

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

Janice Smith Property

Parcel # 6

419 South J.K. Powell Blvd.

Whiteville, Columbus County, North Carolina

US 701 Bypass (Madison St-Powell Blvd) from SR 1437 (Virgil Ave) to US 74/76

TIP Number: R-5020B

WBS Element: 41499.1.3



Apex Companies, LLC

(dba Apex Engineering, PC)

10610 Metromont Parkway, Suite 206

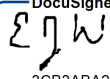
Charlotte, North Carolina 28269

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November 21, 2018

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 6 (Janice Smith property) performed by Apex Companies, LLC (Apex) (dba Apex Engineering, PC) on behalf of the NCDOT. The subject site of this PSA report will be affected by the widening of J.K. Powell Blvd. (US 701 Bypass) from Virgil Ave. to US 74/76. The Site is comprised of one parcel and is located at 419 South J.K. Powell Boulevard and is identified as Parcel 6, Janice Smith Property, within the NCDOT R-5020B design project. The property is located at the northeast corner of the intersection of South J.K. Powell Boulevard and West Virgil Street in Whiteville, Columbus County, North Carolina, as shown in the attached Site Location Map (**Figure 1**). The site investigation was conducted in accordance with Apex Company's Technical and Cost proposal dated May 15, 2018.

NCDOT contracted Apex to perform the PSA within the proposed right-of-way (ROW) and/or easement of the Parcel 6 Property due to the potential presence of contamination at the site and the fact that excavation and grading may occur within the area. The PSA was performed to evaluate if soils have been impacted as a result of past and present uses of the property within the proposed investigation area, if buried underground storage tanks (USTs) are present in the area of investigation, and if groundwater is impacted.

The following report presents the results of an electromagnetic (EM) and ground penetrating radar (GPR) geophysical survey to identify potential underground storage tanks (USTs) in the investigation area and describes the subsurface field investigation at the site. The report includes the evaluation of field screening, as well as field and laboratory analyses with regards to the presence or absence of soil and groundwater contamination within the area of investigation across Parcel 6. **Appendix A** includes a Photograph log for the site.

1.1 Site History

Parcel 6 has been identified with the address of 419 South J.K. Powell Boulevard. Based on a search of the North Carolina Department of Environmental Quality (NCDEQ) UST database registry, no registered tanks were identified for the subject parcel. Additionally, the geophysical survey identified one possible and two probable USTs on site. Apex personnel also reviewed the NCDEQ Incident Management Database and no groundwater incidents are associated with this parcel. Based on information provided by NCDOT, the site was formerly occupied by DBA Laundry Center and dry-cleaning solvents could have been associated with this former site use.

1.2 Site Description

The site is located in a mixed commercial and residential area of Columbus County, North Carolina. The property was observed to consist of a vacant one-story brick building, fuel ports and drive paths. West Virgil Street borders the parcel to the south with residential properties located just beyond. Additional residential properties border the site to the north and east. The property is bordered by J.K. Powell Boulevard to the west followed by the Happy Mart, a convenience store and fuel station. Additionally, the geophysical surveyor, Pyramid Environmental & Engineering, PC, (Pyramid) identified a total of nine EM anomalies on Site. Several of the EM anomalies were directly attributed to visible cultural features at the ground surface. Three EM anomalies were associated with suspected reinforced concrete or suspected buried metallic debris. Pyramid concluded the geophysical data recorded evidence of one possible and two probable metallic USTs on Parcel 6.

2.0 GEOLOGY

2.1 Regional Geology

Parcel 6, Janice Smith property, is located within the Coastal Plain Physiographic Province. The Coastal Plain is the largest physiographic province in the state, covering about 45% of the land area. According to the US Geological Survey Hydrogeological framework of the North Carolina coastal plain, the geology consists of eastward-dipping and eastward-thickening series of sedimentary strata which range in age from Holocene to Cretaceous. The most common sediment types are sand and clay, although a significant amount of limestone occurs in the southern part of the Coastal Plain. The Site overlies surficial sediments (to approximately 30 to 40 feet below land surface), the PeeDee Confining Unit (approximately 10 feet thick in this area), and the Late Cretaceous age PeeDee Formation. The PeeDee Formation is named for exposures along the great Peedee River, it preserves belemnites and foraminifera fossils dating from the Late Cretaceous. It generally consists of marine sand, clayey sand and clay (M.D. Winner Jr. and R.W. Coble, 1996, *Hydrogeologic Framework of the North Carolina Coastal Plain, Regional Aquifer-System Analysis – Northern Atlantic Coastal Plain*, USGS Professional Paper 1404-1)..

2.2 Site Geology

Site geology was observed through the drilling and sampling of 15 direct push technology (DPT) soil borings (SB) onsite. **Figure 2** presents the boring locations and site layout. Borings did not exceed a total depth of ten feet below ground surface (bgs) since that depth was the maximum excavation depth for proposed drainage features. Soil consisting predominantly of gray / tan to orange sandy, clayey silt was observed across the parcel. The soils were unconsolidated and

as a result the borings often collapsed. Borings on the site intercepted water at approximately four feet bgs. According to the topographical maps found on the Columbus County GIS site, the parcel slopes from north to south and although surface topography does not always indicate groundwater flow direction, the surface topography suggests that the direction of groundwater flow is to the south towards Soules Swamp. 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 was contacted on May 25, 2018 to report the proposed drilling activities and notify affected utilities. Apex subcontracted Pyramid to locate subsurface utilities and other subsurface drilling hazards as well as to perform a geophysical survey. Carolina Soil Investigations, LLC (CSI) of Olin, North Carolina was retained by Apex to perform the DPT borings for soil sampling. REDLAB, LLC (REDLAB) provided an ultraviolet fluorescence (UVF) Hydrocarbon Analyzer and Eastern Solutions provided a calibrated Flame Ionization/Photoionization Detector (FID/PID). 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 June 7, 2018. During the site reconnaissance, the area was visually examined for the presence of potential USTs or areas/obstructions that could potentially affect the subsurface investigation. The proposed boring locations were marked based on the site inspection and geophysical survey results. 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

The geophysical survey of the site was conducted on June 7, 2018. Pyramid performed an EM induction metal survey followed by a GPR survey. A copy of the Geophysical Report is presented in **Appendix C**. A total of nine EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface. Four areas contained EM anomalies that were associated with unknown features and were investigated further with the GPR method. Results of GPR scans indicated evidence of one possible and two probable metallic USTs in one area (Anomaly 7). The one possible UST is located on the west

side of the existing building in the north central portion of the survey area and is approximately twelve feet long and six feet wide. The other two probable USTs are located on the west side of the existing building in the central and south-central portion of the survey area. The potential USTs are located in the central and south-central portions of the survey area were approximately eight feet long and eight feet wide. The anomaly locations are depicted on **Figure 2**.

3.4 Well Survey

No water supply or groundwater monitoring wells were observed on Parcel 6.

3.5 Soil Sampling

Apex conducted drilling activities at the site on June 7, 2018. The purpose of soil sampling was to determine if a release of petroleum or other volatile organic chemicals had occurred within the investigation area, and if so, to estimate the volume of impacted soil that might require special handling during construction activities. Apex drilling subcontractor, CSI, advanced 15 direct push soil borings within the proposed investigation area. These 15 boring locations were placed by the one possible UST, two probable USTs, a former dispenser island or in a pattern to maximize the likelihood of intercepting potential soil contamination that might exist in the area of future construction activities. **Figure 2** presents the Site Map with soil boring locations and site structures.

Soil sampling was performed utilizing hand auger and direct push methods accompanied by field screening of volatile organic vapors with the FID/PID unit and onsite quantitative analyses with the UVF Hydrocarbon Analyzer. One to two intervals of the soil boring, exhibiting the most elevated FID/PID readings, were selected for onsite quantitative analysis of total petroleum hydrocarbons (TPH) in soil using the REDLAB UVF Hydrocarbon Analyzer. The analysis was performed onsite by Mr. Thomas Fisher, a certified REDLAB 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 mobilized to the Site on June 7, 2018 to obtain a groundwater grab sample. The groundwater grab sample location was chosen based on data generated from the UVF analyzer and on-site conditions such as the likely groundwater gradient and UST locations. The soils encountered were very sandy and unconsolidated, and as a result the borings would not stand open. Apex instructed CSI personnel to temporarily install a one-inch diameter 10-slot screen into one of the soil borings for the purposes of collecting a groundwater grab sample. Apex personnel collected a groundwater grab sample from boring P-6-SB-3 because it exhibited the highest evidence of contamination. Since it is possible that dry-cleaning products have

historically been used at the Parcel 6 site, the groundwater sample was analyzed for volatile organic compounds (VOCs) in accordance with Method 8260. Risk-based samples were collected and analyzed for semi-volatile organics (SVOCs) in accordance with Method 8270, and extractable petroleum hydrocarbons (EPH) and volatile petroleum hydrocarbons (VPH) in accordance with the Massachusetts Department of Environmental Protection (MADEP) Method. Apex utilize Pace Analytical Laboratory.

4.0 SAMPLING RESULTS

4.1 Soil Sampling Results

Based on FID/PID field screening and onsite UVF hydrocarbon analysis from the June 2018 soil sampling there is evidence of significant petroleum hydrocarbon contamination onsite, within the area of investigation.

Elevated FID/PID readings, above ten parts per million (ppm), were observed in the borings conducted at the site above the smear zone. The FID readings ranged from non-detectable to 98 ppm and the PID readings ranged from non-detectable to 192 ppm. The FID/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 are included in **Appendix D**. **Figure 3** presents the TPH-GRO and TPH-DRO results at each boring.

Based on the UVF analyses, TPH-GRO and TPH-DRO was identified in soils on Parcel 6. TPH-GRO concentrations ranged from below detectable levels to 72.9 milligram per kilogram (mg/kg) (P-6-SB-3). TPH-DRO concentrations ranged from below detectable levels to 5.2 mg/kg (P-6-SB-12). TPH-GRO concentrations exceeded the regulatory action level of 50 mg/kg and the TPH-DRO concentrations did not exceed the regulatory action level of 100 mg/kg. The estimated area of soil contamination in the southeastern portion of Parcel 2 is approximately 46 square feet in size at 2.5 feet bgs or 4.26 cubic yards. Estimated area of contamination is presented in **Figure 4**.

4.2 Groundwater Sampling Results

Apex personnel collected one sample for laboratory analysis to determine the chemical specific concentrations present. The sample was collected from boring P-6-SB-3 and analyzed for the presence of VOCs in accordance with Method 8260, SVOCs in accordance with Method 8270, and EPH and VPH in accordance with the MADEP Method.

Apex personnel collected the sample for laboratory analysis from boring P-6-SB-3 due to a result of TPH-GRO at the concentration of 72.9 mg/kg at a depth of 2-2.5 feet bgs. Additionally, the saturated zone had petroleum odors and the boring is located on the down gradient side of the probable USTs. Sample P-6-SB-3 contained VOCs including ethylbenzene (0.46 micrograms per liter ($\mu\text{g/L}$)), naphthalene (0.42 $\mu\text{g/L}$), toluene (2.5 $\mu\text{g/L}$), and 1,2,4-trimethylbenzene (0.82 $\mu\text{g/L}$). None of the aforementioned VOC constituents exceed their respective 15A NCAC 0.2L .0202 Groundwater Quality Standard (2L Standard). The only SVOC present is phenol with a concentration of 6.8 $\mu\text{g/L}$, less than its 2L standard of 30 $\mu\text{g/L}$. EPH and VPH concentrations were below the laboratory reporting limits.

The chemical specific analytical data is tabulated in **Table 2**. The laboratory report is included in **Appendix D**. Groundwater analytical results are summarized on **Figure 5**.

5.0 CONCLUSIONS

Based on site observations and onsite UVF analysis, petroleum-impacted soil contamination was identified above the NCDEQ Action level of 50 mg/kg for TPH-GRO, however was not identified above the NCDEQ Action level of 100 mg/kg for TPH-DRO. The laboratory analysis of groundwater did not indicate significant groundwater contamination to be present.

The following bulleted summary is based upon Apex's evaluation of field observations and onsite quantitative analyses of samples collected from the Site on June 7, 2018.

- Results of the geophysical survey produced evidence of three anomalies characteristic of USTs. The location of the anomalies are depicted on **Figure 2**.
- Fifteen soil borings were advanced onsite. Soil samples collected from each boring were analyzed in the field using a REDLAB UVF Hydrocarbon Analyzer.
- Soil sample (SB-3) analyzed using the UVF contained TPH-GRO concentrations above the respective NCDEQ Action levels of 50 mg/kg.
- Soil samples analyzed using the UVF did not contain TPH-DRO concentrations above the respective NCDEQ Action levels of 100 mg/kg.
- One groundwater sample was analyzed by a North Carolina Certified laboratory for the presence of VOCs, SVOCs, and VPH and EPH. This data did not indicate there is significant groundwater impact on Parcel 6.

6.0 RECOMMENDATIONS

Based on these PSA results, Apex recommends evacuation and excavation of the possible UST and two probable USTs from the investigation area. Contaminated soils would be removed from the site at that time. The drainage features are to be installed in the area of the probable USTs in the central portion of Parcel 2. Soil contamination was identified in this area. Additionally, due to shallow groundwater the drainage features will likely encounter groundwater. Groundwater could be encountered as shallow as four feet bgs. Groundwater concentrations were less than 2L Groundwater Quality Standards in the area sampled, but NCDOT should be prepared to dewater and containerize contaminated groundwater if encountered during construction activities.

TABLES

Table 1
UVF Onsite Hydrocarbon Analytical Soil Data from June 2018
R-5020B, Parcel 06, Janice Smith Property
Whiteville, Columbus County, North Carolina

Sample ID Number	Sample Date	Sample Depth (ft bgs)	GRO (mg/kg) (C5-C10)	DRO (mg/kg) (C10-C35)
SOIL				
NCDEQ Action Level in mg/kg			50	100
P-6-SB-1	6/7/2018	1 - 2	<0.64	2.1
P-6-SB-1	6/7/2018	4 - 5	<0.47	<0.47
P-6-SB-2	6/7/2018	1 - 2	<0.6	<0.6
P-6-SB-2	6/7/2018	4 - 5	<0.57	<0.57
P-6-SB-3	6/7/2018	2 - 2.5	72.9	1.9
P-6-SB-3	6/7/2018	5 - 5.5	<0.63	0.63
P-6-SB-3	6/7/2018	9 - 10	<0.26	<0.26
P-6-SB-3a	6/7/2018	2 - 3	<0.63	<0.63
P-6-SB-3b	6/7/2018	2 - 3	<0.61	0.61
P-6-SB-3c	6/7/2018	2 - 3	<0.63	4.4
P-6-SB-4	6/7/2018	2 - 2.5	<0.66	0.66
P-6-SB-4*	6/7/2018	5 - 5.5	<0.57	1.6
P-6-SB-5	6/7/2018	2 - 3	<0.63	0.76
P-6-SB-5	6/7/2018	4 - 5	<1.3	3.8
P-6-SB-6	6/7/2018	2.5 - 3	<0.59	0.83
P-6-SB-6	6/7/2018	4.5 - 5	<0.64	1
P-6-SB-7	6/7/2018	2.5 - 3	<0.56	<0.56
P-6-SB-7	6/7/2018	4 - 5	<0.61	<0.61
P-6-SB-8	6/7/2018	1 - 2	<0.63	<0.63
P-6-SB-8	6/7/2018	4.5 - 5	<0.59	0.59
P-6-SB-9	6/7/2018	2 - 3	<0.25	<0.25
P-6-SB-9	6/7/2018	4 - 5	<0.68	<0.68
P-6-SB-10	6/7/2018	2 - 3	<0.58	<0.58
P-6-SB-10	6/7/2018	4 - 5	<0.58	0.58
P-6-SB-11	6/7/2018	2 - 3	<0.55	<0.55
P-6-SB-11	6/7/2018	4 - 5	<0.53	<0.53
P-6-SB-12	6/7/2018	2 - 2.5	<0.63	5.2
P-6-SB-12	6/7/2018	4 - 5	<0.61	0.61
P-6-DUP	6/7/2018	2 - 3	<0.57	0.57
NOTES:				
(mg/kg) = Milligrams per kilogram				
* = Duplicate sample was collected				
GRO = Gasoline Range Organics				
DRO = Diesel Range Organics				
ft bgs = feet below ground surface				
TPH - GRO values in exceedance of NCDEQ Action Level of 50 mg/kg are shown in Bold				
TPH - DRO values in exceedance of NCDEQ Action Level of 100 mg/kg are shown in Bold				

Table 2
Analytical Groundwater Data (June 2018) - Detected Analytes
R-5020B, Parcel 06, Janice Smith Property
Whiteville, Columbus County, North Carolina

Analytical Method		EPA Method 8260					EPA Method 8270	MADEP EPH			MADEP VPH		
Sample ID Number	Sample Date	Acetone	Ethylbenzene	Naphthalene	Toluene	1,2,4-Trimethylbenzene	Phenol	Aliphatic (C09-C18)	Aliphatic (C19-C36)	Aromatic (C11-C22)	Aliphatic (C05-C08)	Aliphatic (C09-C12)	Aromatic (C09-C10)
15A NCAC 02L.0202 Groundwater Standards µg/L		6,000	600	6	600	400	30	700	10,000	200	4	700	200
P-6-SB-3	6/7/2018	21.8J	0.46J	0.42J	2.5	0.82J	6.8J	ND	ND	ND	ND	ND	ND
<p>NOTES: ug/L - micrograms per liter US EPA 8270 - Semi-Volatile Organic Compounds US EPA 8260 - Volatile Organic Compounds Samples collected on 6/7/2018 were analyzed for VOCs using method 8260 MSV Low Level J - Estimated concentration above adjusted method detection limit and below adjusted reporting limit B- Detected in the method blank ND - Below laboratory practical quantitative limits NA - Not Analyzed NE - No standard established NCAC - North Carolina Administrative Code Concentrations in BOLD exceed the NCAC 2L Standards Concentrations in exceed the NCAC 2B Standards * - Value based on limited available data MADEP EPH/VPH - Petroleum Hydrocarbon Fractions</p>													

FIGURES



Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

CHECK BY: TH
DRAWN BY: SP
DATE: 7/6/2018
SCALE: AS SHOWN
CAD NO.: NCDOT-001
PRJ NO.: NCDOT-001

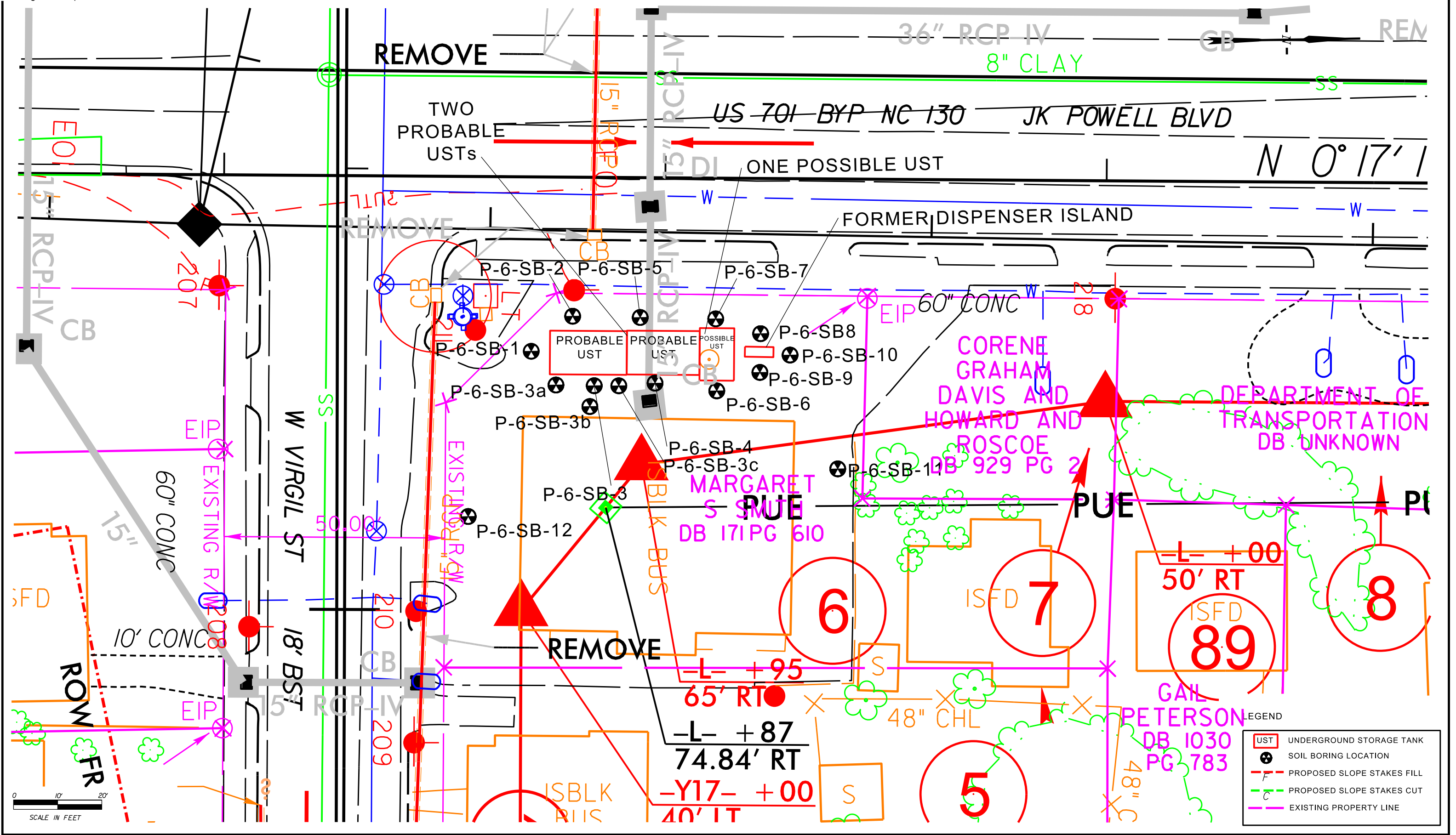
SITE LOCATION MAP

PARCEL #6
419 S. JK POWELL BOULEVARD
WHITEVILLE, NORTH CAROLINA



FIGURE

1



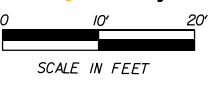
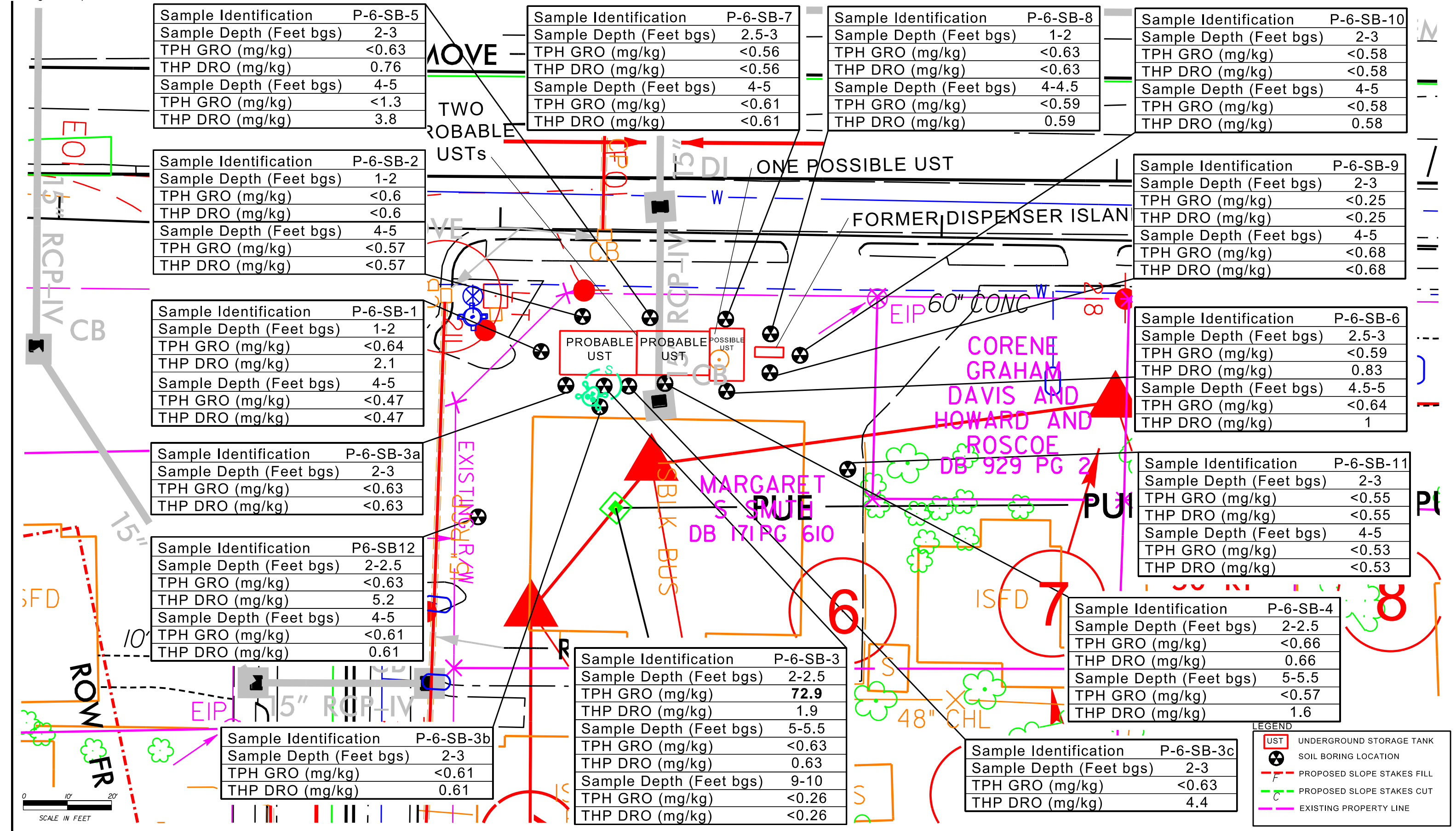
LEGEND

UST	UNDERGROUND STORAGE TANK
	SOIL BORING LOCATION
—	PROPOSED SLOPE STAKES FILL
—	PROPOSED SLOPE STAKES CUT
—	EXISTING PROPERTY LINE

FIGURE 2
 PARCEL 06
 419 S. JK. POWELL BLVD.
 SITE MAP WITH SOIL BORING
 LOCATIONS



Date:	7/2/18	Project Title:	R-5020B US 701 BYPASS COLUMBUS COUNTY
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CAD File:		Client:	NC DOT
1" = 20'			



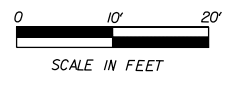
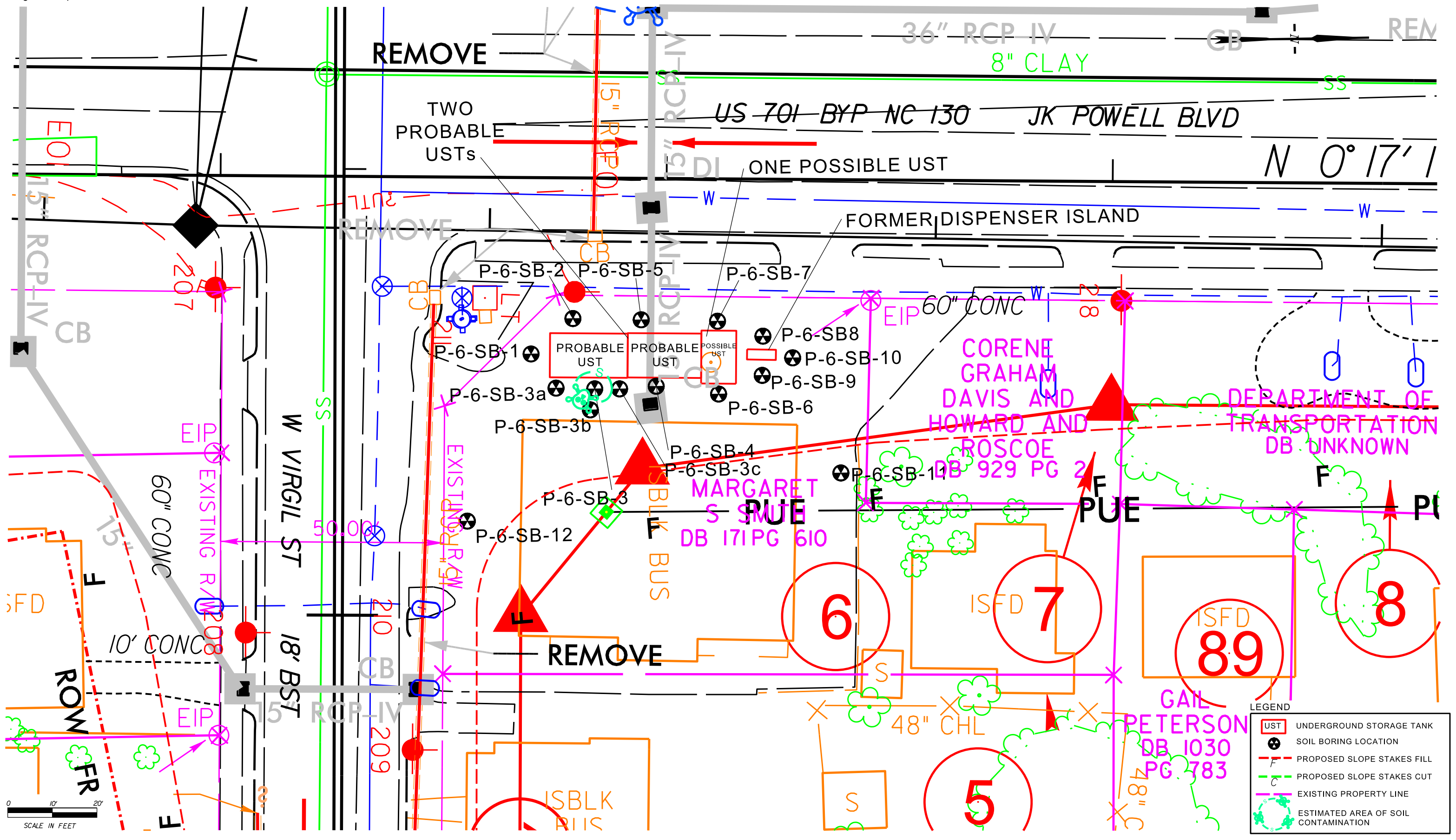
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- UST: UNDERGROUND STORAGE TANK
- Soil Boring Location: SOIL BORING LOCATION
- F: PROPOSED SLOPE STAKES FILL
- C: PROPOSED SLOPE STAKES CUT
- : EXISTING PROPERTY LINE



FIGURE 3
PARCEL 06
419 S. JK. POWELL BLVD.
ONSITE UVF HYDROCARBON ANALYSIS RESULTS - SOIL 6/7/18

Date:	7/17/18	R-5020B US 701 BYPASS COLUMBUS COUNTY
Proj. #	NCDOT-001	
pc_06_fig 3.dgn		Project Title:
CAD File:		1" = 20'
Approx. Scale:		Drawn by: MJO
		Client: NC DOT



LEGEND

UST	UNDERGROUND STORAGE TANK
	SOIL BORING LOCATION
—	PROPOSED SLOPE STAKES FILL
—	PROPOSED SLOPE STAKES CUT
—	EXISTING PROPERTY LINE
⊗	ESTIMATED AREA OF SOIL CONTAMINATION



FIGURE 4
PARCEL 06
419 S. JK. POWELL BLVD.
SITE MAP WITH ESTIMATED AREA OF SOIL CONTAMINATION

Date:	7/30/18	R-5020B US 701 BYPASS COLUMBUS COUNTY
Proj. #	NCDOT-001	
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CAD File:		Approx. Scale:
1" = 20'	MJO	NC DOT
Drawn by:		Checked by:

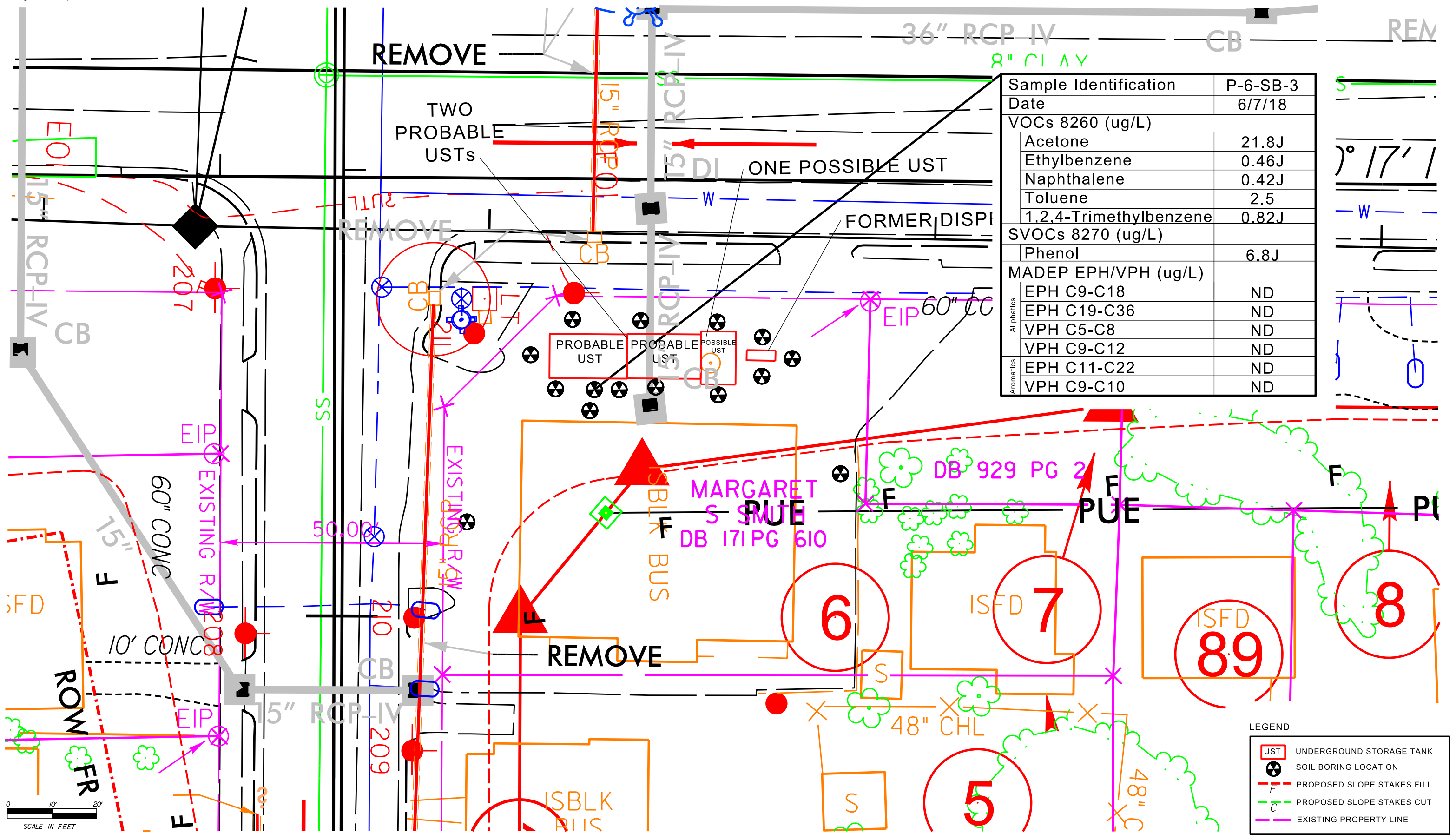


FIGURE 5
PARCEL 06
419 S. JK. POWELL BLVD.
GROUNDWATER ANALYTICAL RESULTS - DETECTED ANALYTES

LEGEND

- UST UNDERGROUND STORAGE TANK
- ⊗ SOIL BORING LOCATION
- F PROPOSED SLOPE STAKES FILL
- C PROPOSED SLOPE STAKES CUT
- EXISTING PROPERTY LINE

Date:	7/30/18	R-5020B US 701 BYPASS COLUMBUS COUNTY
Proj. #	NCDOT-001	
pc_06_fig 4.dgn		Project Title:
CAD File:		Approx. Scale:
	1" = 20'	Drawn by:
		MJO
		NC DOT

APPENDIX A
PHOTOGRAPH LOG



Photo 1

Overview of site prior to preliminary site assessment activities.



Photo 2

View shows probable USTs with utility mark outs.

10610 Metromont Pkwy
Suite 206
Charlotte, NC 28269



WBS 41499.1.3
PROCESSED TLH
DATE June 2018

PHOTOGRAPHIC LOG
PSA Field Activities
Parcel 6
Janice Smith Property
Whiteville, NC



Photo 3

Photo shows CSI clearing for utilities with a hand auger prior to direct push drilling.



Photo 4

CSI collecting macro cores with a direct push drill rig.

10610 Metromont Pkwy
Suite 206
Charlotte, NC 28269



WBS	41499.1.3
PROCESSED	TLH
DATE	June 2018

PHOTOGRAPHIC LOG
 PSA Field Activities
 Parcel 6
 Janice Smith Property
 Whiteville, NC

APPENDIX B
BORING LOGS



Apex Companies, LLC

Boring Log

Boring/Well No.: P-6-SB-1	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1		--	--		0-4' Brown fine SAND .
2		36.4	20.2		
3		47.4	138		
4					
5		16.7	192		4'-10' Gray fine SAND , saturated at 4 feet.
6					
7		16.9	120		
8					
9		10.1	26.9		
10					
11					Boring terminated at 10 feet.
12					
13					
14					

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.: P-6-SB-2	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1		--	--		0-2' Tan fine SAND saturated at 5 feet.
2		7.3	26.6		
3		65	35.4		2'-5' Gray clayey SAND .
4					
5					
6					Boring terminated at 5 feet.
7					
8					
9					
10					
11					
12					
13					
14					

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter: 1"	Outer Casing Interval: NA
Total Depth: 15	Outer Casing Diameter: NA
Screen Interval: 5'-10'	Bentonite Interval: NA
Sand Interval: NA	Slot Size: 0.010" slot
Grout Interval: NA	Static Water Level: 5'



Apex Companies, LLC

Boring Log

Boring/Well No.: P-6-SB-3	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth (ft) BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	<0.1	16.8		0-3' Orange medium SAND .
2				
3				
4	<0.1	16.2		3'-4' Orange and gray marbled clayey SILT .
5	0.2	9.24		4'-5.5' Gray clayey SAND
6				
7	0.5	6.7		5.5'-10' Gray fine SAND .
8				
9				
10	1.8	9.3		
11				Boring terminated at 10 feet.
12				
13				
14				

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.: P-6-SB-3a	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1		--	--		0-3' Orange medium SAND.
2					
3		1.2	8.5		
4					Boring terminated at 3 feet.
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter: 1"	Outer Casing Interval: NA
Total Depth: 15	Outer Casing Diameter: NA
Screen Interval: 5'-10'	Bentonite Interval: NA
Sand Interval: NA	Slot Size: 0.010" slot
Grout Interval: NA	Static Water Level: 5'



Apex Companies, LLC

Boring Log

Boring/Well No.: P-6-SB-3b	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth (ft) BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	--	--		0-3' Orange medium SAND.
2				
3	98	9.1		
4				Boring terminated at 3 feet.
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter: 1"	Outer Casing Interval: NA
Total Depth: 15	Outer Casing Diameter: NA
Screen Interval: 5'-10'	Bentonite Interval: NA
Sand Interval: NA	Slot Size: 0.010" slot
Grout Interval: NA	Static Water Level: 5'



Apex Companies, LLC

Boring Log

Boring/Well No.: P-6-SB-3c	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1		--	--		0-3' Orange medium SAND.
2					
3		1.08	6.3		
4					Boring terminated at 3 feet.
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

WELL CONSTRUCTION DETAILS (If Applicable)

Well Type/Diameter: 1"	Outer Casing Interval: NA
Total Depth: 15	Outer Casing Diameter: NA
Screen Interval: 5'-10'	Bentonite Interval: NA
Sand Interval: NA	Slot Size: 0.010" slot
Grout Interval: NA	Static Water Level: 5'



Apex Companies, LLC

Boring Log

Boring/Well No.: P-6-SB-4	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth (ft) BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	3.7	9.61		0-3' Brown sandy SILT
2				
3				
4	22.3	59.5		3'-5' Black clayey SILT
5				
6	--	--		5'-10' Gray clayey SILT
7				
8				
9				
10				
11				Boring terminated at 10 feet.
12				
13				
14				

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.: P-6-SB-5	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1		4.5	28.7		0-5' Gray clayey sandy SILT.
2					
3		6.79	32.3		
4					
5					
6					Boring terminated at 5 feet.
7					
8					
9					
10					
11					
12					
13					
14					

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.: P-6-SB-6	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth (ft) BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
	--	--		0-0.5' Brown SILT
1	<0.1	3.6		0.5'-2.5' Tan SAND
2				
3	19	65		2.5'-5' Gray clayey SAND
4				
5	45	120		
				Boring terminated at 5 feet.
6				
7				
8				
9				
10				
11				
12				
13				
14				

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.: P-6-SB-7	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					0-0.5' Asphalt
1		1.0	4.6		0.5'-5' Gray clayey SILT
2					
3		2.7	56.3		
4					
5		0.7	29.7		
					Boring terminated at 5 feet.
6					
7					
8					
9					
10					
11					
12					
13					
14					

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.: P-6-SB-8	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth (ft) BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	5.1	86.9		0-2' Tan medium SAND
2				
3	4.56	72.1		2'-5' Gray clayey SAND
4				
5				
6				Boring terminated at 5 feet.
7				
8				
9				
10				
11				
12				
13				
14				

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.: P-6-SB-9	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth (ft) BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	<0.1	4.23		0-3' Tan SAND
2				
3				
4	<0.1	15.6		3'-5' Black clayey SAND
5				
6				Boring terminated at 5 feet.
7				
8				
9				
10				
11				
12				
13				
14				

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.: P-6-SB-10	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth (ft) BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	1.6	5.9		0-3' Tan SAND
2				
3				
4	2.1	10.8		3'-5' Black clayey SAND
5				
6				Boring terminated at 5 feet.
7				
8				
9				
10				
11				
12				
13				
14				

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.: P-6-SB-11	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth BLS)	(ft)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
					0-3' Tan SAND
1		0.2	15.6		
2					
3					
4		0.7	4.32		3'-5' Black clayey SAND
5					
					Boring terminated at 5 feet.
6					
7					
8					
9					
10					
11					
12					
13					
14					

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.: P-6-SB-12	Site Name: Parcel 6
Date: 6/7/2018	Location: Whiteville, Columbus County, NC
Job No.: NCDOT-001	Sample Method: Hand Auger and Direct Push
Apex Rep: Troy Holzschuh	Drilling Method: Hand Auger and Direct Push
Drilling Company: Carolina Soil Investigations	Driller Name/Cert #: Danny Summers/2579

Remarks:

Depth (ft) BLS)	FID Reading (ppm)	PID Reading (ppm)	Lab Sample ID	Soil/Lithologic Description
1	<0.1	<0.1		0-1' Tan fine SAND
2	<0.1	<0.1		1'-3' Black fine SAND
3				
4	1.5	3.7		3'-5' Black clayey SAND
5				
6				Boring terminated at 5 feet.
7				
8				
9				
10				
11				
12				
13				
14				

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



PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2018-139)


GEOPHYSICAL SURVEY


METALLIC UST INVESTIGATION:
PARCEL 6
NCDOT PROJECT R-5020B (41499.1.3)

419 S. JK POWELL BLVD., WHITEVILLE, NC

JUNE 20, 2018

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C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 6 – 419 S. JK Powell Blvd.
Whiteville, Columbus County, North Carolina

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- Figure 2 – Parcel 6 EM61 Results Contour Map
- Figure 3 – Parcel 6 GPR Transect Locations and Select Images
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- Figure 5 – Overlay of Geophysical Survey Boundaries with One Possible and Two Probable USTs on NCDOT Engineering Plans

Appendices

- Appendix A – GPR Transect Images

LIST OF ACRONYMS

CADD	Computer Assisted Drafting and Design
DF	Dual Frequency
EM.....	Electromagnetic
GPR.....	Ground Penetrating Radar
GPS	Global Positioning System
NCDOT.....	North Carolina Department of Transportation
ROW	Right-of-Way
UST	Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Apex Companies, LLC at Parcel 6, located at 419 S. JK Powell Blvd., in Whiteville, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project R-5020B). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from May 30 – June 4, 2018, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of nine EM anomalies were identified. Several of the EM anomalies were directly attributed to visible cultural features at the ground surface. Three EM anomalies were associated with suspected reinforced concrete or suspected buried metallic debris, and were investigated further with GPR. GPR verified the presence of metal reinforcement within the concrete on the southeastern portion of the property (EM Anomaly 5) and on the northwestern portion of the property, surrounding the apparent former pump island (EM Anomaly 1). No evidence of larger structures such as USTs was observed beneath the reinforcement. GPR was performed across a medium-amplitude EM anomaly (EM Anomaly 8) and verified the presence of buried metallic debris.

GPR recorded three discreet hyperbolic reflectors and three isolated high-amplitude lateral reflectors directly in front (west) of the building that are characteristic of metallic USTs (EM Anomaly 7). These features were classified as one possible and two probable metallic USTs. The northern possible UST was approximately 12 feet long by 6 feet wide. The central and southern probable USTs were each approximately 18 feet long by 8 feet wide. Collectively, the geophysical data recorded evidence of one possible and two probable metallic USTs at Parcel 6.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Apex Companies, LLC at Parcel 6, located at 419 S. JK Powell Blvd., in Whiteville, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project R-5020B). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from May 30 – June 4, 2018, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included a small commercial building surrounded by concrete, asphalt, and grass surfaces. An apparent former pump island was observed on the northwestern portion of the property. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61 metal detector integrated with a Trimble AG-114 GPS antenna. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

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. The EM61 data were digitally collected at approximately 0.8-foot intervals along north-south trending or east-west trending, generally parallel survey lines, spaced five feet apart. The data were downloaded to a

computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 15.0 software programs.

GPR data were acquired across select EM anomalies on June 4, 2018, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. 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 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

Pyramid’s classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks on NCDOT Projects			
High Confidence	Intermediate Confidence	Low Confidence	No Confidence
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	Probable UST Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	Possible UST Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist’s discretion.

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Reinforced Concrete	☑
2	Utility Pole	
3	Building	
4	Guy Wire	
5	Reinforced Concrete	☑
6	Utilities/Light/Sign	
7	One Possible UST and Two Probable USTs	☑
8	Suspected Buried Metallic Debris	☑
9	Utility Pole	

Several of the EM anomalies were directly attributed to visible cultural features at the ground surface, including a utility pole, a building, a guy wire, utilities, a light, and a sign. Three additional EM anomalies were associated with suspected reinforced concrete or suspected buried metallic debris, and were investigated further with GPR. GPR scans were performed in a grid-like fashion across the suspected reinforced concrete (Anomalies 1 and 5) to verify the presence of metal reinforcement and confirm that no other metal structures were present beneath the reinforcement.

A large high-amplitude EM anomaly (Anomaly 7) was observed directly in front of the building that was characteristic of one or more large buried structures, such as USTs, and was investigated further with GPR.

Anomaly 8 was suspected to be buried metallic debris and was investigated further with GPR.

Discussion of GPR Results

Figure 3 presents the locations of the formal GPR transects performed at the property, as well as select transect images. A total of eighteen GPR transects were performed at the site. All of the transect images are included in **Appendix A**. GPR Transects 1 and 2 were performed across the reinforced concrete on the southeastern portion of the property (EM Anomaly 5). GPR Transects 11 – 18 were performed across reinforced concrete on the

northwestern portion of the property, surrounding the apparent former pump island (EM Anomaly 1). These transects verified the presence of metal reinforcement in the concrete. No evidence of larger structures such as USTs was observed.

GPR Transects 3 and 4 were performed across EM Anomaly 8. These transects recorded isolated high-amplitude reflectors consistent with buried metallic debris.

GPR Transects 5 – 10 were performed across EM Anomaly 7. These transects recorded three discreet hyperbolic reflectors and three isolated high-amplitude lateral reflectors that are characteristic of metallic USTs. The combined EM and GPR evidence results in these features being classified as one possible and two probable metallic USTs. The northern possible UST (UST #1) was approximately 12 feet long by 6 feet wide. The central and southern probable USTs (UST #2 & UST #3) were each approximately 18 feet long by 8 feet wide. **Figure 4** provides the locations and sizes of the possible and probable metallic USTs overlain on an aerial, along with ground-level photographs.

Collectively, the geophysical data recorded evidence of one possible and two probable metallic USTs at Parcel 6. **Figure 5** provides an overlay of the geophysical survey area and the locations of the possible and probable USTs onto the NCDOT MicroStation engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 6 in Whiteville, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- Several of the EM anomalies were directly attributed to visible cultural features at the ground surface.
- Three EM anomalies were associated with suspected reinforced concrete or suspected buried metallic debris, and were investigated further with GPR.

- GPR verified the presence of metal reinforcement within the concrete on the southeastern portion of the property (EM Anomaly 5) and on the northwestern portion of the property, surrounding the apparent former pump island (EM Anomaly 1). No evidence of larger structures such as USTs was observed beneath the reinforcement.
- GPR was performed across a medium-amplitude EM anomaly (EM Anomaly 8) and verified the presence of buried metallic debris.
- GPR recorded three discreet hyperbolic reflectors and three isolated high-amplitude lateral reflectors directly in front (west) of the building that are characteristic of metallic USTs. These features were classified as one possible and two probable metallic USTs (EM Anomaly 7).
- The northern possible UST was approximately 12 feet long by 6 feet wide. The central and southern probable USTs were each approximately 18 feet long by 8 feet wide.
- Collectively, the geophysical data recorded evidence of one possible and two probable metallic USTs at Parcel 6.

LIMITATIONS

Geophysical surveys have been performed and this report was prepared for Apex Companies, LLC 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 the definitive presence or absence of metallic USTs, but the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA



View of Survey Area
(Facing Approximately North)



View of Survey Area
(Facing Approximately East)



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PROJECT
PARCEL 6
WHITEVILLE, NORTH CAROLINA
NCDOT PROJECT R-5020B

TITLE
PARCEL 6 - GEOPHYSICAL SURVEY
BOUNDARIES AND SITE PHOTOGRAPHS

DATE
5/30/2018

PYRAMID PROJECT #:
2018-139

CLIENT
Apex Companies, LLC

FIGURE 1

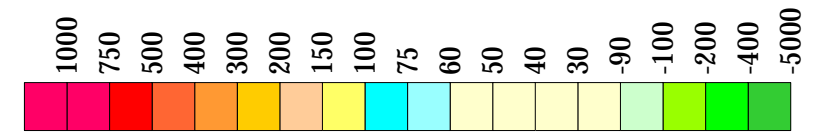
EM61 METAL DETECTION RESULTS



EVIDENCE OF ONE POSSIBLE AND TWO PROBABLE METALLIC USTs OBSERVED.

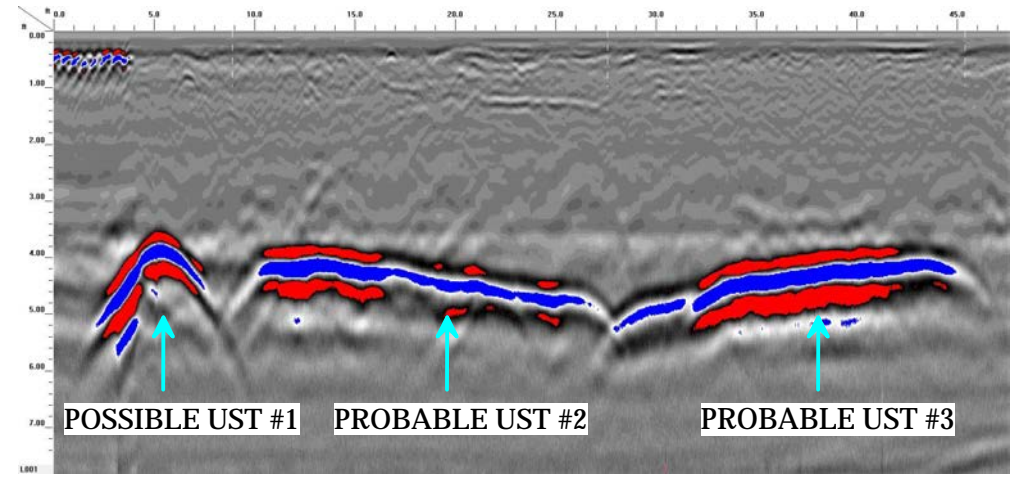
The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM61 data were collected on May 30, 2018, using a Geonics EM61 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on June 4, 2018.

EM61 Metal Detection Response (millivolts)

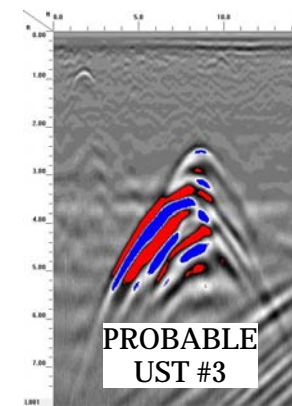


<p>503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology</p>	<p>PROJECT</p> <p>PARCEL 6 WHITEVILLE, NORTH CAROLINA NCDOT PROJECT R-5020B</p>	<p>TITLE</p> <p>PARCEL 6 - EM61 METAL DETECTION CONTOUR MAP</p>	<p>DATE</p> <p>5/30/2018</p>	<p>CLIENT</p> <p>Apex Companies, LLC</p>
			<p>PYRAMID PROJECT #:</p> <p>2018-139</p>	<p>FIGURE 2</p>

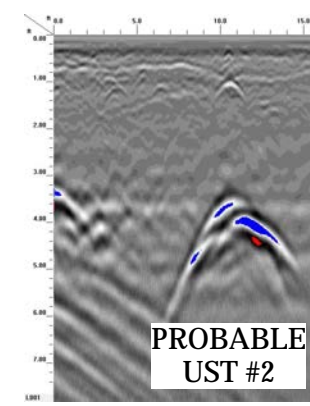
LOCATIONS OF GPR TRANSECTS



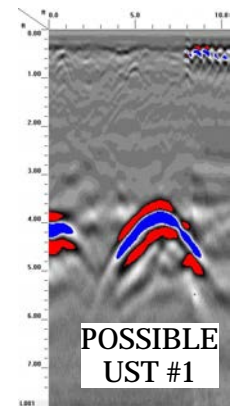
GPR TRANSECT 6 (T6)



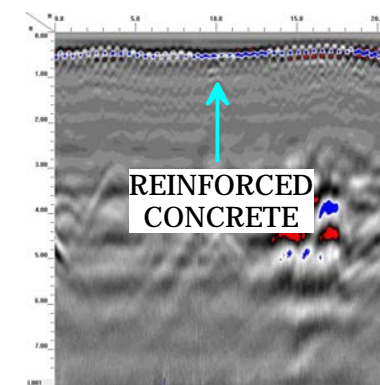
GPR TRANSECT 7 (T7)



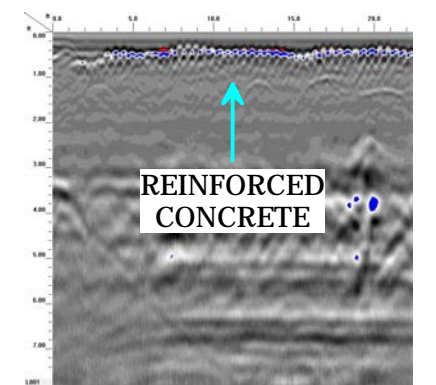
GPR TRANSECT 8 (T8)



GPR TRANSECT 9 (T9)



GPR TRANSECT 12 (T12)



GPR TRANSECT 13 (T13)



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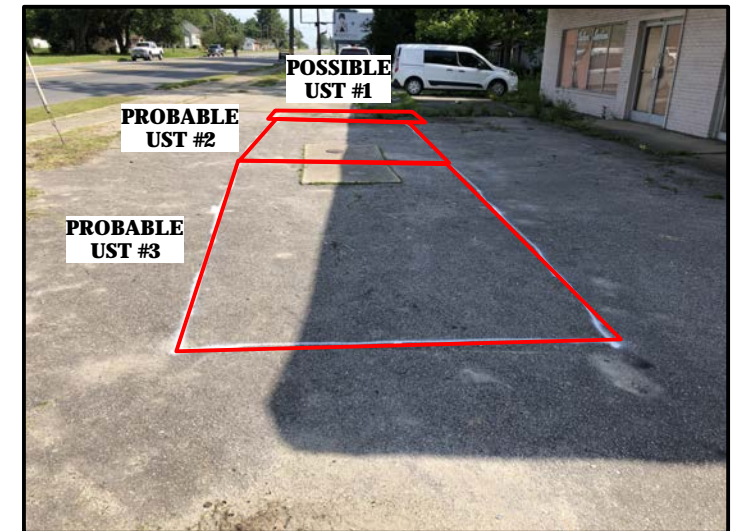
PROJECT **PARCEL 6**
WHITEVILLE, NORTH CAROLINA
NCDOT PROJECT R-5020B

TITLE **PARCEL 6 - GPR TRANSECT LOCATIONS**
AND SELECT IMAGES

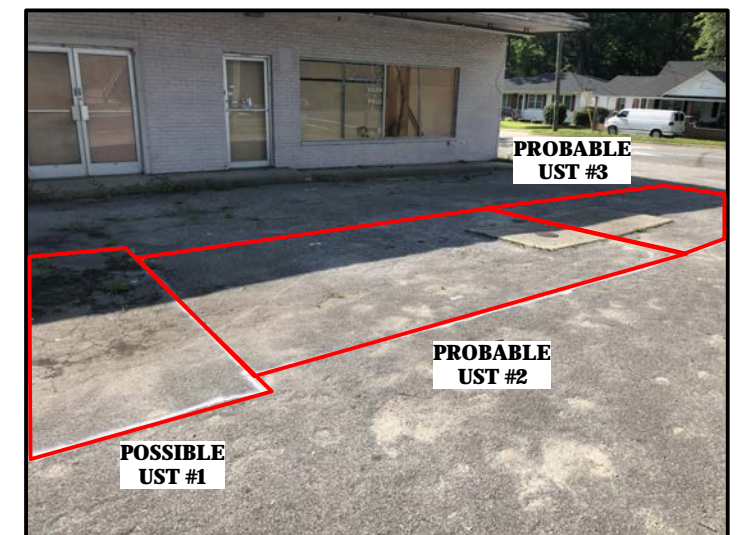
DATE **6/4/2018**
PYRAMID PROJECT #: **2018-139**

CLIENT **Apex Companies, LLC**
FIGURE 3

LOCATIONS OF ONE POSSIBLE AND TWO PROBABLE METALLIC USTs



View of One Possible and Two Probable USTs Facing Approximately North



View of One Possible and Two Probable USTs Facing Approximately Southeast



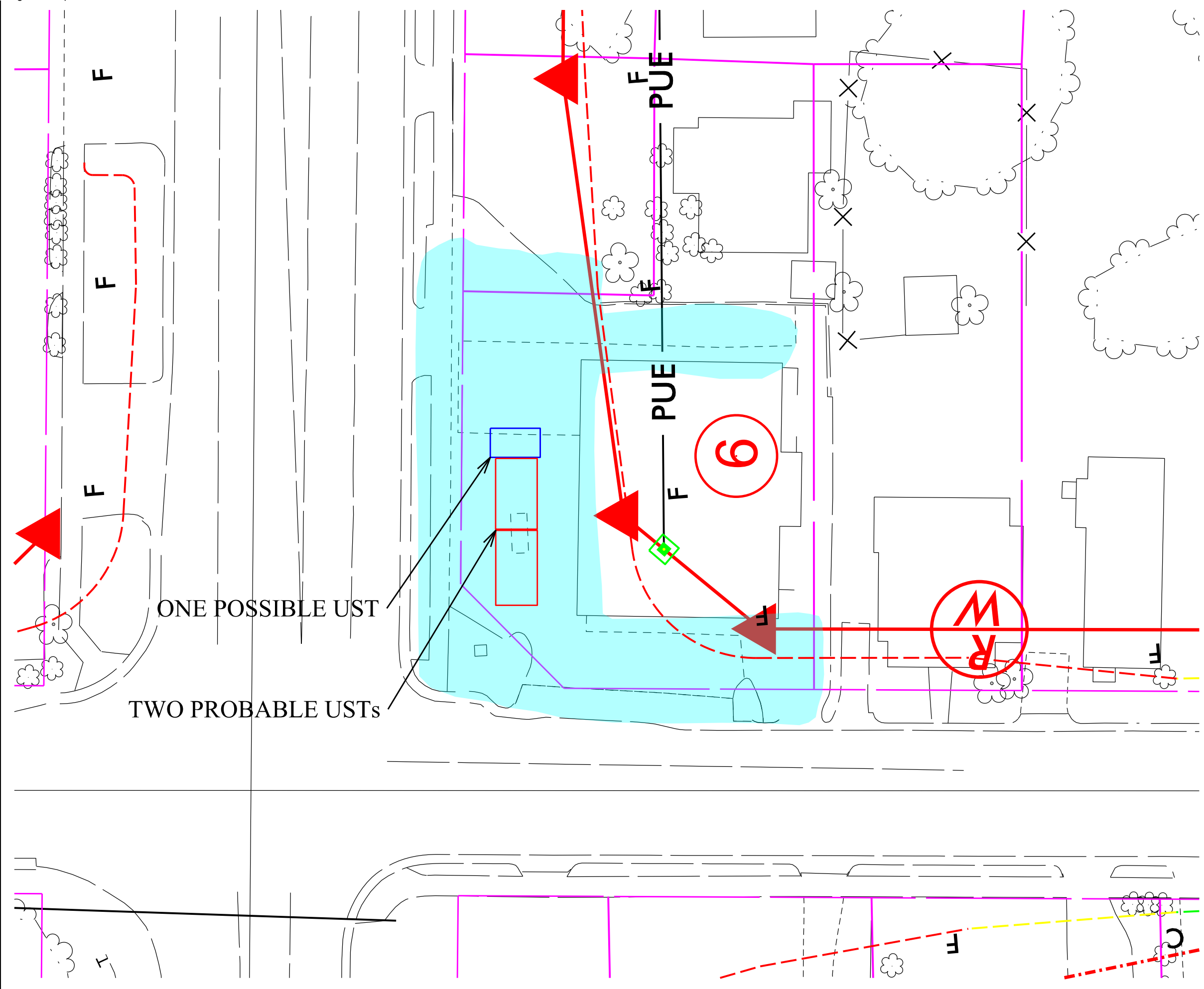
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

PROJECT
PARCEL 6
WHITEVILLE, NORTH CAROLINA
NCDOT PROJECT R-5020B

TITLE
PARCEL 6 - LOCATIONS AND SIZES OF
ONE POSSIBLE AND TWO PROBABLE METALLIC USTs

DATE
5/30/2018
PYRAMID PROJECT #:
2018-139

CLIENT
Apex Companies, LLC
FIGURE 4



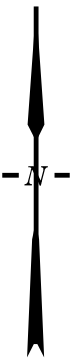
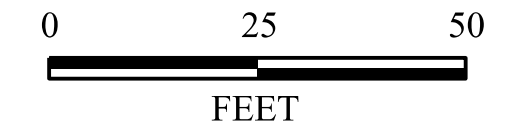
LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PDE — PROPOSED PERMANENT DRAINAGE
- PUE — PROPOSED PERMANENT UTILITY
- - - PROPOSED SS CUT LINE
- - - PROPOSED SS FILL LINE
- GEOPHYSICAL SURVEY AREA
- PROBABLE METALLIC UST
- POSSIBLE METALLIC UST

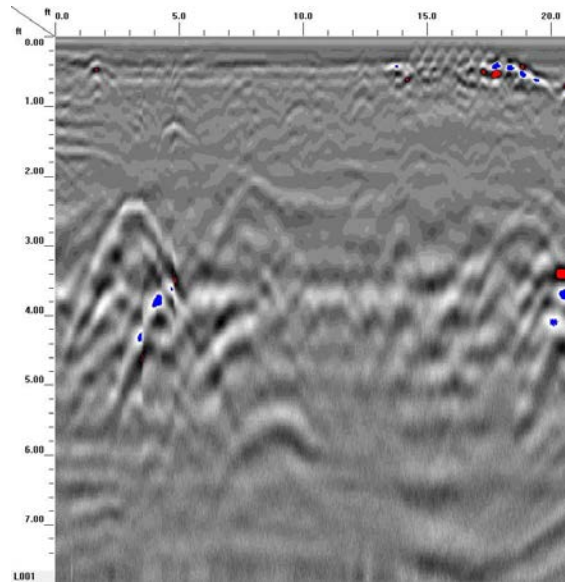
ONE POSSIBLE UST

TWO PROBABLE USTs

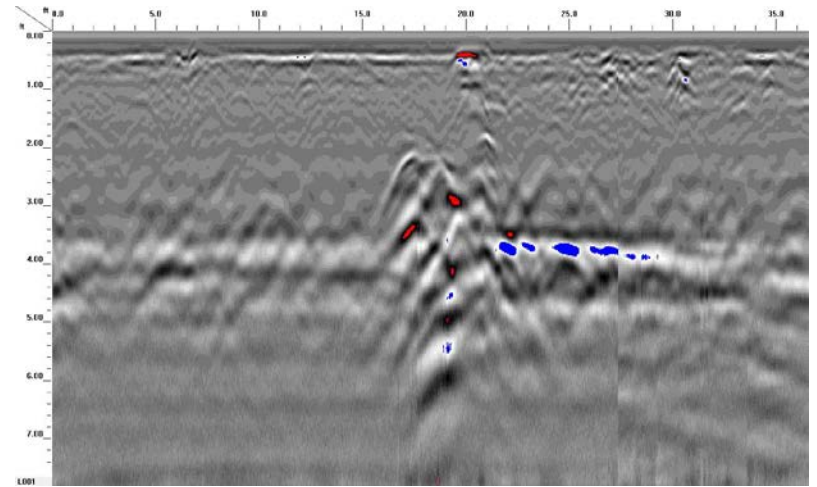
TITLE OVERLAY OF GEOPHYSICAL SURVEY BOUNDARIES WITH ONE PROBABLE AND TWO POSSIBLE USTs ON NCDOT ENGINEERING PLANS	
PROJECT PARCEL 6 WHITEVILLE, NORTH CAROLINA NCDOT PROJECT W-5020B	
503 INDUSTRIAL AVENUE GREENSBORO, NC 27406 336.335.3174 (p) 336.691.0648 (f) License # C1251 Eng. / #C257 Geology	
DATE: 06-26-2018	REVISION NO. 0
PYRAMID PROJECT NO. 2018-139	FIGURE NO. 5



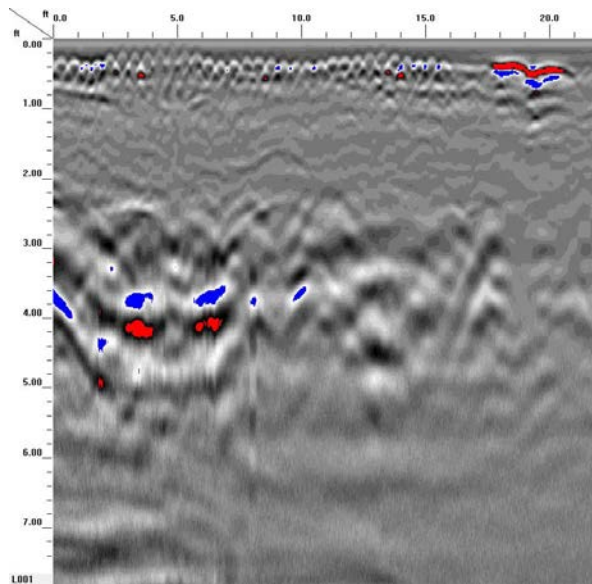
Appendix A – GPR Transect Images



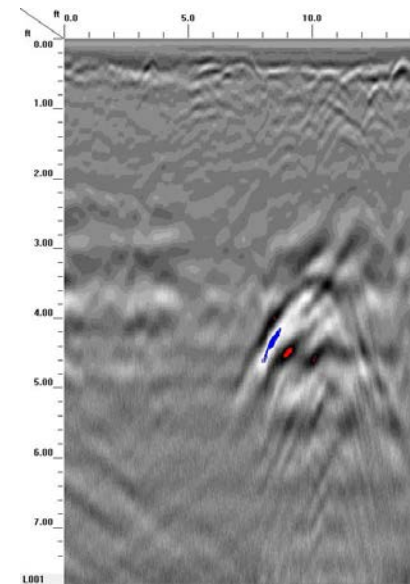
Transect 1



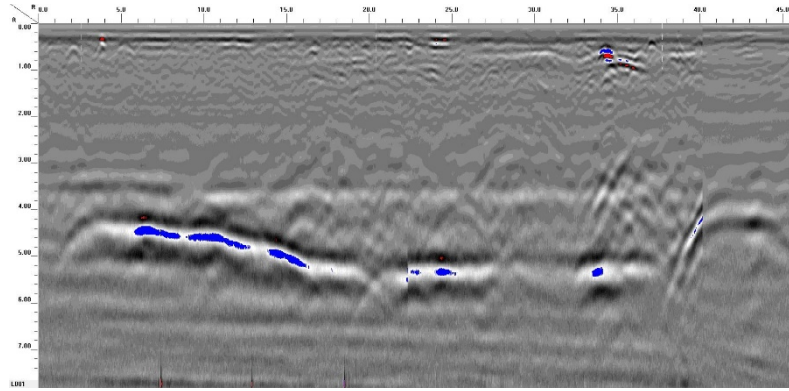
Transect 3



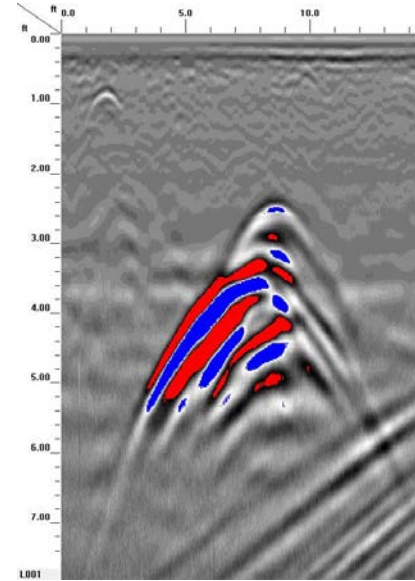
Transect 2



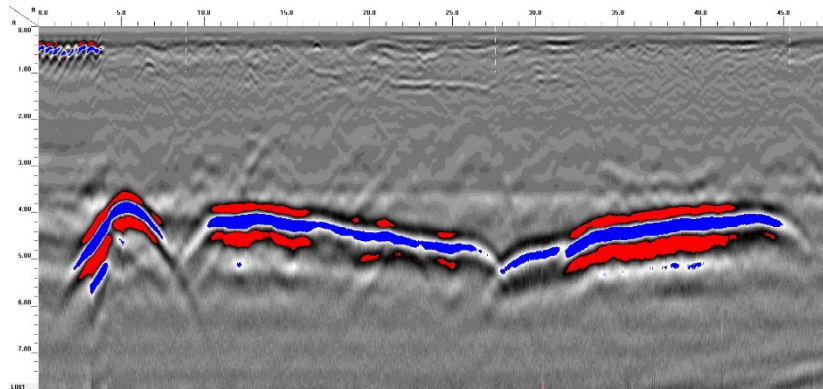
Transect 4



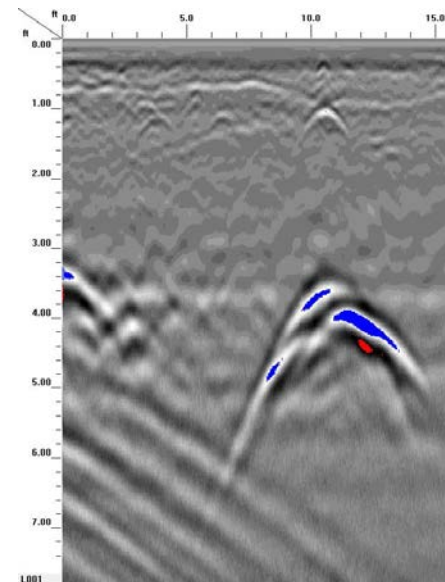
Transect 5



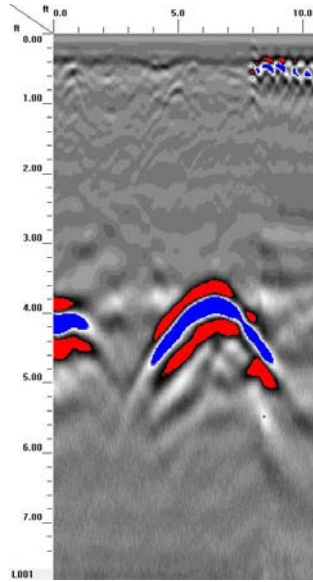
Transect 7



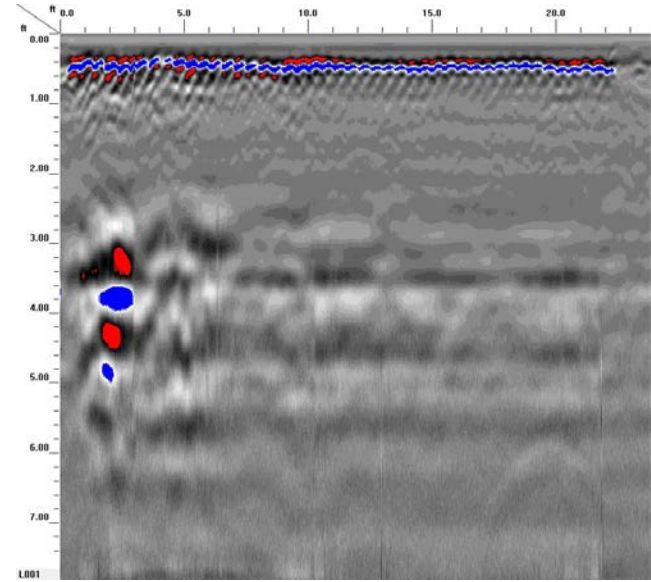
Transect 6



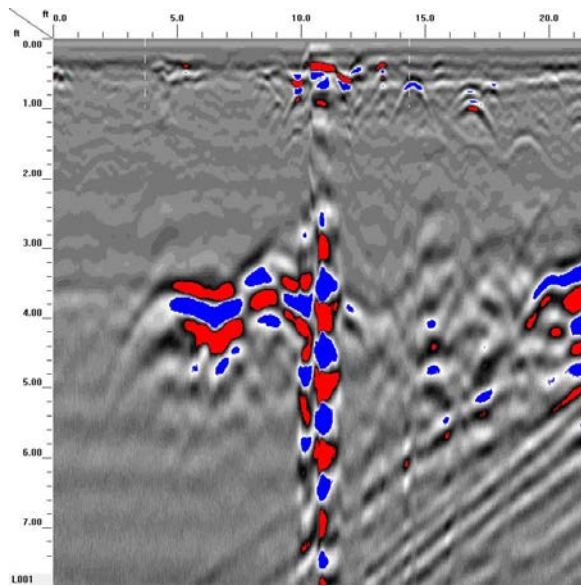
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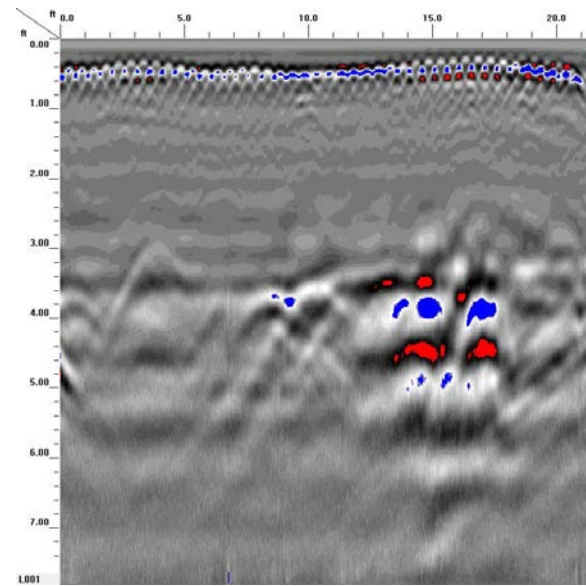
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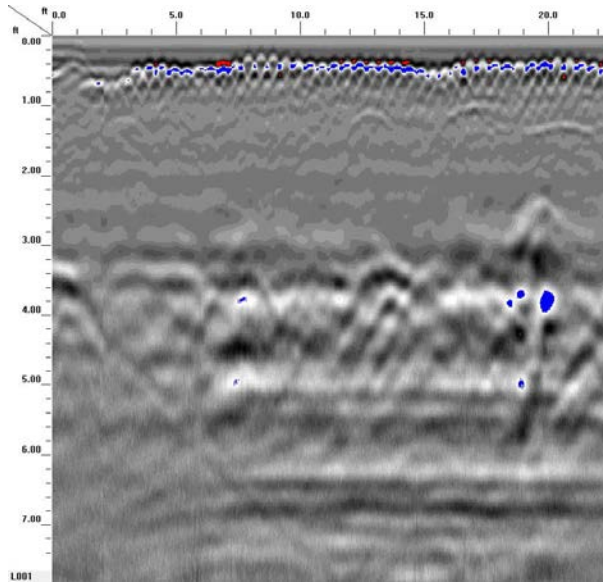
Transect 11



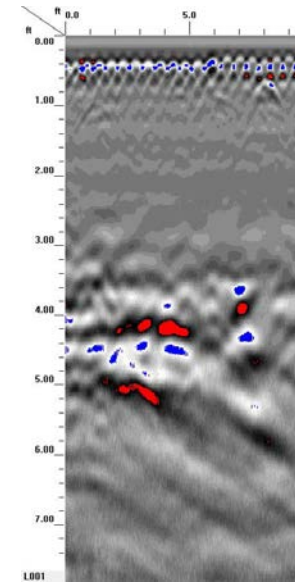
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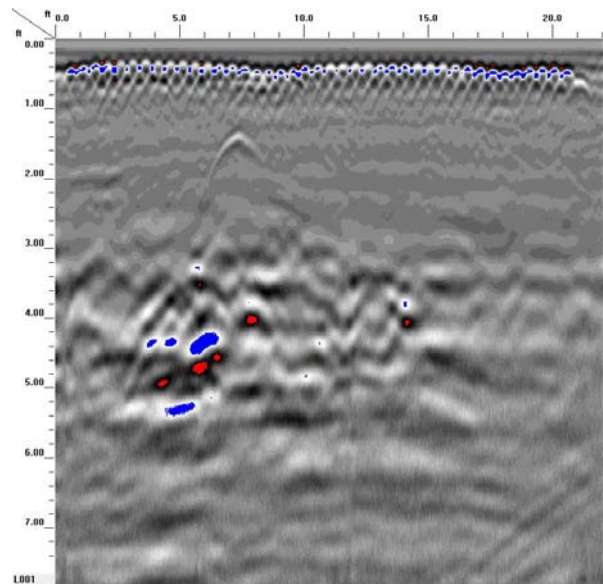
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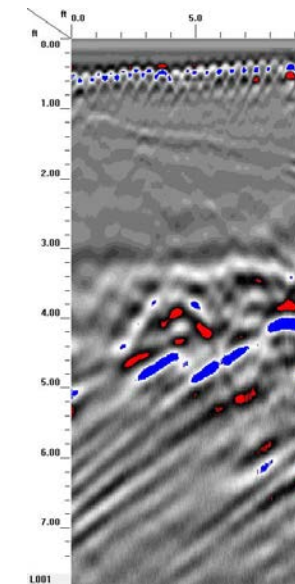
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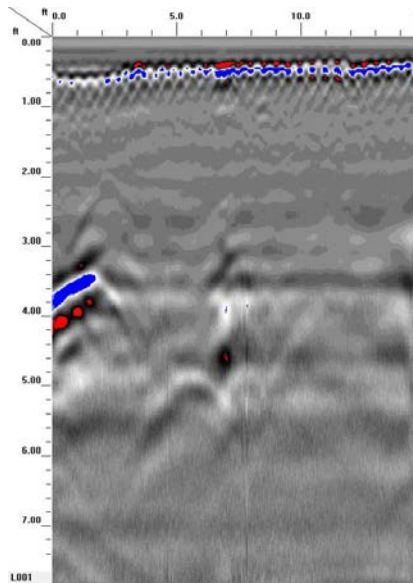
Transect 15



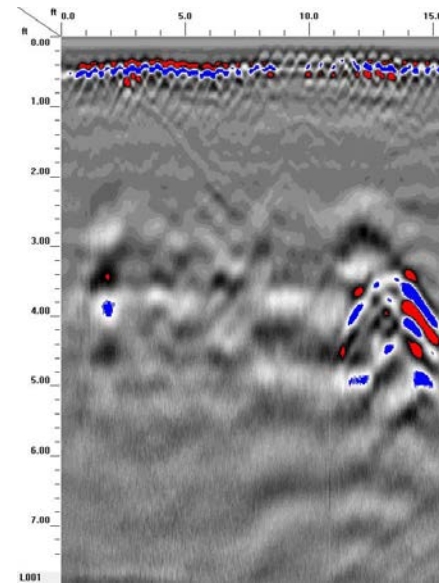
Transect 14



Transect 16



Transect 17



Transect 18

APPENDIX D
UVF HYDROCARBON ANALYSIS AND PACE ANALYTICAL
LABORATORY REPORT



Hydrocarbon Analysis Results

Client: NCDOT
Address: Parcel 6

Samples taken Thursday, June 7, 2018
Samples extracted Thursday, June 7, 2018
Samples analysed Thursday, June 7, 2018

Contact: Craig Haden

Operator Thomas Fisher

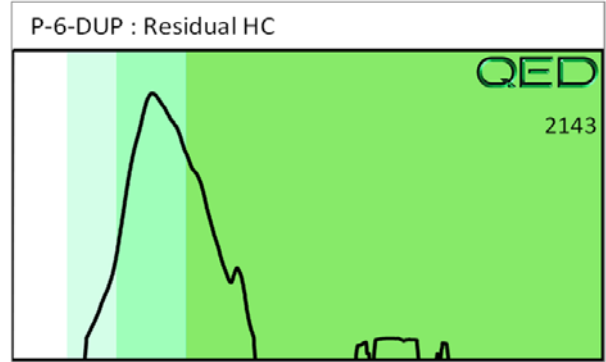
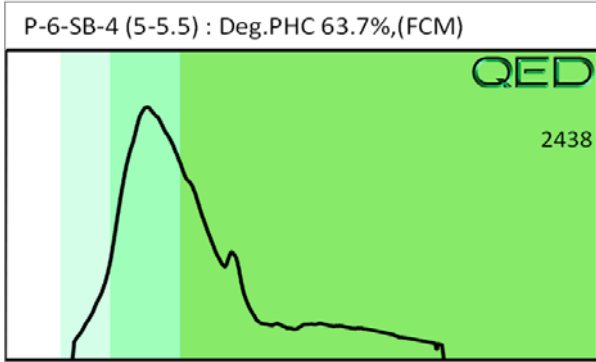
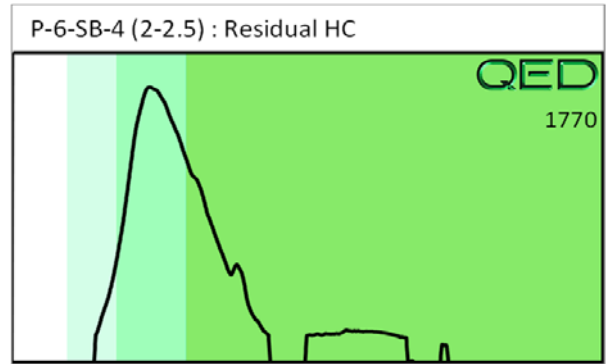
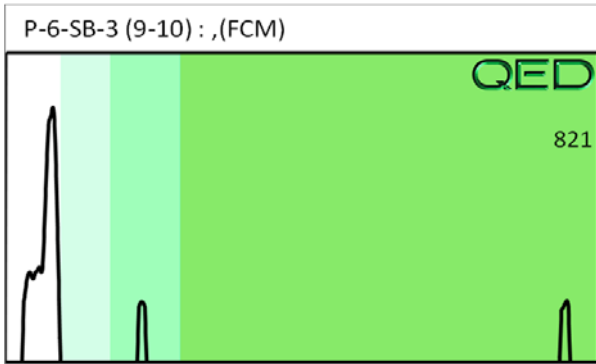
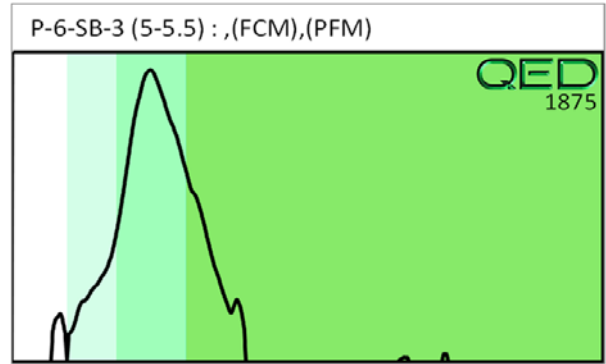
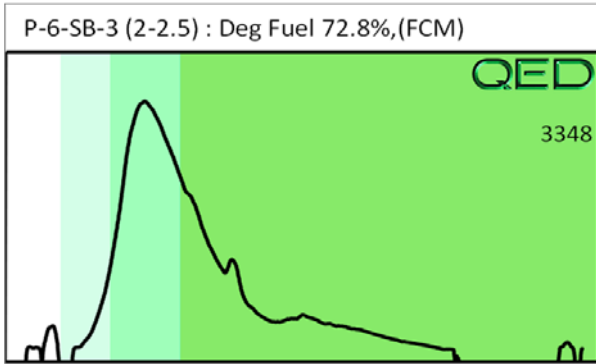
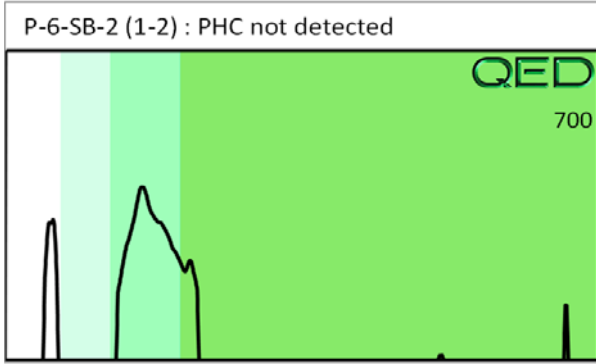
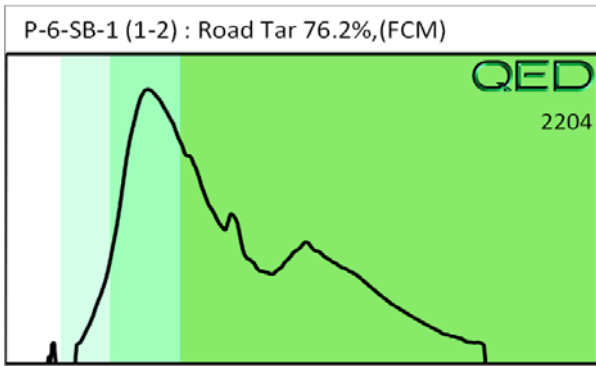
Project: Whiteville

													F03640
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	P-6-SB-1 (1-2)	25.7	<0.64	<0.64	2.1	2.1	1	<0.21	<0.026	0	74.4	25.6	Road Tar 76.2%,(FCM)
s	P-6-SB-1 (4-5)	18.8	<0.47	<0.47	<0.47	<0.47	<0.09	<0.15	<0.019	0	0	0	PHC not detected
s	P-6-SB-2 (1-2)	24.1	<0.6	<0.6	<0.6	<0.6	<0.12	<0.19	<0.024	0	100	0	PHC not detected
s	P-6-SB-2 (4-5)	22.6	<0.57	<0.57	<0.57	<0.57	<0.11	<0.18	<0.023	0	0	0	PHC not detected
s	P-6-SB-3 (2-2.5)	25.7	72.9	72.9	1.9	74.8	1.6	<0.21	<0.026	98.5	1.2	0.2	Deg Fuel 72.8%,(FCM)
s	P-6-SB-3 (5-5.5)	25.2	<0.63	<0.63	0.63	0.63	0.51	<0.2	<0.025	0	92	8	,(FCM),(PFM)
s	P-6-SB-3 (9-10)	10.4	<0.26	<0.26	<0.26	<0.26	<0.05	<0.08	<0.01	0	0	0	,(FCM)
s	P-6-SB-4 (2-2.5)	26.3	<0.66	<0.66	0.66	0.66	0.58	<0.21	<0.026	0	86.2	13.8	Residual HC
s	P-6-SB-4 (5-5.5)	22.6	<0.57	<0.57	1.6	1.6	0.84	<0.18	<0.023	0	83	17	Deg.PHC 63.7%,(FCM)
s	P-6-DUP	22.6	<0.57	<0.57	0.57	0.57	0.57	<0.18	<0.023	0	89.5	10.5	Residual HC
			Initial Calibrator QC check OK							Final FCM QC Check OK			98 %

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





Hydrocarbon Analysis Results

Client: NCDOT
Address: Parcel 6

Samples taken Thursday, June 7, 2018
Samples extracted Thursday, June 7, 2018
Samples analysed Thursday, June 7, 2018

Contact: Craig Haden

Operator Thomas Fisher

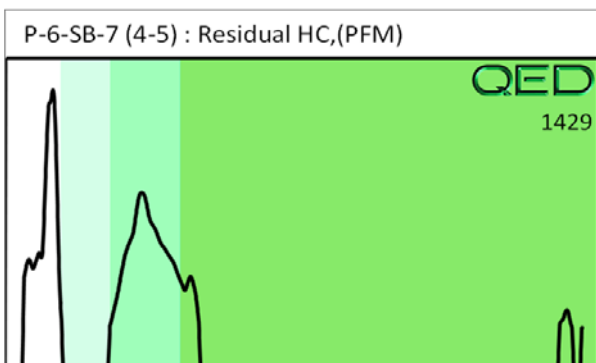
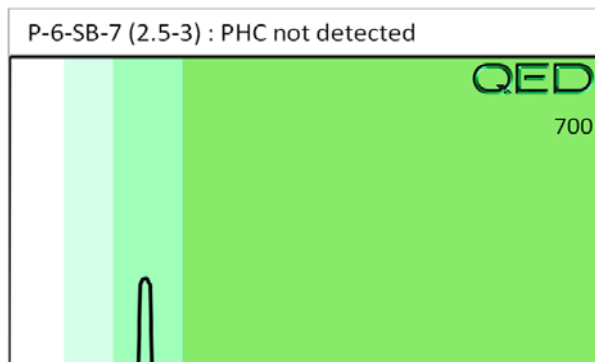
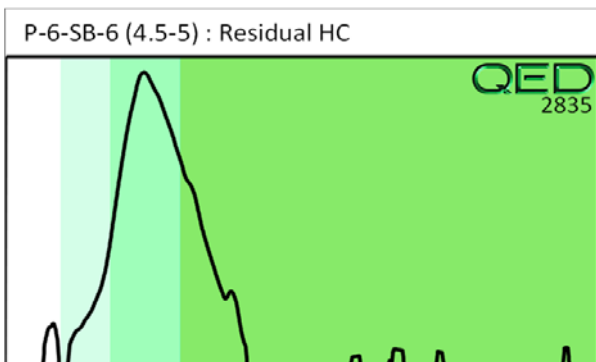
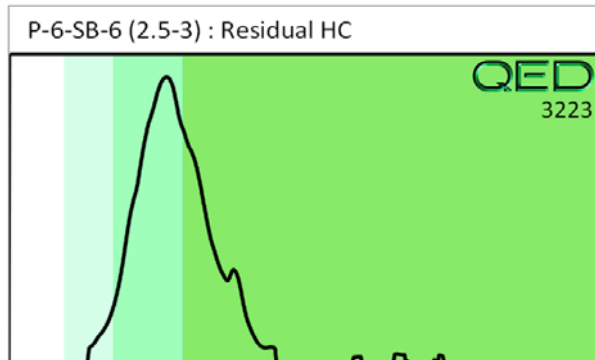
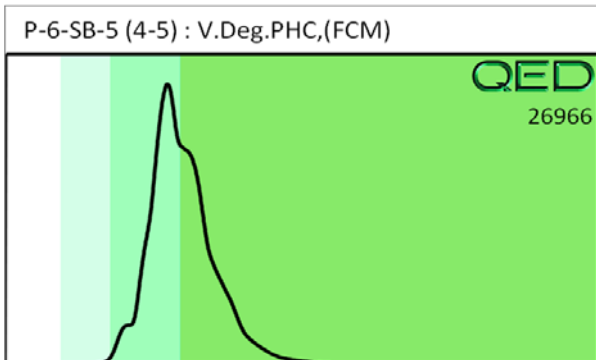
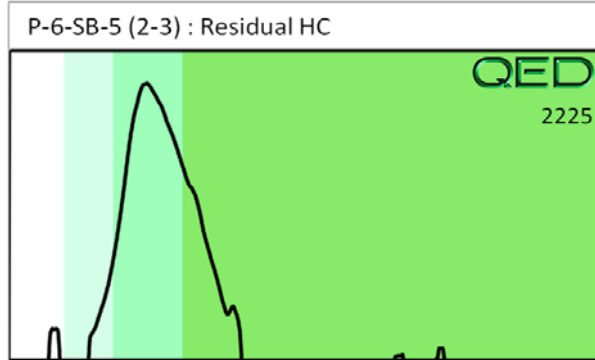
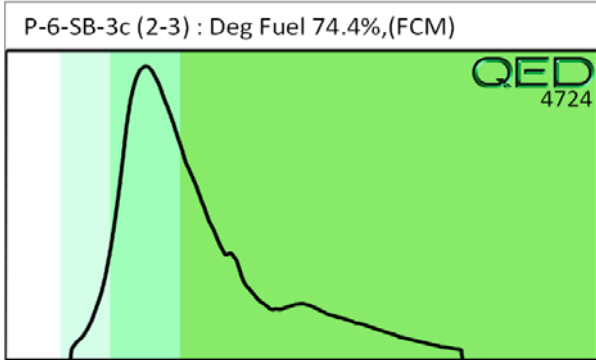
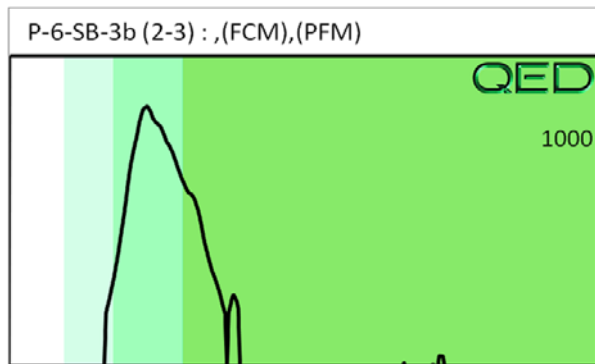
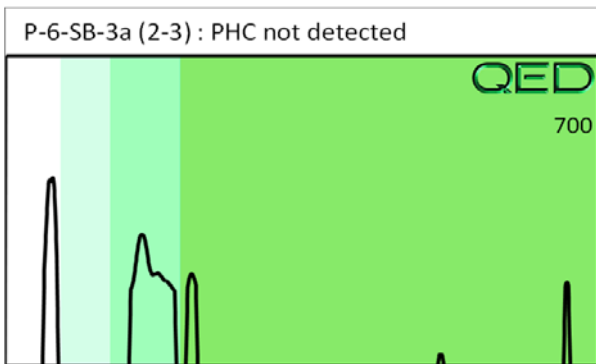
Project: R-5020B Whiteville

											F03640						
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	P-6-SB-3a (2-3)	25.0	<0.63	<0.63	<0.63	<0.63	<0.13	<0.2	<0.025	0	100	0	PHC not detected				
s	P-6-SB-3b (2-3)	24.3	<0.61	<0.61	0.61	0.61	0.37	<0.19	<0.024	0	90.4	9.6	(FCM),(PFM)				
s	P-6-SB-3c (2-3)	25.2	<0.63	<0.63	4.4	4.4	2.4	<0.2	<0.025	0	83	17	Deg Fuel 74.4%,(FCM)				
s	P-6-SB-5 (2-3)	25.0	<0.63	<0.63	0.76	0.76	0.64	<0.2	<0.025	0	91.6	8.4	Residual HC				
s	P-6-SB-5 (4-5)	52.1	<1.3	<1.3	3.8	3.8	3.6	<0.42	<0.052	0	97.5	2.5	V.Deg.PHC,(FCM)				
s	P-6-SB-6 (2.5-3)	23.4	<0.59	<0.59	0.83	0.83	0.79	<0.19	<0.023	0	88.7	11.3	Residual HC				
s	P-6-SB-6 (4.5-5)	25.5	<0.64	<0.64	1	1	0.84	<0.2	<0.025	0	90.9	9.1	Residual HC				
s	P-6-SB-7 (2.5-3)	22.4	<0.56	<0.56	<0.56	<0.56	<0.11	<0.18	<0.022	0	0	0	PHC not detected				
s	P-6-SB-7 (4-5)	24.3	<0.61	<0.61	<0.61	0.31	0.31	<0.19	<0.024	0	100	0	Residual HC,(PFM)				
Initial Calibrator QC check											OK		Final FCM QC Check		OK		97.9 %

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





Hydrocarbon Analysis Results

Client: NCDOT
Address: Parcel 6

Samples taken
Samples extracted
Samples analysed

Thursday, June 7, 2018
Thursday, June 7, 2018
Thursday, June 7, 2018

Contact: Craig Haden

Operator

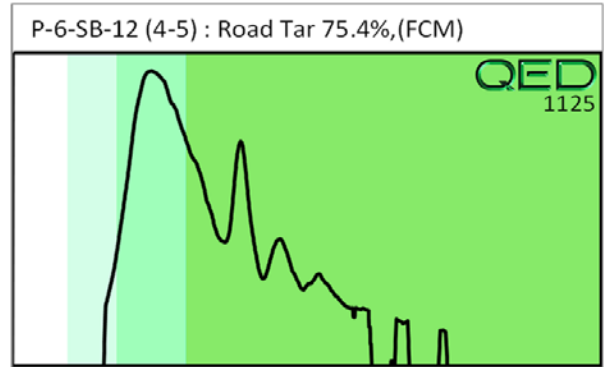
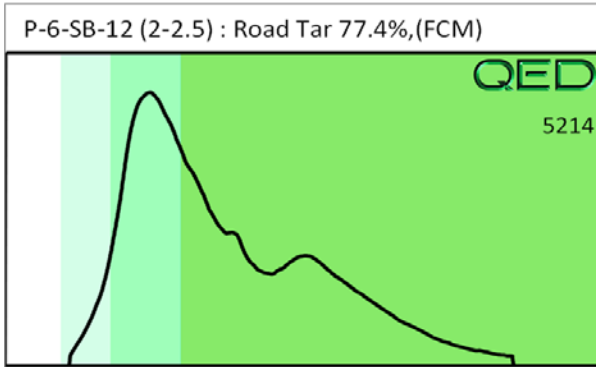
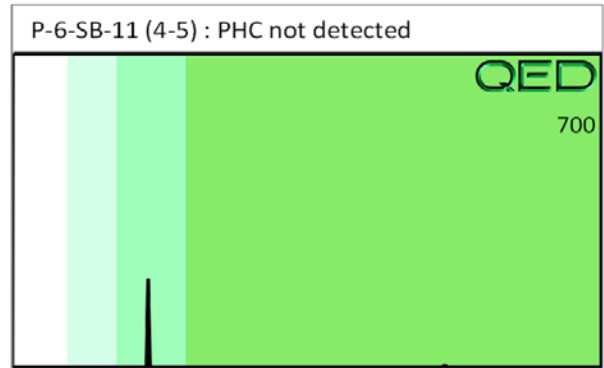
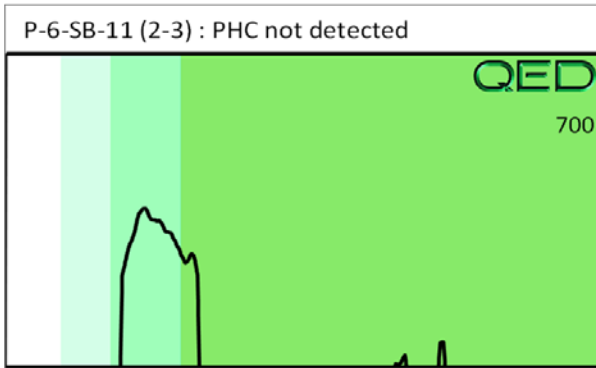
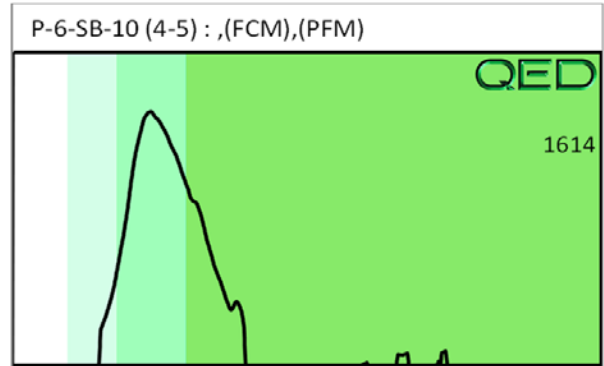
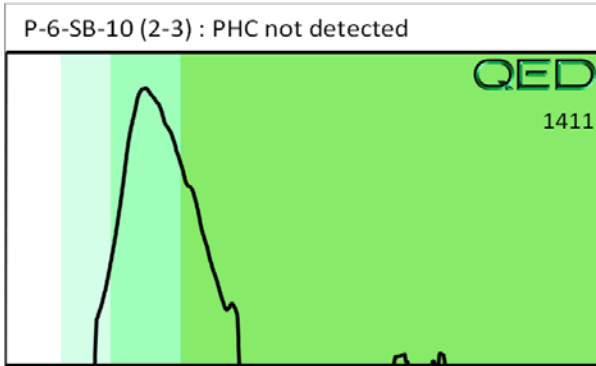
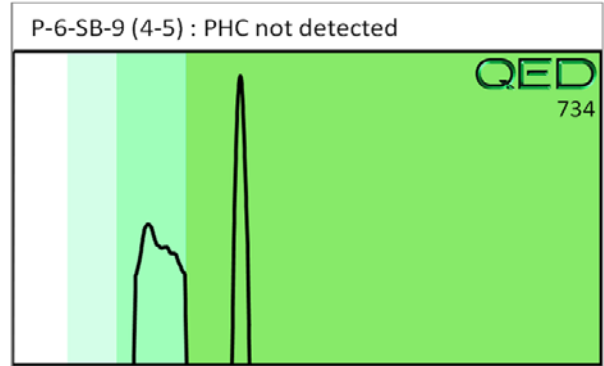
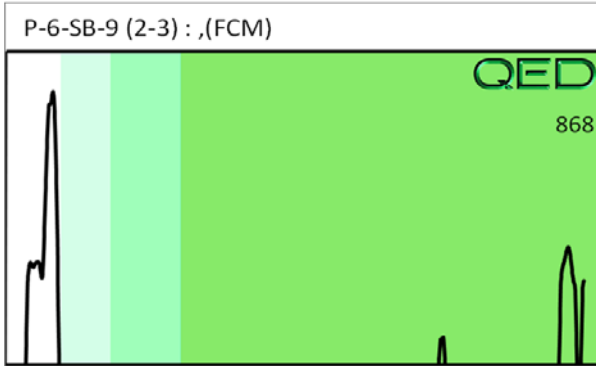
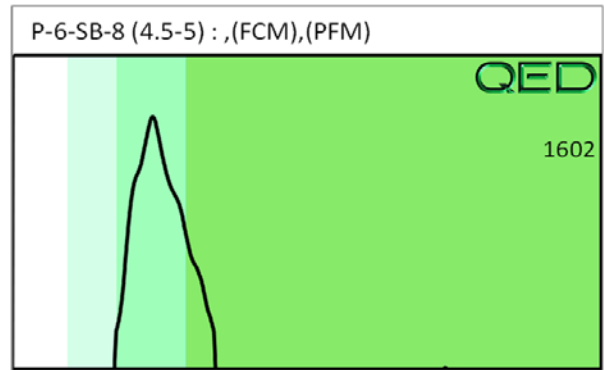
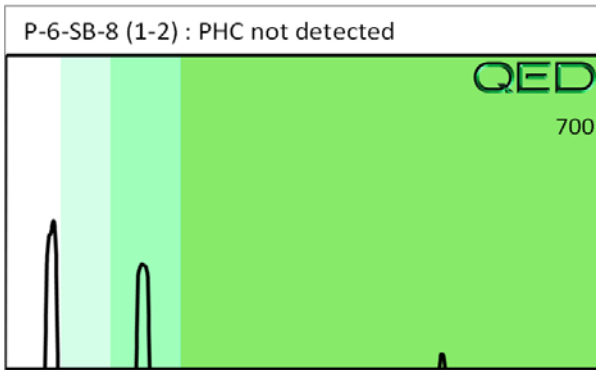
Thomas Fisher

Project: R-5020B Whiteville

										F03640			
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	P-6-SB-8 (1-2)	25.2	<0.63	<0.63	<0.63	<0.63	<0.13	<0.2	<0.025	0	0	0	PHC not detected
s	P-6-SB-8 (4.5-5)	23.6	<0.59	<0.59	0.59	0.59	0.35	<0.19	<0.024	0	100	0	.(FCM),(PFM)
s	P-6-SB-9 (2-3)	10.1	<0.25	<0.25	<0.25	<0.25	<0.05	<0.08	<0.01	0	0	0	.(FCM)
s	P-6-SB-9 (4-5)	27.1	<0.68	<0.68	<0.68	<0.68	<0.14	<0.22	<0.027	0	100	0	PHC not detected
s	P-6-SB-10 (2-3)	23.0	<0.58	<0.58	<0.58	<0.58	<0.12	<0.18	<0.023	0	100	0	PHC not detected
s	P-6-SB-10 (4-5)	23.0	<0.58	<0.58	0.58	0.58	0.44	<0.18	<0.023	0	91.5	8.5	.(FCM),(PFM)
s	P-6-SB-11 (2-3)	22.0	<0.55	<0.55	<0.55	<0.55	<0.11	<0.18	<0.022	0	100	0	PHC not detected
s	P-6-SB-11 (4-5)	21.3	<0.53	<0.53	<0.53	<0.53	<0.11	<0.17	<0.021	0	0	0	PHC not detected
s	P-6-SB-12 (2-2.5)	25.2	<0.63	<0.63	5.2	5.2	2.6	0.29	<0.025	0	75.3	24.7	Road Tar 77.4%,(FCM)
s	P-6-SB-12 (4-5)	24.5	<0.61	<0.61	0.61	0.61	0.37	<0.2	<0.025	0	81.7	18.3	Road Tar 75.4%,(FCM)
Initial Calibrator QC check			OK			Final FCM QC Check			OK			98.1 %	

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





June 21, 2018

Katie Lippard
APEX
136 Fairview Rd
Mooresville, NC 28117

RE: Project: NCDOT -001 WBS 41499.1.3
Pace Project No.: 92387844

Dear Katie Lippard:

Enclosed are the analytical results for sample(s) received by the laboratory on June 08, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Trey Carter", is written over a light blue horizontal line.

Trey Carter
treycarter@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Tim Besier, Apex Companies
Chemical Testing Engineer, Materials and Tests Unit
Troy Holzschuh, Apex



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

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SAMPLE SUMMARY

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92387844001	P-6-SB-3	Water	06/07/18 12:30	06/08/18 15:18
92387844002	P-2-SB-4	Water	06/07/18 16:15	06/08/18 15:18
92387844003	P-54-SB-2	Water	06/07/18 17:45	06/08/18 15:18

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SAMPLE ANALYTE COUNT

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92387844001	P-6-SB-3	MADEP EPH	SEM	7	PASI-C
		MADEP VPH	CL	5	PASI-C
		EPA 8270	PKS	74	PASI-C
		EPA 8260	CAH	68	PASI-C
92387844002	P-2-SB-4	MADEP EPH	SEM	7	PASI-C
		MADEP VPH	CL	5	PASI-C
		EPA 8270	PKS	74	PASI-C
		EPA 8260	CAH	68	PASI-C
92387844003	P-54-SB-2	MADEP EPH	SEM	7	PASI-C
		MADEP VPH	CL	5	PASI-C
		EPA 8270	PKS	74	PASI-C
		EPA 8260	CAH	68	PASI-C

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Lab Sample ID	Client Sample ID	Result	Units	Report Limit	Analyzed	Qualifiers
Method	Parameters					
92387844001	P-6-SB-3					
EPA 8270	Phenol	6.8J	ug/L	10.0	06/15/18 12:30	
EPA 8260	Acetone	21.8J	ug/L	25.0	06/15/18 02:22	
EPA 8260	Ethylbenzene	0.46J	ug/L	1.0	06/15/18 02:22	
EPA 8260	Naphthalene	0.42J	ug/L	1.0	06/15/18 02:22	
EPA 8260	Toluene	2.5	ug/L	1.0	06/15/18 02:22	
EPA 8260	1,2,4-Trimethylbenzene	0.82J	ug/L	1.0	06/15/18 02:22	
92387844002	P-2-SB-4					
MADEP EPH	Aliphatic (C09-C18)	63100000	ug/L	1000000	06/21/18 11:40	N2
MADEP EPH	Aromatic (C11-C22)	29400000	ug/L	20000	06/21/18 07:19	N2
MADEP VPH	Aliphatic (C05-C08)	37600	ug/L	6250	06/11/18 21:07	N2
MADEP VPH	Aliphatic (C09-C12)	62800	ug/L	6250	06/11/18 21:07	N2
MADEP VPH	Aromatic (C09-C10)	22200	ug/L	6250	06/11/18 21:07	N2
EPA 8270	1-Methylnaphthalene	120	ug/L	10.0	06/15/18 13:02	
EPA 8270	2-Methylnaphthalene	276	ug/L	50.0	06/15/18 14:11	
EPA 8270	Naphthalene	671	ug/L	50.0	06/15/18 14:11	
EPA 8260	Benzene	2510	ug/L	100	06/15/18 15:33	
EPA 8260	2-Butanone (MEK)	829	ug/L	500	06/15/18 15:33	
EPA 8260	Chloroethane	111	ug/L	100	06/15/18 15:33	
EPA 8260	Ethylbenzene	5400	ug/L	100	06/15/18 15:33	
EPA 8260	Isopropylbenzene (Cumene)	686	ug/L	100	06/15/18 15:33	
EPA 8260	4-Methyl-2-pentanone (MIBK)	97.4J	ug/L	500	06/15/18 15:33	
EPA 8260	Naphthalene	2320	ug/L	100	06/15/18 15:33	
EPA 8260	n-Propylbenzene	1870	ug/L	100	06/15/18 15:33	
EPA 8260	Toluene	13500	ug/L	100	06/15/18 15:33	
EPA 8260	1,2,4-Trimethylbenzene	12800	ug/L	100	06/15/18 15:33	
EPA 8260	1,3,5-Trimethylbenzene	4230	ug/L	100	06/15/18 15:33	
EPA 8260	Xylene (Total)	31600	ug/L	100	06/15/18 15:33	
92387844003	P-54-SB-2					
MADEP EPH	Aromatic (C11-C22)	361	ug/L	100	06/20/18 18:29	N2
MADEP VPH	Aliphatic (C05-C08)	1500	ug/L	250	06/11/18 18:45	N2
MADEP VPH	Aliphatic (C09-C12)	6830	ug/L	250	06/11/18 18:45	N2
MADEP VPH	Aromatic (C09-C10)	2290	ug/L	250	06/11/18 18:45	N2
EPA 8270	2,4-Dimethylphenol	7.4J	ug/L	8.3	06/15/18 13:34	
EPA 8270	1-Methylnaphthalene	11.5	ug/L	8.3	06/15/18 13:34	
EPA 8270	2-Methylnaphthalene	21.9	ug/L	8.3	06/15/18 13:34	
EPA 8270	Naphthalene	76.4	ug/L	8.3	06/15/18 13:34	
EPA 8260	Benzene	1.7J	ug/L	4.0	06/18/18 19:15	
EPA 8260	n-Butylbenzene	23.0	ug/L	4.0	06/18/18 19:15	
EPA 8260	sec-Butylbenzene	9.5	ug/L	4.0	06/18/18 19:15	
EPA 8260	Ethylbenzene	303	ug/L	4.0	06/18/18 19:15	
EPA 8260	Isopropylbenzene (Cumene)	30.1	ug/L	4.0	06/18/18 19:15	
EPA 8260	Methyl-tert-butyl ether	5.7	ug/L	4.0	06/18/18 19:15	
EPA 8260	Naphthalene	113	ug/L	4.0	06/18/18 19:15	
EPA 8260	n-Propylbenzene	95.9	ug/L	4.0	06/18/18 19:15	
EPA 8260	Toluene	122	ug/L	4.0	06/18/18 19:15	
EPA 8260	1,2,4-Trimethylbenzene	511	ug/L	4.0	06/18/18 19:15	

REPORT OF LABORATORY ANALYSIS

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SUMMARY OF DETECTION

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92387844003	P-54-SB-2					
EPA 8260	1,3,5-Trimethylbenzene	161	ug/L	4.0	06/18/18 19:15	
EPA 8260	Xylene (Total)	1460	ug/L	4.0	06/18/18 19:15	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-6-SB-3 **Lab ID: 92387844001** Collected: 06/07/18 12:30 Received: 06/08/18 15:18 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
MADEP EPH NC Water Analytical Method: MADEP EPH Preparation Method: MADEP EPH									
Aliphatic (C09-C18)	ND	ug/L	114	114	1	06/18/18 20:54	06/19/18 15:09		N2
Aliphatic (C19-C36)	ND	ug/L	114	114	1	06/18/18 20:54	06/19/18 15:09		N2
Aromatic (C11-C22)	ND	ug/L	114	114	1	06/18/18 20:54	06/19/18 15:09		N2
Surrogates									
Nonatriacontane (S)	91	%	40-140		1	06/18/18 20:54	06/19/18 15:09	7194-86-7	
o-Terphenyl (S)	77	%	40-140		1	06/18/18 20:54	06/19/18 15:09	84-15-1	
2-Fluorobiphenyl (S)	91	%	40-140		1	06/18/18 20:54	06/19/18 15:09	321-60-8	
2-Bromonaphthalene (S)	98	%	40-140		1	06/18/18 20:54	06/19/18 15:09	580-13-2	
VPH NC Water Analytical Method: MADEP VPH									
Aliphatic (C05-C08)	ND	ug/L	50.0	50.0	1		06/11/18 16:21		N2
Aliphatic (C09-C12)	ND	ug/L	50.0	50.0	1		06/11/18 16:21		N2
Aromatic (C09-C10)	ND	ug/L	50.0	50.0	1		06/11/18 16:21		N2
Surrogates									
4-Bromofluorobenzene (FID) (S)	88	%	70-130		1		06/11/18 16:21	460-00-4	
4-Bromofluorobenzene (PID) (S)	86	%	70-130		1		06/11/18 16:21	460-00-4	
8270 MSSV RVE Semivol Organic Analytical Method: EPA 8270 Preparation Method: EPA 3510									
Acenaphthene	ND	ug/L	10.0	3.4	1	06/14/18 20:46	06/15/18 12:30	83-32-9	
Acenaphthylene	ND	ug/L	10.0	3.0	1	06/14/18 20:46	06/15/18 12:30	208-96-8	
Aniline	ND	ug/L	10.0	3.1	1	06/14/18 20:46	06/15/18 12:30	62-53-3	L2
Anthracene	ND	ug/L	10.0	2.0	1	06/14/18 20:46	06/15/18 12:30	120-12-7	
Benzo(a)anthracene	ND	ug/L	10.0	1.3	1	06/14/18 20:46	06/15/18 12:30	56-55-3	
Benzo(a)pyrene	ND	ug/L	10.0	1.3	1	06/14/18 20:46	06/15/18 12:30	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	10.0	1.5	1	06/14/18 20:46	06/15/18 12:30	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	10.0	1.8	1	06/14/18 20:46	06/15/18 12:30	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	10.0	1.8	1	06/14/18 20:46	06/15/18 12:30	207-08-9	
Benzoic Acid	ND	ug/L	50.0	17.3	1	06/14/18 20:46	06/15/18 12:30	65-85-0	
Benzyl alcohol	ND	ug/L	20.0	7.0	1	06/14/18 20:46	06/15/18 12:30	100-51-6	
4-Bromophenylphenyl ether	ND	ug/L	10.0	2.7	1	06/14/18 20:46	06/15/18 12:30	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.0	1.3	1	06/14/18 20:46	06/15/18 12:30	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	20.0	4.6	1	06/14/18 20:46	06/15/18 12:30	59-50-7	
4-Chloroaniline	ND	ug/L	20.0	6.8	1	06/14/18 20:46	06/15/18 12:30	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/L	10.0	3.0	1	06/14/18 20:46	06/15/18 12:30	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	10.0	3.1	1	06/14/18 20:46	06/15/18 12:30	111-44-4	
2-Chloronaphthalene	ND	ug/L	10.0	2.9	1	06/14/18 20:46	06/15/18 12:30	91-58-7	
2-Chlorophenol	ND	ug/L	10.0	2.9	1	06/14/18 20:46	06/15/18 12:30	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	10.0	2.9	1	06/14/18 20:46	06/15/18 12:30	7005-72-3	
Chrysene	ND	ug/L	10.0	1.3	1	06/14/18 20:46	06/15/18 12:30	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	10.0	1.9	1	06/14/18 20:46	06/15/18 12:30	53-70-3	
Dibenzofuran	ND	ug/L	10.0	3.4	1	06/14/18 20:46	06/15/18 12:30	132-64-9	
1,2-Dichlorobenzene	ND	ug/L	10.0	3.2	1	06/14/18 20:46	06/15/18 12:30	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	3.2	1	06/14/18 20:46	06/15/18 12:30	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	2.6	1	06/14/18 20:46	06/15/18 12:30	106-46-7	B
3,3'-Dichlorobenzidine	ND	ug/L	20.0	2.8	1	06/14/18 20:46	06/15/18 12:30	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.0	2.7	1	06/14/18 20:46	06/15/18 12:30	120-83-2	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-6-SB-3 Lab ID: 92387844001 Collected: 06/07/18 12:30 Received: 06/08/18 15:18 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
8270 MSSV RVE Semivol Organic			Analytical Method: EPA 8270 Preparation Method: EPA 3510						
Diethylphthalate	ND	ug/L	10.0	2.0	1	06/14/18 20:46	06/15/18 12:30	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.0	1.9	1	06/14/18 20:46	06/15/18 12:30	105-67-9	
Dimethylphthalate	ND	ug/L	10.0	2.3	1	06/14/18 20:46	06/15/18 12:30	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.0	1.2	1	06/14/18 20:46	06/15/18 12:30	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	20.0	4.4	1	06/14/18 20:46	06/15/18 12:30	534-52-1	
2,4-Dinitrophenol	ND	ug/L	50.0	10.1	1	06/14/18 20:46	06/15/18 12:30	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	10.0	2.4	1	06/14/18 20:46	06/15/18 12:30	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	10.0	2.9	1	06/14/18 20:46	06/15/18 12:30	606-20-2	
Di-n-octylphthalate	ND	ug/L	10.0	1.2	1	06/14/18 20:46	06/15/18 12:30	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	6.0	1.4	1	06/14/18 20:46	06/15/18 12:30	117-81-7	
Fluoranthene	ND	ug/L	10.0	1.7	1	06/14/18 20:46	06/15/18 12:30	206-44-0	
Fluorene	ND	ug/L	10.0	3.0	1	06/14/18 20:46	06/15/18 12:30	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	10.0	3.1	1	06/14/18 20:46	06/15/18 12:30	87-68-3	
Hexachlorobenzene	ND	ug/L	10.0	2.5	1	06/14/18 20:46	06/15/18 12:30	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	10.0	3.4	1	06/14/18 20:46	06/15/18 12:30	77-47-4	
Hexachloroethane	ND	ug/L	10.0	4.0	1	06/14/18 20:46	06/15/18 12:30	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.0	1.7	1	06/14/18 20:46	06/15/18 12:30	193-39-5	
Isophorone	ND	ug/L	10.0	2.7	1	06/14/18 20:46	06/15/18 12:30	78-59-1	
1-Methylnaphthalene	ND	ug/L	10.0	2.8	1	06/14/18 20:46	06/15/18 12:30	90-12-0	
2-Methylnaphthalene	ND	ug/L	10.0	2.8	1	06/14/18 20:46	06/15/18 12:30	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.0	3.6	1	06/14/18 20:46	06/15/18 12:30	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.0	2.4	1	06/14/18 20:46	06/15/18 12:30	15831-10-4	
Naphthalene	ND	ug/L	10.0	3.2	1	06/14/18 20:46	06/15/18 12:30	91-20-3	
2-Nitroaniline	ND	ug/L	50.0	5.5	1	06/14/18 20:46	06/15/18 12:30	88-74-4	
3-Nitroaniline	ND	ug/L	50.0	5.0	1	06/14/18 20:46	06/15/18 12:30	99-09-2	
4-Nitroaniline	ND	ug/L	20.0	3.6	1	06/14/18 20:46	06/15/18 12:30	100-01-6	
Nitrobenzene	ND	ug/L	10.0	3.4	1	06/14/18 20:46	06/15/18 12:30	98-95-3	
2-Nitrophenol	ND	ug/L	10.0	2.6	1	06/14/18 20:46	06/15/18 12:30	88-75-5	
4-Nitrophenol	ND	ug/L	50.0	7.8	1	06/14/18 20:46	06/15/18 12:30	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	10.0	2.8	1	06/14/18 20:46	06/15/18 12:30	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	10.0	2.6	1	06/14/18 20:46	06/15/18 12:30	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	10.0	2.0	1	06/14/18 20:46	06/15/18 12:30	86-30-6	
2,2'-Oxybis(1-chloropropane)	ND	ug/L	10.0	2.5	1	06/14/18 20:46	06/15/18 12:30	108-60-1	
Pentachlorophenol	ND	ug/L	25.0	3.1	1	06/14/18 20:46	06/15/18 12:30	87-86-5	
Phenanthrene	ND	ug/L	10.0	2.4	1	06/14/18 20:46	06/15/18 12:30	85-01-8	
Phenol	6.8J	ug/L	10.0	2.7	1	06/14/18 20:46	06/15/18 12:30	108-95-2	
Pyrene	ND	ug/L	10.0	1.2	1	06/14/18 20:46	06/15/18 12:30	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	2.6	1	06/14/18 20:46	06/15/18 12:30	120-82-1	
2,4,5-Trichlorophenol	ND	ug/L	10.0	2.3	1	06/14/18 20:46	06/15/18 12:30	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	10.0	2.8	1	06/14/18 20:46	06/15/18 12:30	88-06-2	
Surrogates									
Nitrobenzene-d5 (S)	78	%	40-121		1	06/14/18 20:46	06/15/18 12:30	4165-60-0	
2-Fluorobiphenyl (S)	82	%	45-139		1	06/14/18 20:46	06/15/18 12:30	321-60-8	
Terphenyl-d14 (S)	55	%	48-146		1	06/14/18 20:46	06/15/18 12:30	1718-51-0	
Phenol-d6 (S)	51	%	18-105		1	06/14/18 20:46	06/15/18 12:30	13127-88-3	
2-Fluorophenol (S)	49	%	13-118		1	06/14/18 20:46	06/15/18 12:30	367-12-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-6-SB-3 Lab ID: 92387844001 Collected: 06/07/18 12:30 Received: 06/08/18 15:18 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
8270 MSSV RVE Semivol Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Surrogates									
2,4,6-Tribromophenol (S)	79	%	31-170		1	06/14/18 20:46	06/15/18 12:30	118-79-6	
8260 MSV Low Level	Analytical Method: EPA 8260								
Acetone	21.8J	ug/L	25.0	10.0	1		06/15/18 02:22	67-64-1	
Benzene	ND	ug/L	1.0	0.25	1		06/15/18 02:22	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.30	1		06/15/18 02:22	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.17	1		06/15/18 02:22	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	0.18	1		06/15/18 02:22	75-27-4	
Bromoform	ND	ug/L	1.0	0.26	1		06/15/18 02:22	75-25-2	
Bromomethane	ND	ug/L	2.0	0.29	1		06/15/18 02:22	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	0.96	1		06/15/18 02:22	78-93-3	
n-Butylbenzene	ND	ug/L	1.0	0.41	1		06/15/18 02:22	104-51-8	
sec-Butylbenzene	ND	ug/L	1.0	0.38	1		06/15/18 02:22	135-98-8	
tert-Butylbenzene	ND	ug/L	1.0	0.40	1		06/15/18 02:22	98-06-6	L2
Carbon tetrachloride	ND	ug/L	1.0	0.25	1		06/15/18 02:22	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.23	1		06/15/18 02:22	108-90-7	
Chloroethane	ND	ug/L	1.0	0.54	1		06/15/18 02:22	75-00-3	
Chloroform	ND	ug/L	1.0	0.14	1		06/15/18 02:22	67-66-3	
Chloromethane	ND	ug/L	1.0	0.11	1		06/15/18 02:22	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.35	1		06/15/18 02:22	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.31	1		06/15/18 02:22	106-43-4	
Dibromochloromethane	ND	ug/L	1.0	0.21	1		06/15/18 02:22	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.27	1		06/15/18 02:22	106-93-4	
Dibromomethane	ND	ug/L	1.0	0.21	1		06/15/18 02:22	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.30	1		06/15/18 02:22	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.24	1		06/15/18 02:22	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.33	1		06/15/18 02:22	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.21	1		06/15/18 02:22	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.32	1		06/15/18 02:22	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.24	1		06/15/18 02:22	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.56	1		06/15/18 02:22	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		06/15/18 02:22	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		06/15/18 02:22	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	0.27	1		06/15/18 02:22	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.28	1		06/15/18 02:22	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	0.13	1		06/15/18 02:22	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.49	1		06/15/18 02:22	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	0.13	1		06/15/18 02:22	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	0.26	1		06/15/18 02:22	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	0.12	1		06/15/18 02:22	108-20-3	
1,4-Dioxane (p-Dioxane)	ND	ug/L	150	78.4	1		06/15/18 02:22	123-91-1	
Ethylbenzene	0.46J	ug/L	1.0	0.30	1		06/15/18 02:22	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	0.71	1		06/15/18 02:22	87-68-3	
2-Hexanone	ND	ug/L	5.0	0.46	1		06/15/18 02:22	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/L	1.0	0.40	1		06/15/18 02:22	98-82-8	

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-6-SB-3 Lab ID: 92387844001 Collected: 06/07/18 12:30 Received: 06/08/18 15:18 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
8260 MSV Low Level									
Analytical Method: EPA 8260									
p-Isopropyltoluene	ND	ug/L	1.0	0.31	1		06/15/18 02:22	99-87-6	
Methylene Chloride	ND	ug/L	2.0	0.97	1		06/15/18 02:22	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	0.33	1		06/15/18 02:22	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.21	1		06/15/18 02:22	1634-04-4	
Naphthalene	0.42J	ug/L	1.0	0.24	1		06/15/18 02:22	91-20-3	
n-Propylbenzene	ND	ug/L	1.0	0.42	1		06/15/18 02:22	103-65-1	
Styrene	ND	ug/L	1.0	0.26	1		06/15/18 02:22	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.33	1		06/15/18 02:22	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.40	1		06/15/18 02:22	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.46	1		06/15/18 02:22	127-18-4	
Toluene	2.5	ug/L	1.0	0.26	1		06/15/18 02:22	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.33	1		06/15/18 02:22	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.35	1		06/15/18 02:22	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.48	1		06/15/18 02:22	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.29	1		06/15/18 02:22	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.47	1		06/15/18 02:22	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.20	1		06/15/18 02:22	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	0.41	1		06/15/18 02:22	96-18-4	
1,2,4-Trimethylbenzene	0.82J	ug/L	1.0	0.31	1		06/15/18 02:22	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	1.0	0.36	1		06/15/18 02:22	108-67-8	
Vinyl acetate	ND	ug/L	2.0	0.35	1		06/15/18 02:22	108-05-4	
Vinyl chloride	ND	ug/L	1.0	0.62	1		06/15/18 02:22	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1.0	1		06/15/18 02:22	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	99	%	70-130		1		06/15/18 02:22	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130		1		06/15/18 02:22	17060-07-0	
Toluene-d8 (S)	103	%	70-130		1		06/15/18 02:22	2037-26-5	

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-2-SB-4									
Lab ID: 92387844002									
Collected: 06/07/18 16:15 Received: 06/08/18 15:18 Matrix: Water									
Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
MADEP EPH NC Water									
Analytical Method: MADEP EPH Preparation Method: MADEP EPH									
Aliphatic (C09-C18)	63100000	ug/L	1000000	1000000	1000	06/18/18 20:54	06/21/18 11:40		N2
Aliphatic (C19-C36)	ND	ug/L	1000000	1000000	1000	06/18/18 20:54	06/21/18 11:40		N2
Aromatic (C11-C22)	2940000	ug/L	20000	20000	20	06/18/18 20:54	06/21/18 07:19		N2
Surrogates									
Nonatriacontane (S)	67900	%	40-140		1000	06/18/18 20:54	06/21/18 11:40	7194-86-7	S4
o-Terphenyl (S)	406	%	40-140		20	06/18/18 20:54	06/21/18 07:19	84-15-1	S4
2-Fluorobiphenyl (S)	952	%	40-140		20	06/18/18 20:54	06/21/18 07:19	321-60-8	S4
2-Bromonaphthalene (S)	2670	%	40-140		20	06/18/18 20:54	06/21/18 07:19	580-13-2	S4
VPH NC Water									
Analytical Method: MADEP VPH									
Aliphatic (C05-C08)	37600	ug/L	6250	6250	125		06/11/18 21:07		N2
Aliphatic (C09-C12)	62800	ug/L	6250	6250	125		06/11/18 21:07		N2
Aromatic (C09-C10)	22200	ug/L	6250	6250	125		06/11/18 21:07		N2
Surrogates									
4-Bromofluorobenzene (FID) (S)	89	%	70-130		125		06/11/18 21:07	460-00-4	
4-Bromofluorobenzene (PID) (S)	89	%	70-130		125		06/11/18 21:07	460-00-4	
8270 MSSV RVE Semivol Organic									
Analytical Method: EPA 8270 Preparation Method: EPA 3510									
Acenaphthene	ND	ug/L	10.0	3.4	1	06/14/18 20:46	06/15/18 13:02	83-32-9	
Acenaphthylene	ND	ug/L	10.0	3.0	1	06/14/18 20:46	06/15/18 13:02	208-96-8	
Aniline	ND	ug/L	10.0	3.1	1	06/14/18 20:46	06/15/18 13:02	62-53-3	L2
Anthracene	ND	ug/L	10.0	2.0	1	06/14/18 20:46	06/15/18 13:02	120-12-7	
Benzo(a)anthracene	ND	ug/L	10.0	1.3	1	06/14/18 20:46	06/15/18 13:02	56-55-3	
Benzo(a)pyrene	ND	ug/L	10.0	1.3	1	06/14/18 20:46	06/15/18 13:02	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	10.0	1.5	1	06/14/18 20:46	06/15/18 13:02	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	10.0	1.8	1	06/14/18 20:46	06/15/18 13:02	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	10.0	1.8	1	06/14/18 20:46	06/15/18 13:02	207-08-9	
Benzoic Acid	ND	ug/L	50.0	17.3	1	06/14/18 20:46	06/15/18 13:02	65-85-0	
Benzyl alcohol	ND	ug/L	20.0	7.0	1	06/14/18 20:46	06/15/18 13:02	100-51-6	
4-Bromophenylphenyl ether	ND	ug/L	10.0	2.7	1	06/14/18 20:46	06/15/18 13:02	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.0	1.3	1	06/14/18 20:46	06/15/18 13:02	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	20.0	4.6	1	06/14/18 20:46	06/15/18 13:02	59-50-7	
4-Chloroaniline	ND	ug/L	20.0	6.8	1	06/14/18 20:46	06/15/18 13:02	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/L	10.0	3.0	1	06/14/18 20:46	06/15/18 13:02	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	10.0	3.1	1	06/14/18 20:46	06/15/18 13:02	111-44-4	
2-Chloronaphthalene	ND	ug/L	10.0	2.9	1	06/14/18 20:46	06/15/18 13:02	91-58-7	
2-Chlorophenol	ND	ug/L	10.0	2.9	1	06/14/18 20:46	06/15/18 13:02	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	10.0	2.9	1	06/14/18 20:46	06/15/18 13:02	7005-72-3	
Chrysene	ND	ug/L	10.0	1.3	1	06/14/18 20:46	06/15/18 13:02	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	10.0	1.9	1	06/14/18 20:46	06/15/18 13:02	53-70-3	
Dibenzofuran	ND	ug/L	10.0	3.4	1	06/14/18 20:46	06/15/18 13:02	132-64-9	
1,2-Dichlorobenzene	ND	ug/L	10.0	3.2	1	06/14/18 20:46	06/15/18 13:02	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	3.2	1	06/14/18 20:46	06/15/18 13:02	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	2.6	1	06/14/18 20:46	06/15/18 13:02	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/L	20.0	2.8	1	06/14/18 20:46	06/15/18 13:02	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.0	2.7	1	06/14/18 20:46	06/15/18 13:02	120-83-2	

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-2-SB-4 Lab ID: 92387844002 Collected: 06/07/18 16:15 Received: 06/08/18 15:18 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
8270 MSSV RVE Semivol Organic Analytical Method: EPA 8270 Preparation Method: EPA 3510									
Diethylphthalate	ND	ug/L	10.0	2.0	1	06/14/18 20:46	06/15/18 13:02	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.0	1.9	1	06/14/18 20:46	06/15/18 13:02	105-67-9	
Dimethylphthalate	ND	ug/L	10.0	2.3	1	06/14/18 20:46	06/15/18 13:02	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.0	1.2	1	06/14/18 20:46	06/15/18 13:02	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	20.0	4.4	1	06/14/18 20:46	06/15/18 13:02	534-52-1	
2,4-Dinitrophenol	ND	ug/L	50.0	10.1	1	06/14/18 20:46	06/15/18 13:02	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	10.0	2.4	1	06/14/18 20:46	06/15/18 13:02	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	10.0	2.9	1	06/14/18 20:46	06/15/18 13:02	606-20-2	
Di-n-octylphthalate	ND	ug/L	10.0	1.2	1	06/14/18 20:46	06/15/18 13:02	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	6.0	1.4	1	06/14/18 20:46	06/15/18 13:02	117-81-7	
Fluoranthene	ND	ug/L	10.0	1.7	1	06/14/18 20:46	06/15/18 13:02	206-44-0	
Fluorene	ND	ug/L	10.0	3.0	1	06/14/18 20:46	06/15/18 13:02	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	10.0	3.1	1	06/14/18 20:46	06/15/18 13:02	87-68-3	
Hexachlorobenzene	ND	ug/L	10.0	2.5	1	06/14/18 20:46	06/15/18 13:02	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	10.0	3.4	1	06/14/18 20:46	06/15/18 13:02	77-47-4	
Hexachloroethane	ND	ug/L	10.0	4.0	1	06/14/18 20:46	06/15/18 13:02	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.0	1.7	1	06/14/18 20:46	06/15/18 13:02	193-39-5	
Isophorone	ND	ug/L	10.0	2.7	1	06/14/18 20:46	06/15/18 13:02	78-59-1	
1-Methylnaphthalene	120	ug/L	10.0	2.8	1	06/14/18 20:46	06/15/18 13:02	90-12-0	
2-Methylnaphthalene	276	ug/L	50.0	14.2	5	06/14/18 20:46	06/15/18 14:11	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.0	3.6	1	06/14/18 20:46	06/15/18 13:02	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.0	2.4	1	06/14/18 20:46	06/15/18 13:02	15831-10-4	
Naphthalene	671	ug/L	50.0	16.2	5	06/14/18 20:46	06/15/18 14:11	91-20-3	
2-Nitroaniline	ND	ug/L	50.0	5.5	1	06/14/18 20:46	06/15/18 13:02	88-74-4	
3-Nitroaniline	ND	ug/L	50.0	5.0	1	06/14/18 20:46	06/15/18 13:02	99-09-2	
4-Nitroaniline	ND	ug/L	20.0	3.6	1	06/14/18 20:46	06/15/18 13:02	100-01-6	
Nitrobenzene	ND	ug/L	10.0	3.4	1	06/14/18 20:46	06/15/18 13:02	98-95-3	
2-Nitrophenol	ND	ug/L	10.0	2.6	1	06/14/18 20:46	06/15/18 13:02	88-75-5	
4-Nitrophenol	ND	ug/L	50.0	7.8	1	06/14/18 20:46	06/15/18 13:02	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	10.0	2.8	1	06/14/18 20:46	06/15/18 13:02	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	10.0	2.6	1	06/14/18 20:46	06/15/18 13:02	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	10.0	2.0	1	06/14/18 20:46	06/15/18 13:02	86-30-6	
2,2'-Oxybis(1-chloropropane)	ND	ug/L	10.0	2.5	1	06/14/18 20:46	06/15/18 13:02	108-60-1	
Pentachlorophenol	ND	ug/L	25.0	3.1	1	06/14/18 20:46	06/15/18 13:02	87-86-5	
Phenanthrene	ND	ug/L	10.0	2.4	1	06/14/18 20:46	06/15/18 13:02	85-01-8	
Phenol	ND	ug/L	10.0	2.7	1	06/14/18 20:46	06/15/18 13:02	108-95-2	
Pyrene	ND	ug/L	10.0	1.2	1	06/14/18 20:46	06/15/18 13:02	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	2.6	1	06/14/18 20:46	06/15/18 13:02	120-82-1	
2,4,5-Trichlorophenol	ND	ug/L	10.0	2.3	1	06/14/18 20:46	06/15/18 13:02	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	10.0	2.8	1	06/14/18 20:46	06/15/18 13:02	88-06-2	
Surrogates									
Nitrobenzene-d5 (S)	72	%	40-121		1	06/14/18 20:46	06/15/18 13:02	4165-60-0	
2-Fluorobiphenyl (S)	79	%	45-139		1	06/14/18 20:46	06/15/18 13:02	321-60-8	
Terphenyl-d14 (S)	55	%	48-146		1	06/14/18 20:46	06/15/18 13:02	1718-51-0	
Phenol-d6 (S)	61	%	18-105		1	06/14/18 20:46	06/15/18 13:02	13127-88-3	
2-Fluorophenol (S)	66	%	13-118		1	06/14/18 20:46	06/15/18 13:02	367-12-4	

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-2-SB-4 Lab ID: 92387844002 Collected: 06/07/18 16:15 Received: 06/08/18 15:18 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
8270 MSSV RVE Semivol Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Surrogates									
2,4,6-Tribromophenol (S)	99	%	31-170		1	06/14/18 20:46	06/15/18 13:02	118-79-6	
8260 MSV Low Level	Analytical Method: EPA 8260								
Acetone	ND	ug/L	2500	1000	100		06/15/18 15:33	67-64-1	
Benzene	2510	ug/L	100	25.0	100		06/15/18 15:33	71-43-2	
Bromobenzene	ND	ug/L	100	30.0	100		06/15/18 15:33	108-86-1	
Bromochloromethane	ND	ug/L	100	17.0	100		06/15/18 15:33	74-97-5	
Bromodichloromethane	ND	ug/L	100	18.0	100		06/15/18 15:33	75-27-4	
Bromoform	ND	ug/L	100	26.0	100		06/15/18 15:33	75-25-2	
Bromomethane	ND	ug/L	200	29.0	100		06/15/18 15:33	74-83-9	
2-Butanone (MEK)	829	ug/L	500	96.0	100		06/15/18 15:33	78-93-3	
n-Butylbenzene	ND	ug/L	100	41.0	100		06/15/18 15:33	104-51-8	
sec-Butylbenzene	ND	ug/L	100	38.0	100		06/15/18 15:33	135-98-8	
tert-Butylbenzene	ND	ug/L	100	40.0	100		06/15/18 15:33	98-06-6	
Carbon tetrachloride	ND	ug/L	100	25.0	100		06/15/18 15:33	56-23-5	
Chlorobenzene	ND	ug/L	100	23.0	100		06/15/18 15:33	108-90-7	
Chloroethane	111	ug/L	100	54.0	100		06/15/18 15:33	75-00-3	
Chloroform	ND	ug/L	100	14.0	100		06/15/18 15:33	67-66-3	
Chloromethane	ND	ug/L	100	11.0	100		06/15/18 15:33	74-87-3	
2-Chlorotoluene	ND	ug/L	100	35.0	100		06/15/18 15:33	95-49-8	
4-Chlorotoluene	ND	ug/L	100	31.0	100		06/15/18 15:33	106-43-4	
Dibromochloromethane	ND	ug/L	100	21.0	100		06/15/18 15:33	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	100	27.0	100		06/15/18 15:33	106-93-4	
Dibromomethane	ND	ug/L	100	21.0	100		06/15/18 15:33	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	100	30.0	100		06/15/18 15:33	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	100	24.0	100		06/15/18 15:33	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	100	33.0	100		06/15/18 15:33	106-46-7	
Dichlorodifluoromethane	ND	ug/L	100	21.0	100		06/15/18 15:33	75-71-8	
1,1-Dichloroethane	ND	ug/L	100	32.0	100		06/15/18 15:33	75-34-3	
1,2-Dichloroethane	ND	ug/L	100	24.0	100		06/15/18 15:33	107-06-2	
1,1-Dichloroethene	ND	ug/L	100	56.0	100		06/15/18 15:33	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	100	19.0	100		06/15/18 15:33	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	100	49.0	100		06/15/18 15:33	156-60-5	
1,2-Dichloropropane	ND	ug/L	100	27.0	100		06/15/18 15:33	78-87-5	
1,3-Dichloropropane	ND	ug/L	100	28.0	100		06/15/18 15:33	142-28-9	
2,2-Dichloropropane	ND	ug/L	100	13.0	100		06/15/18 15:33	594-20-7	
1,1-Dichloropropene	ND	ug/L	100	49.0	100		06/15/18 15:33	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	100	13.0	100		06/15/18 15:33	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	100	26.0	100		06/15/18 15:33	10061-02-6	
Diisopropyl ether	ND	ug/L	100	12.0	100		06/15/18 15:33	108-20-3	
1,4-Dioxane (p-Dioxane)	ND	ug/L	15000	7840	100		06/15/18 15:33	123-91-1	
Ethylbenzene	5400	ug/L	100	30.0	100		06/15/18 15:33	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	100	71.0	100		06/15/18 15:33	87-68-3	
2-Hexanone	ND	ug/L	500	46.0	100		06/15/18 15:33	591-78-6	
Isopropylbenzene (Cumene)	686	ug/L	100	40.0	100		06/15/18 15:33	98-82-8	

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-2-SB-4 Lab ID: 92387844002 Collected: 06/07/18 16:15 Received: 06/08/18 15:18 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
8260 MSV Low Level		Analytical Method: EPA 8260							
p-Isopropyltoluene	ND	ug/L	100	31.0	100		06/15/18 15:33	99-87-6	
Methylene Chloride	ND	ug/L	200	97.0	100		06/15/18 15:33	75-09-2	
4-Methyl-2-pentanone (MIBK)	97.4J	ug/L	500	33.0	100		06/15/18 15:33	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	100	21.0	100		06/15/18 15:33	1634-04-4	
Naphthalene	2320	ug/L	100	24.0	100		06/15/18 15:33	91-20-3	
n-Propylbenzene	1870	ug/L	100	42.0	100		06/15/18 15:33	103-65-1	
Styrene	ND	ug/L	100	26.0	100		06/15/18 15:33	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	100	33.0	100		06/15/18 15:33	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	100	40.0	100		06/15/18 15:33	79-34-5	
Tetrachloroethene	ND	ug/L	100	46.0	100		06/15/18 15:33	127-18-4	
Toluene	13500	ug/L	100	26.0	100		06/15/18 15:33	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	100	33.0	100		06/15/18 15:33	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	100	35.0	100		06/15/18 15:33	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	100	48.0	100		06/15/18 15:33	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	100	29.0	100		06/15/18 15:33	79-00-5	
Trichloroethene	ND	ug/L	100	47.0	100		06/15/18 15:33	79-01-6	
Trichlorofluoromethane	ND	ug/L	100	20.0	100		06/15/18 15:33	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	100	41.0	100		06/15/18 15:33	96-18-4	
1,2,4-Trimethylbenzene	12800	ug/L	100	31.0	100		06/15/18 15:33	95-63-6	
1,3,5-Trimethylbenzene	4230	ug/L	100	36.0	100		06/15/18 15:33	108-67-8	
Vinyl acetate	ND	ug/L	200	35.0	100		06/15/18 15:33	108-05-4	
Vinyl chloride	ND	ug/L	100	62.0	100		06/15/18 15:33	75-01-4	
Xylene (Total)	31600	ug/L	100	100	100		06/15/18 15:33	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	101	%	70-130		100		06/15/18 15:33	460-00-4	
1,2-Dichloroethane-d4 (S)	102	%	70-130		100		06/15/18 15:33	17060-07-0	
Toluene-d8 (S)	100	%	70-130		100		06/15/18 15:33	2037-26-5	

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-54-SB-2 Lab ID: 92387844003 Collected: 06/07/18 17:45 Received: 06/08/18 15:18 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
MADEP EPH NC Water Analytical Method: MADEP EPH Preparation Method: MADEP EPH									
Aliphatic (C09-C18)	ND	ug/L	100	100	1	06/18/18 20:54	06/20/18 18:29		N2
Aliphatic (C19-C36)	ND	ug/L	100	100	1	06/18/18 20:54	06/20/18 18:29		N2
Aromatic (C11-C22)	361	ug/L	100	100	1	06/18/18 20:54	06/20/18 18:29		N2
Surrogates									
Nonatriacontane (S)	58	%	40-140		1	06/18/18 20:54	06/20/18 18:29	7194-86-7	
o-Terphenyl (S)	44	%	40-140		1	06/18/18 20:54	06/20/18 18:29	84-15-1	
2-Fluorobiphenyl (S)	62	%	40-140		1	06/18/18 20:54	06/20/18 18:29	321-60-8	
2-Bromonaphthalene (S)	66	%	40-140		1	06/18/18 20:54	06/20/18 18:29	580-13-2	
VPH NC Water Analytical Method: MADEP VPH									
Aliphatic (C05-C08)	1500	ug/L	250	250	5		06/11/18 18:45		N2
Aliphatic (C09-C12)	6830	ug/L	250	250	5		06/11/18 18:45		N2
Aromatic (C09-C10)	2290	ug/L	250	250	5		06/11/18 18:45		N2
Surrogates									
4-Bromofluorobenzene (FID) (S)	93	%	70-130		5		06/11/18 18:45	460-00-4	
4-Bromofluorobenzene (PID) (S)	92	%	70-130		5		06/11/18 18:45	460-00-4	
8270 MSSV RVE Semivol Organic Analytical Method: EPA 8270 Preparation Method: EPA 3510									
Acenaphthene	ND	ug/L	8.3	2.8	1	06/14/18 20:46	06/15/18 13:34	83-32-9	
Acenaphthylene	ND	ug/L	8.3	2.5	1	06/14/18 20:46	06/15/18 13:34	208-96-8	
Aniline	ND	ug/L	8.3	2.6	1	06/14/18 20:46	06/15/18 13:34	62-53-3	L2
Anthracene	ND	ug/L	8.3	1.7	1	06/14/18 20:46	06/15/18 13:34	120-12-7	
Benzo(a)anthracene	ND	ug/L	8.3	1.1	1	06/14/18 20:46	06/15/18 13:34	56-55-3	
Benzo(a)pyrene	ND	ug/L	8.3	1.1	1	06/14/18 20:46	06/15/18 13:34	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	8.3	1.2	1	06/14/18 20:46	06/15/18 13:34	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	8.3	1.5	1	06/14/18 20:46	06/15/18 13:34	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	8.3	1.5	1	06/14/18 20:46	06/15/18 13:34	207-08-9	
Benzoic Acid	ND	ug/L	41.7	14.4	1	06/14/18 20:46	06/15/18 13:34	65-85-0	
Benzyl alcohol	ND	ug/L	16.7	5.8	1	06/14/18 20:46	06/15/18 13:34	100-51-6	
4-Bromophenylphenyl ether	ND	ug/L	8.3	2.2	1	06/14/18 20:46	06/15/18 13:34	101-55-3	
Butylbenzylphthalate	ND	ug/L	8.3	1.1	1	06/14/18 20:46	06/15/18 13:34	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	16.7	3.8	1	06/14/18 20:46	06/15/18 13:34	59-50-7	
4-Chloroaniline	ND	ug/L	16.7	5.6	1	06/14/18 20:46	06/15/18 13:34	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/L	8.3	2.5	1	06/14/18 20:46	06/15/18 13:34	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	8.3	2.6	1	06/14/18 20:46	06/15/18 13:34	111-44-4	
2-Chloronaphthalene	ND	ug/L	8.3	2.5	1	06/14/18 20:46	06/15/18 13:34	91-58-7	
2-Chlorophenol	ND	ug/L	8.3	2.4	1	06/14/18 20:46	06/15/18 13:34	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	8.3	2.4	1	06/14/18 20:46	06/15/18 13:34	7005-72-3	
Chrysene	ND	ug/L	8.3	1.1	1	06/14/18 20:46	06/15/18 13:34	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	8.3	1.6	1	06/14/18 20:46	06/15/18 13:34	53-70-3	
Dibenzofuran	ND	ug/L	8.3	2.8	1	06/14/18 20:46	06/15/18 13:34	132-64-9	
1,2-Dichlorobenzene	ND	ug/L	8.3	2.7	1	06/14/18 20:46	06/15/18 13:34	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	8.3	2.7	1	06/14/18 20:46	06/15/18 13:34	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	8.3	2.1	1	06/14/18 20:46	06/15/18 13:34	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/L	16.7	2.3	1	06/14/18 20:46	06/15/18 13:34	91-94-1	
2,4-Dichlorophenol	ND	ug/L	8.3	2.3	1	06/14/18 20:46	06/15/18 13:34	120-83-2	

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-54-SB-2 Lab ID: 92387844003 Collected: 06/07/18 17:45 Received: 06/08/18 15:18 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
8270 MSSV RVE Semivol Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Surrogates									
2,4,6-Tribromophenol (S)	98	%	31-170		1	06/14/18 20:46	06/15/18 13:34	118-79-6	
8260 MSV Low Level	Analytical Method: EPA 8260								
Acetone	ND	ug/L	100	40.0	4		06/18/18 19:15	67-64-1	
Benzene	1.7J	ug/L	4.0	1.0	4		06/18/18 19:15	71-43-2	
Bromobenzene	ND	ug/L	4.0	1.2	4		06/18/18 19:15	108-86-1	
Bromochloromethane	ND	ug/L	4.0	0.68	4		06/18/18 19:15	74-97-5	
Bromodichloromethane	ND	ug/L	4.0	0.72	4		06/18/18 19:15	75-27-4	
Bromoform	ND	ug/L	4.0	1.0	4		06/18/18 19:15	75-25-2	
Bromomethane	ND	ug/L	8.0	1.2	4		06/18/18 19:15	74-83-9	
2-Butanone (MEK)	ND	ug/L	20.0	3.8	4		06/18/18 19:15	78-93-3	
n-Butylbenzene	23.0	ug/L	4.0	1.6	4		06/18/18 19:15	104-51-8	
sec-Butylbenzene	9.5	ug/L	4.0	1.5	4		06/18/18 19:15	135-98-8	
tert-Butylbenzene	ND	ug/L	4.0	1.6	4		06/18/18 19:15	98-06-6	
Carbon tetrachloride	ND	ug/L	4.0	1.0	4		06/18/18 19:15	56-23-5	
Chlorobenzene	ND	ug/L	4.0	0.92	4		06/18/18 19:15	108-90-7	
Chloroethane	ND	ug/L	4.0	2.2	4		06/18/18 19:15	75-00-3	
Chloroform	ND	ug/L	4.0	0.56	4		06/18/18 19:15	67-66-3	
Chloromethane	ND	ug/L	4.0	0.44	4		06/18/18 19:15	74-87-3	
2-Chlorotoluene	ND	ug/L	4.0	1.4	4		06/18/18 19:15	95-49-8	
4-Chlorotoluene	ND	ug/L	4.0	1.2	4		06/18/18 19:15	106-43-4	
Dibromochloromethane	ND	ug/L	4.0	0.84	4		06/18/18 19:15	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	4.0	1.1	4		06/18/18 19:15	106-93-4	
Dibromomethane	ND	ug/L	4.0	0.84	4		06/18/18 19:15	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	4.0	1.2	4		06/18/18 19:15	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	4.0	0.96	4		06/18/18 19:15	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	4.0	1.3	4		06/18/18 19:15	106-46-7	
Dichlorodifluoromethane	ND	ug/L	4.0	0.84	4		06/18/18 19:15	75-71-8	
1,1-Dichloroethane	ND	ug/L	4.0	1.3	4		06/18/18 19:15	75-34-3	
1,2-Dichloroethane	ND	ug/L	4.0	0.96	4		06/18/18 19:15	107-06-2	
1,1-Dichloroethene	ND	ug/L	4.0	2.2	4		06/18/18 19:15	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	4.0	0.76	4		06/18/18 19:15	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	4.0	2.0	4		06/18/18 19:15	156-60-5	
1,2-Dichloropropane	ND	ug/L	4.0	1.1	4		06/18/18 19:15	78-87-5	
1,3-Dichloropropane	ND	ug/L	4.0	1.1	4		06/18/18 19:15	142-28-9	
2,2-Dichloropropane	ND	ug/L	4.0	0.52	4		06/18/18 19:15	594-20-7	
1,1-Dichloropropene	ND	ug/L	4.0	2.0	4		06/18/18 19:15	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	4.0	0.52	4		06/18/18 19:15	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	4.0	1.0	4		06/18/18 19:15	10061-02-6	
Diisopropyl ether	ND	ug/L	4.0	0.48	4		06/18/18 19:15	108-20-3	
1,4-Dioxane (p-Dioxane)	ND	ug/L	600	313	4		06/18/18 19:15	123-91-1	
Ethylbenzene	303	ug/L	4.0	1.2	4		06/18/18 19:15	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	4.0	2.8	4		06/18/18 19:15	87-68-3	
2-Hexanone	ND	ug/L	20.0	1.8	4		06/18/18 19:15	591-78-6	
Isopropylbenzene (Cumene)	30.1	ug/L	4.0	1.6	4		06/18/18 19:15	98-82-8	

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ANALYTICAL RESULTS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Sample: P-54-SB-2 **Lab ID: 92387844003** Collected: 06/07/18 17:45 Received: 06/08/18 15:18 Matrix: Water

Parameters	Results	Units	Report			Prepared	Analyzed	CAS No.	Qual
			Limit	MDL	DF				
8260 MSV Low Level Analytical Method: EPA 8260									
p-Isopropyltoluene	ND	ug/L	4.0	1.2	4		06/18/18 19:15	99-87-6	
Methylene Chloride	ND	ug/L	8.0	3.9	4		06/18/18 19:15	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	20.0	1.3	4		06/18/18 19:15	108-10-1	
Methyl-tert-butyl ether	5.7	ug/L	4.0	0.84	4		06/18/18 19:15	1634-04-4	
Naphthalene	113	ug/L	4.0	0.96	4		06/18/18 19:15	91-20-3	
n-Propylbenzene	95.9	ug/L	4.0	1.7	4		06/18/18 19:15	103-65-1	
Styrene	ND	ug/L	4.0	1.0	4		06/18/18 19:15	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	4.0	1.3	4		06/18/18 19:15	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	4.0	1.6	4		06/18/18 19:15	79-34-5	
Tetrachloroethene	ND	ug/L	4.0	1.8	4		06/18/18 19:15	127-18-4	
Toluene	122	ug/L	4.0	1.0	4		06/18/18 19:15	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	4.0	1.3	4		06/18/18 19:15	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	4.0	1.4	4		06/18/18 19:15	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	4.0	1.9	4		06/18/18 19:15	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	4.0	1.2	4		06/18/18 19:15	79-00-5	
Trichloroethene	ND	ug/L	4.0	1.9	4		06/18/18 19:15	79-01-6	
Trichlorofluoromethane	ND	ug/L	4.0	0.80	4		06/18/18 19:15	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	4.0	1.6	4		06/18/18 19:15	96-18-4	
1,2,4-Trimethylbenzene	511	ug/L	4.0	1.2	4		06/18/18 19:15	95-63-6	
1,3,5-Trimethylbenzene	161	ug/L	4.0	1.4	4		06/18/18 19:15	108-67-8	
Vinyl acetate	ND	ug/L	8.0	1.4	4		06/18/18 19:15	108-05-4	
Vinyl chloride	ND	ug/L	4.0	2.5	4		06/18/18 19:15	75-01-4	
Xylene (Total)	1460	ug/L	4.0	4.0	4		06/18/18 19:15	1330-20-7	
Surrogates									
4-Bromofluorobenzene (S)	96	%	70-130		4		06/18/18 19:15	460-00-4	
1,2-Dichloroethane-d4 (S)	105	%	70-130		4		06/18/18 19:15	17060-07-0	
Toluene-d8 (S)	104	%	70-130		4		06/18/18 19:15	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

QC Batch: 414279 Analysis Method: MADEP VPH
 QC Batch Method: MADEP VPH Analysis Description: VPH NC Water
 Associated Lab Samples: 92387844001, 92387844002, 92387844003

METHOD BLANK: 2297276 Matrix: Water

Associated Lab Samples: 92387844001, 92387844002, 92387844003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aliphatic (C05-C08)	ug/L	ND	50.0	50.0	06/11/18 15:24	N2
Aliphatic (C09-C12)	ug/L	ND	50.0	50.0	06/11/18 15:24	N2
Aromatic (C09-C10)	ug/L	ND	50.0	50.0	06/11/18 15:24	N2
4-Bromofluorobenzene (FID) (S)	%	90	70-130		06/11/18 15:24	
4-Bromofluorobenzene (PID) (S)	%	88	70-130		06/11/18 15:24	

LABORATORY CONTROL SAMPLE & LCSD: 2297277 2297278

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Aliphatic (C05-C08)	ug/L	300	324	317	108	106	70-130	2	25	N2
Aliphatic (C09-C12)	ug/L	300	302	304	101	101	30-130	1	25	N2
Aromatic (C09-C10)	ug/L	100	104	102	104	102	70-130	2	25	N2
4-Bromofluorobenzene (FID) (S)	%				105	105	70-130			
4-Bromofluorobenzene (PID) (S)	%				104	104	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

QC Batch: 415295 Analysis Method: EPA 8260
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
 Associated Lab Samples: 92387844001

METHOD BLANK: 2303142 Matrix: Water

Associated Lab Samples: 92387844001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	0.33	06/14/18 23:23	
1,1,1-Trichloroethane	ug/L	ND	1.0	0.48	06/14/18 23:23	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	0.40	06/14/18 23:23	
1,1,2-Trichloroethane	ug/L	ND	1.0	0.29	06/14/18 23:23	
1,1-Dichloroethane	ug/L	ND	1.0	0.32	06/14/18 23:23	
1,1-Dichloroethene	ug/L	ND	1.0	0.56	06/14/18 23:23	
1,1-Dichloropropene	ug/L	ND	1.0	0.49	06/14/18 23:23	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	0.33	06/14/18 23:23	
1,2,3-Trichloropropane	ug/L	ND	1.0	0.41	06/14/18 23:23	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	0.35	06/14/18 23:23	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	0.31	06/14/18 23:23	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	0.27	06/14/18 23:23	
1,2-Dichlorobenzene	ug/L	ND	1.0	0.30	06/14/18 23:23	
1,2-Dichloroethane	ug/L	ND	1.0	0.24	06/14/18 23:23	
1,2-Dichloropropane	ug/L	ND	1.0	0.27	06/14/18 23:23	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	0.36	06/14/18 23:23	
1,3-Dichlorobenzene	ug/L	ND	1.0	0.24	06/14/18 23:23	
1,3-Dichloropropane	ug/L	ND	1.0	0.28	06/14/18 23:23	
1,4-Dichlorobenzene	ug/L	ND	1.0	0.33	06/14/18 23:23	
1,4-Dioxane (p-Dioxane)	ug/L	ND	150	78.4	06/14/18 23:23	
2,2-Dichloropropane	ug/L	ND	1.0	0.13	06/14/18 23:23	
2-Butanone (MEK)	ug/L	ND	5.0	0.96	06/14/18 23:23	
2-Chlorotoluene	ug/L	ND	1.0	0.35	06/14/18 23:23	
2-Hexanone	ug/L	ND	5.0	0.46	06/14/18 23:23	
4-Chlorotoluene	ug/L	ND	1.0	0.31	06/14/18 23:23	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	0.33	06/14/18 23:23	
Acetone	ug/L	ND	25.0	10.0	06/14/18 23:23	
Benzene	ug/L	ND	1.0	0.25	06/14/18 23:23	
Bromobenzene	ug/L	ND	1.0	0.30	06/14/18 23:23	
Bromochloromethane	ug/L	ND	1.0	0.17	06/14/18 23:23	
Bromodichloromethane	ug/L	ND	1.0	0.18	06/14/18 23:23	
Bromoform	ug/L	ND	1.0	0.26	06/14/18 23:23	
Bromomethane	ug/L	ND	2.0	0.29	06/14/18 23:23	
Carbon tetrachloride	ug/L	ND	1.0	0.25	06/14/18 23:23	
Chlorobenzene	ug/L	ND	1.0	0.23	06/14/18 23:23	
Chloroethane	ug/L	ND	1.0	0.54	06/14/18 23:23	
Chloroform	ug/L	ND	1.0	0.14	06/14/18 23:23	
Chloromethane	ug/L	0.14J	1.0	0.11	06/14/18 23:23	
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	06/14/18 23:23	
cis-1,3-Dichloropropene	ug/L	ND	1.0	0.13	06/14/18 23:23	
Dibromochloromethane	ug/L	ND	1.0	0.21	06/14/18 23:23	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

METHOD BLANK: 2303142

Matrix: Water

Associated Lab Samples: 92387844001

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dibromomethane	ug/L	ND	1.0	0.21	06/14/18 23:23	
Dichlorodifluoromethane	ug/L	ND	1.0	0.21	06/14/18 23:23	
Diisopropyl ether	ug/L	ND	1.0	0.12	06/14/18 23:23	
Ethylbenzene	ug/L	ND	1.0	0.30	06/14/18 23:23	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	0.71	06/14/18 23:23	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	0.40	06/14/18 23:23	
Methyl-tert-butyl ether	ug/L	ND	1.0	0.21	06/14/18 23:23	
Methylene Chloride	ug/L	ND	2.0	0.97	06/14/18 23:23	
n-Butylbenzene	ug/L	ND	1.0	0.41	06/14/18 23:23	
n-Propylbenzene	ug/L	ND	1.0	0.42	06/14/18 23:23	
Naphthalene	ug/L	ND	1.0	0.24	06/14/18 23:23	
p-Isopropyltoluene	ug/L	ND	1.0	0.31	06/14/18 23:23	
sec-Butylbenzene	ug/L	ND	1.0	0.38	06/14/18 23:23	
Styrene	ug/L	ND	1.0	0.26	06/14/18 23:23	
tert-Butylbenzene	ug/L	ND	1.0	0.40	06/14/18 23:23	
Tetrachloroethene	ug/L	ND	1.0	0.46	06/14/18 23:23	
Toluene	ug/L	ND	1.0	0.26	06/14/18 23:23	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	06/14/18 23:23	
trans-1,3-Dichloropropene	ug/L	ND	1.0	0.26	06/14/18 23:23	
Trichloroethene	ug/L	ND	1.0	0.47	06/14/18 23:23	
Trichlorofluoromethane	ug/L	ND	1.0	0.20	06/14/18 23:23	
Vinyl acetate	ug/L	ND	2.0	0.35	06/14/18 23:23	
Vinyl chloride	ug/L	ND	1.0	0.62	06/14/18 23:23	
Xylene (Total)	ug/L	ND	1.0	1.0	06/14/18 23:23	
1,2-Dichloroethane-d4 (S)	%	102	70-130		06/14/18 23:23	
4-Bromofluorobenzene (S)	%	102	70-130		06/14/18 23:23	
Toluene-d8 (S)	%	103	70-130		06/14/18 23:23	

LABORATORY CONTROL SAMPLE: 2303143

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	44.5	89	80-125	
1,1,1-Trichloroethane	ug/L	50	45.0	90	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	44.4	89	79-124	
1,1,2-Trichloroethane	ug/L	50	43.2	86	85-125	
1,1-Dichloroethane	ug/L	50	43.5	87	73-126	
1,1-Dichloroethene	ug/L	50	45.2	90	66-135	
1,1-Dichloropropene	ug/L	50	45.0	90	74-135	
1,2,3-Trichlorobenzene	ug/L	50	44.3	89	73-135	
1,2,3-Trichloropropane	ug/L	50	45.1	90	75-130	
1,2,4-Trichlorobenzene	ug/L	50	45.8	92	75-134	
1,2,4-Trimethylbenzene	ug/L	50	42.3	85	79-125	
1,2-Dibromoethane (EDB)	ug/L	50	45.4	91	83-124	
1,2-Dichlorobenzene	ug/L	50	43.3	87	80-133	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

LABORATORY CONTROL SAMPLE: 2303143

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	42.5	85	67-128	
1,2-Dichloropropane	ug/L	50	42.0	84	75-132	
1,3,5-Trimethylbenzene	ug/L	50	43.7	87	79-123	
1,3-Dichlorobenzene	ug/L	50	42.6	85	77-130	
1,3-Dichloropropane	ug/L	50	44.6	89	76-131	
1,4-Dichlorobenzene	ug/L	50	43.0	86	78-130	
1,4-Dioxane (p-Dioxane)	ug/L	1000	1020	102	71-125	
2,2-Dichloropropane	ug/L	50	50.2	100	40-160	
2-Butanone (MEK)	ug/L	100	91.8	92	61-144	
2-Chlorotoluene	ug/L	50	42.5	85	74-132	
2-Hexanone	ug/L	100	95.1	95	68-143	
4-Chlorotoluene	ug/L	50	43.1	86	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	91.9	92	72-135	
Acetone	ug/L	100	88.1	88	48-146	
Benzene	ug/L	50	42.5	85	80-125	
Bromobenzene	ug/L	50	43.6	87	75-125	
Bromochloromethane	ug/L	50	44.9	90	71-125	
Bromodichloromethane	ug/L	50	44.9	90	78-124	
Bromoform	ug/L	50	49.0	98	71-128	
Bromomethane	ug/L	50	41.6	83	40-160	
Carbon tetrachloride	ug/L	50	45.0	90	69-131	
Chlorobenzene	ug/L	50	42.9	86	81-122	
Chloroethane	ug/L	50	37.2	74	39-148	
Chloroform	ug/L	50	45.8	92	73-127	
Chloromethane	ug/L	50	38.9	78	44-146	
cis-1,2-Dichloroethene	ug/L	50	44.0	88	74-124	
cis-1,3-Dichloropropene	ug/L	50	45.3	91	72-132	
Dibromochloromethane	ug/L	50	46.9	94	78-125	
Dibromomethane	ug/L	50	43.1	86	82-120	
Dichlorodifluoromethane	ug/L	50	35.8	72	34-157	
Diisopropyl ether	ug/L	50	44.5	89	69-135	
Ethylbenzene	ug/L	50	42.8	86	79-121	
Hexachloro-1,3-butadiene	ug/L	50	46.7	93	72-131	
Isopropylbenzene (Cumene)	ug/L	50	44.8	90	81-132	
Methyl-tert-butyl ether	ug/L	50	44.2	88	74-131	
Methylene Chloride	ug/L	50	39.7	79	64-133	
n-Butylbenzene	ug/L	50	45.9	92	78-127	
n-Propylbenzene	ug/L	50	44.4	89	78-130	
Naphthalene	ug/L	50	45.4	91	73-133	
p-Isopropyltoluene	ug/L	50	44.5	89	80-131	
sec-Butylbenzene	ug/L	50	44.4	89	80-133	
Styrene	ug/L	50	44.3	89	84-126	
tert-Butylbenzene	ug/L	50	38.0	76	77-133 L2	
Tetrachloroethene	ug/L	50	44.2	88	78-122	
Toluene	ug/L	50	42.3	85	80-121	
trans-1,2-Dichloroethene	ug/L	50	44.3	89	71-127	
trans-1,3-Dichloropropene	ug/L	50	46.0	92	69-141	

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

LABORATORY CONTROL SAMPLE: 2303143

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	50	43.5	87	78-122	
Trichlorofluoromethane	ug/L	50	43.2	86	53-137	
Vinyl acetate	ug/L	100	101	101	40-160	
Vinyl chloride	ug/L	50	42.1	84	50-150	
Xylene (Total)	ug/L	150	133	89	81-126	
1,2-Dichloroethane-d4 (S)	%			102	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2303482 2303483

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92387799001 Result	Spike Conc.	Spike Conc.	MS Result								
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	19.0	19.3	95	96	70-130	2	30		
1,1,1-Trichloroethane	ug/L	ND	20	20	19.6	19.7	98	99	70-130	0	30		
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	18.5	18.7	93	94	70-130	1	30		
1,1,2-Trichloroethane	ug/L	ND	20	20	18.5	19.4	93	97	70-130	4	30		
1,1-Dichloroethane	ug/L	ND	20	20	19.1	19.3	95	97	70-130	1	30		
1,1-Dichloroethene	ug/L	ND	20	20	21.0	21.5	105	108	70-166	3	30		
1,1-Dichloropropene	ug/L	ND	20	20	20.0	20.3	100	101	70-130	2	30		
1,2,3-Trichlorobenzene	ug/L	ND	20	20	18.5	18.7	92	94	70-130	1	30		
1,2,3-Trichloropropane	ug/L	ND	20	20	18.6	19.1	93	95	70-130	3	30		
1,2,4-Trichlorobenzene	ug/L	ND	20	20	19.1	19.4	95	97	70-130	2	30		
1,2,4-Trimethylbenzene	ug/L	ND	20	20	19.0	19.2	95	96	70-130	1	30		
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	19.3	19.4	96	97	70-130	1	30		
1,2-Dichlorobenzene	ug/L	ND	20	20	18.8	19.0	94	95	70-130	1	30		
1,2-Dichloroethane	ug/L	ND	20	20	17.9	18.4	90	92	70-130	3	30		
1,2-Dichloropropane	ug/L	ND	20	20	19.2	18.9	96	94	70-130	2	30		
1,3,5-Trimethylbenzene	ug/L	ND	20	20	19.6	19.8	98	99	70-130	1	30		
1,3-Dichlorobenzene	ug/L	ND	20	20	18.7	18.8	93	94	70-130	1	30		
1,3-Dichloropropane	ug/L	ND	20	20	19.3	19.6	96	98	70-130	2	30		
1,4-Dichlorobenzene	ug/L	ND	20	20	19.0	19.0	95	95	70-130	0	30		
1,4-Dioxane (p-Dioxane)	ug/L	ND	400	400	398	413	100	103	70-130	4	30		
2,2-Dichloropropane	ug/L	ND	20	20	22.6	22.7	113	113	70-130	0	30		
2-Butanone (MEK)	ug/L	ND	40	40	40.0	43.0	100	107	70-130	7	30		
2-Chlorotoluene	ug/L	ND	20	20	19.2	19.1	96	95	70-130	1	30		
2-Hexanone	ug/L	ND	40	40	39.0	40.3	98	101	70-130	3	30		
4-Chlorotoluene	ug/L	ND	20	20	19.3	19.5	96	97	70-130	1	30		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	40	38.6	39.9	96	100	70-130	3	30		
Acetone	ug/L	ND	40	40	41.1	47.1	56	72	70-130	14	30	M1	
Benzene	ug/L	ND	20	20	19.6	20.0	98	100	70-148	2	30		
Bromobenzene	ug/L	ND	20	20	19.3	19.2	97	96	70-130	1	30		
Bromochloromethane	ug/L	ND	20	20	19.5	19.2	98	96	70-130	1	30		
Bromodichloromethane	ug/L	ND	20	20	19.3	19.8	96	99	70-130	3	30		

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Parameter	Units	2303482		2303483		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		92387799001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result							
Bromoform	ug/L	ND	20	20	19.2	19.5	96	97	70-130	1	30	
Bromomethane	ug/L	ND	20	20	18.6	19.1	93	96	70-130	3	30	
Carbon tetrachloride	ug/L	ND	20	20	20.8	21.3	104	107	70-130	2	30	
Chlorobenzene	ug/L	ND	20	20	19.0	19.2	95	96	70-146	1	30	
Chloroethane	ug/L	ND	20	20	18.7	18.8	93	94	70-130	1	30	
Chloroform	ug/L	ND	20	20	18.7	19.0	94	95	70-130	1	30	
Chloromethane	ug/L	ND	20	20	18.4	19.4	92	97	70-130	5	30	
cis-1,2-Dichloroethene	ug/L	ND	20	20	19.8	20.2	99	101	70-130	2	30	
cis-1,3-Dichloropropene	ug/L	ND	20	20	19.9	20.1	99	101	70-130	1	30	
Dibromochloromethane	ug/L	ND	20	20	19.0	19.4	95	97	70-130	2	30	
Dibromomethane	ug/L	ND	20	20	19.0	19.8	95	99	70-130	4	30	
Dichlorodifluoromethane	ug/L	ND	20	20	22.3	22.8	112	114	70-130	2	30	
Diisopropyl ether	ug/L	ND	20	20	19.1	19.2	95	96	70-130	1	30	
Ethylbenzene	ug/L	ND	20	20	19.3	19.5	96	98	70-130	1	30	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	20.0	19.8	100	99	70-130	1	30	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	19.9	20.0	100	100	70-130	0	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	18.3	18.9	92	95	70-130	3	30	
Methylene Chloride	ug/L	ND	20	20	11.2	11.2	56	56	70-130	0	30	M1
n-Butylbenzene	ug/L	ND	20	20	20.0	20.0	100	100	70-130	0	30	
n-Propylbenzene	ug/L	ND	20	20	20.2	20.0	101	100	70-130	1	30	
Naphthalene	ug/L	ND	20	20	18.8	19.0	94	95	70-130	1	30	
p-Isopropyltoluene	ug/L	ND	20	20	19.7	19.6	98	98	70-130	0	30	
sec-Butylbenzene	ug/L	ND	20	20	20.0	19.9	100	100	70-130	1	30	
Styrene	ug/L	ND	20	20	19.3	19.4	96	97	70-130	1	30	
tert-Butylbenzene	ug/L	ND	20	20	17.1	16.7	85	84	70-130	2	30	
Tetrachloroethene	ug/L	ND	20	20	20.5	20.2	102	101	70-130	1	30	
Toluene	ug/L	ND	20	20	19.3	19.6	96	98	70-155	1	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	20.2	20.0	101	100	70-130	1	30	
trans-1,3-Dichloropropene	ug/L	ND	20	20	19.5	20.1	97	100	70-130	3	30	
Trichloroethene	ug/L	ND	20	20	19.5	19.6	97	98	69-151	1	30	
Trichlorofluoromethane	ug/L	ND	20	20	21.4	21.1	107	106	70-130	1	30	
Vinyl acetate	ug/L	ND	40	40	42.1	42.5	105	106	70-130	1	30	
Vinyl chloride	ug/L	ND	20	20	20.8	20.6	104	103	70-130	1	30	
Xylene (Total)	ug/L	ND	60	60	59.0	59.2	98	99	70-130	0	30	
1,2-Dichloroethane-d4 (S)	%						96	99	70-130			
4-Bromofluorobenzene (S)	%						99	101	70-130			
Toluene-d8 (S)	%						99	101	70-130			

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

QC Batch: 415385

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92387844002

METHOD BLANK: 2303519

Matrix: Water

Associated Lab Samples: 92387844002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	0.33	06/15/18 12:01	
1,1,1-Trichloroethane	ug/L	ND	1.0	0.48	06/15/18 12:01	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	0.40	06/15/18 12:01	
1,1,2-Trichloroethane	ug/L	ND	1.0	0.29	06/15/18 12:01	
1,1-Dichloroethane	ug/L	ND	1.0	0.32	06/15/18 12:01	
1,1-Dichloroethene	ug/L	ND	1.0	0.56	06/15/18 12:01	
1,1-Dichloropropene	ug/L	ND	1.0	0.49	06/15/18 12:01	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	0.33	06/15/18 12:01	
1,2,3-Trichloropropane	ug/L	ND	1.0	0.41	06/15/18 12:01	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	0.35	06/15/18 12:01	
1,2,4-Trimethylbenzene	ug/L	ND	1.0	0.31	06/15/18 12:01	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	0.27	06/15/18 12:01	
1,2-Dichlorobenzene	ug/L	ND	1.0	0.30	06/15/18 12:01	
1,2-Dichloroethane	ug/L	ND	1.0	0.24	06/15/18 12:01	
1,2-Dichloropropane	ug/L	ND	1.0	0.27	06/15/18 12:01	
1,3,5-Trimethylbenzene	ug/L	ND	1.0	0.36	06/15/18 12:01	
1,3-Dichlorobenzene	ug/L	ND	1.0	0.24	06/15/18 12:01	
1,3-Dichloropropane	ug/L	ND	1.0	0.28	06/15/18 12:01	
1,4-Dichlorobenzene	ug/L	ND	1.0	0.33	06/15/18 12:01	
1,4-Dioxane (p-Dioxane)	ug/L	ND	150	78.4	06/15/18 12:01	
2,2-Dichloropropane	ug/L	ND	1.0	0.13	06/15/18 12:01	
2-Butanone (MEK)	ug/L	ND	5.0	0.96	06/15/18 12:01	
2-Chlorotoluene	ug/L	ND	1.0	0.35	06/15/18 12:01	
2-Hexanone	ug/L	ND	5.0	0.46	06/15/18 12:01	
4-Chlorotoluene	ug/L	ND	1.0	0.31	06/15/18 12:01	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	0.33	06/15/18 12:01	
Acetone	ug/L	ND	25.0	10.0	06/15/18 12:01	
Benzene	ug/L	ND	1.0	0.25	06/15/18 12:01	
Bromobenzene	ug/L	ND	1.0	0.30	06/15/18 12:01	
Bromochloromethane	ug/L	ND	1.0	0.17	06/15/18 12:01	
Bromodichloromethane	ug/L	ND	1.0	0.18	06/15/18 12:01	
Bromoform	ug/L	ND	1.0	0.26	06/15/18 12:01	
Bromomethane	ug/L	ND	2.0	0.29	06/15/18 12:01	
Carbon tetrachloride	ug/L	ND	1.0	0.25	06/15/18 12:01	
Chlorobenzene	ug/L	ND	1.0	0.23	06/15/18 12:01	
Chloroethane	ug/L	ND	1.0	0.54	06/15/18 12:01	
Chloroform	ug/L	ND	1.0	0.14	06/15/18 12:01	
Chloromethane	ug/L	ND	1.0	0.11	06/15/18 12:01	
cis-1,2-Dichloroethene	ug/L	ND	1.0	0.19	06/15/18 12:01	
cis-1,3-Dichloropropene	ug/L	ND	1.0	0.13	06/15/18 12:01	
Dibromochloromethane	ug/L	ND	1.0	0.21	06/15/18 12:01	

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

METHOD BLANK: 2303519

Matrix: Water

Associated Lab Samples: 92387844002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Dibromomethane	ug/L	ND	1.0	0.21	06/15/18 12:01	
Dichlorodifluoromethane	ug/L	ND	1.0	0.21	06/15/18 12:01	
Diisopropyl ether	ug/L	ND	1.0	0.12	06/15/18 12:01	
Ethylbenzene	ug/L	ND	1.0	0.30	06/15/18 12:01	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	0.71	06/15/18 12:01	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	0.40	06/15/18 12:01	
Methyl-tert-butyl ether	ug/L	ND	1.0	0.21	06/15/18 12:01	
Methylene Chloride	ug/L	ND	2.0	0.97	06/15/18 12:01	
n-Butylbenzene	ug/L	ND	1.0	0.41	06/15/18 12:01	
n-Propylbenzene	ug/L	ND	1.0	0.42	06/15/18 12:01	
Naphthalene	ug/L	ND	1.0	0.24	06/15/18 12:01	
p-Isopropyltoluene	ug/L	ND	1.0	0.31	06/15/18 12:01	
sec-Butylbenzene	ug/L	ND	1.0	0.38	06/15/18 12:01	
Styrene	ug/L	ND	1.0	0.26	06/15/18 12:01	
tert-Butylbenzene	ug/L	ND	1.0	0.40	06/15/18 12:01	
Tetrachloroethene	ug/L	ND	1.0	0.46	06/15/18 12:01	
Toluene	ug/L	ND	1.0	0.26	06/15/18 12:01	
trans-1,2-Dichloroethene	ug/L	ND	1.0	0.49	06/15/18 12:01	
trans-1,3-Dichloropropene	ug/L	ND	1.0	0.26	06/15/18 12:01	
Trichloroethene	ug/L	ND	1.0	0.47	06/15/18 12:01	
Trichlorofluoromethane	ug/L	ND	1.0	0.20	06/15/18 12:01	
Vinyl acetate	ug/L	ND	2.0	0.35	06/15/18 12:01	
Vinyl chloride	ug/L	ND	1.0	0.62	06/15/18 12:01	
Xylene (Total)	ug/L	ND	1.0	1.0	06/15/18 12:01	
1,2-Dichloroethane-d4 (S)	%	103	70-130		06/15/18 12:01	
4-Bromofluorobenzene (S)	%	98	70-130		06/15/18 12:01	
Toluene-d8 (S)	%	100	70-130		06/15/18 12:01	

LABORATORY CONTROL SAMPLE: 2303520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	47.4	95	80-125	
1,1,1-Trichloroethane	ug/L	50	47.7	95	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	46.2	92	79-124	
1,1,2-Trichloroethane	ug/L	50	44.9	90	85-125	
1,1-Dichloroethane	ug/L	50	47.9	96	73-126	
1,1-Dichloroethene	ug/L	50	48.4	97	66-135	
1,1-Dichloropropene	ug/L	50	46.8	94	74-135	
1,2,3-Trichlorobenzene	ug/L	50	47.9	96	73-135	
1,2,3-Trichloropropane	ug/L	50	45.0	90	75-130	
1,2,4-Trichlorobenzene	ug/L	50	48.6	97	75-134	
1,2,4-Trimethylbenzene	ug/L	50	44.5	89	79-125	
1,2-Dibromoethane (EDB)	ug/L	50	47.8	96	83-124	
1,2-Dichlorobenzene	ug/L	50	46.0	92	80-133	

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

LABORATORY CONTROL SAMPLE: 2303520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	44.9	90	67-128	
1,2-Dichloropropane	ug/L	50	44.7	89	75-132	
1,3,5-Trimethylbenzene	ug/L	50	46.4	93	79-123	
1,3-Dichlorobenzene	ug/L	50	45.0	90	77-130	
1,3-Dichloropropane	ug/L	50	46.9	94	76-131	
1,4-Dichlorobenzene	ug/L	50	45.6	91	78-130	
1,4-Dioxane (p-Dioxane)	ug/L	1000	1020	102	71-125	
2,2-Dichloropropane	ug/L	50	55.2	110	40-160	
2-Butanone (MEK)	ug/L	100	95.3	95	61-144	
2-Chlorotoluene	ug/L	50	43.9	88	74-132	
2-Hexanone	ug/L	100	98.7	99	68-143	
4-Chlorotoluene	ug/L	50	45.3	91	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	93.8	94	72-135	
Acetone	ug/L	100	94.4	94	48-146	
Benzene	ug/L	50	44.9	90	80-125	
Bromobenzene	ug/L	50	46.0	92	75-125	
Bromochloromethane	ug/L	50	48.8	98	71-125	
Bromodichloromethane	ug/L	50	47.9	96	78-124	
Bromoform	ug/L	50	51.2	102	71-128	
Bromomethane	ug/L	50	39.1	78	40-160	
Carbon tetrachloride	ug/L	50	47.9	96	69-131	
Chlorobenzene	ug/L	50	45.2	90	81-122	
Chloroethane	ug/L	50	41.9	84	39-148	
Chloroform	ug/L	50	48.2	96	73-127	
Chloromethane	ug/L	50	44.9	90	44-146	
cis-1,2-Dichloroethene	ug/L	50	49.2	98	74-124	
cis-1,3-Dichloropropene	ug/L	50	48.6	97	72-132	
Dibromochloromethane	ug/L	50	49.4	99	78-125	
Dibromomethane	ug/L	50	46.0	92	82-120	
Dichlorodifluoromethane	ug/L	50	51.4	103	34-157	
Diisopropyl ether	ug/L	50	50.3	101	69-135	
Ethylbenzene	ug/L	50	45.4	91	79-121	
Hexachloro-1,3-butadiene	ug/L	50	49.6	99	72-131	
Isopropylbenzene (Cumene)	ug/L	50	47.3	95	81-132	
Methyl-tert-butyl ether	ug/L	50	47.3	95	74-131	
Methylene Chloride	ug/L	50	42.6	85	64-133	
n-Butylbenzene	ug/L	50	48.7	97	78-127	
n-Propylbenzene	ug/L	50	46.7	93	78-130	
Naphthalene	ug/L	50	48.0	96	73-133	
p-Isopropyltoluene	ug/L	50	46.6	93	80-131	
sec-Butylbenzene	ug/L	50	46.9	94	80-133	
Styrene	ug/L	50	46.7	93	84-126	
tert-Butylbenzene	ug/L	50	39.8	80	77-133	
Tetrachloroethene	ug/L	50	46.9	94	78-122	
Toluene	ug/L	50	44.7	89	80-121	
trans-1,2-Dichloroethene	ug/L	50	48.2	96	71-127	
trans-1,3-Dichloropropene	ug/L	50	49.0	98	69-141	

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

LABORATORY CONTROL SAMPLE: 2303520

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/L	50	45.8	92	78-122	
Trichlorofluoromethane	ug/L	50	48.5	97	53-137	
Vinyl acetate	ug/L	100	113	113	40-160	
Vinyl chloride	ug/L	50	49.4	99	50-150	
Xylene (Total)	ug/L	150	139	93	81-126	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			102	70-130	
Toluene-d8 (S)	%			99	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2303521 2303522

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual	
		92387546049 Result	Spike Conc.	Spike Conc.	MS Result							MSD Result
1,1,1,2-Tetrachloroethane	ug/L	ND	500	500	480	498	96	100	70-130	4	30	
1,1,1-Trichloroethane	ug/L	ND	500	500	524	524	105	105	70-130	0	30	
1,1,1,2,2-Tetrachloroethane	ug/L	ND	500	500	470	461	94	92	70-130	2	30	
1,1,2-Trichloroethane	ug/L	ND	500	500	472	478	94	96	70-130	1	30	
1,1-Dichloroethane	ug/L	ND	500	500	519	532	104	106	70-130	2	30	
1,1-Dichloroethene	ug/L	ND	500	500	567	562	113	112	70-166	1	30	
1,1-Dichloropropene	ug/L	ND	500	500	535	537	107	107	70-130	0	30	
1,2,3-Trichlorobenzene	ug/L	ND	500	500	482	509	96	102	70-130	5	30	
1,2,3-Trichloropropane	ug/L	ND	500	500	467	442	93	88	70-130	5	30	
1,2,4-Trichlorobenzene	ug/L	ND	500	500	491	520	98	104	70-130	6	30	
1,2,4-Trimethylbenzene	ug/L	ND	500	500	491	506	98	101	70-130	3	30	
1,2-Dibromoethane (EDB)	ug/L	ND	500	500	497	484	99	97	70-130	3	30	
1,2-Dichlorobenzene	ug/L	ND	500	500	479	502	96	100	70-130	5	30	
1,2-Dichloroethane	ug/L	ND	500	500	487	494	95	97	70-130	1	30	
1,2-Dichloropropane	ug/L	ND	500	500	494	494	99	99	70-130	0	30	
1,3,5-Trimethylbenzene	ug/L	ND	500	500	505	534	101	107	70-130	6	30	
1,3-Dichlorobenzene	ug/L	ND	500	500	473	500	95	100	70-130	6	30	
1,3-Dichloropropane	ug/L	ND	500	500	496	490	99	98	70-130	1	30	
1,4-Dichlorobenzene	ug/L	ND	500	500	487	504	97	101	70-130	4	30	
1,4-Dioxane (p-Dioxane)	ug/L	ND	10000	10000	10400	10700	104	107	70-130	3	30	
2,2-Dichloropropane	ug/L	ND	500	500	588	572	118	114	70-130	3	30	
2-Butanone (MEK)	ug/L	ND	1000	1000	991	980	99	98	70-130	1	30	
2-Chlorotoluene	ug/L	ND	500	500	481	506	96	101	70-130	5	30	
2-Hexanone	ug/L	ND	1000	1000	998	1020	100	102	70-130	3	30	
4-Chlorotoluene	ug/L	ND	500	500	492	520	98	104	70-130	6	30	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	1000	1000	1060	966	106	97	70-130	9	30	
Acetone	ug/L	ND	1000	1000	873	846	87	85	70-130	3	30	
Benzene	ug/L	ND	500	500	524	526	100	101	70-148	0	30	
Bromobenzene	ug/L	ND	500	500	488	515	98	103	70-130	6	30	
Bromochloromethane	ug/L	ND	500	500	513	508	103	102	70-130	1	30	
Bromodichloromethane	ug/L	ND	500	500	488	507	98	101	70-130	4	30	

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Parameter	Units	2303521		2303522		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	Max RPD	RPD	Qual
		92387546049 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Bromoform	ug/L	ND	500	500	469	469	94	94	70-130	0	30		
Bromomethane	ug/L	ND	500	500	347	377	69	75	70-130	8	30	M1	
Carbon tetrachloride	ug/L	ND	500	500	524	542	105	108	70-130	3	30		
Chlorobenzene	ug/L	ND	500	500	490	497	98	99	70-146	1	30		
Chloroethane	ug/L	ND	500	500	497	497	99	99	70-130	0	30		
Chloroform	ug/L	57.8	500	500	547	553	98	99	70-130	1	30		
Chloromethane	ug/L	ND	500	500	417	433	83	87	70-130	4	30		
cis-1,2-Dichloroethene	ug/L	ND	500	500	535	515	107	103	70-130	4	30		
cis-1,3-Dichloropropene	ug/L	ND	500	500	500	514	100	103	70-130	3	30		
Dibromochloromethane	ug/L	ND	500	500	483	469	97	94	70-130	3	30		
Dibromomethane	ug/L	ND	500	500	487	493	97	99	70-130	1	30		
Dichlorodifluoromethane	ug/L	ND	500	500	601	608	120	122	70-130	1	30		
Diisopropyl ether	ug/L	48.8	500	500	560	587	102	108	70-130	5	30		
Ethylbenzene	ug/L	ND	500	500	504	507	101	101	70-130	1	30		
Hexachloro-1,3-butadiene	ug/L	ND	500	500	521	540	104	108	70-130	3	30		
Isopropylbenzene (Cumene)	ug/L	ND	500	500	520	509	104	102	70-130	2	30		
Methyl-tert-butyl ether	ug/L	4040	500	500	4450	4490	83	90	70-130	1	30		
Methylene Chloride	ug/L	ND	500	500	359	370	72	74	70-130	3	30		
n-Butylbenzene	ug/L	ND	500	500	514	543	103	109	70-130	6	30		
n-Propylbenzene	ug/L	ND	500	500	513	537	103	107	70-130	5	30		
Naphthalene	ug/L	ND	500	500	477	501	95	100	70-130	5	30		
p-Isopropyltoluene	ug/L	ND	500	500	502	530	100	106	70-130	5	30		
sec-Butylbenzene	ug/L	ND	500	500	508	536	102	107	70-130	5	30		
Styrene	ug/L	ND	500	500	496	488	99	98	70-130	2	30		
tert-Butylbenzene	ug/L	ND	500	500	430	455	86	91	70-130	5	30		
Tetrachloroethene	ug/L	ND	500	500	527	507	105	101	70-130	4	30		
Toluene	ug/L	ND	500	500	506	506	101	101	70-155	0	30		
trans-1,2-Dichloroethene	ug/L	ND	500	500	536	545	107	109	70-130	2	30		
trans-1,3-Dichloropropene	ug/L	ND	500	500	500	498	100	100	70-130	1	30		
Trichloroethene	ug/L	ND	500	500	506	507	101	101	69-151	0	30		
Trichlorofluoromethane	ug/L	ND	500	500	572	582	114	116	70-130	2	30		
Vinyl acetate	ug/L	ND	1000	1000	1160	1160	116	116	70-130	0	30		
Vinyl chloride	ug/L	ND	500	500	548	555	110	111	70-130	1	30		
Xylene (Total)	ug/L	ND	1500	1500	1540	1540	102	103	70-130	0	30		
1,2-Dichloroethane-d4 (S)	%						100	97	70-130				
4-Bromofluorobenzene (S)	%						100	97	70-130				
Toluene-d8 (S)	%						100	100	70-130				

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

QC Batch: 415620 Analysis Method: EPA 8260
 QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
 Associated Lab Samples: 92387844003

METHOD BLANK: 2304743 Matrix: Water

Associated Lab Samples: 92387844003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2-Dichloroethane	ug/L	ND	1.0	0.24	06/18/18 12:18	
Benzene	ug/L	ND	1.0	0.25	06/18/18 12:18	
Ethylbenzene	ug/L	ND	1.0	0.30	06/18/18 12:18	
Methyl-tert-butyl ether	ug/L	ND	1.0	0.21	06/18/18 12:18	
Naphthalene	ug/L	ND	1.0	0.24	06/18/18 12:18	
Toluene	ug/L	ND	1.0	0.26	06/18/18 12:18	
Xylene (Total)	ug/L	ND	1.0	1.0	06/18/18 12:18	
1,2-Dichloroethane-d4 (S)	%	104	70-130		06/18/18 12:18	
4-Bromofluorobenzene (S)	%	98	70-130		06/18/18 12:18	
Toluene-d8 (S)	%	98	70-130		06/18/18 12:18	

LABORATORY CONTROL SAMPLE: 2304744

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/L	50	43.5	87	67-128	
Benzene	ug/L	50	44.8	90	80-125	
Ethylbenzene	ug/L	50	44.3	89	79-121	
Methyl-tert-butyl ether	ug/L	50	43.3	87	74-131	
Naphthalene	ug/L	50	46.6	93	73-133	
Toluene	ug/L	50	43.8	88	80-121	
Xylene (Total)	ug/L	150	136	91	81-126	
1,2-Dichloroethane-d4 (S)	%			101	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			100	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2304745 2304746

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		92387695003 Result	Spike Conc.	Spike Conc.	MS Result						
1,2-Dichloroethane	ug/L	ND	1000	1000	956	947	96	95	70-130	1	30
Benzene	ug/L	337	1000	1000	1320	1310	98	97	70-148	1	30
Ethylbenzene	ug/L	544	1000	1000	1530	1570	99	102	70-130	2	30
Methyl-tert-butyl ether	ug/L	ND	1000	1000	989	995	99	100	70-130	1	30
Naphthalene	ug/L	226	1000	1000	1260	1290	103	106	70-130	2	30
Toluene	ug/L	6200	1000	1000	7460	7550	126	135	70-155	1	30
Xylene (Total)	ug/L	3750	3000	3000	7050	7020	110	109	70-130	0	30
1,2-Dichloroethane-d4 (S)	%						104	103	70-130		
4-Bromofluorobenzene (S)	%						103	99	70-130		

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Parameter	Units	2304745		2304746		MS % Rec	MSD % Rec	% Rec Limits	Max RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result					
Toluene-d8 (S)	%	92387695003				101	99	70-130		

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

QC Batch: 415300

Analysis Method: EPA 8270

QC Batch Method: EPA 3510

Analysis Description: 8270 Water MSSV RVE

Associated Lab Samples: 92387844001, 92387844002, 92387844003

METHOD BLANK: 2303164

Matrix: Water

Associated Lab Samples: 92387844001, 92387844002, 92387844003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	10.0	2.6	06/15/18 11:58	
1,2-Dichlorobenzene	ug/L	ND	10.0	3.2	06/15/18 11:58	
1,3-Dichlorobenzene	ug/L	ND	10.0	3.2	06/15/18 11:58	
1,4-Dichlorobenzene	ug/L	5.0J	10.0	2.6	06/15/18 11:58	
1-Methylnaphthalene	ug/L	ND	10.0	2.8	06/15/18 11:58	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	10.0	2.5	06/15/18 11:58	
2,4,5-Trichlorophenol	ug/L	ND	10.0	2.3	06/15/18 11:58	
2,4,6-Trichlorophenol	ug/L	ND	10.0	2.8	06/15/18 11:58	
2,4-Dichlorophenol	ug/L	ND	10.0	2.7	06/15/18 11:58	
2,4-Dimethylphenol	ug/L	ND	10.0	1.9	06/15/18 11:58	
2,4-Dinitrophenol	ug/L	ND	50.0	10.1	06/15/18 11:58	
2,4-Dinitrotoluene	ug/L	ND	10.0	2.4	06/15/18 11:58	
2,6-Dinitrotoluene	ug/L	ND	10.0	2.9	06/15/18 11:58	
2-Chloronaphthalene	ug/L	ND	10.0	2.9	06/15/18 11:58	
2-Chlorophenol	ug/L	ND	10.0	2.9	06/15/18 11:58	
2-Methylnaphthalene	ug/L	ND	10.0	2.8	06/15/18 11:58	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	3.6	06/15/18 11:58	
2-Nitroaniline	ug/L	ND	50.0	5.5	06/15/18 11:58	
2-Nitrophenol	ug/L	ND	10.0	2.6	06/15/18 11:58	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	2.4	06/15/18 11:58	
3,3'-Dichlorobenzidine	ug/L	ND	20.0	2.8	06/15/18 11:58	
3-Nitroaniline	ug/L	ND	50.0	5.0	06/15/18 11:58	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	4.4	06/15/18 11:58	
4-Bromophenylphenyl ether	ug/L	ND	10.0	2.7	06/15/18 11:58	
4-Chloro-3-methylphenol	ug/L	ND	20.0	4.6	06/15/18 11:58	
4-Chloroaniline	ug/L	ND	20.0	6.8	06/15/18 11:58	
4-Chlorophenylphenyl ether	ug/L	ND	10.0	2.9	06/15/18 11:58	
4-Nitroaniline	ug/L	ND	20.0	3.6	06/15/18 11:58	
4-Nitrophenol	ug/L	ND	50.0	7.8	06/15/18 11:58	
Acenaphthene	ug/L	ND	10.0	3.4	06/15/18 11:58	
Acenaphthylene	ug/L	ND	10.0	3.0	06/15/18 11:58	
Aniline	ug/L	ND	10.0	3.1	06/15/18 11:58	
Anthracene	ug/L	ND	10.0	2.0	06/15/18 11:58	
Benzo(a)anthracene	ug/L	ND	10.0	1.3	06/15/18 11:58	
Benzo(a)pyrene	ug/L	ND	10.0	1.3	06/15/18 11:58	
Benzo(b)fluoranthene	ug/L	ND	10.0	1.5	06/15/18 11:58	
Benzo(g,h,i)perylene	ug/L	ND	10.0	1.8	06/15/18 11:58	
Benzo(k)fluoranthene	ug/L	ND	10.0	1.8	06/15/18 11:58	
Benzoic Acid	ug/L	ND	50.0	17.3	06/15/18 11:58	
Benzyl alcohol	ug/L	ND	20.0	7.0	06/15/18 11:58	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	3.0	06/15/18 11:58	

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

METHOD BLANK: 2303164

Matrix: Water

Associated Lab Samples: 92387844001, 92387844002, 92387844003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
bis(2-Chloroethyl) ether	ug/L	ND	10.0	3.1	06/15/18 11:58	
bis(2-Ethylhexyl)phthalate	ug/L	ND	6.0	1.4	06/15/18 11:58	
Butylbenzylphthalate	ug/L	ND	10.0	1.3	06/15/18 11:58	
Chrysene	ug/L	ND	10.0	1.3	06/15/18 11:58	
Di-n-butylphthalate	ug/L	ND	10.0	1.2	06/15/18 11:58	
Di-n-octylphthalate	ug/L	ND	10.0	1.2	06/15/18 11:58	
Dibenz(a,h)anthracene	ug/L	ND	10.0	1.9	06/15/18 11:58	
Dibenzofuran	ug/L	ND	10.0	3.4	06/15/18 11:58	
Diethylphthalate	ug/L	ND	10.0	2.0	06/15/18 11:58	
Dimethylphthalate	ug/L	ND	10.0	2.3	06/15/18 11:58	
Fluoranthene	ug/L	ND	10.0	1.7	06/15/18 11:58	
Fluorene	ug/L	ND	10.0	3.0	06/15/18 11:58	
Hexachloro-1,3-butadiene	ug/L	3.5J	10.0	3.1	06/15/18 11:58	
Hexachlorobenzene	ug/L	ND	10.0	2.5	06/15/18 11:58	
Hexachlorocyclopentadiene	ug/L	ND	10.0	3.4	06/15/18 11:58	
Hexachloroethane	ug/L	ND	10.0	4.0	06/15/18 11:58	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	1.7	06/15/18 11:58	
Isophorone	ug/L	ND	10.0	2.7	06/15/18 11:58	
N-Nitroso-di-n-propylamine	ug/L	ND	10.0	2.6	06/15/18 11:58	
N-Nitrosodimethylamine	ug/L	ND	10.0	2.8	06/15/18 11:58	
N-Nitrosodiphenylamine	ug/L	ND	10.0	2.0	06/15/18 11:58	
Naphthalene	ug/L	ND	10.0	3.2	06/15/18 11:58	
Nitrobenzene	ug/L	ND	10.0	3.4	06/15/18 11:58	
Pentachlorophenol	ug/L	ND	25.0	3.1	06/15/18 11:58	
Phenanthrene	ug/L	ND	10.0	2.4	06/15/18 11:58	
Phenol	ug/L	ND	10.0	2.7	06/15/18 11:58	
Pyrene	ug/L	ND	10.0	1.2	06/15/18 11:58	
2,4,6-Tribromophenol (S)	%	34	31-170		06/15/18 11:58	
2-Fluorobiphenyl (S)	%	98	45-139		06/15/18 11:58	
2-Fluorophenol (S)	%	16	13-118		06/15/18 11:58	
Nitrobenzene-d5 (S)	%	87	40-121		06/15/18 11:58	
Phenol-d6 (S)	%	22	18-105		06/15/18 11:58	
Terphenyl-d14 (S)	%	74	48-146		06/15/18 11:58	

LABORATORY CONTROL SAMPLE & LCSD: 2303165

2303166

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	29.3	31.8	59	64	31-120	8	30	
1,2-Dichlorobenzene	ug/L	50	28.7	31.6	57	63	38-120	10	30	
1,3-Dichlorobenzene	ug/L	50	27.9	30.0	56	60	30-122	7	30	
1,4-Dichlorobenzene	ug/L	50	30.5	33.4	61	67	37-120	9	30	
1-Methylnaphthalene	ug/L	50	34.2	37.3	68	75	34-113	9	30	
2,2'-Oxybis(1-chloropropane)	ug/L	50	21.4	23.2	43	46	18-120	8	30	
2,4,5-Trichlorophenol	ug/L	50	35.9	39.9	72	80	43-113	10	30	

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

LABORATORY CONTROL SAMPLE & LCSD: 2303165		2303166								
Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4,6-Trichlorophenol	ug/L	50	34.9	38.4	70	77	42-120	9	30	
2,4-Dichlorophenol	ug/L	50	39.3	42.5	79	85	30-120	8	30	
2,4-Dimethylphenol	ug/L	50	34.8	37.8	70	76	29-111	8	30	
2,4-Dinitrophenol	ug/L	250	188	209	75	84	19-132	11	30	
2,4-Dinitrotoluene	ug/L	50	40.3	44.2	81	88	58-128	9	30	
2,6-Dinitrotoluene	ug/L	50	38.1	41.9	76	84	54-129	9	30	
2-Chloronaphthalene	ug/L	50	32.3	36.1	65	72	43-117	11	30	
2-Chlorophenol	ug/L	50	35.4	38.0	71	76	37-120	7	30	
2-Methylnaphthalene	ug/L	50	35.2	38.2	70	76	33-120	8	30	
2-Methylphenol(o-Cresol)	ug/L	50	36.4	40.4	73	81	31-120	10	30	
2-Nitroaniline	ug/L	100	62.4	70.4	62	70	48-121	12	30	
2-Nitrophenol	ug/L	50	34.5	38.3	69	77	25-116	10	30	
3&4-Methylphenol(m&p Cresol)	ug/L	50	35.7	39.2	71	78	23-120	9	30	
3,3'-Dichlorobenzidine	ug/L	100	61.6	53.5	62	54	10-154	14	30	
3-Nitroaniline	ug/L	100	74.5	81.2	75	81	43-115	9	30	
4,6-Dinitro-2-methylphenol	ug/L	100	88.3	101	88	101	44-124	14	30	
4-Bromophenylphenyl ether	ug/L	50	40.6	45.7	81	91	34-113	12	30	
4-Chloro-3-methylphenol	ug/L	100	76.3	82.4	76	82	31-110	8	30	
4-Chloroaniline	ug/L	100	69.9	65.1	70	65	20-120	7	30	
4-Chlorophenylphenyl ether	ug/L	50	38.4	42.3	77	85	34-116	10	30	
4-Nitroaniline	ug/L	100	77.3	84.1	77	84	46-128	8	30	
4-Nitrophenol	ug/L	250	152	162	61	65	11-120	7	30	
Acenaphthene	ug/L	50	37.1	41.9	74	84	48-114	12	30	
Acenaphthylene	ug/L	50	36.6	41.1	73	82	48-112	12	30	
Aniline	ug/L	50	12.6	8.7J	25	17	26-120		30	L2
Anthracene	ug/L	50	42.0	47.3	84	95	57-118	12	30	
Benzo(a)anthracene	ug/L	50	39.2	42.4	78	85	56-121	8	30	
Benzo(a)pyrene	ug/L	50	40.1	44.1	80	88	55-127	10	30	
Benzo(b)fluoranthene	ug/L	50	38.5	42.5	77	85	53-128	10	30	
Benzo(g,h,i)perylene	ug/L	50	40.1	46.1	80	92	54-125	14	30	
Benzo(k)fluoranthene	ug/L	50	44.0	48.0	88	96	51-123	9	30	
Benzoic Acid	ug/L	250	141	143	56	57	10-120	2	30	
Benzyl alcohol	ug/L	100	80.0	87.6	80	88	27-120	9	30	
bis(2-Chloroethoxy)methane	ug/L	50	38.4	41.4	77	83	32-120	8	30	
bis(2-Chloroethyl) ether	ug/L	50	35.1	37.3	70	75	33-111	6	30	
bis(2-Ethylhexyl)phthalate	ug/L	50	34.8	37.0	70	74	50-145	6	30	
Butylbenzylphthalate	ug/L	50	32.4	35.1	65	70	54-138	8	30	
Chrysene	ug/L	50	39.4	43.1	79	86	58-127	9	30	
Di-n-butylphthalate	ug/L	50	38.6	43.2	77	86	56-125	11	30	
Di-n-octylphthalate	ug/L	50	31.1	33.2	62	66	50-134	6	30	
Dibenz(a,h)anthracene	ug/L	50	41.3	47.4	83	95	53-129	14	30	
Dibenzofuran	ug/L	50	38.8	43.4	78	87	45-120	11	30	
Diethylphthalate	ug/L	50	37.2	40.3	74	81	53-120	8	30	
Dimethylphthalate	ug/L	50	37.9	41.2	76	82	55-116	8	30	
Fluoranthene	ug/L	50	43.0	48.2	86	96	57-125	12	30	
Fluorene	ug/L	50	39.8	43.5	80	87	53-118	9	30	
Hexachloro-1,3-butadiene	ug/L	50	28.4	29.6	57	59	23-120	4	30	

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Parameter	Units	2303165		2303166		% Rec Limits	RPD	Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCS Result	LCS % Rec				
Hexachlorobenzene	ug/L	50	42.2	46.5	84	93	49-116	10	30
Hexachlorocyclopentadiene	ug/L	50	25.1	27.3	50	55	26-158	8	30
Hexachloroethane	ug/L	50	29.2	30.6	58	61	30-114	4	30
Indeno(1,2,3-cd)pyrene	ug/L	50	40.6	46.3	81	93	55-128	13	30
Isophorone	ug/L	50	33.9	35.7	68	71	31-118	5	30
N-Nitroso-di-n-propylamine	ug/L	50	41.3	44.6	83	89	32-119	8	30
N-Nitrosodimethylamine	ug/L	50	31.4	33.7	63	67	13-120	7	30
N-Nitrosodiphenylamine	ug/L	50	40.5	45.1	81	90	43-120	11	30
Naphthalene	ug/L	50	33.9	37.0	68	74	32-120	9	30
Nitrobenzene	ug/L	50	38.5	41.3	77	83	33-110	7	30
Pentachlorophenol	ug/L	100	75.7	85.4	76	85	10-137	12	30
Phenanthrene	ug/L	50	41.7	46.9	83	94	57-117	12	30
Phenol	ug/L	50	25.7	26.7	51	53	10-120	4	30
Pyrene	ug/L	50	36.2	39.0	72	78	55-122	7	30
2,4,6-Tribromophenol (S)	%				91	98	31-170		
2-Fluorobiphenyl (S)	%				82	88	45-139		
2-Fluorophenol (S)	%				60	63	13-118		
Nitrobenzene-d5 (S)	%				79	84	40-121		
Phenol-d6 (S)	%				53	55	18-105		
Terphenyl-d14 (S)	%				53	55	48-146		

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QUALITY CONTROL DATA

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

QC Batch: 415699 Analysis Method: MADEP EPH
 QC Batch Method: MADEP EPH Analysis Description: MADEP EPH NC Water
 Associated Lab Samples: 92387844001, 92387844002, 92387844003

METHOD BLANK: 2305074 Matrix: Water

Associated Lab Samples: 92387844001, 92387844002, 92387844003

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Aliphatic (C09-C18)	ug/L	ND	100	100	06/19/18 14:41	N2
Aliphatic (C19-C36)	ug/L	ND	100	100	06/19/18 14:41	N2
Aromatic (C11-C22)	ug/L	ND	100	100	06/19/18 14:41	N2
2-Bromonaphthalene (S)	%	96	40-140		06/19/18 14:41	
2-Fluorobiphenyl (S)	%	94	40-140		06/19/18 14:41	
Nonatriacontane (S)	%	97	40-140		06/19/18 14:41	
o-Terphenyl (S)	%	88	40-140		06/19/18 14:41	

LABORATORY CONTROL SAMPLE & LCSD: 2305075

2305076

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Aliphatic (C09-C18)	ug/L	300	130	125	43	42	40-140	4	50	N2
Aliphatic (C19-C36)	ug/L	400	271	223	68	56	40-140	19	50	N2
Aromatic (C11-C22)	ug/L	850	530	546	62	64	40-140	3	50	N2
2-Bromonaphthalene (S)	%				63	76	40-140			
2-Fluorobiphenyl (S)	%				63	62	40-140			
Nonatriacontane (S)	%				79	64	40-140			
o-Terphenyl (S)	%				70	82	40-140			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

B Analyte was detected in the associated method blank.

L2 Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

N2 The lab does not hold NELAC/TNI accreditation for this parameter.

S4 Surrogate recovery not evaluated against control limits due to sample dilution.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: NCDOT -001 WBS 41499.1.3

Pace Project No.: 92387844

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92387844001	P-6-SB-3	MADEP EPH	415699	MADEP EPH	415942
92387844002	P-2-SB-4	MADEP EPH	415699	MADEP EPH	415942
92387844003	P-54-SB-2	MADEP EPH	415699	MADEP EPH	415942
92387844001	P-6-SB-3	MADEP VPH	414279		
92387844002	P-2-SB-4	MADEP VPH	414279		
92387844003	P-54-SB-2	MADEP VPH	414279		
92387844001	P-6-SB-3	EPA 3510	415300	EPA 8270	415391
92387844002	P-2-SB-4	EPA 3510	415300	EPA 8270	415391
92387844003	P-54-SB-2	EPA 3510	415300	EPA 8270	415391
92387844001	P-6-SB-3	EPA 8260	415295		
92387844002	P-2-SB-4	EPA 8260	415385		
92387844003	P-54-SB-2	EPA 8260	415620		

REPORT OF LABORATORY ANALYSIS

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Laboratory receiving samples:
Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name: Alex Companies

Project **WO#: 92387844**

Date/Initials Person Examining Contents: MD 6/8/18

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Custody Seal Present? Yes No Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen?
 Yes No N/A

Thermometer: IR Gun ID: 92T040 Type of Ice: Wet Blue None

Cooler Temp (°C): 4.3 Correction Factor: Add/Subtract (°C) +0.4

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 4.7

USDA Regulated Soil (N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?
 Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A -Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A -Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	9.
Headspace in VOA Vials (>5-6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

COMMENTS/SAMPLE DISCREPANCY Field Data Required? Yes No
One AG-1H for sample P-2-SB-4 B out of PH Rxyz

Lot ID of split containers: _____

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: TC

Date: 6/12/18

Project Manager SRF Review: TC

Date: 6/12/18

Project

WO#: 92387844

PM: RWC

Due Date: 06/15/18

CLIENT: 92-APEX MOOR

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (C-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (C-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (C-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (C-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (C-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(C-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Schtillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)		
1	/	/	/	/	/	/	/	/	/	/	2	2	2	2	2											2			
2	/	/	/	/	/	/	/	/	/	/	2	2	2	2	2											2			
3	/	/	/	/	/	/	/	/	/	/	2	2	2	2	2											2			
4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
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10	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #
P-2-SB4	HCl	6	6.8.18	17:00	2ml	4117070

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).

