PRELIMINARY SITE ASSESSMENT

PARCEL 71, DOUGLAS BROWN
726 ELKIN HIGHWAY (NC 268)
NORTH WILKESBORO, WILKES COUNTY, NORTH CAROLINA
STATE PROJECT: R-2603
WBS ELEMENT: 36001.1.2
July 22, 2013

Report prepared for:

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C-257 –Geology
C-1251 - Engineering

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PARCEL 71, DOUGLAS BROWN
726 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 Parcel 71, Douglas Brown. 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). 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:** A review of the North Carolina Department of Environment and Natural Resources (NC DENR) registered UST database and incident database indicated no incidents for the Douglas Brown property (Parcel 71). 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 6, 2013, Ms. Kromm responded to the email and stated that site address 726 Elkin Highway does not have any environmental incidents in the DENR database.

- **Site Observations:** The NCDOT requested that Pyramid investigate low lying areas of the site for possible waste glass that could be hazardous to personnel during road construction activities. The low-lying area on the east side of the property contained rip rap and some trash debris, but Pyramid did not observed and waste glass at the property.

- **Geophysical Survey:** The geophysical investigation suggests that no evidence of metallic USTs was recorded 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 results for soil sample 71-1(7.5) did not detect TPH gasoline range organics (GRO) or diesel range organics (DRO) concentrations above detection limits. The QED results for soil samples 71-

2(7.5), 71-3(7.5) detected TPH-DRO at 22.4 milligram-per-kilogram (mg/kg) and 25.5 mg/kg, respectfully. The NC DENR action levels for TPH-GRO and TPH-DRO is 10 mg/kg.

- **Limited Groundwater Assessment:** The depth to groundwater in the temporary well (TW) at boring 71-3(TW) on the Douglas Brown property was approximately 11 feet below land surface (BLS). One groundwater sample was obtained for laboratory analysis. No volatile organic compounds by EPA Method 6200B were detected above laboratory detection limits in the 71-3(TW) groundwater sample.

- **Contaminated Soil Volumes:** Soils with GRO or DRO above NC DENR Action Levels of 10 mg/kg were observed at soil boring locations 71-2 and 71-3. Pyramid reviewed the NCDOT Microstation computer-aided design and drafting (CADD) files to determine proposed excavation/earthwork plans at the locations of the impacted soils. The NCDOT Microstation cross section file that was the closest to boring 71-2 (Cross Section -L- Sta. 88+00.00) indicates that the NCDOT plans to excavate 1.5 feet below the existing ground surface in this area. The NCDOT Microstation cross section file that was the closest to boring 71-3 (Cross Section -L- Sta. 89+00.00) indicates this area is not directly within a zone of proposed earthwork/excavation, other than the installation of the proposed drainage features. Pyramid's PSA investigation resulted in an estimated area of **9,235 square feet of impacted soil** in the vicinity of borings 71-2 and 71-3. For this reason, our volume calculations are based on a conservative estimate of excavating 1.5 feet and 10 feet below ground surface in this area. The 1.5-foot excavation depth results in an approximate volume of 13,853 cubic feet, or **513 cubic yards of impacted soils at the location of soil borings 71-2 and 71-3**. The 10-foot excavation depth results in an approximately 92,530 cubic feet, or **3,427 cubic yards of impacted soil between 0 to 10 feet at the location of borings 71-2 and 71-3**. The estimates of soil volumes above are based on applying conservative areas of contaminated soil surrounding the location of the soil borings. Due to the limited amount of soil data collected at this time, more refined areas were not assessed.

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 parcel of Douglas Brown. The Douglas Brown property is currently an auto sales facility (Heritage Motors) located at 726 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 in the proposed easement and existing right of way and edge of pavement (State Project R-2603). The location of the subject site is shown on **Figure 1.**

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 CADD files provided to Pyramid 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 one 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 Douglas Brown property was first developed for use before 1958. The earliest aerial to show the building was the 1958 aerial.

Interviews with Mr. Douglas Brown and his son indicated that they have owned the property since the early 1990s. They stated to the best of their knowledge no underground storage tanks (USTs) have been on the property. They also stated it was their understating before they owned the property a cemetery was on the property, but the remains were removed before they owned the property.

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 6, 2013, Ms. Kromm responded to the email and stated that site address 726 Elkin Highway does not have any environmental incidents in the DENR database.

The NCDOT requested that Pyramid investigate low lying areas of the site for possible waste glass that could be hazardous to personnel during road construction activities. The low-lying area on the east side of the property contained rip rap and some trash debris, but Pyramid did not observed and waste glass at the property.

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 by the initial survey could be attributed to visible objects at the ground surface such as signs and vehicles. The GPR surveys across remaining areas at the property indicated that non-cultural anomalies were likely due to buried metallic debris or utilities. No evidence was observed to indicate the presence of metallic USTs within the survey area.

The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/or easement.

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 10, 2013, Pyramid mobilized to the site and drilled soil borings, installed one temporary monitoring well (TW), and collected the proposed soil samples and groundwater sample for the PSA. The soil borings and temporary well were completed using a track mounted Geoprobe® Direct-Push rig. Three (3) soil borings (71-1, 71-2, and 71-3) 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. Soil boring 71-1, 71-2, and 71-3 were installed at or near proposed drainage pipes and features. The locations of the borings are shown on **Figure 2**.

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**. 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 total petroleum hydrocarbon (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 contaminant analysis. The soil samples selected to undergo 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. No duplicate soil samples were collected for laboratory analysis for Parcel 71.

4.2 Soil Sample Analytical Results

The QED results for soil sample 71-1(7.5) did not detect TPH-GRO or TPH-DRO concentrations above detection limits. The QED results for soil samples 71-2(7.5) and 71-3(7.5) detected TPH-DRO at 22.4 milligram-per-kilogram (mg/kg) and 25.5 mg/kg, respectfully. The NC DENR action levels for TPH-GRO and TPH-DRO is 10 mg/kg.

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 10, 2013, Pyramid converted soil boring 71-3 into a 1-inch diameter temporary monitoring well (TW). Soil boring 71-3(TW) was completed to a total depth of 20 feet below land surface (BLS). The temporary well at 71-3 was constructed with 10 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 10, 2013, the temporary monitoring well 71-3(TW) was gauged using a properly decontaminated electric water level probe. The depth-to-groundwater was measured at 11 feet BLS. The temporary monitoring well was sampled using new 0.5-inch disposable bailers. Upon completion of the gauging and sampling, 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

The groundwater sample 71-3(TW) was placed in laboratory prepared containers for analysis of volatile organic compounds (VOCs) by EPA Method 6200B. The samples were shipped to Pace Analytical in Huntersville, NC. The laboratory analysis did not detect any volatile organic compounds above laboratory detection limits in the groundwater sample. The groundwater results for sample 71-3(TW) are summarized in **Table 3**. A copy of the laboratory report and chain-of-custody is included in **Appendix E**.

5.0 Conclusions and Recommendations

As requested by NCDOT, Pyramid has completed a PSA at the Douglas Brown property located 726 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.

5.2 Limited Soil Assessment

The QED analysis for soil sample 71-2(7.5) detected TPH-DRO at 22.4 mg/kg, which is above the NC DENR action level of 10 mg/kg. The QED analysis for soil sample 71-3(7.5) detected TPH-DRO at 25.5 mg/kg, which is above the NC DENR action level of 10 mg/kg. The QED results for the remaining soil sample for Parcel 71 were below detection limits.

5.3 Limited Groundwater Assessment

Soil boring 71-3 was converted into a 1-inch diameter temporary monitoring well to a total depth of 20 feet BLS. The depth-to-groundwater was gauged at 11 feet BLS. The laboratory analysis did not detect any volatile organic compounds above laboratory detection limits in the groundwater sample.

5.4 Recommendations

During road construction activities, it is possible the NCDOT may encounter petroleum impacted soil near soil borings 71-2 and 71-3. The direct source of this petroleum was not evident in the field; however, borings 71-2 and 71-3 were located near proposed drainage features.

Soils with GRO or DRO above 10 mg/kg were observed at the location of boring 71-2 and 71-3. Pyramid reviewed the NCDOT Microstation CADD files to determine proposed excavation/earthwork plans at the locations of the impacted soils. The NCDOT Microstation cross section file that was the closest to boring 71-2 (Cross Section -L- Sta. 88+00.00) indicates this area is not directly within a zone of proposed earthwork/excavation, other than the installation of the proposed drainage feature. The NCDOT Microstation cross section file that was the closest to boring 71-3 (Cross Section -L- Sta. 88+00.00) indicates this area is not directly within a zone of proposed earthwork/excavation, other than the installation of the proposed drainage features.

Pyramid's PSA investigation estimates an area of 9,235 square feet of impacted soil in the vicinity of borings 71-2 and 71-3. For this reason, our volume calculations are based on a conservative estimate of excavating 1.5 feet and 10 feet below ground surface in this

area. The 1.5-foot excavation depth results in an approximate volume of 13,853 cubic feet, or 513 cubic yards of impacted soils at the location of soil borings 71-2 and 71-3. The 10-foot excavation depth results in an approximately 92,530 cubic feet, or 3,427 cubic yards of impacted soil between 0 to 10 feet at the location of borings 71-2 and 71-3. The estimates of soil volumes above are based on applying conservative areas of contaminated soil surrounding the location of the soil borings. Due to the limited amount of soil data collected at this time, more refined areas were not assessed.

If impacted soil is removed at the location of these soil borings, 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.

The NCDOT requested that Pyramid investigate low lying areas of the site for possible waste glass that could be hazardous to personnel during road construction activities. The low-lying area on the east side of the property contained rip rap and some trash debris, but Pyramid did not observed and waste glass at the property.

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 PSA 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: 726 ELKIN HIGHWAY LOCATION: N. WILKESBORO, NORTH CAROLINA

USGS IDENTIFICATION

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

SCALES

MILES: 1/2 0 1

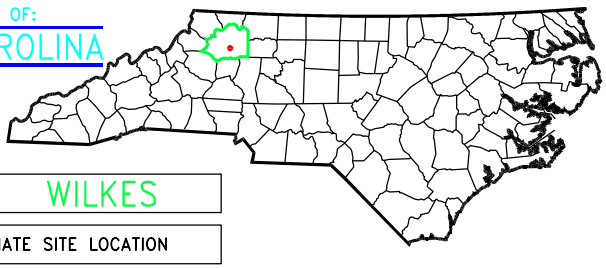
FEET: 1000 0 2000 4000 6000

1" = 2000'

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

MAGNETIC NORTH

COUNTY MAP OF: NORTH CAROLINA



	COUNTY: WILKES
	APPROXIMATE SITE LOCATION

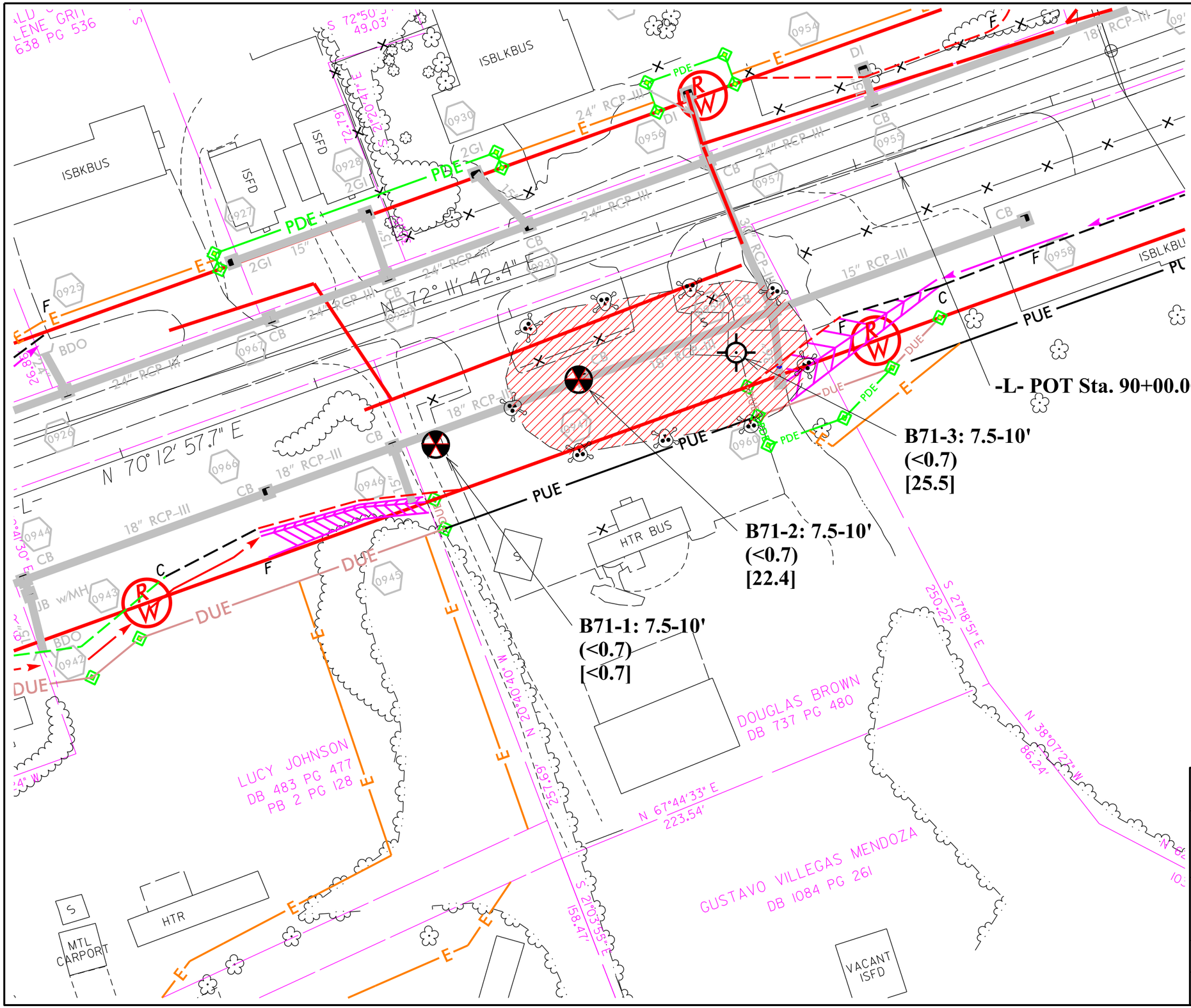
PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT: NCDOT R-2603		SCALE: 1"=2000'	DRAWN BY: KAM
PROPERTY NAME: PARCEL 71, DOUGLAS BROWN			CHECK BY: TDL
CITY: N. WILKESBORO	STATE: NORTH CAROLINA	DATE: 7/9/13	JOB NO.: 2013-131
TITLE: TOPOGRAPHIC MAP		DRAWING NAME: USGSTOPO	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
- E — 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
- AREA OF CONTAMINATION (>10 PPM)

(<6.1) TPH-DRO concentration (mg/kg)

[<6.1] TPH-GRO concentration (mg/kg)

(Analytical data obtained by the method of QROS, QED Analyzer)

0 50 100

FEET

N

TITLE: SOIL BORING LOCATIONS AND ESTIMATED AREA OF CONTAMINATION

PROJECT: NCDOT ROW PROJECT R-2603 (36001.1.2)
DOUGLAS BROWN - PARCEL 071
NC 268, WILKES COUNTY, NORTH CAROLINA

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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

726 Elkin Highway (NC268) - Parcel 71

North Wilkesboro, Wilkes County, North Carolina

SOIL BORING	SAMPLE ID	DEPTH (feet bgs)	OVA/FID READINGS (PPM)
71-1	71-1(0-2.5)	0 to 2.5	<1
	71-1(2.5-5)	2.5 to 5	1.0
	71-1(5-7.5)	**5 to 7.5**	**3**
	71-1(7.5-10)	7.5 to 10	2
71-2	71-2(0-2-5)	2 to 5	<1
	71-2(2.5-5)	2.5 to 5	<1
	71-2(5-7.5)	**5 to 7.5**	**2.0**
	71-2(7.5-10)	7.5 to 10	2
71-3	71-3(0-2.5)	0 to 2.5	<1
	71-3(6.5-7.5)	2.5 to 5	<1
	71-3(5-7.5)	**5 to 7.5**	**1.5**
	71-3(7.5-10)	7.5 to 10	<1

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
726 Elkin Highway (NC 268) - Parcel 71
North Wilkesboro, Wilkes County, North Carolina

				QROS - QED Analysis			Laboratory Analysis (Pace)	
SAMPLE ID	**DATE**	**DEPTH (feet)**	**FID/OVA (ppm)**	**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)**
71-1(7.5)	6/10/2013	7.5 to 10	3.0	<0.7	<0.7	<0.7	------	------
71-2(7.5)	6/10/2013	7.5 to 10	2.0	<0.7	**22.4**	22.4	------	------
71-3(7.5)	6/10/2013	7.5 to 10	1.5	<0.7	**25.5**	25.5	------	------
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

TABLE 3

Summary of Groundwater Analytical Results

NCDOT State Project R-2603
726 Elkin Highway (NC 268) - Parcel 71
North Wilkesboro, Wilkes County, North Carolina

PARAMETER	UNITS	SAMPLE ID	NCAC 2L GROUNDWATER STANDARD
		71-3(TW)	
EPA Method 6200B; Sample Collection Date: 6/10/13			
Benzene	ug/L	ND	1
Chloroform	ug/L	ND	70
Diisopropyl Ether (IPE)	ug/L	ND	70
Ethyl Benzene	ug/L	ND	600
Isopropylbenzene (Cumene)	ug/L	ND	70
Naphthalene	ug/L	ND	6
Styrene	ug/L	ND	70
Toluene	ug/L	ND	600
Total Xylenes	ug/L	ND	500
n-Propylbenzene	ug/L	ND	70
sec-Butylbenzene	ug/L	ND	70
tert-Butyl methyl ether (MTBE)	ug/L	ND	20
tert-Butylbenzene	ug/L	ND	70
1,2,4-Trimethylbenzene	ug/L	ND	400
1,2-Dichloroethane	ug/L	ND	0.4
1,3,5-Trimethylbenzene	ug/L	ND	400
4-Isopropyltoluene	ug/L	ND	25
All Other Parameters	ug/L	ND	NA

ug/L= micrograms-per-liter
ND= Not Detected
NA= Not Applicable

APPENDIX A

Google earth

feet 1000

meters 300

Google earth

feet 1000

meters 300

Google earth

feet 1000

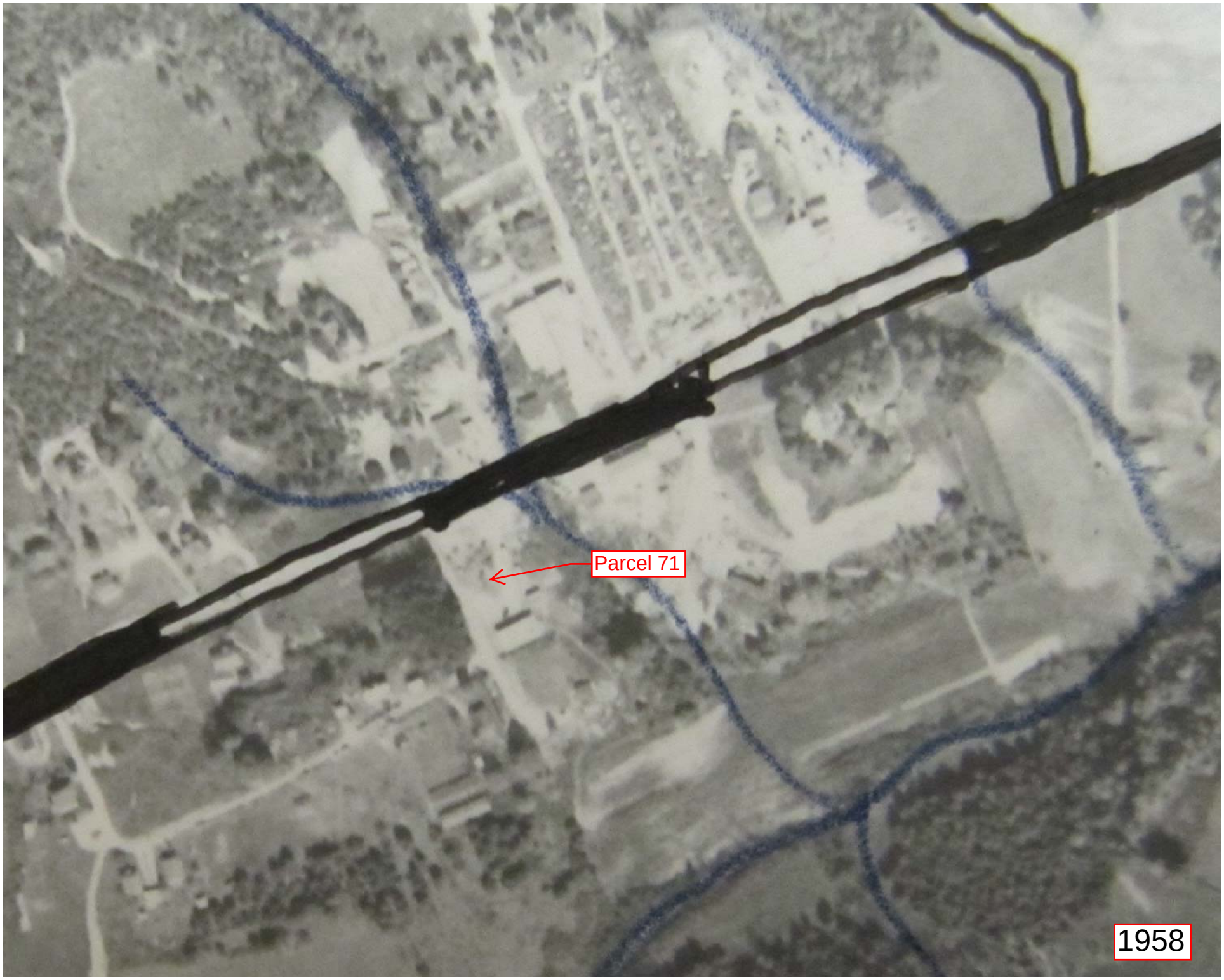
meters 300

Google earth

feet 700

meters 200


Parcel 71
1966


Parcel 71
1958

APPENDIX B

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

PYRAMID ENVIRONMENTAL & ENGINEERING
(PROJECT 2013-131)

NCDOT PROJECT R-2603 (WBS 36000.1.1)

GEOPHYSICAL SURVEYS OF PARCEL 71 – 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
PARCEL 71 – 726 ELKIN HIGHWAY
North Wilkesboro, Wilkes County, North Carolina

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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 signs and vehicles. The GPR surveys across remaining areas at the property indicated that non-cultural anomalies were likely due to buried metallic debris or utilities. No evidence was observed to indicate the presence of metallic USTs within the survey area.
- The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/or easement.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for the North Carolina Department of Transportation (NCDOT) at Parcel 71 (Douglas Brown, Quality Auto Sales), located at 726 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 survey area extended across the northern portion of the parcel, spanning a distance of approximately 180 feet along NC 268, and extending approximately 90 feet at its maximum north/south distance from NC 268 south into the property. Conducted on May 23 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 medians. Several areas of the site were inaccessible due to parked cars for sale, as well as a steep drainage ditch on the east edge of the parcel boundary. 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 23, 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 majority of the EM anomalies that were directly adjacent to the areas marked as inaccessible due to vehicles were a direct result of the metal in those parked cars (see Figure 2 for specific locations). The anomaly at X=25, Y=45 was the result of a metal sign. The anomaly at X=95, Y=45 was also the result of a metal sign. The anomaly at X=155, Y=40 was the result of a sign. The anomaly at X=160, Y=35 was the result of a water meter cover. The anomaly at X=170, Y=25 was the result of a mailbox. The anomaly at X=185, Y=45 was the result of a storm drain pipe. The anomaly at X=190, Y=20 was the result of exposed rebar. The anomaly centered at X=55, Y=95 could not be attributed to a visible object at the ground surface and was investigated further by the GPR. As discussed above, all other anomalies not discussed here specifically were the result of the various groups of parked vehicles at the property.

Anomalies that could not be directly attributed to visible objects at the ground surface were investigated further with the GPR. Specifically, the anomaly centered at X=55, Y=95 was analyzed with the GPR. The GPR data were viewed in real time as the equipment was surveyed across the anomalies. 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 and 2 were performed from west to east and south to north, respectively, across the anomaly at X=55, Y=95. These scans recorded minor reflectors that may be indicative of buried debris and/or a section of unknown buried utility piping. No other significant features were recorded by the GPR that would be indicative of any large objects below the ground surface, such as metallic USTs.

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.

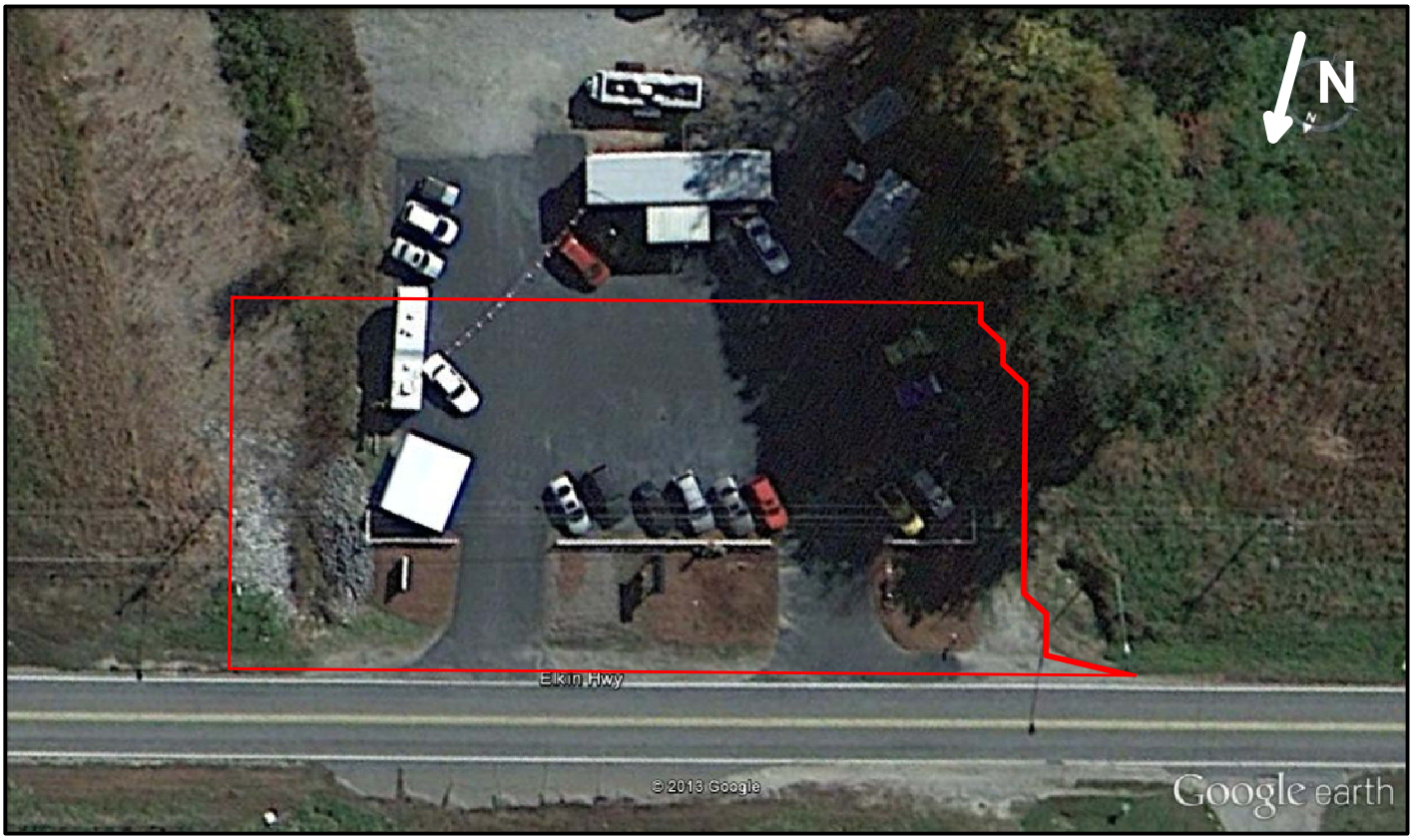
SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across Parcel 71, 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 signs and vehicles. The GPR surveys across remaining areas at the property indicated that non-cultural anomalies were likely due to buried metallic debris or utilities. No evidence was observed to indicate the presence of metallic USTs within the survey area.
- The geophysical investigation suggests that no evidence of metallic USTs was recorded within the proposed ROW and/or easement.

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 Car Sales Building
(Facing Approximately South)

Geophysical Survey Area
(Facing Approximately West)

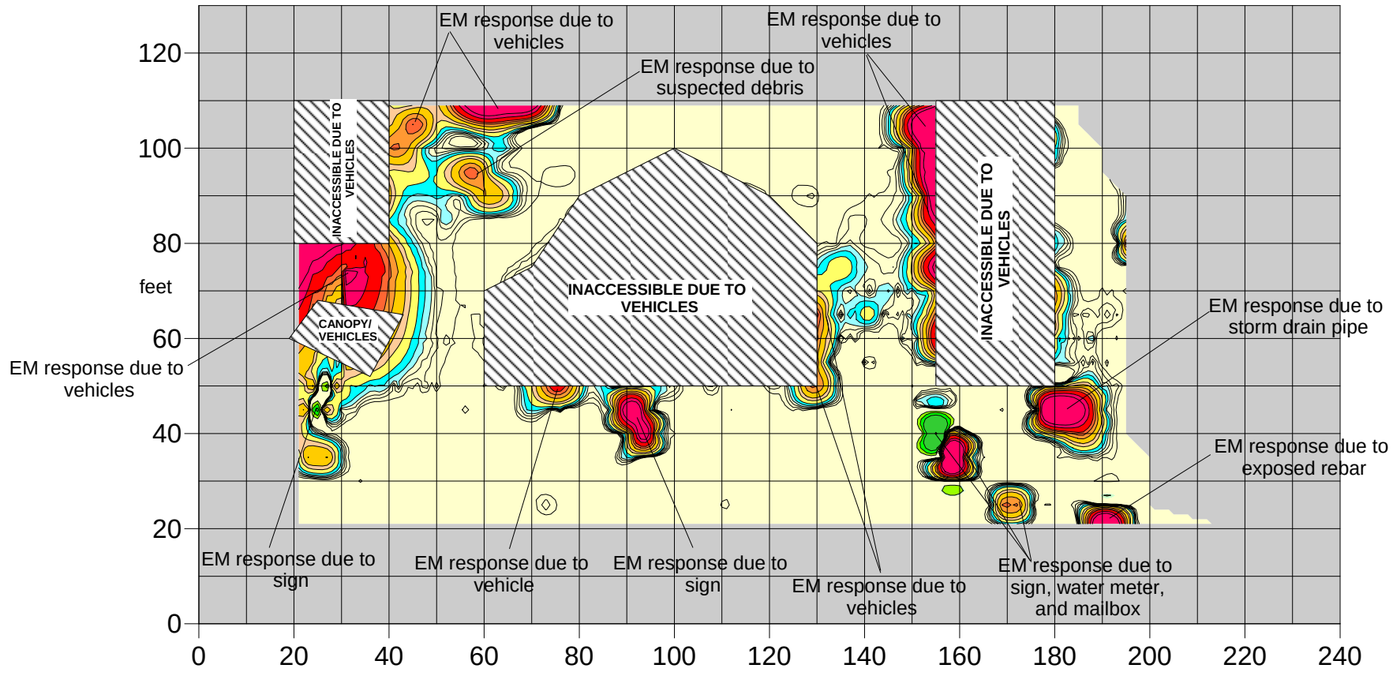
PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT	NC DEPARTMENT OF TRANSPORTATION	DATE	06/26/13	DRWN	ECC
SITE	PARCEL 71, WILKES COUNTY (DOT ROW PROJECT)	LAY		CHKD	
CITY	N. WILKESBORO	STATE	NORTH CAROLINA	DWG	
TITLE	GEOPHYSICAL RESULTS	JAD	2013-131	FIGURE	

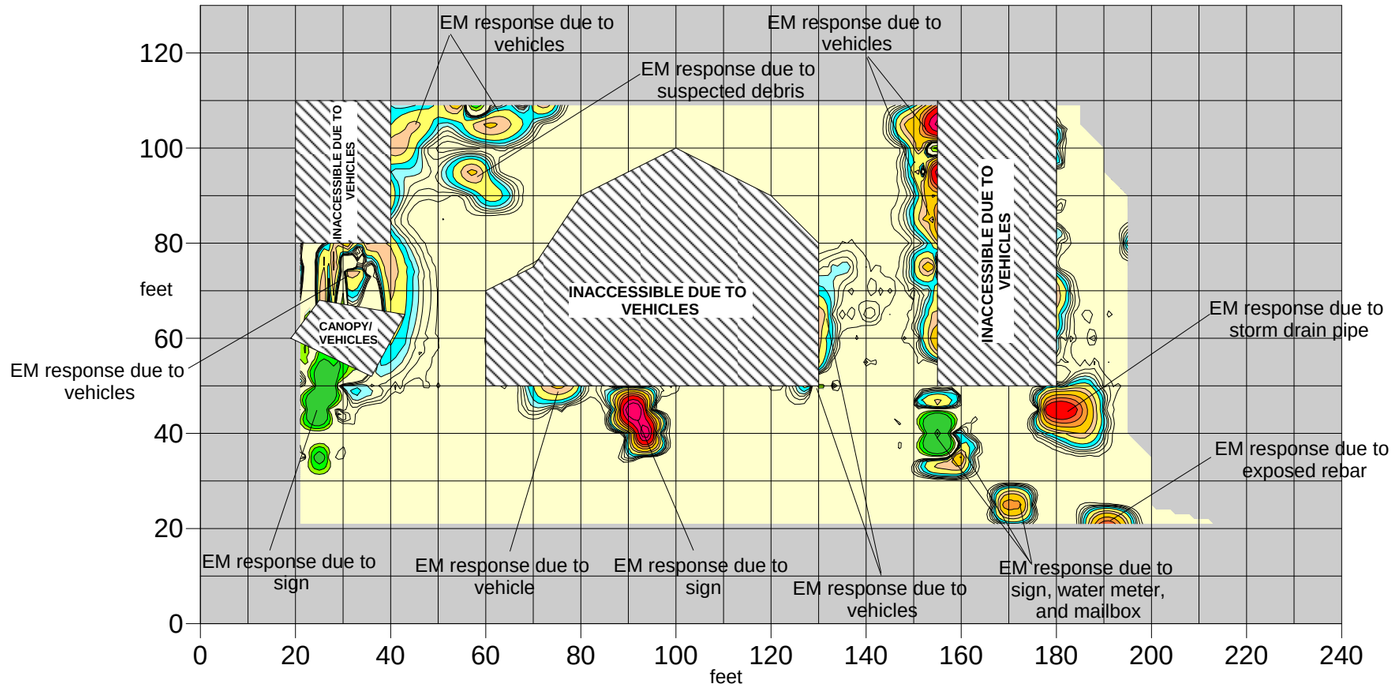
GEOPHYSICAL
SURVEY BOUNDARIES &
SITE PHOTOGRAPHS

FIGURE 1

EM61 Bottom Coil Results



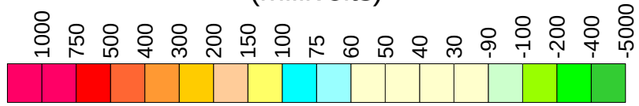
EM61 Differential Results



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 400 MHz antennae.

EM61 Metal Detection Response (millivolts)



N

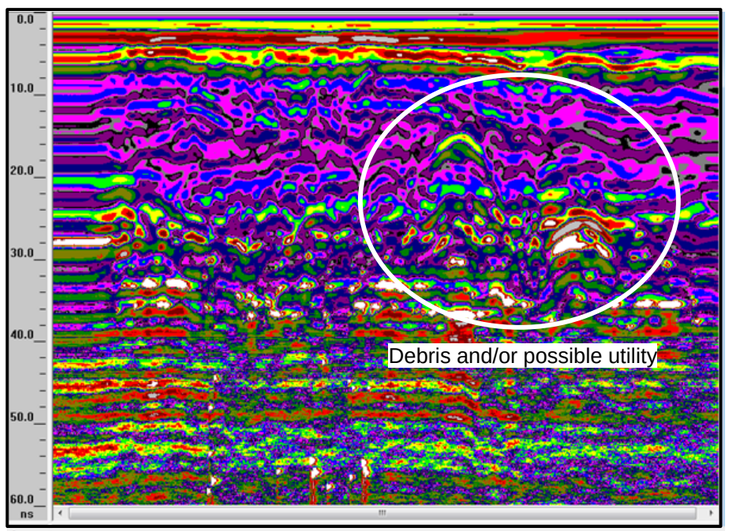
TITLE
PARCEL 71 - EM61 BOTTOM COIL & DIFFERENTIAL RESULTS CONTOUR MAP

PROJECT
NC DEPARTMENT OF TRANSPORTATION
ROW IMPROVEMENT PROJECT
N. WILKESBORO, WILKES COUNTY, NC

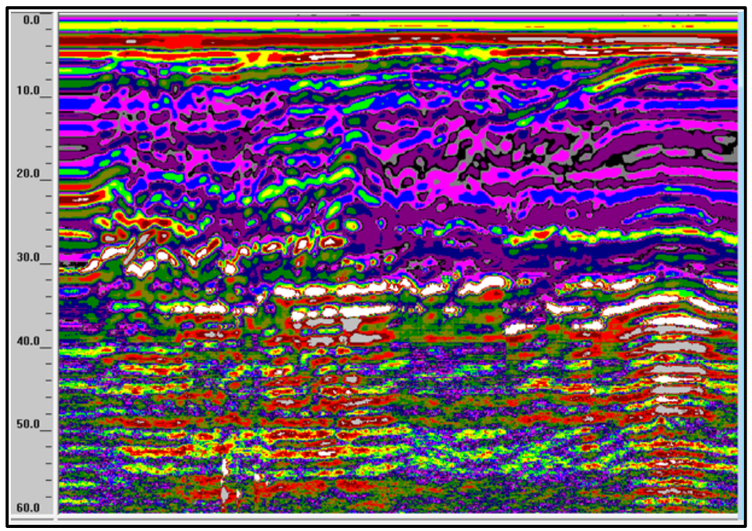
PYRAMID ENVIRONMENTAL & ENGINEERING, P.C
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE	CLIENT
06/25/2013	NCDOT
PYRAMID PROJECT #: 2013-131	**FIGURE 2**

GPR Transects 1 and 2 were performed across the EM anomaly located at X=55, Y=95. The GPR results indicate the anomaly was likely the result of isolated buried metallic debris and/or an unkown utility line. No evidence of a UST was observed. The remaining anomalies were attributed to visible objects at the ground surface.



GPR Transect 1



GPR Transect 2

N

TITLE

PARCEL 71 - GPR TRANSECT LOCATIONS AND IMAGES

PROJECT

NC DEPARTMENT OF TRANSPORTATION
ROW IMPROVEMENT PROJECT
N. WILKESBORO, WILKES COUNTY, NC

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.
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 3**

APPENDIX C

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: **PROJECT NUMBER:**	NC DOT R-2603 Parcel 71, Douglas Brown N. Wilkesboro, NC / 2013-131	**BORING/WELL NO:**	71-1
SITE LOCATION:	726 Elkin Highway Wilkes County, NC	**BORING/WELL LOCATION:**	Parcel 71, Douglas Brown Property, West Edge
START DATE:	6/10/13	**COMPLETED:**	6/10/13
GEOLOGIST:	R. Kramer	**DRILLER:**	Geologic Exploration
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	None
TOTAL DEPTH:	10 feet	**CASING DEPTH:**	N/A

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'	Brown, sandy-silt and gravel (SM to GM), moist, no odor	OVA=71-1(0-2.5): <1 PPM
2-5'	Reddish brown, sandy-silt (MH) has large pieces of mica, dry, no odor	OVA=71-1(2.5-5): 1.0 PPM
5-10'	Reddish brown, sandy-silt (ML), dry, no odor	OVA=71-1(5-7.5): 3.0 PPM
		OVA=71-1(7.5-10): 2.0 PPM

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
SCREEN LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
DEPTH TO TOP OF SAND _____ BAGS OF SAND ___.
DEPTH TO TOP SEAL _____ BENTONITE USED _____ BAGS OF CEMENT USED ___.

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: **PROJECT NUMBER:**	NC DOT R-2603 Parcel 71, Douglas Brown N. Wilkesboro, NC / 2013-131	**BORING/WELL NO:**	71-2
SITE LOCATION:	726 Elkin Highway Wilkes County, NC	**BORING/WELL LOCATION:**	Parcel 71, Douglas Brown Property, Center
START DATE:	6/10/13	**COMPLETED:**	6/10/13
GEOLOGIST:	R. Kramer	**DRILLER:**	Geologic Exploration
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	None
TOTAL DEPTH:	10 feet	**CASING DEPTH:**	N/A

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
0-1'	Asphalt and gravel	OVA=71-2(0-2.5): <1 PPM
1-3'	Brown, micaceous clayey-silt (MH), moist, no odor	OVA=71-2(2.5-5): <1 PPM
3-6'	Reddish-brown, micaceous sandy-silt (MH to ML), moist, no odor	OVA=71-2(5-7.5): 2.0 PPM
6-10'	Reddish-brown, silt (ML), moist, no odor	OVA=71-2(7.5-10): 1.0 PPM

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
SCREEN LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
DEPTH TO TOP OF SAND _____ BAGS OF SAND ___.
DEPTH TO TOP SEAL _____ BENTONITE USED _____ BAGS OF CEMENT USED ___.

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: **PROJECT NUMBER:**	NC DOT R-2603 Parcel 71, Douglas Brown N. Wilkesboro, NC / 2013-131	**BORING/WELL NO:**	71-3(TW)
SITE LOCATION:	726 Elkin Highway Wilkes County, NC	**BORING/WELL LOCATION:**	Parcel 71, Douglas Brown Property, East Edge
START DATE:	6/10/13	**COMPLETED:**	6/10/13
GEOLOGIST:	R. Kramer	**DRILLER:**	Geologic Exploration
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	1-inch
TOTAL DEPTH:	20 feet	**CASING DEPTH:**	20-feet

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
0-1'	Brown, sandy-silt and gravel (SM to GM)	OVA=71-3(0-2.5): <1 PPM
1-4'	Reddish brown, micaceous clayey-silt (MH), moist, no odor	OVA=71-3(2.5-5): <1 PPM
4-6'	Brown, clayey-sandy-silt loam (ML-MH) with mica, moist, no odor	OVA=71-3(5-7.5): 1.5 PPM
6-16'	Brown to tan, silt with some sand & mica (MH), moist, no odor	OVA=71-3(7.5-10): <1 PPM
16-20'	Brown, silt (MH), very moist to saturated, no odor	
	Set 1-inch diameter temporary well at 20 feet with bottom 10 feet of	
	screen.	
	Depth to groundwater = 11 feet below land surface.	

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) 10 DEPTH (ft) 0-10 DIAMETER (in) 1 MATERIAL PVC.
SCREEN LENGTH (ft) 10 DEPTH (ft) 10-20 DIAMETER (in) 1 MATERIAL PVC.
DEPTH TO TOP OF SAND 8 BAGS OF SAND 0.5.
DEPTH TO TOP SEAL 5 BENTONITE USED 0.25 BAGS OF CEMENT USED 0.

APPENDIX D

QED

AQROS

Hydrocarbon Analysis Results

Client: NC Department of Transportation
Address: 726 Elkin Highway, N. Wilkesboro, NC

3 **Samples analysed**

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	71.3(7.5)	13.6	<0.7	<0.7	25.5	25.5	8.37	0.14	< 0.034	48.8	38.6	12.6	Degraded Fuel (est) 69.7%
s	71-2(7.5)	13.0	<0.6	<0.6	22.4	22.4	7.34	0.12	< 0.032	49.4	41.2	9.4	Degraded Fuel (est) 79.2%
s	71-1(7.5)	14.1	<0.7	<0.7	<0.7	<0.7	< 0.71	< 0.07	< 0.035	0	65.9	34.1	PAH

Initial Calibrator QC check

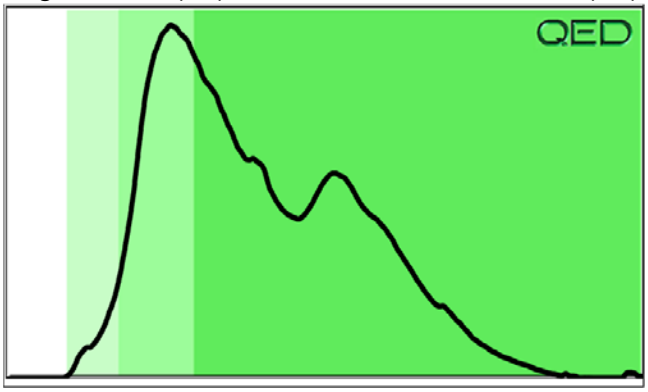
Low Range Calibrator Final check
High Range Calibrator Final check

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

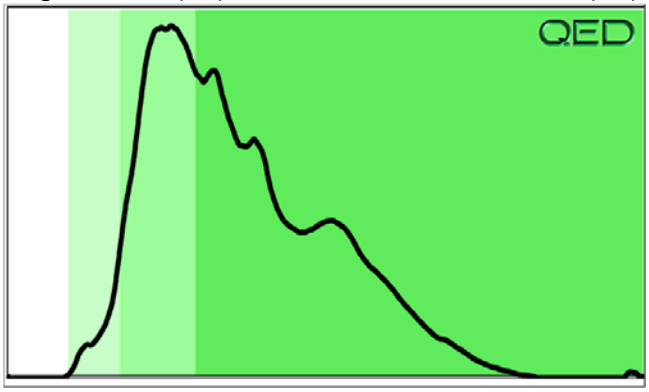
Fingerprints provide a tentative hydrocarbon identification based on operator selected library matches
Fingerprint match abbreviations Est = Specific calibrator not used, result estimated (PFM)= Poor library fingerprint match
(SBS)= site specific background subracted (LBS)= Library background subtracted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

Project NCDOT R-2603 **Date** ##################

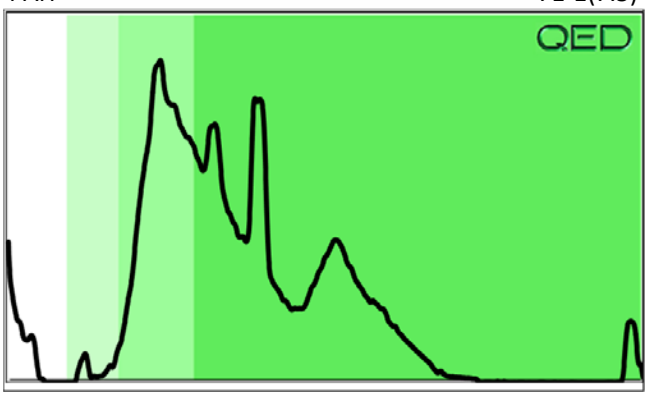
Degraded Fuel (est) 69.7% 71.3(7.5)



Degraded Fuel (est) 79.2% 71-2(7.5)



PAH 71-1(7.5)



APPENDIX E

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

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

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

June 24, 2013

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

RE: Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory on June 12, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

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

Sincerely,

Kevin Godwin

kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Tim Leatherman, Pyramid

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

CERTIFICATIONS

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

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

SAMPLE ANALYTE COUNT

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92161354001	**71-3 (TW)**	SM 6200B	CAH	64	PASI-C

Pace Analytical Services, Inc.
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(828)254-7176

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

PROJECT NARRATIVE

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

Method: **SM 6200B**
Description: 6200B MSV
Client: NCDOT West Central
Date: June 24, 2013

General Information:
1 sample was analyzed for SM 6200B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:
The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:
All criteria were within method requirements with any exceptions noted below.

Internal Standards:
All internal standards were within QC limits with any exceptions noted below.

Surrogates:
All surrogates were within QC limits with any exceptions noted below.

Method Blank:
All analytes were below the report limit in the method blank with any exceptions noted below.

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:
All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MSV/23350

A matrix spike and matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92161461003

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 995346)
  - 1,1-Dichloropropene
  - Carbon tetrachloride
  - Methylene Chloride
- MSD (Lab ID: 995347)
  - 1,1,1-Trichloroethane
  - 1,1-Dichloroethene
  - 1,1-Dichloropropene
  - 1,3-Dichloropropane
  - Carbon tetrachloride
  - Chloroform
  - Methylene Chloride
  - Vinyl chloride
  - trans-1,3-Dichloropropene

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PROJECT NARRATIVE

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

Method: **SM 6200B**
Description: 6200B MSV
Client: NCDOT West Central
Date: June 24, 2013

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

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Huntersville, NC 28078
(704)875-9092

ANALYTICAL RESULTS

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

Sample: 71-3 (TW) **Lab ID: 92161354001** Collected: 06/10/13 15:45 Received: 06/12/13 15:42 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6200B MSV	Analytical Method: SM 6200B							
Benzene	ND	ug/L	0.50	1		06/20/13 18:20	71-43-2	
Bromobenzene	ND	ug/L	0.50	1		06/20/13 18:20	108-86-1	
Bromochloromethane	ND	ug/L	0.50	1		06/20/13 18:20	74-97-5	
Bromodichloromethane	ND	ug/L	0.50	1		06/20/13 18:20	75-27-4	
Bromoform	ND	ug/L	0.50	1		06/20/13 18:20	75-25-2	
Bromomethane	ND	ug/L	5.0	1		06/20/13 18:20	74-83-9	
n-Butylbenzene	ND	ug/L	0.50	1		06/20/13 18:20	104-51-8	
sec-Butylbenzene	ND	ug/L	0.50	1		06/20/13 18:20	135-98-8	
tert-Butylbenzene	ND	ug/L	0.50	1		06/20/13 18:20	98-06-6	
Carbon tetrachloride	ND	ug/L	0.50	1		06/20/13 18:20	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		06/20/13 18:20	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/20/13 18:20	75-00-3	
Chloroform	ND	ug/L	0.50	1		06/20/13 18:20	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/20/13 18:20	74-87-3	
2-Chlorotoluene	ND	ug/L	0.50	1		06/20/13 18:20	95-49-8	
4-Chlorotoluene	ND	ug/L	0.50	1		06/20/13 18:20	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	1		06/20/13 18:20	96-12-8	
Dibromochloromethane	ND	ug/L	0.50	1		06/20/13 18:20	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		06/20/13 18:20	106-93-4	
Dibromomethane	ND	ug/L	0.50	1		06/20/13 18:20	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		06/20/13 18:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		06/20/13 18:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		06/20/13 18:20	106-46-7	
Dichlorodifluoromethane	ND	ug/L	0.50	1		06/20/13 18:20	75-71-8	
1,1-Dichloroethane	ND	ug/L	0.50	1		06/20/13 18:20	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		06/20/13 18:20	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		06/20/13 18:20	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		06/20/13 18:20	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		06/20/13 18:20	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		06/20/13 18:20	78-87-5	
1,3-Dichloropropane	ND	ug/L	0.50	1		06/20/13 18:20	142-28-9	
2,2-Dichloropropane	ND	ug/L	0.50	1		06/20/13 18:20	594-20-7	
1,1-Dichloropropene	ND	ug/L	0.50	1		06/20/13 18:20	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/13 18:20	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		06/20/13 18:20	10061-02-6	
Diisopropyl ether	ND	ug/L	0.50	1		06/20/13 18:20	108-20-3	
Ethylbenzene	ND	ug/L	0.50	1		06/20/13 18:20	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1		06/20/13 18:20	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	0.50	1		06/20/13 18:20	98-82-8	
Methylene Chloride	ND	ug/L	2.0	1		06/20/13 18:20	75-09-2	
Methyl-tert-butyl ether	ND	ug/L	0.50	1		06/20/13 18:20	1634-04-4	
Naphthalene	ND	ug/L	2.0	1		06/20/13 18:20	91-20-3	
n-Propylbenzene	ND	ug/L	0.50	1		06/20/13 18:20	103-65-1	
Styrene	ND	ug/L	0.50	1		06/20/13 18:20	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		06/20/13 18:20	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		06/20/13 18:20	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		06/20/13 18:20	127-18-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

Sample: 71-3 (TW) **Lab ID: 92161354001** Collected: 06/10/13 15:45 Received: 06/12/13 15:42 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6200B MSV	Analytical Method: SM 6200B							
Toluene	ND	ug/L	0.50	1		06/20/13 18:20	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	1		06/20/13 18:20	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	1		06/20/13 18:20	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		06/20/13 18:20	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		06/20/13 18:20	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		06/20/13 18:20	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/20/13 18:20	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	0.50	1		06/20/13 18:20	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/L	0.50	1		06/20/13 18:20	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	0.50	1		06/20/13 18:20	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		06/20/13 18:20	75-01-4	
m&p-Xylene	ND	ug/L	1.0	1		06/20/13 18:20	179601-23-1	
o-Xylene	ND	ug/L	0.50	1		06/20/13 18:20	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		06/20/13 18:20	17060-07-0	
Dibromofluoromethane (S)	106	%	70-130	1		06/20/13 18:20	1868-53-7	
4-Bromofluorobenzene (S)	94	%	70-130	1		06/20/13 18:20	460-00-4	
Toluene-d8 (S)	99	%	70-130	1		06/20/13 18:20	2037-26-5	

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QUALITY CONTROL DATA

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

QC Batch: MSV/23350
QC Batch Method: SM 6200B
Analysis Method: SM 6200B
Analysis Description: 6200B MSV
Associated Lab Samples: 92161354001

METHOD BLANK: 995344
Matrix: Water
Associated Lab Samples: 92161354001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,1,1-Trichloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,1,2-Trichloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,1-Dichloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,1-Dichloroethene	ug/L	ND	0.50	06/20/13 13:58	
1,1-Dichloropropene	ug/L	ND	0.50	06/20/13 13:58	
1,2,3-Trichlorobenzene	ug/L	ND	2.0	06/20/13 13:58	
1,2,3-Trichloropropane	ug/L	ND	0.50	06/20/13 13:58	
1,2,4-Trichlorobenzene	ug/L	ND	2.0	06/20/13 13:58	
1,2,4-Trimethylbenzene	ug/L	ND	0.50	06/20/13 13:58	
1,2-Dibromo-3-chloropropane	ug/L	ND	1.0	06/20/13 13:58	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	06/20/13 13:58	
1,2-Dichlorobenzene	ug/L	ND	0.50	06/20/13 13:58	
1,2-Dichloroethane	ug/L	ND	0.50	06/20/13 13:58	
1,2-Dichloropropane	ug/L	ND	0.50	06/20/13 13:58	
1,3,5-Trimethylbenzene	ug/L	ND	0.50	06/20/13 13:58	
1,3-Dichlorobenzene	ug/L	ND	0.50	06/20/13 13:58	
1,3-Dichloropropane	ug/L	ND	0.50	06/20/13 13:58	
1,4-Dichlorobenzene	ug/L	ND	0.50	06/20/13 13:58	
2,2-Dichloropropane	ug/L	ND	0.50	06/20/13 13:58	
2-Chlorotoluene	ug/L	ND	0.50	06/20/13 13:58	
4-Chlorotoluene	ug/L	ND	0.50	06/20/13 13:58	
Benzene	ug/L	ND	0.50	06/20/13 13:58	
Bromobenzene	ug/L	ND	0.50	06/20/13 13:58	
Bromochloromethane	ug/L	ND	0.50	06/20/13 13:58	
Bromodichloromethane	ug/L	ND	0.50	06/20/13 13:58	
Bromoform	ug/L	ND	0.50	06/20/13 13:58	
Bromomethane	ug/L	ND	5.0	06/20/13 13:58	
Carbon tetrachloride	ug/L	ND	0.50	06/20/13 13:58	
Chlorobenzene	ug/L	ND	0.50	06/20/13 13:58	
Chloroethane	ug/L	ND	1.0	06/20/13 13:58	
Chloroform	ug/L	ND	0.50	06/20/13 13:58	
Chloromethane	ug/L	ND	1.0	06/20/13 13:58	
cis-1,2-Dichloroethene	ug/L	ND	0.50	06/20/13 13:58	
cis-1,3-Dichloropropene	ug/L	ND	0.50	06/20/13 13:58	
Dibromochloromethane	ug/L	ND	0.50	06/20/13 13:58	
Dibromomethane	ug/L	ND	0.50	06/20/13 13:58	
Dichlorodifluoromethane	ug/L	ND	0.50	06/20/13 13:58	
Diisopropyl ether	ug/L	ND	0.50	06/20/13 13:58	
Ethylbenzene	ug/L	ND	0.50	06/20/13 13:58	
Hexachloro-1,3-butadiene	ug/L	ND	2.0	06/20/13 13:58	
Isopropylbenzene (Cumene)	ug/L	ND	0.50	06/20/13 13:58	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

METHOD BLANK: 995344 Matrix: Water

Associated Lab Samples: 92161354001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
m&p-Xylene	ug/L	ND	1.0	06/20/13 13:58	
Methyl-tert-butyl ether	ug/L	ND	0.50	06/20/13 13:58	
Methylene Chloride	ug/L	ND	2.0	06/20/13 13:58	
n-Butylbenzene	ug/L	ND	0.50	06/20/13 13:58	
n-Propylbenzene	ug/L	ND	0.50	06/20/13 13:58	
Naphthalene	ug/L	ND	2.0	06/20/13 13:58	
o-Xylene	ug/L	ND	0.50	06/20/13 13:58	
sec-Butylbenzene	ug/L	ND	0.50	06/20/13 13:58	
Styrene	ug/L	ND	0.50	06/20/13 13:58	
tert-Butylbenzene	ug/L	ND	0.50	06/20/13 13:58	
Tetrachloroethene	ug/L	ND	0.50	06/20/13 13:58	
Toluene	ug/L	ND	0.50	06/20/13 13:58	
trans-1,2-Dichloroethene	ug/L	ND	0.50	06/20/13 13:58	
trans-1,3-Dichloropropene	ug/L	ND	0.50	06/20/13 13:58	
Trichloroethene	ug/L	ND	0.50	06/20/13 13:58	
Trichlorofluoromethane	ug/L	ND	1.0	06/20/13 13:58	
Vinyl chloride	ug/L	ND	1.0	06/20/13 13:58	
1,2-Dichloroethane-d4 (S)	%	98	70-130	06/20/13 13:58	
4-Bromofluorobenzene (S)	%	98	70-130	06/20/13 13:58	
Dibromofluoromethane (S)	%	103	70-130	06/20/13 13:58	
Toluene-d8 (S)	%	101	70-130	06/20/13 13:58	

LABORATORY CONTROL SAMPLE: 995345

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	48.8	98	60-140	
1,1,1-Trichloroethane	ug/L	50	49.4	99	60-140	
1,1,2,2-Tetrachloroethane	ug/L	50	49.4	99	60-140	
1,1,2-Trichloroethane	ug/L	50	50.5	101	60-140	
1,1-Dichloroethane	ug/L	50	48.2	96	60-140	
1,1-Dichloroethene	ug/L	50	48.3	97	60-140	
1,1-Dichloropropene	ug/L	50	60.3	121	60-140	
1,2,3-Trichlorobenzene	ug/L	50	52.9	106	60-140	
1,2,3-Trichloropropane	ug/L	50	54.1	108	60-140	
1,2,4-Trichlorobenzene	ug/L	50	52.6	105	60-140	
1,2,4-Trimethylbenzene	ug/L	50	49.0	98	60-140	
1,2-Dibromo-3-chloropropane	ug/L	50	48.7	97	60-140	
1,2-Dibromoethane (EDB)	ug/L	50	56.4	113	60-140	CU
1,2-Dichlorobenzene	ug/L	50	50.5	101	60-140	
1,2-Dichloroethane	ug/L	50	46.4	93	60-140	
1,2-Dichloropropane	ug/L	50	50.1	100	60-140	
1,3,5-Trimethylbenzene	ug/L	50	48.0	96	60-140	
1,3-Dichlorobenzene	ug/L	50	47.7	95	60-140	
1,3-Dichloropropane	ug/L	50	53.3	107	60-140	
1,4-Dichlorobenzene	ug/L	50	52.6	105	60-140	

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QUALITY CONTROL DATA

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

LABORATORY CONTROL SAMPLE: 995345

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	47.4	95	60-140	
2-Chlorotoluene	ug/L	50	50.5	101	60-140	
4-Chlorotoluene	ug/L	50	46.6	93	60-140	
Benzene	ug/L	50	48.4	97	60-140	
Bromobenzene	ug/L	50	48.9	98	60-140	
Bromochloromethane	ug/L	50	50.8	102	60-140	
Bromodichloromethane	ug/L	50	49.9	100	60-140	
Bromoform	ug/L	50	52.8	106	60-140	
Bromomethane	ug/L	50	47.2	94	60-140	
Carbon tetrachloride	ug/L	50	54.8	110	60-140	
Chlorobenzene	ug/L	50	51.5	103	60-140	
Chloroethane	ug/L	50	45.6	91	60-140	
Chloroform	ug/L	50	49.1	98	60-140	
Chloromethane	ug/L	50	49.3	99	60-140	
cis-1,2-Dichloroethene	ug/L	50	46.9	94	60-140	
cis-1,3-Dichloropropene	ug/L	50	52.6	105	60-140	
Dibromochloromethane	ug/L	50	52.8	106	60-140	
Dibromomethane	ug/L	50	46.4	93	60-140	
Dichlorodifluoromethane	ug/L	50	36.9	74	60-140	
Diisopropyl ether	ug/L	50	50.2	100	60-140	
Ethylbenzene	ug/L	50	51.5	103	60-140	
Hexachloro-1,3-butadiene	ug/L	50	49.5	99	60-140	
Isopropylbenzene (Cumene)	ug/L	50	50.1	100	60-140	
m&p-Xylene	ug/L	100	100	100	60-140	
Methyl-tert-butyl ether	ug/L	50	51.2	102	60-140	
Methylene Chloride	ug/L	50	55.2	110	60-140	
n-Butylbenzene	ug/L	50	49.0	98	60-140	
n-Propylbenzene	ug/L	50	47.7	95	60-140	
Naphthalene	ug/L	50	53.1	106	60-140	
o-Xylene	ug/L	50	47.7	95	60-140	
sec-Butylbenzene	ug/L	50	45.7	91	60-140	
Styrene	ug/L	50	52.7	105	60-140	
tert-Butylbenzene	ug/L	50	45.9	92	60-140	
Tetrachloroethene	ug/L	50	51.1	102	60-140	
Toluene	ug/L	50	45.4	91	60-140	
trans-1,2-Dichloroethene	ug/L	50	49.2	98	60-140	
trans-1,3-Dichloropropene	ug/L	50	56.7	113	60-140	
Trichloroethene	ug/L	50	49.7	99	60-140	
Trichlorofluoromethane	ug/L	50	44.5	89	60-140	
Vinyl chloride	ug/L	50	45.7	91	60-140	
1,2-Dichloroethane-d4 (S)	%			93	70-130	
4-Bromofluorobenzene (S)	%			103	70-130	
Dibromofluoromethane (S)	%			99	70-130	
Toluene-d8 (S)	%			99	70-130	

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QUALITY CONTROL DATA

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 995346 995347

Parameter	Units	92161461003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	23.2	25.0	116	125	60-140	7	
1,1,1-Trichloroethane	ug/L	ND	20	20	25.9	28.7	129	143	60-140	10	M0
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	24.1	25.4	121	127	60-140	5	
1,1,2-Trichloroethane	ug/L	ND	20	20	24.1	26.4	120	132	60-140	9	
1,1-Dichloroethane	ug/L	ND	20	20	26.1	26.7	130	134	60-140	2	
1,1-Dichloroethene	ug/L	ND	20	20	26.8	29.9	134	150	60-140	11	M0
1,1-Dichloropropene	ug/L	ND	20	20	30.9	33.3	155	167	60-140	7	M0
1,2,3-Trichlorobenzene	ug/L	ND	20	20	24.2	25.8	118	126	60-140	6	
1,2,3-Trichloropropane	ug/L	ND	20	20	26.7	27.6	133	138	60-140	4	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	25.8	26.5	127	130	60-140	3	
1,2,4-Trimethylbenzene	ug/L	ND	20	20	24.9	26.4	125	132	60-140	6	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	25.4	26.0	127	130	60-140	2	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	27.0	27.2	135	136	60-140	1	
1,2-Dichlorobenzene	ug/L	ND	20	20	25.0	26.3	125	131	60-140	5	
1,2-Dichloroethane	ug/L	ND	20	20	22.0	22.1	110	111	60-140	0	
1,2-Dichloropropane	ug/L	ND	20	20	24.6	28.1	123	140	60-140	13	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	24.4	26.6	122	133	60-140	9	
1,3-Dichlorobenzene	ug/L	ND	20	20	23.9	25.2	120	126	60-140	5	
1,3-Dichloropropane	ug/L	ND	20	20	27.4	28.2	137	141	60-140	3	M0
1,4-Dichlorobenzene	ug/L	ND	20	20	25.4	27.9	127	140	60-140	10	
2,2-Dichloropropane	ug/L	ND	20	20	24.5	25.3	122	126	60-140	3	
2-Chlorotoluene	ug/L	ND	20	20	26.4	27.8	132	139	60-140	5	
4-Chlorotoluene	ug/L	ND	20	20	23.0	24.6	115	123	60-140	7	
Benzene	ug/L	ND	20	20	24.0	25.8	120	129	60-140	7	
Bromobenzene	ug/L	ND	20	20	25.9	26.9	130	134	60-140	4	
Bromochloromethane	ug/L	ND	20	20	24.2	27.3	121	137	60-140	12	
Bromodichloromethane	ug/L	ND	20	20	24.1	25.7	121	128	60-140	6	
Bromoform	ug/L	ND	20	20	24.8	25.6	124	128	60-140	3	
Bromomethane	ug/L	ND	20	20	21.5	24.4	107	122	60-140	13	
Carbon tetrachloride	ug/L	ND	20	20	28.7	31.5	144	158	60-140	9	M0
Chlorobenzene	ug/L	ND	20	20	25.5	27.0	128	135	60-140	6	
Chloroethane	ug/L	ND	20	20	27.3	28.1	137	140	60-140	3	
Chloroform	ug/L	ND	20	20	27.0	28.4	135	142	60-140	5	M0
Chloromethane	ug/L	ND	20	20	23.8	24.6	119	123	60-140	3	
cis-1,2-Dichloroethene	ug/L	ND	20	20	25.6	26.5	128	132	60-140	3	
cis-1,3-Dichloropropene	ug/L	ND	20	20	25.9	26.7	129	133	60-140	3	
Dibromochloromethane	ug/L	ND	20	20	25.0	27.2	125	136	60-140	8	
Dibromomethane	ug/L	ND	20	20	22.8	22.6	114	113	60-140	1	
Dichlorodifluoromethane	ug/L	ND	20	20	20.0	21.6	100	108	60-140	7	
Diisopropyl ether	ug/L	ND	20	20	26.0	27.8	130	139	60-140	7	
Ethylbenzene	ug/L	ND	20	20	25.9	27.1	130	135	60-140	4	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	24.2	25.6	121	128	60-140	6	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	24.7	25.1	123	126	60-140	2	
m&p-Xylene	ug/L	ND	40	40	49.8	52.5	124	131	60-140	5	
Methyl-tert-butyl ether	ug/L	1.9	20	20	28.7	29.3	134	137	60-140	2	
Methylene Chloride	ug/L	ND	20	20	28.1	30.0	141	150	60-140	7	M0
n-Butylbenzene	ug/L	ND	20	20	25.5	26.5	127	133	60-140	4	

REPORT OF LABORATORY ANALYSIS

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

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

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

QUALITY CONTROL DATA

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 995346 995347

Parameter	Units	92161461003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
n-Propylbenzene	ug/L	ND	20	20	24.9	26.6	124	132	60-140	7	
Naphthalene	ug/L	ND	20	20	24.3	26.4	118	129	60-140	8	
o-Xylene	ug/L	ND	20	20	24.3	25.0	121	125	60-140	3	
sec-Butylbenzene	ug/L	ND	20	20	24.2	25.4	120	126	60-140	5	
Styrene	ug/L	ND	20	20	25.1	25.6	126	128	60-140	2	
tert-Butylbenzene	ug/L	ND	20	20	23.9	26.1	119	131	60-140	9	
Tetrachloroethene	ug/L	ND	20	20	25.6	27.6	126	136	60-140	8	
Toluene	ug/L	ND	20	20	23.2	24.4	116	122	60-140	5	
trans-1,2-Dichloroethene	ug/L	ND	20	20	25.7	28.0	128	140	60-140	9	
trans-1,3-Dichloropropene	ug/L	ND	20	20	26.7	29.0	133	145	60-140	8	M0
Trichloroethene	ug/L	ND	20	20	24.2	26.2	121	131	60-140	8	
Trichlorofluoromethane	ug/L	ND	20	20	25.9	26.9	130	134	60-140	4	
Vinyl chloride	ug/L	ND	20	20	25.2	28.4	126	142	60-140	12	M0
1,2-Dichloroethane-d4 (S)	%						99	99	70-130		
4-Bromofluorobenzene (S)	%						100	98	70-130		
Dibromofluoromethane (S)	%						100	99	70-130		
Toluene-d8 (S)	%						96	98	70-130		

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

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

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

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

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

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

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

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

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

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

CU	The continuing calibration for this compound is outside of Pace Analytical acceptance limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: R-2603 Parcel 71 36001.1.2
Pace Project No.: 92161354

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92161354001	**71-3 (TW)**	SM 6200B	MSV/23350		

REPORT OF LABORATORY ANALYSIS

Pace Analytical®	Sample Condition Upon Receipt (SCUR)	Page 1 of 2
	Document Number: F-CHR-CS-03-rev.11	Issuing Authority: Pace Huntersville Quality Office

Client Name: Pyramid

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden ☐ Raleigh

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

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

Optional
Proj. Due Date:
Proj. Name:

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

Thermometer Used: IR Gun T1102 T1301 (circled T1301) **Type of Ice:** Wet (circled) Blue None ☐ Samples on ice, cooling process has begun

Temp Correction Factor **T1102**: No Correction **T1301**: No Correction

Corrected Cooler Temp.: 1.4 C
Temp should be above freezing to 6°C

Biological Tissue is Frozen: Yes No N/A

Date and Initials of person examining contents: PHM 6/12

Comments:

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

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

Person Contacted: ________________ Date/Time: ________

Comments/ Resolution: ________________

SCURF Review: [initials] **Date:** 6/12/13
SRF Review: [initials] **Date:** 6/13/13

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

WO# : 92161354
92161354

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

1667305

Section A Required Client Information:

Company: Pyramid Environmental
Address: 603 Industrial Ave. Greensboro, NC
Email To: Tim@Pyramidenvironmental.com
Phone: 336-335-3174 Fax:
Requested Due Date/TAT: Normal

Section B Required Project Information:

Report To: Tim Leatherman
Copy To: Pyramid
Purchase Order No.: WBS 36001.1.2
Project Name: NCDOT R-2603 Parcel 71
Project Number: WBS 36001.1.2

Section C Invoice Information:

Attention:
Company Name: NCDOT
Address:
Pace Quote Reference: WBS 36001.1.2 NCDOT
Pace Project Manager: Kevin Godwin
Pace Profile #: 5900-2

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☑ UST ☐ RCRA ☐ OTHER

Site Location STATE: NC

Requested Analysis Filtered (Y/N)

Section D Required Client Information

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

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N	6200 B	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	71-3(TW)	WT	G			6/10/13	1545		4				X						X		021
2																					
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
* PARCEL # 71	Ryan Kramer / Pyramid	6/12/13	08:00	Andrew Price	6-12-13	11:31	1.4	Y	N	Y
		6.12.13	15:42		6-12	1542				

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ryan Kramer
SIGNATURE of SAMPLER: Ryan Kramer
DATE Signed (MM/DD/YY): 6/12/13

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

ORIGINAL

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

APPENDIX F

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Wilkes County ROW PARCELS 71, 72, 73, 74, 78, 94, 97/99, AND 102 **PROJECT NO.:** R-2603

Name: Eric Cross, Ryan Kramer **Date:** 5/22/13 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross & R. Kramer:
On site: 8AM
Mobilize to site. Performed geophysical surveys using EM61 magnetometer and/or GPR.
Performed geophysical data analysis/processing in field and in evening.
Leave site: 6PM
Associated mileage – 84 miles

T. Leatherman:
Travel to Soil & Water offices in Wilkesboro, NC to review maps/aerials
Hours associated with trip - 7
Associated mileage – 191 miles

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Wilkes County ROW PARCELS 71, 72, 73, 74, 78, 94, 97/99, AND 102 **PROJECT NO.:** R-2603

Name: Eric Cross, Ryan Kramer, Tim Leatherman **Date:** 5/23/13 **Mon Tue Wed Th Fri Sat**

TASKS PERFORMED:

E. Cross & R. Kramer
On site: 8AM
Performed geophysical surveys using EM61 magnetometer and/or GPR. Performed geophysical data analysis/processing in field and in evening.
Leave site: 6PM

T. Leatherman
Site Reconnaissance
Hours associated with recon – 7
Mileage for recon – 185

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Wilkes County ROW PARCELS 71, 72, 73, 74, 78, 94, 97/99, AND 102 **PROJECT NO.:** R-2603

Name: Eric Cross, Ryan Kramer **Date:** 5/24/13 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

On site: 8AM
Performed geophysical surveys using EM61 magnetometer and/or GPR. Performed geophysical data analysis/processing in field and in evening.
Leave site: 6PM

Demobilization Mileage - 150

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Wilkes County ROW PARCELS 71, 72, 73, 74, 78, 94, 97/99, AND 102 **PROJECT NO.:** R-2603

Name: Eric Cross, Time Leatherman **Date:** 6/3/13 **Mon** **Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross
On site: 8AM
Mobilize to site. Performed geophysical surveys using EM61 magnetometer and/or GPR.
Performed geophysical data analysis/processing in field and in evening.
Leave site: 6PM
Mobilization mileage – 150 miles

T. Leatherman
Mobilize to site, assist with geophysics.
Hours – 5
Mileage for mobilization/demobilization – 203

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Wilkes County ROW PARCELS 71, 72, 73, 74, 78, 94, 97/99, AND 102 **PROJECT NO.:** R-2603

Name: Eric Cross, Time Leatherman **Date:** 6/4/13 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross & T. Leatherman
On site: 8AM
Performed geophysical surveys using EM61 magnetometer and/or GPR. Performed geophysical data analysis/processing in field. Investigated proposed boring locations. Supervised utility locating.
Leave site: 4PM

E. Cross demobilization mileage: 150

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Wilkes County ROW PARCELS 71, 72, 73, 74, 78, 94, 97/99, AND 102 **PROJECT NO.:** R-2603

Name: Tim Leatherman **Date:** 6/7/13 **MonTue Wed Th Fri Sat Sun**

TASKS PERFORMED:

Travel to NCDENR Regional Office to perform file review
Hours associated with file review – 4.75
Mileage to travel to regional office – 58

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Wilkes County ROW PARCELS 71, 72, 73, 74, 78, 94, 97/99, AND 102 **PROJECT NO.:** R-2603

Name: Tim Leatherman, Ryan Kramer **Date:** 6/10/13 **Mon** **Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

Mobilize to job site from Greensboro. Performed geoprobe boring supervision, soil and groundwater sampling, QED analysis. Hours for personnel vary, see timesheets.

Mileage associated with mobilization/demobilization for all vehicles, week of June 10th = 542

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Wilkes County ROW PARCELS 71, 72, 73, 74, 78, 94, 97/99, AND 102 **PROJECT NO.:** R-2603

Name: Tim Leatherman, Ryan Kramer **Date:** 6/11/13 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

Performed geoprobe boring supervision, soil and groundwater sampling, QED analysis. Hours for personnel vary, see timesheets.

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Wilkes County ROW PARCELS 71, 72, 73, 74, 78, 94, 97/99, AND 102 **PROJECT NO.:** R-2603

Name: Tim Leatherman, Ryan Kramer, Brett Higgins **Date:** 6/12/13 **Mon Tue Wed Th Fri**

TASKS PERFORMED:

Performed geoprobe boring supervision, soil and groundwater sampling, QED analysis. Hours for personnel vary, see timesheets.

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Wilkes County ROW PARCELS 71, 72, 73, 74, 78, 94, 97/99, AND 102 **PROJECT NO.:** R-2603

Name: Tim Leatherman, Brett Higgins **Date:** 6/13/13 **Mon Tue Wed Th Fri**

TASKS PERFORMED:

Performed geoprobe boring supervision, soil and groundwater sampling, QED analysis. Travel to Greensboro from job site. Hours for personnel vary, see timesheets.