February 24, 2020

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

RE: PHASE II INVESTIGATION OF PARCEL 127
Market Express 315 (Shell), R.B. Duckworth and Wife
2800 Old Monroe Rd., Stallings, NC
ESP Project No. GR22.321

TIP Number:	U-4714AC
WBS Number:	39078.1.8
County:	MECKLENBURG
Description:	SR 1009 (John Street/Old Monroe Road), SR 3448/SR3474 (Trade Street) to SR 1377 (Wesley Chapel-Stouts Road)

Dear Mr. Box:

ESP Associates, Inc. (ESP) is pleased to submit this report on our GeoEnvironmental Phase II Investigation of the subject parcel. This work was performed in accordance with your Request for Proposal dated September 23, 2019 and our Cost Proposal dated October 31, 2019.

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

Sincerely,

ESP Associates, Inc.

Edward D. Billington, PG
Senior Geologist/Geophysicist
EDB/NAZ

NORTH CAROLINA LICENSED SEAL 1631 GEOLOGIST EDWARD DAVIS BILLINGTON

DocuSigned by:
Ed Billington
7402544DC92F4E0...

not considered Final unless all signatures are completed

ESP Associates, Inc.
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1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to widen East John Street-Old Monroe Road from Trade Street (S.R. 3448/S.R. 3474) to Wesley Chapel-Stouts Road (S.R. 1377) in the Towns of Matthews, Stallings, and Indian Trail. The project is about 6.5 miles long. The NCDOT requested that ESP Associates, Inc. (ESP) perform a Phase II geoenvironmental investigation of the proposed right-of-way (ROW), proposed permanent drainage easement (PDE), and proposed construction easement (E) of Parcel 127 to locate possible underground storage tanks (USTs), sample soil, and delineate potential contaminated soil. Parcel 127 is located at 2800 Old Monroe Rd., Stallings, in the southwest quadrant of the intersection of Old Monroe Rd. and Potter Rd. (Figure 1). Note that Parcel 127 surrounds a separate, relatively small Parcel 128.

2.0 HISTORY

2.1 Phase I Report

According to the 2014 Hazardous Materials Report (Phase I) prepared by the NCDOT, this parcel is the site of an active Shell gas station and McDonald's restaurant. Four USTs are registered to be on site. USTs were reportedly removed circa 1997 and replaced circa 1997, which apparently resulted in a change of Facility ID. Soil and groundwater contamination were reported to be a concern and may remain a concern. No monitoring wells were observed on site. This site is anticipated to present low geoenvironmental impacts to the project.

2.2 NCDEQ Files

We checked the following online sources at the NCDEQ with the results summarized below:

- Division of Waste Management Site Locator Tool
    - Property owner is listed as Edward R. Squires, Executor. This is consistent with the Union Co. GIS which lists the owner as Edward R. Squires, Executor, c/o (care of) McDonalds Corp AMF O'Hare Airport.
    - Parcel Address: The NCDEQ lists the parcel address as 2824 Old Monroe Rd. but the Union Co. GIS lists the address as 2800 Old Monroe Rd. Note that the address that Market Express uses is also 2800 Old Monroe Rd.
    - Parcel has UST Active Facility ID #35626.
    - Parcel lists 2 UST incidents: UST Incident #16660 for CJ Squires Service & Grocery (prior business), and UST Incident #40877 for Market Express – Stallings.
        - The online documentation for UST Incident #16660 indicates that 4 USTs and the associated dispenser were removed in January 1997. Soil sampling during closure indicated petroleum contaminated soil at the dispenser location. A total of 350 cubic yards of contaminated soil was excavated in July 1997. Verification soil sampling and testing after soil excavation

indicated that "the grossly affected soil was excavated from the former dispenser areas." Groundwater contamination was also an issue, leading to the closure of nearby water wells. The former tank pit and the area of excavated soil were located between the current building and Old Monroe Rd. (see July 25, 1997 Report Figure 6, Appendix D).

  - The online documentation for UST Incident #40877 indicates that the spill bucket for the current 12,000-gallon gasoline USTs was found to be damaged in July 2018. The tank bed containing the 12,000-gallon UST is located north of the dispenser canopy and between the dispenser canopy and Potter Rd. A shallow soil sample collected during an October 2018 Site Check indicated GRO contamination of 4,290 mg/kg (ppm), leading to additional investigations by the consultant (Resolve Environmental Services, PLLC). According to the consultant, the groundwater depth is approximately 8 feet bgs, the one monitoring well on the site has been abandoned, and a Notice of Residual Petroleum will be filed for Parcel 127.

- NC UST Facility Operating Permits
  - Facility ID #35626.
  - 4 active USTs.
  - UST Owner Name is listed as Brewer-Hendley Oil Co.
- Registered USTs Database
  - One 12,000-gallon tank and one 8,000-gallon tank for gas, gas mix.
  - One 6,000-gallon tank for diesel
  - One 4,000-gallon tank for kerosene (probably misidentified).
- Incident Management Database (Regional Underground Storage Tanks)
  - MO-4905 (1997 UST Incident #16660)
  - MO-9439 (2018 UST Incident #40877).

3.0 SITE OBSERVATIONS

During our November/December 2019 and January 2020 field work, the site was occupied by the Market Express, a combination Shell gas station and McDonald's restaurant (Figure 2). The ground in the study area was covered by grass, asphalt pavement and concrete pavement. The primary tank bed with 3 USTS is located on the north side of the site, outside of the proposed ROW. The northeast corner of the primary tank bed may be slightly within the proposed construction easement. The inventory report provided by Market Express lists a 12,000-gallon tank (regular gas), an 8,000-gallon tank (premium gas), and a 6,000-gallon tank (diesel) in the primary tank bed. The report also lists a 4,000-gallon tank (no ethanol plus gas) in a second tank bed located on the northwest side of the canopy and outside of the proposed ROW and construction easement.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on November 19 and December 11, 2019. The geophysical investigation area was approximately 0.53 acres and encompassed the proposed ROW, the proposed PDE, and the proposed construction easement. We performed direct-push drilling and sampling of subsurface soils on January 3, 2020. A photoionization detector (PID) was used to screen subsurface soils in the field and select soil samples to send for laboratory analysis. Groundwater was not encountered during the drilling investigation.

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 approximately three feet (Figures 3 and 4). Location control was provided in real-time using a differential global positioning system (DGPS). One EM61 anomaly was observed near the northeast corner of the canopy that required additional investigation using ground-penetrating radar (GPR). The GPR data was collected using a Sensors and Software Noggin GPR system with a 250 MHz antenna.

4.2 Borings

ESP performed direct-push drilling activities within the proposed ROW, proposed DUE, and proposed construction easement of Parcel 127 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Nine borings were drilled, designated B127-1 through B127-9 (Figure 7). The soil borings were advanced using a GeoProbe 54DT drill rig. Soil samples were obtained to a depth of approximately 10 feet using three 4-foot long Macro-Core® tubes. Soil cores varied in recovery from 2.7 to 4.0 feet (67.50 to 100 percent recovery). 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 warm area for approximately 10 to 15 minutes prior to measuring volatile organic compound (VOC) levels in the head space with the PID. The PID readings ranged from 0.1 to 1.5 parts per million (ppm) (Table 1).

Nine soil samples were selected for laboratory analysis, as listed in Table 2. For each selected sample, an approximate 10-gram soil sample was collected from the sample bag 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 9 borings. Some perched water was encountered in Borings B127-1 and B127-6. However, as the holes stood open, the water level dropped to below the bottom of the hole, apparently draining into more pervious soil at or below the bottom of the borings.

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). Our evaluation of the differential response indicated one anomaly that required GPR imaging. GPR data collected over the anomaly near the northeastern corner of the canopy indicated that it was caused by buried debris. The character of the GPR reflection did not indicate an abandoned UST.

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 also 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 indicate that BTEX and PAHs were below the laboratory detection limits for the 9 samples tested (Table 2). GRO was detected in 3 of the samples with values ranging from 1.2 to 1.9 ppm, below the NCDEQ action level of 50 ppm for GRO. DRO was detected in 4 samples with values ranging from 1.8 to 6.1 ppm, below the NCDEQ action level of 100 ppm for DRO.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the Phase II investigation for Parcel 127 of NCDOT Project U-4714AC indicates that there is no evidence for abandoned USTs in the proposed ROW, proposed PDE, or the proposed construction easement. The 4 known USTs are outside of the proposed ROW and the proposed PDE. The northeastern corner of the primary tank bed containing 3 USTs may be slightly within the proposed construction easement. Laboratory testing detected relatively low levels of petroleum compounds in 4 of the 9 soil samples; the readings were below the NCDEQ action levels of 50 ppm for GRO and 100 ppm for DRO.

6.2 Geophysics

The geophysical data did not indicate the presence of abandoned USTs in the proposed ROW, the proposed PDE, or the proposed construction easement. GPR data collected over the location of one EM61 anomaly indicated that it probably was caused buried debris and not a UST(s).

6.3 Soil

Low levels of petroleum hydrocarbon compounds were detected in 4 of the 9 samples tested, below the NCDEQ action levels of 50 ppm for DRO and 100 ppm for DRO..

7.0 RECOMMENDATIONS

No limitations on construction activities or special handling of excavated soil are recommended for Parcel 127. Groundwater was not encountered in the upper 10 feet in the study area, although some perched water was encountered in two borings. However, in researching recent and past investigations on this parcel, it appears that the groundwater level fluctuates, so groundwater may be encountered during construction. A Notice of Residual Petroleum has been or will be filed by a consultant investigating the site. If groundwater is encountered during construction, it may be contaminated and should be collected and disposed of offsite in accordance with NCDEQ regulations.

The northeast corner of the primary tank bed may be slightly within the proposed construction easement. The proposed construction easement could be moved slightly to completely avoid the tank bed, as defined by the concrete pavement.

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

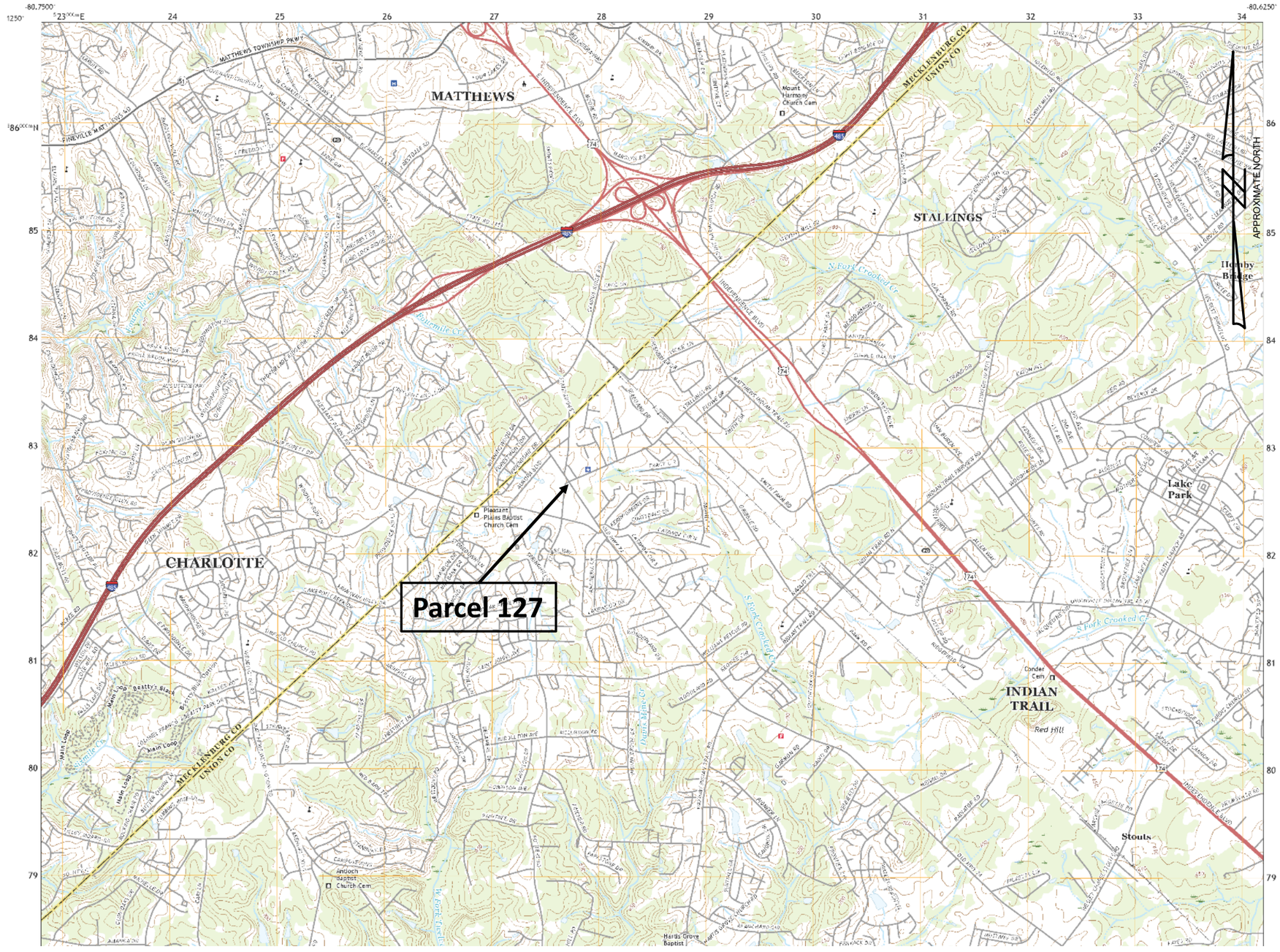
TABLE 1
SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B127-1	none	0.5 (2.0-2.5, 3.0-3.5)
B127-2	none	0.6 (8.0-8.5)
B127-3	none	0.6 (1.0-1.5)
B127-4	none	1.5 (1.0-1.5)
B127-5	none	0.8 (1.0-1.5)
B127-6	none	1.4 (9.0-9.5)
B127-7	none	0.8 (9.0-9.5)
B127-8	none	0.5 (5.0-5.5)
B127-9	none	1.0 (8.0-8.5, 9.0-9.5)

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)
B127-1	S9 (9.0-9.5)	1/3/20	<0.25	<0.25	<0.25	<0.08
B127-2	S4 (4.0-4.5)	1/3/20	<0.54	1.9	2.7	<0.17
B127-3	S9 (9.0-9.5)	1/3/20	<0.46	1.2	2.9	<0.15
B127-4	S4 (4.0-4.5)	1/3/20	<0.53	<0.53	6.1	<0.17
B127-5	S9 (9.0-9.5)	1/3/20	<0.55	<0.55	<0.55	<0.18
B127-6	S4 (4.0-4.5)	1/3/20	<0.53	1.9	1.8	<0.17
B127-7	S9 (9.0-9.5)	1/3/20	<0.29	<0.29	<0.29	<0.09
B127-8	S4 (4.0-4.5)	1/3/20	<0.53	<0.53	<0.53	<0.17
B127-9	S9 (9.0-9.5)	1/3/20	<0.54	<0.54	<0.54	<0.17

FIGURES


-80.7500'
-80.6250'
35°00'00"N
35°07'30"N
MATTHEWS
CHARLOTTE
STALLINGS
INDIAN TRAIL
Parcel 127
APPROXIMATE NORTH
MECKLENBURG CO
UNION CO
Mount Harmony Church Cem
Pleasant Plains Baptist Church Cem
Antioch Baptist Church Cem
Conder Cem
Hornby Bridge
Lake Park
Red Hill
Stouts
Harris Grove Baptist
Beaverdam Cr
N Fork Crooked Cr
S Fork Crooked Cr
Polecat Cr
Main Loop
MATTHEWS TOWNSHIP PKWY
INDEPENDENCE BLVD
FINEVILLE MATTHEWS RD
WILLIAMSBURG RD
CLARENCE WALKER DR
CLEVELAND AVE
CROWN POINT RD
WILLOW CREEK DR
WILLOW WALK DR
WILLOW OAK DR
WILLOW RUN DR
WILLOW CROFT DR
WILLOW CREST DR
WILLOW BEND DR
WILLOW GLEN DR
WILLOW MEADOW DR
WILLOW RIDGE DR
WILLOW VALLEY DR
WILLOW WOOD DR
WILLOW WOOD CT
WILLOW WOOD LN
WILLOW WOOD PL
WILLOW WOOD TER
WILLOW WOOD WAY
WILLOW WOOD CIR
WILLOW WOOD DR



A. Photograph from south end of parcel, looking north.



B. Photograph from north end of parcel, looking south. Primary tank bed containing 3 USTs is at the location of the concrete pavement shown

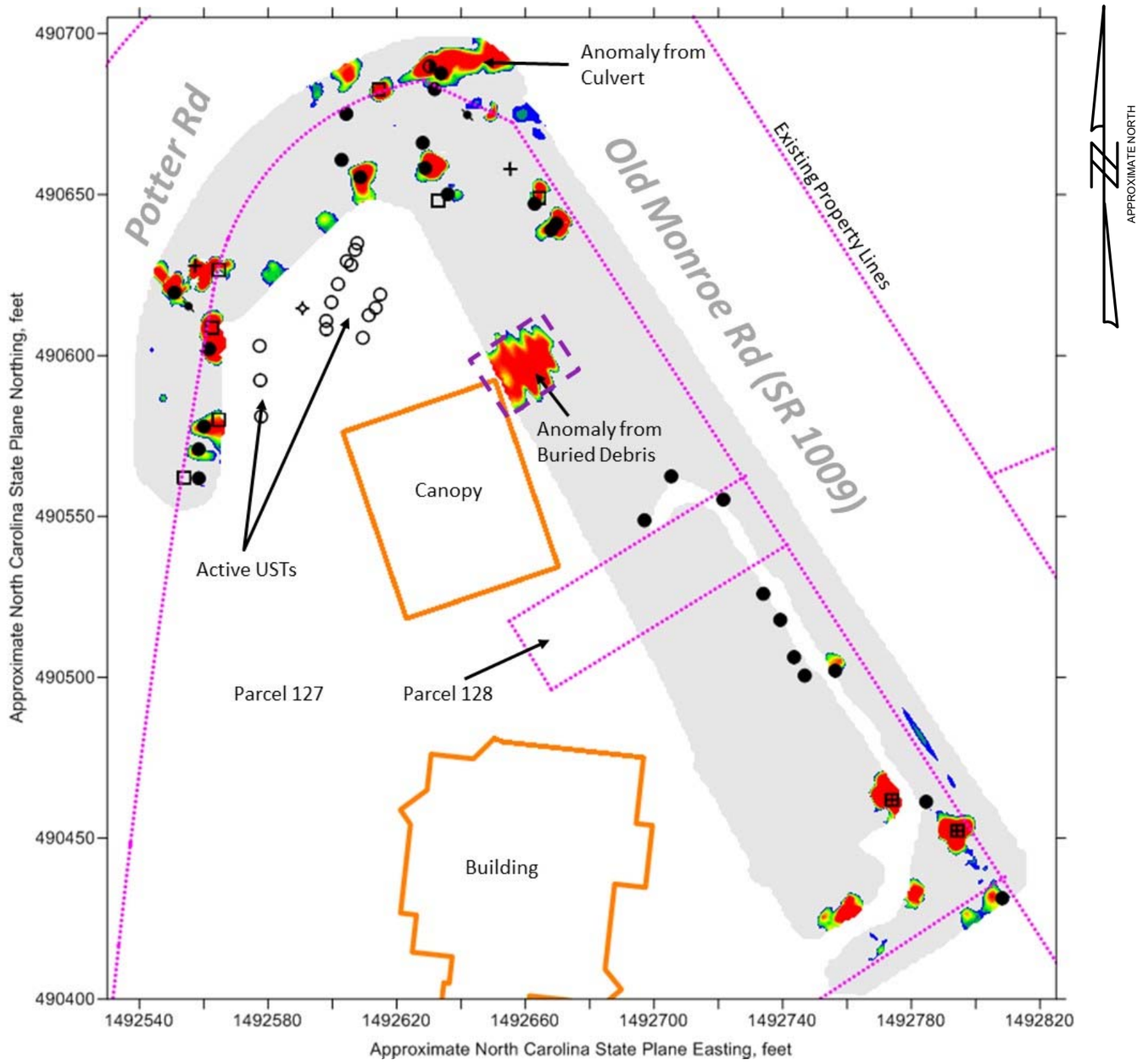


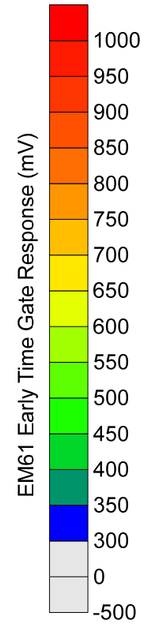
C. Photograph from eastern side of parcel, looking north.



D. Photograph from west side of parcel, looking north. A single UST is located to the right of the dispenser.

PROJECT NO. GR22.321	***FIGURE 2 – PARCEL 127, R.B. DUCKWORTH & WIFE SITE PHOTOGRAPHS***	ESP Associates, Inc. 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com
SCALE N/A		
DATE 2/24/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***	
BY CRP/EDB		





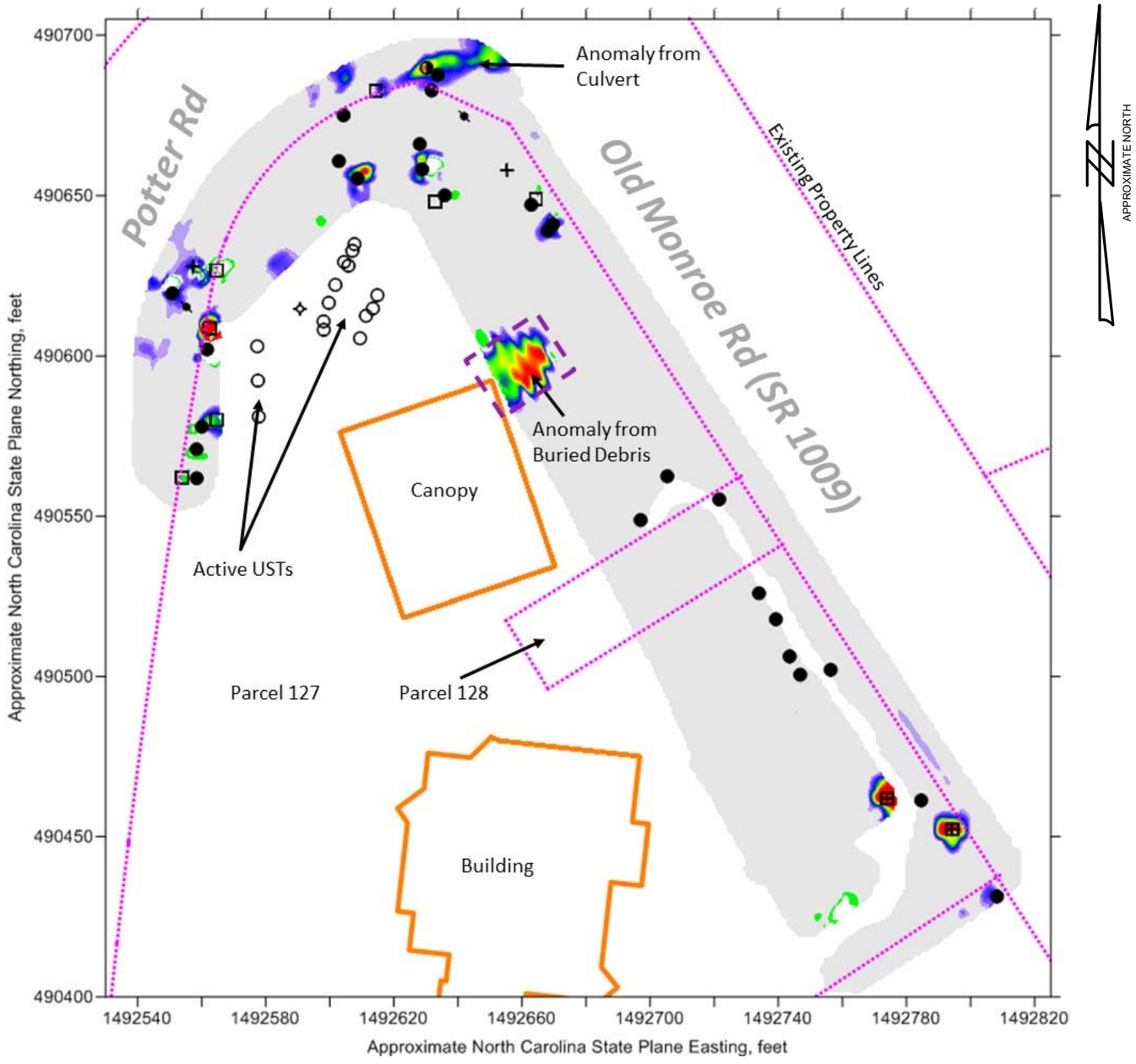
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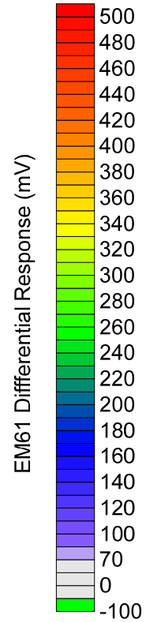
- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet, Catch Basin, Manhole
- Culvert, storm drain pipe
- Utility pole
- Guy wire anchor
- Sign pole, other pole
- UST Fill Port or Valve Cover
- Monitoring Well
- Buried utility line (marked by others)
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Underground Storage Tank

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. GR22.321	***FIGURE 3 – PARCEL 127, R.B. DUCKWORTH & WIFE EM61 EARLY TIME GATE DATA***
SCALE AS SHOWN	
DATE 2/24/2020	***NCDOT PROJECT U-4714AC***
BY CRP/EDB	***SR 1009, SR 3448/SR 3474 TO SR 1377***
	MECKLENBURG COUNTY, NORTH CAROLINA

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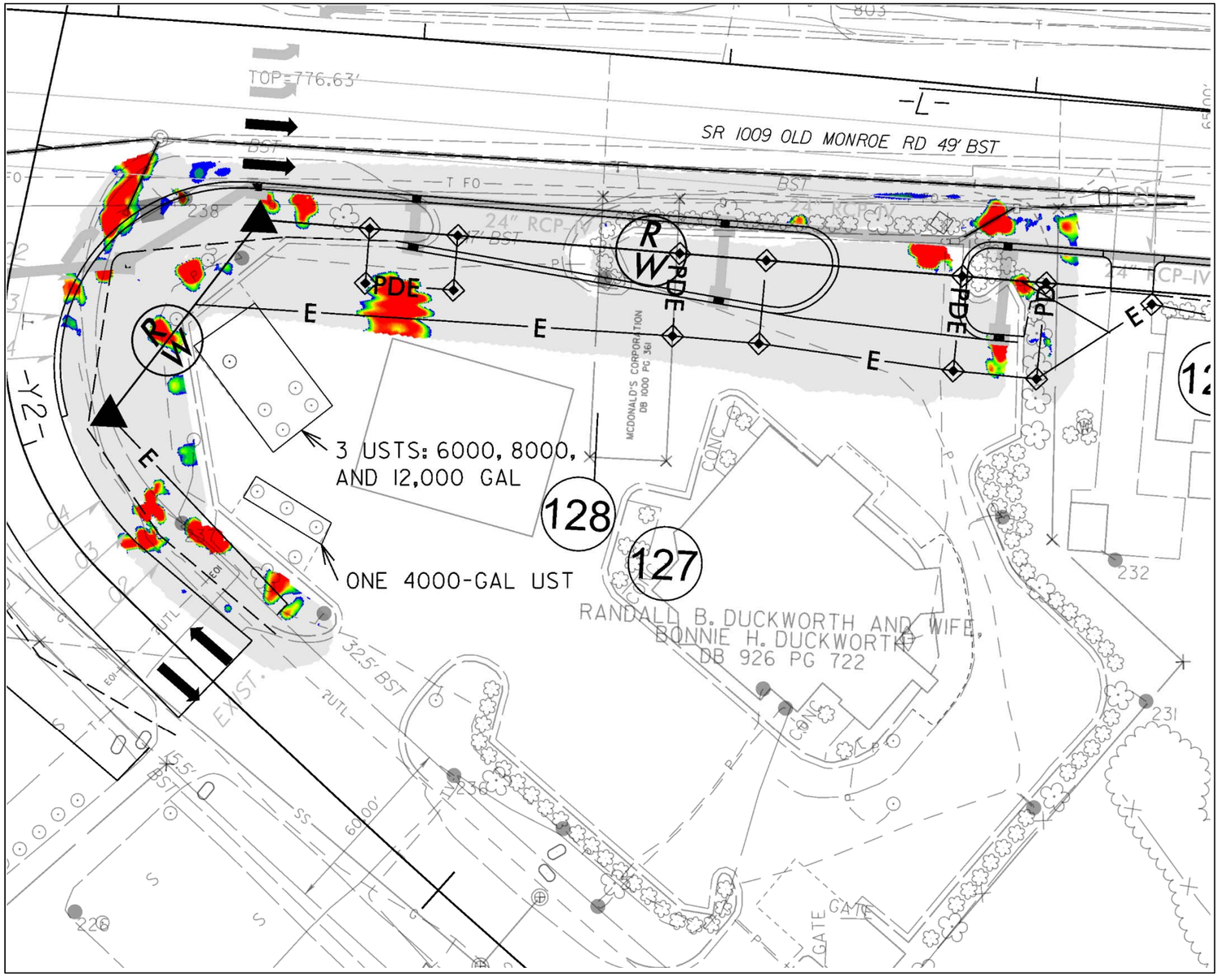
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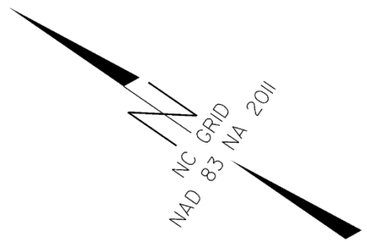
- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet, Catch Basin, Manhole
- Culvert, storm drain pipe
- Utility pole
- Guy wire anchor
- Sign pole, other pole
- UST Fill Port or Valve Cover
- Monitoring Well
- Buried utility line (marked by others)
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Underground Storage Tank

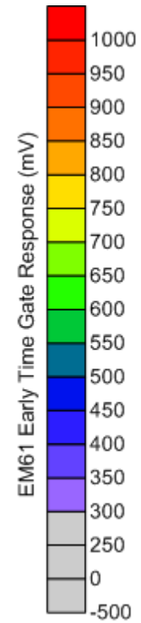
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO. GR22.321	***FIGURE 4 – PARCEL 127, R.B. DUCKWORTH & WIFE EM61 DIFFERENTIAL DATA***
SCALE AS SHOWN	***NCDOT PROJECT U-4714AC***
DATE 2/24/2020	***SR 1009, SR 3448/SR 3474 TO SR 1377***
BY CRP/EDB	***MECKLENBURG COUNTY, NORTH CAROLINA***

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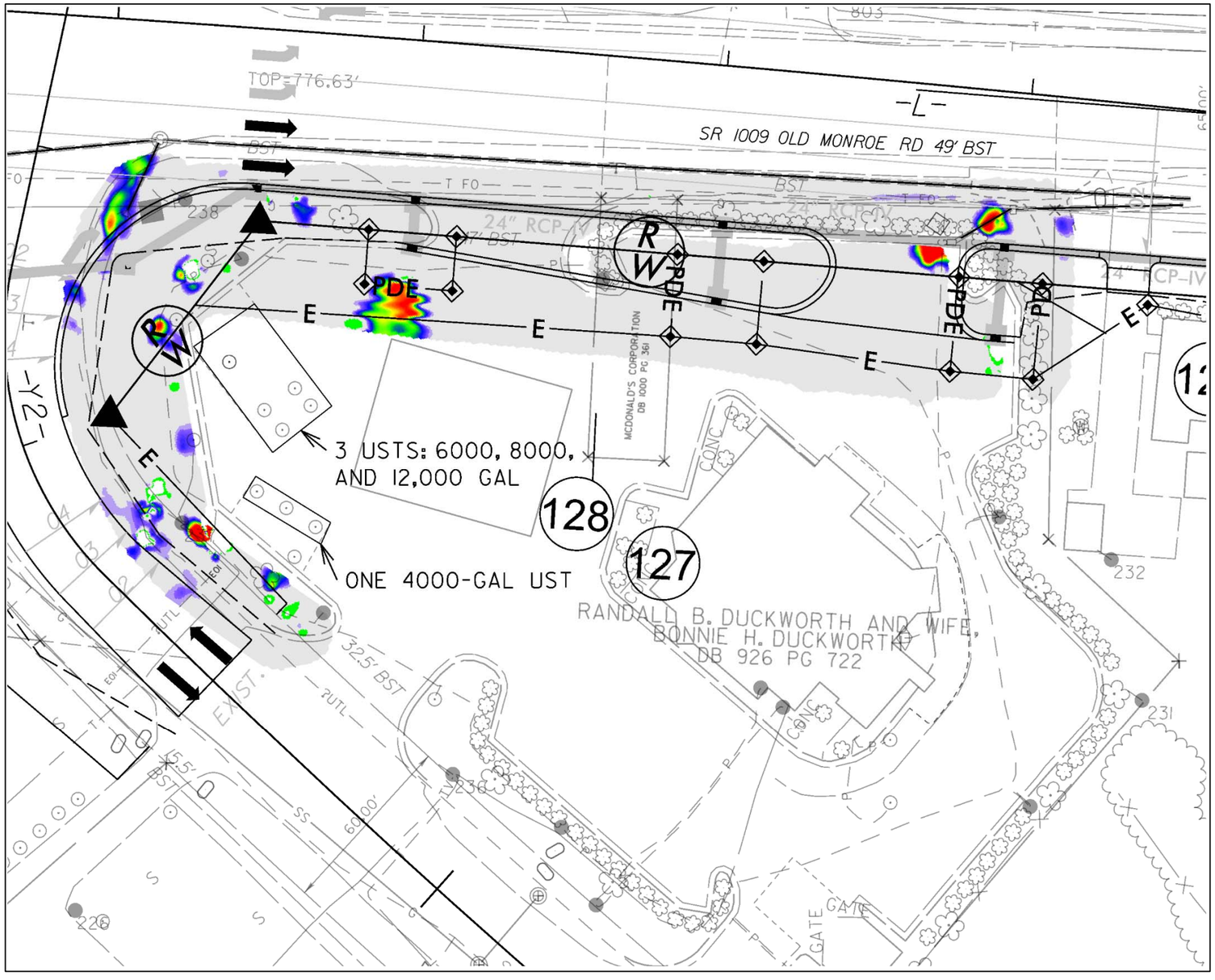
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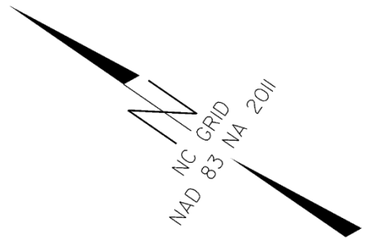
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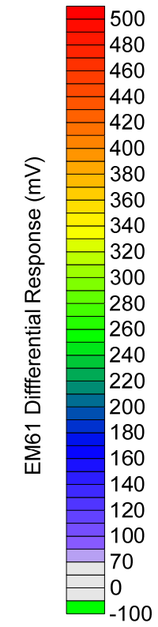
See Figure 9 for explanation of symbols and line types

PROJECT NO. GR22.321	***FIGURE 5 – PARCEL 127, R.B. DUCKWORTH & WIFE EM61 EARLY TIME GATE DATA ON PLAN SHEET***
SCALE 1" = 40'	
DATE 2/24/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***
BY CRP/EDB	

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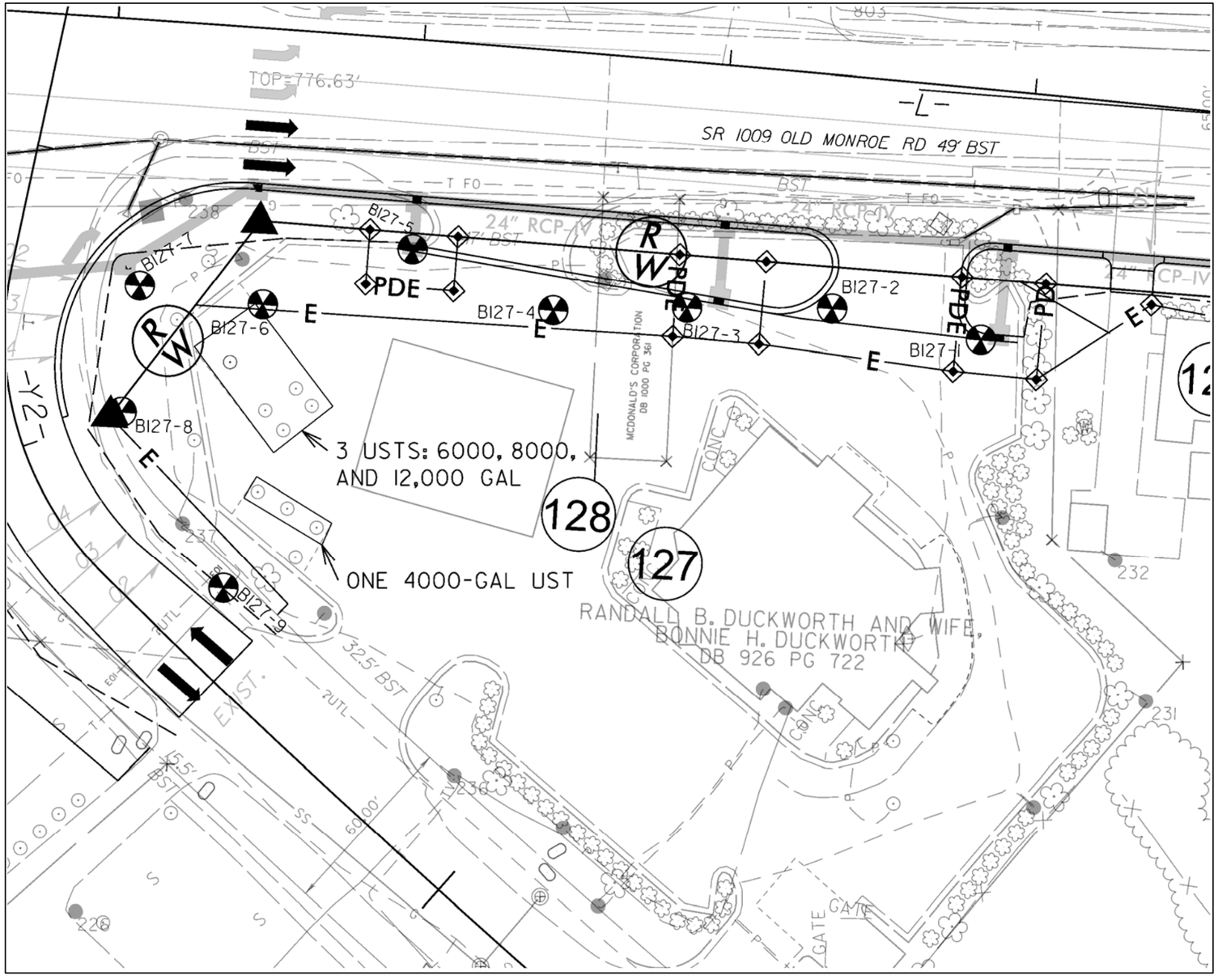
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  - U4714A_ncdot_fs.dgn
  - U4714_NAT_WEX.dgn
  - U-4714A_Hyd_DRN.dgn
  - U-4714AC_Rdy_aln.dgn, Default
  - U-4714AC_Rdy_dsn.dgn, Default
  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

0 40 80
FEET

See Figure 9 for explanation of symbols and line types

PROJECT NO. GR22.321	***FIGURE 6 – PARCEL 127, R.B. DUCKWORTH & WIFE EM61 DIFFERENTIAL DATA ON PLAN SHEET***
SCALE 1" = 40'	
DATE 2/24/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***
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NC GRID
NAD 83 NA 2011

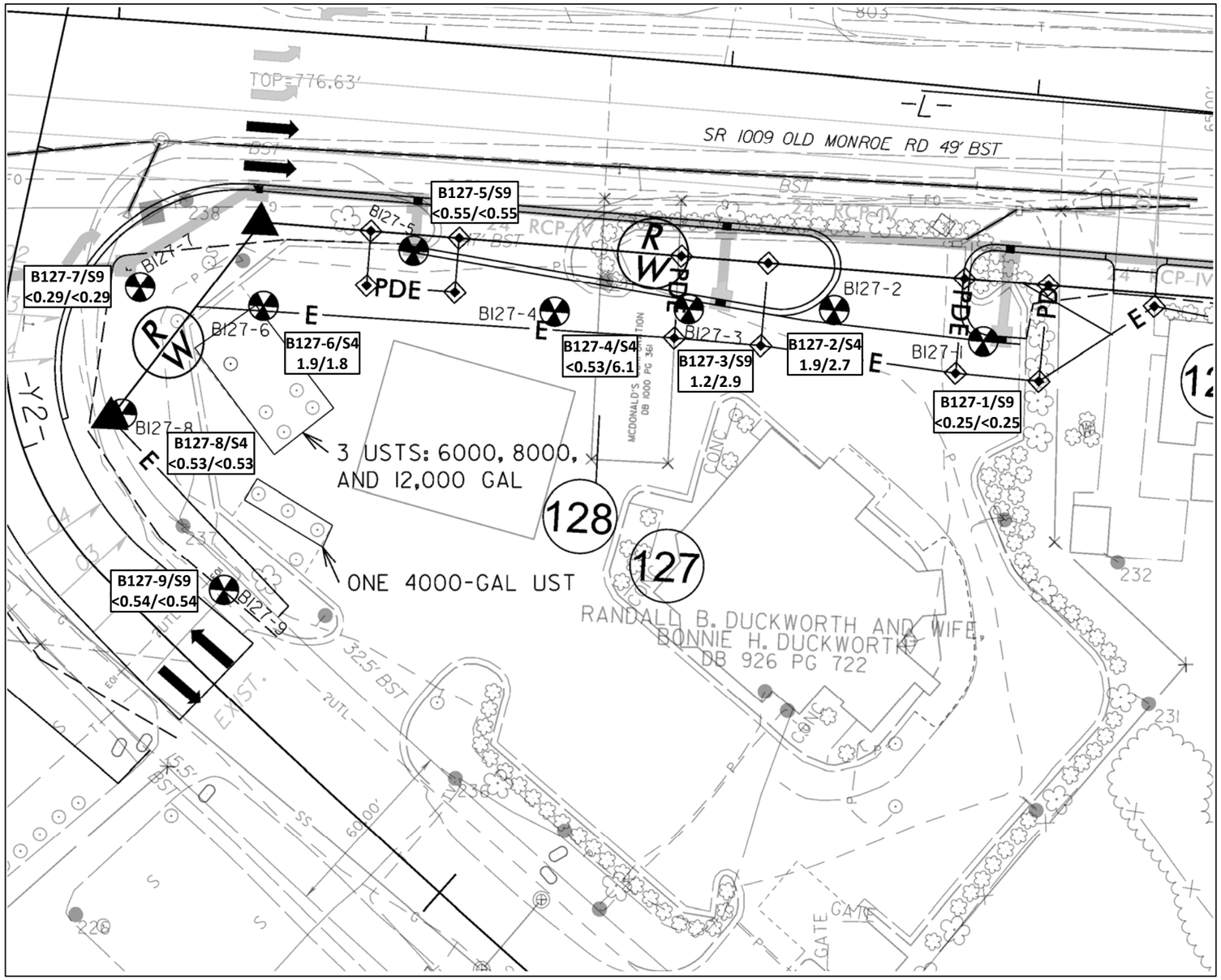
- U4714AC_Geo_env.dgn
  - U4714A_ncdot_fs.dgn
  - U4714_NAT_WEX.dgn
  - U-4714A_Hyd_DRN.dgn
  - U-4714AC_Rdy_aln.dgn, Default
  - U-4714AC_Rdy_dsn.dgn, Default
  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

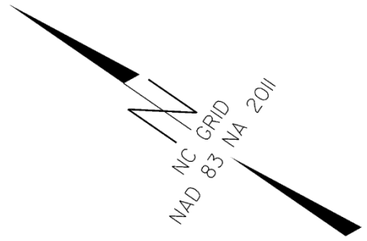
0 40 80
FEET

See Figure 9 for explanation of symbols and line types

PROJECT NO. GR22.321	***FIGURE 7 – PARCEL 127, R.B. DUCKWORTH & WIFE BORING LOCATIONS ON PLAN SHEET***
SCALE 1" = 40'	
DATE 2/24/2020	***NCDOT PROJECT U-4714AC***
BY CRP/EDB	***SR 1009, SR 3448/SR 3474 TO SR 1377***
	MECKLENBURG COUNTY, NORTH CAROLINA

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





Explanation

Maximum Analytical Results per Boring

B127-1/S9
<0.25/<0.25

Boring No./Sample No.
GRO/DRO (mg/kg, ppm)

- U4714AC_Geo_env.dgn
  - U4714A_ncdot_fs.dgn
  - U4714_NAT_WEX.dgn
  - U-4714A_Hyd_DRN.dgn
  - U-4714AC_Rdy_aln.dgn, Default
  - U-4714AC_Rdy_dsn.dgn, Default
  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

See Figure 9 for explanation of symbols and line types

0 40 80
FEET

PROJECT NO. GR22.321	***FIGURE 8 – PARCEL 127, R.B. DUCKWORTH & WIFE SOIL ANALYTICAL RESULTS ON PLAN SHEET***
SCALE 1" = 40'	
DATE 2/24/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***
BY CRP/EDB	

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www.espassociates.com

12/2/2016

PROJECT REFERENCE NO.	SHEET NO.

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 — EIP
- Computed Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 23
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- 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 — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — Flow
- False Sump

RAILROADS:
- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:
- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:
- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- 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 — Vineyard

EXISTING STRUCTURES:
MAJOR:
- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:
- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

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

TELEPHONE:
- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

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

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

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

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

MISCELLANEOUS:
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — W/S
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- 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. GR22.321	**FIGURE 9**
SCALE N/A	**LEGEND FOR PLAN SHEET FIGURES**
DATE 2/24/2020	**NCDOT PROJECT U-4714AC**
BY CRP/EDB	**SR 1009, SR 3448/SR 3474 TO SR 1377**
	MECKLENBURG COUNTY, NORTH CAROLINA

ESP Associates, Inc.
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APPENDIX A
SOIL BORING LOGS

FIELD BORING LOG

BORING NO. B127-1

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: Southeast corner of parcel
TYPE OF BORING: | DATE STARTED: 1/3/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/3/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 775.4'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.8' Asphalt and Gravel	Core 1 Rec 3.3'/4.0'
					Perched water near
1	S-1	1.0-1.5	0.4	0.8' - 3.0' Silty and Sandy Clay, Brown to Red-Brown to Gray, Moist to Wet	surface
2	S-2	2.0-2.5	0.5		
3	S-3	3.0-3.5	0.5	3.0' - 7.0' Sandy Clay, Tan-Brown, Moist	
4	S-4	4.0-4.5	0.3		
					Core 2 Rec 3.7'/4.0'
5	S-5	5.0-5.5	0.4		
6	S-6	6.0-6.5	0.1		
7	S-7	7.0-7.5	0.2	7.0' - 10.0' Clayey Sand, Brown and Black, Wet to Moist	
8	S-8	8.0-8.5	0.3		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.2		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B127-2

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: East side of parcel, opposite approx. center of building
TYPE OF BORING: Direct Push | DATE STARTED: 1/3/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/3/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 775.8'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 1.4' Asphalt and Gravel	Core 1 Rec 2.8'/4.0'
1	S-1	1.0-1.5	0.5		
				1.4' - 7.4' Silty Clay, Brown to Red-Brown and Gray, Moist, Trace Gravel	
2	S-2	2.0-2.5	0.2		
3	no sample				
4	S-4	4.0-4.5	0.3		
					Core 2 Rec 3.3'/4.0'
5	S-5	5.0-5.5	0.3		
6	S-6	6.0-6.5	0.3		
7	S-7	7.0-7.5	0.3		
				7.4' - 10.0' Clayey Sand, Tan-Brown to Brown, Moist to Dry	
8	S-8	8.0-8.5	0.6		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.4		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B127-3

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: East side of parcel, opposite approximate N. end of building
TYPE OF BORING: Direct Push | DATE STARTED: 1/3/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/3/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 776.5'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 2.9' Asphalt over Tan-Brown, Clayey Sand and Gravel, Moist	Core 1 Rec 3.4'/4.0'
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	0.2	2.9' - 4.8' Clayey Sand, Tan-Brown, Moist	
4	S-4	4.0-4.5	0.5		
					Core 2 Rec 3.8"/4.0'
5	S-5	5.0-5.5	0.3	4.8' - 10.0' Silty Clay with Layers of Clayey Sand, Red-Brown to Tan and White, Dry	
6	S-6	6.0-6.5	0.2		
7	S-7	7.0-7.5	0.3		
8	S-8	8.0-8.5	0.3		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.4		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B127-4

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: South Side of East Entrance to Parcel
TYPE OF BORING: Direct Push | DATE STARTED: 1/3/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/3/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 777.1'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 1.7" Asphalt over Dark Brown, Clayey Sand and Gravel, Moist	Core 1 Rec 3.8'/4.0'
1	S-1	1.0-1.5	1.5		
2	S-2	2.0-2.5	0.2	1.7' - 10.0' Silty and Sandy Clay, Tan-Brown to Red and Gray, Dry	
3	S-3	3.0-3.5	0.1		
4	S-4	4.0-4.5	0.2		
					Core 2 Rec 4.0'/4.0'
5	S-5	5.0-5.5	0.2		
6	S-6	6.0-6.5	0.1		
7	S-7	7.0-7.5	0.3		
8	S-8	8.0-8.5	0.2		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.4		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B127-5

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: North Side of East Entrance to Parcel
TYPE OF BORING: Direct Push | DATE STARTED: 1/3/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/3/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 775.9'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 1.0' Asphalt and Gravel	Core 1 Rec 3.7'/4.0'
1	S-1	1.0-1.5	0.8		
				1.0' - 10.0' Silty and Sandy Clay, Tan-Brown to Red and Gray, Moist to Dry	
2	S-2	2.0-2.5	0.4		
3	S-3	3.0-3.5	0.4		
4	S-4	4.0-4.5	0.3		
					Core 2 Rec 3.5'/4.0'
5	S-5	5.0-5.5	0.3		
6	S-6	6.0-6.5	0.2		
7	S-7	7.0-7.5	0.6		
8	S-8	8.0-8.5	0.5		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.7		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B127-6

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321

LOCATION: On east side of primary tank bed

TYPE OF BORING	Direct Push	DATE STARTED:	1/3/20	SHEET:	1 of 1
DRILLING FIRM:	SAEDACCO	DATE FINISHED:	1/3/20	TOTAL DEPTH:	10.0 ft
DRILLER:	John Goff	SAMPLE METHOD:	4' Macrocore	DEPTH TO GW:	N/A ft
DRILL RIG:	Geoprobe 54DT	LOGGED BY:	R. Pastrana	COMMENT:	Approx. Elev: 778.2'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.9' Asphalt and Gravel	Core 1 Rec 3.7'/4.0'
					Perched Water Near
1	S-1	1.0-1.5	0.8	0.9' - 10.0' Silty and Sandy Clay, Tan-Brown to Red and Gray, Moist to Dry	Surface
2	S-2	2.0-2.5	1.1		
3	S-3	3.0-3.5	0.9		
4	S-4	4.0-4.5	0.9		
					Core 2 Rec 2.9'/4.0'
5	S-5	5.0-5.5	0.7		
6	S-6	6.0-6.5	0.6		
7	no sample				
8	S-8	8.0-8.5	0.4		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	1.4		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B127-7

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: North end of parcel, north of primary tank bed
TYPE OF BORING: Direct Push | DATE STARTED: 1/3/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/3/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 779.4'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 1.0' Topsoil and Gravel	Core 1 Rec 3.4'/4.0'
1	S-1	1.0-1.5	0.3		
				1.0' - 10.0' Silty and Sandy Clay, Red-Brown to Tan and Gray, Moist to Dry	
2	S-2	2.0-2.5	0.2		
3	S-3	3.0-3.5	0.2		
4	S-4	4.0-4.5	0.3		
					Core 2 Rec 3.0'/4.0'
5	S-5	5.0-5.5	0.4		
6	S-6	6.0-6.5	0.4		
7	no sample				
8	S-8	8.0-8.5	0.6		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.8		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B127-8

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: North end of parcel, near NW corner of primary tank bed
TYPE OF BORING: Direct Push | DATE STARTED: 1/3/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/3/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 781.3'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 1.2' Topsoil over Silty Sandy Clay and Gravel, Moist	Core 1 Rec 3.8'/4.0'
1	S-1	1.0-1.5	0.4		
				1.2' - 10.0' Silty and Sandy Clay, Tan-Brown to Red-Brown, Dry to Moist	
2	S-2	2.0-2.5	0.2		
3	S-3	3.0-3.5	0.3		
4	S-4	4.0-4.5	0.4		
					Core 2 Rec 3.7'/4.0'
5	S-5	5.0-5.5	0.5		
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	0.3		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.4		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B127-9

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321

LOCATION: West side of parcel, on west side of secondary tank bed

TYPE OF BORING: Direct Push | DATE STARTED: 1/3/20 | SHEET: 1 of 1

DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/3/20 | TOTAL DEPTH: 10.0 ft

DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft

DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 783.3'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.6' Topsoil	Core 1 Rec 3.3'/4.0'
1	S-1	1.0-1.5	0.4	0.6' - 10.0' Silty and Sandy Clay, Red-Brown to Tan-Brown and Gray, Moist to Dry	
2	S-2	2.0-2.5	0.2		
3	S-3	3.0-3.5	0.7		
4	S-4	4.0-4.5	0.5		Core 2 Rec 2.7'/4.0'
5	S-5	5.0-5.5	0.9		
6	S-6	6.0-6.5	0.5		
7	no sample				
8	S-8	8.0-8.5	1.0		Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	1.0		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

APPENDIX B

RED LAB LABORATORY TESTING REPORT

QED

AQROS

Hydrocarbon Analysis Results

Client: ESP
Address:

Samples taken Friday, January 3, 2020
Samples extracted Tuesday, January 7, 2020
Samples analysed Tuesday, January 7, 2020

Contact: NED BILLINGTON

Operator JENN RYAN

Project: GR22.321

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	B127 - 1 S9	10.1	<0.25	<0.25	<0.25	0.14	0.14	<0.08	<0.01	0	40.1	59.9	Residual HC,(BO)
s	B127 - 2 S4	21.5	<0.54	1.9	2.7	4.6	1.8	<0.17	<0.021	74.6	18.5	6.9	Deg Fuel 91.1%,(FCM)
s	B127 - 3 S9	18.6	<0.46	1.2	2.9	4.1	1.9	<0.15	<0.019	64.7	26.5	8.8	Deg Fuel 93%,(FCM)
s	B127 - 4 S4	21.3	<0.53	<0.53	6.1	6.1	3.8	<0.17	<0.021	0	74.1	25.9	Deg Fuel 91.9%,(FCM)
s	B127 - 5 S9	22.0	<0.55	<0.55	<0.55	<0.55	<0.11	<0.18	<0.022	0	0	0	PHC not detected
s	B127 - 6 S4	21.3	<0.53	1.9	1.8	3.7	1.1	<0.17	<0.021	82.2	13.5	4.2	Deg Fuel 90.8%,(FCM)
s	B127 - 7 S9	11.7	<0.29	<0.29	<0.29	<0.29	<0.06	<0.09	<0.012	0	100	0	Residual HC
s	B127 - 8 S4	21.3	<0.53	<0.53	<0.53	<0.53	<0.11	<0.17	<0.021	0	0	0	PHC not detected
s	B127 - 9 S9	21.7	<0.54	<0.54	<0.54	<0.54	<0.11	<0.17	<0.022	0	0	0	PHC not detected,(BO)

Initial Calibrator QC check OK

Final FCM QC Check OK 93.5 %

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) = Modifed 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

B150

Client Name:	ESP
Address:	on file
Contact:	Ned Billington
Project Ref.:	GR22, 321
Email:	on file
Phone #:	336 420 5452
Collected by:	R. Pastrana

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

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

Each UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

Sample Collection	TAT Requested		Analysis Type		Initials	Sample ID (* these are letter "S")	Total Wt.	Tare Wt.	Sample Wt.
Date/Time	24 Hour	48 Hour	UVF	GC					
1/3/20		✓	✓		SOS	B127-1, S9	59.1	45.2	13.9
1/3/20		✓	✓		CRP	B127-2, S4	57.3	45.2	12.1
1/3/20		✓	✓		CRP	B127-3, S9	59.0	45.0	14.0
1/3/20		✓	✓		CRP	B127-4, S4	57.3	45.1	12.2
1/3/20		✓	✓		CRP	B127-5, S9	57.1	45.3	11.8
1/3/20		✓	✓		CRP	B127-6, S4	57.5	45.3	12.2
1/3/20		✓	✓		CRP	B127-7, S9	57.3	45.3	12.0
1/3/20		✓	✓		CRP	B127-8, S4	57.3	45.1	12.2
1/3/20		✓	✓		CRP	B17-9, S9	57.1	45.1	12.0
12/20/19		—	—		SOS	B125-6, S5 }	54.6	44.9	9.7
1/2/20		—	—		CRP	B134-1, S9	57.7	44.1	13.2
1/2/20		—	—		CRP	B134-2, S4	57.4	44.6	12.8
1/2/20		—	—		CRP	B134-2, S9	58.3	44.1	14.2
1/2/20		—	—		CRP	B134-3, S8	57.1	44.0	13.1
1/2/20		—	—		CRP	B134-4, S8	56.8	44.1	12.7
1/2/20		—	—		CRP	B134-5, S4	57.9	43.9	14.0
1/2/20		—	—		CRP	B134-5, S8	58.4	45.4	13.0
1/2/20		—	—		CRP	B134-6, S8	57.8	45.0	12.8

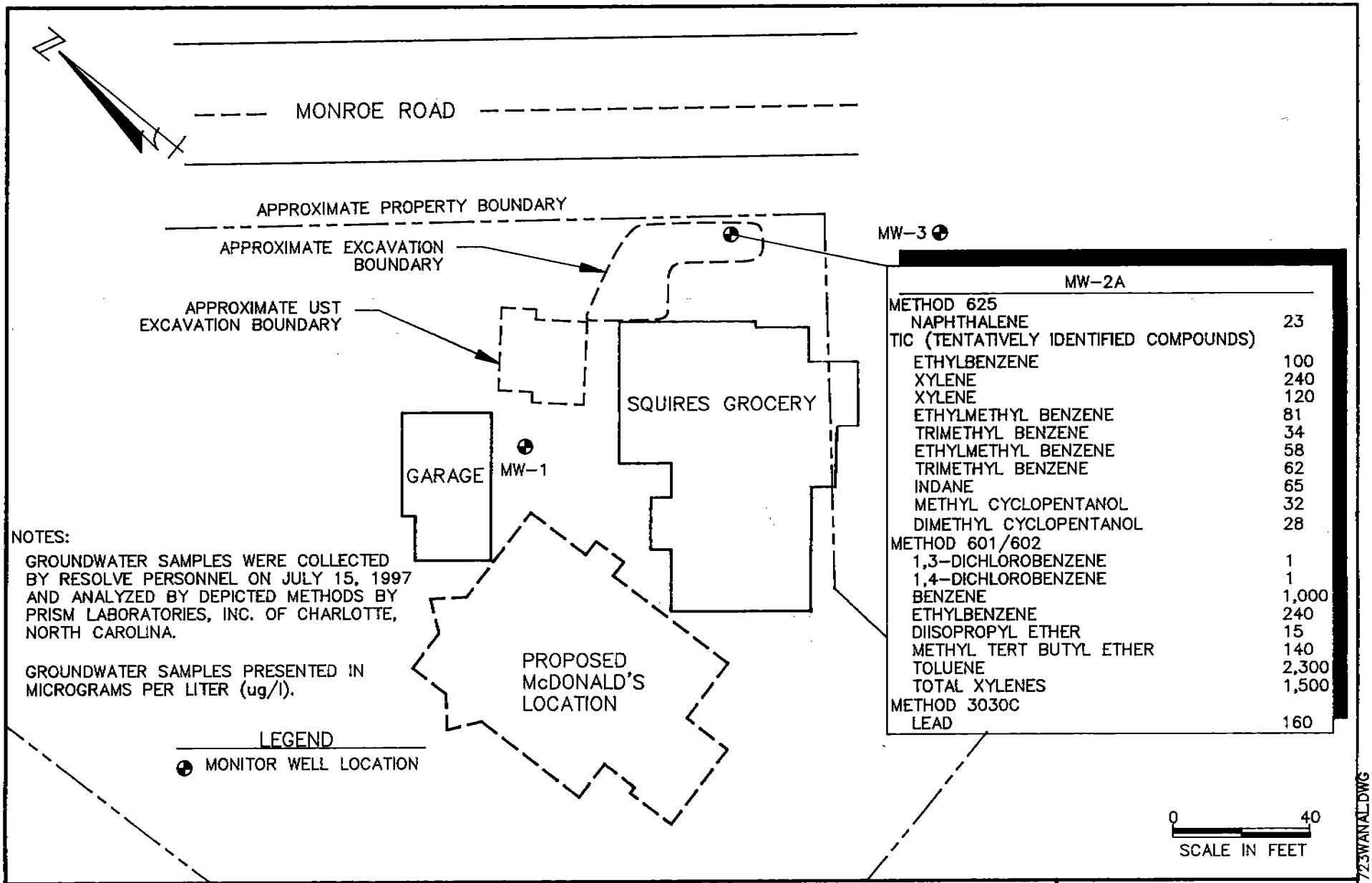
COMMENTS/REQUESTS:
Report bracketed samples separately

TARGET GC/UVF ANALYTES:

Relinquished by		Accepted by	Date/Time
Relinquished by		Accepted by	Date/Time
		CCS	12/7/20 9:00

RED Lab USE ONLY
18
Ref. No

APPENDIX D
RELEVANT NCDEQ INFORMATION



C.J. SQUIRES SERVICE
AND GROCERY
2824 OLD MONROE ROAD
STALLINGS, NORTH CAROLINA

FIGURE 6.
SITE LAYOUT MAP WITH ANALYTICAL DATA
JULY 15, 1997

RESOLVE ENVIRONMENTAL SERVICES, P.A.
MONROE, NORTH CAROLINA

February 26, 2020

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

RE: PHASE II INVESTIGATION OF PARCEL 133
Various Businesses, LR & FR, LLC
2701 and 2749 Old Monroe Rd., Stallings, NC
ESP Project No. GR22.321

TIP Number:	U-4714AC
WBS Number:	39078.1.8
County:	MECKLENBURG
Description:	SR 1009 (John Street/Old Monroe Road), SR 3448/SR3474 (Trade Street) to SR 1377 (Wesley Chapel-Stouts Road)

Dear Mr. Box:

ESP Associates, Inc. (ESP) is pleased to submit this report on our GeoEnvironmental Phase II Investigation of the subject parcel. This work was performed in accordance with your Request for Proposal dated September 23, 2019 and our Cost Proposal dated October 31, 2019.

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

Sincerely,

ESP Associates, Inc.

Edward D. Billington, PG
Senior Geologist/Geophysicist
EDB/NAZ

NORTH CAROLINA LICENSED SEAL 1631 GEOLOGIST EDWARD DAVIS BILLINGTON

DocuSigned by: Ed Billington 7402544DC92F4E0...

not considered Final unless all signatures are completed

ESP Associates, Inc.
7011 Albert Pick Road, Suite E, Greensboro, NC 27409
1.800.960.7317 · NC: 328.334.7724
www.espassociates.com

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1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to widen East John Street-Old Monroe Road from Trade Street (S.R. 3448/S.R. 3474) to Wesley Chapel-Stouts Road (S.R. 1377) in the Towns of Matthews, Stallings, and Indian Trail. The project is about 6.5 miles long. The NCDOT requested that ESP Associates, Inc. (ESP) perform a Phase II geoenvironmental investigation of the proposed right-of-way (ROW) and proposed permanent drainage/utility easement (DUE) of Parcel 133 to locate possible underground storage tanks (USTs), sample soil, and delineate potential contaminated soil. Parcel 133 is located at 2701 and 2749 Old Monroe Rd., Stallings, on the northeast quadrant of the intersection of Old Monroe Rd. and Stallings Rd. (Figure 1).

2.0 HISTORY

2.1 Phase I Report

According to the 2014 Hazardous Materials Report (Phase I) prepared by the NCDOT, Parcel 133 includes the site of a dry-cleaning business (Mills Cleaners) that reportedly has been a drop-off site for the past 8 years, per the current occupant but the history is unclear. This site is anticipated to present low geoenvironmental impacts to the project.

2.2 NCDEQ Files

We checked the following online sources at the NCDEQ with the results summarized below:

- Division of Waste Management Site Locator Tool and Union County GIS
    - Property owner is listed as Carolina Concrete Inc. for the approximate northern half of the parcel and as LR & FR, LLC for the approximate southern half.
    - The site address on the Union County GIS is listed as 2701 Old Monroe Rd. for the approximate northern half of the parcel and as 2749 Old Monroe Rd. and 101 Stallings Rd. for the approximate southern half.
    - UST Incident #21039 is indicated for the southern half of the parcel, with the address of 101 Stallings Rd. The online files for this incident are sparse but include the following:
        - A UST-3 Form, Notice of Intent: UST Permanent Closure was filed on September 23, 1999 by the consultant, The Structures Group, Inc., with the planned removal date of October 5, 1999. The form listed two diesel tanks with volumes of 7,500 and 10,000 gallons. Other than the address of 101 Stallings Rd., no specific location was indicated.
        - A Pollution Incident/UST Leak Reporting Form was filed on October 19, 1999 indicating that diesel range TPH was detected during UST closure activities.
        - There were no other relevant files linked to from the Site Locator Tool for this incident.

- NC UST Facility Operating Permits
    - Not listed
- Incident Management Database (Regional Underground Storage Tanks)
    - Incident No. 21039
    - UST No. MO-5846
    - Release occurred 10/19/1999, was reported 12/3/1999, and was closed out on 1/2/2000.
    - Notes in the file state that "soil contamination to 1540 ppm by (Method) 3550 and 1665 (ppm) by (Method) 5030. Over-excavation was conducted and yielded results below soil to groundwater."
- Registered USTs Database
    - Two diesel USTs removed on October 19, 1999.
    - Tanks were 7,500 and 10,000 gallons.
- Dry-cleaning Solvent Cleanup Act (DSCA) Remediation Unit
    - Since the site was not shown on the Site Locator Tool as a dry-cleaning site, we contacted the DSCA Remediation Unit and asked them to doublecheck their files. They have no records of this being a facility that performed dry cleaning on the site.

3.0 SITE OBSERVATIONS

During our November/December 2019 and January 2020 field work, the site was occupied by a strip mall on the northern half of the parcel and by a church on the southern half. The strip mall includes a gift shop (Just Dont Send Flowers) at the location where the Mill's Cleaners previously was located. The other businesses include a restaurant (Phat Daddy's Café), a hair salon (No Loose Ends), a martial arts studio (True Karate), a nail salon (Amy Nails), and a barber shop (Pro Barber Shop). The building housing the church (Hope Baptist) on the southern half of the parcel appears formerly to have been a bank. The ground in the study area was covered by grass, asphalt pavement, and concrete sidewalks.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on November 19, 2019. The geophysical investigation area was approximately 0.75 acres and encompassed the proposed ROW and the proposed DUE. We performed direct-push drilling and sampling of subsurface soils on January 2, 2020. A photoionization detector (PID) was used to screen subsurface soils in the field and select soil samples to send for laboratory analysis. Groundwater was not encountered during the drilling investigation. Some possible perched water was indicated by moist to wet sandy soils above a more clayey layer in 3 borings.

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 approximately three feet (Figures 3 and 4). Location control was

provided in real-time using a differential global positioning system (DGPS). The EM61 responses were identified as being caused by known cultural features.

4.2 Borings

ESP performed direct-push drilling activities within the proposed ROW and proposed DUE of Parcel 133 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Eight borings were drilled, designated B133-1 through B133-8 (Figure 7). The soil borings were advanced using a GeoProbe 54DT drill rig. Soil samples were obtained to a depth of approximately 10 feet using three 4-foot long Macro-Core® tubes. Soil cores varied in recovery from 2.0 to 4.0 feet (50 to 100 percent recovery). 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. A petroleum odor was observed in the samples from the 8.0 to 10.0-foot Macro-Core in Borings B133-1 and B133-2. Each sample was placed in a sealed plastic bag and then kept in a warm area for approximately 10 to 15 minutes prior to measuring volatile organic compound (VOC) levels in the head space with the PID. The maximum PID readings in the eight borings ranged from 0.6 to 143.3 parts per million (ppm) (Table 1). The highest PID readings were in the samples from Borings B133-1 and B133-2.

Nine soil samples were selected for UVF laboratory analysis, as listed in Table 2. For each selected sample, an approximate 10-gram soil sample was collected from the sample bag 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).

In addition to the UVF analysis, 5 soil samples were selected to test for solvents that may be present from dry cleaning operations. For each selected sample, an approximate 5-gram soil sample was collected from the sample bag using a Terra Core sampler and placed into a laboratory-supplied 40-milliliter 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, located in Wilmington, North Carolina,

following proper chain-of-custody procedures. The RED Lab gas chromatograph was inoperable, so the lab used a gas chromatograph/flame ionization detector (GC/FID) instrument at the University of North Carolina at Wilmington for the analysis.

4.4 Groundwater

Groundwater was not encountered in the 8 borings. Some possible perched water was encountered in Borings B133-5, B133-6, and B133-7.

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). Our evaluation indicated that the EM61 differential responses were caused by known cultural 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 also includes results for TPH, total aromatics, and BaP, is provided in Appendix B. Values are provided in milligrams per kilogram (mg/kg or ppm).

Results for the GC/FID analyses are provided as a one-page report from RED Lab in Appendix B.

5.3 Sample Observations

The results of the laboratory testing indicate that BTEX was above the laboratory detection limits for one of the 9 samples tested with a reading of 1.3 ppm (Table 2). GRO was detected in 3 of the samples with values ranging from 8.7 to 49.3 ppm, below the NCDEQ action level of 50 ppm for GRO. DRO was detected in the 9 samples tested with three readings ranging from 513.9 to 1129 ppm, exceeding the NCDEQ action level of 100 ppm for DRO. PAHs were detected in 3 samples with readings ranging from 7.8 to 16 ppm. The higher readings for GRO, DRO, and PAHs were from the same three samples from Borings B133-1 and B133-2.

The results for the GC/FID analysis of the 5 soil samples indicated presence of chlorinates. However, the results could not be quantified with the instrument used.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the Phase II investigation for Parcel 133 of NCDOT Project U-4714AC indicates that there is no evidence for abandoned USTs in the proposed ROW and proposed DUE. Laboratory testing detected petroleum compounds in the 9 soil samples tested with 3 samples above the action level of 100 ppm for DRO (B133-1, S9; B133-2, S4 and S9). Based on the PID readings and laboratory results, the contamination is located near the southern edge of the parcel in Boring B133-1 at a depth of 9.0 to 9.5 feet and in Boring B133-2 at a depth of 4.0 to 9.5 feet below ground surface (bgs).

The results of the GC/FID analyses to test for solvents that may have been related to the dry-cleaning facility were inconclusive. Available evidence supports the conclusion that the Mills Cleaners was a drop-off facility only and dry cleaning was not performed on the site.

6.2 Geophysics

The geophysical data did not indicate the presence of abandoned USTs in the proposed ROW or proposed DUE.

6.3 Soil

Petroleum hydrocarbon compounds were detected in the 9 samples tested. Three samples from Borings B133-1 and B133-2 had DRO values ranging from 513.9 to 1129 ppm, above the action level of 100 ppm for DRO.

The results of the GC/FID analyses to test for solvents that may have been related to the dry-cleaning facility were inconclusive.

6.4 Estimated Quantities

Based on the laboratory results and PID readings, the petroleum contamination appears to extend from Boring B133-2 at a depth of approximately 4.0 to 9.5 feet bgs to Boring B133-1 at a depth of approximately 9.0 to 9.5 feet. Using an average contaminated soil thickness of 3.0 feet and an area of 1806 square feet, the volume of contaminated soil above 10 feet depth bgs and within the proposed ROW and proposed DUE is estimated as follows:

Total Estimated Volume above 10 feet depth bgs
1806 square feet * 3.0 feet = 5418 cubic feet = 200 cubic yards

Based on the hydraulic design, 3 reinforced concrete pipes (RCP) and 3 catch basins will be installed in the area of contaminated soil. Assuming excavations to one foot below listed invert

and an excavation width of 6 feet, and using the approximate current elevations of the borings, we estimated the amount of contaminated soil to be removed during construction as follows:

Approximate cross-sectional area, square feet * 6-foot width = volume, cubic feet

1) 40 * 6 = 240 cubic feet (east-west pipe at Boring B133-2)
2) 60 * 6 = 360 cubic feet (north-south pipe at Boring 133-2)
3) 0 * 6 = 0 cubic feet (excavation by Boring B133-1 is above contamination)

Total = 660 cubic feet = 25 cubic yards.

1) East-west pipe intersecting near Boring B133-1
    a. Catch basin invert 771.9 feet
    b. Boring elevation approx. 775.6 feet
    c. Contamination encountered at 9 feet bgs
    d. Excavation depth approximately 4.7 feet bgs, contaminated soil likely not encountered.
2) North-south pipe intersecting Boring B133-2
    a. Catch basin invert 772.1
    b. Boring elevation 777.1 feet
    c. Contamination encountered at 4 feet bgs
    d. Excavation depth approximately 6 feet, approximately 2 feet of contaminated soil likely to be encountered
    e. 30 feet length * 2.0 feet depth * 6 feet wide = 360 cubic feet.
3) East-west pipe intersecting Boring B133-2
    a. Catch basin invert 772.1
    b. Average boring elevation 777.1 feet
    c. Contamination encountered at 4 feet bgs
    d. Excavation depth approximately 6 feet, approximately 2 feet of contaminated soil likely to be encountered
    e. 25 feet length * 2.0 feet depth * 6 feet wide = 300 cubic feet.

Therefore, the total estimated volume of contaminated soil to be removed for construction is 660 cubic feet. Assuming 100 pounds per cubic foot, the estimated amount of contaminated soil to be removed during construction is approximately 30 tons.

7.0 RECOMMENDATIONS

ESP recommends that soil removed from the site as part of NCDOT construction activities in the vicinity of Borings B133-1 and B133-2 be screened for petroleum hydrocarbon contamination, properly handled, segregated, and disposed of in accordance with NCDEQ regulations.

Groundwater was not encountered in the upper 10 feet in the study area. However, if groundwater is encountered during construction, it may be contaminated and should be screened for petroleum

hydrocarbon contamination, properly handled, segregated, and disposed of in accordance with NCDEQ regulations.

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

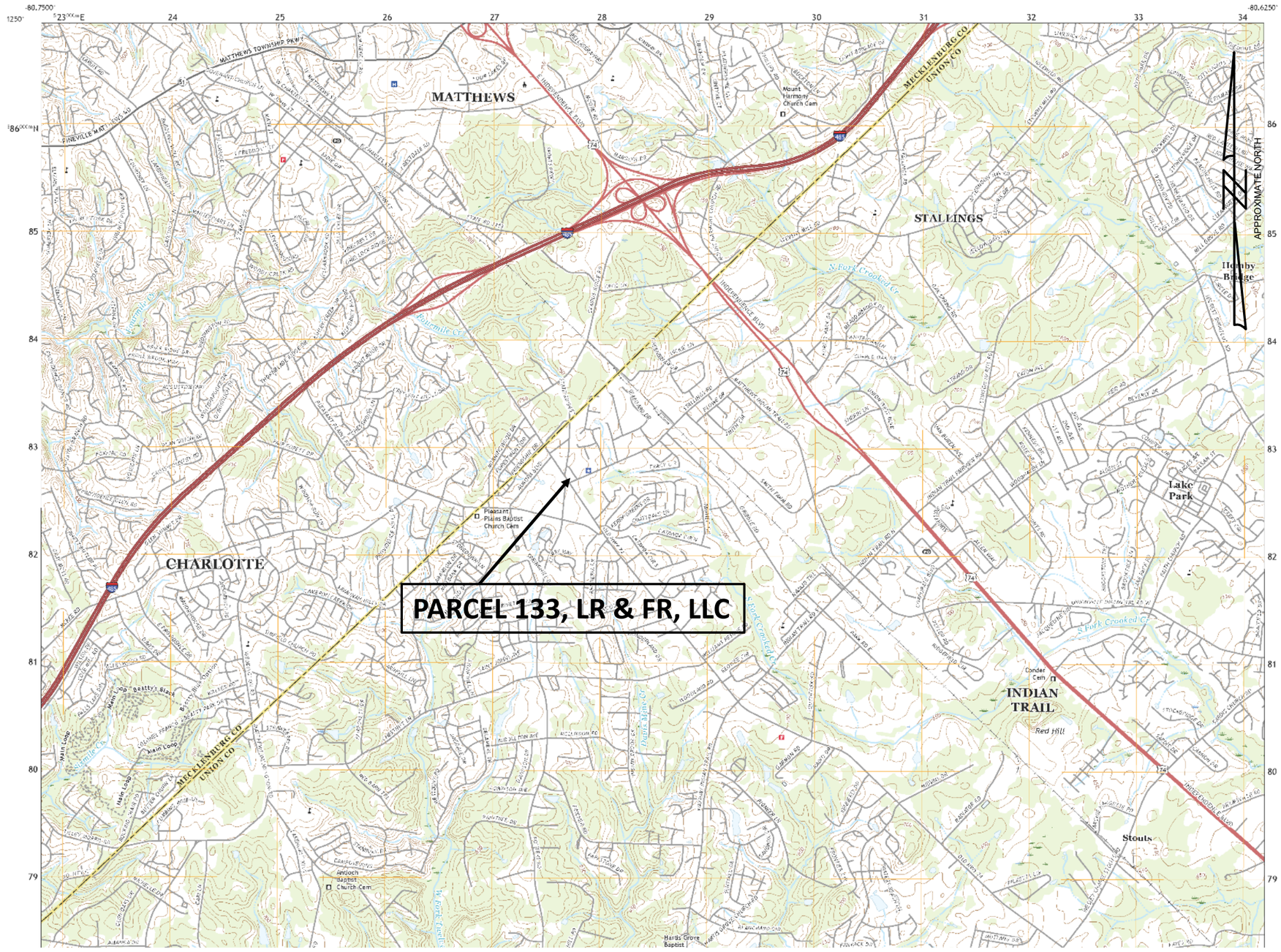
TABLE 1
SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B133-1	8.0-10.0	43.2 (9.0-9.5)
B133-2	2.0-10.0	143.3 (5.0-5.5)
B133-3	none	0.6 (3.0-3.5)
B133-4	none	1.1 (9.0-9.5)
B133-5	none	0.8 (8.0-8.5)
B133-6	none	1.6 (7.0-7.5)
B133-7	none	0.9 (3.0-3.5)
B133-8	none	1.0 (7.0-7.5)

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)
B133-1	S9 (9.0-9.5)	1/2/20	<15.6	49.3	1034	16
B133-2	S4 (4.0-4.5)	1/2/20	<10.6	<10.6	513.9	7.8
B133-2	S9 (9.0-9.5)	1/2/20	<10.1	47.9	1129	15.1
B133-3	S4 (4.0-4.5)	1/2/20	<0.73	<0.73	1.3	<0.23
B133-4	S9 (9.0-9.5)	1/2/20	1.3	8.7	1.4	<0.17
B133-5	S4 (4.0-4.5)	1/2/20	<0.53	<0.53	3.6	<0.17
B133-6	S9 (9.0-9.5)	1/2/20	<0.58	<0.58	0.58	<0.18
B133-7	S4 (4.0-4.5)	1/2/20	<0.55	<0.55	6.7	<0.18
B133-8	S9 (9.0-9.5)	1/2/20	<0.59	<0.59	2.5	<0.19

FIGURES



From: USGS US Topo 7.5 - minute map for MATTHEWS QUADRANGLE, NC, Date: 2019, Original Scale: 1:24,000

PROJECT NO. GR22.321	***FIGURE 1 – PARCEL 133, LR & FR, LLC SITE VICINITY MAP***
SCALE AS SHOWN	***NCDOT PROJECT U-4714AC***
DATE 2/10/2020	***SR 1009, SR 3448/SR 3474 TO SR 1377***
BY CRP/EDB	***MECKLENBURG COUNTY, NORTH CAROLINA***

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



A. Photograph from north end of parcel, looking southwest.



B. Photograph from between the 2 buildings, looking north.



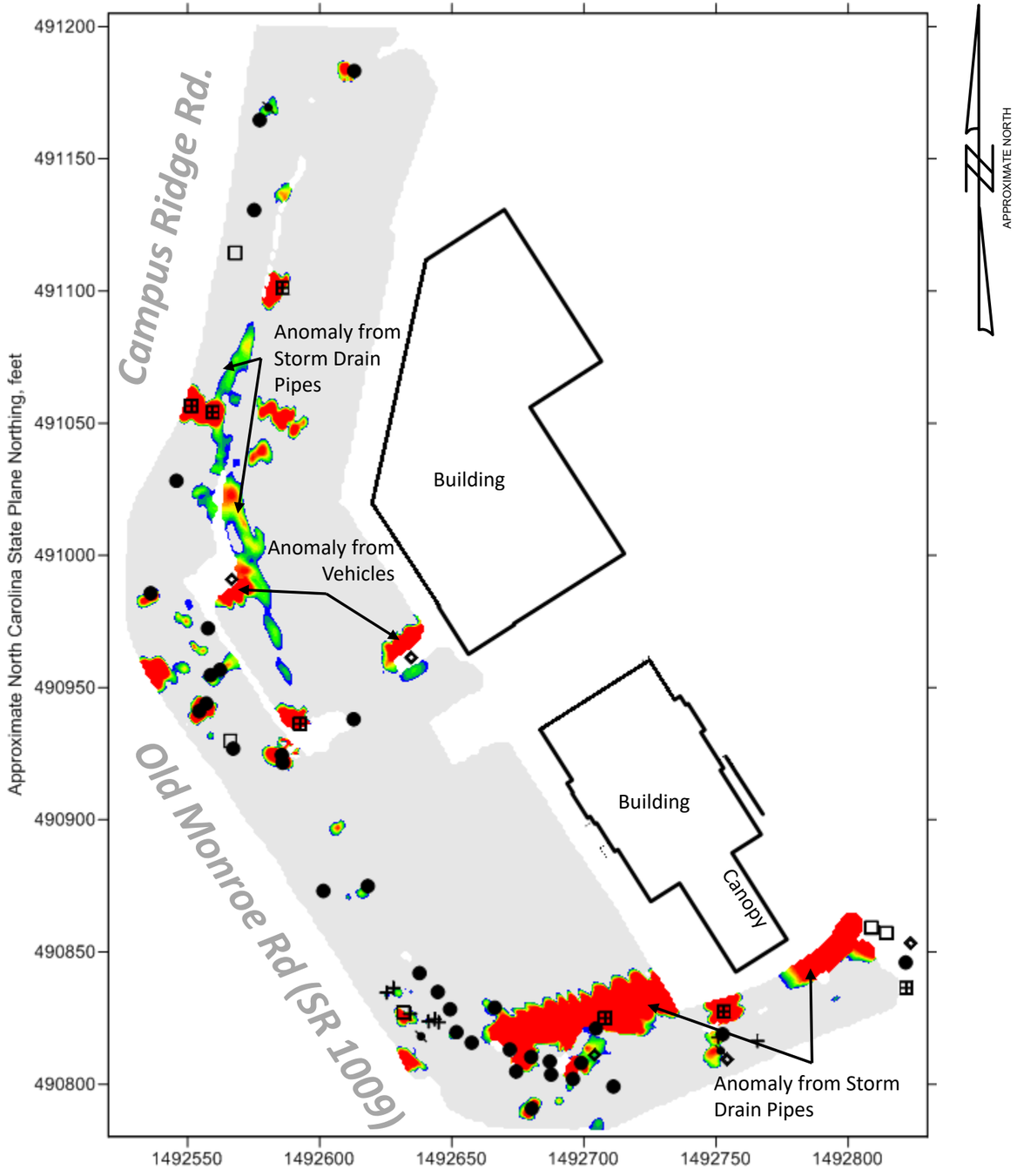
C. Photograph from between the 2 buildings, looking south.



D. Photograph from south end of parcel, looking east.

PROJECT NO. GR22.321	***FIGURE 2 – PARCEL 133, LR & FR, LLC SITE PHOTOGRAPHS***
SCALE N/A	
DATE 2/10/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***
BY CRP/EDB	

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



APPROXIMATE NORTH

EM61 Early Time Gate Response (mV)

1000
950
900
850
800
750
700
650
600
550
500
450
400
350
300
0
-500

EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet, Catch Basin, Manhole
- Culvert, storm drain pipe
- Utility pole
- Guy wire anchor
- Sign pole, other pole
- UST Fill Port or Valve Cover
- Monitoring Well
- Buried utility line (marked by others)
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Underground Storage Tank

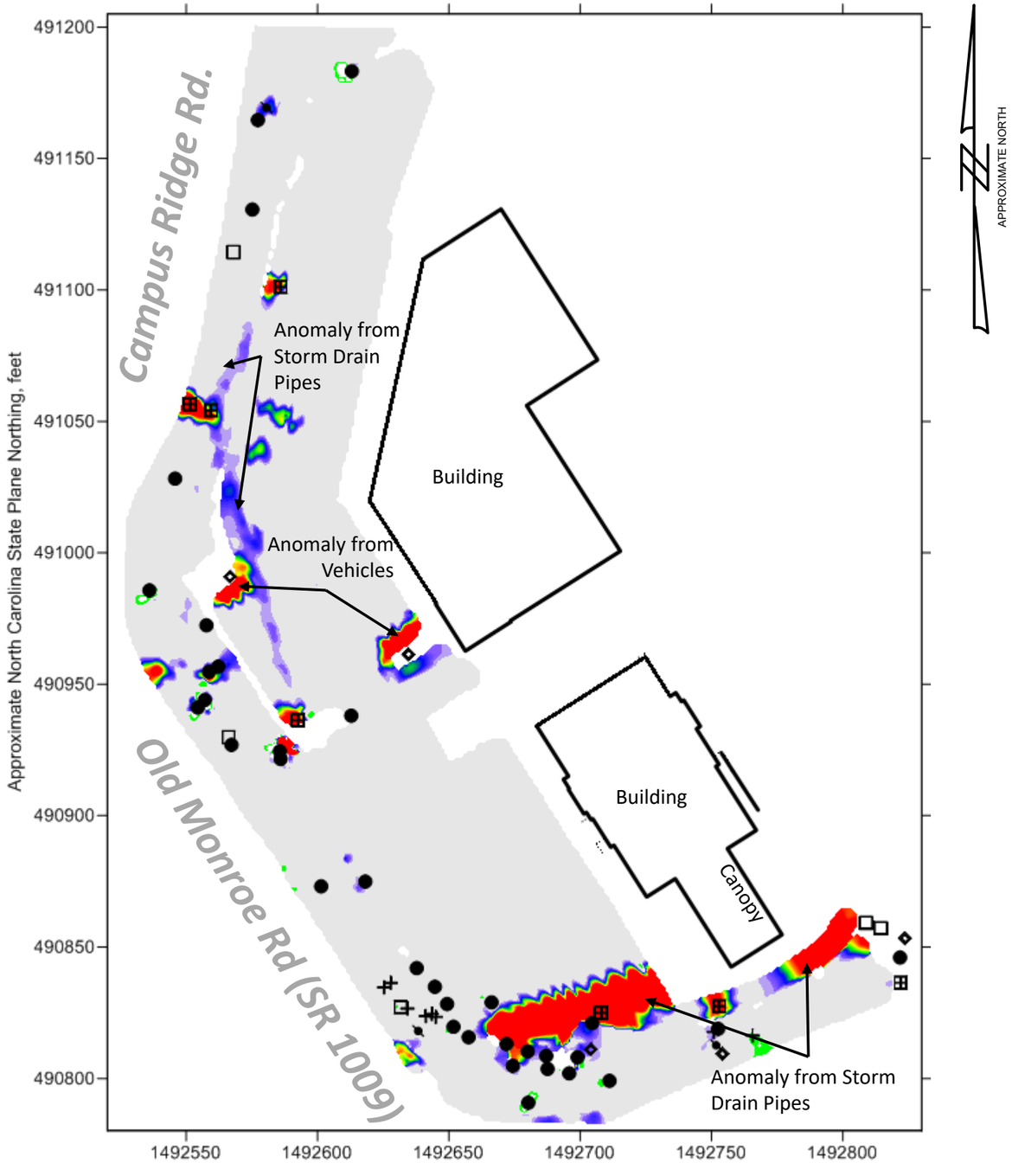
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	GR22.321
SCALE	AS SHOWN
DATE	2/10/2020
BY	CRP/EDB

FIGURE 3 – PARCEL 133, LR & FR, LLC
EM61 EARLY TIME GATE DATA

NCDOT PROJECT U-4714AC
SR 1009, SR 3448/SR 3474 TO SR 1377
MECKLENBURG COUNTY, NORTH CAROLINA

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



APPROXIMATE NORTH

EM61 Differential Response (mV)

500
480
460
440
420
400
380
360
340
320
300
280
260
240
220
200
180
160
140
120
100
70
0
-100

EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet, Catch Basin, Manhole
- Culvert, storm drain pipe
- Utility pole
- Guy wire anchor
- Sign pole, other pole
- UST Fill Port or Valve Cover
- Monitoring Well
- Buried utility line (marked by others)
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Underground Storage Tank

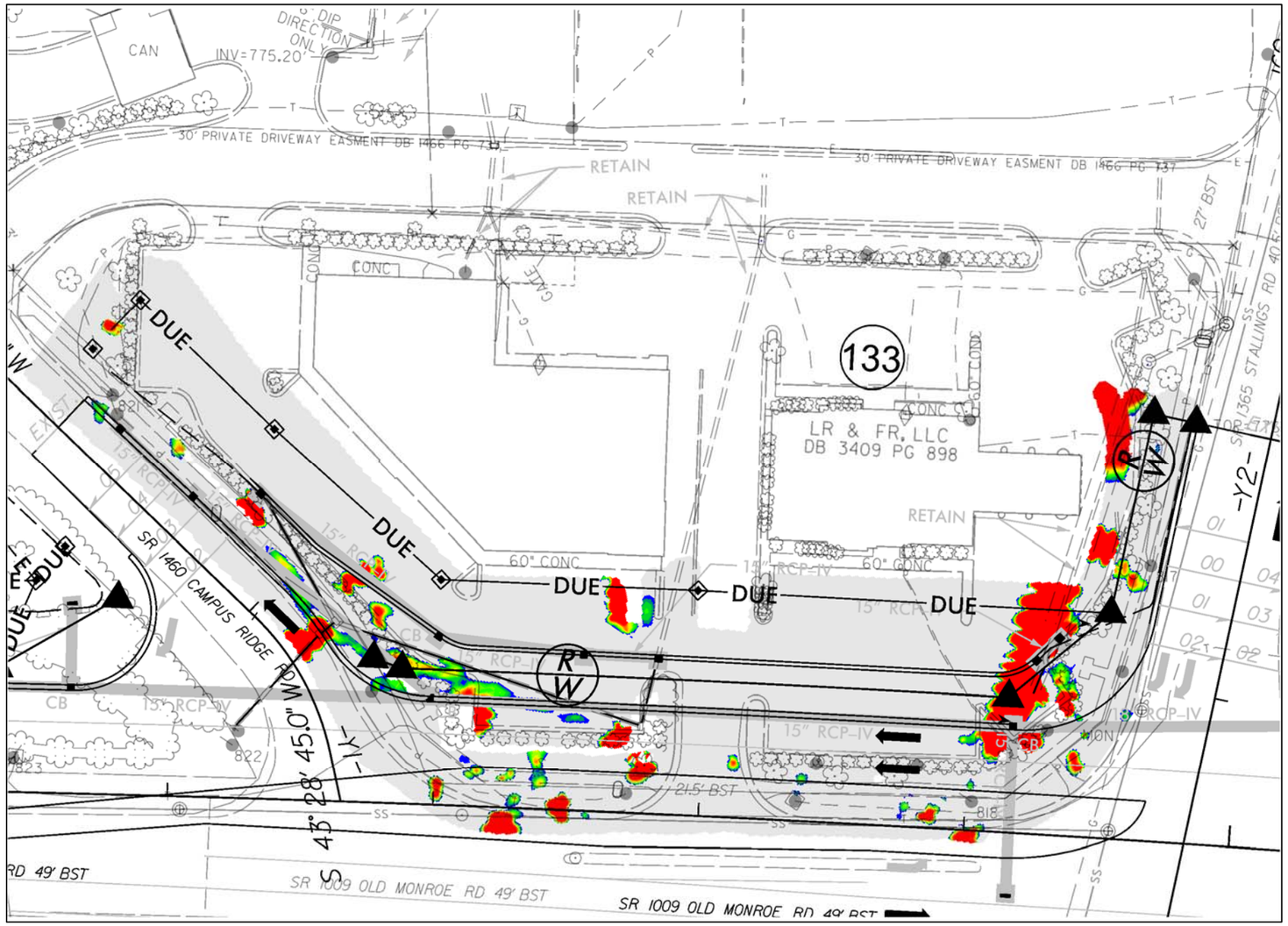
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

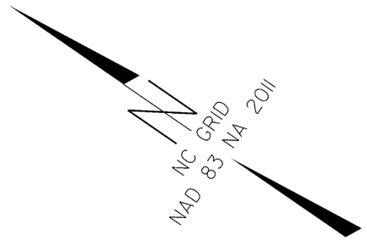
PROJECT NO.	GR22.321
SCALE	AS SHOWN
DATE	2/10/2020
BY	CRP/EDB

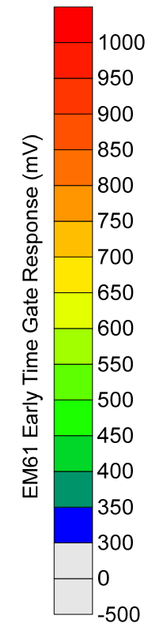
FIGURE 4 – PARCEL 133, LR & FR, LLC
EM61 DIFFERENTIAL DATA

NCDOT PROJECT U-4714AC
SR 1009, SR 3448/SR 3474 TO SR 1377
MECKLENBURG COUNTY, NORTH CAROLINA

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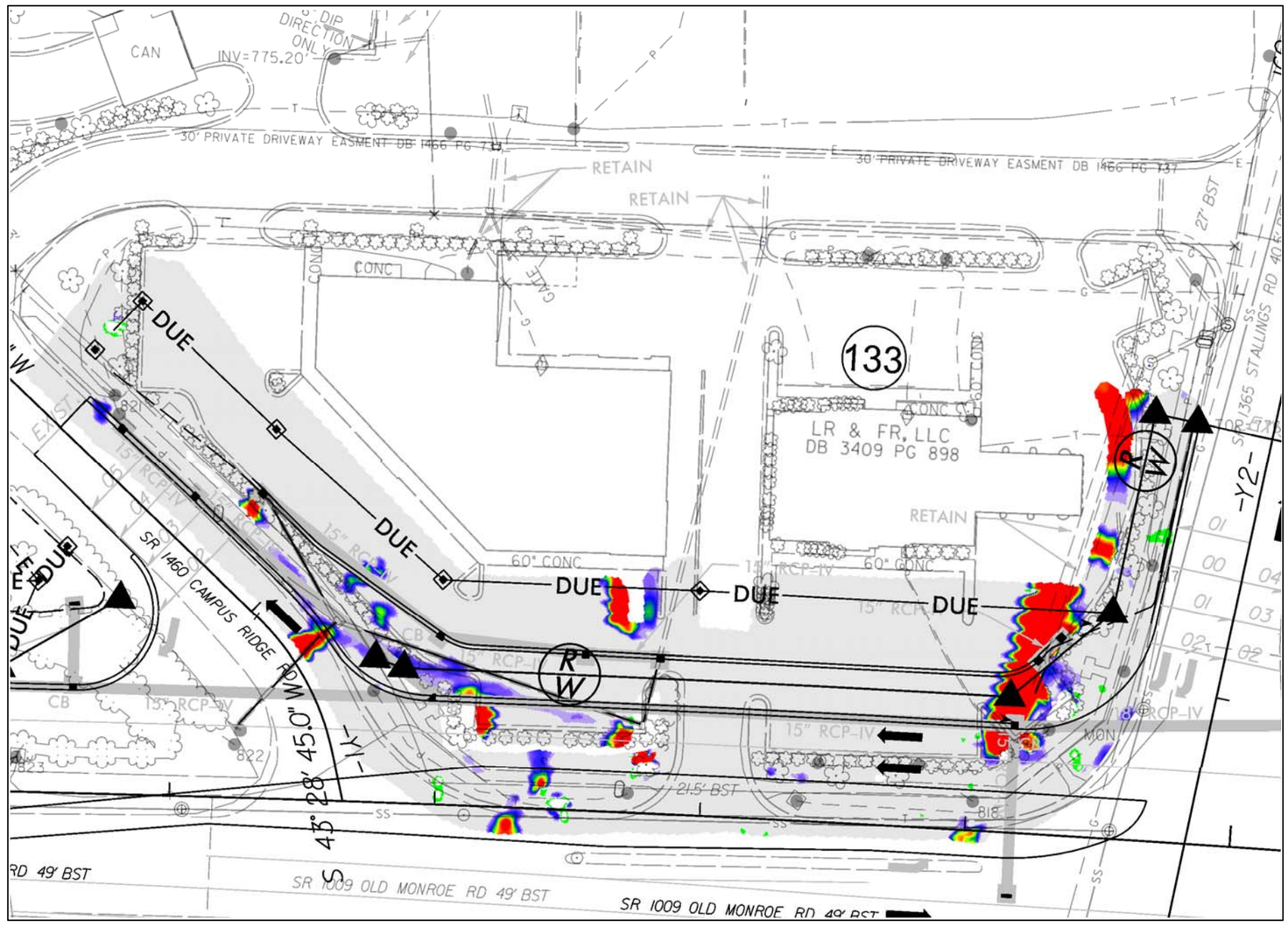


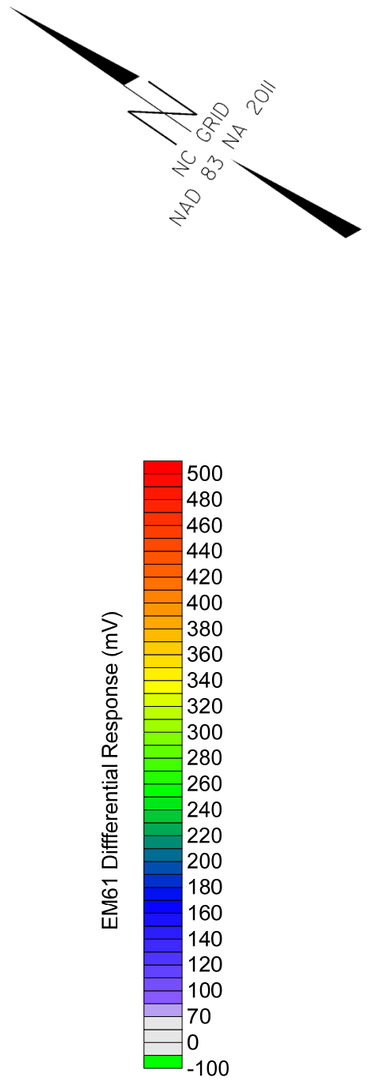
- U4714AC_Geo_env.dgn
  - U4714A_ncdot_fs.dgn
  - U4714_NAT_WEX.dgn
  - U-4714A_Hyd_DRN.dgn
  - U-4714AC_Rdy_aln.dgn, Default
  - U-4714AC_Rdy_dsn.dgn, Default
  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

0 50 100
FEET

See Figure 9 for explanation of symbols and line types

PROJECT NO. GR22.321	***FIGURE 5 – PARCEL 133, LR & FR, LLC EM61 EARLY TIME GATE DATA ON PLAN SHEET***	ESP Associates, Inc. 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com
SCALE 1" = 50'		
DATE 2/10/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***	
BY CRP/EDB		





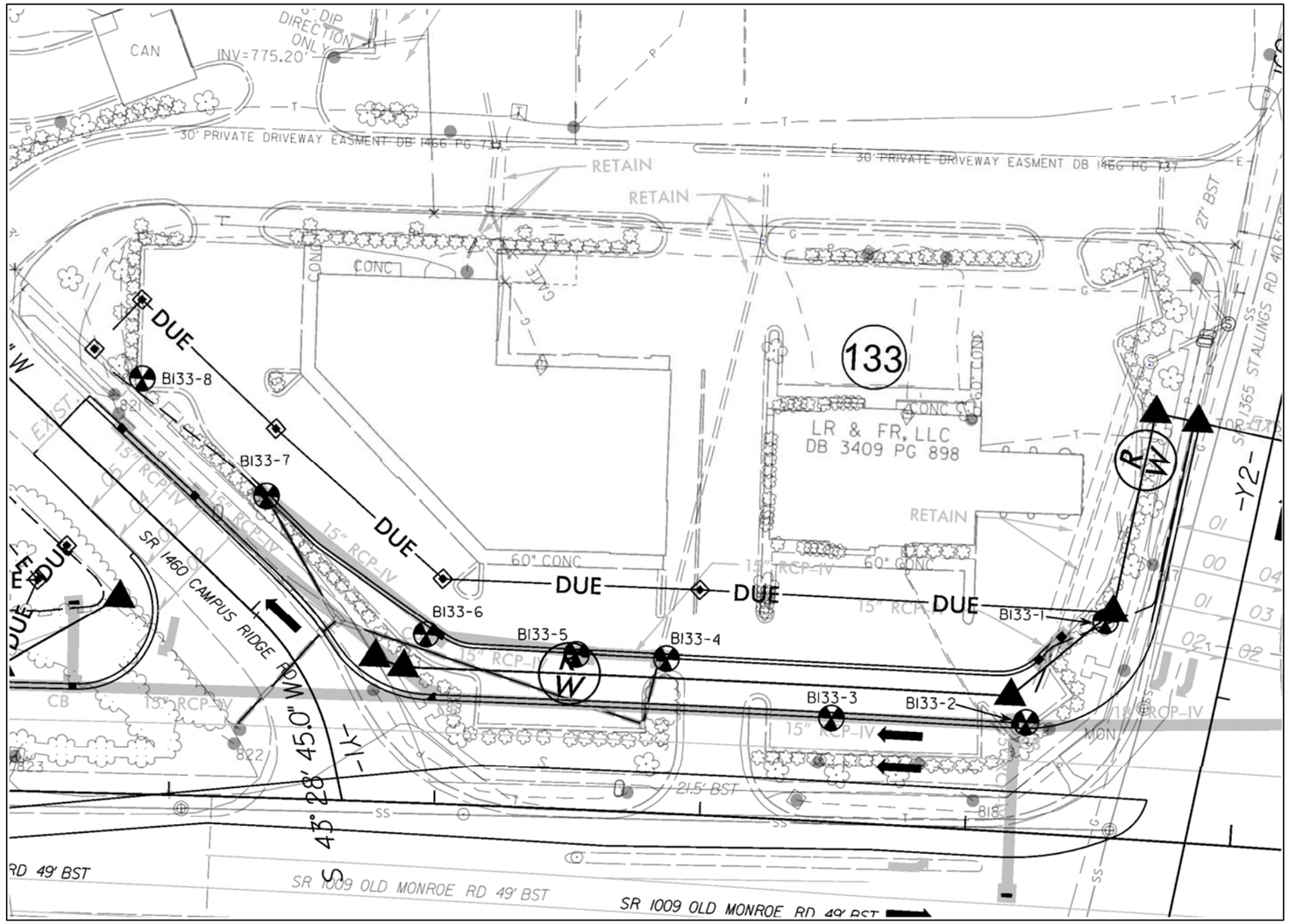
- U4714AC_Geo_env.dgn
  - U4714A_ncdot_fs.dgn
  - U4714_NAT_WEX.dgn
  - U-4714A_Hyd_DRN.dgn
  - U-4714AC_Rdy_aln.dgn, Default
  - U-4714AC_Rdy_dsn.dgn, Default
  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

0 50 100
FEET

See Figure 9 for explanation of symbols and line types

PROJECT NO. GR22.321	***FIGURE 6 – PARCEL 133, LR & FR, LLC EM61 DIFFERENTIAL DATA ON PLAN SHEET***
SCALE 1" = 50'	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***
DATE 2/10/2020	
BY CRP/EDB	

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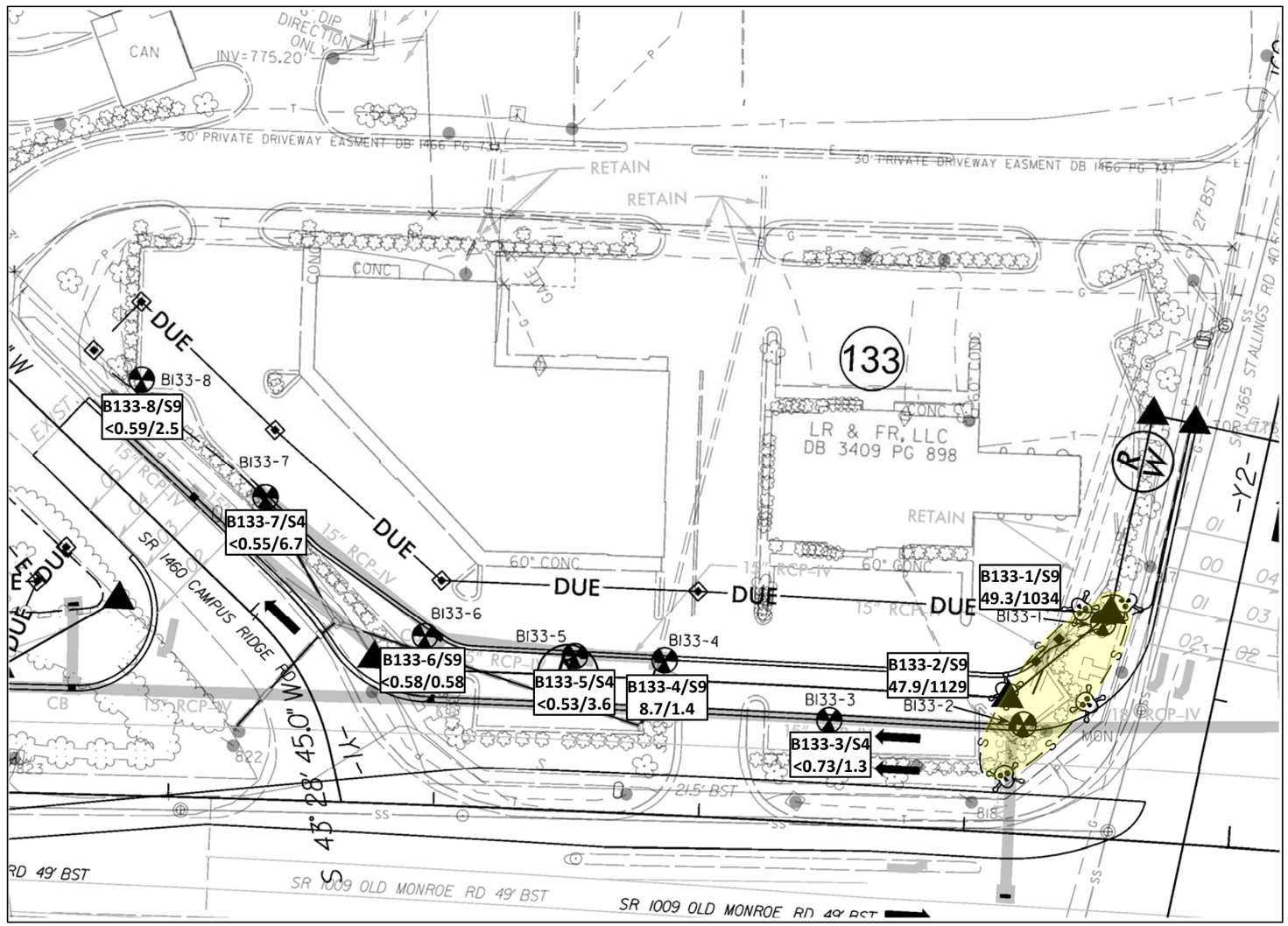
- U4714AC_Geo_env.dgn
  - U4714A_ncdot_fs.dgn
  - U4714_NAT_WEX.dgn
  - U-4714A_Hyd_DRN.dgn
  - U-4714AC_Rdy_aln.dgn, Default
  - U-4714AC_Rdy_dsn.dgn, Default
  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

0 50 100
FEET

See Figure 9 for explanation of symbols and line types

PROJECT NO. GR22.321	***FIGURE 7 – PARCEL 133, LR & FR, LLC BORING LOCATIONS ON PLAN SHEET***
SCALE 1" = 50'	
DATE 2/10/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***
BY CRP/EDB	

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NC GRID
NAD 83 NA 2011

Explanation

Maximum Analytical Results per Boring

B133-1/S9
49.3/1034

Boring No./Sample No.
GRO/DRO (mg/kg, ppm)

- U4714AC_Geo_env.dgn
  - U4714A_ncdot_fs.dgn
  - U4714_NAT_WEX.dgn
  - U-4714A_Hyd_DRN.dgn
  - U-4714AC_Rdy_aln.dgn, Default
  - U-4714AC_Rdy_dsn.dgn, Default
  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

0 50 100
FEET

See Figure 9 for explanation of symbols and line types

PROJECT NO. GR22.321	***FIGURE 8 – PARCEL 133, LR & FR, LLC SOIL ANALYTICAL RESULTS ON PLAN SHEET***
SCALE 1" = 50'	
DATE 2/10/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***
BY CRP/EDB	

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.

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 — EIP
- Computed Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- 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 — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — Flow
- False Sump

RAILROADS:
- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:
- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:
- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- 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 — Vineyard

EXISTING STRUCTURES:
MAJOR:
- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:
- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

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

TELEPHONE:
- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

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

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

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

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

MISCELLANEOUS:
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — W/S
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- 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. GR22.321	**FIGURE 9**
SCALE N/A	**LEGEND FOR PLAN SHEET FIGURES**
DATE 2/10/2020	**NCDOT PROJECT U-4714AC**
BY CRP/EDB	**SR 1009, SR 3448/SR 3474 TO SR 1377**
	MECKLENBURG COUNTY, NORTH CAROLINA

ESP Associates, Inc.
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Greensboro, NC 27409
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APPENDIX A
SOIL BORING LOGS

FIELD BORING LOG

BORING NO. B133-1

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: Southeast edge of parcel
TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 777.2'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' -0.7' Topsoil and Gravel	Core 1 Rec 4.0'/4.0'
				0.7' -1.7' Sand, Brown, Moist	
1	S-1	1.0-1.5	0.4		
2	S-2	2.0-2.5	0.2	1.7' - 10.0' Silty and Sandy Clay, Orange-Brown to Red, Moist to Dry	
3	S-3	3.0-3.5	0.1		
4	S-4	4.0-4.5	0.7		
					Core 2 Rec 3.7'/4.0'
5	S-5	5.0-5.5	0.4		
6	S-6	6.0-6.5	0.2		
7	S-7	7.0-7.5	0.3		
8	S-8	8.0-8.5	11.5		
					Core 3 Rec 2.0'/2.0'
					Petroleum odor in Core 3
9	S-9	9.0-9.5	43.2		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B133-2

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: South corner of parcel, near intersection of Old Monroe Rd. and Stallings Rd.
TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 777.1'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 1.1' Asphalt and Gravel	Core 1 Rec 3.1'/4.0'
1	S-1	1.0-1.5	7.0	1.1' - 10.0' Silty Clay with Layers of Clayey Sand, Orange-Brown to Red and Gray, Moist to Dry	
2	S-2	2.0-2.5	10.0		
3	S-3	3.0-3.5	17.2		
4	S-4	4.0-4.5	45.9		
					Core 2 Rec 3.8'/4.0'
5	S-5	5.0-5.5	143.3		
6	S-6	6.0-6.5	52.2		
7	S-7	7.0-7.5	33.8		
8	S-8	8.0-8.5	24.8		
					Core 3 Rec 2.0'/2.0'
					Petroleum odor in Core 3
9	S-9	9.0-9.5	43.8		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B133-3

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321

LOCATION: Approx. middle of south half of parcel

TYPE OF BORING	Direct Push	DATE STARTED:	1/2/20	SHEET:	1 of 1
DRILLING FIRM:	SAEDACCO	DATE FINISHED:	1/2/20	TOTAL DEPTH:	10.0 ft
DRILLER:	John Goff	SAMPLE METHOD:	4' Macrocore	DEPTH TO GW:	N/A ft
DRILL RIG:	Geoprobe 54DT	LOGGED BY:	R. Pastrana	COMMENT:	Approx. Elev: 777.6'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.7' Asphalt and Gravel	Core 1 Rec 3.5'/4.0'
1	S-1	1.0-1.5	0.5	0.7' - 10.0' Silty Clay with Layers of Clayey Sand, Orange-Brown to Red and Gray, Moist	
2	S-2	2.0-2.5	0.4		
3	S-3	3.0-3.5	0.6		
4	S-4	4.0-4.5	0.4		
					Core 2 Rec 3.7'/4.0'
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	0.4		
8	S-8	8.0-8.5	0.3		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.3		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B133-4

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: North side of entrance
TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 778.1'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.8' Asphalt and Gravel	Core 1 Rec 2.4'/4.0'
1	S-1	1.0-1.5	0.9	0.8' - 1.6' Clay, Gray, Moist	
				1.6' - 10.0' Clayey Sand, Brown, Moist to Dry	
2	S-2	2.0-2.5	0.8		
3	no sample				
4	S-4	4.0-4.5	0.6		
					Core 2 Rec 3.7'/4.0'
5	S-5	5.0-5.5	0.9	4.8' grading to Tan-Brown	
6	S-6	6.0-6.5	0.7		
7	S-7	7.0-7.5	0.5		
8	S-8	8.0-8.5	0.7	8.0' grading to Gray	
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	1.1		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B133-5

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: West of former dry cleaners
TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 778.1'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.9' Asphalt and Gravel	Core 1 Rec 3.6'/4.0'
1	S-1	1.0-1.5	0.5	0.9' - 4.0' Silty Clay with Clayey Sand Layers, Orange-Brown to Red and Gray, Moist	
2	S-2	2.0-2.5	0.4		
3	S-3	3.0-3.5	0.7		
4	S-4	4.0-4.5	0.4	4.0' - 10.0' Clayey Sand, Dark Gray, Saturated to Moist	
					Core 2 Rec 3.8'/4.0'
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	0.7	7.0' grading to Dry	
8	S-8	8.0-8.5	0.8		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.5		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B133-6

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: Near intersection of Old Monroe Rd. and Campus Ridge Rd.
TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 778.3'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 1.0' Asphalt and Gravel	Core 1 Rec 2.0'/4.0'
1	S-1	1.0-1.5	0.7	1.0' - 3.6' Silty Clay with little Gravel, Red-Brown to Brown, Moist	
2	S-2	2.0-2.5	1.1		
3	no sample				
				3.6' - 5.0' Gravel	Gravel may be from
4	no sample				utility trench
					Core 2 Rec 2.9'/4.0'
5	S-5	5.0-5.5	1.2	5.0' - 10.0' Clayey Sand, Dark Gray to Gray, Wet to Moist	Possible perched water
6	S-6	6.0-6.5	0.8		
7	S-7	7.0-7.5	1.6		
				7.8' grading to Dry	
8	S-8	8.0-8.5	1.4		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	1.2		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B133-7

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: Northwest side of parcel by N. end of building
TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 777.7'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.7' Asphalt and Gravel	Core 1 Rec 3.6'/4.0'
1	S-1	1.0-1.5	0.7	0.7' - 5.2' Clayey Sand, Brown to Dark Gray, Moist to Wet	
2	S-2	2.0-2.5	0.6		
3	S-3	3.0-3.5	0.9		
4	S-4	4.0-4.5	0.6		
					Core 2 Rec 3.6'/4.0'
5	S-5	5.0-5.5	0.5		
				5.2' - 10.0' Clayey Silt, Orange-Brown to Red and White, Moist to Dry	
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	0.5	8.0' grading to Tan, Dry	
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.6		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B133-8

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: North end of parcel
TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 778.7'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.6' Asphalt and Gravel	Core 1 Rec 3.8'/4.0'
				0.6' - 1.9' Silty Clay, Orange-Brown to Tan, Moist	
1	S-1	1.0-1.5	0.3		
2	S-2	2.0-2.5	0.4	1.9' - 10.0' Clayey Sand with Layers of Silty Clay, Orange-Brown to Tan, Dry	
3	S-3	3.0-3.5	0.3		
4	S-4	4.0-4.5	0.5		
					Core 2 Rec 4.0'/4.0'
5	S-5	5.0-5.5	0.4		
6	S-6	6.0-6.5	0.4		
7	S-7	7.0-7.5	1.0		
8	S-8	8.0-8.5	0.8		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.7		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

APPENDIX B

RED LAB LABORATORY TESTING REPORT

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: ESP
Address: ON FILE

Samples taken Thursday, January 2, 2020
Samples extracted Thursday, January 2, 2020
Samples analysed Tuesday, January 7, 2020

Contact: NED BILLINGTON

Operator HARRY WOOTEN

Project: GR22.321

F03640

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	B133-1 S-9	624.0	<15.6	49.3	1034	1083	427.2	16	<0.62	52.6	44.2	3.2	Deg.Diesel 83.5%,(FCM)
s	B133-2 , S-4	423.0	<10.6	<10.6	513.9	513.9	199.4	7.8	<0.42	0	92.6	7.4	Deg.Diesel 83.9%,(FCM)
s	B133-2 , S9	403.0	<10.1	47.9	1129	1177	389.3	15.1	<0.4	48.9	49.6	1.5	Deg.Diesel 77.8%,(FCM)
s	B133-3 , S4	29.1	<0.73	<0.73	1.3	1.3	0.38	<0.23	<0.029	0	81.8	18.2	Deg Fuel 93%,(FCM)
s	B133-4 , S9	21.6	1.3	8.7	1.4	10.1	1.2	<0.17	<0.022	92.2	6.7	1.1	No Match found
s	B133-5 , S4	21.3	<0.53	<0.53	3.6	3.6	1.7	<0.17	<0.021	0	51.9	48.1	Deg.PHC 43.9%,(FCM),(BO)
s	B133-6 , S9	23.0	<0.58	<0.58	0.58	0.58	0.34	<0.18	<0.023	0	75.7	24.3	Road Tar 63.8%,(FCM)
s	B133-7 , S4	22.1	<0.55	<0.55	6.7	6.7	3.5	<0.18	<0.022	0	87.1	12.9	Deg Fuel 90.5%,(FCM)
s	B133-8 , S9	23.5	<0.59	<0.59	2.5	2.5	0.33	<0.19	<0.024	0	100	0	Deg.Diesel 42.3%,(FCM),(P)

Initial Calibrator QC check OK Final FCM QC Check OK 95.1 %

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

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

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

This is an abbreviated report, using data acquired from a GC-FID instrument at the University of North Carolina at Wilmington, who were not involved with analysis. A 30m Restek RXi-5Sil-MS column was used in this analysis.

Component failure in FROG 4000 instrument necessitated the use of University resources. The FROG 4000 instrument has been returned to the manufacturer for diagnosis, and will be ready to analyze samples pending manufacturer-recommended repair, expected 21 January 2020.

Standard mixes were prepared at 5, 10, 100 and 500 ppb. The resulting peaks were used to *qualitatively* identify the presence or absence of chlorinated solvent in the sample. Because of the low detector response at standard concentrations, no quantitative value is assigned these results aside from that they are "expected to contain greater than 10 ppb of [chlorinated solvent]."

Vinyl Chloride	NOT VISIBLE
1,1-Dichloroethylene (1,1- DCE)	Visible
cis-Dichloroethylene (cis-DCE)	Visible
trans-Dichloroethylene (trans-DCE)	Visible
Trichloroethylene (TCE)	Visible
Perchloroethylene (PCE)	Visible

B133-4 , S4	cis-,trans- DCE , TCE, PCE
B133-4 , S9	All Visible Chlorinates Present
B133-5 , S4	All Visible Chlorinates Present
B133-6 , S5	1,1- DCE, trans- DCE, TCE,PCE
B133-5 , S9	All Visible Chlorinates Present

APPENDIX C
CHAIN-OF-CUSTODY FORM

Client Name:	ESP
Address:	ON FILE
Contact:	NED BILLINGTON
Project Ref.:	GR22.321
Email:	ON FILE
Phone #:	336-420-5452
Collected by:	R. PASTRANA

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

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

Each UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

Sample Collection	TAT Requested		Analysis Type						
Date/Time	24 Hour	48 Hour	UVF	GC	Initials	Sample ID (← THESE ARE LETTER "S")	Total Wt.	Tare Wt.	Sample Wt
1/2/20		—	—		CRP	B133-1, S-9	56.9	48.7	8.2
1/2/20		—	—		CRP	B133-2, S-4	56.7	44.6	12.1
1/2/20		—	—		CRP	B133-2, S9	56.8	44.1	12.7
1/2/20		—	—		CRP	B133-3, S4	55.6	44.6	11.0
1/2/20		—	—		CRP	B133-4, S9	58.6	43.8	14.8
1/2/20		—	—		CRP	B133-5, S4	59.0	44.0	15.0
1/2/20		—	—		CRP	B133-6, S9	57.9	44.0	13.9
1/2/20		—	—		CRP	B133-7, S4	59.9	45.4	14.5
1/2/20		—	—		CRP	B133-8, S9	59.1	45.5	13.6

COMMENTS/REQUESTS:
REPORT BLACKFIELD SAMPLES SEPERATELY

TARGET GC/UVF ANALYTES:

Relinquished by		Accepted by	Date/Time
Relinquished by		Accepted by	Date/Time
		CCS	1/7/20 9:00

RED Lab USE ONLY
9
Ref. No

February 27, 2020

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

RE: PHASE II INVESTIGATION OF PARCEL 134
Vacant Lot, Timothy Duckworth, et al
Approx. 2801 Old Monroe Rd./124 Stallings Rd., Stallings, NC
ESP Project No. GR22.321

TIP Number:	U-4714AC
WBS Number:	39078.1.8
County:	MECKLENBURG
Description:	SR 1009 (John Street/Old Monroe Road), SR 3448/SR3474 (Trade Street) to SR 1377 (Wesley Chapel-Stouts Road)

Dear Mr. Box:

ESP Associates, Inc. (ESP) is pleased to submit this report on our GeoEnvironmental Phase II Investigation of the subject parcel. This work was performed in accordance with your Request for Proposal dated September 23, 2019 and our Cost Proposal dated October 31, 2019.

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

Sincerely,

ESP Associates, Inc.

Edward D. Billington, PG
Senior Geologist/Geophysicist
EDB/NAZ

DocuSigned by:
Ed Billington
7402544DC92F4E0...

NORTH CAROLINA LICENSED SEAL 1631 GEOLOGIST EDWARD DAVIS BILLINGTON

not considered Final unless all signatures are completed

ESP Associates, Inc.
7011 Albert Pick Road, Suite E, Greensboro, NC 27409
1.800.960.7317 · NC: 328.334.7724
www.espassociates.com

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APPENDICES

Appendix A Soil Boring Logs
Appendix B RED Lab Laboratory Testing Reports
Appendix C Chain-of-Custody Form
Appendix D Relevant NCDEQ Information

1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is planning to widen East John Street-Old Monroe Road from Trade Street (S.R. 3448/S.R. 3474) to Wesley Chapel-Stouts Road (S.R. 1377) in the Towns of Matthews, Stallings, and Indian Trail. The project is about 6.5 miles long. The NCDOT requested that ESP Associates, Inc. (ESP) perform a Phase II geoenvironmental investigation of the proposed right-of-way (ROW), proposed permanent utility easement (PUE), and the proposed construction easement (E) of Parcel 134 to locate possible underground storage tanks (USTs), sample soil, and delineate potential contaminated soil. Parcel 134 is located at approximately 2801 Old Monroe Rd., or 124 Stallings Rd., Stallings, on the southeast quadrant of the intersection of Old Monroe Rd. and Stallings Rd. (Figure 1).

2.0 HISTORY

2.1 Phase I Report

According to the 2014 Hazardous Materials Report (Phase I) prepared by the NCDOT, Parcel 134 is the location of a former gas station, currently a vacant lot, located north of SR 1009 (Old Monroe Rd.), east of Stallings Rd., and west of Parkview Way. Reportedly, two USTs were closed circa 1999. Petroleum soil and/or groundwater contamination was reported and may still be a concern. This site is anticipated to present low geoenvironmental impacts to the project.

2.2 NCDEQ Files

We checked the following online sources at the NCDEQ with the results summarized below:

- Division of Waste Management Site Locator Tool and Union County GIS
    - Property owner is listed as Timothy, Randall, John and Douglas Duckworth (4 brothers) on the Site Locator Tool and on the Union Co. GIS.
    - The site address is listed as approximately 2801 Old Monroe Rd. on the Site Locator Tool. No specific address is given in the Union Co. GIS (states Old Charlotte Hwy).
    - UST Incident #16196 is indicated with the site name of Stallings Exxon. The online files for this site range from 1996 to 2000. The gas station operated until some time in the 1990s.
        - The 11/28/1995 Limited Soil Quality Investigation letter report by a consultant, Resolve Environmental Services, PA (Resolve), indicates two soil samples from the vicinity of the USTs were tested using Method 5030 and found to contain 4900 and 9000 ppm gasoline range organics (GRO).
        - The 11/3/1997 Tank Closure letter report by Resolve indicates that 4 USTs were removed on 10/29/1997 and 10/30/1997, along with approximately 200 cubic yards (cy) of soil. The letter report includes a Figure 2 that indicates the location of the USTs and dispenser islands relative to the

building, and provides the analytical results of the closure samples (see Appendix D, this report). Petroleum contamination (by current standards) of both GRO and DRO was noted from one sample at the north side of the tank basin and in one sample from the northern dispenser island.

  - Nearby groundwater sampling indicated groundwater contamination, leading to abandonment of several water supply wells and connection to County water supply in 1999. Monitoring wells were installed and tested. Once it was established that the groundwater contamination did not exceed the Gross Contamination Levels (GCLs), a Notice of No Further Action was issued by NCDEQ on July 10, 2000.

- NC UST Facility Operating Permits
  - Not listed
- Incident Management Database (Regional Underground Storage Tanks)
  - Incident No. 16196
  - UST No. MO-4816
  - Release occurred 8/9/1996, was reported 8/21/1996, Notice of Violation (NOV) issued 10/18/1996, and was closed out on 7/10/2000.
  - Notes in the file state "unclosed UST's documented during compliance inspection 7.09.96. ESA report 1.14.97 documented soil contamination around tanks to 9000 ppm by 5030. 7.16.96 Duckworth WSW impacted by E 29 ppb. 11.18.96 McGuirt WSW found impacted. LSA indicated soil impact xylenes (110 ppm) > residential < commercial & GW b 5300. Notice that WSW's abandoned received 10.28.99. NFA 7.10.00 after GW below GCL's. Public notice received 7.28.00."
- Registered USTs Database
  - 4 USTs, 2 installed in 1982 and 2 in 1985.
  - The tanks installed in 1982 were 8000-gallons each and contained gasoline and diesel.
  - The tanks installed in 1985 were 4000 and 8000-gallons and contained gasoline.
  - Permanent Close Date by removal was 10/29/97.

3.0 SITE OBSERVATIONS

During our November/December 2019 and January 2020 field work, the site was a partially overgrown vacant lot. A slightly elevated concrete slab was present that was probably the former gas station location. Cut-off pipes indicated the location of the former pump islands. The ground in the study area was covered by grass, shrubs, asphalt pavement, and concrete pavement.

4.0 METHODS

ESP performed a geophysical study of the area designated by the NCDOT on November 19 and December 11, 2019. The geophysical investigation area was approximately 0.41 acres and encompassed the accessible area of the proposed ROW, proposed PUE, and proposed construction

easement. We performed direct-push drilling and sampling of subsurface soils on January 2, 2020. A photoionization detector (PID) was used to screen subsurface soils in the field and select soil samples to send for laboratory analysis. Groundwater was not encountered during the drilling investigation. Some possible perched water was indicated by moist to wet sandy soils in the upper 7 feet of the subsurface in two borings; underlying soils were moist to dry.

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 approximately three feet (Figures 3 and 4). Some areas were too heavily overgrown to collect geophysical data, primarily the east side of the site. Location control was provided in real-time using a differential global positioning system (DGPS). One EM61 response was noted near the southern end of the parcel that required additional evaluation with ground-penetrating radar (GPR) using our Noggin 250 GPR system. The remainder of the EM61 responses corresponded to known cultural features or relic utility pipes.

4.2 Borings

ESP performed direct-push drilling activities within the proposed ROW, proposed PUE, and proposed construction easement of Parcel 134 using a subcontractor, SAEDACCO of Fort Mill, South Carolina. Six borings were drilled, designated B134-1 through B134-6 (Figure 8). The soil borings were advanced using a GeoProbe 54DT drill rig. Soil samples were obtained to a depth of approximately 10 feet using three 4-foot long Macro-Core® tubes. Soil cores varied in recovery from 2.7 to 4.0 feet (67.5 to 100 percent recovery). 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 (core) tubes at approximate one-foot intervals by the ESP field geologist while wearing nitrile disposable gloves. A petroleum odor was observed in the samples from the 4.0 to 8.0-foot core in Boring B134-2, the 8.0 to 10.0-foot core in Boring B134-3, and in both the 4.0 to 8.0 core and the 8.0 to 10.0-foot core in Boring B134-4.

Each sample was placed in a sealed plastic bag and then kept in a warm area for approximately 10 to 15 minutes prior to measuring volatile organic compound (VOC) levels in the head space with the PID. The maximum PID readings per boring ranged from 0.7 to 392.5 parts per million (ppm) (Table 1). The highest PID readings were in the samples from Borings B134-2, B134-3, B134-4, and B134-5.

Eight soil samples were selected for UVF laboratory analysis, as listed in Table 2. For each selected sample, an approximate 10-gram soil sample was collected from the sample bag 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 6 borings.

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 late time gate response reduces the effect of shallow anomalies and emphasizes anomalies from larger and more deeply buried metallic objects, such as USTs (Figure 4). Our evaluation indicated one EM61 anomaly that could not be attributed to known cultural features.

We collected GPR data over the EM61 anomaly near the southern end of the parcel. The results of the GPR imaging indicate that the response is from a probable UST (Figure 5). Based on the GPR images, the probable UST is approximately 8 feet diameter by 15 feet long, and buried approximately 4 feet below the ground surface.

The EM61 early time gate response and differential response are shown on the plan sheet on Figures 6 and 7, 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 also 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 indicate that BTEX was above the laboratory detection limits for one of the 8 samples tested with a reading of 9.4 ppm (Table 2). GRO was detected in 4 samples with values ranging from 12.6 to 181.8 ppm with one reading above the NCDEQ action level of 50 ppm for GRO. DRO was detected in 4 samples with values ranging from 40.4 to 744.9 with two of the readings above the NCDEQ action level of 100 ppm for DRO. PAHs were detected in

4 samples with readings ranging from 0.76 to 29.2 ppm. The GRO and DRO values above the NCDEQ action levels were from Borings B134-2 and B134-4.

6.0 CONCLUSIONS

6.1 Interpretation of Results

The results of the Phase II investigation for Parcel 134 of NCDOT Project U-4714AC indicates that there is a probable abandoned UST within the proposed ROW. Laboratory testing detected petroleum compounds in 4 soil samples tested with 2 samples testing above the action level of 50 ppm for GRO and/or 100 ppm for DRO (B134-2, S4 and B134-4, S8). Based on the PID readings and analytical results, the contamination appears to extend from the probable UST near the southern end of the parcel to the north end of the parcel by Stallings Rd (Figure 9).

6.2 Geophysics

The geophysical data indicated the presence of an abandoned UST within the proposed ROW near the southern end of the parcel. The probable UST is approximately 8 feet diameter by 15 feet long and is buried approximately 4 feet below the ground surface. The approximate size of the UST indicates a tank volume of approximately 5600 gallons.

6.3 Soil

Petroleum hydrocarbon compounds were detected in 4 of the 8 samples tested and 2 of these samples exceeded the NCDEQ action levels of 50 ppm for GRO and/or 100 ppm for DRO. The sample from Boring B134-2 located on the east side of the probable UST at a depth of 4.0 to 4.5 feet bgs had a GRO reading of 181.8 ppm and a DRO reading of 744.9 ppm. The sample from Boring B134-4 located near the former northern pump island at a depth of 8.0 to 8.5 feet bgs had a DRO reading of 280.8 ppm.

6.4 Estimated Quantities

Based on the laboratory results and PID readings, the petroleum contamination appears to extend from Boring B134-2 at a depth of approximately 4.0 to 10.0 feet bgs, to Boring B134-3 at a depth of approximately 8.0 to 10.0 feet bgs, to Boring B134-4 at a depth of approximately 6.0 to 10.0 feet bgs, to Boring B134-5 at a depth of approximately 8.0 to 10.0 feet bgs. Using an average contaminated soil thickness of 3.5 feet and an area of 6679 square feet, the volume of contaminated soil above 10 feet bgs and within the proposed ROW, proposed PUE, and the proposed construction easement is estimated as follows:

Total Estimated Volume of Contaminated Soil above 10 feet depth bgs
6679 square feet * 3.5 feet = 23,377 cubic feet = 866 cubic yards

Based on the hydraulic design, 2 reinforced concrete pipes (RCP) and one catch basin will be installed in the area of contaminated soil. Assuming excavations to one foot below the listed invert and an excavation width of 6 feet, and using the approximate current elevations of the borings, we estimated the amount of contaminated soil to be removed during construction as follows:

1) East-west pipe intersecting at Boring B134-4
    a. Catch basin invert 771.3 feet
    b. Boring elevation approx. 775.6 feet
    c. Contamination encountered at 6 feet bgs
    d. Excavation depth approximately 5.3 feet bgs, contaminated soil likely not encountered.
2) North-south pipe across area of contamination
    a. Catch basin inverts 766.8 to 771.3 feet, average 769.1 feet
    b. Average boring elevation 775.1 feet
    c. Contamination encountered at 4 to 8 feet bgs, average 6 feet bgs
    d. Average excavation depth approximately 7 feet, assume an average of one foot of contaminated soil encountered
    e. 175 feet length * 1.0 feet depth * 6 feet wide = 1050 cubic feet.

Assuming 100 pounds per cubic foot, the estimated amount of contaminated soil to be removed for construction is approximately 53 tons.

7.0 RECOMMENDATIONS

ESP recommends that soil removed from the site as part of NCDOT construction activities be screened for petroleum hydrocarbon contamination, properly handled, segregated, and disposed of in accordance with NCDEQ regulations.

The probable UST identified near the southern end of the parcel should be permanently closed by excavation as per NCDEQ guidelines.

Groundwater was not encountered in the upper 10 feet in the study area. However, if groundwater is encountered during construction, it may be contaminated and should be screened for petroleum hydrocarbon contamination, properly handled, segregated, and disposed of in accordance with NCDEQ regulations.

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

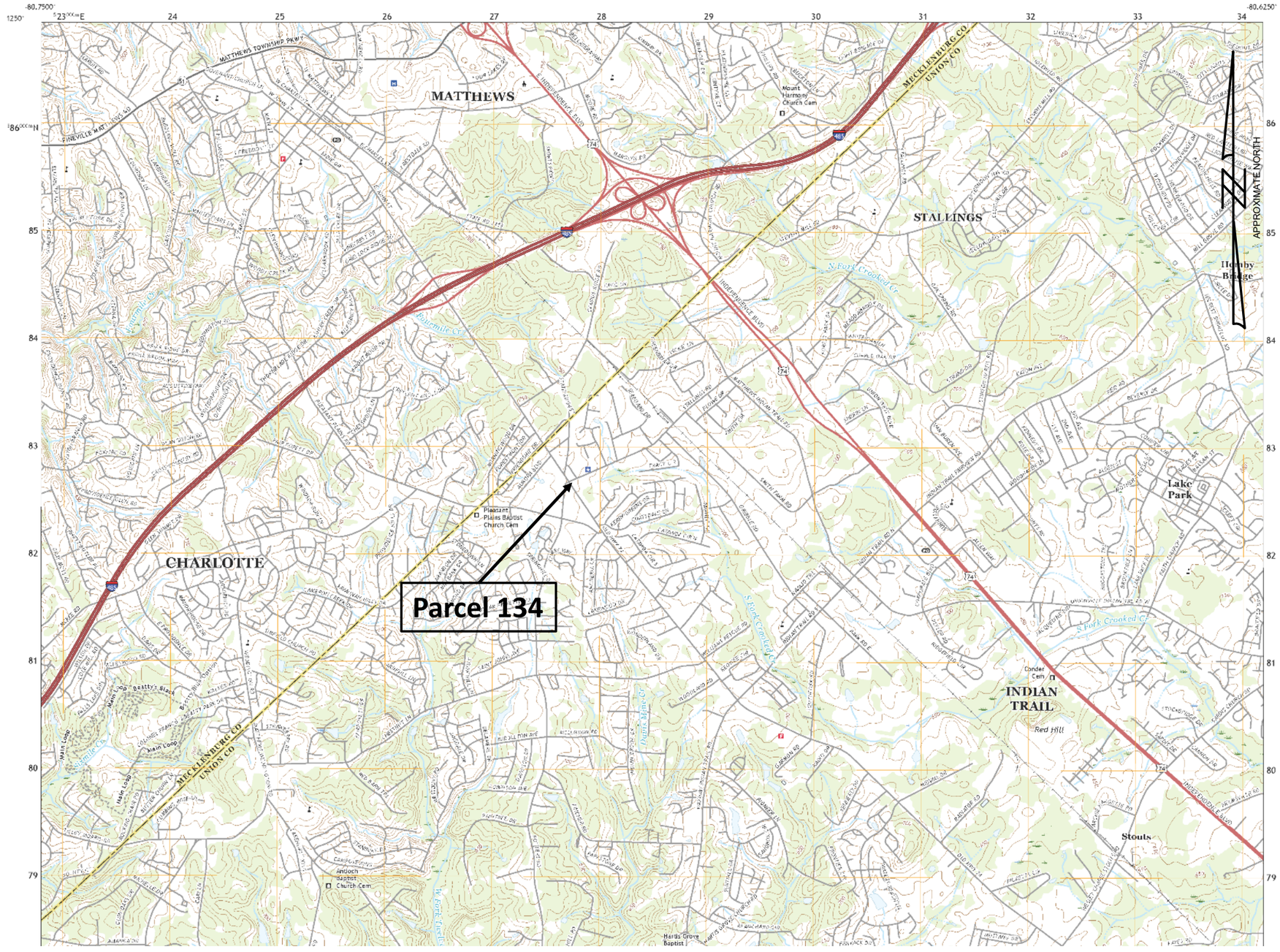
TABLE 1
SOIL SAMPLE PID READINGS

Boring	Sample Depth Range with PID > 10 ppm (feet bgs)	Maximum PID Reading (ppm) and Sample Depth (feet bgs)
B134-1	none	0.7 (1.0-1.5, 9.0-9.5)
B134-2	4.0-10.0	217.0 (4.0-4.5)
B134-3	8.0-10.0	392.5 (9.0-9.5)
B134-4	6.0-10.0	283.3 (8.0-8.5)
B134-5	8.0-10.0	246.7 (8.0-8.5)
B134-6	none	0.8 (8.0-8.5)

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)
B134-1	S9 (9.0-9.5)	1/2/20	<0.27	<0.27	<0.27	<0.08
B134-2	S4 (4.0-4.5)	1/2/20	<6.6	181.8	744.9	29.2
B134-2	S9 (9.0-9.5)	1/2/20	9.4	21.7	40.4	0.76
B134-3	S8 (8.0-8.5)	1/2/20	<0.5	12.6	55.1	1.7
B134-4	S8 (8.0-8.5)	1/2/20	<0.51	34.1	280.8	0.97
B134-5	S4 (4.0-4.5)	1/2/20	<0.46	<0.46	<0.46	<0.15
B134-5	S8 (8.0-8.5)	1/2/20	<0.5	<0.5	<0.5	<0.16
B134-6	S8 (8.0-8.5)	1/2/20	<0.51	<0.51	<0.51	<0.16

FIGURES



From: USGS US Topo 7.5 - minute map for MATTHEWS QUADRANGLE, NC, Date: 2019, Original Scale: 1:24,000

PROJECT NO. GR22.321	***FIGURE 1 – PARCEL 134, T. DUCKWORTH, ET AL SITE VICINITY MAP***	ESP Associates, Inc. 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com
SCALE AS SHOWN		
DATE 2/10/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***	
BY CRP/EDB		



A. Photograph from south end of parcel, looking north.



B. Photograph from north end of parcel, looking south.

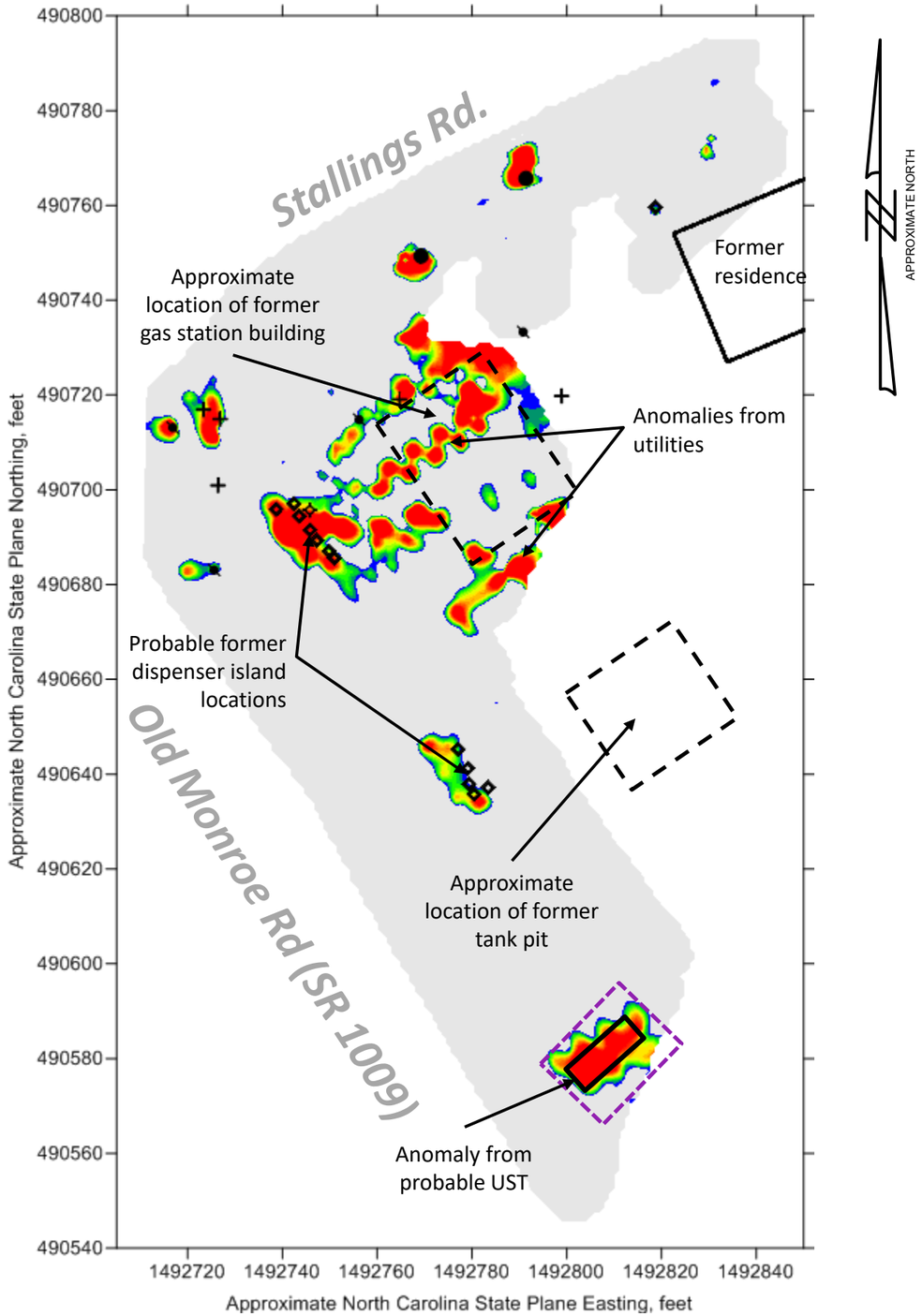


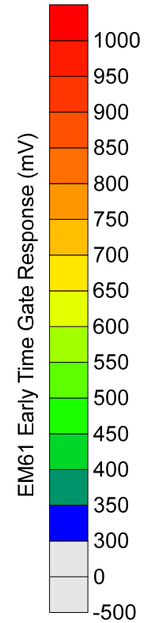
C. Photograph from north end of parcel, looking east.



D. Photograph of marked location of probable UST at the south end of parcel, looking northeast.

PROJECT NO. GR22.321	***FIGURE 2 – PARCEL 134, T. DUCKWORTH, ET AL SITE PHOTOGRAPHS***	ESP Associates, Inc.
SCALE N/A		7011 Albert Pick Rd., Suite E Greensboro, NC 27409
DATE 2/10/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***	336.334.7724
BY CRP/EDB		www.espassociates.com





EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Drop Inlet, Catch Basin, Manhole
- Culvert, storm drain pipe
- Utility pole
- Guy wire anchor
- Sign pole, other pole
- UST Fill Port or Valve Cover
- Monitoring Well
- Buried utility line (marked by others)
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Underground Storage Tank

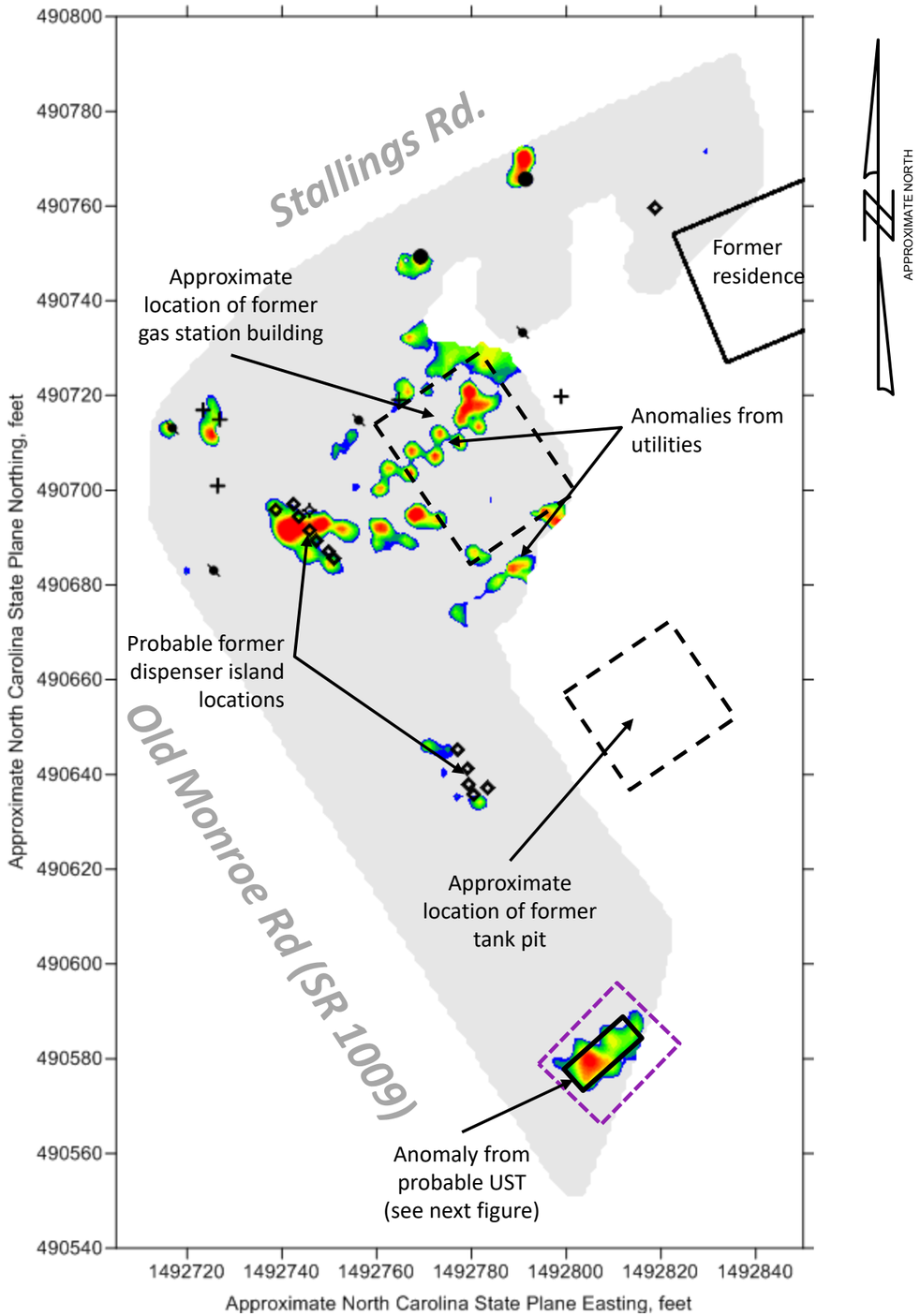
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

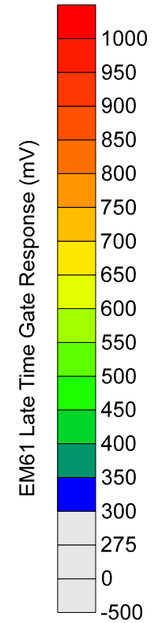
PROJECT NO.	GR22.321
SCALE	AS SHOWN
DATE	2/10/2020
BY	CRP/EDB

FIGURE 3 – PARCEL 134, T. DUCKWORTH, ET AL
EM61 EARLY TIME GATE DATA

NCDOT PROJECT U-4714AC
SR 1009, SR 3448/SR 3474 TO SR 1377
MECKLENBURG COUNTY, NORTH CAROLINA

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Greensboro, NC 27409
336.334.7724
www.espassociates.com





EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
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- Sign pole, other pole
- UST Fill Port or Valve Cover
- Monitoring Well
- Buried utility line (marked by others)
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Underground Storage Tank

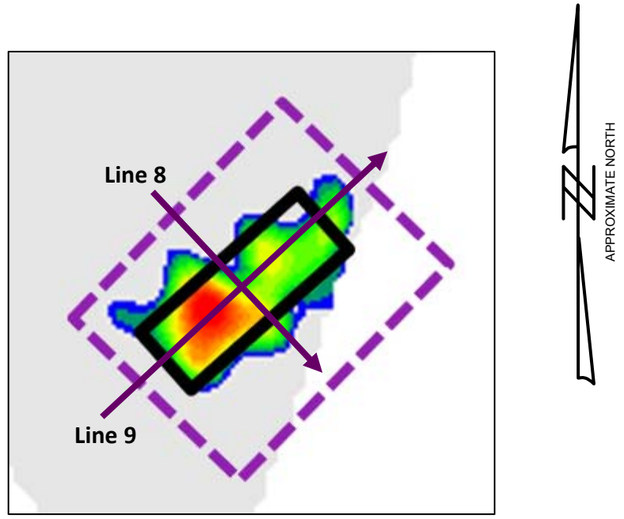
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP makes no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	GR22.321
SCALE	AS SHOWN
DATE	2/10/2020
BY	CRP/EDB

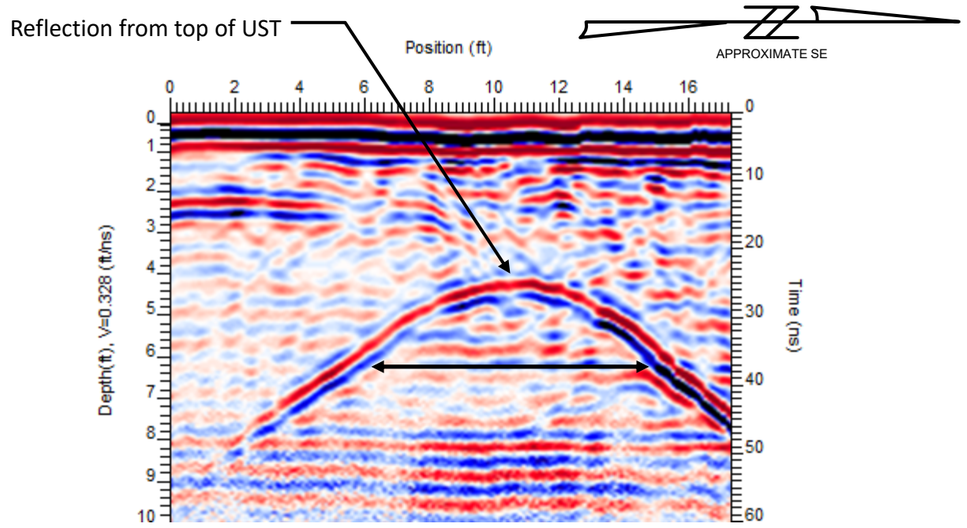
FIGURE 4 – PARCEL 134, T. DUCKWORTH, ET AL
EM61 LATE TIME GATE DATA

NCDOT PROJECT U-4714AC
SR 1009, SR 3448/SR 3474 TO SR 1377
MECKLENBURG COUNTY, NORTH CAROLINA

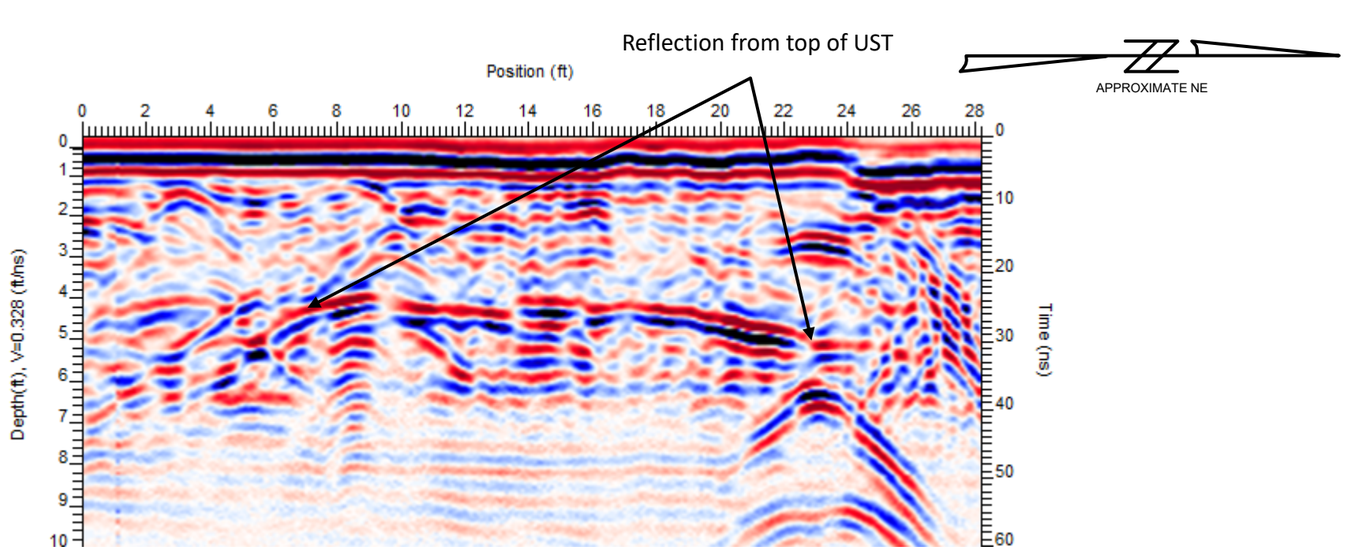
ESP Associates, Inc.
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A. Approximate location of GPR lines over probable UST.



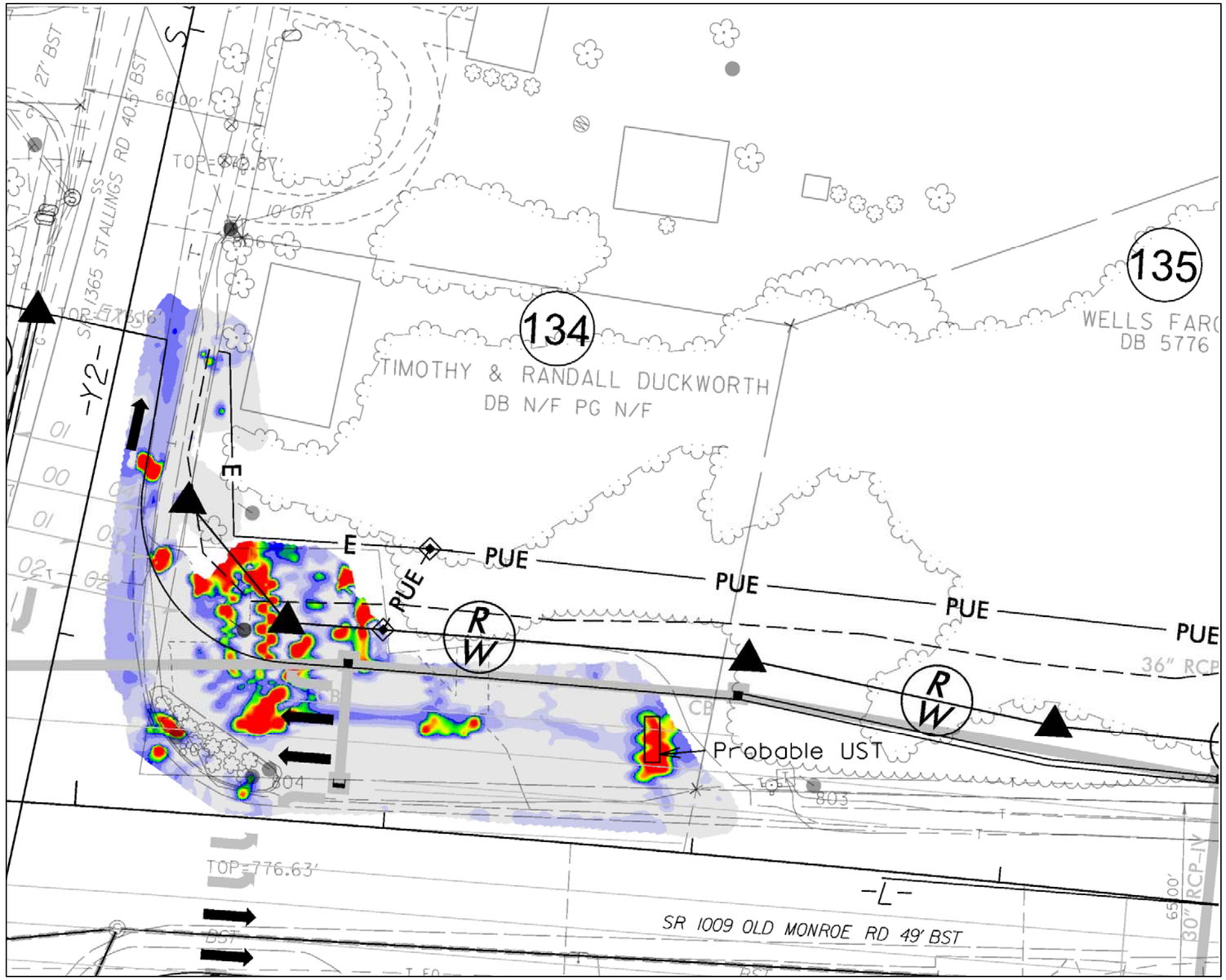
B. GPR Line 8 over short axis of probable UST, indicating an approximate diameter of 8 feet.

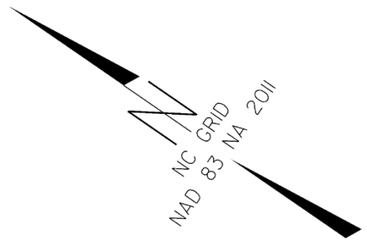


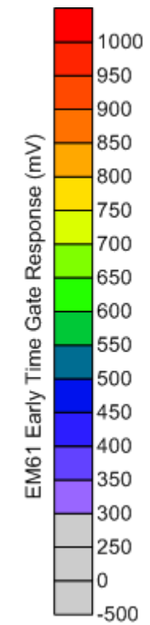
C. GPR Line 9 over long axis of probable UST, indicating an approximate length of 15 feet.

PROJECT NO. GR22.321	***FIGURE 5 – PARCEL 134, T. DUCKWORTH, ET AL GPR IMAGES OF PROBABLE UST***
SCALE AS SHOWN	
DATE 2/10/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***
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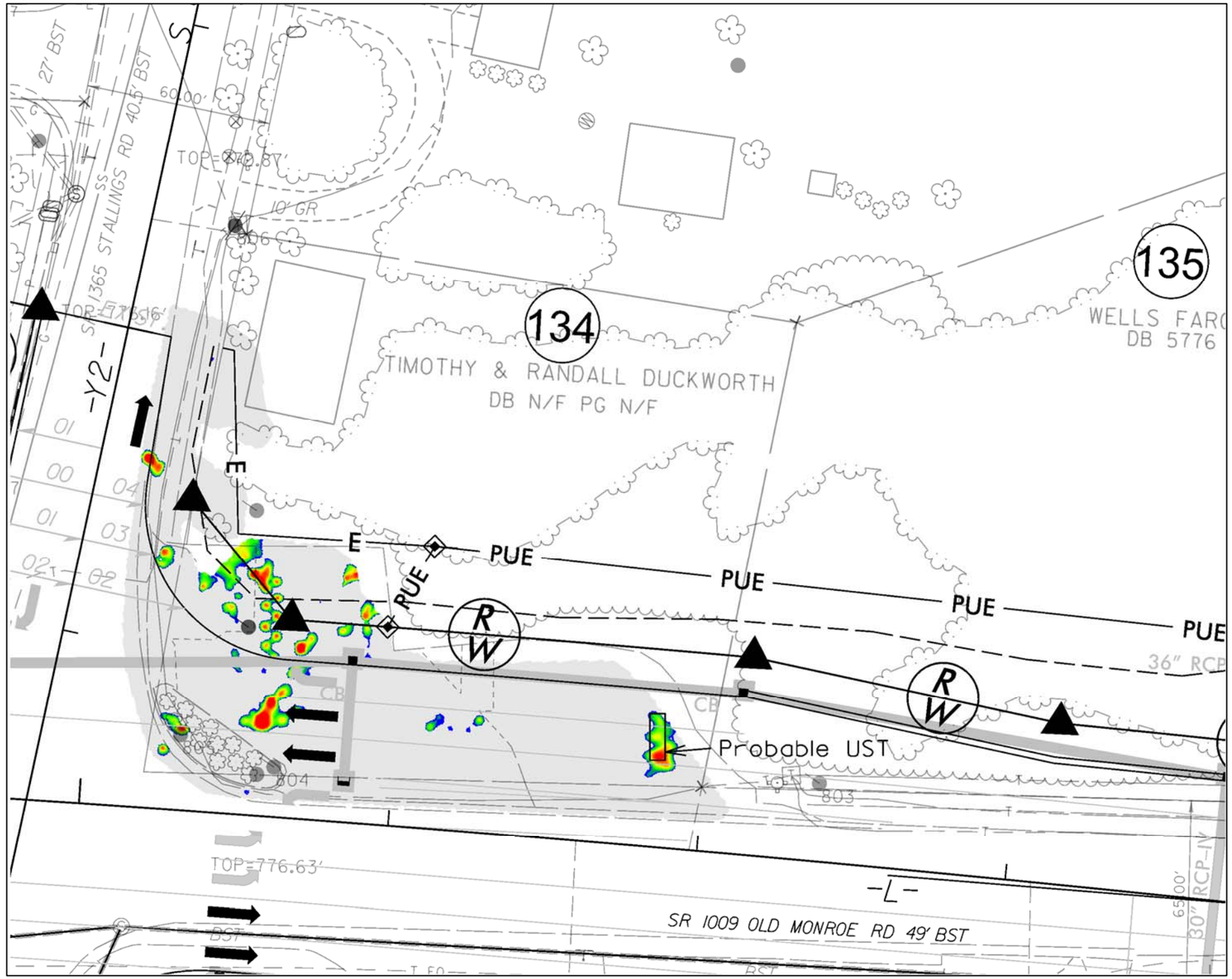
- U4714AC_Geo_env.dgn
  - U4714A_ncdot_fs.dgn
  - U4714_NAT_WEX.dgn
  - U-4714A_Hyd_DRN.dgn
  - U-4714AC_Rdy_aln.dgn, Default
  - U-4714AC_Rdy_dsn.dgn, Default
  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

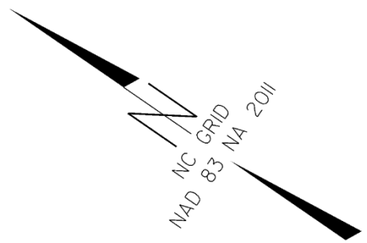
See Figure 10 for explanation of symbols and line types

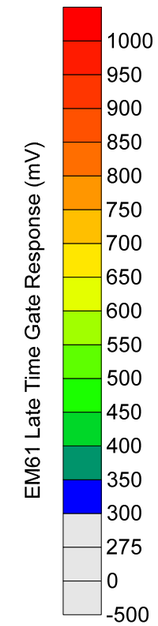
0 40 80
FEET

PROJECT NO. GR22.321	***FIGURE 6 – PARCEL 134, T. DUCKWORTH, ET AL EM61 EARLY TIME GATE DATA ON PLAN SHEET***
SCALE 1" = 40'	
DATE 2/10/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***
BY CRP/EDB	

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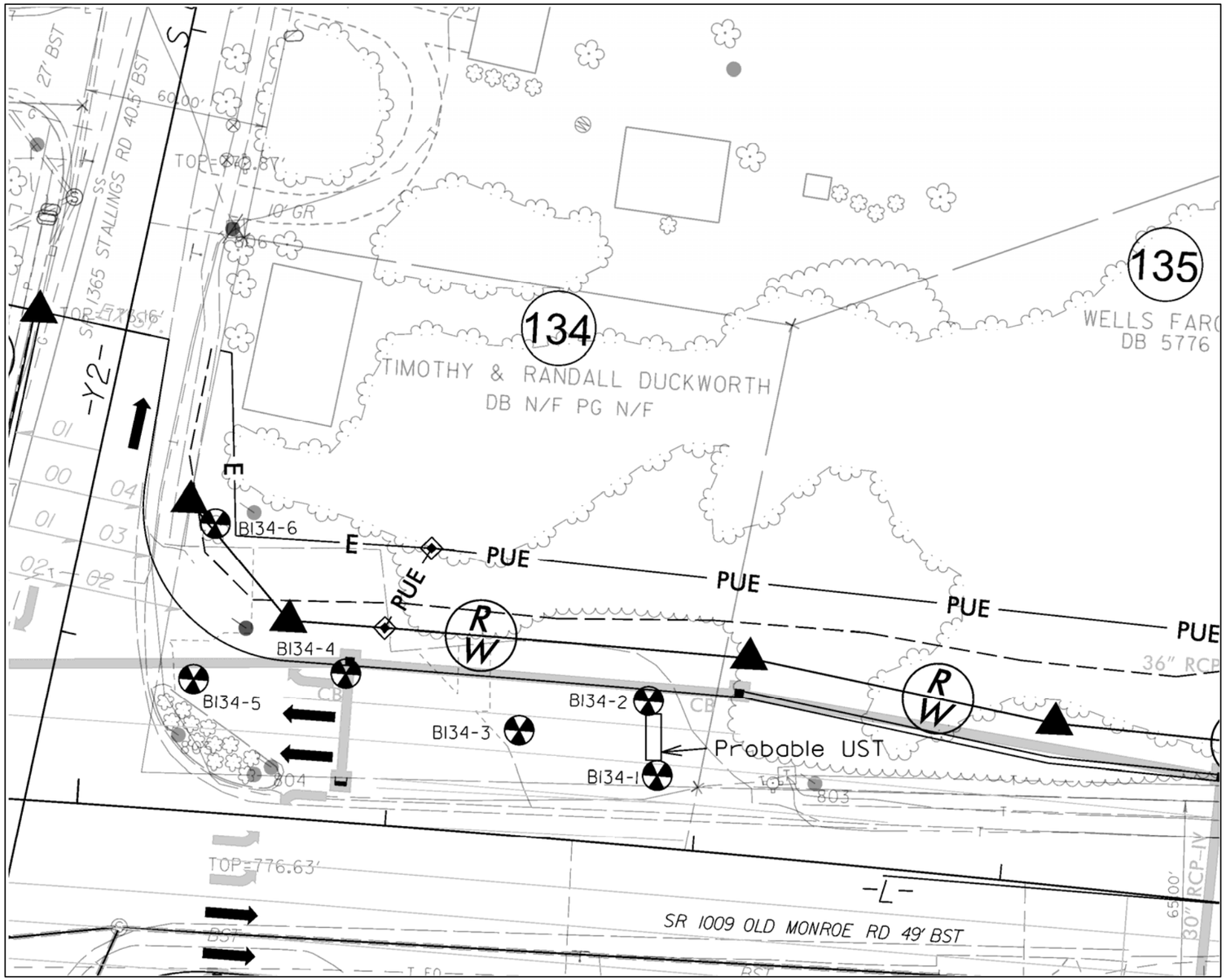


- U4714AC_Geo_env.dgn
  - U4714A_ncdot_fs.dgn
  - U4714_NAT_WEX.dgn
  - U-4714A_Hyd_DRN.dgn
  - U-4714AC_Rdy_aln.dgn, Default
  - U-4714AC_Rdy_dsn.dgn, Default
  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

0 40 80
FEET

See Figure 10 for explanation of symbols and line types

PROJECT NO. GR22.321	***FIGURE 7 – PARCEL 134, T. DUCKWORTH, ET AL EM61 LATE TIME GATE DATA ON PLAN SHEET***	ESP Associates, Inc. 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com
SCALE 1" = 40'		
DATE 2/10/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***	
BY CRP/EDB		



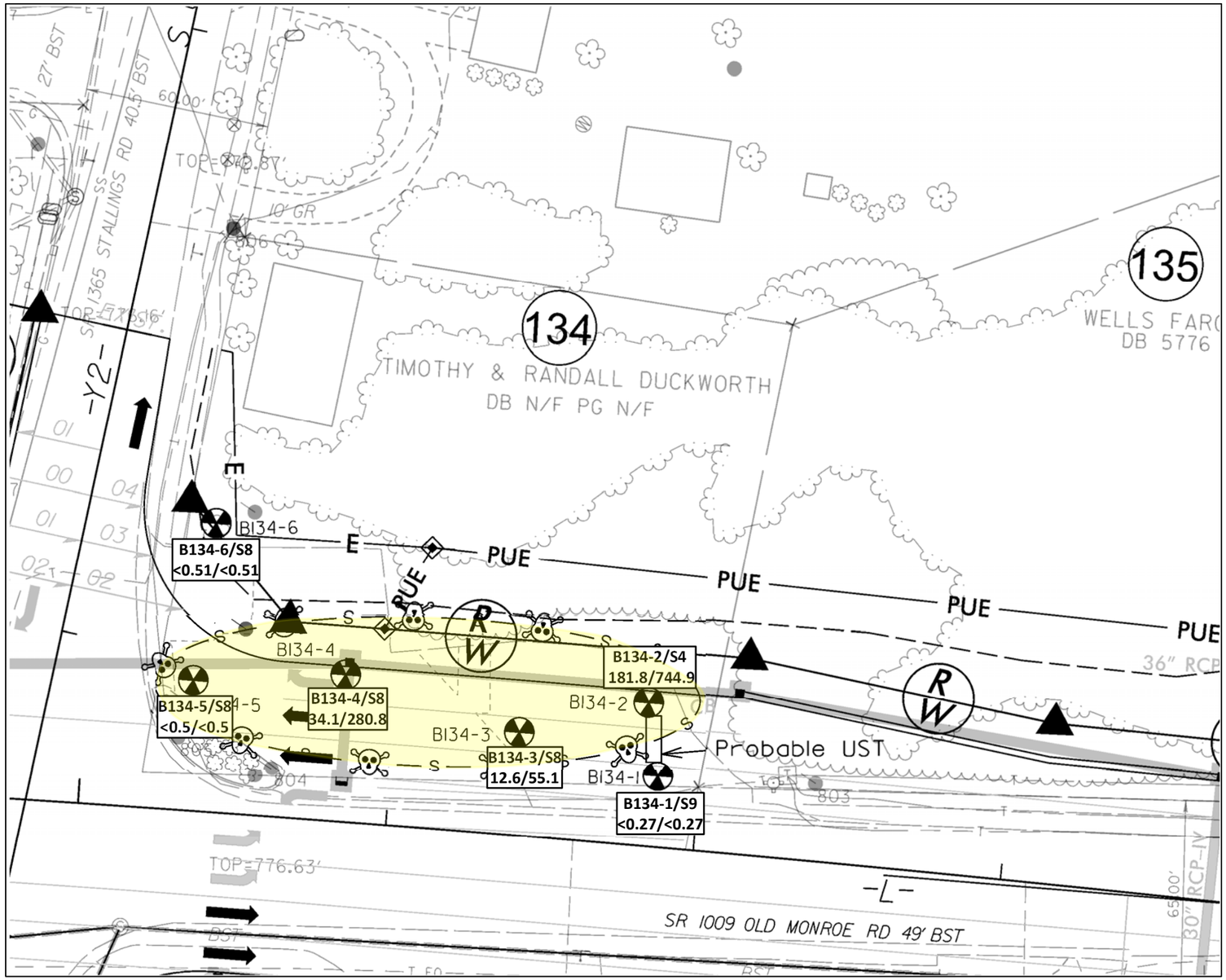
- U4714AC_Geo_env.dgn
  - U4714A_ncdot_fs.dgn
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  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

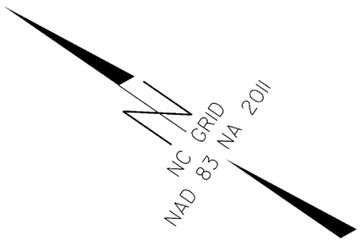
0 40 80
FEET

See Figure 10 for explanation of symbols and line types

PROJECT NO. GR22.321	***FIGURE 8 – PARCEL 134, T. DUCKWORTH, ET AL BORING LOCATIONS ON PLAN SHEET***
SCALE 1" = 40'	
DATE 2/10/2020	***NCDOT PROJECT U-4714AC SR 1009, SR 3448/SR 3474 TO SR 1377 MECKLENBURG COUNTY, NORTH CAROLINA***
BY CRP/EDB	

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Explanation

Maximum Analytical Results per Boring

B134-1/S9
<0.27/<0.27
Boring No./Sample No.
GRO/DRO (mg/kg, ppm)

- U4714AC_Geo_env.dgn
  - U4714A_ncdot_fs.dgn
  - U4714_NAT_WEX.dgn
  - U4714A_Hyd_DRN.dgn
  - U-4714AC_Rdy_aln.dgn, Default
  - U-4714AC_Rdy_dsn.dgn, Default
  - U-4714AC_Rdy_row.dgn
  - U-4714AC_Rdy_ss.dgn

0 40 80
FEET

See Figure 10 for explanation of symbols and line types

PROJECT NO.	GR22.321
SCALE	1" = 40'
DATE	2/10/2020
BY	CRP/EDB

FIGURE 9 – PARCEL 134, T. DUCKWORTH, ET AL SOIL ANALYTICAL RESULTS ON PLAN SHEET

NCDOT PROJECT U-4714AC
SR 1009, SR 3448/SR 3474 TO SR 1377
MECKLENBURG COUNTY, NORTH CAROLINA

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.

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 — EIP
- Computed Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 23
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- 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 — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — Flow
- False Sump

RAILROADS:
- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:
- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easment Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:
- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- 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 — Vineyard

EXISTING STRUCTURES:
MAJOR:
- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:
- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

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

TELEPHONE:
- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

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

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

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

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

MISCELLANEOUS:
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — W/S
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- 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. GR22.321	**FIGURE 10**
SCALE N/A	**LEGEND FOR PLAN SHEET FIGURES**
DATE 2/10/2020	**NCDOT PROJECT U-4714AC**
BY CRP/EDB	**SR 1009, SR 3448/SR 3474 TO SR 1377**
	MECKLENBURG COUNTY, NORTH CAROLINA

ESP Associates, Inc.
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. B134-1

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: South end of parcel, west side of probable UST

TYPE OF BORING	Direct Push	DATE STARTED:	1/2/20	SHEET:	1 of 1
DRILLING FIRM:	SAEDACCO	DATE FINISHED:	1/2/20	TOTAL DEPTH:	10.0 ft
DRILLER:	John Goff	SAMPLE METHOD:	4' Macrocore	DEPTH TO GW:	N/A ft
DRILL RIG:	Geoprobe 54DT	LOGGED BY:	R. Pastrana	COMMENT:	Approx. Elev: 773.6'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.7' Asphalt and Gravel	Core 1 Rec 3.6'/4.0'
1	S-1	1.0-1.5	0.7	0.7' - 5.5' Clayey Sand, Tan-Brown to Brown, Moist to Wet	
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	0.3		
					Core 2 Rec 4.0'/4.0'
5	S-5	5.0-5.5	0.3		
				5.5' - 7.0' Silty Clay, Gray to Orange-Brown, Wet to Moist	
6	S-6	6.0-6.5	0.4		
7	S-7	7.0-7.5	0.2	7.0' - 10.0' Clayey Sand, White, Moist	
8	S-8	8.0-8.5	0.4		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.7		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B134-2

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: South end of parcel, east side of probable UST
TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 774.3'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.7' Asphalt and Gravel	Core 1 Rec 3.3'/4.0'
1	S-1	1.0-1.5	0.3	0.7' - 3.2' Silty Clay, Brown to Orange-Brown, Moist	
2	S-2	2.0-2.5	0.8		
3	S-3	3.0-3.5	0.3		
				3.2' - 6.5' Sandy Clay, Brown and Gray, Moist	
4	S-4	4.0-4.5	217.0		
					Core 2 Rec 3.0'/4.0'
					Petroleum odor
5	S-5	5.0-5.5	131.9	5.0' grading to Wet	
6	S-6	6.0-6.5	31.9		
				6.5' - 10.0' Silty Clay, Orange-Brown to Red and Gray, Moist to Dry	
7	no sample				
8	S-8	8.0-8.5	49.5		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	51.9		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B134-3

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321

LOCATION: Near north edge of asphalt pavement

TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1

DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft

DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft

DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 774.6'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.8' Asphalt and Gravel	Core 1 Rec 3.5'/4.0'
1	S-1	1.0-1.5	1.3	0.8' - 4.9' Clayey Sand with Layers of Coarse Sand, Tan-Brown to Gray, Moist	
2	S-2	2.0-2.5	2.9		
3	S-3	3.0-3.5	1.6		
4	S-4	4.0-4.5	1.7		
					Core 2 Rec 3.7'/4.0'
5	S-5	5.0-5.5	1.0	4.9' - 10.0' Silty Clay with Layers of Clayey Sand, Orange-Brown to Red, Moist	
6	S-6	6.0-6.5	1.3		
7	S-7	7.0-7.5	3.1		
8	S-8	8.0-8.5	282.5		
					Core 3 Rec 2.0'/2.0'
					Petroleum odor
9	S-9	9.0-9.5	392.5		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B134-4

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321

LOCATION: Near former northern dispenser island

TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1

DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft

DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft

DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 775.6'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 1.1' Concrete and Gravel	Core 1 Rec 3.6'/4.0'
1	S-1	1.0-1.5	0.5		
				1.1' - 6.2' Sand, Brown, Dry	
2	S-2	2.0-2.5	0.5		
3	S-3	3.0-3.5	0.7		
4	S-4	4.0-4.5	0.9		
					Core 2 Rec 4.0'/4.0'
					Petroleum odor
5	S-5	5.0-5.5	1.5		
6	S-6	6.0-6.5	176.7		
				6.2' - 10.0' Silty Clay with Layers of Clayey Sand, Orange-Brown to Red with Gray, Moist	
7	S-7	7.0-7.5	20.8		
8	S-8	8.0-8.5	283.3		
					Core 3 Rec 2.0'/2.0'
					Petroleum odor
9	S-9	9.0-9.5	129.9		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B134-5

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: Northwest corner of parcel
TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 776.0'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' -0.8' Concrete and Gravel	Core 1 Rec 2.7'/4.0'
1	S-1	1.0-1.5	1.0	0.8' - 4.7' Clayey Sand, Tan-Brown, Moist	
2	S-2	2.0-2.5	1.7		
3	no sample				
4	S-4	4.0-4.5	2.0		
					Core 2 Rec 4.0'/4.0'
				4.7' - 10.0' Silty Clay with Layers of Clayey Sand, Orange-Brown to Red,	
5	S-5	5.0-5.5	1.2	Moist	
6	S-6	6.0-6.5	2.9		
7	S-7	7.0-7.5	9.7		
8	S-8	8.0-8.5	246.7		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	157.3		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

FIELD BORING LOG

BORING NO. B134-6

PROJECT NAME: NCDOT U-4714AC Phase II | PROJ. NO.: GR22.321
LOCATION: North end of parcel
TYPE OF BORING: Direct Push | DATE STARTED: 1/2/20 | SHEET: 1 of 1
DRILLING FIRM: SAEDACCO | DATE FINISHED: 1/2/20 | TOTAL DEPTH: 10.0 ft
DRILLER: John Goff | SAMPLE METHOD: 4' Macrocore | DEPTH TO GW: N/A ft
DRILL RIG: Geoprobe 54DT | LOGGED BY: R. Pastrana | COMMENT: Approx. Elev: 775.8'

DEPTH (ft)	SAMPLE NO.	SAMPLE DEPTH (ft)	PID READING (ppm)	FIELD CLASSIFICATION AND PHYSICAL DESCRIPTION	REMARKS
				0.0' - 0.8' Topsoil and gravel	Core 1 Rec 2.9'/4.0'
1	S-1	1.0-1.5	0.3	0.8' - 4.8' Clayey Sand and Sand with trace gravel, Tan-Brown, Moist	
2	S-2	2.0-2.5	0.3		
3	no sample				
4	S-4	4.0-4.5	0.4		
					Core 2 Rec 4.0'/4.0'
5	S-5	5.0-5.5	0.3	4.8' - 10.0' Silty Clay with Layers of Clayey Sand, Orange-Brown to Red, Moist	
6	S-6	6.0-6.5	0.7		
7	S-7	7.0-7.5	0.5		
8	S-8	8.0-8.5	0.8		
					Core 3 Rec 2.0'/2.0'
9	S-9	9.0-9.5	0.5		
10				10.0' End of Boring	
11					
12					
13					
14					
15					

APPENDIX B

RED LAB LABORATORY TESTING REPORT

QED

AQROS

Hydrocarbon Analysis Results

Client: ESP
Address:

Samples taken Thursday, January 2, 2020
Samples extracted Tuesday, January 7, 2020
Samples analysed Tuesday, January 7, 2020

Contact: NED BILLINGTON

Operator JENN RYAN

Project: GR22.321

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	B134 - 1 S9	10.6	<0.27	<0.27	<0.27	0.16	0.16	<0.08	<0.011	0	72.6	27.4	Residual HC,(BO),(P)
s	B134 - 2 S4	264.0	<6.6	181.8	744.9	926.7	811.5	29.2	<0.26	85.8	12	2.2	Deg.Diesel 56.9%,(FCM)
s	B134 - 2 S9	18.3	9.4	21.7	40.4	62.1	21.1	0.76	<0.018	97.7	2	0.3	Deg.Diesel 86.4%,(FCM)
s	B134 - 3 S8	19.8	<0.5	12.6	55.1	67.7	44.7	1.7	<0.02	84.5	14.1	1.4	Deg.Diesel 82.1%,(FCM)
s	B134 - 4 S8	20.5	<0.51	34.1	280.8	314.9	25.1	0.97	<0.02	99.1	0.8	0.1	Deg.Kerosene 84.8%,(FCM),(BO)
s	B134 - 5 S4	18.6	<0.46	<0.46	<0.46	<0.46	<0.09	<0.15	<0.019	0	0	0	PHC not detected,(BO)
s	B134 - 5 S8	20.0	<0.5	<0.5	<0.5	<0.5	<0.1	<0.16	<0.02	0	100	0	PHC not detected,(BO)
s	B134 - 6 S8	20.3	<0.51	<0.51	<0.51	<0.51	<0.1	<0.16	<0.02	0	100	0	PHC not detected,(BO)

Initial Calibrator QC check OK

Final FCM QC Check OK 99.2 %

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) = Modifed 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

B150

Client Name:	ESP
Address:	on file
Contact:	Ned Billington
Project Ref.:	GR22, 321
Email:	on file
Phone #:	336 420 5452
Collected by:	R. Pastrana

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

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

Each UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

Sample Collection	TAT Requested		Analysis Type		Initials	Sample ID (* these are letter "S")	Total Wt.	Tare Wt.	Sample Wt.
Date/Time	24 Hour	48 Hour	UVF	GC					
1/3/20		✓	✓		SOS	B127-1, S9	59.1	45.2	13.9
1/3/20		✓	✓		CRP	B127-2, S4	57.3	45.2	12.1
1/3/20		✓	✓		CRP	B127-3, S9	59.0	45.0	14.0
1/3/20		✓	✓		CRP	B127-4, S4	57.3	45.1	12.2
1/3/20		✓	✓		CRP	B127-5, S9	57.1	45.3	11.8
1/3/20		✓	✓		CRP	B127-6, S4	57.5	45.3	12.2
1/3/20		✓	✓		CRP	B127-7, S9	57.3	45.3	12.0
1/3/20		✓	✓		CRP	B127-8, S4	57.3	45.1	12.2
1/3/20		✓	✓		CRP	B17-9, S9	57.1	45.1	12.0
12/20/19		—	—		SOS	B125-6, S5 }	54.6	44.9	9.7
1/2/20		—	—		CRP	B134-1, S9	57.7	44.1	13.2
1/2/20		—	—		CRP	B134-2, S4	57.4	44.6	12.8
1/2/20		—	—		CRP	B134-2, S9	58.3	44.1	14.2
1/2/20		—	—		CRP	B134-3, S8	57.1	44.0	13.1
1/2/20		—	—		CRP	B134-4, S8	56.8	44.1	12.7
1/2/20		—	—		CRP	B134-5, S4	57.9	43.9	14.0
1/2/20		—	—		CRP	B134-5, S8	58.4	45.4	13.0
1/2/20		—	—		CRP	B134-6, S8	57.8	45.0	12.8

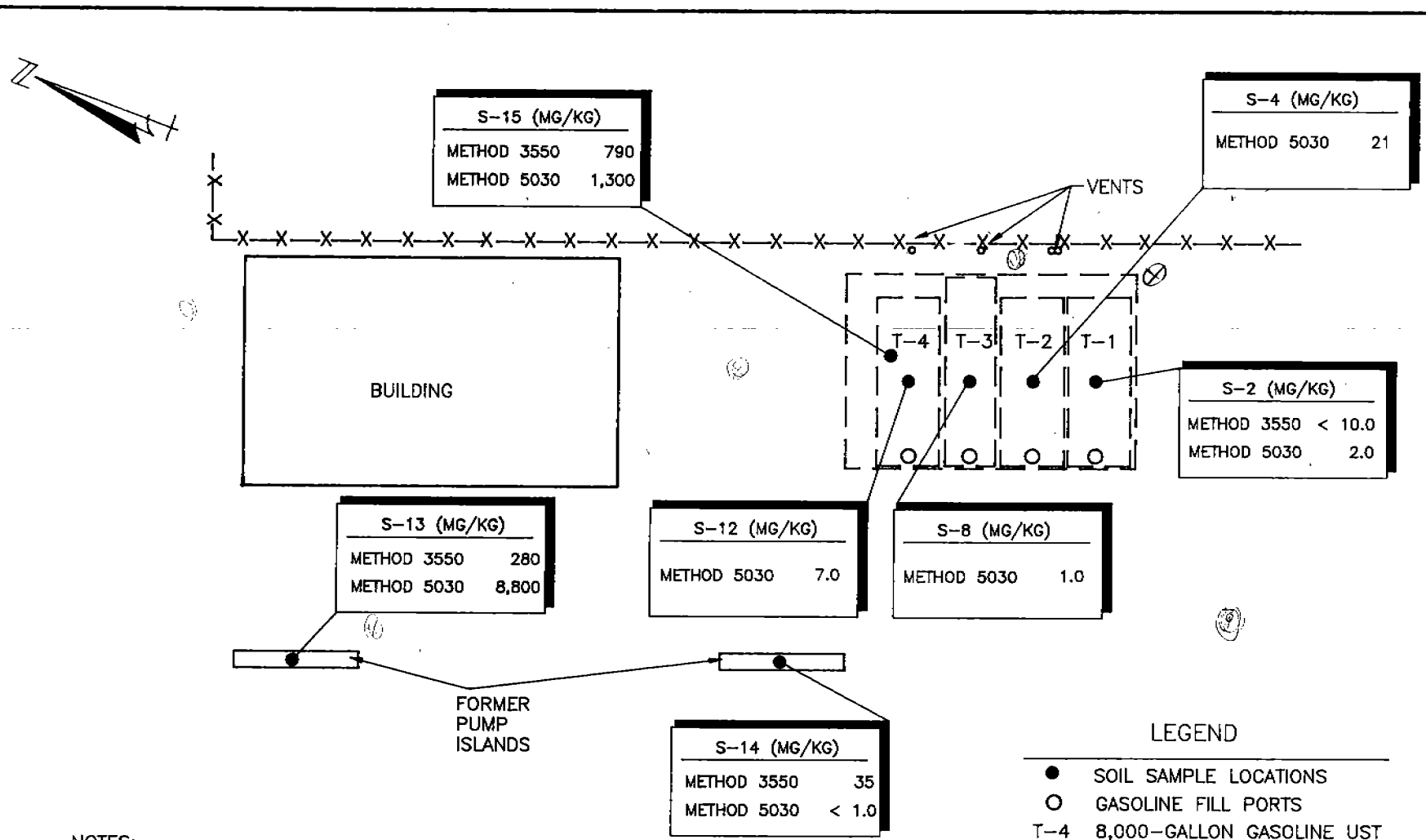
COMMENTS/REQUESTS:
Report bracketed samples separately

TARGET GC/UVF ANALYTES:

Relinquished by		Accepted by	Date/Time
Relinquished by		Accepted by	Date/Time
		CCS	12/7/20 9:00

RED Lab USE ONLY
18
Ref. No

APPENDIX D
RELEVANT NCDEQ INFORMATION



NOTES:
SAMPLES COLLECTED BY RESOLVE PERSONNEL ON OCTOBER 29, 1997 AND ANALYZED BY PRISM LABORATORIES, INC.
(MG/KG) MILLIGRAMS PER KILOGRAM
3550 = SW-846 METHOD 3550
5030 = SW-846 METHOD 5030

FORMER STALLINGS EXXON
OLD MONROE ROAD
STALLINGS, NORTH CAROLINA

FIGURE 2.

SITE LAYOUT MAP WITH SOIL BORING LOCATIONS AND ASSOCIATED ANALYTICAL RESULTS

RESOLVE ENVIRONMENTAL SERVICES, P.A.
MONROE, NORTH CAROLINA

646SITE.DWG