

Preliminary Site Assessment
Mountain Oil Property Parcel #47
Boone, Watauga County, NC

State Project U-4020
WBS Element # 35015.1.1
H&H Job No. ROW-148
May 29, 2008



2923 South Tryon Street
Suite 100
Charlotte, NC 28203
704-586-0007

3334 Hillsborough Street
Raleigh, NC 27607
919-847-4241

**Preliminary Site Assessment Report
Mountain Oil Property Parcel #47
Boone, Watauga County, North Carolina
H&H Project ROW-148**

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**Preliminary Site Assessment
Mountain Oil Property Parcel #47
Boone, Watauga County, North Carolina
H&H Project ROW-148**

1.0 Introduction

Hart & Hickman, PC (H&H) has prepared this Preliminary Site Assessment (PSA) documenting assessment activities performed at the Mountain Oil property (NC DOT Parcel #47) located on the northwest corner of the East King Street (aka US Highway 421) and Farthing Street intersection in Boone, Watauga County, North Carolina. This assessment was conducted on behalf of the North Carolina Department of Transportation (NC DOT) in accordance with the scope of work outlined in our February 29, 2008 proposal.

The purpose of this assessment was to determine the presence or absence of impacted soil at the subject property in the proposed right-of-way construction areas related to the widening of US Highway 421 (State Project U-4020). A site location map is presented as Figure 1 and a site map is presented as Figure 2. The NC DOT preliminary plan of the US Highway 421 widening area near the Mountain Oil property (NC DOT Parcel #47) is included in Appendix A.

The Mountain Oil property (NC DOT Parcel #47) operates as a bulk fuel storage facility but the tank farm is situated away from proposed DOT work areas. According to an Environmental Data Resources (EDR) report for the site vicinity, the property does not appear on the North Carolina Underground Storage Tank (UST) database. H&H did not observe surface evidence of USTs in proposed DOT work areas. Potential UST fill ports are located north of proposed DOT work.

2.0 Site Assessment

Soil Assessment Field Activities

H&H mobilized to the Mountain Oil property on April 8, 2008 to advance five soil borings (47-1 through 47-5) by hand auger methods and direct push technology (DPT). Prior to advancing the soil borings, H&H reviewed the preliminary results of a geophysical survey conducted by Schnabel

Engineering (Schnabel) on March 24, 2008. Schnabel utilized ground penetrating radar (GPR) and electromagnetic (EM) induction technology to identify geophysical anomalies and potential USTs at the site. A Report on Geophysical Surveys dated April 28, 2008 prepared by Schnabel documents the results of the survey and is included in Appendix B. The report indicates that four probable USTs are located in a common UST basin outside of the DOT target area (Figure 2). The report concludes that geophysical data do not indicate the presence of USTs within the right-of-way areas surveyed.

Prior to installing soil borings, utilities were marked by NC One Call and by DOT's contractor, Vaughn and Melton. As an additional precautionary measure against damaging subsurface utility lines, the 0 to 5-foot interval below ground surface (bgs) of each soil boring was installed by hand auger methods. H&H utilized Geologic Exploration of Statesville, North Carolina to advance soil borings 47-1 through 47-5 by DPT beyond 5 feet bgs. Borings were installed to a depth of 12 ft. Soil boring locations are shown on Figure 2 and soil boring logs are included in Appendix C. To facilitate the selection of soil samples for laboratory analysis from these borings, soil was screened continuously for the presence of volatile organic compounds (VOCs) with an organic vapor analyzer (OVA). Additionally, H&H observed the soil for visual and olfactory indications of petroleum impacts. In general, soil samples that exhibited the highest reading on the OVA were selected for laboratory analysis.

H&H collected five soil samples (47-1 @ 2-5 ft; 47-2 @ 2-5 ft; 47-3 @ 0-2 ft; 47-4 @ 2-5 ft; and 47-5 @ 2-5 ft) for laboratory analysis. Soil samples are identified by the NC DOT parcel number, soil boring number, and the depth interval of sample collection. The samples were sent to Prism Laboratories, Inc. of Charlotte, North Carolina, for analysis of total petroleum hydrocarbons (TPH) gasoline-range organics (GRO) and diesel-range organics (DRO) by EPA Method 8015B. Sample intervals and analytical results are summarized in Table 1. Laboratory Analytical data sheets for the Parcel 47 soil samples and chain-of-custody documentation are provided in Appendix D. The chain-of-custody form includes samples collected from other properties during the same mobilization. The analytical results are discussed below.

3.0 Analytical Results

Target compounds were not detected above laboratory reporting limits in any of the five samples collected. Based on laboratory analytical results and OVA readings, impacted soils are not present at the site within the vicinity of the soil borings. Review of cut and fill lines and cross sections in the proposed right-of-way construction areas indicate that that approximately 1.5 feet of fill material will be placed for proposed road work near Parcel 47. Based on the results of soil sampling activities noted above, impacted soil should not be encountered at this site during NC DOT road work.

4.0 Summary and Regulatory Considerations

H&H has reviewed Geophysical survey results and collected five soil samples at the Mountain Oil property (NC DOT Parcel #47). No USTs, geophysical anomalies, or impacted soils were detected between the existing northern curb of East King Street and the proposed utility easement line.

5.0 Signature Page

This report was prepared by:



Scott Drury
Staff Scientist for
Hart and Hickman, PC

This report was reviewed by:



Matt Bramblett, PE
Principal and Project Manager for
Hart and Hickman, PC

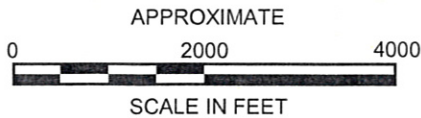
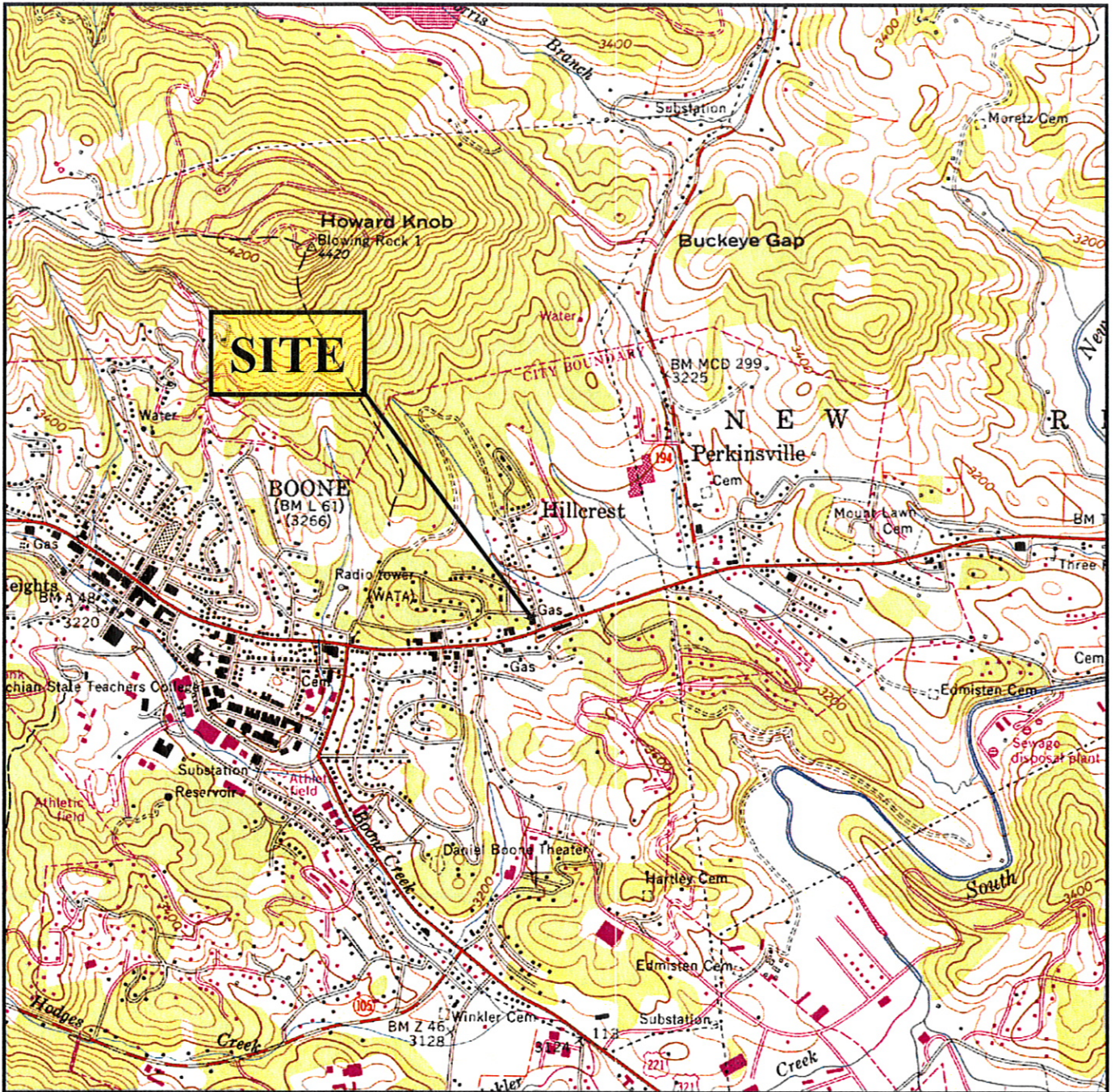
Table 1
Soil Analytical Results
Mountain Oil Property, Parcel #47
Boone, North Carolina
H&H Job No. ROW-148

Sample ID	47-1		47-2		47-3		47-4		47-5		NCDENR Action Level (mg/kg)
	Sample Depth (ft)	Sample Date	Sample Depth (ft)	Sample Date	Sample Depth (ft)	Sample Date	Sample Depth (ft)	Sample Date	Sample Depth (ft)	Sample Date	
<u>TPH-DRO/GRO (8015B)</u> Diesel-Range Organics (DRO) Gasoline-Range Organics (GRO)	2-5	4/8/2008	2-5	4/8/2008	0-2	4/8/2008	2-5	4/8/2008	2-5	4/8/2008	
	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	
	<7.8		<7.9		<7.8		<8.0		<7.8		10
	<5.6		<5.7		<5.6		<5.7		<5.5		10

Notes:

EPA Method follows parameter in parenthesis;


TPH=total petroleum hydrocarbons



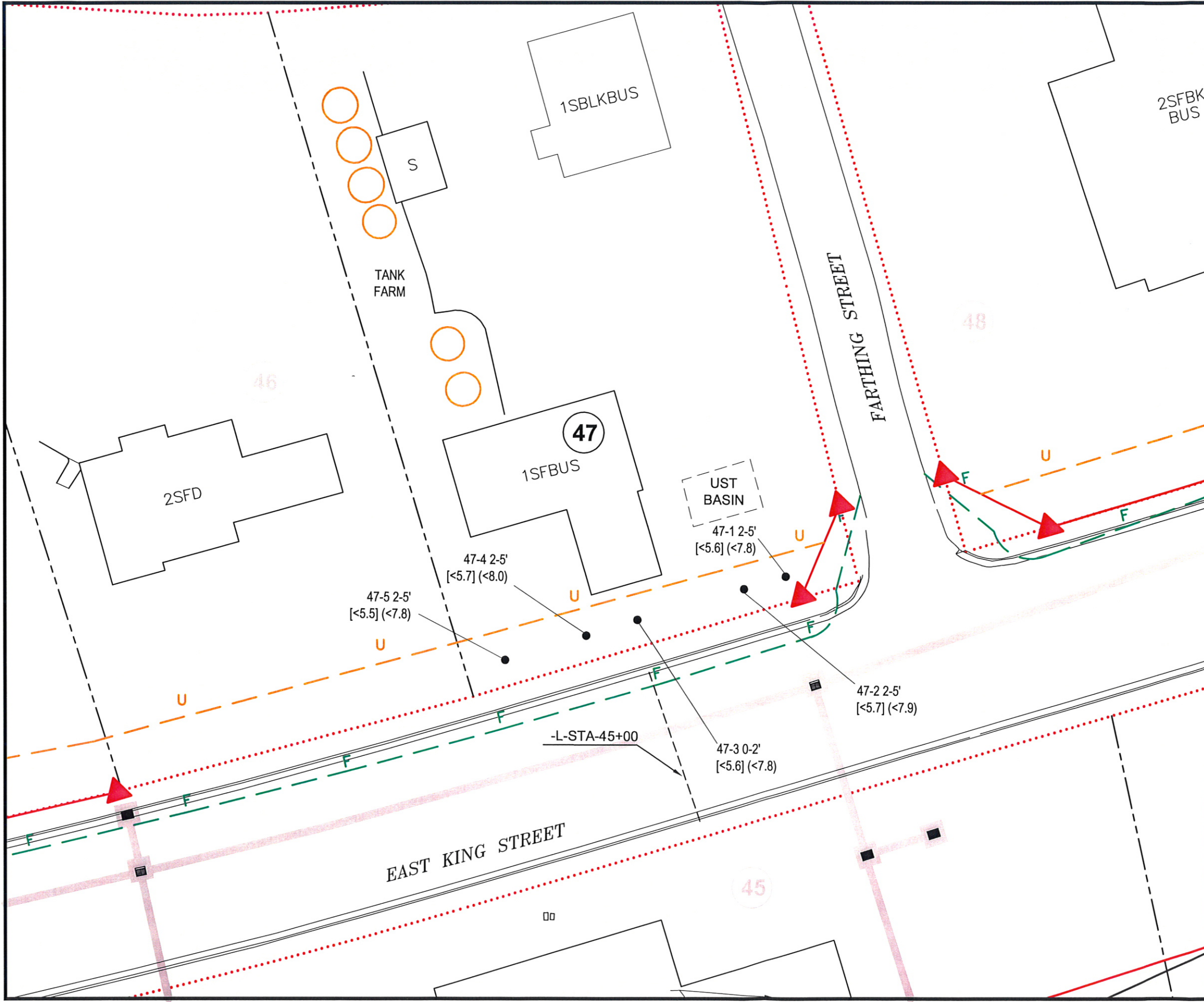
U.S.G.S. QUADRANGLE MAP

**BOONE, NC 1959
PHOTOREVISED 1978**

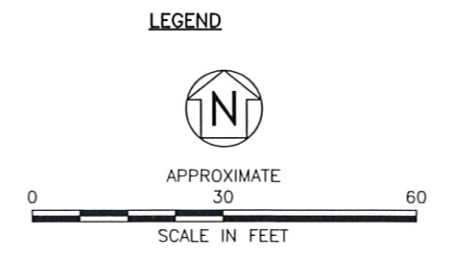
QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)

TITLE	SITE LOCATION MAP	
PROJECT	MOUNTAIN OIL PROPERTY PARCEL #47 BOONE, NORTH CAROLINA	
 2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 A PROFESSIONAL CORPORATION 704-586-0007 (p) 704-586-0370 (f)		
DATE:	4-28-08	REVISION NO: 0
JOB NO:	ROW-148	FIGURE NO: 1

S:\AAA-Master Projects\INC DOT\Right-of-Way-ROW\PROW-148 Boone PSAs\Files from DOT\Proj\FIGURES\37_38_41-43_45_47_48 A.dwg, 47, 5/28/2008 1:26:06 PM, 1:1



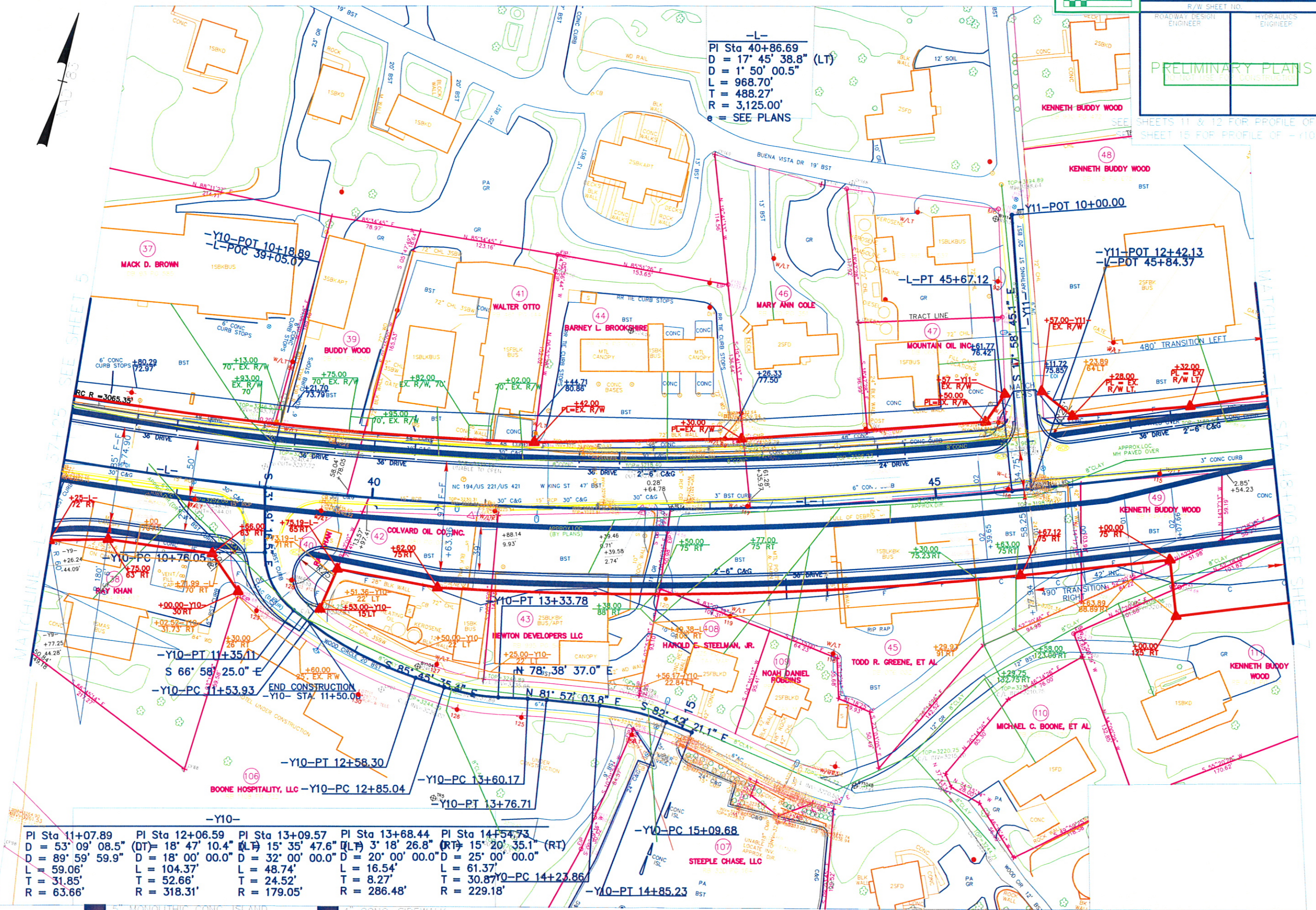
- LEGEND**
- PROPERTY LINE
 - EXISTING RIGHT-OF-WAY
 - ▲ PROPOSED RIGHT-OF-WAY
 - F- PROPOSED FILL LINE
 - U- PROPOSED UTILITY EASEMENT
 - PROPOSED DRAINAGE PIPE
 - PROPOSED CATCH BASIN
 - SOIL BORING
 - UST BASIN IDENTIFIED BY SCHNABEL
 - ④ 47 PARCEL NUMBER
 - [] = TPH GRO mg/kg
 - () = TPH DRO mg/kg



TITLE SITE MAP AND SOIL ANALYTICAL RESULTS	
PROJECT MOUNTAIN OIL PROPERTY PARCEL #47 BOONE, NORTH CAROLINA	
2923 South Tryon Street-Suite 100 Charlotte, North Carolina 28203 704-586-0007(p) 704-586-0373(f)	
DATE: 4-24-08	REVISION NO. 0
JOB NO: ROW-148	FIGURE: 2

Appendix A
NC DOT Preliminary Plan

-L-
 PI Sta 40+86.69
 D = 17' 45" 38.8" (LT)
 D = 1' 50" 00.5"
 L = 968.70'
 T = 488.27'
 R = 3,125.00'
 e = SEE PLANS



PI Sta 11+07.89	PI Sta 12+06.59	PI Sta 13+09.57	PI Sta 13+68.44	PI Sta 14+54.73
D = 53' 09" 08.5"	(DT) = 18' 47" 10.4"	(LT) = 15' 35" 47.6"	(LT) = 3' 18" 26.8"	(RT) = 15' 20" 35.1"
D = 89' 59" 59.9"	D = 18' 00" 00.0"	D = 32' 00" 00.0"	D = 20' 00" 00.0"	D = 25' 00" 00.0"
L = 59.06'	L = 104.37'	L = 48.74'	L = 16.54'	L = 61.37'
T = 31.85'	T = 52.66'	T = 24.52'	T = 8.27'	T = 30.87'
R = 63.66'	R = 318.31'	R = 179.05'	R = 286.48'	R = 229.18'

S:\VAA-Master-Projects\DOT Right-of-Way - ROW\148 Boone PSA\Figures\bind.dwg, Model, 5/28/2008 1:26:33 PM, 1:80

Appendix B

Schnabel Engineering Report on Geophysical Services

April 28, 2008

Mr. Matt Bramblett, PE
Hart & Hickman, PC
2923 South Tryon Street, Suite 100
Charlotte, NC 28203

RE: State Project: U-4020
WBS Element: 35015.1.1
County: Watauga
Description: US 421 (King Street) from US 321 (Hardin Street) to east
of NC 194 (Jefferson Road) in Boone

SUBJECT: Report on Geophysical Surveys of Parcel 47
Schnabel Engineering Project No. 07210023.07

Dear Mr. Bramblett:

This letter contains our 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.

1.0 INTRODUCTION

Schnabel Engineering conducted geophysical surveys on March 11 and March 18, 2008, in the accessible areas of the proposed right-of-way (ROW) sections of Parcel 47 (Mountain Oil Company Property) under our 2007 contract with the NCDOT. Parcel 47 is located at the northwest corner of the intersection of US 421 (King Street) and Farthing Street. The work was conducted at the location indicated by the NCDOT to support their environmental assessment of the subject parcel. The purpose of the geophysical surveys was to locate possible metal underground storage tanks (UST's) and associated metal product lines in the accessible areas of the site.

2.0 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 (building, curbs, signs, etc.) were recorded for later correlation with the geophysical data and for location references to the NCDOT drawings. The geophysical investigation consisted of an electromagnetic (EM) induction survey using a Geonics EM61-MK2 instrument, and a ground-penetrating radar survey using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna.

The EM61 data were collected along parallel survey lines spaced about 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 two feet apart in orthogonal directions over anomalous EM readings not attributed to cultural features and reinforced concrete.

Preliminary results were sent to David Graham and Matt Bramblett of Hart & Hickman on March 24, 2008.

3.0 DISCUSSION OF RESULTS

The contoured EM61 data are shown on Figures 1 and 2. The EM61 early time gate results are plotted on Figure 1. The early time gate data provide the most sensitive detection of metal object targets, regardless of size. Figure 2 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 UST's.

The early time gate and differential results show a high amplitude anomaly over most of the survey area and other anomalies attributed to known site features (Figures 1 and 2). These anomalies were

surveyed with GPR, which indicated the presence of reinforced concrete over most of the site. The GPR data did not indicate the presence of UST's in the areas surveyed. The approximate location of probable UST's outside of the NCDOT right-of-way/easement is shown on Figures 1 and 2 for informational purposes only.

4.0 CONCLUSIONS

Our evaluation of the geophysical data collected on Parcel 47 of Project U-4020 in Boone, NC indicates the following:

- The geophysical data do not indicate the presence of UST's within the right-of-way areas surveyed.

5.0 LIMITATIONS

These services have been performed and this report prepared for Hart & Hickman 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.

Thank you for the opportunity to serve you on this project. Please call if you need additional information or have any questions.

Sincerely,

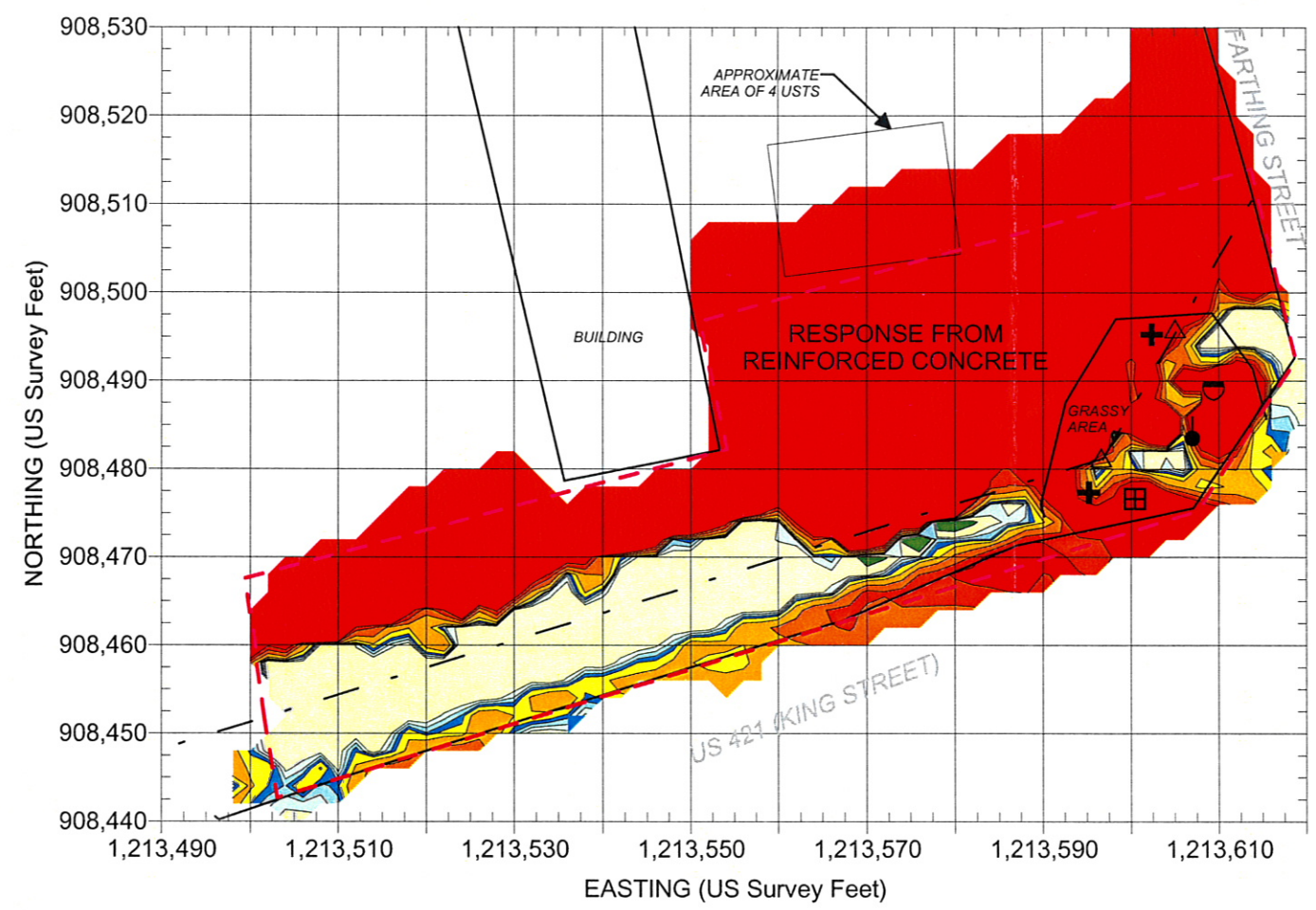


Jeremy S. Strohmeyer, P.G.
Project Manager

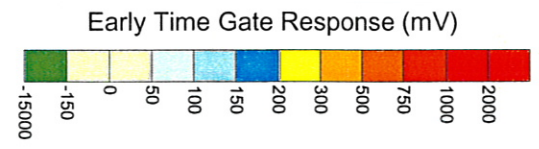
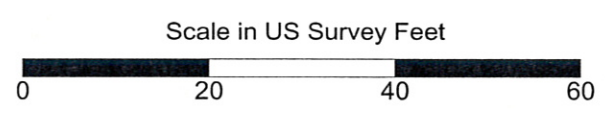
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Attachment: Figures (2)

FILE: G:\2007 PROJECTS\07210023 (NCDOT 2007 GEOPHYSICAL SERVICES)\PHASE 07 (U-4020 - WATAUGA COUNTY)\REPORT\HART & HICKMAN\PARCEL 47\REPORT ON PARCEL 47.DOC



EXPLANATION	
	EM61 SURVEY AREA - DATA ACQUIRED ALONG PARALLEL SURVEY LINES SPACED APPROXIMATELY 2.5 FEET APART
	GUY WIRE
	SIGN
	METALLIC OBJECT
	NCDOT MARKER
	UTILITY POLE
	STORMWATER GRATE
	UTILITY MANHOLE
	MONITORING WELL
	LIGHTPOLE
	GPR SURVEY AREA
	LOCATION OF GPR SURVEY LINE SHOWN
	APPROXIMATE LOCATION OF POSSIBLE UTILITY (SOME MARKED IN FIELD)
	APPROXIMATE LOCATION OF POSSIBLE BURIED UST AS MARKED IN FIELD
	APPROXIMATE LIMITS OF NCDOT PROJECT



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 March 11, 2008, 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 March 18, 2008, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

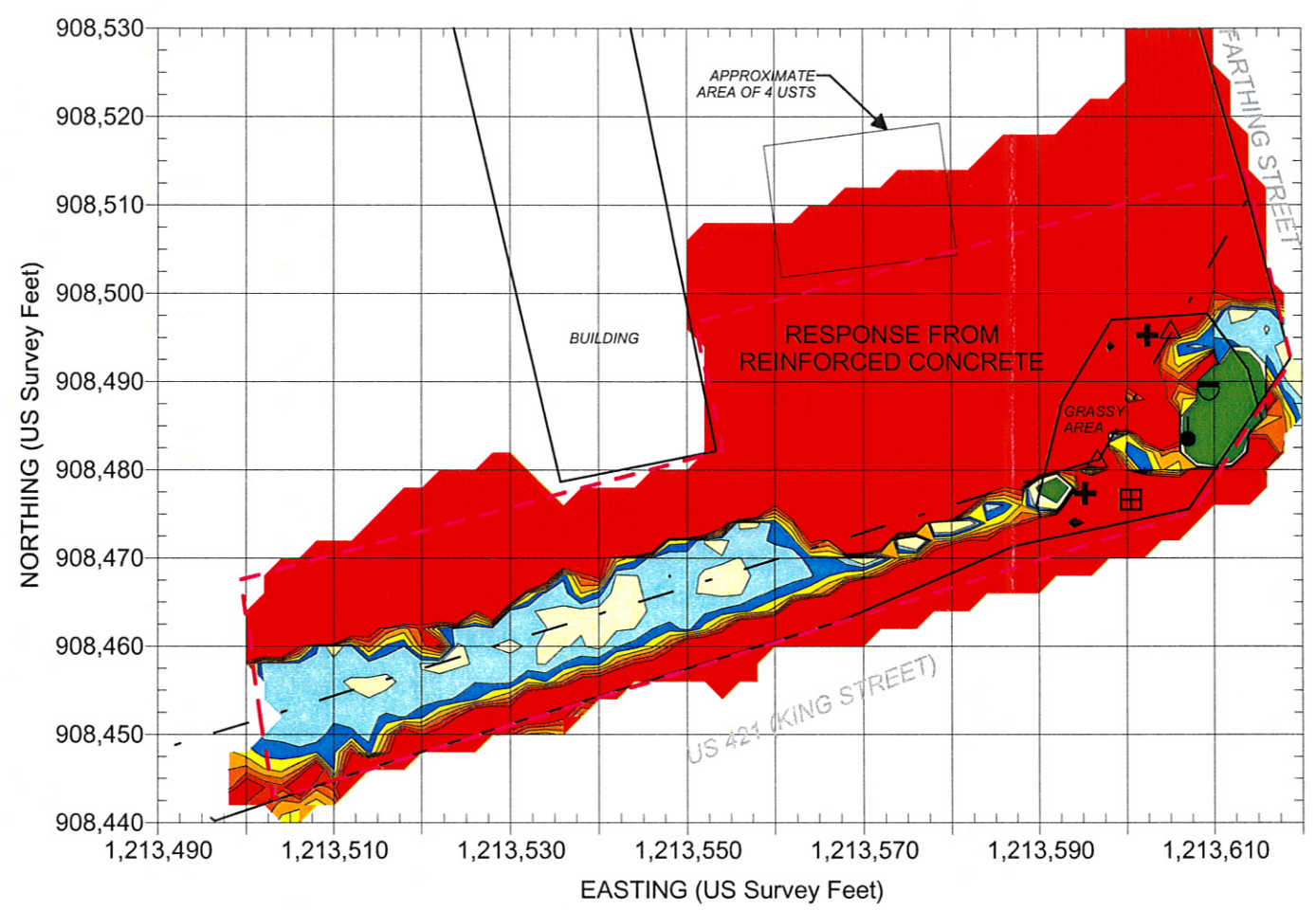


NC Department of Transportation
Geotechnical Engineering Unit

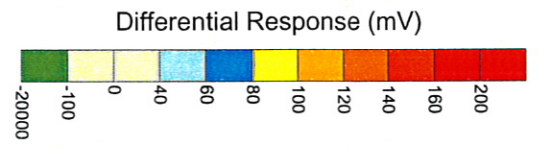
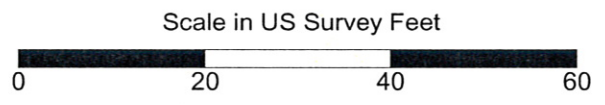
State Project No. U-4020
Watauga County, North Carolina

**PARCEL 47
EM61 EARLY TIME
GATE RESPONSE**

FIGURE 1



EXPLANATION	
	EM61 SURVEY AREA - DATA ACQUIRED ALONG PARALLEL SURVEY LINES SPACED APPROXIMATELY 2.5 FEET APART
	GUY WIRE
	SIGN
	METALLIC OBJECT
	NCDOT MARKER
	UTILITY POLE
	STORMWATER GRATE
	UTILITY MANHOLE
	MONITORING WELL
	LIGHTPOLE
	GPR SURVEY AREA
	LOCATION OF GPR SURVEY LINE SHOWN
	APPROXIMATE LOCATION OF POSSIBLE UTILITY (SOME MARKED IN FIELD)
	APPROXIMATE LOCATION OF POSSIBLE BURIED UST AS MARKED IN FIELD
	APPROXIMATE LIMITS OF NCDOT PROJECT



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 March 11, 2008, 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 March 18, 2008, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

	NC Department of Transportation Geotechnical Engineering Unit	PARCEL 47 EM61 DIFFERENTIAL RESPONSE FIGURE 2
	State Project No. U-4020 Watauga County, North Carolina	

Appendix C
Soil Boring Logs



BORING NUMBER 47-1

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: Boone PSAs
JOB NUMBER: ROW-148
LOCATION: Boone, NC

LOG OF BORING - HART HICKMAN GDT - 5/23/08 14:39 - S\AAAA-MASTER PROJECTS\NC DOT RIGHT-OF-WAY - ROW\ROW-148 BOONE PSAS\BORING LOGS\ROW-148 (47).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0			0.3	0.9	[Stippled pattern]	Tan, orange, silty, SAND, dry		0.0
2.5	75			1.7				2.5
5.0				0.9				5.0
7.5	90			0.8				7.5
10.0	25			0.8			10.0	
12.5					Bottom of borehole at 12.0 feet.			12.5
15.0								15.0

DRILLING CONTRACTOR: GEOLOGIC EXPLORATION
DRILL RIG/ METHOD: Geoprobe 6620DT
SAMPLING METHOD: DPT Sleeves
LOGGED BY: MHF
DRAWN BY:

BORING STARTED: 4/8/08
BORING COMPLETED: 4/8/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:
Hand augered to 5'. Soil sample collected from 2-5' for laboratory analysis.



BORING NUMBER 47-2

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: Boone PSAs
JOB NUMBER: ROW-148
LOCATION: Boone, NC

LOG OF BORING - HART HICKMAN GDT - 5/23/08 14:39 - S:\AAA-MASTER PROJECTS\NC DOT RIGHT-OF-WAY -ROW-148 BOONE PSAS\BORING LOGS\ROW-148 (47).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Tan, orange, silty, SAND, dry		0.0
2.5	75		0.6	0.8				2.5
5.0				1.8				5.0
7.5	75							7.5
10.0				0.7				10.0
12.5	50			0.8				12.5
15.0						Bottom of borehole at 12.0 feet.		15.0

DRILLING CONTRACTOR: GEOLOGIC EXPLORATION
DRILL RIG/ METHOD: Geoprobe 6620DT
SAMPLING METHOD: DPT Sleeves
LOGGED BY: MHF
DRAWN BY:

BORING STARTED: 4/8/08
BORING COMPLETED: 4/8/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:
Hand augered to 5'. Soil sample collected from 2-5' for laboratory analysis.



BORING NUMBER 47-3

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: Boone PSAs

JOB NUMBER: ROW-148

LOCATION: Boone, NC

LOG OF BORING - HART HICKMAN.GDT - 5/23/08 14:39 - S:\AAA-MASTER PROJECTS\NC DOT RIGHT-OF-WAY -ROW\ROW-148 BOONE PSAS\BORING LOGS\ROW-148 (47).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Red, brown, sandy, SILT with partially weathered rock, dry		0.0
2.5	100		0.5	1.1				2.5
5.0				1		Light pink, tan, silty, fine SAND, dry		5.0
7.5	90			0.9				7.5
10.0				0.9		Brown, orange, SILT, slightly damp		10.0
12.5	50			0.6				12.5
15.0						Bottom of borehole at 12.0 feet.		15.0

DRILLING CONTRACTOR: GEOLOGIC EXPLORATION
DRILL RIG/ METHOD: Geoprobe 6620DT
SAMPLING METHOD: DPT Sleeves
LOGGED BY: MHF
DRAWN BY:

BORING STARTED: 4/8/08
BORING COMPLETED: 4/8/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:
 Hand augered to 5'. Soil sample collected from 0-2' for laboratory analysis.



BORING NUMBER 47-4

2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

PROJECT: Boone PSAs
JOB NUMBER: ROW-148
LOCATION: Boone, NC

LOG OF BORING - HART HICKMAN.GDT - 5/23/08 14:39 - S:\AAA-MASTER PROJECTS\NC DOT RIGHT-OF-WAY -ROW\ROW-148 BOONE PSAS\BORING LOGS\ROW-148 (47).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Brown, tan, silty, fine SAND, dry		0.0
2.5	100		0.5	1.9		Medium brown, tan, silty, fine SAND, dry		2.5
5.0				3.1				5.0
7.5	100			2.8		Grey, fine SILT, dry		7.5
10.0				1.9		Orange, tan, fine silty, SAND, some partially weathered rock, dry		10.0
12.5	100			1.9				12.5
15.0						Bottom of borehole at 12.0 feet.		15.0

DRILLING CONTRACTOR: GEOLOGIC EXPLORATION
DRILL RIG/ METHOD: Geoprobe 6620DT
SAMPLING METHOD: DPT Sleeves
LOGGED BY: MHF
DRAWN BY:

BORING STARTED: 4/8/08
BORING COMPLETED: 4/8/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:
Hand augered to 5'. Collected soil sample from 2-5' for laboratory analysis.



BORING NUMBER 47-5

2923 South Tryon Street-Suite 100
 Charlotte, North Carolina 28203
 704-586-0007(p) 704-586-0373(f)

3334 Hillsborough Street
 Raleigh, North Carolina 27607
 919-847-4241(p) 919-847-4261(f)

PROJECT: Boone PSAs
JOB NUMBER: ROW-148
LOCATION: Boone, NC

LOG OF BORING - HART HICKMAN.GDT - 5/23/08 14:39 - S:\AAA-MASTER PROJECTS\INC DOT RIGHT-OF-WAY -ROW\ROW-148 BOONE PSAS\BORING LOGS\ROW-148 (47).GPJ

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm)		LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
			BKG.	SAMP.				
0.0						Orange, brown, sandy, SILT, dry		0.0
2.5	75		0.5	1.2				2.5
5.0				2.9				5.0
7.5	50			2.2		Dark brown, orange, silty, SAND, with partially weathered rock, dry		7.5
10.0				1.1				10.0
12.5	50			1.7		Light brown, silty, SAND, with partially weathered, dry		12.5
15.0						Bottom of borehole at 12.0 feet.		15.0

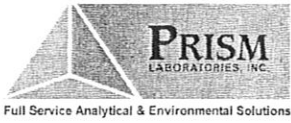
DRILLING CONTRACTOR: GEOLOGIC EXPLORATION
DRILL RIG/ METHOD: Geoprobe 6620DT
SAMPLING METHOD: DPT Sleeves
LOGGED BY: MHF
DRAWN BY:

BORING STARTED: 4/8/08
BORING COMPLETED: 4/8/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:
 Hand augered to 5'. Collected soil sample from 2-5' for laboratory analysis.

Appendix D

Laboratory Analytical Report



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

Laboratory Report

04/28/08

North Carolina Department of
 Transportation
 Attn: David Graham
 c/o Hart and Hickman
 2923 South Tryon St. Ste 100
 Charlotte, NC 28203

Project Name: Boone PSAs
 Project ID: ROW-148
 Project No.: WBS# 35015.1.1
 Sample Matrix: Soil

Client Sample ID: 47-1 (2-5)
 Prism Sample ID: 211247
 COC Group: G0408351
 Time Collected: 04/08/08 14:25
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	89.2	%			1	SM2540 G	04/14/08 14:15	mbarber	
Diesel Range Organics (DRO) by GC-FID									
Diesel Range Organics (DRO)	BRL	mg/kg	7.8	1.9	1	8015B	04/17/08 21:19	jvogel	Q31874
Sample Preparation:			50.29 g	/	2 mL	3550B	04/17/08 10:30	jvogel	P21377
					Surrogate	% Recovery	Control Limits		
					o-Terphenyl	81	48 - 130		
Sample Weight Determination									
Weight 1	5.43	g			1	GRO	04/17/08 0:00	athao	
Weight 2	5.88	g			1	GRO	04/17/08 0:00	athao	
Gasoline Range Organics (GRO) by GC-FID									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.6	3.5	50	8015B	04/16/08 19:33	wbradley	Q31784
					Surrogate	% Recovery	Control Limits		
					aaa-TFT	67	55 - 129		

Sample Comment(s):

*BRL = Below Reporting Limit
 Values are reported down to the reporting limit only. No J-Flags applied.
 The results in this report relate only to the samples submitted for analysis and meet state certification requirements other than NELAC certification except for those instances indicated in the case narrative and/or test comments.
 All results are reported on a dry-weight basis*

Angela D. Overcash, V.P. Laboratory Services



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

Laboratory Report

04/28/08

North Carolina Department of
 Transportation
 Attn: David Graham
 c/o Hart and Hickman
 2923 South Tryon St. Ste 100
 Charlotte, NC 28203

Project Name: Boone PSAs
 Project ID: ROW-148
 Project No.: WBS# 35015.1.1
 Sample Matrix: Soil

Client Sample ID: 47-2 (2-5)
 Prism Sample ID: 211248
 COC Group: G0408351
 Time Collected: 04/08/08 14:40
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	88.4	%			1	SM2540 G	04/14/08 14:15	mbarber	
Diesel Range Organics (DRO) by GC-FID									
Diesel Range Organics (DRO)	BRL	mg/kg	7.9	1.9	1	8015B	04/18/08 2:43	javogel	Q31874
Sample Preparation:			49.95 g	/	2 mL	3550B	04/17/08 10:30	javogel	P21377
					Surrogate		% Recovery	Control Limits	
					o-Terphenyl		86	48 - 130	
Sample Weight Determination									
Weight 1	6.44	g			1	GRO	04/17/08 0:00	athao	
Weight 2	6.24	g			1	GRO	04/17/08 0:00	athao	
Gasoline Range Organics (GRO) by GC-FID									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.7	3.5	50	8015B	04/16/08 20:05	wbradley	Q31784
					Surrogate		% Recovery	Control Limits	
					aaa-TFT		79	55 - 129	

Sample Comment(s):

BRL = Below Reporting Limit

Values are reported down to the reporting limit only. No J-Flags applied.

The results in this report relate only to the samples submitted for analysis and meet state certification requirements other than NELAC certification except for those instances indicated in the case narrative and/or test comments.

All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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

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



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

Laboratory Report

04/28/08

North Carolina Department of
 Transportation
 Attn: David Graham
 c/o Hart and Hickman
 2923 South Tryon St. Ste 100
 Charlotte, NC 28203

Project Name: Boone PSAs
 Project ID: ROW-148
 Project No.: WBS# 35015.1.1
 Sample Matrix: Soil

Client Sample ID: 47-3 (0-2)
 Prism Sample ID: 211249
 COC Group: G0408351
 Time Collected: 04/08/08 14:55
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	89.4	%			1	SM2540 G	04/14/08 14:15	mbarber	
Diesel Range Organics (DRO) by GC-FID									
Diesel Range Organics (DRO)	BRL	mg/kg	7.8	1.9	1	8015B	04/17/08 21:55	jvogel	Q31874
Sample Preparation:			49.91 g	/	2 mL	3550B	04/17/08 10:30	jvogel	P21377
					Surrogate		% Recovery	Control Limits	
					o-Terphenyl		77	48 - 130	
Sample Weight Determination									
Weight 1	5.80	g			1	GRO	04/17/08 0:00	athao	
Weight 2	5.77	g			1	GRO	04/17/08 0:00	athao	
Gasoline Range Organics (GRO) by GC-FID									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.6	3.5	50	8015B	04/16/08 20:36	wbradley	Q31784
					Surrogate		% Recovery	Control Limits	
					aaa-TFT		83	55 - 129	

Sample Comment(s):

BRL = Below Reporting Limit

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Angela D. Overcash, V.P. Laboratory Services

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

Laboratory Report

04/28/08

North Carolina Department of
 Transportation
 Attn: David Graham
 c/o Hart and Hickman
 2923 South Tryon St. Ste 100
 Charlotte, NC 28203

Project Name: Boone PSAs
 Project ID: ROW-148
 Project No.: WBS# 35015.1.1
 Sample Matrix: Soil

Client Sample ID: 47-4 (2-5)
 Prism Sample ID: 211250
 COC Group: G0408351
 Time Collected: 04/08/08 15:10
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Percent Solids Determination									
Percent Solids	87.3	%			1	SM2540 G	04/14/08 14:15	mbarber	
Diesel Range Organics (DRO) by GC-FID									
Diesel Range Organics (DRO)	BRL	mg/kg	8.0	1.9	1	8015B	04/17/08 22:31	javogel	Q31874
Sample Preparation:			50.4 g	/	2 mL	3550B	04/17/08 10:30	javogel	P21377
			Surrogate				% Recovery	Control Limits	
			o-Terphenyl				96	48 - 130	
Sample Weight Determination									
Weight 1	3.71	g			1	GRO	04/17/08 0:00	athao	
Weight 2	5.71	g			1	GRO	04/17/08 0:00	athao	
Gasoline Range Organics (GRO) by GC-FID									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.7	3.6	50	8015B	04/16/08 21:08	wbradley	Q31784
			Surrogate				% Recovery	Control Limits	
			aaa-TFT				83	55 - 129	

Sample Comment(s):

BRL = Below Reporting Limit

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All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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

Laboratory Report

04/28/08

North Carolina Department of
 Transportation
 Attn: David Graham
 c/o Hart and Hickman
 2923 South Tryon St. Ste 100
 Charlotte, NC 28203

Project Name: Boone PSAs
 Project ID: ROW-148
 Project No.: WBS# 35015.1.1
 Sample Matrix: Soil

Client Sample ID: 47-5 (2-5)
 Prism Sample ID: 211251
 COC Group: G0408351
 Time Collected: 04/08/08 15:25
 Time Submitted: 04/11/08 9:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
<u>Percent Solids Determination</u>									
Percent Solids	90.1	%			1	SM2540 G	04/14/08 14:15	mbarber	
<u>Diesel Range Organics (DRO) by GC-FID</u>									
Diesel Range Organics (DRO)	BRL	mg/kg	7.8	1.9	1	8015B	04/17/08 23:43	jvogel	Q31874
Sample Preparation:			50.02 g	/	2 mL	3550B	04/17/08 10:30	jvogel	P21377
			Surrogate				% Recovery	Control Limits	
			o-Terphenyl				91	48 - 130	
<u>Sample Weight Determination</u>									
Weight 1	6.00	g			1	GRO	04/17/08 0:00	athao	
Weight 2	6.02	g			1	GRO	04/17/08 0:00	athao	
<u>Gasoline Range Organics (GRO) by GC-FID</u>									
Gasoline Range Organics (GRO)	BRL	mg/kg	5.5	3.5	50	8015B	04/17/08 16:53	wbradley	Q31818
			Surrogate				% Recovery	Control Limits	
			aaa-TFT				89	55 - 129	

Sample Comment(s):

BRL = Below Reporting Limit

Values are reported down to the reporting limit only. No J-Flags applied.

The results in this report relate only to the samples submitted for analysis and meet state certification requirements other than NELAC certification except for those instances indicated in the case narrative and/or test comments.

All results are reported on a dry-weight basis

Angela D. Overcash, V.P. Laboratory Services

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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: Hart & Harkman
Report To/Contact Name: D. Graham
Reporting Address: 2023 S. Togan St

Phone: 704-586-0007 Fax (Yes) (No):
Email (Yes) (No) Email Address: dgraham@hartandharkman.com
EDD Type: PDF Excel Other
Site Location Name: Beane DOT
Site Location Physical Address: Beane, NC

CHAIN OF CUSTODY RECORD

PAGE 4 OF 10 QUOTE # TO ENSURE PROPER BILLING:

Project Name: ROW-148

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:

Address:

Purchase Order No./Billing Reference

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				
48-2(0-2)	4/8/08	1210	soil	vpp	3	none/meth	TPH-COL		211241
48-3(2-5)		1220							211242
48-4(2-5)		1320							211243
48-5(5-17)		1335							211244
48-6(2-5)		1345							211245
48-7(0-2)		1405							211246
47-1(2-5)		1425							211247
47-2(2-5)		1440							211243
47-3(0-2)		1455							211249
47-4(2-5)		1510							211250

PRESS DOWN FIRMLY - 3 COPIES

Sampler's Signature: [Signature] Sampled By (Print Name): M. Fallick Affiliation: H&H

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) [Signature] Date: _____ Military/Hours: _____

Received By: (Signature) [Signature] Date: _____

Relinquished By: (Signature) [Signature] Date: 4/10/08 Military/Hours: 920

Relinquished By: (Signature) _____ Date: _____

Additional Comments: _____

Method of Shipment: Fed Ex UPS Hand-delivered Prism Field Service Other

NPDES: NC SC NC SC NC SC NC SC NC SC

GROUNDWATER: NC SC NC SC NC SC

DRINKING WATER: NC SC NC SC NC SC

SOLID WASTE: NC SC NC SC

RCRA: NC SC NC SC

CERCLA: NC SC NC SC

LANDFILL: NC SC NC SC

OTHER: NC SC NC SC

*CONTAINER TYPE CODES: A - Amber C - Clear G - Glass P - Plastic TI - Teflon-lined Can VOA = Volatile Organics Analysis (Zero Head Space)

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL



Full Service Analytical & Environmental Solutions

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

Client Company Name: HART & HILMAN
 Report To/Contact Name: D. GARDNER
 Reporting Address: 2923 S. Tryon St.

Phone: 704-586-0007 Fax (Yes) (No):
 Email (Yes) (No) Email Address: dgardner@hartandhilman.com
 EDD Type: PDF Excel Other
 Site Location Name: DOT
 Site Location Physical Address: Boone, NC

CHAIN OF CUSTODY RECORD

PAGE 5 OF 10 QUOTE # TO ENSURE PROPER BILLING:

Project Name: Row-148

Short Hold Analysis: (Yes) (No) Not Project: (Yes) (No)

*Please ATTACH any project specific reporting (QC LEVEL I III IV) provisions and/or QC Requirements

Invoice To: _____
 Address: _____

Purchase Order No./Billing Reference _____

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)

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				
47-S (2-5)	4/18/08	1525	soil	VOL	3	40ml	none both	X		211251
41-1 (5-7)		1600						X		211252
41-2 (2-5)		1645						X		211253
41-3 (5-7)		1625						X		211254
41-4 (5-7)		1640						X		211255
41-5 (2-5)		1655						X		211256
41-6 (2-5)		1715						X		211257
37-2 (2-5)	4/19/08	0800						X		211258
37-4 (0-2)		0820						X		211259
37-3 (10-12)		0835						X		211260

PRISM USE ONLY

Site Arrival Time: _____

Site Departure Time: _____

Field Tech Fee: _____

Mileage: _____

Additional Comments: _____

Received By: (Signature) _____

Received By: (Signature) _____

Received For Prism Laboratories By: _____

Date: 4/18/08 920

Date: _____

Date: _____

COC Group No. 60453351

Method of Shipment: Fed Ex UPS Hand-delivered Prism Field Service Other _____

NPDES: NC SC NC SC NC SC NC SC NC SC

GROUNDWATER: NC SC NC SC NC SC NC SC

DRINKING WATER: NC SC NC SC NC SC NC SC

SOLID WASTE: NC SC NC SC NC SC NC SC

RCRA: NC SC NC SC NC SC NC SC

CERCLA: NC SC NC SC NC SC NC SC

OTHER: NC SC NC SC NC SC NC SC

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

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 _____

PRISM USE ONLY

Site Arrival Time: _____

Site Departure Time: _____

Field Tech Fee: _____

Mileage: _____

Additional Comments: _____

Received By: (Signature) _____

Received By: (Signature) _____

Received For Prism Laboratories By: _____

Date: 4/18/08 920

Date: _____

Date: _____

COC Group No. 60453351

Method of Shipment: Fed Ex UPS Hand-delivered Prism Field Service Other _____

NPDES: NC SC NC SC NC SC NC SC

GROUNDWATER: NC SC NC SC NC SC NC SC

DRINKING WATER: NC SC NC SC NC SC NC SC

SOLID WASTE: NC SC NC SC NC SC NC SC

RCRA: NC SC NC SC NC SC NC SC

CERCLA: NC SC NC SC NC SC NC SC

OTHER: NC SC NC SC NC SC NC SC

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

ORIGINAL