November 5, 2018



Mr. Cyrus Parker, L.G., P.E. Geotechnical Engineering Unit State of N.C. Department of Transportation – Division of Highways P.O. Box 25201 Raleigh, NC 27611-5201

RE: PRELIMINARY SITE ASSESSMENT OF PARCEL 331 – Revision 1 ESP Project No. CS34.366

WBS:	34839.1.8
TIP:	U-2579AB
County:	Forsyth
Description:	Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40
	Business/US 421
Parcel No.:	331
Owner:	NCDOT
Address:	4203 Kernersville Road, Winston-Salem, NC

Dear Mr. Parker:

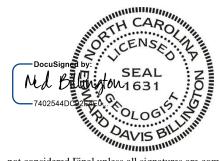
ESP Associates, Inc. (ESP) is pleased to submit this report on our Preliminary Site Assessment of the subject parcel. This work was performed in accordance with your Request for Proposal dated April 17, 2018 and our Cost Proposal dated May 3, 2018.

We appreciate the opportunity to assist you during this phase of the project. If you should have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

ESP Associates, Inc.

Edward D. Billington, PG Senior Geologist/Geophysicist DMN/EDB/CJW



not considered Final unless all signatures are completed

7011 Albert Pick Road, Suite E, Greensboro, NC 27409 1.800.960.7317 · NC: 336.334.7724 www.espassociates.com

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Appendix B RED Lab Laboratory Testing Report

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1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to construct the Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40 Business/US 421 (Figure 1). The NCDOT requested that ESP Associates, Inc. (ESP) perform a Preliminary Site Assessment (PSA) of Parcel 331 to locate possible underground storage tanks (USTs), sample soil, and delineate potential contaminated soil.

2.0 HISTORY

This parcel has been acquired by the NCDOT and is currently occupied by a vacant lot. The facility is listed in the North Carolina Department of Environmental Quality's (NCDEQ's) UST Section Registry with Facility ID #: 0-016674. Two USTs were reportedly removed in 1975.

3.0 SITE OBSERVATIONS

During our May 2018 field work, the site was a vacant lot (Figure 2). The ground in the study area was covered by gravel and grass.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on May 21, 2018. We performed direct-push drilling and sampling of subsurface soils within the proposed easement on September 7, 2018. A photoionization detector (PID) was used to screen subsurface soils in the field and select soil samples to send for laboratory analysis.

4.1 Geophysics

ESP performed a metal detector study over the accessible areas of the site using a Geonics EM61 MK2 with a line spacing of about three feet (Figures 3 and 4). Location control was provided in real-time using a differential global positioning system (DGPS). We collected ground-penetrating radar (GPR) data over selected EM61 anomalies using our Sensors and Software Noggin 250 GPR system. The GPR data were collected using a line spacing of one to two feet.

4.2 Borings

ESP performed direct-push drilling activities within the easement of Parcel 331 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Five borings were drilled, designated B331-1 through B331-5 (Figure 3). The soil borings were advanced using a GeoProbe 7822DT drill rig. Continuous soil samples were obtained to a depth of approximately ten feet using five-foot long Macro Cores®. Soil cores had a recovery of four to five feet. The sampling equipment was decontaminated prior to drilling and between borings by the driller using a Liquinox® detergent solution.

4.3 Soil Sample Protocol

Representative soil samples were taken from the Macro-Core tubes at approximate one-foot intervals by the ESP field geologist while wearing nitrile disposable gloves. Each sample was placed in a sealed plastic bag and then kept in a sunny area for at least 5 minutes prior to measuring volatile organic compound (VOC) levels in the head space with the PID. All of the soil samples obtained had a PID reading of less than 10 parts per million (ppm) (Table 1).

Soil samples selected for laboratory analysis were Sample S-9 (corresponding depth of 9.0-9.5 feet) from all borings. For each selected sample, an approximate 10-gram soil sample was collected from the Macro-Core tube using a Terra Core Sampler and placed into a laboratory-supplied 40-milliliter volatile organic analysis (VOA) vial containing methanol. Once sealed, the vial was labeled with the sample identification number and then shaken vigorously for about one minute. The samples were packed on ice and sent via overnight delivery to RED Lab, LLC (RED Lab), located in Wilmington, North Carolina, following proper chain-of-custody procedures (Appendix C).

RED Lab used a QED Hydrocarbon Analyzer to quantitatively analyze the soil samples using the ultraviolet fluorescence (UVF) method for benzene, toluene, ethylbenzene, and xylene (BTEX); gasoline range organics (GRO); diesel range organics (DRO); total petroleum hydrocarbons (TPH); total aromatics; polycyclic aromatic hydrocarbons (PAHs); and benzo(a)pyrene (BaP).

4.4 Groundwater

Groundwater was not encountered in the five borings drilled on the site.

5.0 **RESULTS**

5.1 Geophysics

The EM61 early time gate data show the response from both shallow and deeper metallic objects (Figure 3). The differential response reduces the effect of shallow anomalies and emphasizes anomalies from larger and more deeply buried metallic objects, such as USTs (Figure 4). The EM61 differential results indicated one anomaly (response above background) that did not correspond to known site features.

GPR data were collected over the EM61 anomaly. The GPR data collected did not indicate the presence of unknown USTs within the study area.

The EM61 early time gate response and differential response are shown on the plan sheet on Figures 5 and 6, respectively.

5.2 Sample Data

The soil sample UVF hydrocarbon analysis results for BTEX, GRO, DRO, and PAHs are presented in Table 2. The RED Lab laboratory report, which includes results for TPH, total aromatics, and BaP, is provided in Appendix B. Values are provided in milligrams per kilogram (mg/kg or ppm).

5.3 Sample Observations

The results of the laboratory testing indicated that BTEX, GRO, DRO, and PAHs were below the detection limits for all samples.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the PSA for Parcel 331 of NCDOT Project U-2579AB do not indicate the presence of abandoned USTs. No petroleum hydrocarbon soil contamination at or above NCDEQ action levels was detected on Parcel 331.

6.2 Geophysics

The geophysical data do not indicate the presence of abandoned USTs.

6.3 Soil

The results of the PID field screening readings and off-site UVF hydrocarbon analyses do not indicate the presence of contaminated soil at or above the NCDEQ action levels within the study area on Parcel 331 (Figure 7).

7.0 **RECOMMENDATIONS**

No limitations on construction activities or special handling of excavated soil are recommended for Parcel 331.

8.0 LIMITATIONS

ESP's professional services have been performed, findings obtained, and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. ESP is not responsible for the independent conclusions, opinions, or recommendations made by others based on the data presented in this report.

The passage of time may result in a change in the environmental characteristics at this site and surrounding properties. ESP does not warrant against future operations or conditions, or against operations or conditions present of a type or at a location not investigated. ESP does not assume responsibility for other environmental issues that may be associated with the subject site.

TABLES

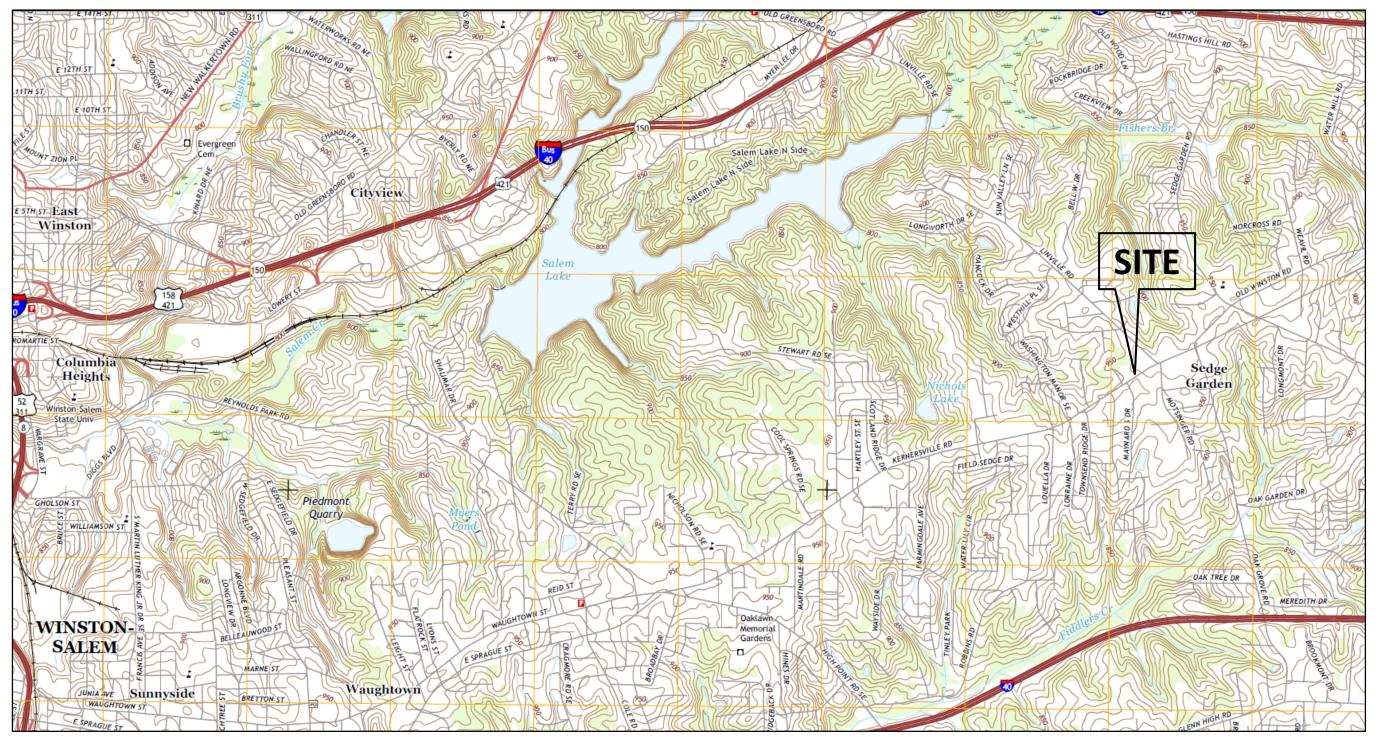
TABLE 1SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B331-1	none	4.1 (5.0-5.5)
B331-2	none	4.6 (2.0-2.5)
B331-3	none	4.7 (7.0-7.5)
B331-4	none	4.8 (7.0-7.5)
B331-5	none	3.9 (2.0-2.5)

Boring	Sample ID (depth in feet bgs)	Date Collected	BTEX (C6-C9) (mg/kg)	GRO (C5-C10) (mg/kg)	DRO (C10-C35) (mg/kg)	PAHs (mg/kg)
B331-1	S-9 (9.0-9.5)	9/10/18	< 0.53	<0.53	< 0.53	< 0.17
B331-2	S-9 (9.0-9.5)	9/10/18	<0.49	<0.49	<0.49	<0.16
B331-3	S-9 (9.0-9.5)	9/10/18	<0.47	<0.47	<0.47	<0.15
B331-4	S-9 (9.0-9.5)	9/10/18	<0.31	<0.31	<0.31	<0.1
B331-5	S-9 (9.0-9.5)	9/10/18	<0.38	<0.38	<0.38	< 0.12

TABLE 2SOIL SAMPLE UVF RESULTS SUMMARY

FIGURES



From: USGS US Topo 7.5 - minute map for WINSTON-SALEM EAST, NC Date: 2016, Scale: 1:24,000

PROJECT NO. CS34.366 SCALE AS SHOWN	FIGURE 1 – PARCEL SITE VICINITY
DATE 11/6/18	U-2579AB, WINSTON SALEM – NORTHERI (FUTURE I-74) FROM I-40 TO I-4
DMN	FORSYTH COUNTY, NORT

331, NCDOT Y MAP

RN BELTWAY EASTERN SECTION -40 BUSINESS/US421 RTH CAROLINA



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a. Photo from northeast side of site looking southwest.



b. Photo from southwest side of site looking northeast.

CS34.366 SCALE AS SHOWN	FIGURE 2 – PARCEL 3 SITE PHOTOGR
DATE	U 2570AD WINISTON SALEM NODTUERN
11/6/18	U-2579AB, WINSTON SALEM – NORTHERN (FUTURE I-74) FROM I-40 TO I-4
DMN	FORSYTH COUNTY, NORT

331, NCDOT RAPHS

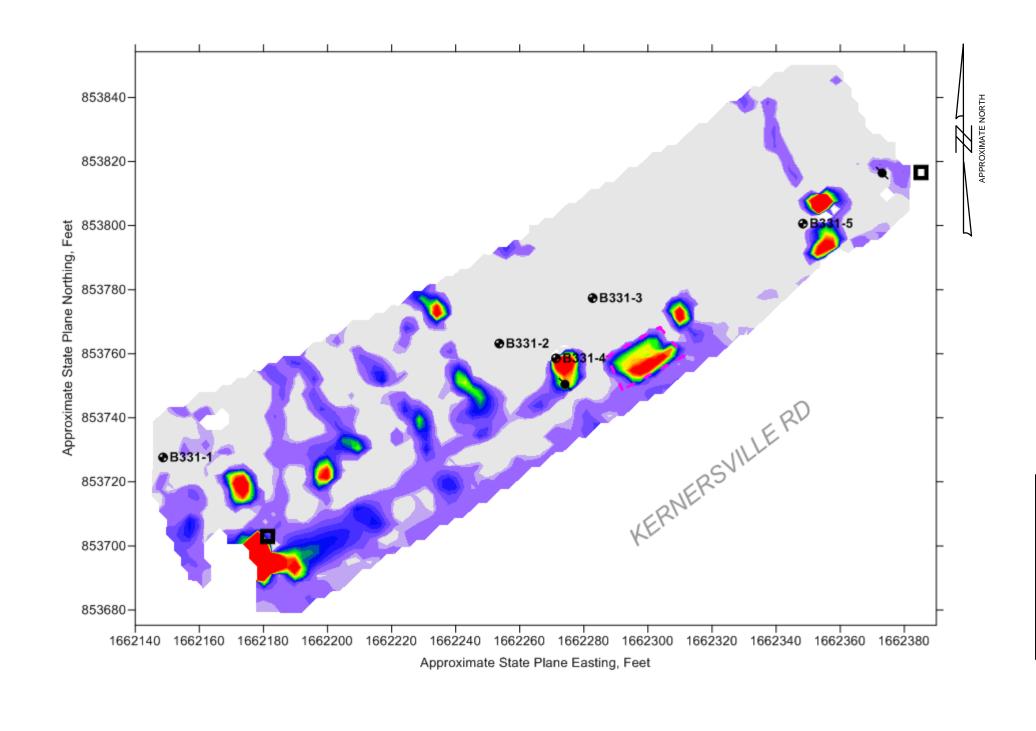
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م 534.366	FIGURE 3 – PARCEL 3
SHOWN	EM61 EARLY TIME GAT
1/6/18	U-2579AB, WINSTON SALEM – NORTHERN
DMN	(FUTURE I-74) FROM I-40 TO I-4 FORSYTH COUNTY, NORT
	534.366 SHOWN 1/6/18

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

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EXPLANATION

Miscellaneous metal object (pipe, debris, etc.)
 Power pole
 EM61 Data Collection Areas
 GPR Data Collection Areas
 Approximate soil boring location

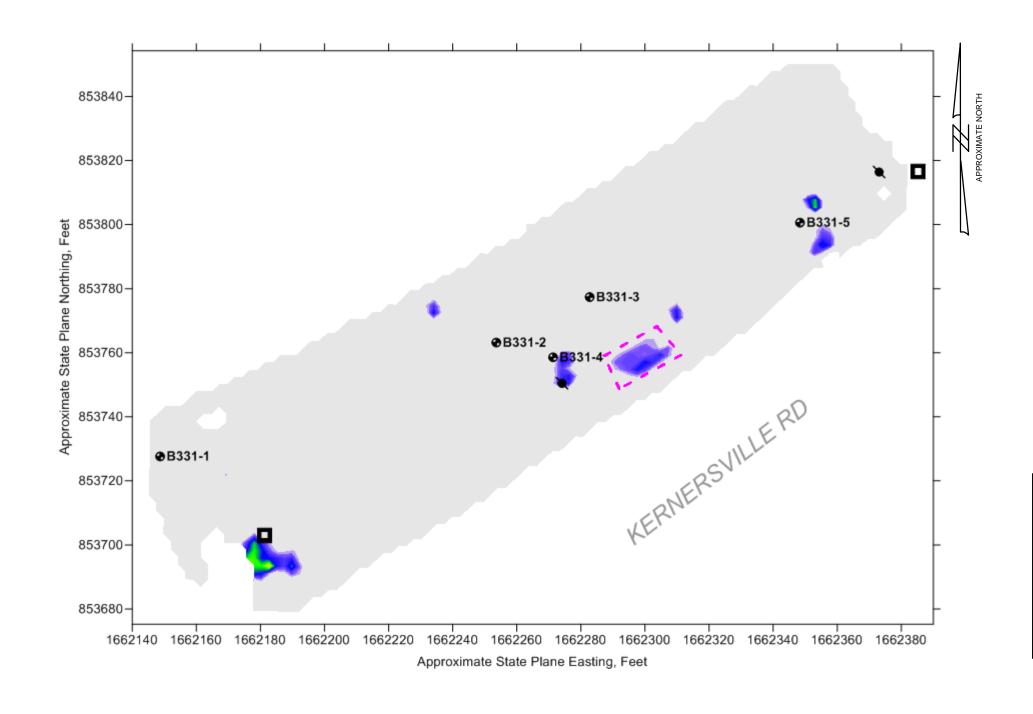
331, NCDOT ATE RESPONSE

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EXPLANATION

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 GPR Data Collection Areas
 Approximate soil boring location

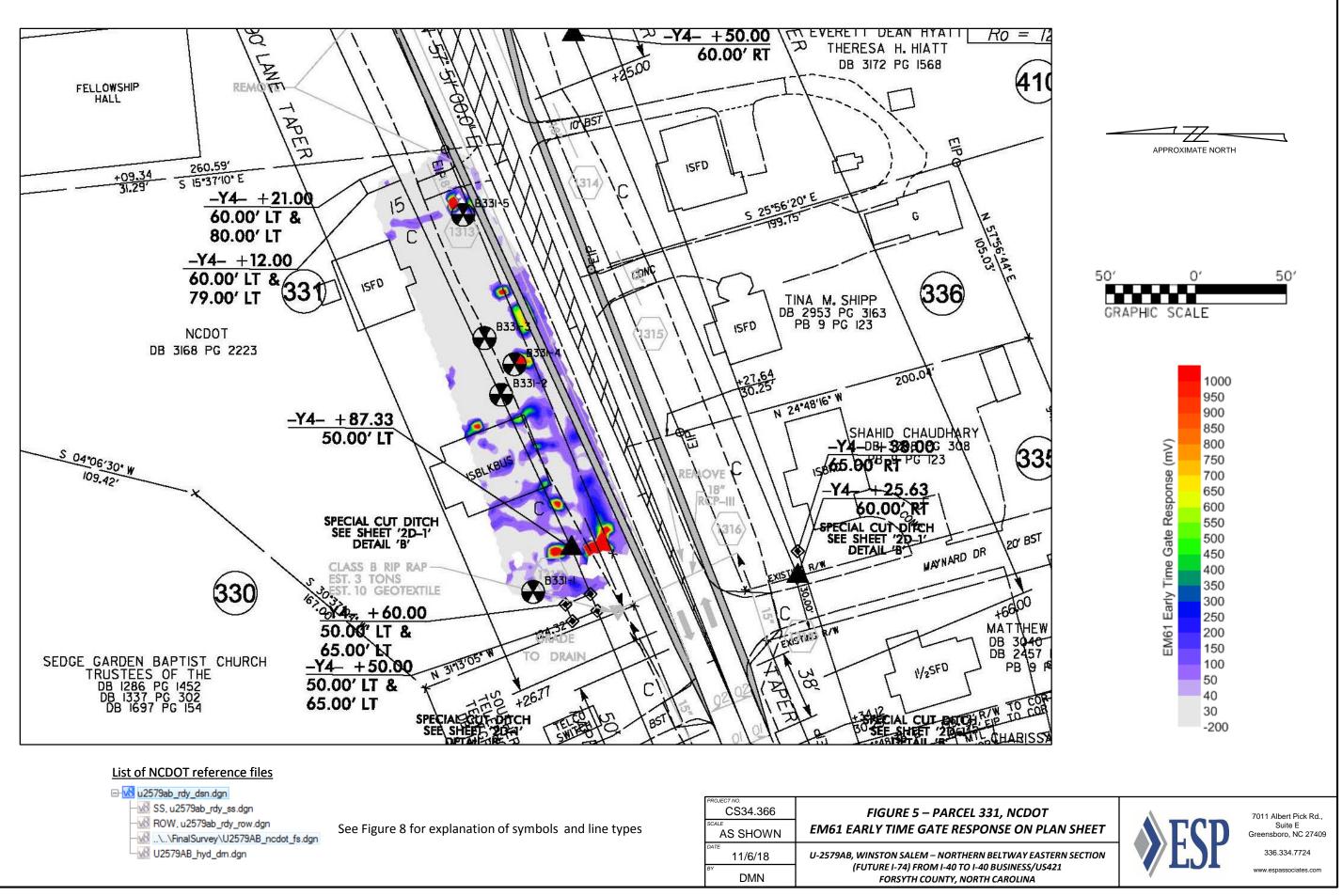
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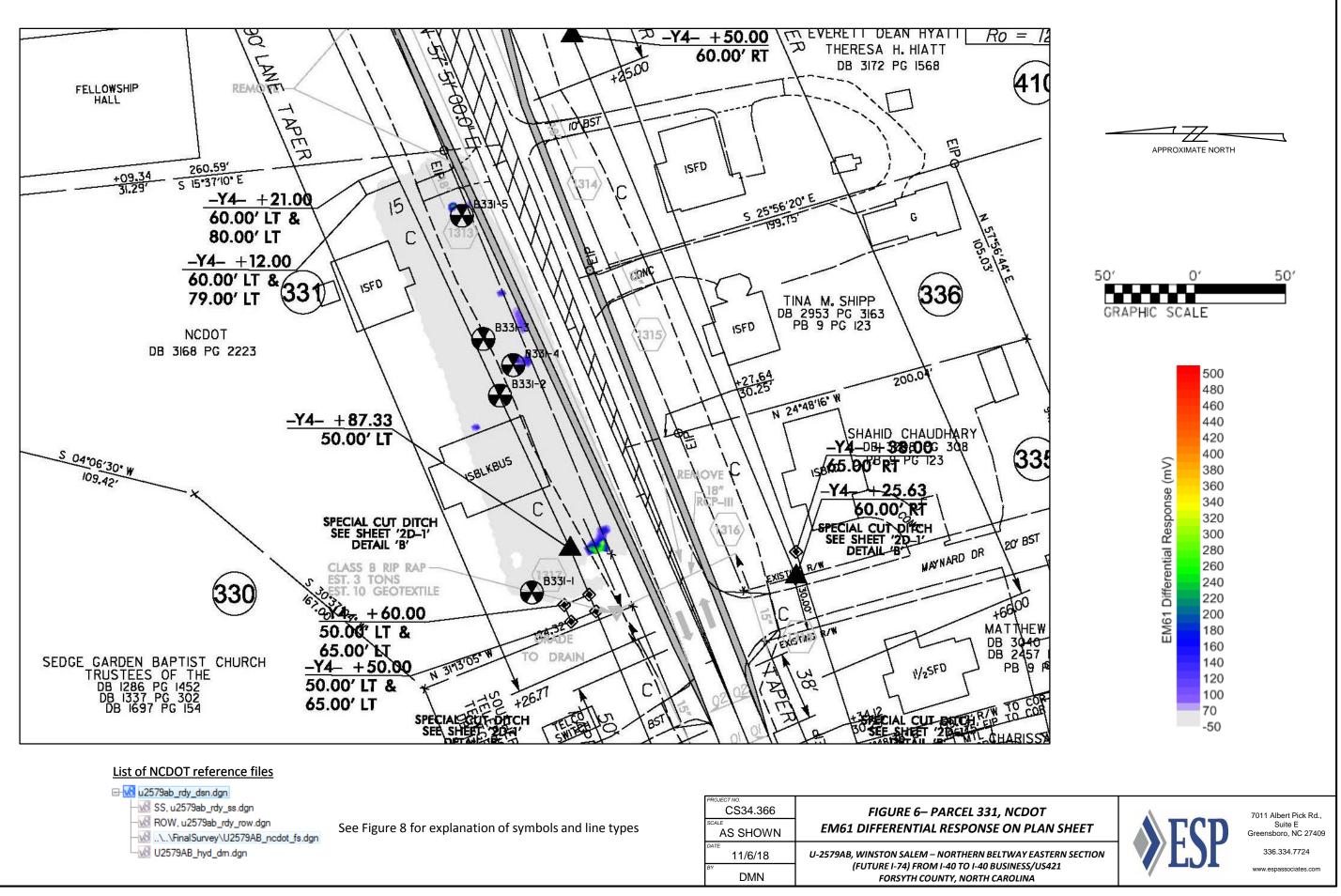


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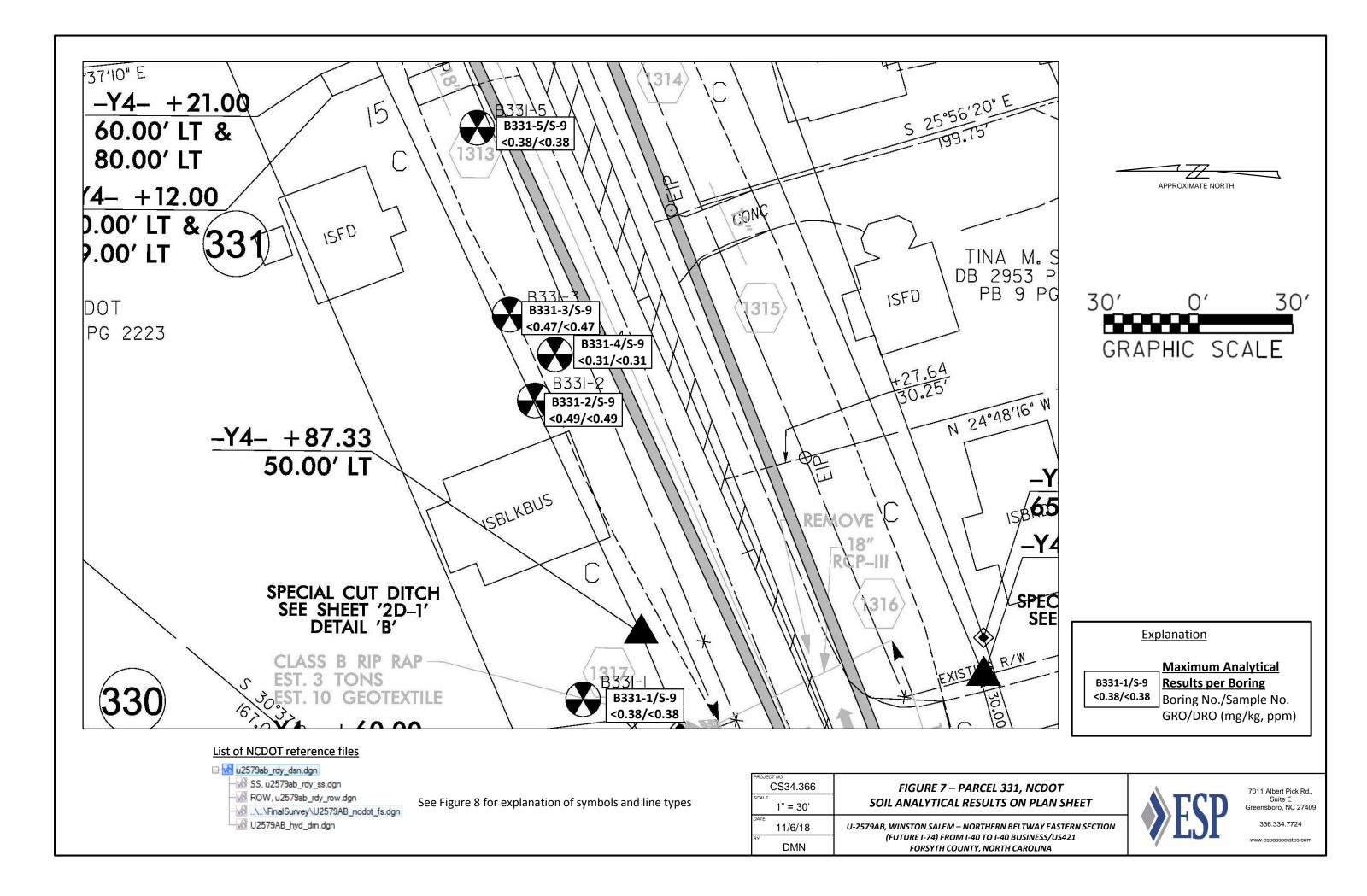
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PROJECT NO. CS34.366	FIGURE 6- PARCEL
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Building Proposed Slope Stokes Cut Fishing Telephone Pole SS Forced Main I School Proposed Slope Stokes Fill Proposed Slope Stokes Fill Proposed Telephone Pole MISCELLANEOUS: HYDROLOGY: Proposed Guiderail Proposed Guiderail II Utility Pole II Hydro, Pool or Reservoir Proposed Cub B Guiderail Froposed Cub B Guiderail II Utility Coated Oc Jurisdictional Stream II Proposed Cub B Guiderail III Utility Coated Oc Buffer Zone 1 Froposed Cub B Guiderail III Utility Unknown U UG Telephone Cable LOS B (S.U.E.*) Utility Unknown U Buffer Zone 2 Fiz 2 VEGETATION: Single Tree III Ud Telephone Codult LOS B (S.U.E.*) Ud G Telephone Codult LOS B (S.U.E.*) Ud G Telephone Codult LOS D (S.U.E.*) III du data Guadraid Wetland Hedge Woods Line III Woods Line IIII du data Guadraid IIII du data Guadraid IIII du data Guadraid IIIIIIII du data Guadraid IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Entering Cone		TELEPHONE:		
School Proposed Slope Stakes Fill Proposed Slope Stakes Fill Proposed Telephone Pole O Church Proposed Curb Ramp III Proposed Curb Ramp III Utility Pole Dam HYDROLOGY: Proposed Guardrail III Utility Pole III Stream or Body of Water Proposed Guardrail IIII Utility Pole IIII Utility Pole Jurisdictional Stream Jurisdictional Stream Jurisdictional Stream Jurisdictional Stream IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Proposed Slope Stakes Cut	£	Existing Telephone Pole	. 	
Church Proposed Curb Ramp Image: Construction of the construction		Proposed Slope Stakes Fill	Ľ			55 Forcea Main I
Dam Existing Metal Guardrail Image: Construction of Body of Water Image: Construction of Body of Body of Water Image: Construction of Body of B	Church	Proposed Curb Ramp	CR		. n	MISCELLANEOUS:
AmpRoducts: Proposed Guardrail Image: Construction of the serve in the ser		Existing Metal Guardrail	<u> </u>		. m	Utility Pole —
Sheath of Body of Water Existing Cable Guiderail Image: Cable Guiderail <t< td=""><td></td><td>Proposed Guardrail</td><td></td><td></td><td></td><td>Utility Pole with B</td></t<>		Proposed Guardrail				Utility Pole with B
Hydro, Pool or Keservoir Proposed Cable Guiderail Image: Cable Guiderail <	-	Existing Cable Guiderail	<u> </u>			Utility Located Ob
Jurisdictional Stream _js Equality Symbol Image: Construction of the		Proposed Cable Guiderail				Utility Traffic Sian
Buffer Zone 1 Buffer Zone 2 Pavement Removal Pavem		Equality Symbol	•			
Flow Arrow VEGETATION: U/G Telephone Conduit LOS B (S.U.E.*) U/G Telephone Conduit LOS B (S.U.E.*) Disappearing Stream Single Tree I/G Telephone Conduit LOS C (S.U.E.*) A/G Tank; Water, Spring I/G Telephone Conduit LOS D (S.U.E.*) I/G Te		Pavement Removal				
Flow Arrow Single Tree Single Tree UG Telephone Conduit LOS D (S.U.E.*) AG Tank; Water, Disappearing Stream Single Shrub o UG Telephone Conduit LOS D (S.U.E.*) AG Tank; Water, Vetland Hedge Woods Line Woods Line UG Fiber Optics Cable LOS D (S.U.E.*) Image: Conduit LOS D (S.U.E.*)		VEGETATION:				Underground Stor
Spring Single Shrub Image: Single Shrub Image		Single Tree	÷			5
Wetland + Proposed Lateral, Tail, Head Ditch Woods Line Woods Line - W						
Proposed Lateral, Tail, Head Ditch Woods Line Image: Contraction of the contrest of the contraction of the contraction of the contraction of t			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			
Proposed Lateral, Tail, Head Ditch Fiber Optics Cable LOS C (S.U.E.*) Fider of Information		-	- <u></u>			
	raise sump —					

PROJECT NO. CS34.366	FIGURE 8
scale N/A	LEGEND FOR PLAN SHE
DATE 11/6/18	U-2579AB, WINSTON SALEM – NORTHERN B
DMN	(FUTURE I-74) FROM I-40 TO I-40 E FORSYTH COUNTY, NORTH

PROJECT	REFERENCE NO. SHEET NO.
ole	Ø
Sie	0
	8
nt	•
Line LOS B (S.U.E*)	
Line LOS C (S.U.E*)	
Line LOS D (S.U.E*)	
nd Water Line	A/G Water
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ble Hand Hole	E
ole LOS B (S.U.E.*)	n
ole LOS C (S.U.E.*)	n
ble LOS D (S.U.E.*)	Tr
Optic Cable LOS B (S.U.E.*)	
Optic Cable LOS C (S.U.E.*)	
Optic Cable LOS D (S.U.E.*)	N N NO
	♦
	¢
ne LOS B (S.U.E.*)	•
ne LOS C (S.U.E.*)	
ne LOS D (S.U.E.*)	A/G Gos
nd Gas Line	A70 005
WER:	
ver Manhole	
ver Cleanout	-
	۲
y Sewer Line	
nd Sanitary Sewer	
Nain Line LOS B (S.U.E.*)	
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Nain Line LOS D (S.U.E.*)	
DUS:	
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ed Object	0
Signal Box	5
	_
own U/G Line LOS B (S.U.E.*)	
Vater, Gas, Oil	
d Storage Tank, Approx. Loc. ——	
Vater, Gas, Oil	
nental Boring	
e LOS A (S.U.E.*)	Θ
According to Utility Records —	-
mation	E.O.I.
	2.0.1.

8 HEET FIGURES

RN BELTWAY EASTERN SECTION -40 BUSINESS/US421 RTH CAROLINA



7011 Albert Pick Rd., Suite E Greensboro, NC 27409

336.334.7724

www.espassociates.com

APPENDIX A SOIL BORING LOGS

	FSP			FIFI	D BORING LO	G	BORING NO.
	JECT NAME:		DOT U-2579. SW corner of	AB PSA	PROJ. NO.:		B331-1
TYPE	OF BORING		Direct Pus	sh	DATE STARTED: 9/7/18		SHEET: 1 of 1
DRILI DRILI	LING FIRM:		SAEDACC Brian Ewir		DATE FINISHED: 9/7/18 SAMPLE METHOD: 5' Macro Co		DEPTH: 10.0 ft TO GW: Dry ft
	L RIG:	G	Geoprobe 782		LOGGED BY: D. Nance		IMENT:
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		FIELD CLASSIFICATIO PHYSICAL DESCRIP		REMARKS
-				0.0-0.5	Topsoil		Core 1 Rec 4.0'/5.0'
1	S-1	1.0-1.5	0.3	0.5-8.3	Red-brown sandy silt		
- ' 	5-1	1.0-1.5	0.5	0.5-0.5	Red-brown Sandy Silt		
2	S-2	2.0-2.5	0.1				
•							
3	S-3	3.0-3.5	1.0				
4	S-4	No Rec	N/A				Core 2 Rec 5.0'/5.0'
-	S-5	5.0-5.5	4.1				
_5	0.0	5.0-5.5					
·							
6	S-6	6.0-6.5	2.2				
7	S-7	7.0-7.5	2.4				
·							
8	S-8	8.0-8.5	1.9				
				8.3-10.0	Tan-gray sandy silt		
9 (S-9	9.0-9.5	0.9				
<u> </u>		9.0-9.5	0.0				
10		Sam	ple selected	for laborator	y analysis		
-							
11							
·							
12							
•							
13							
- · · ·							
14							
·							
15							

J.	FCP			FIF	LD BORING LOG		BORING NO.
	JECT NAME:	NC	DOT U-2579	AB PSA	PROJ. NO.: CS3	34.366	B331-2
	ATION: E OF BORING		Center of s Direct Pus		DATE STARTED: 9/7/18	SHEET	: 1 of 1
	LING FIRM:		SAEDACC		DATE FINISHED: 9/7/18	TOTAL DEPTH	
DRIL			Brian Ewir	ng	SAMPLE METHOD: 5' Macro Core	DEPTH TO GW	
DRIL	L RIG:	G	Geoprobe 782	22 DT	LOGGED BY: D. Nance	COMMENT	:
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		FIELD CLASSIFICATION AN PHYSICAL DESCRIPTION		REMARKS
				0.0-0.7	Gravel		Core 1 Rec 5.0'/5.0'
-							
1	S-1	1.0-1.5	4.0	0.7-3.4	Orange-red silty clay		
•							
	S-2	0005	4.6				
2	5-2	2.0-2.5	4.6				
3	S-3	3.0-3.5	4.0				
		0.0 0.0					
•				3.4-10.0	Red-brown sandy, clayey silt		
4	S-4	4.0-4.5	3.7				Core 2 Rec 5.0'/5.0'
-							
•							
5	S-5	5.0-5.5	3.6				
	-						
6	S-6	6.0-6.5	2.5				
7	S-7	7.0-7.5	4.0				
	5-7	7.0-7.5	4.0				
8	S-8	8.0-8.5	4.3				
-							
-							
9	S-9	9.0-9.5	3.6				
		<u> </u>					
10		Sam	ple selected	for laborato	ry analysis		
11							
_ ! !							
12							
			1				
13							
14							
15			+				

	FCP			FIF	LD BORING LOG		BORING NO.
	IECT NAME:	NCI	DOT U-2579. Center of s	AB PSA	PROJ. NO.: <u>CS</u>	34.366	B331-3
	OF BORING	:	Direct Pus		DATE STARTED: 9/7/18	SHEET	: 1 of 1
	_ING FIRM:		SAEDACC	0	DATE FINISHED: 9/7/18	TOTAL DEPTH	
DRILI			Brian Ewir		SAMPLE METHOD: 5' Macro Core	DEPTH TO GW	
	RIG:		Geoprobe 782	22 DT	LOGGED BY: D. Nance	COMMENT	:
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		FIELD CLASSIFICATION A PHYSICAL DESCRIPTIO		REMARKS
				0.0-0.5	Gravel		Core 1 Rec 5.0'/5.0'
•							
_1	S-1	1.0-1.5	2.9	0.5-3.1	Orange-red silty clay		
2	S-2	2.0-2.5	3.4				
	02	2.0-2.5	0.1				
3	S-3	3.0-3.5	3.8				
				3.1-10.0	Red-brown sandy, clayey silt		
•				0.1 10.0	Red-brown sandy, clayey sin		
4	S-4	4.0-4.5	4.5				Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	3.0				
5		5.0-5.5	0.0				
6	S-6	6.0-6.5	3.6				
-							
7	S-7	7.0-7.5	4.7				
	S-8	0.0.0.5	3.5				
8	3-0	8.0-8.5	5.5				
	_						
9 (S-9	9.0-9.5	4.1				
-							
10		Sam	ple selected	for laborato	ory analysis		
44							
11							
12							
[
13							
14							<u>_</u> _
15							

	FCP			FIF	LD BORING LOG		BORING NO.
	JECT NAME:	NC	DOT U-2579 Center of s	AB PSA	PROJ. NO.: <u>CS34.36</u>	6	B331-4
	OF BORING	:	Direct Pus		DATE STARTED: 9/7/18	SHEET	1 of 1
	LING FIRM:	-	SAEDACC		DATE FINISHED: 9/7/18	TOTAL DEPTH	
DRILI	LER:		Brian Ewir		SAMPLE METHOD: 5' Macro Core	DEPTH TO GW	
DRILI	L RIG:		Geoprobe 782	22 DT	LOGGED BY: D. Nance	COMMENT	
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION		REMARKS
				0.0-0.3	Gravel		Core 1 Rec 5.0'/5.0'
_1	S-1	1.0-1.5	2.4	0.3-3.7	Orange-red silty clay		
2	S-2	2.0-2.5	3.3				
	0.2	2.0-2.5	0.0				
3	S-3	3.0-3.5	3.0				
-				3.7-10.0	Orange-red sandy, clayey silt		
				5.7-10.0	Orange-red sandy, clayey sin		
4	S-4	4.0-4.5	2.3				Core 2 Rec 5.0'/5.0'
_	S-5	5.0-5.5	2.6				
_5	0-0	5.0-5.5	2.0				
6	S-6	6.0-6.5	3.8				
-							
7	S-7	7.0-7.5	4.8				
8	S-8	8.0-8.5	3.7				
9 (S-9	9.0-9.5	3.4				
_ 3 (5.0-5.5					
10		Sam	nple selected	for laborato	ory analysis		
					<u>· · · · · · · · · · · · · · · · · · · </u>		
11			+				
12							
13		L					
		L					
14							
15							
15	1		1	1			

Ň	FSP			FIF	LD BORING LOG		BORING NO.
	IECT NAME:		DOT U-2579. NW Corner o	AB PSA	PROJ. NO.: <u>CS34.366</u>		B331-5
TYPE DRILI DRILI	OF BORING	:	Direct Pus SAEDACC Brian Ewir Geoprobe 782	sh CO ng	DATE STARTED: 9/7/18 DATE FINISHED: 9/7/18 SAMPLE METHOD: 5' Macro Core LOGGED BY: D. Nance	SHEET TOTAL DEPTH DEPTH TO GW COMMENT	10.0 ft Dry ft
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		FIELD CLASSIFICATION AND		REMARKS
DEP.	SAN	SAN DEP	REA (PI	0.0-0.3	PHYSICAL DESCRIPTION		Core 1 Rec 5.0'/5.0'
	0.4						
1 ·	S-1	1.0-1.5	3.3	0.3-3.5	Orange-red silty clay		<u></u>
2	S-2	2.0-2.5	3.9				
3	S-3	3.0-3.5	3.5				
•				3.5-8.3	Red-brown sandy, clayey silt		
4	S-4	4.0-4.5	3.5				Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	2.8				
6	S-6	6.0-6.5	2.6				
7	S-7	7.0-7.5	3.1				
8	S-8	8.0-8.5	3.8	8.3-10.0	Tan-gray silty sand		
9 (S-9	9.0-9.5	3.2				
_10		Sam	uple selected	for laborato	ory analysis		
<u>11</u>							
12							
•							
<u>13</u>							
14							
15	I		1	1			

APPENDIX B

RED LAB LABORATORY TESTING REPORT

Q	ED			Hydroca	arbon An	alysis Re	esults				-		QROS
	ESP ASSOCIATES, INC 7011 ALBERT PICK ROA SUITE E GREENSBORO NC 2740								Sa Sample Sampl		acted		Monday, September 10, 2018 Monday, September 10, 2018 Wednesday, September 12, 2018
Contact:	DILLON NANCE									Ор	erator		NICK HENDRIX
Project:	U-2579 AB												
							Total						U00904
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Aromatics (C10-C35)	16 EPA PAHs	BaP	a	% Ratios		HC Fingerprint Match
							(010 000)			C5 - C10	C10 - C18	C18	
S	B331-5 (S-9)	15.1	<0.38	<0.38	<0.38	<0.38	<0.08	<0.12	<0.015	0	100	0	,(FCM),(P)
s	B331-4 (S-9)	12.3	<0.31	<0.31	<0.31	<0.31	<0.06	-	<0.012	0	0	0	,(FCM)
s	B331-3 (S-9)	18.7	<0.47		<0.47	<0.47	<0.09			0	0		,(FCM),(P)
S	B331-2 (S-9)	19.4	<0.49				<0.1	<0.16		0	0		,(FCM)
S	B331-1 (S-9)	21.2	<0.53				<0.11	<0.17	<0.021	0	0		,(FCM)
S	B352-3 (S-9)	37.8	<0.95				<0.19			0	100		,(FCM),(P)
S	B352-2 (S-8)	15.4	<0.38			-	0.83			0	56.6		Deg.PHC 53.1%,(FCM),(BO)
S	B352-1 (S-9)	17.3	<0.43	1.7	<0.43	1.7	0.43	<0.14	<0.017	91.4	4.9	3.7	V.Deg.PHC 60.6%,(FCM),(BO)
		Initial Calibrator	QC check	OK					Final F	CM QC	Check	OK	100.8 %
Abbreviatior B = Blank D	on values in mg/kg for soil sample is :- FCM = Results calculated u rift : (SBS)/(LBS) = Site Specific	sing Fundamental Calib or Library Background S	ration Mode Subtraction a	: % = confide	ence of hydroc ult : (BO) = Ba	arbon identific ckground Org	ation : (PFM) = anics detected	= Poor Fing : (OCR) = 0	erprint Match Outside cal r	n : (T) = ⁻ ange : (N	Furbid : (I	P) = Pai	rticulate detected
% Ratios es	timated aromatic carbon number	proportions : HC = Hyd	rocarbon : P	HC = Petrole	um HC : FP =	Fingerprint or	nly. Data g	generated	by HC-1 Ana	alyser			

APPENDIX C CHAIN-OF-CUSTODY FORM

Client Name:	ESP Agisciates, Inc.	
Address:	ESP Acysciates, Inc. Feil Albert Pick Rd. Ste E Greensborg, NK 27409	D
Contact:	Dillon Nonce	
Project Ref.:	U-2579 AB	RAPIDEN
Email:	d. nance Despressociates	cim
Phone #:	336-404-3117	CHAIN
Collected by:	P. Nance	



RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

RED Lab, LLC 5598 Marvin K Moss Lane MARBIONC Bldg, Suite 2003 Wilmington, NC 28409

Each sample will be analyzed for BTEX, GRO, DRO, TPH, PAH total aromatics and BaP

Sample Collection	TAT Re	quested	Matrix	Samala ID	111/5	CORTEN		_	
Date/Time	24 Hour	48 Hour	(S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
9/10/18		V	5	B331-5 5-9	V		49.2	43.9	\$ 5.2
				B331-4 5-9	3		\$52.7	45.6	8.1 7.5
				B331-3 5-9			51.6	44.1	7.5
	×			B331-2 5-9			53.0	45.8	7.2
				B331-1 5-9			52.0	45.4	6.6
				B352-3 9-9		47,4		43.7	3.7
				B352-2 5-3			52.8	43.7	9.1
				B352-1 5-9			519	43.8	8.1
				B342-6 5-3		<u> </u>	49.8	44.4	5.4
				B342-5 5-4			52.2	44.1	, 8.1
				B342-4 5-5			51.8	WAR 91.9	6.9
				B342-4 5-9		5	2.0 44		
				B342-3 5-9			52.1	44.4	7.7
				B342-2 5-9			50.7	43.7	7.0
				B342-1 5-9			50.1	43.9	6.2
				B54-1 5-9			510	44.1	6.9
				<u>B54-2 5-3</u>			51.2	43.5	7.7
				B54-3 5-9			51.9	44.0	7.9
				B54-4 5-7			49.3	44.3	5.5
	L Caral		V	B54-5 5-9	1 1.		51.2	44.3	
Comments: Kmo	fected	- data	results	largely unaffected.	alle		RI	ED Lab USE	ONLY
Relinquished by				Date/Time		5			
D. Nance		9/1	0/18 16:00 N	+ 9/11.	(:00	(1~1		
Relinquished by			/Time Accepted by	, 110	Date/Time				

November 5, 2018



Mr. Cyrus Parker, L.G., P.E. Geotechnical Engineering Unit State of N.C. Department of Transportation – Division of Highways P.O. Box 25201 Raleigh, NC 27611-5201

RE: PRELIMINARY SITE ASSESSMENT OF PARCEL 342– Revision 1 ESP Project No. CS34.366

WBS:	34839.1.8
TIP:	U-2579AB
County:	Forsyth
Description:	Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40
	Business/US 421
Parcel No.:	342
Owner:	Taylor Family Properties
Address:	4401 Kernersville Road, Winston-Salem, NC

Dear Mr. Parker:

ESP Associates, Inc. (ESP) is pleased to submit this report on our Preliminary Site Assessment of the subject parcel. This work was performed in accordance with your Request for Proposal dated April 17, 2018 and our Cost Proposal dated May 3, 2018.

We appreciate the opportunity to assist you during this phase of the project. If you should have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

ESP Associates, Inc.

Edward D. Billington, PG Senior Geologist/Geophysicist DMN/EDB/CJW



not considered Final unless all signatures are completed

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Legend for Plan Sheet Figures

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Appendix A Soil Boring Logs

Appendix B RED Lab Laboratory Testing Report

Appendix C Chain-of-Custody Form

1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to construct the Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40 Business/US 421 (Figure 1). The NCDOT requested that ESP Associates, Inc. (ESP) perform a Preliminary Site Assessment (PSA) of Parcel 342 within the proposed Right of Way (ROW) and/or easement to locate possible underground storage tanks (USTs), sample soil, and delineate potential contaminated soil.

2.0 HISTORY

This parcel is owned by Taylor Family Properties and is currently occupied by an active gas station/convenience store. The facility is listed in the North Carolina Department of Environmental Quality's (NCDEQ's) UST Section Registry with Facility ID #: 0-032502 and was assigned Ground Water Incident #: 44687.

3.0 SITE OBSERVATIONS

During our May 2018 field work, the site was operating as an active gas station/convenience store (Figure 2). There are currently four 12,000 gallon USTs in use. Four monitoring wells are on site at each corner of the tank pit and appear to be active but are locked with padlocks; therefore, ESP was unable to sample these wells (Figure 3). The ground in the study area was covered by asphalt, concrete, and grass.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on May 23, 2018. We performed direct-push drilling and sampling of subsurface soils within the proposed easement on September 6, 2018. A photoionization detector (PID) was used to screen subsurface soils in the field and select soil samples to send for laboratory analysis.

4.1 Geophysics

ESP performed a metal detector study over the accessible areas of the site using a Geonics EM61 MK2 with a line spacing of about three feet (Figures 3 and 4). Location control was provided in real-time using a differential global positioning system (DGPS). We collected ground-penetrating radar (GPR) data over selected EM61 anomalies and reinforced concrete areas using our Sensors and Software Noggin 250 GPR system. The GPR data were collected using a line spacing of one to two feet.

4.2 Borings

ESP performed direct-push drilling activities within the easement of Parcel 342 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Six borings were drilled, designated B342-1 through B342-6 (Figure 3). The soil borings were advanced using a GeoProbe 7822DT drill rig. Continuous soil samples were obtained to a depth of approximately ten feet using five-foot long Macro Cores[®]. Soil cores had a recovery of four to five feet. The sampling equipment was decontaminated prior to drilling and between borings by the driller using a Liquinox[®] detergent solution.

4.3 Soil Sample Protocol

Representative soil samples were taken from the Macro-Core tubes at approximate one-foot intervals by the ESP field geologist while wearing nitrile disposable gloves. Each sample was placed in a sealed plastic bag and then kept in a sunny area for at least 5 minutes prior to measuring volatile organic compound (VOC) levels in the head space with the PID. All of the soil samples obtained had a PID reading of less than 10 parts per million (ppm).

Soil samples selected for laboratory analysis were Sample S-9 (corresponding depth of 9.0-9.5 feet) from each of Borings B342-1, B342-2, B342-3, B342-4, and B342-5; Sample S-5 (5.0-5.5 feet) from Boring B342-4; and Sample S-3 (3.0-3.5 feet) from Boring B342-6. For each selected sample, an approximate 10-gram soil sample was collected from the Macro-Core tube using a Terra Core Sampler and placed into a laboratory-supplied 40-milliliter volatile organic analysis (VOA) vial containing methanol. Once sealed, the vial was labeled with the sample identification number and then shaken vigorously for about one minute. The samples were packed on ice and sent via overnight delivery to RED Lab, LLC (RED Lab), located in Wilmington, North Carolina, following proper chain-of-custody procedures (Appendix C).

RED Lab used a QED Hydrocarbon Analyzer to quantitatively analyze the soil samples using the ultraviolet fluorescence (UVF) method for benzene, toluene, ethylbenzene, and xylene (BTEX); gasoline range organics (GRO); diesel range organics (DRO); total petroleum hydrocarbons (TPH); total aromatics; polycyclic aromatic hydrocarbons (PAHs); and benzo(a)pyrene (BaP).

4.4 Groundwater

Groundwater was not encountered in the six borings drilled on the site.

5.0 **RESULTS**

5.1 Geophysics

The EM61 early time gate data show the response from both shallow and deeper metallic objects (Figure 3). The differential response reduces the effect of shallow anomalies and emphasizes

anomalies from larger and more deeply buried metallic objects, such as USTs (Figure 4). The EM61 differential results indicated several anomalies (response above background) that did not correspond to known site features.

GPR data were collected over the EM61 anomalies. The GPR data collected did not indicate the presence of unknown USTs within the study area.

The EM61 early time gate response and differential response are shown on the plan sheet on Figures 5 and 6, respectively.

5.2 Sample Data

The soil sample UVF hydrocarbon analysis results for BTEX, GRO, DRO, and PAHs are presented in Table 2. The RED Lab laboratory report, which includes results for TPH, total aromatics, and BaP, is provided in Appendix B. Values are provided in milligrams per kilogram (mg/kg or ppm).

5.3 Sample Observations

The results of the laboratory testing indicated that BTEX and GRO were below the detection limits for all samples. DRO was detected in 1 of the 7 soil samples tested but below the NCDEQ action level of 100 ppm. The highest DRO reading was 20.2 ppm in Sample S-5 (5.0-5.5 feet) from Boring B342-4. PAHs were detected in 1 of the 7 soil samples tested. The highest PAH reading was 0.54 ppm in Sample S-5 (5.0-5.5 feet) from boring B342-4.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the PSA for Parcel 342 of NCDOT Project U-2579AB do not indicate the presence of abandoned USTs. No petroleum hydrocarbon soil contamination at or above NCDEQ action levels was detected within the proposed construction easement on Parcel 342.

6.2 Geophysics

The geophysical data do not indicate the presence of abandoned USTs.

6.3 Soil

The results of the PID field screening readings and off-site UVF hydrocarbon analyses do not indicate the presence of contaminated soil at or above the NCDEQ action levels within the proposed construction easement on Parcel 342 (Figure 7).

7.0 **RECOMMENDATIONS**

The four known USTs are within the proposed ROW on Parcel 342 and should be removed prior to property acquisition. Other than the known USTs, no limitations on construction activities or special handling of excavated soil are recommended for Parcel 342.

8.0 LIMITATIONS

ESP's professional services have been performed, findings obtained, and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. ESP is not responsible for the independent conclusions, opinions, or recommendations made by others based on the data presented in this report.

The passage of time may result in a change in the environmental characteristics at this site and surrounding properties. ESP does not warrant against future operations or conditions, or against operations or conditions present of a type or at a location not investigated. ESP does not assume responsibility for other environmental issues that may be associated with the subject site.

TABLES

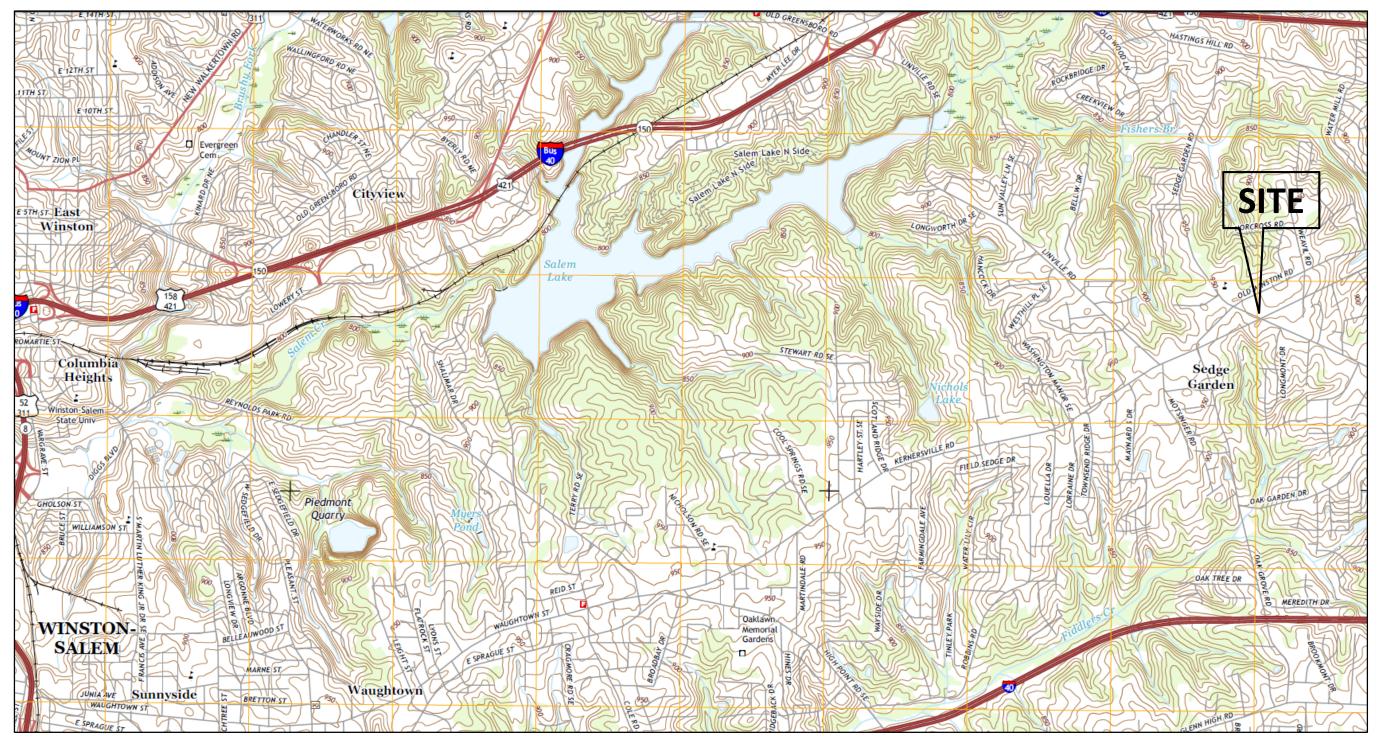
TABLE 1SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B342-1	none	4.3 (5.0-5.5)
B342-2	none	3.9 (9.0-9.5)
B342-3	none	5.9 (7.0-7.5)
B342-4	none	7.0 (5.0-5.5)
B342-5	none	2.5 (1.0-1.5)
B342-6	none	2.9 (2.0-2.5)

Boring	Sample ID (depth in feet bgs)	Date Collected	BTEX (C6-C9) (mg/kg)	GRO (C5-C10) (mg/kg)	DRO (C10-C35) (mg/kg)	PAHs (mg/kg)
B342-1	S-9 (9.0-9.5)	9/10/18	< 0.32	< 0.32	< 0.32	< 0.1
B342-2	S-9 (9.0-9.5)	9/10/18	<0.5	<0.5	<0.5	<0.16
B342-3	S-9 (9.0-9.5)	9/10/18	<0.45	<0.45	<0.45	< 0.15
B342-4	S-5 (5.0-5.5)	9/10/18	<0.51	<0.51	20.2	0.54
D342-4	S-9 (9.0-9.5)	9/10/18	<0.44	<0.44	<0.44	<0.14
B342-5	S-9 (9.0-9.5)	9/10/18	<0.43	<0.43	<0.43	<0.14
B342-6	S-3 (3.0-3.5)	9/10/18	<0.65	<0.65	<0.65	<0.21

TABLE 2SOIL SAMPLE UVF RESULTS SUMMARY

FIGURES



From: USGS US Topo 7.5 - minute map for WINSTON-SALEM EAST, NC Date: 2016, Scale: 1:24,000

PROJECT NO. CS34.366 SCALE AS SHOWN	FIGURE 1 – PARCEL 342, TAYLO SITE VICINITY
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DMN	(FUTURE I-74) FROM I-40 TO I-4 FORSYTH COUNTY, NOR1
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RN BELTWAY EASTERN SECTION -40 BUSINESS/US421 RTH CAROLINA



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a. Photo from northeast side of site looking southwest.



b. Photo from east side of site looking west.



c. Photo of marked known USTs.

PROJECT NO. CS34.366 SCALE AS SHOWN	FIGURE 2 – PARCEL 342, TAYLO SITE PHOTOGR
DATE 11/6/18 BY DMN	U-2579AB, WINSTON SALEM – NORTHERI (FUTURE I-74) FROM I-40 TO I-4
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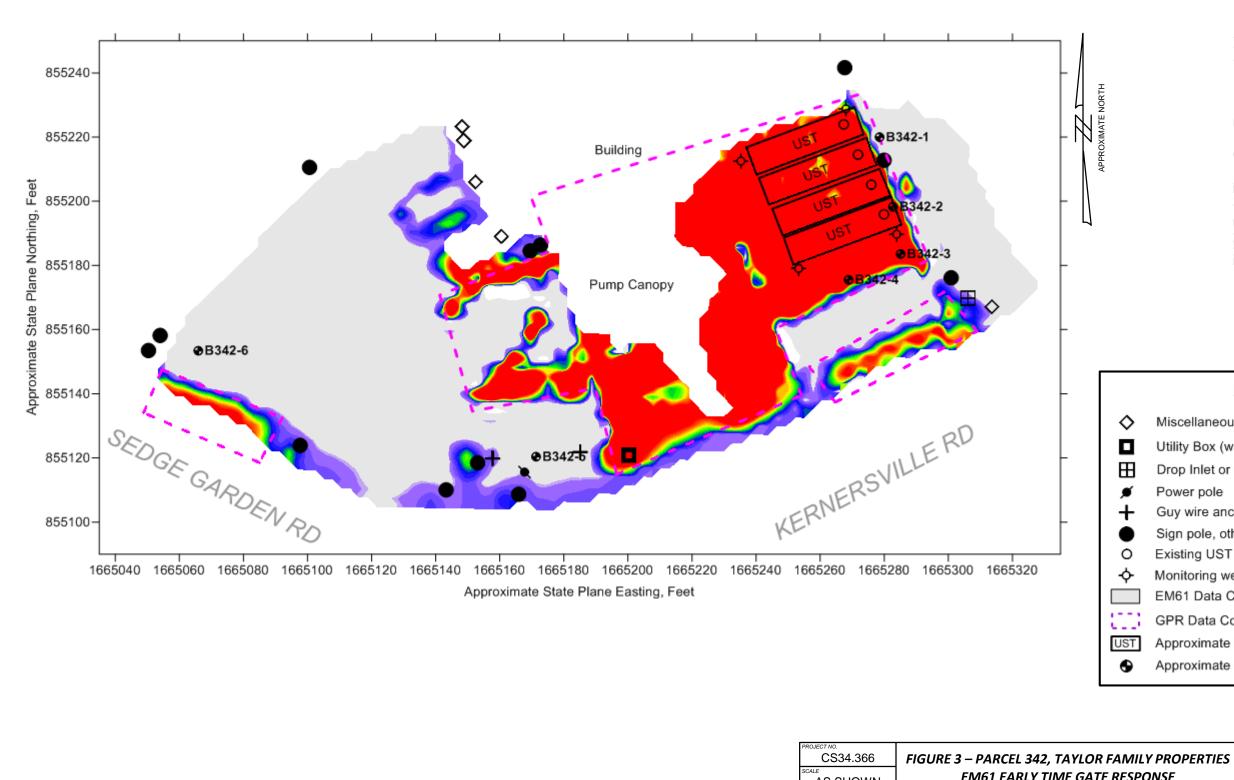
RN BELTWAY EASTERN SECTION I-40 BUSINESS/US421 RTH CAROLINA



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

EM61 EARLY TIME GATE RESPONSE AS SHOWN U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION 11/6/18 (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 DMN FORSYTH COUNTY, NORTH CAROLINA

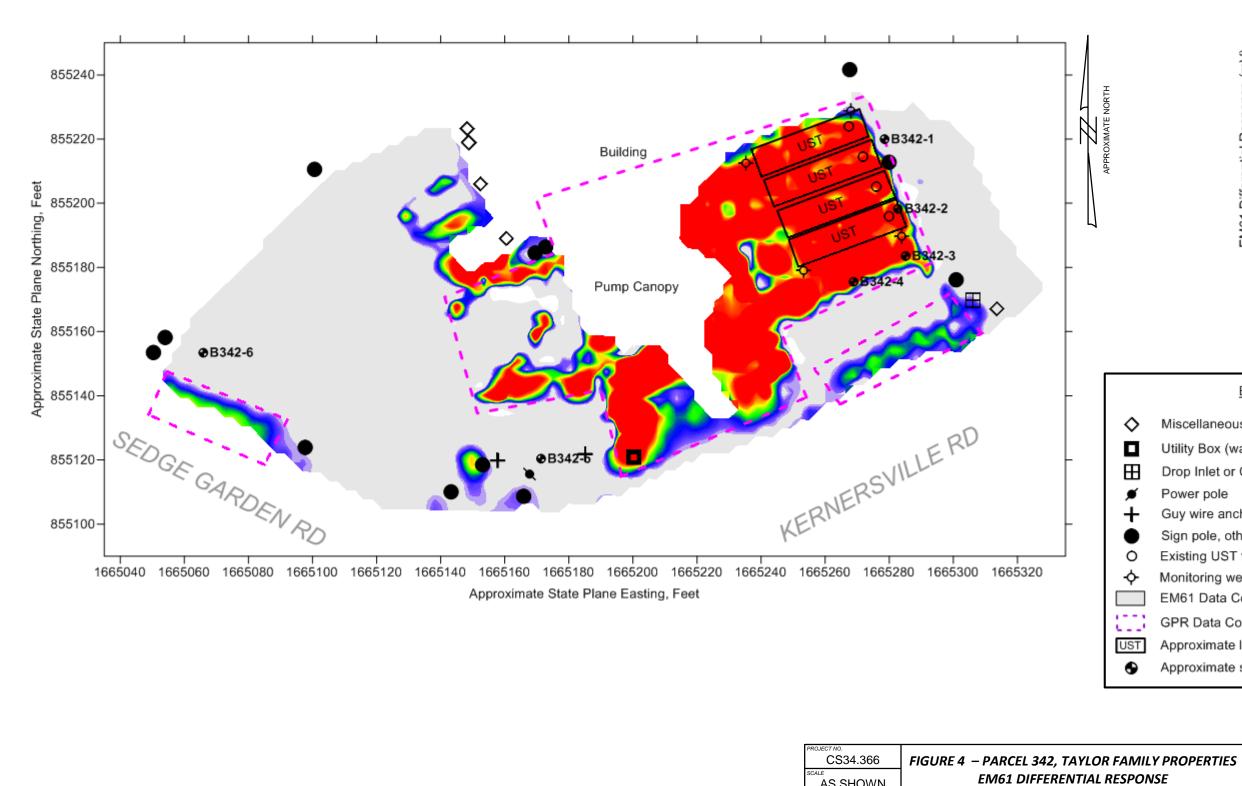
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Ħ	Drop Inlet or Catch Basin			
۲	Power pole			
+	Guy wire anchor			
۲	Sign pole, other pole			
Ó	Existing UST fill port			
¢	Monitoring well			
	EM61 Data Collection Areas			
000	GPR Data Collection Areas			
UST	Approximate location of known UST			
•	Approximate soil boring location			



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Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy	DATE 11/6/18	U-2579AB, WINSTON S
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UST	Approximate location of known UST			
•	Approximate soil boring location			

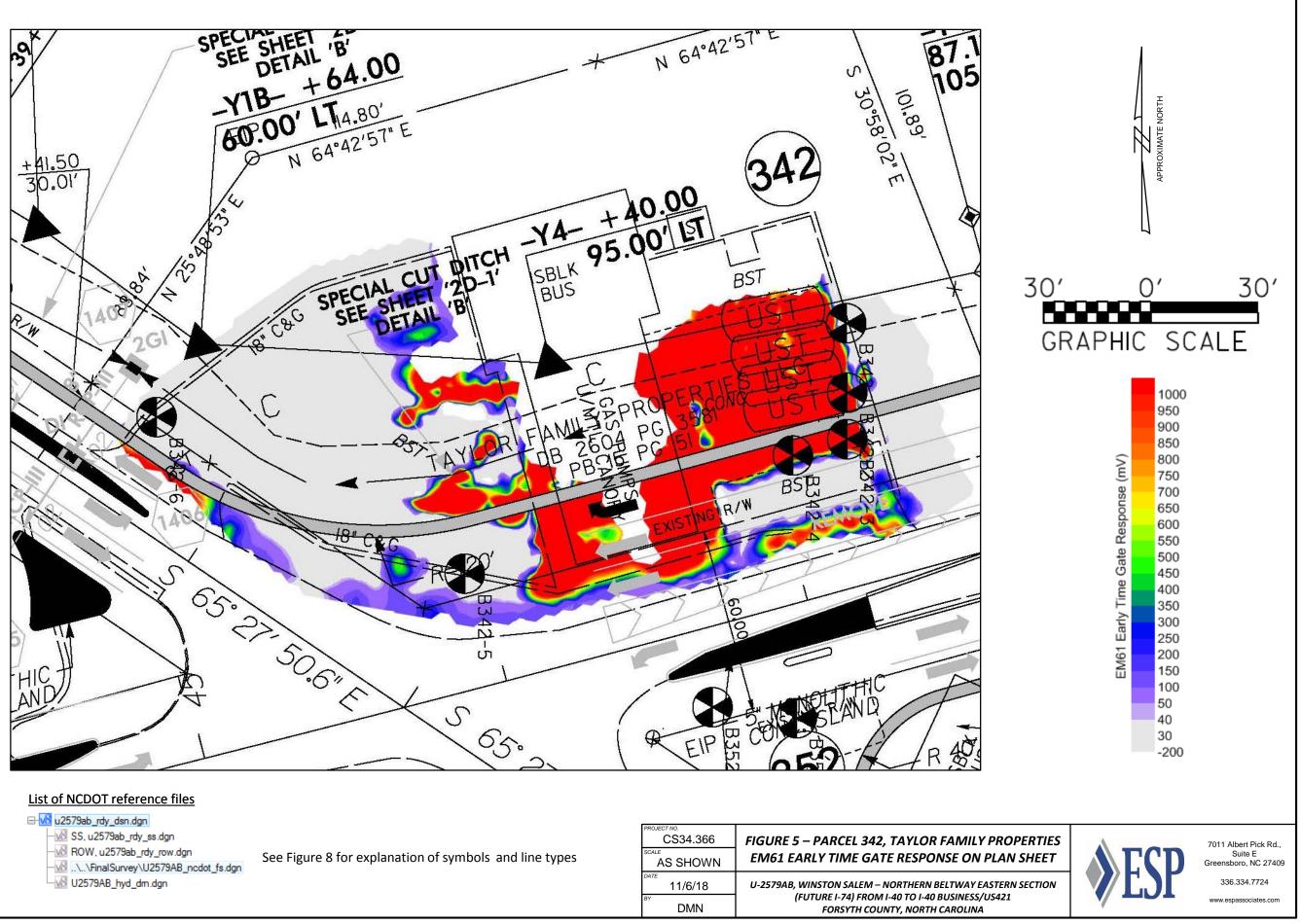
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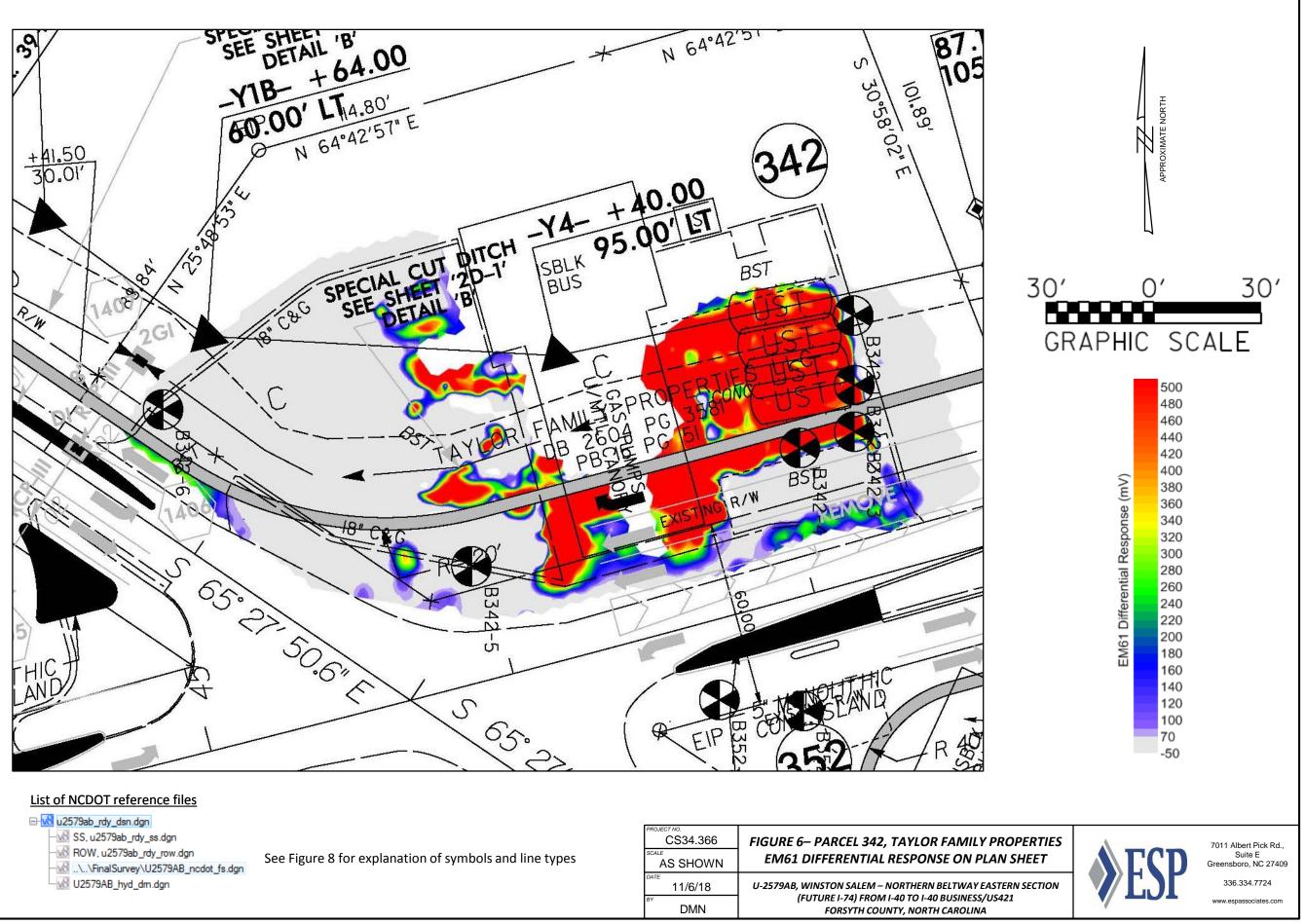


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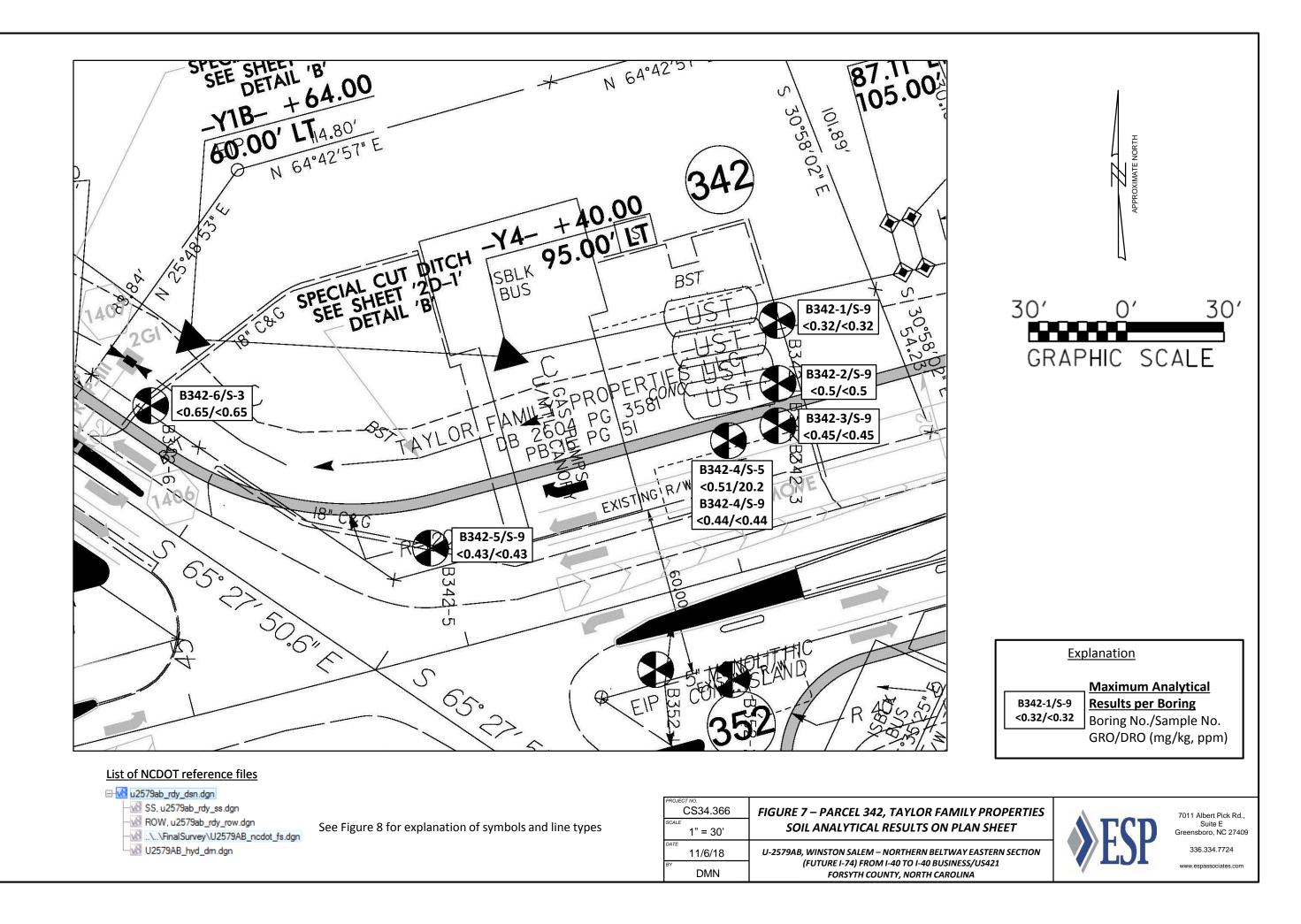
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CS34.366	FIGURE 5 – PARCEL 342, TAYLO
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CS34.366	FIGURE 6– PARCEL 342, TAYLO
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Jurisdictional Stream _js Equality Symbol Image: Construction of the		Proposed Cable Guiderail				Utility Traffic Sian
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Flow Arrow VEGETATION: U/G Telephone Conduit LOS B (S.U.E.*) U/G Telephone Conduit LOS B (S.U.E.*) Disappearing Stream Single Tree I/G Telephone Conduit LOS C (S.U.E.*) A/G Tank; Water, Spring I/G Telephone Conduit LOS D (S.U.E.*) I/G Te		Pavement Removal				
Flow Arrow Single Tree Single Tree UG Telephone Conduit LOS D (S.U.E.*) AG Tank; Water, Disappearing Stream Single Shrub o UG Telephone Conduit LOS D (S.U.E.*) AG Tank; Water, Vetland Hedge Woods Line Woods Line UG Fiber Optics Cable LOS D (S.U.E.*) Image: Conduit LOS D (S.U.E.*)		VEGETATION:				Underground Stor
Spring Single Shrub Image: Single Shrub Image		Single Tree	÷			5
Wetland + Proposed Lateral, Tail, Head Ditch Woods Line Woods Line - W						
Proposed Lateral, Tail, Head Ditch Woods Line Image: Contraction of the contrest of the contraction of the contraction of the contraction of t						
Proposed Lateral, Tail, Head Ditch Fiber Optics Cable LOS C (S.U.E.*) Fider of Information		-	- <u></u>			
	raise sump —					

PROJECT NO. CS34.366	FIGURE 8
scale N/A	LEGEND FOR PLAN SHE
DATE 11/6/18	U-2579AB, WINSTON SALEM – NORTHERN B
DMN	(FUTURE I-74) FROM I-40 TO I-40 E FORSYTH COUNTY, NORTH

PROJECT	REFERENCE NO. SHEET NO.
ole	Ø
Sie	0
	8
nt	•
Line LOS B (S.U.E*)	
Line LOS C (S.U.E*)	
Line LOS D (S.U.E*)	
nd Water Line	A/G Water
	8
ble Hand Hole	E
ole LOS B (S.U.E.*)	n
ole LOS C (S.U.E.*)	nn
ble LOS D (S.U.E.*)	Tr
Optic Cable LOS B (S.U.E.*)	
Optic Cable LOS C (S.U.E.*)	
Optic Cable LOS D (S.U.E.*)	N N NO
	♦
	¢
ne LOS B (S.U.E.*)	•
ne LOS C (S.U.E.*)	
ne LOS D (S.U.E.*)	A/G Gos
nd Gas Line	A70 005
WER:	
ver Manhole	
ver Cleanout	-
	۲
y Sewer Line	
nd Sanitary Sewer	
Nain Line LOS B (S.U.E.*)	
Nain Line LOS C (S.U.E.*)	
Nain Line LOS D (S.U.E.*)	
DUS:	
	•
with Base	
ed Object	0
Signal Box	5
	_
own U/G Line LOS B (S.U.E.*)	
Vater, Gas, Oil	
d Storage Tank, Approx. Loc. ——	
Vater, Gas, Oil	
nental Boring	
e LOS A (S.U.E.*)	Θ
According to Utility Records —	-
mation	E.O.I.
	2.0.1.

8 HEET FIGURES

RN BELTWAY EASTERN SECTION -40 BUSINESS/US421 RTH CAROLINA



7011 Albert Pick Rd., Suite E Greensboro, NC 27409

336.334.7724

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APPENDIX A SOIL BORING LOGS

	FSP			FIE		G	BORING NO.				
	ECT NAME:		OOT U-2579.	AB PSA	PROJ. NO.:		B342-1				
TYPE DRILI DRILI	OF BORING _ING FIRM:	:	Direct Pus SAEDACC Brian Ewir eoprobe 782	sh CO ng	DATE STARTED: 9/6/18 DATE FINISHED: 9/6/18 SAMPLE METHOD: 5' Macro Co LOGGED BY: D. Nance	DATE FINISHED: 9/6/18 TOTAL DEPTH SAMPLE METHOD: 5' Macro Core DEPTH TO GW					
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		FIELD CLASSIFICATIO PHYSICAL DESCRIP	N AND	REMARKS				
	SA	SA	RE (0.0-0.2 0.2-4.5	Topsoil Red-brown sandy, clayey silt	-	Core 1 Rec 5.0'/5.0'				
 1	S-1	1.0-1.5	3.6	0.2-4.3	Rea-brown sandy, dayby sin						
2	S-2	2.0-2.5	4.3								
3	S-3	3.0-3.5	4.0								
4	S-4	4.0-4.5	3.4	4.5-5.0	Red-brown to tan silty sand		Core 2 Rec 5.0'/5.0'				
_5	S-5	5.0-5.5	4.3	5.0-7.3	Red-brown silty clay						
6	S-6	6.0-6.5	3.5								
7	S-7	7.0-7.5	3.1	7.3-10.0	Red-brown sandy, clayey silt						
8	S-8	8.0-8.5	4.2								
9 (S-9	9.0-9.5	2.8								
10		Sam	ple selected	for laborato	ry analysis						
<u>11</u>											
12											
 13											
15											

	FSP			FIEL	D BORIN	G LOG		BORING NO.
	IECT NAME:		OT U-2579	AB PSA		PROJ. NO.: <u>CS34.366</u>		B342-2
	TION: OF BORING	-	ast side of L Direct Pus		DATE STARTED:	9/6/18	SHEE	T: 1 of 1
DRILI	LING FIRM:		SAEDACC		DATE FINISHED:			
DRILI DRILI	_ER: _ RIG:	G	Brian Ewir eoprobe 782		SAMPLE METHOD: LOGGED BY:		DEPTH TO GV COMMEN	
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)			SSIFICATION AND		REMARKS
•				0.0-0.3 0.3-1.7	Topsoil Red-brown silty sa	nd		Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	0.4					
2	S-2	2.0-2.5	0.2	1.7-9.0	Red-brown silty, sa	andy clay		
n								
3	S-3	3.0-3.5	0.2					-
•								
4	S-4	4.0-4.5	0.3					Core 2 Rec 5.0'/5.0'
•								
5	S-5	5.0-5.5	0.3					
6	S-6	6.0-6.5	0.2					
-								
7	S-7	7.0-7.5	0.0					
_8	S-8	8.0-8.5	2.6					
·								
9 (S-9	9.0-9.5	3.9	9.0-10.0	Red-brown sandy,	clayey silt		
		- Cami	le selected	for laboratory	/ analysis			
10		Jani	le selecteu					
11								
12								
<u> </u>								
. 13								
<u> </u>								
•								
15								

	FSP			FIFI				BORING NO.
LOCA	IECT NAME:	S	DOT U-2579, outh side of	AB PSA USTs		PROJ. NO.: <u>CS34.366</u>		B342-3
	OF BORING	:	Direct Pus		DATE STARTED		SHEE TOTAL DEPTH	
DRILI			Brian Ewir	ıg	SAMPLE METHOD		DEPTH TO GV	
	RIG:		eoprobe 782	22 DT	LOGGED BY	D. Nance	COMMEN	T:
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		PHYSIC	ASSIFICATION AND AL DESCRIPTION		REMARKS
				0.0-0.2 0.2-0.9	Asphalt Gravel			Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	3.3	0.9-9.1	Red-brown sandy	. siltv clav		
•		1.0 1.0				, - , , - , ,		
	S-2	0.0.0.5	3.3					
2	5-2	2.0-2.5	5.5					
•								
_3	S-3	3.0-3.5	4.2					
•								
4	S-4	4.0-4.5	5.0					Core 2 Rec 5.0'/5.0'
·								
5	S-5	5.0-5.5	4.4					
6	S-6	6.0-6.5	4.7					
		0.0-0.0						
•								
7	S-7	7.0-7.5	5.9					
8	S-8	8.0-8.5	4.4					
•								
9 (S-9	9.0-9.5	2.9	9.1-10.0	Orange-tan to whi	te silty sand		
·								
10		Sam	ole selected	for laborator	y analysis			
11								
•								
12								
l								
13								
14								
•								
·								
15	1		1	1				

Boring Logs B342-3 11/6/2018

	FSP			FIFI		GLOG		BORING NO.			
	IECT NAME:		OOT U-2579/	AB PSA		PROJ. NO.: CS34.366		B342-4			
TYPE DRILL DRILL	OF BORING	:	Direct Pus SAEDACC Brian Ewin eoprobe 782	sh CO ng	DATE FINISHED: SAMPLE METHOD:	DATE STARTED: 9/6/18 SHEE DATE FINISHED: 9/6/18 TOTAL DEPTH SAMPLE METHOD: 5' Macro Core DEPTH TO GW LOGGED BY: D. Nance COMMENT					
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)			SSIFICATION AND		REMARKS			
 				0.0-0.2 0.2-0.6	Asphalt Gravel			Core 1 Rec 5.0'/5.0'			
1	S-1	1.0-1.5	3.9	0.6-6.0	Red-brown sandy,	silty clay					
2	S-2	2.0-2.5	4.6								
3	S-3	3.0-3.5	4.8								
4	S-4	4.0-4.5	4.6					Core 2 Rec 5.0'/5.0'			
5 (S-5	5.0-5.5	7.0								
6	S-6	6.0-6.5	le selected 4.2	for laborator 6.0-10.0	y analysis Red-brown sandy,	clayey silt					
7	S-7	7.0-7.5	3.4								
8	S-8	8.0-8.5	4.1								
<u>9</u>	S-9	9.0-9.5	3.7								
<u>10</u>		Samı	ole selected	for laborator	y analysis						
11											
12											
13											
 14											
15											

	FCP			FIFI	D BORIN	GLOG		BORING NO.
	IECT NAME:		DOT U-2579	AB PSA		PROJ. NO.: <u>CS34.366</u>	;	B342-5
	OF BORING		Direct Pus		DATE STARTED:	9/6/18	SHEET	: 1 of 1
	_ING FIRM:	<u> </u>	SAEDACC		DATE FINISHED:		TOTAL DEPTH	
DRILI			Brian Ewir		SAMPLE METHOD:		DEPTH TO GW	
DRILI	_ RIG:		eoprobe 782	22 DT	LOGGED BY:	D. Nance	COMMENT	:
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ff)	PID READING (ppm)			SSIFICATION AND L DESCRIPTION		REMARKS
				0.0-0.1	Topsoil			Core 1 Rec 5.0'/5.0'
•								
_1	S-1	1.0-1.5	2.5	0.1-6.4	Red-brown sandy,	clayey silt		
•								
2	S-2	2.0-2.5	1.5					
	02	2.0-2.5	1.0					
3	S-3	3.0-3.5	1.6					
•								<u>.</u>
•								
4	S-4	4.0-4.5	2.3					Core 2 Rec 5.0'/5.0'
-								
5	S-5	5.0-5.5	1.6					
5		5.0-5.5	1.0					
6	S-6	6.0-6.5	2.2	6.4-10.0	Orange to white-gr	ay silty sand		
-								
7	S-7	7.0-7.5	2.3					
	S-8	0.0.0.5	2.0					
_8	3-0	8.0-8.5	2.0					
9 (S-9	9.0-9.5	2.3					
-								
10		Sam	le selected	for laboratory	analysis			
•								
11								
12								
•								
13								
<u> </u>								
14								
[[
15								

	TCD			FIF				BORING NO.
	ESP			FIE		DRING LOG		
	ECT NAME:		DOT U-2579/			PROJ. NO.: CS34.	366	B342-6
	TION: OF BORING		West side of Direct Pus			STARTED: 9/6/18	SHEET	Γ: 1 of 1
	LING FIRM:	<u>.</u>	SAEDACC			FINISHED: 9/6/18	TOTAL DEPTH	
DRILL			Brian Ewin			METHOD: 5' Macro Core	DEPTH TO GW	
DRILL	RIG:		eoprobe 782	22 DT	LO	GGED BY: D. Nance	COMMENT	Г:
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)			FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION		REMARKS
•				0.0-0.3 0.3-0.7	Asphalt Gravel			Core 1 Rec 4.0'/5.0'
1	S-1	1.0-1.5	1.3	0.7-4.0	Orange-b	prown sandy silt		
2	S-2	2.0-2.5	2.9					
.								
3 (S-3	3.0-3.5	2.3					
_ _		0.0 0.0						
·			nple selecte	d for labora	tory analysis			
4	S-4	No Rec						Refusal at 5.0'
5								
6								
7								
.								
8								
•								
9								
_10								
44								
11								
-								
12								
13								
1.4								
14								
15	t		1	1				

APPENDIX B

RED LAB LABORATORY TESTING REPORT

				Hydroca	arbon An	alysis Re	esults						
	ESP ASSOCIATES, INC. 7011 ALBERT PICK ROAD SUITE E GREENSBORO NC 27409								Sample Sample Sampl	es ext			Monday, September 10, 2018 Monday, September 10, 2018 Wednesday, September 12, 2018
Contact:	DILLON NANCE									Ор	erator		NICK HENDRIX
Project:	U-2579 AB												
													U0090
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
										C5 - C10	C10 - C18	C18	
s	B342-6 (S-3)	25.9	<0.65	<0.65	<0.65	<0.65	<0.13	<0.21	<0.026	0	100	0	Residual HC
S	B342-5 (S-9)	17.3	<0.43	<0.43	<0.43	<0.43	<0.09	<0.14	<0.017	0	0	0	PHC not detected
S	B342-4 (S-5)	20.3	<0.51	<0.51	20.2	20.2	10.7	0.54	<0.02	0	81.6	18.4	V.Deg.PHC 77.4%,(FCM),(BO)
S	B342-4 (S-9)	17.5	<0.44	<0.44	<0.44	<0.44	<0.09	<0.14	<0.018	0	0	0	PHC not detected
S	B342-3 (S-9)	18.2	<0.45	<0.45	<0.45	<0.45	<0.09	<0.15	<0.018	0	100	0	PHC not detected
s	B342-2 (S-9)	20.0	<0.5	<0.5	<0.5	<0.5	<0.1	<0.16	<0.02	0	0	0	PHC not detected
S	B342-1 (S-9)	12.9	<0.32	<0.32	<0.32	<0.32	<0.06	<0.1	<0.013	0	0	0	,(FCM)
	Initia	Calibrator	QC check	OK					Final FC	CM QC	Check	OK	- 102.7 %
Abbreviatio	on values in mg/kg for soil samples and m ns :- FCM = Results calculated using Fund prift : (SBS)/(LBS) = Site Specific or Library	damental Calib	ration Mode	: % = confide	nce of hydroc	arbon identific	ation : (PFM) =	= Poor Finge	erprint Match	n : (T) =	Turbid : (P) = Pa	rticulate detected

APPENDIX C CHAIN-OF-CUSTODY FORM

Client Name:	ESP Agosciates, Inc.	
Address:	ESP Agysciates, Inc. 7011 Albert Pick Rd. Ste E Greensborg, NE 27409	D
Contact:	Dillon Nonce	
Project Ref.:	U-2579 AB	RAPIDEN
Email:	d. nance Despressociates	cim
Phone #:	336-404-3117	CHAIN
Collected by:	P. Nance	



RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

RED Lab, LLC 5598 Marvin K Moss Lane MARBIONC Bldg, Suite 2003 Wilmington, NC 28409

Each sample will be analyzed for BTEX, GRO, DRO, TPH, PAH total aromatics and BaP

Sample Collection	TAT Requested		Matrix	Sample ID	UVF	GC BTEX	TEX Total Wt.	Tare Wt.	Sample Wt.		
Date/Time	24 Hour	48 Hour	(S/W)						-		
9/10/18		V	5	B331-5 5-9	V		49.2	43.9	\$ 5.3		
+				6331-4 5-9	,		\$52.7	45.6	8.1		
				B331-3 5-9			51.6	44.1	8.1 7.5		
				B331-2 5-9			53.0	45.8	7.2		
				B331-1 5-9			52.0	45.4	6.6		
				B352-3 9-9		47,4		43.7	3.7		
				B352-2 5-3			52.8	43.7	9.1		
				B352-1 5-9		100 M	519	43.8	8.1		
				B342-6 5-3			49.8	44.4	5.4		
				B342-5 5-4			52.2	44.1	. 8.1		
				B342-4 5-5			51.8	QR 691.9	6.9		
				B342-4 5-9		5	2.0 44		8.0		
				B342-3 5-9			52.1	44.4	7.7		
				B342-2 5-9			50.7	43.7	7.0		
				B342-1 5-9			50.1	43.9	6.2		
				B54-1 5-9			51.0	44.1	6.9		
				B54-2 5-3			51.2	43.5	7.7		
				B54-3 5-9			51.9	44.0	7.9		
				B54-4 5-7	1		49.8	44.3	5.5		
V		Y	V	B54-5 5-9	V		51.2	44.3			
Comments: X Mos	+ Sampl	es un-	lerwein rewite	larachy unaffected. WH	alle)			D Lab USE	ONLY		
Relinquished by			Date	/Time Accepted by		Date/Time					
	ance		9/1		9/11.	(:	(101			
	uished by			/Time Accepted by	· ·//v	Date/Time		U V			



May 28, 2019 June 9, 2019 Revision

Mr. Gordon Box, LG Geotechnical Engineering Unit North Carolina Department of Transportation 1020 Birch Ridge Drive Raleigh, NC 27610

RE: ENVIRONMENTAL SITE ASSESSMENT OF PARCEL 342-REMNANT Circle K, Taylor Family Properties 4401 Kernersville Road, Kernersville, North Carolina ESP Project No. GR22.313

TIP No.:U-2579ABWBS N0.:34839.1.8County:ForsythDescription:Winston-Salem - Northern Beltway Eastern Section (Future I-74) from I-40 to I-40
Business/US 421

Dear Mr. Box:

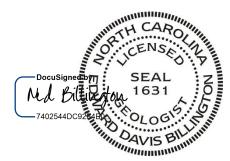
ESP Associates, Inc. (ESP) is pleased to submit this report on our Phase II Environmental Assessment of the subject parcel. This work was performed in accordance with your Request for Proposal dated April 1, 2019 and our Cost Proposal dated April 15, 2019.

We appreciate the opportunity to assist you during this phase of the project. If you should have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

ESP Associates, Inc.

Edward D. Billington, PG Senior Geologist/Geophysicist DMN/SBM/EDB/CJW



not considered Final unless all signatures are completed

7011 Albert Pick Road, Suite E, Greensboro, NC 27409 1.800.960.7317 NC: 336.334.7724 www.espassociates.com

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Appendix C Chain-of-Custody Form

1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to construct the Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40 Business/US 421. In May 2018, ESP performed a Preliminary Site Assessment of the proposed right-of-way (ROW) of Parcel 342 that included Borings B342-1 through B342-6. The results of that work were provided in a report to the NCDOT dated November 5, 2018, and indicated that there were no abandoned USTs or petroleum hydrocarbon soil contamination at or above the NCDEQ action levels in the proposed ROW. Groundwater was not encountered within the drilling depths of 10 feet below ground surface.

In April 2019, the NCDOT requested that ESP perform a Phase II Environmental Assessment of the planned remnant of Parcel 342 to locate possible underground storage tanks (USTs), sample soil, and delineate potentially contaminated soil (Figure 1). The remnant is located outside of the proposed ROW.

2.0 HISTORY

This parcel is owned by Taylor Family Properties and is currently occupied by an active gas station/convenience store (Circle K). The facility is listed in the North Carolina Department of Environmental Quality's (NCDEQ's) UST Section Registry with Facility ID #00-0-0000032502. A release was reported in June 2016, assigned Ground Water Incident #44687, and was closed in September 2016. Our online search of the NCDEQ records did not indicate any relevant documents for this site.

3.0 SITE OBSERVATIONS

During our April and May 2019 field work, the site was operating as an active gas station/convenience store (Figure 2). There are currently four 12,000-gallon USTs in use (two gasoline, one diesel, and one kerosene). The ground in the study area was covered by asphalt, concrete, and grass. Portions of the study area were obstructed by air conditioner units, dumpsters, debris, and a shed.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on April 17, 18 and 23, 2019. We performed direct-push drilling and sampling of subsurface soils within the planned remnant of Parcel 342 on May 2, 2019. A photoionization detector (PID) was used to screen subsurface soils in the field and select soil samples to send for laboratory analysis.

4.1 Geophysics

ESP performed a metal detector study over the accessible areas of the site using a Geonics EM61 MK2 with a line spacing of about three feet (Figures 3 and 4). Location control was provided in real-time using a differential global positioning system (DGPS). We collected ground-penetrating radar (GPR) data over selected EM61 anomalies and areas of reinforced concrete using our Sensors and Software Noggin 250 GPR system. The GPR data were collected using a line spacing of one to two feet.

4.2 Borings

ESP performed direct-push drilling activities within the proposed remnant of Parcel 342 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Four borings were drilled on May 2, 2019 using direct-push drilling and hand augering (B342-7 through B342-10). The soil borings were advanced using a GeoProbe 54DT direct-push rig. Continuous soil samples were obtained to a depth of approximately ten feet using four-foot long Macro-Core® tubes. Due to the presence of nearby buried utilities, a hand auger was used by the driller for the first 3 to 4 feet of B342-8, B342-9, and B342-10. The sampling equipment was decontaminated prior to drilling and between borings by the driller using a Liquinox® detergent solution.

4.3 Soil Sample Protocol

Representative soil samples were taken from the Macro-Core tubes or hand auger at approximate one-foot intervals by the ESP field geologist while wearing nitrile disposable gloves. Each sample was placed in a sealed plastic bag and then kept in a sunny area for at least 5 minutes prior to measuring volatile organic compound (VOC) levels in the head space with the PID. The PID readings were less than 10 parts per million (ppm) for each soil sample.

For samples selected for laboratory analysis, an approximate 10-gram soil sample was collected from the Macro-Core tube using a Terra Core Sampler and placed into a laboratory-supplied 40-milliliter volatile organic analysis (VOA) vial containing methanol. Once sealed, the vial was labeled with the sample identification number and then shaken vigorously for about one minute. The samples were packed on ice and sent via overnight delivery to RED Lab, LLC (RED Lab), located in Wilmington, North Carolina, following proper chain-of-custody procedures (Appendix C).

RED Lab used a QED Hydrocarbon Analyzer to quantitatively analyze the soil samples using the ultraviolet fluorescence (UVF) method for benzene, toluene, ethylbenzene, and xylene (BTEX); gasoline range organics (GRO); diesel range organics (DRO); total petroleum hydrocarbons (TPH); total aromatics; polycyclic aromatic hydrocarbons (PAHs); and benzo(a)pyrene (BaP).

4.4 Groundwater

Groundwater was not encountered in the 4 borings drilled in the Parcel 342-Remnant.

5.0 **RESULTS**

5.1 Geophysics

The EM61 early time gate data show the response from both shallow and deeper metallic objects (Figure 3). The differential response reduces the effect of shallow anomalies and emphasizes anomalies from larger and more deeply buried metallic objects, such as USTs (Figure 4).

The EM61 differential results indicated several anomalies (response above background) that did not correspond to known site features. GPR data were collected over the EM61 anomalies. The GPR data collected did not indicate the presence of unknown USTs within the study area.

The EM61 early time gate response and differential response are shown on the plan sheet on Figures 5 and 6, respectively.

5.2 Sample Data

The soil sample UVF hydrocarbon analysis results for BTEX, GRO, DRO, and PAHs are presented in Table 2. The RED Lab laboratory report, which includes results for TPH, total aromatics, and BaP, is provided in Appendix B. Values are provided in milligrams per kilogram (mg/kg or ppm).

5.3 Sample Observations

The results of the laboratory testing indicated that BTEX, GRO, and PAHs were below the detection limits for the four samples tested. DRO was detected in one of the 4 soil samples tested (Sample B342-7/S4) at a concentration of 1.8 ppm, below the NCDEQ action level of 100 ppm.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the Phase II investigation of the planned remnant of Parcel 342 do not indicate the presence of abandoned USTs. No petroleum hydrocarbon soil contamination at or above NCDEQ action levels was detected within the planned remnant of Parcel 342.

6.2 Geophysics

The geophysical data do not indicate the presence of abandoned USTs.

6.3 Soil

The results of the PID field screening readings and off-site UVF hydrocarbon analyses do not indicate the presence of contaminated soil at or above the NCDEQ action levels within the planned remnant of Parcel 342 (Figure 7).

7.0 **RECOMMENDATIONS**

Other than the 4 known USTs within the proposed ROW on Parcel 342, no limitations on construction activities or special handling of excavated soil are recommended for the planned remnant of Parcel 342.

8.0 LIMITATIONS

ESP's professional services have been performed, findings obtained, and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. ESP is not responsible for the independent conclusions, opinions, or recommendations made by others based on the data presented in this report.

The passage of time may result in a change in the environmental characteristics at this site and surrounding properties. ESP does not warrant against future operations or conditions, or against operations or conditions present of a type or at a location not investigated. ESP does not assume responsibility for other environmental issues that may be associated with the subject site.

TABLES

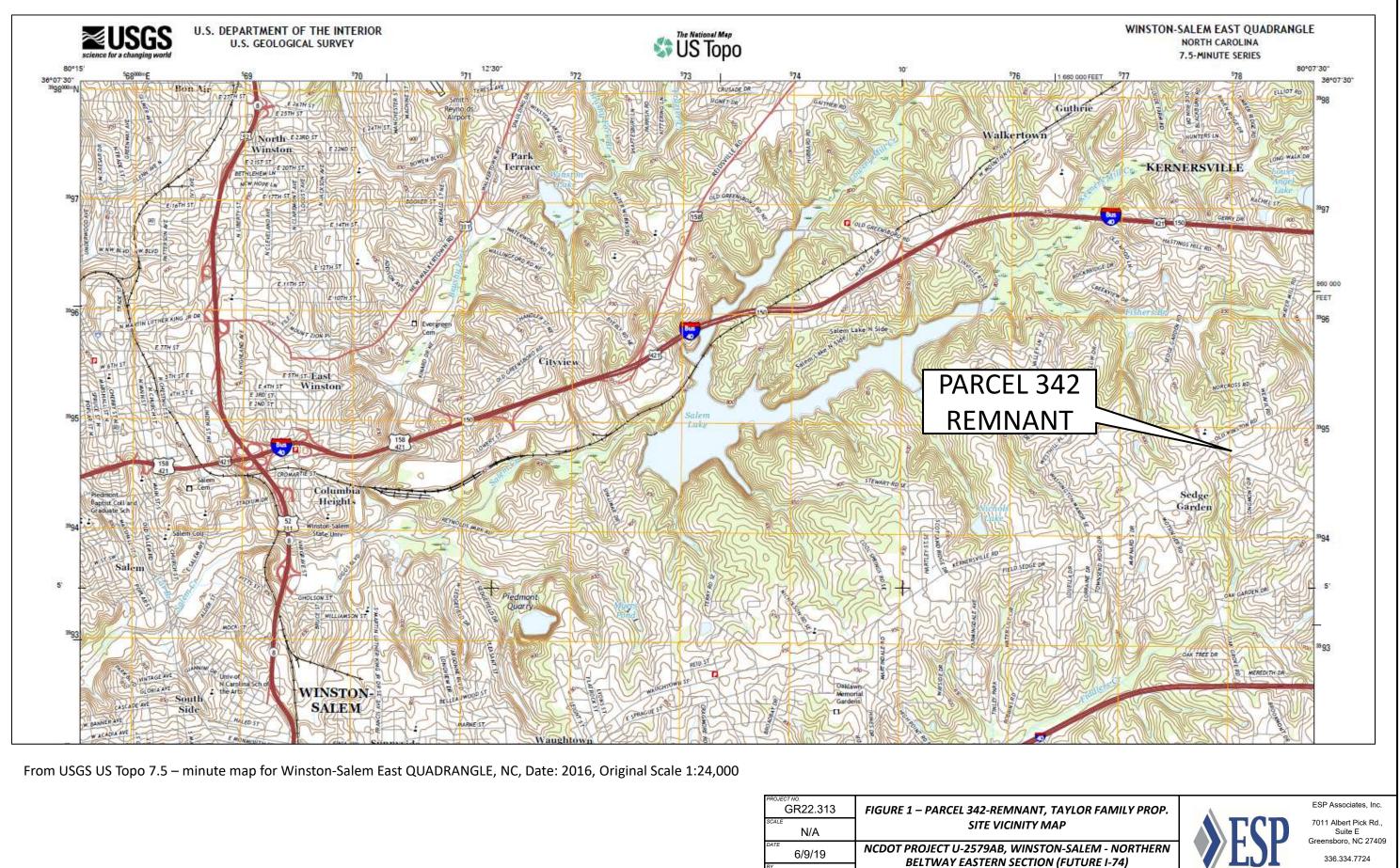
TABLE 1SOIL SAMPLE PID READINGS

Boring	Date Collected	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B342-7	5/2/19	none	3.3 (4.0-4.5)
B342-8	5/2/19	none	2.5 (1.0-1.5)
B342-9	5/2/19	none	3.5 (5.0-5.5)
B342-10	5/2/19	none	2.7 (9.0-9.5)

Boring	Sample ID (depth in feet bgs)	Date Collected	BTEX (C6-C9) (mg/kg)	GRO (C5-C10) (mg/kg)	DRO (C10-C35) (mg/kg)	PAHs (mg/kg)
B342-7	S4 (4.0-4.5)	5/2/19	<0.61	<0.61	1.8	<0.2
B342-8	S8 (8.0-8.5)	5/2/19	<0.26	<0.26	<0.26	<0.08
B342-9	S5 (5.0-5.5)	5/2/19	<0.15	<0.15	<0.15	<0.05
B342-10	S9 (9.0-9.5)	5/2/19	<0.36	<0.36	<0.36	<0.12

TABLE 2SOIL SAMPLE UVF RESULTS SUMMARY

FIGURES



PROJECT NO. GR22.313	FIGURE 1 – PARCEL 342-REMNANT, TAYLOR FAMI
scale N/A	SITE VICINITY MAP
6/9/19	NCDOT PROJECT U-2579AB, WINSTON-SALEM - N BELTWAY EASTERN SECTION (FUTURE I-74
^{BY} SBM/EDB	FORSYTH COUNTY, NORTH CAROLINA

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A. Photograph of edge of known USTs and part of study area on east side of the gas station, looking west.



B. Photograph of study area on the east side of the gas station, looking southwest.



C. Photograph of rear of the gas station building with fenced-in air conditioning systems, looking southwest.



D. Photograph of western part of the study area, looking northeast.

FIGURE 2 – PARCEL 342-REMNAN	PROJECT NO. GR22.313
SITE PHOTOG	scale N/A
NCDOT PROJECT U-2579AB, WINS BELTWAY EASTERN SECT	^{DATE} 6/9/19
FORSYTH COUNTY, NO	BY SBM/EDB

NT, TAYLOR FAMILY PROP. GRAPHS

STON-SALEM - NORTHERN ION (FUTURE I-74) ORTH CAROLINA

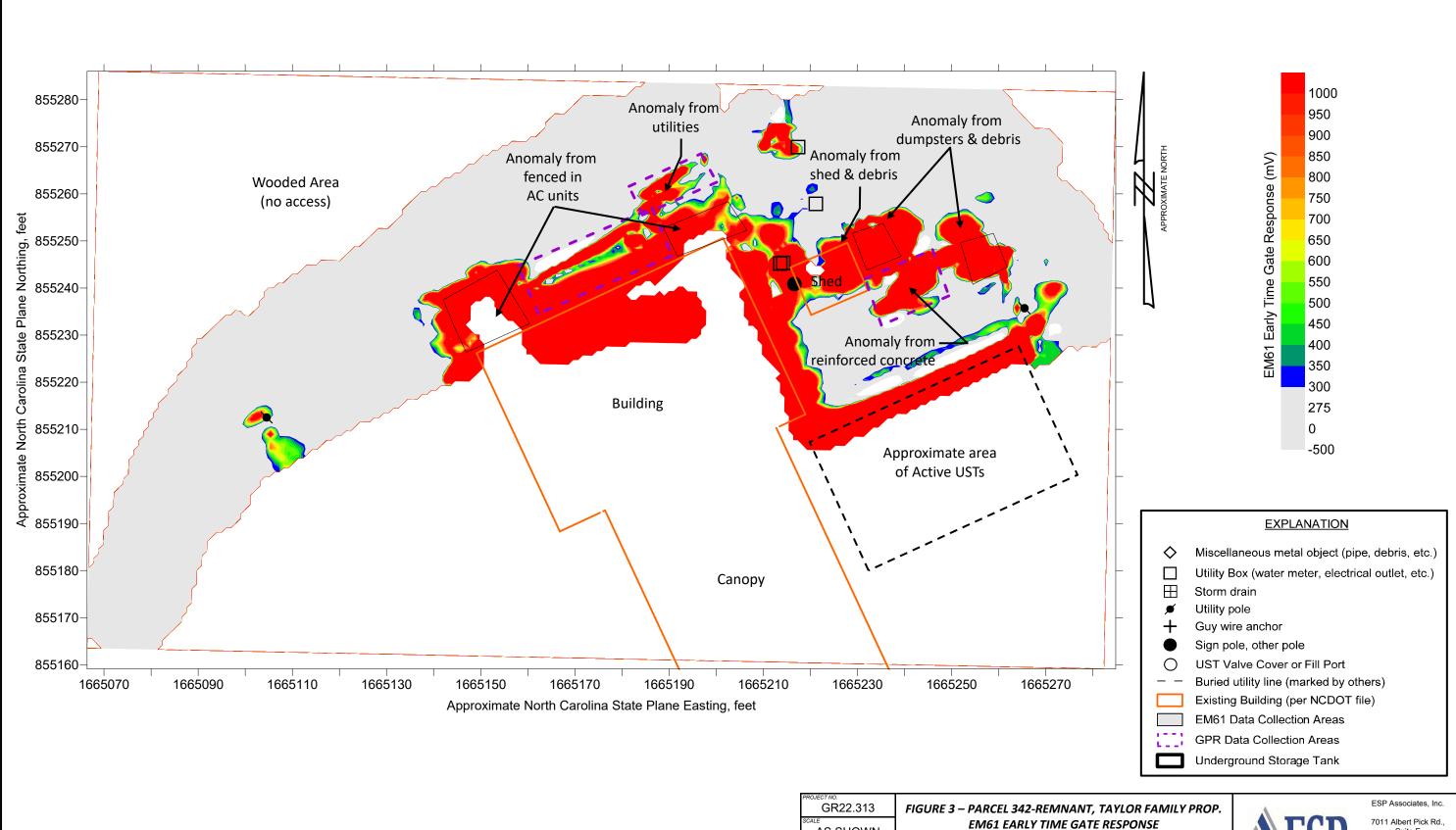


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	AS SHOWN	AS SHOWN
	6/9/19	6/9/19 6/9/19 BELTWAY EASTERN SECTION
	SBM/EDB	51
•		

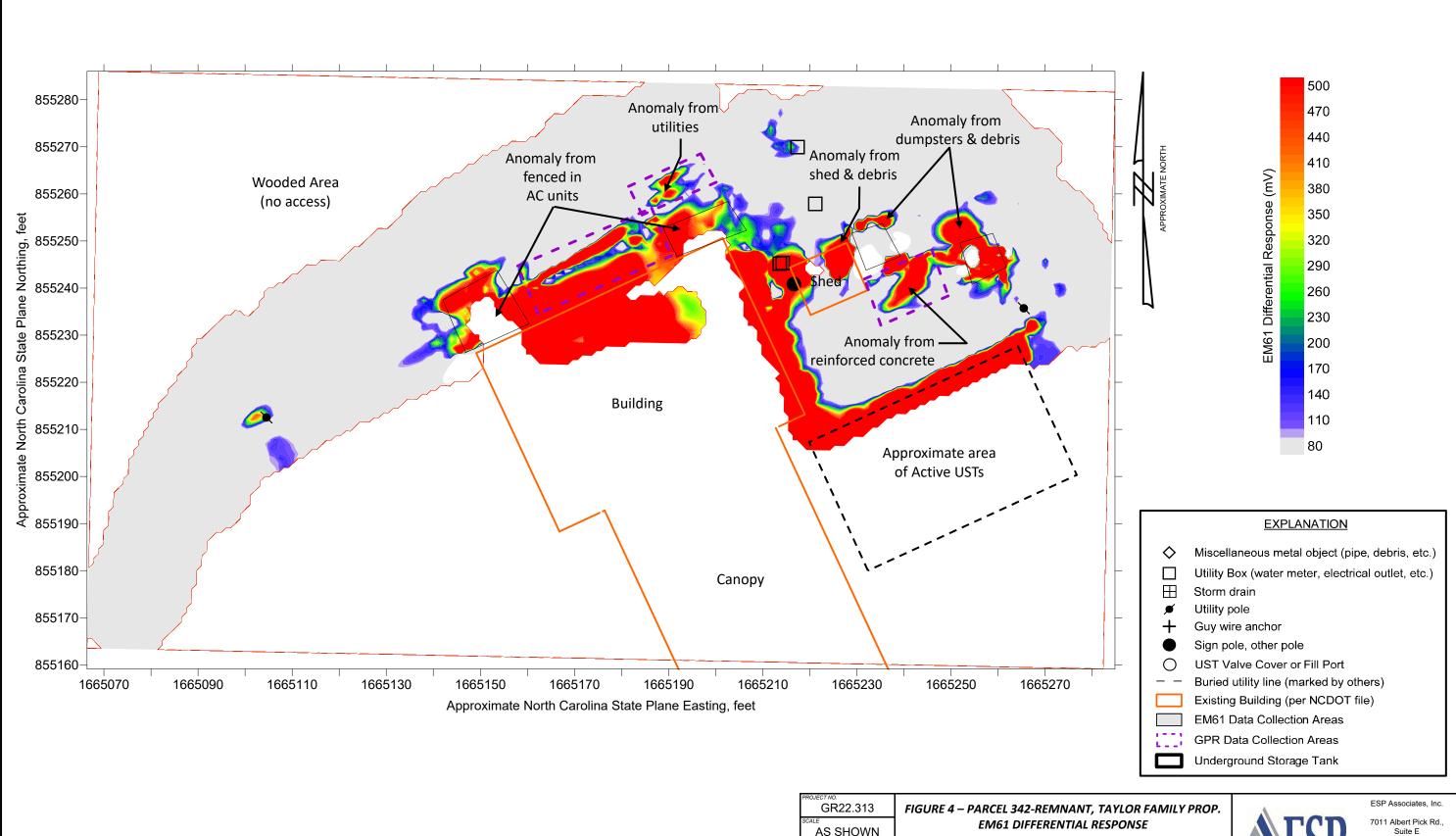
ON-SALEM - NORTHERN N (FUTURE I-74) TH CAROLINA



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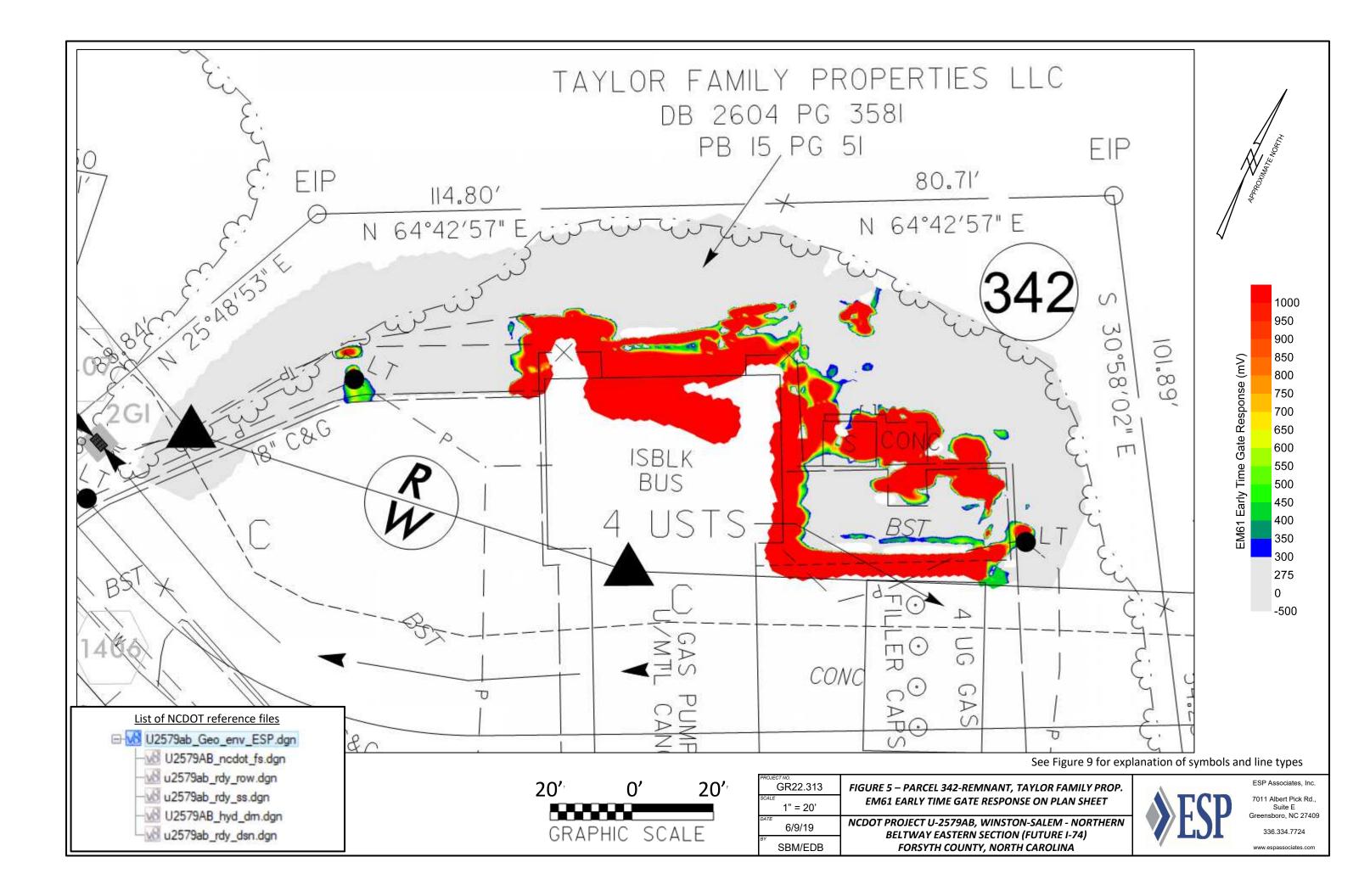
www.espassociates.

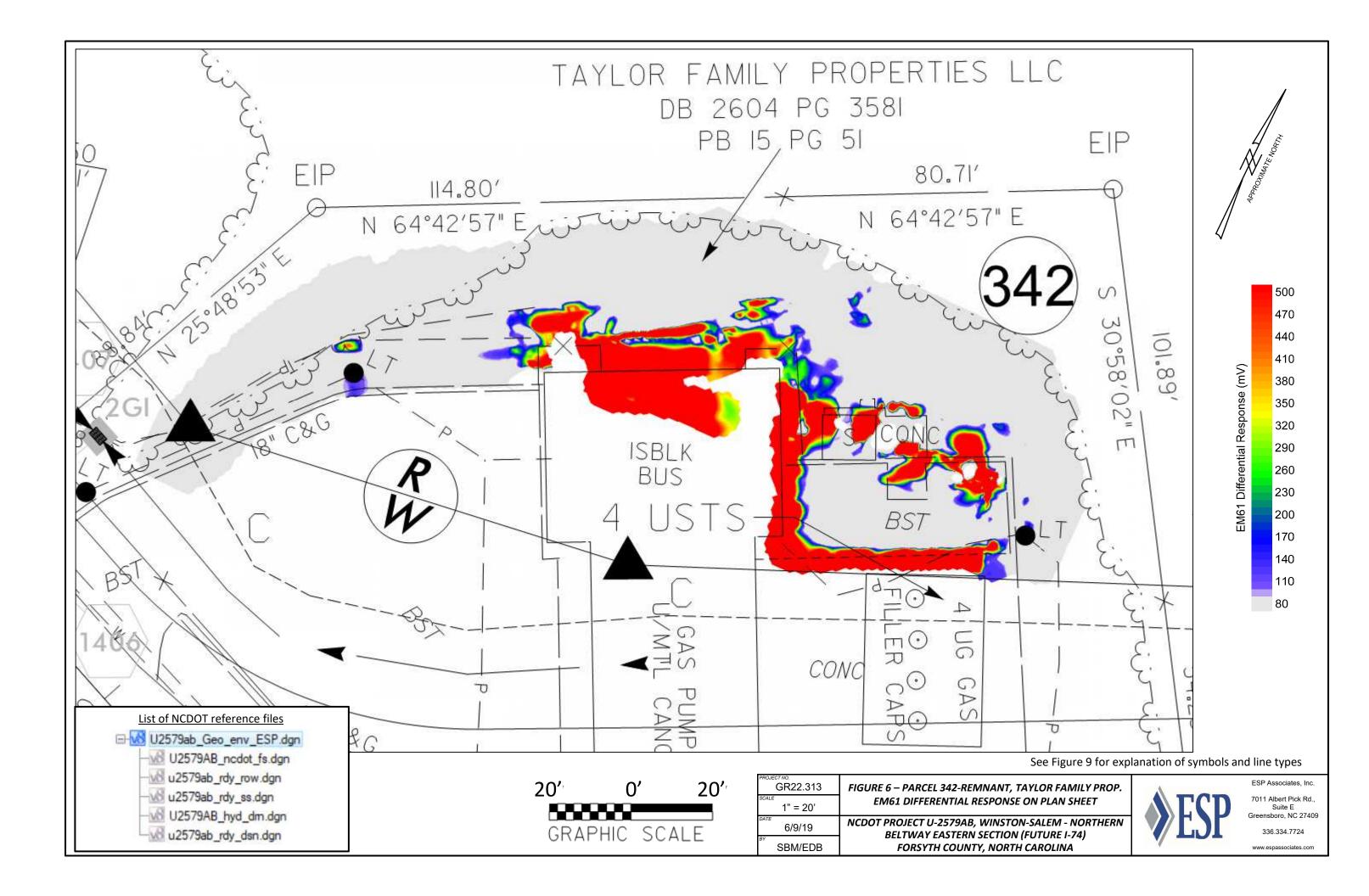


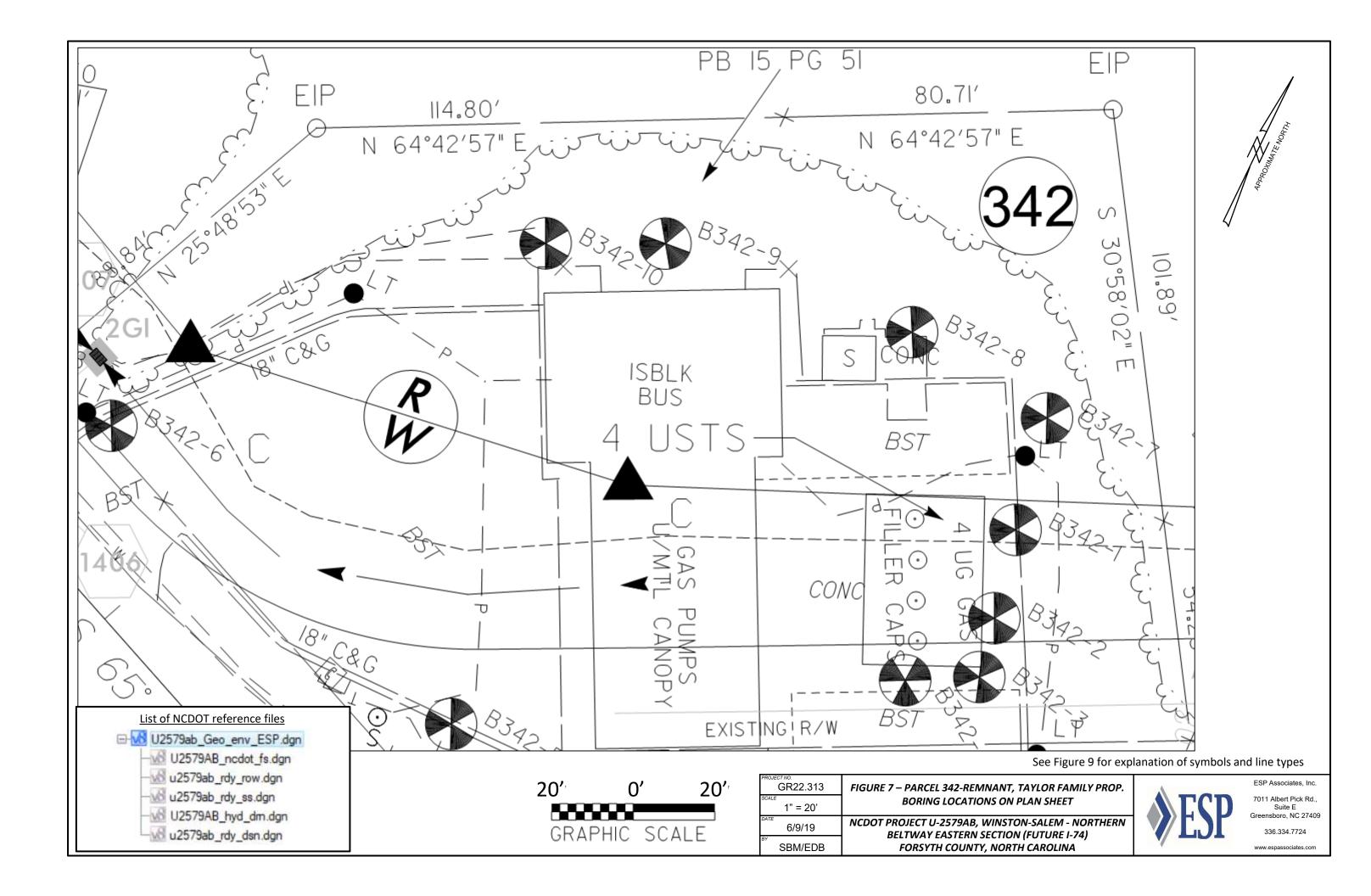
AS SHOWN	EM61 DIFFEREN
6/9/19	NCDOT PROJECT U-2579AB, W BELTWAY EASTERN SE
SBM/EDB	FORSYTH COUNTY,

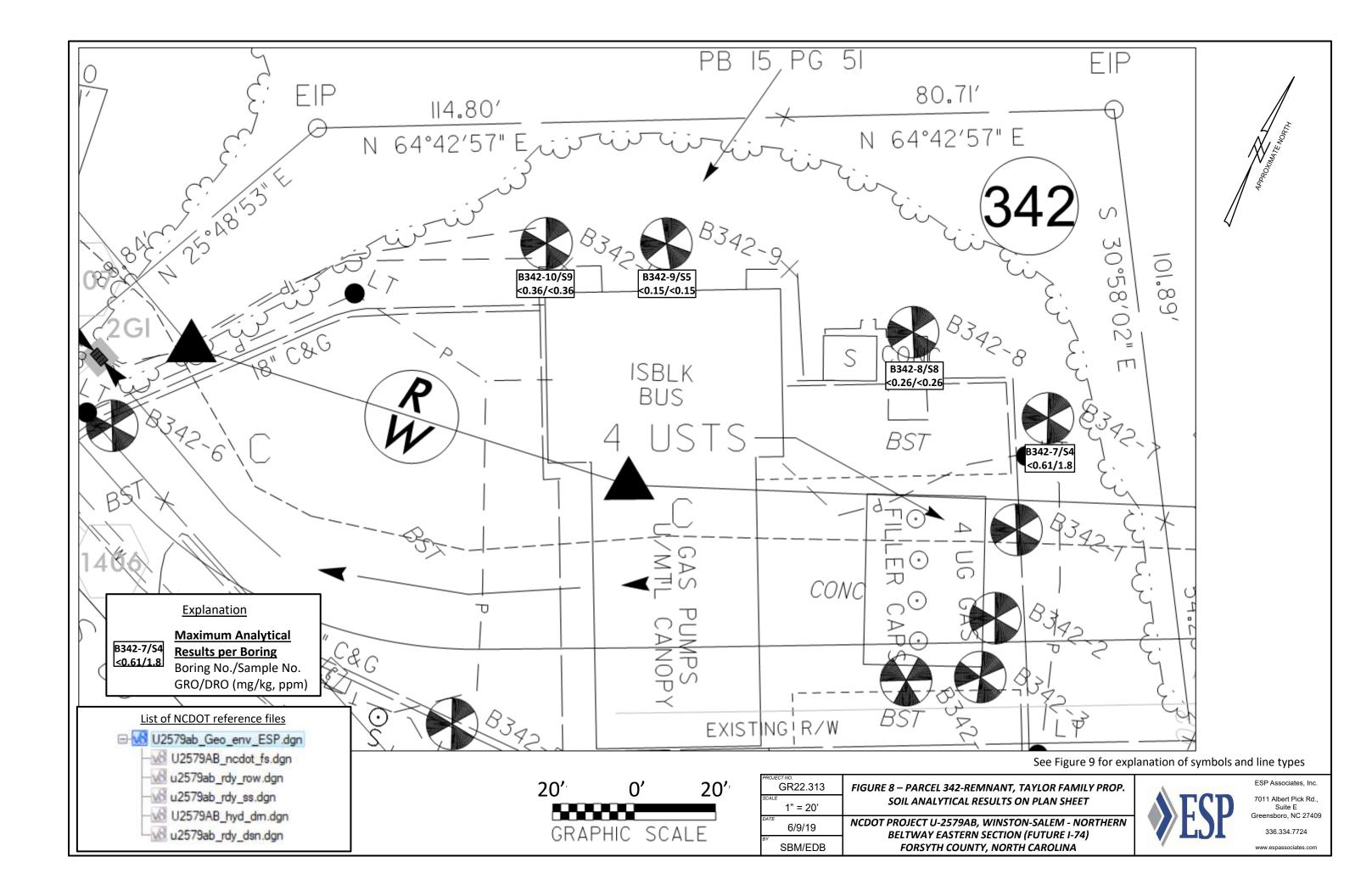
, WINSTON-SALEM - NORTHERN I SECTION (FUTURE I-74) TY, NORTH CAROLINA Greensboro, NC 27409 336.334.7724

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	STATE OF NORTH	CAROLII	NA, DIVISION OF HIGHWA	AYS	
	CONVENTION	ΔΙ ΡΙ	AN SHEET SYMBO	210	
BOUNDARIES AND PROPERTY:	Note: Not to S		U.E. = Subsurface Utility Engineering		WATER:
State Line					Water Manhole —
County Line	PAR POADS				Water Meter
Township Line	RAILROADS:	 	Orchard		Water Valve
City Line	Standard Gauge	CSX TRANSPORTATION			Water Hydrant —
Reservation Line	RR Signal Milepost	0 MILEPOST 35	inojala	- Vineyard	U/G Water Line I
Property Line	3%101	SWITCH	EXISTING STRUCTURES:		U/G Water Line I
Existing Iron Pin 🔤	RR Abandoned		MAJOR:		U/G Water Line I
Property Corner	RR Dismantled		Bridge, Tunnel or Box Culvert	<u> </u>	Above Ground W
Property Monument	RIGHT OF WAY:	•	Bridge Wing Wall, Head Wall and End Wall-	- J CONC **	
Parcel/Sequence Number 🕑	Baseline Control Point	•	MINOR: Head and End Wall —————		TV: TV Pedestal ——
Existing Fence Line ————————————————————————————————————	Existing Right of Way Marker	\bigtriangleup	Pipe Culvert		TV Tower
Proposed Woven Wire Fence	Existing Right of Way Line	-			U/G TV Cable H
Proposed Chain Link Fence	Proposed Right of Way Line		Footbridge		U/G TV Cable L
Proposed Barbed Wire Fence	Proposed Right of Way Line with Iron Pin and Cap Marker	──	Drainage Box: Catch Basin, DI or JB	Св	U/G TV Cable LC
Existing Wetland Boundary	Proposed Right of Way Line with		Paved Ditch Gutter		U/G TV Cable LC
Proposed Wetland Boundary	Concrete or Granite R/W Marker	-9-0-	Storm Sewer Manhole		U/G Fiber Optic (
Existing Endangered Animal Boundary	Proposed Control of Access Line with Concrete C/A Marker		Storm Sewer	s	U/G Fiber Optic (
Existing Endangered Plant Boundary	Existing Control of Access		UTILITIES:		U/G Fiber Optic (
Existing Historic Property Boundary	C C		POWER:		
Known Contamination Area: Soil ————————————————————————————————————	Proposed Control of Access	Ę	Existing Power Pole		GAS:
Potential Contamination Area: Soil ————————————————————————————————————		-	Proposed Power Pole		Gas Valve
Known Contamination Area: Water - 🐨 - 🕱 🕱	Proposed Temporary Construction Easement -		Existing Joint Use Pole	- →	Gas Meter —
Potential Contamination Area: Water	Proposed Temporary Drainage Easement		Proposed Joint Use Pole	- -	U/G Gas Line LC
Contaminated Site: Known or Potential —— 🕱 🅱	Proposed Permanent Drainage Easement —		Power Manhole	Ð	U/G Gas Line LC
BUILDINGS AND OTHER CULTURE:	Proposed Permanent Drainage / Utility Easement		Power Line Tower	\boxtimes	U/G Gas Line LC
Gas Pump Vent or U/G Tank Cap O	Proposed Permanent Utility Easement		Power Transformer		Above Ground G
Sign 9	Proposed Temporary Utility Easement		U/G Power Cable Hand Hole		SANITARY SEWER:
Well P	Proposed Aerial Utility Easement ————	AUE	H-Frame Pole		Sanitary Sewer M
Small Mine 🔶 🛠	Proposed Permanent Easement with Iron Pin and Cap Marker	۲	U/G Power Line LOS B (S.U.E.*)		Sanitary Sewer C
Foundation	ROADS AND RELATED FEATURE	•	U/G Power Line LOS C (S.U.E.*)		U/G Sanitary Sew
Area Outline	Existing Edge of Pavement		U/G Power Line LOS D (S.U.E.*)		Above Ground So
Cemetery	Existing Curb		TELEPHONE:		SS Forced Main
Building	Proposed Slope Stakes Cut				SS Forced Main
School	Proposed Slope Stakes Cut		Existing Telephone Pole		SS Forced Main
Church	Proposed Curb Ramp	œ	Proposed Telephone Pole	-0-	
Dam	Existing Metal Guardrail		Telephone Manhole	Ō	MISCELLANEOUS:
HYDROLOGY:	Proposed Guardrail		Telephone Pedesta		Utility Pole —
Stream or Body of Water	Existing Cable Guiderail		Telephone Cell Tower		Utility Pole with E
Hydro, Pool or Reservoir	Proposed Cable Guiderail		U/G Telephone Cable Hand Hole		Utility Located Ob
Jurisdictional Stream	Equality Symbol		U/G Telephone Cable LOS B (S.U.E.*)		Utility Traffic Sign
Buffer Zone 1BZ 1	. , ,	<u>.</u>	U/G Telephone Cable LOS C (S.U.E.*)		Utility Unknown I
Buffer Zone 2BZ 2BZ 2	Pavement Removal	*****	U/G Telephone Cable LOS D (S.U.E.*)		U/G Tank; Water,
Flow Arrow	Single Tree	~	U/G Telephone Conduit LOS B (S.U.E.*)		Underground Stor
Disappearing Stream	Single Tree	÷	U/G Telephone Conduit LOS C (S.U.E.*)		A/G Tank; Water,
Spring		0	U/G Telephone Conduit LOS D (S.U.E.*)		Geoenvironmenta
Wetland ¥	Hedge		U/G Fiber Optics Cable LOS B (S.U.E.*)		U/G Test Hole LC
Proposed Lateral, Tail, Head Ditch — 🗕 🕹 🕰	woods Line		U/G Fiber Optics Cable LOS C (S.U.E.*)		Abandoned Accor
False Sump			U/G Fiber Optics Cable LOS D (S.U.E.*)	1 No	End of Informatio

 PROJECT NO.
 GR22.313
 FIGURE 9

 SCALE
 LEGEND FOR PLAN SHEET FIGURES

 DATE
 6/9/19
 NCDOT PROJECT U-2579AB, WINSTON-SALEM - NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FORSYTH COUNTY, NORTH CAROLINA

PRDJECT R	EFERENCE NO. SHEET NO.	
ole	ø	
	•	
	8	
ant	•	
Line LOS B (S.U.E*)		
Line LOS C (S.U.E*)	_	
Line LOS D (S.U.E*)	A/G Rater	
nd Water Line		
	\otimes	
ble Hand Hole ———	5	
ble LOS B (S.U.E.*)		
ble LOS C (S.U.E.*)		
ble LOS D (S.U.E.*)		
Optic Cable LOS B (S.U.E.*)		
Optic Cable LOS C (S.U.E.*)		
Optic Cable LOS D (S.U.E.*)		
	<u> </u>	
	¢	
ne LOS B (S.U.E.*)		
ne LOS C (S.U.E.*)		
ne LOS D (S.U.E.*)		
und Gas Line	A/G Gas	
WER:		
ver Manhole		
ver Cleanout	۲	
y Sewer Line	u	
nd Sanitary Sewer	A/G Sanitary Sever	
Main Line LOS B (S.U.E.*)		
Main Line LOS C (S.U.E.*)		
Main Line LOS D (S.U.E.*)		
OUS:		
	•	
with Base		
ed Object	o	
signal Box	5	
own U/G Line LOS B (S.U.E.*)		
Water, Gas, Oil		
d Storage Tank, Approx. Loc. —	(IST)	
Vater, Gas, Oil		
mental Boring	•	
ble LOS A (S.U.E.*)	۵	
According to Utility Records —		
mation ———	E.O.I.	



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APPENDIX A SOIL BORING LOGS

	FCP			FIELD BORING LOG	BORING NO.
	LJI		D240.7		
	IECT NAME:	NCDOT U- Northeast	B342-7		
8	OF BORING		Direct Pus		T: 1 of 1
	ING FIRM:		SAEDACC		
DRILL	ER:		Stefan Smi	th SAMPLE METHOD: 4' Macro Core DEPTH TO GV	V: N/A ft
DRILL	RIG:		Geoprobe 54	LOGGED BY: S. Montgomery COMMEN	T:
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0 - 0.1 Grass, root mat	Core 1 Rec 4.0'/4.0'
				0.1 - 3.0 Red to red brown clayey sand, dry	
1	S-1	1.0-1.5	1.7		
2	S-2	2.0-2.5	0.5		
[
3	S-3	3.0-3.5	0.3	3.0 - 4.0 Red to red brown clayey silt, dry	
		0.0 0.0	0.0		
[Core 2 Rec 4.0'/4.0'
4	S-4	4.0-4.5	3.3	4.0 - 5.0 Red to red brown and white sandy clay, dry	
-					
-					
_5	S-5	5.0-5.5	0.4	5.0 - 8.5 Red to red brown clayey sand, dry	
6	S-6	6.0-6.5	2.5		
		0.0 0.0	2.0		
7	S-7	7.0-7.5	0.8		
8	S-8	8.0-8.5	1.0	8.5 - 10.0 Mottled white, gray and black sand, dry	Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.4		
10					
[
11					
[]					
12					
13					
}					
[
_ 14					
[
15					
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	FC	p			FIELD BORING LOG	BORING NO.
			NCDOT U-	B342-8		
	JECT N			mpster # 1; in	PROJ. NO.: <u>GR22.313</u> the grass	D342-0
	OF BO			Direct Pus		1 of 1
DRILI	LING F	IRM:		SAEDACC		
DRILL				Stefan Smi Geoprobe 54		
	RIG:			-	DT LOGGED BY: S. Montgomery COMMENT	:
DEPTH (ft)	SAMPLE	ON	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
					0.0 - 0.1 Grass, root mat 0.1 - 8.0 Red to red brown clayey silt, dry	Hand augering from 0.0' -3.0'
<u> </u>						No odor
1	S-1	H.A.	1.0-1.5	2.5		
2	S-2	H.A.	2.0-2.5	1.3		
3	S-3	H.A.	3.0-3.5	0.7		Core 1 Rec 1.0'/1.0'
						Core 1 Rec 1.0/1.0
4	S-4		4.0-4.5	0.7		Core 2 Rec 4.0'/4.0'
-4	10-4		4.0-4.0	0.7		0010 2 1100 4.0 /4.0
5	S-5		5.0-5.5	0.3		
6	S-6		6.0-6.5	0.6		
7	S-7		7.0-7.5	0.3		
	-					······································
8	S-8		8.0-8.5	0.4	8.5 - 10.0 Mottled white, gray and black sand, dry	Core 3 Rec 2.0'/2.0' No odor
t						
9	S-9		9.0-9.5	0.2		········
				-		
}				_		
10	1					
	+					······································
11	1			1		
<u></u>						
12						
	<u> </u>					
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14						
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15	1					

	FSP			FIELD BORING LOG	BORING NO.
	IECT NAME:	NCDOT U-	B342-9		
	TION:		station, cente	PROJ. NO.: <u>GR22.313</u> er of building	0042-0
	OF BORING		Direct Pus	h DATE STARTED: 5/2/19 SHEE	T: 1 of 1
	ING FIRM:		SAEDACC		
DRILL		Geoprob	Stefan Smi e 54DT, Hand		
	_ RIG:			Auger (H.A.) LOGGED BY: S. Montgomery COMMEN	
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0 - 0.1 Grass, root mat 0.1 - 8.0 Red to red brown clayey sand, dry	— H.A. 0.0' -3.0'
	S-1 H.A.	1.0-1.5	0.2		
_1	5-1 п.А.	1.0-1.5	0.2		
[
2	S-2 H.A.	2.0-2.5	1.3		
[S-3 H.A.	3.0-3.5	1.2		
3	5-5 п.А.	5.0-5.5	1.2		Core 1 Rec 1.0'/1.0'
4	S-4	4.0-4.5	2.3		Core 2 Rec 4.0'/4.0'
					·
	S-5	5.0-5.5	3.5		
_5	3-0	5.0-5.5	3.5		
[
6	S-6	6.0-6.5	2.8		
					·
[<u></u>	S-7	7.0-7.5	1.0		
_7	3-7	7.0-7.5	1.0		
[
8	S-8	8.0-8.5	1.2	8.0 - 10.0 Tan to red brown sandy clay, dry	Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	1.6		
9	0-9	3.0-3.3	1.0		
10					
11					
<u> </u>					
}					
12					
}					
13	[
			<u> </u>		
14					
}					
[
[15	1	Į			

	F	P			FIELD BORING LOG	BORING NO.
		<u>, 1</u>	NCDOT U-	B342-10		
PROJ LOCA		NAME:			PROJ. NO.: <u>GR22.313</u> st corner of gas station building	D342-10
		i. Boring		Direct Pus		Γ: 1 of 1
		FIRM:		SAEDACC		
DRILI	ER:			Stefan Smi		V: N/A ft
DRILI	RIG	:		Geoprobe 54	LOGGED BY: S. Montgomery COMMEN	Г:
DEPTH (ft)		SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
					0.0 - 0.1 Grass, root mat 0.1 - 2.0 Red brown clayey sand, dry	— H.A. from 0.0' -4.0'
[1	S-1	H.A.	1.0-1.5	1.0		_
2	S-2	НΔ	2.0-2.5	2.0	2.0 -4.5 Red Brown clayey sand, very wet	
	0-2	п.д.	2.0-2.0	2.0		
3	S-3	H.A.	3.0-3.5	1.0		 Wet clayey sand thought to have been from water main near the borehole 2' deep
	-					
_4	S-4	H.A.	4.0-4.5	2.2	4.5 - 8.0 Red brown clayey sand, dry	Core 1 Rec 4.0'/4.0'
	-					
[]				1.0		
_5	S-5		5.0-5.5	1.9		
6	S-6		6.0-6.5	0.9		
- — —						·
7	S-7		7.0-7.5	0.5		
·	-					·
[S-8		8.0-8.5	1.3	0.0.05 Ded brown elevery early maint	Core 3 Rec 2.0'/2.0'
8	5-0		8.0-8.5	1.3	8.0 - 8.5 Red brown clayey sand, moist 8.5 - 10.0 Dark gray sand, moist	
[
9	S-9		9.0-9.5	2.7		
10						
	-			-		
	1					
11	\vdash			+		
[]				1		
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<u> 15 </u>	1					

APPENDIX B

RED LAB LABORATORY TESTING REPORT

Q	ED		E		APID ENVIRON		DSTICS						QROS
Client: Address:	ESP ASSOCIATES GREENSBORO, NC			Hydroca	rbon Ana	alysis Re	sults		Sampl	mples es exti les ana	racted		Thursday, May 2, 2019 Thursday, May 2, 2019 Tuesday, May 7, 2019
Contact:	NED BILLINGTON									Ор	erator		CAROLINE STEVENS
Project:	GR22.313 GROUP 2												
													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	B342-7 S4	24.5	<0.61	<0.61	1.8	1.8	1.3	<0.2	<0.025	0	50.3	49.7	V.Deg.PHC 75.8%,(FCM),(P)
S	B342-8 S8	10.4	<0.26	<0.26	<0.26	<0.26	<0.05	<0.08	<0.01	0	0	0	,(FCM)
S	B342-9 S5	5.9	<0.15	<0.15	<0.15	<0.15	< 0.03	<0.05	<0.006	0	0	0	,(FCM)
S	B342-10 S9	14.4	<0.36	<0.36	<0.36	<0.36	<0.07	<0.12	<0.014	0	0	0	,(FCM)
	Initial	Calibrator	QC check	ОК					Final F	CM QC	Check	OK	96.8 9
Fingerprints	erated by a QED HC-1 analyser. Concentr provide a tentative hydrocarbon identificatior 3S) = Site Specific or Library Background Sul	n. The abbrev	viations are:-	FCM = Resu	lts calculated	using Fundan	nental Calibratio	on Mode : %	= confidenc				natch to library

APPENDIX C CHAIN-OF-CUSTODY FORM

Client Name:	ESP ASSOC.
Address:	Greensbord
Contact:	Ned Billington
Project Ref.:	Red Billington GR 22.313
Email:	(10
Phone #:	ovella
Collected by:	5. Montgomeny

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM RED Lab, LLC 5598 Marvin K Moss Lane MARBIONC Bldg, Suite 2003 Wilmington, NC 28409

Each sample will be analyzed for BTEX, GRO, DRO, TPH, PAH total aromatics and BaP

Sample Collection	TAT Requested		tion TAT Requested			Coursel a ID	T. I. J. MA	7	
Date/Time	24 Hour	48 Hour	Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.		
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5/2/19		i /	EAS	B39-5 55	54.8	44.9	9.9		
	and the second								
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5/2/19			EPB	B342-8 58 660002	54.4	44.8	9.6		
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Relinquished by		Date/							
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November 5, 2018



Mr. Cyrus Parker, L.G., P.E. Geotechnical Engineering Unit State of N.C. Department of Transportation – Division of Highways P.O. Box 25201 Raleigh, NC 27611-5201

RE: PRELIMINARY SITE ASSESSMENT OF PARCEL 352 – Revision 1 ESP Project No. CS34.366

WBS:	34839.1.8
TIP:	U-2579AB
County:	Forsyth
Description	Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40
	Business/US 421
Parcel No.:	352
Owner:	Don M. Berrier
Address:	4400 Kernersville Road, Winston-Salem, NC

Dear Mr. Parker:

ESP Associates, Inc. (ESP) is pleased to submit this report on our Preliminary Site Assessment of the subject parcel. This work was performed in accordance with your Request for Proposal dated April 17, 2018 and our Cost Proposal dated May 3, 2018.

We appreciate the opportunity to assist you during this phase of the project. If you should have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

ESP Associates, Inc.

Edward D. Billington, PG Senior Geologist/Geophysicist DMN/EDB/CJW



not considered Final unless all signatures are completed

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APPENDICES

Appendix A Soil Boring Logs

Appendix B RED Lab Laboratory Testing Report

Appendix C Chain-of-Custody Form

1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to construct the Winston-Salem - Northern Beltway Eastern Section (Future I-74) From I-40 to I-40 Business/US 421 (Figure 1). The NCDOT requested that ESP Associates, Inc. (ESP) perform a Preliminary Site Assessment (PSA) of Parcel 352 within the proposed Right of Way (ROW) and/or easement to locate possible underground storage tanks (USTs), sample soil, and delineate potential contaminated soil.

2.0 HISTORY

This parcel is owned by Don M. Berrier and is currently occupied by an active business. The facility is listed in the North Carolina Department of Environmental Quality's (NCDEQ's) UST Section Registry with UST No. WS-612. No other information is available for this site.

3.0 SITE OBSERVATIONS

During our May 2018 field work, the site was operating as an active florist shop (Figure 2). The ground in the study area was covered by asphalt, concrete, and grass.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on May 23, 2018. We performed direct-push drilling and sampling of subsurface soils within the proposed easement on September 6, 2018. A photoionization detector (PID) was used to screen subsurface soils in the field and select soil samples to send for laboratory analysis.

4.1 Geophysics

ESP performed a metal detector study over the accessible areas of the site using a Geonics EM61 MK2 with a line spacing of about three feet (Figures 3 and 4). Location control was provided in real-time using a differential global positioning system (DGPS). We collected ground-penetrating radar (GPR) data over selected EM61 anomalies and reinforced concrete areas using our Sensors and Software Noggin 250 GPR system. The GPR data were collected using a line spacing of one to two feet.

4.2 Borings

ESP performed direct-push drilling activities within the easement of Parcel 352 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Three borings were drilled, designated B352-1 through B352-3 (Figure 3). The soil borings were advanced using a GeoProbe 7822DT drill rig. Continuous soil samples were obtained to a depth of approximately ten feet using five-foot long Macro Cores®. Soil cores had a recovery of four to five feet. The sampling equipment

was decontaminated prior to drilling and between borings by the driller using a Liquinox® detergent solution.

4.3 Soil Sample Protocol

Representative soil samples were taken from the Macro-Core tubes at approximate one-foot intervals by the ESP field geologist while wearing nitrile disposable gloves. Each sample was placed in a sealed plastic bag and then kept in a sunny area for at least 5 minutes prior to measuring volatile organic compound (VOC) levels in the head space with the PID. All of the soil samples obtained had a PID reading of less than 10 parts per million (ppm).

Soil samples selected for laboratory analysis were Sample S-9 (corresponding depth of 9.0-9.5 feet) from each of Borings B352-1, and B352-3; Sample S-8 (8.0-8.5 feet) from Boring B352-2. For each selected sample, an approximate 10-gram soil sample was collected from the Macro-Core tube using a Terra Core Sampler and placed into a laboratory-supplied 40-milliliter volatile organic analysis (VOA) vial containing methanol. Once sealed, the vial was labeled with the sample identification number and then shaken vigorously for about one minute. The samples were packed on ice and sent via overnight delivery to RED Lab, LLC (RED Lab), located in Wilmington, North Carolina, following proper chain-of-custody procedures (Appendix C).

RED Lab used a QED Hydrocarbon Analyzer to quantitatively analyze the soil samples using the ultraviolet fluorescence (UVF) method for benzene, toluene, ethylbenzene, and xylene (BTEX); gasoline range organics (GRO); diesel range organics (DRO); total petroleum hydrocarbons (TPH); total aromatics; polycyclic aromatic hydrocarbons (PAHs); and benzo(a)pyrene (BaP).

4.4 Groundwater

Groundwater was not encountered in the three borings drilled on the site.

5.0 RESULTS

5.1 Geophysics

The EM61 early time gate data show the response from both shallow and deeper metallic objects (Figure 3). The differential response reduces the effect of shallow anomalies and emphasizes anomalies from larger and more deeply buried metallic objects, such as USTs (Figure 4). The EM61 differential results indicated several anomalies (response above background) that did not correspond to known site features.

GPR data were collected over the EM61 anomalies. The GPR data collected did not indicate the presence of unknown USTs within the study area.

The EM61 early time gate response and differential response are shown on the plan sheet on Figures 5 and 6, respectively.

5.2 Sample Data

The soil sample UVF hydrocarbon analysis results for BTEX, GRO, DRO, and PAHs are presented in Table 2. The RED Lab laboratory report, which includes results for TPH, total aromatics, and BaP, is provided in Appendix B. Values are provided in milligrams per kilogram (mg/kg or ppm).

5.3 Sample Observations

The results of the laboratory testing indicated that BTEX and PAHs were below the detection limits for all samples. GRO was detected in 1 of the 3 soil samples tested but below the NCDEQ action level of 50 ppm. The highest GRO reading was 1.7 ppm in Sample S-9 (9.0-9.5 feet) from Boring B352-1. DRO was detected in 1 of the 3 soil samples tested but below the NCDEQ action level of 100 ppm. The highest DRO reading was 1.6 ppm in Sample S-8 (8.0-8.5 feet) from Boring B352-2.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the PSA for Parcel 352 of NCDOT Project U-2579AB do not indicate the presence of abandoned USTs. No petroleum hydrocarbon soil contamination at or above NCDEQ action levels was detected within the proposed construction easement on Parcel 352.

6.2 Geophysics

The geophysical data do not indicate the presence of abandoned USTs.

6.3 Soil

The results of the PID field screening readings and off-site UVF hydrocarbon analyses do not indicate the presence of contaminated soil at or above the NCDEQ action levels within the proposed construction easement on Parcel 352 (Figure 7).

7.0 **RECOMMENDATIONS**

No limitations on construction activities or special handling of excavated soil are recommended for Parcel 352.

8.0 LIMITATIONS

ESP's professional services have been performed, findings obtained, and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. ESP is not responsible for the independent conclusions, opinions, or recommendations made by others based on the data presented in this report.

The passage of time may result in a change in the environmental characteristics at this site and surrounding properties. ESP does not warrant against future operations or conditions, or against operations or conditions present of a type or at a location not investigated. ESP does not assume responsibility for other environmental issues that may be associated with the subject site.

TABLES

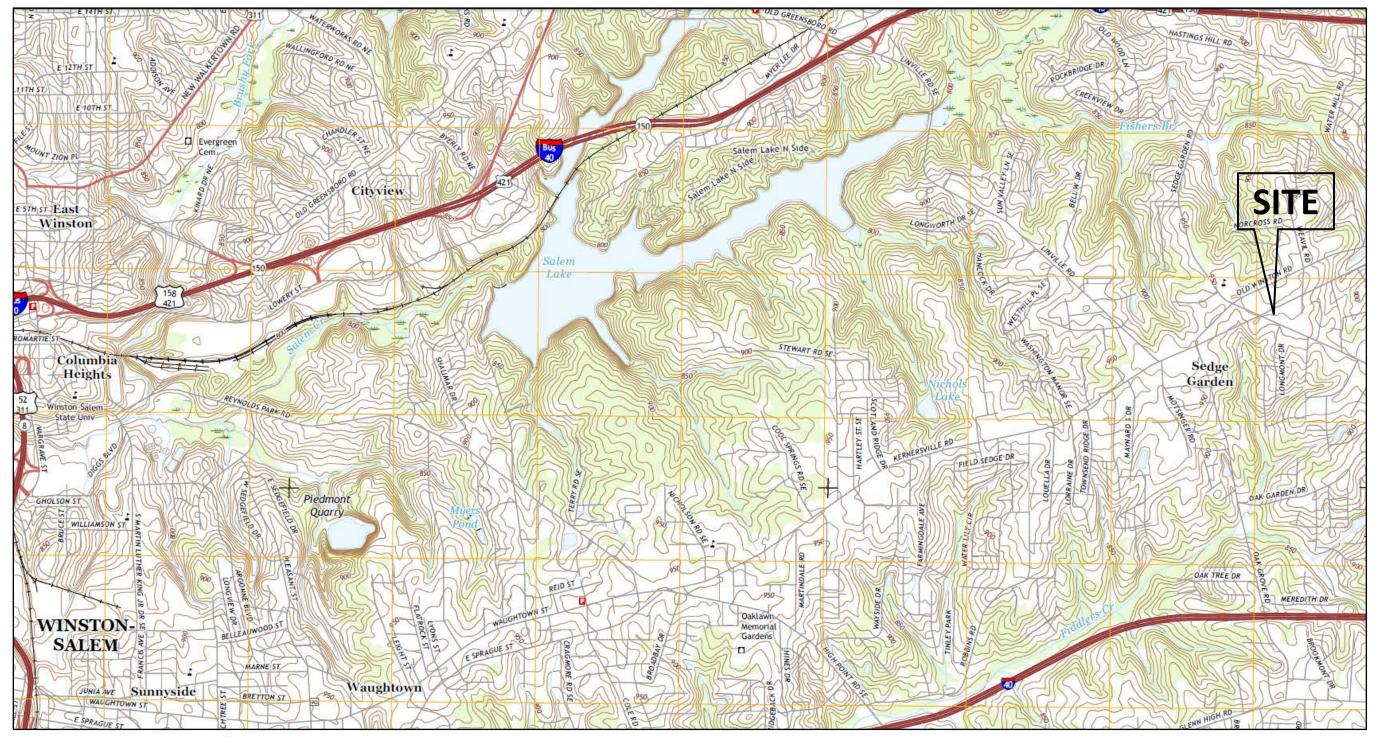
TABLE 1SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B352-1	none	3.2 (7.0-7.5)
B352-2	none	4.6 (5.0-5.5)
B352-3	none	4.4 (6.0-6.5)

Boring	Sample ID (depth in feet bgs)	Date Collected	BTEX (C6-C9) (mg/kg)	GRO (C5-C10) (mg/kg)	DRO (C10-C35) (mg/kg)	PAHs (mg/kg)
B352-1	S-9 (9.0-9.5)	9/10/18	< 0.43	1.7	<0.43	<0.14
B352-2	S-8 (8.0-8.5)	9/10/18	<0.38	<0.38	1.6	< 0.12
B352-3	S-9 (9.0-9.5)	9/10/18	<0.95	<0.95	<0.95	<0.3

TABLE 2SOIL SAMPLE UVF RESULTS SUMMARY

FIGURES



From: USGS US Topo 7.5 - minute map for WINSTON-SALEM EAST, NC Date: 2016, Scale: 1:24,000

FIGURE 1 – PARCEL 352, L SITE VICINITY
U-2579AB, WINSTON SALEM – NORTHERI
(FUTURE I-74) FROM I-40 TO I-4 FORSYTH COUNTY, NOR1

DON M. BERRIER Y MAP

RN BELTWAY EASTERN SECTION -40 BUSINESS/US421 RTH CAROLINA



7011 Albert Pick Rd., Suite E Greensboro, NC 27409

336.334.7724 www.espassociates.com



a. Photo from north side of site looking south.



c. Photo from southeast side of site looking northwest.



b. Photo from west side of site looking east.



d. Photo from south side of site looking north.

SCALE	4.366 HOWN	FIGURE 2 – PARCEL 352, SITE PHOTOGI
DATE		
9/X	X/18	U-2579AB, WINSTON SALEM – NORTHER
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, DON M. BERRIER GRAPHS

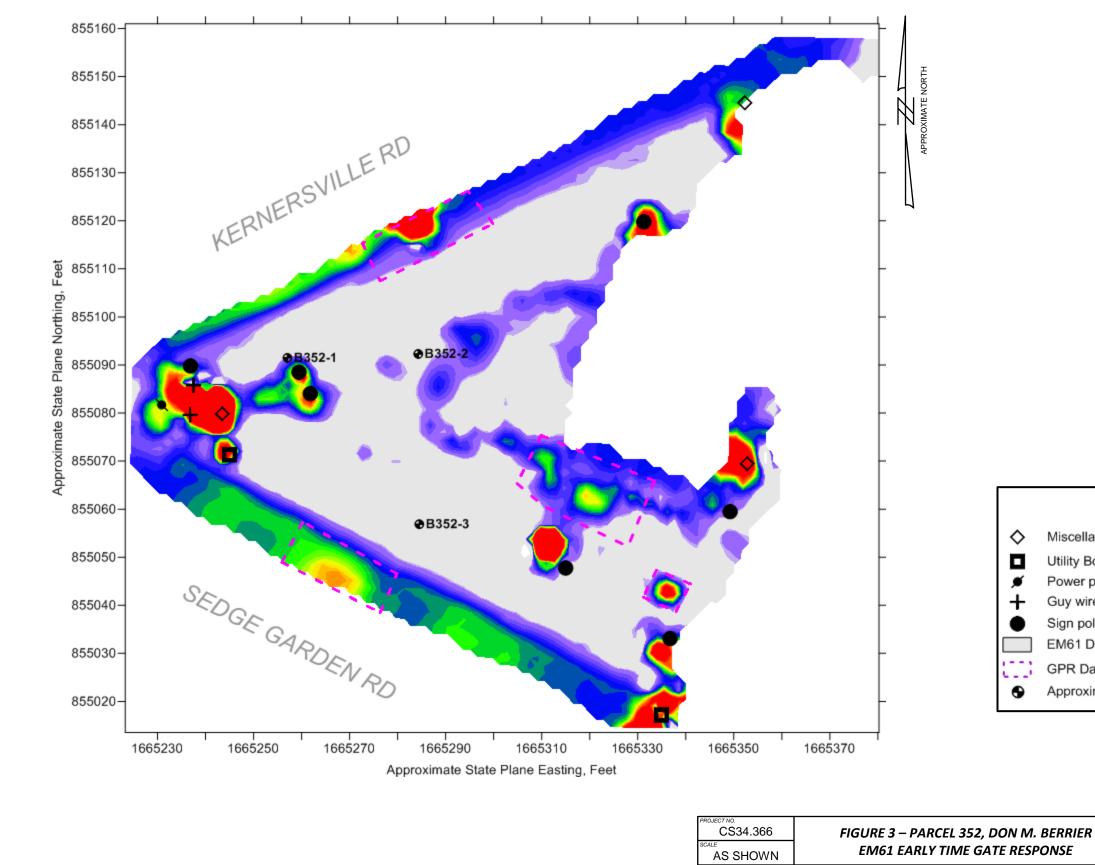
RN BELTWAY EASTERN SECTION I-40 BUSINESS/US421 RTH CAROLINA



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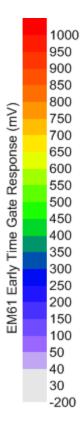
336.334.7724

www.espassociates.com



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

EM61 EARLY TIME GATE RESPONSE U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION 9/XX/18 (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 DMN FORSYTH COUNTY, NORTH CAROLINA



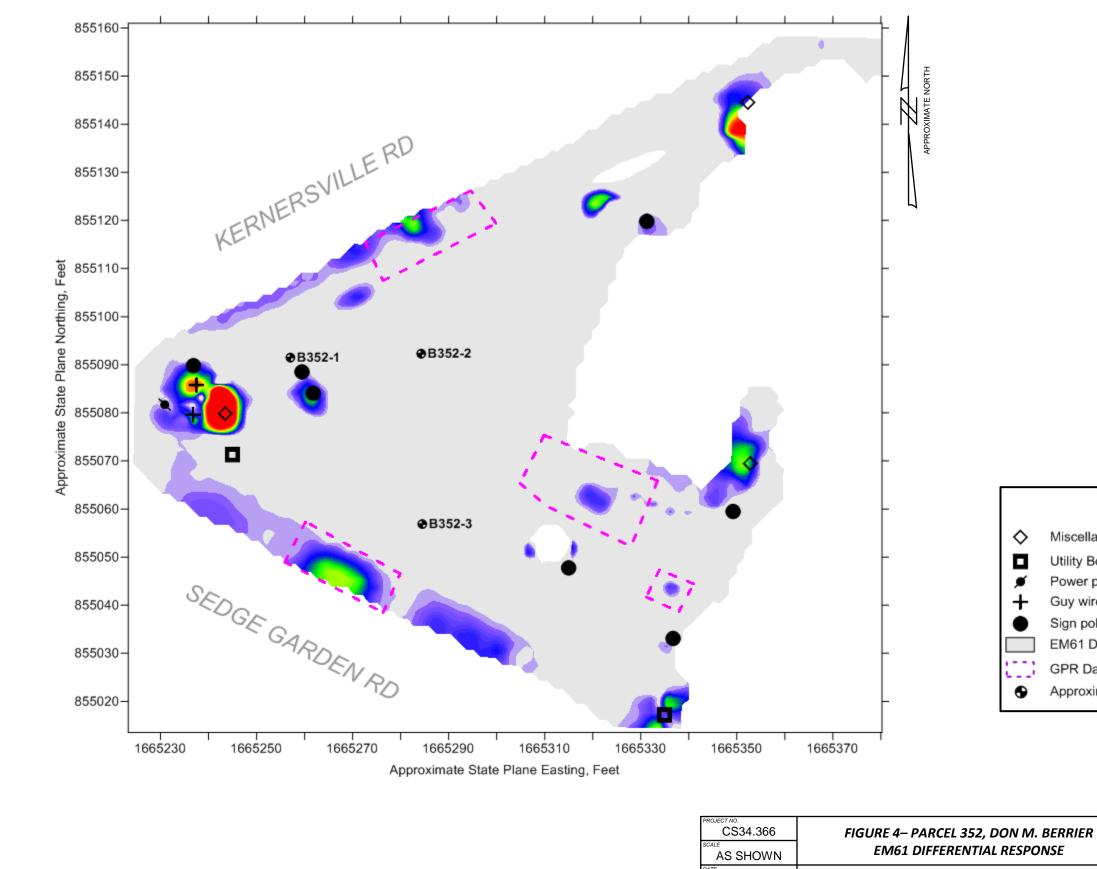
EXPLANATION

Miscellaneous metal object (pipe, debris, etc.) \diamond Utility Box (water meter, electrical outlet, etc.) Power pole + Guy wire anchor Sign pole, other pole EM61 Data Collection Areas . - - -GPR Data Collection Areas C - - - 1 • Approximate soil boring location



7011 Albert Pick Rd., Suite E Greensboro, NC 27409

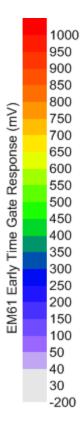
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Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

9/XX/18 U-2579AB, WINSTON SALEM - NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA

DMN



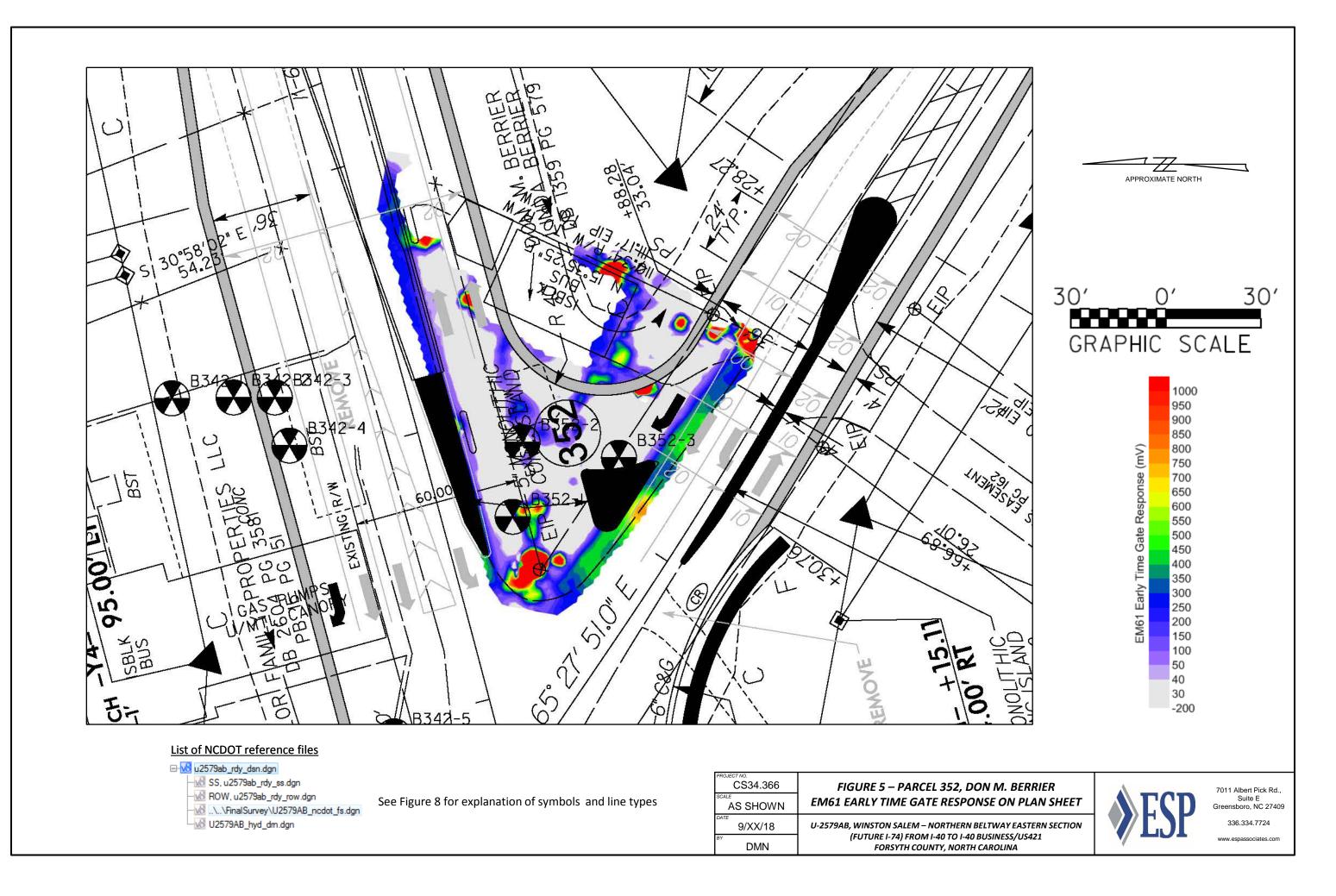
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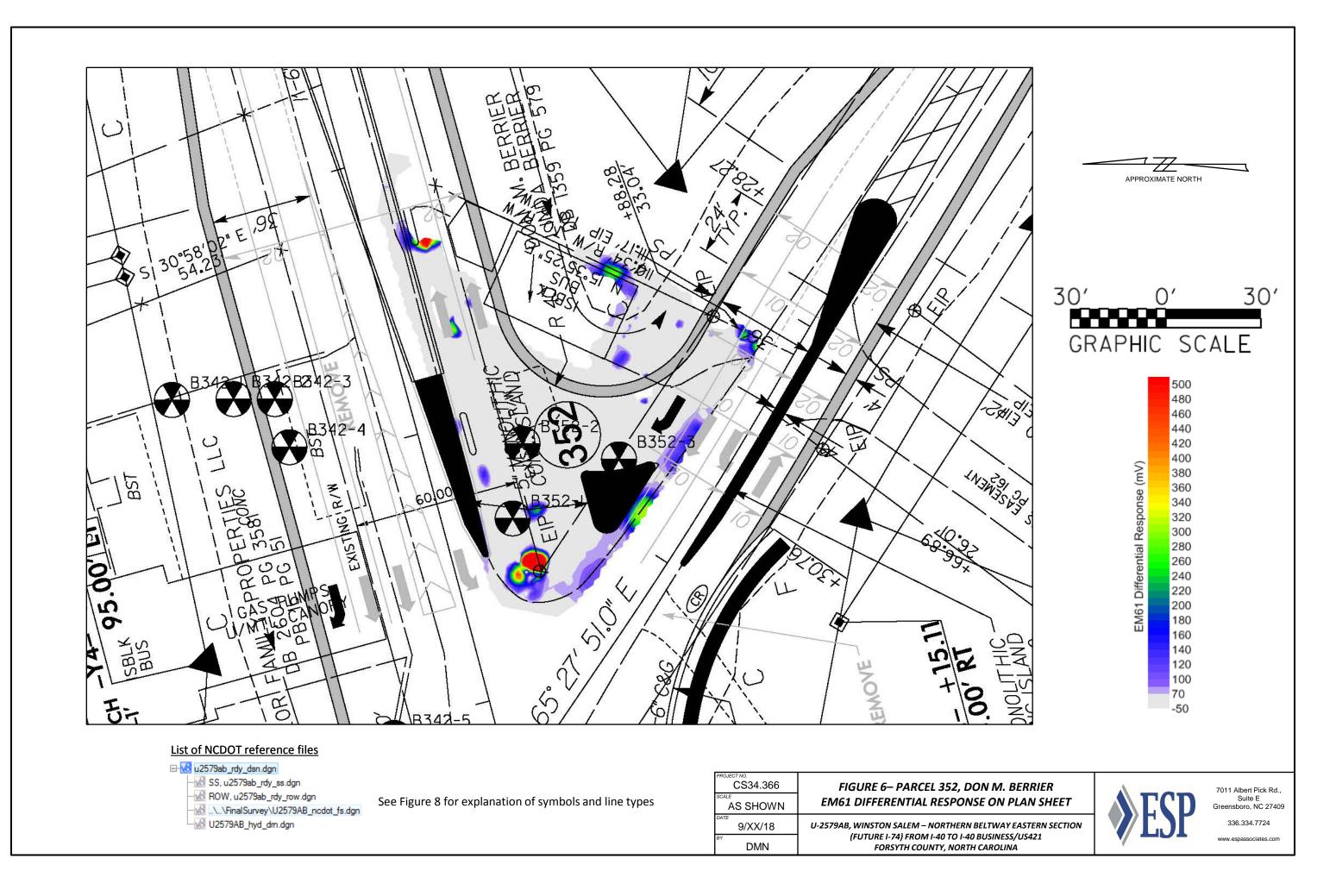
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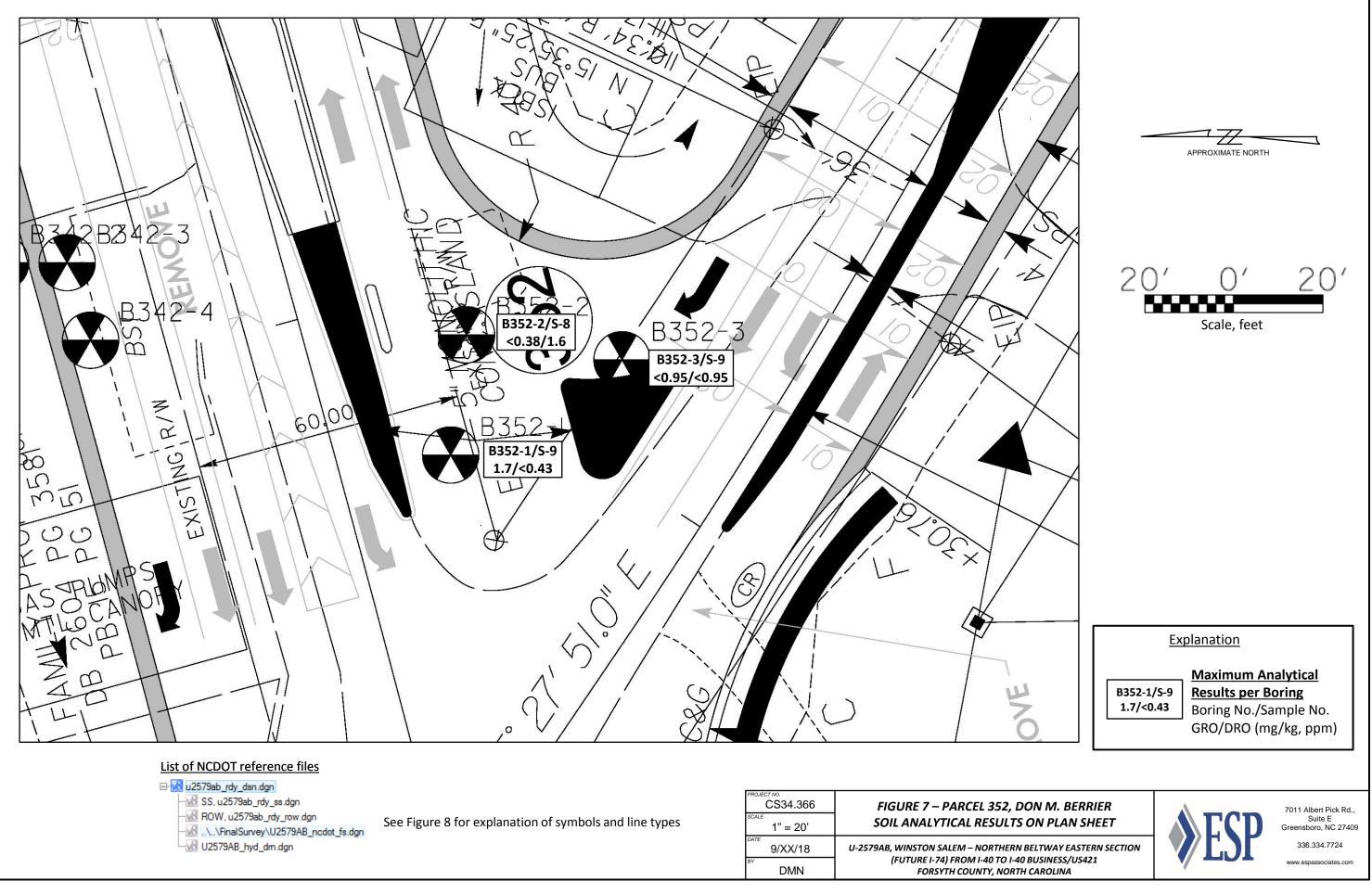


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PROJECT NO. CS34.366	FIGURE 7 – PARCEL 352,
scale 1" = 20'	SOIL ANALYTICAL RESULT
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Small Aine * iron Pin and Cap Marker * UG Power Line LOS B (S.U.E.*) UG Sanitary Sew Foundation * ROADS AND RELATED FEATURES: UG Power Line LOS B (S.U.E.*) UG Sanitary Sew Cemetery * * * WG Power Line LOS B (S.U.E.*) WG Sanitary Sew Building * * * * WG Power Line LOS B (S.U.E.*) WG Sanitary Sew School * * * * * * Above Ground Sc Church * * * * * * * SS Forced Main I Church * * * * * * * * SS Forced Main I Church * * * * * * * * SS Forced Main I Dam * * * * * * * * SS Forced Main I HYDROLOGY: * * * * * * * * * * * * * * *		Proposed Permanent Easement with				,
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Cemetery SS Forced Main I Building Fraposed Slope Stakes Cut SS Forced Main I School Fraposed Slope Stakes Cut SS Forced Main I Church Proposed Slope Stakes Cut SS Forced Main I Proposed Slope Stakes Fill Proposed Curb Ramp Existing Telephone Pole O MINDROLOGY: Stream or Body of Water Proposed Guardrail Telephone Cable Note MISCELLANEOUS: Stream or Body of Water Existing Cable Guiderail Telephone Cable LOS B (S.U.E.*) Utility Located OF Jurisdictional Stream ISE I Proposed Cable Guiderail Utility Traffic Sign Buffer Zone 1 Existing Cable Guiderail Force Utility Traffic Sign Buffer Zone 2 Existing Tree Single Tree Utility Traffic Sign Spring VEGETATION: Single Shrub G G Telephone Conduit LOS D (S.U.E.*) Utility Conduct Actor Wetland * Woods Line * G Genenvironmenter AG Tank; Water, Buffer Optics Cable LOS C (S.U.E.*) * * AG Tank; Water, Genenvironmenter Genenvironmenter Genenvironmenter Buffer Zone 1						
Camery Existing Curb Fisting Curb SS Forced Main I Building Proposed Slope Stakes Cut Image: State S		Existing Edge of Pavement		U/G Power Line LOS D (S.U.E.*)	·•	
Building Proposed Slope Stokes Cut Fishing Telephone Pole SS Forced Main I School Proposed Slope Stokes Fill Proposed Slope Stokes Fill Proposed Telephone Pole MISCELLANEOUS: HYDROLOGY: Proposed Guiderail Proposed Guiderail II Utility Pole II Hydro, Pool or Reservoir Proposed Cub B Guiderail Froposed Cub B Guiderail II Utility Coated Oc Jurisdictional Stream II Proposed Cub B Guiderail III Utility Coated Oc Buffer Zone 1 Froposed Cub B Guiderail III Utility Unknown U UG Telephone Cable LOS B (S.U.E.*) Utility Unknown U Buffer Zone 2 Fiz 2 VEGETATION: Single Tree III Ud Telephone Codult LOS B (S.U.E.*) Ud G Telephone Codult LOS B (S.U.E.*) Ud G Telephone Codult LOS D (S.U.E.*) III du data Guadraid Wetland Hedge Woods Line III Woods Line IIII du data Guadraid IIII du data Guadraid IIII du data Guadraid IIIIIIII du data Guadraid IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Entering Cone		TELEPHONE:		
School Proposed Slope Stakes Fill Proposed Slope Stakes Fill Proposed Telephone Pole O Church Proposed Curb Ramp III Proposed Curb Ramp III Utility Pole Dam HYDROLOGY: Proposed Guardrail III Utility Pole III Stream or Body of Water Proposed Guardrail IIII Utility Pole IIII Utility Pole Jurisdictional Stream Jurisdictional Stream Jurisdictional Stream Jurisdictional Stream IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Proposed Slope Stakes Cut	£	Existing Telephone Pole	. 	
Church Proposed Curb Ramp Image: Construction of the construction		Proposed Slope Stakes Fill	Ľ			55 Forcea Main I
Dam Existing Metal Guardrail Image: Construction of Body of Water Image: Construction of Body of Body of Water Image: Construction of Body of B	Church	Proposed Curb Ramp	CR		. n	MISCELLANEOUS:
AmpRoducts: Proposed Guardrail Image: Construction of the serve in the ser		Existing Metal Guardrail	<u> </u>		. m	Utility Pole —
Sheath of Body of Water Existing Cable Guiderail Image: Cable Guiderail <t< td=""><td></td><td>Proposed Guardrail</td><td></td><td></td><td></td><td>Utility Pole with B</td></t<>		Proposed Guardrail				Utility Pole with B
Hydro, Pool or Keservoir Proposed Cable Guiderail Image: Cable Guiderail <	-	Existing Cable Guiderail	<u> </u>			Utility Located Ob
Jurisdictional Stream _js Equality Symbol Image: Construction of the		Proposed Cable Guiderail				Utility Traffic Sian
Buffer Zone 1 Buffer Zone 2 Pavement Removal Pavem		Equality Symbol	•			
Flow Arrow VEGETATION: U/G Telephone Conduit LOS B (S.U.E.*) U/G Telephone Conduit LOS B (S.U.E.*) Disappearing Stream Single Tree I/G Telephone Conduit LOS C (S.U.E.*) A/G Tank; Water, Spring I/G Telephone Conduit LOS D (S.U.E.*) I/G Te		Pavement Removal				
Flow Arrow Single Tree Single Tree UG Telephone Conduit LOS D (S.U.E.*) AG Tank; Water, Disappearing Stream Single Shrub o UG Telephone Conduit LOS D (S.U.E.*) AG Tank; Water, Vetland Hedge Woods Line Woods Line UG Fiber Optics Cable LOS D (S.U.E.*) Image: Conduit LOS D (S.U.E.*)		VEGETATION:				Underground Stor
Spring Single Shrub Image: Single Shrub Image		Single Tree	÷			5
Wetland + Proposed Lateral, Tail, Head Ditch Woods Line Woods Line - W						
Proposed Lateral, Tail, Head Ditch Woods Line Image: Contraction of the contrest of the contraction of the contraction of the contraction of t						
Proposed Lateral, Tail, Head Ditch Fiber Optics Cable LOS C (S.U.E.*) Fider of Information		-	- <u></u>			
	raise sump —					

PROJECT NO. CS34.366	FIGURE 8
scale N/A	LEGEND FOR PLAN SHE
^{DATE} 9/XX/18	U-2579AB, WINSTON SALEM – NORTHERN B
DMN	(FUTURE I-74) FROM I-40 TO I-40 FORSYTH COUNTY, NORTH

PRD.#CT	REFERENCE NO. SHEET NO.
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According to Utility Records —	AATUR
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8 HEET FIGURES

RN BELTWAY EASTERN SECTION -40 BUSINESS/US421 RTH CAROLINA



7011 Albert Pick Rd., Suite E Greensboro, NC 27409

336.334.7724

www.espassociates.com

APPENDIX A SOIL BORING LOGS

	FCP			FIFI	D BORING L	OG		BORING NO.
PROJECT NAME:			DOT U-2579	AB PSA		. NO.: <u>CS34.366</u>		B352-1
LOCATION:		Ne	ear Kernersvi	lle Rd.				
TYPE	OF BORING	:	Direct Pus		DATE STARTED: 9/6/18		SHEET	: 1 of 1
DRILI	_ING FIRM:		SAEDACC		DATE FINISHED: 9/6/18		TOTAL DEPTH	10.0 ft
DRILI	_ER:	Brian Ewing		SAMPLE METHOD: 5' Mag	cro Core	DEPTH TO GW		
DRILI	RIG:	G	eoprobe 782	22 DT	LOGGED BY: D.	Nance	COMMENT	
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		FIELD CLASSIFIC PHYSICAL DES			REMARKS
DE	Ś	S De	R					
				0.0-0.3	Asphalt			Core 1 Rec 5.0'/5.0'
-								
1	S-1	1.0-1.5	0.7	0.3-2.0	Orange-brown sandy silt			
2	S-2	2.0-2.5	1.5	2.0-7.9	Orange-brown sandy, sil	tv clav		
		2.0 2.0			orange brown banay, on	ly oldy		
0	S-3	2025	1.1					
3	3-3	3.0-3.5	1.1					
·								
-	_							
4	S-4	4.0-4.5	1.4					Core 2 Rec 5.0'/5.0'
•								
5	S-5	5.0-5.5	2.4					
6	S-6	6.0-6.5	2.4					
_ Ŭ								
7	S-7	7.0-7.5	3.2	7.9-10.0	Orange-red sandy silt			
- '	0-1	7.0-7.5	0.2	7.5-10.0	Orange red sandy sit			
-								
	0.0		4.4					
8	S-8	8.0-8.5	1.4					
-								
9 (S-9	9.0-9.5	1.2					
10		Sam	nle selected	for laborator	v analysis			
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	FSP			FIF	LD BORING LOG		BORING NO.
	JECT NAME:		DOT U-2579, ear concrete	AB PSA	PROJ. NO.: <u>CS34.366</u>		B352-2
TYPE OF BORING: DRILLING FIRM: DRILLER: DRILL RIG:			Direct Pus SAEDACC Brian Ewir Geoprobe 782	:O ng	DATE STARTED: 9/6/18 DATE FINISHED: 9/6/18 SAMPLE METHOD: 5' Macro Core LOGGED BY: D. Nance	SHEET TOTAL DEPTH DEPTH TO GW COMMENT	: 10.0 ft Dry ft
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION		REMARKS
				0.0-0.3	Asphalt		Core 1 Rec 4.5'/5.0'
1	S-1	1.0-1.5	2.5	0.3-3.0	Orange-red silty clay		
2	S-2	2.0-2.5	3.3				
3	S-3	3.0-3.5	2.0	3.0-3.7	Asphalt		
4	S-4	No Rec	2.4	3.7-7.0	Orange-red silty clay		Core 2 Rec 4.0'/5.0'
5	S-5	5.0-5.5	4.6				
6	S-6	6.0-6.5	3.4				
7	S-7	7.0-7.5	4.1	7.0-9.0	Orange-tan silty sand		
8 (S-8	8.0-8.5	4.5				
9			ple selected	Cara la la cara t			
•		Sam	pie selected				
<u>10</u>							
<u>11</u>							
12							
13							
 14							
15							

Boring Logs B352-2 11/6/2018

	FSP			FIFI	LD BORING LOG		BORING NO.
			DOT U-2579	AB PSA	PROJ. NO.: <u>CS34.36</u>	66	B352-3
	TION: OF BORING		ar Sedge Gar Direct Pus		DATE STARTED: 9/6/18	SHEET:	1 of 1
	LING FIRM:		SAEDACC		DATE FINISHED: 9/6/18	TOTAL DEPTH:	
DRILL			Brian Ewir		SAMPLE METHOD: 5' Macro Core	DEPTH TO GW:	
DRILL		G	Geoprobe 782	22 DT	LOGGED BY: D. Nance	COMMENT:	
DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)		FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION		REMARKS
				0.0-0.4 0.4-0.7	Asphalt Gravel		Core 1 Rec 4.0'/5.0'
1	S-1	1.0-1.5	2.5	0.7-5.2	Orange-red silty, sandy clay		
	3-1	1.0-1.5	2.5	0.7-5.2	Grange-red sity, sandy day		
_2	S-2	2.0-2.5	2.4				
a							
3	S-3	3.0-3.5	2.7				
4	S-4	No Rec	N/A				Core 2 Rec 5.0'/5.0'
a							
5	S-5	5.0-5.5	3.7	5.2-10.0	Orande-brown sandy, silty clay		
		0.0-0.0	-		orande brown sandy; siny day		
6	S-6	6.0-6.5	4.4				
-							
7	S-7	7.0-7.5	4.3				
·							
8	S-8	8.0-8.5	4.1	8.3-10.0	Tan-gray sandy silt		
				0.0 10.0			
	S-9	0005	2.4				
9 (3-9	9.0-9.5	2.4				
_10				for laborato	ny analysis		
		Laun	ime selected				
							·
11							
12							
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APPENDIX B

RED LAB LABORATORY TESTING REPORT

Q	ED			Hydroca	arbon An	alysis Re	esults				-		QROS
Client: Address:	ESP ASSOCIATES, INC 7011 ALBERT PICK RO SUITE E GREENSBORO NC 274	AD							Sa Sample Sampl		acted		Monday, September 10, 2018 Monday, September 10, 2018 Wednesday, September 12, 2018
Contact:	DILLON NANCE									Ор	erator		NICK HENDRIX
Project:	U-2579 AB												
							Total						U00904
Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Aromatics (C10-C35)	16 EPA PAHs	BaP	0	% Ratios		HC Fingerprint Match
							(010 000)			C5 - C10	C10 - C18	C18	
S	B331-5 (S-9)	15.1	<0.38	<0.38	<0.38	<0.38	<0.08	<0.12	<0.015	0	100	0	,(FCM),(P)
S	B331-4 (S-9)	12.3			<0.31	<0.31	<0.06	-	<0.012	0	0	0	,(FCM)
S	B331-3 (S-9)	18.7	<0.47		<0.47	<0.47	<0.09			0	0		,(FCM),(P)
S	B331-2 (S-9)	19.4	<0.49			<0.49	<0.1	<0.16		0	0		,(FCM)
S	B331-1 (S-9)	21.2					<0.11	<0.17	<0.021	0	0		,(FCM)
S	B352-3 (S-9)	37.8				<0.95	<0.19			0	100		,(FCM),(P)
S	B352-2 (S-8)	15.4	<0.38			-	0.83			0	56.6		Deg.PHC 53.1%,(FCM),(BO)
S	B352-1 (S-9)	17.3	<0.43	1.7	<0.43	1.7	0.43	<0.14	<0.017	91.4	4.9	3.7	V.Deg.PHC 60.6%,(FCM),(BO)
		Initial Calibrator	QC check	OK					Final F	CM QC	Check	OK	100.8 %
Abbreviatior B = Blank D	on values in mg/kg for soil samp ns :- FCM = Results calculated u rift : (SBS)/(LBS) = Site Specific	using Fundamental Calib or Library Background S	ration Mode Subtraction a	: % = confide	ence of hydroc ult : (BO) = Ba	arbon identific ckground Orga	ation : (PFM) = anics detected	= Poor Fing : (OCR) = 0	erprint Match	n : (T) = 1 ange : (N	Furbid : (I	P) = Pai	rticulate detected
0/ Dotion on	timated aromatic carbon numbe	a manage attraction of the state											

APPENDIX C CHAIN-OF-CUSTODY FORM

Client Name:	ESP Agesciates, Inc.	
Address:	ESP Associates, Inc. Feil Albert Pick Rd. Ste E Greensborg, NK 27409	D
Contact:	Dillon Nonce	
Project Ref.:	U-2579 AB	RAPIDEN
Email:	d. nance Despressociates	Cirm
Phone #:	336-404-3117	CHAIN
Collected by:	P. Nance	



RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

RED Lab, LLC 5598 Marvin K Moss Lane MARBIONC Bldg, Suite 2003 Wilmington, NC 28409

Each sample will be analyzed for BTEX, GRO, DRO, TPH, PAH total aromatics and BaP

Sample Collection	TAT Re	quested	Matrix	Samala ID	111/5	CORTEN		_	
Date/Time	24 Hour 48 Hour		(S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
9/10/18		V	5	B331-5 5-9	V		49.2	43.9	\$ 5.2
				B331-4 5-9	3		\$52.7	45.6	8.1 7.5
				B331-3 5-9			51.6	44.1	7.5
	×			B331-2 5-9			53.0	45.8	7.2
				B331-1 5-9			52.0	45.4	6.6
				B352-3 9-9		47,4		43.7	3.7
				B352-2 5-3			52.8	43.7	9.1
				B352-1 5-9			519	43.8	8.1
				B342-6 5-3		<u> </u>	49.8	44.4	5.4
				B342-5 5-4			52.2	44.1	, 8.1
				B342-4 5-5			51.8	WAR 91.9	6.9
				B342-4 5-9		5	2.0 44		
				B342-3 5-9			52.1	44.4	7.7
				B342-2 5-9			50.7	43.7	7.0
				B342-1 5-9			50.1	43.9	6.2
				B54-1 5-9			510	44.1	6.9
				<u>B54-2 5-3</u>			51.2	43.5	7.7
				B54-3 5-9			51.9	44.0	7.9
				B54-4 5-7			49.3	44.3	5.5
	L Caral		V	B54-5 5-9	1 1.		51.2	44.3	
Comments: Kmo	fected	- data	results	largely unaffected.	alle		RI	ED Lab USE	ONLY
Relinq	uished by		Date	/Time Accepted by		Date/Time		5	
D. Nance		9/1	0/18 16:00 N	+ 9/11.	(:00	(1~1		
	uished by			/Time Accepted by	, 110	Date/Time			