# PRELIMINARY SITE ASSESSMENT

PARCEL #122, SHELL PROPERTY
CHARLOTTE – US 74 (INDEPENDENCE BOULEVARD) FROM NC 24 - 27
(ALBEMARLE ROAD) TO IDELWILD ROAD
MECKLENBURG COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 3479.1.1 STATE PROJECT U-0209B

August 20, 2010

## Prepared for:

Ethan J. Caldwell, 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. 313 Gallimore Dairy Road Greensboro, North Carolina 27409

Kleinfelder Project No. 111989

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August 20, 2010 File No. 111989 | GSO10R159

Ethan J. Caldwell, L.G., P. E. North Carolina Department of Transportation 1589 Mail Service Center Raleigh, North Carolina 27699-1589

Reference: **Preliminary Site Assessment** 

WBS Element No. 34749.1.1, State Project U-0209B

Parcel #122, Shell Property

Mecklenburg County, North Carolina

Dear Mr. Caldwell:

Please find enclosed a 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 thirteen 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.

Annamarie Blauser Staff Professional I

Am Bluba

John. Stewart John M. Stewart, P.G. Senior Professional

AB/JMS:cas **Enclosure** 

### PRELIMINARY SITE ASSESSMENT

**Site Name and Location:** 

Parcel #122, Shell Property

5601 E. Independence Boulevard Charlotte, Mecklenburg County, North

Carolina

Latitude and Longitude:

35° 10' 60" N, 80° 45' 20" W

**Facility ID Number:** 

0-014323

**NCDOT Project No.:** 

NCDOT WBS Element 34749.1.1

State Project U-0209B

**Date of Report:** 

August 20, 2010

Consultant:

Kleinfelder

313 Gallimore Dairy Road

Greensboro, North Carolina 27409

Attn: Mr. John M. Stewart Phone: 336.668.0093 X115

# Seal and Signature of Certifying Licensed Geologist

I, John M. Stewart, 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.

John M. Stervart, P.O.

111989 | GSO10R159 Copyright 2010 Kleinfelder Page i

August 20, 2010

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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 Shell station property (Parcel 122) located at 5601 East Independence Boulevard (US 74) in Charlotte, Mecklenburg County, North Carolina (Figure 1). This assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Kleinfelder's June 15, 2010 proposal.

NCDOT is proposing to widen US 74 (Independence Boulevard) from NC 24-27 (Albemarle Road) to Idlewild Road and construct a bridge with on and off ramps accessing Idlewild Road. With an exception of a small wedge on the south side of the property, the proposed right-of-way includes most of the Shell property (Figure 2); therefore, NCDOT has determined that the entire property will be taken. 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 74 (Independence Boulevard) from NC 24-27 (Albemarle Road) to Idlewild Road.

### 1.1 Site Description

The proposed right-of-way includes most of the property owned by Sam's Investments. At the time of our site reconnaissance, this parcel was occupied by an active gas station and convenience store (Shell, Facility ID No. 0-014323). A car wash is located in the east side of the property. Four underground storage tanks (USTs) are registered for the facility and are located on the east side of the property between the store and car wash. Two dispenser islands are located on either side of the convenience store (north and south). The site is almost entirely covered by concrete. Site photographs are shown in Appendix A.

#### 1.2 Site Location

The facility is located on the southeast quadrant of East Idlewild Road and East Independence Boulevard. The property is bound to the north by Idlewild Road and beyond by a First Citizens Bank. The property is bound to the west by East Independence Boulevard and beyond by a McDonald's restaurant and a shopping center. The property is bound to the south by an auto dealership and to the east by East Idlewild Road.

### 1.3 NCDENR File Review

Kleinfelder reviewed incident files at the North Carolina Department of Environment and Natural Resources (NDENR) Mooresville Regional Office. No incidents were reported for the property.

#### 2.0 SOIL ASSESSMENT

## 2.1 Geophysical Investigation

Pyramid Environmental & Engineering, P.C (Pyramid) conducted a geophysical investigation of the entire property on June 28 and 30, 2010. Pyramid utilized ground penetration radar (GPR) and electromagnetic (EM) induction technology to identify potential geophysical anomalies and potential USTs at the site. Because a majority of the property was covered with wire mesh reinforced concrete, the EM survey could not be conducted over the entire site; therefore, GPR was used to survey the site. A more detailed description of their scope of work is explained in their Geophysical Investigation Report included in Appendix B. Prior to drilling the soil borings, buried 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, soil samples were collected near the USTs, dispensers, and along the drainage features located on the north and west sides of the Shell property. Kleinfelder met Probe Technology at the Shell property on July 15, 2010; Probe Technology advanced thirteen soil borings (B-1 to B-13) by direct push technology

(DPT). The approximate locations of the borings are shown on Figure 3. Copies of the boring logs are included in Appendix C.

Soil borings were advanced between a depth of five to twelve feet below the ground surface (bgs) depending on their location. Borings B-1 through B-7 were located along the proposed drainage features on the north and west sides of the property. Borings B-8 and B-9 and B-12 and B-13 were located adjacent to the dispenser islands. Borings B-10 and B-11 were located north and south of the UST field. No samples were collected adjacent to the lines between the USTs and dispensers because the exact location of the lines could not be determined due to metal interference in the concrete. Soil samples were collected by driving a macrocore sampler in 5-foot intervals in each boring. Each 5-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.

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 Prism laboratories, a NCDOT contract laboratory for chemical analysis.

#### 3.0 RESULTS

### 3.1 Geophysical Investigation

Pyramid's results indicate that disregarding the active and known USTs, the GPR investigation did not detect unknown metallic USTs within the survey area. Pyramid's report is included in Appendix B.

## 3.2 Soil Sample

Diesel range organics (DRO) and Gasoline range organics (GRO) were detected at concentrations above the State action level of 10 milligrams per kilogram in soil sample B-10 (10-12ft). 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 are present on Parcel 122 adjacent to the north side of the UST field. The contaminated soil covers an area approximately 100 square feet (Figure 4). The contaminated soil extends vertically approximately 10 to 14 feet below ground surface. Based on these dimensions, Kleinfelder estimates that there are approximately 44 cubic yards of impacted soil.

#### 4.0 CONCLUSIONS

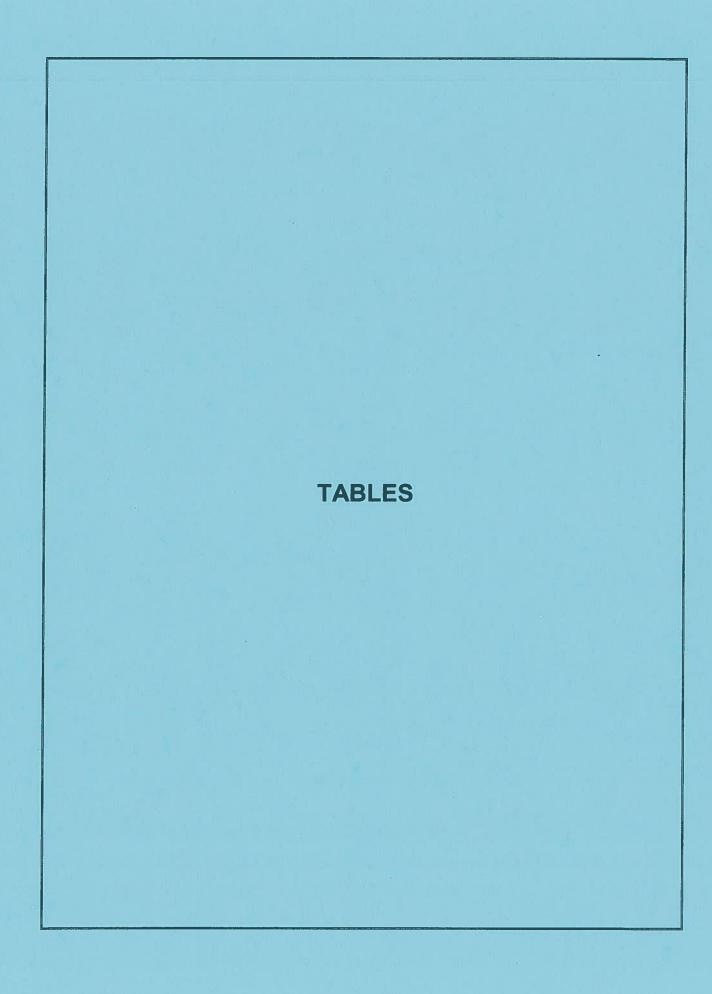
Based on results of the laboratory analysis and field observations, Kleinfelder has the following conclusions:

- Groundwater was not encountered in the soil borings.
- Total DRO and GRO were detected above the State action level in boring B-10.
- Based on the laboratory results, petroleum impacted soil is located at a depth
  of twelve feet bgs in the area of B-10 which is located north of the UST field
  on the east side of the property.
- Approximately 44 cubic yards of contaminated soil was identified north of the UST field. Based on the findings, petroleum contaminated soil would not be encountered unless construction activities reached a depth of at least ten feet below existing grade.
- No petroleum hydrocarbons were detected in samples collected adjacent to the dispensers, or along proposed drainage features on the north and west sides of the property.

#### 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.

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**TABLE 1: SOIL SAMPLE PID RESULTS** 

SAMPLE LOCATION	DEPTH	PID
G/(IVII) EE EGG/(ITGIV	(feet bgs)	READINGS
	0.0 - 2.5	0.3
B-1	2.5 - 5.0	0.2
	5.0 - 7.5	0.5
	7.5 - 10.0	0.2
	0.0 - 2.5	0.7
B-2	2.5 - 5.0	1.7
D-2	5.0 - 7.5	1.6
•	7.5 - 10.0	2.2
	0.0 - 2.5	2.3
B-3	2.5 - 5.0	1.3
<b>B-3</b>	5.0 - 7.5	2.3
	7.5 - 10.0	2.0
	0.0 - 2.5	1.4
B-4	2.5 - 5.0	0.8
D-4	5.0 - 7.5	1.7
	7.5 - 10.0	0.6
	0.0 - 2.5	1.2
D.S.	2.5 - 5.0	1.6
B-5	5.0 - 7.5	0.3
	7.5 - 10.0	0.8
	0.0 - 2.5	0.7
D. G	2.5 - 5.0	0.9
B-6	5.0 - 7.5	1.2
	7.5 - 10.0	5.8
	0.0 - 2.5	1.4
B-7	2.5 - 5.0	1.7
B-/	5.0 - 7.5	1.4
	7.5 - 10.0	2.4
D.O.	0.0 - 2.5	0.3
B-8	2.5 - 5.0	1.3
D.O.	0.0 - 2.5	2.3
B-9	2.5 - 5.0	0.4
	0.0 - 2.5	0.0
	2.5 - 5.0	2.4
B-10	5.0 - 7.5	0.3
	7.5 - 10.0	1.2
	10.0 - 12.0	40.0
	0.0 - 2.5	0.2
	2.5 - 5.0	0.7
B-11	5.0 - 7.5	1.9
	7.5 - 10.0	2.6
	10.0 - 12.0	3.1
5.46	0.0 - 2.5	0.0
B-12	2.5 - 5.0	0.0
- 10	0.0 - 2.5	0.6
B-13	2.5 - 5.0	0.6

Notes:

Samples were collected on July 15, 2010. 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	COLLECTION DATE	DRO	GRO
B-1 (5-7.5ft)	07-15-2010	BRL	BRL
B-2 (7.5-10ft)	07-15-2010	BRL	BRL
B-3 (5-7.5ft)	07-15-2010	BRL	BRL
B-4 (5-7.5ft)	07-15-2010	BRL	BRL
B-5 (2.5-5ft)	07-15-2010	BRL	BRL
B-6 (7.5-10ft)	07-15-2010	BRL	BRL
B-7 (7.5-10ft)	07-15-2010	BRL	BRL
B-8 (2.5-5ft)	07-15-2010	BRL	BRL
B-9 (0-2.5ft)	07-15-2010	BRL	BRL
B-10 (10-12ft)	07-15-2010	11	13
B-11 (10-12ft)	07-15-2010	BRL	BRL
B-12 (2.5-5ft)	07-15-2010	BRL	BRL
B-13 (2.5-5ft)	07-15-2010	BRL	BRL
State Action Level		10	10

### Notes:

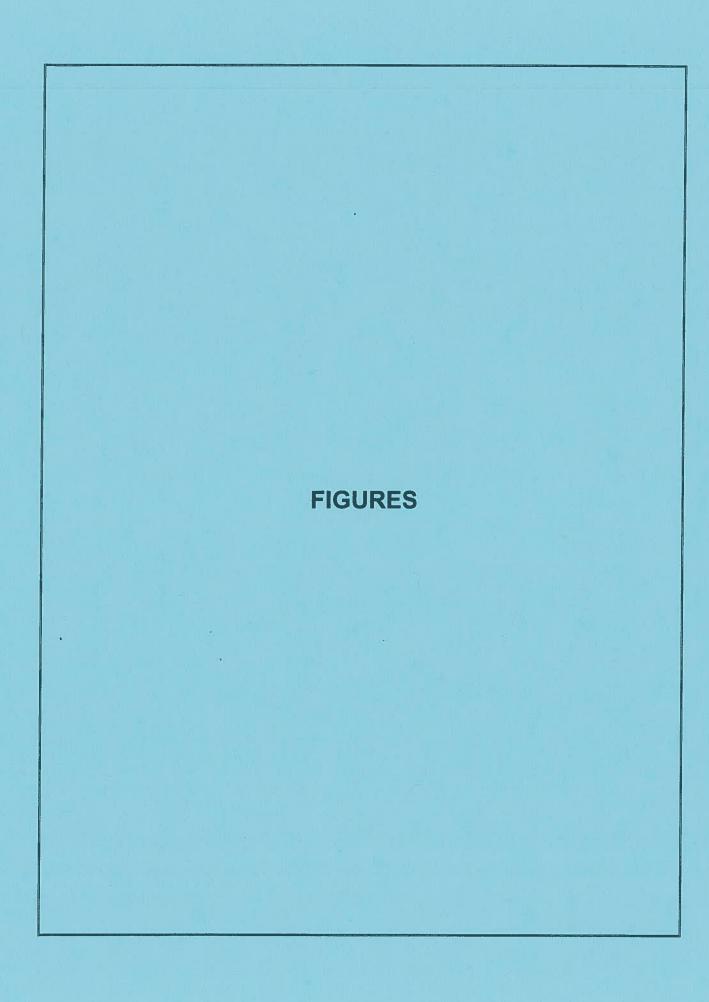
Sample collection depth is indicated in Sample ID, following sequential soil sample number Results presented in milligrams per kilogram, analogous to parts per million

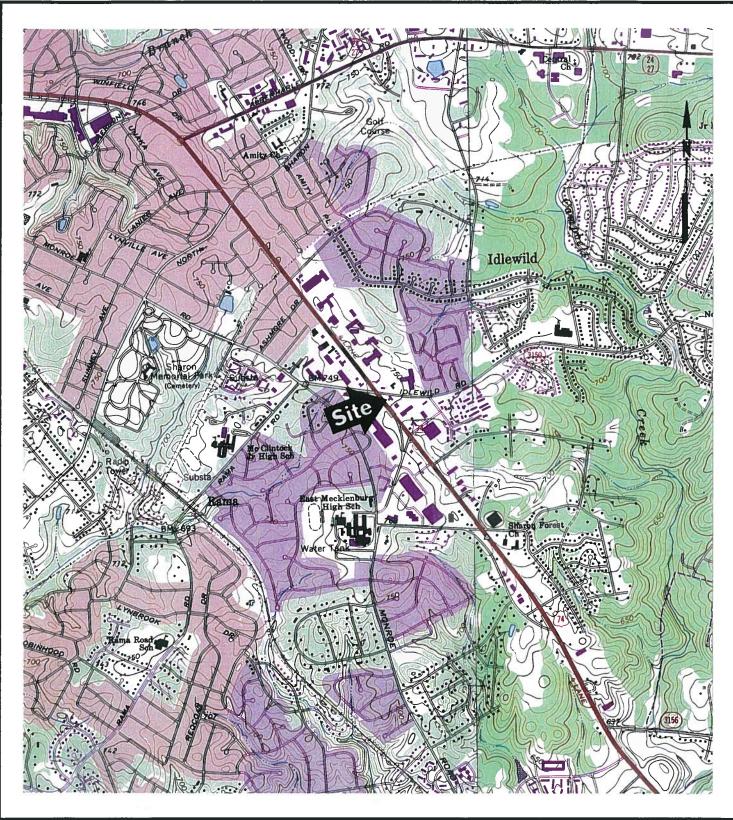
DRO = Diesel Range Organics

GRO = Gasoline Range Organics

BRL = Below reporting limit

**Bold** denotes concentration exceeds the State Action Level







## FIGURE 1 SITE LOCATION MAP

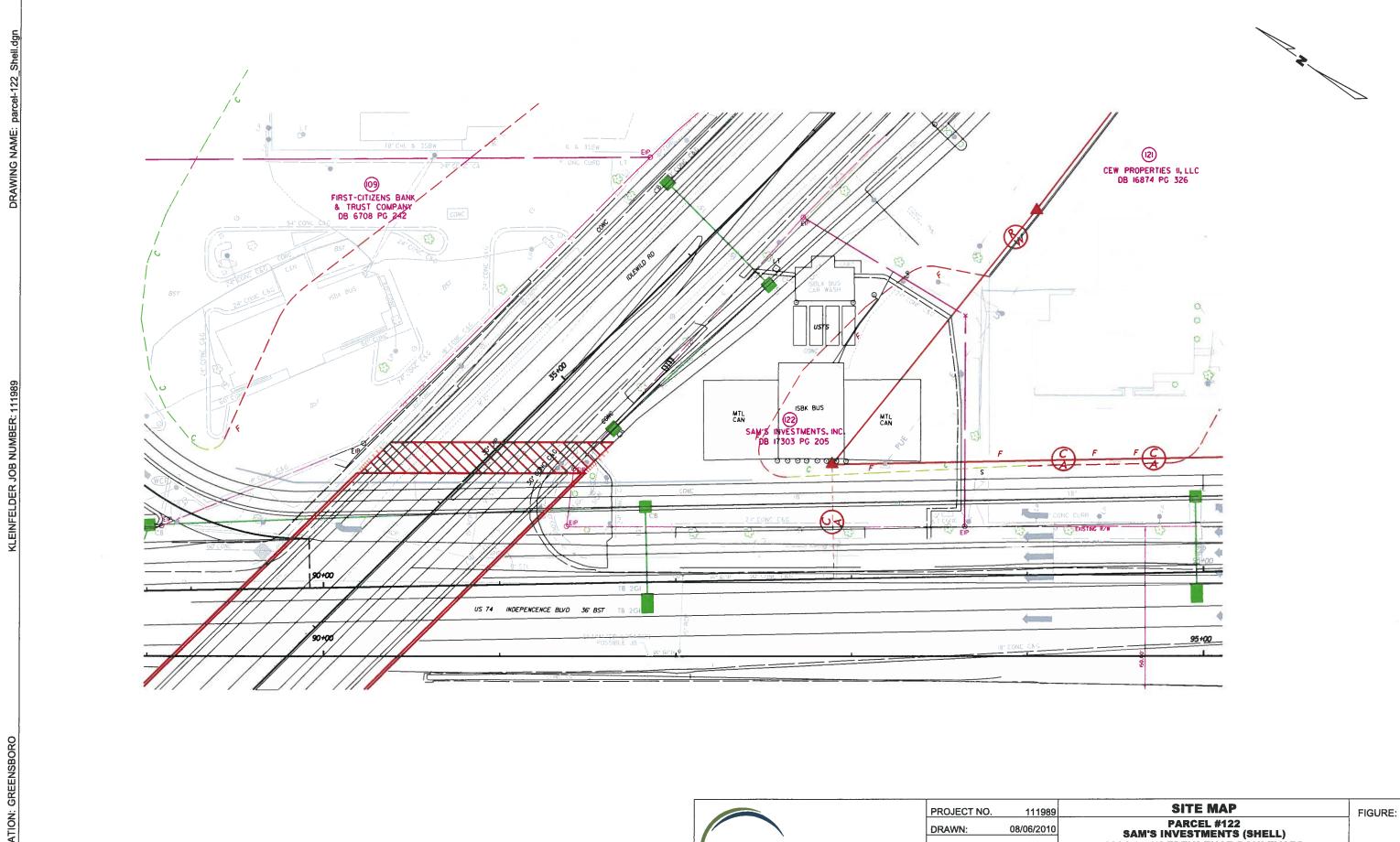
PARCEL # 122- SHELL PROPERTY 5601 EAST INDEPENDENCE BOULEVARD MECKLENBURG COUNTY, NORTH CAROLINA

DATE: July 26, 2010

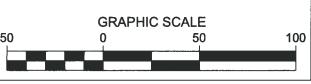
SOURCE: USGS 7.5' Topographic Map, Charlotte East Quadrangle APPROVED BY:

SCALE: 1" to 2,000'

**PROJECT NO. 111989** 

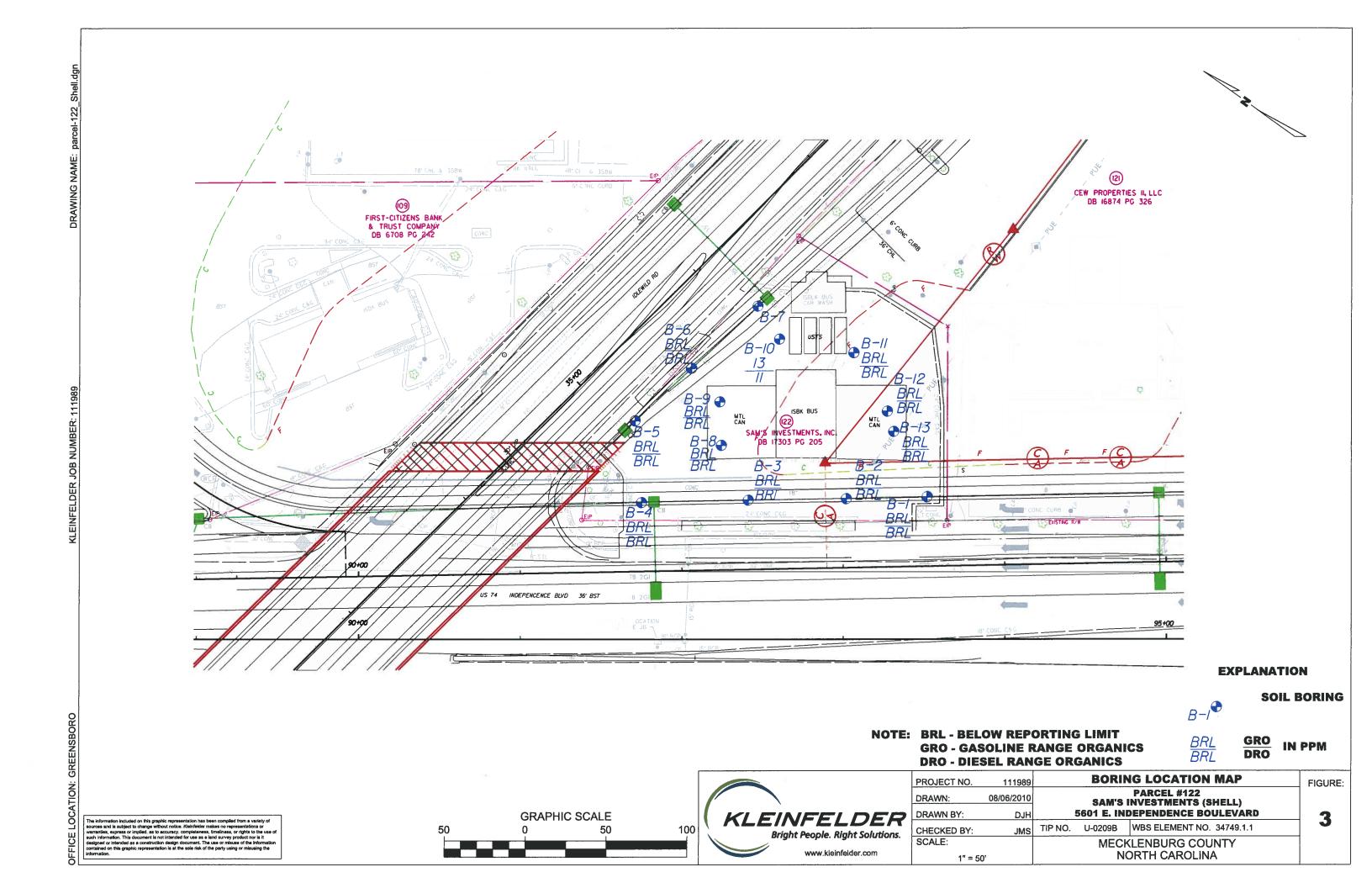


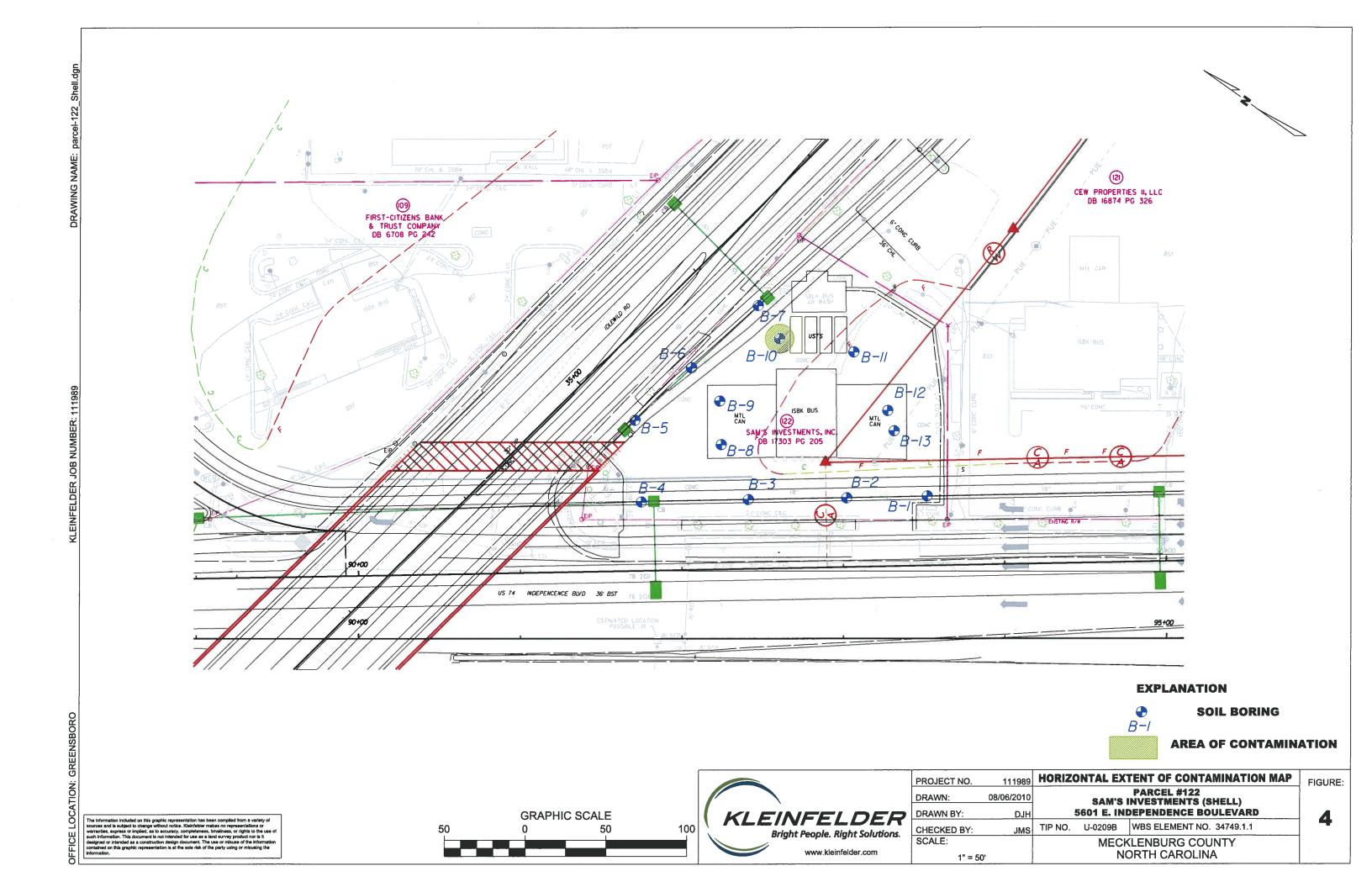
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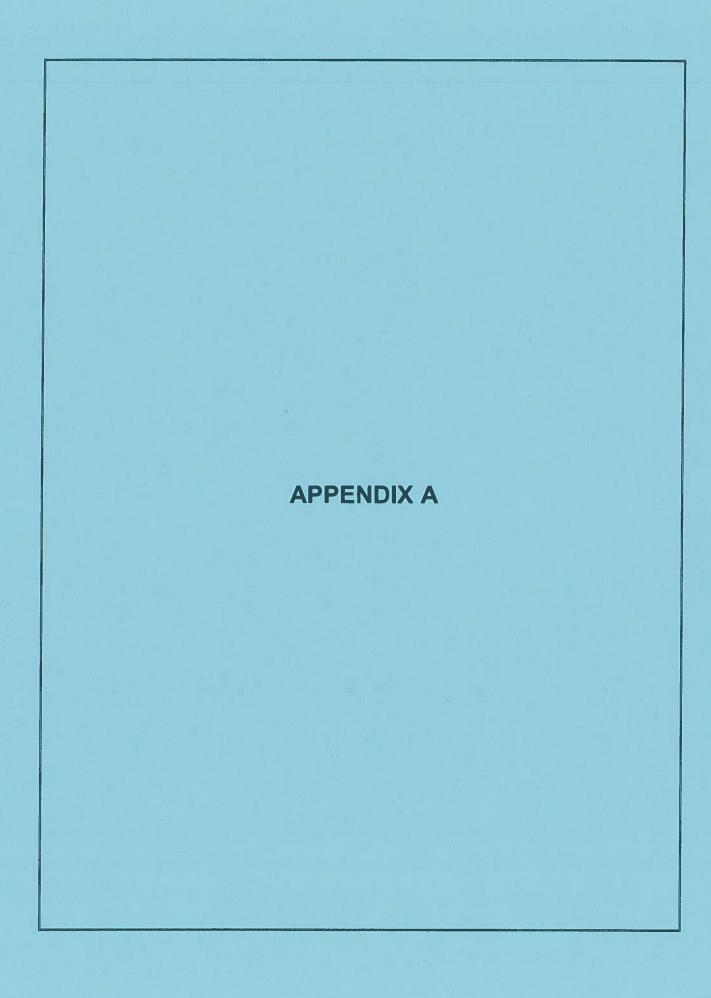




PROJECT NO.	111989			SITE MAP
DRAWN:	08/06/2010		SAM'S	PARCEL #122 INVESTMENTS (SHELL)
DRAWN BY:	DJH		5601 E. IN	DEPENDENCE BOULEVARD
CHECKED BY:	JMS	TIP NO.	U-0209B	WBS ELEMENT NO. 34749.1.1
SCALE:			MECH	KLENBURG COUNTY
1" = 50	0'		N	ORTH CAROLINA







## SITE PHOTOGRAPHS KLEINFELDER PROJECT NO. 111989 PARCEL NO. 122



Photograph 1 – View of the Shell station looking east at the northern-most dispenser islands.



Photograph 2 – View of the Shell station UST field looking south. The car wash is located east of the UST field (left of the photograph).

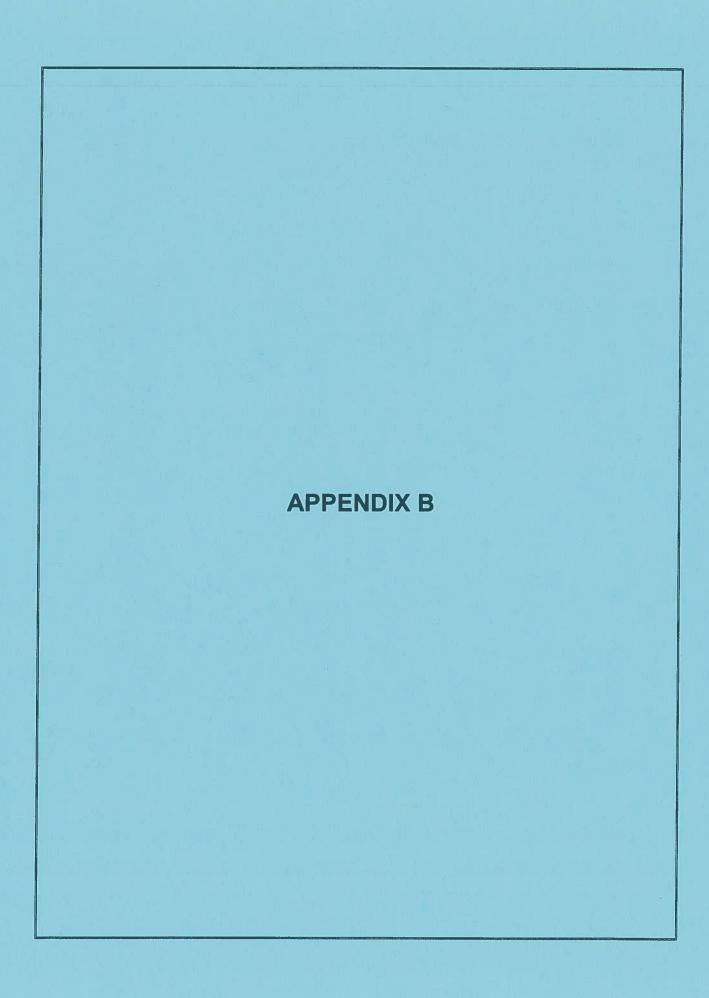
## SITE PHOTOGRAPHS KLEINFELDER PROJECT NO. 111989 PARCEL NO. 122



Photograph 3 – View of the northern portion of the Shell property looking northeast.



Photograph 4 – View of the east side of the Shell property looking southeast.



# **GEOPHYSICAL INVESTIGATION REPORT**

EM61 & GPR SURVEYS

SAM'S INVESTMENTS, INC. PROPERTY
PARCEL 122
Charlotte, North Carolina

August 10, 2010

Report prepared for:

John Stewart P.G.

Kleinfelder

6200 Harris Technology Boulevard

Charlotte, NC 28269

Prepared by

Mark J. De*r*fil. P.G.

Reviewed by: \_ さ

Douglas Canavello, P.G.

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

# Kleinfelder GEOPHYSICAL INVESTIGATION REPORT SAM'S INVESTMENTS, INC. PROPERTY PARCEL 122

Charlotte, North Carolina

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### 1.0 INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Kleinfelder across the Sam's Investments, Inc. property (Parcel 122) located along the northeast corner of the Independence Boulevard and Idlewild Road intersection in Charlotte, North Carolina. Conducted on June 28 and June 30, 2010 the geophysical investigation was performed as part of the North Carolina Department of Transportation (NCDOT) preliminary site assessment project to determine if unknown, metallic underground storage tanks (UST's) were present beneath the site.

Parcel 122 consists of an active Shell gas station, store and car wash facility. The geophysical survey area covered the entire property which had a maximum length and width of 240 feet and 170 feet, respectively. Kleinfelder representative Mr. John Stewart, PE provided site maps during the week of June 1, 2010 that outlined the geophysical survey area of the Sam's Investments, Inc. property and Kleinfelder representative Mr. John Lindemann was on site the morning of June 23, 2010 and identified the perimeter of the geophysical survey area to Pyramid Environmental personnel. Photographs of the geophysical equipment used in this investigation and a portion of Parcel 122 are shown in **Figure 1**.

# 2.0 FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 10-foot by 10-foot survey grid was established across the geophysical survey area (property) 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 June 28, 2010 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.

After the survey grid was established, a two-minute recon across the site with the EM61 metal detector indicated that all of the concrete pavement, which covers most of the site, was reinforced with wire mesh or rods. Consequently, the EM61 metal detection survey was limited to the grass-covered surfaces located across the westerly portion of the site immediately along Independence Boulevard. All of the EM61 data were digitally collected at approximately 0.8 foot intervals along northwesterly-southeasterly (Y-axis) 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 June 30, 2010 across the remaining portions of the site containing concrete pavement and 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 Y-axis survey lines, spaced 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.

Contour plots of the EM61 bottom coil and differential results are presented in Figures 2 and 3, 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 solid purple lines in Figures 2 and 3 represent the locations of the GPR survey lines acquired at Parcel 122.

Preliminary geophysical results obtained from Parcel 122 were reported to Mr. Stewart on July 14, 2010.

## 3.0 DISCUSSION OF RESULTS

The linear, EM61 bottom coil anomalies recorded along the edge of Idlewild Road and Independence Boulevard that intersect grid coordinates X=15 Y=55, X=30 Y=62 and X=120 Y=15 are probably in response to buried utility lines. The high amplitude bottom coil anomalies or negative differential anomalies intersecting grid coordinates X=55 Y=75 and X=130 Y=40 are probably in response to steel reinforced concrete. Similarly, the negative differential anomalies centered near grid coordinates X=20 Y=40, X=32 Y=16, X=40 Y=50, and X=93 Y=15 are probably in response to known surface objects.

GPR data acquired across the concrete UST pad centered near grid coordinates X=165 Y=140 confirms the presence of the four active USTs buried approximately 2.5 feet below the concrete surface. The axes of the four USTs lie in a northeast-southwest orientation and are easily identified by the visible UST vent/fill/valve covers. The image from GPR survey line Y=145 showing the GPR response from the four USTs is presented in **Figure 4**. The high amplitude GPR reflections (reflections shaded in white) that are in response to the active USTs suggest a metallic composition.

Although buried lines and conduits were detected by the GPR investigation, the data suggest that the remaining portion of Parcel 122 (excluding the active UST pad) does not contain unknown, metallic USTs.

# 4.0 **SUMMARY & CONCLUSIONS**

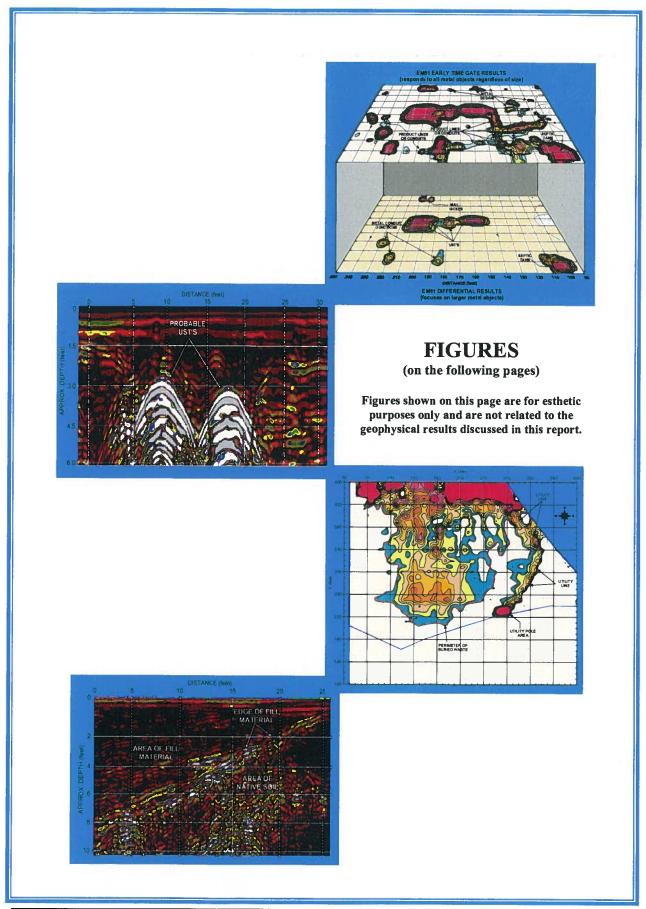
Our evaluation of the EM61 and GPR data collected across the Sam's Investments, Inc. property (Parcel 122) located in Charlotte, North Carolina, provides the following summary and conclusions:

The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the surveyed portions of the site.

- The linear, EM61 bottom coil anomalies recorded along the edge of Idlewild Road and Independence Boulevard that intersect grid coordinates X=15 Y=55, X=30 Y=62 and X=120 Y=15 are probably in response to buried utility lines
- GPR data acquired across the concrete UST pad centered near grid coordinates X=165 Y=140 confirms the presence of the four active USTs buried approximately 2.5 feet below the concrete surface. The axes of the four USTs lie in a northeast-southwest orientation and are easily identified by the visible UST vent/fill/valve covers.
- Although buried lines and conduits were detected by the GPR investigation, the data suggest that the remaining portion of Parcel 122 (excluding the active UST pad) does not contain unknown, metallic USTs.

## **5.0 LIMITATIONS**

EM61 and GPR surveys have been performed and this report prepared for Kleinfelder 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. Excluding the active (known) USTs, the EM61 and GPR results obtained for this project have not conclusively determined that the site does not contain unknown, buried metallic USTs, but that none were detected.



The photograph shows the Geonics EM61 metal detector that was used to conduct the metal detection survey across Parcel 122 on June 28, 2010.





The photographs show the SIR-2000 GPR system equipped with a 400 MHz antenna that were used to conduct the ground penetrating radar investigation at Parcel 122 on June 30, 2010.



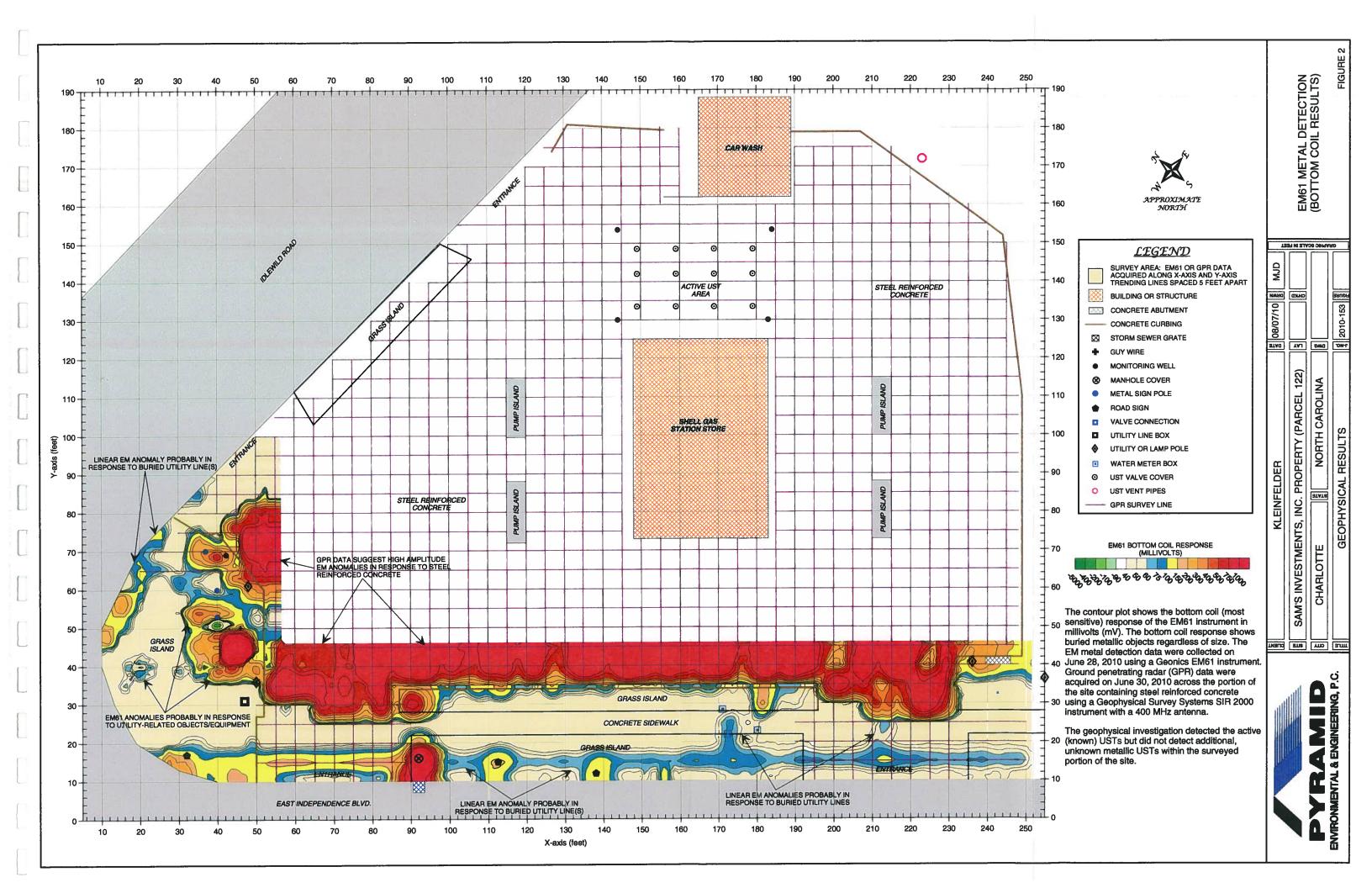
The photograph shows the western portion of the Sam's Investments, Inc. property (Parcel 122) located at the intersection of Independence Boulevard and Idlewild Road in Charlotte, North Carolina. The photograph is viewed in a northeasterly direction.

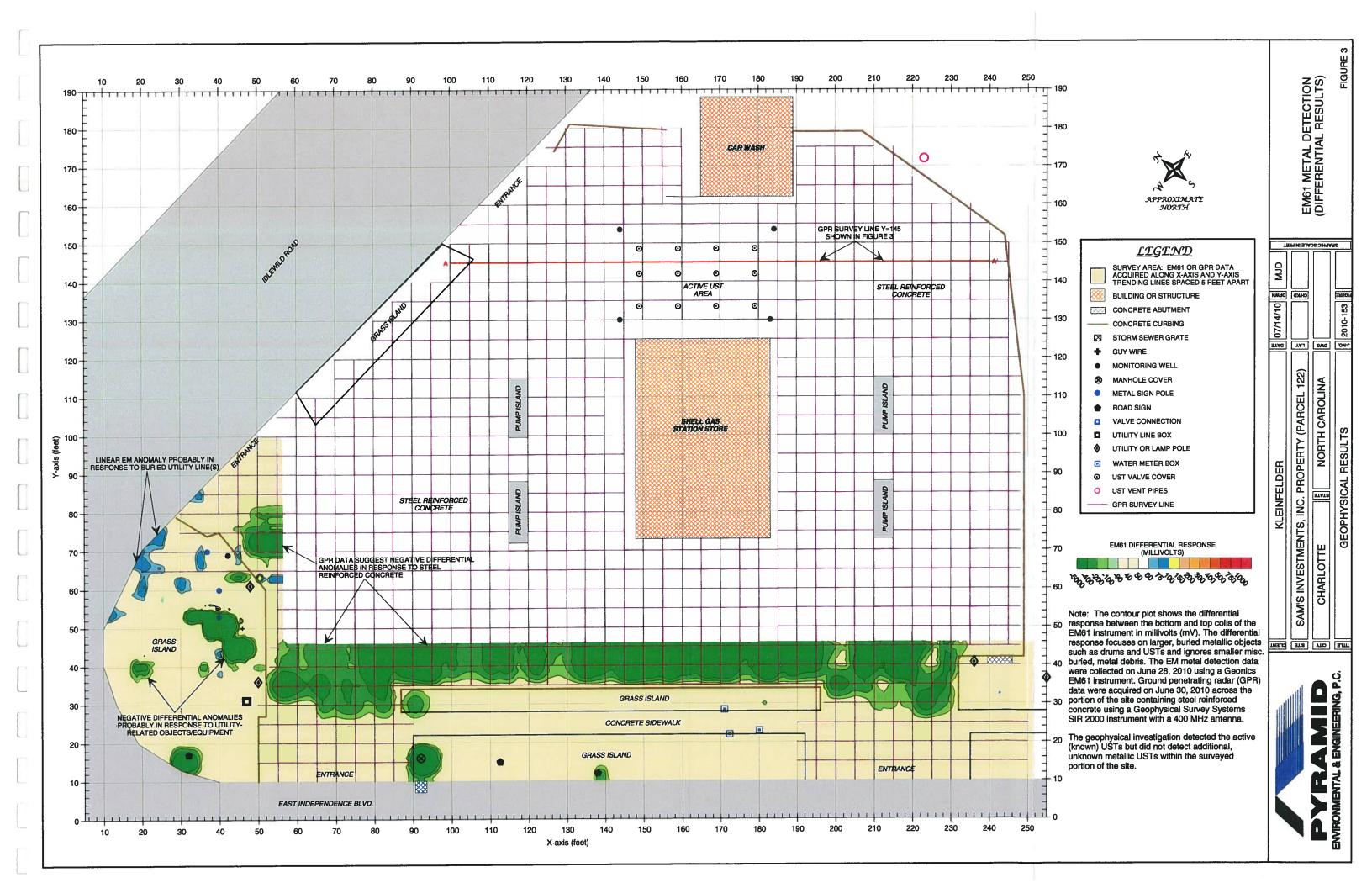


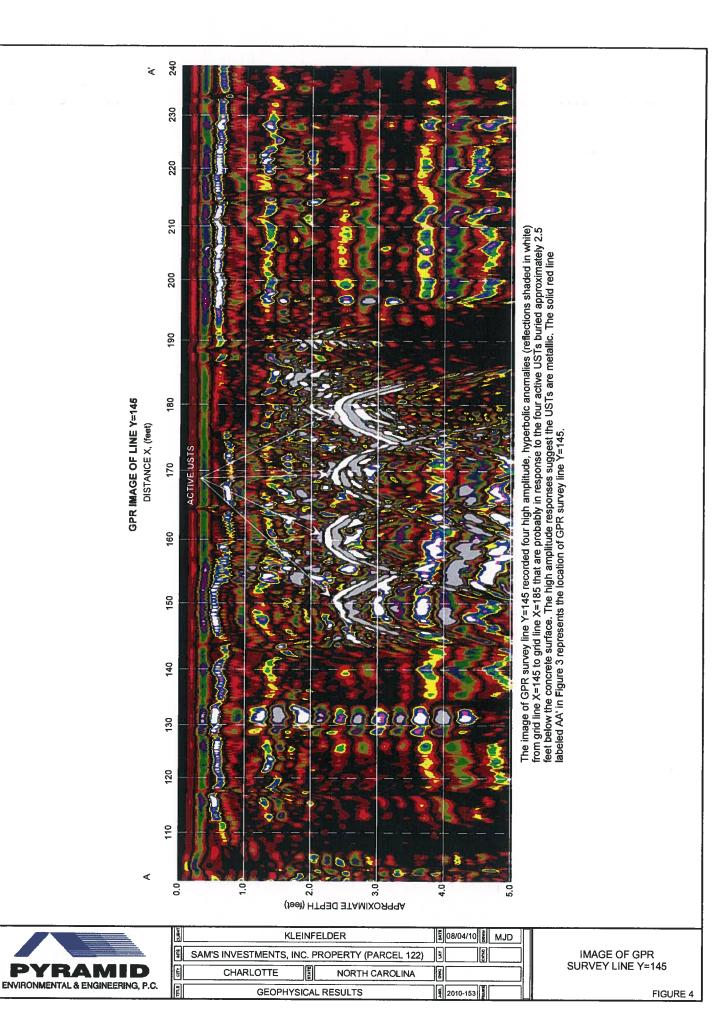
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È	CHARLOTTE NORTH CAROLINA	8
Ē	GEOPHYSICAL RESULTS	2010-153

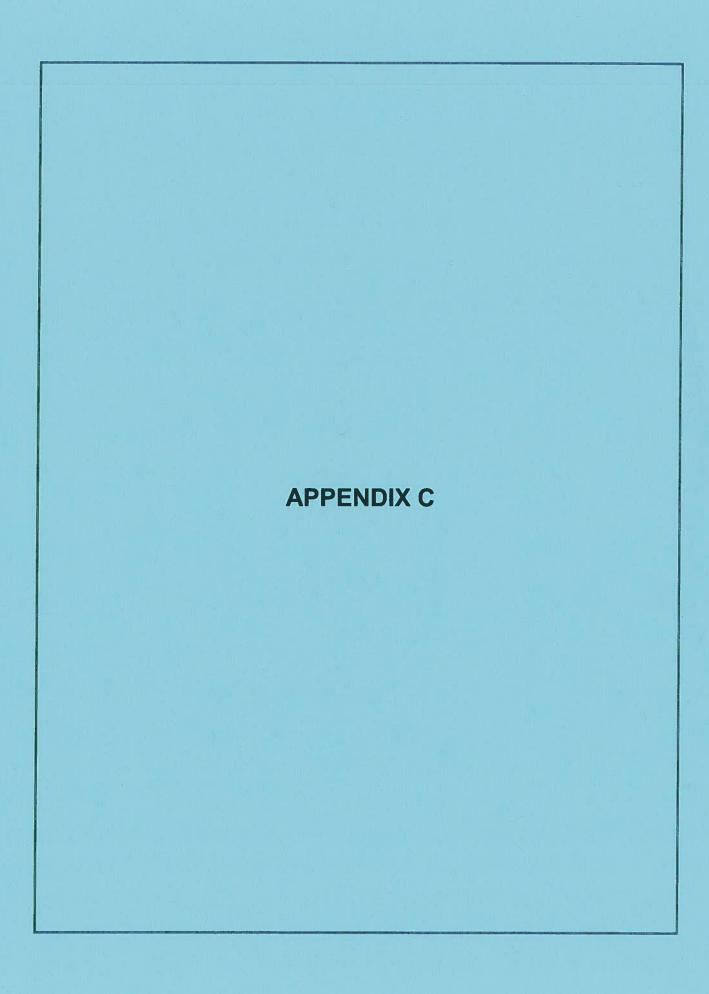
GEOPHYSICAL EQUIPMENT & SITE PHOTOGRAPHS

FIGURE 1









Project Number	NCDOT Name U- r 111989 n Parcel			on		Drill Contractor Probe Techology  Drill Method 2 inch Direct Push  Drilling Started 7/15/10 Ended 7/15/10 Total Depth 10.0  Logged By T. Stewart  Drilling Started Depth To Water	<b>IG B-</b> 1
DEPTH	SAMPLE NO.	BLOWS/FT	PID	nscs	LITHOLOGY	DESCRIPTION	DEPTH
- - - 5—			0.3	CL		Brown, Gray, Lean CLAY, Hard, Dry, No Odor	-
10	ss		0.5	CL		Light Yellowish Brown, Gray, Lean CLAY, Hard, Dry, No Odor	5
-						Boring Terminated at 10 feet in RESIDUAL	10
15—							- 15 -
20-							- 20 -
25-							- 25
30-							- - 30 - -
		einfeld				Remarks Sample B-1 collected from 5-7.5 ft. submitted for laboratory analysis	ysis.
KLEINFE	Gr Te	eenst lepho	limore boro, N ne: 33 6-668-	IC 27 36-66	409 8-00		

Project Number	NCDOT Name U- r 111989 n Parcel 1			on	222	Drill Contractor Probe Techology  Drill Method 2 inch Direct Push  Drilling Started 7/15/10 Ended 7/15/10  Logged By T. Stewart  LOG OF BORIN  SHEE  Elevation —  Total Depth 10.0  Depth To Water	<b>G B-2</b>
DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID	SOSO	LITHOLOGY	DESCRIPTION	DEPTH
-			0.7	CL		Red Brown, Gray, Lean CLAY, Hard, Dry, No Odor	-
5	ss		1.6	CL		Yellowish Brown, Gray, Lean CLAY, Hard, Dry, Odor	5
10						Boring Terminated at 10 feet in RESIDUAL	- - - - - - - - - -
20-							- 20
25 - - -							- 25 - -
30-							- 30 - - - -
KLEINFE	31 Gr Te	eenst lepho	der limore ooro, N ne: 33	IC 27 36-66	7409 88-00		lysis.

Project Number	NCDOT Name U- 111989		-	on		Drill Contractor Probe Techology  Drill Method 2 inch Direct Push  Drilling Started 7/15/10 Ended 7/15/10 Total Depth 10.0  Logged By T. Stewart  Drilling Started Probe Techology  Elevation  Total Depth 10.0  Depth To Water	IG B-3
DEPTH	SAMPLE NO.	BLOWS/FT	PID	nscs	LITHOLOGY	DESCRIPTION	DEPTH
5	SS		2.3	CL	7	Red Brown, Yellowish Brown, Lean CLAY, Hard, Dry, Petroleum Odor  Boring Terminated at 10 feet in RESIDUAL	- 5 - 10 - 15
20—							- - - - - - - - - - - -
30-							- - - - -
KLEINFE	31 Gr Te	eenst lepho	der limore poro, N ne: 33 6-668-	IC 27 36-66	7409 58-00		rsis.

Project Number	NCDOT Name U- 111989		•	on		Drill Contractor Probe Techology  Drill Method 2 inch Direct Push  Drilling Started 7/15/10 Ended 7/15/10  Logged By T. Stewart  LOG OF BORIN SHEE  Elevation  Total Depth 10.0  Depth To Water	IG B-4
DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID	nscs	LITHOLOGY	DESCRIPTION	DEPTH
5—	ss		1.4 0.8 1.7	CL		Red Brown, Gray, Lean CLAY, Hard, Dry, No Odor  Boring Terminated at 10 feet in RESIDUAL	- 5
15— - - - - 20—							- - - 15 - - - - 20
25—							- - - 25 - - - - - - 30
30-		einfeld				Remarks Sample B-4 collected from 5-7.5 ft. submitted for laboratory analy	-
KLEINFE	31 Gr Te	3 Gal eenst lepho	der limore ooro, N one: 33 6-668-	IC 27 36-66	7409 68-00		rsis.

Project Number	NCDOT Name U- 111989	<del></del>	-	on		Drill Contractor Probe Techology  Drill Method 2 inch Direct Push  Drilling Started 7/15/10 Ended 7/15/10  Logged By T. Stewart  LOG OF BORIN  SHEE  Elevation  Total Depth 10.0  Depth To Water	<b>IG B-5</b>
DEPTH	SAMPLE NO.	BLOWS/FT	PID	SOSU	LITHOLOGY	DESCRIPTION	DEPTH
_			1.2			Red Brown, Gray, Lean CLAY, Hard, Dry, No Odor	
5—	ss		1.6	CL			-
-			0.3				-5
-			0.8				-
10-						Boring Terminated at 10 feet in RESIDUAL	10
-							-
15-							15
-							-
20-							- 20
-							-
25—							25
-							- 25
-							-
30-							- 30 -
		ĺ					-
30 —	31 Gr Te	eenstelepho	der llimore boro, N one: 33 86-668-	IC 27 36-66	7409 88-00	<b>[</b> ]	ysis.

Client NCDOT Project Name U-0209B  Number 111989  Location Parcel 122-Shell Station	Drill Contractor Probe Techology  Drill Method 2 inch Direct Push  Drilling Started 7/15/10 Ended 7/15/10  Logged By T. Stewart	LOG OF BORING B-6 SHEET 1 OF 1 Elevation Total Depth _10.0  Depth To Water
DEPTH SAMPLE LIGHT SAMPLE PID SON PPM PPM PPM PPM PPM PPM PPM PPM PPM PP	DESCRIPTION	DEPTH FEET
5	Brown, Yellowish Brown, Lean CLAY, Hard, Dry, No Od Boring Terminated at 10 feet in RE	-5
Kleinfelder 313 Gallimore Dairy Road Greensboro, NC 27409 Telephone: 336-668-0093 Fax: 336-668-3868	Remarks Sample B-6 collected from 7.5  See key sheet for symbols and abbreviations user	

Client Number	ame <u>U</u> -		= /1		72	Drill Contractor Probe Techology  Drill Method 2 inch Direct Push  Drilling Started 7/15/10 Ended 7/15/10 Total Depth 10.0	ING B-
Location	Parcel	122-Sh	ell Statio	n		Logged By T. Stewart Depth To Water	
DEPTH :	SAMPLE NO.	BLOWS/FT	PID	nscs	LITHOLOGY	DESCRIPTION	ОЕРТН
_			1.4			Red Brown, Yellowish Brown, Lean CLAY, Hard, Dry, Petroleum Odor	
5	_		1.7	CL			- 5
- - - -	ss	5	2.4				-
10					/////	Boring Terminated at 10 feet in RESIDUAL	10
-							
15							— 15
20-							- - - 20
25					-		- - - 25
30-							- - 30
-							-
KLEINFEL Bugas hayar da	31 Gi Te	reensl elepho	der Ilimore boro, N one: 33 86-668-	IC 27 36-66	7409 88-00		nalysis.

Client _	NCDOT					Drill Contractor Probe Techology	LOG OF	BORING B-8 SHEET 1 OF 1
Project	Name U	-0209B	· · · · · · · · · · · · · · · · · · ·			Drill Method 2 inch Direct Push Elevati	on	
Number	r <u>111989</u>		-			Drilling Started 7/15/10 Ended 7/15/10 Total D	epth 5.0	
Location	Parcel	122-Sh	ell Statio	on		Logged By T. Stewart Depth	To Water	
DEPTH FEET	SAMPLE NO.	BLOWS/FT	PID	nscs	LITHOLOGY	DESCRIPTION		DEPTH
_			0.3			Red Brown, Yellowish Brown, Lean CLAY, Hard, Dry, No Odor		_
-			0.5	CL				-
-	ss		1.3					
5—				-		Boring Terminated at 5 feet in RESIDUAL		5
_								-
_								[
40								-
10-								<del>-</del> 10
_								
_								-
15—				i				<del>-</del> 15
_								
-								-
20—								- - 20
-								- 20
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_								-
25—								- 25
_								-
_								-
30-								- 30
-								-
-								
-								Ļ
	KI	einfeld	der	De:-	, D-	Remarks Sample B-8 collected from 2.5-5 ft. subm	nitted for labo	ratory analysis.
KLEINFE	LEER GI	reensl	llimore boro, N	IC 27	7409			
	Fa	eepno x: 33	one: 33 36-668-	-3868	08-U( 3	See key sheet for symbols and abbreviations used above.		
_						Coo may arrost for symbols and appreviations used above.		

Project Number	NCDOT Name U- 111989 Parcel			on		Drill Contractor Probe Techology  Drill Method 2 inch Direct Push  Drilling Started 7/15/10 Ended 7/15/10  Logged By T. Stewart  LOG OF BORII  SHE  Elevation  Total Depth 5.0  Depth To Water	NG B-9 ET 1 OF 1
DEPTH	SAMPLE NO.	BLOWS/FT	FID	nscs	LITHOLOGY	DESCRIPTION	DEPTH
5	ss		2.3	CL		ed Brown, Yellowish Brown, Lean CLAY, Hard, Dry, Petroleum Odor  Boring Terminated at 5 feet in RESIDUAL	5
- 10 - -							- 10 -
15-							- - 15 - - -
20-							- 20 - - - - - - 25
30-							- - - - 30
-							-
KLEINFE Bright heape	31 Gr Te	eensb lepho	ler limore loro, N ne: 33 6-668-	IC 27 36-66	'409 88-00		lysis.





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

# **Case Narrative**

07/23/2010

Kleinfelder SE, Inc. (NCDOT Project)
John Stewart
c/o Trigon Engineering/Kleinfelder, 313 Gallimore Dairy Rd.
Greensboro, NC 27409

Project: NCDOT Parcel #122 Project No.: WBS# 34749.1.1 Lab Submittal Date: 07/15/2010 Prism Work Order: 0070465

This data package contains the analytical results for the project identified above and includes a Case Narrative, Sample Results and Chain of Custody. Unless otherwise noted, all samples were received in acceptable condition and processed according to the referenced methods.

Data qualifiers are flagged individually on each sample. A key reference for the data qualifiers appears at the end of this case narrative.

Please call if you have any questions relating to this analytical report.

Respectfully,

PRISM LABORATORIES, INC.

**VP Laboratory Services** 

Reviewed By

Rosti a. Jones

### **Data Qualifiers Key Reference:**

A Surrogate recovered above established QC limits.

BRL Below Reporting Limit
MDL Method Detection Limit

RPD Relative Percent Difference

\* Results reported to the reporting limit. All other results are reported to the MDL with values between MDL and reporting limit indicated with a J.



# **Sample Receipt Summary**

07/23/201

Prism Work Order: 0070465

Client Sample ID	Lab Sample ID	Matrix	Date Sampled	Date Received
B1-(5-7.5)	0070465-01	Solid	07/15/10	07/15/10
B2-(7.5-10)	0070465-02	Solid	07/15/10	07/15/10
B3-(5-7.5)	0070465-03	Solid	07/15/10	07/15/10
B4-(5-7.5)	0070465-04	Solid	07/15/10	07/15/10
B5-(2.5-5)	0070465-05	Solid	07/15/10	07/15/10
B6-(7.5-10)	0070465-06	Solid	07/15/10	07/15/10
B7-(7.5-10)	0070465-07	Solid	07/15/10	07/15/10
B8-(2.5-5)	0070465-08	Solid	07/15/10	07/15/10
B9-(0-2.5)	0070465-09	Solid	07/15/10	07/15/10
B10-(10-12)	0070465-10	Solid	07/15/10	07/15/10
B11-(10-12)	0070465-11	Solid	07/15/10	07/15/10
B12-(2.5-5)	0070465-12	Solid	07/15/10	07/15/10
B13-(2.5-5)	0070465-13	Solid	07/15/10	07/15/10

Samples received in good condition at 6.0 degrees C unless otherwise noted.







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B1-(5-7.5) Prism Sample ID: 0070465-01 Prism Work Order: 0070465 Time Collected: 07/15/10 08:36 Time Submitted: 07/15/10 15:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID									,
Diesel Range Organics	BRL	mg/kg dry	9.7	1.6	1	*8015C	7/21/10 15:28	B JMV	P0G0380
			Surrogate			Recov	ery	Control	Limits
			o-Terphenyl			74	1 %	49-124	
Gasoline Range Organics by GC/FII	ס								
Gasoline Range Organics	BRL	mg/kg dry	5.5	0.71	50	*8015C	7/21/10 17:4	1 HPE	P0G0429
			Surrogate	7,5		Recov	ery	Control	Limits
			a,a,a-Trifluor	otoluene		120	0 %	55-129	
General Chemistry Parameters									
% Solids	71.9	% by Weight	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B2-(7.5-10) Prism Sample ID: 0070465-02 Prism Work Order: 0070465 Time Collected: 07/15/10 08:50

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID									
Diesel Range Organics	BRL	mg/kg dry	8.5	1.4	1	*8015C	7/21/10 16:04	JMV	P0G0380
			Surrogate			Recov	ery	Control	Limits
			o-Terphenyl			80	) %	49-124	
Gasoline Range Organics by GC/FID									
Gasoline Range Organics	BRL	mg/kg dry	4.5	0.59	50	*8015C	7/21/10 18:14	HPE	P0G0429
			Surrogate			Recov	ery	Control	Limits
			a,a,a-Trifluor	otoluene		96	%	55-129	
General Chemistry Parameters									
% Solids	81.9	% by Weight	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B3-(5-7.5) Prism Sample ID: 0070465-03 Prism Work Order: 0070465

Time Collected: 07/15/10 09:18 Time Submitted: 07/15/10 15:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID								·	
Diesel Range Organics	BRL	mg/kg dry	9.1	1.5	1	*8015C	7/21/10 16:39	JMV	P0G0380
			Surrogate			Reco	very	Control	Limits
			o-Terphenyl			9:	3 %	49-124	
Gasoline Range Organics by GC/FIE									
Gasoline Range Organics	BRL	mg/kg dry	7.4	0,96	50	*8015C	7/21/10 18:46	HPE	P0G0429
			Surrogate			Reco	very	Control	Limits
			a,a,a-Trifluor	otoluene		10	5 %	55-129	
General Chemistry Parameters									
% Solids	76.6	% by Welght	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B4-(5-7.5) Prism Sample ID: 0070465-04 Prism Work Order: 0070465 Time Collected: 07/15/10 09:35 Time Submitted: 07/15/10 15:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID						·			
Diesel Range Organics	BRL	mg/kg dry	9.3	1.5	1	*8015C	7/21/10 17:15	JM∨	P0G0380
-			Surrogate			Recov	very	Control	Limits
			o-Terphenyl			78	3 %	49-124	
Gasoline Range Organics by GC/FID									
Gasoline Range Organics	BRL	mg/kg dry	6.1	0.80	50	*8015C	7/21/10 19:17	HPE	P0G0429
			Surrogate			Recov	ery	Control I	Limits
			a,a,a-Trifluor	otoluene		96	%	55-129	
General Chemistry Parameters									
% Solids	74.7	% by Welght	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B5-(2.5-5) Prism Sample ID: 0070465-05 Prism Work Order: 0070465 Time Collected: 07/15/10 09:48

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID							4		
Diesel Range Organics	BRL	mg/kg dry	8.6	1.4	1	*8015C	7/21/10 17:5	1 JMV	P0G0380
			Surrogate			Recov	very	Control	Limits
			o-Terphenyi			90	%	49-124	
Gasoline Range Organics by GC/FII	D								
Gasoline Range Organics	BRL	mg/kg dry	5.7	0.74	50	*8015C	7/21/10 19:4	9 HPE	P0G0429
			Surrogate			Recov	<i>е</i> гу	Control	Limits
			a,a,a-Trifluo	rotoluene		10	1 %	55-129	
General Chemistry Parameters									
% Solids	80.7	% by Weight	0.100	0.100	1	*SM2540 G	7/21/10 15:3	) JAB	P0G0437







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Weight

Sample Matrix: Solid

Client Sample ID: B6-(7.5-10) Prism Sample ID: 0070465-06 Prism Work Order: 0070465 Time Collected: 07/15/10 10:11 Time Submitted: 07/15/10 15:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID									
Diesel Range Organics	BRL	mg/kg dry	9.2	1.5	1	*8015C	7/21/10 18:2	5 JMV	P0G0380
			Surrogate			Recov	rery	Control	Limits
			o-Terphenyl			81	%	49-124	
Gasoline Range Organics by GC/FID									
Gasoline Range Organics	BRL	mg/kg dry	5.7	0.74	50	*8015C	7/21/10 20:20	) HPE	P0G0429
		18 74727837	Surrogate			Recov	ery	Control	Limits
			a,a,a-Trifluor	otoluene		10:	3 %	55-129	
General Chemistry Parameters									
% Solids	75.9	% by	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B7-(7.5-10) Prism Sample ID: 0070465-07 Prism Work Order: 0070465 Time Collected: 07/15/10 10:25

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID				·					-
Diesel Range Organics	BRL	mg/kg dry	9.2	1.5	1	*8015C	<b>7</b> /21/10 19:38	JMV	P0G0380
			Surrogate			Recov	ery	Control	Limits
			o-Terphenyi			95	i %	49-124	1
Gasoline Range Organics by GC/FID									
Gasoline Range Organics	BRL	mg/kg dry	6.2	0.80	50	*8015C	7/21/10 21:55	HPE	P0G0429
			Surrogate			Recov	very	Control	Limits
			a,a,a-Trifluor	otoluene		93	%	55-129	
General Chemistry Parameters									**
% Solids	76.4	% by Weight	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B8-(2.5-5) Prism Sample ID: 0070465-08 Prism Work Order: 0070465 Time Collected: 07/15/10 11:03 Time Submitted: 07/15/10 15:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID		· · · · ·							-
Diesel Range Organics	BRL	mg/kg dry	9.2	1.5	1	*8015C	7/21/10 20:13	JMV	P0G0380
			Surrogate			Recov	ery	Control	Limits
			o-Terphenyl			89	%	49-124	
Gasoline Range Organics by GC/FII	D								
Gasoline Range Organics	BRL	mg/kg dry	7.2	0.93	50	*8015C	7/21/10 22:27	HPE	P0G0429
			Surrogate			Recov	ery	Control	Limits
			a,a,a-Trifluoi	rotoluene		95	· %	55-129	
General Chemistry Parameters									
% Solids	75.8	% by Weight	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437



# **Laboratory Report**

07/23/2010

Kleinfelder SE, Inc. (NCDOT Project)

Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B9-(0-2.5) Prism Sample ID: 0070465-09 Prism Work Order: 0070465

Time Collected: 07/15/10 11:30 Time Submitted: 07/15/10 15:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID									
Diesel Range Organics	BRL	mg/kg dry	9.2	1.5	1	*8015C	7/21/10 20:49	JMV	P0G0380
			Surrogate			Recov	ery	Control	Limits
			o-Terphenyl			85	%	49-124	
Gasoline Range Organics by GC/FID	•								
Gasoline Range Organics	BRL	mg/kg dry	5.9	0.77	50	*8015C	7/21/10 22:59	HPE	P0G0429
	4		Surrogate			Recov	ery	Control I	Limits
			a,a,a-Trifluor	otoluene		12	1 %	55-129	
General Chemistry Parameters									
% Solids	75.9	% by Weight	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B10-(10-12) Prism Sample ID: 0070465-10 Prism Work Order: 0070465 Time Collected: 07/15/10 13:20 Time Submitted: 07/15/10 15:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID									
Diesel Range Organics	11	mg/kg dry	9.4	1.5	1	*8015C	7/21/10 21:24	JMV	P0G038
			Surrogate			Reco	very	Control	Limits
			o-Terphenyl			88	3 %	49-124	
Gasoline Range Organics by GC/F	FID .								
Gasoline Range Organics	13	mg/kg dry	6.5	0.85	50	*8015C	7/21/10 23:30	HPE	P0G0429
		-	Surrogate			Recov	very	Control	Limits
			a,a,a-Trifluor	otoluene		96	i %	55-129	
General Chemistry Parameters									
% Solids	74.1	% by Weight	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Weight

Sample Matrix: Solid

Client Sample ID: B11-(10-12) Prism Sample ID: 0070465-11 Prism Work Order: 0070465 Time Collected: 07/15/10 14:00

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/F	D								
Diesel Range Organics	BRL	mg/kg dry	9.4	1.5	1	*8015C	7/21/10 22:35	JMV	P0G0380
			Surrogate			Reco	very	Control	Limits
			o-Terphenyl			7:	1 %	49-124	
Gasoline Range Organics by GC	/FID								
Gasoline Range Organics	BRL	mg/kg dry	6.8	0.88	50	*8015C	7/22/10 0:02	HPE	P0G0429
			Surrogate			Reco	/ery	Control	Limits
			a,a,a-Trifluor	otoluene		12	5 %	55-129	
General Chemistry Parameters									
% Solids	74.0	% by	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437



# **Laboratory Report**

Kleinfelder SE, Inc. (NCDOT Project)

Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B12-(2.5-5) Prism Sample ID: 0070465-12 Prism Work Order: 0070465

Time Collected: 07/15/10 14:10 Time Submitted: 07/15/10 15:55

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID									
Diesel Range Organics	BRL	mg/kg dry	8.5	1.4	1	*8015C	7/21/10 22:00	JMV	P0G0380
			Surrogate			Reco	very	Control	Limits
			o-Terphenyl			87	7 %	49-124	-
Gasoline Range Organics by GC/FID									
Gasoline Range Organics	BRL	mg/kg dry	4.5	0.58	50	*8015C	7/22/10 0:33	HPE	P0G0429
			Surrogate			Reco	very	Control	Limits
			a,a,a-Trifluor	otoluene		92	2 %	55-129	
General Chemistry Parameters									
% Solids	82.5	% by Weight	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437







Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No.: WBS# 34749.1.1

Greensboro, NC 27409

Project: NCDOT Parcel #122

Sample Matrix: Solid

Client Sample ID: B13-(2.5-5) Prism Sample ID: 0070465-13

Prism Work Order: 0070465 Time Collected: 07/15/10 14:20

Parameter	Result	Units	Report Limit	MDL	Dilution Factor	Method	Analysis Date/Time	Analyst	Batch ID
Diesel Range Organics by GC/FID									
Diesel Range Organics	BRL	mg/kg dry	7.9	1.3	1	*8015C	7/21/10 23:11	JMV	P0G0380
			Surrogate			Reco	very	Control	Limits
			o-Terphenyl			70	5 %	49-124	
Gasoline Range Organics by GC/FID									
Gasoline Range Organics	BRL	mg/kg dry	5.9	0.76	50	*8015C	7/22/10 1:05	HPE	P0G0429
			Surrogate		-	Reco	very	Control I	_imits
			a,a,a-Trifluor	otoluene		96	3 %	55-129	
General Chemistry Parameters									
% Solids	87.9	% by Welght	0.100	0.100	1	*SM2540 G	7/21/10 15:30	JAB	P0G0437



Project: NCDOT Parcel #122

Prism Work Order: 0070465

Time Submitted: 7/15/10 3:55:00PM

Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No: WBS# 34749.1.1 Greensboro, NC 27409

Gasoline Range Organics by GC/FID - Quality Control

		Reporting		Spike	Source		%REC		RPD	
Analyte	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	Notes
Batch P0G0429 - 5035										_
Blank (P0G0429-BLK1)	0.0000 0000 000			Prepared	& Analyze	d: 07/21/1	0			
Gasoline Range Organics	BRL	5.0	mg/kg wet							
Surrogate: a,a,a-Trifluorotoluene	4.50		mg/kg wet	5.00		90	55-129			
LCS (P0G0429-BS1)				Prepared	& Analyze	d: 07/21/1	0			
Gasoline Range Organics	41.4	5.0	mg/kg wet	50.0		83	67-116			
Surrogate: a,a,a-Trifluorotoluene	5.30		mg/kg wet	5.00		106	55-129			
LCS Dup (P0G0429-BSD1)				Prepared	& Analyze	d: 07/21/1	0			
Gasoline Range Organics	42.6	5.0	mg/kg wet	50.0		85	67-116	3	200	
Surrogate: a,a,a-Trifluorotoluene	5.35		mg/kg wet	5.00		107	55-129			
Matrix Spike (P0G0429-MS1)	Sour	ce: 007046	5-01	Prepared	& Analyze	d: 07/21/1	0			
Gasoline Range Organics	66.4	7.0	mg/kg dry	69.5	BRL	96	57-113			
Surrogate: a,a,a-Trifluorotoluene	8.28		mg/kg dry	6.95		119	55-129			
Matrix Spike Dup (P0G0429-MSD1)	Sour	ce: 007046	5-01	Prepared	& Analyze	d: 07/21/1	0			
Gasoline Range Organics	70.5	7.0	mg/kg dry	69.5	BRL	101	57-113	6	23	
Surrogate: a,a,a-Trifluorotoluene	8.69		mg/kg dry	6.95		125	55-129			



Kleinfelder SE, Inc. (NCDOT Project) Attn: John Stewart Project: NCDOT Parcel #122

Prism Work Order: 0070465

Time Submitted: 7/15/10 3:55:00PM

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No: WBS# 34749.1.1 Greensboro, NC 27409

### Diesel Range Organics by GC/FID - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
										***************************************
Batch P0G0380 - 3545A										
Blank (P0G0380-BLK1)				Prepared	: 07/20/10	Analyzed	: 07/21/10			
Diesel Range Organics	BRL	7.0	mg/kg wet							
Surrogate: o-Terphenyl	1.59		mg/kg wet	1.60		100	49-124			
LCS (P0G0380-BS1)				Prepared	: 07/20/10	Analyzed	: 07/21/10			
Diesel Range Organics	69.3	7.0	mg/kg wet	80.0		87	55-109			
Surrogate: o-Terphenyl	2.31		mg/kg wet	1.60		145	49-124			Α
LCS Dup (P0G0380-BSD1)			l	Prepared:	: 07/20/10	Analyzed	: 07/21/10			
Diesel Range Organics	62.2	7.0	mg/kg wet	80.0	11.550.5	78	55-109	11	200	
Surrogate: o-Terphenyl	1.96		mg/kg wet	1.60		122	49-124			



Project: NCDOT Parcel #122

Prism Work Order: 0070465 Time Submitted: 7/15/10 3:55:00PM

Attn: John Stewart

c/o Trigon Engineering/Kleinfelder, 313 Gallir Project No: WBS# 34749.1.1

Greensboro, NC 27409

**General Chemistry Parameters - Quality Control** 

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch P0G0437 - NO PREP						····				
Duplicate (P0G0437-DUP1)	Sour	ce: 0070465	5-09 F	repared	& Analyze	d: 07/21/1	0			
% Solids	76.7	0.100	% by Weight		75.9			1	20	

# **Sample Extraction Data**

Prep Method: 3545A	rer	Met	hod:	3545A
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Lab Number	Batch	Initial	Final	Date	=
0070465-01	P0G0380	25.05 g	1 mL	07/20/10	
0070465-02	P0G0380	25.08 g	1 mL	07/20/10	
0070465-03	P0G0380	24.99 g	1 mL	07/20/10	
0070465-04	P0G0380	25.11 g	1 mL	07/20/10	
0070465-05	P0G0380	25.1 g	1 mL	07/20/10	
0070465-06	P0G0380	25.01 g	1 mL	07/20/10	
0070465-07	P0G0380	25 g	1 mL	07/20/10	1/2
0070465-08	P0G0380	25.01 g	1 mL	07/20/10	8
0070465-09	P0G0380	25.07 g	1 mL	07/20/10	
0070465-10	P0G0380	25 g	1 mL	07/20/10	
0070465-11	P0G0380	25.08 g	1 mL	07/20/10	
0070465-12	P0G0380	25.02 g	1 mL	07/20/10	
0070465-13	P0G0380	25.06 g	1 mL	07/20/10	
Prep Method: 5035					
Lab Number	Batch	Initial	Final	Date	
0070465-01	P0G0429	6.34 g	5 mL	07/21/10	
0070465-02	P0G0429	6.72 g	5 mL	07/21/10	
0070465-03	P0G0429	4.43 g	5 mL	07/21/10	
0070465-04	P0G0429	5.46 g	5 mL	07/21/10	
0070465-05	P0G0429	5.47 g	5 mL	07/21/10	
0070465-06	P0G0429	5.79 g	5 mL	07/21/10	
0070465-07	P0G0429	5.32 g	5 mL	07/21/10	
0070465-08	P0G0429	4.6 g	5 mL	07/21/10	
0070465-09	P0G0429	5.59 g	5 mL	07/21/10	
0070465-10	P0G0429	5.19 g	5 mL	07/21/10	
0070465-11	P0G0429	4.97 g	5 mL	07/21/10	
0070465-12	P0G0429	6.79 g	5 mL	07/21/10	
0070465-13	P0G0429	4.85 g	5 mL	07/21/10	
NO PREP			- · · · · -		
Lab Number	Batch	Initial	Final	Date	
0070465-01	P0G0437	30 g	30 mL	07/21/10	
0070465-02	P0G0437	30 g	30 mL	07/21/10	
0070465-03	P0G0437	30 g	30 mL	07/21/10	
0070465-04	P0G0437	30 g	30 mL	07/21/10	
0070465-05	P0G0437	30 g	30 mL	07/21/10	
0070465-06	P0G0437	30 g	30 mL	07/21/10	
0070465-07	P0G0437	30 g	30 mL	07/21/10	
0070465-08	P0G0437	30 g	30 mL	07/21/10	
0070465-09	P0G0437	30 g	30 mL	07/21/10	
0070465-10	P0G0437	30 g	30 mL	07/21/10	
0070465-11	P0G0437	30 g	30 mL	07/21/10	
0070465-12	P0G0437	30 g	30 mL	07/21/10	
0070465-13	P0G0437	30 g	30 mL	07/21/10	
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449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543
Phone: 704/529-6364 • Fax: 704/525-0409
Ident Company Name: Kley Let Alege

Report To/Contact Name: John Stewart Other Kennelder, com Site Location Physical Address: Charlete, NC Phone: 336-66 8-00 ax (Yes) (No): Email ((es))(No) Email Address JM Steude Cha Greensborn NC 27469 EDD Type: PDF\_V Excel\_Of Client Company Name: \_\_ Reporting Address:

# **CHAIN OF CUSTODY RECORD**

PAGE COF COUOTE # TO ENSURE PROPER BILLING: Project Name: NCDOT - Parcal (22

\*Please ATTACH any project specific reporting (QC LEVEL ! II III IV) UST Project: provisions and/or QC Requirements
Invoice To: John Steward Short Hold Analysis: (Yes) (No) Same Invoice To: Address:

77	lays O 5 Days Ceush Work Must Be	proved	ands and holidays.	ERVICES	
Purchase Order No./Billing Reference	ate	Samples received after 15:00 will be processed next business day.	Turnaround time is based on business days, excluding weekends and holidays.	(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES) RENDERED BY PRISM LABORATORIES, INC. TO CLIENT)	

LAB USE ONLY			

	TO BE FILLED IN B	TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL	PERSONNEL
Days	Certification: NEL	Certification: NELACUSACE	FLNC
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holidays.	Water Chlorinated: YES NO	YES NO K	
	Sample Iced Upon	Sample Iced Upon Collection: YES	0

							former or results				
CLIENT	DATE	TIME	MATRIX (SOIL	SAMPL	LE CONTAINER	ÆR	PRESERVA-	A Co	ANALYSES REQUESTED		PRISM
SAMPLE DESCRIPTION	COLLECTED	MILITARY	WATER OR SLUDGE)	*TYPE SEE BELOW	NO.	SIZE	TIVES	4		REMARKS	ID NO.
B-1 (5-7.5)	9280 OJ-SJ-L	9280	50		4		Mothane	××			B
R-2(7.5-10)	01-51-1	0850	50		4		Methans	×			20
18-3(5.75)	7-15-10	8160	50	,	7		Mithem	X			89
8-4 (5-75)	01-51-1	1	50		'n		Methans	X			po
B-5(25-3)	01-51-6		50		8		Mithaul	X			8
R-6 (7.5-10)	01-51-1	1001	56		3		Motheral	X			90
B-7 (7.5-1)	7-15-10	5201	2		.5		Methans	XX			40
8-8 (25-5)	7-15-10		8		5		Mothank	X			8
8-9(0-2.5)			20		4		Methans	KK			8
0251 01-51-7 (10-01)012	01-51-1	0251	20		7		Methans	×			۵)
Sampler's Signature	1) = M	Mect	Sampled By	Sampled By (Print Name)	110	K X	ewaret	Affiliation	extelder	PRESS DOWN F	PRESS DOWN FIRMLY - 3 COPIES
Upon relinquishing, this Chain of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be submitted in writing to the Prism Project Manager. There will be charges for any changes after analyses have been initialized.	Chain of Custo	ody is your auth	horization for sere will be cl	Prism to proc harges for any	sed with t	he analyses Ifter analyse	as requested at	ove. Any change falized.	e must be	a.	PRISM USE ONLY
Relinquished By: (Signature)	1/1/		Rece	Received By: (Signature)				Date	y/Hours	Additional Comments: 報報	

SEE REVERSE FOR

25:51 01-51-2

Date

COC Group No.

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY.
SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.

Received ForPrism Laborate

Received By: (Signature)

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Page 20 of 21

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LANDFILL

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SOLID WASTE: DNC DSC

DRINKING WATER:

Prism Field Service

C Fed Ex C UPS MHand-delivered

Relinquished By: (Signature

Relinquished By: (Signature Refinquished By: (Signature ONC OSC

NPDES: UST: GROUNDWATER:



449 Springbrook Road • P.O. Box 240543 • Charlotte, NC 28224-0543 Phone: 704/529-6364 • Fax: 704/525-0408, B Klemteldec. The dotter NC Email (Yes) Mo) Email Address TM S & LANG Sreenshow, NC 2 Phone: 36-668-CD53 Fax (Yes) (No) Site Location Physical Address: \_ Site Location Name: Vacce Reporting Address: 313 Report To/Contact Name: EDD TYPE: PDF X Excel Client Company Name: \_

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\*Please ATTACH any project specific reporting (QC LEVEL I II III I **€ UST Project**: PAGE ZOF ZOUOTE # TO ENSURE PROPER BILLINGS provisions and/or QC Requirements. Same NODOT -Short Hold Analysis: (Yes) (No) John Project Name: \_ Invoice To: Address:

MONTH TOTAL OF X	AND THE SERVICE STATES OF THE SERVICE STATES		
Hece	No) PROP		

O BE FILLED IN BY CLIENT/SAMPLING PERSONNEL

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Pertification: NELAC

OTHER

Sample Iced Upon Collection: YES Water Chiorinated: YES NO L

		TIME	MATRIX	SAMPI	E CONTAINER	<u> </u>		ANALYSE	ANALYSES REQUESTED		PRISM
CLIENT SAMPLE DESCRIPTION	DATE	COLLECTED MILITARY HOURS	(SOIL, WATER OR SLUDGE)	*TYPE	NO.	SIZE	PRESERVA- TIVES	0x 0x0		REMARKS	LAB ID NO.
B-1((10-12)	7-15-10	1400	50		4		mothold	イイ			<u>-</u>
13-12(25-5)	: •		Š		5		Mothered	イズ			[2
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Sampler's Signature	7	ALC.	Sampled B	Sampled By (Print Name)	13	S	enal	Affiliation Klein	Klenfelder	PRESS DOWN FIRMLY - 3 COPIES	3 COPIES
Upon relinquishing, M	is Chain of Cust	ody is your aut	thorization for	Prism to proc	seed with the	he analyses after analyse	as requested a	Upon reinquishing, his Chan of Custody is your authorization for Prism to proceed with the analyses as requested above. Any changes must be Upon reinquishing, his Chan of Custody is your authorization for Prism to proceed with the analyses have been initialized.	pe pe	PRISM L	PRISM USE ONLY
Submitted in Writing to	To Language	TOR THE STATE OF	Rece	Received By: (Signature	(6			N / 2 Ma	y/Hours	Additional Comments:	

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5.55

7-15-10 COC Group No.

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY.

SAMPLES ARE NOT ACCEPTED AND VERHIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.

C Prism Field Service

☐ Hand-defivered

Dred Ex Clups

Received By: (Signature)

Relinquished By: (Signature)

Refinquished By: (Signature)

Relinquished By: (Signature)

TO FOYER

WBS#

SEE REVERSE FOR TERMS & CONDITIONS Page 21 of 21