PRELIMINARY SITE ASSESSMENT

GLADE VALLEY – US HIGHWAY 21 SOUTH FROM ROARING GAP TO SPARTA
PARCEL #141, CAVEROCK FARMS LIMITED PARTNERSHIP PROPERTY
5087 US HIGHWAY 21 SOUTH
GLADE VALLEY, ALLEGHANY COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 37044.1.1
STATE PROJECT R-3101

January 13, 2012

Prepared for:

Cyrus F. Parker, L.G., P. E.
North Carolina Department of Transportation
Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Prepared by:

Kleinfelder Southeast, Inc.
6200 Harris Technology Blvd.
Charlotte, North Carolina 28269

Kleinfelder Project No. 123173

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January 13, 2012
123173 | CLT12R015

Cyrus F. Parker, L.G., P. E.
North Carolina Department of Transportation
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Subject: **Preliminary Site Assessment**
WBS Element No. 34749.1.1, State Project R-3101
Parcel #141, Caverock Farms Limited Partnership Property
5087 US Highway 21 South
Glade Valley, Alleghany County, North Carolina

Dear Mr. Parker:

Please find the enclosed report summarizing the sampling activities for the preliminary site assessment conducted at the referenced site. Laboratory analysis of soil samples collected at the site detected contaminant concentrations exceeding the State action levels in one of five samples. This report summarizes our field activities, results, laboratory report, and conclusions.

Should questions arise or additional information be required, please contact the undersigned.

Sincerely,

KLEINFELDER SOUTHEAST, INC.

Travis O'Quinn
Staff Professional I

Craig D Neil, P.G.
Senior Professional

TLO/CDN:jc
Enclosure

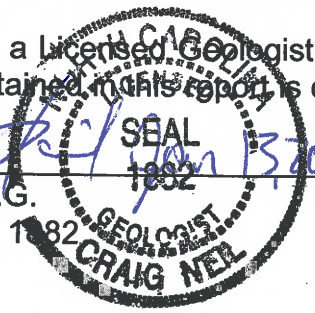
6200 Harris Technology Boulevard, Charlotte, NC 28269 **p** | 704.598.1049 **f** | 704.598.1050

PRELIMINARY SITE ASSESSMENT

Site Name and Location:	Parcel #141, Caverock Farms Limited Partnership Property 5087 US Hwy 21 South Glade Valley, Allegheny County, North Carolina
Latitude and Longitude:	36° 27' 57.3582"N, -81° 3' 3.7836" W
Facility ID Number:	None
NCDOT Project No.:	NCDOT WBS Element 37044.1.1 State Project R-3101
Date of Report:	January 13, 2012
Consultant:	Kleinfelder Southeast, Inc. 6200 Harris Technology Blvd. Charlotte, North Carolina 28269 Attn: Mr. Craig D. Neil Phone: 704.598.1049 X457

Seal and Signature of Certifying Licensed Geologist

I, Craig D. Neil, a Licensed Geologist for Kleinfelder Southeast, Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.



Craig D. Neil, P.G.
NC License No. 1682

Jan 13, 2012

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1.0 INTRODUCTION

Kleinfelder Southeast, Inc. (Kleinfelder) has prepared this Preliminary Site Assessment (PSA) report documenting assessment activities performed at the Caverock Farms Limited Partnership Property (Parcel 141) located at 5087 US Highway 21 South in Glade Valley, Alleghany County, North Carolina (Figure 1). This assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Kleinfelder's November 1, 2011 proposal.

NCDOT is proposing to widen US Highway 21 South (US 21) from Roaring Gap to Sparta. The proposed right-of-way includes a portion of Parcel 141 (Figure 2). Based on information provided by NCDOT, the site may have historically operated as a gasoline station. Therefore, there is concern that contaminated soils could be encountered during the construction activities at this site.

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 US 21 from Roaring Gap to Sparta.

1.1 Site Description

The proposed right-of-way includes approximately 15 to 20 feet on each side of the current US 21. At the time of our site reconnaissance, the site contained a two story building (garage below with offices above). No underground storage tanks (USTs) were registered at the site; however, two anomalies were identified by the geophysical investigation. One anomaly was located in front of the structure and was suspected to be an UST. The second anomaly was located at the west corner of the structure and was suspected to be a septic tank, a UST, or a miscellaneous object. Site photographs are shown in Appendix A.

1.2 Site Location

The facility is located at 5087 US Highway 21 South in Glade Valley, North Carolina. The property is bound to the north, east and west by wooded land and to the south by a residential property.

2.0 SITE ASSESSMENT

2.1 Geophysical Investigation

Pyramid Environmental & Engineering, P.C (Pyramid) conducted a geophysical investigation of the property on November 9, 2011. Pyramid utilized ground penetration radar (GPR) and electromagnetic (EM) induction technology to identify potential geophysical anomalies and potential USTs at the site. Pyramid identified two anomalies during the geophysical investigation. One anomaly was located in front of the structure and was a possible object or UST. The second anomaly was located at the west corner of the structure and was a possible septic tank or a UST. A copy of the Pyramid Geophysical Investigation Report is included in Appendix B. Prior to conducting soil borings, utilities were marked by NC One Call and Taylor Wiseman & Taylor (TWT).

2.2 Soil Sampling

To determine if contaminated soil may be encountered during the proposed construction activities, five soil samples were collected along the NCDOT proposed right-of-way. Kleinfelder met Probe Technology at the site on December 20, 2011. Probe Technology advanced five soil borings (SB-1 to SB-5) by direct push technology (DPT). The approximate location of the borings is shown on Figure 3. Copies of the boring logs are included in Appendix C.

Soil borings were advanced to a depth of ten feet below the ground surface (bgs) at each location. Soil borings SB-1 through SB-5 were located west of the building along the proposed right-of-way. Soil boring SB-3 was located between the possible UST or object and US 21 along the proposed right-of-way. Soil boring SB-5 was located between the possible septic tank/UST and US 21 along the proposed right-of-way. Soil samples were collected by driving a macrocore sampler in five foot intervals in each boring. Each five foot sample sleeve was divided in half and screened for volatile organic compounds in the field using a MiniRae 2000 photo-ionization detector (PID). In each boring, the soil interval with the highest PID reading was collected for laboratory analysis. If no organic vapors were detected, the sample collected from the bottom of the boring was submitted for analysis. The PID readings are summarized in Table 1. Copies of the boring logs are included in Appendix C.

Prior to the initial boring and after each subsequent boring, the sampling equipment was decontaminated. The soil samples collected for laboratory analysis were analyzed for total petroleum hydrocarbons (TPH) similar to diesel and gasoline (DRO/GRO) using EPA Method 8015B following 3550 and 5035 preparation. All soil samples were placed into laboratory provided jars, labeled, and maintained on ice until delivered to Pace Analytical, a NCDOT contract laboratory, for chemical analysis.

3.0 RESULTS

3.1 Geophysical Investigation

Pyramid concluded that the GPR investigation identified two anomalies. One anomaly was located in front of the structure and was a possible object or UST. The second anomaly was located at the west corner of the structure and was a possible septic tank or UST. Pyramid's report is included in Appendix B.

3.2 Soil Sampling

Gasoline range organics (GRO) were not detected at concentrations above the North Carolina action level (10 milligrams per kilogram (mg/kg)) in the soil samples. Diesel range organics (DRO) were detected in soil sample B-4 (27.1 mg/kg) at approximately 0.0 to 2.5 feet below ground surface (bgs) at a concentration above the North Carolina action level for petroleum USTs. The laboratory results are summarized in Table 2 and on Figure 3. The laboratory report and associated chain-of-custody document are included in Appendix D.

Based on laboratory analytical results and PID readings, petroleum impacted soils were identified in the vicinity of SB-4. The contaminated soil covers an area approximately 315 square feet (Figure 3). The contaminated soil extends vertically to approximately five feet bgs. Based on these dimensions Kleinfelder estimates that there are approximately 58 cubic yards of impacted soil identified within the proposed right-of-way on the site.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based on results of the laboratory analysis and field observations, Kleinfelder has the following conclusions:

- The GPR investigation identified two anomalies. One anomaly was located in front of the structure and was suspected to be an UST. The second anomaly was located at the west corner of the structure and was suspected to be a septic tank, a UST, or a miscellaneous object.
- Groundwater was encountered at approximately six feet bgs in the soil borings.
- GRO were not detected in the soil borings above the laboratory detections limits or the North Carolina action levels. DRO were detected in soil sample SB-4 above the North Carolina action level for petroleum USTs.
- Based on the soil samples and PID readings, petroleum impacted soils are located between the surface and a depth of 5 feet bgs in the area of SB-4.
- Approximately 58 cubic yards of contaminated soil was identified on the site.

Based on results of the laboratory analysis and field observations, Kleinfelder has the following recommendations:

- If impacted soils are encountered during the road widening project, Kleinfelder recommends the soils be handled appropriately and disposed of at an approved disposal facility.

5.0 LIMITATIONS

Our work has been performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services were provided. Our conclusions, opinions and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

The information included on graphic representations in the report has been compiled from a variety of sources and is subject to change without notice. Kleinfelder makes no representations or warranties, express or implied, as to accuracy, completeness, timeliness, or rights to the use of such information. These documents are not intended for use as a land survey product, nor are they designed or intended as a construction design document. The use or misuse of the information contained on these graphic representations is at the sole risk of the party using or misusing the information.

TABLES

TABLE 1: SOIL SAMPLE PID RESULTS

SAMPLE LOCATION	DEPTH (feet bgs)	PID READINGS
SB-1	0.5 - 2.5	0.3
	2.5 - 5.0	0.0
	5.0 - 7.5	0.0
	7.5-10	**0.0**
SB-2	0.5 - 2.5	**3.5**
	2.5 - 5.0	0.1
	5.0 - 7.5	0.1
	7.5-10	0.0
SB-3	0.5 - 2.5	2.0
	2.5 - 5.0	0.1
	5.0 - 7.5	**4.4**
	7.5-10	0.0
SB-4	0.5 - 2.5	**45.7**
	2.5 - 5.0	0.8
	5.0 - 7.5	11.4
	7.5-10	0.1
SB-5	0.5 - 2.5	0.1
	2.5 - 5.0	0.0
	5.0 - 7.5	0.0
	7.5-10	**0.0**

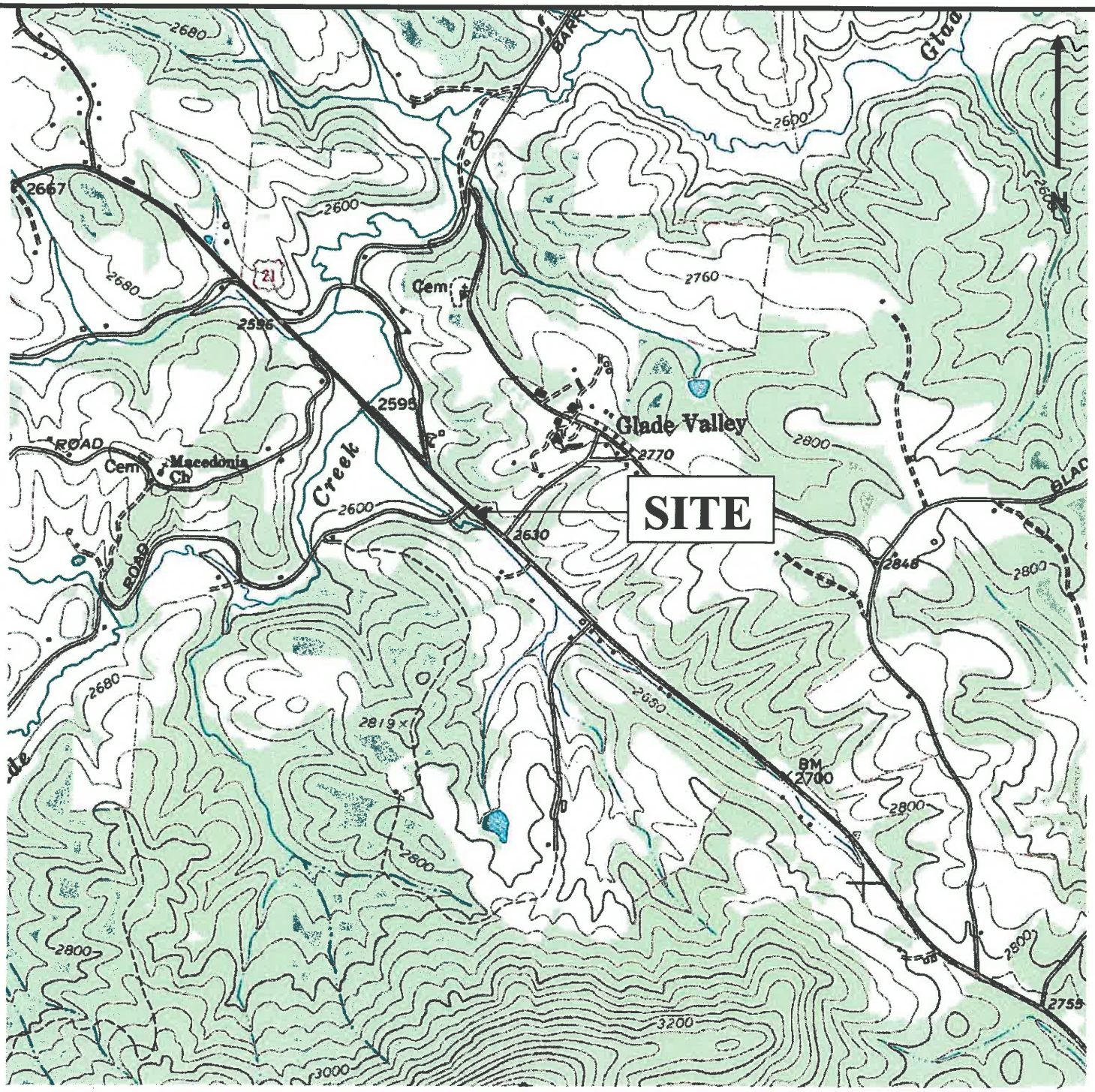
Notes:
Samples were collected on December 20, 2011.
Readings reported in parts per million
feet bgs = feet below ground surface
Bold = Selected for laboratory analysis

TABLE 2: SOIL SAMPLE ANALYTICAL SUMMARY

SAMPLE ID	DEPTH	COLLECTION DATE	DRO	GRO
SB-1	7.5-10.0	12/20/2011	<5.7	<5.4
SB-2	0.0-2.5	12/20/2011	<5.6	<5.3
SB-3	5.0-7.5	12/20/2011	<6.2	<5.5
SB-4	0.0-2.5	12/20/2011	**27.1**	<5.9
SB-5	7.5-10.0	12/20/2011	<6.4	<6.5
State Action Level			10	10

Notes:
Results presented in milligrams per kilogram, analogous to parts per million
DRO = Diesel Range Organics
GRO = Gasoline Range Organics
Bold denotes concentration exceeds the State Action Level for Petroleum USTs

FIGURES



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6200 HARRIS TECHNOLOGY BOULEVARD
CHARLOTTE, NORTH CAROLINA
PHONE: 704.598.1049

FIGURE 1
SITE LOCATION MAP

PARCEL #141 – CAVEROCK FARMS LIMITED PARTNERSHIP PROPERTY
5087 US HWY 21 SOUTH
GLADE VALLEY, NORTH CAROLINA

DATE: 1/4/2012	APPROVED BY: CDN	SCALE: as shown	
SOURCE: USGS Topographic Orthophoto Map, NC Glade Valley 1968		PROJECT NO: 123173	

ATTACHED IMAGES:
ATTACHED XREFS: XRef: r3101_ls_hyl_081014: XRef: r3101_ls_pml_081022: XRef: r3101_ls_prl_060321: XRef: r3101_ls_sue_060321: XRef: R3101_ddc_DRN_110701: XRef: r3101_ddc_dsn_090611: XRef: r3
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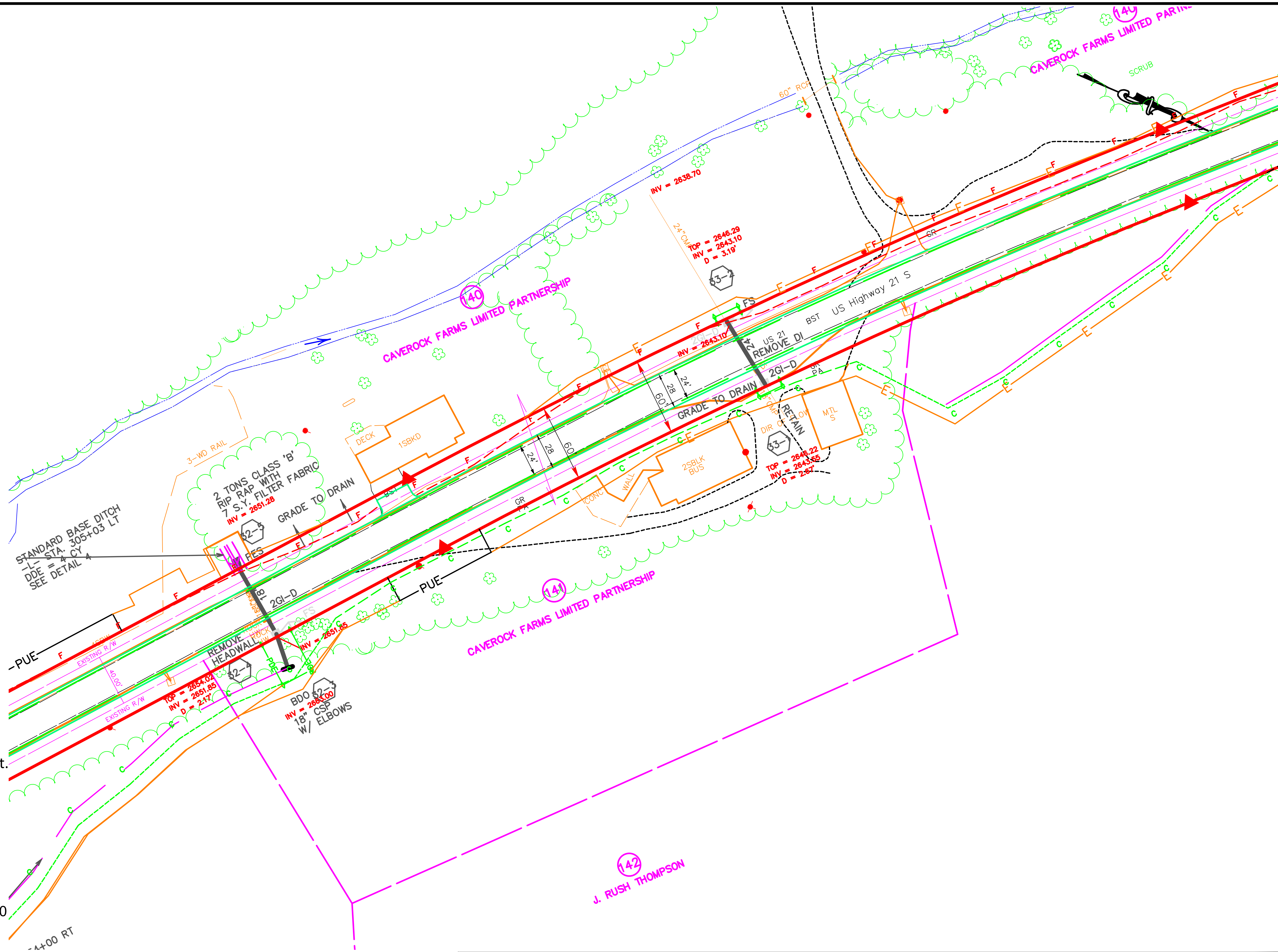

Legend

- Property line.
- Existing Right of Way Line.
- Proposed Right of Way Line.
- DUE — Proposed Permanent Drainage /Utility Easement.
- PUE — Proposed Permanent Utility Easement.
- E — Proposed Temporary Construction Easement.
- C — Proposed Slope Stakes Cut.
- F — Proposed Slope Stakes Fill.

GRAPHIC SCALE

80 0 80 160

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PROJECT NO.	123173
DRAWN:	APR 2012
DRAWN BY:	AB
CHECKED BY:	TO
FILE NAME:	Parcel 111-145_042012.dwg

SITE LOCATION MAP

Parcel # 141
Caverock Farms Limited Partnership Prop.

NCDOT WBS ELEMENT 37044.1.1
STATE PROJECT R-3101
5087 US Hwy 21 South
GLADE VALLEY, NORTH CAROLINA

FIGURE

2

ATTACHED IMAGES:
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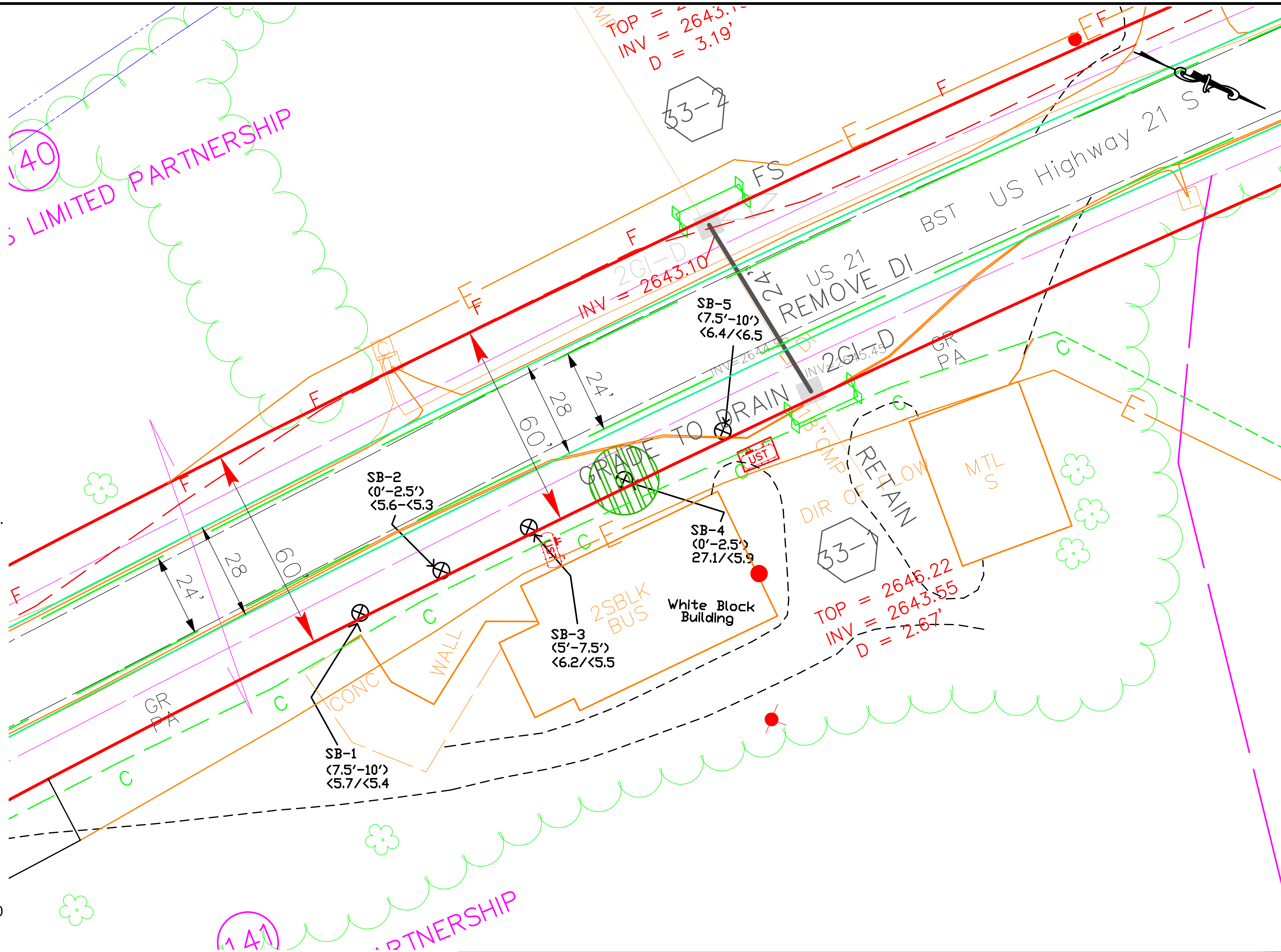

Legend

- Property line.
- Existing Right of Way Line.
- Proposed Right of Way Line.
- DUE — Proposed Permanent Drainage /Utility Easement.
- PUE — Proposed Permanent Utility Easement.
- E — Proposed Temporary Construction Easement.
- C — Proposed Slope Stakes Cut.
- F — Proposed Slope Stakes Fill.
- ⊕ Approximate location of soil borings.
- UST — Approximate location of possible USTs or object.
- UST — Approximate location of possible USTs, objects or septic tank.
- Approximate location of soil contamination.
- (5'-7.5') Sample depth location.
- <6.4/<6.5 Concentration of TPH-DRO/TPH-GRO mg/kg.

GRAPHIC SCALE

30 0 30 60

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PROJECT NO.	123173
DRAWN:	APR 2012
DRAWN BY:	AB
CHECKED BY:	TO
FILE NAME:	Parcel 111-145_042012.dwg

BORING LOCATION and CONTAMINATION MAP
Parcel # 141
Caverock Farms Limited Partnership Prop.

NCDOT WBS ELEMENT 37044.1.1
STATE PROJECT R-3101
5087 US Hwy 21 South
GLADE VALLEY, NORTH CAROLINA

FIGURE
3

APPENDIX A

SITE PHOTOGRAPHS
KLEINFELDER PROJECT NO. 123173
PARCEL NO. 141

Photograph 1 – View of the Caverock Farms Limited Partnership Property looking east.

Photograph 2 View of the building looking east. Note the location of the suspected septic tank.

APPENDIX B

Pyramid Project # 2011267

GEOPHYSICAL INVESTIGATION REPORT

EM61 & GPR SURVEYS
CAVEROCK FARMS LP PROPERTY (PARCEL 141)
5087 US Highway 21 South
Glade Valley, North Carolina
State Project R-3101 WBS Element 37044.1.1
December 6, 2011

Report prepared for: **NC Department of Transportation**
GeoTechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Prepared by: Mark J. Denil
Mark J. Denil, P.G.

Reviewed by: Douglas A. Canavello
Douglas Canavello, P.G.

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
P.O. Box 16265
GREENSBORO, NC 27416-0265
(336) 335-3174

NC Department of Transportation
GEOPHYSICAL INVESTIGATION REPORT
CAVEROCK FARMS LP PROPERTY (PARCEL 141)
5087 US Highway 21 South
Glade Valley, North Carolina
State Project R-2612B WBS Element 34483.1.1

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FIGURES

1.0 INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for the North Carolina Department of Transportation (NCDOT) – Geotechnical Unit across the proposed right-of-way (ROW) area at the Caverock Farms Limited Partnership property (Parcel 141) located at 5087 US Highway 21 South near Glade Valley, North Carolina. Conducted on November 9 and 17, 2011, the geophysical investigation was performed as part of the NCDOT preliminary site assessment for the US Highway 21 from Roaring Gap to Sparta project (State Project R-3101, WBS Element – 37044.1.1), to determine if unknown, metallic, underground storage tanks (USTs) were present beneath the proposed ROW area of the property

The Caverock Farms LP property consists of a construction office and earth moving facility. The proposed ROW area includes the portion of property that lies between the office building and the road and consists primarily of flat-lying, grass or dirt-covered terrain. The geophysical survey area has a maximum length and width of 490 feet and 35 feet, respectively. Areas containing equipment or vehicles were omitted from the survey area.

NCDOT representative Mr. Ethan J. Caldwell, LG, PE provided site information which identified the geophysical survey area to Pyramid Environmental personnel during the week of October 17, 2011. Photographs of the geophysical equipment used in this investigation and the geophysical survey area of the Caverock Farms LP property are shown in **Figure 1**. An aerial photograph in **Figure 2** shows how the geophysical survey area is divided into a southeastern section and a northwestern section due to the length of the survey area.

2.0 FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 10-foot by 20-foot survey grid was established across the geophysical survey area using measuring tapes, pin flags and water-based marking paint. These grid marks were used as X-Y coordinates for location control when collecting the geophysical data and establishing base maps for the geophysical results.

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection surveys and ground penetrating radar (GPR) surveys. The EM survey was performed on November 9, 2011 using a Geonics EM61-MK1 metal detection instrument. According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. All of the EM61 data were digitally collected at approximately 0.8 foot intervals along northwesterly-southeasterly parallel survey lines spaced five feet apart. All of the data were downloaded to a computer and reviewed in the field and office using the Geonics DAT61W and Surfer for Windows Version 7.0 software programs.

GPR surveys were conducted on November 17, 2011 across selected EM61 differential anomalies using a GSSI SIR-2000 unit equipped with a 400 MHz antenna. Data were digitally collected in a continuous mode along X-axis and/or Y-axis survey lines, spaced 2.5 to 5.0 feet apart using a vertical scan of 512 samples, at a rate of 48 scans per second. A 70 MHz high pass filter and an 800 MHz low pass filter were used during data acquisition with the 400 MHz antenna. GPR data were collected down to a maximum depth of approximately 5 feet, based on an estimated two-way travel time of 8 nanoseconds per foot. All of the GPR data were downloaded to a field computer and reviewed in the field and office using Radprint software. Preliminary geophysical results obtained from the site were emailed to Kleinfelder representative Mr. Craig Neal, PG during the week of November 21, 2011.

3.0 DISCUSSION OF RESULTS

Contour plots of the EM61 bottom coil and differential results are presented in **Figures 3 and 4**, respectively. The bottom coil results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The bottom coil response can be used to delineate metal conduits or utility lines, small, isolated metal objects, and areas containing insignificant metal debris. The differential results are obtained from the difference between the top and bottom coils of the EM61 instrument. The differential results focus on the larger metal objects such as drum and UST-size objects and ignore the smaller insignificant metal objects.

The linear EM61 bottom coil anomalies intersecting grid coordinates X=18 Y=420, X=24 Y=465, X=30 Y=305, and X=35 Y=378 are probably in response to buried utility lines or conduits. The bottom coil anomalies centered near grid coordinates X=40 Y=225, X=40 Y=435, X=50 Y=247, and X=50 Y=273 are probably in response to known surface objects, structures, equipment, buildings and/or vehicles. The randomly-scattered bottom coil anomalies recorded between grid lines Y=10 to Y=190 are probably in response to buried miscellaneous debris or insignificant objects.

GPR scans performed along the front wall of the garage building detected a possible buried object or (to a very low possibility) a UST centered near grid coordinates X=48 Y=292. Based on the GPR data, the possible buried object or UST is approximately 4.5 feet long, 4 feet wide and buried 3.75 feet below present grade. The possible object or UST may extend beneath the garage. The GPR image obtained along a portion of survey line X=48, which crosses the possible object or UST and a photograph showing the location of the possible object or UST are presented in **Figure 5.** The foot print of the possible buried object or UST detected by the geophysical investigation was marked in the field using orange marking paint and pin flags.

GPR data suggest the high-amplitude EM61 differential anomaly centered near grid coordinates X=36 Y=350 is in response to a possible septic tank, metallic UST or miscellaneous object that appears to have a flat top. Based on the GPR data, the possible septic tank or UST is approximately 9 feet long, 6.5 feet wide and buried 2 feet below present grade. The GPR image obtained along a portion of survey line X=46, which crosses the possible septic tank, UST or object and a photograph showing the location of the possible tank or object are presented in **Figure 6.** The foot print of the possible tank detected by the geophysical investigation was marked in the field using orange marking paint and pin flags.

The remaining EM61 metal detection anomalies shown in Figures 3 and 4 are probably in response to known surface objects, structures or miscellaneous debris.

4.0 SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across the proposed ROW area at the Caverock Farms Limited Partnership property (Parcel 141) located at 5087 US Highway 21 South near Glade Valley, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the proposed ROW area of the site.

- The linear EM61 bottom coil anomalies intersecting grid coordinates X=18 Y=420, X=24 Y=465, X=30 Y=305, and X=35 Y=378 are probably in response to buried utility lines or conduits.

- GPR scans performed along the front wall of the garage building detected a possible buried object or (to a very low possibility) a UST centered near grid coordinates X=48 Y=292. Based on the GPR data, the possible buried object or UST is approximately 4.5 feet long, 4 feet wide and buried 3.75 feet below present grade.

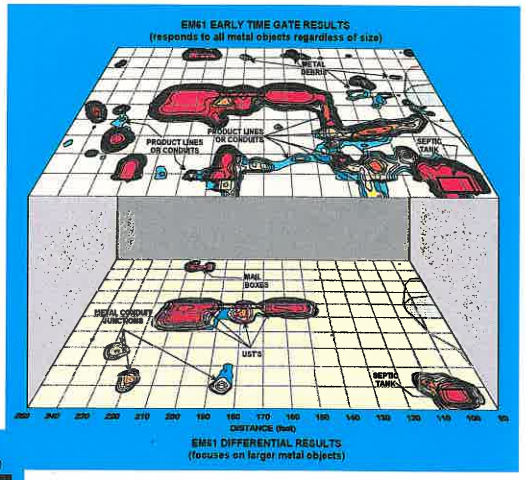
- GPR data suggest the high-amplitude EM61 differential anomaly centered near grid coordinates X=36 Y=350 is in response to a possible septic tank, metallic UST or miscellaneous object that appears to have a flat top. Based on the GPR data, the possible septic tank or UST is approximately 9 feet long, 6.5 feet wide and buried 2 feet below present surface.

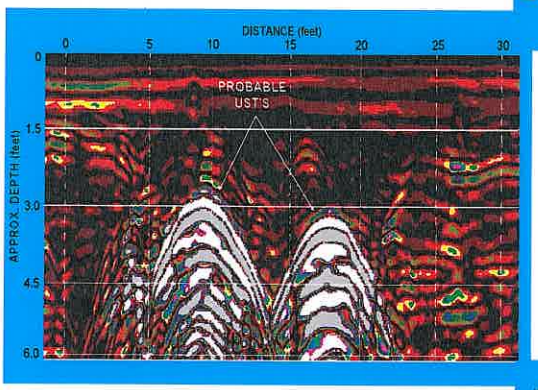
- The remaining EM61 anomalies shown in Figure 2 are probably in response to known surface objects, structures or miscellaneous debris.

5.0 LIMITATIONS

EM61 and GPR surveys have been performed and this report prepared for the NCDOT in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR are non-unique and may not represent actual

subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined that a possible septic tank or possible USTs are present within surveyed portion of the site but that only a possible septic tank or a possible UST were detected.

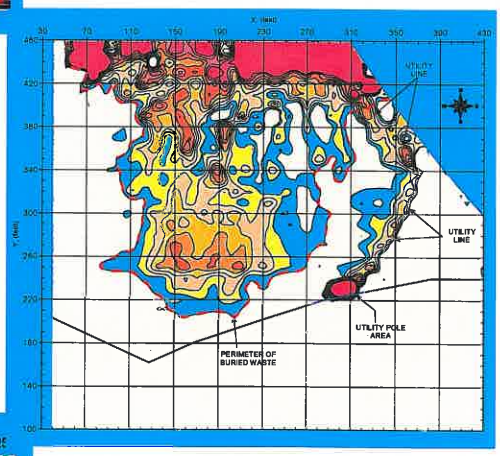


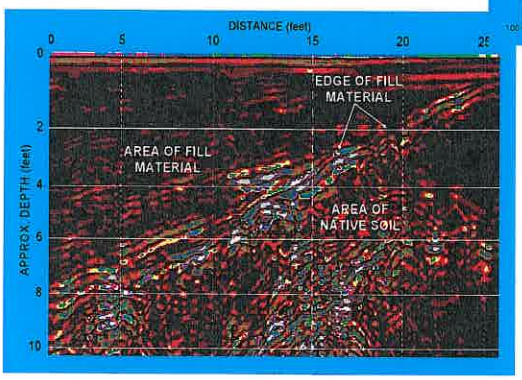


FIGURES

(on the following pages)

Figures shown on this page are for esthetic purposes only and are not related to the geophysical results discussed in this report.





The photograph shows the Geonics EM61 metal detector that was used to conduct the metal detection survey across the proposed Right-of-Way area at Parcel 141 on November 9, 2011.

The photographs show the SIR-2000 GPR system equipped with a 400 MHz antenna that were used to conduct the ground penetrating radar investigation across selected EM61 differential anomalies at Parcel 141 on November 17, 2011.

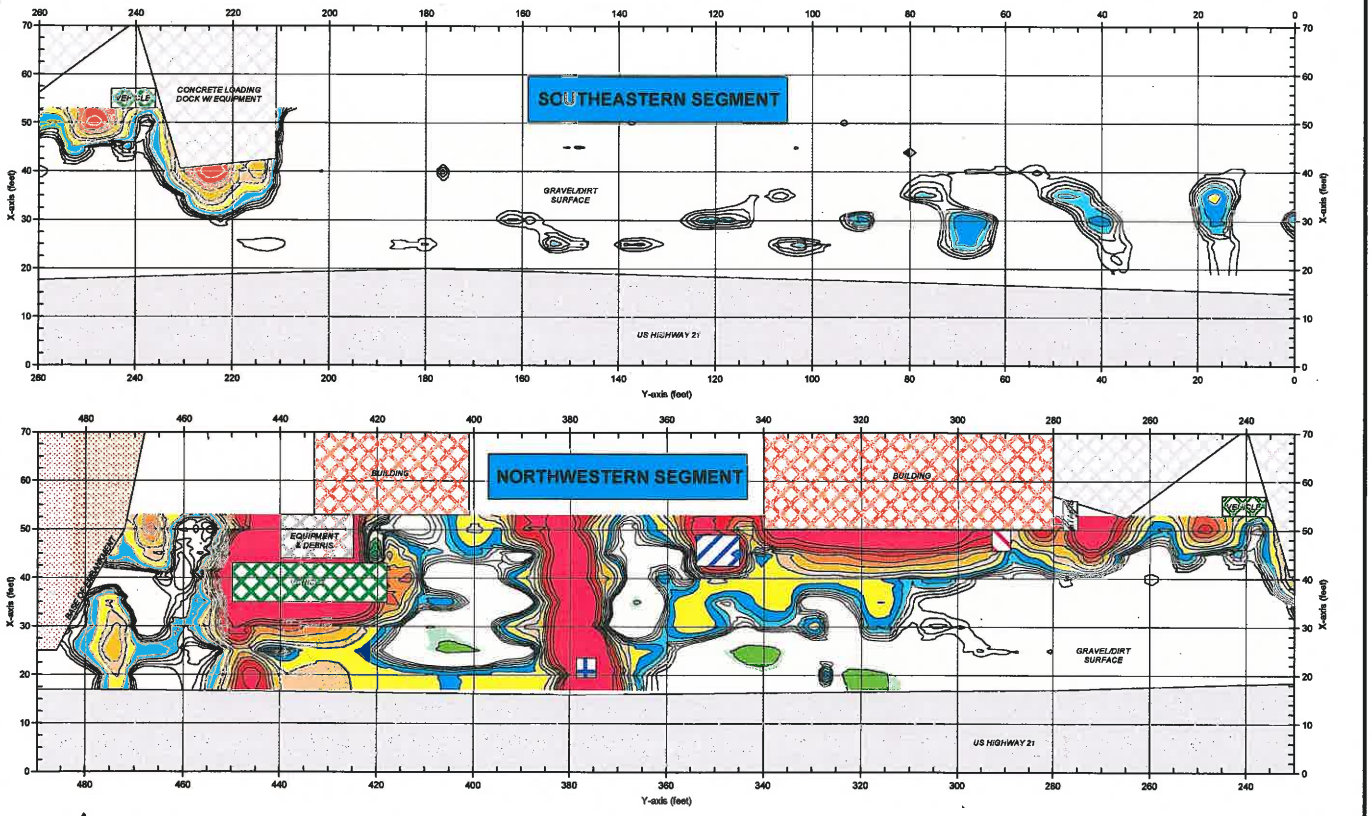
The photograph shows the front portion of the Caverock Farms L.P. property (Parcel 141) located at 5087 US Highway 21 South near Glade Valley, North Carolina. The geophysical investigation was performed across the front portion of the property. The photograph is viewed in a southeasterly direction.

PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	NORTH CAROLINA DEPARMENT OF TRANSPORTATION	DATE	12/06/11	DRWN	MJD
SITE	CAVEROCK FARMS L.P. PROPERTY (PARCEL 141)	LAY		CK'KD	
CITY	GLADE VALLEY	STATE	NORTH CAROLINA	DWG	
TITLE	GEOPHYSICAL RESULTS	JOB#	2011-267	REVIS	

GEOPHYSICAL EQUIPMENT & SITE PHOTOGRAPHS

FIGURE 1



APPROXIMATE NORTH

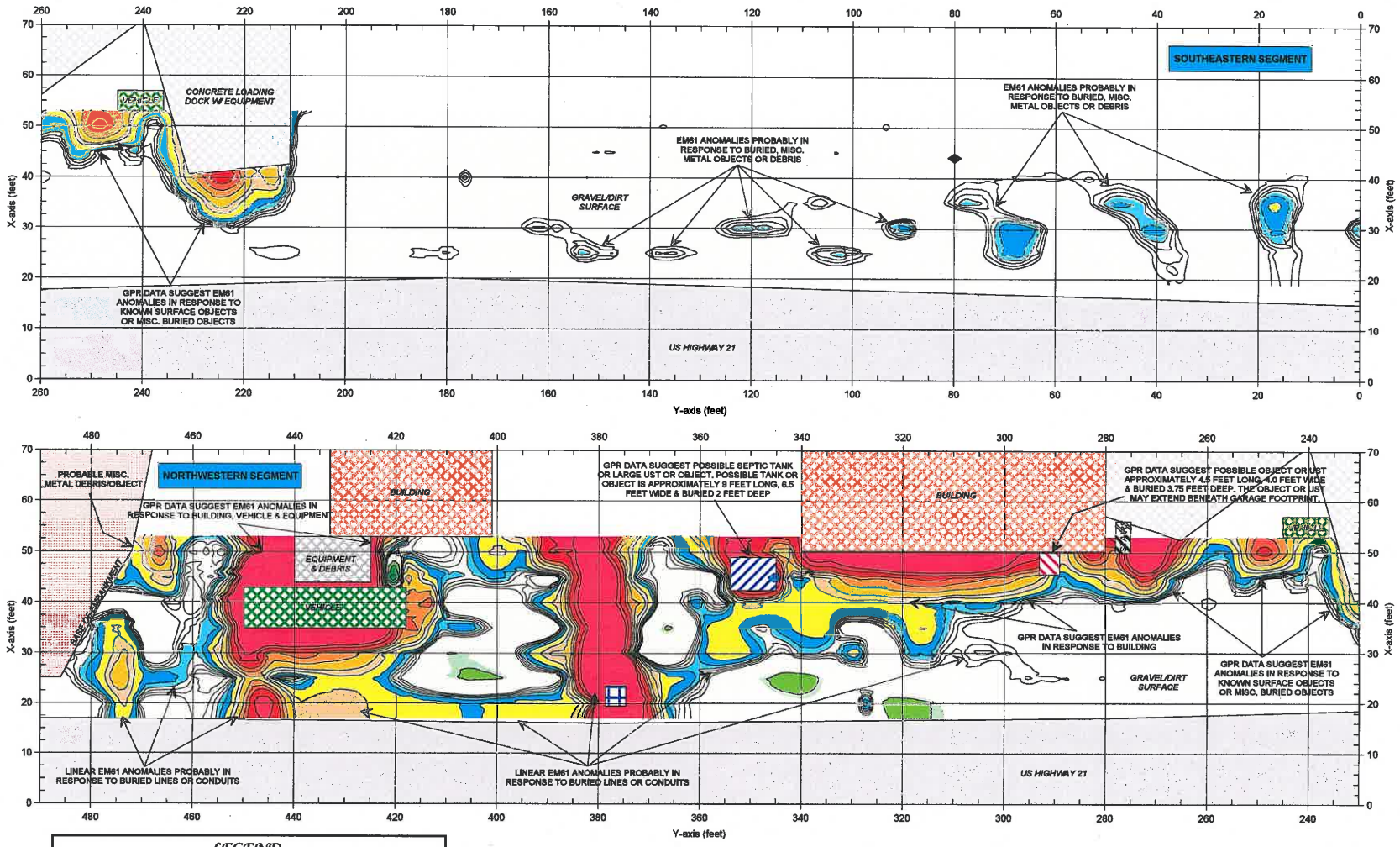
Due to the length of the geophysical survey area at Parcel 141, the survey area has been divided into a southeastern section and a northwestern section in Figures 3 and 4. The rectangles in the aerial photograph represent the division of the survey area. The contour plots (lower) show how the geophysical results are presented in Figures 3 and 4.

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	NORTH CAROLINA DEPARMENT OF TRANSPORTATION	DATE	12/06/11	DRWN	MJD
SITE	CAVEROCK FARMS L.P. PROPERTY (PARCEL 141)	LAY		CHKD	
CITY	GLADE VALLEY	STATE	NORTH CAROLINA	DWG	
TITLE	GEOPHYSICAL RESULTS	JOB	2011-267	FIGURE	

DIVISION OF GEOPHYSICAL SURVEY AREA

FIGURE 2



The contour plot shows the bottom coil (most sensitive) response of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The EM metal detection data were collected on November 9, 2011 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were acquired on November 17, 2011 across selected EM61 differential anomalies using a Geophysical Survey Systems SIR 2000 instrument with a 400 MHz antenna.

The geophysical investigation detected a possible septic tank centered near grid coordinates X=46 Y=350 and a possible buried object or UST (very low confidence) centered near grid coordinates X=48 Y=291.

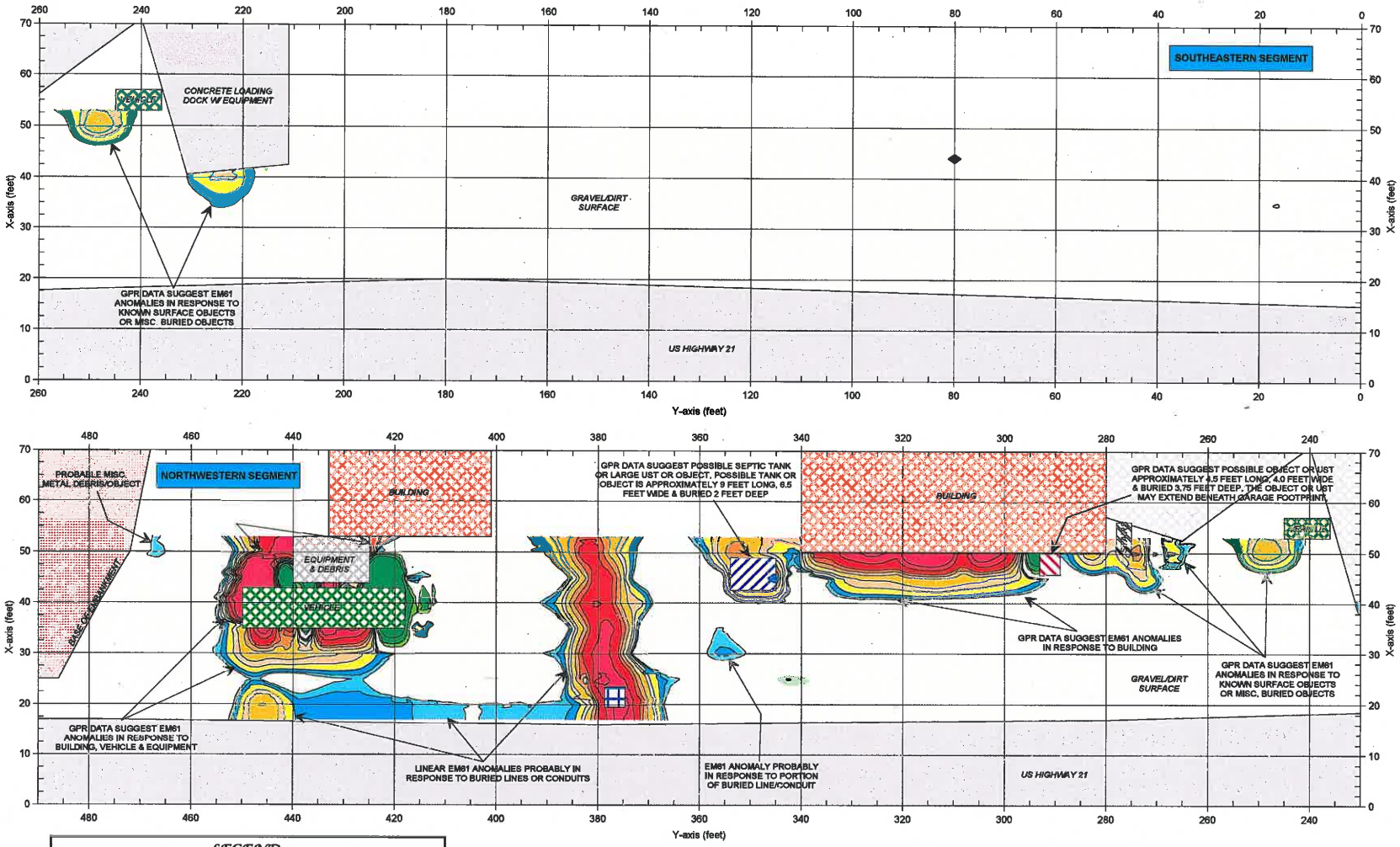
FIGURE 3

EM61 METAL DETECTION (BOTTOM COIL RESULTS)

SUBMIT	NORTH CAROLINA DEPARMENT OF TRANSPORTATION
RTE	CAVEROCK FARMS L.P. PROPERTY (PARCEL 141)
CITY	GLADE VALLEY
STATE	NORTH CAROLINA
TITLE	GEOPHYSICAL RESULTS
DRAWN	MJD
CHKD	
DATE	12/06/11
LAY	
DWG	
PROJECT	2011-267

GRAPHIC SCALE IN FEET

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.



LEGEND

- SURVEY AREA: EM61 OR GPR DATA ACQUIRED ALONG X-AXIS TRENDING LINES SPACED 5 FEET APART
- BUILDING
- VEHICLE
- CONCRETE LOADING DOCK
- EQUIPMENT
- MAIL BOX
- UTILITY POLE
- METAL LIGHT POLE
- METAL STORM SEWER GRATE
- METAL STAIRS
- POSSIBLE OBJECT OR UST, AS SUGGESTED BY GPR RESULTS
- POSSIBLE SEPTIC TANK OR UST, AS SUGGESTED BY GPR RESULTS

APPROXIMATE NORTH

EM61 DIFFERENTIAL RESPONSE (MILLIVOLTS)

Note: The contour plot shows the differential response between the bottom and top coils of the EM61 instrument in millivolts (mV). The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller misc. buried, metal debris. The EM metal detection data were collected on November 9, 2011 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were acquired on November 17, 2011 using a Geophysical Survey Systems SIR 2000 instrument with a 400 MHz antenna.

The geophysical investigation detected a possible septic tank centered near grid coordinates X=46 Y=350 and a possible buried object or UST (very low confidence) centered near grid coordinates X=48 Y=291.

EM61 METAL DETECTION (DIFFERENTIAL RESULTS)

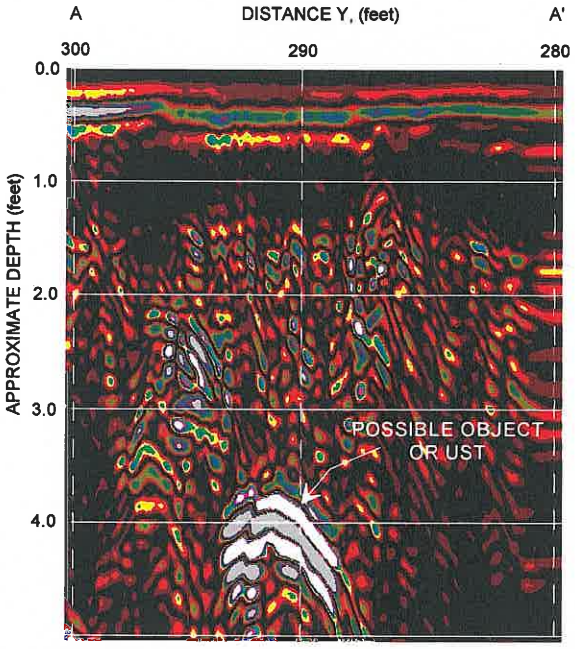
FIGURE 4

CLIENT	NORTH CAROLINA DEPARMENT OF TRANSPORTATION
SITE	CAVEROCK FARMS L.P. PROPERTY (PARCEL 141)
CITY	GLADE VALLEY
STATE	NORTH CAROLINA
TITLE	GEOPHYSICAL RESULTS
PROJECT	2011-267
DWG	
DATE	12/06/11
DRAWN	MJD
CHKD	
APVD	

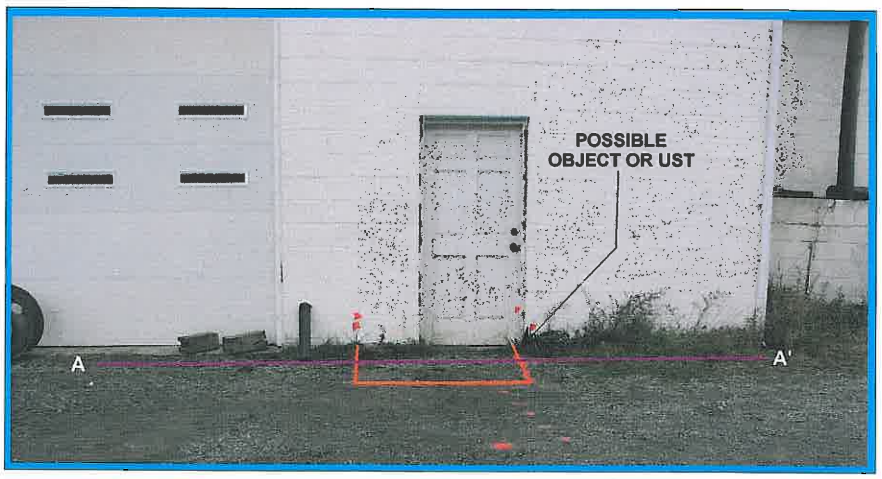
GRAPHIC SCALE IN FEET

PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

GPR IMAGE OF LINE X=48



The GPR image obtained along a portion of survey line X=48 recorded a high-amplitude, hyperbolic anomaly (GPR reflections shaded in white) that is possibly in response to a buried object or UST. Centered near grid coordinates X=48 Y=292, the possible object or UST is approximately 4.5 feet long, 4 feet wide and buried 3.75 feet below present grade. The possible object or UST may extend beneath the garage.The solid purple line labeled AA' and the orange rectangle in the photograph below represent the location of the GPR image and the foot print of the possible object or UST, respectively.



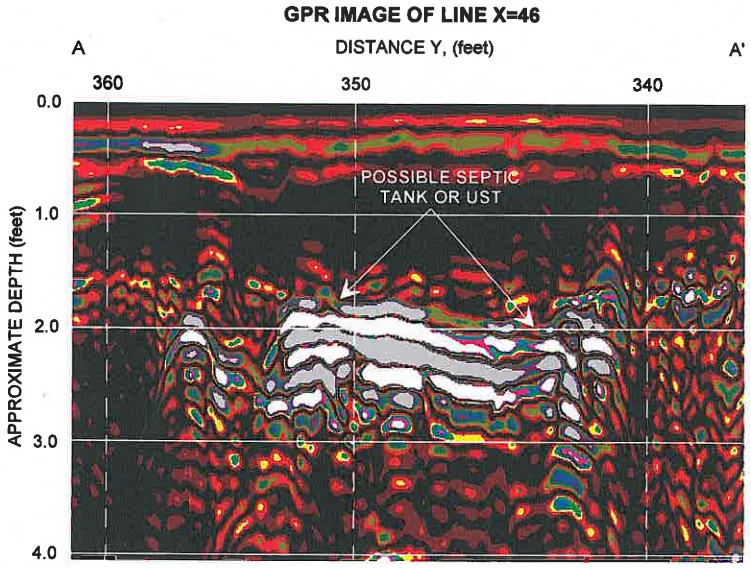
The orange rectangle in the photograph represents the approximate perimeter of a possible object or UST, as suggested by the GPR data. Centered near grid coordinates X=48 Y=292, the possible object or UST is approximately 4.5 feet long, 4 feet wide and buried 3.75 feet below present grade. The possible object or UST may extend beneath the garage.The solid purple line in the photograph represents the approximate location of the GPR image shown above. The photograph is viewed in an easterly direction.

PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	NORTH CAROLINA DEPARMENT OF TRANSPORTATION		DATE	12/06/11	DRWN MJD
SITE	CAVEROCK FARMS L.P. PROPERTY (PARCEL 141)		LAY		CHKD
CITY	GLADE VALLEY	STATE NORTH CAROLINA	DWG		
TITLE	GEOPHYSICAL RESULTS		JOB	2011-267	FIGURE

GPR IMAGE ACROSS
POSSIBLE OBJECT OR UST

FIGURE 5



The GPR image obtained along a portion of survey line X=46 recorded a flat-lying, high-amplitude anomaly (GPR reflections shaded in white) that are possibly in response to a septic tank, UST or miscellaneous object buried approx. 2. feet below present grade. The solid purple line labeled AA' and the orange rectangle in the photograph below represent the location of the GPR image and the foot print of the possible septic tank or UST, respectively.

The orange rectangle in the photograph represents the approximate perimeter of a possible septic tank or UST or other miscellaneous object, as suggested by the GPR data. Centered near grid coordinates X=46 Y=350, the tank or object is approximately 9 feet long, 6.5 feet wide and buried 2 feet below present grade. The solid purple line in the photograph represents the approximate location of the GPR image shown above. The photograph is viewed in a southeasterly direction.

PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	NORTH CAROLINA DEPARMENT OF TRANSPORTATION	DATE	12/06/11	DRWN	MJD
SITE	CAVEROCK FARMS L.P. PROPERTY (PARCEL 141)	LAY		CHKD	
CITY	GLADE VALLEY	STATE	NORTH CAROLINA	DWG	
TITLE	GEOPHYSICAL RESULTS	JOB#	2011-267	FIGURE	

GPR IMAGE ACROSS
POSSIBLE SEPTIC TANK

FIGURE 6

APPENDIX C

LOG OF BORING SB-1/111

SHEET 1 OF 1

Client NCDOT
Project Name Sparta PSAs
Number 123173 Task 1
Location Parcel 141

Drill Contractor Geoprobe Technology
Drill Method Geoprobe
Drilling Started 12/20/11 Ended 12/20/11
Logged By A. Bauser

Elevation –
Total Depth 10.0

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
			0.0	GW		Topsoil - 2 inches Well Graded GRAVEL, Gray Fine to Coarse Angular, Fine to Coarse Sand, Moist	
			0.0	SM		Silty SAND, Brown, Non Plastic, Moist to Wet with Brown Gravel Layer from 3.9-4.2 feet	
5	SS		0.0				5
			0.0	SP		Poorly Graded SAND, Tan, Fine to Coarse Subangular Sand, Non Plastic with Gravel at 10 feet	
10						Boring Terminated at 10 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

Kleinfelder
313 Gallimore Dairy Road
Greensboro, NC 27409
Telephone: 336-668-0093
Fax: 336-668-3868

Remarks Sample collected from 7.5-10.0 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

LOG A EWNN05 SPARTA.GPJ LOG A EWNN05.GDT 1/12/12

LOG OF BORING SB-2/111

SHEET 1 OF 1

Client NCDOT
Project Name Sparta PSAs
Number 123173 Task 1
Location Parcel 141

Drill Contractor Geoprobe Technology
Drill Method Geoprobe
Drilling Started 12/20/11 Ended 12/20/11
Logged By A. Bauser

Elevation –
Total Depth 10.0

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
			0.0	GP		Topsoil - 2 inches Poorly Graded GRAVEL with Sand, Gray, Non Plastic, Slightly Moist	
			0.0	SM		Silty SAND, Tan with Brown Blotches, Non Plastic, Slightly Moist	
5			0.0	SP		Poorly Graded SAND, Tan, Fine to Medium Sand, Some Silt, Non Plastic, Moist	5
	SS		0.0	GP		Poorly Graded GRAVEL, White-Tan, Fine to Coarse Angular, Non Plastic, Medium Dense, Slightly Moist	
10				SP		Poorly Graded SAND, Tan, Oxidized Spots, Fine to Medium, Non Plastic, Moist Boring Terminated at 10 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

Kleinfelder
313 Gallimore Dairy Road
Greensboro, NC 27409
Telephone: 336-668-0093
Fax: 336-668-3868

Remarks Sample collected from 7.5-10.0 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

LOG OF BORING SB-3/111

SHEET 1 OF 1

Client NCDOT
Project Name Sparta PSAs
Number 123173 Task 1
Location Parcel 141

Drill Contractor Geoprobe Technology
Drill Method Geoprobe
Drilling Started 12/20/11 Ended 12/20/11
Logged By A. Bauser

Elevation --
Total Depth 10.0

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
						Topsoil - 5 inches	
			0.1	GP		Poorly Graded GRAVEL with Sand, Fine to Coarse Subangular to Angular Gravel, Fine to Coarse Sand, Slightly Moist	
			0.0	SP		Poorly Graded SAND with Gravel, Tan, Slightly Moist, Fine to Coarse Sand with Fine Subangular Gravel	
5	SS		1,745	GP		Poorly Graded GRAVEL with Sand, Olive, Fine to Coarse Subrounded, Wet, Non Plastic	5
			1,005				
10						Boring Terminated at 10 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

Kleinfelder
313 Gallimore Dairy Road
Greensboro, NC 27409
Telephone: 336-668-0093
Fax: 336-668-3868

Remarks Sample collected from 5.0-7.5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

LOG A EWNN05 SPARTA.GPJ LOG A EWNN05.GDT 1/12/12

LOG OF BORING SB-4/111

SHEET 1 OF 1

Client NCDOT
Project Name Sparta PSAs
Number 123173 Task 1
Location Parcel 141

Drill Contractor Geoprobe Technology
Drill Method Geoprobe
Drilling Started 12/20/11 Ended 12/20/11
Logged By A. Bauser

Elevation --
Total Depth 10.0

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
0			0.2	GP		Poorly Graded GRAVEL, Gray, Subrounded, Non Plastic, Slightly Moist	0
				SP		Poorly Graded SAND with Silt, Non Plastic, Slightly Moist, Red-Brown to Tan, and Rounded Gravel from 0.5-2.0 feet	
			0.8				
5			0.5	GP		Poorly Graded GRAVEL, Tan-Gray, Fine to Coarse Subrounded, Non Plastic, Slightly Moist	5
				SP		Poorly Graded SAND with Silt, Fine to Medium Sand, Gran to Tan-White, Wet at 8 feet	
	SS		0.5				
10						Boring Terminated at 10 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

Kleinfelder
313 Gallimore Dairy Road
Greensboro, NC 27409
Telephone: 336-668-0093
Fax: 336-668-3868

Remarks Sample collected from 7.5-10.0 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

LOG A EWNN05 SPARTA.GPJ LOG A EWNN05.GDT 1/12/12

LOG OF BORING SB-5/111

SHEET 1 OF 1

Client NCDOT
Project Name Sparta PSAs
Number 123173 Task 1
Location Parcel 141

Drill Contractor Geoprobe Technology
Drill Method Geoprobe
Drilling Started 12/20/11 Ended 12/20/11
Logged By A. Bauser

Elevation –
Total Depth 10.0

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
				GP		Poorly Graded GRAVEL, Black-Brown, Non Plastic, Slightly Moist, Fine to Coarse Angular	
			0.2	SP		SAND, Tan-Red, Slightly Moist, Medium Dense to Loose, Fine to Coarse Sand	
			0.2				
5							5
			0.1	GP		Poorly Graded GRAVEL with Sand, Fine to Coarse, Tan, Non Plastic, Slightly Moist, Medium Dense	
	SS		0.2	SP		Poorly Graded SAND, Fine to Medium, Brown-Orange to Orange, Loose, Moist to Wet	
10						Boring Terminated at 10 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

Kleinfelder
313 Gallimore Dairy Road
Greensboro, NC 27409
Telephone: 336-668-0093
Fax: 336-668-3868

Remarks Sample collected from 7.5-10.0 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

LOG A EWNN05 SPARTA.GPJ LOG A EWNN05.GDT 1/12/12

LOG OF BORING SB-1/141

SHEET 1 OF 1

Client NCDOT
Project Name Sparta PSAs
Number 123173 Task 1
Location Parcel 141

Drill Contractor Geoprobe Technology
Drill Method Geoprobe
Drilling Started 12/20/11 Ended 12/20/11
Logged By A. Bauser

Elevation –
Total Depth 9.0

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
			0.3	SP		Poorly Graded SAND with Subangular and Subrounded Gravel, Brown to Tan, Fine to Coarse Sand, Non Plastic, Slightly Moist	
			0.0				
5			0.0	SP SM		Silty SAND, Dark Brown-Tan to Tan-Brown, Fine to Medium Sand, Slightly Moist	5
	SS		0.0				
10						Boring Refusal at 9 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

Kleinfelder
313 Gallimore Dairy Road
Greensboro, NC 27409
Telephone: 336-668-0093
Fax: 336-668-3868

Remarks Sample collected from 7.5-9.0 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

LOG A EWNN05 SPARTA.GPJ LOG A EWNN05.GDT 1/12/12

LOG OF BORING SB-2/141

SHEET 1 OF 1

Client NCDOT
Project Name Sparta PSAs
Number 123173 Task 1
Location Parcel 141

Drill Contractor Geoprobe Technology
Drill Method Geoprobe
Drilling Started 12/20/11 Ended 12/20/11
Logged By A. Bauser

Elevation –
Total Depth 10.0

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
0	SS		3.5	GP		GRAVEL with Sand, Brown, Fine Angular Gravel	0
			0.1	SP		SAND with Fine Subangular Gravel, Tan-Orange, Loose, Moist to Wet	
5			0.1				5
			0.0				
10						Boring Terminated at 10 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

Kleinfelder
313 Gallimore Dairy Road
Greensboro, NC 27409
Telephone: 336-668-0093
Fax: 336-668-3868

Remarks Sample collected from 0.0-2.5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

LOG A EWNN05 SPARTA.GPJ LOG A EWNN05.GDT 1/12/12

LOG OF BORING SB-3/141

SHEET 1 OF 1

Client NCDOT
Project Name Sparta PSAs
Number 123173 Task 1
Location Parcel 141

Drill Contractor Geoprobe Technology
Drill Method Geoprobe
Drilling Started 12/20/11 Ended 12/20/11
Logged By A. Bauser

Elevation --
Total Depth 10.0

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
0			0.1	GP		Poorly Graded GRAVEL, Subrounded and Subangular, Non Plastic	0
						Weathered Rock, Extremely Weak, Sand Silt and Fine Gravel, Non Plastic, Slightly Moist, Medium Dense	
			2.0				
5	SS		4.4				5
			0.0				
10						Boring Terminated at 10 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

Kleinfelder
313 Gallimore Dairy Road
Greensboro, NC 27409
Telephone: 336-668-0093
Fax: 336-668-3868

Remarks Sample collected from 5.0-7.5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

LOG A EWNN05 SPARTA.GPJ LOG A EWNN05.GDT 1/12/12

LOG OF BORING SB-4/141

SHEET 1 OF 1

Client NCDOT
Project Name Sparta PSAs
Number 123173 Task 1
Location Parcel 141

Drill Contractor Geoprobe Technology
Drill Method Geoprobe
Drilling Started 12/20/11 Ended 12/20/11
Logged By A. Bauser

Elevation --
Total Depth 10.0

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
0	SS		45.7	GP		Poorly Graded GRAVEL, Brown-Gray, Subangular, Non Plastic, Fine to Coarse Gravel, Fine to Coarse Sand, Slightly Moist	0
				SP		SAND, Tan, Fine to Coarse, Non Plastic	
			0.8	GP		GRAVEL, Fine to Medium, Pluberized Gravel, Slightly Moist	
5			11.4			Weathered Rock, Extremely Weak/Weathered, Sand Silt, Fine Gravel	5
			0.1				
10						Boring Terminated at 10 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

Kleinfelder
313 Gallimore Dairy Road
Greensboro, NC 27409
Telephone: 336-668-0093
Fax: 336-668-3868

Remarks Sample collected from 0.0-2.5 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

LOG A EWNN05 SPARTA.GPJ LOG A EWNN05.GDT 1/12/12

LOG OF BORING SB-5/141

SHEET 1 OF 1

Client NCDOT
Project Name Sparta PSAs
Number 123173 Task 1
Location Parcel 141

Drill Contractor Geoprobe Technology
Drill Method Geoprobe
Drilling Started 12/20/11 Ended 12/20/11
Logged By A. Bauser

Elevation –
Total Depth 9.0

DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID ppm	USCS	LITHOLOGY	DESCRIPTION	DEPTH FEET
			0.1	GP		GRAVEL, Fine Subangular, Some Sand, Brown	
				SP		SAND with Silt and 10% Gravel, Gray-Tan, Fine to Medium Sand, Slightly Moist	
			0.0				
5			0.0	SM		Silty SAND, Gray-Brown, Fine to Medium, Loose, Moist with Gravel	5
			0.0				
10						Boring Refusal at 9 feet in RESIDUAL	10
15							15
20							20
25							25
30							30

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Greensboro, NC 27409
Telephone: 336-668-0093
Fax: 336-668-3868

Remarks Sample collected from 7.5-9.0 ft. submitted for laboratory analysis.

See key sheet for symbols and abbreviations used above.

LOG A EWNN05 SPARTA.GPJ LOG A EWNN05.GDT 1/12/12

APPENDIX D

Pace Analytical®
www.pacelabs.com

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

December 29, 2011

Chemical Testing Engineer
NCDOT
Materials & Tests Unit
1801 Blue Ridge Road
Raleigh, NC 27607

RE: Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory on December 22, 2011. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

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

Sincerely,

Charles Hardin

charles.hardin@pacelabs.com
Project Manager

Enclosures

cc: Mr. Peter Pozzo, Kleinfelder, Inc.

Pace Analytical
www.pacelabs.com

Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
Eden, NC 27288
(336)623-8921

Pace Analytical Services, Inc.
2225 Riverside Dr.
Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

CERTIFICATIONS

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
South Carolina Drinking Water Cert. #: 99006003
Virginia Drinking Water Certification #: 00213
Connecticut Certification #: PH-0104
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Louisiana DHH Drinking Water # LA 100031
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460144

Pace Analytical
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Pace Analytical Services, Inc.
205 East Meadow Road - Suite A
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Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE SUMMARY

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92109092001	**SB-1 (141)**	Solid	12/20/11 12:10	12/22/11 16:35
92109092002	**SB-2 (141)**	Solid	12/20/11 12:15	12/22/11 16:35
92109092003	**SB-3 (141)**	Solid	12/20/11 12:20	12/22/11 16:35
92109092004	**SB-4 (141)**	Solid	12/20/11 12:25	12/22/11 16:35
92109092005	**SB-5 (141)**	Solid	12/20/11 12:30	12/22/11 16:35

Pace Analytical
www.pacelabs.com

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Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

SAMPLE ANALYTE COUNT

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92109092001	**SB-1 (141)**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	AW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92109092002	**SB-2 (141)**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	AW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92109092003	**SB-3 (141)**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	AW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92109092004	**SB-4 (141)**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	AW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C
92109092005	**SB-5 (141)**	EPA 8015 Modified	RES	2	PASI-C
		EPA 8015 Modified	AW	2	PASI-C
		ASTM D2974-87	JEA	1	PASI-C

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ANALYTICAL RESULTS

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

Sample: SB-1 (141) **Lab ID: 92109092001** Collected: 12/20/11 12:10 Received: 12/22/11 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	5.7	5.1	1	12/23/11 06:30	12/28/11 13:57	68334-30-5	
Surrogates									
n-Pentacosane (S)	46	%	41-119		1	12/23/11 06:30	12/28/11 13:57	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	5.4	5.4	1	12/23/11 12:17	12/24/11 01:36	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	98	%	70-167		1	12/23/11 12:17	12/24/11 01:36	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**11.6**	%	0.10	0.10	1		12/23/11 14:40		

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ANALYTICAL RESULTS

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

Sample: SB-2 (141) **Lab ID: 92109092002** Collected: 12/20/11 12:15 Received: 12/22/11 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	5.6	5.1	1	12/23/11 06:30	12/28/11 14:27	68334-30-5	
Surrogates									
n-Pentacosane (S)	56	%	41-119		1	12/23/11 06:30	12/28/11 14:27	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	5.3	5.3	1	12/23/11 12:17	12/24/11 02:00	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	102	%	70-167		1	12/23/11 12:17	12/24/11 02:00	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**11.1**	%	0.10	0.10	1		12/23/11 14:40		

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ANALYTICAL RESULTS

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

Sample: SB-3 (141) **Lab ID: 92109092003** Collected: 12/20/11 12:20 Received: 12/22/11 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	6.2	5.6	1	12/23/11 06:30	12/28/11 14:27	68334-30-5	
Surrogates									
n-Pentacosane (S)	57	%	41-119		1	12/23/11 06:30	12/28/11 14:27	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	5.5	5.5	1	12/23/11 12:17	12/24/11 02:25	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-167		1	12/23/11 12:17	12/24/11 02:25	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**19.0**	%	0.10	0.10	1		12/23/11 14:40		

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ANALYTICAL RESULTS

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

Sample: SB-4 (141) **Lab ID: 92109092004** Collected: 12/20/11 12:25 Received: 12/22/11 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	**27.1**	mg/kg	6.1	5.4	1	12/23/11 06:30	12/28/11 14:58	68334-30-5	
Surrogates									
n-Pentacosane (S)	66	%	41-119		1	12/23/11 06:30	12/28/11 14:58	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	5.9	5.9	1	12/28/11 10:29	12/28/11 21:16	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	90	%	70-167		1	12/28/11 10:29	12/28/11 21:16	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**17.4**	%	0.10	0.10	1		12/23/11 14:41		

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ANALYTICAL RESULTS

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

Sample: SB-5 (141) **Lab ID: 92109092005** Collected: 12/20/11 12:30 Received: 12/22/11 16:35 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Components	ND	mg/kg	6.4	5.7	1	12/23/11 06:30	12/28/11 14:58	68334-30-5	
Surrogates									
n-Pentacosane (S)	67	%	41-119		1	12/23/11 06:30	12/28/11 14:58	629-99-2	
Gasoline Range Organics	Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B								
Gasoline Range Organics	ND	mg/kg	6.5	6.5	1	12/28/11 10:29	12/28/11 21:41	8006-61-9	
Surrogates									
4-Bromofluorobenzene (S)	91	%	70-167		1	12/28/11 10:29	12/28/11 21:41	460-00-4	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**21.3**	%	0.10	0.10	1		12/23/11 14:41		

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QUALITY CONTROL DATA

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

QC Batch: GCV/5635 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92109092001, 92109092002, 92109092003

METHOD BLANK: 704042 Matrix: Solid
Associated Lab Samples: 92109092001, 92109092002, 92109092003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	5.8	12/23/11 16:42	
4-Bromofluorobenzene (S)	%	94	70-167	12/23/11 16:42	

LABORATORY CONTROL SAMPLE: 704043

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	24.3	24.0	99	70-165	
4-Bromofluorobenzene (S)	%			91	70-167	

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QUALITY CONTROL DATA

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

QC Batch: GCV/5643
QC Batch Method: EPA 5035A/5030B
Analysis Method: EPA 8015 Modified
Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92109092004, 92109092005

METHOD BLANK: 704788 Matrix: Solid
Associated Lab Samples: 92109092004, 92109092005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	5.9	12/28/11 12:43	
4-Bromofluorobenzene (S)	%	104	70-167	12/28/11 12:43	

LABORATORY CONTROL SAMPLE: 704789

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	24.4	25.8	106	70-165	
4-Bromofluorobenzene (S)	%			94	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 704790 704791

Parameter	Units	92109103001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Gasoline Range Organics	mg/kg	ND	26.2	26.2	29.6	34.1	111	128	47-187	14	30	
4-Bromofluorobenzene (S)	%						97	109	70-167			

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QUALITY CONTROL DATA

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

QC Batch: OEXT/15996 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92109092001, 92109092002, 92109092003, 92109092004, 92109092005

METHOD BLANK: 703972 Matrix: Solid
Associated Lab Samples: 92109092001, 92109092002, 92109092003, 92109092004, 92109092005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	12/27/11 11:41	
n-Pentacosane (S)	%	67	41-119	12/27/11 11:41	

LABORATORY CONTROL SAMPLE: 703973

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	51.8	78	49-113	
n-Pentacosane (S)	%			68	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 703974 703975

Parameter	Units	92109089001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Diesel Components	mg/kg	ND	71.9	71.9	32.2	34.0	45	47	10-146	6	30	
n-Pentacosane (S)	%						39	46	41-119			S2

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QUALITY CONTROL DATA

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

QC Batch: PMST/4410 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92109092001, 92109092002, 92109092003, 92109092004, 92109092005

SAMPLE DUPLICATE: 703865

Parameter	Units	92109089001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	7.2	8.5	16	25	

SAMPLE DUPLICATE: 703866

Parameter	Units	92109101001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	18.9	18.7	1	25	

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QUALIFIERS

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

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LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

S2 Surrogate recovery outside laboratory control limits due to matrix interferences (confirmed by similar results from sample re-analysis).

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Parcel 141 WSB 37044.1.1
Pace Project No.: 92109092

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92109092001	**SB-1 (141)**	EPA 3546	OEXT/15996	EPA 8015 Modified	GCSV/11119
92109092002	**SB-2 (141)**	EPA 3546	OEXT/15996	EPA 8015 Modified	GCSV/11119
92109092003	**SB-3 (141)**	EPA 3546	OEXT/15996	EPA 8015 Modified	GCSV/11119
92109092004	**SB-4 (141)**	EPA 3546	OEXT/15996	EPA 8015 Modified	GCSV/11119
92109092005	**SB-5 (141)**	EPA 3546	OEXT/15996	EPA 8015 Modified	GCSV/11119
92109092001	**SB-1 (141)**	EPA 5035A/5030B	GCV/5635	EPA 8015 Modified	GCV/5637
92109092002	**SB-2 (141)**	EPA 5035A/5030B	GCV/5635	EPA 8015 Modified	GCV/5637
92109092003	**SB-3 (141)**	EPA 5035A/5030B	GCV/5635	EPA 8015 Modified	GCV/5637
92109092004	**SB-4 (141)**	EPA 5035A/5030B	GCV/5643	EPA 8015 Modified	GCV/5644
92109092005	**SB-5 (141)**	EPA 5035A/5030B	GCV/5643	EPA 8015 Modified	GCV/5644
92109092001	**SB-1 (141)**	ASTM D2974-87	PMST/4410		
92109092002	**SB-2 (141)**	ASTM D2974-87	PMST/4410		
92109092003	**SB-3 (141)**	ASTM D2974-87	PMST/4410		
92109092004	**SB-4 (141)**	ASTM D2974-87	PMST/4410		
92109092005	**SB-5 (141)**	ASTM D2974-87	PMST/4410		

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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.

Page: 1 of 1

1452519

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:
Company: Kleinfelder	Report To: Travis O'Quinn	Attention:
Address: Charlotte, NC	Copy To: Craig Neil	Company Name: NCDOT
		Address:
Email To: TOquinn@Kleinfelder.com	Purchase Order No.:	Pace Quote Reference: WBS 37044.1.1
Phone: Fax:	Project Name: NCDOT Parcel 141	Pace Project Manager:
Requested Due Date/TAT: STD	Project Number: 123173	Pace Profile #:

REGULATORY AGENCY: ☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER ☐ UST ☐ RCRA ☐ OTHER

Site Location STATE: NC

Requested Analysis Filtered (Y/N)

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Y/N	Analysis Test: GRO	DRO	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	SB-1 (141)	SL	G			12/20/11	1210												X	X		001
2	SB-2 (141)	"	"			"	1215												X	X		002
3	SB-3 (141)	"	"			"	1220												X	X		003
4	SB-4 (141)	"	"			"	1225												X	X		004
5	SB-5 (141)	"	"			"	1230												X	X		005
6																						
7																						
8																						
9																						
10																						
11																						
12																						

9210902

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
	T Q / Kleinfelder	12/22/11	15:40	Moody - Pace	12-22-11	15:40				
	Moody	12-22-11	16:35	Justin Mottley / Pace	12-22-11	16:35	6.0	Y	N	Y

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Travis O'Quinn

SIGNATURE of SAMPLER: T Q

DATE Signed (MM/DD/YY): 12/20/11

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

Pace Analytical	Document Name: **Sample Condition Upon Receipt (SCUR)**	Document Revised: July 29, 2011 Page 1 of 2
	Document Number: **F-CHR-CS-03-rev.05**	Issuing Authority: Pace Huntersville Quality Office

Client Name: Kleinfelder Project # 92109092

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other_____

Thermometer Used: IR Gun T1102 **Type of Ice:** (Wet) Blue None ☑ Samples on ice, cooling process has begun

Temp Correction Factor Add / Subtract 0 °C

Corrected Cooler Temp.: 6.0 C **Biological Tissue is Frozen:** Yes No N/A

Temp should be above freezing to 6°C

Comments:

Date and Initials of person examining contents: JMM 12-22-11

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix:_____		
All containers needing preservation have been checked.	☐Yes ☐No ☑N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☐Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes ☐No	Initial when completed
Samples checked for dechlorination:	☐Yes ☐No ☑N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☐No ☑N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted:_____ Date/Time:_____

Comments/ Resolution:_____

SCURF Review: CAH Date: 12/22/11 **SRF Review:** BKM Date: 12/23/11

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)