Schnabel Engineering of Greensboro, NC (Schnabel) performed a geophysical investigation of the property under a separate contract with the NCDOT. Geophysical surveying using GPR and EM was utilized to investigate for any potential UST system components remaining at the site.

The following report describes our field investigations and results of chemical analyses. It includes the results of the geophysical investigation, evaluation of the analytical data with regards to the presence or absence of soil contamination within the existing right-of-way (ROW) and estimates the extent of soil contamination.

### 1.1 Site Location

The BEBCO LLC Property is located on the north side of Hwy 51 in Pineville, Mecklenburg County, North Carolina approximately 800 feet west of the intersection of Hwy 51 and Downs Circle. It is located within the Piedmont physiographic province of south-central North Carolina.

Figure 1 shows the site location and vicinity.

### 1.2 Site Description

The site is approximately a 0.5 acre parcel located on the north side of Hwy 51. A one story wooden house occupies the site. An above ground storage tank (AST) approximately 275 gallons in capacity used for home heating oil is currently located near the northwest corner of the house outside of the ROW (Figure 2). At the time of this investigation the house was being vacated by the occupant. It is unknown what the future plans are regarding the use of the house. A small canopy/carport is located on the south end of the house. A circular gravel driveway encircles the house and connects the east and west sides of the property to Hwy 51. Much of the property is covered in grass/tall weeds and trees. Figure 2 shows the general layout of the site. The area of easement investigation was roughly 115 by 20 ft.

A vacant field occupies the adjacent property to the east. Wooded land is located north and west of the property, with Hwy 51 adjacent to the south. Photographs are included as Appendix 1.

### 2.0 GEOLOGY

### 2.1 Regional Geology

The BEBCO LLC Property is located in the Charlotte Belt of the Piedmont physiographic province of south central North Carolina. The Charlotte Belt is a complex series of Paleozoic metamorphic and igneous rocks consisting of metamorphosed granites, metagabbros and diorites, mafic and felsic metavolcanics, and granitic-to-mafic intrusive bodies.

### 2.2 Site Geology

Site geology was observed through observation of bedrock outcroppings and sampling of 9 hand auger and direct push probe borings. Borings extended to total depths ranging from 2 to 7 feet bgs. Soils generally consisted of a surfical fill of gravel with fines underlain by saprolite beginning at an approximate depth of 0.5 feet bgs. The one exception to this was seen at boring location P3-6 where fill was present from the surface to approximately 3.5 feet bgs. The saprolite consisted of a dry clayey sandy silt, orangish brown and light brown and gray in color. Boulder outcroppings of gabbro were observed at ground surface. Boring logs are presented in Appendix 2.

Ground water was not encountered in any of the borings. Local topography suggests that ground-water flow is toward the south and east in the site vicinity.

### 3.0 FIELD ACTIVITIES

### 3.1 Preliminary Activities

Prior to commencing field activities at the site, several tasks were accomplished in preparation for the direct push sampling. The Health and Safety Plan (HSP) was modified to include the site-specific health and safety information necessary for the field activities. North Carolina-1-Call was contacted to facilitate the location of underground utilities in the vicinity of selected boring locations. Environmental Drilling and Probing Services of Charlotte, NC (EDPS) was retained by AMEC to perform the direct push sampling. Pace Laboratories, Inc. was contacted for acquisition of sample bottles. Schnabel was contacted to perform the geophysical investigation.

The geophysical investigation performed by Schnabel did not indicate the presence of UST or system components within the proposed ROW or outside the ROW in the areas identified by the Schnabel study. Schnabel was required to conduct the geophysical survey in two separate mobilizations due to the presence of a construction dumpster in the Right-of-Way/Easement study area which partially blocked access. The geophysical survey report is presented as Appendix 3.

### 3.2 Site Reconnaissance

AMEC personnel completed site reconnaissance on May 11<sup>th</sup> and 18<sup>th</sup>, 2006. The area was visually examined for the presence of any UST or areas/obstructions that could potentially affect the upcoming subsurface investigation.

### 3.3 Well Survey

Ground water was not encountered in any of the borings completed for this investigation. No well survey was performed as part of this PSA but one water supply well was observed by AMEC on the site. A water meter from the municipal water supply was also observed on the property.

### 3.4 Direct Push Sampling

Following the initial geophysical survey, six soil borings were conducted parallel to the road at roughly 20ft spacing to target the future drain line location as closely as possible. The

NC Department of Transportation – Preliminary Site Assessment BEBCO LLC Property, Parcel #3 July 26, 2006

borings were completed to depths ranging from 2 ft to 7ft below ground surface (bgs). The total depth of each boring represents the refusal depth and is the assumed depth to competent bedrock. Due to the presence of utilities minor sampling location adjustments were required. The sample locations are shown on Figure 2.

Borings were also placed outside of the easement adjacent to the canopy/carport area which was initially considered a potential UST bed. Due to the restricted height of the canopy/carport roof, the geoprobe unit could not access the area directly beneath the canopy/carport. The presence of a concrete slab beneath the canopy also precluded the use of a hand auger beneath the canopy/carport. The geoprobe could not access the areas immediately adjacent to the canopy/carport due to various reasons: dense vegetation to the west; insufficient clearance to orient the geoprobe perpendicular to Hwy 51 to the south; and, a construction dumpster to the east. A hand auger was therefore used to install three soil borings immediately adjacent to the canopy/carport concrete slab.

Three exploratory hand auger borings were also placed outside of the easement 30ft east of the canopy/carport in an area reported by the former occupant to have been the location of vent pipes. The area was topographically higher in elevation suggesting the potential for the presence of fill. The borings indicated that bedrock was present immediately beneath a thin layer of surfical soil.

No evidence of potential soil contamination was identified by field observations (i.e. petroleum odors, petroleum staining, PID response) in any of the borings. PID screening results are incorporated in Table 1 and on the boring logs included as Appendix 2. No ground water was encountered and no ground-water samples were collected.

Soil samples were collected in accordance with EPA protocols in laboratory-supplied containers. The soil samples for GRO analysis were collected using the 5030 prep method with methanol preservation. Samples for 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 Pace Analytical, a North Carolina Certified Laboratory following proper chain-of-custody procedures.

All equipment used for obtaining samples was decontaminated in accordance with EPA protocols. This included steam cleaning for the direct push equipment and the following for sampling tools:

- equipment thoroughly cleaned with a phosphorous-free detergent;
- rinsed with tap water;
- rinsed with methanol; and,
- rinsed with de-ionized water.

### 4.0 RESULTS

### 4.1 Soil Sampling Results

AMEC conducted soil sampling at the BEBCO LLC Property (Parcel # 3) on May 31, 2006. 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 and hand auger methods accompanied by field screening for organic vapors with a PID.

Nine soil samples were collected from the soil borings. No measurable PID responses, petroleum odors, or petroleum staining were observed in any of the soil borings. Laboratory analyses did not indicate detectable concentrations of GRO in any of the samples. Analyses of soil samples for DRO indicated a detectable concentration in the three western most samples. Analysis of samples P3-1, P3-2 and P3-3 indicated DRO concentrations of 35, 16 and 8 mg/kg respectively. P3-1 was collected at 3-5 ft bgs and samples P3-2 and P3-3 were collected at 1-3 ft bgs. The reported concentrations in P3-1 and P3-2 exceed the 10 mg/kg NCDENR Initial Action Level for petroleum fuel compounds. No samples were collected from these locations for VOC or SVOC analyses because there were no field indicators of petroleum contaminants.

Results of chemical analyses of soil samples are summarized in Table 1, with detections also posted on Figure 2. Copies of the original laboratory report and chain-of-custody documentation are included as Appendix 4.

### 4.2 Extent of Impacted Soils

This investigation and analytical program were implemented to determine the presence or absence of petroleum hydrocarbons and, if possible, to estimate the volume of impacted soil present within the Right-of-Way/Easement study area. For the purposes of this PSA it was assumed that soil excavation activities will extend to the top of competent rock. The average depth to rock, as defined by probe refusal, is approximately 4 ft in the area of DRO impacted soil.

DRO was discovered in borings P3-1 and P3-2 at concentrations exceeding the NCDENR Reporting level of 10 mg/kg but not the 40mg/kg Action Level. If impacted soil is excavated

with any detection of GRO/DRO; this constitutes the need for special handling and disposal under the NCDENR Groundwater Section Program. Based upon the location of the soil borings, the extent of the proposed study area, and the projected depth to bedrock, AMEC estimates that 186 cubic yards of soil may require special handling if disturbed during construction. The area of potentially petroleum-impacted soil is shown on Figure 2.

### 5.0 CONCLUSIONS

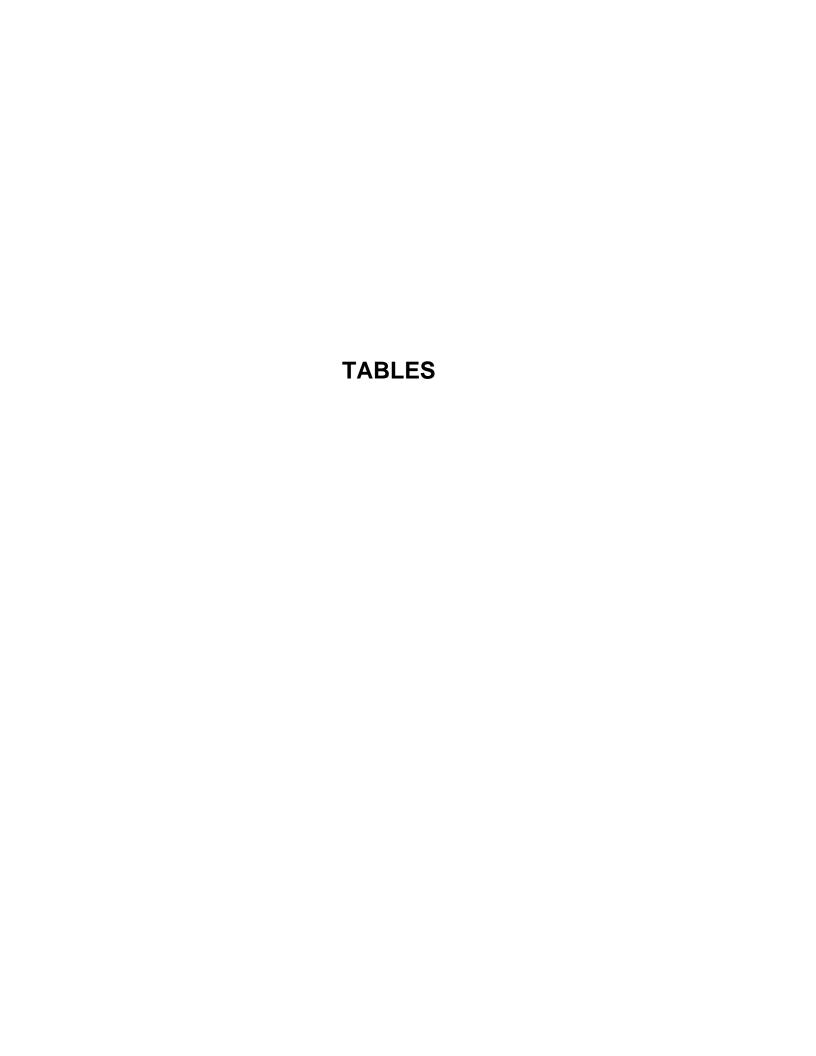
The following conclusions are based upon AMEC's evaluation of field observations and laboratory analyses of samples collected from the site on May 31, 2006.

- The commercial building at the BEBCO LLC Property, Parcel #3 is currently vacant. It has recently been used as a residence, but may have been operated in the past as a gas station.
- According to Schnabel, a NCDOT geophysical subcontractor, no UST-like subsurface anomalies are present in the study area, the canopy/carport or the topographically elevated area 30 ft to the east.
- No field indicators of petroleum contaminants were observed in samples collected for this investigation.
- Laboratory analyses of soil samples indicated no detectable levels of GRO in any of the nine samples.
- Laboratory analyses of soil samples indicated DRO at a concentrations ranging from 8 to 35 mg/kg in 3 of the 9 boring locations.
- Ground water was not encountered in borings that extended to a maximum depth of 7 ft bgs.
- Approximately 186 cubic yards of petroleum-contaminated soil is potentially present within the study area.

# 6.0 RECOMMENDATIONS

If NCDOT excavates soil in the contaminated area, AMEC recommends the following action:

• Segregation of soil during excavation for construction operations then proper disposal of potentially petroleum-impacted soil from the proposed ROW.



# Table 1 Gasoline and Diesel Range Organic Analytical Results in Soil Samples NCDOT Parcel #3 BEBCO LLC Property Pineville, North Carolina

		Sample Depth	Field	Soils Me	ethod 8015
Sample ID	Sample Date (feet bgs)		Screening (ppm)	GRO (mg/kg)	DRO (mg/kg)
NC Action Leve	ls			10	40
P3-1	05/31/2006	3-5	0	BQL (4.6)	35.
P3-2	05/31/2006	1-3	0	BQL (4.3)	16.
P3-3	05/31/2006	1-3	0	BQL (4.5)	8.0
P3-4	05/31/2006	4-6	0	BQL (4.3)	BQL (5.5)
P3-5	05/31/2006	1-2	0	BQL (4.1)	BQL (5.4)
P3-6	05/31/2006	3-5	0	BQL (5.1)	BQL (6.3)
P3-7	05/31/2006	3-4	0	BQL (4.4)	BQL (5.6)
P3-8	05/31/2006	3-4	0	BQL (6.2)	BQL (6.6)
P3-9	05/31/2006	3-4	0	BQL (4.2)	BQL (5.5)

### NOTES:

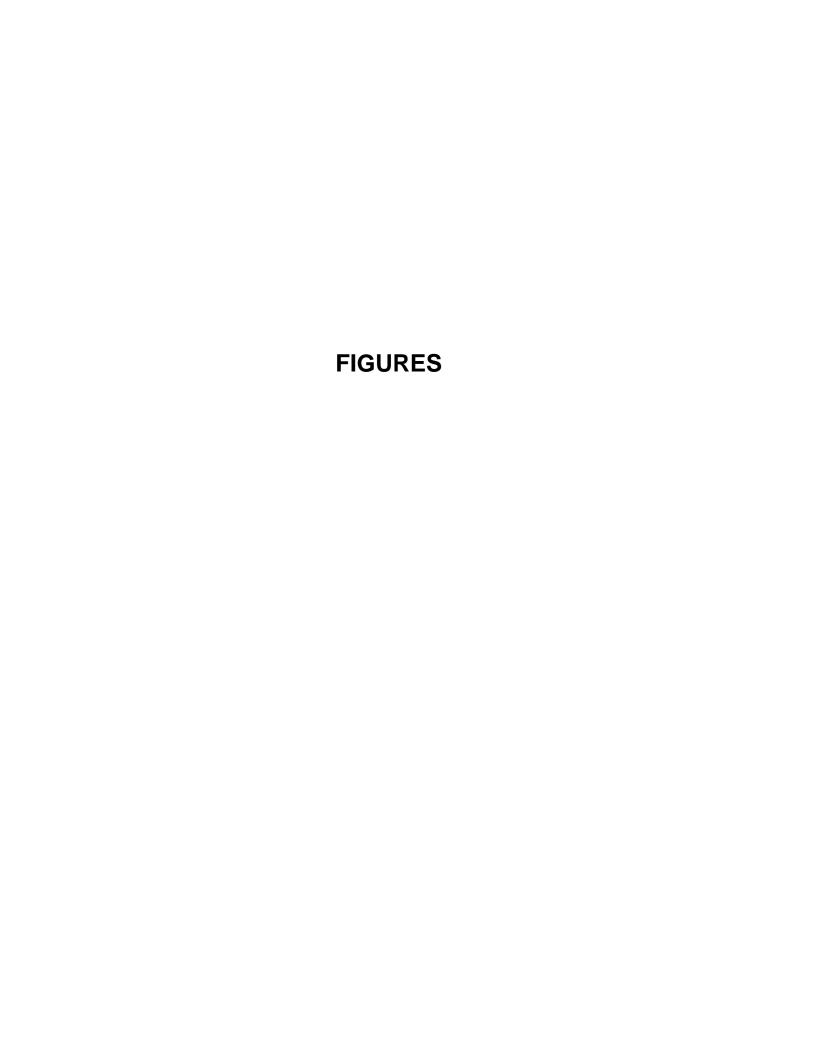
bgs = below ground surface

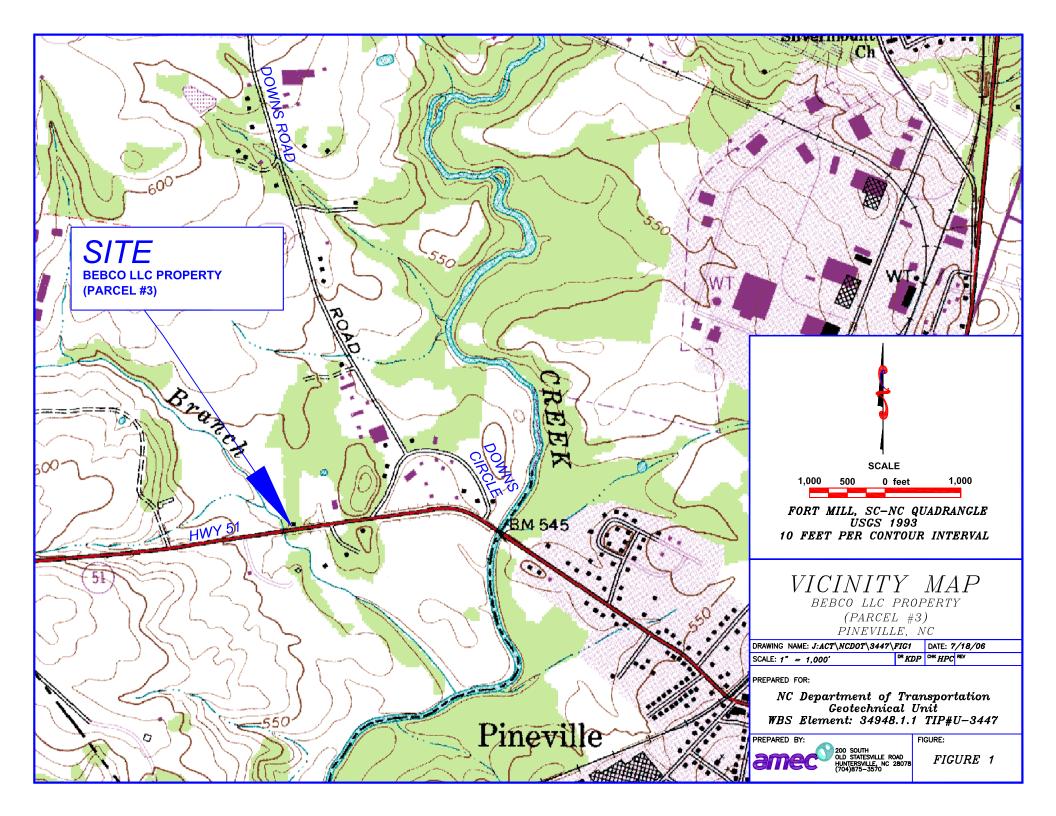
GRO = Gasoline Range Organics by Method 5035

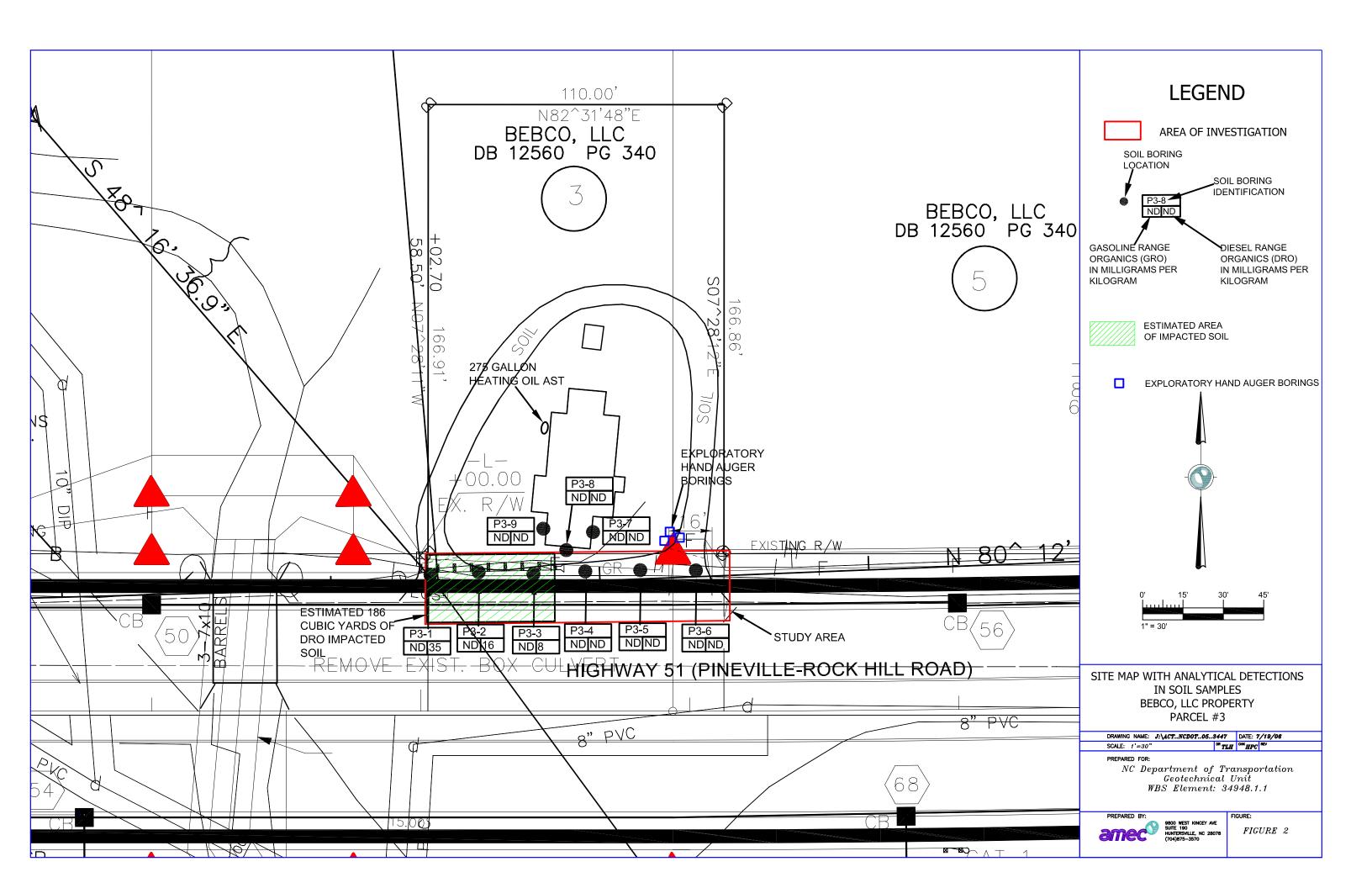
DRO = Diesel Range Organics by Method 3550

BQL = analyte not detected above quantitation limit shown in ( )

Standards derived from the North Carolina Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater







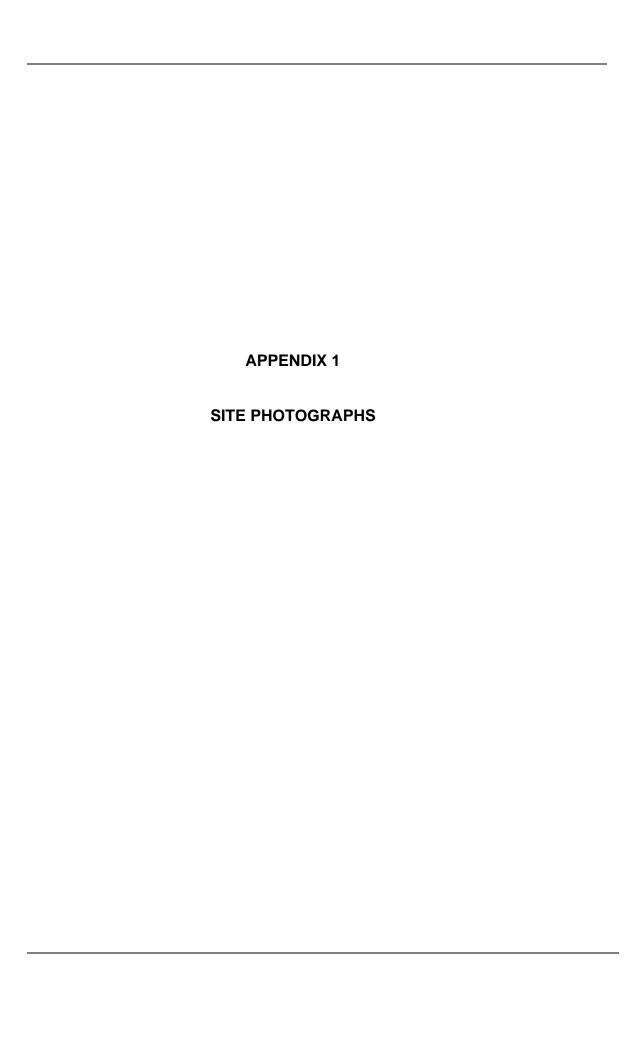




Photo No.

1

Date: 5/11/06

**Direction Photo** Taken: West

Description:

Canopy/carport area



Photo No. 2

Date: 5/11/06

**Direction Photo** Taken: Northeast

Description:

Canopy/carport area





Photo No.

**Date:** 2/16/06

Direction Photo Taken: East

Description:

View of water supply well.



Photo No.

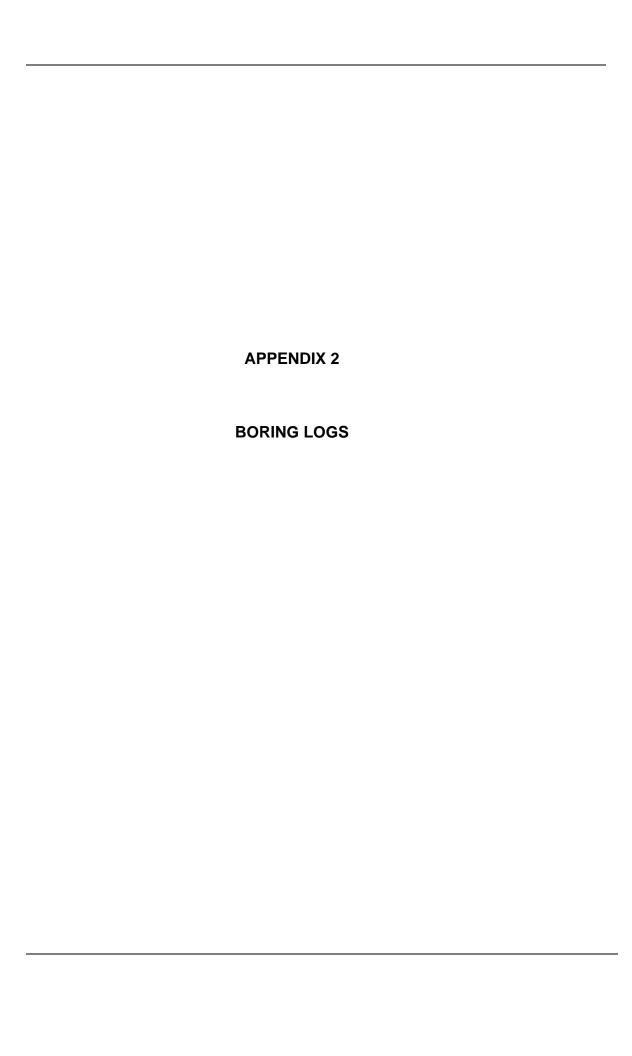
**Date:** 5/11/06

Direction Photo Taken: East

**Description:** 

Heating oil AST in overgrown area beside the house





Project Number: 6-9300-3447 Project Location: Pineville, NC

**BORING NO: P 3-1** 

Drilling Company: EDPS Date: 5/30/2006

Driller: Tommy Bolyard Geologist: Kelly D. Phillips

**Drilling Method: Direct Push Macrocore** 

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Hole Size: 2"

Project Name: NCDOT Pineville PSAs BORING NO: P 3-2

Project Number: 6-9300-3447 Project Location: Pineville, NC

Drilling Company: EDPS Date: 5/30/2006

Driller: Tommy Bolyard Geologist: Kelly D. Phillips

**Drilling Method: Direct Push Macrocore** 

Depth (ft)	Symbol	Description	USCS	Field PID Results (ppm)	Recovery	Sample Comments
0.0	7 .7 .	Ground Surface FILL				
-	• , • ,	Gravel with fines	GM	0		
-		SAPROLITE Gravelly Sandy Silt Orangish-brown and grey	ML	0		
2.0-						
-		Refusal in Rock at 3' bgs				
4.0-						
4.0-						
-						
6.0-						
-						
-						
8.0						

Hole Size: 2"

Project Number: 6-9300-3447 Project Location: Pineville, NC

**BORING NO: P 3-3** 

Drilling Company: EDPS Date: 5/30/2006

Driller: Tommy Bolyard Geologist: Kelly D. Phillips

**Drilling Method: Direct Push Macrocore** 

Depth (ft)	Symbol	Description	USCS	Field PID Results (ppm)	Recovery	Sample Comments
0.0	7 .7 .	Ground Surface FILL	014	•		
-		Gravel with fines  SAPROLITE  Gravelly Sandy Silt  Orangish-brown and grey	GM	0		
2.0-			ML	0		
		Refusal at 3' bgs				
4.0-						
-						
6.0-						
8.0						
-						

Hole Size: 2"

Project Number: 6-9300-3447 Project Location: Pineville, NC

**BORING NO: P 3-4** 

Drilling Company: EDPS Date: 5/30/2006

Driller: Tommy Bolyard Geologist: Kelly D. Phillips

**Drilling Method: Direct Push Macrocore** 

Depth (ft)	Symbol	Description	USCS	Field PID Results (ppm)	Recovery	Sample Comments
0.0-		Ground Surface  FILL Gravel with fines  SAPROLITE Sandy Clayey Silt Orangish-brown and grey	GM	0		
2.0-			ML	0		
4.0-	/ / / / / /			0		
6.0	# #	Refusal at 6' bgs				
-						

Hole Size: 2"

**Project Number: 6-9300-3447** 

**Drilling Company: EDPS** 

**Driller: Tommy Bolyard** 

**Drilling Method: Direct Push Macrocore** 

**BORING NO: P 3-5** 

**Project Location: Pineville, NC** 

Date: 5/30/2006

Geologist: Kelly D. Phillips

Depth (ft)	Symbol	Description	USCS	Field PID Results (ppm)	Recovery	Sample Comments
0.0-		Ground Surface				
-		FILL Gravel with fines	GM			
- - - - -	*	SAPROLITE Sandy Clayey Silt Orangish-brown and grey	ML	0		
2.0-		Refusal at 2' bgs				
- - - -						
4.0-						
4.0-						
- - - -						
6.0-						
-						
- - -						
8.0-						
_ _ _ _						

Hole Size: 2"

**Project Number: 6-9300-3447** 

**Drilling Company: EDPS** 

**Driller: Tommy Bolyard** 

**Drilling Method: Direct Push Macrocore** 

**BORING NO: P 3-6** 

**Project Location: Pineville, NC** 

Date: 5/30/2006

Geologist: Kelly D. Phillips

Depth (ft)	Symbol	Description	USCS	Field PID Results (ppm)	Recovery	Sample Comments
0.0-	GHTGHT	Ground Surface				
2.0-		FILL Gravelly Sandy Silt Brown	ML	0		
4.0		SAPROLITE Clayey Sandy Silt Orangish-brown and light brown	ML	0		
6.0	<i>/</i>			0		
8.0		Refusal at 7' bgs				

Hole Size: 2"

**Project Number: 6-9300-3447** 

**Drilling Company: EDPS** 

**Driller: Tommy Bolyard** 

**Drilling Method: Hand Auger** 

**BORING NO: P 3-7** 

**Project Location: Pineville, NC** 

Date: 5/30/2006

Geologist: Kelly D. Phillips

Depth (ft)	Symbol	Description	USCS	Field PID Results (ppm)	Recovery	Sample Comments
0.0-		Ground Surface				
- - - -		Gravel with fines	GM	0		
2.0-	/ / / / / /	SAPROLITE Clayey Sandy Silt Orangish-brown and grey	ML	0		
4.0-	/ / / /	Refusal at 4' bgs				
-		(Holdsdi dt 4 bgs				
6.0-						
8.0-						
- - - -						

Hole Size: 3-1/2"

**Project Number: 6-9300-3447** 

**Drilling Company: EDPS** 

**Driller: Tommy Bolyard** 

**Drilling Method: Hand Auger** 

**BORING NO: P 3-8** 

**Project Location: Pineville, NC** 

Date: 5/30/2006

Geologist: Kelly D. Phillips

Depth (ft)	Symbol	Description	USCS	Field PID Results (ppm)	Recovery	Sample Comments
0.0-		Ground Surface				
		Gravel with fines	GM	0		
2.0-	/ / / / / /	SAPROLITE Sandy Clayey Silt Orangish-brown and grey	ML	0		
4.0	<i>// //</i>	Refusal at 4' bgs				
6.0-						
8.0-						

Hole Size: 3-1/2"

**Project Number: 6-9300-3447** 

**Drilling Company: EDPS** 

**Driller: Tommy Bolyard** 

**Drilling Method: Hand Auger** 

**BORING NO: P 3-9** 

**Project Location: Pineville, NC** 

Date: 5/30/2006

Geologist: Kelly D. Phillips

Depth (ft)	Symbol	Description	USCS	Field PID Results (ppm)	Recovery	Sample Comments
0.0-		Ground Surface				
		Gravel with fines	GM	0		
2.0-	/ / / / / /	SAPROLITE Sandy Clayey Silt Orangish-brown and grey	ML	0		
4.0	<i>// //</i>	Refusal at 4' bgs				
6.0-						
8.0-						

Hole Size: 3-1/2"

# **APPENDIX 3 GEOPHYSICAL SURVEY**



Schnabel Engineering South

Phone (336) 274-9456 Fax (336) 274-9486 www.schnabel-eng.com

June 22, 2006

Ms. Helen Corley, L.G. AMEC Earth and Environmental 9800 West Kincey Avenue Suite 190 Huntersville, NC 28078

Via email (pdf)

cc: Mr. Cyrus Parker, Mr. Don Moore, NCDOT, via email (pdf)

RE:

State Project: U-3447, WBS Element 34948.1.1, Mecklenburg County

NC 51 from South Carolina State Line to SR 3645 (Downs Circle)

SUBJECT:

Report on Geophysical Surveys for Locating Possible USTs on Parcel 003

Schnabel Engineering Project No. 05211014.01-08

Dear Ms. Corley:

This letter contains our report on the geophysical surveys we conducted on the subject property. This letter report includes two 8.5x11 color figures and two 11x17 color figures.

### 1.0 INTRODUCTION

The work described in this report was conducted by Schnabel Engineering under our contract with the NCDOT. The work was conducted at the location indicated by AMEC to support their environmental assessment of the subject parcel. The work was also extended to include an additional area to the east based on information provided by a previous tenant of the property. The purpose of the geophysical surveys was to locate possible metal underground storage tanks (USTs) and associated metal product lines in the accessible areas of the site.

Schnabel Engineering conducted geophysical surveys on May 30 and June 6, 2006, in the accessible areas of the proposed right-of-way (ROW) sections of Parcel 003. This property, owned by BEBCO, LLC, is located approximately 3500 feet ENE of the North Carolina-South Carolina state line on the north side of NC 51 (Pineville – Rock Hill Rd). Photographs of Parcel 003 are included on Figure 1.

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 were conducted using a Geophysical Survey Systems SIR-2000 system equipped with a 400 MHz antenna. Photographs of these instruments are shown in Figure 2.

### 2.0 FIELD METHODOLOGY

### 2.1 Location Control

An X-Y survey grid was set up on Parcel 003 to determine relative locations of geophysical data points and site features. References to direction and location in this report are based on this local site grid. The locations of existing site features (building, curbs, etc.) were recorded for later correlation with the geophysical data and for location references to the NCDOT drawings.

### 2.2 Data Collection

The EM61 data were collected in the accessible portions of the parcel along east-west trending parallel survey lines spaced approximately 2.5 feet apart. The EM61 data were recorded digitally using a field computer and later transferred to a desktop computer for data processing. The GPR data were collected outside of the right-of-way in accessible areas around a tree and bushes, based on information provided by a previous tenant of the property. 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.

## 3.0 <u>DISCUSSION OF RESULTS</u>

The contoured EM61 data 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 most sensitive detection of metal object targets, regardless of size. 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.

At the time of the initial geophysical surveys on May 30, 2006, a large roll-off dumpster was located in the eastern portion of the survey area. Based on information provided by a previous tenant of the property, AMEC requested that we return to the site after the dumpster had been removed to survey the eastern portion of the survey area. On June 6, 2006, we returned to the site and collected EM61 data in the area where the dumpster had previously been located. Figures 3 and 4 show the EM61 data from the combined survey area.

The early time gate and differential results (Figures 3 and 4) show a small anomaly probably caused by an insignificant buried metal object and several anomalies caused by known site features. The observed anomalies not attributed to known site features have a reduced amplitude in the differential data set (Figure 4). GPR surveys were not conducted within right-of-way areas of the subject property. The GPR data collected outside of the right-of-way did not indicate the presence of USTs in the areas surveyed.

#### 4.0 CONCLUSIONS

Our evaluation of the geophysical data collected on Parcel 003 on State Project U-3447 in Mecklenburg County, NC indicate the following:

• The geophysical data do not indicate the presence of USTs in the areas surveyed on Parcel 003.

**5.0 LIMITATIONS** 

These services have been performed and this report prepared for 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.

Thank you for the opportunity to serve you on this project. Please call if you need additional

information or have any questions.

Sincerely,

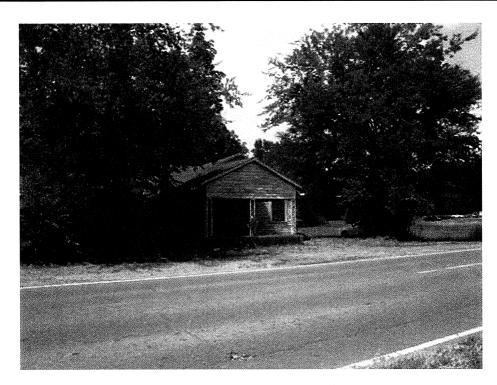
Jeremy S. Strohmeyer, L.G.

Project Manager

FR/JS/RC

Attachment: Figures (1-4)

4



Parcel 003, BEBCO, LLC Property, looking northeast



Parcel 003, BEBCO, LLC Property, looking northwest



NC Department of Transportation Geotechnical Engineering Unit

State Project No. U-3447 Mecklenburg County, North Carolina SITE PHOTOS



Geonics EM61-MK2



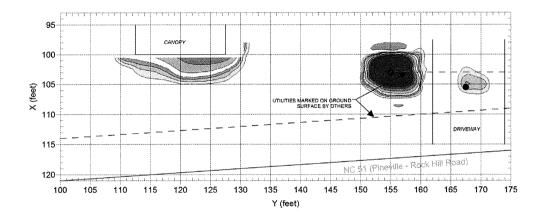
Geophysical Survey Systems SIR-2000 with 400 MHz antenna



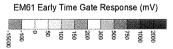
NC Department of Transportation Geotechnical Engineering Unit

State Project No. U-3447 Mecklenburg County, North Carolina PHOTOS OF GEOPHYSICAL EQUIPMENT









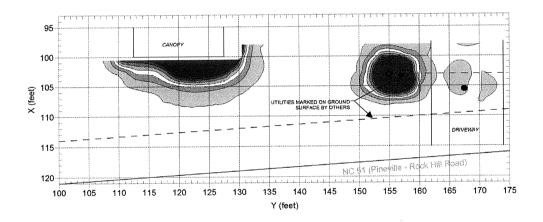
Note: The contour plot shows the earliest and most sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on May 30 and June 6, 2006, using a Geonics EM61-MK2 instrument. An X-Y survey grid was set up across this parcel as location control for the geophysical surveys.



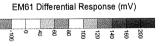
NC Department of Transportation Geotechnical Engineering Unit

State Project No. U-3447 Mecklenburg County, North Carolina PARCEL 003 EM61 EARLY TIME GATE RESPONSE

APPROXIMATE NORTH







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 pipes and tanks. The EM data were collected on May 30 and June 6, 2006, using a Geonics EM61-MK2 instrument. An X-Y survey grid was set up across this parcel as location control for the geophysical surveys.



NC Department of Transportation Geotechnical Engineering Unit

State Project No. U-3447 Mecklenburg County, North Carolina PARCEL 003 DIFFERENTIAL RESPONSE

## **APPENDIX 4**

# LABORATORY ANALYTICAL REPORTS & CHAIN-OF-CUSTODY



> Phone: 704.875.9092 Fax: 704.875.9091

Pace Analytical Services, Inc. 2225 Riverside Drive Asheville, NC 28804 Phone: 828.254.7176 Fax: 828.252.4618

June 14, 2006

Ms. Helen Corley AMEC 9800 West Kincey Ave Suite 190 Huntersville, NC 28078

RE:

Lab Project Number:

92120391

Client Project ID:

NCDOT Pineville/WBS#34948.1.1

Dear Ms. Corley:

Enclosed are the analytical results for sample(s) received by the laboratory on May 31, 2006. Results reported herein conform to the most current NELAC standards, where applicable, unless otherwise narrated in the body of the report.

Inorganic Wet Chemistry and Metals Analyses were performed at our Pace Asheville laboratory and Organic testing was performed at our Pace Charlotte laboratory unless otherwise footnoted.

If you have any questions concerning this report please feel free to contact me.

Sincer

Richard Swantz

richard.swartz@pacelabs.com

Project Manager

**Enclosures** 

E87648



Huntersville, NC 28078 Phone: 704.875.9092 Fax: 704.875.9091

Pace Analytical Services, Inc.

2225 Riverside Drive Asheville, NC 28804 Phone: 828.254.7176

Fax: 828.252.4618

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

Solid results are reported on a dry weight basis

Lab Sample No:

Parameters

927042184

Project Sample Number: 92120391-001

Date Collected: 05/31/06 12:00

Client Sample ID: P3-1

Matrix: Soil

Date Received: 05/31/06 17:15

Ву

CAS No. Qual RegLmt

Wet Chemistry

Percent Moisture Percent Moisture Method: % Moisture

5.4 %

%

%

06/01/06 10:11 TNM

Analyzed

GC Semivolatiles

TPH in Soil by 3545/8015

Diesel Fuel n-Pentacosane (S) Date Extracted

35. 128 06/08/06

Prep/Method: EPA 3545 / EPA 8015 mg/kg 26.

Results Units Report Limit

06/10/06 02:19 KBS 68334-30-5 06/10/06 02:19 KBS 629-99-2

06/08/06

GC Volatiles

GAS, Soil, North Carolina Gasoline

4-Bromofluorobenzene (S)

Method: EPA 8015

ND 100 mg/kg

4.6 06/10/06 08:12 DHW

06/10/06 08:12 DHW 460-00-4

Date: 06/14/06

Page: 1 of 15

NC Wastewater SC

12 NC Drinking Water 37706 99006 FL NELAP E87627

Charlotte Certification IDs



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Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

Lab Sample No:

927042192

Client Sample ID: P3-2

Project Sample Number: 92120391-002

Date Collected: 05/31/06 12:15

Matrix: Soil

Date Received: 05/31/06 17:15

			•			the second secon
Parameters	Results	Units	Report Limit	Analyzed By	CAS No.	Qual RegLmt
Wet Chemistry						
Percent Moisture	Method: % Mo	oisture				
Percent Moisture	6.2	%		06/01/06 10:12 TNM		
GC Semivolatiles						
TPH in Soil by 3545/8015	Prep/Method:	EPA 3545 /	EPA 8015			
Diesel Fuel	16.	mg/kg	5.3	06/10/06 01:40 KBS	68334-30-5	
n-Pentacosane (S)	57	%		06/10/06 01:40 KBS		
Date Extracted	06/08/06			06/08/06		
GC Volatiles						
GAS, Soil, North Carolina	Method: EPA	8015				
Gasoline	ND	mg/kg	4.3	06/10/06 09:10 DHW		
4-Bromofluorobenzene (S)	94	%		06/10/06 09:10 DHW	460-00-4	

Date: 06/14/06

Page: 2 of 15

Asheville Certification IDs NC Wastewater 40 NC Drinking Water 37712

SC 99030 FL NELAP E87648 **Charlotte Certification IDs** NC Wastewater 12 NC Drinking Water 37706 99006 FL NELAP E87627

SC



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2225 Riverside Drive Asheville, NC 28804 Phone: 828.254.7176

Fax: 828.252.4618

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

Lab Sample No:

927042200

Date Collected: 05/31/06 12:30

Client Sample ID: P3-3

Project Sample Number: 92120391-003

Date Received: 05/31/06 17:15

Matrix: Soil

Units Report Limit Analyzed Ву CAS No. Qual RegLmt Results **Parameters** Wet Chemistry Percent Moisture Method: % Moisture 06/01/06 10:12 TNM Percent Moisture 6.3 GC Semivolatiles Prep/Method: EPA 3545 / EPA 8015 TPH in Soil by 3545/8015 5.3 06/13/06 19:30 KBS 68334-30-5 Diesel Fuel 8.0 mg/kg % 06/13/06 19:30 KBS 629-99-2 96 n-Pentacosane (S) 06/12/06 Date Extracted 06/12/06 GC Volatiles Method: EPA 8015 GAS, Soil, North Carolina ND 4.5 06/10/06 10:08 DHW Gasoline mg/kg 06/10/06 10:08 DHW 460-00-4 4-Bromofluorobenzene (S) 90 %

Date: 06/14/06

Page: 3 of 15

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Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

Lab Sample No: Client Sample ID: P3-4

927042218

Project Sample Number: 92120391-004

Date Collected: 05/31/06 12:45

Matrix: Soil

Date Received: 05/31/06 17:15

Parameters Wet Chemistry	Results	Units	Report Limit	Analyzed By	CAS_No.	Qual RegLmt
Percent Moisture	Method: % Mo	isture				
Percent Moisture	8.3	%		06/01/06 16:44 TNM		
GC Semivolatiles						
TPH in Soil by 3545/8015	Prep/Method:	EPA 3545 /	EPA 8015			
Diesel Fuel	ND	mg/kg	5.5	06/09/06 19:15 KBS	68334-30-5	
n-Pentacosane (S)	63	%		06/09/06 19:15 KBS	629-99-2	
Date Extracted	06/08/06			06/08/06		
GC Volatiles						
GAS, Soil, North Carolina	Method: EPA 8	3015				
Gasoline	ND	mg/kg	4.3	06/10/06 10:36 DHW		
4-Bromofluorobenzene (S)	86	%		06/10/06 10:36 DHW	460-00-4	

Date: 06/14/06

Page: 4 of 15

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Asheville, NC 28804 Phone: 828.254.7176

Fax: 828.252.4618

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

Lab Sample No: Client Sample ID: P3-5

927042226

Project Sample Number: 92120391-005

Date Collected: 05/31/06 13:00

Matrix: Soil

Date Received: 05/31/06 17:15

Parameters	Results	Units	Report Limit	Analyzed	Ву (	CAS No.	<u>Qual</u>	RegLmt
Wet Chemistry								
Percent Moisture	Method: % Mo	isture						
Percent Moisture	7.6	%		06/01/06 16:45 T	NM			
GC Semivolatiles								
TPH in Soil by 3545/8015	Prep/Method:	EPA 3545 /	EPA 8015					
Diesel Fuel	ND	mg/kg	5.4	06/13/06 13:44 K	BS 683	334-30-5		
n-Pentacosane (S)	77	%		06/13/06 13:44 K	BS 629	9-99-2		
Date Extracted	06/12/06			06/12/06				
GC Volatiles								
GAS, Soil, North Carolina	Method: EPA	8015						
Gasoline	ND	mg/kg	4.1	06/10/06 11:05 D	HW			
4-Bromofluorobenzene (S)	83	%		06/10/06 11:05 D	HW 46	0-00-4		

Date: 06/14/06

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Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

Lab Sample No:

927042234

Project Sample Number: 92120391-006

Date Collected: 05/31/06 13:15

Client Sample ID: P3-6

Matrix: Soil

Date Received: 05/31/06 17:15

Parameters Wet Chemistry	Results	Units	Report Limit	Analyzed	Ву	CAS No.	Qual	RegLmt
Percent Moisture	Method: % Mo	isture						
Percent Moisture	20.8	%		06/01/06 16:45 T	NM			
GC Semivolatiles								
TPH in Soil by 3545/8015	Prep/Method:	EPA 3545 /	EPA 8015					
Diesel Fuel	ND	mg/kg	6.3	06/13/06 14:06 K	(BS	68334-30-5		
n-Pentacosane (S)	89	%		06/13/06 14:06 K	(BS	629-99-2		
Date Extracted	06/12/06			06/12/06				
GC Volatiles								
GAS, Soil, North Carolina	Method: EPA	8015						
Gasoline	ND	mg/kg	5.1	06/10/06 11:34 D	HW			
4-Bromofluorobenzene (S)	80	%		06/10/06 11:34 D	HW	460-00-4		

Date: 06/14/06

Page: 6 of 15

Asheville Certification IDs NC Wastewater 40 NC Drinking Water 37712 SC 99030 FL NELAP

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REPORT OF LABORATORY ANALYSIS

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12 NC Drinking Water 37706 SC 99006



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Asheville, NC 28804 Phone: 828.254.7176 Fax: 828.252.4618

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

Lab Sample No:

Client Sample ID: P3-7

927042242

Project Sample Number: 92120391-007

Date Collected: 05/31/06 13:40

Matrix: Soil

Date Received: 05/31/06 17:15

Parameters Wet Chemistry	Results	Units	Report Limit	Analyzed By	CAS No	Qual RegLmt
Percent Moisture	Method: % Mo	isture				
Percent Moisture	11.5	%		06/01/06 16:45 TNN		
GC Semivolatiles						
TPH in Soil by 3545/8015	Prep/Method:	EPA 3545 /	EPA 8015			
Diesel Fuel	ND	mg/kg	5.6	06/13/06 14:27 KBS	68334-30-5	
n-Pentacosane (S)	47	%		06/13/06 14:27 KBS	629-99-2	2
Date Extracted	06/12/06			06/12/06		
GC Volatiles						
GAS, Soil, North Carolina	Method: EPA	8015				
Gasoline	ND	mg/kg	4.4	06/10/06 12:03 DHW		
4-Bromofluorobenzene (S)	82	%		06/10/06 12:03 DHV	460-00-4	

Date: 06/14/06

Page: 7 of 15

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Fax: 828.252.4618

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

Lab Sample No: 927042259 Client Sample ID: P3-8

Project Sample Number: 92120391-008

Date Collected: 05/31/06 14:00

CITEIL Sample ID: P3-8	·			Matrix: Soil	Date R	eceived: 05/31/06 17
Parameters Wet Chemistry	Results	Units	Report Limit	Analyzed By	CAS_No	Qual RegLmt
Percent Moisture	Method: % Mc	oisture				
Percent Moisture	23.9	%		06/01/06 16:46 TNM		
GC Semivolatiles						
TPH in Soil by 3545/8015	Prep/Method:	EPA 3545 /	EPA 8015			
Diesel Fuel	ND	mg/kg	6.6	06/13/06 15:26 KBS	68334-30-5	
n-Pentacosane (S)	78	%		06/13/06 15:26 KBS		
Date Extracted	06/12/06			06/12/06		
GC Volatiles						
GAS, Soil, North Carolina	Method: EPA	8015				
Gasoline	ND	mg/kg	6.2	06/10/06 12:32 DHW		
4-Bromofluorobenzene (S)	86	%		06/10/06 12:32 DHW	460-00-4	

Date: 06/14/06

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Lab Project Number: 92120391

06/10/06 13:01 DHW

06/10/06 13:01 DHW 460-00-4

Client Project ID: NCDOT Pineville/WBS#34948.1.1

Lab Sample No:

927042267

Project Sample Number: 92120391-009

Date Collected: 05/31/06 14:15

Client Sample ID: P3-9

GAS, Soil, North Carolina

4-Bromofluorobenzene (S)

Gasoline

Matrix: Soil

Date Received: 05/31/06 17:15

Parameters Wet Chemistry	Results	Units	Report Limit	Analyzed By	CAS_No.	Qual	RegLmt
Percent Moisture	Method: % Moi	sture					
Percent Moisture	9.6	%		06/01/06 16:46 TNM			
GC Semivolatiles							
TPH in Soil by 3545/8015	Prep/Method:	EPA 3545 /	EPA 8015				
Diesel Fuel	ND	mg/kg	5.5	06/13/06 17:20 KBS	68334-30-5		
n-Pentacosane (S)	56	%		06/13/06 17:20 KBS	629-99-2		
Date Extracted	06/12/06			06/12/06			
GC Volatiles							

4.2

Method: EPA 8015 ND

81

mg/kg

%

Date: 06/14/06

Page: 9 of 15

Charlotte Certification IDs



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Pace Analytical Services, Inc. 2225 Riverside Drive Asheville, NC 28804 Phone: 828.254.7176 Fax: 828.252.4618

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

#### PARAMETER FOOTNOTES

Method 9071B modified to use ASE.

All pH, Free Chlorine, Total Chlorine and Ferrous Iron analyses conducted outside of EPA recommended immediate hold time.

Depending on the moisture content the PRLs can be elevated for all soil samples reported on a dry weight basis.

2-Chloroethyl vinyl ether has been shown to degrade in the presence of acid.

ND Not detected at or above adjusted reporting limit

NC Not Calculable

J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit

MDL Adjusted Method Detection Limit

(S) Surrogate

[1] The sample extract could not be concentrated to the normal final volume. This resulted in an elevated reporting limit.

[2] Low surrogate recovery was confirmed as a matrix effect by a second analysis.

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Page: 10 of 15

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NC Wastewater 12 NC Drinking Water 37706 SC 99006

FL NELAP E87627



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Pace Analytical Services, Inc. 2225 Riverside Drive Asheville, NC 28804 Phone: 828.254.7176 Fax: 828.252.4618

#### QUALITY CONTROL DATA

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

QC Batch: 159210

Analysis Method: EPA 8015

QC Batch Method: EPA 3545

Analysis Description: TPH in Soil by 3545/8015

Associated Lab Samples:

927042200 927042192

927042218

927042226

927042184 927042234

927042242

927042259

927042267

METHOD BLANK:

927067546

927042184

927042192

927042200

927042218

**Footnotes** 

927042226

927042234

927042242

Associated Lab Samples:

927042259

927042267

Reporting

Units

Result ND

Limit

Diesel Fuel n-Pentacosane (S)

Parameter

mg/kg %

50

B1ank

5.0

LABORATORY CONTROL SAMPLE: 927067553

Parameter

Spike LCS Conc. Result

LCS

% Rec Footnotes

Diesel Fuel

Units mg/kg

Units

mg/kg

58

n-Pentacosane (S)

166.70

97.14

63

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 927067561 927067579

Parameter Diesel Fuel 927042259 Result 1.213 Spike Conc

MS Result

MSD Result

MS % Rec % Rec

MSD

RPD

Footnotes 6

n-Pentacosane (S)

219.00

116.4

110.2

50 53 57 53

Page: 11 of 15

Date: 06/14/06

Asheville Certification IDs NC Wastewater 40

NC Drinking Water SC

FL NELAP

99030 E87648

37712

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E87627



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## QUALITY CONTROL DATA

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

QC Batch: 159370 QC Batch Method: EPA 8015 Analysis Method: EPA 8015

927042184

Analysis Description: GAS, Soil, North Carolina

927042234

927042192 927042200 927042242 927042259 927042218 927042226

927042267

METHOD BLANK: 927074625

Associated Lab Samples:

Associated Lab Samples:

927042184 927042192 927042200

927042218

927042226

927042234

927042242

Parameter Gasoline

Blank Units Result mg/kg ND

927042267

Reporting Limit

Footnotes 5.0

4-Bromofluorobenzene (S)

%

927042259

98

LABORATORY CONTROL SAMPLE: 927074633

Parameter Gasoline

<u>Units</u> mg/kg Spike LCS Conc. Result LCS

% Rec Footnotes 104

4-Bromofluorobenzene (S)

25.00 26.10

Result

98

MATRIX SPIKE: 927074641

Parameter Gasoline 4-Bromofluorobenzene (S)

Units mg/kg 927042184 Spike Conc. 1.124

MS Result 24.46 MS

% Rec Footnotes 101

94

Footnotes

SAMPLE DUPLICATE: 927074658

Parameter

Gasoline

Units mg/kg %

927042192 Result

ND

94

DUP Result ND

96

23.01

RPD NC

Date: 06/14/06

4-Bromofluorobenzene (S)

Page: 12 of 15

Asheville Certification IDs NC Wastewater 40 NC Drinking Water 37712 SC 99030

E87648

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NC Wastewater 12 NC Drinking Water 37706

SC 99006 FL NELAP E87627



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Pace Analytical Services, Inc. 2225 Riverside Drive Asheville, NC 28804 Phone: 828.254.7176 Fax: 828.252.4618

# QUALITY CONTROL DATA

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

QC Batch: 158643

Analysis Method: % Moisture

QC Batch Method:

Analysis Description: Percent Moisture

Associated Lab Samples:

927042200 927042184 927042192

SAMPLE DUPLICATE: 927043224

927039859 DUP

Footnotes <u>Uni</u>ts Result Result RPDParameter

Percent Moisture

11.10 14.00

Date: 06/14/06

Page: 13 of 15

Asheville Certification IDs NC Wastewater 40 37712 NC Drinking Water 99030 SC

FL NELAP

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## QUALITY CONTROL DATA

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

QC Batch: 158718

Analysis Method: % Moisture

Analysis Description: Percent Moisture

Associated Lab Samples:

QC Batch Method:

927042218 927042267 927042226

927042234

927042242

927042259

SAMPLE DUPLICATE: 927046516

Parameter

927044248

DUP

Result

Result

RPD

Footnotes

Percent Moisture

%

11.70

11.60

Date: 06/14/06

Page: 14 of 15

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NC Drinking Water 37706 SC 99006



Pace Analytical Services, Inc. 9800 Kincey Avenue, Suite 100 Huntersville, NC 28078 Phone: 704.875.9092 Fax: 704.875.9091 Pace Analytical Services, Inc. 2225 Riverside Drive Asheville, NC 28804 Phone: 828.254.7176 Fax: 828.252.4618

Lab Project Number: 92120391

Client Project ID: NCDOT Pineville/WBS#34948.1.1

#### QUALITY CONTROL DATA PARAMETER FOOTNOTES

Consistent with EPA guidelines, unrounded concentrations are displayed and have been used to calculate % Rec and RPD values.

LCS(D) Laboratory Control Sample (Duplicate)

MS(D) Matrix Spike (Duplicate)

DUP Sample Duplicate

ND Not detected at or above adjusted reporting limit

NC Not Calculable

J Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit

MDL Adjusted Method Detection Limit RPD Relative Percent Difference

(S) Surrogate

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E87627

Asheville Certification IDs
NC Wastewater 40
NC Drinking Water 37712
SC 99030
FL NELAP E87648

# REPORT OF LABORATORY ANALYSIS

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CHAIN-OF-CUSTODY / Analytical Request Document The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately. Pace Analytical` of Page: Section A Section B Section C 0987500 Required Client Information: Required Project Information: Invoice Information: Report To: Helen Corley **REGULATORY AGENCY** □ NPDES ☐ GROUND WATER DRINKING WATER Copy To: Company Name: Confection, ca K. Won Hust 190 **□** UST ☐ RCRA ☐ Other Address: MN ANG  $\Box$  IN □ MI □GA SITE LOCATION Purchase Order No.: Pace Quote Reference OTHER helen . College amer.com ПОН □sc □ WI Project Name: NCMT-TARVILE-Parcel Pace Project Manager: Swante Filtered (Y/N) Project Number: Requested Due Date/TAT: Pace Profile #: Requested Section D Required Client Information WAIRIX

WAIN MATRIX Preservatives SAMPLE TYPE GRAB C=COMP DRINKING WATER DW WATER WT WASTE WATER WW MATRIX CODE SAMPLE ID WASTE WATER COLLECTED One Character per box. COMPOSITE START COMPOSITE END/GRAB (A-Z, 0-9 / .-) Pace Project Number Samples IDs MUST BE UNIQUE OTHER DATE TIME DATE TIME Lab I.D 1200 7 1215 3 3 1230 4 1245 1300 1315 1340 1400 3 0 1415 **RELINQUISHED BY / AFFILIATION** DATE TIME **ACCEPTED BY / AFFILIATION** DATE TIME SAMPLE CONDITION Additional Comments:
Please Callutt any Questing N. 3/3/10 Σ× Σ× Σ× × Sealed Cooler SAMPLER NAME AND SIGNATURE Samples Intact SIGNATURE OF SAMPLER: DATE Sighed (MM/DD/YY) M SEE REVERSE SIDE FOR INSTRUCTIONS