Prepared for:

North Carolina Department of Transportation

Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Preliminary Site Assessment Report

Donald and Sue Barkley Property
Parcel # 015
2000 US 321 (North Chester Street)
Gastonia, Gaston County, North Carolina
I-85/US 321 Geometric Safety Improvements to Interchange
TIP Number: I-5000
WBS Element: 41153.1.1

10610 Metromont Parkway, Suite 206
Charlotte, North Carolina 28269

June 23, 2016

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APEX

10610 Metromont Parkway, Suite 206
Charlotte, North Carolina 28269

Prepared by:

DocuSigned by:
Troy Holzschuh
2D73445FBBB9455...
7/6/2016

Troy L. Holzschuh
Assistant Project Manager

Reviewed by:

Kathleen Roush, L.G. RSM
Division Manager
NC Geologist License No. 1353

NORTH CAROLINA LICENSED SEAL 1353 GEOLOGIST KATHLEEN A. ROUSH

DocuSigned by:
Kathleen A Roush
CB46382A3B3C414...
7/8/2016

June 23, 2016

not considered Final unless all signatures are completed

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1.0 INTRODUCTION

This report presents the results of a Preliminary Site Assessment (PSA) for the North Carolina Department of Transportation (NCDOT) Parcel 15 performed by Apex Companies, LLC (Apex) on behalf of the NCDOT. The subject site of this PSA report is to be affected by the realignment of the Interstate 85 and US 321 interchange. The site consists of three separate addresses, 1900, 1950 and 2000 North Chester Street (US 321) and is identified as Parcel 15, Donald and Sue Barkley Property (RFP refers to Markley Property, however property tax documents indicate it is Barkley Property), within the NCDOT I-5000 design project. The property is located on the eastern side of US 321, as shown in the Vicinity Map, **Figure 1** (site). This is in Gastonia, Gaston County, North Carolina. The investigation was conducted in accordance with Apex Company's Technical and Cost proposal dated June 6, 2016.

According to the RFP acquisition of the right-of-way (ROW) is necessary for the improvement of the interchange and a PSA is to be performed for the entire parcel. The following report summarizes the geophysical survey and describes the subsurface field investigation at the site. The report includes the evaluation of field screening with the photoionization detector (PID) and onsite quantitative analyses with the ultraviolet fluorescence (UVF) Hydrocarbon Analyzer with regards to the presence or absence of soil contamination within the area of investigation across Parcel 15. **Appendix A** includes a Photograph log for the site.

1.1 Site History

Parcel 15 contains three separate buildings with three separate addresses of 1900, 1950 and 2000 North Chester Street (US 321), Gastonia, NC. Based on a search of the North Carolina Department of Environmental Quality (NCDEQ) Underground Storage Tank (UST) database registry, no USTs are associated with this parcel. However, according to Mr. Donald Barkley the building located at 2000 North Chester Street formerly operated as a gas station. Mr. Barkley added that two USTs were previously removed from the site as well as the associated dispensers, piping, and canopy. The former UST bed was located on the eastern side of the former gas station. Apex personnel also reviewed the NCDEQ Incident Management Database and no Groundwater Incident is associated with this parcel.

1.2 Site Description

The site consists of three separate buildings with three separate addresses. The northern most building located at 2000 North Chester Street is a single story cinder block building with one bay door. This tenant space formerly operated as a gas station and currently operates as Wyant & Son Monument Co. The central building, 1950 North Chester Street, is a boarded up one story building and is currently vacant. The southernmost building is located at 1900 North Chester Street and operates as Corbin Gage, Inc. This building is a one story cinder block building with

two bay doors, one on the southern end and one on the northern end. The three buildings are located on the western two-thirds of the property. The eastern third of the property is a steep hill which is heavily wooded.

2.0 GEOLOGY

2.1 Regional Geology

Parcel 15 is located within the Inner Piedmont Belt. The Inner Piedmont Belt lies between the Charlotte and Kings Mountain Belts to the east and the Blue Ridge to the west. It is separated from Charlotte and Kings Mountain Belts by the Kings Mountain Eufola fault zone and from the Blue Ridge by the Brevard fault zone. Stratified rocks of the Inner Piedmont consist predominately of thinly layered mica schist and biotite gneiss which are interlayered with lesser amounts of amphibolite, calc-silicate rock, hornblende gneiss, quartzite, and some rare marble.

2.2 Site Geology

Site geology was observed through the drilling and sampling of 32 direct push Geoprobe® soil borings onsite. **Figure 2** presents the boring locations and site layout. Thirty-one of the borings did not exceed ten feet below land surface (bls), since that is the maximum excavation depth proposed for drainage features. One boring (P15-B4) was advanced to a maximum depth of 20 feet bls to delineate soil contamination that was identified. Soil consisting predominantly of brown to orange micaceous clayey Silt to a brown to orange micaceous Silt was observed across the parcel. Soil displayed varying degrees of moisture. Water was not encountered during boring activities, however partially weathered rock (PWR) was encountered in several of the borings located on the southern third of the parcel. Boring logs are presented in **Appendix B**.

3.0 FIELD ACTIVITIES

3.1 Preliminary Activities

Prior to commencing field sampling activities at the site, several tasks were accomplished in preparation for the subsurface investigation. A Health and Safety Plan (HASP) was prepared to include the site-specific health and safety information necessary for the field activities. North Carolina-One Call (811) was contacted on May 11, 2016 to report the proposed drilling activities and subsequently notify all affected public utilities. Apex subcontracted ESP Associates (ESP) to locate subsurface utilities and other subsurface drilling hazards as well as to perform a geophysical survey. Carolina Soil Investigations (CSI) of Olin, North Carolina was retained by Apex to perform the direct push Geoprobe® sampling for soil borings. RED Lab, LLC was contacted for rental of a UVF Hydrocarbon Analyzer. Boring locations were strategically placed

in a pattern within the area of investigation to maximize the opportunity to encounter potentially contaminated soil.

3.2 Site Reconnaissance

Apex personnel performed a site reconnaissance on May 24, 2016. During the site reconnaissance, the area was visually examined for the presence of USTs or areas/obstructions that could potentially affect the subsurface investigation, and the boring locations were identified prior to boring advancement which began May 25, 2016. Apex personnel also used the site visit as an opportunity to contact the property manager/owner to inform them of upcoming field activities.

3.3 Geophysics Survey Results

ESP performed the geophysical survey of the site during the week of May 23rd, 2016. ESP performed an electromagnetic (EM) survey followed by GPR surveys. Their Geophysical Report is presented in **Appendix C**. The anomalies indicated in the report are associated with known features, such as buildings, metal debris, reinforced concrete and vehicles. The geophysical data collected for this project does not indicate the presence of possible USTs in the geophysical study area.

3.4 Well Survey

No water supply wells were observed during the PSA activities.

3.5 Soil Sampling

Apex conducted drilling activities at the site on May 25 and 26, 2016. Apex's drilling subcontractor, CSI, advanced 32 direct push soil borings on the site. These 32 boring were located by the former tank bed and dispenser island or in a pattern to maximize the likelihood of intercepting potential soil contamination. **Figure 2** presents the Site Map with boring locations and identifications.

The purpose of soil sampling was to determine if a petroleum release has occurred on the subject site, and if so, to estimate the volume of impacted soil that might require special handling during construction activities.

Soil sampling was performed utilizing direct push methods accompanied by field screening with the PID and onsite quantitative analyses with the UVF Hydrocarbon Analyzer. One to two intervals of the soil boring, exhibiting the most elevated PID readings, were selected for onsite quantitative analysis of total petroleum hydrocarbons (TPH) in soil using the QROS-QED UVF Hydrocarbon Analyzer. The analysis was performed onsite by Troy Holzschuh, a certified QED

UVF technician with Apex. The UVF results were generated concurrent with soil boring activities so that rapid assessment could be utilized for strategic boring placement.

3.6 Groundwater Sampling

Apex personnel did not encounter groundwater during the PSA activities.

4.0 SAMPLING RESULTS

4.1 Soil Sampling Results

Based on PID field screening and onsite UVF hydrocarbon analysis from the May 2016 soil sampling there is evidence of petroleum hydrocarbon contamination onsite, within the investigation area.

Onsite Soil Screening and UVF Analysis

Elevated PID readings, above ten parts per million (ppm), were observed in borings conducted at the site. PID detections ranged from 0.18 ppm to 11.7 ppm. The PID field screening results are provided on the boring logs in **Appendix B**.

Soil concentrations of TPH gasoline range organics (GRO) and diesel range organics (DRO) measured using the onsite UVF unit are presented in **Table 1**, with instrument generated tables and chromatographs in **Appendix D**. **Figure 3** presents the GRO and DRO results at each boring.

Based on the UVF analyses one boring P15-B4 did indicate detections for TPH DRO of 17.7 milligrams per kilogram (mg/kg) and 19.9 mg/kg at the eight to ten foot bls interval and the 14 to 15 foot bls interval, respectively. Both are above the NCDEQ Action level of 10 mg/kg. P15-B4 was delineated vertically to a depth of 20 bls. The extent of vertical contamination was 15 feet bls. Impact at P15-B4 was delineated horizontally to the north, west, and southerly direction and no other exceedances were detected. Due to the proximity of the northern most building, the contaminated area could not be delineated to the east. Five additional borings indicated detections of TPH GRO and 11 additional borings indicated detections of TPH DRO, however all concentrations were below the NCDEQ Action level of 10 mg/kg.

4.2 Extent of Impacted Soils

This PSA was implemented to determine the presence or absence of petroleum hydrocarbons and, if possible, to estimate the volume of impacted soil present on the subject site.

The site has one area of confirmed contamination in soil. P15-B4 indicates a DRO concentration of 17.7 mg/kg at a depth of eight to ten feet bls and a DRO concentration of 19.9 mg/kg at a depth of 14 to 15 feet bls. Additional samples from borings, P15-B4a, P15-B4b and P15-B4c, were collected to delineate soil contamination in the northern, western and southern directions. Due to the location of the northern most building an additional sample could not be taken from an eastern direction. The delineation samples did not indicate additional soil impact was present. Samples collected from boring P15-B4 at deeper depths ranging from 17 to 18 and 19 to 20 feet bls did not indicate petroleum impact. The area of the soil contamination is estimated to be 158 square feet. This estimate is based on soil borings conducted during this assessment and the estimated area is shown on **Figure 4**. Assuming a fifteen foot thickness of soil impact, the volume of potentially impacted soil is estimated to be 2,370 cubic feet or 87.77 cubic yards.

5.0 CONCLUSIONS

Based on site observations and onsite UVF analysis, evidence of petroleum-impacted soil contamination was identified above the NCDEQ Action level of 10 mg/kg.

The following bulleted summary is based upon Apex's evaluation of field observations and onsite quantitative analyses of samples collected from the site on May 25 and 26, 2016.

- Results of the geophysical survey did not produce evidence of anomalies characteristic of USTs.
- Thirty-two soil borings were advanced onsite and at least one soil sample was collected from each boring. Each sample was analyzed via UVF in the field utilizing a RED Lab QED Hydrocarbon Analyzer.
- Two TPH DRO concentrations from one boring location identified onsite were above the NCDEQ Action level of 10 mg/kg.
- No TPH GRO concentrations identified onsite were above the NCDEQ Action level of 10 mg/kg.

6.0 RECOMMENDATIONS

Based on these PSA results, Apex recommends removal and disposal of the contaminated soil prior to road construction activity at this site.

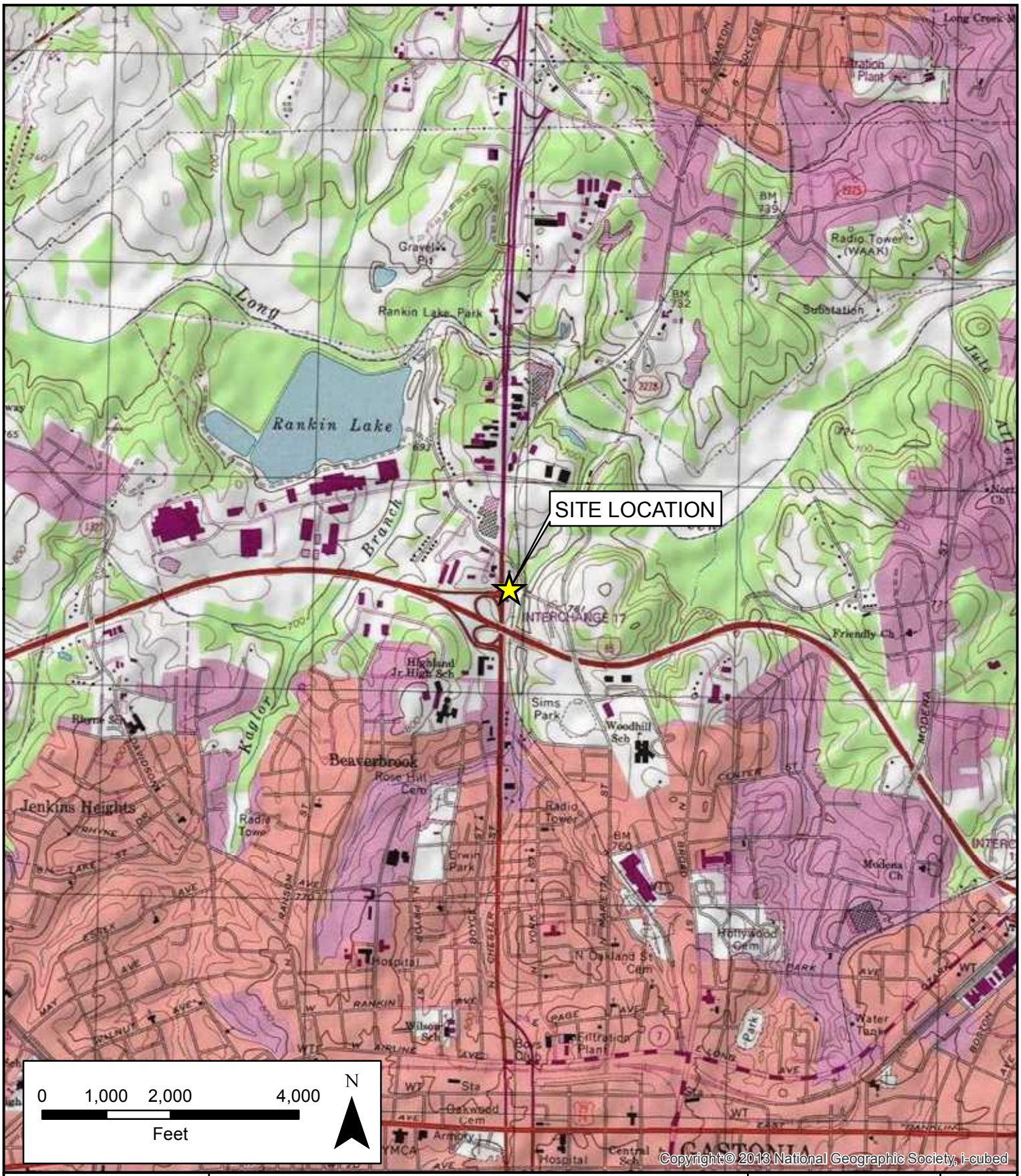
TABLES

Table 1
UVF Onsite Hydrocarbon Analytical Soil Data from May 2016
I-5000, Parcel 15, Donald and Sue Markley Property
Gastonia, North Carolina

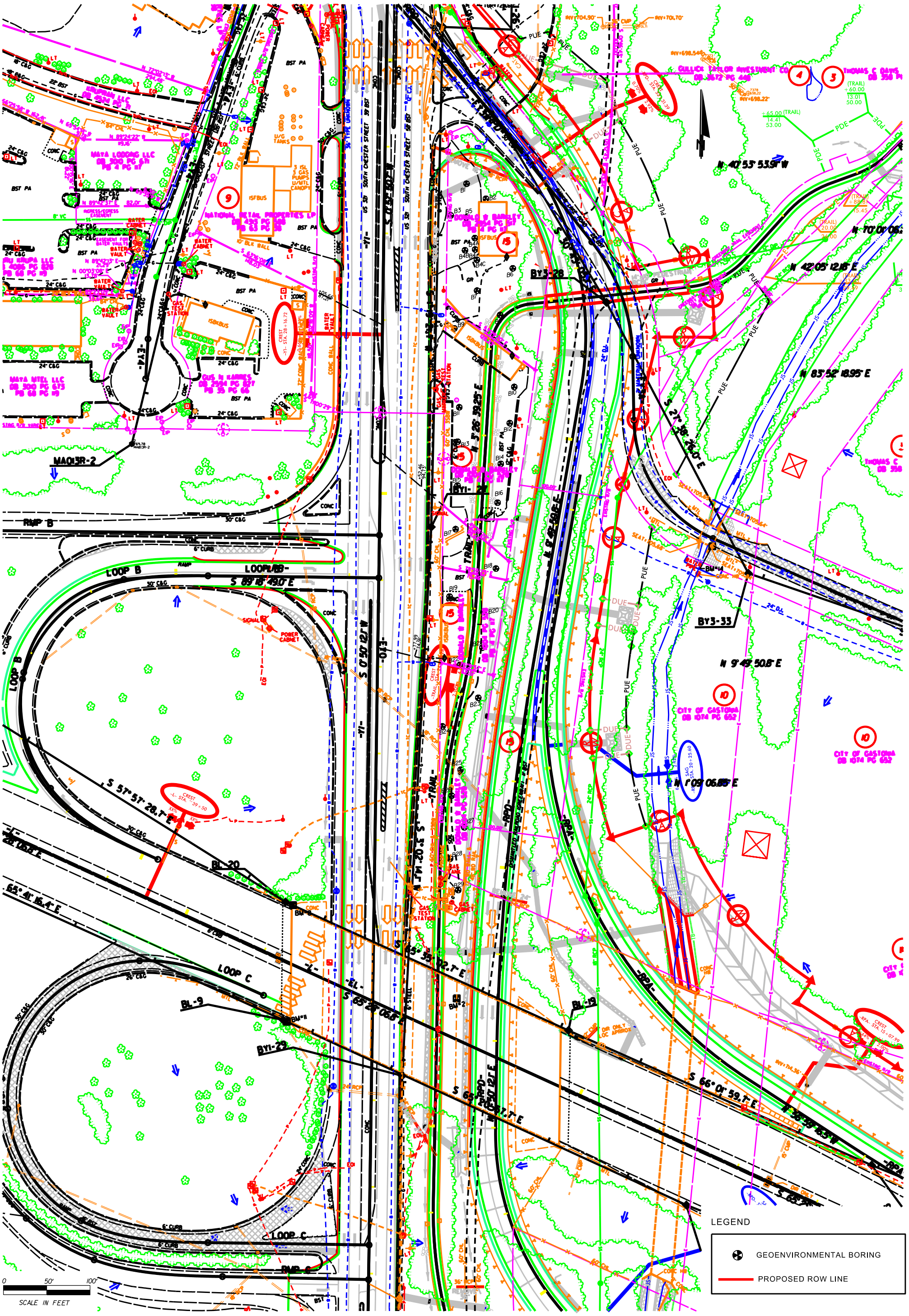
Sample ID Number	Sample Date	Sample Depth (ft bgs)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)
NCDEQ Action Level in mg/kg			**10**	**10**
P15 - B1	5/25/2016	3 to 4	<0.57	0.62
P15 - B2	5/25/2016	4 to 5	<0.51	<0.2
P15 - B3	5/25/2016	4 to 5	<0.45	<0.18
P15 - B4	5/25/2016	8 to 10	<0.5	**17.7**
P15 - B4	5/25/2016	14 to 15	<0.48	**19.9**
P15 - B4	5/25/2016	19 to 20	<0.64	0.52
P15 - B4	5/25/2016	17 to 18	<0.67	0.6
P15 - B4a	5/25/2016	9 to 10	<0.45	1.4
P15 - B4b	5/25/2016	9 to 10	0.79	3.2
P15 - B4c	5/25/2016	9 to 10	<0.55	<0.22
P15 - B5	5/25/2016	4 to 5	<0.8	<0.32
P15 - B6	5/25/2016	4 to 5	<0.61	<0.25
P15 - B7	5/25/2016	4 to 5	3.6	1.8
P15 - B8	5/25/2016	4 to 5	<0.76	1.9
P15 - B9	5/25/2016	4 to 5	<0.63	<0.25
P15 - B10	5/25/2016	4 to 5	<0.41	<0.16
P15 - B11	5/25/2016	4 to 5	<0.75	<0.3
P15 - B12	5/25/2016	4 to 5	<0.59	<0.23
P15 - B13	5/25/2016	4 to 5	<0.5	2
P15 - B14	5/25/2016	4 to 5	<0.54	<0.22
P15 - B15	5/26/2016	4 to 5	<0.52	<0.21
P15 - B16	5/26/2016	4 to 5	<0.5	<0.21
P15 - B17	5/26/2016	4 to 5	<0.43	<0.17
P15 - B18	5/26/2016	4 to 5	<0.48	<0.19
P15 - B19	5/26/2016	4 to 5	<0.45	<0.18
P15 - B20	5/26/2016	4 to 5	<0.57	<0.23
P15 - B21	5/26/2016	4 to 5	<0.49	<0.2
P15 - B22	5/26/2016	4 to 5	<0.5	1.1
P15 - B23	5/26/2016	4 to 5	<0.55	<0.22
P15 - B24	5/26/2016	4 to 5	<0.48	<0.19
P15 - B25	5/26/2016	4 to 5	<0.42	0.45
P15 - B26	5/26/2016	4 to 5	1	<0.19
P15 - B27	5/26/2016	4 to 5	0.77	<0.18
P15 - B28	5/26/2016	4 to 5	2.7	<0.17
P15 - B29	5/26/2016	4 to 5	<0.56	0.57

NOTES:
(mg/kg) = Millograms per kilogram
GRO = Gasoline Range Organics
DRO = Diesel Range Organics
ft bgs = feet below ground surface
Bold Concentrations indicate an exceedance of NCDEQ Action Level of 10 mg/Kg

FIGURES



CHECK BY: TH	SITE VICINITY MAP	FIGURE
DRAWN BY: SP		
DATE: 6/21/16	1900, 1950 AND 2000 NORTH CHESTER STREET GASTONIA, NORTH CAROLINA	1
SCALE: 1in = 2,000 ft		
CAD NO.: 510459-001		
PRJ NO.: 510459-001		



APEX COMPANIES, LLC
10610 METROMONT PARKWAY
SUITE 206
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 2
PARCEL 15
SITE MAP WITH SOIL BORING LOCATIONS

Date: 6/15/16	GASTON COUNTY I-5000
Proj. # 510459-001	Project Title:
CAD File: pc_15_fig 2.dgn	
Approx. Scale: 1" = 100'	Drawn by: MJO
	Client: NC DOT

Sample Identification	P15-B1
Date	5-25-16
Sample Depth (Feet bgs)	3-4
TPH GRO (mg/kg)	<0.57
THP DRO (mg/kg)	<0.62

Sample Identification	P15-B2
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.51
THP DRO (mg/kg)	<0.2

Sample Identification	P15-B3
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.45
THP DRO (mg/kg)	<0.18

Sample Identification	P15-B5
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.8
THP DRO (mg/kg)	<0.32

Sample Identification	P15-B4A
Date	5-25-16
Sample Depth (Feet bgs)	9-10
TPH GRO (mg/kg)	<0.45
THP DRO (mg/kg)	1.4

Sample Identification	P15-B4B
Date	5-25-16
Sample Depth (Feet bgs)	9-10
TPH GRO (mg/kg)	0.79
THP DRO (mg/kg)	3.2

Sample Identification	P15-B9
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.63
THP DRO (mg/kg)	<0.25

Sample Identification	P15-B11
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.75
THP DRO (mg/kg)	<0.3

Sample Identification	P15-B13
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.5
THP DRO (mg/kg)	2

Sample Identification	P15-B15
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.52
THP DRO (mg/kg)	<0.21

Sample Identification	P15-B17
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.43
THP DRO (mg/kg)	<0.17

Sample Identification	P15-B19
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.45
THP DRO (mg/kg)	<0.18

Sample Identification	P15-B22
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.5
THP DRO (mg/kg)	1.1

Sample Identification	P15-B24
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.48
THP DRO (mg/kg)	<0.19

Sample Identification	P15-B26
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	1
THP DRO (mg/kg)	<0.19

Sample Identification	P15-B28
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	2.7
THP DRO (mg/kg)	<0.17

Sample Identification	P15-B29
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.56
THP DRO (mg/kg)	<0.57

Sample Identification	P15-B4
Date	5-25-16
Sample Depth (Feet bgs)	8-10
TPH GRO (mg/kg)	<0.5
THP DRO (mg/kg)	17.7

Sample Identification	P15-B4
Date	5-25-16
Sample Depth (Feet bgs)	14-15
TPH GRO (mg/kg)	<0.48
THP DRO (mg/kg)	19.9

Sample Identification	P15-B4
Date	5-25-16
Sample Depth (Feet bgs)	19-20
TPH GRO (mg/kg)	<0.64
THP DRO (mg/kg)	<0.52

Sample Identification	P15-B4C
Date	5-25-16
Sample Depth (Feet bgs)	9-10
TPH GRO (mg/kg)	<0.55
THP DRO (mg/kg)	<0.22

Sample Identification	P15-B6
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.61
THP DRO (mg/kg)	<0.25

Sample Identification	P15-B7
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	3.6
THP DRO (mg/kg)	1.8

Sample Identification	P15-B8
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.76
THP DRO (mg/kg)	1.9

Sample Identification	P15-B10
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.41
THP DRO (mg/kg)	<0.16

Sample Identification	P15-B12
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.59
THP DRO (mg/kg)	<0.23

Sample Identification	P15-B14
Date	5-25-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.54
THP DRO (mg/kg)	<0.22

Sample Identlflcatlon	P15-B16
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.5
THP DRO (mg/kg)	<0.21

Sample Identification	P15-B18
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.48
THP DRO (mg/kg)	<0.19

Sample Identification	P15-B20
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.57
THP DRO (mg/kg)	<0.23

Sample Identification	P15-B21
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.49
THP DRO (mg/kg)	<0.2

Sample Identification	P15-B23
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.55
THP DRO (mg/kg)	<0.22

Sample Identification	P15-B25
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.42
THP DRO (mg/kg)	0.45

Sample Identification	P15-B27
Date	5-26-16
Sample Depth (Feet bgs)	4-5
TPH GRO (mg/kg)	<0.77
THP DRO (mg/kg)	<0.18

LEGEND

- GEOENVIRONMENTAL BORING
- EXISTING PROPERTY LINE
- PROPOSED ROW LINE

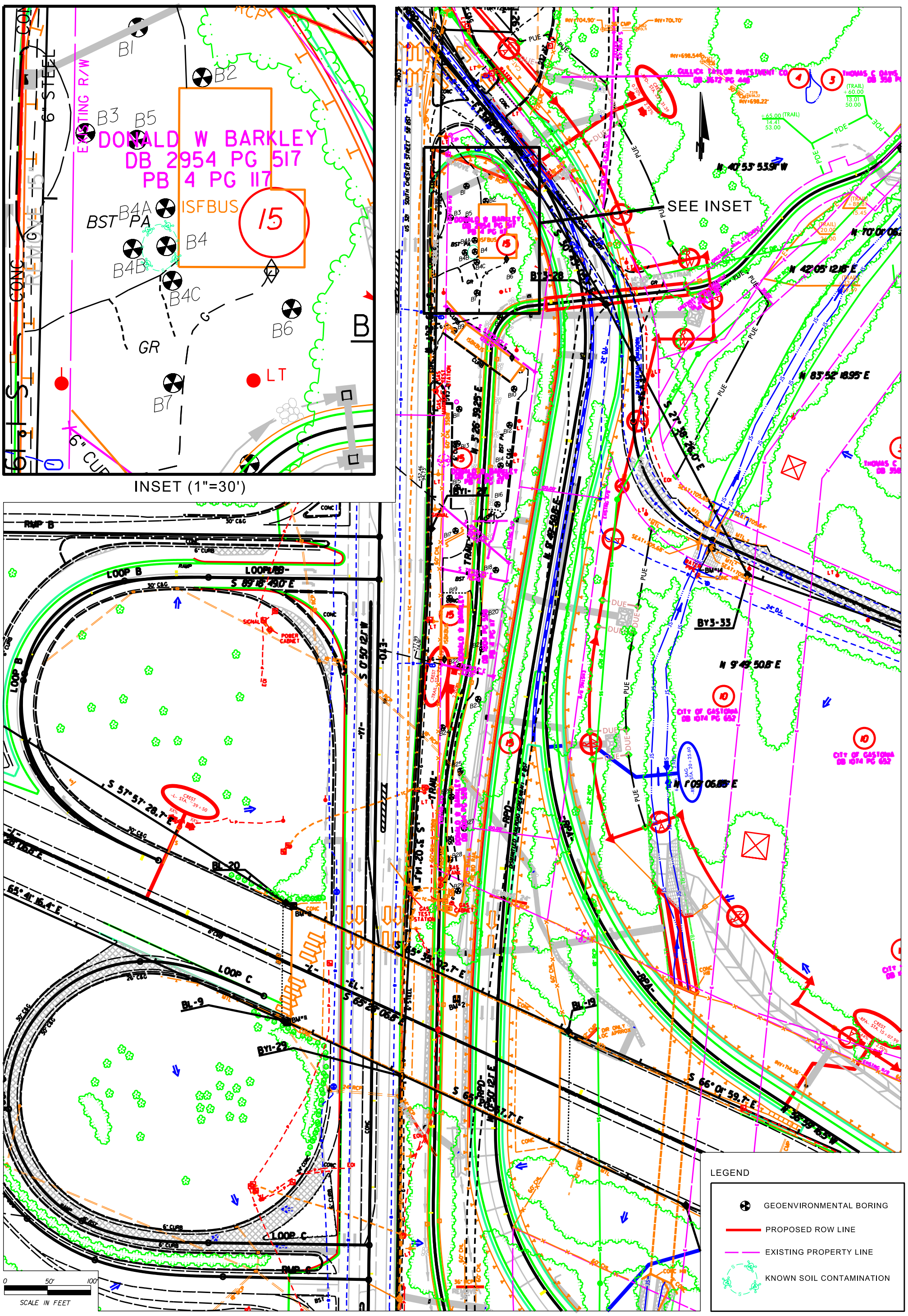
0 50' 100'

SCALE IN FEET

APEX COMPANIES, LLC
10610 METROMONT PARKWAY
SUITE 206
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 3
PARCEL 15
ONSITE UVF HYDROCARBON ANALYSIS RESULTS

Date: 6/15/16	GASTON COUNTY I-5000
Proj. # 510459-001	
CAD File: pc_15_fig 3.dgn	Project Title:
Approx. Scale: 1" = 100'	Drawn by: MJO
	Client: NC DOT



APEX COMPANIES, LLC
10610 METROMONT PARKWAY
SUITE 206
CHARLOTTE, NC 28117
PHONE: (704) 799-6390

FIGURE 4
PARCEL 15
EXTENT OF IMPACTED SOILS

Date:	6/15/16
Proj. #	510459-001
CAD File:	pc__15__fig 4.dgn
Approx. Scale:	1" = 100'
Drawn by:	MJO
Client:	NC DOT
Project Title:	GASTON COUNTY I-5000

APPENDIX A
PHOTOGRAPH LOG

Photo 1

Photo taken from the northwestern corner of the parcel looking south prior to Preliminary Site Activities.

Photo 2

Photo taken from the southern end of the parcel looking north prior to Preliminary Site Activities.

10610 Metromont Pkwy
Suite 206
Charlotte, NC 28269

APEX

WBS	41153.1.1
PROCESSED	TLH
DATE	May 2016
PAGE	

PHOTOGRAPHIC LOG

Preliminary Site Activities
2000 US 321., Gastonia, NC

Photo 3

Viewing building located in the central portion of the parcel prior to Preliminary Site Activities.

Photo 4

Viewing CSI prepare to start drilling.

Photo 5

Viewing partially weathered rock (PWR) encountered during direct push drilling activities. PWR was encountered predominantly on the southern third of the parcel.

Photo 6

Viewing vent pipe located near the southwestern corner of the northern building. ESP did not find evidence of a UST during the geophysical survey and the owner of the parcel indicated that the USTs associated with this vent pipe had previously been removed.

Photo 7

Viewing monuments and head stones on southern portion of parcel facing north.

Photo 8

Viewing building structure on southern end of the parcel facing south.

APPENDIX B

BORING LOGS

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B1	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**

Remarks:

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.3	0.0		Asphalt with Gravel Base
0.3-2.5	0.0		Red, Clayey Silt, Moist
2.5-4	0.8	P15-B1 (3-4)	Tannish Orange, Clayey Silt, Micaceous, Moist
4-6	0.0		Tan, Silt, Micacous, Moist
6-8	0.0		
8-10	0.0		
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B2	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**

Remarks:

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.1	0.0		Grass, Brown, Silt, Moist
0.1-3	0.0		Tannish Orange, Silt, Micaceous, Moist
3-5	0.0	P15-B2 (4-5)	Orange, Silt, Micacous, Moist
5-7	0.0		
7-9	0.0		
9-10	0.0		Tan, Silt, Micaceous, Moist
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B3	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**

Remarks:

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2	0.0		Asphalt with Gravel Base
0.2-4	0.0		Orange, Silt, Micaceous, Moist
4-6	0.0	P15-B3 (4-5)	Tan, Silt, Micaceous, Moist
6-8	0.0		
8-10	0.0		
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B4	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2	0.0		Asphalt with Gravel Base
0.2-3.5	0.0		Orange, Clayey Silt, Moist
3.5-6	0.0		Orange, Sandy Silt, Moist
6-8	2.8		Orange, Silt, Micaceous, Moist
8-10	4.8	P15-B4 (8-10)	Tan, Silt, Micaceous, Moist
10-12	4.8		
12-14	9.6		
14-16	11.7	P15-B4 (14-15)	
16-18	0.9	P15-B4 (17-18)	
18-20	0.4	P15-B4 (19-20)	
			Boring terminated at 20 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B4a	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2			Asphalt with Gravel Base
0.2-3	0.0		Orange, Silt, Micaceous, Moist
3-6	0.0		Orange, Sandy Silt, Moist
6-8	0.0		
8-10	0.0	P15-B4a (9-10)	
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B4b	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2			Asphalt with Rock Gravel
0.2-3	0.0		Orange, Silt, Micaceous, Moist
3-6	0.0		Tannish Orange, Sandy Silt, Moist
6-8	1.2		
8-10	8.2	P15-B4b (9-10)	
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B4c	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2			Grass and Brown Silt
0.2-4	0.0		Orange, Clayey Silt, Moist
4-6	0.0		Orange, Silt, Micaceous, Moist
6-8	0.0		
8-10	0.0	P15-B4c (9-10)	
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B5	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2			Asphalt with Gravel Base
0.2-4	0.0		Orange, Silt, Micaceous, Moist
4-6	0.0	P15-B5 (4-5)	Tan, Silt, Micaceous, Moist
6-8	0.0		
8-10	0.0		
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B6	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2			Grass and Brown Silt
0.2-3	0.0		Orange, Clayey Silt, Moist
3-6	0.0	P15-B6 (4-5)	Orange, Silt, Micaceous, Moist
6-8	0.0		
8-10	0.0		
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B7	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2	0.0		Grass and Brown Silt
0.2-1	0.18		Brown, Clayey Silt, Moist
1-4	0.8		Orange, Clayey Silt, Moist
4-7	0.82	P15-B7 (4-5)	Orange, Silt, Micacous, Moist
7-10	0.47		Tan, Silt, Micaceous, Moist
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval: N/A
Total Depth: 11 feet bgs	Outer Casing Diameter: N/A
Screen Interval: 6 to 11 feet	Bentonite Interval: N/A
Sand Interval: 4 to 11 feet	Slot Size: 0.10
Grout Interval: N/A	Static Water Level: 3.08

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Boring Log

Boring/Well No.: P15 - B8	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2			White, Sand, Medium With Gravel, Dry
0.2-2	0.0		Orange, Silt, Moist
2-6	0.0	P15-B8 (4-5)	
6-8	0.0		Tannish Orange, Silt, Moist
8-10	0.0		
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B9	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.5			White, Sand, Medium With Gravel, Dry
0.5-1.5	0.0		Orange, Clayey Silt, Moist
1.5-3	0.0		Orange, Silt, Moist
3-5	0.0	P15-B-9 (4-5)	
5-7	0.0		Tannish Orange, Silt, Moist
7-10	0.0		
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B10	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2			Asphalt with Gravel Base
0.2-4	0.0		Tan, Silt, Micaceous, Moist
4-7	0.0	P15-B10 (4-5)	
7-10	0.0		Orange, Clayey Silt, Moist
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B11	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.3	0.0		Asphalt with Gravel Base
0.3-2	0.0		Orange, Clayey Silt, Moist
2-3	0.0		Tan, Silt, Micaceous, Moist
3-4	0.0		Orange, Silt, Moist
4-6	0.0	P15-B11 (4-5)	
			Boring terminated at 6 feet due to refusal

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B12	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2	0.0		Asphalt with Gravel Base
0.7-3	0.0		Orange, Clayey Silt, Moist
3-5	0.0	P15-B12 (4-5)	
5-7	0.0		
			Boring terminated at 7 feet due to refusal

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B13	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2	0.0		Asphalt with Gravel Base
0.2-3	0.0		Orange, Clayey Silt, Moist
3-6	0.0	P15-B13 (4-5)	
6-8	0.0		Rock fragments
8-10	0.0		Brown, Silt, Moist
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B14	**Site Name: Donald and Sue Markley Property**
Date: 5-25-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2	0.0		Asphalt with Gravel Base
0.2-3.5	0.0		Orange, Clayey Silt, Moist
3.5-4	0.0		Rock fragments
4-7	0.0	P15-B14 (4-5)	Orange, Clayey Silt, Moist
7-10	0.0		
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B15	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-2	0.0		Brown, Silt, Moist
2-5	0.7	P15-B15 (4-5)	Orange, Clayey Silt, Moist
5			Rock fragments
			Boring terminated at 5 feet due to refusal

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B16	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2			Grass With Brown Silt
0.2-3	0.0		Orange, Clayey Silt, Moist
3-5	1.2	P15-B16 (4-5)	
5-7	0.0		Orange, Clayey Sand, Medium, Moist
7-7.5	0.0		Rock fragments
7.5-10	0.0		Orange, Clayey Silt, Moist
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B17	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.3			Asphalt with Gravel Base
0.3-3	0.0		Orange, Silt, Moist
3-3.5	0.0		Rock fragments
3.5-6	0.0	P15-B17 (4-5)	Orange, Clayey Silt, Moist
			Boring terminated at 6 feet due to refusal

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B18	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.3			Asphalt with Gravel Base
0.3-1	0.0		Brown, Clayey Silt, Moist
1-1.5	0.0		Yellow, Sand, Medium, Moist
1.5-3	0.0		Brownish Orange, Clayey Silt, Moist
3-5	0.0	P15-B18 (4-5)	
5-7	0.0		Orange, Clayey Silt, Moist
7-10	0.0		Yellowish Orange, Sandy Silt, Moist
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B19	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.3			Asphalt with Gravel Base
0.3-2	0.0		Brown, Clayey Silt, Moist
2-4	0.0		Orangish Red, Clayey Silt, Moist
4-6	0.0	P15-B19 (4-5)	Orange, Silt, Moist
6-8	0.0		
8-10	0.0		Yellow, Silt, Moist
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B20	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.2			Grass with Brown Silt
0.2-3	0.0		Brown, Clayey Silt, Moist
3-6	0.0	P15-B20 (4-5)	Orange, Clayey Silt, Moist
6-8	0.0		
8-10	0.0		
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B21	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.5			Grass with Brown Silt
0.5-1	0.0		Yellow, Sand, Medium, Moist
1-3	0.0		Orange, Clayey Silt, Moist
3-5	0.0	P15-B21 (4-5)	
5-8	0.0		
			Boring terminated at 8 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

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Boring Log

Boring/Well No.: P15 - B22	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.1			Grass with Brown Silt
1-3	0.0		Orange, Clayey Silt, Moist
3-5	0.0	P15-B22 (4-5)	
5-7	0.0		
7-10	0.0		Orange and Yellow, Marbled, Clayey Silt, Moist
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B22	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.5			Grass with Brown Silt
0.5-2	0.0		Orange, Silt, Moist
2-5	0.0	P15-B23 (4-5)	
			Boring terminated at 5 feet due to refusal

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B24	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.1			Grass with Brown Silt
0.1-1	0.0		Brown, Clayey Silt, Moist
1-3	0.0		Orange, Clayey Silt, Moist
3-5	0.0		
5-6	0.0	P15-B24 (4-5)	Orange, Black and Yellow, Marbled, Sandy Silt, Moist
6-8	0.0		Orange, Clayey Silt, Moist
8-10	0.0		
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B25	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.5			Grass with Brown Silt
0.5-1.5	0.0		Orange, Silt, Moist
1.5-3	0.0		Orange, Yellow and Black, Marbled, Sandy Silt, Moist
3-5	0.0	P15-B25 (4-5)	
5-7	0.0		Orange, Silt, Moist
7-10	0.0		Orange, Clayey Silt, Moist
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B26	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-0.1			Grass with Brown Silt
0.1-3	0.0		Orange, Clayey Silt, Moist
3-5	0.0	P15-B26 (4-5)	
			Boring terminated at 5 feet due to refusal

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B27	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-1			Grass with Brown Silt
1-3	0.0		Orange, Clayey Silt, Moist
3-5	0.0	P15-B27 (4-5)	
			Boring terminated at 5 feet due to refusal

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B28	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-1			Grass with Brown Silt
1-3	0.0		Orange, Clayey Silt, Moist
3-5	0.0	P15-B28 (4-5)	
5-6	0.0		Rock fragments
6-8	0.0		Orange, Yellow and Black, Marbled, Sandy Silt, Moist
8-10	0.0		
			Boring terminated at 10 feet

WELL CONSTRUCTION DETAILS (If Applicable)	
Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

Apex Companies, LLC

Boring Log

Boring/Well No.: P15 - B29	**Site Name: Donald and Sue Markley Property**
Date: 5-26-16	**Location: Gastonia, Gaston Co., NC**
Job No.: 510459-001	**Sample Method: Direct Push**
Apex Rep: Troy L. Holzschuh	**Drilling Method: Direct Push**
Drilling Company: Carolina Soil Investigations	**Driller Name/Cert #: Danny Summers/2579A**
Remarks:	

Depth (ft BLS)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
0-1			Grass with Brown Silt
1-3	0.0		Orange, Clayey Silt, Moist
3-5	0.0	P15-B29 (4-5)	
			Boring terminated at 5 feet due to refusal

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter:	Outer Casing Interval:
Total Depth:	Outer Casing Diameter:
Screen Interval:	Bentonite Interval:
Sand Interval:	Slot Size:
Grout Interval:	Static Water Level:

APPENDIX C

GEOPHYSICAL REPORT

ESP Associates, P.A.

May 26, 2016

Mr. Troy Holzschuh
Apex Companies, LLC
136 Fairview Road Suite 125
Mooresville, NC 28117

Reference: **REPORT ON GEOPHYSICAL SERVICES**
Parcel 15, Intersection of US 321 and I-85
Gaston County, North Carolina
ESP Project No. EO73.301

State Project: I-5000
WBS Element: 41153.1.1
County: Gaston
Description: I-85/US 321 Geometric Safety Improvements to Interchange

Dear Mr. Holzschuh:

ESP Associates, P.A. (ESP) is pleased to present this report to Apex Companies, LLC (Apex) on the geophysical services we provided for the referenced project. This work was performed under our subconsultant agreement dated March 29, 2015 and in accordance with our cost proposal to you dated May 6, 2016 with authorization provided by your Professional Services Order 51-443 dated May 11, 2016. The purpose of the work was to help identify possible underground storage tanks (USTs).

1.0 GEOPHYSICAL DATA COLLECTION

On May 23 and 24, 2016, ESP performed geophysical studies at Parcel 15, located on the northeast side of the intersection of US 321 and I-85 in Gastonia, North Carolina. The work consisted of metal detection using a Geonics EM61 MK2 instrument and subsurface imaging using a Sensors and Software Noggin 250 Ground-Penetrating Radar (GPR) instrument. Representative photographs of the geophysical study area are provided on Figure 1.

The EM61 data were collected over the accessible areas of the site using a line spacing of approximately 3 feet. We used a sub-meter differential GPS instrument (Hemisphere XF101) connected to an Archer Field computer to provide approximate locations of the EM61 data in real time. We collected representative GPR data over selected EM61 anomalies with responses significant enough to represent possible USTs.

2.0 DATA ANALYSIS AND PRESENTATION

The EM61 data were gridded and contoured to produce plan view contour maps of the early time gate response (Figure 2) and the differential response (Figures 3, 4 and 5). The differential response is calculated by subtracting the response of the bottom coil from the response of the top coil of the EM61. Typically, the differential response diminishes the response from smaller, near-surface metallic objects, thus emphasizing the response from deeper and larger metallic objects, such as USTs. The approximate DGPS locations of observed site features were superimposed on the EM61 contour maps so that anomalies caused by site features such as metal objects on the ground surface could be recognized.

3.0 DISCUSSION OF RESULTS

The EM61 differential contour plot indicated high amplitude responses (anomalies) that correspond to fences, storm drain grates, and other metallic features on the ground surface. In addition, the EM61 differential data showed several anomalies around the buildings that did not correspond to known metallic features.

We collected GPR data over four EM61 differential anomalies around the three buildings within the parcel. The GPR data over these anomalies did not indicate possible USTs and were likely caused by adjacent metallic site features such as metal doors, reinforced concrete, or buried metallic debris. We collected GPR data in the vicinity of the possible vent pipe, located by the southwest corner of the northern building (former gas station), as shown on Figure 1, Image D. The GPR data did not indicate a UST in the vicinity of the possible vent pipe.

4.0 SUMMARY AND CONCLUSIONS

Our review of the geophysical data collected for this project does not indicate the presence of possible USTs in the geophysical study area. Please note that the geophysical study area did not include two areas occupied by stone monuments, located between the center building and the northern building.

5.0 LIMITATIONS

These services have been provided to Apex in accordance with generally accepted guidelines for performing geophysical surveys. It is recognized that the results of geophysical surveys are non-unique and subject to interpretation. Further, the locations of data and features included in this report are approximate and were collected using a sub-meter DGPS instrument. ESP makes no guarantee as to the accuracy of these locations.

Thank you for the opportunity to be of service to Apex on this project. Please contact us if you have any questions or need further information.

Sincerely,

ESP ASSOCIATES, P.A.

Edward D. Billington, P.G.

DMN/EDB

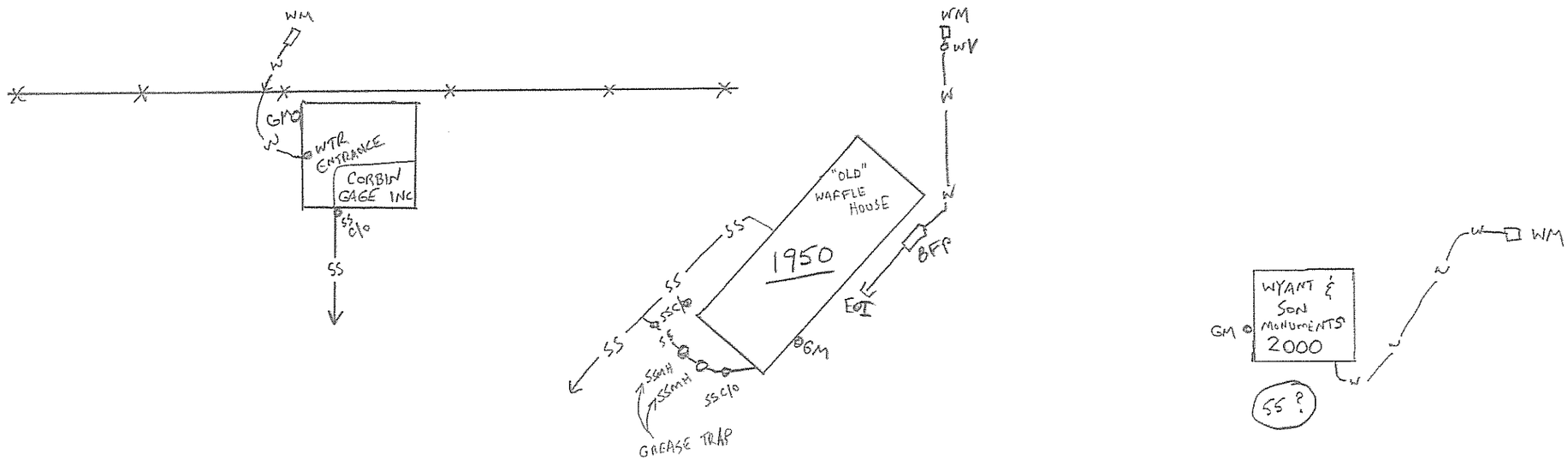
Attachments: Subsurface Utility Location Sketch
Figures 1 – 5

PRELIMINARY - DO NOT USE FOR CONSTRUCTION THIS IS NOT A SURVEY. THE DASHED UTILITY LINES SHOWN HEREON WERE DESIGNATED AND PAINTED ON MAY 23, 2016, BUT WERE NOT SURVEYED. THE LOCATIONS ARE SCHEMATIC IN NATURE AND ARE NOT TO SCALE. THE DESIGNATED UTILITIES WERE NOT FIELD LOCATED BY ESP.

I-85 N

I-85 S

US 321



COULDN'T FIND SS @ 2000
OWNER SAID IT FED OUT BACK
BUT THERE IS CEMENT CHUNKS
ALL IN BACK.

QUALITY CONTROL CHECK	SURVEYING AND MAPPING
PERFORMED BY: TW	PERFORMED BY:
DATE CHECKED: 5-23-16	DATE CHECKED:

ESP Associates, P.A.
3475 Lakemont Boulevard
Fort Mill, SC 29708
NC# (704) 583-4949 SC# (803) 802-2440

2016 — SUBSURFACE UTILITY LOCATION SKETCH

PROJECT NAME: APEX 1-5000

PROJECT Number: EO 73301.000 Sheet 1 of 1

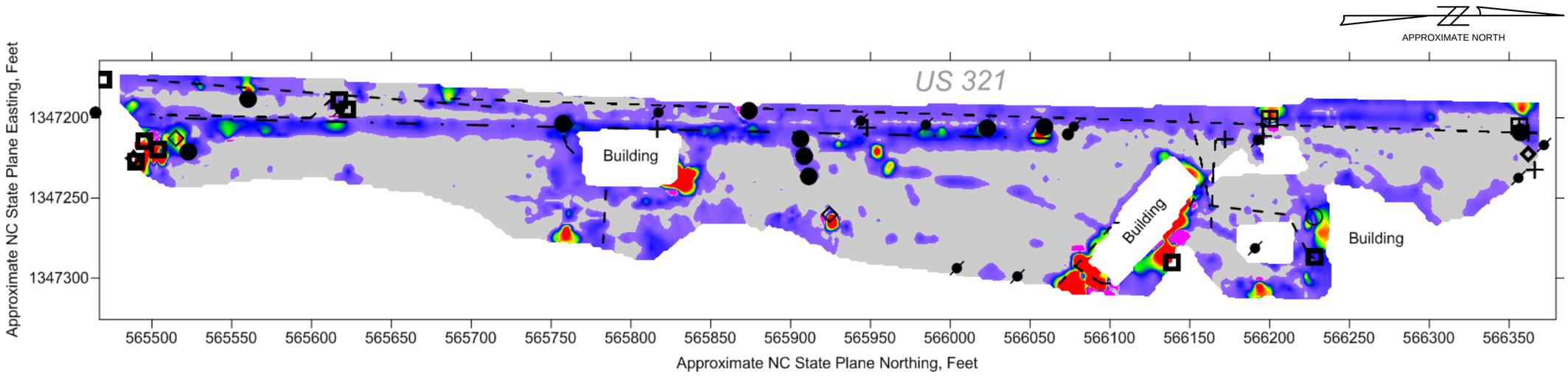
A. Photo from center of site, looking south.

B. Photo from center of site, looking north.

C. Photo of southern portion of site, looking south.

D. Photo of possible vent pipe (arrow) located by southwest corner of Wyant & Son Monument Co.

PROJECT NO. EO73.301	***FIGURE 1*** ***PHOTOGRAPHS OF SITE***	ESP Associates, P.A.
SCALE NTS		7011 Albert Pick Rd. Suite E. Greensboro, NC 27409
DATE 5/26/16	***PARCEL 15, STATE PROJECT I-5000*** ***GASTON COUNTY, NORTH CAROLINA***	336.334.7724
BY DMN/EDB		www.espassociates.com



EXPLANATION

- Storm drain grate
- Utility feature (water meter, hydrant, etc.)
- Metal debris on ground surface
- Power pole
- Guy wire anchor
- Sign pole, other pole
- Fence and fencepost
- Approximate location of buried utility lines marked by ESP and others
- EM61 data collection areas

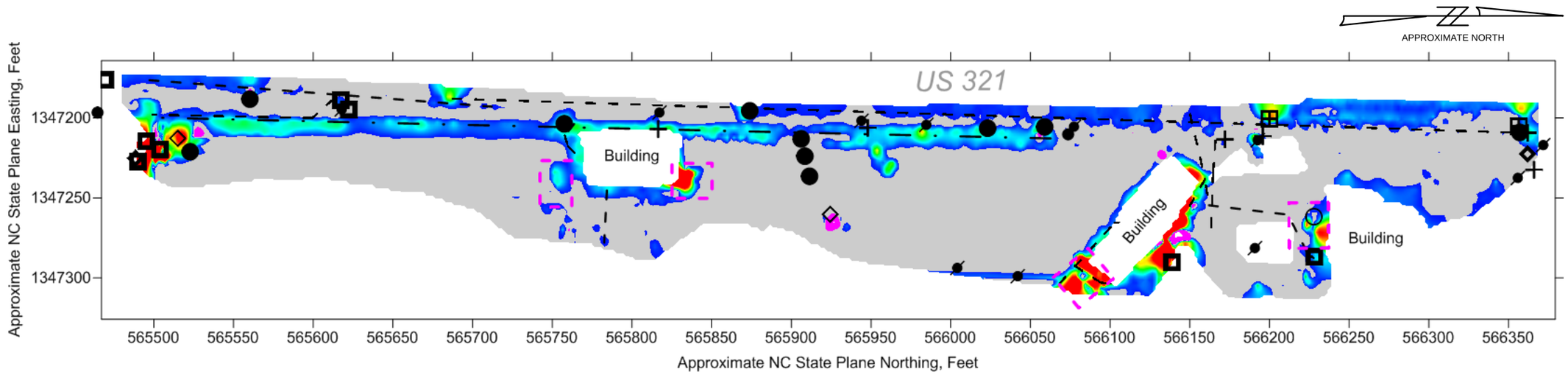
EM61 Early Time Gate Response (mV)

-4000 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000

Note: Locations of data and features are approximate and were collected using a sub-meter DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO. EO73.301	***FIGURE 2***
SCALE AS SHOWN	***EM61 EARLY TIME GATE RESPONSE***
DATE 5/26/16	***PARCEL 15, STATE PROJECT I-5000***
BY DMN/EDB	***GASTON COUNTY, NORTH CAROLINA***

ESP Associates, P.A.
7011 Albert Pick Rd.
Suite E.
Greensboro, NC 27409
336.334.7724
www.espassociates.com



EXPLANATION

- Storm drain grate
- Utility feature (water meter, hydrant, etc.)
- Metal debris on ground surface
- Power pole
- Guy wire anchor
- Sign pole, other pole
- Fence and fencepost
- Approximate location of buried utility lines marked by ESP and others
- EM61 data collection areas
- GPR data collection area

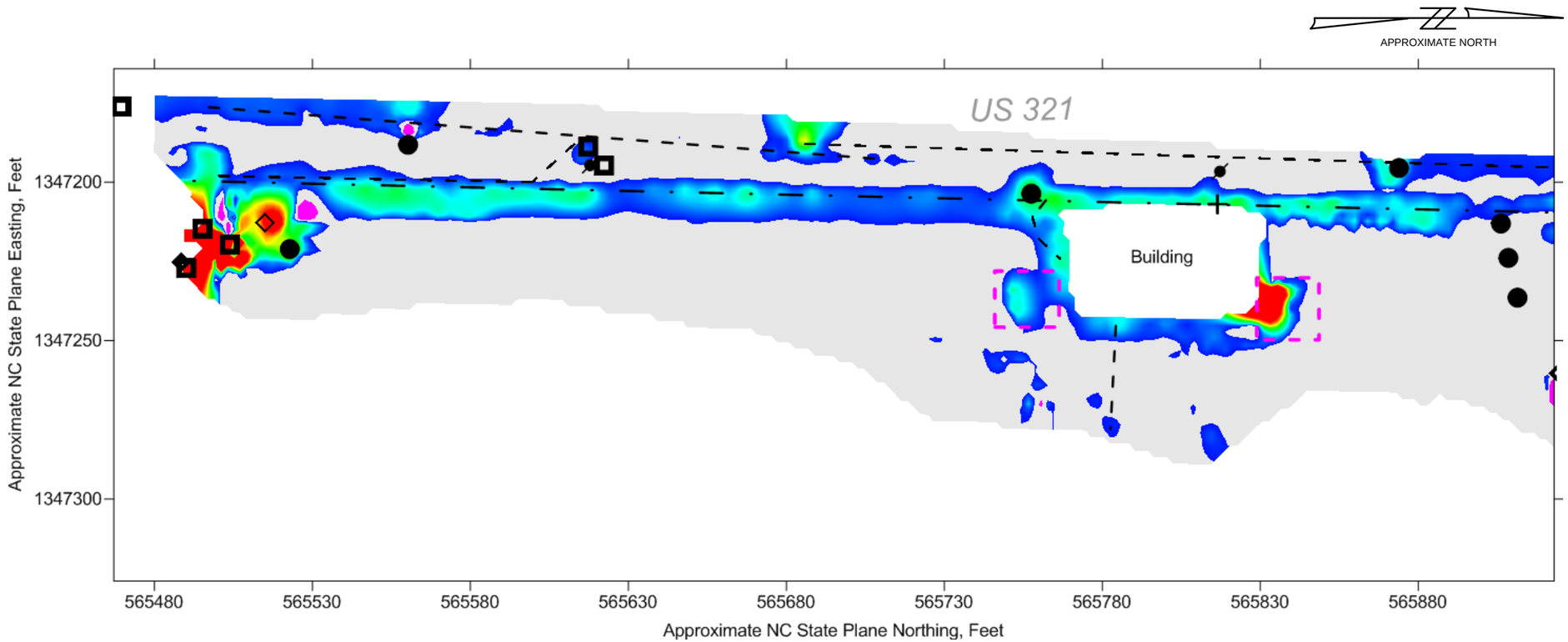
EM61 Differential Response (mV)

20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500

Note: Locations of data and features are approximate and were collected using a sub-meter DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO. EO73.301	***FIGURE 3***
SCALE AS SHOWN	***EM61 DIFFERENTIAL RESPONSE***
DATE 5/26/16	***PARCEL 15, STATE PROJECT I-5000***
BY DMN/EDB	***GASTON COUNTY, NORTH CAROLINA***

ESP Associates, P.A.
7011 Albert Pick Rd.
Suite E.
Greensboro, NC 27409
336.334.7724
www.espassociates.com



EXPLANATION

- Storm drain grate
- Utility feature (water meter, hydrant, etc.)
- Metal debris on ground surface
- Power pole
- Guy wire anchor
- Sign pole, other pole
- Fence and fencepost
- Approximate location of buried utility lines marked by ESP and others
- EM61 data collection areas
- GPR data collection area

EM61 Differential Response (mV)

20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500

Note: Locations of data and features are approximate and were collected using a sub-meter DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	EO73.301
SCALE	AS SHOWN
DATE	5/26/16
BY	DMN/EDB

FIGURE 4 – SOUTH HALF OF PARCEL EM61 DIFFERENTIAL RESPONSE

PARCEL 15, STATE PROJECT I-5000 GASTON COUNTY, NORTH CAROLINA

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7011 Albert Pick Rd.
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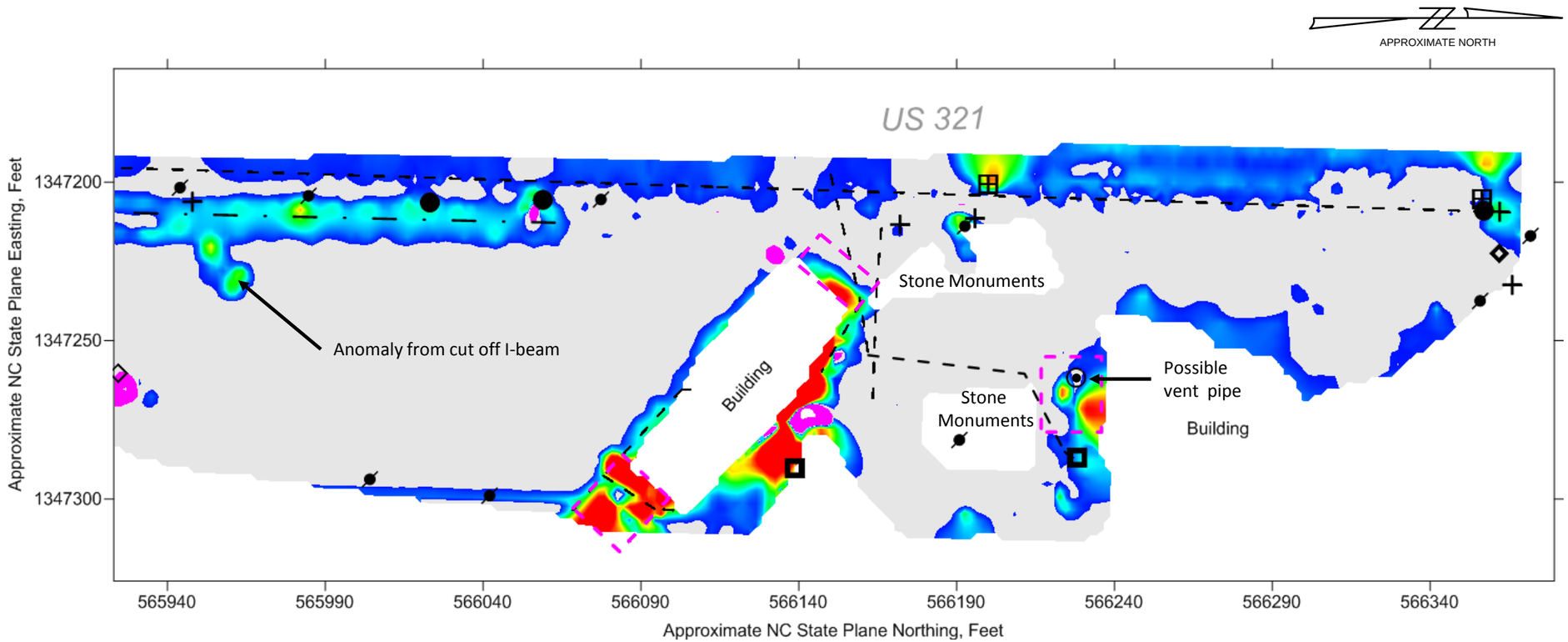
Greensboro, NC 27409
336.334.7724
www.espassociates.com



EXPLANATION

- Storm drain grate
- Utility feature (water meter, hydrant, etc.)
- Metal debris on ground surface
- Power pole
- Guy wire anchor
- Sign pole, other pole
- Fence and fencepost
- Approximate location of buried utility lines marked by ESP and others
- EM61 data collection areas
- GPR data collection area

EM61 Differential Response (mV)

20 40 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500

Note: Locations of data and features are approximate and were collected using a sub-meter DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	EO73.301
SCALE	AS SHOWN
DATE	5/26/16
BY	DMN/EDB

FIGURE 5 – NORTH HALF OF PARCEL EM61 DIFFERENTIAL RESPONSE

PARCEL 15, STATE PROJECT I-5000 GASTON COUNTY, NORTH CAROLINA

ESP Associates, P.A.
7011 Albert Pick Rd.
Suite E.
Greensboro, NC 27409
336.334.7724
www.espassociates.com

APPENDIX D
HYDROCARBON ANALYSIS RESULTS

QED

AQROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: 2000 N Chester St (US-321)

Samples taken Wednesday, May 25, 2016
Samples extracted Wednesday, May 25, 2016
Samples analysed Wednesday, May 25, 2016

Contact: Dennis Li

Operator Troy L. Holzschuh

Project: I-5000

U00904

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	P15-B1 (3-4)	22.8	<1.1	<0.57	0.62	0.62	<0.2	<0.02	<0.002	71.3	19.2	9.5	V.Deg.Gas + BO (FCM) 44.2%
s	P15-B2 (4-5)	20.5	<1	<0.51	<0.2	<0.51	<0.1	<0.02	<0.002	0	0	0	PHC not Detected + BO
s	P15-B3 (4-5)	18.1	<0.45	<0.45	<0.18	<0.45	<0.09	<0.01	<0.002	0	0	0	PHC not Detected + BO (P)
s	P15-B4 (8-10)	20.2	<0.5	<0.5	17.7	17.7	3.3	0.13	<0.002	0	98.8	1.2	Deg.PHC (FCM) (P) 49.1%
s	P15-B4 (14-15)	19.3	<0.48	<0.48	19.9	19.9	3.2	0.14	<0.002	0	100	0	Deg.PHC (FCM) 73.8% B
s	P15-B4 (19-20)	25.5	<1.3	<0.64	0.52	0.52	0.5	<0.02	<0.003	0	100	0	PHC Traces + BO (FCM)
s	P15-B4 (17-18)	26.8	<0.67	<0.67	0.6	0.6	0.39	<0.02	<0.003	0	100	0	PHC Traces (FCM)
s	P15-B4a (9-10)	17.9	<0.45	<0.45	1.4	1.4	0.82	0.04	<0.002	0	92.1	7.9	Residual.PHC (FCM) (P) 49.9%
s	P15-B4b (9-10)	20.8	<0.52	0.79	3.2	4	1.2	0.04	<0.002	40.3	57.7	2	Deg.Diesel (FCM) (P) 33.3%
s	P15-B4c (9-10)	22.0	<1.1	<0.55	<0.22	<0.55	<0.11	<0.02	<0.002	0	0	0	PHC not Detected + BO (P)

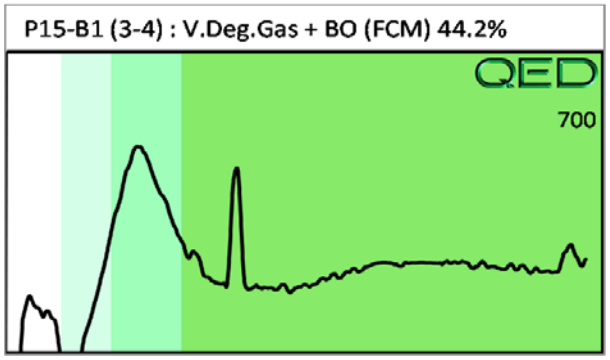
Initial Calibrator QC check OK Final FCM QC Check OK 90.7 %

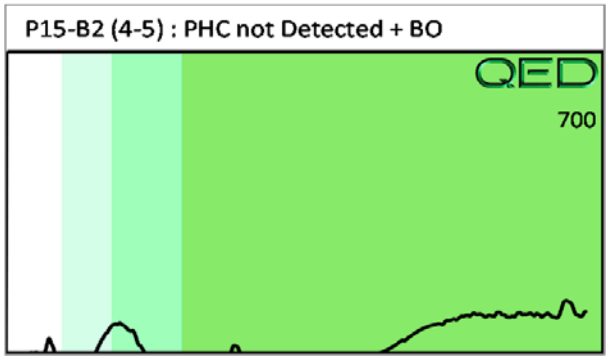
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

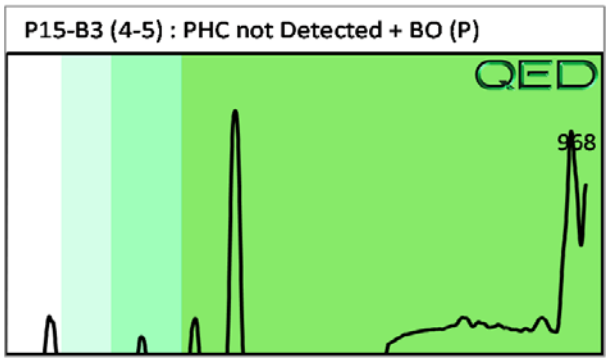
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

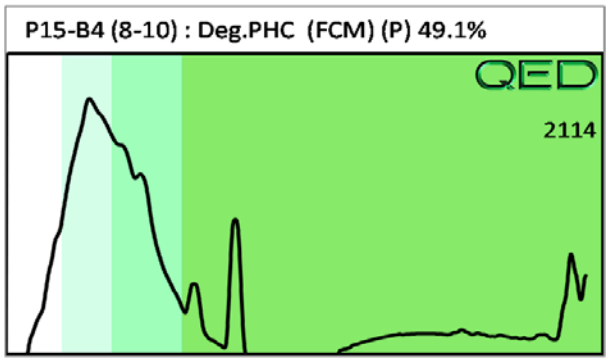
(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

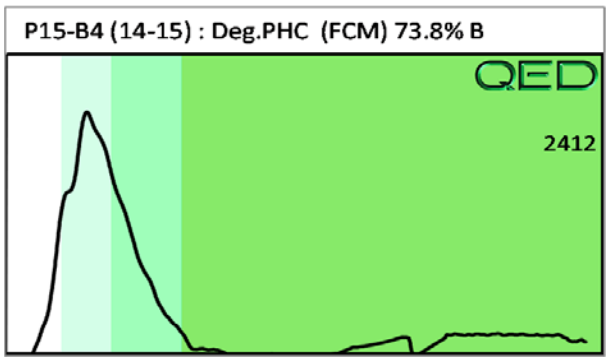
Project: I-5000 Wednesday, May 25, 2016

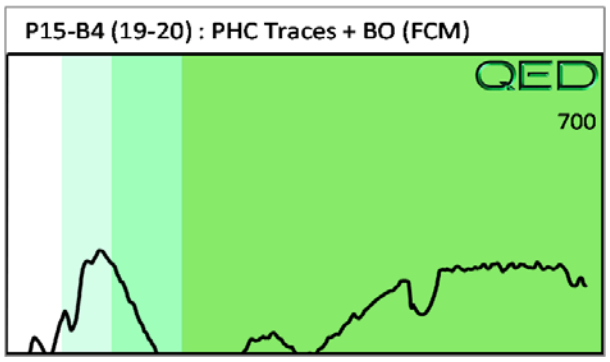


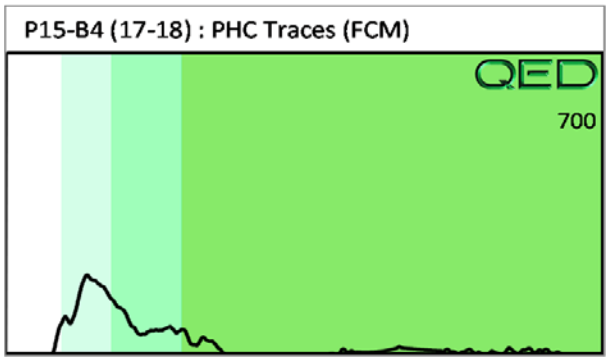


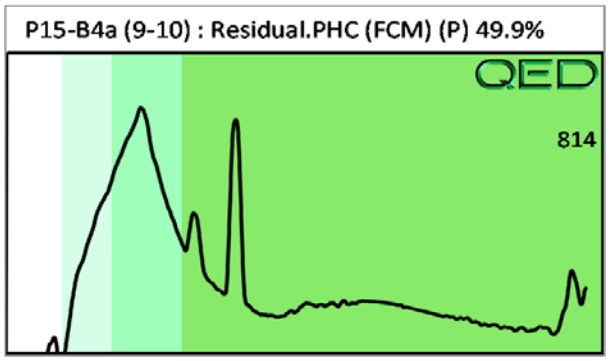


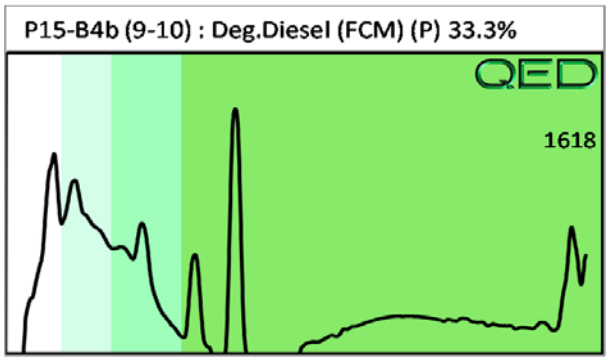


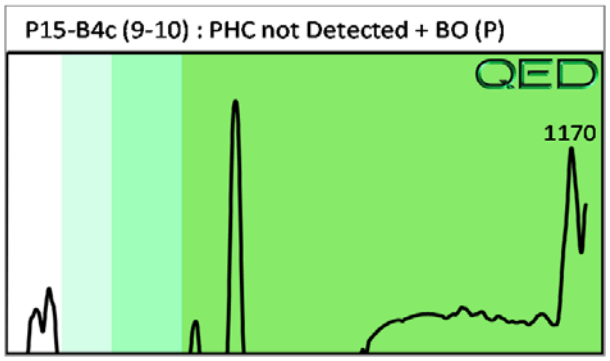












QED

AQROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: 2000 N Chester St (US-321)

Samples taken Wednesday, May 25, 2016
Samples extracted Wednesday, May 25, 2016
Samples analysed Wednesday, May 25, 2016

Contact: Dennis Li

Operator Troy L. Holzschuh

Project: I-5000

U00904

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	P15-B5 (4-5)	32.1	<0.8	<0.8	<0.32	<0.8	<0.16	<0.03	<0.003	0	0	0	PHC not Detected + BO (P)
s	P15-B6 (4-5)	24.5	<1.2	<0.61	<0.25	<0.61	<0.12	<0.02	<0.002	0	0	0	PHC not Detected + BO
s	P15-B7 (4-5)	25.0	<1.3	3.6	1.8	5.4	1.2	0.06	<0.003	78.2	19.4	2.4	Deg.Gas (FCM) 25.5% B
s	P15-B8 (4-5)	30.6	<1.5	<0.76	1.9	1.9	1.5	0.07	<0.003	0	88.8	11.2	Residual.PHC (FCM) 27%
s	P15-B-9 (4-5)	25.2	<0.63	<0.63	<0.25	<0.63	<0.13	<0.02	<0.003	0	0	0	PHC not detected
s	P15-B10 (4-5)	16.5	<0.41	<0.41	<0.16	<0.41	<0.08	<0.01	<0.002	0	0	0	PHC not Detected
s	P15-B11 (4-5)	29.9	<0.75	<0.75	<0.3	<0.75	<0.15	<0.02	<0.003	0	0	0	PHC not Detected + BO (P)
s	P15-B12 (4-5)	23.4	<0.59	<0.59	<0.23	<0.59	<0.12	<0.02	<0.002	0	0	0	PHC not Detected + BO
s	P15-B13 (4-5)	20.0	<1	<0.5	2	2	1.4	0.06	0.002	0	82.9	17.1	Deg Fuel (FCM) 77.1%
s	P15-B14 (4-5)	21.7	<0.54	<0.54	<0.22	<0.54	<0.11	<0.02	<0.002	0	0	0	PHC not Detected + BO

Initial Calibrator QC check OK Final FCM QC Check OK 89.9 %

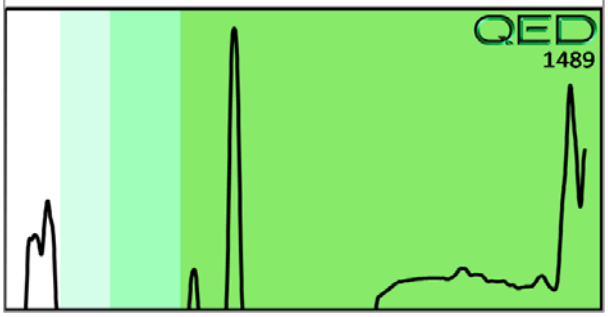
Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library (SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

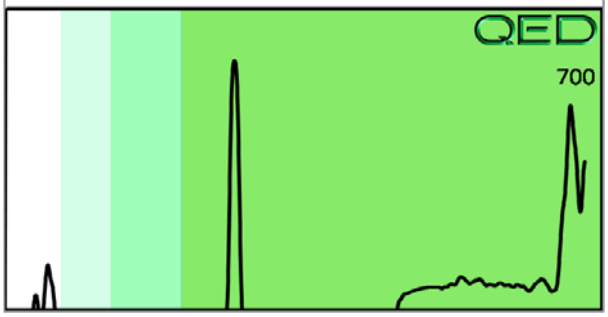
Project: I-5000

Wednesday, May 25, 2016

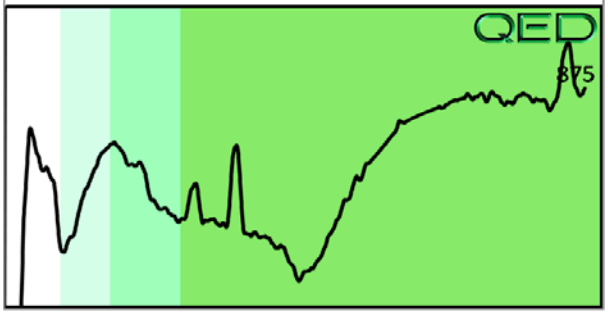
P15-B5 (4-5) : PHC not Detected + BO (P)



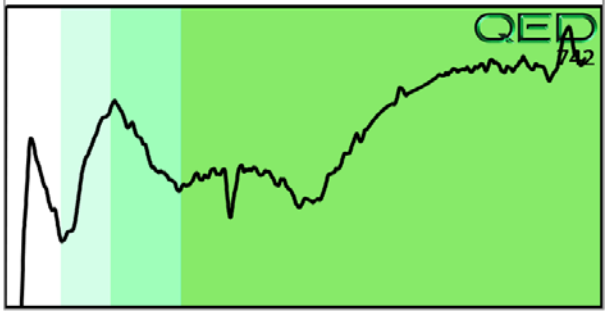
P15-B6 (4-5) : PHC not Detected + BO



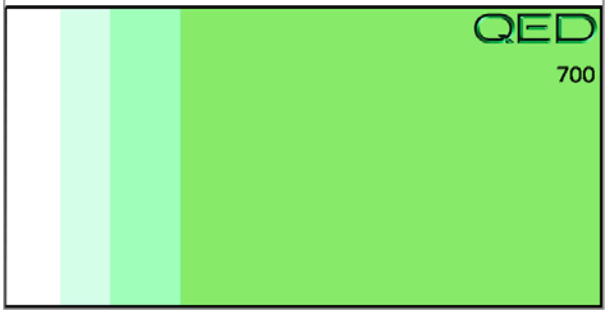
P15-B7 (4-5) : Deg.Gas (FCM) 25.5% B



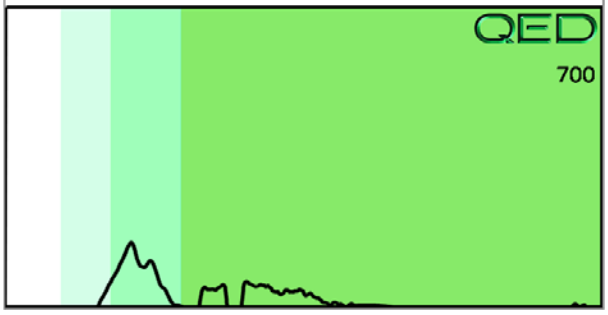
P15-B8 (4-5) : Residual.PHC (FCM) 27%



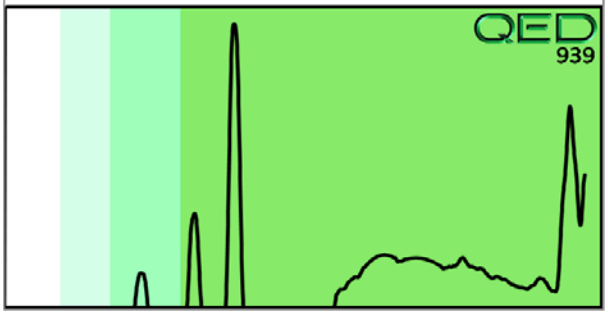
P15-B-9 (4-5) : PHC not detected



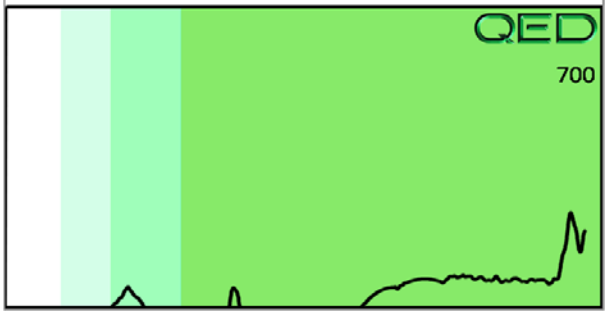
P15-B10 (4-5) : PHC not Detected



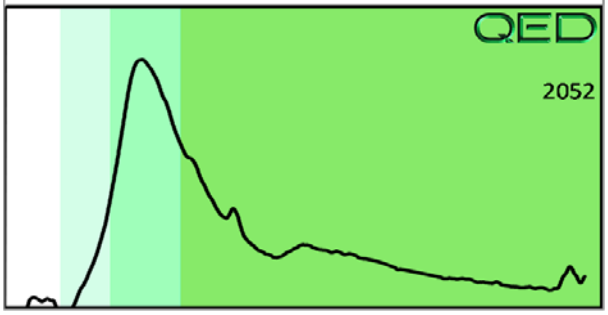
P15-B11 (4-5) : PHC not Detected + BO (P)



P15-B12 (4-5) : PHC not Detected + BO



P15-B13 (4-5) : Deg Fuel (FCM) 77.1%



P15-B14 (4-5) : PHC not Detected + BO

QED

AQROS

Hydrocarbon Analysis Results

Client: NCDOT
Address: 2000 N Chester St. (US-321)

Samples taken Thursday, May 26, 2016
Samples extracted Thursday, May 26, 2016
Samples analysed Thursday, May 26, 2016

Contact: Dennis Li

Operator Troy L. Holzschuh

Project: I-5000

U00904

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	P15-B15 (4-5)	20.8	<0.52	<0.52	<0.21	<0.52	<0.1	<0.02	<0.002	0	0	0	PHC not Detected + BO (P)
s	P15-B16 (4-5)	20.0	<1	<0.5	<0.2	<0.5	<0.1	<0.02	<0.002	0	0	0	PHC not Detected + BO (P)
s	P15-B17 (4-5)	17.3	<0.43	<0.43	<0.17	<0.43	<0.09	<0.01	<0.002	0	0	0	PHC not Detected + BO (P)
s	P15-B18 (4-5)	19.3	<0.48	<0.48	<0.19	<0.48	<0.1	<0.02	<0.002	0	0	0	PHC not Detected + BO (P)
s	P15-B19 (4-5)	18.1	<0.45	<0.45	<0.18	<0.45	<0.09	<0.01	<0.002	0	100	0	PHC Traces + BO (FCM) (P)
s	P15-B20 (4-5)	22.8	<0.57	<0.57	<0.23	<0.57	<0.11	<0.02	<0.002	0	0	0	PHC not Detected + BO (P)
s	P15-B21 (4-5)	19.5	<0.98	<0.49	<0.2	<0.49	<0.1	<0.02	<0.002	0	0	0	PHC not Detected + BO
s	P15-B22 (4-5)	20.0	<0.5	<0.5	1.1	1.1	0.39	<0.02	<0.002	0	90.7	9.3	Deg.Diesel + BO (FCM) 36.2%
s	P15-B23 (4-5)	21.8	<0.55	<0.55	<0.22	<0.55	<0.11	<0.02	<0.002	0	0	0	PHC Traces
s	P15-B24 (4-5)	19.3	<0.48	<0.48	<0.19	<0.48	<0.1	<0.02	<0.002	0	0	0	PHC not Detected + BO

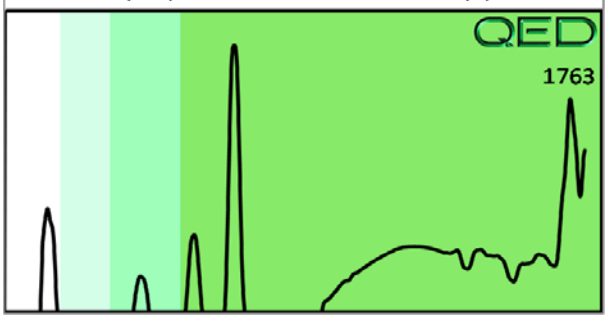
Initial Calibrator QC check OK Final FCM QC Check OK 104.5 %

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

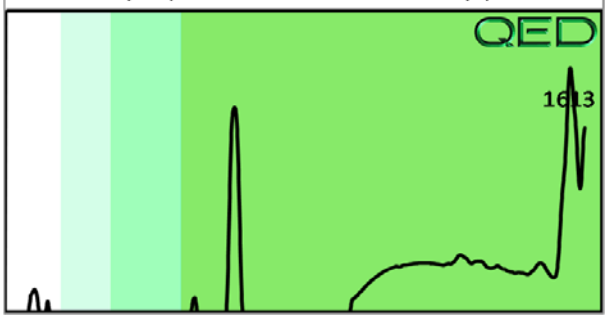
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

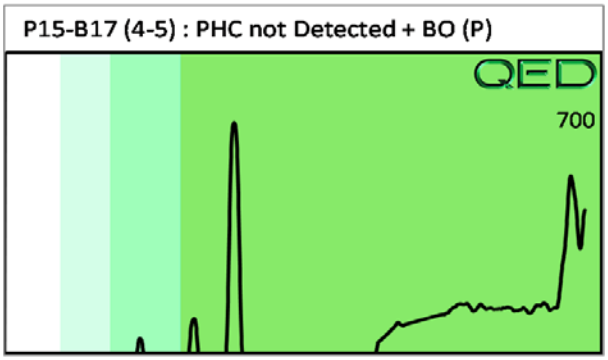
P15-B15 (4-5) : PHC not Detected + BO (P)



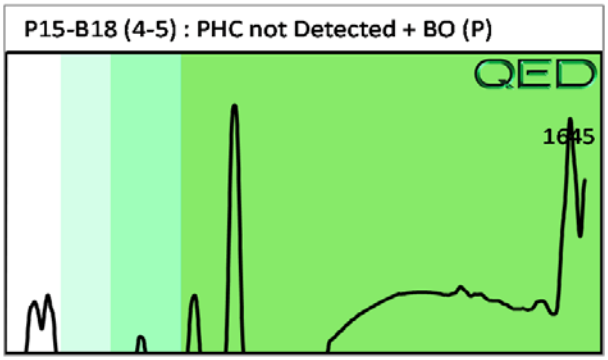
P15-B16 (4-5) : PHC not Detected + BO (P)



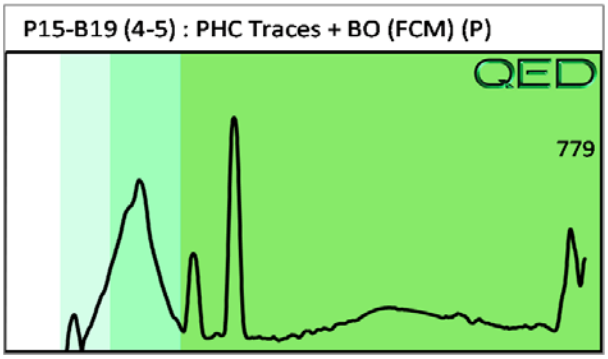
P15-B17 (4-5) : PHC not Detected + BO (P)



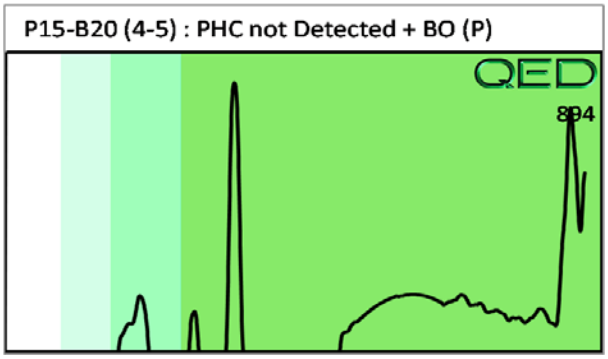
P15-B18 (4-5) : PHC not Detected + BO (P)



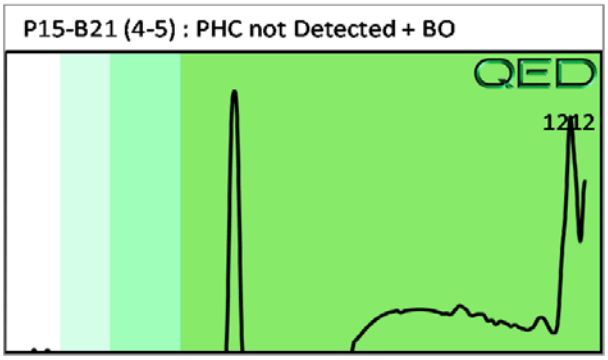
P15-B19 (4-5) : PHC Traces + BO (FCM) (P)



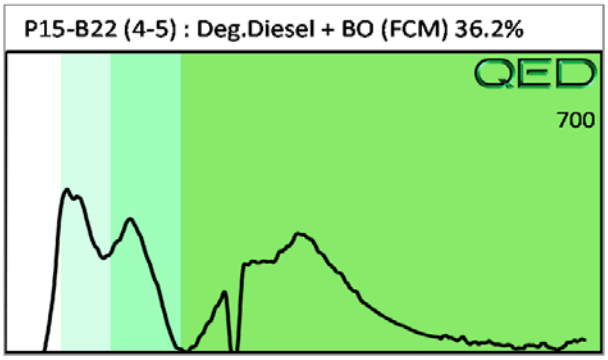
P15-B20 (4-5) : PHC not Detected + BO (P)



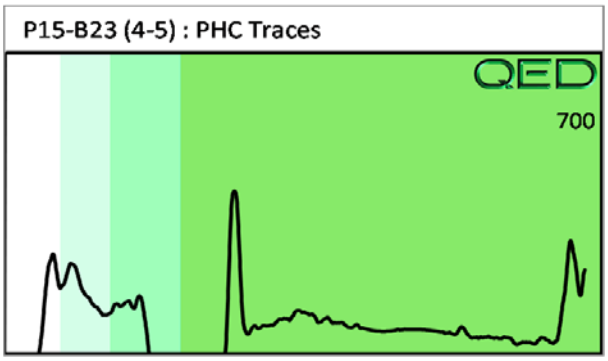
P15-B21 (4-5) : PHC not Detected + BO



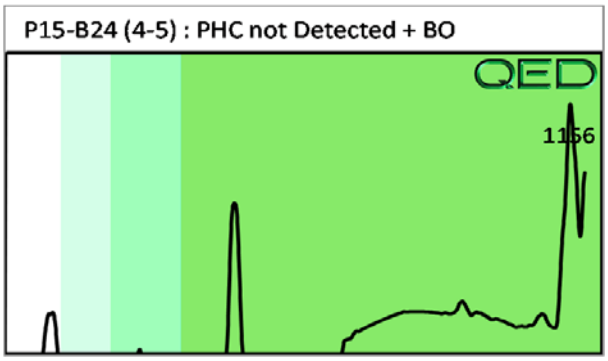
P15-B22 (4-5) : Deg.Diesel + BO (FCM) 36.2%



P15-B23 (4-5) : PHC Traces



P15-B24 (4-5) : PHC not Detected + BO



Hydrocarbon Analysis Results

Client: NCDOT
Address: 2000 N Chester St. (US-321)

Samples taken Thursday, May 26, 2016
Samples extracted Thursday, May 26, 2016
Samples analysed Thursday, May 26, 2016

Contact: Dennis Li

Operator Troy L. Holzschuh

Project: I-5000

U00904

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	P15-B25 (4-5)	16.8	<0.42	<0.42	0.45	0.45	<0.08	<0.01	<0.002	0	0	100	V.Deg.PHC (FCM) (P) 59.5%
s	P15-B26 (4-5)	19.0	<0.95	1	<0.19	1	<0.09	<0.02	<0.002	96.2	0	3.8	Deg.Gas + BO (FCM) (P)
s	P15-B27 (4-5)	18.4	<0.92	0.77	<0.18	0.77	<0.09	<0.01	<0.002	95.5	0	4.5	Deg.Gas + BO (FCM) (P)
s	P15-B28 (4-5)	17.3	2.7	2.7	<0.17	2.7	<0.09	<0.01	<0.002	98.8	0	1.2	Deg.Gas + BO (FCM) (P)
s	P15-B29 (4-5)	22.4	<0.56	<0.56	0.57	0.57	<0.22	<0.02	<0.002	0	50.6	49.4	V.Deg.PHC + BO (FCM) (P) 60.9%

Initial Calibrator QC check OK

Final FCM QC Check OK 103.1 %

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. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

QED Hydrocarbon Fingerprints

Project: I-5000 Thursday, May 26, 2016