PRELIMINARY SITE ASSESSMENT
FOR
PARCEL #168 JERRY TAYLOR PROPERTY

STATE PROJECT: R-2303A
WBS ELEMENT: 34416.1.1
NC 24 FROM WEST OF SR 1006 (MAXWELL RD./CLINTON RD.)
IN CUMBERLAND COUNTY TO SR 1853 (JOHN NUNNERY RD.)

PREPARED FOR:

NCDOT GEOTECHNICAL ENGINEERING UNIT
GEOENVIRONMENTAL SECTION
1589 MSC
RALEIGH, NORTH CAROLINA 27699-1589

JANUARY 7, 2011
REVISED JANUARY 12, 2011

PREPARED BY:

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CATLIN PROJECT NO. 210124

CORPORATE GEOLOGY LICENSE CERTIFICATION NO. C-118
CORPORATE LICENSURE NO. FOR ENGINEERING SERVICES C-0585

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for
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January 7, 2011
Revised January 11, 2011

1.0 PURPOSE OF INVESTIGATION AND DESCRIPTION

CATLIN Engineers and Scientists (CATLIN) were retained by the North Carolina Department of Transportation (NCDOT) Geotechnical Engineering Unit to provide a field investigation concluding with a Preliminary Site Assessment (PSA) for the above referenced properties. In response to a Request for Technical and Cost Proposal (RFP) dated October 22, 2010, and subsequent site reconnaissance and discussions with NCDOT GeoEnvironmental Project Manager Mr. Ethan Caldwell, PE, LG, CATLIN submitted a proposal for conducting an investigation at nine (9) parcels near Stedman, North Carolina. Figure 1 illustrates the general location and the State Project is illustrated on Figure 2.

This report documents our activities and findings at Parcel #168, Jerry Taylor Property. The following specific parcel information was provided by NCDOT:

Parcel #168 Jerry Taylor Property
(The parcel was incorrectly referred to as Parcel #166 in the RFP)
Taylors Auto Sales
8947 Clinton Rd.
Stedman, NC 28391
Plan Sheet 31
Facility ID: None Identified

Property Owner:
Jerry Taylor
512 John Nunnery Rd.
Stedman, NC 28391

Currently this site is a vacant store. Historically the site may have operated as a gas station. The site is located on the northwest quadrant of the intersection of John Nunnery Road and Clinton Road. According to NCDENR's UST Section registry there are no known Facility IDs or Groundwater Incidents associated with this site.

The site is illustrated on Figure 3.

According to the RFP:

> Acquisition of the right-of-way is necessary for NC 24 roadway construction (above referenced State Project R-2303A) and specifically at the above referenced parcel. A site investigation is necessary to determine the presence of USTs and/or contaminated soil in the proposed right-of-way and/or easement.

The work scope as requested includes:

- Notify property owners/occupants of intent as applicable.
- Locate all USTs and determine approximate size and contents (if any). Locate all USTs and determine approximate size and contents (if any).
- Locate monitoring wells that may be impacted during construction.
- Determine if contaminated soils are present.
- If contamination is evident, estimate the quantity of impacted soils and indicate the approximate area of soil contamination on a site map.
- Prepare and submit one report of findings including field activities, findings, and recommendations for each site in triplicate and electronically to the NCDOT GeoEnvironmental Section.

In addition to the RFP, NCDOT provided plan sheets associated with the roadway construction. CATLIN and NCDOT personnel agreed to approximate proposed boring and sample locations within the right-of-way and/or easement for soil sample collection and total petroleum hydrocarbons (TPH) diesel and gasoline range organics (DRO and GRO) laboratory analysis during a October 26, 2010 site reconnaissance meeting.

2.0 METHODS

Approximate proposed borings were indicated in the field with NCDOT personnel during initial site reconnaissance and before final Workplan submittal. Per NCDOT request, borings (soil samples) were located near known or suspect UST systems and proposed drainage features (as indicated on NCDOT provided plan sheets).

CATLIN coordinated geophysical activities concurrently with soil boring and sampling. Final sampling activities were completed after the geophysical survey. CATLIN's field activities concluded on November 22, 2010.

2.1 FIELD METHODS

All field work was conducted in general accordance with state and federal guidelines and industry standards.

Underground utility locating was coordinated by CATLIN personnel. The North Carolina One Call Center (NC-1-Call) was contacted for underground utility location. Proposed boring locations were marked before NC-1-Call personnel were on-site. The areas around the proposed boring locations were checked and found to be clear of any underground utilities or alternate locations were indicated by NC-1-Call personnel.

CATLIN personnel gathered subsurface soil data at the site by Direct Push Technology (DPT) boring advancement using an AMS PowerProbe™ 9600D (PowerProbe). The borings were advanced to depth by static force and a 90-pound hydraulic percussion hammer. Two and one-quarter inch diameter by four-foot length steel is used as casing. Soil samples were continuously collected in four-foot long and one and one-half inch diameter clear liners. Liners are removed from the casing and then cut in half longitudinally to allow for visual/manual classification utilizing the Unified Soil Classification System (USCS). Borings were identified by the parcel number (as indicated by NCDOT) followed by "DPT" and consecutive numbers starting with "01" at each parcel (example: 168DPT-01). Soil samples were collected continuously from near the surface to boring termination. Soils were removed from the liners in two-foot intervals and placed in sealable polyethylene bags for organic vapor analysis (OVA) headspace screening utilizing a photo ionization detector (PID). The USCS and OVA/PID information was recorded on field logs and has been transferred to the Boring Logs provided in Appendix A.

Soil samples were collected for laboratory analysis above the water table using roughly a one-foot interval of the two-foot sample revealing the highest OVA/PID reading. Sample identification was based on the boring identification followed by sample depth in parentheses (example: 168DPT-01 (3-4').

New disposable nitrile gloves were worn during sampling activities. All samples were placed into laboratory provided glassware and packed on ice in an insulated cooler for transportation to the laboratory. Sample integrity was maintained by following proper Chain of Custody procedures. A copy of the Chain of Custody is provided following the analytical report in Appendix B.

Boreholes were abandoned to just below the surface using three-eighth inch bentonite chips. Bentonite and water were poured into the borehole simultaneously to facilitate hydration. Borings located in asphalt or gravel were topped with asphalt cold patch. Final borehole and sample locations were surveyed utilizing a Trimble® GPS survey instrument.

2.2 LABORATORY TESTING

Following boring advancement, selected soils were placed in the appropriately labeled glassware. In an attempt to provide information regarding petroleum impact to soils and groundwater with reasonable analytical expense, soil samples were analyzed for TPH DRO and GRO by Environmental Protection Agency (EPA) Methods 5030 and 3550 with analysis by modified 8015.

A total of seven (7) soil samples were submitted to SGS North America Inc. (NC Certification # 481). Chain of Custody documentation is included in Appendix B.

3.0 RESULTS

In the event a cut is required for roadway construction or utility installation, any soil samples revealing detectable TPH concentrations will be considered petroleum impacted for handling and disposal purposes. The complete laboratory analytical reports are provided in Appendix B. Results of Schnabel's geophysical investigations including site photographs were submitted directly to NCDOT and a copy is provided in Appendix C. Schnabel's investigation results will be generally discussed in the following section.

One geophysical anomaly indicative of a potential UST was identified near the northwest corner of the building. According to the geophysical report, the possible UST is approximately three (3) feet BLS and about 150-gallon capacity. No vent pipe was identified with this possible UST location. The suspected UST location is illustrated on Figure 3. Photographs of the site including the suspected UST location are included in the geophysical report provided in Appendix C.

Seven (7) borings were advanced for soil sample collection and one sample was collected from each boring for laboratory analysis. Six (6) of the borings were advanced in front of the building in a grid pattern with approximately 15-foot spacing. One (1) boring was advanced near the northwest corner of the building and suspected UST location. Boring/sample locations are illustrated on Figure 3. Borings were terminated at four (4) feet BLS except borings 168DPT-01 and 168DPT-07, which were advanced to eight (8) feet BLS. Sandy soils were encountered across the site. Damp soils were encountered across the site approximately four (4) feet BLS. Soil samples were collected for laboratory analysis from within the two (2) foot interval with the highest OVA/PID reading. Soil samples for laboratory analysis were collected from three (3) to four (4) feet BLS except the 168DPT-06 (0-2') soil sample. Boring logs including USCS classification and OVA/PID screening results are provided in Appendix A. Summarized analytical results are provided on Table 1 and Figure 3.

No TPH DRO or TPH GRO concentrations above the laboratory reporting limit were detected in any of the soil samples except the 168DPT-06 (0-2') soil sample collected near the front, southeast corner of the building. The 168DPT-06 (0-2') soil sample revealed 13.7 mg/kg TPH DRO and 7.08 mg/kg TPH GRO. The estimated extent of petroleum impacted soils is illustrated on Figure 3, however, it should be noted there are no "clean" soil sample locations defining the estimated extent to the north or east. This area is approximately 210 ft^2. Based on an assumed zone of contamination from near the surface to the assumed water table depth of four (4) feet, approximately 31 yds^3 of TPH impacted soils may be encountered near boring 168DPT-06.

4.0 SUMMARY AND RECOMMENDATIONS

A preliminary site assessment was conducted at the subject site as requested by NCDOT. Right-of-Way acquisition for NC 24 roadway construction is proposed at the site. In the event a cut is required for roadway construction or utility installation, any soil samples revealing detectable TPH concentrations will be considered petroleum impacted for handling and disposal purposes. Petroleum impacted soils were revealed at one (1) of the seven (7) boring locations.

One geophysical anomaly indicative of a potential UST was identified near the northwest corner of the building.

Six (6) soil borings were advanced for soil sample collection in front of the building. One (1) boring was advanced for soil sample collection near the northwest corner of the building and suspected UST location. No TPH DRO or TPH GRO concentrations above the laboratory reporting limit were detected in any of the soil samples except the 168DPT-06 (0-2') soil sample collected near the front, southeast corner of the building. The 168DPT-06 (0-2') soil sample revealed 13.7 mg/kg TPH DRO (which is above the NCDENR Action Level) and 7.08 mg/kg TPH GRO. The estimated extent of petroleum impacted soils is illustrated on Figure 3, however, it should be noted there are no "clean" soil sample locations defining the estimated extent to the north or east. This area is approximately 210 ft^2 (+/- 31 yds^3).

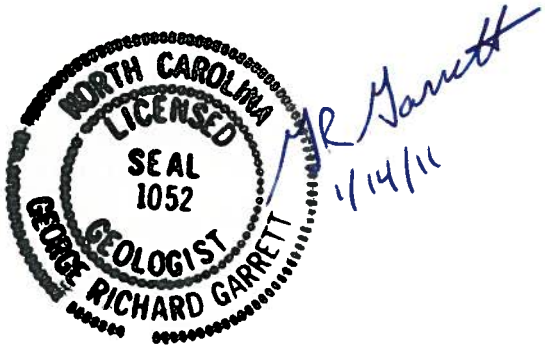
CATLIN recommends forwarding a copy of this report to the NCDENR Fayetteville Regional Office UST Section with a cover letter indicating the presence of a UST and petroleum impacted soils above NCDENR Action Level at this site.

5.0 LIMITATIONS

This report is based on the agreed work scope and a review of available data from limited sampling. It is possible that this investigation may have failed to reveal the presence of contamination in the project area where such contamination may exist. Although CATLIN has used accepted methods appropriate for soil and groundwater sampling, CATLIN cannot guarantee that additional soil and/or groundwater contamination does not exist.

6.0 SIGNATURES

Benjamin J. Ashba
Project Manager



G. Richard Garrett, P.G.
Senior Project Manager

TABLES

TABLE 1
SUMMARY OF SOIL LABORATORY RESULTS
EPA METHOD 8015

Parcel #168
Jerry Taylor Property
Taylor's Auto Sales
8947 Clinton Road

Sample ID	Contaminant of Concern → / Date Collected	Diesel Range Organics	Gasoline Range Organics
168 DPT-01 (3-4')	11/15/2010	<6.66	<5.29
168 DPT-02 (3-4')	11/15/2010	<6.68	<5.66
168 DPT-03 (3-4')	11/15/2010	<6.20	<5.28
168 DPT-04 (3-4')	11/15/2010	<6.53	<5.31
168 DPT-05 (3-4')	11/15/2010	<6.57	<5.09
168 DPT-06 (0-2')	11/15/2010	**13.7**	**7.08**
168 DPT-07 (3-4')	11/22/2010	<6.19	<5.47

All results in milligrams per kilogram (mg/kg).
Sample depth in feet provide in parenthesis ( ) as part of the Sample ID.
< = Less than reporting limit
Results in bold exceed the reporting limit.

FIGURES

DESCRIPTION: NC 24 from West of SR 1006 (Maxwell Road/Clinton Road) in Cumberland County to SR 1853 (John Nunnery Road)	ENGLISH	WBS ELEM.: 34416.1.1	FIGURE NO. 1
		TIP NO.: R-2303A	TOTAL FIGURES: 3
		F.A. NO.: N/A	
		COUNTY: CUMBERLAND	
PREPARED BY: CATLIN Engineers and Scientists, 220 Old Dairy Road, Wilmington, NC 28405, Corporate Licensure No. for Engineering Services C-0554	SCALE: 1"=1/2 MILE	TITLE: GENERAL LOCATION	

S:-project-2010-210124-figs-FIG01_GENERAL-LOCATION.dgn

½ ¼ 0 ½ 1
SCALE IN MILES

STA. 16+90.00 – BEGIN PROJECT

STA. 376+28.96 – END PROJECT

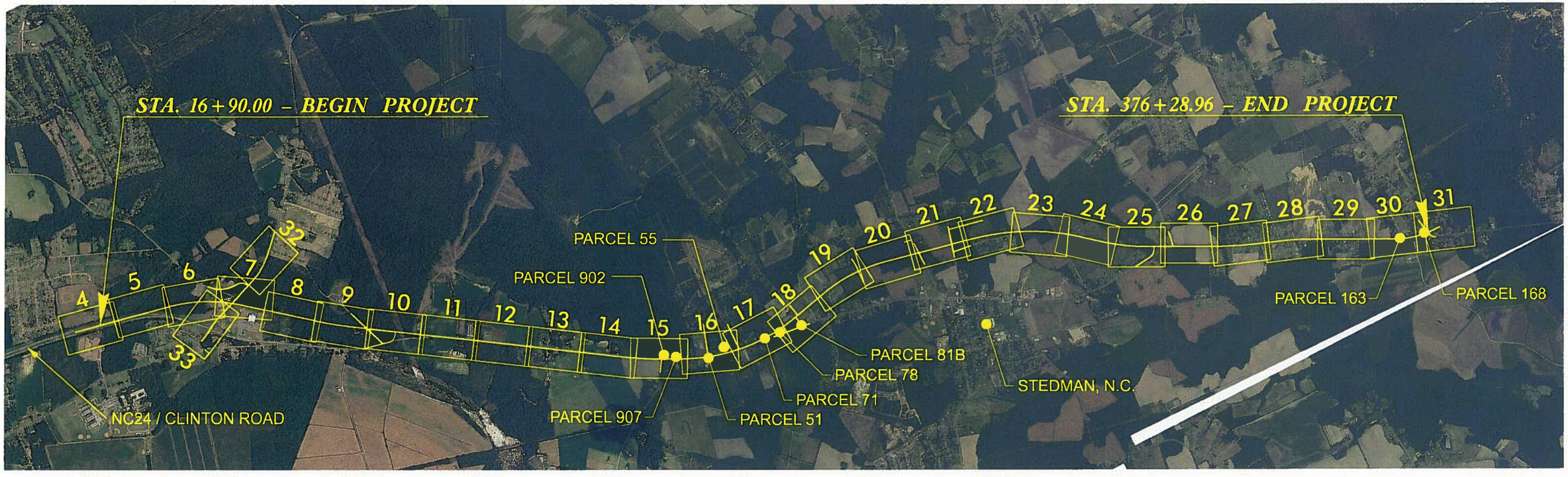
PARCEL 55
PARCEL 902
PARCEL 907
PARCEL 51
PARCEL 71
PARCEL 78
PARCEL 81B
PARCEL 163
PARCEL 168
NC24 / CLINTON ROAD
STEDMAN, N.C.

NOTE:
1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.
2. USGS TOPOS (STEDMAN, VANDER, & AUTRYVILLE) OBTAINED FROM TERRAIN NAVIGATOR PRO.

DESCRIPTION: NC 24 from West of SR 1006 (Maxwell Road/Clinton Road) in Cumberland County to SR 1853 (John Nunnery Road)	ENGLISH	WBS ELEM.: 34416.1.1	FIGURE NO. 2
		TIP NO.: R-2303A	TOTAL FIGURES: 3
		F.A. NO.: N/A	
		COUNTY: CUMBERLAND	
PREPARED BY: CATLIN Engineers and Scientists, 220 Old Dairy Road, Wilmington, NC 28405, Corporate Licensure No. for Engineering Services C-0658	SCALE: 1"=1/2 MILE	TITLE: STATE PROJECT R-2303A STA 16+90.00 TO 376+28.96	

S:-project-2010-210124-figs-FIG02_AERIAL-LAYOUT.dgn

½ ¼ 0 ½ 1
SCALE IN MILES



NOTE:
1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.
2. AERIAL PHOTOS OBTAINED FROM TERRAIN NAVIGATOR PRO.

SUMMARY OF SOIL LABORATORY RESULTS
EPA METHOD 8015

Sample ID	Contaminant of Concern → Date Collected	Diesel Range Organics	Gasoline Range Organics
168 DPT-01 (3-4')	11/15/2010	<6.66	<5.29
168 DPT-02 (3-4')	11/15/2010	<6.68	<5.66
168 DPT-03 (3-4')	11/15/2010	<6.20	<5.28
168 DPT-04 (3-4')	11/15/2010	<6.53	<5.31
168 DPT-05 (3-4')	11/15/2010	<6.57	<5.09
168 DPT-06 (0-2')	11/15/2010	**13.7**	**7.08**
168 DPT-07 (3-4')	11/22/2010	<6.19	<5.47

All results in milligrams per kilogram (mg/kg).
Sample depth in feet provide in parenthesis ( ) as part of the Sample ID.
< = Less than reporting limit
Results in bold exceed the reporting limit.

DESCRIPTION: NC 24 from West of SR 1006 (Maxwell Road/Clinton Road) in Cumberland County to SR 1853 (John Nunnery Road)	ENGLISH
WBS ELEM.: 34416.1.1	FIGURE NO. 3
TIP NO.: R-2303A	TOTAL FIGURES: 3
F.A. NO.: N/A	
COUNTY: CUMBERLAND	
PREPARED BY: CATLIN Engineers and Scientists, 220 Old Dairy Road, Wilmington, NC 28405, Corporate Licensure No. for Engineering Services C-0585	SCALE: 1"=30'
TITLE: PARCEL #168 JERRY TAYLOR PROPERTY	

S:-project-2010-210124-figs-parcel 168_1.dgn

30 15 0 30
SCALE IN FEET

POLE
END FENCE
-Y11- +80
50'
EIP
-L- +90
100'
NAD 83/95
89.92
10° 46' 59.5" E
STA. 376+28.96
END PROJECT R-2303A
100.73
N 83°44'39" W
+61.50
41.94'
LEIBURN R. STRICKLAND
DB 2799 PG 628
PB 19 PG 48
48" CHE
96" WD
2-10,000 GAL
308
309 W/LT
245.22
N 79°11'49" E
12" BLK
12" BLK
12" BLK
12" BLK
JERRY TAYLOR
DB 6301 PG 857
168
JERRY TAYLOR
DB 6301 PG 857
168
N 10°48'12" W
125.62
168DPT-07
TAYLOR'S
AUTO SALES
8947 CLINTON RD.
ESTIMATED EXTENT OF
PETROLEUM IMPACTED SOILS
SPECIAL CUT DITCH
SEE DETAIL A
ISBLKBL'S
168DPT-05
168DPT-04
168DPT-06
168DPT-02
168DPT-01
168DPT-03
303 W/LT
304 W/LT
BL- 42 =
BY12 - 72
SOIL
TH #37 CAR
EXISTING R/W
6" PVC W DATUR
BST
MTL CANOPY
EXISTING R/W
EXISTING R/W
8" W DATUR
302
305
306
-DET2-
S 69° 25' 16.4" E
-L- +29
195'

NOTE:
1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.
2. UNDERGROUND UTILITIES IDENTIFIED BY NC-ONE-CALL AND GEOPHYSICAL INVESTIGATION NOT SHOWN.

LEGEND

NEW	DESCRIPTION
◐	SOIL BORING/SAMPLE
▨	SUSPECTED USTS IDENTIFIED DURING GEOPHYSICAL INVESTIGATION

APPENDICES

APPENDIX A

BORING LOGS

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 34416.1.1
State Project: R-2303A

PROJECT NO.:	210124	**STATE:**	NC	**COUNTY:**	Cumberland	**LOCATION:**	Stedman
PROJECT NAME:	NC 24 from West of SR 1006 in Cumberland County to SR 1853			**LOGGED BY:**	Ben Ashba	**BORING ID:**	168DPT-01
				DRILLER:	Michael D. Mason		
NORTHING:	455,919.00	**EASTING:**	2,103,213.00	**CREW:**			
SYSTEM:	NCSP NAD 83 (USft)	**BORING LOCATION:**	Off SW corner of building.			**LAND ELEV.:**	NM
DRILL MACHINE:	Power Probe	**METHOD:**	Direct Push	**0 HOUR DTW:**	Dry	**BORING DEPTH:**	8.0
START DATE:	11/15/10	**FINISH DATE:**	11/15/10	**24 HOUR DTW:**	N/A	**ROCK DEPTH:**	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	DIRECT PUSH		▲1.3		GW		0.5	Gravel and brick rubble.	
2.0									
3.0	DIRECT PUSH		▲1.4	168 DPT-01 (3-4)					
4.0					SP			Med. SAND. Poorly graded. Moist @ 4ft. Brown grading to light brown.	
	DIRECT PUSH		▲0.9						
6.0									
	DIRECT PUSH		▲1.1						
8.0							8.0	Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO.LOG 210124_168_NC24-TAYLOR.GPJ CATLIN.GDT 12/28/10

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 34416.1.1
State Project: R-2303A

PROJECT NO.: 210124	STATE: NC	COUNTY: Cumberland	LOCATION: Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		LOGGED BY: Ben Ashba	BORING ID: 168DPT-02
		DRILLER: Michael D. Mason	
NORTHING: 455,914.00	EASTING: 2,103,224.00	CREW:	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: South of building.		LAND ELEV.: NM
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: Dry	BORING DEPTH: 4.0
START DATE: 11/15/10	FINISH DATE: 11/15/10	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT (0.5 0.5 0.5 0.5)	MOI.	PID RESULTS (ppm) (0 1000 2000 3000 4000)	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0					GW		0.2	Gravel	
	DIRECT PUSH		▲2.6		SP		1.0	V.f. to med. SAND. Varying browns.	
					GW		1.2	Brick rubble.	
2.0									
	DIRECT PUSH		▲6.0	168 DPT-02 (3-4)	SP			Med. SAND. Poorly graded. Moist @ 4ft.	
3.0									
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 34416.1.1
State Project: R-2303A

PROJECT NO.: 210124	STATE: NC	COUNTY: Cumberland	LOCATION: Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		LOGGED BY: Ben Ashba	BORING ID: 168DPT-03
		DRILLER: Michael D. Mason	
NORTHING: 455,909.00	EASTING: 2,103,235.00	CREW:	
SYSTEM: NCSP NAD 83 (USft)	BORING LOCATION: Off SE corner of building.		LAND ELEV.: NM
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: Dry	BORING DEPTH: 4.0
START DATE: 11/15/10	FINISH DATE: 11/15/10	24 HOUR DTW: N/A	ROCK DEPTH: --

DEPTH	BLOW COUNT (0.5 0.5 0.5 0.5)	MOI.	PID RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0					GW		0.2	Gravel	
	DIRECT PUSH		▲2.2		SP		1.0	V.f. to med. SAND. Varying browns.	
					GW		1.2	Brick rubble.	
2.0									
	DIRECT PUSH		▲3.6	168 DPT-03 (3-4)	SP			Med. SAND. Poorly graded. Moist @ 4ft.	
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 168 NC24-TAYLOR.GPJ CATLIN.GDT 12/28/10

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 34416.1.1
State Project: R-2303A

PROJECT NO.: 210124	**STATE:** NC	**COUNTY:** Cumberland		**LOCATION:** Stedman	
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		**LOGGED BY:** Ben Ashba		**BORING ID:** 168DPT-04	
		DRILLER: Michael D. Mason			
NORTHING: 455,933.00	**EASTING:** 2,103,218.00	**CREW:**			
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** Front SW corner of building.			**LAND ELEV.:** NM	
DRILL MACHINE: Power Probe	**METHOD:** Direct Push		**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0	
START DATE: 11/15/10	**FINISH DATE:** 11/15/10		**24 HOUR DTW:** N/A	**ROCK DEPTH:** --	

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	DIRECT PUSH		▲2.9		SW		1.0	V.f. to cse. SAND w/tr. gravel. Light brown.	
2.0					SP			F. to med. SAND. Varying browns. Trace black (possible staining) "dots" from 2 to 4ft. No HCO.	
3.0	DIRECT PUSH		▲3.1	168 DPT-04 (3-4)					
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 168 NC24-TAYLOR.GPJ CATLIN.GDT 12/28/10

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 34416.1.1
State Project: R-2303A

PROJECT NO.: 210124	**STATE:** NC	**COUNTY:** Cumberland	**LOCATION:** Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		**LOGGED BY:** Ben Ashba	**BORING ID:** 168DPT-05
		DRILLER: Michael D. Mason	
NORTHING: 455,929.00	**EASTING:** 2,103,230.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** Front center of building.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/15/10	**FINISH DATE:** 11/15/10	**24 HOUR DTW:** N/A	**ROCK DEPTH:** --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	DIRECT PUSH		2.3		SW		0.5	V.f. to med. SAND w/some Gravel and organics.	
					SM		1.5	Silty, f. SAND. Dark brown.	
2.0	DIRECT PUSH		3.3	168 DPT-05 (3-4)	SP		4.0	V.f. to f. SAND. Orangish brown. Moist at base.	
4.0								Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 168 NC24-TAYLOR GPJ CATLIN GDT 12/28/10

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC
WBS Element: 34416.1.1
State Project: R-2303A

PROJECT NO.: 210124	**STATE:** NC	**COUNTY:** Cumberland	**LOCATION:** Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		**LOGGED BY:** Ben Ashba	**BORING ID:** 168DPT-06
		DRILLER: Michael D. Mason	
NORTHING: 455,925.00	**EASTING:** 2,103,241.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** Front SE corner of building.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/15/10	**FINISH DATE:** 11/15/10	**24 HOUR DTW:** N/A	**ROCK DEPTH:** --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	DIRECT PUSH		▲1.7	168 DPT-06 (0-2)	SW		1.0	F. to cse. SAND w/tr. gravel.	
2.0	DIRECT PUSH		▲1.1		SP		4.0	V.f. to f. SAND. Varying browns. Moist @ base.	
4.0								Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 168 NC24-TAYLOR.GPJ CATLIN.GDT 12/28/10

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC

WBS Element: 34416.1.1
State Project: R-2303A

PROJECT NO.: 210124	**STATE:** NC	**COUNTY:** Cumberland	**LOCATION:** Stedman
PROJECT NAME: NC 24 from West of SR 1006 in Cumberland County to SR 1853		**LOGGED BY:** Ben Ashba	**BORING ID:** 168DPT-07
		DRILLER: Michael D. Mason	
NORTHING: 455,982.00	**EASTING:** 2,103,223.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** Near NW corner of building West of suspected UST		**GRND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 8.0
START DATE: 11/22/10	**FINISH DATE:** 11/22/10	**24 HOUR DTW:** N/A	**ROCK DEPTH:** --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	MOI.	PID RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
							0.0	LAND SURFACE	
0.0	DIRECT PUSH		▲2.6		SM		0.5	Topsoil	
2.0									
3.0	DIRECT PUSH		▲3.8	168 DPT-07 (3-4)					
4.0					SP			F. SAND. Poorly graded. Brown grading to light brown/tan.	
	DIRECT PUSH		▲3.3						
6.0									
	DIRECT PUSH		▲3.5						
8.0							8.0	Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 168 NC24-TAYLOR GPJ CATLIN GDT 12/28/10

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

SGS

Ben Ashba
Richard Catlin & Associates
P.O. Box 10279
Wilmington, NC 28404-0279

Report Number: G128-2619

Client Project: NCDOT Stedman PSAs

Dear Ben Ashba,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. Any samples submitted to our laboratory will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or services performed during this project, please call Barbara Hager at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America, Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America, Inc.

Barbara Hager 12/2/10
Project Manager Date
Barbara Hager

List of Reporting Abbreviations
And Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantification Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

D = Detected, but RPD is > 40% between results in dual column method.

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL/CL = Reporting Limit / Control Limit

RPD = Relative Percent Difference

UJ = Target analytes with recoveries that are 10% < %R < LCL; # of MEs are allowable and compounds are not detected in the sample.

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% soilds = Percent Solids

Special Notes:
1) Metals and mercury samples are digested with a hot block; see the standard operating procedure document for details.
2) Uncertainty for all reported data is less than or equal to 30 percent.

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-01 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-77A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/15/2010 16:30
Date Received: 11/19/2010
Matrix: Soil
Solids 92.49

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.29	mg/Kg	1	11/24/10 18:17

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	102.0	102.0		70-130

Comments:

Batch Information

Analytical Batch: VP112410
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.13 g
Final Volume: 5 mL

Analyst: VMC

NC Certification #481

Reviewed By:

SGS North America, Inc.

Results for Total Petroleum Hydrocarbons

by GC/FID 8015

Client Sample ID:	168 DPT-02 (3-4')	Analyzed By:	LMC
Client Project ID:	NCDOT Stedman PSAs	Date Collected:	11/15/2010 16:45
Lab Sample ID:	G128-2619-78A	Date Received:	11/19/2010
Lab Project ID:	G128-2619	Matrix:	Soil
Report Basis:	Dry Weight	Solids	94.99

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.66	mg/Kg	1	11/24/10 18:43

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	98.9	98.9		70-130

Comments:

Batch Information

Analytical Batch:	VP112410	Prep Method:	5035
Analytical Method:	8015	Initial Wt/Vol:	5.58 g
Instrument ID:	GC4	Final Volume:	5 mL
Analyst:	LMC		

Analyst: _____

NC Certification #481

Reviewed By: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-03 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-79A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/15/2010 17:00
Date Received: 11/19/2010
Matrix: Soil
Solids 94.04

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.28	mg/Kg	1	11/24/10 19:10

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	95.3	95.3		70-130

Comments:

Batch Information

Analytical Batch: VP112410
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.04 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-04 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-80A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/15/2010 17:15
Date Received: 11/19/2010
Matrix: Soil
Solids 93.02

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.31	mg/Kg	1	11/24/10 19:37

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	95.2	95.2		70-130

Comments:

Batch Information

Analytical Batch: VP112410
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.07 g
Final Volume: 5 mL

Analyst: WMC

NC Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-05 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-81A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/15/2010 17:30
Date Received: 11/19/2010
Matrix: Soil
Solids 93.38

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.09	mg/Kg	1	11/24/10 20:04

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	95.1	95.1		70-130

Comments:

Batch Information

Analytical Batch: VP112410
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.31 g
Final Volume: 5 mL

Analyst: LMC

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-06 (0-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-82A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/15/2010 17:35
Date Received: 11/19/2010
Matrix: Soil
Solids 95.65

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	7.08	5.58	mg/Kg	1	11/25/10 07:11

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	93.7	93.7		70-130

Comments:

Batch Information

Analytical Batch: VP112410
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 5.62 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-01 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-77D
Lab Project ID: G128-2619

Date Collected: 11/15/2010 16:30
Date Received: 11/19/2010
Matrix: Soil
Solids 92.49
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.66	mg/Kg	1	11/25/10 20:39

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	29.4	73.4

Comments:

Batch Information

Analytical Batch: EP112410
Analytical Method: 8015
Instrument: GC6
Analyst: DTF

Prep batch: 17808
Prep Method: 3541
Prep Date: 11/23/10
Initial Prep Wt/Vol: 32.47 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-02 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-78D
Lab Project ID: G128-2619

Date Collected: 11/15/2010 16:45
Date Received: 11/19/2010
Matrix: Soil
Solids 94.99
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.68	mg/Kg	1	11/25/10 21:07

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	29.6	74.1

Comments:

Batch Information

Analytical Batch: EP112410
Analytical Method: 8015
Instrument: GC6
Analyst: DTF

Prep batch: 17808
Prep Method: 3541
Prep Date: 11/23/10
Initial Prep Wt/Vol: 31.5 G
Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-03 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-79D
Lab Project ID: G128-2619

Date Collected: 11/15/2010 17:00
Date Received: 11/19/2010
Matrix: Soil
Solids 94.04
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.20	mg/Kg	1	11/25/10 21:35

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	29.3	73.2

Comments:

Batch Information

Analytical Batch: EP112410
Analytical Method: 8015
Instrument: GC6
Analyst: DTF

Prep batch: 17808
Prep Method: 3541
Prep Date: 11/23/10
Initial Prep Wt/Vol: 34.33 G
Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-04 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-80D
Lab Project ID: G128-2619

Date Collected: 11/15/2010 17:15
Date Received: 11/19/2010
Matrix: Soil
Solids 93.02
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.53	mg/Kg	1	11/25/10 22:03

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	29.5	73.7

Comments:

Batch Information

Analytical Batch: EP112410
Analytical Method: 8015
Instrument: GC6
Analyst: DTF

Prep batch: 17808
Prep Method: 3541
Prep Date: 11/23/10
Initial Prep Wt/Vol: 32.93 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-05 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-81D
Lab Project ID: G128-2619

Date Collected: 11/15/2010 17:30
Date Received: 11/19/2010
Matrix: Soil
Solids 93.38
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.57	mg/Kg	1	11/25/10 22:32

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	29.7	74.2

Comments:

Batch Information

Analytical Batch: EP112410
Analytical Method: 8015
Instrument: GC6
Analyst: DTF

Prep batch: 17808
Prep Method: 3541
Prep Date: 11/23/10
Initial Prep Wt/Vol: 32.62 G
Prep Final Vol: 10 mL

Analyst: FM

NC Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-06 (0-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-82E
Lab Project ID: G128-2619

Date Collected: 11/15/2010 17:35
Date Received: 11/19/2010
Matrix: Soil
Solids 95.65
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**13.7**	6.61	mg/Kg	1	11/30/10 12:02

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	30.2	75.4

Comments:

Batch Information

Analytical Batch: EP113010
Analytical Method: 8015
Instrument: GC6
Analyst: DTF

Prep batch: 17821
Prep Method: 3541
Prep Date: 11/29/10
Initial Prep Wt/Vol: 31.64 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

210-124

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099555

(1)

CLIENT: CATLIN / NCDOT

CONTACT: Ben Ashba@CATLIN PHONE NO: 910) 452-5861

PROJECT: NCDOT Stedman PSAs ~~SITE/PWSID#~~ State Proj# R-2303A WBS: 34416.1.1

REPORTS TO: Ben@CATLIN NCDOT email: ben.ashba@catlinusa.com ~~FAX NO.: ( )~~

INVOICE TO: NCDOT GeoEnviro ~~BUDGET#~~ Cumberland County ~~Stak~~ P.O. NUMBER: 6300025660

SGS Reference: GL28-2619

PAGE 1 OF 9

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	Preservatives Used	Analysis Required (3)	REMARKS
	907 DPT-01 (2-3')	11.15.10	1330	SOIL	3	G	MeOH	GRO	
	907 DPT-02 (2-3')		1400				ICE	DRO	
	907 DPT-03 (1-2')		1415						
	907 DPT-04 (2-3')		1430						
	907 DPT-05 (2-3')		1445						
	907 DPT-06 (1-2')		1500						
	907 DPT-07 (1-2')		1515						
	907 DPT-08 (2-3')		1530						
	51 DPT-01 (2-3')	11.16.10	815						
	51 DPT-02 (2-3')		1000						

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:
Ben Ashba	11/19/10	1455	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature°C: 5.8, 5.8, 5.5, 5.6

Special Deliverable Requirements: Summary EDD

Chain of Custody Seal: (Circle) INTACT BROKEN (ABSENT)

Special Instructions:

Requested Turnaround Time:

☐ RUSH _____ Date Needed

☒ STD 2 Week

200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

White - Retained by Lab

N.C. Certification #481

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(1) CLIENT: CATLIN / NCDOT

CONTACT: Ben Ashba @ CATLIN PHONE NO: (910) 452-5869

PROJECT: NCDOT Stedman PSAS SITE ID/WSID#: State Proj # R-2303A WBS: 34416.1.1

REPORTS TO: Ben @ CATLIN NCDOT email: ben.ashba@catlinusa.com FAX NO:

INVOICE TO: NCDOT GeoEnviro QUOTE# Cumberland County DOT P.O. NUMBER: 6300025660

SGS Reference: G128-2619

PAGE 2 OF 9

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE C=COMP G=GRAS	Preservatives used: Meoh	ICE	Analysis Required (3): GRO	DRO	REMARKS
✓	S1 DPT-03 (2-3')	11.16.10	930	SOIL	3	G	✓	✓			
✓	S1 DPT-04 (2.5-3.5')		915								
✓	S1 DPT-05 (2-3')		900								HOT
✓	S1 DPT-06 (2-3')		845								
✓	S1 DPT-07 (3-4')		830								
✓	S1 DPT-08 (2.5-3.5')	↓	945								
✓	S1 DPT-09 ([redacted])	11.19.10	745								HOT
✓	S1 DPT-10 (2-3')		800								HOT
✓	S1 DPT-13 (1-2')		850								maybe Hot
✓	S1 DPT-14 (2-3')	↓	905								maybe Hot

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Ben Ashba	11/19/10	1455	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C: 5.8, 5.8, 5.5, 5.6

Special Deliverable Requirements: Summary EDD

Chain of Custody Seal: (Circle) INTACT BROKEN (ABSENT)

Special Instructions:

Requested Turnaround Time:

☐ RUSH _____ Date Needed

☒ STD 2 Week

☐ 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
☒ 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

White - Retained by Lab

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(1)
CLIENT: CATLIN/NCDOT
CONTACT: BenAshbe@CATLIN PHONE NO: (910) 452-5861
PROJECT: NCDOT Stedman PSAS SITE/LOCATION: State Proj. #: R-2303A WBS: 34416.1.1
REPORTS TO: Ben@CATLIN NCDOT email: benashbe@catlinusa.com FAX NO: (---)
INVOICE TO: NCDOT GeoEnviro QUOTE #: Cumberland County DOT P.O. NUMBER: 6300025660

SGS Reference: G128-2619

PAGE 3 OF 9

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	Preservatives Used: Methanol, Ice	Analysis Required (3): GRO, DRO	REMARKS
✓	S1 DPT-15 (2-3')	11.19.10	920	SOIL	3	G	✓	✓	maybe Hot
✓	S1 DPT-16 (2-3')	11.19.10	940						maybe Hot
✓	S1 DPT-17 (1-2')	11.19.10	1000						maybe Hot
✓	T1 DPT-01 (4-5')	11.16.10	1125						
✓	T1 DPT-02 (6-7')		1145						
✓	T1 DPT-03 (6-7')		1215						
✓	T1 DPT-04 (6-8')		1240						
✓	T1 DPT-05 (4-6')		1300						
✓	T1 DPT-06 (3-4')		1315						
✓	T1 DPT-07 (5-6')	↓	1400	↓	↓	↓	↓	↓	

(5)

	Date	Time	
Collected/Relinquished By:(1) Ben Ashbe	11/19/10	1455	Received By:
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:
Shipping Ticket No:
Special Deliverable Requirements: Summary EDD
Samples Received Cold? (Circle) YES NO
Temperature °C: 5.6, 5.8, 5.5, 5.6
Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
Special Instructions:
Requested Turnaround Time:
☐ RUSH _____ Date Needed
☒ STD 2 week

210124

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- Maryland
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(1)

CLIENT: CATLIN / NCDOT

CONTACT: Ben Ashley @ CATLIN PHONE NO: (910) 452-5861

PROJECT: NCDOT Stedman PSAS STATE PROJ #: R-2303A WBS: 34416.1.1

REPORTS TO: Ben @ CATLIN NCDOT FAX NO: ( )

INVOICE TO: NCDOT Geo Enviro QUOTE #: Cumberland County DOT P.O. NUMBER: 6300025660

SGS Reference: G128-2619

PAGE 4 OF 9

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives used: MeOH, ICE	Analysis Required (3): GRO, DRO	REMARKS
✓	71 DPT-08 (7-8')	11.16.10	1420	SOIL	3	G	✓	✓	
✓	71 DPT-09 (5-6')		1440						
✓	71 DPT-10 (3-4')		1500						
✓	78 DPT-01 (7-8')	11.17.10	815						
✓	78 DPT-02 (7-8')		840						Maybe Hot
✓	78 DPT-03 (6-7')		930						
✓	78 DPT-04 (7-8')		1000						
✓	78 DPT-05 (6-7')		900						HOT
✓	78 DPT-06 (1-2')		1020						
✓	78 DPT-07 (7-8')		1040						

(5)

	Date	Time	Received By:
Collected/Relinquished By: (1) Ben Ashley	11/19/10	1455	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C: 5.8, 5.8, 5.5, 5.6

Special Deliverable Requirements: Summary EDD

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Special Instructions:

Requested Turnaround Time:

☐ RUSH _____ Date Needed

☒ STD 2 Week

210124

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099558

(1)
CLIENT: CATLIN / NCDOT
CONTACT: BenAshbe@CATLIN PHONE NO: (910) 452-5861
PROJECT: NCDOT Stedman PSAs STIP Proj # R-2303A WBS: 34416.1.1
REPORTS TO: Ben Ashbe@CATLIN NCDOT email: benashbe@catlinusa.com FAX NO: ( )
INVOICE TO: NCDOT QUOTE #: Cumberland County
GeoENVIRO DOT P.O. NUMBER: 6300025660

SGS Reference: G128-2619

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	Preservatives Used: Not Iced	Analysis Required (3): GRO DRO	REMARKS
✓	81B DPT-01 (7-8')	11-18-10	1130	SOIL	3	G	✓ ✓		Hot
✓	81B DPT-02 (6-7')		1210						maybe Hot
✓	81B DPT-03 (4-5')		1230						maybe Hot
✓	81B DPT-04 (1-2')		1250						
✓	81B DPT-05 (1-2')		1315						Hot
	81B DPT-06 (1-2')		1340						maybe Hot
✓	81B DPT-07 (2-3')		1400						maybe Hot
✓	81B DPT-08 (1-2')		1420						
✓	81B DPT-09 (1-2')		1440						
✓	81B DPT-10 (1-2')	↓	1500	↓	↓	↓	↓ ↓		

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Ben Ashbe	11-19-10	1455	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:
Shipping Ticket No:
Special Deliverable Requirements: Summary EDD

Samples Received Cold? (Circle) YES NO
Temperature °C: 5 8 5 8 5 5 5 5 6
Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Special Instructions:

Requested Turnaround Time:
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☒ STD 2 Week

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099559

(1)
CLIENT: CATLIN / NCDOT
CONTACT: Ben Ashby @CATLIN PHONE NO: (910) 452-5861
PROJECT: NCDOT Stedman PSA ~~SITE/PWSID#~~ State Proj #12-2303A WBS: 34416.1.1
REPORTS TO: Ben@CATLIN NCDOT email: benashby@catlinusa.com FAX NO: ( )
INVOICE TO: NCDOT GeoEnviro ~~QUOTE #~~ Cumberland County DOT P.O. NUMBER: 6300025460

SGS Reference: G129-2619

PAGE 6 OF 9

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives used: Methanol	Analysis Required (3): GRO, DRO	REMARKS
	81B DPT-11 (1-2')	11-18-10	1520	SOIL	3	G	✓	✓	
	81B DPT-12 (1-2')		1530						
	81B DPT-13 (2-3')		1545						
	81B DPT-14 (1-2')		1600						
	81B DPT-15 (1-2')		1620						
	81B DPT-16 (2-3')		1640						
	81B DPT-17 (2-3')	↓	1700						
✓	163 DPT-01 (3-4')	11-17-10	1230						
✓	163 DPT-02 (4-5')		1245						
✓	163 DPT-03 (5-6')	↓	1310	↓					

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Ben Ashby	11-19-10	1455	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:
Shipping Ticket No:
Samples Received Cold? (Circle) YES NO
Temperature °C: 5.8, 5.8, 5.5, 5.6
Special Deliverable Requirements: Summary EDD
Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
Special Instructions:
Requested Turnaround Time:
☐ RUSH _____ Date Needed
☒ STD 2 Week

200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
6500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

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099560

(1)

CLIENT: CATLIN / NCDOT

CONTACT: Ben Ashlar@CATLIN PHONE NO: 910 452-5861

PROJECT: NCDOT Stedman PSAs SITE/PWSID: State Proj # R-2303A WBS: 34416.1.1

REPORTS TO: Ben@CATLIN NCDOT email: ben.ashlar@catlinusa.com FAX NO:

INVOICE TO: NCDOT QUOTE #: Cumberland County

GeoEnviro DOT P.O. NUMBER: 6300025660

(2)

SGS Reference: G128-2619

PAGE 7 OF 9

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	Preservatives Used	Analysis Required (3)	REMARKS
								GRO MeOH 1G; DRO	
✓	163 DPT-04 (2-3')	11.17.10	1330	SOIL	3	G		✓ ✓	
✓	163 DPT-05 (1-2')		1400						maybe Hot
✓	163 DPT-06 (1-2')		1420						maybe Hot
✓	163 DPT-07 (2-3')		1440						HOT
✓	163 DPT-08 (2-3')		1530						HOT
✓	163 DPT-09 (1-2')		1600						maybe Hot
✓	163 DPT-10 (1-2')		1610						maybe Hot
✓	163 DPT-11 (3-4')		1620						
	163 DPT-12 (6-7')	11.17.10	1645						
	163 DPT-13 (6-7')	11.18.10	715						

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Ben Ash	11.19.10	1455	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C: 5.8, 5.8, 5.5, 5.6

Special Deliverable Requirements: Summary EDD

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Special Instructions:

Requested Turnaround Time:

☐ RUSH _____ Date Needed

☒ STD 2 Week

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099561

(1) CLIENT: CATLIN / NCDOT

CONTACT: Ben Ashby @ CATLIN PHONE NO: (910) 452-5861

PROJECT: NCDOT Stedman PSA 5 State Proj # R-2303A WBS: 34416.1.1

REPORTS TO: Ben @ CATLIN NCDOT email: ben.ashby@catlinusa.com FAX NO:

INVOICE TO: NCDOT GeoEnviro QUOTE #: Cumberland County P.O. NUMBER: 6300025662

SGS Reference: G128-2619

PAGE 8 OF 9

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE
FS (3-4') 11/9/10	163 DPT-14 (6-7')	11.18.10	740	SOIL	3	G
	163 DPT-15 (2-3') or (3-4')		805			
	163 DPT-16 (1-2')		820			
	163 DPT-17 (5-6')		850			
	163 DPT-18 (6-7')		920			
	163 DPT-19 (6-7')		940			
	168 DPT-01 (3-4')	11.15.10	1630			
	168 DPT-02 (3-4')		1645			
	168 DPT-03 (3-4')		1700			
	168 DPT-04 (3-4')		1715			

Preservative Used: NaOH ICE

Analysis Required: (3) GRO DRO

REMARKS:
- check sample label
- maybe Hot
- Maybe Hot
- maybe Hot
- check sample label ID maybe (2-4') not (3-4')

(5)

Collected/Relinquished By: (1)	Date	Time	Received By:
Ben Ashby	11.19.10	1455	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:

Shipping Ticket No:

Special Deliverable Requirements: Summary EDD

Samples Received Cold? (Circle) YES NO

Temperature °C: 5.8, 5.8, 5.5, 5.6

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Special Instructions:

Requested Turnaround Time:

☐ RUSH _____ Date Needed

☒ STD 2 Weeks

X 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
X 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

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099562

(1)
CLIENT: CATLIN / NCDOT
CONTACT: Ben Ashbee CATLIN PHONE NO: 910) 452-5861
PROJECT: NCDOT Stedman PSAs STATE PROJ # R-2303A WBS: 34416.1.1
REPORTS TO: Bene CATLIN NCDOT email: ben.ashbee@catlinusa.com FAX NO.: ( )
INVOICE TO: NCDOT GeoEnviro DOT QUOTE #: Cumberland County P.O. NUMBER: 6300025660

SGS Reference: G128-2619

PAGE 9 OF 9

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP G=GRAB)	(3) Preservatives Used	Analysis Required: GRO	DRO	8260	8270	REMARKS
✓	168 DPT-05 (3-4')	11.15.10	1730	SOIL	3	G	Not Iced	✓	✓			
✓	168 DPT-06 (0-2')	11.15.10	1735	SOIL	3	G		✓	✓			
✓	81B DPT-02	11.18.10	1730	H2O	4	G	HCl Iced			X	X	NO LABELS maybe HCl

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:
Ben Ashbee	11.19.10	1455	
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:
Shipping Ticket No:
Special Deliverable Requirements: Summary EDD
Samples Received Cold? (Circle) YES NO
Temperature °C: 5.8, 5.8, 5.5, 5.6
Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
Special Instructions: Please report any 8260/8270 Low Runs, screening OK
Requested Turnaround Time:
☐ RUSH _____ Date Needed
☒ STD 2 Week

☐ 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
☒ 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

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SGS North America, Inc.

SGS

Ben Ashba
Richard Catlin & Associates
P.O. Box 10279
Wilmington, NC 28404-0279

Report Number: G128-2622

Client Project: NCDOT Stedman PSAs

Dear Ben Ashba,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. Any samples submitted to our laboratory will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or services performed during this project, please call Barbara Hager at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America, Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,
SGS North America, Inc.

Barbara Hager 12/2/10
Project Manager Date
Barbara Hager

List of Reporting Abbreviations
And Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantification Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

D = Detected, but RPD is > 40% between results in dual column method.

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL/CL = Reporting Limit / Control Limit

RPD = Relative Percent Difference

UJ = Target analytes with recoveries that are 10% < %R < LCL; # of MEs are allowable and compounds are not detected in the sample.

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% soilds = Percent Solids

Special Notes:
1) Metals and mercury samples are digested with a hot block; see the standard operating procedure document for details.
2) Uncertainty for all reported data is less than or equal to 30 percent.

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-07 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2622-9D
Lab Project ID: G128-2622

Date Collected: 11/22/2010 17:15
Date Received: 11/23/2010
Matrix: Soil
Solids 94.05
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.19	mg/Kg	1	11/25/10 02:00

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	30.9	77.4

Comments:

Batch Information

Analytical Batch: EP112410
Analytical Method: 8015
Instrument: GC6
Analyst: DTF

Prep batch: 17817
Prep Method: 3541
Prep Date: 11/24/10
Initial Prep Wt/Vol: 34.36 G
Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

Reviewed By: [signature]

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 168 DPT-07 (3-4')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2622-9A
Lab Project ID: G128-2622
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/22/2010 17:15
Date Received: 11/23/2010
Matrix: Soil
Solids 94.05

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.47	mg/Kg	1	12/01/10 20:32

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	95.1	95.1		70-130

Comments:

Batch Information

Analytical Batch: VP120110
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 5.83 g
Final Volume: 5 mL

Analyst: LMC

NC Certification #481

Reviewed By: [illegible]

210124.

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099711

(1) CLIENT: CATLIN / NCDOT

CONTACT: Ben Ashe-CATLIN PHONE NO: (910) 452-5861

PROJECT: NCDOT Stedman PSAs ~~SITE/PWSID#~~ STIP#: R-2303A WBS: 34416.1.1

REPORTS TO: Ben@CATLIN NCDOT email: ben.ashe@catlinusa.com FAX NO.: (---)

INVOICE TO: NCDOT ~~QUOTE #~~: Cumberland County

Geo ENVIRO State P.O. NUMBER: 6300025660

SGS Reference: G128-2622

PAGE 1 OF 1

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	Preservatives Used	Analysis Required (3)	REMARKS
	907 DPT-09 (2-3')	11.22.10	1550	SOIL	3	G	MeOH ICE	GRO DRO	
	78 DPT-08 (6-7')		1410						HOT
	7B DPT-09 (6-7')		1430						HOT
	7B DPT-10 (6-7')		1500						HOT
	7B DPT-11 (6-7')		1520						HOT
	81B DPT-18 (1-2')		1200						HOT
	81B DPT-19 (2-3')		1230						HOT
	81B DPT-20 (2-3')		1300						HOT
	168 DPT-07 (3-4')		1715						

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:
Ben Ashe	11.23.10	1100	Barbara Hager
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) (YES) NO

Temperature °C: 2.0

Special Deliverable Requirements: Summary EDD

Chain of Custody Seal: (Circle) INTACT BROKEN (ABSENT)

Special Instructions:

Requested Turnaround Time:

☐ RUSH _____ Date Needed

☒ STD 2 week

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☒ 5500 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

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APPENDIX C
SCHNABEL GEOPHYSICAL REPORTS

Schnabel
ENGINEERING

December 14, 2010

Mr. Richard Garrett, LG
Catlin Engineers and Scientists, Inc.
P.O. Box 10279
Wilmington, NC 28404-0279

RE:
State Project: R-2303A
WBS Element: 34416.1.1
County: Cumberland
Description: Stedman – NC 24 from West of SR 1006 (Maxwell Road/Clinton Road) in Cumberland County to SR 1853 (John Nunnery Road)

Subject: **Project 09210013.31 Report on Geophysical Surveys**
Parcel 168, Cumberland County, North Carolina

Dear Mr. Garrett:

SCHNABEL ENGINEERING SOUTH, PC (Schnabel) is pleased to present this report on the geophysical surveys we conducted on the subject property. We understand this letter report will be included as an appendix in your report to the NCDOT. The report includes two 11x17 color figures and three 8.5x11 color figures.

INTRODUCTION

The work described in this report was conducted on November 12 and 19, 2010, by Schnabel under our 2009 contract with the NCDOT. The work was conducted over the accessible areas of the parcel as indicated by the NCDOT to support their environmental assessment of the subject property. Photographs of the parcel are included on Figure 1. The property is located on the northwest quadrant of the intersection of John Nunnery Road and Clinton Road in Stedman, NC. The purpose of the geophysical surveys was to locate possible metal underground storage tanks (UST's) in the accessible areas of the right-of-way and/or easement.

The geophysical investigation consisted of electromagnetic (EM) induction surveys using a Geonics EM61-MK2 instrument. The EM61 metal detector is used to locate metal objects buried up to about eight feet below ground surface. Ground-penetrating radar (GPR) investigations of selected EM61 anomalies, including areas of reinforced concrete, were conducted using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna. Photographs of the equipment used are shown on Figure 2.

schnabel-eng.com
T/ 336-274-9456 F/ 336-274-9486
11A Oak Branch Drive / Greensboro, NC / 27407

FIELD METHODOLOGY

Locations of geophysical data points were obtained using a sub-meter Trimble Pro-XRS DGPS system. References to direction and location in this report are based on the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 83 datum, with units in US survey feet. The locations of existing site features (monitoring wells, signs, etc.) were recorded for later correlation with the geophysical data and for location references to the NCDOT drawings.

The EM61 data were collected along parallel survey lines spaced approximately 2.5 feet apart. The EM61 and DGPS data were recorded digitally using a field computer and later transferred to a desktop computer for data processing. The GPR data were collected along survey lines spaced one to two feet apart in orthogonal directions over areas of reinforced concrete and anomalous EM readings not attributed to cultural features. The GPR data were reviewed in the field to evaluate the possible presence of UST's. The GPR data also were recorded digitally and later transferred to a desktop computer for further review.

DISCUSSION OF RESULTS

The contoured EM61 data collected over Parcel 168 are shown on Figures 3 and 4. The EM61 early time gate results are plotted on Figure 3. The early time gate data provide the more sensitive detection of metal objects. Figure 4 shows the difference between the response of the top and bottom coils of the EM61 instrument (differential response). The difference is taken to remove the effect of surface and very shallowly buried metallic objects. Typically, the differential response emphasizes anomalies from deeper and larger objects such as UST's.

The early time gate and differential results show anomalies apparently caused by reinforced concrete, buried utilities, or known site features (Figures 3 and 4). The GPR data collected near the northernmost corner of the building indicated the presence of a possible UST located approximately 10 feet southwest of the northernmost building corner. The UST is inside the limits of the planned right-of way and/or easement. An example GPR image showing the reflection from the possible UST on Parcel 168 is shown on Figures 3 and 4. Figures 3 and 4 also include the location of the possible UST as marked in the field. The GPR data indicate that the possible UST is buried approximately 2.5 to 3.5 feet below ground surface and is about 3 feet in diameter and about 3 feet long, equivalent to a capacity of about 150 gallons. Photographs of the possible UST location, as marked in the field, are included on Figure 5.

CONCLUSIONS

Our evaluation of the geophysical data collected on the subject property on Project R-2303A in Stedman, NC indicates the following:

The geophysical data indicate the presence of a possible UST on Parcel 168 located approximately 10 feet southwest of the northernmost building corner. The UST is inside the planned right-of-way and/or easement. The possible UST is about 150-gallon capacity and is buried about 2.5 to 3.5 feet below ground surface.

LIMITATIONS

These services have been performed and this report prepared for Catlin Engineers and Scientists, Inc. and the North Carolina Department of Transportation in accordance with generally accepted guidelines for conducting geophysical surveys. It is generally recognized that the results of geophysical surveys are non-unique and may not represent actual subsurface conditions.

We appreciate the opportunity to have provided these services. Please call if you need additional information or have any questions.

Sincerely,

SCHNABEL ENGINEERING SOUTH, PC

Jeremy S. Strohmeyer, LG
Project Manager

Edward D. Billington, LG
Senior Vice President

JW:JS:NB
Attachments: Figures (5)
FILE: G:\2009 PROJECTS\09210013 (NCDOT 2009 GEOTECH UNIT SERVICES)\09210013.31 (R-2303A, CUMBERLAND CO.)\REPORT\PARCEL 168\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 168 (R-2303A).DOCX

Parcel 168 – Jerry Taylor Property, looking east

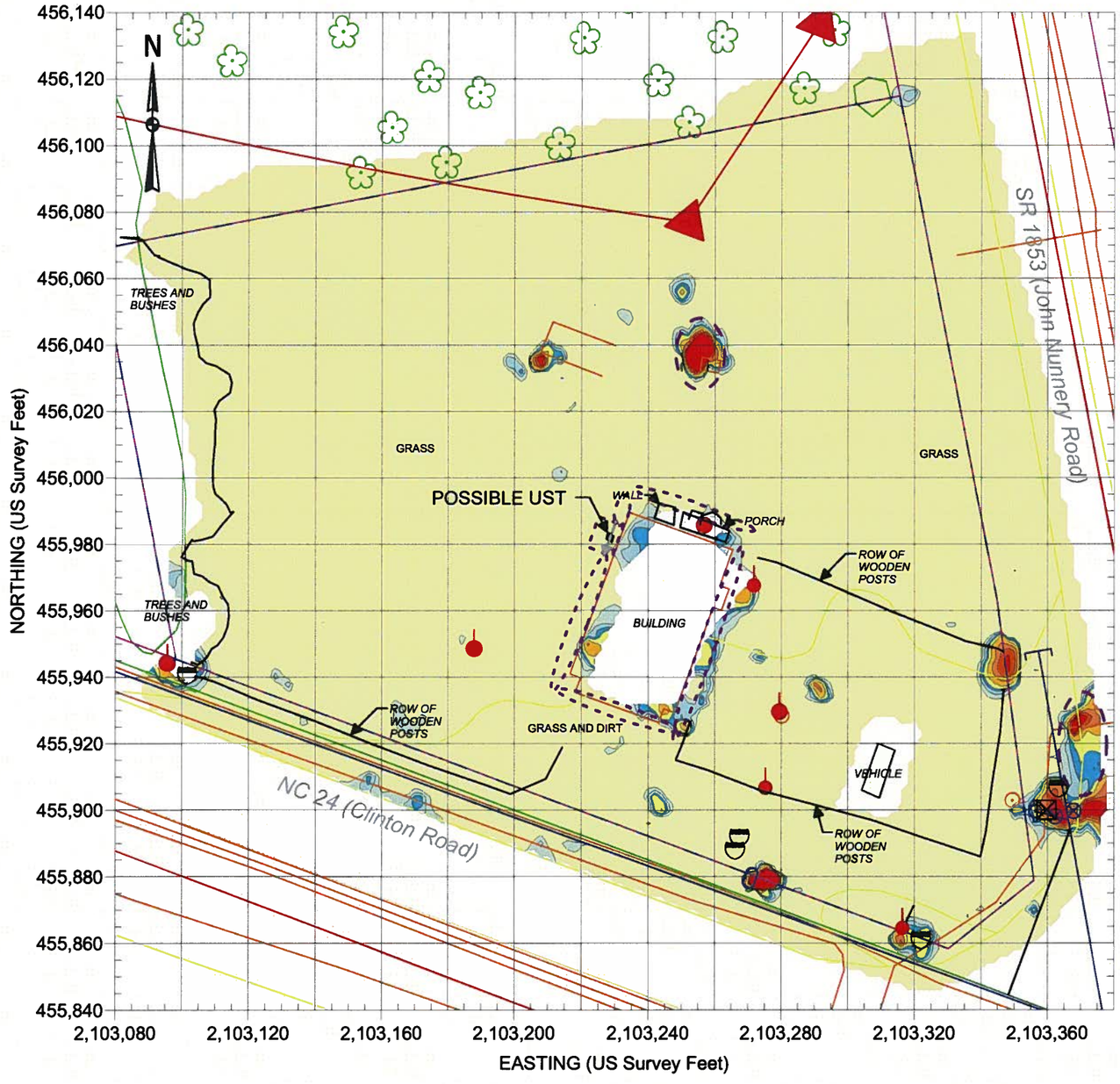
Parcel 168 – Jerry Taylor Property, looking northwest

Schnabel ENGINEERING	STATE PROJECT R-2303A NC DEPT. OF TRANSPORTATION CUMBERLAND CO., NORTH CAROLINA PROJECT NO. 09210013.31	PARCEL 168 SITE PHOTOS FIGURE 1

Geonics EM61-MK2

GSSI SIR-3000

Schnabel ENGINEERING	STATE PROJECT R-2303A NC DEPT. OF TRANSPORTATION CUMBERLAND CO., NORTH CAROLINA PROJECT NO. 09210013.31	PHOTOS OF GEOPHYSICAL EQUIPMENT USED FIGURE 2



EM61 Early Time Gate Response (mV)

-15000 -100 0 50 100 150 200 300 500 750 1000 2000

Scale in US Survey Feet

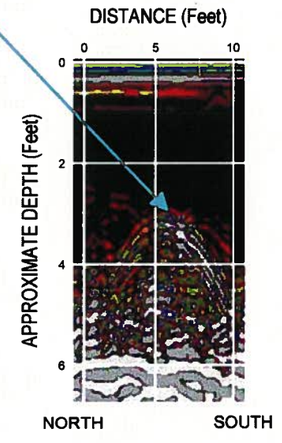
0 40 80 120

EXPLANATION

- SIGN
- UTILITY POLE
- GUY WIRE
- MISCELLANEOUS METALLIC OBJECT
- UTILITY MANHOLE, METER, BOX, ETC.
- LIGHT POLE
- STORM SEWER INLET
- UST LID
- DOT PROPOSED R/W
- DOT PROPOSED UTILITY EASEMENT
- PROPERTY LINE
- UTILITY (AS MARKED BY OTHERS OR AS PROVIDED BY NCDOT [VARIOUS COLORS])
- EXAMPLE GPR LINE LOCATION
- GPR SURVEY AREA
- LOCATION OF SUSPECT UST MARKED ON SITE

REF.: NCDOT FILE: r2303a_rdy_psh_31.dgn
(FOR SOME SITE FEATURES)

EXAMPLE GPR RESPONSE FROM POSSIBLE UST



Note: The contour plot shows the earliest and most sensitive time gate of the EM61 bottom coil/channel in millivolts (mV). The EM data were collected on November 12, 2010, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina Zone 3200, using the NAD 1983 datum. GPR data were acquired on November 19, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

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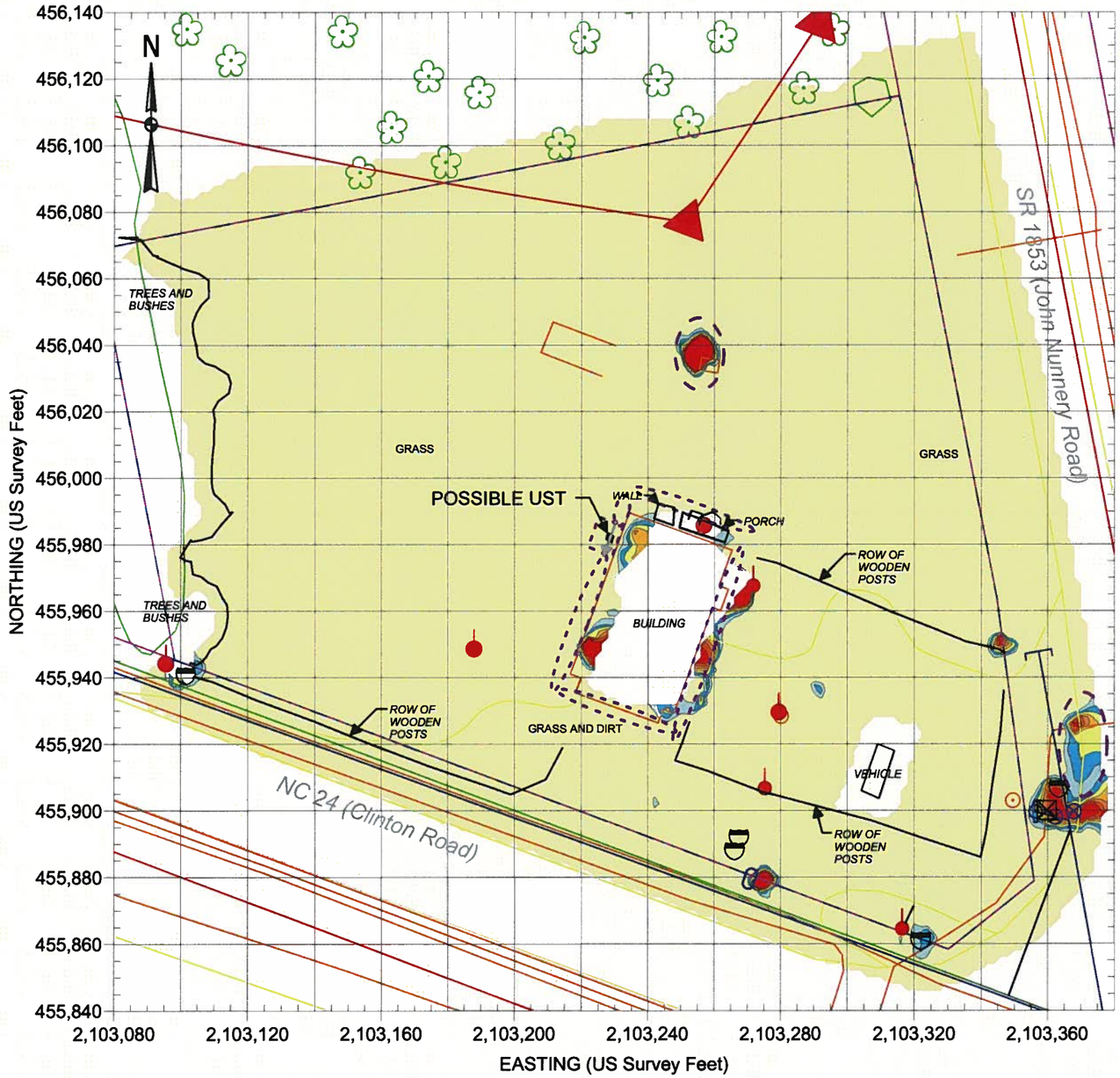
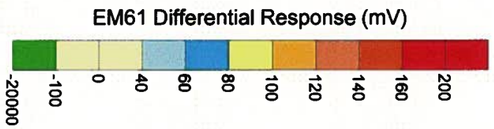
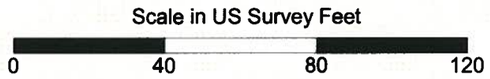
PARCEL 168
EM61 EARLY TIME GATE RESPONSE
FIGURE 3







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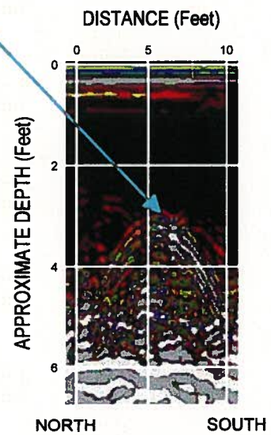
(FOR SOME SITE FEATURES)

EXAMPLE GPR RESPONSE FROM POSSIBLE UST



Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on November 12, 2010, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 1983 datum. GPR data were acquired on November 19, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

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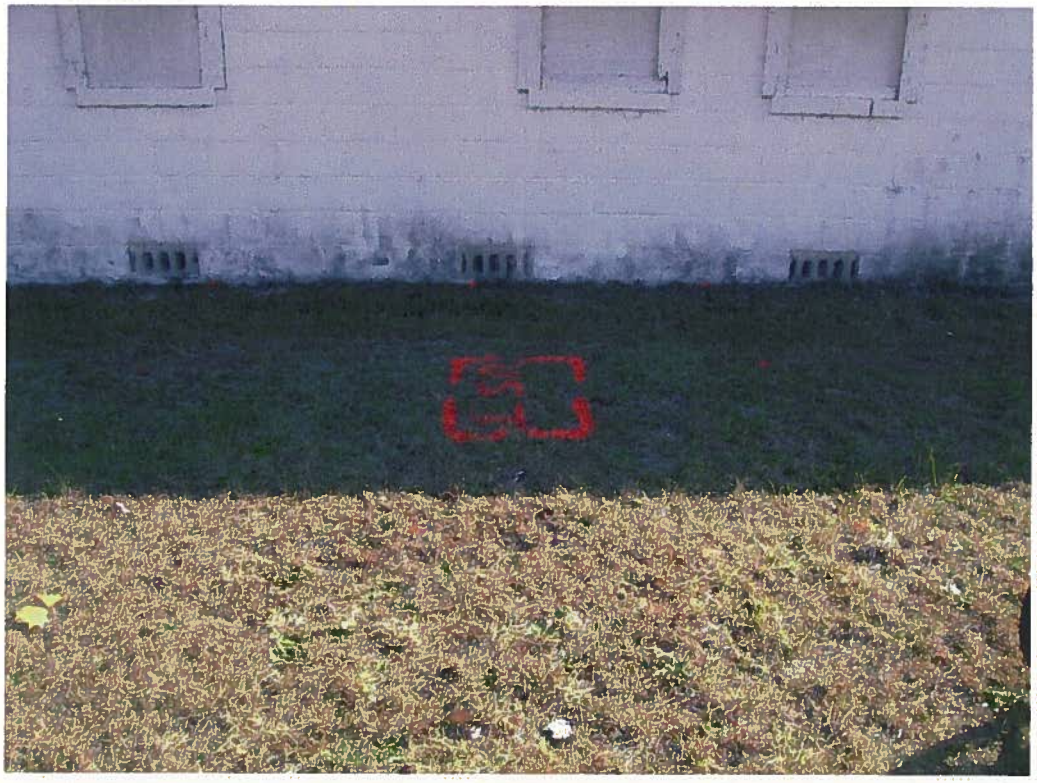
PARCEL 168
EM61 DIFFERENTIAL RESPONSE
FIGURE 4

Parcel 168 – Jerry Taylor Property, looking south. Photo shows approximate marked location of the possible UST near the northernmost building corner.



Parcel 168 – Jerry Taylor Property, looking east. Photo shows approximate marked location of the possible UST near the northernmost building corner.

Schnabel ENGINEERING	STATE PROJECT R-2303A CUMBERLAND CO., NORTH CAROLINA NC DEPT. OF TRANSPORTATION PROJECT NO. 09210013.31	PHOTOS OF POSSIBLE UST LOCATION FIGURE 5