Via Email

September 23, 2019

NC DOT Geotechnical Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, NC 27699-1589

Attention: Mr. Gordon Box

Re: Phase II Investigation
State of North Carolina - Parcel 4
NC DOT State Project No. R-4707
WBS: 36599.1.2
Browns Summit, Guilford County, North Carolina
H&H Job No. ROW-603

Dear Gordon:

Please find the attached electronic copy of the Phase II Investigation report for the State of North Carolina Property (Parcel 4) located in Browns Summit, Guilford County, North Carolina. Please return via DocuSign for final signatures. If you have any questions or need additional information, please contact us at (704) 586-0007.

Sincerely,

Hart & Hickman, PC

David Graham, PG
Senior Project Geologist

Matt Bramblett, PE
Principal

Attachment

Phase II Investigation
State of North Carolina Property

NC DOT Parcel 4
Browns Summit, Guilford County
North Carolina

H&H Job No. ROW-603
State Project R-4707
WBS Element #36599.1.2
September 23, 2019

hart hickman

SMARTER ENVIRONMENTAL SOLUTIONS

#C-1269 Engineering
#-245 Geology

2923 South Tryon Street, Suite 100
Charlotte, NC 28203
704.586.0007 main

3921 Sunset Ridge Rd , Suite 301
Raleigh, NC 27607
919.847.4241 main

www.harthickman.com

Phase II Investigation
State of North Carolina Property - NC DOT Parcel 4
Browns Summit, Guilford County, North Carolina
H&H Project ROW-603

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Phase II Investigation
State of North Carolina Property - NC DOT Parcel 4
Browns Summit, Guilford County, North Carolina
H&H Project ROW-603

1.0 Introduction and Background

Hart & Hickman, PC (H&H) has prepared this Phase II Investigation (Phase II) report documenting assessment activities performed at the State of North Carolina property (Parcel 4) located at 5900 Summit Avenue in Browns Summit, Guilford County, North Carolina. The Parcel 4 property is currently occupied by Gateway University Research Park. This assessment was conducted on behalf of the North Carolina Department of Transportation (NC DOT) in accordance with H&H's May 10, 2019 proposal.

The purpose of this assessment was to collect data to evaluate the potential for underground storage tank (UST) systems and the presence or absence of impacted soil in proposed right of way and construction easement areas on the eastern portion of the subject property related to the proposed road improvement activities along US Highway 29 North (State Project R-4707). A site location map is included as Figure 1, and a site map is presented as Figure 2. NC DOT's plan sheet depicting Parcel 4 is included in Appendix A.

H&H searched the North Carolina Department of Environmental Quality (NC DEQ) Laserfiche website for incident files for the Parcel 4 property to better target UST system areas and to find locations of previously reported impacts. UST Incident #21547 was identified for the Parcel 4 property. H&H reviewed previous environmental documents for the Parcel 4 property including *UST Closure and Site Investigation Report* prepared by ENSCI Environmental, Inc. (ENSCI) dated August 26, 1993, *Underground Storage Tank (UST) Closure Report* by Earth Tech Engineering, Inc. (Earth Tech) dated March 6, 2000, and the *Phase I Limited Site Assessment* (LSA) report by Law Engineering and Environmental Services, Inc. (LAW) dated July 6, 2001.

The ENSCI UST closure report indicates that two 3,000-gallon gasoline USTs were removed from the Parcel 4 property in July 1993. No target constituents were detected in soil samples collected

beneath the USTs. NC DEQ issued a letter on October 1, 1993 that indicates the USTs were closed in accordance with NC DEQ guidelines. Based on the UST closure report, the former gasoline USTs appear to have been located outside of proposed NC DOT work areas.

The Earth Tech UST Closure report indicates that four heating oil USTs were removed from the property in October 1999 (Incident #21547). The USTs were used to store and supply heating oil to four different buildings on the property. Two of the USTs were 20,000-gallons in capacity and were located near Brown Hall and Mehl Hall on the eastern and central portions of the property, respectively. A 1,000-gallon UST and a 7,500-gallon UST were located near the central kitchen and the maintenance building, respectively, in the southwestern potion of the property. With the exception of the 20,000-gallon heating oil UST located near Brown Hall in the eastern portion of the property, concentrations of total petroleum hydrocarbons (TPH) as diesel range organics (DRO) and/or gasoline range organics (GRO) were detected above NC DEQ Action Levels in closure samples collected beneath each of the heating oil USTs. The DRO concentrations detected in soil samples collected beneath the heating oil UST near Brown Hall were below the NC DEQ Action Level. Approximately 30 tons of impacted soil were removed from the UST excavation near Mehl hall and properly disposed.

As part of subsequent LSA activities associated with Incident #21547 conducted by LAW in May 2001, soil and/or groundwater samples were collected near each of the former heating oil UST locations. Concentrations of target constituents detected in soil samples collected near the former UST locations at Brown Hall, the central kitchen, and Mehl Hall were below NC DEQ Maximum Soil Contaminant Concentrations (MSCCs). In addition, concentrations of target constituents detected in groundwater samples collected from monitoring wells installed near the former UST locations at Mehl Hall and the maintenance building were below the 15A NCAC 2L .0202 Groundwater Quality Standards (2L Standards). Based on the results of the LSA, NC DEQ issued a no further action (NFA) status for Incident #21547 on February 7, 2006. The former heating oil UST locations are located outside of proposed NC DOT work areas. Pertinent information from NC DEQ files is included in Appendix B.

The Phase II activities conducted by H&H on Parcel 4 are discussed below.

2.0 Geophysical Survey

Prior to advancing soil borings, H&H reviewed the results of a geophysical survey performed on Parcel 4 by ESP Associates, Inc. (ESP) on June 19, 2019. ESP's work consisted of metal detection using a Geonics EM61 MK2 instrument to identify potential geophysical anomalies and potential USTs at the site. The geophysical survey results indicate that no suspected USTs were identified in proposed NC DOT work areas. Other anomalies were present in the survey data but were attributed to buried utilities. The anomalies were not characteristic signatures of potential USTs. ESP's report, including figures depicting the results of the geophysical survey, is provided in Appendix C.

3.0 Soil Assessment

3.1 Soil Sampling

H&H contracted with South Atlantic Environmental Drilling and Construction Co. (SAEDACCO) of Fort Mill, South Carolina to advance soil borings on Parcel 4. On June 24, 2019, seven soil borings (4-1 through 4-7) were advanced at the site using a direct push technology (DPT) drilling rig. Prior to conducting soil borings, underground utilities were marked by the NC 811 public utility locator and by ESP for private underground utilities. Borings were also cleared to a five foot depth by hand auger.

The soil borings were advanced to maximum depths of 12 feet below ground surface (ft bgs). To facilitate the selection of soil samples for laboratory analysis, soil from each boring was screened continuously for the presence of volatile organic compounds (VOCs) with a photoionization detector (PID). Additionally, H&H observed the soil for visual and olfactory indications of impacts. Elevated PID readings were documented near the surface in borings 4-1 through 4-4. The elevated PID readings were likely due to organic material near the ground surface. There were no other significant indications of impacts based on field screening. Soil samples were collected at depths of 0 to 2 ft bgs, 2 ft to 4 ft bgs, and 8 ft to 10 ft bgs. Soil boring logs are included in Appendix D. Global positioning system (GPS) coordinate data for the soil borings are summarized in Table 1, and the boring locations are shown on Figure 2.

H&H submitted a total of eight soil samples from borings (4-1 through 4-7) for laboratory analysis. The soil samples were placed into laboratory supplied sample containers using nitrile glove-covered hands. The containers were then labeled as to content, analyses requested, sample date and time, and sampler's name. The samples were placed in an iced cooler upon collection and were subsequently submitted to Red Lab, LLC of Wilmington, NC under standard chain-of-custody protocol for analysis of TPH DRO and GRO using QED ultraviolet fluorescence (UVF) technology. Soil sample depths and analytical results are summarized in Table 2. Laboratory analytical data sheets and chain-of-custody documentation are provided in Appendix E. The analytical results are discussed below.

Upon completion of soil sampling activities, soil cuttings generated during drilling activities were spread on site. The soil borings were filled with bentonite pellets and covered with soil to match the existing ground surface.

3.2 Soil Analytical Results

Concentrations of TPH DRO (ranging from 0.29 mg/kg to 8.4 mg/kg) were detected in soil samples 4-1 through 4-4 and 4-6 collected on Parcel 4. The TPH DRO concentrations are below the NC DEQ Action Level of 100 mg/kg. A concentration of TPH GRO (0.83 mg/kg) was also detected in soil sample 4-6 below the NC DEQ Action Level of 50 mg/kg. Soil analytical results are depicted on Figure 2.

Based on laboratory analytical results, impacted soil above NC DEQ Action Levels does not appear to be present at the site in the vicinity of the soil boring locations. However, if impacted soil is encountered during the NC DOT construction activities, it should be properly managed and disposed.

4.0 Summary and Regulatory Considerations

H&H has reviewed available NC DEQ incident files, geophysical survey results, and analytical results of soil samples collected at the Parcel 4 property in Greensboro, Guilford County, North Carolina. Review of NC DEQ Incident files indicate that two 3,000-gallon gasoline USTs were removed from the site in 1993. No indication of a release was identified during closure of the gasoline USTs. Two 20,000-gallon heating oil USTs, one 7,500-gallon heating oil UST, and one 1,000-gallon heating oil UST were removed from Parcel 4 in 1999 (Incident #21547). Soil impacts above NC DEQ Action Levels were identified beneath three of the heating oil USTs. However, based on subsequent risk-based site assessment activities, the heating oil USTs incident was issued a NFA status in 2006. Each of the former USTs noted above was located outside of proposed NC DOT work areas. Based on the geophysical survey, no potential USTs were identified in proposed NC DOT work areas on Parcel 4.

Analytical results of soil samples collected by H&H indicate concentrations of TPH DRO and GRO below the NC DEQ Action Levels on Parcel 4. NC DOT plans indicate a proposed cut for road improvement activities and proposed drainage structures in the proposed NC DOT work areas on Parcel 4. Impacted soil is not expected to be encountered in proposed cut areas or areas of proposed drainage structures. If impacted soil is encountered during road construction activities, it should be properly managed and disposed at a permitted facility. If a UST is encountered during construction activities, the UST system(s) and their contents should be removed in accordance with NC DEQ regulations and properly disposed.

5.0 Signature Page

This report was prepared by:

DocuSigned by:
David Graham
9F6FAD6E6BA24BE...

David Graham, PG
Senior Project Geologist for
Hart & Hickman, PC

This report was reviewed by:

DocuSigned by:
Matt Bramblett
CBCA88CDF0E547B...

Matt Bramblett, PE
Principal and Project Manager for
Hart & Hickman, PC

Not considered final unless all signatures are completed.

Table 1
Soil Boring GPS Coordinate Data
NC DOT Parcel 4
Browns Summit, Guilford County, North Carolina
H&H Job No. ROW-603

Sample ID	Latitude	Longitude
4-1	36.1682277	-79.7175423
4-2	36.1684071	-79.7173516
4-3	36.1685999	-79.7172338
4-4	36.1685999	-79.7172338
4-5	36.1687792	-79.7172726
4-6	36.1689818	-79.7168507
4-7	36.1692734	-79.7166640

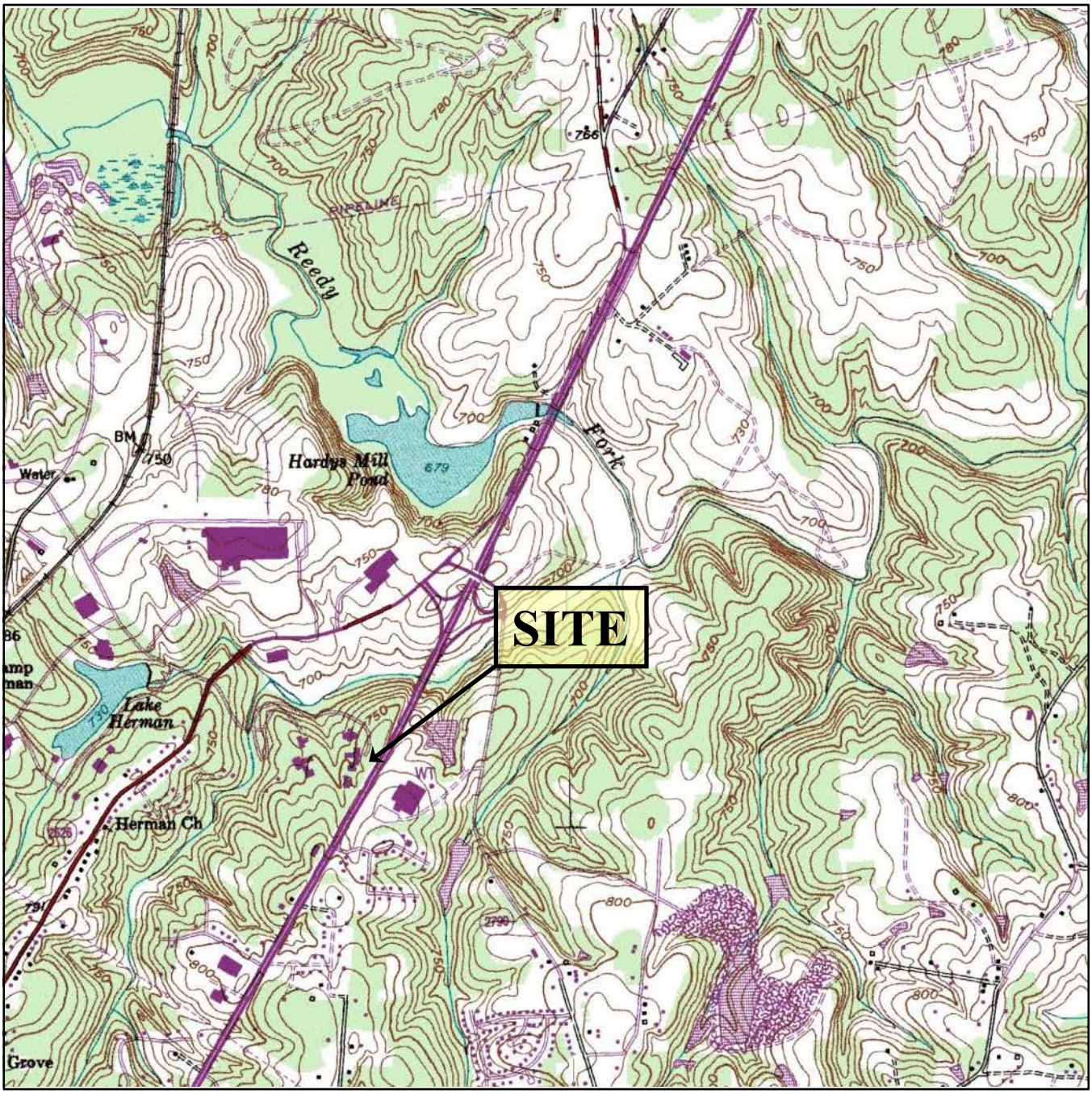
Notes:

GPS coordinate data points collected using a Trimble GeoExplorer 6000 series unit with external satellite for increased accuracy.

Table 2 (Page 1 of 1)
Soil Analytical Results
NC DOT Parcel 4
Browns Summit, Guilford County, North Carolina
H&H Job No. ROW-603

Sample ID	4-1	4-2	4-3	4-4	4-5	4-6	4-7		**Regulatory Standard**
Sample Depth (ft)	0-2	0-2	0-2	0-2	2-4	0-2	2-4	8-10	
Sample Date	6/24/2019	6/24/2019	6/24/2019	6/24/2019	6/24/2019	6/24/2019	6/24/2019	6/24/2019	
TPH-DRO/GRO (UVF) (mg/kg)									**NCDEQ Action Level (mg/kg)**
Diesel-Range Organics (DRO)	8.4	1.5	1.8	4.5	<0.52	0.29	<0.55	<0.55	100
Gasoline-Range Organics (GRO)	0.74	<0.55	<0.52	<0.58	<0.52	0.83	<0.55	<0.55	50

Notes:
UVF = QED Ultraviolet fluorescence technology.
TPH = Total petroleum hydrocarbons.



N

APPROXIMATE

0 2000 4000

SCALE IN FEET

U.S.G.S. QUADRANGLE MAP

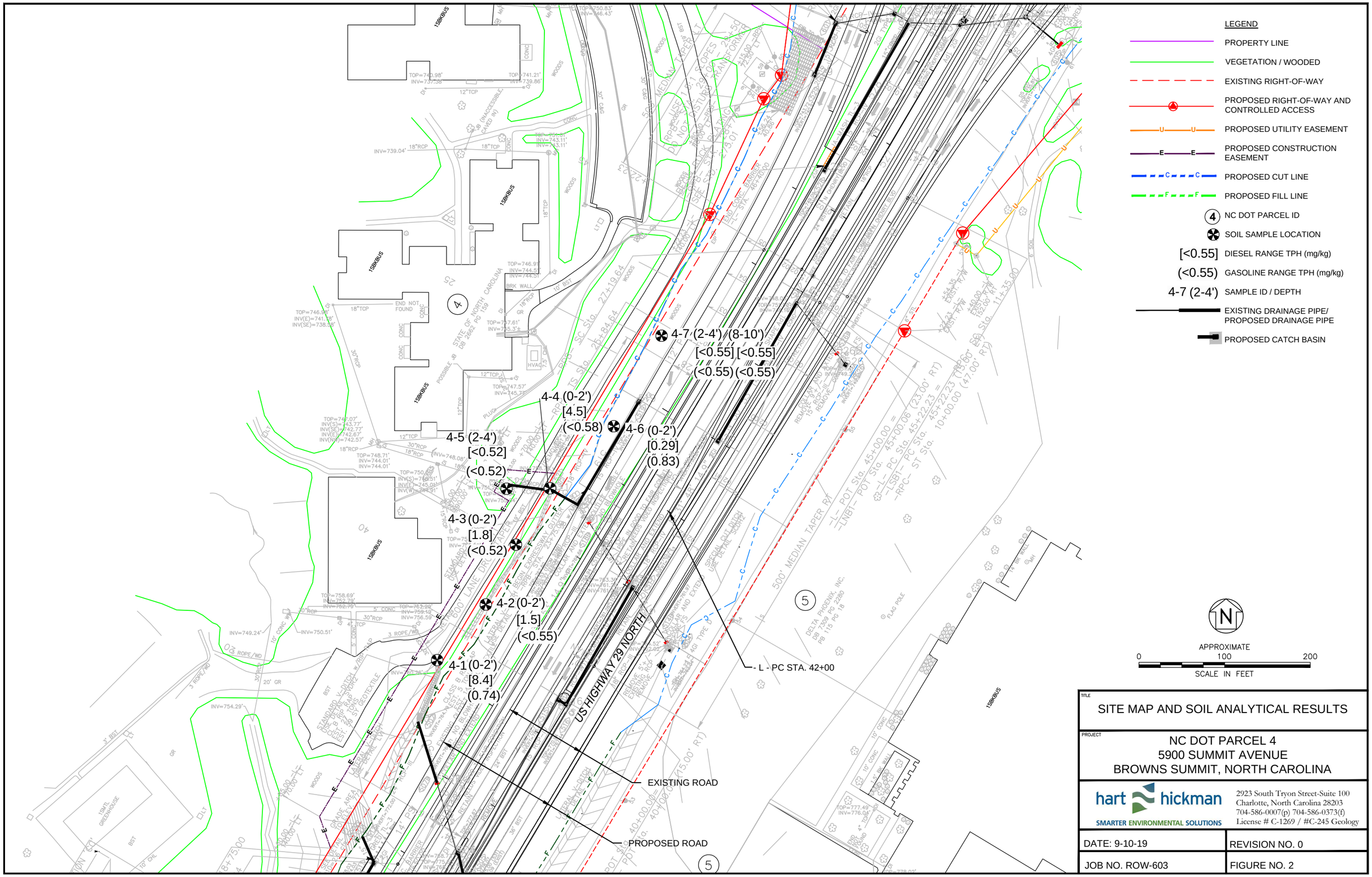
BROWNS SUMMIT, NORTH CAROLINA, 1994

QUADRANGLE
7.5 MINUTE SERIES (TOPOGRAPHIC)

TITLE	**SITE LOCATION MAP**
PROJECT	NC DOT PARCEL 4 5900 SUMMIT AVENUE BROWNS SUMMIT, NORTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007 (p) 704-586-0373 (f)

DATE:	9-13-19	REVISION NO:	0
JOB NO:	ROW-603	FIGURE:	1



TITLE

SITE MAP AND SOIL ANALYTICAL RESULTS

PROJECT

NC DOT PARCEL 4
5900 SUMMIT AVENUE
BROWNS SUMMIT, NORTH CAROLINA

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS
2923 South Tryon Street-Suite 100
Charlotte, North Carolina 28203
704-586-0007(p) 704-586-0373(f)
License # C-1269 / #C-245 Geology

DATE: 9-10-19	REVISION NO. 0
JOB NO. ROW-603	FIGURE NO. 2

Appendix A

NC DOT Preliminary Plan

PROJECT REFERENCE NO.	SHEET NO.
R-4707	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Mead&Hunt
111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8670 | meadhunt.com
NC License No. F-1235

8/17/99

REVISIONS

-RPB- CURVE DATA

PI Sta 12+21.22	PI Sta 16+63.54
△ = 3° 06' 34.5" (LT)	△ = 3° 06' 34.5" (RT)
D = 0° 42' 10.9"	D = 0° 42' 10.9"
L = 442.32'	L = 442.32'
T = 221.22'	T = 221.22'
R = 8,150.00'	R = 8,150.00'
e = NC	e = NC

NAD 83(2011)

1 MICHAEL DALE AND KIMBERLY B. LOFTIS DB 4901 PG 1218

2 DALY MANAGEMENT COMPANY, LLC DB 7803 PG 1678 PB 167 PG 43

3 DALY MANAGEMENT COMPANY, LLC DB 7803 PG 1678 PB 141 PG 20

4 STATE OF NORTH CAROLINA DB 2662 PG 159

5 BEGIN FULL C/A BEGIN WOVEN WIRE FENCE +00.00 -L- EXIST. R/W

BEGIN FULL C/A BEGIN WOVEN WIRE FENCE +00.00 -L- EXIST. R/W

BEGIN TIP PROJECT R-4707 -L- STA. 20+00.00

-L- POT Sta.28+00.00 = -RPB- PC Sta. 10+00.00 (39.00' LT)

-RPB- PRC Sta. 14+42.32

BEGIN SBG -RPB- STA. 15+00.00 -RPB- 13+94.50 77.36'

BEGIN GRADE -L- STA. 31+00.00

RETAIN EXISTING LEFT TURN MOVEMENT TIE TO EXISTING PAVEMENT ELEVATION

RETAIN CONC. ISLAND

TIE GR TO EXISTING

300' TAPER

500' ACCELERATION LANE

8:1 TAPER

GRADE CUT DITCH TO DRAIN

4' PS

-BL- 12

-BL- 13

-BL- 14

-L- STA. 33+50.00 SEE SHEET 5

MATCHLINE -L- STA. 33+50.00

FOR -RPB- PROFILE, SEE SHEET 18

FOR -L- SB PROFILE, SEE SHEET 10

FOR -L- NB PROFILE, SEE SHEET 10

CITY OF GREENSBORO GUILFORD COUNTY

THE GREATER STEPPING STONE CHURCH NONDENOMINATIONAL DB 5036 PG 1610 PB 32 PG 55

LEWIS H. AND SHIRLEY R. EAST DB 3127 PG 105

FSH PROPERTIES, LLC DB 5483 PG 1365 DB 5483 PG 1369 PB 187 PG 78 PB 186 PG 41

(PER GIS) FLEETA MAE AYERS SEAWELL (PER DEED) BILLY C. AND FLEETA MAE AYERS DB 3188 PG 915 PB 32 PG 55

(PER GIS) FLEETA MAE AYERS SEAWELL (PER DEED) FLEETA MAE AYERS DB 3760 PG 1210 DB 3760 PG 1212 (PLAT)

ROBIN W. AND RENEE T. SAUL DB 7551 PG 1354 PB 32 PG 55

DONALD L. VANEATON DB 7394 PG 2255 PB 32 PG 55

JEFFREY I. AND DEBORAH HARRIS RICHARDSON DB 7683 PG 1850 PB 32 PG 55

RAMON GUEVARA HERNANDEZ ESTHER ARACELI WITRAGO REGALADO DB 7933 PG 2481 PB 20 PG 64

BRASON PROPERTIES, LLC DB 6111 PG 101 PB 20 PG 64

STEVEN WAYNE AND MARGARET EVELYN MORETZ DB 4913 PG 879 PB 20 PG 64

JANICE T. DAVIS DB 5554 PG 1005 PB 20 PG 64

06-MAR-2018 17:37
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R4707_Rdy.prj
17345.rd

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-4707	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Mead&Hunt
111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8570 | meadhunt.com
NC License No. F-1235

-L- CURVE DATA
PI Sta 52+64.99
△ = 3° 42' 45.0" (LT)
D = 0° 15' 00.0"
L = 1,485.00'
T = 742.76'
R = 22,918.31'
e = NC

-LSBI- CURVE DATA
PI Sta 47+72.06
△ = 1° 15' 00.6" (LT)
D = 0° 15' 00.7"
L = 499.65'
T = 249.83'
R = 22,899.31'
e = NC

-RPB- CURVE DATA
PI Sta 16+63.54
△ = 3° 06' 34.5" (RT)
D = 0° 42' 10.9"
L = 442.32'
T = 221.22'
R = 8,150.00'
e = NC

PIs Sta 26+74.65
Θs = 1° 50' 29.9"
Ls = 135.00'
LT = 90.00'
ST = 45.00'
INC = 45'

PI Sta 28+60.83
△ = 7° 41' 32.6" (LT)
D = 2° 43' 42.1"
L = 281.94'
T = 141.18'
R = 2,100.00'
e = 0.05

-RPC- CURVE DATA
PIs Sta 10+90.00
Θs = 1° 36' 41.2"
Ls = 135.00'
LT = 90.00'
ST = 45.00'
INC = 45'

PI Sta 12+39.90
△ = 5° 00' 20.0" (RT)
D = 2° 23' 14.4"
L = 209.67'
T = 104.90'
R = 2,400.00'
e = 0.05

NAD 83(2011)

MATCHLINE -L- STA. 33+50.00

SEE SHEET 4

SEE SHEET 6

MATCHLINE -L- STA. 47+50.00

END SBG
-RPB- STA. 18+75.00

-RPB- PT Sta. 18+84.64

-RPB- SC Sta. 27+19.64

-RPB- TS Sta. 25+84.64

600' LANE DROP TAPER

500' MEDIAN TAPER LT

500' MEDIAN TAPER RT

USE 1.5:1 SLOPES
-RPB- STA. 29+00 - 29+50
DO NOT DISTURB TRANSFORMER

BEGIN ROCK PLATING
-RPB- STA. 28+75
SEE STD. 275.01

BEGIN EXPRESSWAY GUTTER
-RPB- STA. 23+75.00

END CONC. BARRIER
-L- STA. 46+40.00

BEGIN CONC. BARRIER
-L- STA. 37+50.00

-L- POT Sta. 40+00.00=
-LNBI- POT Sta. 40+00.00 (15.00' RT)

-L- POT Sta. 45+00.00 =
-LNBI- POT Sta. 45+00.06 (23.00' RT)
-L- PC Sta. 45+22.23 =
-LSBI- PC Sta. 45+22.23 (15.00' LT)
-RPC- ST Sta. 10+00.00 (47.00' RT)

-RPC- SC Sta. 11+35.00

STATE OF NORTH CAROLINA
DB 2662 PG 159

DELTA PHOENIX, INC.
DB 7309 PG 2280
PB 115 PG 18

DAN L. AND FRIEDA A. SOUTHER
DB 4636 PG 910
PB 20 PG 64

JEFFERY AND BRENDA HERBIN
DB 4841 PG 520
PB 20 PG 64

JOHN JR. AND LATONYA C. BELL
DB 4658 PG 185
PB 20 PG 64

DONNIE LEE MCDANIEL
DB 7301 PG 2734
PB 20 PG 64

CLASS B RIP RAP
EST. 5 TONS
EST. 14 SY GEOTEXTILE

STANDARD V-DITCH wRIP RAP
USE DETAIL 'SVDR2'
CL B RIP RAP
EST. 27 TONS
EST. 59 SY GEOTEXTILE

STANDARD V-DITCH
USE DETAIL 'SV1'

LATERAL V-DITCH
USE DETAIL 'LV1'

LATERAL V-DITCH
USE DETAIL 'LV2'

LATERAL V-DITCH
USE DETAIL 'LV3'

SPECIAL CUT DITCH
USE DETAIL 'SCDH2'

GRADE AREA
TO ELEV. 772

PSH SEE DETAIL P1
Q10 = 7.6 cfs

GREU TL-3

JB w/MH

3GI TYPE D

4GI TYPE D

COLLAR AND EXTEND

REMOVE

RETAIN

REMOVE DI

REMOVE 13' +/-

REMOVE 5' +/- EXISTING RCP

REMOVE 10' +/-

REMOVE 9' +/- 15" RCP-III

24" RCP-III

15" RCP-IV

18" RCP-III

18" RCP-IV

14' PS

12' PS

6' PS

4' PS

N 30° 53' 14.9" E

N 31° 48' 14.9" E

FOR -L- SB PROFILE, SEE SHEET 11

FOR -L- NB PROFILE, SEE SHEET 11

FOR -RPC- PROFILE, SEE SHEET 20

FOR -RPB- PROFILE, SEE SHEETS 18 & 19

06-MAR-2018 17:37
M:\Highway\Proj\R4707_Rdy_psh_05.dgn
17845.1.1

Appendix B

NC DEQ Incident Files

UST Closure and Site Investigation Report

Central North Carolina School for the Deaf
Greensboro, North Carolina
ENSCI Job #RS26-034

August 26, 1993

Leonard A. Thomas
Project Manager

ENSCI Environmental, Inc.
1108 Old Thomasville Road
High Point, North Carolina 27260
(919) 883-7505

1. Introduction

ENSCI Environmental, Inc. was contracted by the Central North Carolina School for the Deaf to remove two 3,000-gallon gasoline Underground Storage Tanks (USTs) from property located at 5900 Summit Avenue in Greensboro, North Carolina (see **Figure 1**). Site work was performed July 15-19, 1993.

This UST Closure and Site Investigation Report will satisfy state and federal requirements under 40 CFR 280.72 and 15A NCAC 2N .0803. In connection with these requirements, a Site Investigation Report for UST Closure (form GW/UST-2) is included as Appendix A.

2. Scope of Work

In order to perform permanent closure of the USTs in accordance with state and federal requirements, ENSCI developed the following scope of work:

- Removing and disposing of the USTs
- Performing any necessary release prevention or abatement
- Conducting field screening in order to identify any potentially petroleum hydrocarbon-impacted soil and determine the extent of excavation
- Performing site characterization including sample collection as required
- Preparing a report detailing site activities and findings

3. Preparation for UST Removal

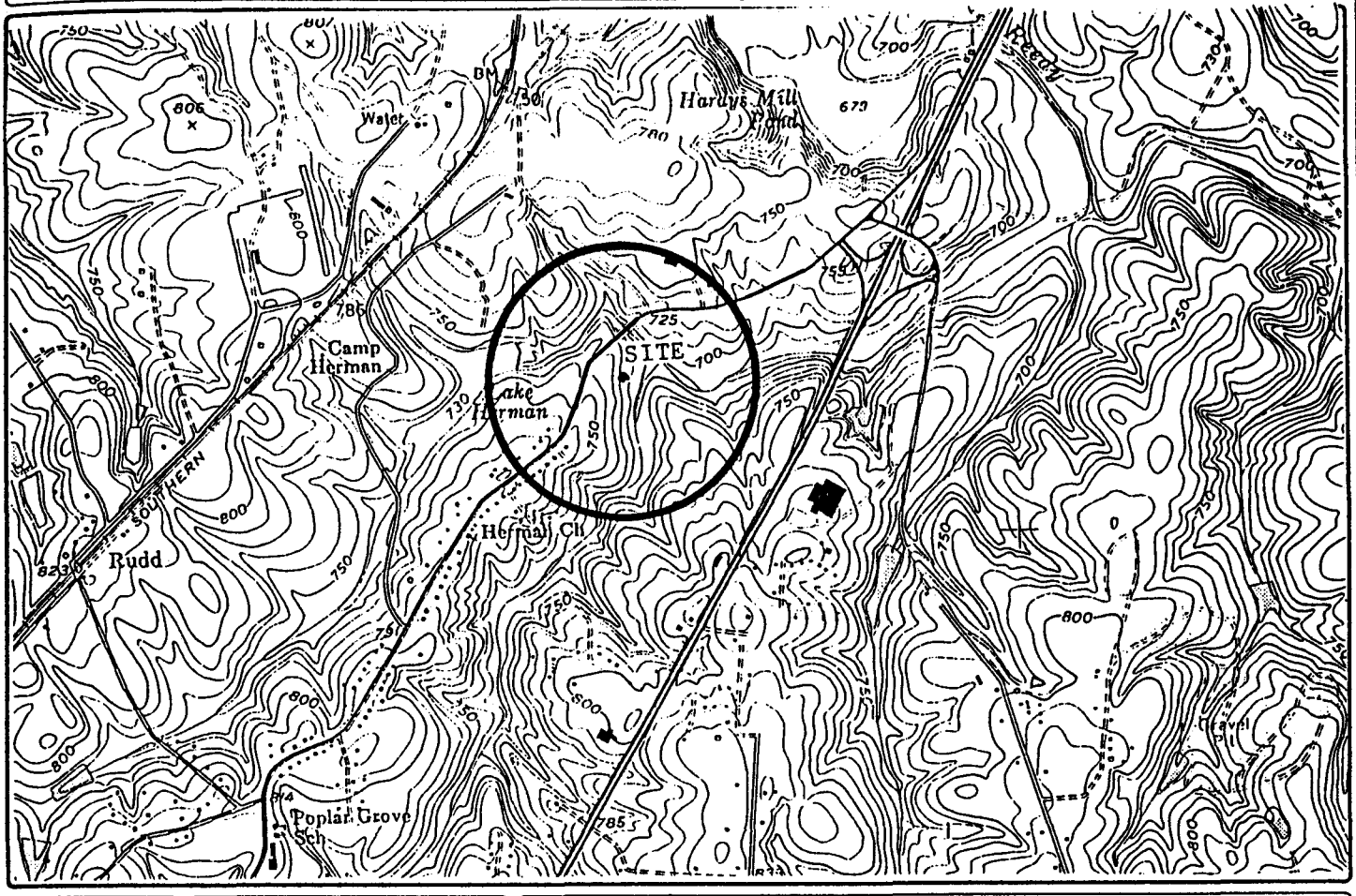
Prior to removal of the USTs, all required notifications were filed with state and local agencies. These notifications included a 30-day advance notification to the North Carolina Department of Environment, Health & Natural Resources (DEHNR) and contact with the local fire department.

After mobilizing to the site, soil above each UST was removed until the point at which the top of the tank was exposed (approximately 2 feet below grade). At this point, all product lines were disconnected and removed. An inventory of the tanks and lines is presented in **Figure 2**.

USGS TOPOGRAPHIC MAP

SITE: CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF

LOCATION: GREENSBORO, N.C.



PRIMARY HIGHWAY, HARD SURFACE	
SECONDARY HIGHWAY, HARD SURFACE	
LIGHT-DUTY ROAD HARD OR IMPROVED SURFACE	
UNIMPROVED ROAD	
STATE ROAD	
U. S. ROUTE	
INTERSTATE ROUTE	

USGS 7.5 MINUTE QUADRANGLE MAP: BROWNS SUMMITT, N.C.

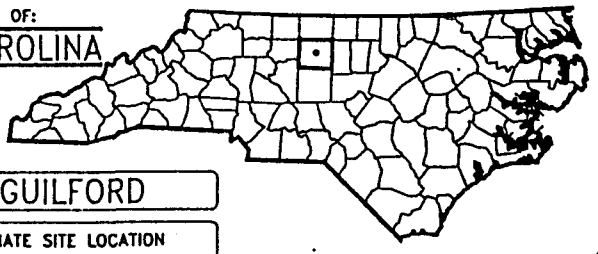
MAP DATE: 1951 PHOTOREVISION DATE: 1968

PHOTOREVISIONS NOTED IN PURPLE (COLOR MAPS)

NOTE: CIRCLE SURROUNDING SITE INDICATES AN APPROXIMATE 1500' RADII.

MAGNETIC NORTH

COUNTY MAP OF: NORTH CAROLINA



COUNTY: GUILFORD

APPROXIMATE SITE LOCATION

ENGINEERING GROUP, P.A.

CLIENT: CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF

PROPERTY NAME: 5900 SUMMITT AVE.

CITY: GREENSBORO STATE: NORTH CAROLINA

TITLE: TOPOGRAPHIC MAP

SCALE: 1"=2000'

DATE: 8/24/93

DRAWING NAME: USGS-1

DRAWN BY: DJ

CHECK BY: LT

JOB NUMBER: RS26-024

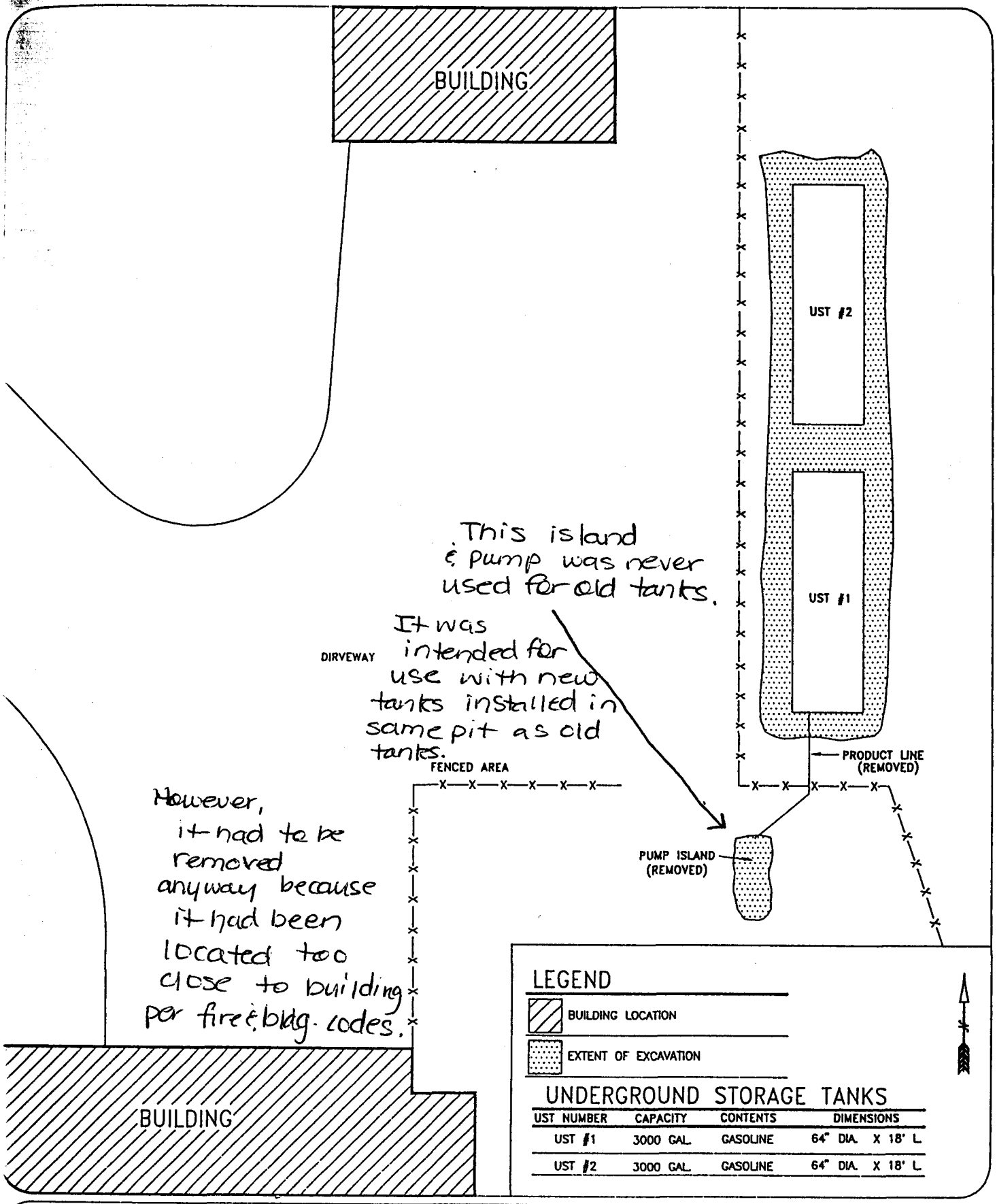
TYPE: TANK PULL

FIGURE NUMBER: 1

NOTES

TOPOGRAPHIC MAP USED IN THIS GRAPHIC IS MAPPED, EDITED, AND PUBLISHED BY THE UNITED STATES GEOLOGIC SURVEY, DEPARTMENT OF THE INTERIOR, RESTON VIRGINIA.

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.



UNDERGROUND STORAGE TANKS

UST NUMBER	CAPACITY	CONTENTS	DIMENSIONS
UST #1	3000 GAL.	GASOLINE	64" DIA. X 18' L.
UST #2	3000 GAL.	GASOLINE	64" DIA. X 18' L.

ENVI® ENGINEERING GROUP, P.A.

CLIENT: CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF

PROPERTY NAME: 5900 SUMMITT AVE.

CITY: GREENSBORO STATE: NORTH CAROLINA

TITLE: SITE PLAN

SCALE: 1"=10'

DATE: 8/23/93

DRAWING NAME: CNCS4D

DRAWN BY: DJ

CHECK BY: HH

JOB NUMBER: RS26-034

TYPE: TANK PULL

FIGURE NUMBER: 2

0 5 10

SCALE IN FEET (1"=10')

For safety, the internal atmosphere of each UST was tested with a lower explosive level meter (explosimeter) before additional activity. The vapors inside the tanks were measured to be greater than 10 percent of the lower explosive limit. Therefore, in accordance with American Petroleum Institute publication 1604, ENSCI personnel used dry ice to purge the tanks until they met this criterion. Periodic vapor monitoring with the lower explosive level meter ensured continued safety during tank removal.

Using a vacuum truck, approximately 129 gallons of residual liquids consisting primarily of water were removed from the tanks and transported offsite for disposal at Environmental Compliance Corporation in Winston-Salem, North Carolina.

4. UST Removal and Disposal

The USTs which were removed from the subject site were located on the east side of the facility, as illustrated in Figure 2. Excavation around each tank proceeded to the depth of the bottom of the tank. At that point, each UST was removed, cleaned of debris, and inspected by ENSCI personnel for any indications of a release. The results of this inspection are illustrated in Table 1.

Table 1: UST Size and Condition

UST #/Former Contents	Capacity/ Dimensions	Condition
UST #1 Gasoline	3,000 gallons 17'9" x 5'	minor corrosion; no visible holes
UST #2 Gasoline	3,000 gallons 17'9" x 5'	minor corrosion; no visible holes

Following inspection, each tank was labelled in preparation for transporting it to Mid-East Industrial in Carthage, North Carolina. The Certificate of Disposal is included as Appendix B. The pump island illustrated in Figure 2 was also removed by ENSCI.

5. Field Observations and Screening

Throughout excavation, soil was screened visually to determine the potential presence or absence of petroleum hydrocarbons (see Table 2).

Table 2: Field Observations

Area	Observations
UST #1	No staining or odor in cover material or excavation. No piping leak evidence.
UST #2	No staining or odor in cover material or excavation. No piping leak evidence.

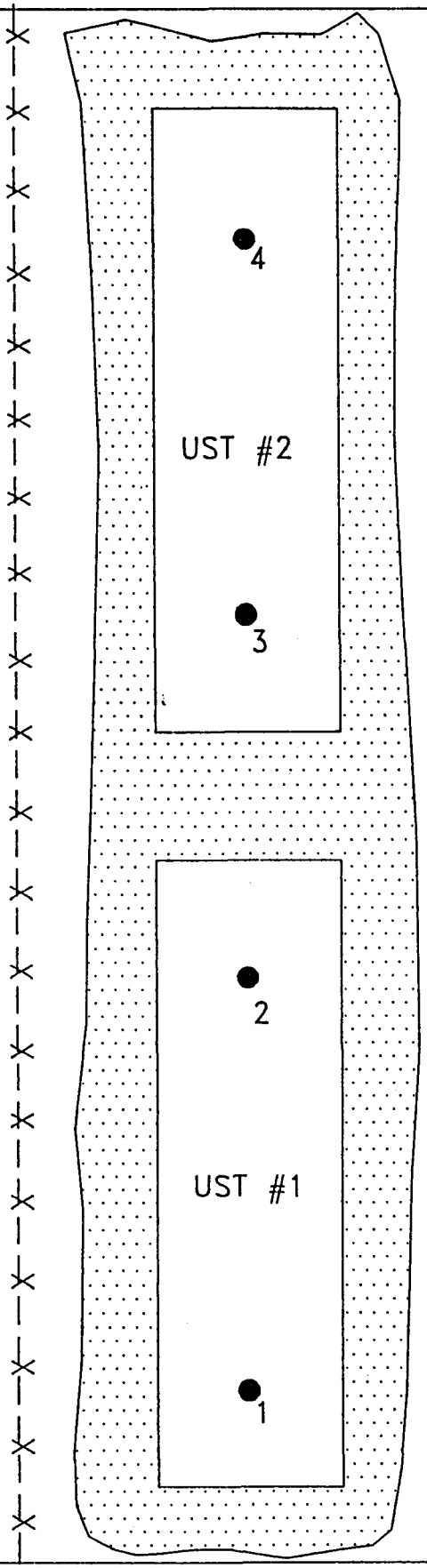
ENSCI did not encounter groundwater during site activities. Subsequent to the collection of samples (discussed in Section 6), all soil which was removed from the excavation was used as backfill. In order to replace the volume of the USTs, clean fill soil was used to return the excavation to the original grade.

6. Soil Sampling

6.1 Soil Sample Collection Procedure

As part of the limited site assessment required under 40 CFR 280.72 and 15A NCAC .0803, ENSCI collected samples of native soil located beneath each UST, as illustrated in **Figure 3**. When sampling equipment was reused, personnel used the following procedure in order to prevent cross-contamination:

1. Wash with nonphosphate detergent and water, brush to remove particulate matter.
2. Rinse with tap water.
3. Rinse with 10 percent nitric acid solution.
4. Rinse with deionized water.
5. Rinse with pesticide-grade isopropyl alcohol.
6. Rinse with deionized water.
7. Air dry as long as possible.



LEGEND

- EXTENT OF EXCAVATION
- SAMPLE LOCATION

UNDERGROUND STORAGE TANKS

UST NUMBER	CAPACITY	CONTENTS	DIMENSIONS
UST #1	3000 GAL.	GASOLINE	64" DIA. X 18' L.
UST #2	3000 GAL.	GASOLINE	64" DIA. X 18' L.

ENVI® ENGINEERING GROUP, P.A.

CLIENT: CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF

PROPERTY NAME: 5900 SUMMITT AVE.

CITY: GREENSBORO STATE: NORTH CAROLINA

TITLE: EXCAVATION DETAIL MAP

SCALE: 1"=5'

DATE: 8/23/93

DRAWING NAME: CNCS4D

DRAWN BY: DJ

CHECK BY: HH

JOB NUMBER: RS28-034

TYPE: TANK PULL

FIGURE NUMBER: 3

0 2.5 5

SCALE IN FEET (1"=5')

As an additional measure in preventing cross-contamination, latex gloves were worn by the sampling technician during these activities. Gloves were changed between samples.

The samples were packed in ice and maintained at 4°C during shipment to Research & Analytical Laboratories, Inc. in Kernersville, North Carolina for analysis. Chain of custody forms and analytical reports are included in Appendix C. Results are discussed in the sections that follow.

6.2 Analytical Methods and Results

Samples were analyzed for total petroleum hydrocarbons in the form of low boiling point fuel such as gasoline using EPA Method 5030. Results are presented in Table 3. A copy of the original laboratory report is included as Appendix C.

Table 3: Laboratory Results for Soil Samples
Results in parts per million

Sample	EPA Method 5030
1	<10*
2	<10*
3	<10*
4	<10*

* Not detected in concentrations exceeding the practical quantitation limit for the analysis (10 parts per million).

As illustrated in Table 3, results of laboratory analysis indicate no detections of petroleum hydrocarbons in the samples.

7. Summary

Two USTs were removed from the subject site and disposed of offsite. No evidence of potential soil impact was observed. Following UST removal, four soil samples were collected from undisturbed soil beneath the USTs. Based on laboratory analysis, none of

these samples exhibited petroleum hydrocarbon levels in excess of the method detection limit.

All soil which was removed from the excavation was used as backfill. In order to make up for tank volume, clean fill soil was used at the top of the backfilled area.

State of North Carolina
Department of Environment,
Health and Natural Resources
Winston-Salem Regional Office

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Leesha Fuller, Regional Manager

October 1, 1993

N.C. Dept. of Human Resources
Central N.C. School for the Deaf
Attn: Dan Falls
5900 Summit Ave.
P.O. Box 14670
Greensboro, NC 27415-4670

Subject : Underground Storage Tank Closure, 5900 Summit Ave., Greensboro, Guilford County, NC

Dear Mr. Falls:

On September 20, 1993, we received the soil sample results and closure assessment from the underground storage tank closure at the subject location. As the implementing agency for the Federal Underground Storage Tank Program for the State of North Carolina, we have determined from review of your assessment that the UST system has been closed in accordance with NCAC Title 15A Subchapter 2N Sections .0802 and .0803 and 40 CFR 280.71 and 280.71. However, this does not absolve you of any responsibility for contamination that may not have been detected or noted during the site assessment.

If you have any questions, please feel free to contact Kelly C. Gage at (919) 373-7565.

Sincerely,

W. Waddell Watters

W. Waddell Watters
Hydrogeologist II

cc:WSRO
Central Files-Guilford County
Guilford County Emergency Services

3809 Camden Falls Court, Greensboro, North Carolina 27410

March 22, 2000

Ms. Cindi Rintol
UST Section Head
North Carolina Dept. of Environment & Natural Resources
585 Waughtown Street
Winston-Salem, North Carolina 27107

Subject: **UST Closure Report Transmittal**
Central ~~North Carolina~~ NC School for the Deaf -B
5900 Summit Ave.
Greensboro, North Carolina
Guilford County

Phone/Fax

336-288-9879

Dear Ms. Rintol:

Please find attached one (1) copy of the UST closure report for the above referenced site. Call if you have any questions.

Very truly yours,

Earth Tech Engineering, Inc.

Eric K. Lintz, P.G
Project Manager

cc: Sharon Cihak (Guilford Co. Dept. Of Public Health) w/attachment
Brian Fruits (CNCSD)

attachments (1)

tech engineering & construction total water management

environmental services & remediation transportation

Underground Storage Tank (UST) Closure Report
NCDWM Form GW/UST-12

Location: 5900 Summit Avenue
Greensboro, NC 27214

Contractor: Eco Systems, Inc.
1108 Old Thomasville Road
High Point, NC 27260

Consultant: Earth Tech Engineering, Inc.
3809 Camden Falls Court
Greensboro, NC 27410

Client: Central North Carolina School for the Deaf
5900 Summit Avenue
Greensboro, NC 27214

March 6, 2000

Project # 34879.01

TABLE OF CONTENTS

UNDERGROUND STORAGE TANK CLOSURE REPORT

I. GENERAL INFORMATION

A. Ownership of UST(s)

1. **Name of UST owner:** *Central North Carolina School for the Deaf*

2. **Owner address and telephone number:**

5900 Summit Avenue
Greensboro, NC 27214
(336) 621-6490

B. Facility Information

1. **Facility name:** *Central North Carolina School for the Deaf*
Greensboro Campus Location

2. **Facility ID # :** *0-033577*

3. **Facility address, telephone number and county:**

5900 Summit Avenue
Greensboro, NC 27214
(336) 621-6490
Guilford County

C. Contacts

1. **Name, address, telephone number and job title of primary contact person:**

Clarke Martin, Business Manager
5900 Summit Avenue
Greensboro, NC 27214
(336) 621-6490

2. **Name, address and telephone number of closure contractor:**

Eco Systems, Inc.
1108 Old Thomasville Road
High Point, NC 27260
(336) 883-7505

3. **Name, address and telephone number of primary consultant:**

Earth Tech Engineering, Inc.
3809 Camden Falls Court
Greensboro, NC 27410
(336) 288-9879

4. **Name, address, telephone number, and State certification number of laboratory:**

Pace Analytical Services, Inc.
9800 Kincey Avenue, Suite 100
Huntersville, NC 28078
(704) 875-9092
NCDWM# 12

D. UST Information

TANK NO.	LOCATION	INSTALLATION DATES	SIZE (Gallons)	TANK DIMENSIONS	LAST CONTENTS	PREVIOUS CONTENTS (if any)
1	*Brown Hall*	*12/31/76*	*20,000*	*10'-6"x 31'6"*	*Heating Oil*	*None*
2	*Mehl Hall*	*12/31/76*	*20,000*	*10'-6"x 31'6"*	*Heating Oil*	*None*
3	*Central Kitchen*	*12/31/76*	*1,000*	*12' x 3'-9"*	*Heating Oil*	*None*
4	*Maintenance Building*	*12/31/76*	*7,500*	*8'x 20'*	*Heating Oil*	*None*

E. Site Characteristics

1. **Describe any past releases at this site:**

No known releases.

2. **Is the facility active or inactive at this time? If the facility is inactive, note the last time the USTs were in operation:**

The USTs were located at four different buildings on the Greensboro campus of the Central North Carolina School for the Deaf (CNCSFD). The original use of the UST's was to store and supply heating oil to boilers at four different buildings. The UST's were emptied of their contents on 3/24/93 and taken out of service until they were removed in October of 1999.

3. **Describe surrounding property use (for example, residential, commercial, farming, etc.):**

All immediate surrounding property appears to be undeveloped land.

4. **Describe site geology/hydrogeology:**

The project site is in the Carolina Slate Belt Geologic Province of North Carolina. The subsurface geology is typically characterized as a metamorphosed granitic rock. The specific surficial geology noted at the site was a brownish-red clay.

Groundwater was not encountered during the UST removals.

II. CLOSURE PROCEDURES

A. Describe preparations for closure including the steps taken to notify authorities, permits obtained and the steps taken to clean and purge the tanks:

- *Earth Tech was tasked with a professional oversight role as the consultant on this project. Eco Systems, of High Point, NC was the removal contractor. Earth Tech provided one field technician to oversee all phases of the UST removals and to keep field notes. The client was notified and coordination was maintained throughout the project.*
- *Eco Systems mobilized personnel and equipment to site on October 12, 1999.*
- *A soil staging area was setup with 10 mil polyliner and excavation commenced at Brown Hall.*
- *Eco Systems experienced an equipment failure and subsequently mobilized to the Central Kitchen location where the same excavation procedures were followed. Brown Hall, the Maintenance Building, and Mehl Hall were subsequently performed in the same manner.*
- *The final depth to the base of the UST at Central Kitchen was recorded at approximately 7' below grade. At Brown Hall, it was approximately 18'. At the Maintenance Building, it was approximately 13'. At Mehl Hall, it was approximately 17'.*

- *The USTs were transported to Eco Systems, High Point, North Carolina where they were cleaned and then transported to D.H. Griffin Wrecking Company, Inc., Greensboro, NC where they were destroyed (see Appendix A).*

- ***Central Kitchen:*** *Two (2) grab soil samples were collected from the bottom of the tank, and one (1) grab soil sample was collected along the pipe run (see Figure 3). All samples were submitted to a certified laboratory per North Carolina Division of Waste Management (DWM) guidelines, and analyzed for TPH 3550 / 5030 analyses (see Table 1).*

- ***Brown Hall:*** *A concrete hold-down pad was discovered at the bottom of this excavation. At the direction of Guilford County Environmental Department, four (4) grab soil samples were collected along each long side of the pad and two (2) grab soil samples were collected along each end of the pad for a total of twelve (12) bottom samples. Then, two (2) grab soil samples were collected along the pipe run (see Figure 3). All samples were submitted to a certified laboratory per North Carolina Division of Waste Management (DWM) guidelines, and analyzed for TPH 3550 / 5030 analyses (see Table 1).*

- ***Maintenance Building:*** *A concrete hold-down pad was discovered at the bottom of this excavation. At the direction of Guilford County Environmental Department, three (3) grab soil samples were collected along each long side of the pad and two (2) grab soil samples were collected along each end of the pad for a total of ten (10) bottom samples. Then, two (2) grab soil samples were collected along the pipe run (see Figure 3). All samples were submitted to a certified laboratory per North Carolina Division of Waste Management (DWM) guidelines, and analyzed for TPH 3550 / 5030 analyses (see Table 1).*

- ***Mehl Hall:*** *A concrete hold-down pad was discovered at the bottom of this excavation. At the direction of Guilford County Environmental Department, four (4) grab soil samples were collected along each long side of the pad and two (2) grab soil samples were collected along each end of the pad for a total of twelve (12) bottom samples. Then, one (1) grab soil sample was collected along the pipe run. There was a visual indication that some petroleum contaminated soil (PCS) was present at one end of the excavation. The suspected PCS was delineated and stockpiled separately from the rest of the excavation. Subsequently, one (1) grab soil sample was collected from the stockpile of suspected PCS (see Figure 3). All samples were submitted to a certified laboratory per North Carolina Division of Waste Management (DWM) guidelines, and analyzed for TPH 3550 / 5030 analyses (see Table 1).*

- *The excavation was backfilled with the excavated soils and supplemented with additional off-site sand rock, bringing the excavation back to near original grade.*

- *The surface of each excavation was restored with either stone or grass to match the prior grade cover.*

B. Note the amount of residual material pumped from the tank(s):

At Central Kitchen, Brown Hall, and the Maintenance Building, there was very minimal residual product (much less than 1% of each UST volume). However, at Mehl Hall, approximately 100 gallons of product was pumped from the UST and transported by Eco Systems to Shamrock Environmental Corporation in Greensboro, NC.

C. Describe the storage, sampling and disposal of the residual material:

All remaining residual material generated from the UST closure, destruction, and disposal was containerized by Eco Systems during cleaning activities. Eco Systems utilizes Shamrock Environmental Corporation, High Point, NC for residual fluid disposal, and Waste Management, Kernersville, NC for residual solid disposal.

D. Excavation:

1. Describe excavation procedures noting the condition of the soils and the dimensions of the excavation in relation to the tanks, piping and/or pumps:

Central Kitchen: *The excavation was performed via backhoe with only enough soil excavated to extract the UST. The excavated soils did not appear to be petroleum impacted. The final dimension of the UST excavation was approximately 14' long x 8' wide x 7' deep.*

Brown Hall: *The excavation was performed via trackhoe with only enough soil excavated to extract the UST. The excavated soils did not appear to be petroleum impacted. The final dimension of the UST excavation was approximately 35' long x 14' wide x 18' deep.*

Maintenance Building: *The excavation was performed via trackhoe with only enough soil excavated to extract the UST. The excavated soils did not appear to be petroleum impacted. The final dimension of the UST excavation was approximately 27' long x 12' wide x 13' deep.*

Mehl Hall: *The excavation was performed via trackhoe to extract the UST. Approximately 30 tons of additional excavated soil appeared to be petroleum impacted. The final dimension of the UST excavation was approximately 37' long x 14'-6" wide x 17' deep.*

2. **Note the depth of tank burial(s) (from land surface to top of tank):**

Central Kitchen: *The top of the UST was approximately three and one half feet (3.5') below grade.*

Brown Hall: *The top of the UST was approximately five and one half feet (5.5') below grade.*

Maintenance Building: *The top of the UST was approximately five feet (5') below grade.*

Mehl Hall: *The top of the UST was approximately four and one half feet (4.5') below grade.*

3. **Quantity of soil removed:**

Only enough soil to extract the UST's were removed with exception of Mehl Hall, where approximately 30 tons of suspected PCS was encountered. Only excavated soils that were apparently clean were placed back into the excavation.

4. **Describe soil type(s):**

Subsurface residual soils at the site consisted primarily of brownish-red clay.

5. **Type and source of backfill used:**

The soils excavated to extract the USTs were used as backfill. Off-site stone was used to fill the void once occupied by the USTs.

E. Contaminated Soil

1. **Describe how it was determined to what extent to excavate the soil:**

With the exception of Mehl Hall, only enough soil to extract the USTs was excavated as noted in Section 5.5 of the NC "Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater."

2. **Describe method of temporary storage, sampling and treatment/disposal of soil:**

A soil staging area was set up with a 10 mil polyliner at Mehl Hall due to suspected PCS. No temporary material storage was required at the other sites as all excavated material was apparently clean and placed back in the excavation after the USTs were removed. At Mehl Hall, approximately 30 tons of suspected PCS was encountered and excavated in an effort to clean the excavation.

III. SITE INVESTIGATION

A. Provide information on field screening and observations, include methods used to calibrate field screening instrument(s):

An organic vapor analyzer (OVA) was used to screen soils for petroleum hydrocarbon contamination. The OVA used is a flame ionization detector (FID) which was calibrated prior to mobilization by inserting the probe into an airtight bag filled with 95.0 ppm methane calibration gas. The SPAN was adjusted accordingly. The OVA was utilized continuously during the excavation activities to screen soils encountered for organic vapors. Petroleum vapors were detected via OVA during the excavation of the USTs.

B. Describe soil sampling points and sampling procedures used:

Forty-three (43) soil samples were collected during removal activities for laboratory submittal. Samples consisted of 36 grab samples total at the bases of the UST excavations, six (6) grab samples total under the pipe runs, and one (1) grab sample under the excavated soil stockpile of suspected PCS (see Figure 2). Specific locations of samples are mentioned in Section II.A of this report.

The soil samples from the base of the excavation were collected from the undisturbed portion of the backhoe/trackhoe bucket. The soil sample from the stockpile was collected by hand from several primary samples, which were co-mingled in a clean ziplock bag prior to placement in a laboratory grade glass jar.

C. Describe groundwater or surface water sampling procedures used, including:

Groundwater/surface water not encountered.

D. Quality control measures

For each soil sample collected, a clean pair of disposable gloves were worn. Each sample was placed into a laboratory grade glass jar and sealed. Each jar was lightly packed with soil, secured with a Teflon lid, and identified with a waterproof label. The samples were immediately placed in a chilled cooler, packed with ice bags, and transported to the designated laboratory. A chain of custody form was included with the samples indicating sample number, location, time, date, and analytical parameters. Sample numbers and locations were clearly recorded in a site log and sketched on a site map.

Samples were shipped by overnight courier to the contracted state certified laboratory as specified in Section I.C.4.

E. Investigation results

The analysis consisted of TPH 5030 and TPH 3550 per the guidelines for a suspected heating oil release (see Table 1 & Appendix D). The subsequent laboratory results reported some contaminant concentrations above the minimum state action limits of 10.0 mg/kg and 40.0 mg/kg for TPH 5030 and TPH 3550, respectively. The 1,000 gallon UST at the Central Kitchen only had one TPH 3550 concentration above the minimum action limit. In particular, the sample collected at the west bottom of the excavation reported a TPH 3550 concentration of 41.0 mg/kg, which is just 1.0 ppm above the action limit of 40.0 mg/kg.

The 20,000 gallon UST at Brown Hall had no reported TPH concentrations above the minimum action limit and can therefore be deemed clean. The other two (2) remaining USTs, one (1) 7500 gallon at the Maintenance Building and one (1) 20,000 gallon at the Mehl Hall both have elevated TPH contamination remaining in the excavation.

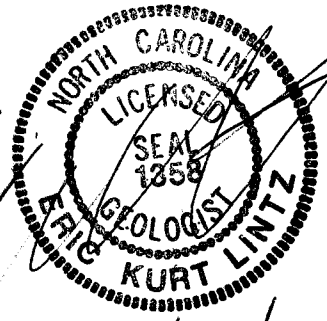
IV. CONCLUSION

As previously noted, in Section E, there remains some elevated TPH concentrations particularly at two (2) of the four (4) former UST locations. Both the Maintenance Building UST and the Mehl Hall UST will likely require some additional investigation utilizing the UST Section's "Risk Based Soil Cleanup Requirements." The customary next step would be to prepare a Limited Site Assessment (LSA) for the confirmed releases such that the NCDENR will be able to classify the site specific risk.

V. SIGNATURE OF PROFESSIONAL ENGINEER OR LICENSED GEOLOGIST

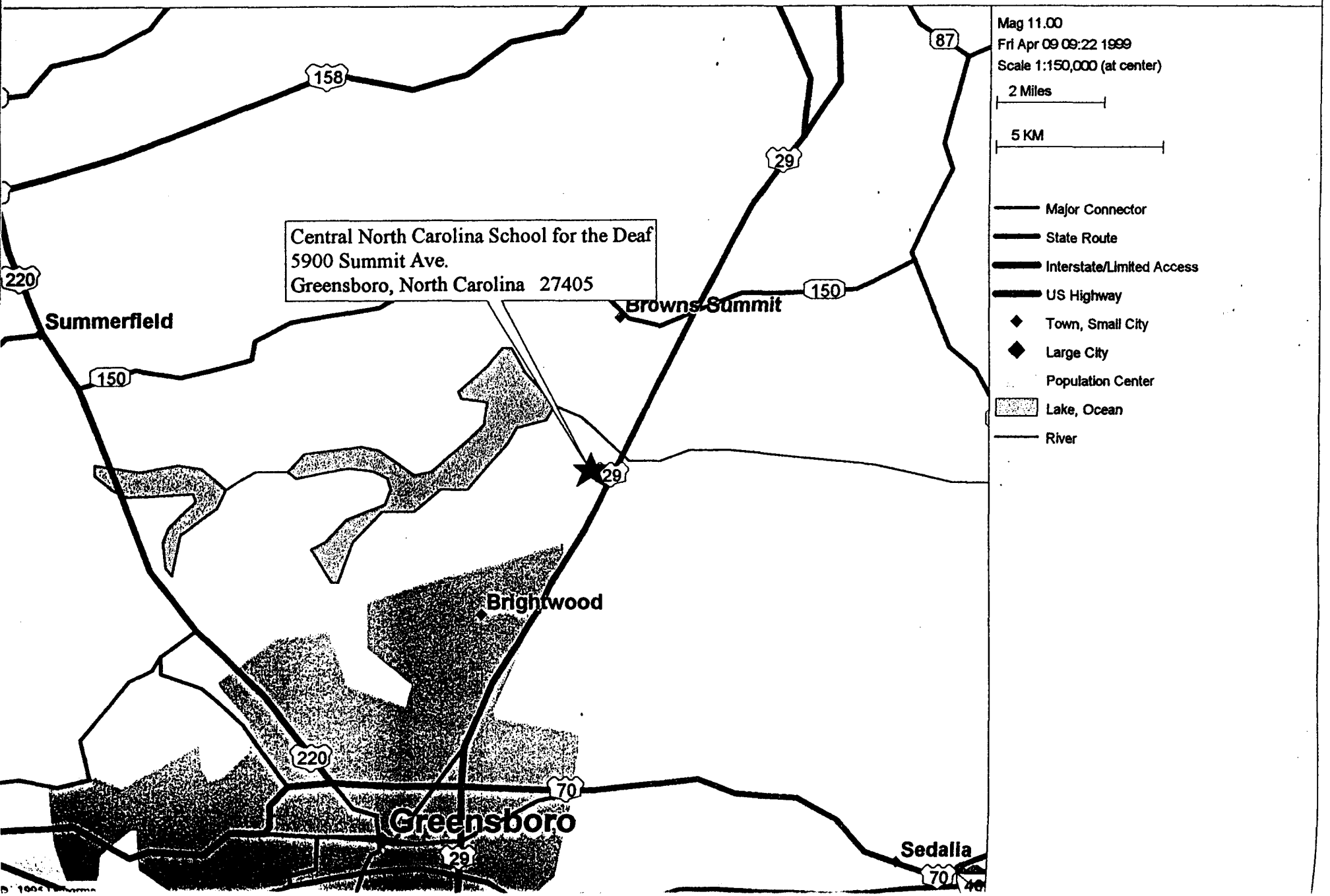
Earth Tech Engineering, Inc., a registered North Carolina Professional Corporation, has remained in responsible charge throughout the completion of this UST Closure Report. As the professional in responsible charge, the UST closure and report were completed using acceptable technical practices consistent with the North Carolina Division of Waste Management (DWM) laws, regulations, and guidelines.

Eric Lintz, PG (NC LG No. 1358)
Project Manager



3/22/00

Vicinity Map, Central NC School for the Deaf



SUMMIT AVENUE

ENTRANCE

VISITOR PARKING

HALL MERICKA MAIN OFFICE

EXISTING F.A. ENTRANCE CABINET WITH NEW LIGHTNING ARRESTOR

EXISTING MAIN ANNUNCIATOR PANEL TO BE DISCONNECTED AND LEFT IN PLACE

HALL MERICKA

EXISTING BUILDING F.A. CONTROL PANEL

POWER ONLY

DIXON BLDG.

EXISTING F.A. ENTRANCE CABINET WITH NEW LIGHTNING ARRESTOR

EXISTING BUILDING F.A. CONTROL PANEL

EXISTING FIRE ALARM ENTRANCE CABINET WITH NEW LIGHTNING ARRESTOR

EXISTING BUILDING F.A. CONTROL PANEL

PHILLIP PAYNE BLDG.

POWER ONLY

BROWN HALL

EXISTING BUILDING F.A. CONTROL PANEL

BROWN HALL

POWER ONLY

EXISTING F.A. ENTRANCE CABINET WITH NEW LIGHTNING ARRESTOR

EXISTING F.A. ENTRANCE CABINET WITH NEW LIGHTNING ARRESTOR

EXISTING BUILDING F.A. CONTROL PANEL

SIMPSON WILLIAMS GYMNASIUM

NEW SURFACE MOUNTED ANNUNCIATOR PANEL LOCATION SIMPLEX 2120 SERIES OR EQUAL IN BASE BID

NEW 1" EMT CONDUIT w/ 4 PAIR SHIELDED 18 GA. CABLE IN BASE BID

MEHL HALL

EXISTING BUILDING F.A. CONTROL PANEL

CENTRAL KITCHEN

MEHL HALL

EXISTING FIRE ALARM ENTRANCE CABINET WITH NEW LIGHTNING ARRESTOR

CENTRAL KITCHEN

EXISTING BUILDING F.A. CONTROL PANEL

MAINTENANCE BUILDING

EXISTING BUILDING F.A. CONTROL PANEL

MAINTENANCE BLDG.

0 80 120

ADD ALT. #1 (OUTLINE)

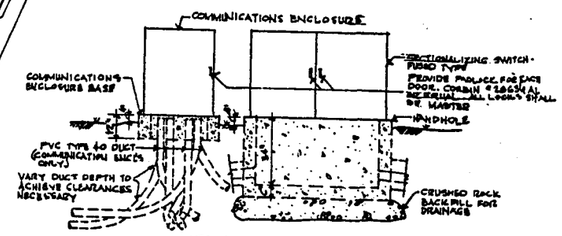
REMOVE EXISTING SINGLE PAIR CABLE IN UNDERGROUND DUCTS (SEE SECTION B-B) REPLACE WITH NEW FOUR PAIR CABLE AS SPECIFIED.

ADD ALT. #2 (OUTLINE)

REPLACE EACH EXISTING BUILDING F.A. CONTROL PANEL WITH NEW FIRE ALARM PANEL AS SPECIFIED.

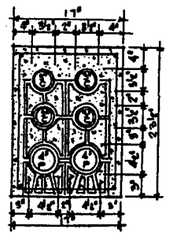
BASE BID (OUTLINE)

1. REPLACE EXISTING AUDIO-VISUAL UNITS WITH NEW STROBES AS INDICATED.
2. ADD NEW STROBES TO EXISTING BELL AS INDICATED.
3. ADD ADDITIONAL NEW STROBES IN NEW LOCATIONS SHOWN, WITH CONNECTING WIRING.
4. REPLACE EXISTING MAIN ANNUNCIATOR PANEL IN MERICK HALL WITH NEW ANNUNCIATOR PANEL, LOCATE IN MEHL HALL.
5. REWORK EXISTING BUILDING F.A. CONTROL PANELS TO OPERATE NEW STROBES.
6. INSTALL LIGHTNING ARRESTORS ON MAIN ANNUNCIATOR PANEL.
7. INSTALL LIGHTNING ARRESTORS ON INCOMING F.A. CABLES AT EACH F.A. ENTRANCE CABINET.



FRONT VIEW

"A" EXISTING COMMUNICATIONS ENCLOSURE AND SECTIONALIZING SWITCH - FUSED TYPE NOT TO SCALE



SECTION B-B NOT TO SCALE

SECTION THRU EXISTING UNDERGROUND DUCT BANK... (TYPICAL)

--E-- EXISTING UNDERGROUND ELEC.

RECEIVED
JUN 18 1987
C.N.C.S.D.

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 2307 WILLIAM R. ATKINSON

6/16/87

MACRAE-BELL ASSOCIATES, ARCHITECTS, P.C. CERT. No. 74 GREENSBORO, N.C.

NO.	DATE	REVISION

MACRAE - BELL ASSOCIATES ARCHITECTS, P.C.
3808 W. FRIENDLY AVE.
GREENSBORO, N.C. 27410
PHONE (919) 378-1060

DATE JUN 16 1987

DRAWN

JOB NO. 8703

VISUAL FIRE ALARMS AND ELECTRONIC MONITORING SYSTEM

323755

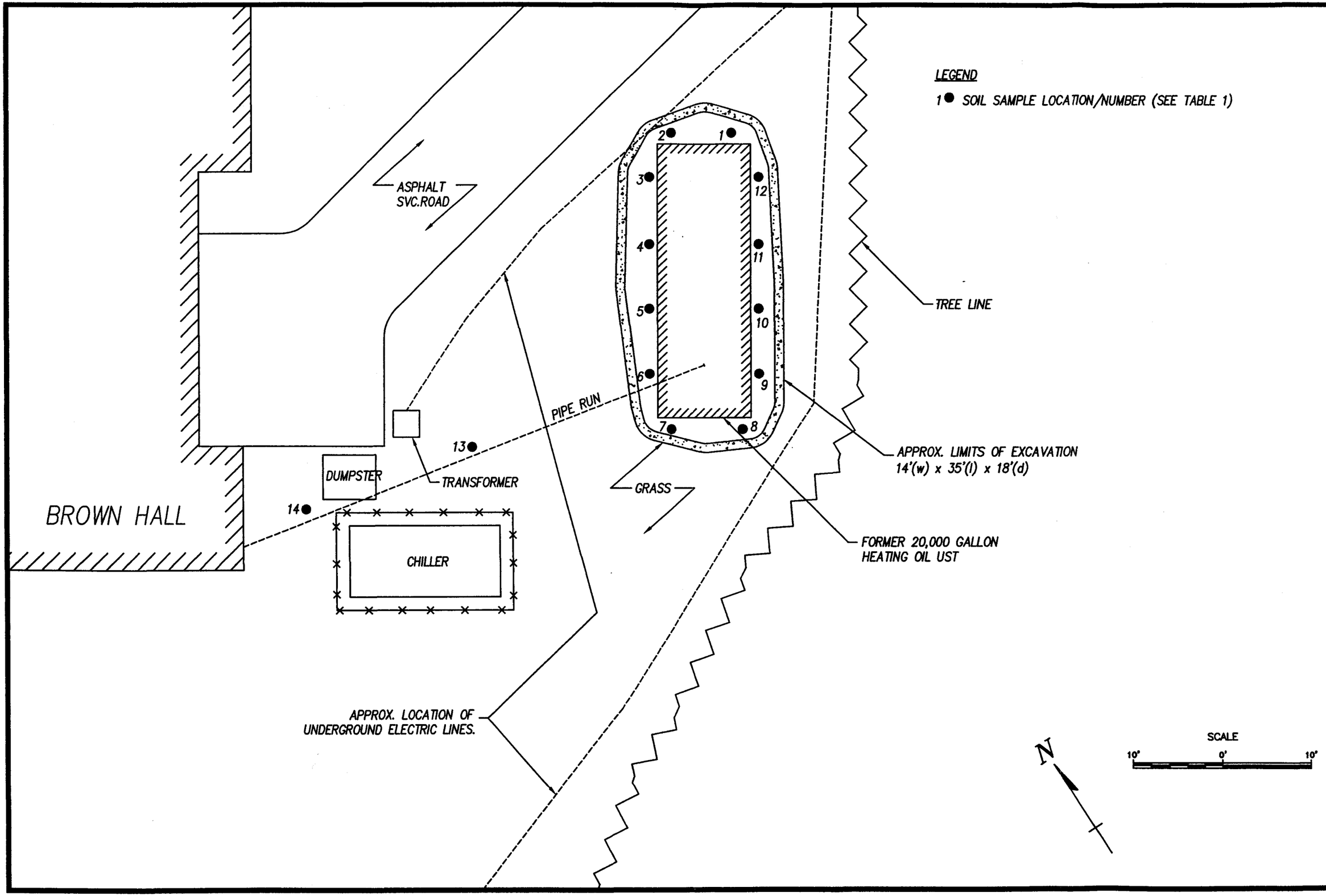
CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF
GREENSBORO, NORTH CAROLINA

NEW & EXISTING SITE ALARM SYSTEM LAYOUT

SHEET NO.

S-1

OF



EARTH TECH

311-J SOUTH WESTRIDGE DRIVE • GREENSBORO, NORTH CAROLINA 27407 • (910) 299-0000

CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF
5900 SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA 27405

SITE MAP – 20,000 GAL #2 HEATING OIL UST

DESIGNED BY	EXL	DATE	MAR 00
DRAWN BY	EXL	DATE	MAR 00
SCALE	AS SHOWN		

N

APPROXIMATE SCALE

10' 0' 10'

ASPHALT DRIVE

ASPHALT PARKING

GRASS

DUMPSTER PAD

ASPHALT DRIVE

MEHL HALL

13

PIPE RUN

VENT

TRANSFORMER

12 11 10 9

1 8

2 7

3 4 5 6

FORMER 20,000 GALLON HEATING OIL UST

GRAVEL

APPROX. LIMITS OF EXCAVATION
14'6"(w) x 37'(l) x 17'(d)

STORMWATER MANHOLE

LEGEND

1 ● SOIL SAMPLE LOCATION/NUMBER (SEE TABLE 1)

EARTH TECH
311-J SOUTH WESTGATE DRIVE • GREENSBORO, NORTH CAROLINA 27407 • (910) 299-0000

CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF
5900 SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA 27405

SITE MAP - 20,000 GAL #2 HEATING OIL UST

DESIGNED BY EXL	DATE FEB 00		
DRAWN BY EXL	DATE FEB 00		
SCALE AS SHOWN			

SCALE
10' 0' 10'

N

LEGEND

1 ● SOIL SAMPLE LOCATION/NUMBER (SEE TABLE 1)

APPROX. LIMITS OF EXCAVATION
8'(w) x 14'(l) x 7'(d)

1 2

LOCATION FORMER 1,000 GALLON HEATING OIL UST

PIPE RUN

3

GRASS

TREE LINE

APPROX. LOCATION OF UNDERGROUND ELECTRIC LINES.

CENTRAL KITCHEN

ASPHALT ROAD

EARTH TECH

311-J SOUTH HERITAGE DRIVE • GREENSBORO, NORTH CAROLINA 27407 • (910) 288-6888

CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF
5900 SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA 27405

SITE MAP - 1,000 GAL FUEL OIL UST

DESIGNED BY EXL	DATE MAR 00
DRAWN BY EXL	DATE MAR 00
SCALE	AS SHOWN

N

SCALE
10' 0' 10'

LEGEND
1 ● SOIL SAMPLE LOCATION/NUMBER (SEE TABLE 1)

RAILROAD TIES

TREE LINE

GRAVEL

LOCATION FORMER 7,500
GALLON #2 HEATING OIL UST

ASPHALT

1 2 11 PIPE RUN 12

APPROX. LIMITS OF EXCAVATION
12'(w) x 27'(l) x 13'(d)

10 3 9 4 8 5 7 6

GRASS

MAINTENANCE BUILDING

EARTH TECH
311-J SOUTH WESTOVER DRIVE • GREENSBORO, NORTH CAROLINA 27407 • (910) 288-0000

CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF
5900 SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA 27405

SITE MAP - 7,500 GAL #2 HEATING OIL UST

DESIGNED BY	DATE
EXL	MAR 00
DRAWN BY	DATE
EXL	MAR 00
SCALE	AS SHOWN

TABLE 1

Sample Identifications and Results

Central Kitchen – 1,000 Gallon Heating Oil UST Sample Summary				
Location	Sample ID	Depth	TPH 3550 (mg/kg)	TPH 5030 (mg/kg)
West Bottom	1	7'	41.0	<7.9
East Bottom	2	7'	13.0	<7.5
Pipe Run	3	3'	<7.2	<8.7

Brown Hall – 20,000 Gallon Heating Oil UST Sample Summary				
Location	Sample ID	Depth	TPH 3550 (mg/kg)	TPH 5030 (mg/kg)
North Excavation	1	18'	<6.5	<7.9
North Excavation	2	18'	10.0	<8.2
West Excavation	3	18'	12.0	<8.1
West Excavation	4	18'	<6.4	<7.7
West Excavation	5	18'	<6.4	<7.7
West Excavation	6	18'	<6.0	<7.2
South Excavation	7	18'	<5.9	<7.0
South Excavation	8	18'	<6.0	<7.1
East Excavation	9	18'	<6.0	<7.2
East Excavation	10	18'	<6.0	<7.2
East Excavation	11	18'	<6.2	<7.5
East Excavation	12	18'	<6.1	<7.3
Pipe Run	13	3'	<5.9	<7.1
Pipe Run	14	3'	<6.1	<7.3

Maintenance Building – 7,500 Gallon Heating Oil UST Sample Summary				
Location	Sample ID	Depth	TPH 3550 (mg/kg)	TPH 5030 (mg/kg)
North Excavation	1	13'	11.0	<7.4
North Excavation	2	13'	100.0	<7.1
East Excavation	3	13'	1100.0	60.0
East Excavation	4	13'	23.0	<7.4
East Excavation	5	13'	<5.9	<7.1
South Excavation	6	13'	110.0	<7.8
South Excavation	7	13'	<6.1	<7.4
West Excavation	8	13'	<6.8	<8.2
West Excavation	9	13'	<6.1	<7.3
West Excavation	10	13'	38.0	<7.7
Pipe Run	11	3'	<6.1	<7.3
Pipe Run	12	3'	<6.9	<8.3

Mehl Hall – 20,000 Gallon Heating Oil UST Sample Summary				
Location	Sample ID	Depth	TPH 3550 (mg/kg)	TPH 5030 (mg/kg)
West Excavation	1	17'	<6.7	<8.0
West Excavation	2	17'	55.0	<9.4
South Excavation	3	17'	7.8	<8.5
South Excavation	4	17'	<6.6	12.0
South Excavation	5	17'	<6.5	<7.8
South Excavation	6	17'	<7.1	<8.5
East Excavation	7	17'	<7.1	<8.5
East Excavation	8	17'	<7.3	<8.7
North Excavation	9	17'	270.0	11.0
North Excavation	10	17'	<6.9	<8.3
North Excavation	11	17'	14.0	<8.0
North Excavation	12	17'	12.0	<8.2
Pipe Run	13	3'	2700.0	<7.6

LAWGIBB GROUP

REPORT OF PHASE I LIMITED SITE ASSESSMENT

CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF GREENSBORO, NORTH CAROLINA

Coordinates in Decimal Degrees:
Lattitude: N 36°, 10' 9"
Longitude: W 79° 43' 7"

Issued: July 6, 2001

Incident Number: 21547
Facility Identification Number: 0-033577
UST owner/operator: Central North Carolina School for the Deaf
Land Owner: Central North Carolina School for the Deaf

Release Information:

Incident Number: 21547
Date: June 2001
Estimated Quantity: Unknown.
Cause of Release: Release from USTs discovered during removal.
Size and Contents: 1,000, 7,500, and 2- 20,000-gallon capacity, USTs contained heating oil.

Consultant:
Law Engineering and Environmental Services, Inc.
7347-E West Friendly Avenue
Greensboro, North Carolina 27410

James J. Gonsiewski, L.G.
Senior Geologist
NC License 1371

NORTH CAROLINA LICENSED SEAL 1371 GEOLOGIST JAMES J. GONSIEWSKI

Mark I. Miller, L.G.
Principal Geologist
NC License 1715

LAW Project No. 30440-1-0496

LAWGIBB GROUP

July 6, 2001

Ms. Sharon Cihak
Guilford County Department of Public Health
Environmental Health Division
1100 East Wendover Avenue
Greensboro, North Carolina 27405

Subject: **Report of Phase I Limited Site Assessment**
Central North Carolina School for the Deaf
5900 Summit Avenue
Greensboro, North Carolina
LAW Project No. 30440-1-0496

Dear Ms. Cihak:

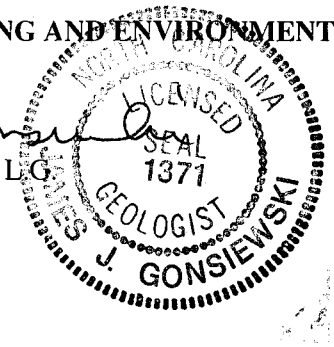
On behalf of the Central North Carolina School for the Deaf, Law Engineering and Environmental Services, Inc. (LAW) is submitting this *Report of Phase I Limited Site Assessment* for the subject site. Included in this report is a description of the field activities, the results obtained, and our conclusions and recommendations.

This Limited Site Assessment report has been prepared in general accordance with the Underground Storage Tank Limited Site Assessment guidelines presented in the NCDENR *Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater Volume II* dated July 2001. As described in the report, LAW considers this site to meet the requirements for regulatory closure, and recommends that the NCDENR issue a No Further Action Required letter for the site.

We appreciate your consideration and cooperation in the submission of this report.

Sincerely,

LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.



James J. Gonsiewski, L.G.
Senior Geologist
NC License 1371

Mark I. Miller, L.G.
Principal Geologist
NC License 1715

Attachments

cc: Mr. Terry Hatcher, North Carolina Department of Health and Human Services
Mr. Greg Benton, Central North Carolina School for the Deaf

LAW Engineering and Environmental Services, Inc.
7347-E West Friendly Avenue • Greensboro, NC 27410
336-294-4221 • Fax: 336-294-4227

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FIGURES

APPENDICES

1.0 INTRODUCTION

The subject site is the Central North Carolina School for the Deaf located on Summit Avenue in Greensboro, North Carolina (Figure 1). The school has recently closed.

Four heating oil underground storage tanks (USTs) were removed from the site in October 1999. The approximate locations of these USTs are shown on Figure 2. Volatile and semi-volatile TPH were detected in the confirmation soil samples collected beneath the former UST in the vicinity of the maintenance building (UST 1, Figure 2) at a depth of approximately 13 feet below ground surface. The samples contained volatile TPH at concentrations of up to 60 milligrams per kilogram (mg/kg) and semi-volatile TPH at concentrations of up to 1,100 mg/kg. Semi-volatile TPH was detected in the confirmation soil samples collected beneath the former UST in the vicinity of the central kitchen building (UST 2, Figure 2) at a depth of approximately 7 feet below ground surface at concentrations of up to 41 mg/kg. Volatile and semi-volatile TPH were detected in the confirmation soil samples collected beneath the former UST in the vicinity of Mehl Hall (UST 3, Figure 2) at depths from 3 to 17 feet below ground surface. The samples contained volatile TPH at concentrations of up to 12 mg/kg and semi-volatile TPH at concentrations of up to 2,700 mg/kg. Semi-volatile TPH was detected in the confirmation soil samples collected beneath the former UST in the vicinity of Brown Hall (UST 4, Figure 2) at a depth of approximately 17 feet below ground surface at concentrations of up to 12 mg/kg. The results of the UST Closure and additional soil excavation and sampling activities were provided in the Earth Tech's *Underground Storage Tank (UST) Closure Report* to the Central North Carolina School for the Deaf dated March, 2000. A copy of the report was forwarded to the Guilford County Department of Public Health, Environmental Health Division, in Greensboro, North Carolina.

Earth Tech and Eco Systems, Inc. were on-site to remove and stockpile approximately 30 tons of contaminated soil from the UST excavation in the vicinity of Mehl Hall. Laboratory analysis of a confirmation soil sample collected from the stockpile detected volatile total petroleum hydrocarbons (TPH) at a concentration of 59 milligrams per kilogram (mg/kg) and semi-volatile TPH at a concentration of 490 mg/kg. Since these concentrations were above the State of North Carolina action level of 10 mg/kg, the soil was loaded and transported to ES&J Enterprises in Autryville, North Carolina for remediation.

New requirements for assessment and cleanup of petroleum UST release sites became effective with the advent of Risk Based Corrective Action (RBCA) rules for petroleum USTs (15A NCAC 2L .0115) in January 1998 and July 2001. The scope of services LAW proposed comprised the activities necessary to complete a Phase I Limited Site Assessment in accordance with the RBCA rules and associated guidance.

1.1 Purpose of Investigation

The purpose of this Phase I Limited Site Assessment (Phase I LSA) was to identify site-specific factors that will allow DWM to determine the risk classification for the site. LAW conducted this work to meet requirements of the RBCA rules established by the NCDENR in July 2001 and codified in 15A NCAC 2L .0115.

1.2 Scope of Work

The Phase I LSA at the Central North Carolina School for the Deaf included the collection of soil and groundwater samples for laboratory testing, and the evaluation of potential receptors and risk factors associated with the site. The Phase I LSA was performed to satisfy the requirements of the RBCA rules. Guidelines established by the NCDENR to assist in meeting the rules are provided in *Groundwater Section Guidelines for the Investigation and Remediation of Soil and Groundwater, Volume II: Petroleum Underground Storage Tanks, July 2001* (the Guidelines). This report is formatted in general accordance with the outline presented on pages 138 through 147 of the Guidelines, under the section "Limited Site Assessment Report."

2.0 BACKGROUND

2.1 Site Name

Central North Carolina School for the Deaf
Greensboro, Guilford County, North Carolina 27420.

2.2 Latitude and Longitude of Site

Lattitude: N 36° 10' 9"
Longitude: W 79° 43' 7"

Source: Street Atlas USA, Version 5.0, DeLorme, Inc., Yarmouth, Maine

2.3 Incident Number

The site incident number is 21547.

2.4 Facility Identification Number

The facility identification number is 0-033577.

2.5 Date of Report

July 6, 2001.

2.6 Current UST owner, UST operator, and/or other persons responsible for release or discharge

The UST owner/operator is:

Central North Carolina School for the Deaf
P.O. Box 26030
Greensboro, North Carolina 27420-6030
Phone: (336) 621-6490

2.7 Consultants

Law Engineering and Environmental Services, Inc.
7347-E West Friendly Avenue
Greensboro, North Carolina 27410
Attention: Mr. Mark I. Miller, L.G.
(336) 294-4221

2.8 Release Information

Date: Release date is not known. Soil contamination was identified following removal of the USTs at the site. The initial findings were documented in Earth Tech's *Underground Storage Tank (UST) Closure Report* dated March 6, 2000. The Guilford County Department of Public Health, Environmental Health Division was provided with a copy of Earth Tech's report.

Estimated Quantity: Unknown.

Cause of Release (piping/UST): Former USTs located on-site which reportedly contained heating oil.

Size and Contents of the UST System: Four heating oil USTs with capacities of 1,000, 7,500, and two 20,000 gallons.

2.9 Land Owner

Central North Carolina School for the Deaf

2.10 Summary Table

UST SYSTEM IDENTIFICATION	PRODUCT	CAPACITY	DATE INSTALLED	DATE REMOVED/RELEASE DISCOVERED?
UST 1	Heating Oil	7,500 Gallons	12/76	10-99/10-99
UST 2	Heating Oil	1,000 Gallons	12/76	10-99/10-99
UST 3	Heating Oil	20,000 Gallons	12/76	10-99/10-99
UST 4	Heating Oil	20,000 Gallons	12/76	10-99/10-99

3.0 SITE CHARACTERIZATION

3.1 Background Information

Four heating oil USTs were removed from the site in October 1999. The approximate locations of these USTs are shown on Figure 2. Volatile and semi-volatile TPH were detected in the confirmation soil samples collected beneath the former UST in the vicinity of the maintenance building (UST 1, Figure 2) at a depth of approximately 13 feet below ground surface. The samples contained volatile TPH at concentrations of up to 60 mg/kg and semi-volatile TPH at concentrations of up to 1,100 mg/kg. Semi-volatile TPH was detected in the confirmation soil samples collected beneath the former UST in the vicinity of the central kitchen building (UST 2, Figure 2) at a depth of approximately 7 feet below ground surface at concentrations of up to 41 mg/kg. Volatile and semi-volatile TPH were detected in the confirmation soil samples collected beneath the former UST in the vicinity of Mehl Hall (UST 3, Figure 2) at depths from 3 to 17 feet below ground surface. The samples contained volatile TPH at concentrations of up to 12 mg/kg and semi-volatile TPH at concentrations of up to 2,700 mg/kg. Semi-volatile TPH was detected in the confirmation soil samples collected beneath the former UST in the vicinity of Brown Hall (UST 4, Figure 2) at depths of approximately 17 feet below ground surface at concentrations of up to 12 mg/kg. The results of the UST Closure and additional soil excavation and sampling activities were provided in the Earth Tech's *Underground Storage Tank (UST) Closure Report* to the Central North Carolina School for the Deaf dated March, 2000. A copy of the report was

forwarded to the Guilford County Department of Public Health, Environmental Health Division, in Greensboro, North Carolina.

Earth Tech and Eco Systems, Inc. were on-site to remove and stockpile approximately 30 tons of contaminated soil from the UST excavation in the vicinity of Mehl Hall. Laboratory analysis of a confirmation soil sample collected from the stockpile detected volatile TPH at a concentration of 59 mg/kg and semi-volatile TPH at a concentration of 490 mg/kg. Since the concentrations were above the State of North Carolina action level of 10 mg/kg, he soil was loaded and transported to ES&J Enterprises in Autryville, North Carolina for remediation.

Incident Number: The incident number for the subject site is 21547.

Previous Site Ranking: The subject site has not been assigned risk-based ranking by the North Carolina Department of Environment and Natural Resources.

Contaminant type: Heating Oil

Source (tank, piping include size):

The source of contamination was the USTs formerly located on the subject site.

Quantities released: Unknown

Date of release discovery:

Soil contamination was identified during the removal of the USTs in October 1999 and documented in Earth Tech's *Underground Storage Tank (UST) Closure Report* dated March 6, 2000.

Cause of release: Release from USTs.

Initial abatement/remedial actions:

The UST and associated piping were removed from the subject site October 1999.

Assessment and Additional Remedial Activities:

Earth Tech observed the excavation of petroleum-impacted soil in the vicinity of the former UST near Mehl Hall. Approximately 30 tons of petroleum-impacted soil was removed from the site and remediated. The results of the supplemental sampling activities were presented in Earth Tech's *Underground Storage Tank (UST) Closure Report* dated March 6, 2000.

3.2 Summary of Events and Site History

The following is a chronological summary list of events and letters, reports and correspondence regarding the release incident.

October 1999

Four heating oil USTs were removed from the site by Eco Systems, Inc. During the closure of the USTs soil contamination was identified by Earth Tech personnel.

March 2000

A closure report, Earth Tech's *Underground Storage Tank (UST) Closure Report* dated March 6, 2000 outlining the results of the UST and soil excavation, was submitted to the Guilford County Department of Public Health.

March 2001

A Notice of Violation (NOV) was issued by the North Carolina Department of Environment and Natural Resources (NCDENR) requiring that a Limited Site Assessment (LSA) be completed for the Site.

4.0 RISK CHARACTERIZATION

A risk characterization must be conducted to demonstrate that the site meets the requirements for Low Risk classification prior to site closure. The following information has been provided to support a risk classification for the site.

4.1 Part I – Groundwater, Surface Water and Subsurface Vapor Migration Impacts

HIGH RISK

1) Has the discharge or release contaminated any water supply well including any used for non-drinking purposes? If yes, explain. **No.**

2) *Is a water supply well used for drinking water located within 1000 feet of the source area of the discharge or release?* **No.**

3) *Is a water supply well used for any purpose (e.g. irrigation, washing cars, industrial cooling water, filling swimming pools) located within 250 feet of the source area of the release or discharge?* **No.**

4) *Does groundwater within 500 feet of the source area of the discharge or the release have the potential for future use in that there is no other source of water supply other than groundwater? Explain.* **No.** Water is currently being supplied to the site by the City of Greensboro.

5) *Do vapors from the discharge or release pose a threat of explosion because of accumulation of the vapors in a confined space or pose any other serious threat to public health, public safety, or the environment? If yes, explain.* **No.**

6) *Are there any other factors that would cause the discharge or release to pose an imminent danger to public health, public safety, or the environment? If yes, explain.* **No.**

INTERMEDIATE RISK

1) *Is a surface water body located within 500 feet of the source area of the discharge or release? If yes, does the maximum groundwater contaminant concentration exceed the surface water quality standards and criteria found in 15A NCAC 2B .0200 by a factor of 10?* **No.** The nearest surface water feature is located approximately 600 feet north of the closest source area.

2) *Is the source area of the discharge or release located within a designated wellhead protection area as defined in 42 USC 300h-7(e)? If yes, explain.* ***No.*** Wellhead protection areas defined by 42 USC 300h-7(e) have not, as of this time, been designated by the state.

3) *Is the discharge or release located in the Coastal Plain physiographic region as designated on a map entitled "Geology of North Carolina" published by the Department in 1985? If yes, is the source area of the discharge or release located in an area in which there is a recharge to an unconfined or semi-confined deeper aquifer that is being used or may be used as a source of drinking water? If yes, explain.* **No.**

4) *Do the levels of groundwater contamination for any contaminant exceed the gross contaminant levels established (see Table 7) by the Department?* **No.**

4.2 Part II – Current Land Use

1) *Does the property contain one or more primary or secondary residences (permanent or temporary)? If yes explain.* **Yes.** The buildings located on the subject site were formerly used as residences for the school.

2) *Does the property contain a school, daycare center, hospital, playground, park, recreation area, church, nursing home, or other place of public assembly? If yes, explain.* ***Yes.*** Although the school is closed, an athletic field is located on the site.

3) *Does the property contain a commercial (e.g., retail, warehouse, office/business space, etc.) or industrial (e.g., manufacturing, utilities, industrial research and development, chemical/petroleum bulk storage, etc.) enterprise, an inactive commercial or industrial enterprise, or is the land undeveloped? If yes, explain.* **No**.

4) *Do children visit the property? If yes, explain.* **Yes**. Students and visitors still access the school and the athletic field.

5) *Is access to the property reliably restricted consistent with its use (e.g., fences, security personnel or both)? If yes, explain.* **Yes.** The school is fenced and patrolled.

6) *Do pavement, buildings, or other structures cap the contaminated soil? If yes, explain what mechanisms are in place or can be put into place to ensure that the contaminated soil will remain capped in the foreseeable future.* **No**.

7) *What is the zoning status of the property?* This property is zoned institutional.

8) *Is the use of the property likely to change in the next 20 years? Explain.* **Yes.** The School for the Deaf has recently closed. The future use of the property is unknown at the present time.

The following questions pertain to the area within 1,500 feet of the source area of the discharge or release (excludes the property containing the release source area).

9) *What is the distance from the source area of the release to the nearest primary or secondary residence (permanent or temporary)?* The nearest residence is approximately 1,000 feet southeast of the location of the closest former UST.

10) *What is the distance from the source area of the release to the nearest school, daycare center, hospital, playground, park, recreation area, church, nursing home or other place of public assembly?* A former school is located on the site. Bryan Park is located north across Summit Avenue approximately 2,000 feet north of the subject site (Figure 4).

11) *What is the zoning status of properties in the surrounding area?* Institutional, industrial, residential and commercial.

12) *Briefly characterize the use and activities of the land in the surrounding area.* The subject site is located in a primarily institutional, and residential area, with limited commercial development located along Summit Avenue to the north.

5.0 RECEPTOR INFORMATION

5.1 Water-Supply Wells

Two water-supply wells were identified within 1500 feet of the subject site. These wells are shown on Figure 3. Table 1 lists the water supply and monitoring well information.

5.2 Public Water Supplies

Drinking water is provided to the site and site vicinity by the City of Greensboro. The source of drinking water for the city are the Lake Brandt and Lake Townsend reservoirs.

5.3 Surface Water

The closest surface-water feature to the subject site is an unnamed tributary of the Reedy Fork to Lake Townsend. The tributary runs through the subject site and is located approximately 600 feet northeast of the maintenance area former UST (Figure 1).

5.4 Wellhead Protection Areas

Wellhead protection areas defined by 42 USC 300h-7(e) have not, as of this time, been designated by the state.

5.5 Deep Aquifers in the Coastal Plain Physiographic Region

The subject site is not located within the Coastal Plain Physiographic Region.

5.6 Subsurface Structures

No subsurface structures were identified in the vicinity of the former USTs.

5.7 Land Use

The area surrounding the subject site is used mainly for institutional and residential purposes. Figure 4 shows the zoning in the area surrounding the site.

5.8 Property Owners and Occupants

The subject site is owned by the Central North Carolina School for the Deaf. Table 2 summarizes the adjacent land owner information.

6.0 SITE GEOLOGY AND HYDROGEOLOGY

6.1 Regional Geology/Hydrogeology

The subject site is located in the Charlotte Belt of the Piedmont Physiographic Province. The rocks beneath the site have been identified as metamorphosed gabbro and diorite granitic rock.

The surficial aquifer at the site consists of a zone of consolidated and unconsolidated materials that is saturated with groundwater. The upper portion of the surficial aquifer consists of unconsolidated residual soils and partially consolidated rock that were derived through the weathering of the underlying bedrock. These soils consist primarily of a silty very fine sand to silt and sandy to clayey silt which have been formed by in-place weathering. The lower portion of the surficial aquifer includes the underlying gneissic bedrock that is highly metamorphosed and foliated. Groundwater flows through fractures and joints within the bedrock and is typically hydraulically connected to groundwater within the overlying unconsolidated and partially consolidated materials.

6.2 Site Geology/Hydrogeology

LAW advanced four borings on the subject site for the installation of monitoring wells. During this investigation, we encountered soils consisting of red-brown to orange-brown clayey and silty sands in the upper 12 to 15 feet. At depths greater than 12 to 15 feet, we encountered bedrock.

7.0 FIELD ACTIVITIES AND TEST RESULTS

7.1 Soil and Groundwater Sampling

On May 14, 2001, Probe Technologies, Inc. (Probe) completed four soil borings, one adjacent to each of the four former UST areas (Figure 1), using a truck-mounted Geoprobe™ rig. The Geoprobe™ rig utilizes a hydraulic direct-push soil sampling system. Probe advanced the soil borings adjacent to the former tank pits.

Boring B-1 was advanced near the Brown Hall UST (UST 4, Figure 2) adjacent to the location of confirmation soil sample 3, which exhibited the highest semi-volatile TPH concentration of 12 mg/kg. After an initial attempt that failed due to shallow refusal, the boring was advanced to 12 feet below ground surface (bgs) where probe refusal due to bedrock was again encountered. Due to utility limitations (two power lines are located adjacent to the UST) and the steep slope of the hill, the Geoprobe™ sample was collected approximately 10 feet downhill from the former UST (Figure 5). One soil sample was collected from the boring in residuum at 12 feet bgs.

Boring B-2 was completed adjacent to the central kitchen UST (UST 2, Figure 2) after four prior attempts ended in shallow refusal. Boring B-2 was situated adjacent to the location of confirmation soil sample 1, which exhibited the highest semi-volatile TPH concentration of 41 mg/kg. The boring was advanced to 12 feet bgs (Figure 6) where probe refusal due to bedrock was again encountered. The base of the UST was located at 7 feet bgs. Two soil samples were collected for analysis, from 7 and 12 feet bgs.

Boring B-3 was advanced adjacent to the maintenance building UST (UST 1, Figure 2) after one prior attempt met with shallow refusal. Boring B-3 was situated adjacent to the location of confirmation soil sample 3, which exhibited volatile TPH at 60 mg/kg and semi-volatile TPH at 1,100 mg/kg. The boring was advanced to 12 feet bgs (Figure 7) where probe refusal due to bedrock was again encountered. Since the base of the UST was located at 13 feet bgs, no soil samples were collected from the boring.

The fourth boring (MW-1) was completed adjacent to the UST at Mehl Hall (UST 3, Figure 2) after one prior attempt met with shallow refusal. The completed boring was situated near the

location of confirmation soil sample 9, which exhibited volatile TPH at 11 mg/kg and semi-volatile TPH at 270 mg/kg at a depth of 17 feet bgs. The boring was advanced to 26 feet bgs (Figure 8) where probe refusal due to bedrock was again encountered. Soil samples were collected from the boring at 12, 15, 20 and 25 feet bgs. The boring was advanced to intersect the water table in the vicinity of the former tank location, so that the groundwater sample would be representative of conditions beneath the source of the contamination. Soil samples were collected for laboratory analysis at depths of 15 and 20 feet below ground surface. A Type II monitoring well was installed at the location using the methods described in Appendix A. The water table stabilized at a depth of 15.5 feet bgs on May 15, 2001. A groundwater sample was collected from the well on May 15, 2001 using the methods described in Appendix A.

On May 24, 2001, South Atlantic Environmental Drilling and Construction Company (SAEDCO) installed a groundwater monitoring well (MW-3) adjacent to the maintenance building UST using a rotary/air rig. The boring was advanced by rotary drilling to 12 feet bgs (MW-3, Figure 7) where bedrock was encountered. The rig personnel switched to air drilling and advanced the boring to 30 feet bgs. A Type II monitoring well was installed at the location using the methods described in Appendix A. The water table stabilized at a depth of 24.3 feet bgs on May 29, 2001. A groundwater sample was collected from the well on May 29, 2001 using the methods described in Appendix A. Soil boring logs and well construction diagrams are included in Appendix B.

Soil samples were obtained continuously during initial Geoprobe™ drilling activities. The soil samples from each two foot-interval were placed in paired plastic bags and sealed. Each soil sample was then classified as to its color and texture and inspected for evidence (staining, odor, PID readings) of petroleum contamination. Soils encountered during drilling consisted mostly of clayey and silty sands and partially weathered rock. We did not observe petroleum-contaminated soils or identify petroleum odors within the soil samples collected. The PID did not indicate evidence of volatile petroleum constituents.

LAW placed the soil samples in laboratory-supplied jars, and placed the jars in a cooler packed with ice. Each of these soil samples were delivered under chain-of-custody to Environmental Science Corporation (ESC) in Mt. Juliet, Tennessee for analysis for volatile and semi-volatile organic compounds according to EPA Methods 8260 and 8270 respectively. The soil samples were

also tested for VPH and EPH using MADEP Methods. Copies of the laboratory reports and chains-of-custody are included in Appendix C.

The groundwater samples was decanted into laboratory-supplied bottles and placed into a cooler packed with ice. The cooler was delivered under chain-of-custody to ESC for testing. ESC tested the groundwater samples for volatile organic compounds using EPA Methods 602, and semi-volatile organic compounds using EPA Method 625 with 10 tentatively identified compounds (TICs). The samples were also tested for volatile and extractable petroleum hydrocarbons (VPH and EPH) using MADEP Methods. Copies of the laboratory reports and chains-of-custody are included in Appendix C.

7.2 Laboratory Test Results

Copies of the laboratory reports are included in Appendix C. The laboratory did not detect concentrations of volatile organic compounds, or volatile or extractable petroleum hydrocarbons within the soil or groundwater samples at concentrations above their respective State of North Carolina action levels. Semi-volatile tentatively identified compounds (TICs) were detected in the groundwater samples collected from monitoring wells MW-1 and MW-3. No action levels or standards have been established for these compounds.

8.0 CONCLUSIONS AND RECOMMENDATIONS

LAW did not document the presence of receptors within DWM-recommended radii. In Earth Tech's *Underground Storage Tank (UST) Closure Report*, the laboratory had detected semi-volatile total petroleum hydrocarbons in soil samples collected from beneath the former tanks at concentrations that exceeded the current Action Level of 10 mg/kg. However, during the Phase I LSA, the laboratory did not detect volatile or semi-volatile organic compounds, or volatile or extractable petroleum hydrocarbons within the soil or groundwater samples above established State of North Carolina Action Levels.

Based upon our review of Section 4.3 ("Risk Classifications") of the Guidelines and the findings of this Phase I LSA, the data indicate that the Central North Carolina School for the Deaf Site meets the criteria for classification as Low Risk. Therefore, the site qualifies for closure under

15A NCAC 2L.0115(h). LAW will provide a copy of this report to the Guilford County Department of Public Health, Environmental Health Division, along with a request for notification of No Further Action.

9.0 REFERENCES CITED

Groundwater Section, North Carolina Department of Environment and Natural Resources, *Groundwater Section Guidelines for the Investigation and Remediation of Soils and Groundwater, Volume II: Petroleum Underground Storage Tanks*, Raleigh, North Carolina, July 2001.

Browns Summit, N.C. 7 ½ -minute topographic map, published by the United States Geological Survey in 1951, photorevised in 1968.

Geologic Map of North Carolina, 1985, published by the North Carolina Department of Natural Resources and Community Development.

TABLE 1

WELL SURVEY INFORMATION

Property Owner Name and Address	Water Supply Well ?	Well Status	Distance From Site (feet)	Notes	Access to Public Water Supply
Bobby R. Coffer 5816 Summit Avenue	Yes	In Use	1200 feet from from Maintenance Building	According to property owner, used for all water needs at home.	Yes
Central North Carolina School for the Deaf 5900 Summit Avenue	Yes	In Use	500 feet from UST 4	Used to irrigate athletic fields	Yes
Central North Carolina School for the Deaf 5900 Summit Avenue	No	N/A	Adjacent to UST 1 and UST 3	- 2 Type II monitoring wells on site	Yes

Notes:
N/A = Not Applicable
Survey performed on 5/24/01 by JMB

Prepared/Date: JJG 6/01
Checked/Date: MIM 6/01

TABLE 2
OWNERS OF PROPERTIES CONTIGUOUS TO THE CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF
GREENSBORO, NORTH CAROLINA
LAW PROJECT NO. 30440-1-0496-01-917

Parcel Number	Land Owner and Address
193-458-16	George Greene, Jr. Estate c/o Franklin M. Green Executor 1475 NC Highway 65 Reidsville, North Carolina 27320
193-458-17	George Greene, Jr. Estate c/o Franklin M. Green Executor 1475 NC Highway 65 Reidsville, North Carolina 27320
193-458-18	George Greene, Jr. Estate c/o Franklin M. Green Executor 1475 NC Highway 65 Reidsville, North Carolina 27320
193-458-21	George Greene, Jr. Estate c/o Franklin M. Green Executor 1475 NC Highway 65 Reidsville, North Carolina 27320
193-458-12	Mary W. Worrel 3607 Esterwood Road Greensboro, North Carolina 27405
193-458-2	R & J Properties of Greensboro, LLC c/o Dixie Sales Company P.O. Box 1408 Greensboro, North Carolina 27402
193-458-4	Reedy Fork Associates, LLC co Starmount Company 600 Geen Valley Road, Suite 300 Greensboro, North Carolina 27408
193-458-2	Wysong & Miles Company US Highway 29 North P.O. Box 21168 Greensboro, North Carolina 27420
193-458-28	Wysong & Miles Company US Highway 29 North P.O. Box 21168 Greensboro, North Carolina 27420
193-458-36	William Larry White 3614 Esterwood Road Greensboro, North Carolina 27405
193-458-37	State of North Carolina c/o Department of Administration 116 West Jones Street Raleigh, North Carolina 27603
193-458-39	James r. & Marie C. Harris

	1703 Pichard Street Greensboro, North Carolina 27401
193-458-40	Caron Crews Hairston 4831 Westray Lane Walkertown, North Carolina 27051
193-458-41	Juanita Crews Scales 710 Douglas Street Greensboro, North Carolina 27406
193-458-51	Bobby R. Coffer P.O. Box 125 Browns Summit, North Carolina 27214
193-458-88	Larry Wayne & Lethia S.Thomas 3520 Treeview Lane Brown Summit, North Carolina 27214
193-458-53	Peggy O. Gardner 3518 Treeview Lane Browns Summit, North Carolina 27214
193-458-54	Jasper Leroy & Carolyn S. Swofford 3516 Treeview Lane Browns Summit, North Carolina 27214
193-458-55	Hobert H. Burleson 3514 Treeview Lane Browns Summit, North Carolina 27214
193-458-8	Hobert H. Burleson 3514 Treeview Lane Browns Summit, North Carolina 27214

TABLE 3

SOIL LABORATORY ANALYTICAL RESULTS

PARAMETER	MDL							RESIDENTIAL MSCC	SOIL-TO-GROUNDWATER MSCC
Sample ID		B-1	B-2	B-2	MW-1	MW-1	MW-1	N/A	N/A
Sample Depth (feet)		12 ft	7 ft	12 ft	15 ft	20 ft	25 ft		
Collection Date		5/14/01	5/14/01	5/14/01	5/14/01	5/14/01	5/14/01		
Volatile Organic Compounds (mg/kg):									
Benzene	0.0011	**0.002**	BDL	BDL	BDL	BDL	BDL	22	0.0056
Bromoform	0.0011	BDL	0.0013	0.0017	BDL	BDL	0.0015	81*	7*
Chlroroethane	0.0011	0.0016	BDL	BDL	BDL	BDL	BDL	220*	0.24*
1,1-Dichloroethane	0.0005	0.0048	BDL	BDL	BDL	BDL	BDL	1560	5
cis 1,2-Dichloroethene	0.0005	0.0026	BDL	BDL	BDL	BDL	BDL	156	0.35
Vinyl Chloride	0.0005	0.0017	BDL	BDL	BDL	BDL	BDL	0.34*	0.01*
Extractable Petroleum Hydrocarbons (mg/kg):									
C_9- C_{18} Aliphatics	10	11	BDL	BDL	BDL	BDL	BDL	9386	3255
C_{19}- C_{36} Aliphatics	10	BDL	BDL	BDL	BDL	BDL	BDL	93860	a
C_{11}- C_{22} Aromatics	10	14	BDL	BDL	BDL	BDL	BDL	469	34
Photoionization Detector (PID) (ppm):									
PID Reading		BDL	BDL	BDL	BDL	BDL	BDL	N/A	N/A

Notes:

BDL - Below Detection Limit

MDL -Method Detection Limit

Bold - Value exceeds Soil-to-Groundwater MSCC

ppm - parts per million

MSCC - Maximum Soil Contaminant Concentrations (NCDENR - Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater, Volume II, dated January 2, 1998)

NA - Not Analyzed

N/A - Not Applicable

NE - Not Established. MSCC Value is not listed by NCDENR for this parameter.

mg/kg - milligrams per kilogram

*Source - EPA Region III Risk-Based Concentration Table

Prepared by: 7/01

Checked by: AC 7/01

TABLE 4

GROUNDWATER LABORATORY ANALYTICAL RESULTS

Sample ID	MW-1	MW-3	MDL	State 2L Standards 1998	Gross Contaminant Levels
Collection Date	5/15/01	5/29/01			
PARAMETER					
Volatile Organic Compounds (mg/L)					
Toluene	BDL	0.00097	0.0005	1	257.5
Tentatively Identified Compounds (mg/L)					
2,4-bis(1,1,-dimethylethyl)-phenol	**0.003**	BDL	0.0005	NE	NE
3,5-bis(1,1,-dimethylethyl)-phenol	BDL	**0.026**	0.0005	NE	NE
Unknown Compounds	**0.031**	**0.047**	0.0005	NE	NE
Extractable Petroleum Hydrocarbons (mg/L)					
C_9- C_{18} Aliphatics	BDL	0.67	0.1	4.2	NE
C_{19}- C_{36} Aliphatics	BDL	BDL	0.1	4.2	NE
C_{11}-C_{22} Aromatics	BDL	BDL	0.1	0.210	NE

Prepared by: 7/01
Checked by: AC 7/01

NOTES:
BDL = Below Detection Limit
MDL = Method Detection Limit
ppm = parts per million
NE = Not Established
mg/L = milligrams per liter
Bold - Value exceeds State of North Carolina 2L Standards

APPROXIMATE SCALE

1000 500 0 1000

(IN FEET)

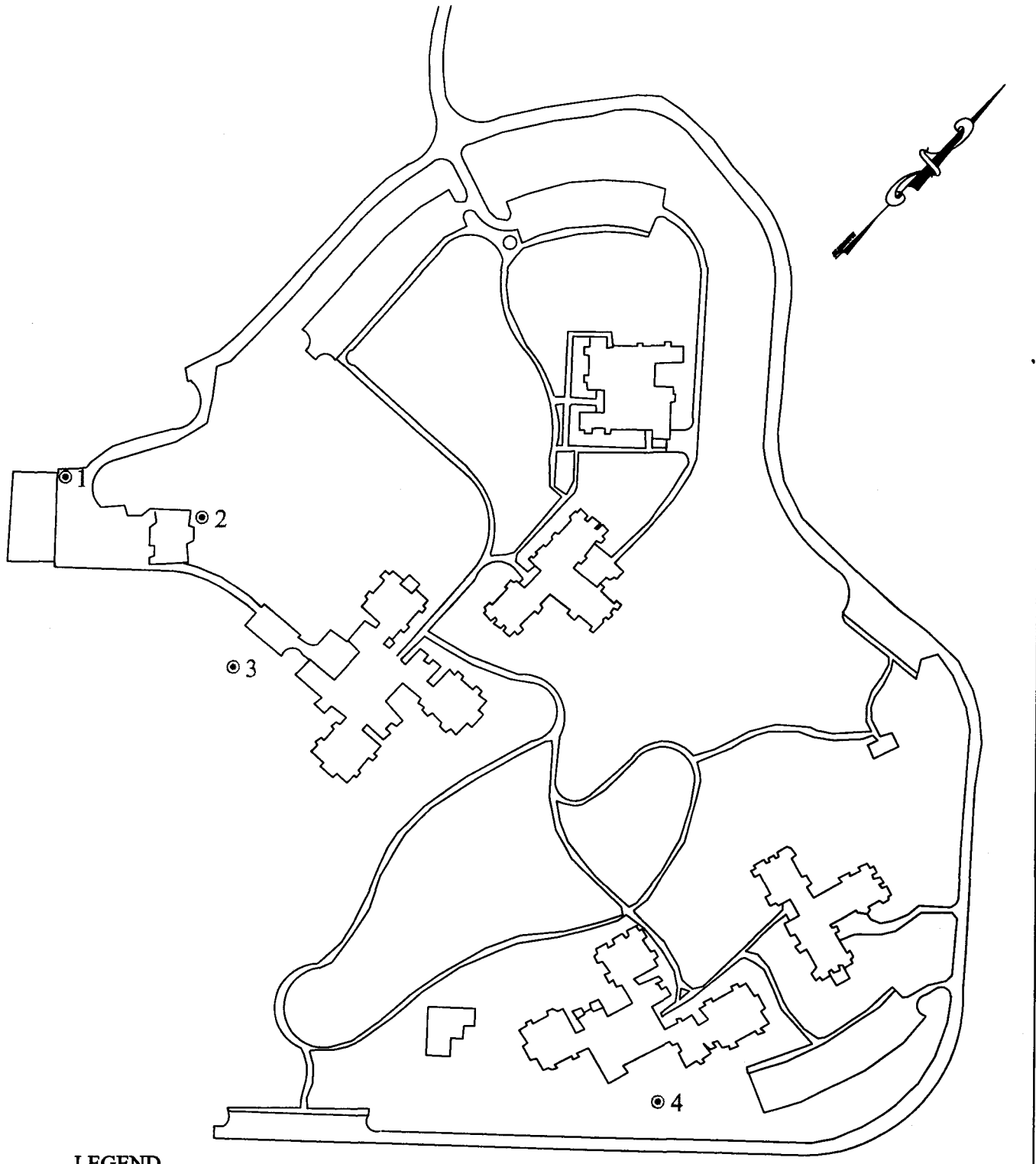
DELORME 3-D TOPOQUADS,
NORTH CAROLINA, 2000

NORTH

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

SITE LOCATION MAP
CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF
GREENSBORO, NORTH CAROLINA

PROJECT NO. 30440-1-0496 | FIGURE 1



LEGEND

◉4 **FORMER UST LOCATION**

LAW

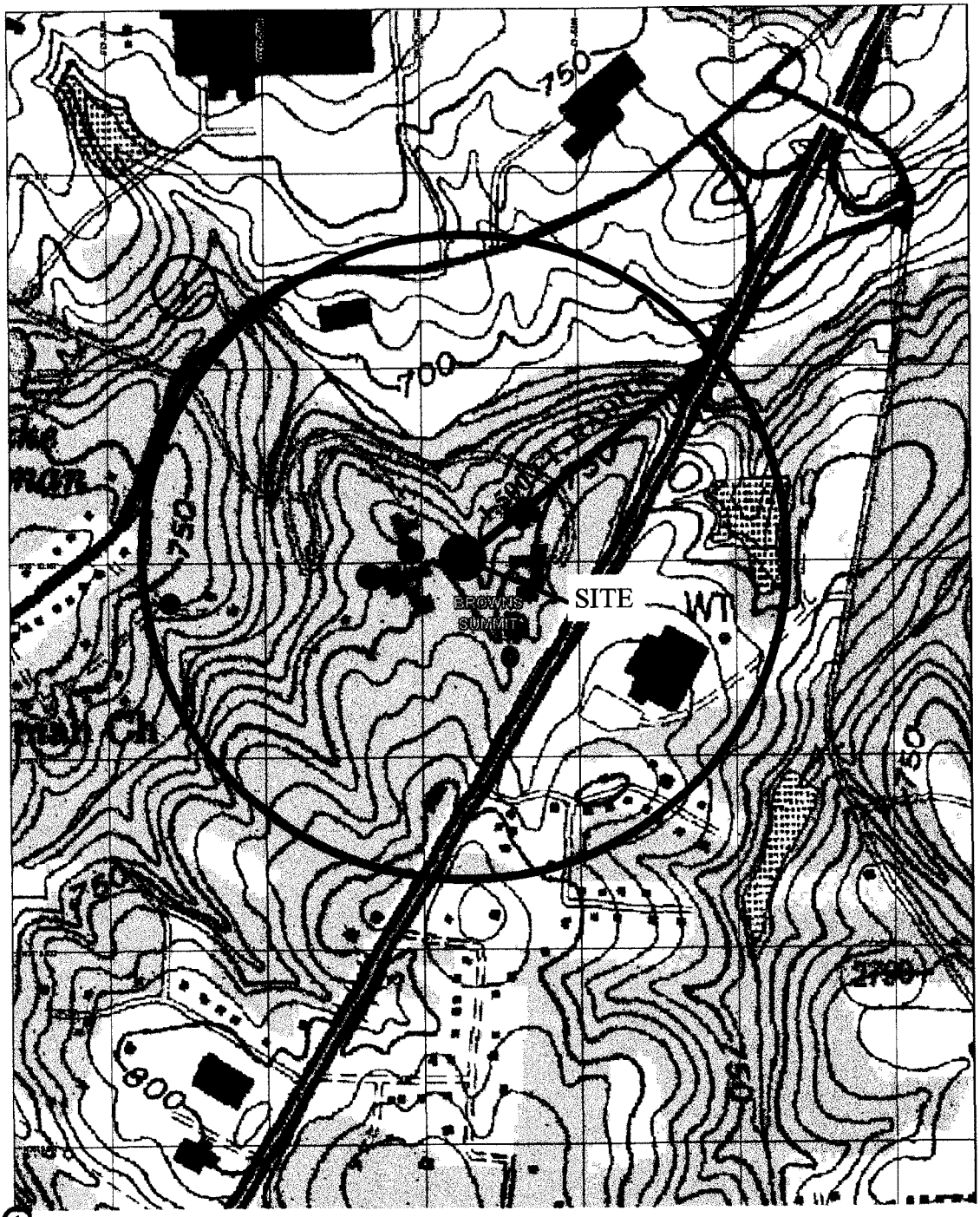
LAWGIBB Group Member

LAW ENGINEERING & ENVIRONMENTAL SERVICES, INC. GREENSBORO, NC

SITE PLAN
CENTRAL NORTH CAROLINA SCHOOL
FOR THE DEAF
5900 SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA

DRAWN: JMB	DATE: 5-15-01
DFT CHECK:	SCALE: 1" = 240'
ENG CHECK:	JOB: 30440-1-0496
APPROVAL:	FIGURE: 2

REFERENCE: SITE PLAN PROVIDED BY NC SCHOOL FOR THE DEAF



1 BRYAN PARK

WATER SUPPLY WELL

GROUNDWATER MONITORING WELL

APPROXIMATE SCALE

1000 500 0 1000

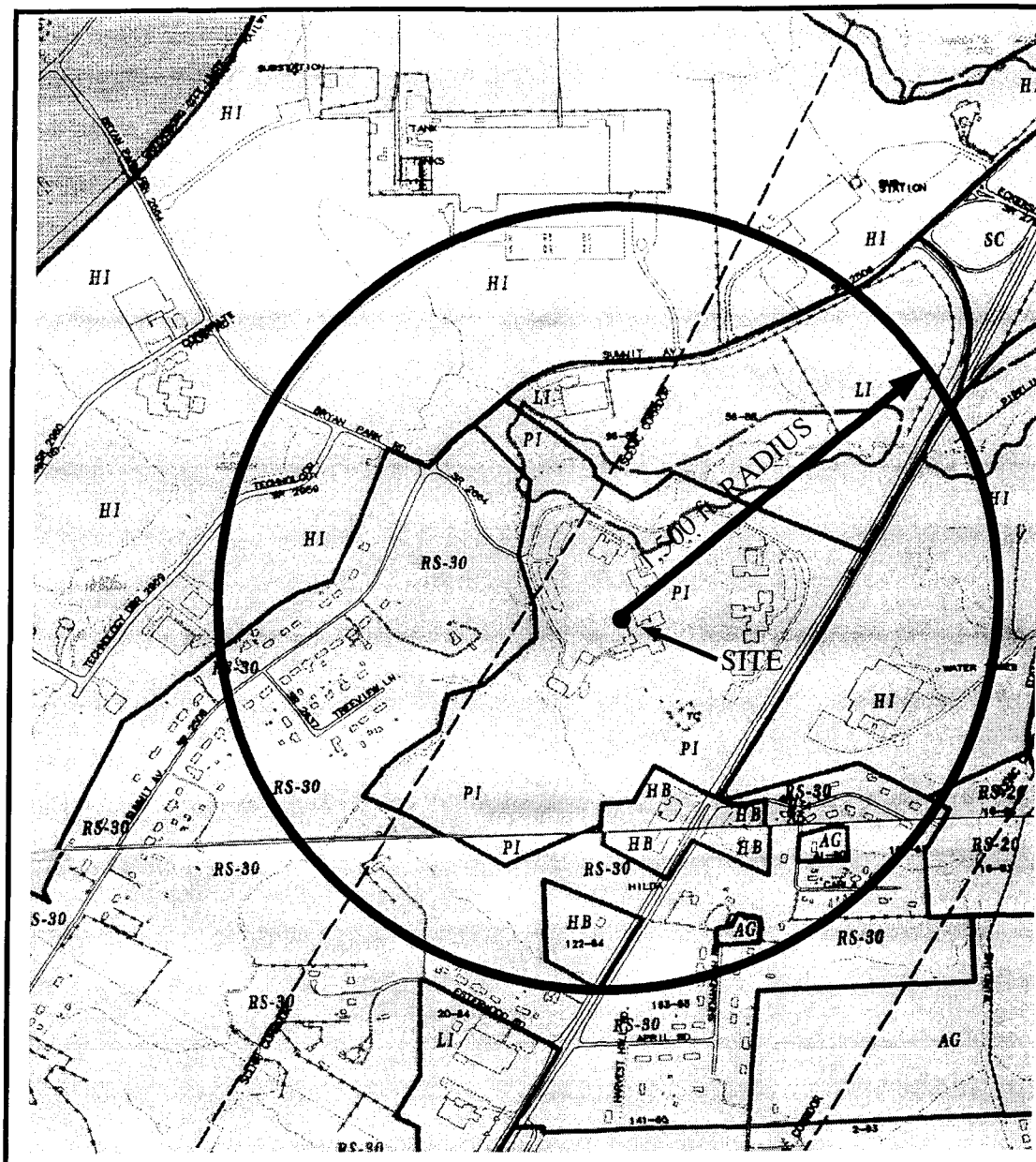
(IN FEET)

DELORME 3-D TOPOQUADS,
NORTH CAROLINA, 2000

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

PUBLIC ASSEMBLY AREAS/ WELL SURVEY MAP
CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF
GREENSBORO, NORTH CAROLINA

PROJECT NO. 30440-1-0496 | FIGURE 3



LI = LIGHT INDUSTRIAL
PI =PUBLIC INSTITUTION
HB = HIGHWAY BUSINESS
RS - 30 = RESIDENTIAL

AG = AGRICULTURAL
HI = HEAVY INDUSTRIAL
RS - 20 = RESIDENTIAL

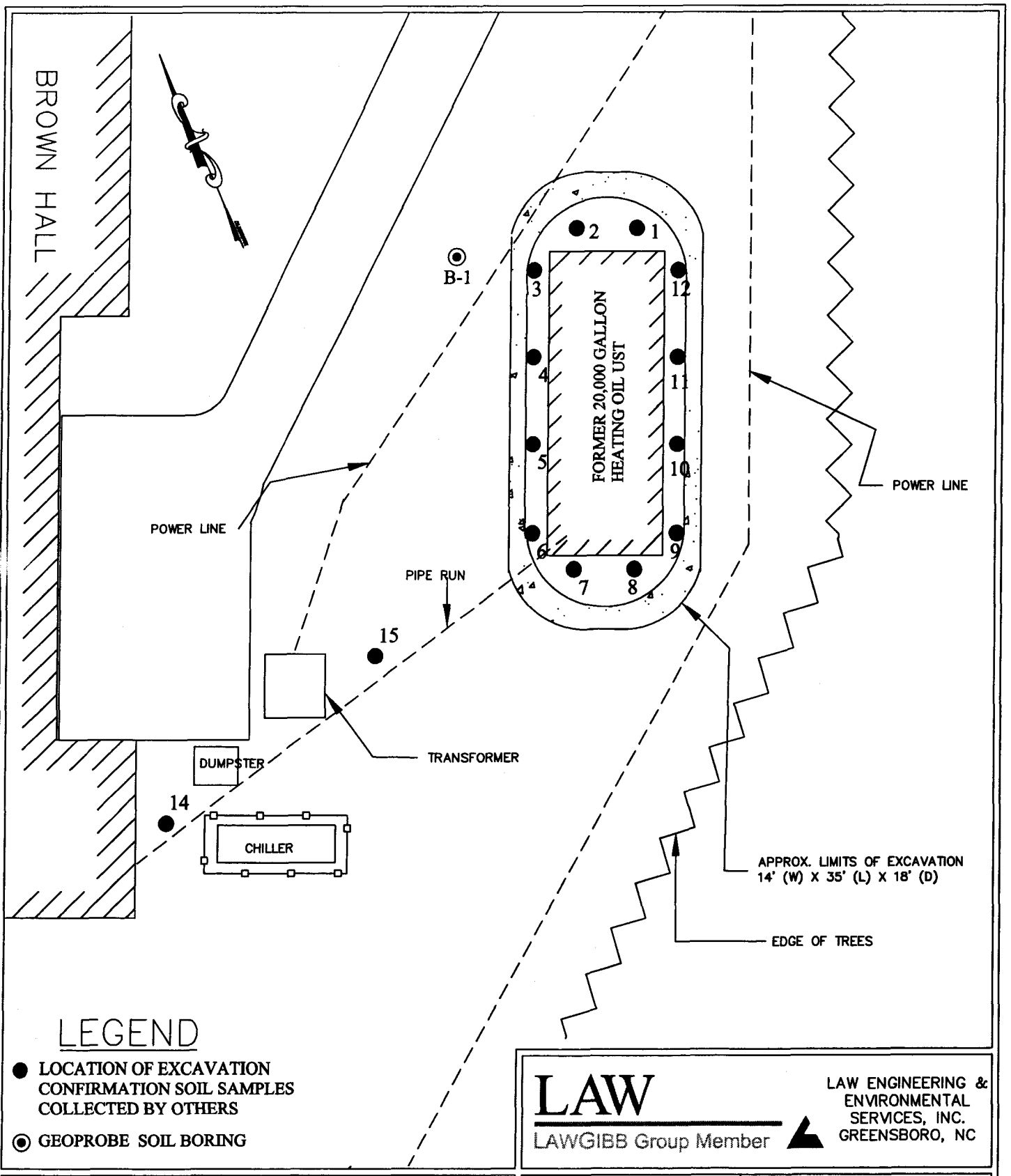
APPROXIMATE SCALE
500 250 0 500
(IN FEET)

REF: GUILFORD COUNTY ZONING ATLAS (11/1/96)

LAW
ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

ZONING MAP
CENTRAL NORTH CAROLINA SCHOOL FOR THE DEAF
GREENSBORO, NORTH CAROLINA

PROJECT NO. 30440-1-0496 | FIGURE 4



LEGEND

- LOCATION OF EXCAVATION CONFIRMATION SOIL SAMPLES COLLECTED BY OTHERS
- GEOPROBE SOIL BORING

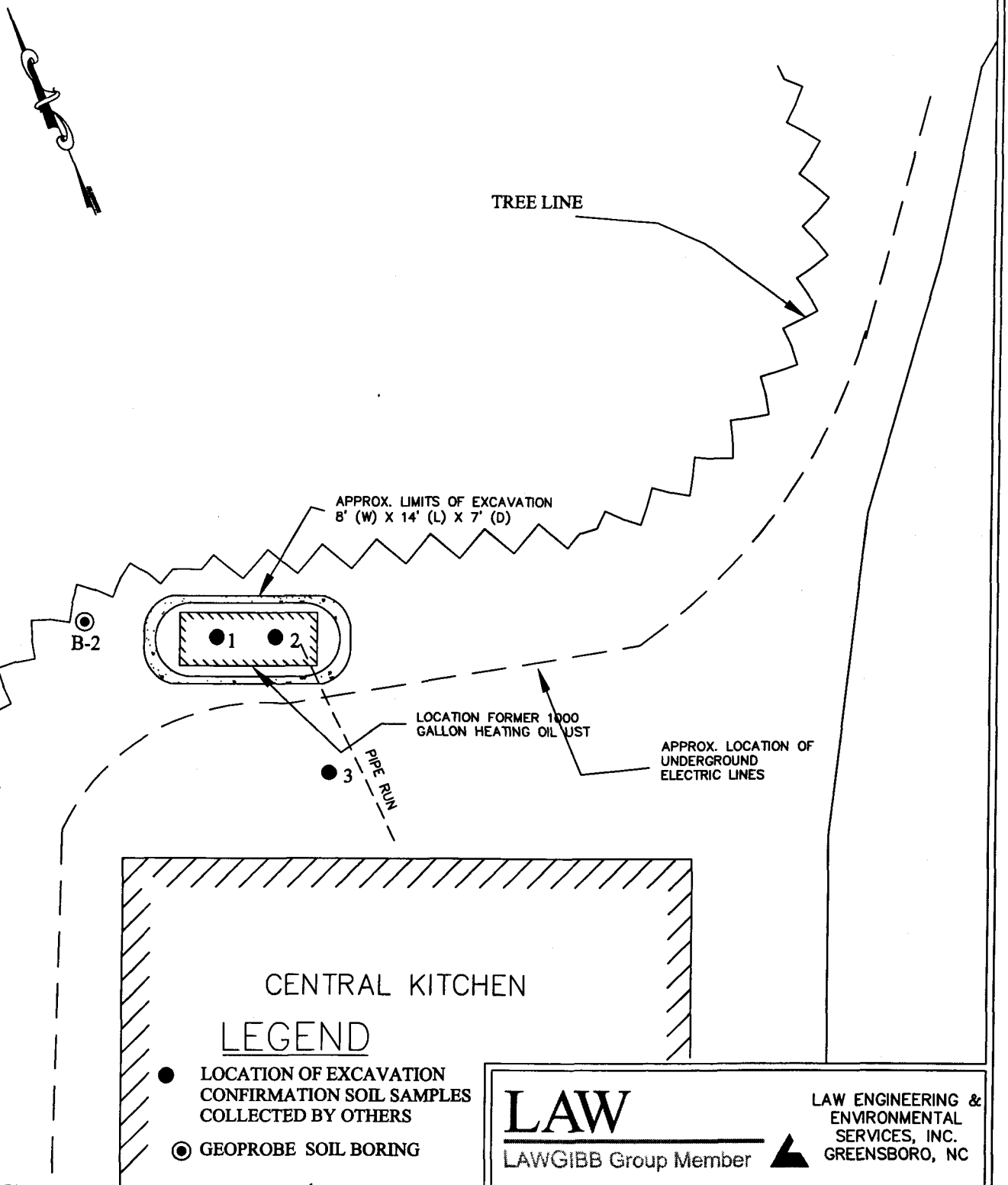
LAW
LAWGIBB Group Member

LAW ENGINEERING & ENVIRONMENTAL SERVICES, INC.
GREENSBORO, NC

BROWN HALL
CENTRAL NORTH CAROLINA SCHOOL
FOR THE DEAF
5900 SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA

DRAWN: JMB	DATE:5-10-01
DFT CHECK:	SCALE: 1" = 10'
ENG CHECK:	JOB: 30440-1-0496
APPROVAL:	FIGURE: 5

REFERENCE: EARTH TECH UST CLOSURE REPORT AND LAW PERSONNEL FIELD NOTES



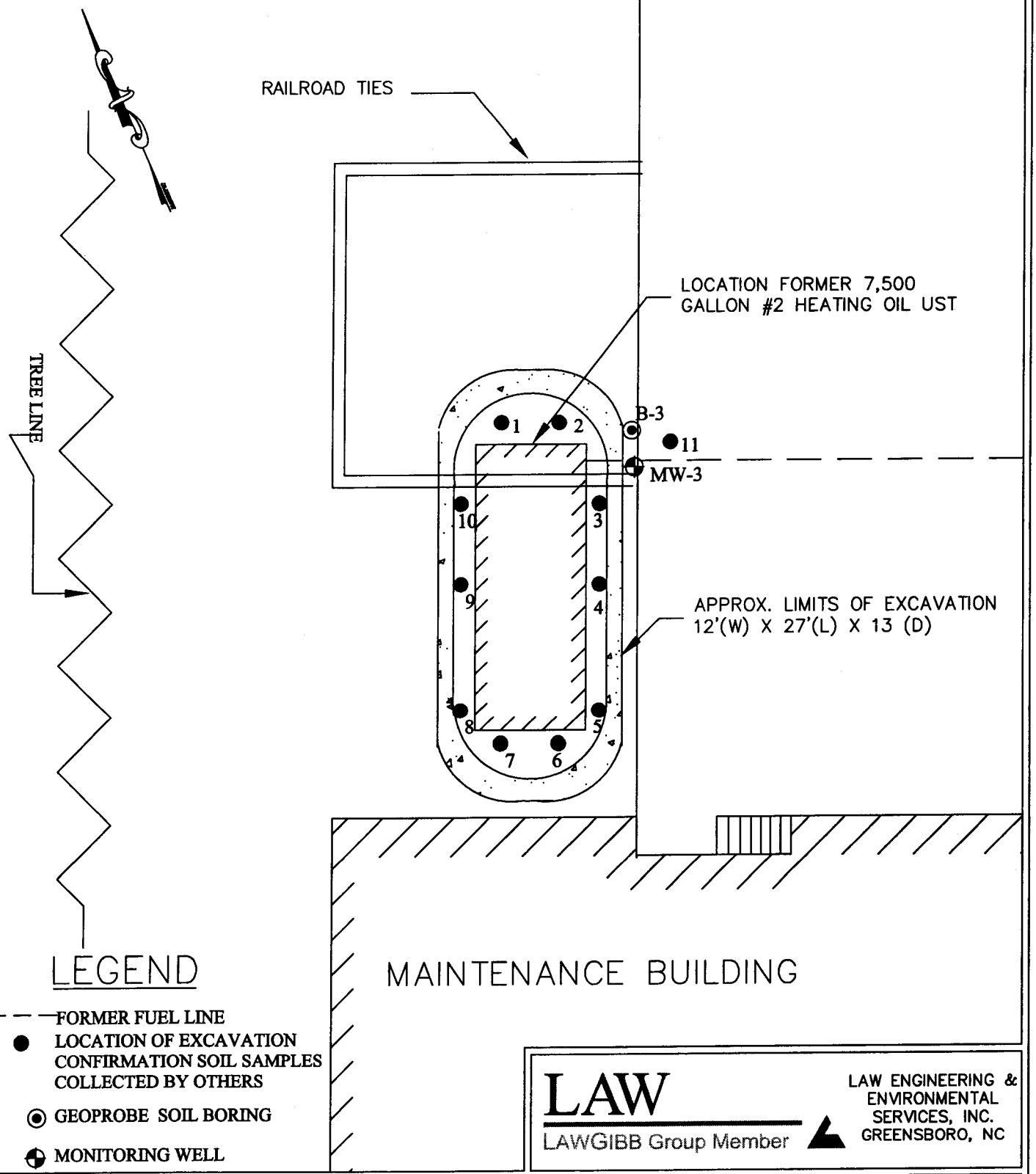
LAW
LAWGIBB Group Member

LAW ENGINEERING & ENVIRONMENTAL SERVICES, INC.
GREENSBORO, NC

CENTRAL KITCHEN
CENTRAL NORTH CAROLINA SCHOOL
FOR THE DEAF
5900 SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA

DRAWN:	DATE: 5-8-01
DFT CHECK:	SCALE: 1" = 10'
ENG CHECK:	JOB: 30440-1-0496
APPROVAL:	FIGURE: 6

REFERENCE: EARTH TECH UST CLOSURE REPORT AND LAW PERSONNEL FIELD NOTES



LEGEND

- FORMER FUEL LINE
- LOCATION OF EXCAVATION CONFIRMATION SOIL SAMPLES COLLECTED BY OTHERS
- GEOPROBE SOIL BORING
- MONITORING WELL

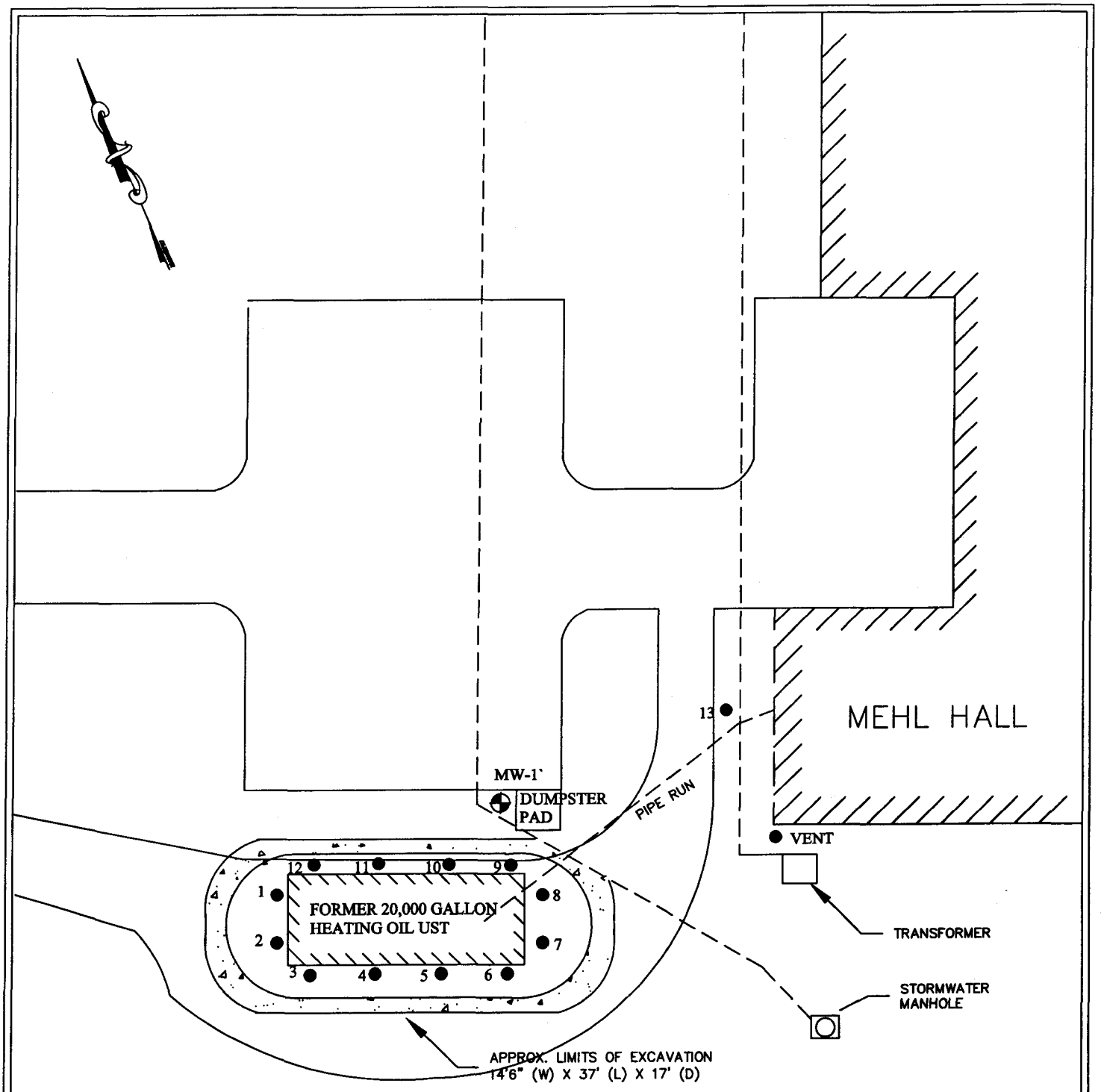
LAW
LAWGIBB Group Member

LAW ENGINEERING & ENVIRONMENTAL SERVICES, INC.
GREENSBORO, NC

MAINTENANCE BUILDING
CENTRAL NORTH CAROLINA SCHOOL
FOR THE DEAF
5900 SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA

DRAWN:	DATE:5-8-01
DFT CHECK:	SCALE: 1" = 10'
ENG CHECK:	JOB: 30440-1-0496
APPROVAL:	FIGURE: 7

REFERENCE: EARTH TECH UST CLOSURE REPORT AND LAW PERSONNEL FIELD NOTES



LEGEND

- LOCATION OF EXCAVATION CONFIRMATION SOIL SAMPLES COLLECTED BY OTHERS
- MONITORING WELL

LAW
LAWGIBB Group Member

LAW ENGINEERING & ENVIRONMENTAL SERVICES, INC.
GREENSBORO, NC

MEHL HALL
CENTRAL NORTH CAROLINA SCHOOL
FOR THE DEAF
5900 SUMMIT AVENUE
GREENSBORO, NORTH CAROLINA

DRAWN: JMB	DATE:5-10-01
DFT CHECK:	SCALE: 1" = 10'
ENG CHECK:	JOB: 30440-1-0496
APPROVAL:	FIGURE: 8

REFERENCE: EARTH TECH UST CLOSURE REPORT AND LAW PERSONNEL FIELD NOTES

North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor
William G. Ross Jr., Secretary

Division of Waste Management
Underground Storage Tank Section

Dexter R. Matthews, Director

February 7, 2006

Central North Carolina School for the Deaf
Attn: Mr. Greg Benton
P.O. Box 26030
Greensboro, NC 27420-6030

Re: Notice of No Further Action
15A NCAC 2L .0407(d)
Risk-based Assessment and Corrective Action
for Petroleum Underground Storage Tanks

Central NC School for the Deaf-B
5900 Summit Avenue
Browns Summit, Guilford County
Incident Number: 21547
Risk Classification: Low

Dear Mr. Benton:

The Limited Site Assessment/ Site Closure Request received by the Underground Storage Tank (UST) Section, Winston-Salem Regional Office on July 10, 2001 has been reviewed. The review indicates that soil contamination does not exceed the residential maximum soil contaminant concentrations (MSCCs), established in Title 15A NCAC 2L .0411 and that groundwater contamination does not exceed the groundwater quality standards established in Title 15A NCAC 2L .0202.

The UST Section determines that no further action is warranted for this incident. This determination shall apply unless the UST Section later finds that the discharge or release poses an unacceptable risk or a potentially unacceptable risk to human health or the environment. Pursuant to Title 15A NCAC 2L .0407(a) you have a continuing obligation to notify the Department of any changes that might affect the risk or land use classifications that have been assigned.

This No Further Action determination applies only to the subject incident; for any other incidents at the subject site, the responsible party must continue to address contamination as required.

If you have any questions regarding this notice, please contact Sharon K. Cihak at the Guilford County Dept. of Public Health, 1203 Maple Street, Greensboro, NC 27405 and/or at (336) 641-3541.

Sincerely,

Cindy H. Rintoul, L.G.
Regional Supervisor
Winston-Salem Regional Office

cc: Guilford County Health Department

UST Regional Offices

Asheville (ARO) – 2090 US Highway 70, Swannanoa, NC 28778 **(828) 296-4500**

Fayetteville (FAY) – 225 Green Street, Suite 714, Systel Building, Fayetteville, NC 28301 **(910) 486-1541**

Mooresville (MOR) – 610 East Center Avenue, Suite 301, Mooresville, NC 28115 **(704) 663-1699**

Raleigh (RRO) – 1628 Mail Service Center, Raleigh, NC 27699 **(919) 791-4200**

Washington (WAS) – 943 Washington Square Mall, Washington, NC 27889 **(252) 946-6481**

Wilmington (WIL) – 127 Cardinal Drive Extension, Wilmington, NC 28405 **(910) 796-7215**

Winston-Salem (WS) – 585 Waughtown Street, Winston-Salem, NC 27107 **(336) 771-4600**

Guilford County Environmental Health, 1203 Maple Street, Greensboro, NC 27405, **(336) 641-3771**

FTP: NFA low-noNRP NOR1205.dot

Appendix C

ESP Associates, Inc. Geophysical Survey Report

July 12, 2019

Mr. David Graham, P.G.
Hart & Hickman, P.C.
2923 S. Tryon Street, Suite 100
Charlotte, North Carolina 28203

Reference: **REPORT ON GEOPHYSICAL SERVICES FOR PARCEL 4**
State of NC
5900 Summit Ave., Guilford, North Carolina
ESP Project No. HR12.300

TIP Number: R-4707
WBS Number: 36599.1.2
County: Guilford
Description: SR 2526 (Summit Avenue) from SR 2641 (Bryan Park Road) to US 29-SR 2970 (Ready Fork Parkway) Interchange

Dear Mr. Graham:

ESP Associates, Inc. (ESP) is pleased to present this report to Hart & Hickman, P.C. (Hart & Hickman) on the geophysical services we provided for the referenced project. This work was performed under our contractor agreement dated May 31, 2019, as authorized by the Work Authorization dated June 6, 2019, and in accordance with our cost proposal to you dated April 17, 2019. The purpose of the work was to help identify possible metallic underground storage tanks (USTs).

1.0 GEOPHYSICAL DATA COLLECTION

On June 19, 2019, ESP performed geophysical studies at Parcel 4, located on the west side of US 29-SR Browns Summit, North Carolina. The work consisted of metal detection using a Geonics EM61 MK2 instrument and obtaining the approximate locations of relevant site features using a DGPS instrument. In addition, our survey group provided utility locating and marked the found utilities on site.

The limits of the study area were based on NCDOT field staking and on the NCDOT MicroStation file provided by Hart & Hickman, and extended from the edge of the current roadway to the proposed right-of-way (ROW)/easement. Representative photographs of the geophysical study area are provided on Figure 1.

The EM61 data were collected over the accessible areas of the study area using a line spacing of approximately 3 feet. We used a Geode differential GPS instrument (DGPS) connected to a Mesa 2 field computer to provide approximate locations of the EM61 data in real time. The DGPS instrument was also used to obtain the approximate location of site features that could affect the EM61 readings.

We compared the location of the EM61 responses to the location of site features and noted anomalies associated with storm drains. Since there were not any EM61 anomalies indicative of abandoned metallic USTs, it was not necessary to perform ground-penetrating radar (GPR) imaging at this site.

2.0 DATA ANALYSIS AND PRESENTATION

The EM61 data were gridded and contoured in Surfer to produce plan view contour maps of the early time gate response (Figure 2) and the differential response (Figure 3). The differential response is calculated by subtracting the response of the bottom coil from the response of the top coil of the EM61. Typically, the differential response diminishes the response from smaller, near-surface metallic objects, thus emphasizing the response from deeper and larger metallic objects, such as metallic USTs. The DGPS locations of observed site features were superimposed on the EM61 contour maps so that anomalies caused by site features such as metal objects on the ground surface could be recognized. Figures 2 and 3 show the EM61 data and the site features that we observed and mapped in the field with DGPS; these figures do not necessarily show all existing site features.

The EM61 early time gate response and differential response were exported from Surfer as geo-referenced images and attached to the NCDOT plan sheet in MicroStation (Figures 4 and 5). The legend for the NCDOT line types and symbols is shown on Figure 6.

4.0 SUMMARY AND CONCLUSIONS

Our review of the geophysical data collected for this project does not indicate the presence of abandoned metallic USTs within the proposed ROW/easement of Parcel 4.

5.0 LIMITATIONS

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

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

Sincerely,

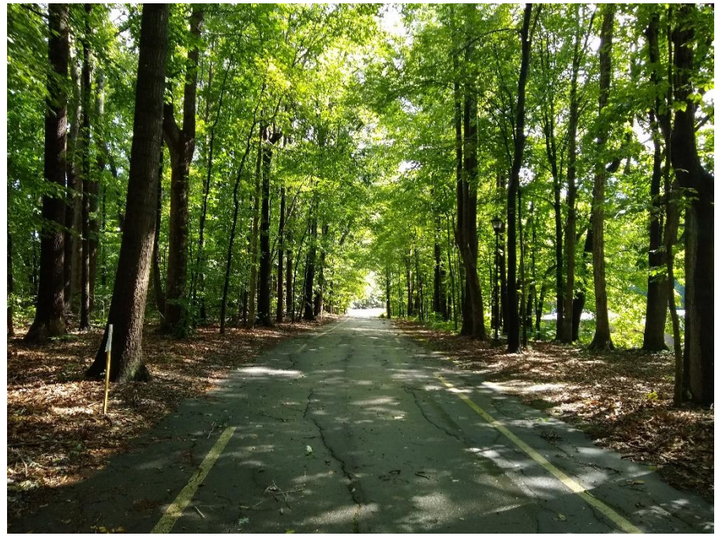
ESP Associates, Inc.

Edward D. Billington, PG
Senior Geophysicist

SBM/EDB

Attachments: Figures 1 – 6

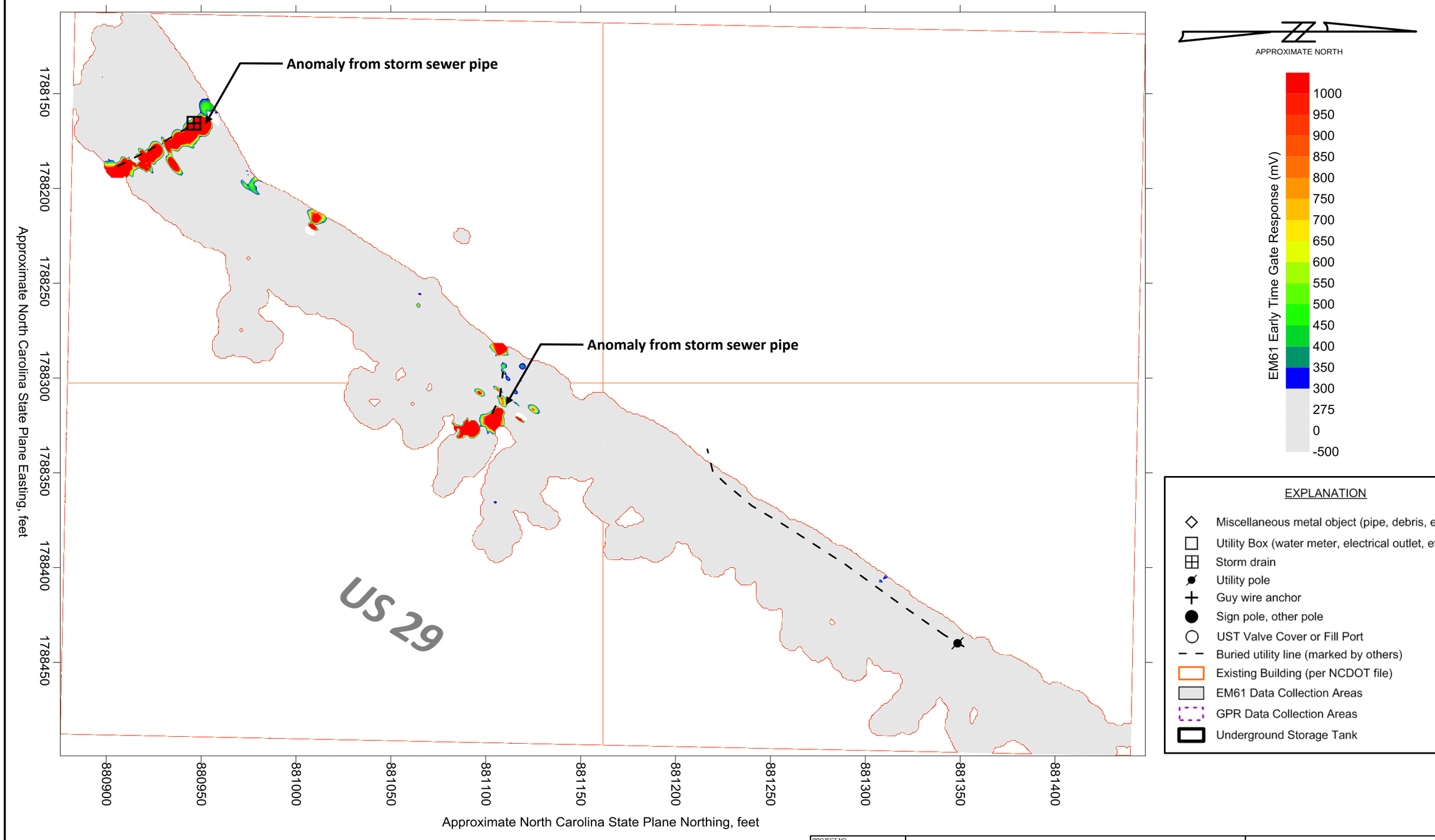
A. Photograph of northern part of geophysical area, looking south.



B. Photograph of southern part of geophysical area, looking north.

C. Photograph of part of geophysical area, looking south.

PROJECT NO. HR12.300	***FIGURE 1 – PARCEL 4, STATE OF NC SITE PHOTOGRAPHS***	ESP Associates, Inc. 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com
SCALE N/A		
DATE 7/12/19	***NCDOT PROJECT R-4707 SR 2526 FROM SR 2641 TO US 29-SR 2970 INTERCHANGE GUILFORD COUNTY, NORTH CAROLINA***	
BY SBM/EDB		



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

PROJECT NO. HR12.300	***FIGURE 2 – PARCEL 4, STATE OF NC EM61 EARLY TIME GATE DATA***
SCALE AS SHOWN	***NCDOT PROJECT R-4707***
DATE 7/12/19	***SR 2526 FROM SR 2641 TO US 29-SR 2970 INTERCHANGE***
BY SBM/EDB	***GUILFORD COUNTY, NORTH CAROLINA***

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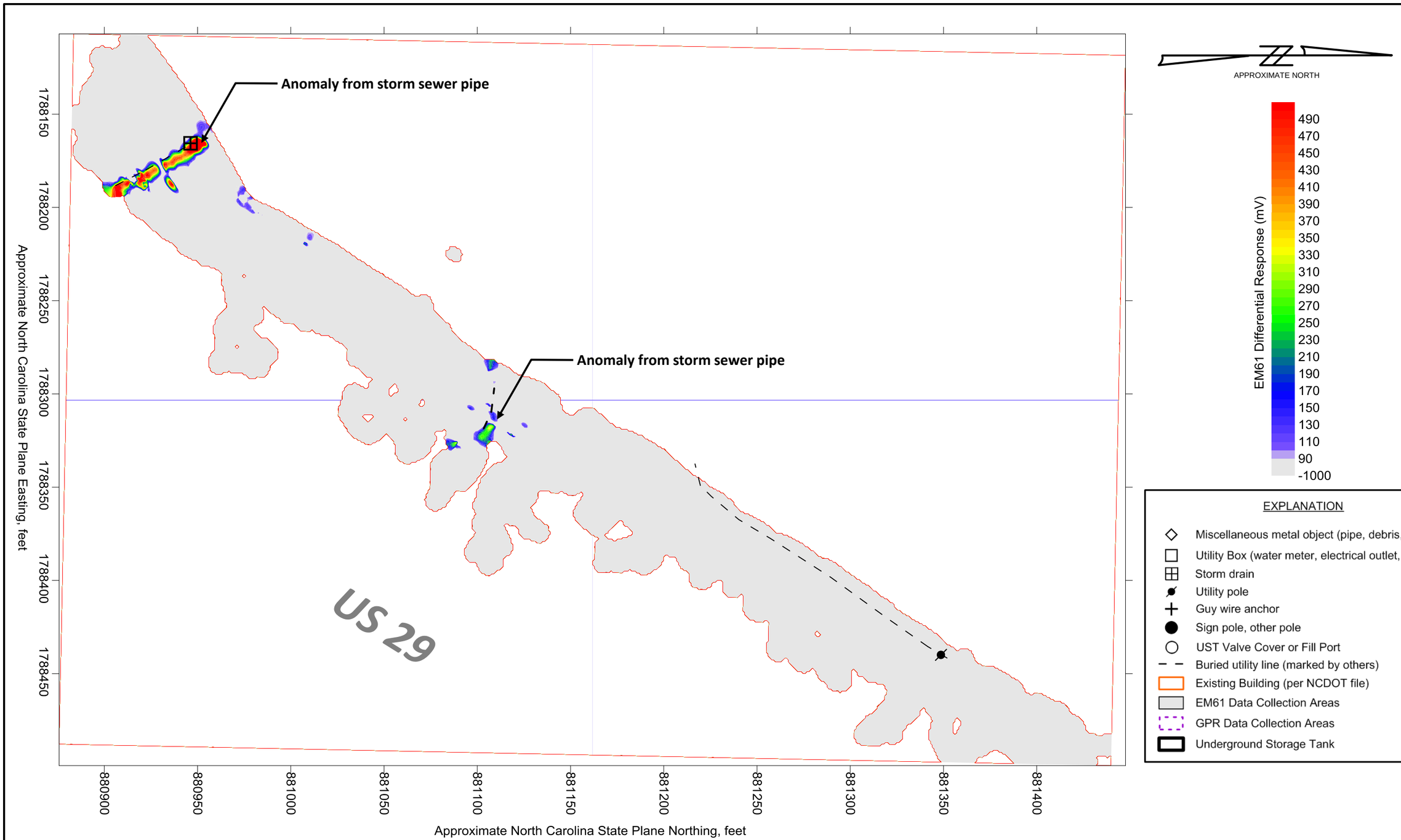
www.espassociates.com



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

PROJECT NO.	HR12.300
SCALE	AS SHOWN
DATE	7/12/19
BY	SBM/EDB

FIGURE 3 – PARCEL 4, STATE OF NC
EM61 DIFFERENTIAL DATA

NCDOT PROJECT R-4707
SR 2526 FROM SR 2641 TO US 29-SR 2970 INTERCHANGE
GUILFORD COUNTY, NORTH CAROLINA

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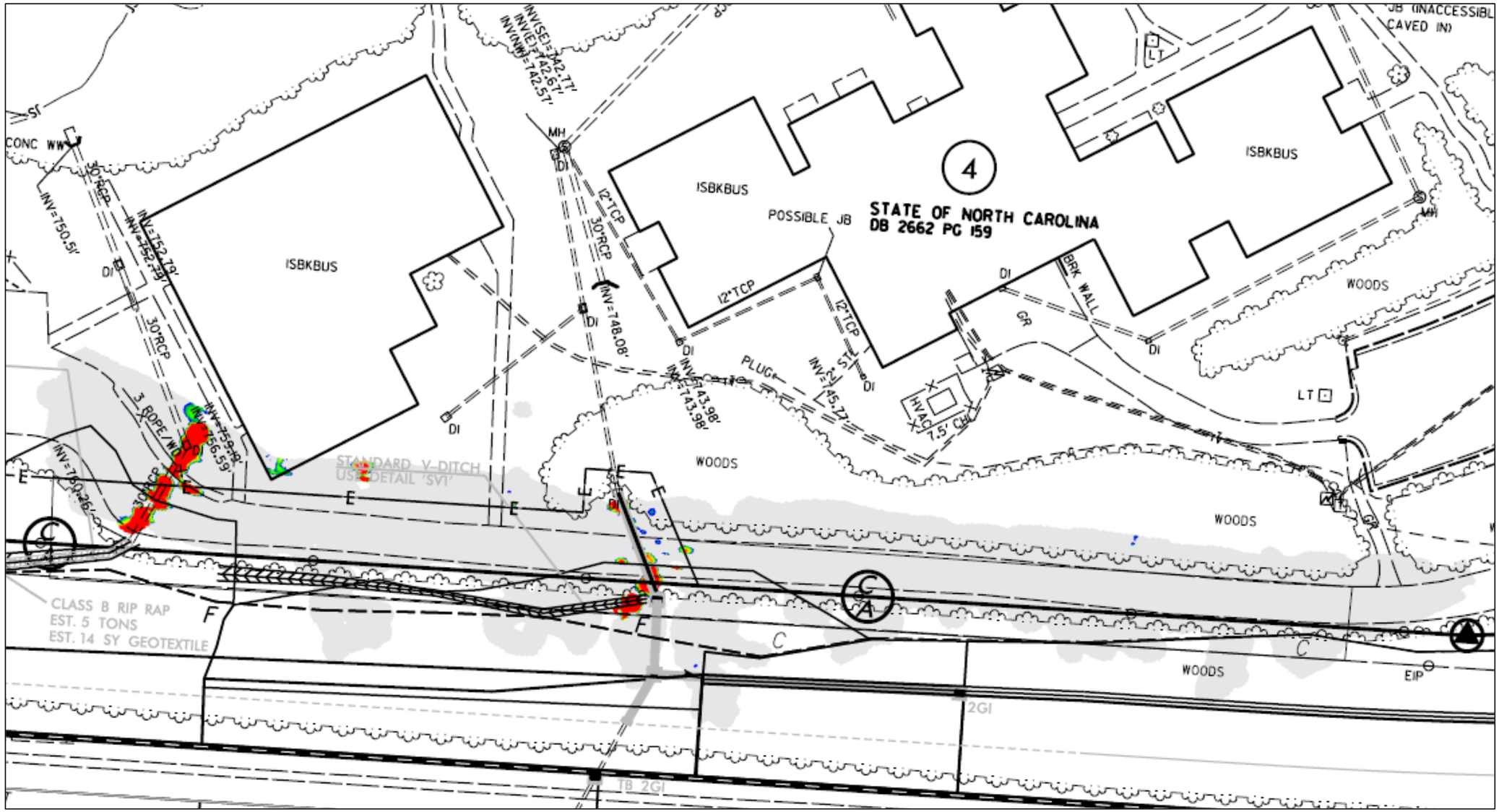

See Figure 6 for explanation of symbols and line types

List of NCDOT reference files

- R4707_Geo_Env.dgn
  - R4707_FS_NCDOT.dgn
  - R4707_hyd_drn.dgn
  - R4707_Rdy_dsn.dgn
  - R4707_Rdy_row.dgn
  - R4707_Rdy_ss.dgn

50’ 0’ 50’
GRAPHIC SCALE

PROJECT NO.	HR12.300
SCALE	1” = 50’
DATE	7/12/19
BY	SBM/EDB

FIGURE 4 – PARCEL 4, STATE OF NC
EM61 EARLY TIME GATE DATA ON PLAN SHEET

NCDOT PROJECT R-4707
SR 2526 FROM SR 2641 TO US 29-SR 2970 INTERCHANGE
GUILFORD COUNTY, NORTH CAROLINA

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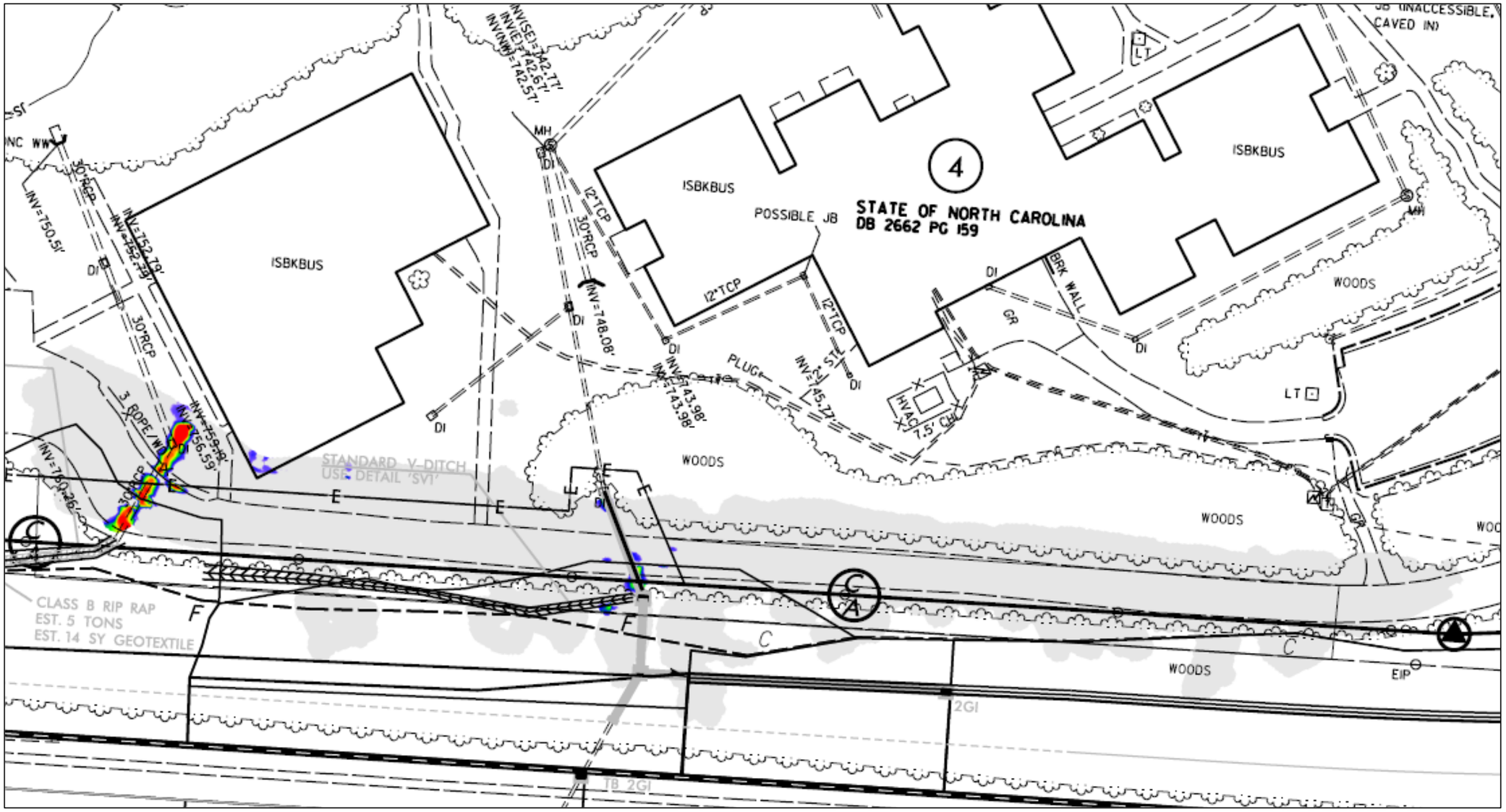

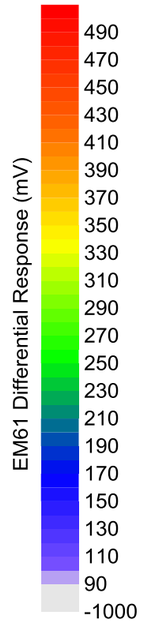

See Figure 6 for explanation of symbols and line types

APPROXIMATE NORTH

List of NCDOT reference files

- R4707_Geo_Env.dgn
  - R4707_FS_NCDOT.dgn
  - R4707_hyd_drn.dgn
  - R4707_Rdy_dsn.dgn
  - R4707_Rdy_row.dgn
  - R4707_Rdy_ss.dgn

50’ 0’ 50’

GRAPHIC SCALE

PROJECT NO.	HR12.300
SCALE	1” = 50’
DATE	7/12/19
BY	SBM/EDB

FIGURE 5 – PARCEL 4, STATE OF NC
EM61 DIFFERENTIAL DATA ON PLAN SHEET

NCDOT PROJECT R-4707
SR 2526 FROM SR 2641 TO US 29-SR 2970 INTERCHANGE
GUILFORD COUNTY, NORTH CAROLINA

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04/26/15

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

PROJECT REFERENCE NO. | SHEET NO.

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

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 HW)

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line LOS B (S.U.E.*)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (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.	HR12.300
SCALE	N/A
DATE	7/12/19
BY	SBM/EDB

FIGURE 6 – PARCEL 4, STATE OF NC
LEGEND FOR PLAN SHEET FIGURES

NCDOT PROJECT R-4707
SR 2526 FROM SR 2641 TO US 29-SR 2970 INTERCHANGE
GUILFORD COUNTY, NORTH CAROLINA

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Appendix D

Soil Boring Logs

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS

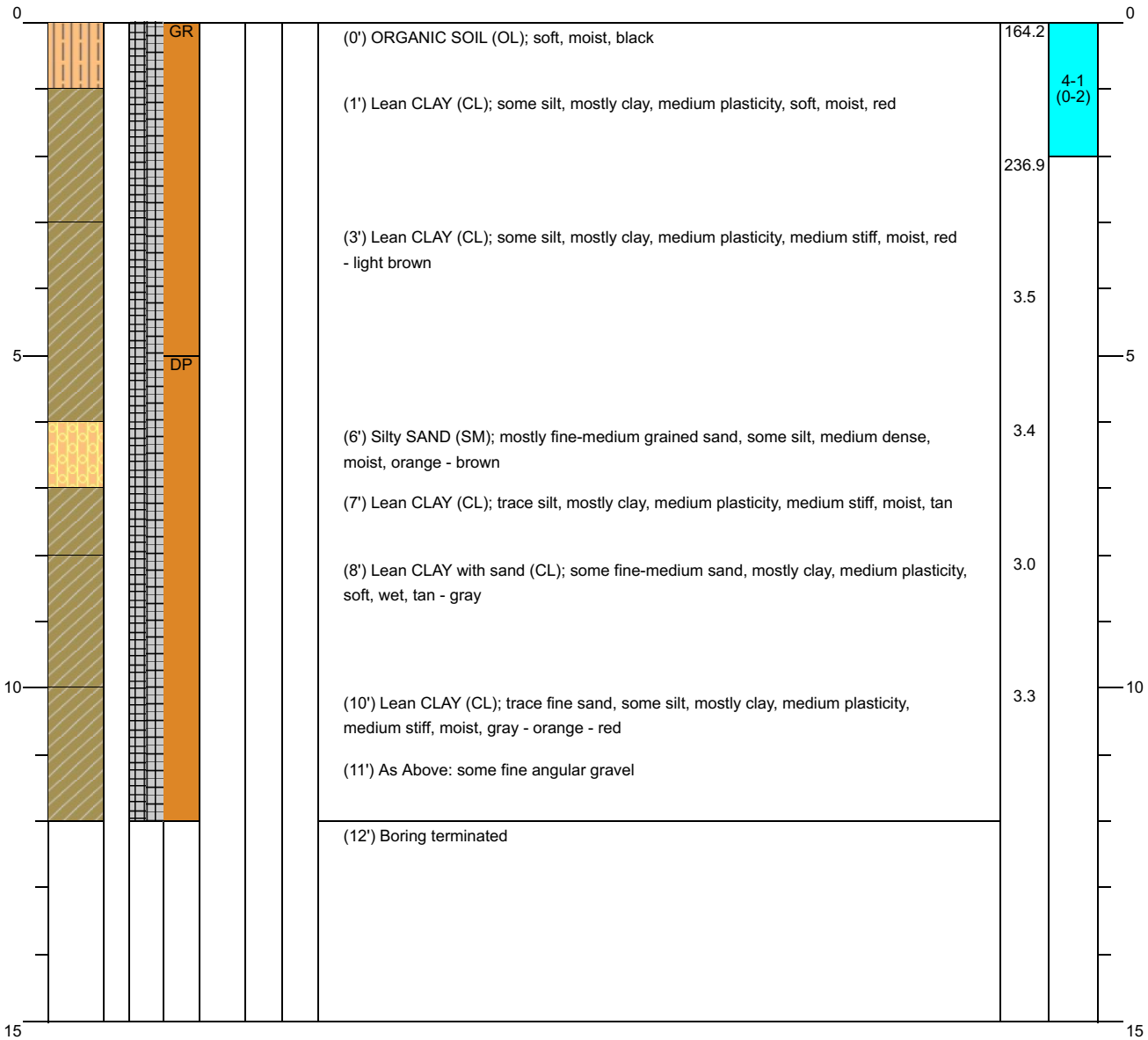
Client:	**NC DOT**
Project:	**ROW-603**
Address:	**Parcel 4, Browns Summit, NC**

BORING LOG

Boring No. 4-1

Page: 1 of 1

Drilling Start Date:	**6/24/2019**	Boring Depth (ft):	**12.0**
Drilling End Date:	**6/24/2019**	Boring Diameter (in):	**2.50**
Drilling Company:	**SAEDACCO**	Sampling Method(s):	**Direct Push, Grab**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	
Drilling Equipment:	**Geoprobe 7822 DT**	DTW After Drilling (ft):	
Driller:	**Stefan Smith**	Ground Surface Elev. (ft):	
Logged By:	**AFM**	Location (X,Y):	



DEPTH (ft)	SOIL/ROCK VISUAL DESCRIPTION	PID (ppm)	Lab Sample	DEPTH (ft)
0	(0') ORGANIC SOIL (OL); soft, moist, black	164.2	4-1 (0-2)	0
	(1') Lean CLAY (CL); some silt, mostly clay, medium plasticity, soft, moist, red	236.9		
	(3') Lean CLAY (CL); some silt, mostly clay, medium plasticity, medium stiff, moist, red - light brown	3.5		
5	(6') Silty SAND (SM); mostly fine-medium grained sand, some silt, medium dense, moist, orange - brown	3.4		5
	(7') Lean CLAY (CL); trace silt, mostly clay, medium plasticity, medium stiff, moist, tan			
	(8') Lean CLAY with sand (CL); some fine-medium sand, mostly clay, medium plasticity, soft, wet, tan - gray	3.0		
10	(10') Lean CLAY (CL); trace fine sand, some silt, mostly clay, medium plasticity, medium stiff, moist, gray - orange - red	3.3		10
	(11') As Above: some fine angular gravel			
	(12') Boring terminated			
15				15

NOTES: Hole precleared to 5.0' by SAEDACCO using hand auger.

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS

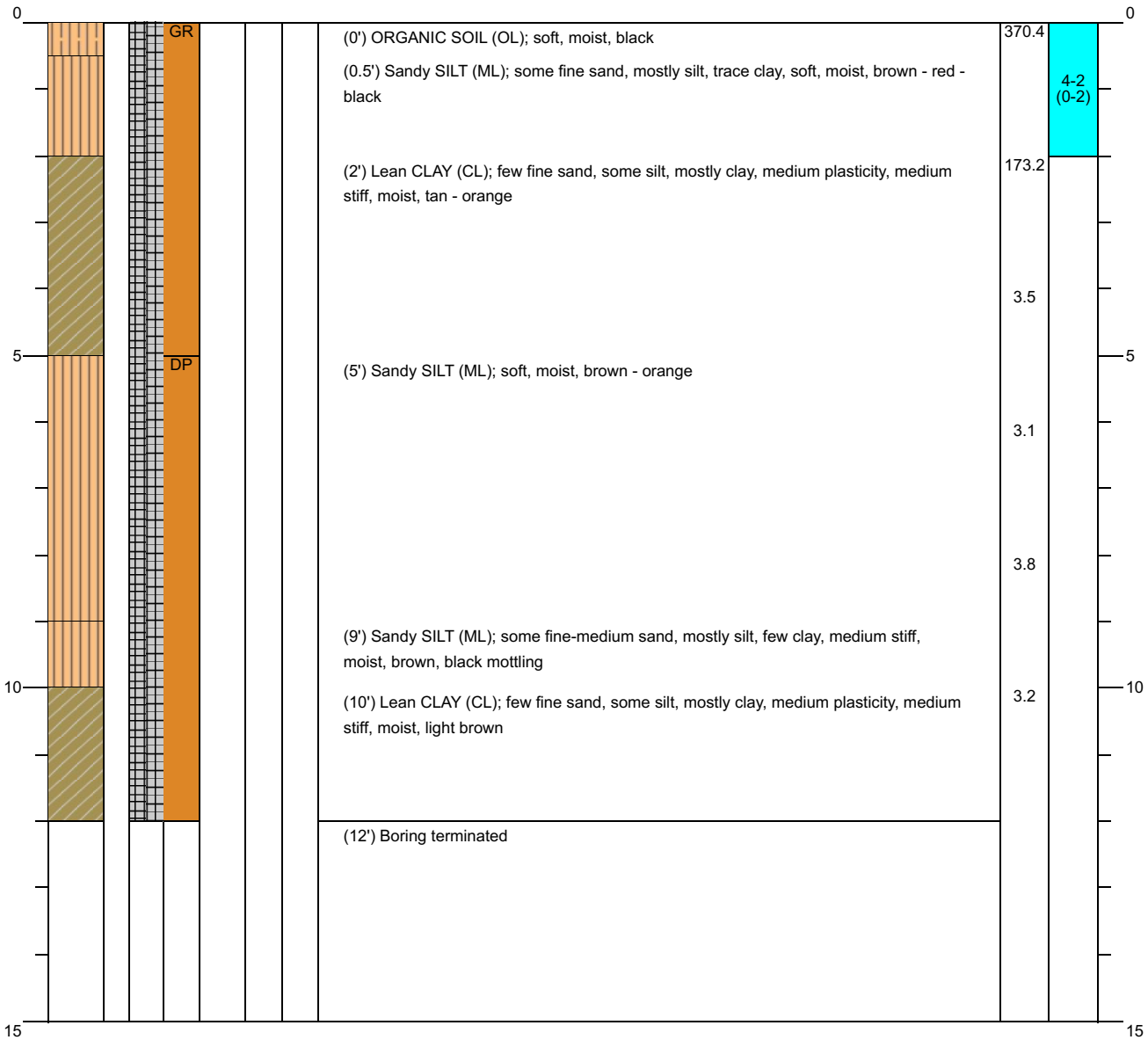
Client:	**NC DOT**
Project:	**ROW-603**
Address:	**Parcel 4, Browns Summit, NC**

BORING LOG

Boring No. **4-2**

Page: **1 of 1**

Drilling Start Date:	**6/24/2019**	Boring Depth (ft):	**12.0**
Drilling End Date:	**6/24/2019**	Boring Diameter (in):	**2.50**
Drilling Company:	**SAEDACCO**	Sampling Method(s):	**Direct Push, Grab**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	
Drilling Equipment:	**Geoprobe 7822 DT**	DTW After Drilling (ft):	
Driller:	**Stefan Smith**	Ground Surface Elev. (ft):	
Logged By:	**AFM**	Location (X,Y):	



DEPTH (ft)	SOIL/ROCK VISUAL DESCRIPTION	PID (ppm)	Lab Sample	DEPTH (ft)
0	(0') ORGANIC SOIL (OL); soft, moist, black	370.4	4-2 (0-2)	0
	(0.5') Sandy SILT (ML); some fine sand, mostly silt, trace clay, soft, moist, brown - red - black			
	(2') Lean CLAY (CL); few fine sand, some silt, mostly clay, medium plasticity, medium stiff, moist, tan - orange	173.2		
		3.5		
5	(5') Sandy SILT (ML); soft, moist, brown - orange			5
		3.1		
		3.8		
	(9') Sandy SILT (ML); some fine-medium sand, mostly silt, few clay, medium stiff, moist, brown, black mottling			
10	(10') Lean CLAY (CL); few fine sand, some silt, mostly clay, medium plasticity, medium stiff, moist, light brown	3.2		10
	(12') Boring terminated			
15				15

NOTES: Hole precleared to 5.0' by SAEDACCO using hand auger.

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS

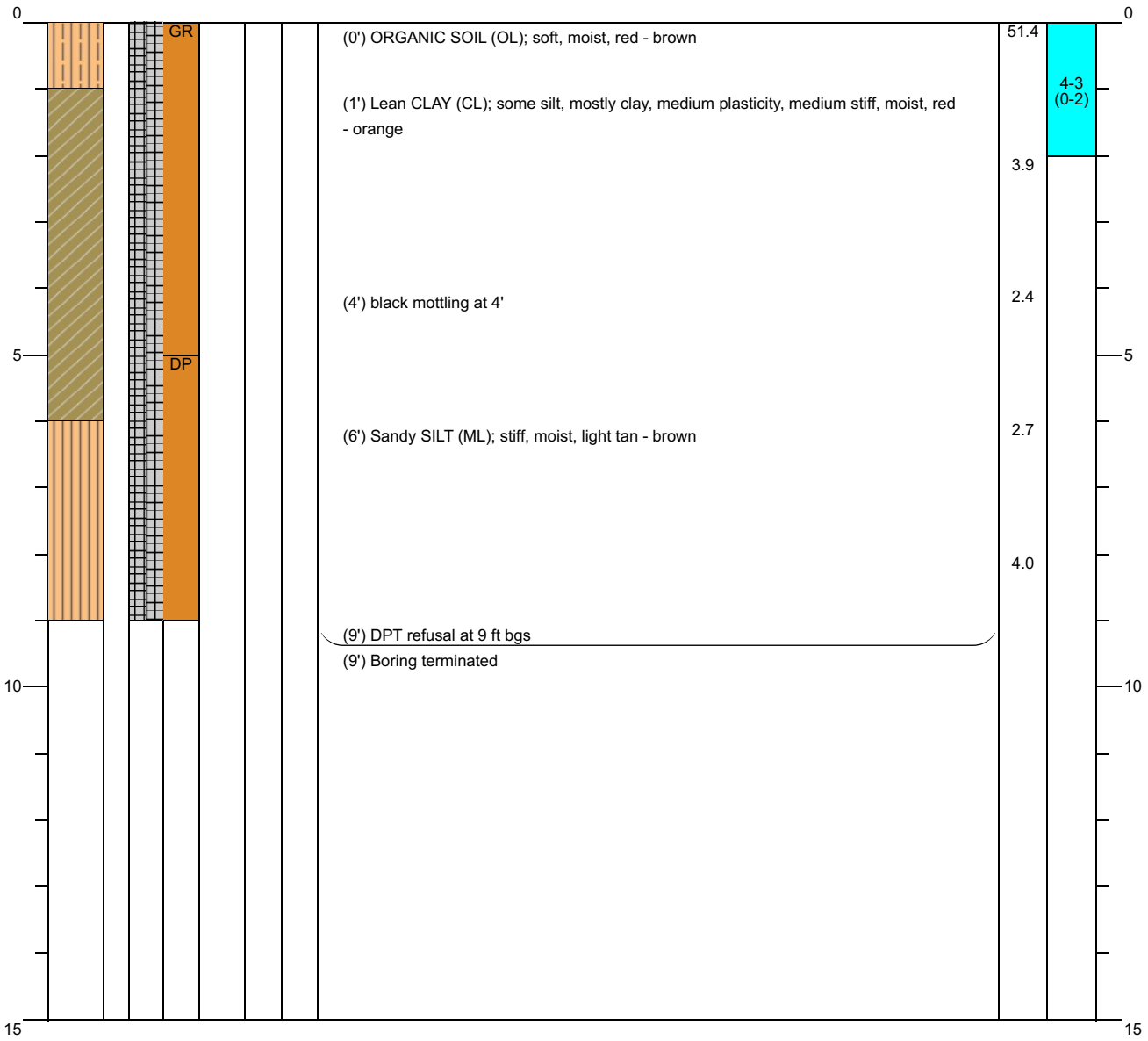
Client:	**NC DOT**
Project:	**ROW-603**
Address:	**Parcel 4, Browns Summit, NC**

BORING LOG

Boring No. **4-3**

Page: **1 of 1**

Drilling Start Date:	**6/24/2019**	Boring Depth (ft):	**9.0**
Drilling End Date:	**6/24/2019**	Boring Diameter (in):	**2.50**
Drilling Company:	**SAEDACCO**	Sampling Method(s):	**Direct Push, Grab**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	
Drilling Equipment:	**Geoprobe 7822 DT**	DTW After Drilling (ft):	
Driller:	**Stefan Smith**	Ground Surface Elev. (ft):	
Logged By:	**AFM**	Location (X,Y):	



NOTES: Hole precleared to 5.0' by SAEDACCO using hand auger.

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS

Client:	**NC DOT**
Project:	**ROW-603**
Address:	**Parcel 4, Browns Summit, NC**

BORING LOG

Boring No. **4-4**

Page: **1 of 1**

Drilling Start Date:	**6/24/2019**	Boring Depth (ft):	**12.0**
Drilling End Date:	**6/24/2019**	Boring Diameter (in):	**2.50**
Drilling Company:	**SAEDACCO**	Sampling Method(s):	**Direct Push, Grab**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	
Drilling Equipment:	**Geoprobe 7822 DT**	DTW After Drilling (ft):	
Driller:	**Stefan Smith**	Ground Surface Elev. (ft):	
Logged By:	**CDG**	Location (X,Y):	

DEPTH (ft)	LITHOLOGY	WATER LEVEL	BORING COMPLETION	COLLECT: Sample Type	COLLECT: Time	COLLECT: Blow Counts	COLLECT: Recovery (ft)	SOIL/ROCK VISUAL DESCRIPTION	MEASURE: PID (ppm)	MEASURE: Lab Sample	DEPTH (ft)
0				GR				(0') ORGANIC SOIL (OL); little silt, little clay, soft, moist, black - red	119.3	4-4 (0-2)	0
								(1') SILT (ML); mostly silt, some clay, soft, moist, red - orange	6.5		
									4.8		
5				DP							5
								(6') Sandy SILT (ML); medium stiff, moist, red - light tan	4.2		
								(7') Sandy SILT (ML); medium stiff, moist, brown - light tan	3.5		
10									4.1		10
								(12') Boring terminated			
15											15

NOTES: Hole precleared to 5.0' by SAEDACCO using hand auger.

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS

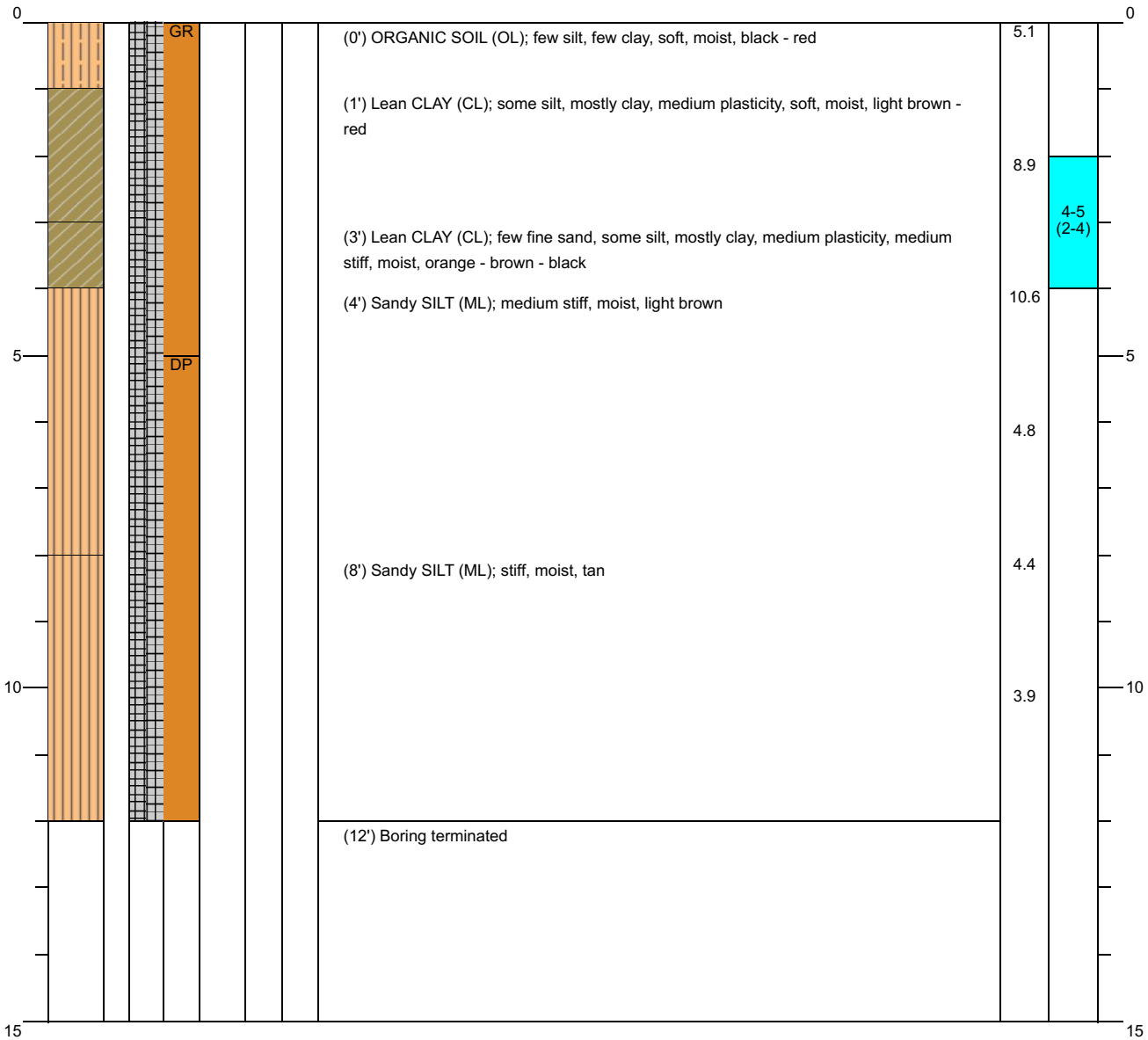
Client:	**NC DOT**
Project:	**ROW-603**
Address:	**Parcel 4, Browns Summit, NC**

BORING LOG

Boring No. **4-5**

Page: **1 of 1**

Drilling Start Date:	**6/24/2019**	Boring Depth (ft):	**12.0**
Drilling End Date:	**6/24/2019**	Boring Diameter (in):	**2.50**
Drilling Company:	**SAEDACCO**	Sampling Method(s):	**Direct Push, Grab**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	
Drilling Equipment:	**Geoprobe 7822 DT**	DTW After Drilling (ft):	
Driller:	**Stefan Smith**	Ground Surface Elev. (ft):	
Logged By:	**CDG**	Location (X,Y):	



NOTES: Hole precleared to 5.0' by SAEDACCO using hand auger.

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS

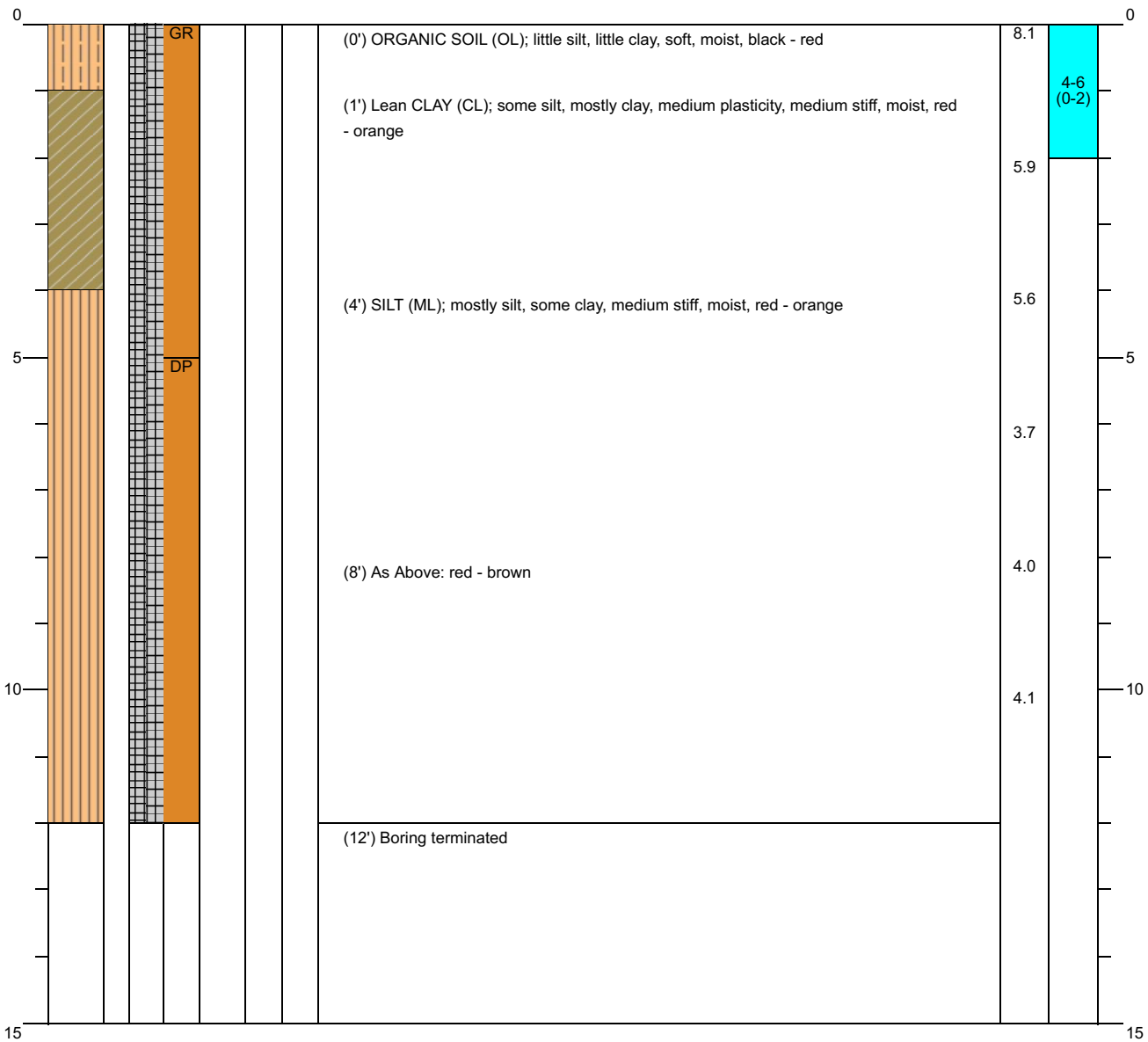
Client:	**NC DOT**
Project:	**ROW-603**
Address:	**Parcel 4, Browns Summit, NC**

BORING LOG

Boring No. **4-6**

Page: **1 of 1**

Drilling Start Date:	**6/24/2019**	Boring Depth (ft):	**12.0**
Drilling End Date:	**6/24/2019**	Boring Diameter (in):	**2.50**
Drilling Company:	**SAEDACCO**	Sampling Method(s):	**Direct Push, Grab**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	
Drilling Equipment:	**Geoprobe 7822 DT**	DTW After Drilling (ft):	
Driller:	**Stefan Smith**	Ground Surface Elev. (ft):	
Logged By:	**CDG**	Location (X,Y):	



DEPTH (ft)	SOIL/ROCK VISUAL DESCRIPTION	PID (ppm)	Lab Sample	DEPTH (ft)
0	(0') ORGANIC SOIL (OL); little silt, little clay, soft, moist, black - red	8.1	4-6 (0-2)	0
	(1') Lean CLAY (CL); some silt, mostly clay, medium plasticity, medium stiff, moist, red - orange	5.9		
	(4') SILT (ML); mostly silt, some clay, medium stiff, moist, red - orange	5.6		
5		3.7		5
	(8') As Above: red - brown	4.0		
10		4.1		10
	(12') Boring terminated			
15				15

NOTES: Hole precleared to 5.0' by SAEDACCO using hand auger.

hart hickman
SMARTER ENVIRONMENTAL SOLUTIONS

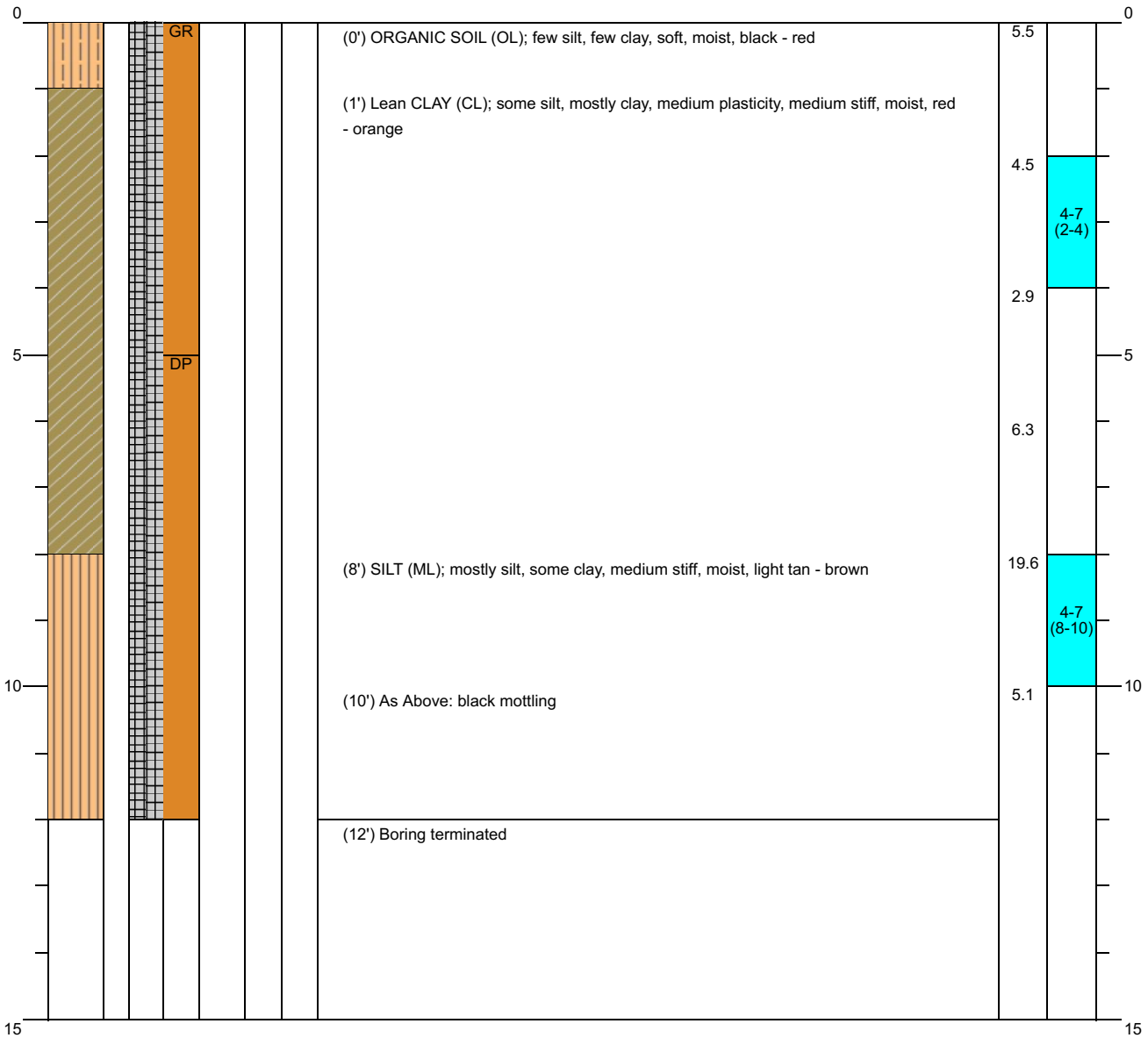
Client:	**NC DOT**
Project:	**ROW-603**
Address:	**Parcel 4, Browns Summit, NC**

BORING LOG

Boring No. **4-7**

Page: **1 of 1**

Drilling Start Date:	**6/24/2019**	Boring Depth (ft):	**12.0**
Drilling End Date:	**6/24/2019**	Boring Diameter (in):	**2.50**
Drilling Company:	**SAEDACCO**	Sampling Method(s):	**Direct Push, Grab**
Drilling Method:	**Direct Push**	DTW During Drilling (ft):	
Drilling Equipment:	**Geoprobe 7822 DT**	DTW After Drilling (ft):	
Driller:	**Stefan Smith**	Ground Surface Elev. (ft):	
Logged By:	**CDG**	Location (X,Y):	



NOTES: Hole precleared to 5.0' by SAEDACCO using hand auger.

Appendix E

Laboratory Analytical Report

QED REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS QROS

Hydrocarbon Analysis Results

Client: HART HICKMAN
Address: 2923 S TRYON ST SUITE 100
CHARLOTTE NC 28203

Samples taken Monday, June 24, 2019
Samples extracted Monday, June 24, 2019
Samples analysed Thursday, June 27, 2019

Contact: DAVID GRAHAM

Operator JENN RYAN

Project: ROW - 603

U04049

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	4 - 1 (0-2)	23.4	<0.59	0.74	8.4	9.1	4.3	<0.19	<0.023	17.5	57.6	24.9	Deg.PHC 76.6%,(FCM)
s	4 - 2 (0-2)	21.8	<0.55	<0.55	1.5	1.5	0.75	<0.17	<0.022	0	56.1	43.9	Deg Fuel 73.8%,(FCM)
s	4 - 3 (0-2)	20.8	<0.52	<0.52	1.8	1.8	0.96	<0.17	<0.021	0	68.8	31.2	Deg Fuel 69.2%,(FCM)
s	4 - 4 (0-2)	23.0	<0.58	<0.58	4.5	4.5	1.6	<0.18	<0.023	0	32.2	67.8	V.Deg.Diesel 56.7%,(FCM),(BO),(P)
s	4 - 5 (2-4)	20.6	<0.52	<0.52	<0.52	<0.52	<0.1	<0.17	<0.021	0	100	0	,(FCM)
s	4 - 6 (0-2)	11.6	<0.29	0.83	0.29	1.12	0.16	<0.09	<0.012	94.9	3.4	1.7	76.6%,(FCM)
s	4 - 7 (2-4)	21.8	<0.55	<0.55	<0.55	<0.55	<0.11	<0.17	<0.022	0	0	0	,(FCM),(BO)
s	4 - 7 (8-10)	21.8	<0.55	<0.55	<0.55	1.2	1.2	<0.17	<0.022	0	90.8	9.2	Residual HC,(PFM)

Initial Calibrator QC check OK Final FCM QC Check OK 101.2 %

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

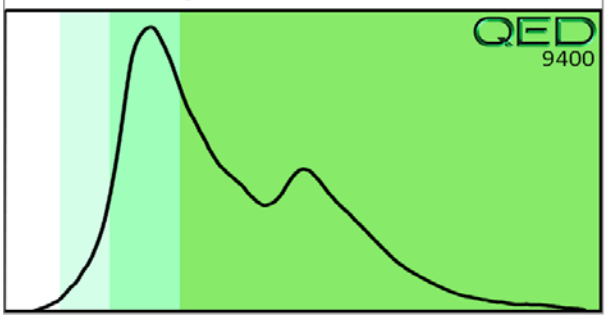
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

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

QED Hydrocarbon Fingerprints

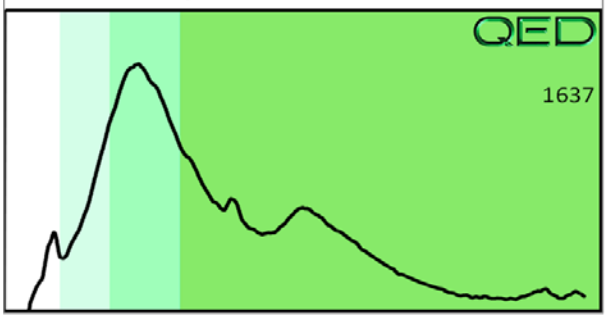
Project: ROW - 603 Wednesday, June 26, 2019

4 - 1 (0-2) : Deg.PHC 76.6%,(FCM)

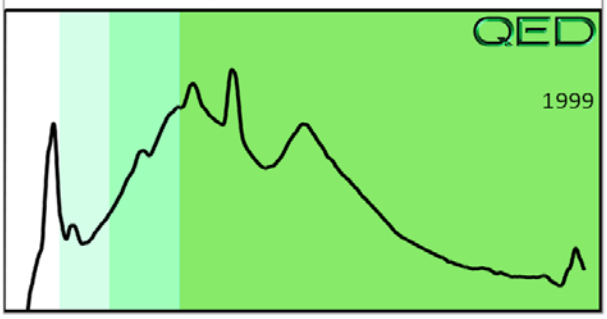


4 - 2 (0-2) : Deg Fuel 73.8%,(FCM)

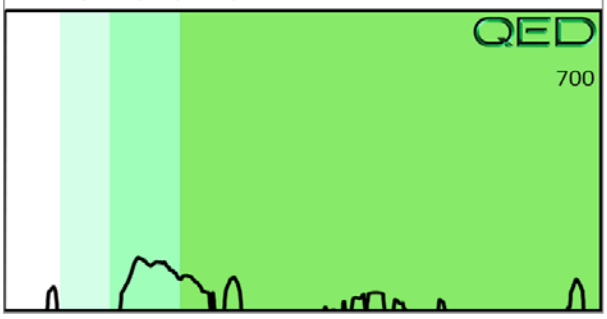
4 - 3 (0-2) : Deg Fuel 69.2%,(FCM)



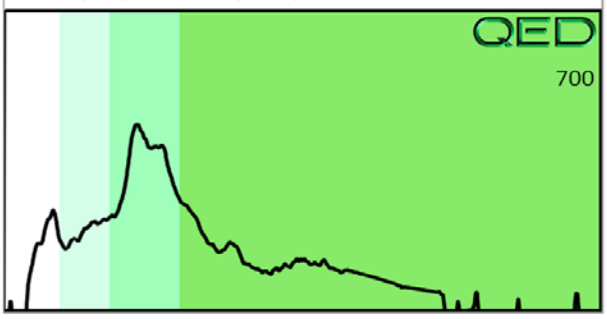
4 - 4 (0-2) : V.Deg.Diesel 56.7%,(FCM),(BO),(P)



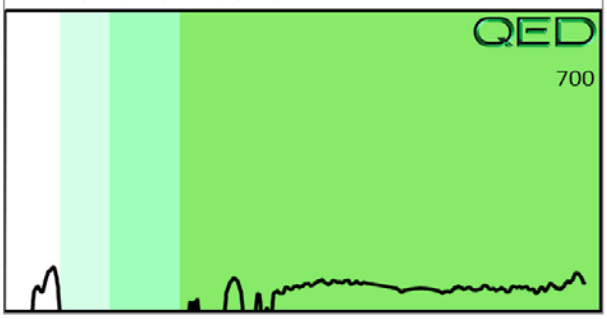
4 - 5 (2-11) : ,(FCM)



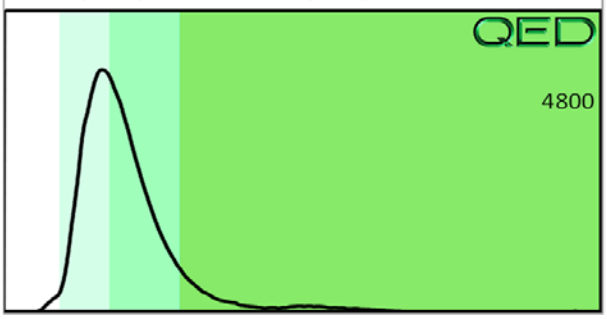
4 - 6 (0-2) : 76.6%,(FCM)



4 - 7 (2-4) : ,(FCM),(BO)



4 - 7 (8-10) : Residual HC,(PFM)



B12B

Client Name:	HART & HICKMAN, P.C
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Contact:	DAVID GRAHAM
Project Ref.:	ROW-603
Email:	DGRAHAM@HARTHICKMAN.COM
Phone #:	704-586-0007
Collected by:	AFM, CDG

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

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.

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

Sample Collection	TAT Requested		Analysis Type				Weights		
Date/Time	24 Hour	48 Hour	UVF	GC	Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
6/24/19 / 1200			X		CDG	4-1 (0-2)	55.4	44.3	11.1
6/24/19 / 1300			X		CDG	4-2 (0-2)	56.1	44.2	11.9
6/24/19 / 1410			X		CDG	4-3 (0-2)	56.4	43.9	12.5
6/24/19 / 1445			X		CDG	4-4 (0-2)	55	43.7	11.3
6/24/19 / 1635			X		CDG	4-5 (2-4)	56.8	44.2	12.6
6/24/19 / 1505			X		CDG	4-6 (0-2)	56.5	44.4	12.1
6/24/19 / 1535			X		CDG	4-7 (8-10)	55.7	43.8	11.9
6/25/19 / 0820			X		CDG	5-1	53.6	44.1	9.5
6/25/19 / 0910			X		CDG	5-2	54.6	43.7	10.9
6/25/19 / 0940			X		CDG	5-3	53.3	44.4	8.9
6/25/19 / 1015			X		CDG	5-4	52.7	43.9	8.8
6/25/19 / 1050			X		CDG	5-5	54	44.4	9.6
6/25/19 / 1150			X		CDG	~~5-6~~	55	44.2	10.8
6/24/19 / 1535			X		CDG	~~4-7A~~ 4-7 (2-4)	56.1	44.2	11.9
6/25/19 / 1345			X		CDG	5-7	56.0	44.4	11.6
6/25/19 / 1415			X		CDG	5-8	55.5	43.9	11.6
6/25/19 / 1455			X		CDG	5-9	54.6	43.9	10.7
6/25/19 / 1525			X		CDG	5-10	56.1	43.8	12.3
6/25/19 / 1615			X		CDG	5-11	54.7	44.3	10.4
6/25/19 / 1810			X		CDG	SED 6-1	56.5	44.1	12.4

COMMENTS/REQUESTS: PLEASE PLT 4-1 TO 4-7 ON REPORT 1, 5-1 TO 5-11 ON REPORT 2, SED 6-1 ON REPORT 3

TARGET GC/UVF ANALYTES: BTEX, GRO, DRO, TPH, PAH, BaP

Relinquished by		Accepted by	Date/Time
			6/26/19 1832
Relinquished by		Accepted by	Date/Time

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Ref. No 061719A