



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 051 – 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.: 051
Owner: Jerry M. Pegram
Address: 4314 Kernersville Road, Winston-Salem, NC

Dear Mr. Parker:

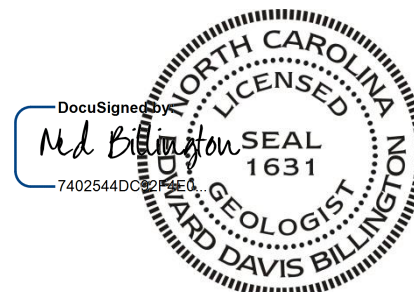
ESP Associates, Inc. (ESP) is pleased to submit this report on our Preliminary Site Assessment of the subject parcel. This work was performed in accordance with your Request for Proposal dated April 17, 2018 and our Cost Proposal dated May 3, 2018.

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

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	HISTORY	1
3.0	SITE OBSERVATIONS.....	1
4.0	METHODS	1
4.1	Geophysics	1
4.2	Borings	1
4.3	Soil Sample Protocol.....	2
4.4	Groundwater.....	2
5.0	RESULTS	2
5.1	Geophysics	2
5.2	Sample Data	3
5.3	Sample Observations.....	3
6.0	CONCLUSIONS.....	3
6.1	Interpretation of Results.....	3
6.2	Geophysics	3
6.3	Soil	3
7.0	RECOMMENDATIONS.....	4
8.0	LIMITATIONS.....	4

TABLES

Table 1	Soil Sample PID Readings
Table 2	Soil Sample UVF Results Summary

FIGURES

Figure 1	Parcel 051, Site Vicinity Map
Figure 2	Parcel 051, Site Photographs
Figure 3	Parcel 051, EM61 Early Time Gate Response
Figure 4	Parcel 051, EM61 Differential Response
Figure 5	Parcel 051, EM61 Early Time Gate Response on Plan Sheet
Figure 6	Parcel 051, EM61 Differential Response on Plan Sheet
Figure 7	Parcel 051, Soil Analytical Results on Plan Sheet
Figure 8	Legend for Plan Sheet Figures

TABLE OF CONTENTS (continued)

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 051 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 Jerry M. Pegram and is currently occupied by an oil company, consignment shop, and storage facility. The facility is listed in the North Carolina Department of Environmental Quality's (NCDEQ's) UST Section Registry as an active facility with Facility ID #: 0-016313. One diesel UST and one propane aboveground storage tank (AST) are currently in use. There are no known groundwater or soil contamination incidents associated with this facility.

3.0 SITE OBSERVATIONS

During our May 2018 field work, the site was operating as an oil company, consignment shop, and storage facility (Figure 2). The ground in the study area was covered by asphalt, gravel, concrete, and grass.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on May 22, 2018. We performed direct-push drilling and sampling of subsurface soils within the proposed easement on September 4, 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 051 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. The owner, Mr. Pegram, provided

permission for us to be on site. Mr. Pegram's geologist, Mr. Joseph Best, PG, was present during the drilling and split soil samples with us. Prior to drilling, ESP's utility locating crew marked the private utilities on Parcel 051.

Five borings were drilled, designated B51-1 through B51-5 (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®. All soil cores had a recovery of 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. The soil samples obtained had PID readings 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, PAHs, and GRO were below the detection limits for all samples. DRO was detected in 1 of the 5 soil samples tested but below the NCDEQ action level of 100 ppm. The highest DRO reading was 0.9 ppm in Sample S-9 (9.0-9.5 feet) from Boring B51-2.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the PSA for Parcel 051 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 051.

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 051 (Figure 7).

7.0 RECOMMENDATIONS

The known UST should be removed prior to property acquisition. Other than the known UST, no limitations on construction activities or special handling of excavated soil are recommended for Parcel 051.

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

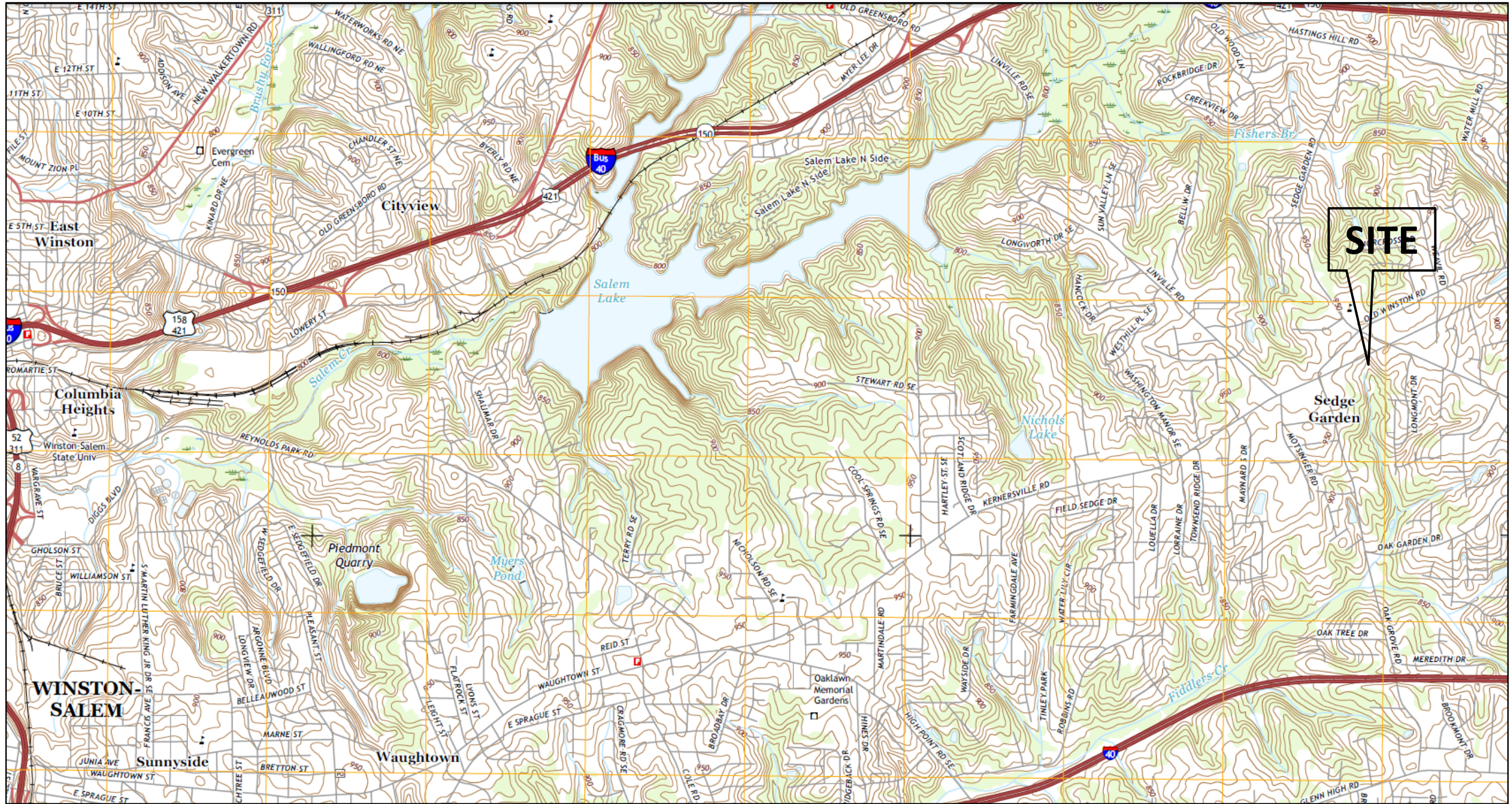
TABLE 1
SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B51-1	none	0.6 (5.0-5.5)
B51-2	none	0.4 (5.0-5.5)
B51-3	none	0.4 (6.0-6.5)
B51-4	none	0.7 (8.0-8.5)
B51-5	none	0.8 (5.0-5.5)

TABLE 2
SOIL SAMPLE UVF RESULTS SUMMARY

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)
B51-1	S-9 (9.0-9.5)	9/10/18	<0.21	<0.21	<0.21	<0.07
B51-2	S-9 (9.0-9.5)	9/10/18	<0.5	<0.5	0.9	<0.16
B51-3	S-9 (9.0-9.5)	9/10/18	<0.54	<0.54	<0.54	<0.17
B51-4	S-9 (9.0-9.5)	9/10/18	<0.56	<0.56	<0.56	<0.18
B51-5	S-9 (9.0-9.5)	9/10/18	<0.64	<0.64	<0.64	<0.2

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
DATE	11/6/18
BY	DMN

**FIGURE 1 – PARCEL 051, JERRY M. PEGRAM
SITE VICINITY MAP**

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



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



a. Photo from east side of site looking west.




b. Photo from north side of site looking south.

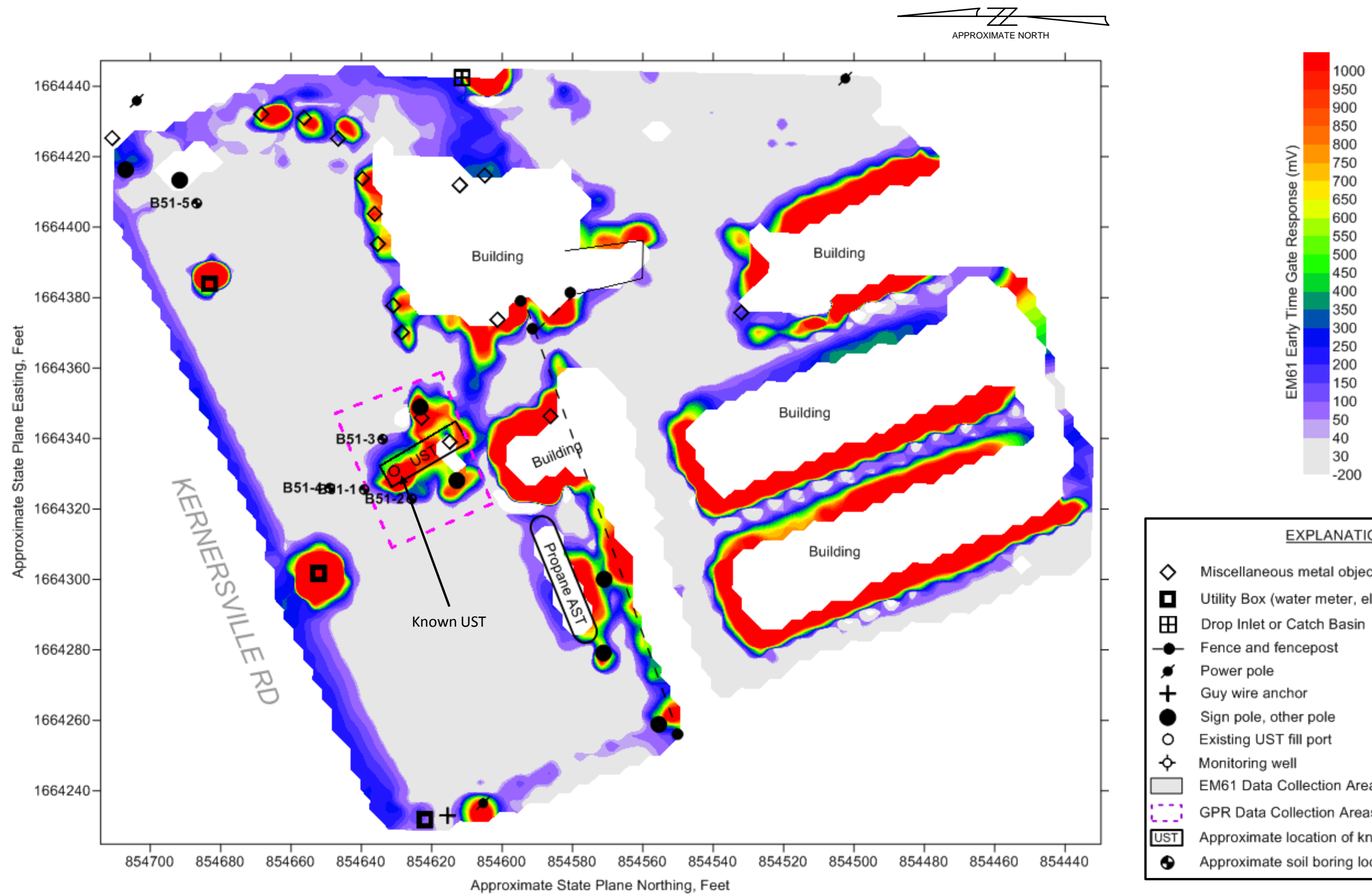


c. Photo of propane AST looking south.



d. Photo of marked known UST.

PROJECT NO. CS34.366	FIGURE 2 – PARCEL 051, JERRY M. PEGRAM SITE PHOTOGRAPHS	U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA	 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com
SCALE AS SHOWN			
DATE 11/6/18			
BY DMN			



- EXPLANATION**
- ◇ Miscellaneous metal object (pipe, debris, etc.)
 - Utility Box (water meter, electrical outlet, etc.)
 - ▣ Drop Inlet or Catch Basin
 - Fence and fencepost
 - ⚡ Power pole
 - ⊕ Guy wire anchor
 - Sign pole, other pole
 - Existing UST fill port
 - ◇ Monitoring well
 - EM61 Data Collection Areas
 - ▤ GPR Data Collection Areas
 - ▭ UST Approximate location of known UST
 - ⊙ Approximate soil boring location

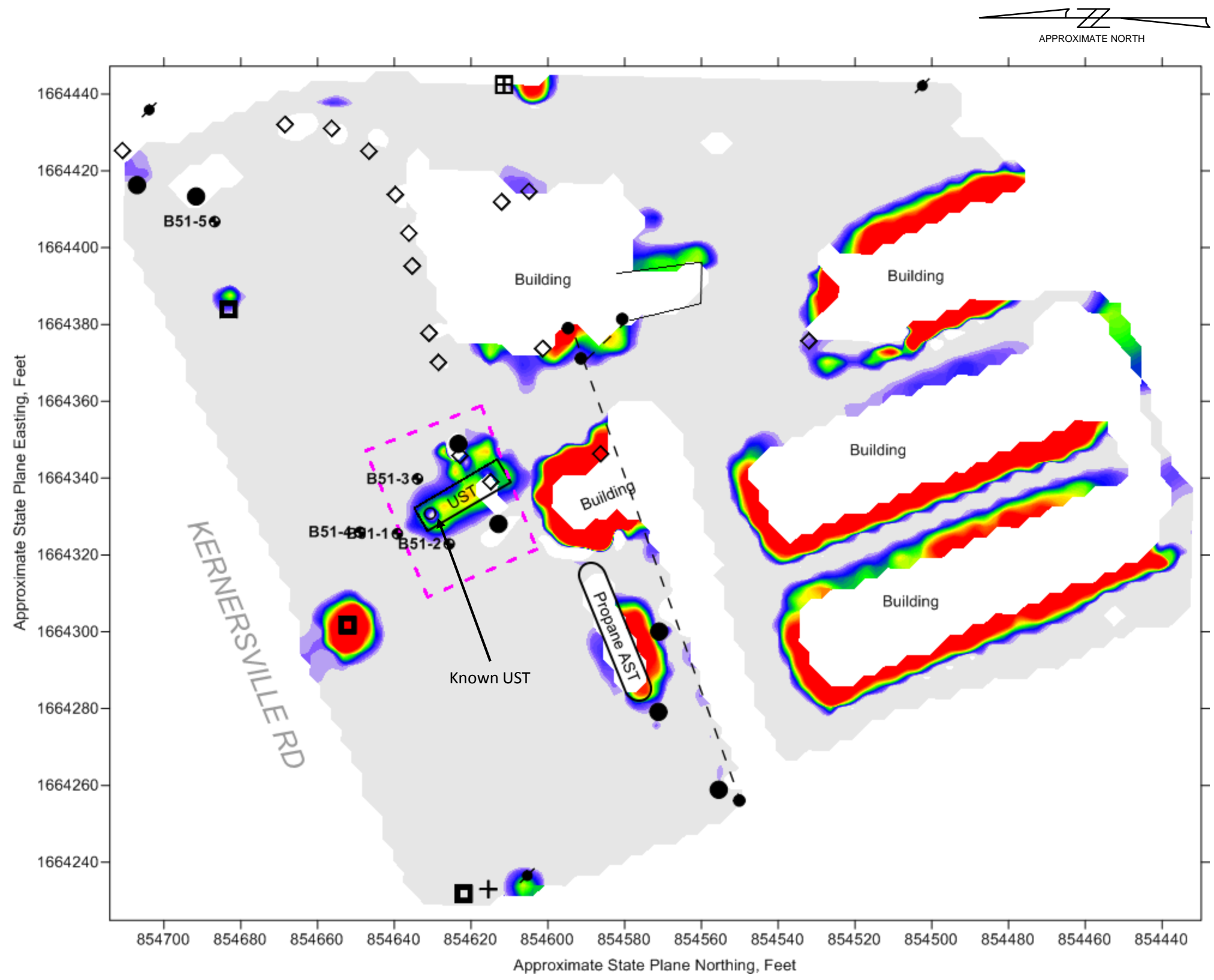
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 3 – PARCEL 051, JERRY M. PEGRAM
EM61 EARLY TIME GATE RESPONSE
 U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
 (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
 FORSYTH COUNTY, NORTH CAROLINA



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



- EXPLANATION**
- ◇ Miscellaneous metal object (pipe, debris, etc.)
 - ▣ Utility Box (water meter, electrical outlet, etc.)
 - ⊠ Drop Inlet or Catch Basin
 - Fence and fencepost
 - ⚡ Power pole
 - ⊕ Guy wire anchor
 - Sign pole, other pole
 - Existing UST fill port
 - ⊕ Monitoring well
 - ▭ EM61 Data Collection Areas
 - ▭ GPR Data Collection Areas
 - ▭ UST Approximate location of known UST
 - Approximate soil boring location

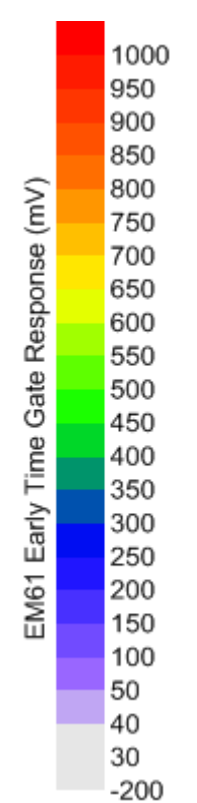
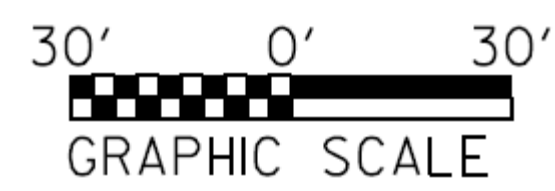
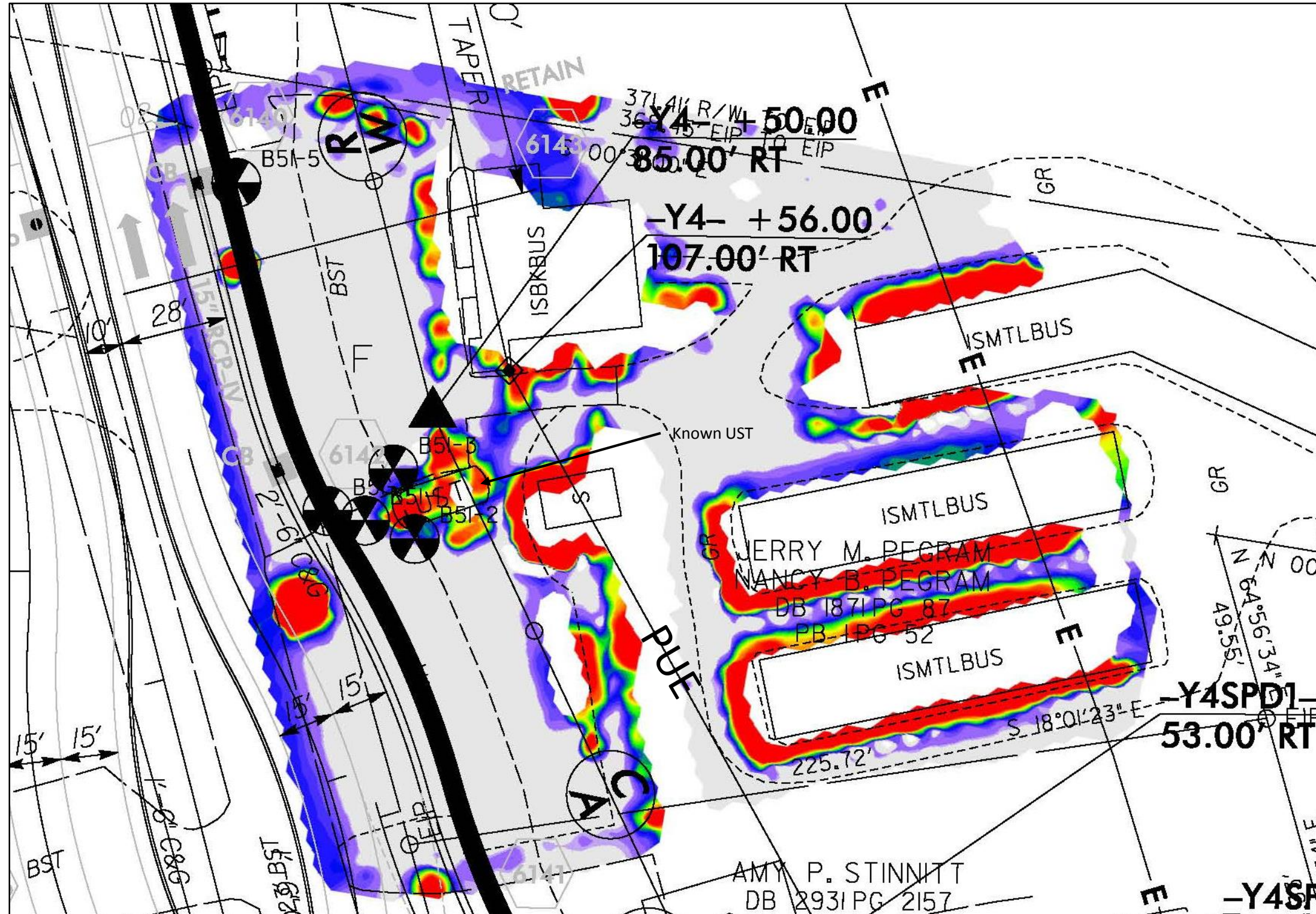
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 4- PARCEL 051, JERRY M. PEGRAM
EM61 DIFFERENTIAL RESPONSE
 U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
 (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
 FORSYTH COUNTY, NORTH CAROLINA



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



List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
- SS, u2579ab_rdy_ss.dgn
- ROW, u2579ab_rdy_row.dgn
- FinalSurvey\U2579AB_ncdot_fs.dgn
- U2579AB_hyd_dm.dgn

See Figure 8 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 5 – PARCEL 051, JERRY M. PEGRAM
EM61 EARLY TIME GATE RESPONSE ON PLAN SHEET

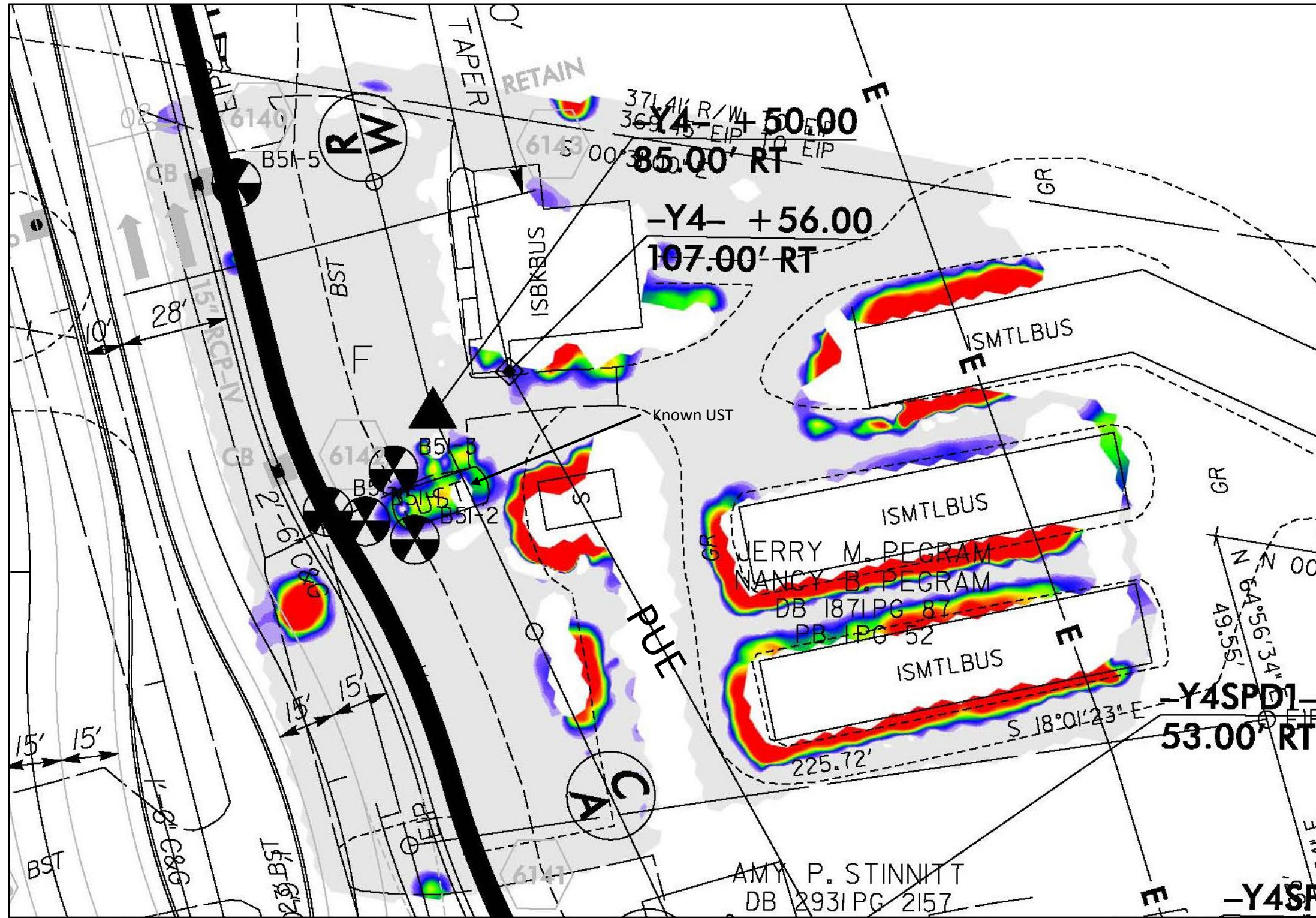
U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
 (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
 FORSYTH COUNTY, NORTH CAROLINA



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

336.334.7724

www.espassociates.com



List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
- SS, u2579ab_rdy_ss.dgn
- ROW, u2579ab_rdy_row.dgn
- FinalSurvey\U2579AB_ncdot_fs.dgn
- U2579AB_hyd_dm.dgn

See Figure 8 for explanation of symbols and line types

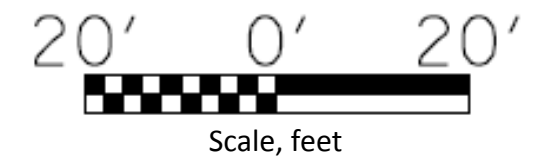
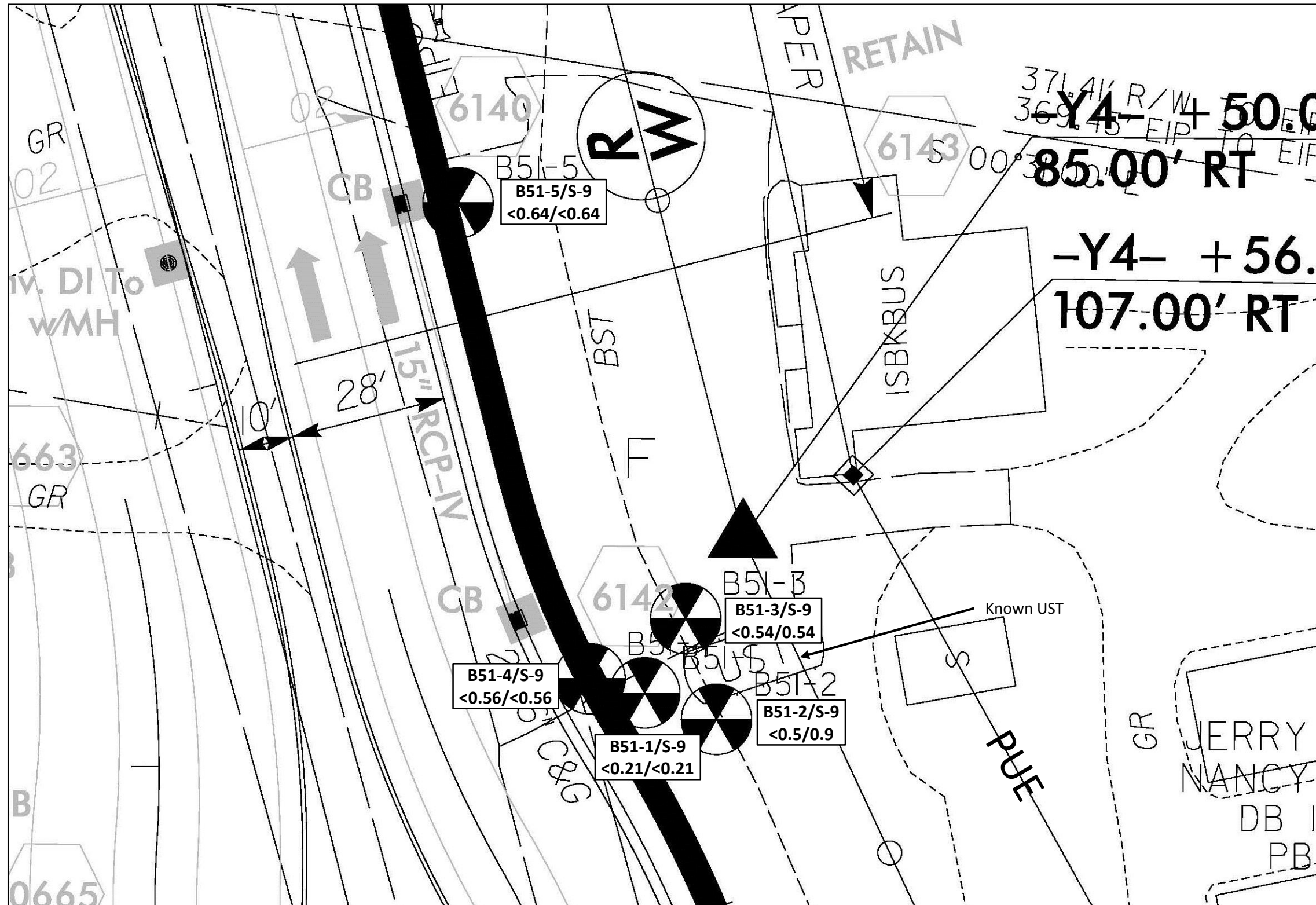
PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

**FIGURE 6- PARCEL 051, JERRY M. PEGRAM
EM61 DIFFERENTIAL RESPONSE ON PLAN SHEET**

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



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



Explanation	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> B51-1/S-9 <0.21/<0.21 </div>	Maximum Analytical Results per Boring Boring No./Sample No. GRO/DRO (mg/kg, ppm)

List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
- SS, u2579ab_rdy_ss.dgn
- ROW, u2579ab_rdy_row.dgn
- FinalSurvey\U2579AB_ncdot_fs.dgn
- U2579AB_hyd_dm.dgn

See Figure 8 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	1" = 20'
DATE	11/6/18
BY	DMN

**FIGURE 7 – PARCEL 051, JERRY M. PEGRAM
SOIL ANALYTICAL RESULTS ON PLAN SHEET**

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



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

336.334.7724

www.espassociates.com

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

*Note: Not to Scale *S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	
Property Corner	
Property Monument	
Parcel/Sequence Number	
Existing Fence Line	
Proposed Woven Wire Fence	
Proposed Chain Link Fence	
Proposed Barbed Wire Fence	
Existing Wetland Boundary	
Proposed Wetland Boundary	
Existing Endangered Animal Boundary	
Existing Endangered Plant Boundary	
Existing Historic Property Boundary	
Known Contamination Area: Soil	
Potential Contamination Area: Soil	
Known Contamination Area: Water	
Potential Contamination Area: Water	
Contaminated Site: Known or Potential	

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	
Sign	
Well	
Small Mine	
Foundation	
Area Outline	
Cemetery	
Building	
School	
Church	
Dam	

HYDROLOGY:

Stream or Body of Water	
Hydro, Pool or Reservoir	
Jurisdictional Stream	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

RAILROADS:

Standard Gauge	
RR Signal Milepost	
Switch	
RR Abandoned	
RR Dismantled	

RIGHT OF WAY:

Baseline Control Point	
Existing Right of Way Marker	
Existing Right of Way Line	
Proposed Right of Way Line	
Proposed Right of Way Line with Iron Pin and Cap Marker	
Proposed Right of Way Line with Concrete or Granite RW Marker	
Proposed Control of Access Line with Concrete C/A Marker	
Existing Control of Access	
Proposed Control of Access	
Existing Easement Line	
Proposed Temporary Construction Easement	
Proposed Temporary Drainage Easement	
Proposed Permanent Drainage Easement	
Proposed Permanent Drainage / Utility Easement	
Proposed Permanent Utility Easement	
Proposed Temporary Utility Easement	
Proposed Aerial Utility Easement	
Proposed Permanent Easement with Iron Pin and Cap Marker	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Curb Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	

VEGETATION:

Single Tree	
Single Shrub	
Hedge	
Woods Line	

Orchard	
Vineyard	

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

UTILITIES:

POWER:	
Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
U/G Power Cable Hand Hole	
H-Frame Pole	
U/G Power Line LOS B (S.U.E.*)	
U/G Power Line LOS C (S.U.E.*)	
U/G Power Line LOS D (S.U.E.*)	

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	
Telephone Pedestal	
Telephone Cell Tower	
U/G Telephone Cable Hand Hole	
U/G Telephone Cable LOS B (S.U.E.*)	
U/G Telephone Cable LOS C (S.U.E.*)	
U/G Telephone Cable LOS D (S.U.E.*)	
U/G Telephone Conduit LOS B (S.U.E.*)	
U/G Telephone Conduit LOS C (S.U.E.*)	
U/G Telephone Conduit LOS D (S.U.E.*)	
U/G Fiber Optics Cable LOS B (S.U.E.*)	
U/G Fiber Optics Cable LOS C (S.U.E.*)	
U/G Fiber Optics Cable LOS D (S.U.E.*)	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
U/G Water Line LOS B (S.U.E.*)	
U/G Water Line LOS C (S.U.E.*)	
U/G Water Line LOS D (S.U.E.*)	
Above Ground Water Line	

TV:

TV Pedestal	
TV Tower	
U/G TV Cable Hand Hole	
U/G TV Cable LOS B (S.U.E.*)	
U/G TV Cable LOS C (S.U.E.*)	
U/G TV Cable LOS D (S.U.E.*)	
U/G Fiber Optic Cable LOS B (S.U.E.*)	
U/G Fiber Optic Cable LOS C (S.U.E.*)	
U/G Fiber Optic Cable LOS D (S.U.E.*)	

GAS:

Gas Valve	
Gas Meter	
U/G Gas Line LOS B (S.U.E.*)	
U/G Gas Line LOS C (S.U.E.*)	
U/G Gas Line LOS D (S.U.E.*)	
Above Ground Gas Line	

SANITARY SEWER:

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
U/G Sanitary Sewer Line	
Above Ground Sanitary Sewer	
SS Forced Main Line LOS B (S.U.E.*)	
SS Forced Main Line LOS C (S.U.E.*)	
SS Forced Main Line LOS D (S.U.E.*)	

MISCELLANEOUS:

Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line LOS B (S.U.E.*)	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
U/G Test Hole LOS A (S.U.E.*)	
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

PROJECT NO.	CS34.366
SCALE	N/A
DATE	11/6/18
BY	DMN

**FIGURE 8
LEGEND FOR PLAN SHEET FIGURES**

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



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

APPENDIX A
SOIL BORING LOGS



FIELD BORING LOG

BORING NO.

B51-1

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366
 LOCATION: SW of UST
 TYPE OF BORING: Direct Push DATE STARTED: 9/4/18 SHEET: 1 of 1
 DRILLING FIRM: SAEDACCO DATE FINISHED: 9/4/18 TOTAL DEPTH: 10.0 ft
 DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft
 DRILL RIG: Geoprobe 7822 DT LOGGED BY: D. Nance COMMENT: _____

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.8 Gravel 0.8-1.9 Orange-brown sandy silt w/ clay	Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	0.6		
				1.9-10.0 Orange-brown clayey silt	
2	S-2	2.0-2.5	0.4		
3	S-3	3.0-3.5	0.3		
4	S-4	4.0-4.5	0.2		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	0.6		
6	S-6	6.0-6.5	0.5		
7	S-7	7.0-7.5	0.4		
8	S-8	8.0-8.5	0.4		
9	S-9	9.0-9.5	0.3		
10					Sample selected for laboratory analysis
11					
12					
13					
14					
15					



FIELD BORING LOG

BORING NO.

B51-2

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366
 LOCATION: SW of UST
 TYPE OF BORING: Direct Push DATE STARTED: 9/4/18 SHEET: 1 of 1
 DRILLING FIRM: SAEDACCO DATE FINISHED: 9/4/18 TOTAL DEPTH: 10.0 ft
 DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft
 DRILL RIG: Geoprobe 7822 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 Gravel 0.4-5.5 Orange-brown sandy, clayey silt	Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	0.1		
2	S-2	2.0-2.5	0.1		
3	S-3	3.0-3.5	0.1		
4	S-4	4.0-4.5	0.2		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	0.4	5.5-10.0 Orange-brown sandy silt	
6	S-6	6.0-6.5	0.0		
7	S-7	7.0-7.5	0.2		
8	S-8	8.0-8.5	0.3		
9	S-9	9.0-9.5	0.3		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis



FIELD BORING LOG

BORING NO.

B51-3

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366

LOCATION: NE of UST

TYPE OF BORING: Direct Push DATE STARTED: 9/4/18 SHEET: 1 of 1

DRILLING FIRM: SAEDACCO DATE FINISHED: 9/4/18 TOTAL DEPTH: 10.0 ft

DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 DT LOGGED BY: D. Nance COMMENT: _____

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-1.0 Asphalt 1.0-10.0 Orange-brown clayey silt	Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	0.2		
2	S-2	2.0-2.5	0.3		
3	S-3	3.0-3.5	0.3		
4	S-4	4.0-4.5	0.2		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	0.3		
6	S-6	6.0-6.5	0.4		
7	S-7	7.0-7.5	0.2		
8	S-8	8.0-8.5	0.2		
9	S-9	9.0-9.5	0.1		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis



FIELD BORING LOG

BORING NO.

B51-4

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366

LOCATION: Center of parking lot

TYPE OF BORING: Direct Push DATE STARTED: 9/4/18 SHEET: 1 of 1

DRILLING FIRM: SAEDACCO DATE FINISHED: 9/4/18 TOTAL DEPTH: 10.0 ft

DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 DT LOGGED BY: D. Nance COMMENT: _____

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.6 Asphalt 0.6-10.0 Orange-brown sandy, clayey silt	Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	0.6		
2	S-2	2.0-2.5	0.4		
3	S-3	3.0-3.5	0.1		
4	S-4	4.0-4.5	0.1		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	0.2		
6	S-6	6.0-6.5	0.3		
7	S-7	7.0-7.5	0.6		
8	S-8	8.0-8.5	0.7		
9	S-9	9.0-9.5	0.6		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis



FIELD BORING LOG

BORING NO.

B51-5

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366

LOCATION: NE corner of parking lot

TYPE OF BORING: Direct Push DATE STARTED: 9/4/18 SHEET: 1 of 1

DRILLING FIRM: SAEDACCO DATE FINISHED: 9/4/18 TOTAL DEPTH: 10.0 ft

DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 DT LOGGED BY: D. Nance COMMENT: _____

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-1.2 Asphalt 1.2-10.0 Red-brown sandy, silty clay	Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	0.6		
2	S-2	2.0-2.5	0.7		
3	S-3	3.0-3.5	0.5		
4	S-4	4.0-4.5	0.5		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	0.8		
6	S-6	6.0-6.5	1.1		
7	S-7	7.0-7.5	1.2		
8	S-8	8.0-8.5	1.0		
9	S-9	9.0-9.5	0.6		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

APPENDIX B

RED LAB LABORATORY TESTING REPORT



Hydrocarbon Analysis Results

Client: ESP ASSOCIATES, INC.
Address: 7011 ALBERT PICK ROAD
 SUITE E
 GREENSBORO NC 27409

Samples taken Monday, September 10, 2018
Samples extracted Monday, September 10, 2018
Samples analysed Wednesday, September 12, 2018

Contact: DILLON NANCE

Operator NICK HENDRIX

Project: U-2579 AB

U00904

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B51-5 (S-9)	25.5	<0.64	<0.64	<0.64	<0.64	<0.13	<0.2	<0.025	0	0	0	PHC not detected
s	B51-4 (S-9)	22.2	<0.56	<0.56	<0.56	<0.56	<0.11	<0.18	<0.022	0	0	0	PHC not detected
s	B51-3 (S-9)	21.4	<0.54	<0.54	<0.54	<0.54	<0.11	<0.17	<0.021	0	0	0	PHC not detected,(BO)
s	B51-2 (S-9)	20.0	<0.5	<0.5	0.9	0.9	<0.1	<0.16	<0.02	0	100	0	Deg.Fuel 51%,(FCM)
s	B51-1 (S-9)	8.2	<0.21	<0.21	<0.21	<0.21	<0.04	<0.07	<0.008	0	0	100	.(FCM),(BO),(P)

Initial Calibrator QC check **OK**

Final FCM QC Check **OK**

96.4 %

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.
 Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected
 B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modified Result.
 % Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

APPENDIX C
CHAIN-OF-CUSTODY FORM

Client Name:	ESP Associates, Inc
Address:	7011 Albert Pick Rd. Ste E Greensboro, NC 27409
Contact:	Dillon Nance
Project Ref.:	U-2579AA
Email:	d.nance@espassociates.com
Phone #:	336-404-3117
Collected by:	D. 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 Date/Time	TAT Requested		Matrix (S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
	24 Hour	48 Hour							
9/10/18		✓	S	B36-5 S-7	✓		50.5	44.2	6.3
				B36-4 S-9			50.5	44.1	6.4
				B36-3 S-9			53.0	44.1	8.9
				B36-2 S-9			48.4	44.0	4.4
				B36-1 S-9			50.4	44.3	6.1
				B60-4 S-18			51.2	44.3	6.9
				B60-3 S-7			51.7	44.4	7.3
				B60-2 S-8			49.6	44.3	5.3
				B60-1 S-10			51.2	44.5	6.7
				B50-5 S-8			50.5	44.3	6.2
				B50-4 S-10			49.3	44.0	5.3
				B50-3 S-9			46.6	44.0	2.6
				B50-2 S-9			50.7	44.2	6.5
				B50-1 S-9			49.9	43.9	6.0
				B51-5 S-9			49.5	44.0	5.5
				B51-4 S-9			50.3	44.0	6.3
				B51-3 S-9			47.1	44.3	2.8
				B61-2 S-9			48.2	44.2	4.0
				B57-1 S-9			53.7	44.0	9.7

Comments: **Most samples underweight. Soil matrix representation affected - data results largely unaffected.**

RED Lab USE ONLY

Relinquished by	Date/Time	Accepted by	Date/Time
D. Nance	9/10/18 16:00	NT 9/12 11:00	9/12 11:00
Relinquished by	Date/Time	Accepted by	Date/Time

1a



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 054 – 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.: 054
Owner: George Nick Angle
Address: 4341-53 Kernersville Road Winston-Salem, NC

Dear Mr. Parker:

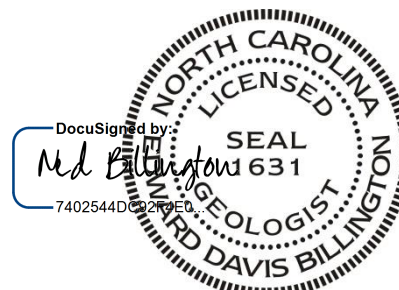
ESP Associates, Inc. (ESP) is pleased to submit this report on our Preliminary Site Assessment of the subject parcel. This work was performed in accordance with your Request for Proposal dated April 17, 2018 and our Cost Proposal dated May 3, 2018.

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

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	HISTORY	1
3.0	SITE OBSERVATIONS.....	1
4.0	METHODS	1
4.1	Geophysics	1
4.2	Borings	1
4.3	Soil Sample Protocol.....	2
4.4	Groundwater.....	2
5.0	RESULTS	2
5.1	Geophysics	2
5.2	Sample Data	3
5.3	Sample Observations.....	3
6.0	CONCLUSIONS.....	3
6.1	Interpretation of Results.....	3
6.2	Geophysics	3
6.3	Soil	3
7.0	RECOMMENDATIONS.....	4
8.0	LIMITATIONS.....	4

TABLES

Table 1	Soil Sample PID Readings
Table 2	Soil Sample UVF Results Summary

FIGURES

Figure 1	Parcel 054, Site Vicinity Map
Figure 2	Parcel 054, Site Photographs
Figure 3	Parcel 054, EM61 Early Time Gate Response
Figure 4	Parcel 054, EM61 Differential Response
Figure 5	Parcel 054, EM61 Early Time Gate Response on Plan Sheet
Figure 6	Parcel 054, EM61 Differential Response on Plan Sheet
Figure 7	Parcel 054, Soil Analytical Results on Plan Sheet
Figure 8	Legend for Plan Sheet Figures

TABLE OF CONTENTS (continued)

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 054 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 George Nick Angle and is currently occupied by several active businesses. The facility is listed in the North Carolina Department of Environmental Quality's (NCDEQ's) UST Section Registry with Facility ID #: 0-016068 and was assigned Ground Water Incident #: 14721. Three USTs were removed from the parcel in 1994 and the site's UST release incident was reportedly closed out in 2006. Two monitoring wells are on site and appear to be active but are locked with padlocks; therefore, ESP was unable to sample these wells (Figure 3).

3.0 SITE OBSERVATIONS

During our May 2018 field work, the site was operating as several active businesses (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 24, 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).

4.2 Borings

ESP performed direct-push drilling activities within the easement of Parcel 054 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Five borings were drilled, designated B54-1 through B54-5 (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 three 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 B54-1, B54-3, and B54-5; Sample S-8 (8.0-8.5 feet) from Boring B54-2; Sample S-7 (7.0-7.5 feet) from Boring B54-4. 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 did not indicate any anomalies (response above background) that did not correspond to known site features.

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, PAHs, and GRO were below the detection limits for all samples. DRO was detected in 2 of the 5 soil samples tested but below the NCDEQ action level of 100 ppm. The highest DRO reading was 10 ppm in Sample S-9 (9.0-9.5 feet) from Boring B54-3.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the PSA for Parcel 054 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 054.

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 054 (Figure 7).

7.0 RECOMMENDATIONS

No limitations on construction activities or special handling of excavated soil are recommended for Parcel 054.

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

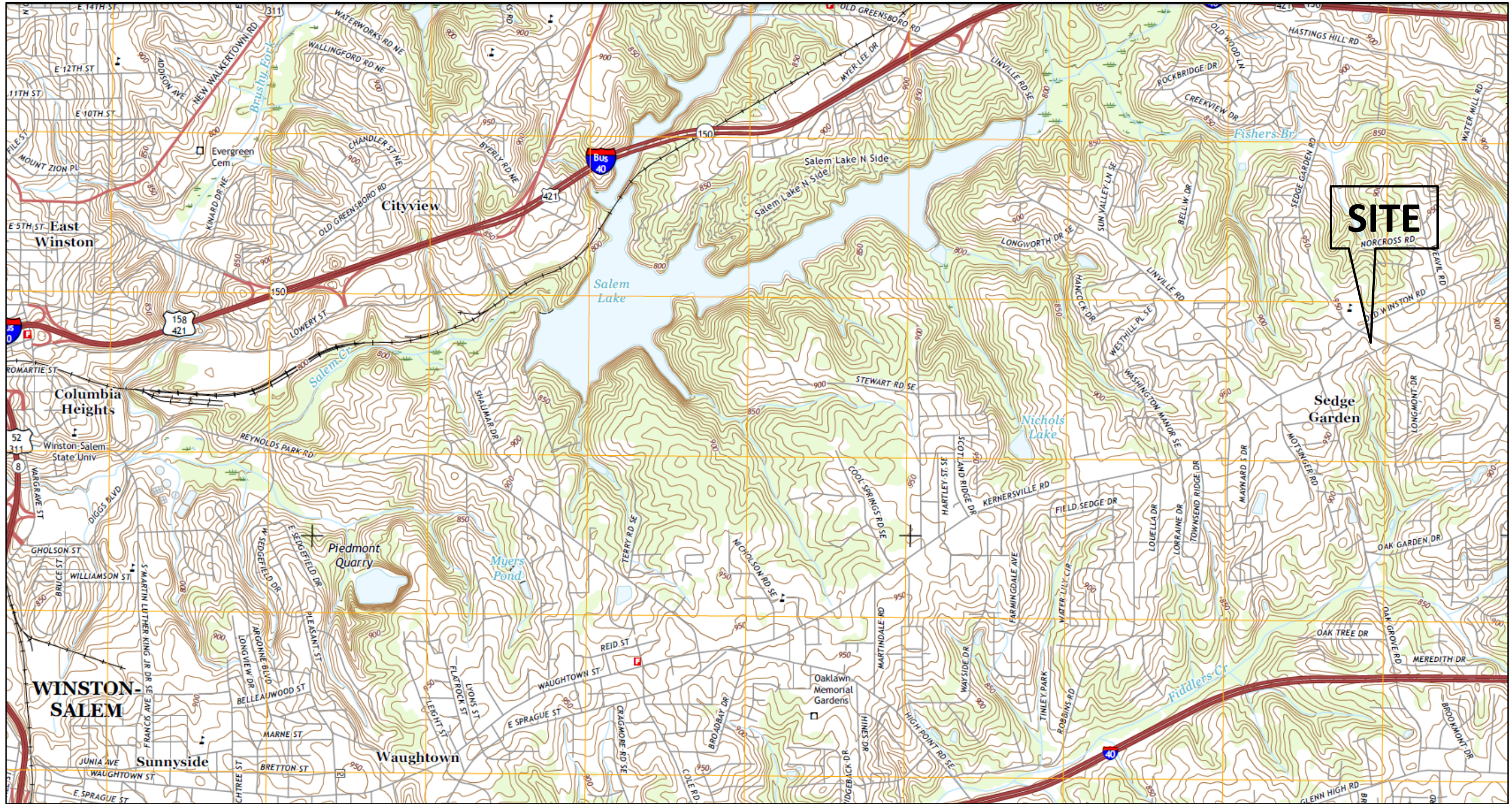
TABLE 1
SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B54-1	none	1.3 (5.0-5.5)
B54-2	none	1.0 (8.0-8.5)
B54-3	none	2.1 (9.0-9.5)
B54-4	none	1.1 (5.0-5.5)
B54-5	none	1.6 (1.0-1.5)

TABLE 2
SOIL SAMPLE UVF RESULTS SUMMARY

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)
B54-1	S-9 (9.0-9.5)	9/10/18	<0.51	<0.51	<0.51	<0.16
B54-2	S-8 (8.0-8.5)	9/10/18	<0.45	<0.45	1.3	<0.15
B54-3	S-9 (9.0-9.5)	9/10/18	<0.82	<0.82	10	<0.26
B54-4	S-7 (7.0-7.5)	9/10/18	<0.64	<0.64	<0.64	<0.2
B54-5	S-9 (9.0-9.5)	9/10/18	<0.29	<0.29	<0.29	<0.09

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
DATE	11/6/18
BY	DMN

**FIGURE 1 – PARCEL 054, GEORGE NICK ANGLE
SITE VICINITY MAP**

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



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

336.334.7724

www.espassociates.com



a. Photo from northeast side of site looking southwest.




b. Photo from east side of site looking west.

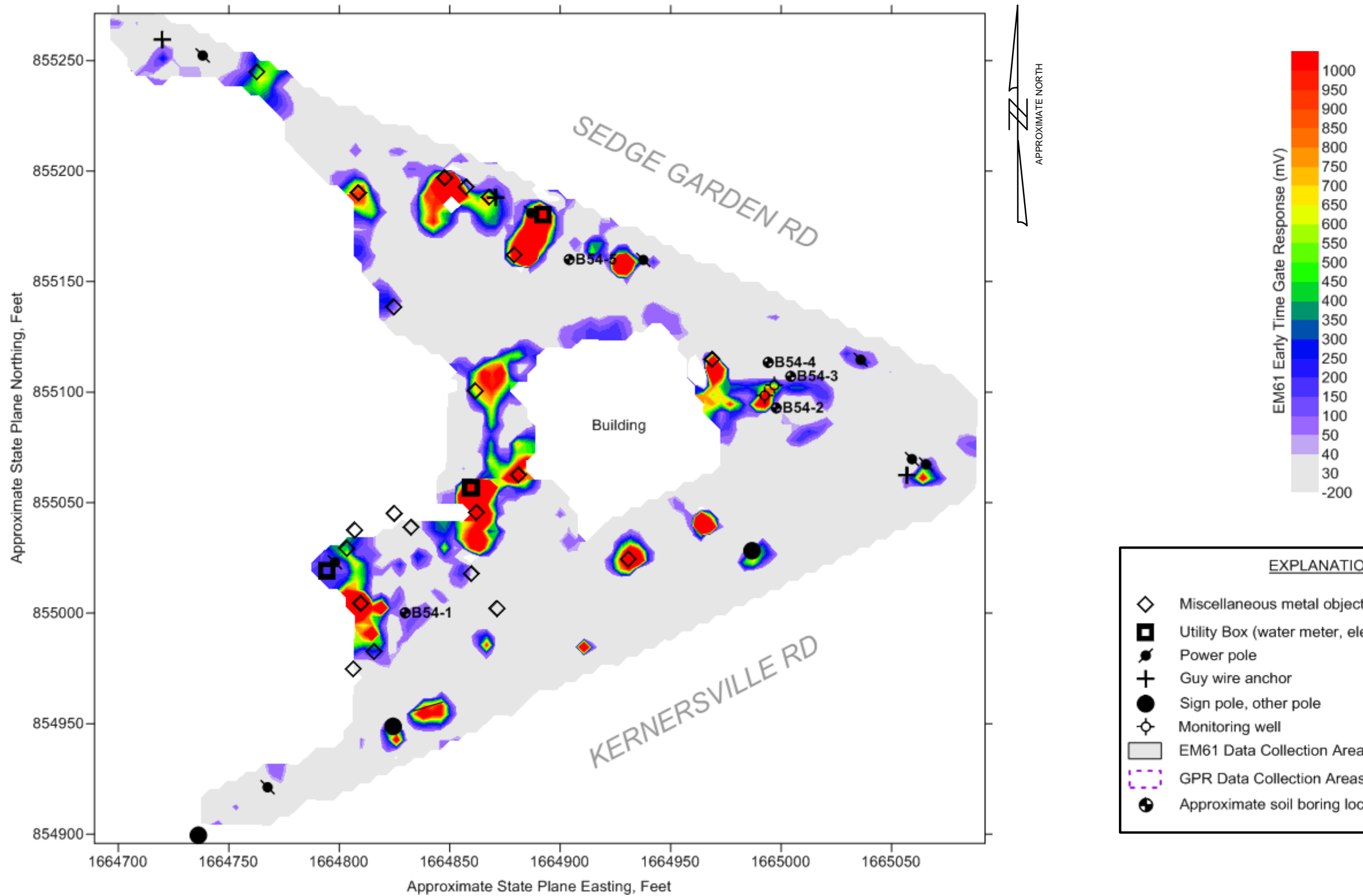


c. Photo from northwest side of site looking southeast.



d. Photo from southwest side of site looking northeast.

PROJECT NO. CS34.366	FIGURE 2 – PARCEL 054, GEORGE NICK ANGLE SITE PHOTOGRAPHS	U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA	 ESP	7011 Albert Pick Rd., Suite E Greensboro, NC 27409
SCALE AS SHOWN				336.334.7724
DATE 11/6/18				www.espassociates.com
BY DMN				



EXPLANATION

	Miscellaneous metal object (pipe, debris, etc.)
	Utility Box (water meter, electrical outlet, etc.)
	Power pole
	Guy wire anchor
	Sign pole, other pole
	Monitoring well
	EM61 Data Collection Areas
	GPR Data Collection Areas
	Approximate soil boring location

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.

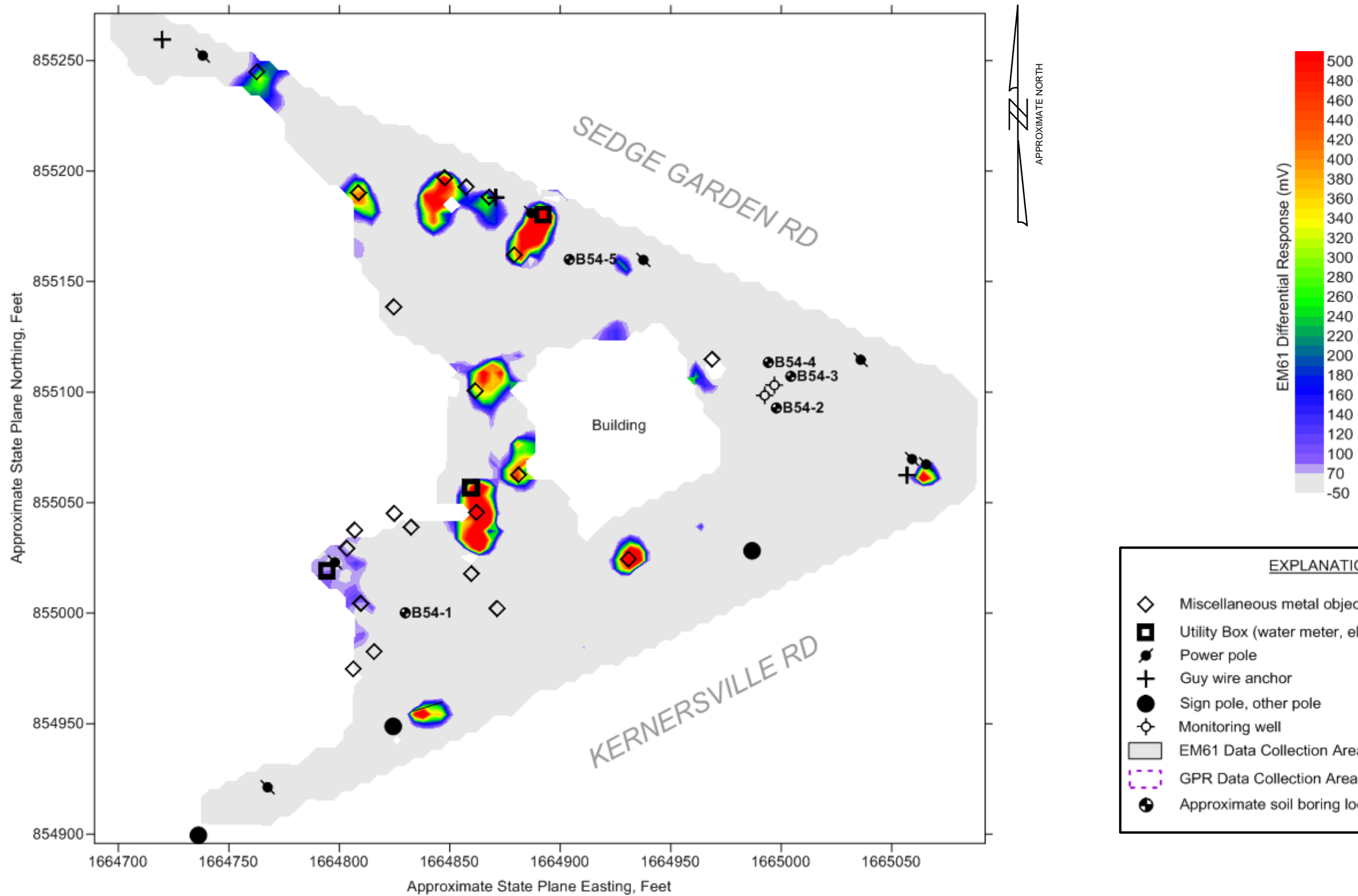
PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 3 – PARCEL 054, GEORGE NICK ANGLE
EM61 EARLY TIME GATE RESPONSE

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

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

336.334.7724
www.espassociates.com



EXPLANATION	
◇	Miscellaneous metal object (pipe, debris, etc.)
◻	Utility Box (water meter, electrical outlet, etc.)
●	Power pole
+	Guy wire anchor
●	Sign pole, other pole
⊙	Monitoring well
◻	EM61 Data Collection Areas
◻	GPR Data Collection Areas
●	Approximate soil boring location

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.

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

**FIGURE 4 – PARCEL 054, GEORGE NICK ANGLE
EM61 EARLY TIME GATE RESPONSE**

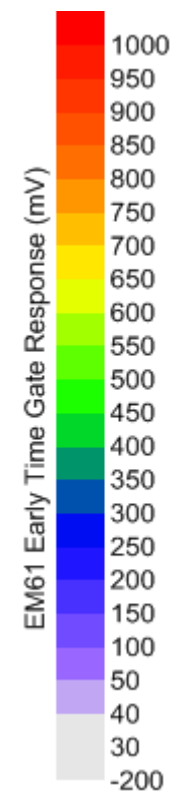
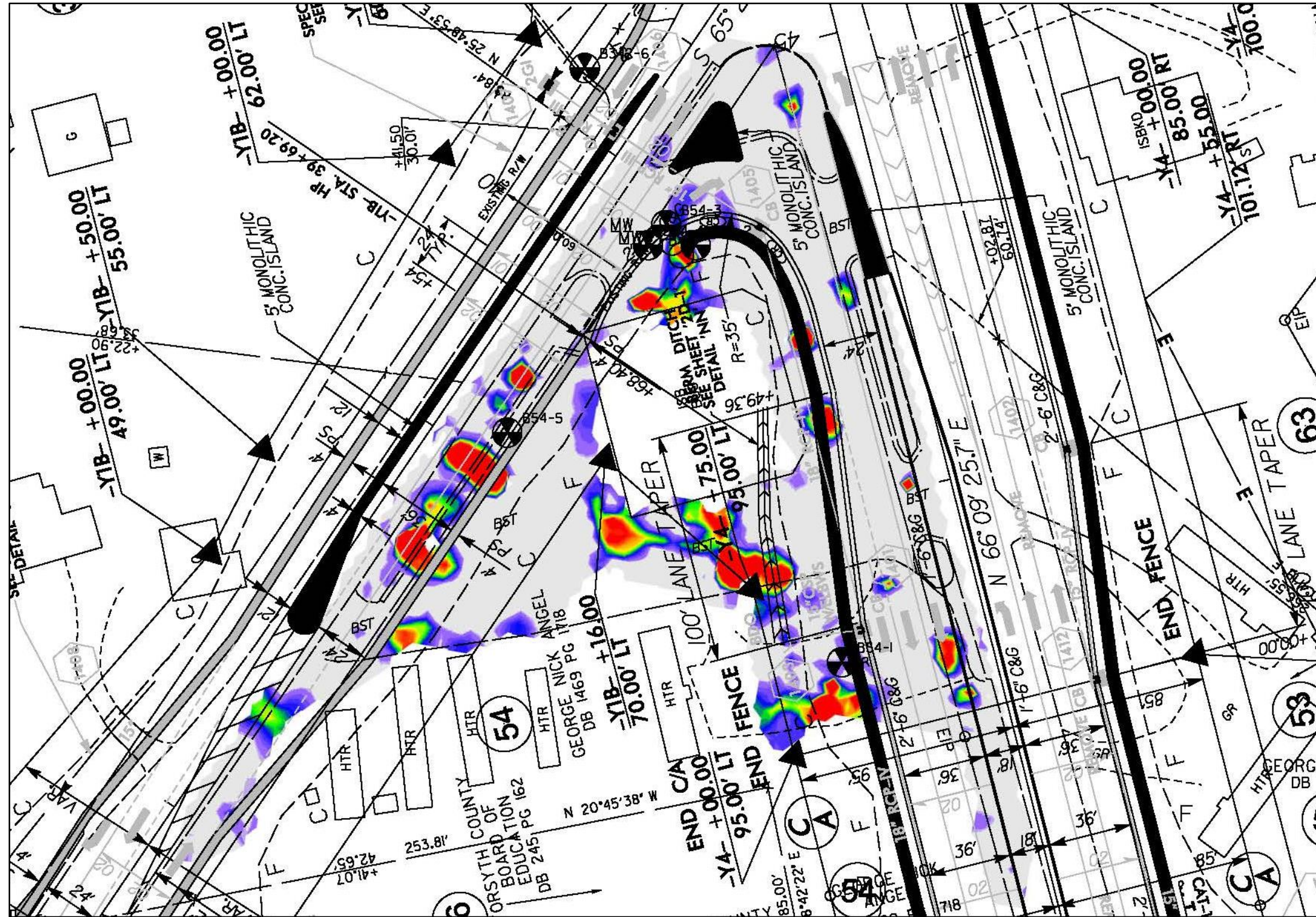
**U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
FORSYTH COUNTY, NORTH CAROLINA**



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

336.334.7724

www.espassociates.com



List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
- SS, u2579ab_rdy_ss.dgn
- ROW, u2579ab_rdy_row.dgn
- FinalSurvey\U2579AB_ncdot_fs.dgn
- U2579AB_hyd_dm.dgn

See Figure 8 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

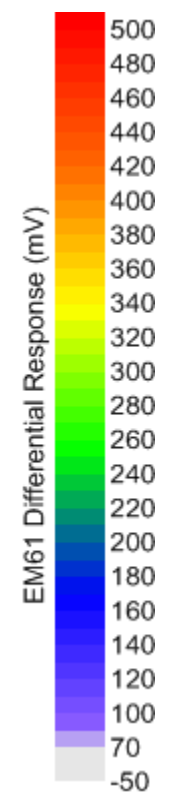
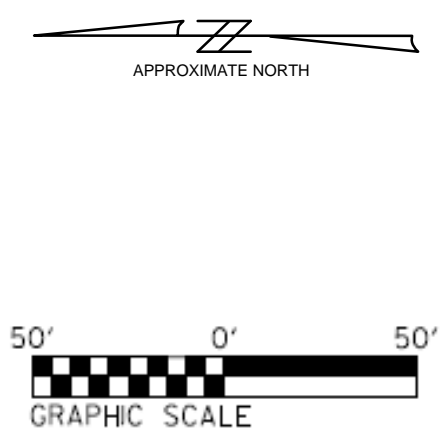
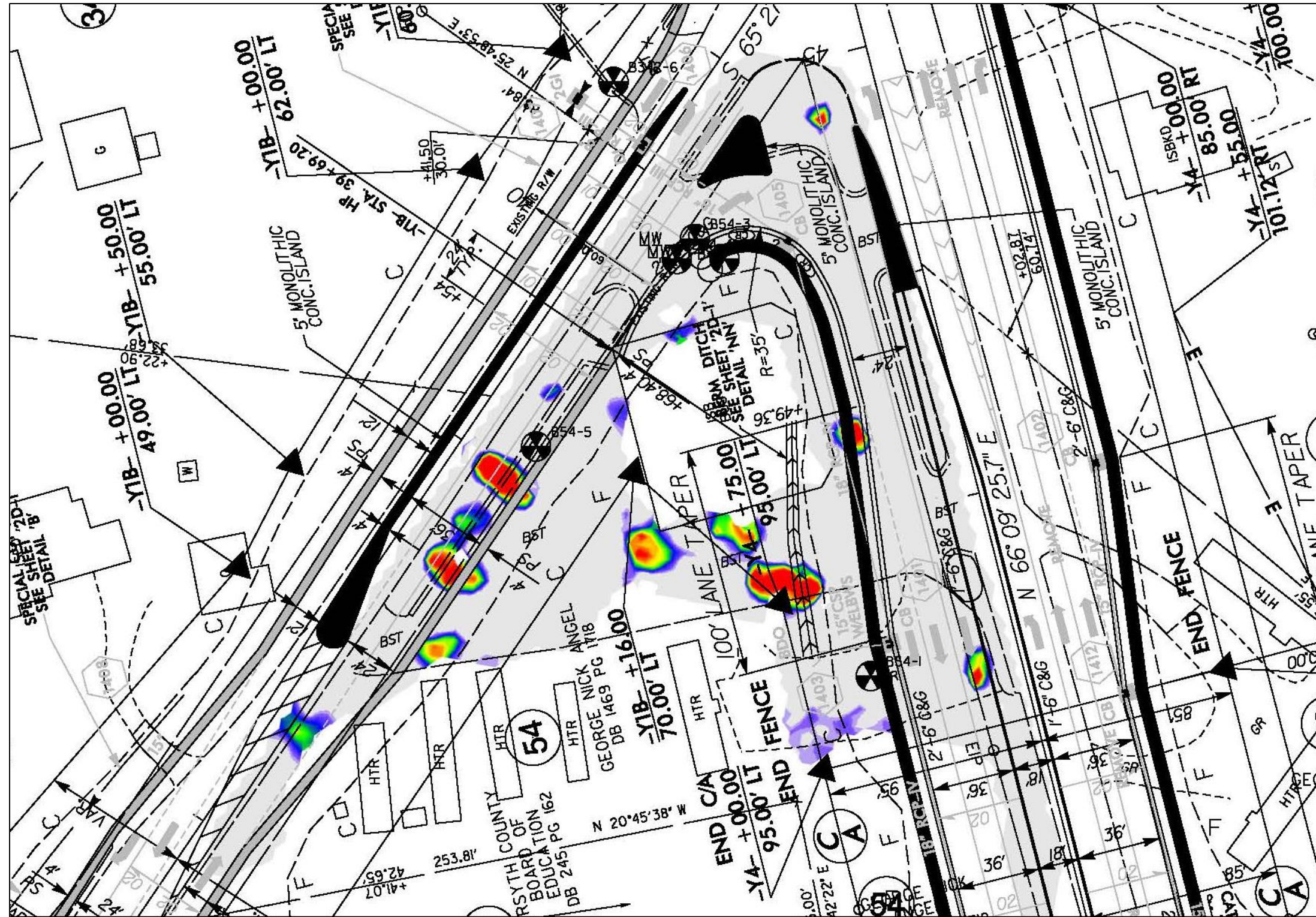
FIGURE 5 – PARCEL 054, GEORGE NICK ANGLE
EM61 EARLY TIME GATE RESPONSE ON PLAN SHEET

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



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

336.334.7724
 www.espassociates.com



List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
- SS, u2579ab_rdy_ss.dgn
- ROW, u2579ab_row.dgn
- FinalSurvey\U2579AB_ncdot_fs.dgn
- U2579AB_hyd_dm.dgn

See Figure 8 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

**FIGURE 6- PARCEL 054, GEORGE NICK ANGLE
EM61 DIFFERENTIAL RESPONSE ON PLAN SHEET**

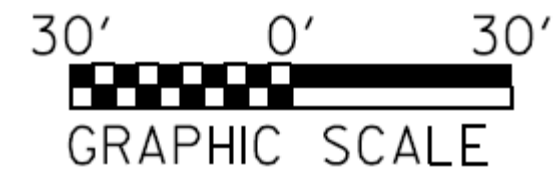
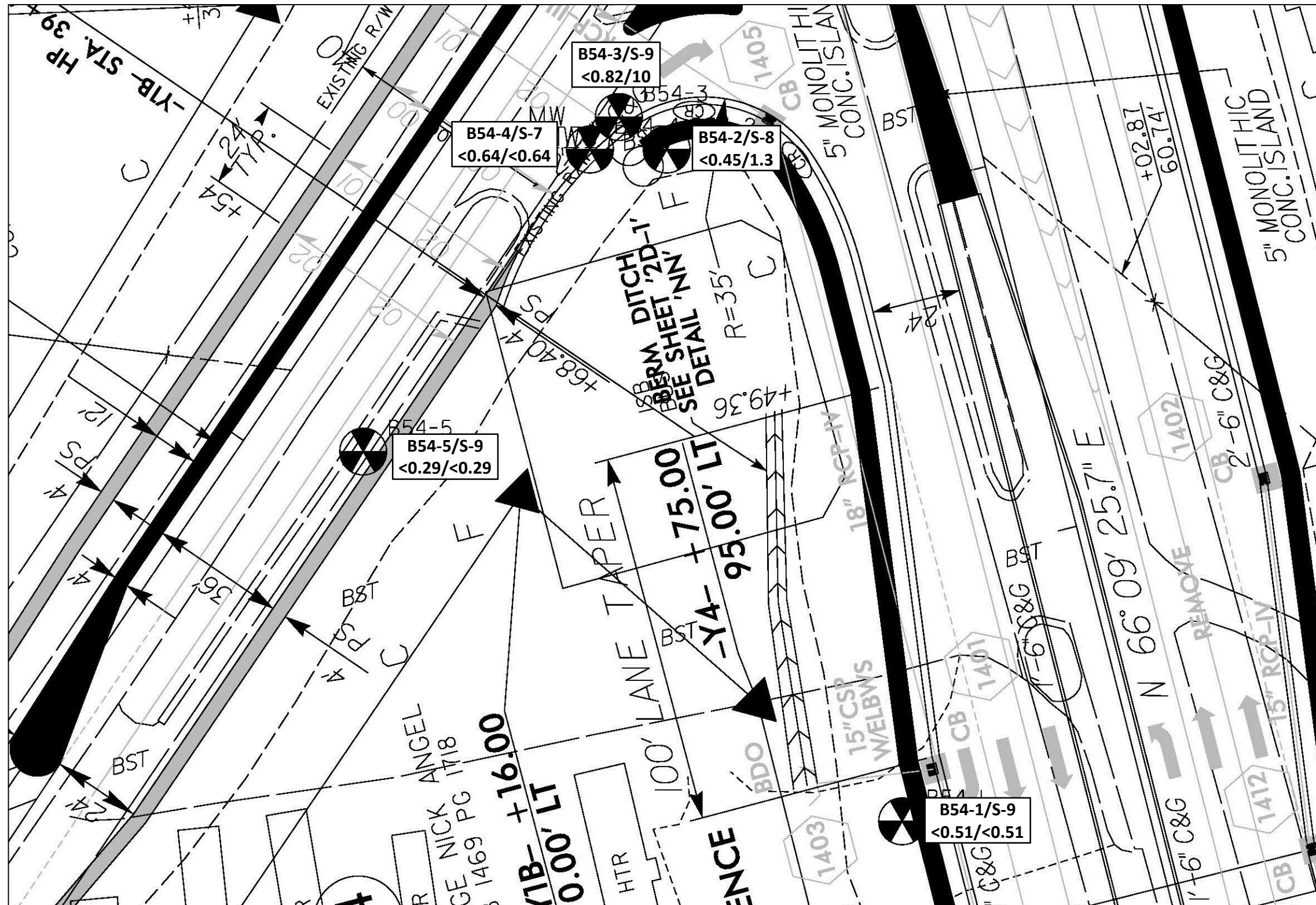
U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
FORSYTH COUNTY, NORTH CAROLINA



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

336.334.7724

www.espassociates.com



Explanation	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> B54-1/S-9 <0.51/<0.51 </div>	Maximum Analytical Results per Boring Boring No./Sample No. GRO/DRO (mg/kg, ppm)

List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
- SS, u2579ab_rdy_ss.dgn
- ROW, u2579ab_rdy_row.dgn
- FinalSurvey\U2579AB_ncdot_fs.dgn
- U2579AB_hyd_dm.dgn

See Figure 8 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	1" = 30'
DATE	11/6/18
BY	DMN

**FIGURE 7 – PARCEL 054, GEORGE NICK ANGLE
SOIL ANALYTICAL RESULTS ON PLAN SHEET**

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



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

336.334.7724

www.espassociates.com

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

*Note: Not to Scale *S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

State Line	————— —————
County Line	————— —————
Township Line	————— —————
City Line	————— —————
Reservation Line	————— —————
Property Line	————— —————
Existing Iron Pin	○
Property Corner	■
Property Monument	■
Parcel/Sequence Number	⊕
Existing Fence Line	—x—x—x—
Proposed Woven Wire Fence	—•—•—•—
Proposed Chain Link Fence	—□—□—□—
Proposed Barbed Wire Fence	—◇—◇—◇—
Existing Wetland Boundary	—w—w—w—
Proposed Wetland Boundary	—w—w—w—
Existing Endangered Animal Boundary	—a—
Existing Endangered Plant Boundary	—p—
Existing Historic Property Boundary	—h—
Known Contamination Area: Soil	—X—X—X—
Potential Contamination Area: Soil	—X—X—X—
Known Contamination Area: Water	—W—W—W—
Potential Contamination Area: Water	—W—W—W—
Contaminated Site: Known or Potential	—X—X—

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊕
Well	⊕
Small Mine	⊕
Foundation	▭
Area Outline	▭
Cemetery	⊕
Building	▭
School	▭
Church	▭
Dam	▭

HYDROLOGY:

Stream or Body of Water	—————
Hydro, Pool or Reservoir	▭
Jurisdictional Stream	—JS—
Buffer Zone 1	—BZ 1—
Buffer Zone 2	—BZ 2—
Flow Arrow	→
Disappearing Stream	→
Spring	○
Wetland	—w—
Proposed Lateral, Tail, Head Ditch	— —
False Sump	▭

RAILROADS:

Standard Gauge	—+—+—+—+—
RR Signal Milepost	⊕
Switch	⊕
RR Abandoned	—+—+—+—
RR Dismantled	—+—+—+—

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	—
Proposed Right of Way Line	—
Proposed Right of Way Line with Iron Pin and Cap Marker	—
Proposed Right of Way Line with Concrete or Granite RW Marker	—
Proposed Control of Access Line with Concrete C/A Marker	—
Existing Control of Access	—
Proposed Control of Access	—
Existing Easement Line	—E—
Proposed Temporary Construction Easement	—E—
Proposed Temporary Drainage Easement	—TDE—
Proposed Permanent Drainage Easement	—PDE—
Proposed Permanent Drainage / Utility Easement	—DUE—
Proposed Permanent Utility Easement	—PUE—
Proposed Temporary Utility Easement	—TUE—
Proposed Aerial Utility Easement	—AUE—
Proposed Permanent Easement with Iron Pin and Cap Marker	◆

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	—
Existing Curb	—
Proposed Slope Stakes Cut	—
Proposed Slope Stakes Fill	—
Proposed Curb Ramp	—CR—
Existing Metal Guardrail	—
Proposed Guardrail	—
Existing Cable Guiderail	—
Proposed Cable Guiderail	—
Equality Symbol	⊕
Pavement Removal	—X—X—X—

VEGETATION:

Single Tree	⊕
Single Shrub	⊕
Hedge	—
Woods Line	—

Orchard	⊕
Vineyard	⊕

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	—
Bridge Wing Wall, Head Wall and End Wall	—
MINOR:	
Head and End Wall	—
Pipe Culvert	—
Footbridge	—
Drainage Box: Catch Basin, DI or JB	—
Paved Ditch Gutter	—
Storm Sewer Manhole	⊕
Storm Sewer	—

UTILITIES:

POWER:	
Existing Power Pole	⊕
Proposed Power Pole	⊕
Existing Joint Use Pole	⊕
Proposed Joint Use Pole	⊕
Power Manhole	⊕
Power Line Tower	⊕
Power Transformer	⊕
U/G Power Cable Hand Hole	⊕
H-Frame Pole	⊕
U/G Power Line LOS B (S.U.E.*)	—
U/G Power Line LOS C (S.U.E.*)	—
U/G Power Line LOS D (S.U.E.*)	—

TELEPHONE:

Existing Telephone Pole	⊕
Proposed Telephone Pole	⊕
Telephone Manhole	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	⊕
U/G Telephone Cable LOS B (S.U.E.*)	—
U/G Telephone Cable LOS C (S.U.E.*)	—
U/G Telephone Cable LOS D (S.U.E.*)	—
U/G Telephone Conduit LOS B (S.U.E.*)	—
U/G Telephone Conduit LOS C (S.U.E.*)	—
U/G Telephone Conduit LOS D (S.U.E.*)	—
U/G Fiber Optics Cable LOS B (S.U.E.*)	—
U/G Fiber Optics Cable LOS C (S.U.E.*)	—
U/G Fiber Optics Cable LOS D (S.U.E.*)	—

WATER:

Water Manhole	⊕
Water Meter	⊕
Water Valve	⊕
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	—
U/G Water Line LOS C (S.U.E.*)	—
U/G Water Line LOS D (S.U.E.*)	—
Above Ground Water Line	—A/G Water—

TV:

TV Pedestal	⊕
TV Tower	⊕
U/G TV Cable Hand Hole	⊕
U/G TV Cable LOS B (S.U.E.*)	—
U/G TV Cable LOS C (S.U.E.*)	—
U/G TV Cable LOS D (S.U.E.*)	—
U/G Fiber Optic Cable LOS B (S.U.E.*)	—
U/G Fiber Optic Cable LOS C (S.U.E.*)	—
U/G Fiber Optic Cable LOS D (S.U.E.*)	—

GAS:

Gas Valve	⊕
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	—
U/G Gas Line LOS C (S.U.E.*)	—
U/G Gas Line LOS D (S.U.E.*)	—
Above Ground Gas Line	—A/G Gas—

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	—
Above Ground Sanitary Sewer	—A/G Sanitary Sewer—
SS Forced Main Line LOS B (S.U.E.*)	—
SS Forced Main Line LOS C (S.U.E.*)	—
SS Forced Main Line LOS D (S.U.E.*)	—

MISCELLANEOUS:

Utility Pole	⊕
Utility Pole with Base	⊕
Utility Located Object	⊕
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line LOS B (S.U.E.*)	—
U/G Tank; Water, Gas, Oil	▭
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	▭
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

PROJECT NO.	CS34.366
SCALE	N/A
DATE	11/6/18
BY	DMN

**FIGURE 8
LEGEND FOR PLAN SHEET FIGURES**

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



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

APPENDIX A
SOIL BORING LOGS



FIELD BORING LOG

BORING NO.

B54-1

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366LOCATION: West side of site, grassy area near mailboxesTYPE OF BORING: Direct Push DATE STARTED: 9/6/18 SHEET: 1 of 1DRILLING FIRM: SAEDACCO DATE FINISHED: 9/6/18 TOTAL DEPTH: 10.0 ftDRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ftDRILL RIG: Geoprobe 7822 DT LOGGED BY: D. Nance COMMENT: _____

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.2 Topsoil 0.2-10.0 Orange-brown sandy, clayey silt	Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	0.6		
2	S-2	2.0-2.5	0.2		
3	S-3	3.0-3.5	0.4		
4	S-4	4.0-4.5	0.4		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	1.3		
6	S-6	6.0-6.5	0.4		
7	S-7	7.0-7.5	0.6		
8	S-8	8.0-8.5	0.3		
9	S-9	9.0-9.5	0.4		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis



FIELD BORING LOG

BORING NO.

B54-2

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366
 LOCATION: East side of building in parking lot
 TYPE OF BORING: Direct Push DATE STARTED: 9/6/18 SHEET: 1 of 1
 DRILLING FIRM: SAEDACCO DATE FINISHED: 9/6/18 TOTAL DEPTH: 10.0 ft
 DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft
 DRILL RIG: Geoprobe 7822 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 Asphalt 0.3-8.6 Orange-brown sandy silt	Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	0.6		
2	S-2	2.0-2.5	0.6		
3	S-3	3.0-3.5	0.5		
4	S-4	4.0-4.5	0.6		Core 2 Rec 4.0'/5.0'
5	S-5	5.0-5.5	0.7		
6	S-6	6.0-6.5	0.5		
7	S-7	7.0-7.5	0.5		
8	S-8	8.0-8.5	1.0	8.6-9.0 White-tan silty sand	
9					
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis



FIELD BORING LOG

BORING NO.

B54-3

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366
 LOCATION: East side of building in parking lot
 TYPE OF BORING: Direct Push DATE STARTED: 9/6/18 SHEET: 1 of 1
 DRILLING FIRM: SAEDACCO DATE FINISHED: 9/6/18 TOTAL DEPTH: 10.0 ft
 DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft
 DRILL RIG: Geoprobe 7822 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 Asphalt 0.3-10.0 Brown to gray silty sand	Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	0.7		
2	S-2	2.0-2.5	0.7		
3	S-3	3.0-3.5	0.9		
4	S-4	4.0-4.5	0.7		Core 2 Rec 4.0'/5.0'
5	S-5	5.0-5.5	0.5		
6	S-6	6.0-6.5	0.5		
7	S-7	7.0-7.5	0.3		
8	S-8	8.0-8.5	0.5		
9	S-9	9.0-9.5	2.1		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis



FIELD BORING LOG

BORING NO.

B54-4

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366

LOCATION: East side of building in parking lot

TYPE OF BORING: Direct Push DATE STARTED: 9/6/18 SHEET: 1 of 1

DRILLING FIRM: SAEDACCO DATE FINISHED: 9/6/18 TOTAL DEPTH: 7.5 ft

DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 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 Asphalt 0.3-10.0 Brown to gray silty sand w/ rock frags	Core 1 Rec 5.0'/5.0'
1	S-1	1.0-1.5	0.6		
2	S-2	2.0-2.5	0.7		
3	S-3	3.0-3.5	0.9		
4	S-4	4.0-4.5	0.7		Core 2 Rec 3.0'/5.0'
5	S-5	5.0-5.5	1.1		
6	S-6	6.0-6.5	1.0		
7	S-7	7.0-7.5	0.6		Refusal at 8.0'
8					
9					
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis



FIELD BORING LOG

BORING NO.

B54-5

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366

LOCATION: Adjacent to Sedge Garden Rd. north of building

TYPE OF BORING: Direct Push DATE STARTED: 9/6/18 SHEET: 1 of 1

DRILLING FIRM: SAEDACCO DATE FINISHED: 9/6/18 TOTAL DEPTH: 10.0 ft

DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 DT LOGGED BY: D. Nance COMMENT: _____

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.1 Topsoil 0.3-10.0 Brown to gray silty sand	Core 1 Rec 3.5'/5.0'
1	S-1	1.0-1.5	1.6	0.1-7.5 Brown to gray sandy silt	
2	S-2	2.0-2.5	1.1		
3	S-3	3.0-3.5	1.2		
4	S-4	No Rec	N/A		Core 2 Rec 5.0'/5.0'
5	S-5	5.0-5.5	1.0		
6	S-6	6.0-6.5	0.6		
7	S-7	7.0-7.5	0.5	7.5-10.0 Brown to white-gray silty sand	
8	S-8	8.0-8.5	0.7		
9	S-9	9.0-9.5	0.7		
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis

APPENDIX B

RED LAB LABORATORY TESTING REPORT



Hydrocarbon Analysis Results

Client: ESP ASSOCIATES, INC.
Address: 7011 ALBERT PICK ROAD
 SUITE E
 GREENSBORO NC 27409

Samples taken Monday, September 10, 2018
Samples extracted Monday, September 10, 2018
Samples analysed Wednesday, September 12, 2018

Contact: DILLON NANCE

Operator NICK HENDRIX

Project: U-2579 AB

U00904

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B54-1 (S-9)	20.3	<0.51	<0.51	<0.51	<0.51	<0.1	<0.16	<0.02	0	0	0	PHC not detected
s	B54-2 (S-8)	18.2	<0.45	<0.45	1.3	1.3	1.2	<0.15	<0.018	0	62.8	37.2	V.Deg.PHC 71.2%,(FCM),(BO)
s	B54-3 (S-9)	32.9	<0.82	<0.82	10	10	5.1	<0.26	<0.033	9.9	71.1	19	Deg.PHC 73.6%,(FCM)
s	B54-4 (S-7)	25.5	<0.64	<0.64	<0.64	<0.64	<0.13	<0.2	<0.025	0	0	0	PHC not detected
s	B54-5 (S-9)	11.6	<0.29	<0.29	<0.29	<0.29	<0.06	<0.09	<0.012	0	0	0	.(FCM)
s	B36-5 (S-7)	22.2	<0.56	<0.56	<0.56	<0.56	<0.11	<0.18	<0.022	0	73.3	26.7	Residual HC,(BO),(P)
s	B36-4 (S-9)	21.9	<0.55	<0.55	0.75	0.75	0.72	<0.18	<0.022	0	74.1	25.9	Residual HC,(BO),(P)
s	B36-3 (S-9)	47.2	<1.2	<1.2	2.5	2.5	<0.24	<0.38	<0.047	0	100	0	Deg.Diesel 45.3%,(FCM)
s	B36-2 (S-9)	35.0	<0.88	1.9	5.2	7.1	3	<0.28	<0.035	49.8	43.9	6.2	Deg.Fuel 74.3%,(FCM)
s	B36-1 (S-9)	23.0	<0.57	<0.57	<0.57	<0.57	<0.11	<0.18	<0.023	0	27.9	72.1	Residual HC,(BO)

Initial Calibrator QC check **OK**

Final FCM QC Check **OK**

101.1 %

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modified Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

APPENDIX C
CHAIN-OF-CUSTODY FORM

Client Name: ESP Associates, Inc.
 Address: 7011 Albert Pick Rd. Ste E
Greensboro, NC 27409
 Contact: Dillon Nance
 Project Ref.: U-2579 AB
 Email: d.nance@espsociates.com
 Phone #: 336-404-3117
 Collected by: D. 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 Date/Time	TAT Requested		Matrix (S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
	24 Hour	48 Hour							
9/10/18		✓	S	B331-5 S-9	✓		49.2	43.9	5.3
				B331-4 S-9			52.7	45.6	8.1
				B331-3 S-9			51.6	44.1	7.5
				B331-2 S-9			53.0	45.8	7.2
				B331-1 S-9			52.0	45.4	6.6
				B352-3 S-9		47.4	52.7	43.7	3.7
				B352-2 S-9			52.8	43.7	9.1
				B352-1 S-9			51.9	43.8	8.1
				B342-6 S-3			49.8	44.4	5.4
				B342-5 S-9			52.2	44.1	8.1
				B342-4 S-5			51.8	44.4	6.9
				B342-4 S-9			52.0	44.4	8.0
				B342-3 S-9			52.1	44.4	7.7
				B342-2 S-9			50.7	43.7	7.0
				B342-1 S-9			50.1	43.9	6.2
				B54-1 S-9			51.0	44.1	6.9
				B54-2 S-8			51.2	43.5	7.7
				B54-3 S-9			51.9	44.0	7.9
				B54-4 S-7			49.8	44.3	5.5
				B54-5 S-9			51.2	44.3	

Comments: ***most samples underweight. Soil matrix representation affected - data results largely unaffected. (NH 9/12)**

RED Lab USE ONLY

Relinquished by <u>D. Nance</u>	Date/Time <u>9/10/18 16:00</u>	Accepted by <u>NH</u>	Date/Time <u>9/12 11:00</u>
Relinquished by	Date/Time	Accepted by	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 060 – 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.: 060
Owner: Michael & Kristina Tozer
Address: 4260 Kernersville Road, Winston-Salem, NC

Dear Mr. Parker:

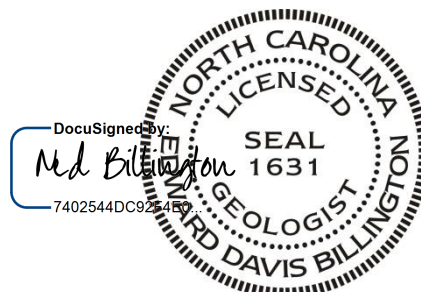
ESP Associates, Inc. (ESP) is pleased to submit this report on our Preliminary Site Assessment of the subject parcel. This work was performed in accordance with your Request for Proposal dated April 17, 2018 and our Cost Proposal dated May 3, 2018.

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

TABLE OF CONTENTS

1.0	INTRODUCTION	1
2.0	HISTORY	1
3.0	SITE OBSERVATIONS.....	1
4.0	METHODS	1
4.1	Geophysics	1
4.2	Borings	2
4.3	Soil Sample Protocol.....	2
4.4	Groundwater.....	2
5.0	RESULTS	2
5.1	Geophysics	2
5.2	Sample Data	3
5.3	Sample Observations.....	3
6.0	CONCLUSIONS.....	3
6.1	Interpretation of Results.....	3
6.2	Geophysics	3
6.3	Soil	4
7.0	RECOMMENDATIONS.....	4
8.0	LIMITATIONS.....	4

TABLES

Table 1	Soil Sample PID Readings
Table 2	Soil Sample UVF Results Summary

FIGURES

Figure 1	Parcel 060, Site Vicinity Map
Figure 2	Parcel 060, Site Photographs
Figure 3	Parcel 060, EM61 Early Time Gate Response
Figure 4	Parcel 060, EM61 Differential Response
Figure 5	Parcel 060, EM61 Early Time Gate Response on Plan Sheet
Figure 6	Parcel 060, EM61 Differential Response on Plan Sheet
Figure 7	Parcel 060, Soil Analytical Results on Plan Sheet
Figure 8	Legend for Plan Sheet Figures

TABLE OF CONTENTS (continued)

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 060 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 Michael & Kristina Tozer and is currently occupied by an auto repair shop. The facility is listed in the North Carolina Department of Environmental Quality's (NCDEQ's) UST Section Registry with Facility ID #: 0-015981 and was assigned Ground Water Incident #: 16461. Four USTs were removed from the parcel in 1996 and the site's UST release incident was closed out in 1998.

3.0 SITE OBSERVATIONS

During our May 2018 field work, the site was operating as an active auto repair shop (Figure 2). The ground in the study area was covered by asphalt, gravel, concrete, and grass. Used oil drums were stored on the ground on the west side of the building and there were some dark stains on the ground by the drums (Figure 2.c). There were many non-functioning automobiles parked within the parcel that the owner was unwilling to move, limiting our study area. The auto repair shop building did not appear to contain a hydraulic lift.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on May 24, 2018. We performed direct-push drilling and sampling of subsurface soils within the proposed easement on September 5, 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 060 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Four borings were drilled, designated B60-1 through B60-4 (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 three 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-10 (corresponding depth of 9.0-10.0 feet) from Boring B60-1; Sample S-8 (7.0-8.0 feet) from Boring B60-2; Sample S-7 (6.0-7.0 feet) from Boring B60-3; Sample S-18 (18.0-18.5 feet) from Boring B60-4. 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 four 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 was below the detection limits for all samples. GRO was detected in 1 of the 4 soil samples tested but below the NCDEQ action level of 50 ppm. The highest GRO reading was 0.55 ppm in Sample S-18 (18.0-18.5 feet) from Boring B60-4. DRO was detected in 3 of the 4 soil samples tested but below the NCDEQ action level of 100 ppm. The highest DRO reading was 5.3 ppm in Sample S-7 (6.0-7.0 feet) from Boring B60-3. PAHs were detected in 1 of the 4 soil samples tested. The highest PAH reading was 0.2 ppm in sample S-18 (18.0-18.5).

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the PSA for Parcel 060 of NCDOT Project U-2579AB do not indicate the presence of abandoned USTs. However, some areas of the site could not be investigated due to the many parked cars that could not be moved. No petroleum hydrocarbon soil contamination at or above NCDEQ action levels was detected within the proposed construction easement on Parcel 060.

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 060 (Figure 7).

7.0 RECOMMENDATIONS

No limitations on construction activities or special handling of excavated soil are recommended for Parcel 060.

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

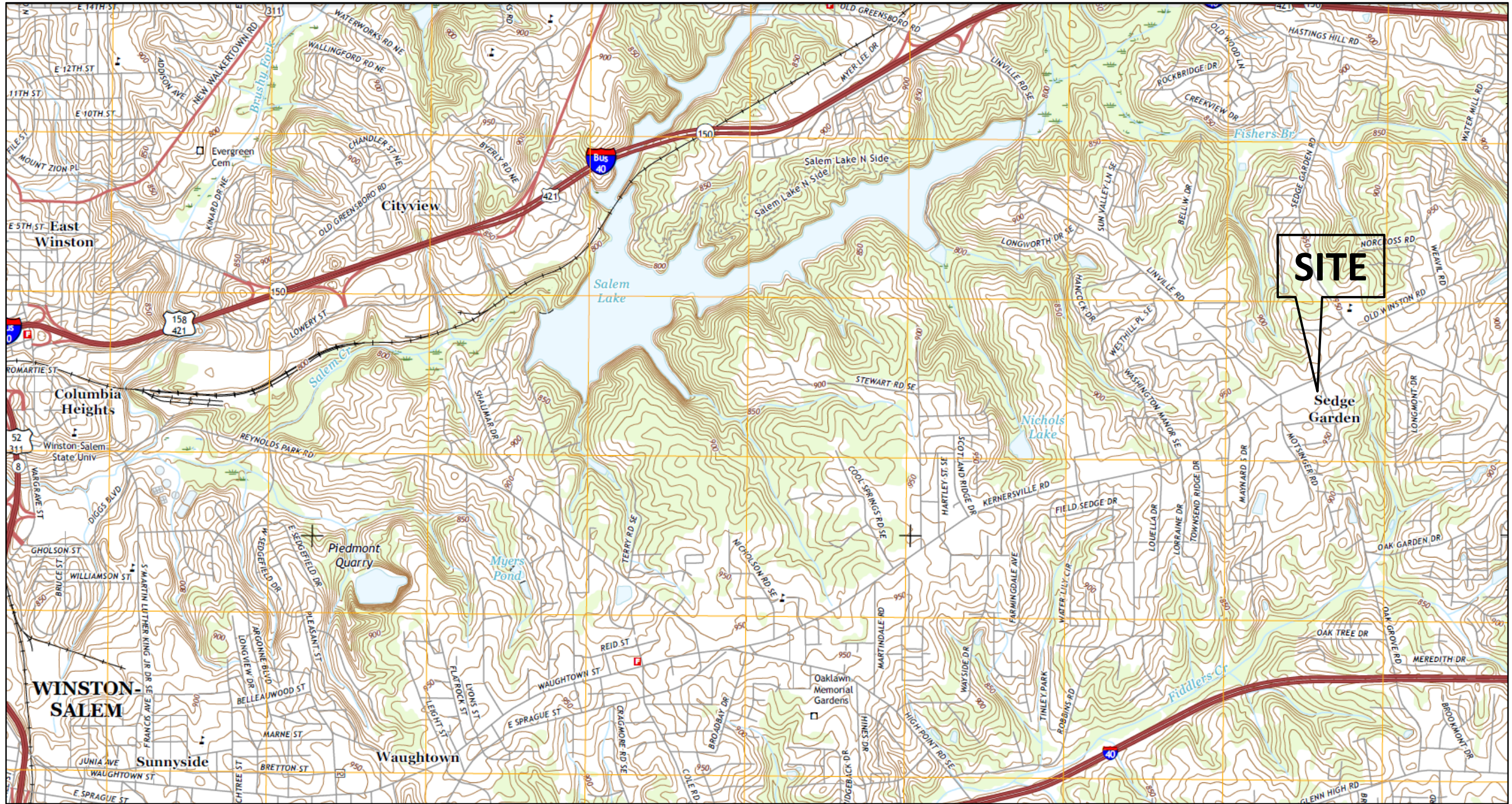
TABLE 1
SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B60-1	none	1.1 (8.0-9.0)
B60-2	none	1.0 (0.0-1.0)
B60-3	none	0.5 (5.0-6.0)
B60-4	none	2.1 (18.0-18.5)

TABLE 2
SOIL SAMPLE UVF RESULTS SUMMARY

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)
B60-1	S-10 (9.0-10.0)	9/10/18	<0.3	<0.3	0.76	<0.1
B60-2	S-8 (7.0-8.0)	9/10/18	<0.66	<0.66	4.2	<0.21
B60-3	S-7 (6.0-7.0)	9/10/18	<0.48	<0.48	5.3	0.2
B60-4	S-18 (18.0-18.5)	9/10/18	<0.29	0.55	<0.29	<0.09

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
DATE	11/6/18
BY	DMN

**FIGURE 1 – PARCEL 060, MICHAEL & KRISTINA TOZER
SITE VICINITY MAP**

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



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

336.334.7724

www.espassociates.com



a. Photo from northeast side of site looking southwest.




b. Photo from east side of site looking west.

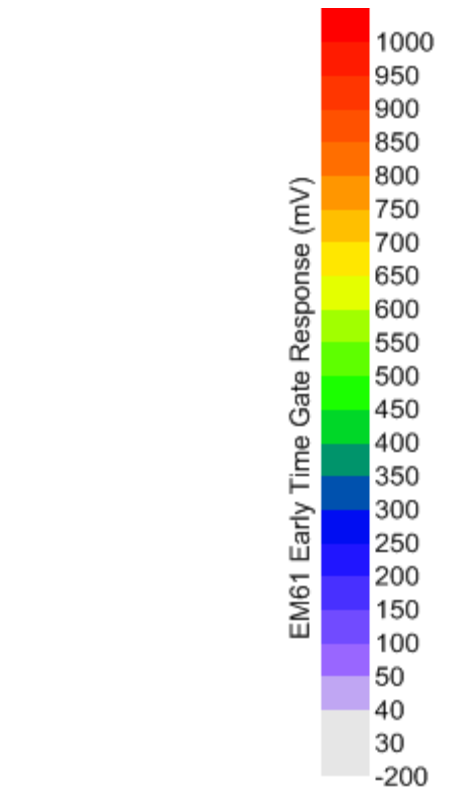
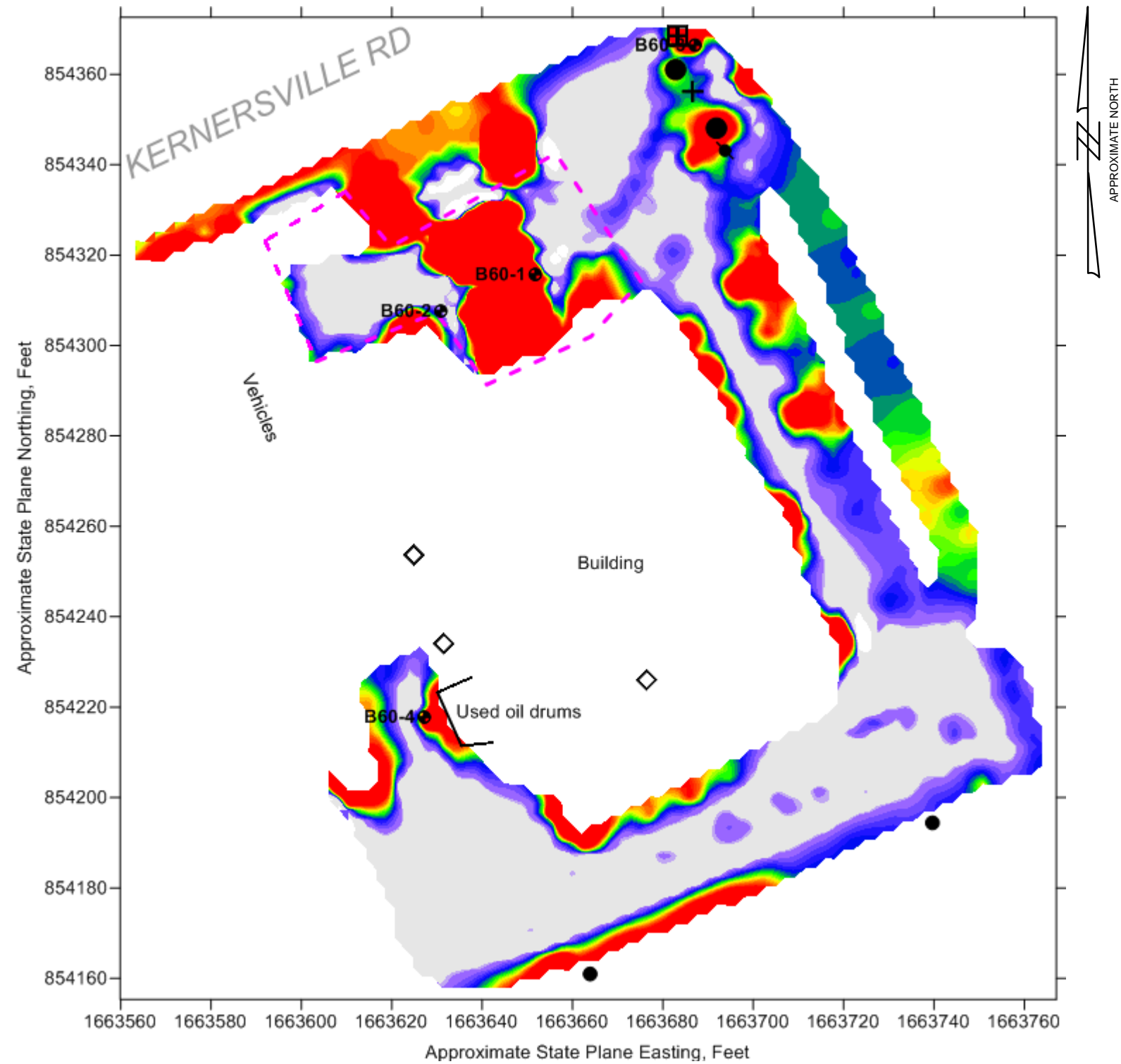


c. Photo of used oil barrels.



d. Photo of ASTs.

PROJECT NO. CS34.366	FIGURE 2 – PARCEL 060, MICHAEL & KRISTINA TOZER SITE PHOTOGRAPHS U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421 FORSYTH COUNTY, NORTH CAROLINA		7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com
SCALE AS SHOWN			
DATE 11/6/18			
BY DMN			



EXPLANATION	
◇	Miscellaneous metal object (pipe, debris, etc.)
⊠	Drop Inlet or Catch Basin
●	Power pole
+	Guy wire anchor
●	Sign pole, other pole
■	EM61 Data Collection Areas
⋯	GPR Data Collection Areas
●	Approximate soil boring location

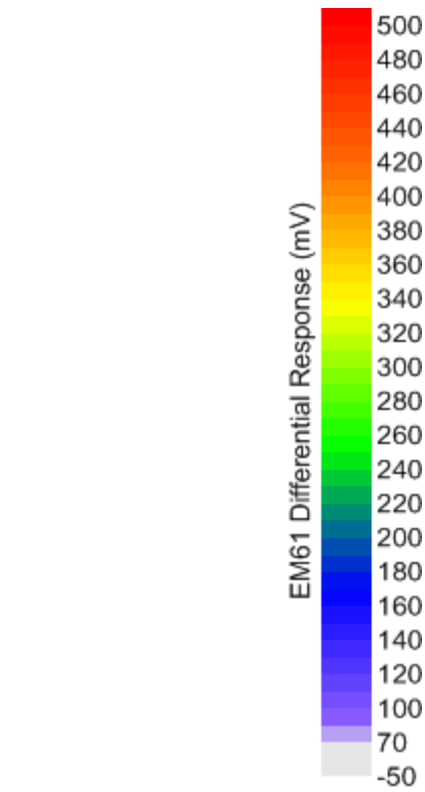
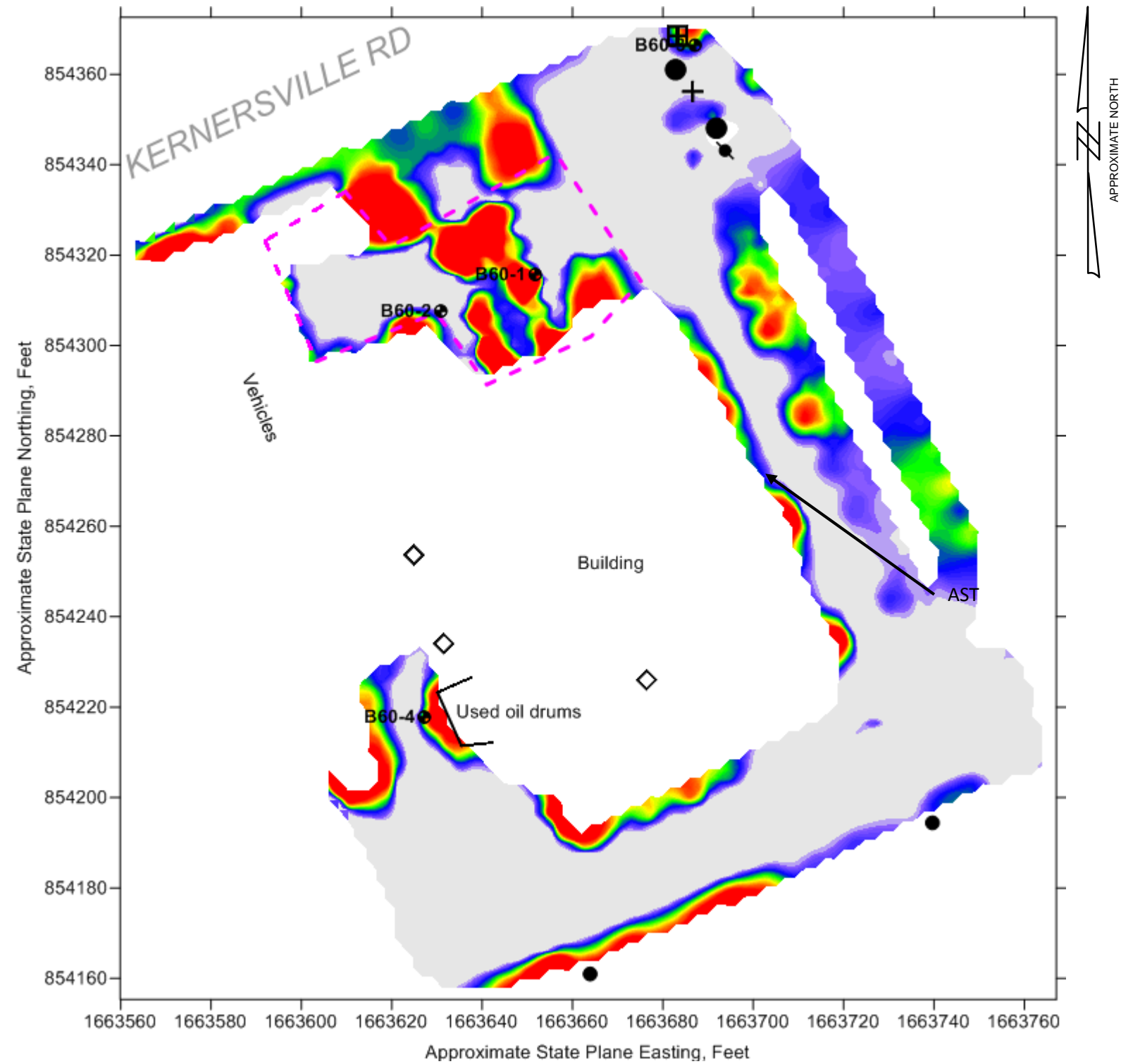
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 3 – PARCEL 060, MICHAEL & KRISTINA TOZER
EM61 EARLY TIME GATE RESPONSE
 U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
 (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
 FORSYTH COUNTY, NORTH CAROLINA



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



EXPLANATION	
◇	Miscellaneous metal object (pipe, debris, etc.)
⊠	Drop Inlet or Catch Basin
●	Power pole
+	Guy wire anchor
●	Sign pole, other pole
■	EM61 Data Collection Areas
⋯	GPR Data Collection Areas
●	Approximate soil boring location

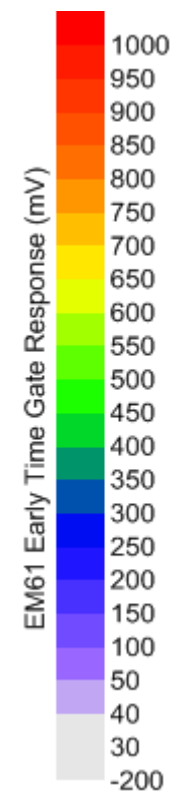
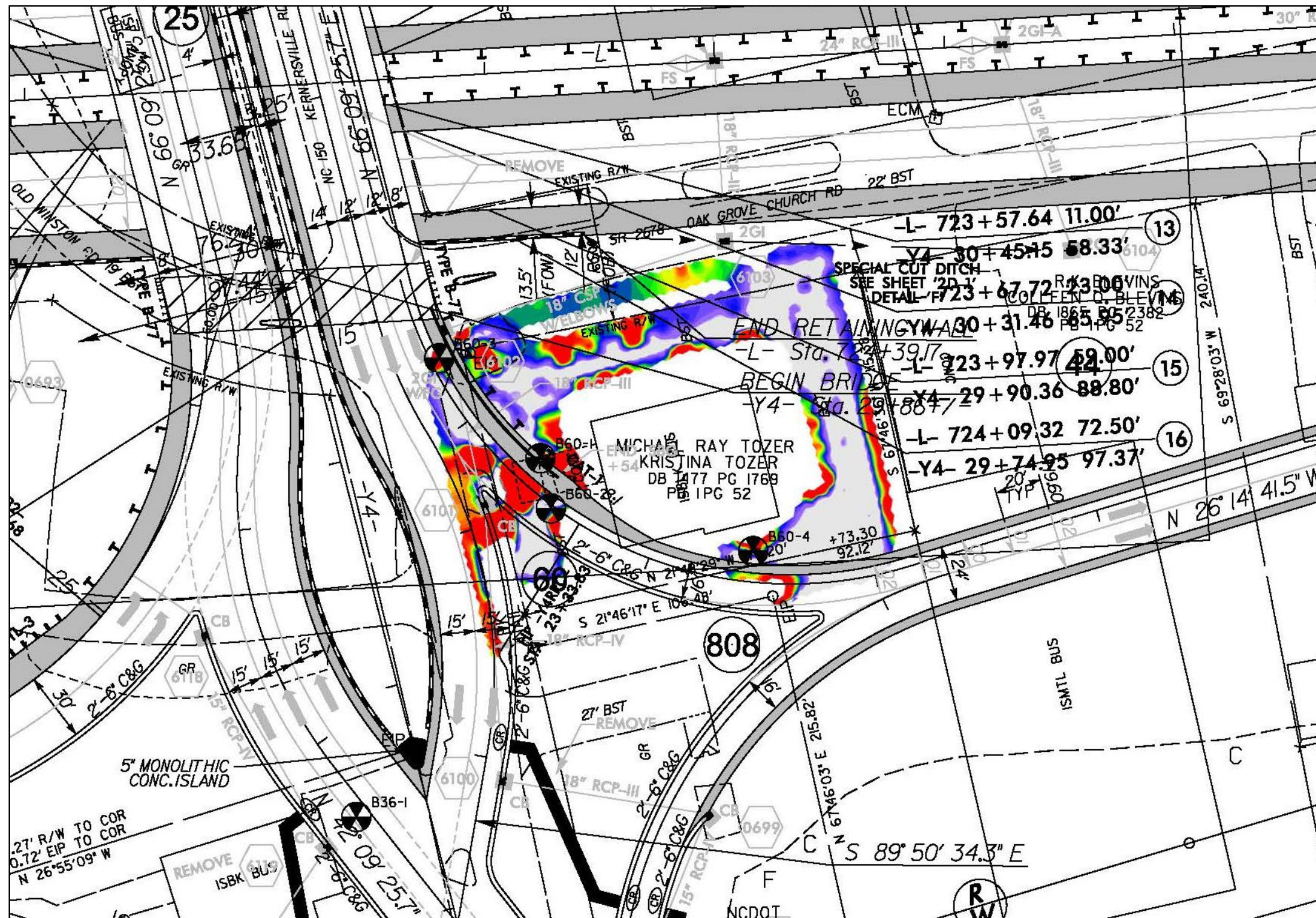
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

FIGURE 4 – PARCEL 060, MICHAEL & KRISTINA TOZER
EM61 DIFFERENTIAL RESPONSE
 U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
 (FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
 FORSYTH COUNTY, NORTH CAROLINA



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



List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
- SS, u2579ab_rdy_ss.dgn
- ROW, u2579ab_rdy_row.dgn
- FinalSurvey\U2579AB_ncdot_fs.dgn
- U2579AB_hyd_dm.dgn

See Figure 8 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

**FIGURE 5 – PARCEL 060, MICHAEL & KRISTINA TOZER
EM61 EARLY TIME GATE RESPONSE ON PLAN SHEET**

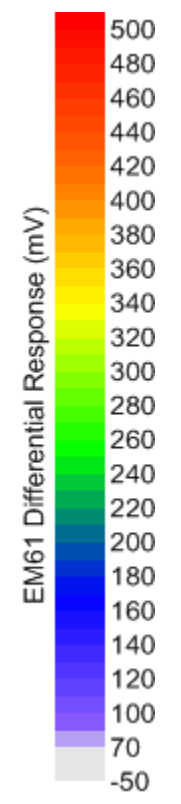
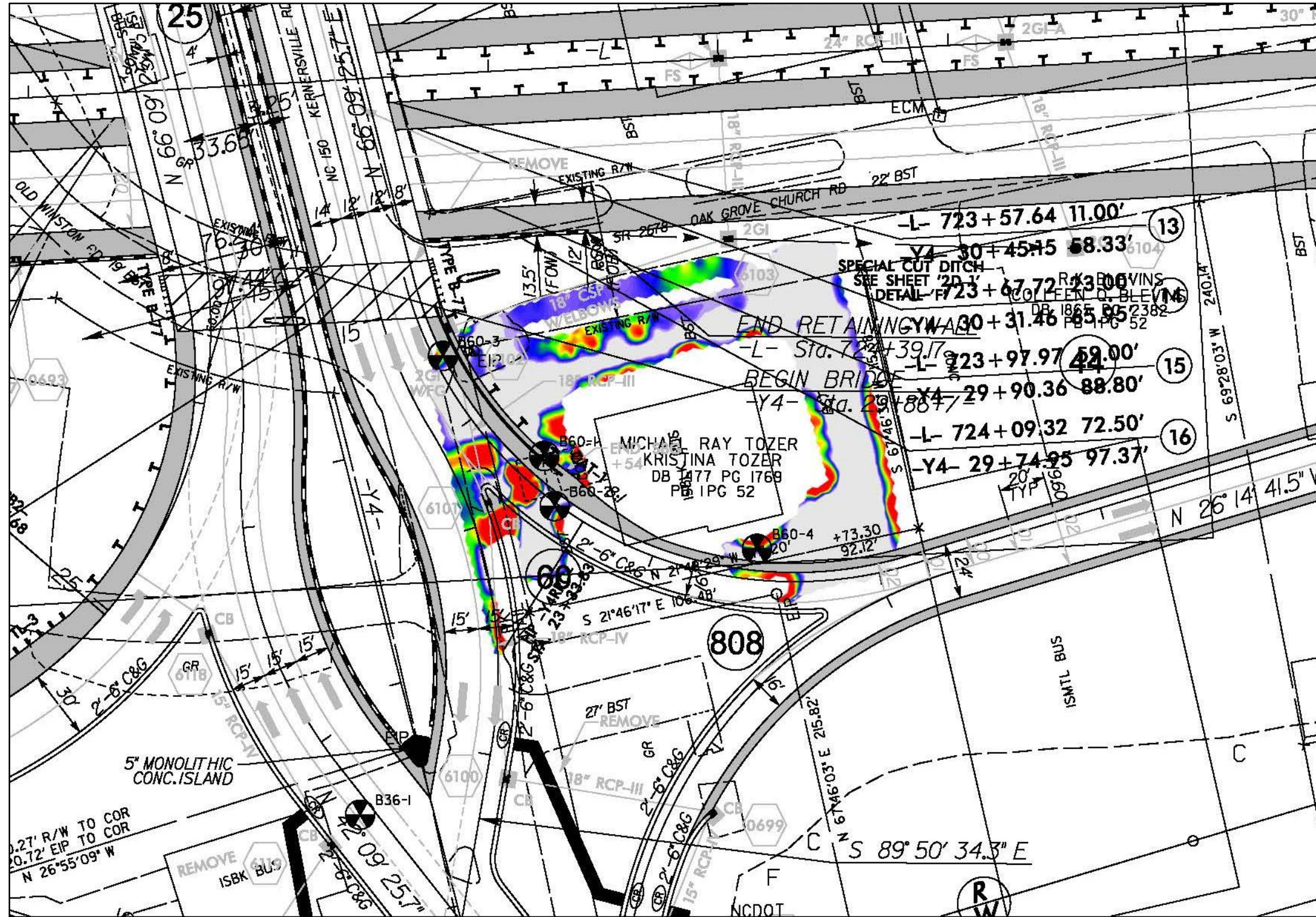
U-2579AB, WINSTON SALEM – NORTHERN BELTWAY EASTERN SECTION
(FUTURE I-74) FROM I-40 TO I-40 BUSINESS/US421
FORSYTH COUNTY, NORTH CAROLINA



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

336.334.7724

www.espassociates.com



List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
- SS, u2579ab_rdy_ss.dgn
- ROW, u2579ab_rdy_row.dgn
- FinalSurvey\U2579AB_ncdot_fs.dgn
- U2579AB_hyd_dm.dgn

See Figure 8 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	AS SHOWN
DATE	11/6/18
BY	DMN

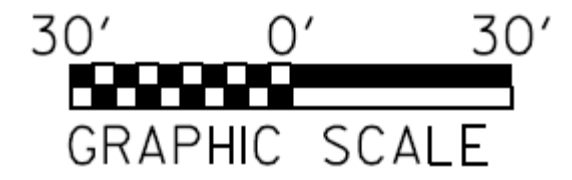
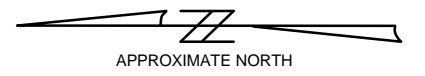
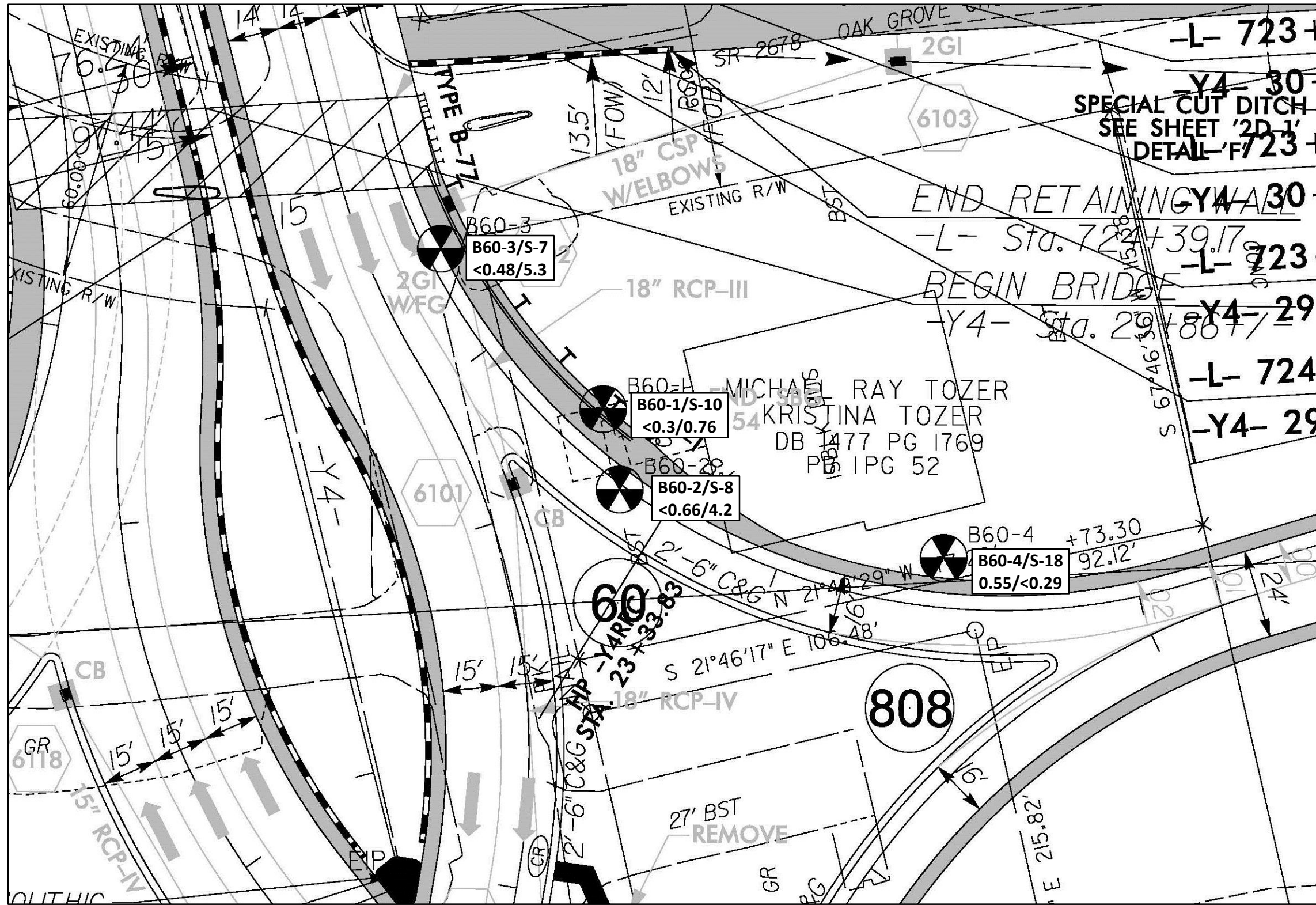
FIGURE 6- PARCEL 060, MICHAEL & KRISTINA TOZER
EM61 DIFFERENTIAL RESPONSE ON PLAN SHEET

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



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

336.334.7724
 www.espassociates.com



Explanation	
<div style="border: 1px solid black; padding: 2px; display: inline-block;"> B60-1/S-10 <0.3/0.76 </div>	Maximum Analytical Results per Boring Boring No./Sample No. GRO/DRO (mg/kg, ppm)

List of NCDOT reference files

- u2579ab_rdy_dsn.dgn
- SS, u2579ab_rdy_ss.dgn
- ROW, u2579ab_rdy_row.dgn
- FinalSurvey\U2579AB_ncdot_fs.dgn
- U2579AB_hyd_dm.dgn

See Figure 8 for explanation of symbols and line types

PROJECT NO.	CS34.366
SCALE	1" = 30'
DATE	11/6/18
BY	DMN

**FIGURE 7 – PARCEL 060, MICHAEL & KRISTINA TOZER
SOIL ANALYTICAL RESULTS ON PLAN SHEET**

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

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

336.334.7724
www.espassociates.com

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

*Note: Not to Scale *S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

State Line	—————
County Line	—————
Township Line	—————
City Line	—————
Reservation Line	—————
Property Line	—————
Existing Iron Pin	○
Property Corner	⊠
Property Monument	⊠
Parcel/Sequence Number	⊕
Existing Fence Line	—x—x—
Proposed Woven Wire Fence	—•—•—
Proposed Chain Link Fence	—□—□—
Proposed Barbed Wire Fence	—◇—◇—
Existing Wetland Boundary	—w—w—
Proposed Wetland Boundary	—w—w—
Existing Endangered Animal Boundary	—a—
Existing Endangered Plant Boundary	—p—
Existing Historic Property Boundary	—h—
Known Contamination Area: Soil	—X—X—
Potential Contamination Area: Soil	—X—X—
Known Contamination Area: Water	—W—W—
Potential Contamination Area: Water	—W—W—
Contaminated Site: Known or Potential	—X—X—

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	⊕
Well	⊕
Small Mine	⊕
Foundation	⊠
Area Outline	⊠
Cemetery	⊠
Building	⊠
School	⊠
Church	⊠
Dam	⊠

HYDROLOGY:

Stream or Body of Water	—————
Hydro, Pool or Reservoir	—————
Jurisdictional Stream	—JS—
Buffer Zone 1	—BZ 1—
Buffer Zone 2	—BZ 2—
Flow Arrow	—————
Disappearing Stream	—————
Spring	⊕
Wetland	—w—w—
Proposed Lateral, Tail, Head Ditch	—————
False Sump	⊕

RAILROADS:

Standard Gauge	—————
RR Signal Milepost	⊕
Switch	⊕
RR Abandoned	—————
RR Dismantled	—————

RIGHT OF WAY:

Baseline Control Point	⊕
Existing Right of Way Marker	⊕
Existing Right of Way Line	—————
Proposed Right of Way Line	—————
Proposed Right of Way Line with Iron Pin and Cap Marker	⊕
Proposed Right of Way Line with Concrete or Granite RW Marker	⊕
Proposed Control of Access Line with Concrete C/A Marker	⊕
Existing Control of Access	⊕
Proposed Control of Access	⊕
Existing Easement Line	—E—
Proposed Temporary Construction Easement	—E—
Proposed Temporary Drainage Easement	—TDE—
Proposed Permanent Drainage Easement	—PDE—
Proposed Permanent Drainage / Utility Easement	—DUE—
Proposed Permanent Utility Easement	—PUE—
Proposed Temporary Utility Easement	—TUE—
Proposed Aerial Utility Easement	—AUE—
Proposed Permanent Easement with Iron Pin and Cap Marker	⊕

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	—————
Existing Curb	—————
Proposed Slope Stakes Cut	—————
Proposed Slope Stakes Fill	—————
Proposed Curb Ramp	⊕
Existing Metal Guardrail	—————
Proposed Guardrail	—————
Existing Cable Guiderail	—————
Proposed Cable Guiderail	—————
Equality Symbol	⊕
Pavement Removal	⊕

VEGETATION:

Single Tree	⊕
Single Shrub	⊕
Hedge	—————
Woods Line	—————

Orchard	⊕
Vineyard	⊕

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	—————
Bridge Wing Wall, Head Wall and End Wall	⊕
MINOR:	
Head and End Wall	—————
Pipe Culvert	—————
Footbridge	—————
Drainage Box: Catch Basin, DI or JB	⊕
Paved Ditch Gutter	—————
Storm Sewer Manhole	⊕
Storm Sewer	—————

UTILITIES:

POWER:	
Existing Power Pole	⊕
Proposed Power Pole	⊕
Existing Joint Use Pole	⊕
Proposed Joint Use Pole	⊕
Power Manhole	⊕
Power Line Tower	⊕
Power Transformer	⊕
U/G Power Cable Hand Hole	⊕
H-Frame Pole	⊕
U/G Power Line LOS B (S.U.E.*)	—————
U/G Power Line LOS C (S.U.E.*)	—————
U/G Power Line LOS D (S.U.E.*)	—————

TELEPHONE:

Existing Telephone Pole	⊕
Proposed Telephone Pole	⊕
Telephone Manhole	⊕
Telephone Pedestal	⊕
Telephone Cell Tower	⊕
U/G Telephone Cable Hand Hole	⊕
U/G Telephone Cable LOS B (S.U.E.*)	—————
U/G Telephone Cable LOS C (S.U.E.*)	—————
U/G Telephone Cable LOS D (S.U.E.*)	—————
U/G Telephone Conduit LOS B (S.U.E.*)	—————
U/G Telephone Conduit LOS C (S.U.E.*)	—————
U/G Telephone Conduit LOS D (S.U.E.*)	—————
U/G Fiber Optics Cable LOS B (S.U.E.*)	—————
U/G Fiber Optics Cable LOS C (S.U.E.*)	—————
U/G Fiber Optics Cable LOS D (S.U.E.*)	—————

WATER:

Water Manhole	⊕
Water Meter	⊕
Water Valve	⊕
Water Hydrant	⊕
U/G Water Line LOS B (S.U.E.*)	—————
U/G Water Line LOS C (S.U.E.*)	—————
U/G Water Line LOS D (S.U.E.*)	—————
Above Ground Water Line	—————

TV:

TV Pedestal	⊕
TV Tower	⊕
U/G TV Cable Hand Hole	⊕
U/G TV Cable LOS B (S.U.E.*)	—————
U/G TV Cable LOS C (S.U.E.*)	—————
U/G TV Cable LOS D (S.U.E.*)	—————
U/G Fiber Optic Cable LOS B (S.U.E.*)	—————
U/G Fiber Optic Cable LOS C (S.U.E.*)	—————
U/G Fiber Optic Cable LOS D (S.U.E.*)	—————

GAS:

Gas Valve	⊕
Gas Meter	⊕
U/G Gas Line LOS B (S.U.E.*)	—————
U/G Gas Line LOS C (S.U.E.*)	—————
U/G Gas Line LOS D (S.U.E.*)	—————
Above Ground Gas Line	—————

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	—————
Above Ground Sanitary Sewer	—————
SS Forced Main Line LOS B (S.U.E.*)	—————
SS Forced Main Line LOS C (S.U.E.*)	—————
SS Forced Main Line LOS D (S.U.E.*)	—————

MISCELLANEOUS:

Utility Pole	⊕
Utility Pole with Base	⊕
Utility Located Object	⊕
Utility Traffic Signal Box	⊕
Utility Unknown U/G Line LOS B (S.U.E.*)	—————
U/G Tank; Water, Gas, Oil	⊕
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	⊕
Geoenvironmental Boring	⊕
U/G Test Hole LOS A (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

PROJECT NO.	CS34.366
SCALE	N/A
DATE	11/6/18
BY	DMN

**FIGURE 8
LEGEND FOR PLAN SHEET FIGURES**

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



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

APPENDIX A
SOIL BORING LOGS



FIELD BORING LOG

BORING NO.

B60-1

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366
 LOCATION: E side of former pump island
 TYPE OF BORING: Direct Push DATE STARTED: 9/5/18 SHEET: 1 of 1
 DRILLING FIRM: SAEDACCO DATE FINISHED: 9/5/18 TOTAL DEPTH: 10.0 ft
 DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft
 DRILL RIG: Geoprobe 7822 DT LOGGED BY: N. Billington COMMENT: _____

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.3 Asphalt 0.3-4.5 Orange-brown sandy clay to silty clay w/sand	Core 1 Rec 5.0'/5.0'
1	S-1	0.0-1.0	0.2		
2	S-2	1.0-2.0	0.2		
3	S-3	2.0-3.0	0.3		
4	S-4	3.0-4.0	0.4		Core 2 Rec 5.0'/5.0'
				4.5-10.0 Orange-brown sandy silt	
5	S-5	4.0-5.0	0.3		
6	S-6	5.0-6.0	0.3		
7	S-7	6.0-7.0	0.4		
8	S-8	7.0-8.0	0.4		
9	S-9	8.0-9.0	1.1		
10	S-10	9.0-10.0	0.8		
11					
12					
13					
14					
15					

Sample selected for laboratory analysis



FIELD BORING LOG

BORING NO.

B60-2

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366

LOCATION: W side of former pump island

TYPE OF BORING: Direct Push DATE STARTED: 9/5/18 SHEET: 1 of 1

DRILLING FIRM: SAEDACCO DATE FINISHED: 9/5/18 TOTAL DEPTH: 9.0 ft

DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft

DRILL RIG: Geoprobe 7822 DT LOGGED BY: N. Billington COMMENT: _____

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.5 Asphalt 0.5-8.0 Orange-brown silty clay	Core 1 Rec 3.0'/5.0'
1	S-1	0.0-1.0	1.0		
2	S-2	1.0-2.0	0.5		
3	S-3	2.0-3.0	0.1		
4	S-4	No Rec	N/A		Core 2 Rec 5.0'/5.0'
5	S-5	4.0-5.0	0.1		
6	S-6	5.0-6.0	0.3		
7	S-7	6.0-7.0	0.2	8.0-9.0 Orange-brown sandy silt	
8	S-8	7.0-8.0	0.0		
9					
10					
11					
12					
13					
14					
15					

Sample selected for laboratory analysis



FIELD BORING LOG

BORING NO.

B60-3

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366LOCATION: By existing catch basin corner by intersectionTYPE OF BORING: Direct Push DATE STARTED: 9/5/18 SHEET: 1 of 1DRILLING FIRM: SAEDACCO DATE FINISHED: 9/5/18 TOTAL DEPTH: 10.0 ftDRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ftDRILL RIG: Geoprobe 7822 DT LOGGED BY: D. Nance COMMENT: _____

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0-0.1 Asphalt 0.1-1.0 Orange-brown silty clay w/sand	Core 1 Rec 4.0'/5.0'
1	S-1	0.0-1.0	0.2	1.0-7.0 Orange-brown sandy silt	
2	S-2	1.0-2.0	0.2		
3	S-3	2.0-3.0	0.3		
4	S-4	3.0-4.0	0.3		Core 2 Rec 3.0'/5.0'
5	S-5	4.0-5.0	0.3		
6	S-6	5.0-6.0	0.5		
7	S-7	6.0-7.0	0.4	7.0-8.0 Orange to tan and gray silty sand	
8					Sample selected for laboratory analysis
9					
10					
11					
12					
13					
14					
15					



FIELD BORING LOG

BORING NO.

B60-4

PROJECT NAME: NCDOT U-2579AB PSA PROJ. NO.: CS34.366
 LOCATION: Front Near used oil drums on SW side of building
 TYPE OF BORING: Direct Push DATE STARTED: 9/5/18 SHEET: 1 of 1
 DRILLING FIRM: SAEDACCO DATE FINISHED: 9/5/18 TOTAL DEPTH: 19.0 ft
 DRILLER: Brian Ewing SAMPLE METHOD: 5' Macro Core DEPTH TO GW: Dry ft
 DRILL RIG: Geoprobe 7822 DT LOGGED BY: D. Nance COMMENT: _____

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
	S-1	1.0-1.5	0.3	0.0-0.3 Gravel 0.3-7.2 Orange-red silty clay	Core 1 Rec 4.0/5.0'
2	S-2	2.0-2.5	0.4		
	S-3	3.0-3.5	0.2		
4	S-4	4.0-4.5	0.1		
	S-5	5.0-5.5	0.8		Core 2 Rec 5.0/5.0'
6	S-6	6.0-6.5	1.3		
	S-7	7.0-7.5	1.5		
8	S-8	8.0-8.5	0.4	7.2-19.0 Orange-brown sandy, clayey silt	
	S-9	9.0-9.5	0.4		
10	S-10	10.0-10.5	0.1		Core 3 Rec 5.0/5.0'
	S-11	11.0-11.5	0.2		
12	S-12	12.0-12.5	0.2		
	S-13	13.0-13.5	0.3		
14	S-14	14.0-14.5	0.3		
	S-15	15.0-15.5	0.4		Core 4 Rec 4.0/5.0'
16	S-16	16.0-16.5	0.6		
	S-17	17.0-17.5	1.1		
18	S-18	18.0-18.5	2.1		
20					

Sample selected for laboratory analysis

APPENDIX B

RED LAB LABORATORY TESTING REPORT



Hydrocarbon Analysis Results

Client: ESP ASSOCIATES, INC.
Address: 7011 ALBERT PICK ROAD
 SUITE E
 GREENSBORO NC 27409

Samples taken Monday, September 10, 2018
Samples extracted Monday, September 10, 2018
Samples analysed Wednesday, September 12, 2018

Contact: DILLON NANCE

Operator NICK HENDRIX

Project: U-2579 AB

U00904

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	B60-4 (S-18)	11.6	<0.29	0.55	<0.29	0.55	<0.06	<0.09	<0.012	99.4	0.6	0	.(FCM),(P)
s	B60-3 (S-7)	19.2	<0.48	<0.48	5.3	5.3	3.7	0.2	<0.019	0	82.4	17.6	Deg.Fuel 72.5%,(FCM)
s	B60-2 (S-8)	26.4	<0.66	<0.66	4.2	4.2	1.8	<0.21	<0.026	0	74.1	25.9	Deg.Fuel 78.6%,(FCM),(P)
s	B60-1 (S-10)	11.9	<0.3	<0.3	0.76	0.76	0.25	<0.1	<0.012	0	85.6	14.4	V.Deg.Diesel 74.8%,(FCM)
s	B50-5 (S-9)	12.9	<0.32	<0.32	<0.32	<0.32	<0.06	<0.1	<0.013	0	79.3	20.7	.(FCM),(BO)
s	B50-4 (S-10)	12.8	<0.32	0.58	<0.32	0.58	<0.06	<0.1	<0.013	94.3	5.7	0	Deg.PHC 71.8%,(FCM)
s	B50-3 (S-9)	13.8	<0.35	0.7	0.48	1.18	<0.07	<0.11	<0.014	95.9	4.1	0	Deg.Fuel 68.3%,(FCM)
s	B50-2 (S-9)	21.5	<0.54	<0.54	<0.54	<0.54	<0.11	<0.17	<0.022	0	100	0	PHC not detected
s	B50-1 (S-9)	23.3	<0.58	<0.58	<0.58	<0.58	<0.12	<0.19	<0.023	0	0	0	PHC not detected,(BO)

Initial Calibrator QC check **OK**

Final FCM QC Check **OK**

103.3 %

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modified Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

APPENDIX C
CHAIN-OF-CUSTODY FORM

Client Name: ESP Associates, Inc
 Address: 7011 Albert Pick Rd. Ste E
Greensboro, NC 27409
 Contact: Dillon Nance
 Project Ref.: U-2579AA
 Email: d.nance@espassociates.com
 Phone #: 336-404-3117
 Collected by: D. 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 Date/Time	TAT Requested		Matrix (S/W)	Sample ID	UVF	GC BTEX	Total Wt.	Tare Wt.	Sample Wt.
	24 Hour	48 Hour							
9/10/18		✓	S	B36-5 S-7	✓		50.5	44.2	6.3
				B36-4 S-9			50.5	44.1	6.4
				B36-3 S-9			53.0	44.1	8.9
				B36-2 S-9			48.4	44.0	4.4
				B36-1 S-9			50.4	44.3	6.1
				B60-4 S-18			51.2	44.3	6.9
				B60-3 S-7			51.7	44.4	7.3
				B60-2 S-8			49.6	44.3	5.3
				B60-1 S-10			51.2	44.5	6.7
				B50-5 S-8			50.5	44.3	6.2
				B50-4 S-10			49.3	44.0	5.3
				B50-3 S-9			46.6	44.0	2.6
				B50-2 S-9			50.7	44.2	6.5
				B50-1 S-9			49.9	43.9	6.0
				B51-5 S-9			49.5	44.0	5.5
				B51-4 S-9			50.3	44.0	6.3
				B51-3 S-9			47.1	44.3	2.8
				B61-2 S-9			48.2	44.2	4.0
				B57-1 S-9			53.7	44.0	9.7

Comments: ***Most samples underweight. Soil matrix representation affected - data results largely unaffected.**

RED Lab USE ONLY

Relinquished by	Date/Time	Accepted by	Date/Time
<u>D. Nance</u>	<u>9/10/18 16:00</u>	<u>NT 9/12</u>	<u>11:00</u>
Relinquished by	Date/Time	Accepted by	Date/Time

1a