

Pyramid Environmental & Engineering, P.C. Project # 2013-131
Preliminary Site Assessment (PSA) – Parcels 97/99, Alan & Steven Johnson

PRELIMINARY SITE ASSESSMENT
PARCELS 97/99, ALAN & STEVEN JOHNSON
2484 ELKIN HIGHWAY (NC 268)
NORTH WILKESBORO, WILKES COUNTY, NORTH CAROLINA
STATE PROJECT: R-2603
WBS ELEMENT: 36001.1.2
July 22, 2013

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**PRELIMINARY SITE ASSESSMENT
PARCELS 97/99, ALAN & STEVEN JOHNSON
2484 ELKIN HIGHWAY (NC 286)
NORTH WILKESBORO, WILKES COUNTY, NORTH CAROLINA**

EXECUTIVE SUMMARY OF RESULTS

Pyramid Environmental & Engineering P.C. (Pyramid) has prepared this Preliminary Site Assessment (PSA) report documenting background information, field activities, assessment activities, findings, conclusions, and recommendations for the Parcels 97 & 99, Alan & Steven Johnson. The purpose of this assessment was to determine the presence or absence of underground storage tanks (USTs) and impacted soils at the subject property within the proposed easement and between the existing right of way (ROW) and edge of pavement with emphasis on the areas of proposed drainage structures (State Project R-2603). As directed by the North Carolina Department of Transportation (NCDOT), the area of interest was within the vicinity of the structures on-site, which straddled Parcels 97 and 99. This report includes analysis of both Parcel 97 and 99. This preliminary site assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Pyramid's May 7, 2013, technical proposal.

The following statements summarize the results of the PSA:

- **Site History:** Historical information reviewed as part of the PSA indicated that the property was developed between 1993 and 2006. The 1958, 1966, and 1993 aerials show the property partially cleared, with no structures present. The existing gas station building first appears on the 2006 aerial photograph, indicating it was constructed between 1993 and 2006. No other significant changes occurred to the structures between 2006 and the present.

On May 22, 2013, Pyramid emailed the Wilkes County parcel addresses to Ms. Carin Kromm, the Winston-Salem Regional Office Supervisor for the North Carolina Department of Environment and Natural Resources (NC DENR) UST Section, with a request to investigate any incidents associated with the parcels. On June 6th, Ms. Kromm responded to the email and stated that no incidents are recorded for the Alan & Steven Johnson properties. Two active USTs are currently registered for this facility with Facility ID 0-035668 (Johnson Oil & Tractor Inc.).

- **Geophysical Survey:** The geophysical investigation provided no evidence of metallic USTs within the proposed ROW and/or easement.

- **Limited Soil Assessment:** A total of three borings were performed across the property and one soil sample from each boring was analyzed with the QED UVF HC-1 Analyzer system from QROS-US for (total petroleum hydrocarbons) TPH petroleum contamination. The QED did not detect TPH-GRO or TPH-DRO concentrations above detection limits in the three soil samples analyzed.
- **Limited Groundwater Assessment:** Groundwater was not encountered to a depth of 25 feet below land surface (BLS) in the temporary monitor well at boring 97-2(TW), and thus no groundwater sample was analyzed. Site observations indicate it is likely the depth of the water table is well below any planned excavation associated with road construction at this property.

1.0 Introduction

Pyramid Environmental & Engineering P.C. (Pyramid) has prepared this Preliminary Site Assessment (PSA) report documenting background information, field activities, assessment activities, findings, conclusions, and recommendations for the parcels of Alan and Steven Johnson. The Johnson properties overlap the area of interest, which is currently operating as an active gas station, located at 2484 Elkin Highway (NC 268) in North Wilkesboro, NC. This preliminary site assessment was conducted on behalf of the NCDOT in accordance with Pyramid's May 7, 2013, technical proposal.

The purpose of this assessment was to determine the presence or absence of underground storage tanks (USTs) and impacted soils at the subject properties between the proposed easement/proposed right of way and the existing right of way/edge of pavement (State Project R-2603). The location of the subject site is shown on **Figure 1**, and the parcel boundaries and owner information are shown in **Figure 2**.

1.1 Background Information

Based on the NCDOT's March 22, 2013, *Request for Technical and Cost Proposal*, the PSA was conducted in the proposed easement and the area between the existing NCDOT right of way and the edge of pavement with emphasis on the areas of proposed drainage features, in accordance with the computer-aided design and drafting (CADD) files provided to Pyramid by the NCDOT. This PSA was conducted at both Parcel 97 and 99, within the area straddling the vicinity of the structures on-site, as directed by the NCDOT. The PSA included the following:

- Research the properties for past uses and possible releases.
- Conduct a preliminary geophysical site assessment and limited soil assessment in the proposed easement and the area between the existing ROW and the edge of pavement with emphasis on the proposed drainage features.
- Report the depth to groundwater for each site and attempt to obtain one groundwater sample for each site for laboratory analysis by installing temporary monitoring wells.

1.2 Project Information

Prior to field activities, a Health and Safety Plan was prepared. Prior to drilling activities, the public underground utilities were located and marked by the North Carolina One-Call Service. A private utility locator, Northstate Utility Locating Incorporated of Colfax, North Carolina was used to mark the on-site private, buried utilities.

2.0 Site History

Pyramid completed a records review of the NC DENR file, interviewed NC DENR personnel, interviewed property owners, and reviewed aerial photographs to assess past uses of the property. It should be noted that the NCDOT directed Pyramid to not obtain a First Search radius report detailing the history of the site and surrounding area. For this reason, Pyramid reviewed historical aerial photographs dating back to 1958 available from Wilkes Soil and Water Conservation office in Wilkesboro and on Google Earth for past uses. The 1958, 1966, 1993, 2006, 2008, and 2012 aerial photographs are included in **Appendix A**. Historical information reviewed as part of the PSA indicated that the property was developed between 1993 and 2006. The 1958, 1966, and 1993 aerials show the property partially cleared, with no structures present. The existing gas station building first appears on the 2006 aerial photograph, indicating it was constructed between 1993 and 2006. No other significant changes occurred to the structures between 2006 and the present.

On May 22, 2013, Pyramid emailed the Wilkes County parcel addresses to Ms. Carin Kromm, the Winston-Salem Regional Office Supervisor for the NC DENR UST Section, with a request to investigate any incidents associated with the parcels. On June 6th, Ms. Kromm responded to the email and stated that no incidents are recorded for the Alan & Steven Johnson properties. Two active USTs are currently registered for this facility with Facility ID 0-035668 (Johnson Oil & Tractor Inc.).

3.0 Geophysical Investigation

Pyramid performed electromagnetic (EM) and ground penetrating radar (GPR) surveys across the accessible portions of the Parcel. The majority of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as sign posts and drainage features. A single unknown anomaly was recorded that exhibited a high amplitude response indicative of a large metal object. However, the GPR did not record evidence to support the presence of a UST at this location. It should be noted that the depth of GPR penetration was limited to approximately 3 feet below the ground surface.

The geophysical investigation provided no evidence of metallic USTs within the proposed ROW and/or easement. The anomaly at X=200, Y=65 (see full report in Appendix B) was classified as No Confidence, in accordance with NCDOT categories for USTs.

The full details of the geophysical investigation are included in the Geophysical Investigation Report as **Appendix B**.

4.0 Soil Sampling Activities & Results

4.1 Soil Assessment Field Activities

On June 12, 2013, Pyramid mobilized to the site and drilled soil borings, installed one temporary monitoring well, and collected the proposed soil samples for the PSA. The soil borings and temporary well were completed using a track mounted Geoprobe® Direct-Push rig and hand-auger. Three (3) soil borings (97-1, 97-2, and 99-1) were advanced on the subject property between the NCDOT proposed easement, existing ROW and edge of pavement. The selected locations were chosen to avoid public utilities along Elkin Highway, and private utilities associated with the business while remaining in the proposed right of way area. The three borings were installed on top of or directly adjacent to the location of a proposed 18-inch drainage pipe extending across the site perpendicular to Elkin Highway. The locations of the borings are shown on **Figure 3**.

Soil samples were continuously collected in five foot long disposable sleeves from each boring for geologic description, and visual examination for signs of contamination. Soil recovered from each sleeve was screened in the field using an Organic Vapor Analyzer (OVA) every 2 to 2.5 feet depending on the soil recovery of each sleeve. In general, the soil sample with the highest OVA reading was selected from each boring for laboratory analysis. The soil boring logs with the soil descriptions, visual examination, and OVA screening results are included in **Appendix C**. The OVA field screening results are summarized in **Table 1**. In order to prevent cross contamination, new disposable nitrile gloves were worn by the sampling technician during the sampling activities, and were changed between samples.

The soil samples selected for Total Petroleum Hydrocarbon (TPH) analyses were analyzed utilizing the QED UVF HC-1 Analyzer system from QROS-US. The NCDOT has indicated that this instrument is an acceptable method to provide TPH results for soil analysis for the PSA projects. Pyramid's QED-certified technician worked with Pyramid's on-site staff geologist to perform soil analyses. The soil samples selected for analysis using the QED Analyzer were analyzed for TPH as diesel range organics (DRO) and TPH as gasoline range organics (GRO). The soil samples selected for analysis using the QED were preserved in the field with methanol and were analyzed at the end of each day using the QED.

4.2 Soil Sample Analytical Results

The QED did not detect TPH-GRO or TPH-DRO concentrations above detection limits for any of the three soil samples analyzed. The soil sample QED results are summarized in **Table 2**. A copy of the QED analysis report is included in **Appendix D**.

4.3 Temporary Monitoring Well Installation

On June 12, 2013, Pyramid converted soil boring 97-2 into a 1-inch diameter temporary monitoring well (TW). Soil boring 97-2(TW) was completed to a total depth of 25 feet

BLS. The temporary well at 97-2 was constructed with 15 feet of 1-inch diameter of schedule 80 PVC casing and 10 feet of 1-inch diameter of schedule 80 PVC slotted screen. The temporary well was set in the boring with 10 feet of slotted screen at the bottom of the well.

On June 13, 2013, the temporary monitoring well 97-2(TW) was gauged using a properly decontaminated electric water level probe. Groundwater was not encountered, and the well was determined to be dry. For this reason, no groundwater sample was obtained at Parcel 97/99 for analysis. Observations regarding the elevation of the site and depth to groundwater at nearby properties indicate that the depth of the water table is likely below 25 feet bls, and thus will not impact the proposed road construction. After the temporary well was found to be dry, the temporary monitoring well was properly abandoned by the drillers by removing the casing, and filling the borehole with bentonite chips and portland cement.

4.4 Groundwater Analytical Results

As discussed above, groundwater was not encountered in the temporary well at boring 97-2(TW), and thus no sample was collected for analysis.

5.0 Conclusions and Recommendations

As requested by NCDOT, Pyramid has completed a PSA in the vicinity of the structures on-site at the Alan and Steven Johnson properties located 2484 Elkin Highway, North Wilkesboro, NC. The following is a summary of the assessment activities and results.

5.1 Geophysical Investigation

The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/or easement. The anomaly at X=200, Y=65 (see full report in Appendix B) was classified as No Confidence, in accordance with NCDOT categories for USTs.

5.2 Limited Soil Assessment

The QED did not detect TPH-GRO or TPH-DRO concentrations above laboratory detection limits for any of the three soil samples analyzed.

5.3 Limited Groundwater Assessment

Groundwater was not encountered in the temporary well at boring 97-2(TW), and thus no samples were collected for laboratory analysis.

5.4 Recommendations

No petroleum-impacted soils were encountered during the PSA investigation at Parcels 97 and 99, nor were any probable or possible USTs encountered within the proposed right of way or easement. Therefore, no recommendations are necessary for the treatment or disposal of such materials.

It should be noted that, if impacted soil is encountered during road construction outside of the area analyzed by this investigation, the impacted soil should be managed according to NC DENR Division of Waste Management (DWM) UST Section Guidelines and disposed of at a permitted facility.

6.0 Limitations

The results of this preliminary investigation are limited to the boring locations completed during this limited assessment and presented in this report. The laboratory results only reflect the current conditions at the locations sampled on the date this Preliminary Site Assessment was performed.

7.0 Closure

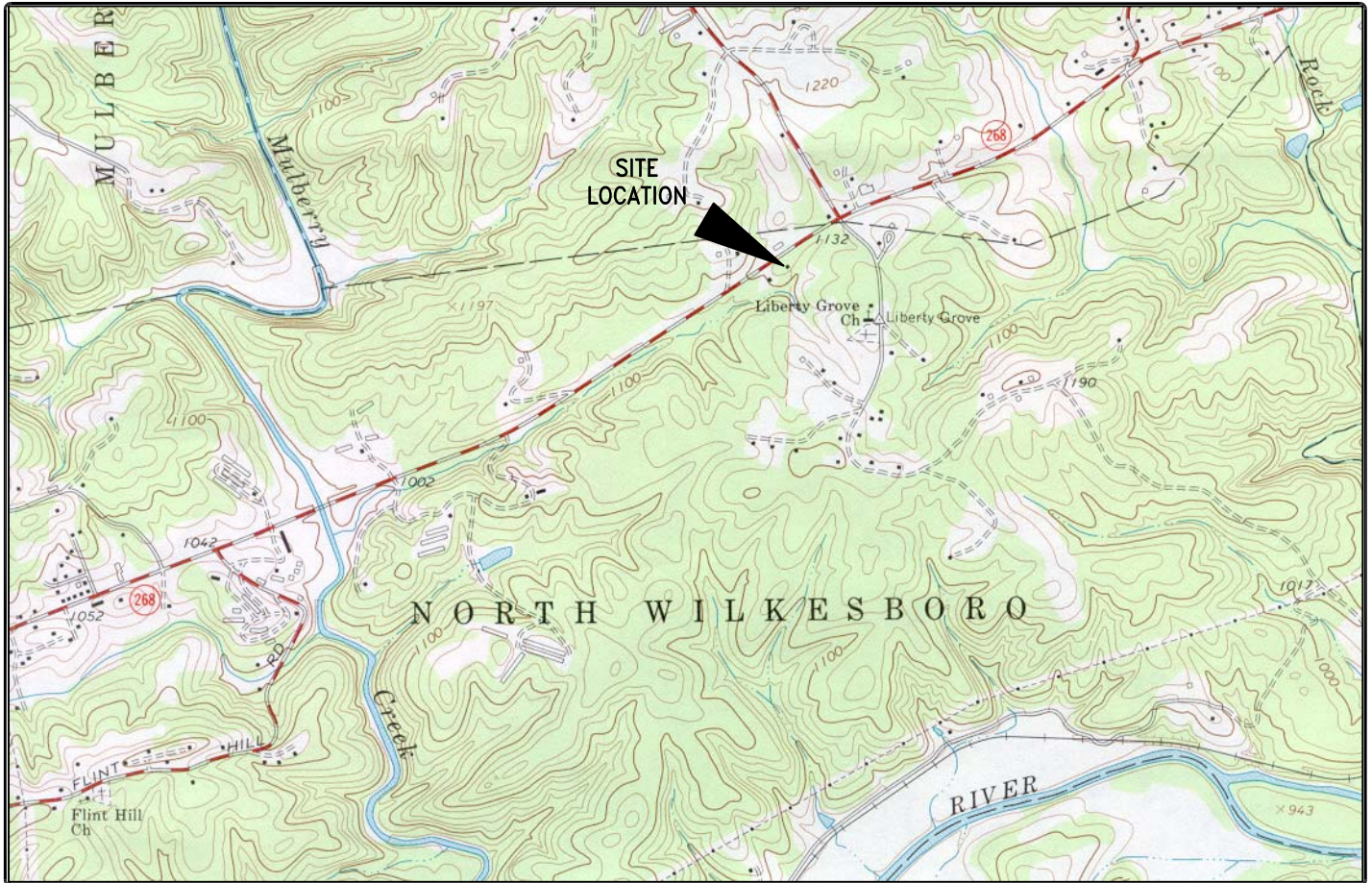
This report was prepared for, and is available solely for use by NCDOT and their designees. The contents thereof may not be used or relied upon by any other person without the express written consent and authorization of Pyramid Environmental & Engineering, P.C. (Pyramid). The observations, conclusions, and recommendations documented in this report are based on site conditions and information reviewed at the time of Pyramid's investigation. Pyramid appreciates the opportunity to provide this environmental service.

FIGURES

USGS TOPOGRAPHIC MAP

SITE: 2484 ELKIN HIGHWAY

LOCATION: N. WILKESBORO, NORTH CAROLINA



USGS IDENTIFICATION

SCALES

USGS 7.5 MINUTE MAP

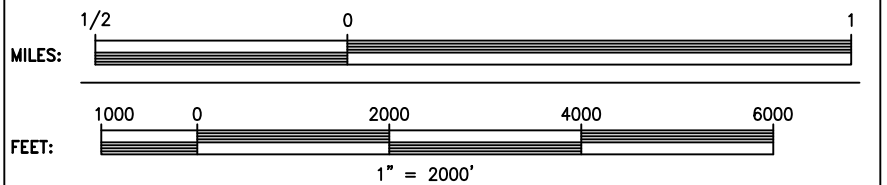
ROARING RIVER, N.C.

ORIGINAL DATE:

1966

PHOTOREVISION DATE:

NA

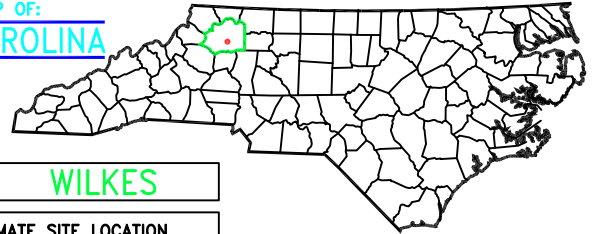


	PRIMARY HIGHWAY, HARD SURFACE
	SECONDARY HIGHWAY, HARD SURFACE
	LIGHT-DUTY ROAD HARD OR IMPROVED SURFACE
	UNIMPROVED ROAD
	STATE ROAD
	U.S. ROUTE
	INTERSTATE ROUTE

NOTES: TOPOGRAPHICAL CONTOUR INTERVAL = 20 FEET
 PHOTOREVISIONS DENOTED IN PURPLE

MAGNETIC NORTH

COUNTY MAP OF:
NORTH CAROLINA



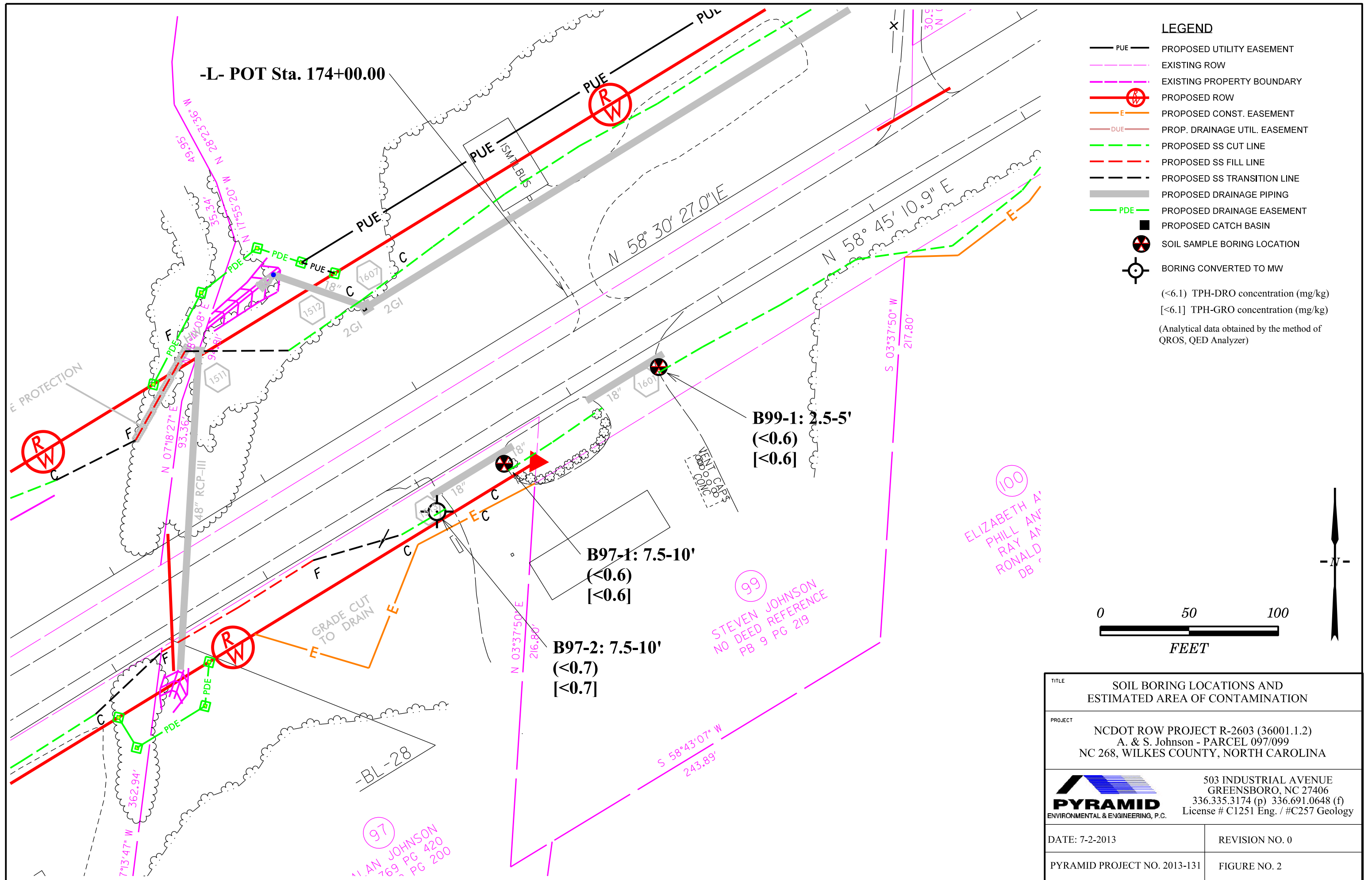
COUNTY: **WILKES**
 APPROXIMATE SITE LOCATION



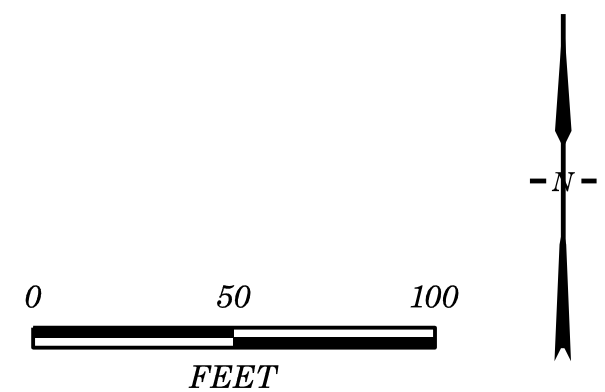
CLIENT: NCDOT R-2603
 PROPERTY NAME: PARCELS 97&99, A. & S. JOHNSON
 CITY: N. WILKESBORO STATE: NORTH CAROLINA
 TITLE: TOPOGRAPHIC MAP

SCALE: 1"=2000'
 DATE: 7/9/13
 DRAWING NAME: USGSTOPO
 DRAWN BY: KAM
 CHECK BY: TDL
 JOB NO.: 2013-131
 TYPE: PSA
 FIGURE NUMBER: 1

NOTES
 TOPOGRAPHIC MAP USED IN THIS GRAPHIC IS MAPPED, EDITED, AND PUBLISHED BY THE UNITED STATES GEOLOGIC SURVEY, DEPARTMENT OF THE INTERIOR, RESTON VIRGINIA.
 THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.



- LEGEND**
- PUE — PROPOSED UTILITY EASEMENT
 - EXISTING ROW
 - EXISTING PROPERTY BOUNDARY
 - PROPOSED ROW
 - PROPOSED CONST. EASEMENT
 - DUE — PROP. DRAINAGE UTIL. EASEMENT
 - PROPOSED SS CUT LINE
 - PROPOSED SS FILL LINE
 - PROPOSED SS TRANSITION LINE
 - PROPOSED DRAINAGE PIPING
 - PDE — PROPOSED DRAINAGE EASEMENT
 - PROPOSED CATCH BASIN
 - ⊗ SOIL SAMPLE BORING LOCATION
 - ⊕ BORING CONVERTED TO MW
- (<6.1) TPH-DRO concentration (mg/kg)
 [<6.1] TPH-GRO concentration (mg/kg)
 (Analytical data obtained by the method of QROS, QED Analyzer)



TITLE SOIL BORING LOCATIONS AND ESTIMATED AREA OF CONTAMINATION	
PROJECT NCDOT ROW PROJECT R-2603 (36001.1.2) A. & S. Johnson - PARCEL 097/099 NC 268, WILKES COUNTY, NORTH CAROLINA	
503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology	
DATE: 7-2-2013	REVISION NO. 0
PYRAMID PROJECT NO. 2013-131	FIGURE NO. 2

TABLES

TABLE 1
Summary of Soil Field Screening Results
NCDOT Project R-2603
2484 Elkin Highway (NC268) - Parcels 97 & 99
North Wilkesboro, Wilkes County, North Carolina

SOIL BORING	SAMPLE ID	DEPTH (feet bgs)	OVA/FID READINGS (PPM)
97-1	97-1(2.5-5)	2.5 to 5	0.0
	97-1(5-7.5)	5 to 7.5	0.0
	97-1(7.5-10)	7.5 to 10	1.0
97-2	97-2(0-2.5)	2 to 5	1.0
	97-2(2.5-5)	2.5 to 5	1.5
	97-2(5-7.5)	5 to 7.5	1.0
	97-2(7.5-10)	7.5 to 10	2.0
	97-2(10-12.5)	10 to 12.5	1.0
	97-2(12.5-15)	12.5 to 15	2.0
99-1	99-1(0-2.5)	0 to 2.5	0.0
	99-1(5-7.5)	2.5 to 5	0.5
	99-1(7.5-10)	7.5 to 10	0.0

bgs= below ground surface

FID= flame-ionization detector

PPM= parts-per-million

☐ = sampled for lab analysis &/or QROS-QED analysis

OVA= Organic Vapor Analyzer

TABLE 2
Summary of Soil Sample Analytical Results
 NCDOT State Project R-2603
 2484 Elkin Highway (NC 268) - Parcels 97 & 99
 North Wilkesboro, Wilkes County, North Carolina

SAMPLE ID	DATE	DEPTH (feet)	FID/OVA (ppm)	QROS - QED Analysis			Laboratory Analysis (Pace)	
				GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)	TPH (mg/kg) (C5-C35)	EPA Method 3550 DRO (mg/kg)	EPA Method 5035 GRO (mg/kg)
97-1(7.5-10)	6/12/2013	7.5 to 10	1.0	<0.6	<0.6	<0.6	-----	-----
97-2(7.5-10)	6/12/2013	7.5 to 10	2.0	<0.7	<0.7	<0.7	-----	-----
99-1(2.5-5)	6/12/2013	2.5 to 5	0.5	<0.6	<0.6	<0.6	-----	-----
NC Initial Action Level - UST Section for 5035/5030-GRO; 3550-DRO				10	10	NA	10	10

FID= flame-ionizaton detector
 PPM= parts-per-million

GRO= Gasoline Range Organics
 DRO= Diesel Range Organics
 mg/kg= milligrams-per-kilogram

TPH= Total Petroleum
 Hydrocarbons (GRO + DRO)

NA= Not Applicable
 "-----" = No Laboratory Analysis

* Bold values indicate concentrations above initial action levels

APPENDIX A



Parcels 97 & 99

Elkin Hwy

268

© 2013 Google

Google earth

2012

Google earth

feet
meters





Parcels 97 & 99

268

Ekin Hwy

Image U.S. Geological Survey

Google earth

2008

Google earth





Parcels 97 & 99



Elgin Hwy

268

Image USDA Farm Service Agency

Google earth

2006

Google earth

feet
meters

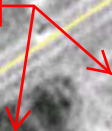


1000
300





Parcels 97 & 99



Ekin Hwy

268

Image U.S. Geological Survey

Google earth

1993

Google earth

feet
meters





Parcels 97 & 99

1966



NC-268

Parcels 97 & 99

1958

APPENDIX B



PYRAMID ENVIRONMENTAL & ENGINEERING
(PROJECT 2013-131)

NCDOT PROJECT R-2603 (WBS 36000.1.1)


GEOPHYSICAL SURVEYS OF PARCELS 97/99 – UNDERGROUND STORAGE TANK INVESTIGATION


NORTH WILKESBORO, WILKES COUNTY, NC

JULY 10, 2013

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C257: GEOLOGY C1251: ENGINEERING

**GEOPHYSICAL INVESTIGATION REPORT
NCDOT PRELIMINARY SITE ASSESSMENT
PARCELS 97/99 – 2484 ELKIN HIGHWAY
North Wilkesboro, Wilkes County, North Carolina**

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- Figure 2 – Parcels 97/99 - EM61 Bottom Coil and Differential Results Contour Map
- Figure 3 – Parcels 97/99 - GPR Transect Locations and Images

EXECUTIVE SUMMARY

- Electromagnetic (EM) and Ground Penetrating Radar (GPR) surveys were performed across the accessible portions of the Parcel.
- The majority of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as sign posts and drainage features. A single unknown anomaly was recorded that exhibited a high amplitude response indicative of a large metal object. However, the GPR did not record evidence to support the presence of a UST at this location.
- It should be noted that the depth of GPR penetration was limited to approximately 3 feet below the ground surface.
- The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/or easement. The anomaly at X=200, Y-65 was classified as No Confidence, in accordance with NCDOT categories for USTs.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for the North Carolina Department of Transportation (NCDOT) at Parcels 97 & 99 (A. & S. Johnson, Run In 834 Gas Station), located at 2484 Elkin Highway, North Wilkesboro, NC. The geophysical investigation was performed as part of the Preliminary Site Assessment (PSA) conducted by Pyramid at nine separate parcels along NC 268, and focused on the area between the current edge of pavement along NC 268 and the proposed right of way (ROW) and/or easement, whichever was greater. The gas station property overlapped Parcels 97 and 99, and the NCDOT directed Pyramid to perform the PSA and geophysical investigation in the immediate vicinity of the structures on-site. The survey area extended across the northern portion of the parcels, spanning a distance of approximately 220 feet along NC 268, and extending approximately 50 feet at its maximum north/south distance from NC 268 south into the property. Conducted on May 24 and June 3, 2013, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site consisted of a combination of asphalt parking space and grassy open areas. Aerial photographs showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 20-foot by 10-foot survey grid was established across the geophysical survey areas using measuring tapes 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 and ground penetrating radar (GPR) surveys. The EM survey was performed on May 24, 2013, using a Geonics EM61 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 north-south trending or east-west trending, 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 DAT61 and Surfer for Windows Version 11.0 software programs.

GPR data were acquired on June 3, 2013, across selected EM61 differential anomalies using a Geophysical Survey Systems, Inc. (GSSI) SIR-2000 unit equipped with a 400 MHz antenna. Data were collected generally from east to west and north to south across specific EM61 anomalies. All of the GPR data were viewed in real time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 8 feet, based on an estimated two-way travel time of 8 nanoseconds per foot. GPR transect and image files were saved to the hard drive of the SIR unit.

DISCUSSION OF RESULTS

Contour plots of the EM61 bottom coil and differential results obtained across the survey areas at the property are presented in **Figure 2**. 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.

Discussion of EM Anomalies: The anomaly centered at X=65, Y=45 was the result of a metal sign. The anomaly at X=125, Y=35 was the result of a water meter cover and possible reinforcement in the concrete median. The anomaly at X=215, Y=65 was the result of a metal storm drain. The anomaly at X=235, Y=60 was the result of the gas station sign. The minor anomaly at X=45, Y=50 was likely isolated minor metallic debris. The anomaly at X=200, Y=65 could not be attributed to any cultural features, and was investigated further using the GPR equipment.

The GPR data were viewed in real time as the equipment was surveyed across the anomaly. Transects across EM anomalies were saved to the hard drive for post-processing in the office. **Figure 3** presents an aerial photograph showing the location of the GPR transects performed across the anomaly as well as the GPR images that were collected.

GPR Transects 1, 2, and 3 were performed across the anomaly at X=200, Y=65. Transect 1 recorded a horizontal feature that suggested an isolated buried object such as a utility or possible vault. Transects 2 and 3 did not record any significant features. The three GPR transects did not record any evidence of large objects below the ground surface, such as metallic USTs. However, it should be noted that the depth penetration of the GPR at this property was limited to approximately 3 feet below the ground surface, likely as a result of local geologic conditions and/or the depth of the water table.

The geophysical investigation did not record evidence of metallic USTs within the proposed ROW and/or easement in the accessible areas of the parcel property. The unknown anomaly at X=200, Y=65 is classified as No Confidence, in accordance with the NCDOT categories for unknown metallic USTs.

SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across Parcels 97/99, North Wilkesboro, North Carolina provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the geophysical survey area.

- The majority of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as sign posts and drainage features. A single unknown anomaly was recorded that exhibited a high amplitude response indicative of a large metal object. However, the GPR did not record evidence to support the presence of a UST at this location.
- It should be noted that the depth of GPR penetration was limited to approximately 3 feet below the ground surface.
- The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/or easement. The anomaly at X=200, Y-65 was classified as No Confidence, in accordance with NCDOT categories for USTs.

LIMITATIONS

Geophysical 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 surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined that metallic USTs do not lie within the survey area of the Wilkes County property, but that none were detected. Additionally, it should be understood that areas containing vehicles or other restrictions to the accessibility of the geophysical instruments could not be investigated.



Aerial Photograph Showing Approximate Geophysical Survey Boundaries



Photograph of Active Service Station
(Facing Approximately Northwest)



Geophysical Survey Area
(Facing Approximately West)

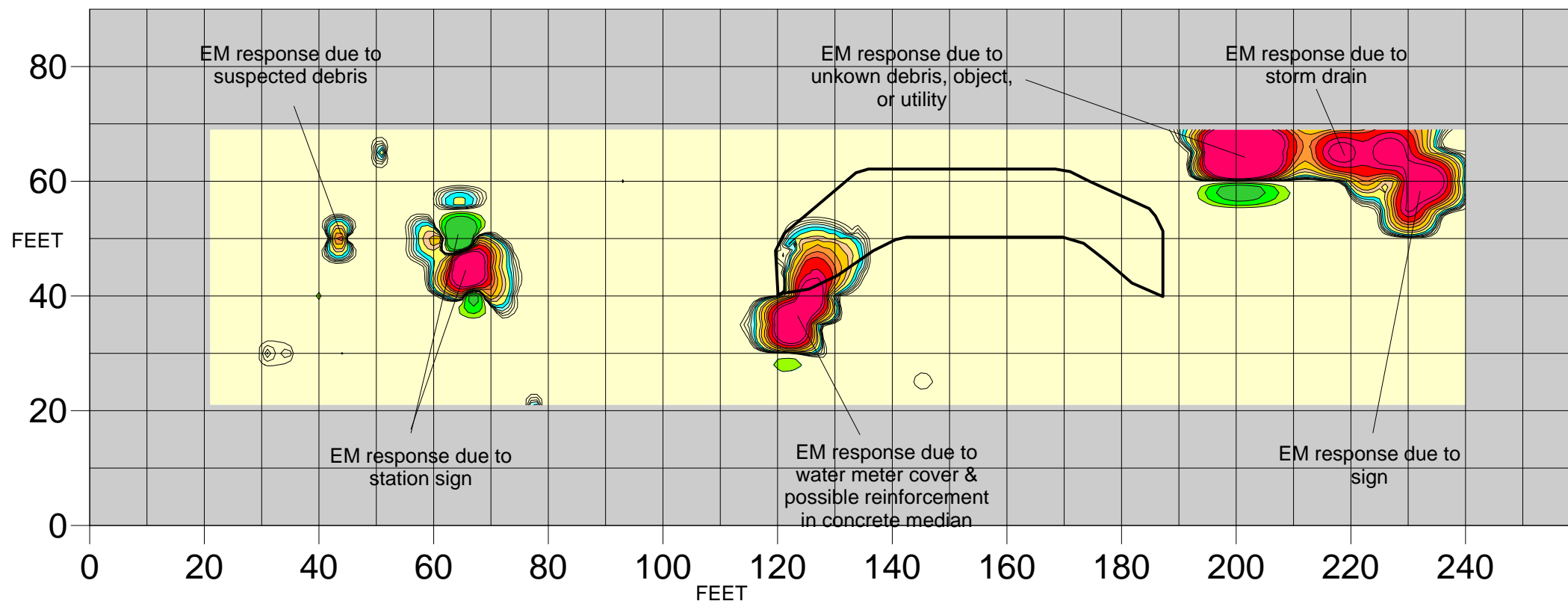


CLIENT	NC DEPARTMENT OF TRANSPORTATION		DATE	07/04/13	DRWN	ECC
SITE	PARCELS 97/99, WILKES COUNTY (DOT ROW PROJECT)		LAY		CRWD	
CITY	N. WILKESBORO	STATE	NORTH CAROLINA	DRWG		
TITLE	GEOPHYSICAL RESULTS		PLNG	2013-131	PROJID	

GEOPHYSICAL
SURVEY BOUNDARIES &
SITE PHOTOGRAPHS

FIGURE 1

EM61 Bottom Coil Results



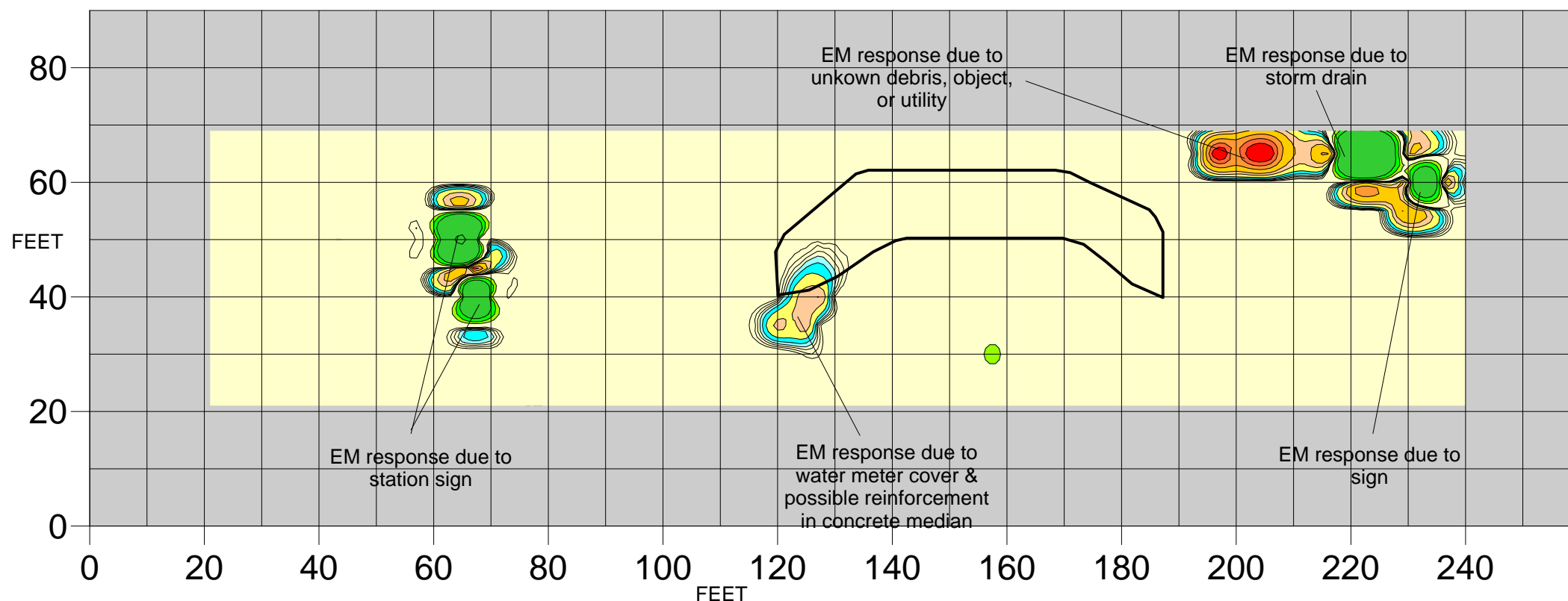
NO EVIDENCE OF METALLIC USTs OBSERVED


The contour plots show the bottom coil (most sensitive) and differential results of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller miscellaneous buried, metal debris. The EM61 data were collected on May 23, 2013 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were collected on June 3, 2013, using a GSSI SIR 2000 unit coupled to a 400MHz antennae.

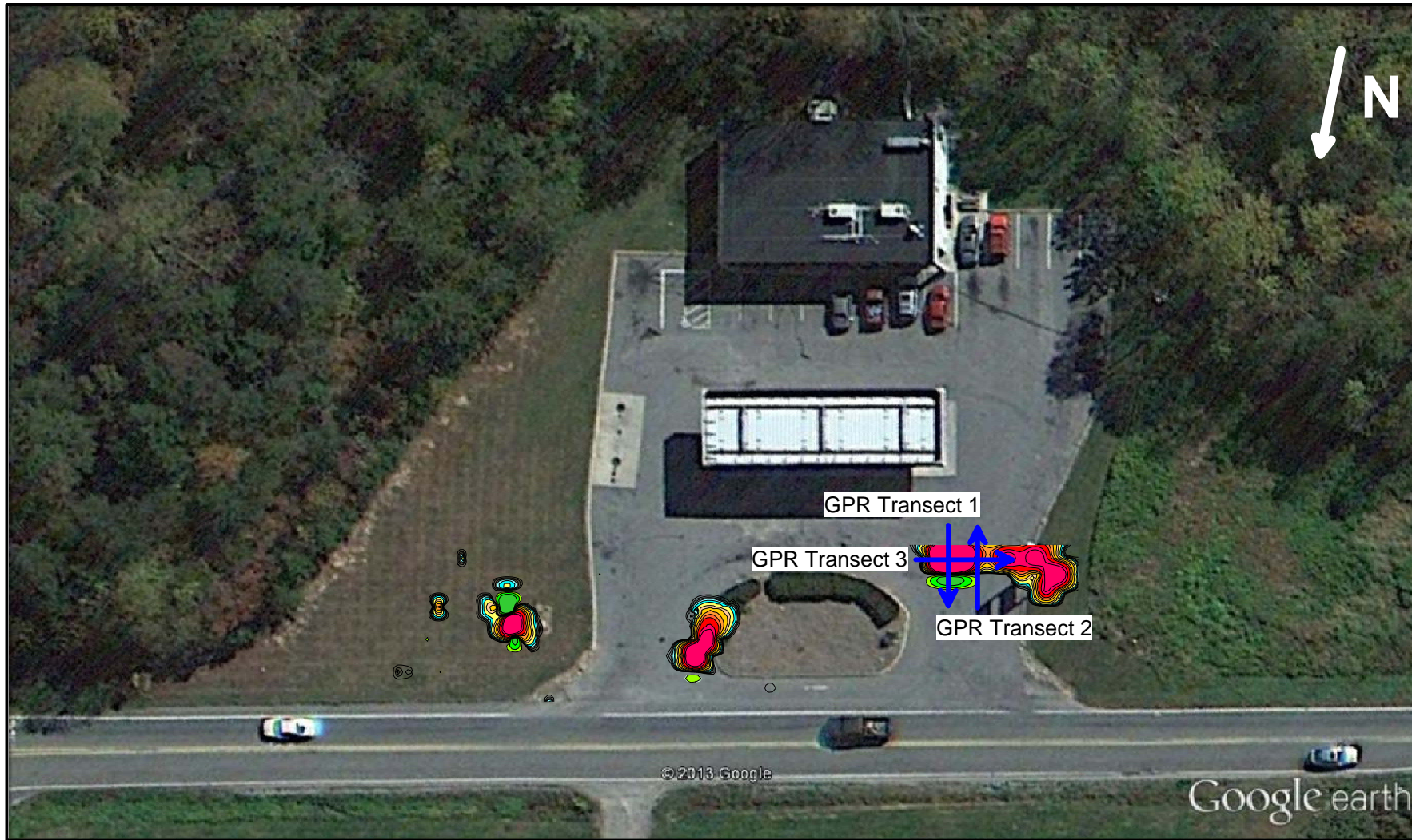
EM61 Metal Detection Response (millivolts)



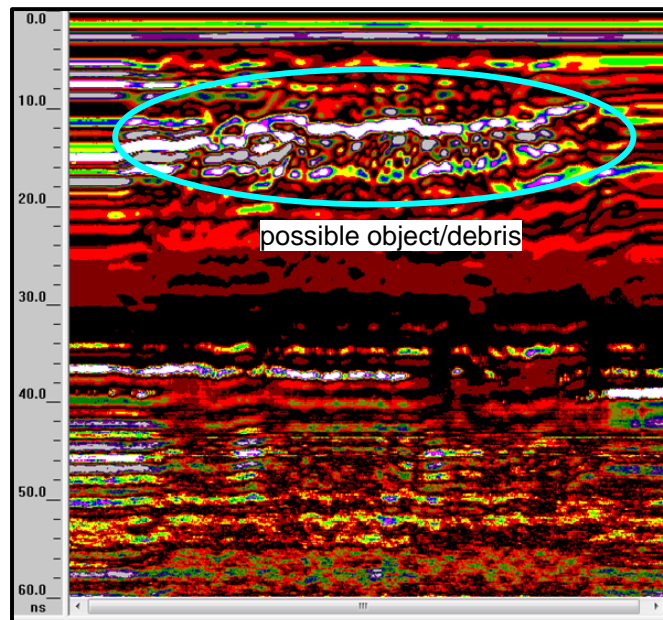
EM61 Differential Results



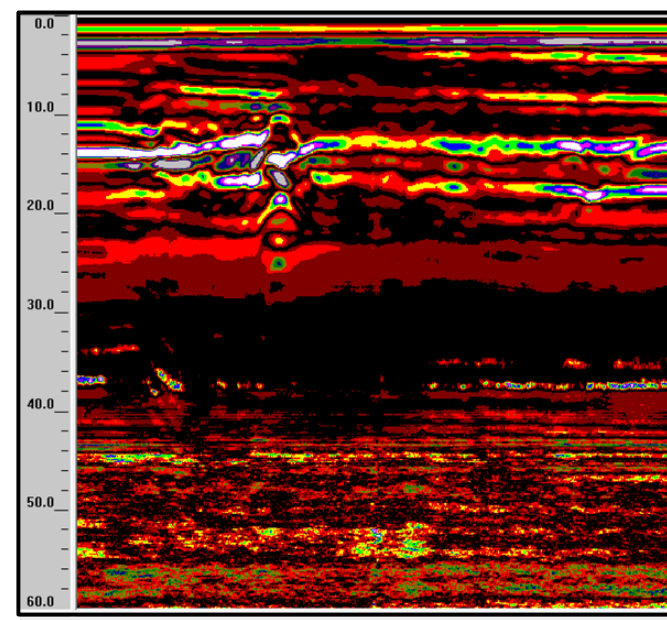
TITLE PARCELS 97/99 - EM61 BOTTOM COIL & DIFFERENTIAL RESULTS CONTOUR MAP	
PROJECT NC DEPARTMENT OF TRANSPORTATION ROW IMPROVEMENT PROJECT N. WILKESBORO, WILKES COUNTY, NC	
 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology	
DATE 07/04/2013	CLIENT NCDOT
PYRAMID PROJECT #: 2013-131	FIGURE 2



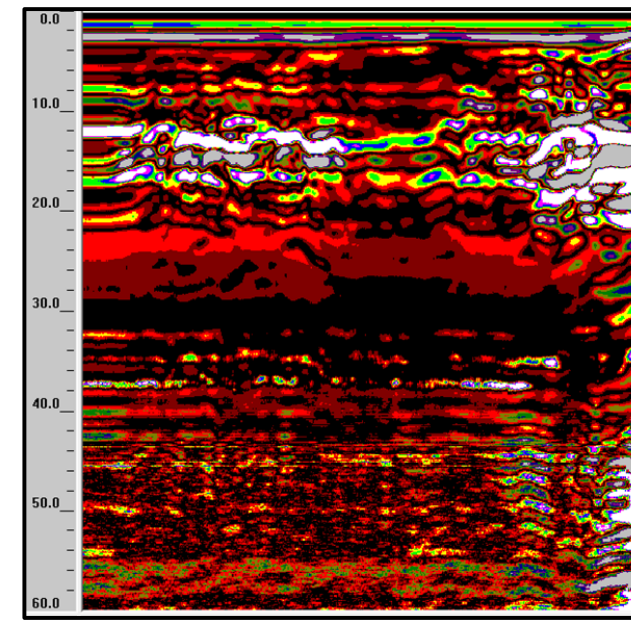
GPR Transects 1, 2 and 3 were performed across the EM anomaly located at X=200, Y=65. The anomaly's size and response amplitude was characteristic of a large metallic object such as a UST. However, the GPR data did not record any evidence of a structure that would be considered a UST. GPR Transect 1 recorded a reflector that may be indicative of an object such as an old vault that could generate the EM response observed. The remaining anomalies were attributed to visible objects at the ground surface or utilities.



GPR Transect 1




GPR Transect 2



GPR Transect 3



TITLE PARCELS 97/99 - GPR TRANSECT LOCATIONS AND IMAGES	
PROJECT NC DEPARTMENT OF TRANSPORTATION ROW IMPROVEMENT PROJECT N. WILKESBORO, WILKES COUNTY, NC	
 <div style="float: right;"> 503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology </div>	
DATE	07/04/2013
CLIENT	NCDOT
PYRAMID PROJECT #:	2013-131
FIGURE 3	

APPENDIX C

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT R-2603 Parcels 97&99, Alan & Steven Johnson, N. Wilkesboro, NC	BORING/WELL NO:	97-2(TW)
SITE LOCATION:	2484 Elkin Highway Wilkes County, NC	BORING/WELL LOCATION:	Parcel 97, Alan Johnson Property
START DATE:	6/12/13	COMPLETED:	6/12/13
GEOLOGIST:	B. Higgins	DRILLER:	Geologic Exploration
DRILL METHOD:	Geoprobe	SAMPLE METHOD:	Macro-core
BORING DIA:	2-inch	CASING DIA:	1-inch
TOTAL DEPTH:	25 feet	CASING DEPTH:	25 feet

DEPTH (ft.)	VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.	OVA RESULTS PERCENT RECOVERY BLOW COUNTS
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DEPTH (ft.)	VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.	OVA RESULTS PERCENT RECOVERY BLOW COUNTS
	Depths correspond to soil type transitions	Core Sample Depths
0-2.5'	Medium brown to reddish brown, silty-clay (CL) changing to white, tan & brown micaceous silt (MH), no odor	OVA=97-2(0-2.5): 1.0 PPM
2.5-5'	Reddish brown, slightly micaceous clayey-silt (MH), firm, no odor	OVA=97-2(2.5-5): 1.5 PPM
5-7.5'	Firm mottled red-brown, orange, brown & tan, slightly micaceous silt (MH), no odor	OVA=97-2(5-7.5): 1.0 PPM
7.5-10'	Firm mottled red-brown, orange, brown & tan, slightly micaceous silt (MH), no odor	OVA=97-2(7.5-10): 2.0 PPM
10-12.5'	Mottled tan with white orange-brown & black slightly micaceous silt (MH), soft, no odor	OVA=97-2(10-12.5):1.0 PPM
12.5-15'	Mottled tan with white orange-brown & black slightly micaceous silt (MH), soft, no odor	OVA=97-2(12.5-15):2.0 PPM
	Temporary well set at 25 feet with lower 10 feet screen. Let well set over night. Temporary well 97-2(TW) was gauged on 6/13/13 & was dry.	
	DGW: DRY	

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) 15 DEPTH (ft) 0-15 DIAMETER (in) 1 MATERIAL PVC
 SCREEN LENGTH (ft) 10 DEPTH (ft) 15-25 DIAMETER (in) 1 MATERIAL PVC
 DEPTH TO TOP OF SAND 13 BAGS OF SAND 0.5
 DEPTH TO TOP SEAL 10 BENTONITE USED 0.25 BAGS OF CEMENT USED 0

APPENDIX D



Hydrocarbon Analysis Results

Client: NC Department of Transportation
Address: 2484 Elkin Highway

3 Samples analysed

Contact: **Operator** Tim Leatherman

Project: NCDOT R-2603, Pyramid 2013-131

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	97-1(7.5-10)	12.6	<0.6	<0.6	<0.6	<0.6	< 0.63	< 0.06	< 0.032	0	0	100	Match not possible
s	97-2(7.5-10)	14.7	<0.7	<0.7	<0.7	<0.7	< 0.74	< 0.07	< 0.037	0	0	100	Match not possible
s	99-1(2.5-5)	12.7	<0.6	<0.6	<0.6	<0.6	< 0.64	< 0.06	< 0.032	0	0	100	Match not possible

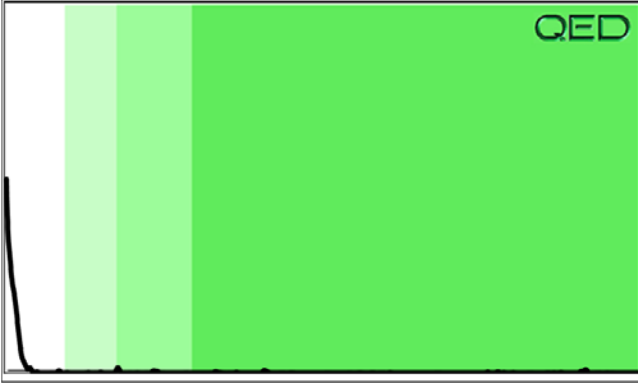
Initial Calibrator QC check

Low Range Calibrator Final check
High Range Calibrator Final check

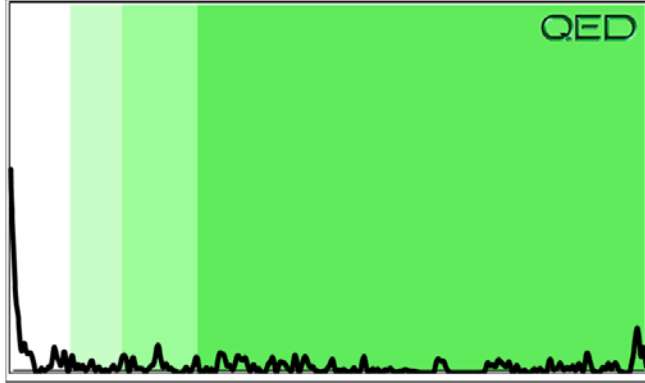
Results generated by a QED HC-1 analyser
 Concentration values in mg/kg for soil samples and mg/L for water samples.
 Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification based on operator selected library matches
 Fingerprint match abbreviations Est = Specific calibrator not used, result estimated (PFM)= Poor library fingerprint match
 (SBS)= site specific background subtracted (LBS)= Library background subtracted % = match confidence

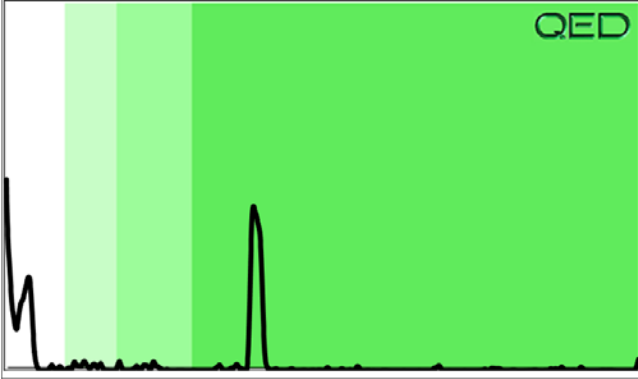
Match not possible 97-1(7.5-10)



Match not possible 97-2(7.5-10)



Match not possible 99-1(2.5-5)



APPENDIX E
