Preliminary Site Assessment
Nola L. Hodges Property
Parcel #158
Fayetteville, Cumberland County, NC

H&H Job No. ROW-203
State Project U-2810C
WBS Element # 34866.1.1
January 8, 2009

Hart & Hickman

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
Nola L. Hodges Property Parcel #158
Fayetteville, Cumberland County, North Carolina
H&H Project ROW-203

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Preliminary Site Assessment Report
Nola L. Hodges Property Parcel #158
Fayetteville, Cumberland County, North Carolina
H&H Project ROW-203

1.0 Introduction

Hart & Hickman, PC (H&H) has prepared this Preliminary Site Assessment (PSA) report documenting assessment activities performed at the Nola L. Hodges property (Parcel #158) located at 2817 and 2821 Camden Rd. in Fayetteville, Cumberland County, North Carolina. This assessment was conducted on behalf of the North Carolina Department of Transportation (NC DOT) in accordance with H&H's November 17, 2008 proposal.

The purpose of this assessment was to determine the presence or absence of impacted soil at the subject property in proposed right-of-way construction areas related to the widening of Camden Road (State Project U-2810C). A site location map is included as Figure 1 and a site map is presented as Figure 2. The NC DOT preliminary plan of the Camden Road widening area near the Nola L. Hodges property is attached as Appendix A.

Based on information provided by NC DOT, the southwestern portion (2821 Camden Road) of the subject site is currently vacant and formerly operated as Dwayne's Auto Sales. The site may have operated as a gas station at some unspecified time in the past. No underground storage tank (UST) incident files were available for review. The northeastern portion (2817 Camden Road) of the subject site is currently occupied by a residence.

2.0 Site Assessment

Soil Assessment Field Activities

H&H mobilized to the Nola L. Hodges property on December 9, 2008 to advance six soil borings (158-1 through 158-6) by direct push technology (DPT). Prior to advancing the soil borings, H&H reviewed a geophysical survey performed at the subject site by Schnabel Engineering (Schnabel) on November 19 and 25, 2008. Schnabel utilized ground penetrating radar (GPR) and time domain electromagnetic (TDEM) technology to identify potential geophysical anomalies and potential

USTs at the site. The Schnabel results indicate an area of reinforced concrete and three magnetic anomalies on the property; however, follow up with GPR did not indicate the presence of USTs. The anomalies were likely caused by reinforced concrete, a septic system (see Schnabel site maps), and buried metal debris. Schnabel's report including site maps depicting the results of the GPR and TDEM is provided in Appendix B.

Prior to conducting soil borings, utilities were marked by NC One Call. Borings were also cleared to a five foot depth by hand auger. H&H utilized Subsurface Environmental Investigations, LLC of Statesville, North Carolina to advance the soil borings (Figure 2). To facilitate the selection of soil samples for laboratory analysis, soil from each boring 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 exhibit the highest reading on the OVA are selected for laboratory analysis. No OVA readings were detected in the six borings installed on Parcel 158. Soil boring logs are included in Appendix C.

H&H submitted six soil samples (158-1 through 158-6) for laboratory analysis. Soil samples are identified by the NC DOT Parcel number, soil boring, and the depth interval in ft. Samples were sent to SGS Environmental Services, Inc. using standard chain-of-custody protocol for analysis of total petroleum hydrocarbons (TPH) gasoline-range organics (GRO) and diesel-range organics (DRO) by EPA Method 8015B. The GRO samples were prepared using EPA Method 5035. Sample depths and analytical results are summarized in Table 1. Laboratory analytical data sheets for Parcel 158 soil samples and chain-of-custody documentation are provided in Appendix D. The analytical results are discussed below.

3.0 Analytical Results

No target analytes were detected in the six soil samples collected from Parcel 158. Based on laboratory analytical results and lack of OVA readings, impacted soil does not appear to be present at the site in the vicinity of the soil boring locations.

4.0 Summary and Regulatory Considerations

H&H has reviewed geophysical survey results and collected soil samples at Parcel 158. No USTs appear to be present within the NC DOT target area. TPH GRO and DRO were not detected in the six soil samples analyzed by the laboratory. DOT plans indicate proposed cut and fill areas on Parcel 158. Based on results of soil sampling activities, impacted soil should not be encountered at this parcel during proposed NC DOT road work.

5.0 Signature Page

This report was prepared by:

Dave Graham
Project Geologist for
Hart and Hickman, PC

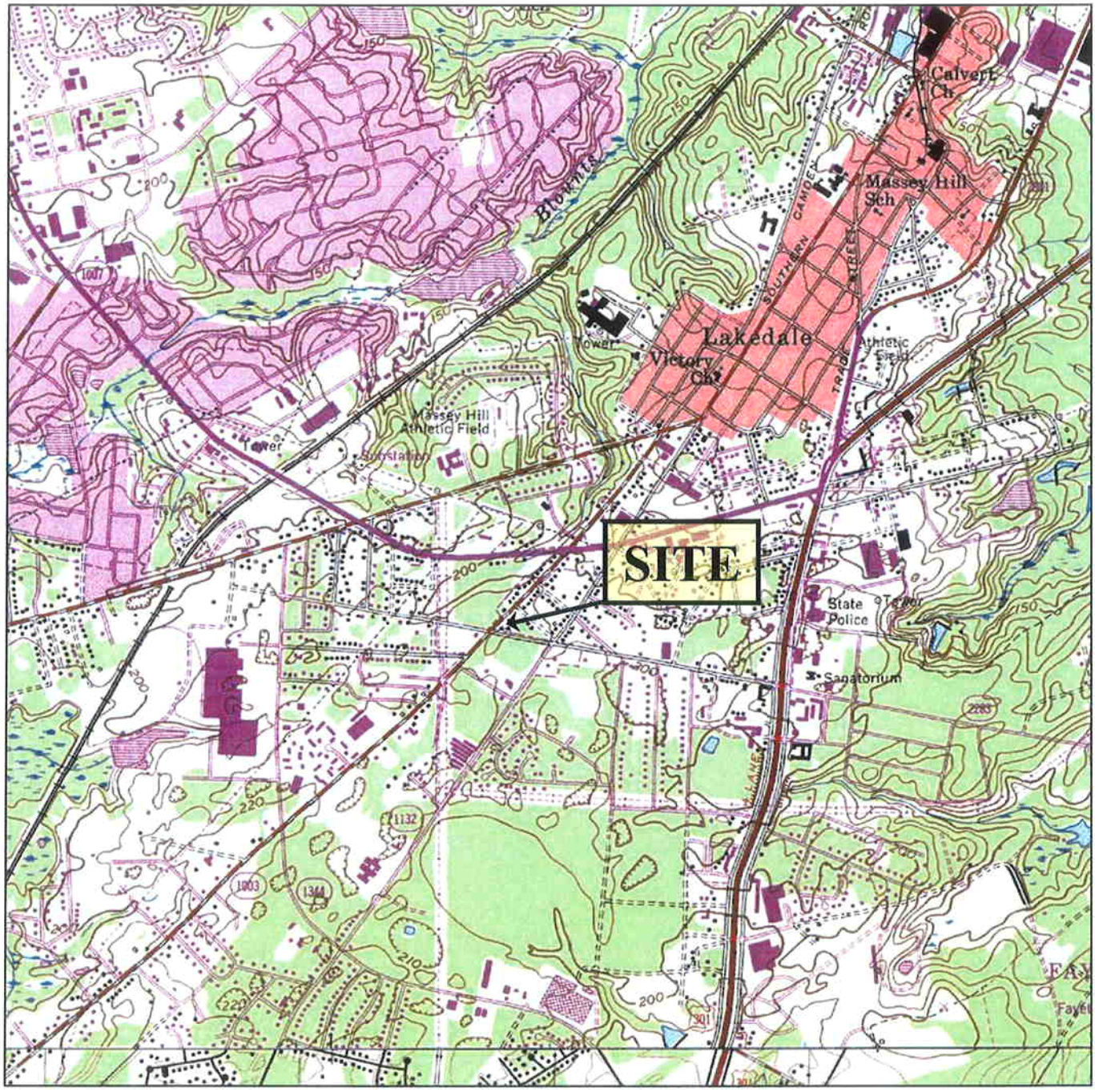
This report was reviewed by:

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

Table 1
Soil Analytical Results
Nola L. Hodges Property, Parcel #158
Fayetteville, North Carolina
H&H Job No. ROW-203

Sample ID	158-1	158-2	158-3	158-4	158-5	158-6	NCDENR
Sample Depth (ft)	6-8	6-8	6-8	6-8	6-8	6-8	Action
Sample Date	12/9/2008	12/9/2008	12/9/2008	12/9/2008	12/9/2008	12/9/2008	Level
Units	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
TPH-DRO/GRO (8015B)							
Diesel-Range Organics (DRO)	<6.10	<6.36	<7.16	<6.33	<6.03	<7.31	10
Gasoline-Range Organics (GRO)	<5.66	<5.81	<6.60	<6.20	<6.34	<6.51	10

Notes:
EPA Method follows parameter in parenthesis;
TPH=total petroleum hydrocarbons
GRO was prepared using EPA Method 5035



N

APPROXIMATE

0 2000 4000

SCALE IN FEET

U.S.G.S. QUADRANGLE MAP

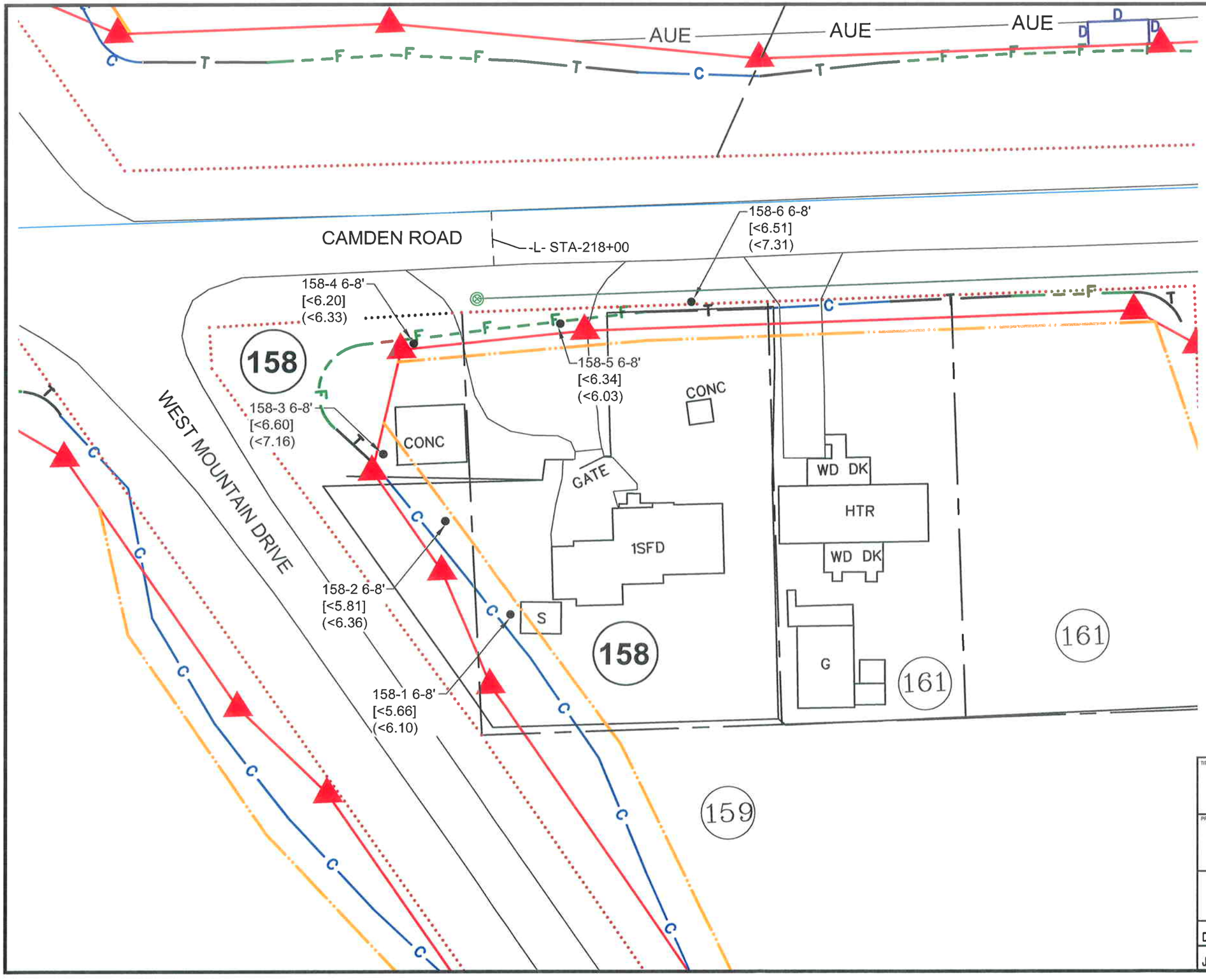
FAYETTEVILLE, NC 1957/1987

7.5 MINUTE SERIES (TOPOGRAPHIC)

TITLE	SITE LOCATION MAP
PROJECT	PARCEL #158 FAYETTEVILLE, NORTH CAROLINA

Hart & Hickman
A PROFESSIONAL CORPORATION
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007 (p) 704-586-0373 (f)

DATE:	12-16-08	REVISION NO:	0
JOB NO:	ROW-203	FIGURE:	1



TITLE

SITE MAP AND
SOIL ANALYTICAL RESULTS

PROJECT

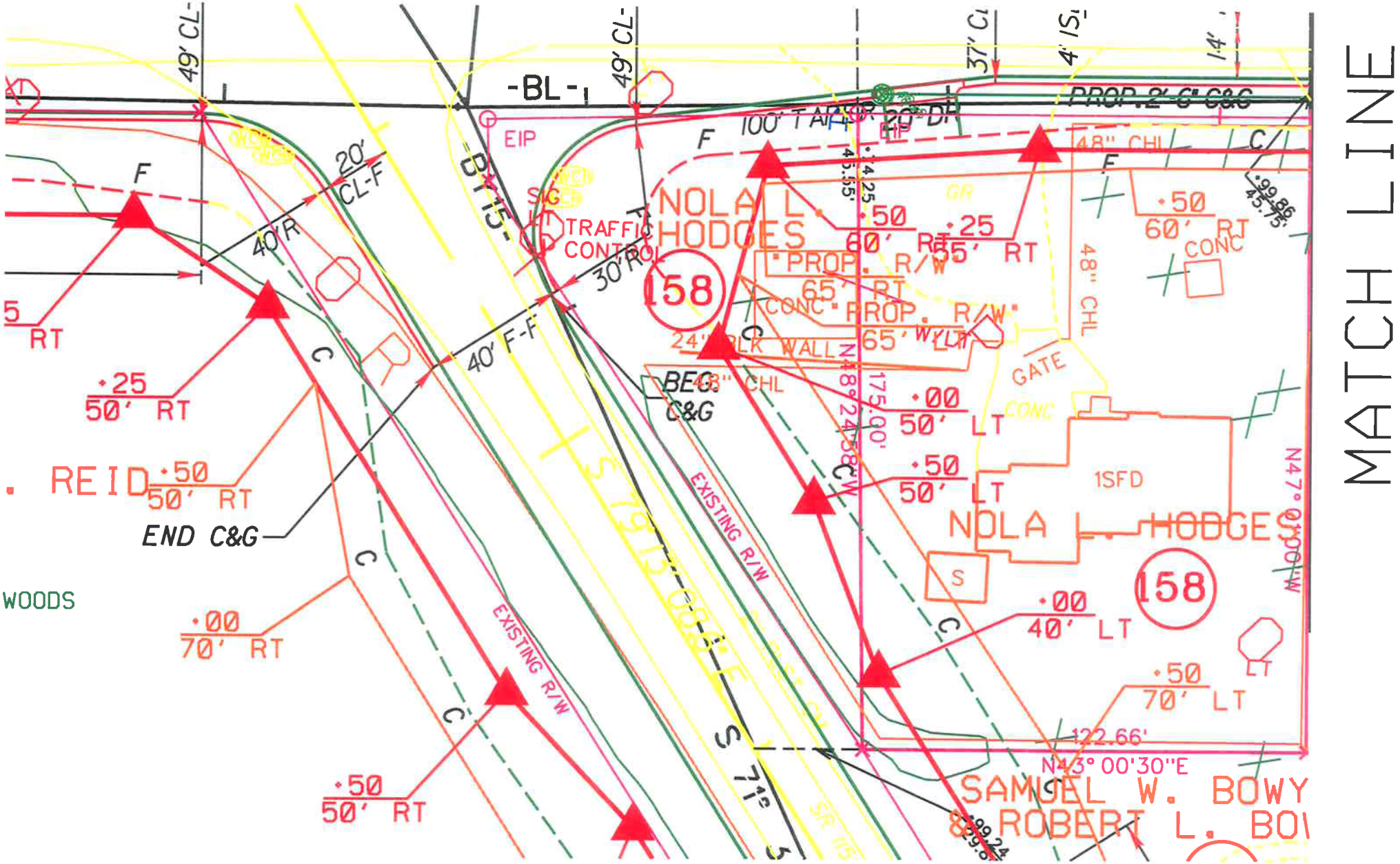
PARCEL #158
FAYETTEVILLE, NORTH CAROLINA

Hart & Hickman
A PROFESSIONAL CORPORATION
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

DATE: 12-29-08	REVISION NO. 0
JOB NO: ROW-203	FIGURE NO. 2

Appendix A

NC DOT Preliminary Plan


MATCH LINE
-BL-
49' CL-
PROP. 2'-6" C&G
100' TAPER
EIP
TRAFFIC CONTROL
20' CL-F
40'R
30'R
40' F-F
NOLA L. HODGES
158
PROP. R/W
65' RT
65' LT
CONC
24" BLK WALL
48" CHL
BEG C&G
END C&G
EXISTING R/W
S 79° 15' 00" E
N 48° 24' 58" W
175.00'
GATE
1SFD
NOLA L. HODGES
158
N 47° 00' 00" W
122.66'
N 43° 00' 30" E
SAMUEL W. BOWY
& ROBERT L. BO
REID
WOODS
.25 50' RT
.50 50' RT
.00 70' RT
.50 50' RT
.50 60' RT
.25 55' RT
.00 50' LT
.50 50' LT
.00 40' LT
.50 70' LT

U-2810C | 9
19 (U-2810)

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

MATCH LINE 206+00 SEE SHEET 8

MATCH LINE 219+00 SEE SHEET 10

BEGIN CONSTRUCTION

BEGIN CONSTRUCTION
-Y15- Sta. 10+00.00

ARTHUR HARLOW JR.

FAYETTEVILLE CITY LIMITS

ANTHONY R. JACOBS

JOE P. RIDDLE, III

JOE P. RIDDLE.

RORIE INVESTMENTS LLC

CORNERSTONE PROPANE, L.P.

JEANETTE C. REID

PROPANE TANKS

END CONSTRUCTION
-Y14- Sta. 18+30.00

TRAFFIC DIAGRAM
EST. 2006/2030 ADT

500/600 SR 1150 VEDA STREET
200/300 300/300
10800/17200 SR 1003 CAMDEN ROAD 10900/17200

TRAFFIC DIAGRAM
EST. 2006/2030 ADT

SR 1154 WEST MOUNTAIN ROAD
2800/7800
200/3000 200/2600 SR 1003 CAMDEN ROAD
10900/17200 1900/6300 400/4500 9400/15000
4700/13000

SEE SHEET 14 FOR -L- PROFILE
SEE SHEET 17 FOR -Y13- PROFILE
SEE SHEET 18 FOR -Y14- PROFILE

Appendix B

Schnabel Engineering Geophysical Survey Report

Schnabel Engineering South

11-A Oak Branch Drive
Greensboro, NC 27407
Phone (336) 274-9456
Fax (336) 274-9486
www.schnabel-eng.com

December 16, 2008

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

Via email (pdf)

RE: State Project: U-2810C
WBS Element: 34866.1.1
County: Cumberland
Description: SR 1003 (Camden Road) from SR 1290 (King Charles Road) to north of SR 1007 (Owen Drive)

SUBJECT: Report on Geophysical Surveys of Parcel 158
Schnabel Engineering Project No. 08210020.06

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 November 19 and 25, 2008, in the accessible areas of the proposed right-of-way (ROW) section of Parcel 158 (Nola L. Hodges Property, formerly Dwayne's Auto Sales) under our 2008 contract with the NCDOT. Parcel 158 is located on the northeastern quadrant of the intersection of SR 1003 (Camden Road) and SR 1154 (West Mountain Drive), in Fayetteville, NC. The work was conducted at the location indicated by Hart & Hickman and 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 (GPR) 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 in orthogonal directions over anomalous EM readings not attributed to known metallic features.

Preliminary results were sent to David Graham and Wil Pineda of Hart & Hickman on December 5, 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 indicate several anomalies probably caused by known metallic features. One area containing reinforced concrete and three anomalies not attributed to known metallic features in the EM61 data were investigated using GPR. The GPR data indicate that

the anomalies are probably caused by reinforced concrete, a septic system, and buried metal debris. The GPR data did not indicate the presence of UST's in the areas surveyed on Parcel 158.

4.0 CONCLUSIONS

Our evaluation of the geophysical data collected on Parcel 158 of Project U-2810C in Fayetteville, NC indicates the following:

- The geophysical data do not indicate the presence of UST's in the 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,

SCHNABEL ENGINEERING SOUTH, P.C.

Jeremy S. Strohmeyer, P.G.
Project Manager

Edward D. Billington, P.G.
Senior Vice President

JW/JS/NB
Attachment: Figures (2)
FILE: G:\2008 PROJECTS\08210020 (NCDOT 2008 GEOTECH UNIT SERVICES)\08210020 06 (U-2810C, CUMBERLAND COUNTY)\REPORT\PARCEL 135\REPORT ON PARCEL 135.DOC

EM61 Early Time Gate Response (mV)

-15000 -100 0 37.5 50 100 150 200 300 500 750 1000 2000

Scale in US Survey Feet

0 30 60 90

EXPLANATION

- EM61 SURVEY AREA - DATA ACQUIRED ALONG PARALLEL SURVEY LINES SPACED APPROXIMATELY 2.5 FEET APART
- DOT MARKER
- TANK LID
- METALLIC OBJECT
- MONITORING WELL
- UTILITY POLE
- STORMWATER GRATE
- GPR SURVEY AREA
- GUY WIRE
- UTILITY MANHOLE OR BOX
- TREE
- SIGN

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 November 19, 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 November 25, 2008, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

Schnabel Engineering

NC Department of Transportation
Geotechnical Engineering Unit

State Project No. U-2810C
Cumberland County, North Carolina

PARCEL 158
EM61 EARLY TIME GATE RESPONSE

FIGURE 1

Differential Response (mV)

-20000 -500 0 40 60 80 100 120 140 160 200

Scale in US Survey Feet

0 30 60 90

EXPLANATION

- EM61 SURVEY AREA - DATA ACQUIRED ALONG PARALLEL SURVEY LINES SPACED APPROXIMATELY 2.5 FEET APART
- DOT MARKER
- TANK LID
- METALLIC OBJECT
- MONITORING WELL
- UTILITY POLE
- STORMWATER GRATE
- GPR SURVEY AREA
- GUY WIRE
- UTILITY MANHOLE OR BOX
- TREE
- SIGN

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 November 19, 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 November 25, 2008, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

Schnabel Engineering

NC Department of Transportation
Geotechnical Engineering Unit

State Project No. U-2810C
Cumberland County, North Carolina

PARCEL 158
EM61 DIFFERENTIAL RESPONSE

FIGURE 2

Appendix C

Soil Boring Logs

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

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

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

BORING NUMBER 158-1

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION
0						(SM) Brown-orange, fine silty SAND, dry
	100		0	0		
	100		0	0		
5	100		0	0		
						(SW) Tan, fine SAND, dry
	100		0	0		
	100		0	0		
10	100		0	0		
						Bottom of borehole at 12.0 feet.
15						
20						

WELL DIAGRAM

DEPTH (ft): 0, 5, 10, 15, 20

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 6-8 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 10:49 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 158.GPJ

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

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Charlotte, North Carolina 28203
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3334 Hillsborough St.
Raleigh, North Carolina 27607
919-847-4241(p) 919-847-4261(f)

BORING NUMBER 158-2

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
0								0
	100		0	0		(SM) Brown-orange, fine silty SAND, dry		
	100		0	0				
5	100		0	0		(SW) Tan, fine SAND, dry		5
	100		0	0				
	100		0	0				
10	100		0	0				10
						Bottom of borehole at 12.0 feet.		
15								15
20								20

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 6-8 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 10:49 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 158.GPJ

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

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Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)

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

BORING NUMBER 158-3

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
0								0
	100		0	0		(SM) Tan-brown, silty fine SAND, dry		
	100		0	0				
5	100		0	0				5
	100		0	0		(SW) Tan, fine SAND, dry		
	100		0	0				
10	100		0	0				10
						Bottom of borehole at 12.0 feet.		
15								15
20								20

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 6-8 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 10:49 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 158.GPJ

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

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

BORING NUMBER 158-4

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
0								0
	100		0	0		(SM) Brown-orange, silty fine SAND, dry		
	100		0	0				
5	100		0	0				5
	100		0	0				
	100		0	0		(SW) Tan, fine SAND, dry		
10	100		0	0				10
						Bottom of borehole at 12.0 feet.		
15								15
20								20

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 6-8 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 10:49 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 158.GPJ

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

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

BORING NUMBER 158-5

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM	DEPTH (ft)
0								0
	100		0	0		(SM) Brown-orange, silty fine SAND, dry		
	100		0	0				
5	100		0	0				5
	100		0	0		(SW) Tan, fine SAND, dry		
	100		0	0				
10	100		0	0				10
						Bottom of borehole at 12.0 feet.		
15								15
20								20

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 6-8 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 10:49 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 158.GPJ

Hart & Hickman
ENVIRONMENTAL CONSULTANTS

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

BORING NUMBER 158-6

PROJECT: Cumberland County PSAs
JOB NUMBER: ROW-203
LOCATION: Fayetteville, NC

DEPTH (ft)	RECOVERY (%)	BLOW COUNT	OVA (ppm) BKG.	OVA (ppm) SAMP.	LITHOLOGY	MATERIAL DESCRIPTION	WELL DIAGRAM
0							
	100		0	0		(SM) Brown-orange, silty fine SAND, dry	
	100		0	0			
5	100		0	0			
	100		0	0		(SW) Tan, fine SAND, dry	
	100		0	0			
10	100		0	0			
						Bottom of borehole at 12.0 feet.	
15							
20							

DRILLING CONTRACTOR: SEI
DRILL RIG/ METHOD: Geoprobe / Direct-Push Sleeve
SAMPLING METHOD: DPT Sleeves
LOGGED BY GAB
DRAWN BY:

BORING STARTED 12/9/08
BORING COMPLETED: 12/9/08
TOTAL DEPTH: 12
SURFACE ELEV:
DEPTH TO WATER:

Remarks:

Borehole hand-augered to 5 feet.
Sample collected from 6-8 feet.

LOG OF BORING - HART HICKMAN.GDT - 12/23/08 10:49 - S:\AAA-MASTER GINT PROJECTS\ROW-203\PARCEL 158.GPJ

Appendix D

Laboratory Analytical Report

SGS

Mr. David Graham
Hart & Hickman
2923 S. Tryon St.
Suite 100
Charlotte NC 28203
Report Number: G609-43

Client Project: Row-203

Dear Mr. Graham:

Enclosed are the results of the analytical services performed under the referenced project. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. Any samples submitted to our laboratory will will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or the services performed during this project, please call SGS at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS Environmental Services for your analytical services. We look forward to working with you again on any additional analytical needs which you may have.

Sincerely,
SGS Environmental Services, Inc.

12/19/08

Project Manager
Lori Lockamy

Date

List of Reporting Abbreviations
And Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantification Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

P/D = Detected, but RPD is > 25/40% between results in dual column method.

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL/CL = Reporting Limit / Control Limit

RPD = Relative Percent Difference

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% soilds = Percent Solids

Special Notes:
1) Metals and mercury samples are digested with a hot block, see the standard operating procedure document for details.
2) Uncertainty for all reported data is less than or equal to 30 percent.

MI34.021808.4

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 158-1 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-1A
Lab Project ID: G609-43
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 16:20
Date Received: 12/12/2008
Matrix: Soil
Solids 94.57

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.66	mg/Kg	1	12/17/08 14:59

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	104	104		70-130

Comments:

Batch Information

Analytical Batch: VP121708
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5.6 g
Final Volume: 5 mL

Analyst: DVG

NC Certification #481

Reviewed By: GRO

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: 158-2 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-2A
Lab Project ID: G609-43
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 16:30
Date Received: 12/12/2008
Matrix: Soil
Solids 93.82

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.81	mg/Kg	1	12/15/08 18:22

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	99	99.2		70-130

Comments:

Batch Information

Analytical Batch: VP121508
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5.5 g
Final Volume: 5 mL

Analyst: DVG

NC Certification #481

Reviewed By: GRO

N.C. Certification #481

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 158-3 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-3A
Lab Project ID: G609-43
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 16:45
Date Received: 12/12/2008
Matrix: Soil
Solids 85.90

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.60	mg/Kg	1	12/15/08 18:48

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	100	99.5		70-130

Comments:

Batch Information

Analytical Batch: VP121508
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5.29 g
Final Volume: 5 mL

Analyst: DVG

NC Certification #481

Reviewed By: GRC

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 158-4 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-4A
Lab Project ID: G609-43
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 17:00
Date Received: 12/12/2008
Matrix: Soil
Solids 93.52

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.20	mg/Kg	1	12/15/08 19:15

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	99	99.5		70-130

Comments:

Batch Information

Analytical Batch: VP121508
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5.17 g
Final Volume: 5 mL

Analyst: DVG

Reviewed By: GRO

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 158-5 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-5A
Lab Project ID: G609-43
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 17:15
Date Received: 12/12/2008
Matrix: Soil
Solids 96.03

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.34	mg/Kg	1	12/15/08 19:41

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	100	100		70-130

Comments:

Batch Information

Analytical Batch: VP121508
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 4.93 g
Final Volume: 5 mL

Analyst: DVG

NC Certification #481

Reviewed By: GRO

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 158-6 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-6A
Lab Project ID: G609-43
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 12/9/2008 17:30
Date Received: 12/12/2008
Matrix: Soil
Solids 81.97

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.51	mg/Kg	1	12/15/08 20:08

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	96	95.6		70-130

Comments:

Batch Information

Analytical Batch: VP121508
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5.62 g
Final Volume: 5 mL

Analyst: DVG

NC Certification #481

Reviewed By: GRO

N.C. Certification #481

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: VBLK4121508A
Lab Project ID:
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected:
Date Received:
Matrix: Soil
Solids 100.00

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.00	mg/kg	1	12/15/08 11:17

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	102	102		70-130

Comments:

Batch Information

Analytical Batch: VP121508
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5 g
Final Volume: 5 mL

Analyst: DVG

Reviewed By: GRC

SGS Environmental Services, Inc.

QC Results for Total Petroleum Hydrocarbons

by GC/FID

Client Sample ID: Batch QC
Lab Sample ID: g106-648-1a
LCS ID: LCS4121508A / VP121508

Analyzed By: DVG
Matrix: Soil
Solids 75.80

MS/MSD

Analyte	Sample MG/KG	Spiked MG/KG	MS MG/KG	REC % #	Spiked MG/KG	MSD MG/KG	REC % #	RPD % #
				(70-130%)			(70-130%)	(30%)
GRO	210	17.2	239	169 *	17.2	230	116	37.2 *

LCS

Analyte	Spiked MG/KG	Result MG/KG	REC % #	LIMITS Lower	Upper
GRO	16	16	100 /	70	130

Comments:

Reviewed By: _____

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: VBLK4121708A
Lab Project ID:
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected:
Date Received:
Matrix: Soil
Solids 100.00

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.00	mg/kg	1	12/17/08 05:31

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	98	97.6		70-130

Comments:

Batch Information

Analytical Batch: VP121708
Analytical Method: 8015
Instrument ID: GC4
Analyst: DVG

Prep Method: 5035
Initial Wt/Vol: 5 g
Final Volume: 5 mL

Analyst: DVG

NC Certification #481
N.C. Certification #481

Reviewed By: GRO

SGS Environmental Services, Inc.

QC Results for Total Petroleum Hydrocarbons

by GC/FID

Client Sample ID: Batch QC
Lab Sample ID: g609-42-1a
LCS ID: LCS4121708A / VP121708

Analyzed By: DVG
Matrix: Soil
Solids 93.47

MS/MSD

Analyte	Sample MG/KG	Spiked MG/KG	MS MG/KG	REC % #	Spiked MG/KG	MSD MG/KG	REC % #	RPD % #
				(70-130%)			(70-130%)	(30%)
GRO	BQL	16.7	17.1	102	16.7	16.4	98.2	3.8

LCS

Analyte	Spiked MG/KG	Result MG/KG	REC % #	LIMITS Lower	Upper
GRO	16	15	94.4	70	130

Comments:

Reviewed By: MD

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 158-1 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-1D
Lab Project ID: G609-43

Date Collected: 12/9/2008 16:20
Date Received: 12/12/2008
Matrix: Soil
Solids 94.57
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.10	mg/Kg	1	12/17/08 13:24

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	37.6	94.1

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 34.65 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____
DRO XLS

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by GC/FID 8015

Client Sample ID: 158-2 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-2D
Lab Project ID: G609-43

Date Collected: 12/9/2008 16:30
Date Received: 12/12/2008
Matrix: Soil
Solids 93.82
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.36	mg/Kg	1	12/17/08 13:52

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	36.5	91.1

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 33.52 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____
DRO.XLS

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 158-3 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-3D
Lab Project ID: G609-43

Date Collected: 12/9/2008 16:45
Date Received: 12/12/2008
Matrix: Soil
Solids 85.90
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	7.16	mg/Kg	1	12/17/08 14:20

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	34.7	86.8

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 32.53 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by GC/FID 8015

Client Sample ID: 158-4 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-4D
Lab Project ID: G609-43

Date Collected: 12/9/2008 17:00
Date Received: 12/12/2008
Matrix: Soil
Solids 93.52
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.33	mg/Kg	1	12/17/08 14:48

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	35	87.4

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 33.79 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

DRO.XLS

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 158-5 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-5D
Lab Project ID: G609-43

Date Collected: 12/9/2008 17:15
Date Received: 12/12/2008
Matrix: Soil
Solids 96.03
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.03	mg/Kg	1	12/17/08 15:16

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	36.6	91.4

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 34.55 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____
DRO XLS

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: 158-6 (6-8)
Client Project ID: Row-203
Lab Sample ID: G609-43-6D
Lab Project ID: G609-43

Date Collected: 12/9/2008 17:30
Date Received: 12/12/2008
Matrix: Soil
Solids 81.97
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	7.31	mg/Kg	1	12/17/08 15:44

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	36.3	90.7

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 33.38 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

DRO XLS

SGS Environmental Services, Inc.

Results for Total Petroleum Hydrocarbons

by **GC/FID 8015**

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB13228
Lab Project ID:

Date Collected:
Date Received:
Matrix: SOIL
Solids 100.00
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.25	mg/Kg	1	12/17/08 12:28

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	38.4	96

Comments:

Batch Information

Analytical Batch: EP121708
Analytical Method: 8015
Instrument: GC6
Analyst: EAW

Prep batch: 13228
Prep Method: 3541
Prep Date: 12/15/08
Initial Prep Wt/Vol: 32 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

DRO.XLS

SGS Environmental Services, Inc.

QC Results for Total Petroleum Hydrocarbons
by GC/FID

Client Sample ID: Batch QC
Lab Sample ID: G609-46-9D
Batch ID: 13228

Analyzed By: EAW
Matrix: Soil
Solids 93.49

MS/MSD

Analyte	Sample MG/KG	Spiked MG/KG	MS MG/KG	REC %	#	Spiked MG/KG	MSD MG/KG	REC %	#	RPD %
DRO	BQL	64.7	52.1	80.5	✓	61.8	60.3	97.6	✓	19.2

LCS

Analyte	Spiked MG/KG	Result MG/KG	REC %	#	LIMITS Lower	Upper
DRO	62.5	61	97.6	✓	55.3	137

Reviewed By: _____

SGS

CHAIN OF CUSTODY RECORD
SGS Environmental Services Inc.

Locations Nationwide
- Alaska
- Ohio
- New Jersey
- West Virginia
- Hawaii
- Maryland
- North Carolina

www.us.sgs.com

091000

(1)

CLIENT: Hart & Hickman

CONTACT: David Graham PHONE NO:(704) 586-0007

PROJECT: ROW-203 / SITE/PWSID# :

REPORTS TO: David Graham E-MAIL: dgraham@harthickman.com

FAX NO.:( )

INVOICE TO: Hart & Hickman QUOTE #

P.O. NUMBER ROW-203

SGS Reference: 6609-43

PAGE 1 OF 1

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives Used	(3) TPH EPA 8015B GRO, DRO	REMARKS
√	158-1 (G-8')	12/9/08	1620	SOIL	3	G		X	
√	158-2 (G-8')	12/9/08	1630	SOIL	3	G		X	
√	158-3 (G-8')	12/9/08	1645	SOIL	3	G		X	
√	158-4 (G-8')	12/9/08	1700	SOIL	3	G		X	
√	157-5 (G-8')	12/9/08	1715	SOIL	3	G		X	
√	158-6 (G-8')	12/9/08	1730	SOIL	3	G		X	

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:	Date	Time
Grant Barrier / HLH	12/11/08	1500		12/12/08	10:15
Relinquished By: (2)	Date	Time	Received By:	Date	Time
Relinquished By: (3)	Date	Time	Received By:	Date	Time
Relinquished By: (4)	Date	Time	Received By:	Date	Time

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C 5.2 °F

Special Deliverable Requirements:

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

Special Instructions:

Requested Turnaround Time:

☐ RUSH _____ ☐ STD

Date Needed

☐ 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
☐ 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557
☐ 1270 Greenbrier Street Charleston, WV 25311 Tel: (304) 346-0725 Fax: (304) 346-0761

White - Retained by Lab
Yellow - Returned with Report
Pink - Retained by Sampler

N.C. Certification #481