PRELIMINARY SITE ASSESSMENT
FOR
PARCEL #81B ROBERT LEE LONG 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
Parcel #81B Robert Lee Long 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.)

January 7, 2011
Revised January 12, 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 #81B, Robert Lee Long Property. The following specific parcel information was provided by NCDOT:

Parcel #81B Robert Lee Long Property
Residence
6871 Clinton Rd.
Stedman, NC 28391
Plan Sheet 18
Facility ID: None Identified

Property Owner:
James P. Long
6871 Clinton Rd.
Stedman, NC 28391

Currently this site is a residence. Historically the site operated as a gas station. The site is located on the northwest quadrant of the intersection of Blake Road and Clinton Road. According to NCDENR's UST Section registry there are no known Facility IDs or Groundwater Incidents associated with this site. A possible UST was observed in front of the store (house).

The property occupant did identify the location of two (2) additional USTs in the southeastern portion of the property. 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. During field work at Parcel #81B, the NCDOT Project Manger Mr. Ethan Caldwell, PE, LG was contacted regarding preliminary field findings at Parcel #81B. Mr. Caldwell subsequently requested a groundwater sample also be collected for laboratory analysis at Parcel #81B.

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: 81BDPT-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: 81BDPT-01 (7-8'). Following removal of the PowerProbe tooling at boring 81BDPT-02, a new polyethylene bailer and twine was utilized to collect a grab groundwater sample from the open borehole. In some cases of elevated OVA/PID readings, additional borings were advanced for soil sample collection in an attempt to delineate suspected soil contamination.

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 and a groundwater sample was analyzed for volatile and semi-volatile organics per EPA Methods 8260 and 8270.

A total of 20 soil samples and one (1) groundwater sample 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 investigation 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.

Five (5) probable USTs were identified during the geophysical survey. According to the geophysical report, the probable UST Number 1 is about 1,000-gallon capacity, is approximately three (3) feet BLS, and located south of the building near the southeast corner. Probable USTs Number 2 and Number 3 are about 4,000-gallon capacity, approximately three (3) feet BLS and located south of the probable UST Number 1. The probable UST Number 4 is about 150-gallon capacity, is approximately one (1) to two (2) feet BLS and located in front of (south of) the building near the western side. The probable UST Number 5 is about 550-gallon capacity, is approximately one (1) to two (2) feet BLS and located east of the probable UST Number 4 and west of the former dispenser island. Probable UST locations are illustrated on Figure 3. Apparent fill ports filled with concrete were also located in the probable UST Number 3

and probable UST Number 4 locations. Photographs of the site including the probable UST locations are included in the geophysical report provided in Appendix C.

Twenty (20) borings were advanced for soil sample collection and one sample was collected from each boring for laboratory analysis. Borings were advanced near the suspected USTs and the former dispenser island. Boring/sample locations are illustrated on Figure 3.

Borings 81BDPT-01, 81BDPT-03, 81BDPT-05 through 81BDPT-08 and 81BDPT-18 through 81BDPT-20 were terminated at eight (8) feet BLS. Moist to wet soils were encountered in these borings approximately five (5) feet BLS. The 81BDPT-02 boring was advanced to 12 feet BLS and the depth to water was measured at 6.2 feet BLS before collecting a grab groundwater sample approximately 45 minutes after removing tooling from the borehole. Boring 81BDPT-04 was terminated upon refusal at five (5) feet BLS. The remaining borings were terminated at four (4) feet BLS. Clayey and sandy soils were encountered across the site. 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 generally collected from within one (1) to three (3) feet BLS with the exception of soil samples 81BDPT-01 (7-8'), 81BDPT-02 (6-7'), and 81BDPT-03 (4-5'). 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 concentrations above the laboratory reporting limit were detected in soil samples collected from borings 81BDPT-07, 81BDPT-13, 81BDPT-19, and 81BDPT-20. Sixteen (16) of 20 soil samples revealed detectable TPH DRO concentrations. No TPH GRO concentrations were detected in the soil samples except in the 81BDPT-01 (7-8') sample.

The groundwater sample location (81BDPT-02) is illustrated on Figure 3. Summarized EPA Method 8260 and EPA Method 8270 groundwater sample analytical results are provided on Table 2. Minor concentrations of numerous compounds were revealed but only Naphthalene concentrations were detected above the corresponding North Carolina Administrative Code T15A:02L Groundwater Quality Standards (2L GWQS).

The estimated extent of TPH impacted soil is illustrated on Figure 3. This area encompasses approximately 2,600 ft^2 and includes the five (5) probable UST locations and former dispenser island. Based on an assumed zone of contamination from one (1) foot BLS to the assumed water table depth of approximately six (6) feet BLS, approximately 481 yds^3 of TPH impacted soils may be in the area. However, it should be noted (as illustrated on Figure 3), there are not clean soil sample locations defining the entire estimated extent. Additionally, saturated soils at or below the water table may need to be handled

as a petroleum impacted waste in the event of excavation during construction activities.

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 16 of the 20 boring locations.

Five (5) probable USTs were identified during the geophysical survey.

Twenty (20) borings were advanced for soil sample collection and one sample was collected from each boring for laboratory analysis. Sixteen (16) of 20 soil samples revealed detectable TPH DRO concentrations. No TPH GRO concentrations were detected in the soil samples except in the 81BDPT-01 (7-8') sample. Fourteen soil samples revealed TPH concentrations above the NCDENR Action Level of 10 mg/kg TPH DRO or TPH GRO.

The estimated extent of TPH impacted soil is illustrated on Figure 3. This area encompasses approximately 2,600 ft^2 (+/- 481 yds^3) and includes the five (5) probable UST locations and former dispenser island. However, it should be noted (as illustrated on Figure 3), there are not clean soil sample locations defining the entire estimated extent. Additionally, saturated soils at or below the water table may need to be handled as a petroleum impacted waste in the event of excavation during construction activities.

One groundwater sample was collected for laboratory analysis and revealed Naphthalene concentrations above the 2L GWQS.

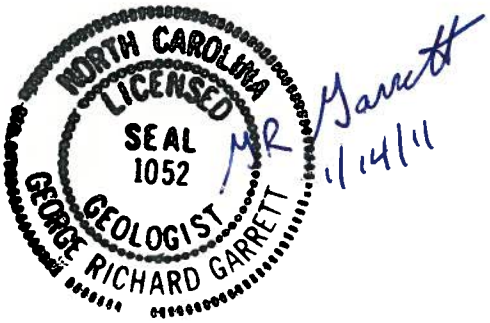
CATLIN recommends forwarding a copy of this report to the NCDENR Fayetteville Regional Office UST Section with a cover letter indicating the presence of TPH impacted soils above the NCDENR Action Level and groundwater impacts above the 2L GWQS at this site. The existing USTs should be removed with efforts to remove all petroleum impacted soils before roadway construction.

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 #81B
Robert Lee Long Property
Residence
6871 Clinton Road

Sample ID	Contaminant of Concern → / Date Collected	Diesel Range Organics	Gasoline Range Organics
81B DPT-01 (7-8')	11/18/2010	**756**	**252**
81B DPT-02 (6-7')	11/18/2010	**69.8**	<4.72
81B DPT-03 (4-5')	11/18/2010	**26.2**	<4.87
81B DPT-04 (1-2')	11/18/2010	**28.2**	<4.82
81B DPT-05 (1-2')	11/18/2010	**19.0**	<4.55
81B DPT-06 (1-2')	11/18/2010	**24.3**	<5.07
81B DPT-07 (2-3')	11/18/2010	<6.66	<4.43
81B DPT-08 (1-2')	11/18/2010	**21.5**	<5.05
81B DPT-09 (1-2')	11/18/2010	**13.1**	<5.03
81B DPT-10 (1-2')	11/18/2010	**19.3**	<5.08
81B DPT-11 (1-2')	11/18/2010	**14.1**	<5.15
81B DPT-12 (1-2')	11/18/2010	**30.2**	<5.17
81B DPT-13 (2-3')	11/18/2010	<6.79	<4.52
81B DPT-14 (1-2')	11/18/2010	**7.00**	<5.68
81B DPT-15 (1-2')	11/18/2010	**19.3**	<5.45
81B DPT-16 (2-3')	11/18/2010	**12.2**	<5.08
81B DPT-17 (2-3')	11/18/2010	**6.77**	<4.35
81B DPT-18 (1-2')	11/22/2010	**44.3**	<4.80
81B DPT-19 (2-3')	11/22/2010	<6.82	<5.00
81B DPT-20 (2-3')	11/22/2010	<6.97	<5.35

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.

TABLE 2
SUMMARY OF GROUNDWATER LABORATORY RESULTS
EPA METHODS 8260 AND 8270

Parcel #81B
Robert Lee Long Property
Residence
6871 Clinton Road

Boring ID	Analytical Method →		EPA Method 8260													EPA Method 8270		
	Contaminant of Concern →		Acetone	Benzene	sec-Butylbenzene	tert-Butylbenzene	Ethylbenzene	Isopropylbenzene	4-Isopropyltoluene	Naphthalene	n-Propyl benzene	Toluene	1,2,4-Trimethylbenzene	Total Xylenes	All other EPA Method 8260 Compunds	2-Methylnaphthalene	Naphthalene	All other EPA Method 8270 Compunds
	Sample ID	Date Collected																
81B DPT-02	81B DPT-02	11/18/2010	5.47 J	0.120 J	3.1	0.690 J	1.69	3.18	0.150 J	**34.7**	5.48	5.17	0.890 J	<0.455	BMDL	23.6	**40.3**	BMDL
2L GWQS (ug/L)			6,000	1	70	70	600	70	NE	6	70	600	400	500	Varies	30	6	Varies

All results in micrograms per liter (ug/L).
BMDL = Below Method Detection Limit
Bold results indicate concentrations above the NCAC T15A:02L Groundwater Quality Standards (2L GWQS).
< = Less than method detection limit
NE = None Established

FIGURES

DESCRIPTION:		WBS ELEM.: 34416.1.1	FIGURE NO. 1
NC 24 from West of SR 1006 (Maxwell Road/Clinton Road) in Cumberland County to SR 1853 (John Nunnery Road)	ENGLISH	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.

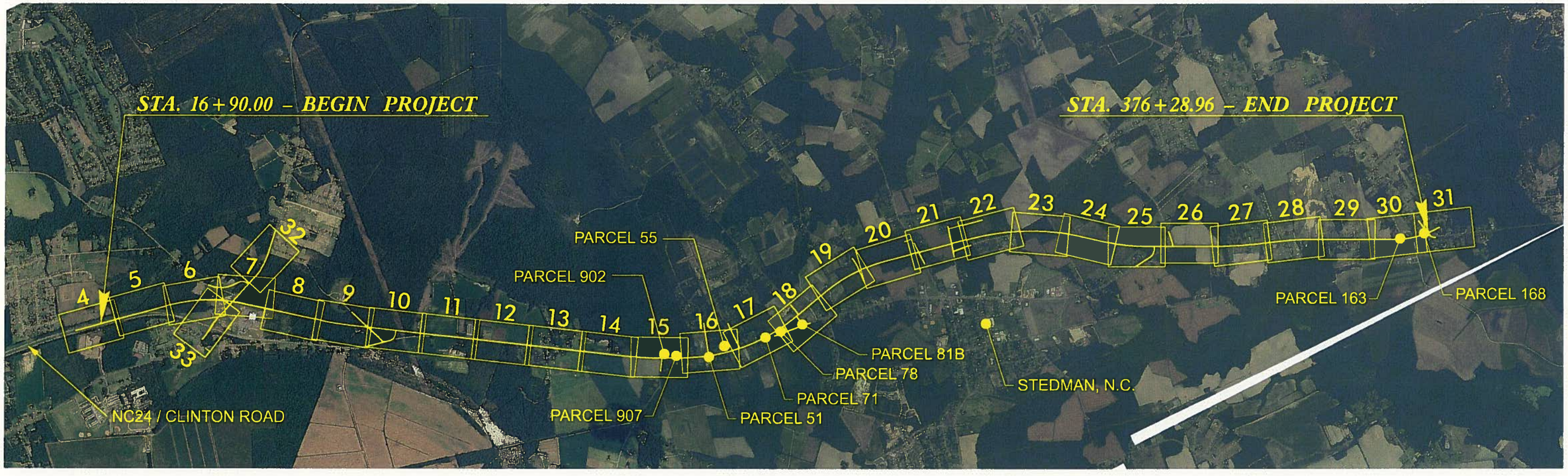
NOTE:
1. BASE MAP ADAPTED FROM NCDOT SUPPLIED DRAWING.
2. USGS TOPOS (STEDMAN, VANDER, & AUTRYVILLE) OBTAINED FROM TERRAIN NAVIGATOR PRO.

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

N

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.

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"=20'	TITLE: PARCEL #81B ROBERT LEE LONG PROPERTY	

S:-project-2010-210124-figs-parcel 81B_1.dgn

SUMMARY OF SOIL LABORATORY RESULTS
EPA METHOD 8015

Sample ID	Contaminant of Concern → / Date Collected	Diesel Range Organics	Gasoline Range Organics
81B DPT-01 (7-8')	11/18/2010	**756**	**252**
81B DPT-02 (6-7')	11/18/2010	**69.8**	<4.72
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81B DPT-10 (1-2')	11/18/2010	**19.3**	<5.08
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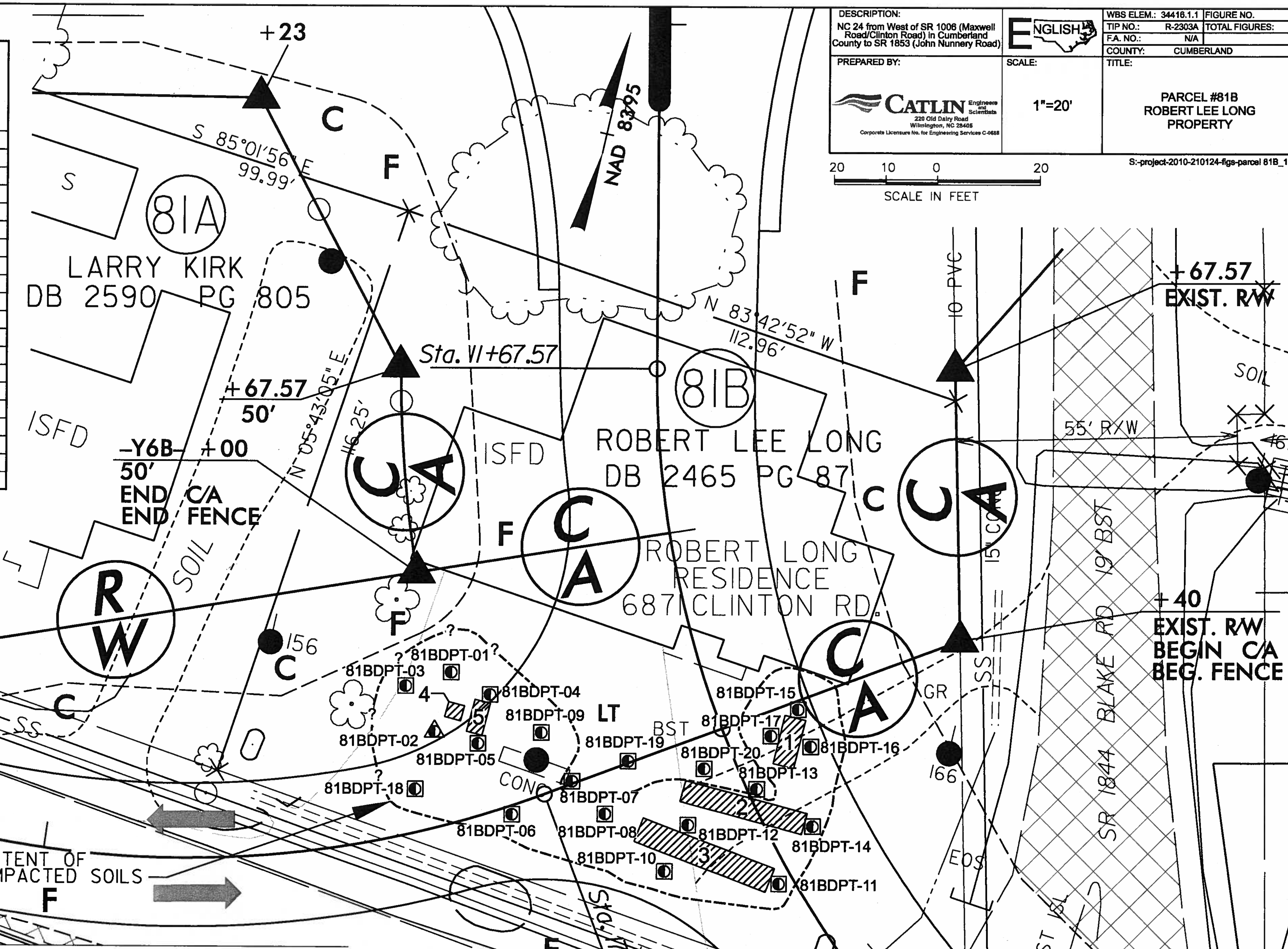
81B DPT-12 (1-2')	11/18/2010	**30.2**	<5.17
81B DPT-13 (2-3')	11/18/2010	<6.79	<4.52
81B DPT-14 (1-2')	11/18/2010	**7.00**	<5.68
81B DPT-15 (1-2')	11/18/2010	**19.3**	<5.45
81B DPT-16 (2-3')	11/18/2010	**12.2**	<5.08
81B DPT-17 (2-3')	11/18/2010	**6.77**	<4.35
81B DPT-18 (1-2')	11/22/2010	**44.3**	<4.80
81B DPT-19 (2-3')	11/22/2010	<6.82	<5.00
81B DPT-20 (2-3')	11/22/2010	<6.97	<5.35

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.



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
▲	SOIL BORING/SAMPLE AND GRAB GROUNDWATER 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:** 81BDPT-01
		DRILLER: Michael D. Mason	
NORTHING: 461,329.00	**EASTING:** 2,087,580.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** North of western USTs.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 8.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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							0.2	Asphalt	
	DIRECT PUSH		▲8.9		GW		1.0	Gravelly SAND to Sandy GRAVEL.	
2.0	DIRECT PUSH		▲15.0		SP		3.0	V.f. to f. SAND. Brown to orange brown. Damp below 3ft. HCO.	
4.0	DIRECT PUSH		▲45.8		SC		4.0	Clayey, v.f. to f. SAND. HCO.	
					CL		5.0	Sandy CLAY. HCO.	
6.0	DIRECT PUSH		▲202	81B DPT-01 (7-8)	CH		6.0	CLAY. High plast. HCO.	
7.0							8.0	Sandy CLAY. Gray. Dry. HCO.	
8.0								Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124_81B_NC24-LONG.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:**	81BDPT-02
				DRILLER:	Michael D. Mason		
NORTHING:	461,317.00	**EASTING:**	2,087,579.00	**CREW:**			
SYSTEM:	NCSP NAD 83 (USft)	**BORING LOCATION:**	South of western USTs.			**LAND ELEV.:**	NM
DRILL MACHINE:	Power Probe	**METHOD:**	Direct Push	**0 HOUR DTW:**	7.5	**BORING DEPTH:**	12.0
START DATE:	11/18/10	**FINISH DATE:**	11/18/10	**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	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
							LAND SURFACE	0.0	
0.0	DIRECT PUSH		▲19.5				Asphalt	0.2	
					GW		Gravelly SAND to Sandy GRAVEL.	0.8	
2.0	DIRECT PUSH	M	▲9.4		SP		V.f. to f. SAND. Gray and light gray.		
4.0	DIRECT PUSH	W	▲12.1					5.0	
					SC		Clayey, f. SAND. Gray and light gray.	6.0	
6.0				81B DPT-02 (6-7)					
7.0	DIRECT PUSH	M	▲43.5	▽					
8.0									
	DIRECT PUSH		▲16.1		CL		Sandy CLAY. Gray and light gray.		
10.0	DIRECT PUSH		▲5.2						
12.0								12.0	
							Boring Terminated at Depth 12.0 ft (Groundwater in boring @ 6.2ft. 45 minutes after completion)		

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24 LONG 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:**	81BDPT-03
				DRILLER:	Michael D. Mason		
NORTHING:	461,325.00	**EASTING:**	2,087,572.00	**CREW:**			
SYSTEM:	NCSP NAD 83 (USft)	**BORING LOCATION:**	West of western USTs.			**LAND ELEV.:**	NM
DRILL MACHINE:	Power Probe	**METHOD:**	Direct Push	**0 HOUR DTW:**	Dry	**BORING DEPTH:**	8.0
START DATE:	11/18/10	**FINISH DATE:**	11/18/10	**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							0.2	Asphalt	
	DIRECT PUSH		▲7.7		GW		1.0	Gravelly SAND to Sandy GRAVEL.	
2.0	DIRECT PUSH	M	▲12.9		SP		5.5	V.f. to f. SAND. Varying browns.	
4.0				81B DPT-02 (4-5)					
5.0	DIRECT PUSH	M/W	▲42.9						
6.0	DIRECT PUSH	M	▲382		CL		8.0	F. Sandy CLAY. Gray. Strong HCO below 6ft.	
8.0								Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-04
NORTHING: 461,327.00	**EASTING:** 2,087,588.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** East of western USTs.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 5.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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							0.2	Asphalt	
					GW		0.5	Gravel Sub-base	
1.0	DIRECT PUSH		▲24.9	81B DPT-04 (1-2)	SW			Gravelly SAND. Dark brown.	
2.0							2.0		
	DIRECT PUSH		▲0.9		SP			V.f. to f. SAND. Grayish brown changing to dark brown below 4ft. Refusal @ 5ft.	
4.0	DIRECT PUSH		▲8.2						
5.0							5.0	Boring Terminated at Depth 5.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124_81B_NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-05
NORTHING: 461,317.00	**EASTING:** 2,087,588.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** West of former dispenser.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 8.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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							0.2	Asphalt	
1.0	DIRECT PUSH		▲915	81B DPT-05 (1-2)					
2.0					SP			V.f. to f. SAND. Brown.	
	DIRECT PUSH		▲337						
4.0							4.0		
					SC			Clayey SAND. Gray.	
	DIRECT PUSH	W	▲30.8				4.5		
6.0					CL			Sandy CLAY. Gray.	
	DIRECT PUSH	M	▲35.6						
8.0							8.0	Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124_81B_NC24-LONG.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:** 81BDPT-06	
		DRILLER: Michael D. Mason			
NORTHING: 461,305.00	**EASTING:** 2,087,598.00	**CREW:**			
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** South of former dispenser.			**LAND ELEV.:** NM	
DRILL MACHINE: Power Probe	**METHOD:** Direct Push		**0 HOUR DTW:** Dry	**BORING DEPTH:** 8.0	
START DATE: 11/18/10	**FINISH DATE:** 11/18/10		**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	SOIL AND ROCK DESCRIPTION	DEPTH	ELEVATION
							LAND SURFACE	0.0	
0.0							Asphalt	0.2	
1.0	DIRECT PUSH		▲33.9	81B DPT-06 (1-2)	SW		F. to med. SAND w/tr. gravel @ 1.5ft. Possible staining (black) from 0.5 to 2ft. Brown.		
2.0									
	DIRECT PUSH		▲5.3						
4.0								4.0	
		M							
	DIRECT PUSH		▲15.5						
		W							
6.0					CL		Sandy CLAY. Gray. Moist w/wet from 5-6ft. HCO below 6ft.		
	DIRECT PUSH	M	▲66.6						
8.0							Boring Terminated at Depth 8.0 ft	8.0	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24 LONG.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:** 81BDPT-07
		DRILLER: Michael D. Mason	
NORTHING: 461,314.00	**EASTING:** 2,087,608.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** East of former dispenser.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 8.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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							0.2	Asphalt	
	DIRECT PUSH		▲56.9		GW			Sandy GRAVEL to Gravelly SAND. Fill. No HCO.	
2.0							2.0		
	DIRECT PUSH			81B DPT-07 (2-3)					
3.0			▲59.4						
		M			SP			V.f. to f. SAND. Brown.	
4.0									
	DIRECT PUSH	W	▲58.1				5.0		
					SC			Clayey, f. SAND. Gray.	
6.0							6.0		
	DIRECT PUSH	M	▲5.2		CL			Sandy CLAY. Gray w/some dark orange mottling.	
8.0							8.0		
								Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24 LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-08
NORTHING: 461,309.00	**EASTING:** 2,087,615.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** East of 81BDPT-08 and West of UST.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 8.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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							0.2	Asphalt	
1.0	DIRECT PUSH		▲6.1	81B DPT-08 (1-2)	GW		2.0	Sandy GRAVEL to Gravelly SAND.	
2.0	DIRECT PUSH	M	▲4.4		SC/ CL		6.0	Clayey SAND to Sandy CLAY. Brown w/orange and gray mottling.	
4.0	DIRECT PUSH	W	▲3.9						
6.0	DIRECT PUSH						8.0	No Return due to obstruction in sampler.	
8.0								Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-09
NORTHING: 461,322.00	**EASTING:** 2,087,600.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** North of former dispenser.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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							0.2	Asphalt	
					GW			Gravelly SAND to Sandy GRAVEL.	
1.0	DIRECT PUSH		▲0.5	81B DPT-09 (1-2)			1.0		
2.0					SP			F. SAND. Brown.	
	DIRECT PUSH		▲0.0				3.0		
					SC			Clayey, f. SAND. Orangish brown.	
4.0							4.0		
								Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-10
NORTHING: 461,300.00	**EASTING:** 2,087,629.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** South of eastern USTs.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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							0.2	Asphalt	
					GW		0.5	Gravelly SAND to Sandy GRAVEL.	
1.0	DIRECT PUSH		▲1.4	81B DPT-10 (1-2)					
2.0					SC			Clayey, f. SAND. Brown. Moist below 3.5ft.	
	DIRECT PUSH		▲1.2						
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124_81B_NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-11
NORTHING: 461,304.00	**EASTING:** 2,087,651.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** East of SE UST.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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							0.2	Asphalt	
1.0	DIRECT PUSH		▲2.8	81B DPT-11 (1-2)	GW			Gravelly SAND to Sandy GRAVEL. Brown.	
2.0									
	DIRECT PUSH		▲0.5		SC		3.0	Clayey, f. SAND. Brown.	
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124_81B_NC24-LONG.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:** 81BDPT-12
		DRILLER: Michael D. Mason	
NORTHING: 461,310.00	**EASTING:** 2,087,632.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** Between eastern USTs.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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		0.5	GRAVEL	
1.0	DIRECT PUSH		▲1.6	81B DPT-12 (1-2)	SW		1.5	Gravelly SAND.	
2.0	DIRECT PUSH		▲1.5		SP		3.5	F. SAND. Brown.	
4.0					SC		4.0	Clayey SAND. Orange brown.	
								Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO.LOG 210124 81B NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-13
NORTHING: 461,320.00	**EASTING:** 2,087,643.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** North of NE UST and South of northern UST.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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		▲0.2	81B DPT-13 (2-3)	GW		0.5	GRAVEL	
					SW		1.5	Gravelly SAND.	
2.0	DIRECT PUSH		▲1.6		SP		3.0	V.f. to f. SAND. Brown.	
3.0					SC		4.0	Clayey, v.f. to f. SAND. Orange brown. Moist.	
4.0								Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-14
NORTHING: 461,316.00	**EASTING:** 2,087,655.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** East of NE UST.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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			Gravelly SAND to Sandy GRAVEL.	
							0.8		
1.0	DIRECT PUSH		▲3.1	81B DPT-14 (1-2)					
2.0					SC			Clayey, v.f. to med. SAND. Varying browns.	
	DIRECT PUSH		▲2.3						
4.0							4.0		
								Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-15
NORTHING: 461,337.00	**EASTING:** 2,087,647.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** North of northern UST near building.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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					SW		0.5	Gravelly SAND.	
1.0	DIRECT PUSH		▲2.2	81B DPT-15 (1-2)	SP			V.f. to f. SAND. Brown.	
2.0							3.0		
	DIRECT PUSH		▲0.2		SC			Clayey, v.f. to f. SAND. Orange brown. Moist.	
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24 LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-16
NORTHING: 461,331.00	**EASTING:** 2,087,651.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** East of northern UST.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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		▲0.1		GW		0.5	GRAVEL	
					SP			V.f. to f. SAND. Brown.	
2.0				81B DPT-16 (2-3)			3.0		
3.0	DIRECT PUSH		▲1.0		SC			Clayey, v.f. SAND. Orange brown. Moist.	
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124_81B_NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-17
NORTHING: 461,331.00	**EASTING:** 2,087,643.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** West of northern UST.		**LAND ELEV.:** NM
DRILL MACHINE: Power Probe	**METHOD:** Direct Push	**0 HOUR DTW:** Dry	**BORING DEPTH:** 4.0
START DATE: 11/18/10	**FINISH DATE:** 11/18/10	**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		0.5	GRAVEL	
	DIRECT PUSH		▲0.3		SP			V.f. to f. SAND. Brown.	
2.0				81B DPT-17 (2-3)			3.0		
3.0	DIRECT PUSH		▲1.8		SC			Clayey, v.f. SAND. Orange brown. Moist.	
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO_LOG_210124_81B_NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-18
NORTHING: 461,305.00	**EASTING:** 2,087,578.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** SW of former dispenser.		**LAND 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							0.2	Asphalt	
					GW			Sandy GRAVEL. Gray.	
1.0	DIRECT PUSH		9,999+▲	81B DPT-18 (1-2)			1.0		
2.0					SP			F. SAND. Dark gray grading to orange brown.	
	DIRECT PUSH		7,068▲						
4.0		M			SC		4.0	Clayey, f. SAND.	
	DIRECT PUSH		9,999+▲				5.5		
		W							
6.0		W			CL			Sandy CLAY. Gray to light gray. HCO below 7ft.	
	DIRECT PUSH		6,091▲						
		M							
8.0							8.0	Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24-LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-19
NORTHING: 461,320.00	**EASTING:** 2,087,617.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** West of NE UST.		**LAND 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	SOIL AND ROCK DESCRIPTION (DEPTH / ELEVATION)
0.0							0.0 LAND SURFACE
							0.2 Asphalt
	DIRECT PUSH		4,568▲		SW		V.f. to cse. SAND w/some Gravel. 1.0
2.0							
	DIRECT PUSH		9,999+▲	81B DPT-19 (2-3)			
3.0		M			SP		V.f. to f. SAND. Brown grading to orange brown.
4.0							
	DIRECT PUSH	W	9,999+▲				5.5
		M			SC		Clayey, v.f. to f. SAND. HCO. 6.5
6.0							
	DIRECT PUSH		9,999+▲		CL		Sandy CLAY. HCO. 8.0
8.0							Boring Terminated at Depth 8.0 ft

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 210124 81B NC24 LONG.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 **DRILLER:** Michael D. Mason	**BORING ID:** 81BDPT-20
NORTHING: 461,322.00	**EASTING:** 2,087,632.00	**CREW:**	
SYSTEM: NCSP NAD 83 (USft)	**BORING LOCATION:** North of NE UST.		**LAND 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		▲0.0		GW		0.5	Sandy GRAVEL.	
2.0				81B DPT-20 (2-3)	SC			Clayey, f. SAND. Varying browns w/dark gray (possible staining) from 2.5 to 4ft.	
3.0	DIRECT PUSH		▲1,520						
4.0		M					4.0		
	DIRECT PUSH		▲1,883		SP		5.0	F. SAND. Gray.	
		W			SC		6.0	Clayey, f. SAND. Gray.	
6.0	DIRECT PUSH	M	▲1,664		CL		8.0	Sandy CLAY. Gray to light gray. Slight HCO.	
8.0								Boring Terminated at Depth 8.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO_LOG_210124_81B_NC24-LONG.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
Barbara Hager

Date

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 Volatiles by GCMS 8260

Client Sample ID: 81B DPT-02
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-83A
Lab Project ID: G128-2619

Analyzed By: BWS
Date Collected: 11/18/2010 17:30
Date Received: 11/19/2010
Matrix: Water
Sample Amount: 5 mL

Compound	Result UG/L	Quantitation Limit UG/L	MDL UG/L	Dilution Factor	Date Analyzed	Flag
Acetone	**5.47**	25.0	2.18	1	12/1/2010	J
Benzene	**0.120**	1.00	0.0650	1	12/1/2010	J
Bromobenzene	BQL	1.00	0.0560	1	12/1/2010	
Bromochloromethane	BQL	1.00	0.101	1	12/1/2010	
Bromodichloromethane	BQL	1.00	0.0760	1	12/1/2010	
Bromoform	BQL	1.00	0.120	1	12/1/2010	
Bromomethane	BQL	1.00	0.133	1	12/1/2010	
2-Butanone	BQL	25.0	0.544	1	12/1/2010	
n-Butylbenzene	BQL	1.00	0.109	1	12/1/2010	
sec-Butylbenzene	**3.10**	1.00	0.0840	1	12/1/2010	
tert-Butylbenzene	**0.690**	1.00	0.0500	1	12/1/2010	J
Carbon disulfide	BQL	1.00	0.0690	1	12/1/2010	
Carbon tetrachloride	BQL	1.00	0.0870	1	12/1/2010	
Chlorobenzene	BQL	1.00	0.0820	1	12/1/2010	
Chloroethane	BQL	1.00	0.106	1	12/1/2010	
Chloroform	BQL	1.00	0.0790	1	12/1/2010	
Chloromethane	BQL	1.00	0.146	1	12/1/2010	
2-Chlorotoluene	BQL	1.00	0.0990	1	12/1/2010	
4-Chlorotoluene	BQL	1.00	0.0800	1	12/1/2010	
Dibromochloromethane	BQL	1.00	0.0900	1	12/1/2010	
1,2-Dibromo-3-chloropropane	BQL	5.00	1.21	1	12/1/2010	
Dibromomethane	BQL	1.00	0.113	1	12/1/2010	
1,2-Dibromoethane (EDB)	BQL	1.00	0.124	1	12/1/2010	
1,2-Dichlorobenzene	BQL	1.00	0.127	1	12/1/2010	
1,3-Dichlorobenzene	BQL	1.00	0.0810	1	12/1/2010	
1,4-Dichlorobenzene	BQL	1.00	0.0790	1	12/1/2010	
trans-1,4-Dichloro-2-butene	BQL	5.00	0.630	1	12/1/2010	
1,1-Dichloroethane	BQL	1.00	0.0740	1	12/1/2010	
1,1-Dichloroethene	BQL	1.00	0.0890	1	12/1/2010	
1,2-Dichloroethane	BQL	1.00	0.0790	1	12/1/2010	
cis-1,2-Dichloroethene	BQL	1.00	0.0650	1	12/1/2010	
trans-1,2-dichloroethene	BQL	1.00	0.0890	1	12/1/2010	
1,2-Dichloropropane	BQL	1.00	0.0940	1	12/1/2010	
1,3-Dichloropropane	BQL	1.00	0.127	1	12/1/2010	
2,2-Dichloropropane	BQL	1.00	0.0590	1	12/1/2010	
1,1-Dichloropropene	BQL	1.00	0.0720	1	12/1/2010	
cis-1,3-Dichloropropene	BQL	1.00	0.0760	1	12/1/2010	
trans-1,3-Dichloropropene	BQL	1.00	0.0760	1	12/1/2010	
Dichlorodifluoromethane	BQL	5.00	0.0940	1	12/1/2010	
Diisopropyl ether (DIPE)	BQL	1.00	0.0730	1	12/1/2010	
Ethylbenzene	**1.69**	1.00	0.0770	1	12/1/2010	
Hexachlorobutadiene	BQL	1.00	0.228	1	12/1/2010	
2-Hexanone	BQL	5.00	0.720	1	12/1/2010	
Iodomethane	BQL	1.00	0.0420	1	12/1/2010	
Isopropylbenzene	**3.18**	1.00	0.0710	1	12/1/2010	

Results for Volatiles
by GCMS 8260

Client Sample ID: 81B DPT-02
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-83A
Lab Project ID: G128-2619

Analyzed By: BWS
Date Collected: 11/18/2010 17:30
Date Received: 11/19/2010
Matrix: Water
Sample Amount: 5 mL

Compound	Result UG/L	Quantitation Limit UG/L	MDL UG/L	Dilution Factor	Date Analyzed	Flag
4-Isopropyltoluene	**0.150**	1.00	0.0480	1	12/1/2010	J
Methylene chloride	BQL	5.00	0.0980	1	12/1/2010	
4-Methyl-2-pentanone	BQL	5.00	0.550	1	12/1/2010	
Methyl-tert-butyl ether (MTBE)	BQL	1.00	0.0670	1	12/1/2010	
Naphthalene	**34.7**	1.00	0.133	1	12/1/2010	
n-Propyl benzene	**5.48**	1.00	0.0800	1	12/1/2010	
Styrene	BQL	1.00	0.0850	1	12/1/2010	
1,1,1,2-Tetrachloroethane	BQL	1.00	0.0900	1	12/1/2010	
1,1,2,2-Tetrachloroethane	BQL	1.00	0.115	1	12/1/2010	
Tetrachloroethene	BQL	1.00	0.0690	1	12/1/2010	
Toluene	**5.17**	1.00	0.0760	1	12/1/2010	
1,2,3-Trichlorobenzene	BQL	1.00	0.190	1	12/1/2010	
1,2,4-Trichlorobenzene	BQL	1.00	0.119	1	12/1/2010	
Trichloroethene	BQL	1.00	0.0540	1	12/1/2010	
1,1,1-Trichloroethane	BQL	1.00	0.0540	1	12/1/2010	
1,1,2-Trichloroethane	BQL	1.00	0.182	1	12/1/2010	
Trichlorofluoromethane	BQL	1.00	0.111	1	12/1/2010	
1,2,3-Trichloropropane	BQL	1.00	0.120	1	12/1/2010	
1,2,4-Trimethylbenzene	**0.890**	1.00	0.0650	1	12/1/2010	J
1,3,5-Trimethylbenzene	BQL	1.00	0.0740	1	12/1/2010	
Vinyl chloride	BQL	1.00	0.149	1	12/1/2010	
m-,p-Xylene	**0.390**	2.00	0.0980	1	12/1/2010	J
o-Xylene	BQL	1.00	0.0650	1	12/1/2010	

	Spike Added	Spike Result	Percent Recovered
1,2-Dichloroethane-d4	30	28.4	95
Toluene-d8	30	30.3	101
4-Bromofluorobenzene	30	30.1	100

Comments:

Flags:
BQL = Below Quantitation Limits.
J = Detected below the quantitation limit.

Analyst: _____ Reviewed By: _____

Results for Semivolatiles by GCMS 8270

Client Sample ID: 81B DPT-02
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-83E
Lab Project ID: G128-2619

Initial Volume: 953 mL

Analyzed By: CMP
Date Collected: 11/18/2010 17:30
Date Received: 11/19/2010
Date Extracted: 11/22/2010
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	BQL	5.25	1.16	1	11/23/2010	
Acenaphthylene	BQL	5.25	1.10	1	11/23/2010	
Anthracene	BQL	5.25	1.26	1	11/23/2010	
Benzo[a]anthracene	BQL	5.25	1.16	1	11/23/2010	
Benzo[a]pyrene	BQL	5.25	1.03	1	11/23/2010	
Benzo[b]fluoranthene	BQL	5.25	0.981	1	11/23/2010	
Benzo[g,h,i]perylene	BQL	5.25	1.18	1	11/23/2010	
Benzo[k]fluoranthene	BQL	5.25	1.45	1	11/23/2010	
Benzoic Acid	BQL	26.2	4.24	1	11/23/2010	
Bis(2-chloroethoxy)methane	BQL	5.25	1.21	1	11/23/2010	
Bis(2-chloroethyl)ether	BQL	5.25	1.16	1	11/23/2010	
Bis(2-chloroisopropyl)ether	BQL	5.25	1.11	1	11/23/2010	
Bis(2-ethylhexyl)phthalate	BQL	5.25	1.33	1	11/23/2010	
4-bromophenyl phenyl ether	BQL	5.25	1.15	1	11/23/2010	
Butylbenzylphthalate	BQL	5.25	1.16	1	11/23/2010	
2-Chloronaphthalene	BQL	5.25	0.897	1	11/23/2010	
2-Chlorophenol	BQL	5.25	1.06	1	11/23/2010	
4-Chloro-3-methylphenol	BQL	5.25	1.07	1	11/23/2010	
4-Chloroaniline	BQL	26.2	1.61	1	11/23/2010	
4-Chlorophenyl phenyl ether	BQL	5.25	1.15	1	11/23/2010	
Chrysene	BQL	5.25	1.37	1	11/23/2010	
Dibenzo[a,h]anthracene	BQL	5.25	1.21	1	11/23/2010	
Dibenzofuran	BQL	5.25	1.33	1	11/23/2010	
Di-n-Butylphthalate	BQL	5.25	1.48	1	11/23/2010	
1,2-Dichlorobenzene	BQL	5.25	0.656	1	11/23/2010	
1,3-Dichlorobenzene	BQL	5.25	0.546	1	11/23/2010	
1,4-Dichlorobenzene	BQL	5.25	0.561	1	11/23/2010	
3,3'-Dichlorobenzidine	BQL	10.5	1.32	1	11/23/2010	
2,4-Dichlorophenol	BQL	5.25	0.965	1	11/23/2010	
Diethylphthalate	BQL	5.25	1.43	1	11/23/2010	
Dimethylphthalate	BQL	5.25	1.26	1	11/23/2010	
2,4-Dimethylphenol	BQL	5.25	0.719	1	11/23/2010	
Di-n-octylphthalate	BQL	5.25	1.12	1	11/23/2010	
4,6-Dinitro-2-methylphenol	BQL	26.2	2.24	1	11/23/2010	
2,4-Dinitrophenol	BQL	26.2	0.766	1	11/23/2010	
2,4-Dinitrotoluene	BQL	5.25	1.27	1	11/23/2010	
2,6-Dinitrotoluene	BQL	5.25	1.40	1	11/23/2010	
Diphenylamine *	BQL	5.25	1.41	1	11/23/2010	
Fluoranthene	BQL	5.25	1.45	1	11/23/2010	
Fluorene	BQL	5.25	1.34	1	11/23/2010	
Hexachlorobenzene	BQL	5.25	1.72	1	11/23/2010	
Hexachlorobutadiene	BQL	5.25	0.651	1	11/23/2010	
Hexachlorocyclopentadiene	BQL	10.5	1.02	1	11/23/2010	
Hexachloroethane	BQL	5.25	0.776	1	11/23/2010	
Indeno(1,2,3-c,d)pyrene	BQL	5.25	1.09	1	11/23/2010	
Isophorone	BQL	5.25	1.01	1	11/23/2010	
2-Methylnaphthalene	**23.6**	5.25	0.866	1	11/23/2010	

Results for Semivolatiles
by GCMS 8270

Client Sample ID: 81B DPT-02
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-83E
Lab Project ID: G128-2619

Initial Volume: 953 mL

Analyzed By: CMP
Date Collected: 11/18/2010 17:30
Date Received: 11/19/2010
Date Extracted: 11/22/2010
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
2-Methylphenol	BQL	5.25	0.808	1	11/23/2010	
3- & 4-Methylphenol	BQL	5.25	1.76	1	11/23/2010	
Naphthalene	**40.3**	5.25	0.824	1	11/23/2010	
2-Nitroaniline	BQL	5.25	1.44	1	11/23/2010	
3-Nitroaniline	BQL	26.2	1.26	1	11/23/2010	
4-Nitroaniline	BQL	26.2	1.09	1	11/23/2010	
Nitrobenzene	BQL	5.25	1.05	1	11/23/2010	
2-Nitrophenol	BQL	5.25	0.939	1	11/23/2010	
4-Nitrophenol	BQL	26.2	1.49	1	11/23/2010	
N-Nitrosodi-n-propylamine	BQL	5.25	1.61	1	11/23/2010	
Pentachlorophenol	BQL	26.2	1.28	1	11/23/2010	
Phenanthrene	BQL	5.25	1.26	1	11/23/2010	
Phenol	BQL	5.25	0.955	1	11/23/2010	
Pyrene	BQL	5.25	1.22	1	11/23/2010	
1,2,4-Trichlorobenzene	BQL	5.25	0.813	1	11/23/2010	
2,4,5-Trichlorophenol	BQL	5.25	1.20	1	11/23/2010	
2,4,6-Trichlorophenol	BQL	5.25	0.971	1	11/23/2010	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	5.4	54
2-Fluorophenol	10	7.5	75
Nitrobenzene-d5	10	7.2	72
Phenol-d6	10	8.3	83
2,4,6-Tribromophenol	10	8.4	84
4-Terphenyl-d14	10	5	50

Comments:
* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:
BQL = Below Quantitation Limits.
J = Detected below the quantitation limit.

Reviewed By: CMP

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-01 (7-8')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-41A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 11:30
Date Received: 11/19/2010
Matrix: Soil
Solids 88.67

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	252	4.97	mg/Kg	10	11/28/10 16:24

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	101.0	101.0		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.81 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-02 (6-7')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-42A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 12:10
Date Received: 11/19/2010
Matrix: Soil
Solids 85.63

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.72	mg/Kg	1	11/28/10 16:51

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	96.0	96.0		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 7.43 g
Final Volume: 5 mL

Analyst: _____

Reviewed By: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-03 (4-5')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-43B
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 12:30
Date Received: 11/19/2010
Matrix: Soil
Solids 87.56

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.87	mg/Kg	1	11/28/10 17:17

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	94.2	94.2		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 7.04 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: 81B DPT-04 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-44A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 12:50
Date Received: 11/19/2010
Matrix: Soil
Solids 90.67

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.82	mg/Kg	1	11/28/10 17:44

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	98.2	98.2		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.86 g
Final Volume: 5 mL

Analyst: LMC

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-05 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-45A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 13:15
Date Received: 11/19/2010
Matrix: Soil
Solids 92.27

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.55	mg/Kg	1	11/28/10 18:11

Surrogate Spike Results

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

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 7.15 g
Final Volume: 5 mL

Analyst: LMC

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-06 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-46A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 13:40
Date Received: 11/19/2010
Matrix: Soil
Solids 92.61

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.07	mg/Kg	1	11/28/10 18:38

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	97.4	97.4		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.39 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-07 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-47A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 14:00
Date Received: 11/19/2010
Matrix: Soil
Solids 92.91

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.43	mg/Kg	1	11/28/10 19:04

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	93.2	93.2		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 7.29 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-08 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-48A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 14:20
Date Received: 11/19/2010
Matrix: Soil
Solids 92.24

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.05	mg/Kg	1	11/28/10 19:31

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	96.7	96.7		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.44 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-09 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-49A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 14:40
Date Received: 11/19/2010
Matrix: Soil
Solids 91.04

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.03	mg/Kg	1	11/28/10 19:58

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	95.7	95.7		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.55 g
Final Volume: 5 mL

Analyst: LMC

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-10 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-50A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 15:00
Date Received: 11/19/2010
Matrix: Soil
Solids 88.19

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.08	mg/Kg	1	11/28/10 20:24

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	94.5	94.5		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.69 g
Final Volume: 5 mL

Analyst: LMC

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID:	81B DPT-11 (1-2')	Analyzed By:	LMC
Client Project ID:	NCDOT Stedman PSAs	Date Collected:	11/18/2010 15:20
Lab Sample ID:	G128-2619-51A	Date Received:	11/19/2010
Lab Project ID:	G128-2619	Matrix:	Soil
Report Basis:	Dry Weight	Solids	94.65

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.15	mg/Kg	1	11/29/10 16:10

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	92.6	92.6		70-130

Comments:

Batch Information

Analytical Batch:	VP112910	Prep Method:	5035
Analytical Method:	8015	Initial Wt/Vol:	6.16 g
Instrument ID:	GC4	Final Volume:	5 mL
Analyst:	LMC		

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-12 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-52A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 15:30
Date Received: 11/19/2010
Matrix: Soil
Solids 93.06

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.17	mg/Kg	1	11/29/10 16:37

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	91.9	91.9		70-130

Comments:

Batch Information

Analytical Batch: VP112910
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.24 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-13 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-53A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 15:45
Date Received: 11/19/2010
Matrix: Soil
Solids 90.84

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.52	mg/Kg	1	11/29/10 01:19

Surrogate Spike Results

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

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 7.31 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-14 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-54A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 16:00
Date Received: 11/19/2010
Matrix: Soil
Solids 88.24

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.68	mg/Kg	1	11/29/10 01:45

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	91.7	91.7		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 5.99 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-15 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-55A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 16:20
Date Received: 11/19/2010
Matrix: Soil
Solids 89.61

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.45	mg/Kg	1	11/29/10 02:12

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	94.2	94.2		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.14 g
Final Volume: 5 mL

Analyst: LMC

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-16 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-56A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 16:40
Date Received: 11/19/2010
Matrix: Soil
Solids 91.39

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.08	mg/Kg	1	11/29/10 02:39

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	89.6	89.6		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 6.46 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-17 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-57A
Lab Project ID: G128-2619
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/18/2010 17:00
Date Received: 11/19/2010
Matrix: Soil
Solids 91.54

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.35	mg/Kg	1	11/29/10 03:05

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	93.2	93.2		70-130

Comments:

Batch Information

Analytical Batch: VP112810
Analytical Method: 8015
Instrument ID: GC4
Analyst: LMC

Prep Method: 5035
Initial Wt/Vol: 7.53 g
Final Volume: 5 mL

Analyst: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-01 (7-8')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-41D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 11:30
Date Received: 11/19/2010
Matrix: Soil
Solids 88.67
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	756	70.4	mg/Kg	10	11/29/10 16:42

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery	
OTP	40	40-140	NA	NA	#

Comments:
NA : Surrogates diluted out

Batch Information

Analytical Batch: EP112910
Analytical Method: 8015
Instrument: GC6
Analyst: DTF

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.06 G
Prep Final Vol: 10 mL

Analyst: EK

NC Certification #481

N.C. Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-02 (6-7')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-42D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 12:10
Date Received: 11/19/2010
Matrix: Soil
Solids 85.63
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**69.8**	7.28	mg/Kg	1	11/25/10 03:24

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	30.1	75.3

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.07 G
Prep Final Vol: 10 mL

Analyst: FK

NC Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-03 (4-5')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-43D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 12:30
Date Received: 11/19/2010
Matrix: Soil
Solids 87.56
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**26.2**	7.17	mg/Kg	1	11/25/10 03:52

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	29.1	72.8

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 31.85 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481
N.C. Certification #481

Reviewed By: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-04 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-44D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 12:50
Date Received: 11/19/2010
Matrix: Soil
Solids 90.67
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**28.2**	6.78	mg/Kg	1	11/25/10 04:20

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	33.3	83.2

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.51 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-05 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-45D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 13:15
Date Received: 11/19/2010
Matrix: Soil
Solids 92.27
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**19.0**	6.57	mg/Kg	1	11/25/10 04:48

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	32.5	81.3

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.99 G
Prep Final Vol: 10 mL

Analyst: FK

NC Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by **GC/FID 8015**

Client Sample ID: 81B DPT-06 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-46D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 13:40
Date Received: 11/19/2010
Matrix: Soil
Solids 92.61
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**24.3**	6.75	mg/Kg	1	11/25/10 05:16

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	31.9	79.8

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32 G
Prep Final Vol: 10 mL

Analyst: FK

NC Certification #481
N.C. Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-07 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-47D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 14:00
Date Received: 11/19/2010
Matrix: Soil
Solids 92.91
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.66	mg/Kg	1	11/25/10 05:44

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	30.5	76.2

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.31 G
Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481
N.C. Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-08 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-48D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 14:20
Date Received: 11/19/2010
Matrix: Soil
Solids 92.24
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	21.5	6.63	mg/Kg	1	11/25/10 06:12

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	30.9	77.2

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.7 G
Prep Final Vol: 10 mL

Analyst: FK

NC Certification #481

Reviewed By: MT

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-09 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-49D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 14:40
Date Received: 11/19/2010
Matrix: Soil
Solids 91.04
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	13.1	6.88	mg/Kg	1	11/25/10 07:37

Surrogate Spike Results		Spike Added	Control Limits	Spike Result	Percent Recovery
OTP		40	40-140	28.5	71.2

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 31.95 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: 81B DPT-10 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-50D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 15:00
Date Received: 11/19/2010
Matrix: Soil
Solids 88.19
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**19.3**	7.04	mg/Kg	1	11/25/10 08:05

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	28.1	70.3

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.21 G
Prep Final Vol: 10 mL

Analyst: FK

NC Certification #481

Reviewed By:

N.C. Certification #481

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-11 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-51D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 15:20
Date Received: 11/19/2010
Matrix: Soil
Solids 94.65
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	14.1	6.53	mg/Kg	1	11/25/10 08:33

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	29.9	74.7

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.37 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: 81B DPT-12 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-52D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 15:30
Date Received: 11/19/2010
Matrix: Soil
Solids 93.06
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**30.2**	6.72	mg/Kg	1	11/25/10 09:02

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	32.3	80.6

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 31.99 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

N.C. Certification #481

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-13 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-53D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 15:45
Date Received: 11/19/2010
Matrix: Soil
Solids 90.84
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.79	mg/Kg	1	11/25/10 09:29

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	30.7	76.7

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.44 G
Prep Final Vol: 10 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-14 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-54D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 16:00
Date Received: 11/19/2010
Matrix: Soil
Solids 88.24
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**7.00**	6.83	mg/Kg	1	11/25/10 09:57

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	31.1	77.7

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 33.19 G
Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481

Reviewed By:

N.C. Certification #481

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-15 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-55D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 16:20
Date Received: 11/19/2010
Matrix: Soil
Solids 89.61
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**19.3**	6.94	mg/Kg	1	11/25/10 10:25

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	31.4	78.5

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.14 G
Prep Final Vol: 10 mL

Analyst: DX

NC Certification #481

N.C. Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-16 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-56D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 16:40
Date Received: 11/19/2010
Matrix: Soil
Solids 91.39
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**12.2**	6.55	mg/Kg	1	11/25/10 10:53

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	29.9	74.7

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 33.4 G
Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481

Reviewed By:

N.C. Certification #481

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-17 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2619-57D
Lab Project ID: G128-2619

Date Collected: 11/18/2010 17:00
Date Received: 11/19/2010
Matrix: Soil
Solids 91.54
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	**6.77**	6.63	mg/Kg	1	11/25/10 11:20

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	27.4	68.5

Comments:

Batch Information

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

Prep batch: 17802
Prep Method: 3541
Prep Date: 11/22/10
Initial Prep Wt/Vol: 32.95 G
Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481

Reviewed By:

210-124

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(1)

CLIENT: CATLIN / NCDOT

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

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

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

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

SGS Reference: G128-2619

PAGE 1 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): G20, D20	REMARKS
✓	907 DPT-01 (2-3')	11.15.10	1330	SOIL	3	G	✓	✓	
✓	907 DPT-02 (2-3')		1400						
✓	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

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(1) CLIENT: CATLIN / NCDOT

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

PROJECT: NCDOT Stedman P5/A5 SITE ID/WBS#: 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=GRAB	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
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(1) CLIENT: CATLIN / NCDOT

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

PROJECT: NCDOT Stedman PSAs 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) (3) (4) (5)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	Preservatives Used	Analysis Required	REMARKS
	S1 DPT-15 (2-3')	11.19.10	920	SOIL	3	G	Ice	GRO, DRO	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						

	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:

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C: 5.6, 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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(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

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(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives used: NaOH, 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

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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 Ashba @ CATLIN NCDOT email: ben.ashba@catlinusa.com FAX NO.: ( )

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SGS Reference: G128-2619

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Preservatives Used: MeOH, ICE

Analysis Required: GRO, DRO

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C= COMP, G= GRAB)	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						
✓	81B DPT-06 (1-2')		1340						~~maybe~~ Hot
✓	81B DPT-07 (2-3')		1400						maybe Hot
✓	81B DPT-08 (1-2')		1420						maybe HOT
✓	81B DPT-09 (1-2')		1440						
✓	81B DPT-10 (1-2')		1500						

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

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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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 Geo Enviro 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

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CLIENT: CATLIN / NCDOT

CONTACT: Ben Ashbar @ 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.ashbar@catlinusa.com FAX NO.:

INVOICE TO: NCDOT QUOTE #: Cumberland County

(2) GeoEnviro DOT P.O. NUMBER: 6300025660

SGS Reference: G128-2619

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LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	Preservatives Used: None / Ice	Analysis Required (3): GRO / DRO	REMARKS
✓	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 Ashbar	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 Week

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6500 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 Ashby @ CATLIN PHONE NO: (919) 852-5861

PROJECT: NCDOT Stedman PSAs ~~STATE PROJECT~~ 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: 6300025660

SGS Reference: G128-2619

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(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	Preservative Used	Analysis Required (3)	REMARKS
FS (3-4') 11/9/10	✓ 163 DPT-14 (6-7')	11.18.10	740	SOIL	3	G	NaHSO4	GRO DRO	
	✓ 163 DPT-15 (2-3') or (3-4')		805						check sample label
	✓ 163 DPT-16 (1-2')		820						maybe Hot
	✓ 163 DPT-17 (5-6')		850						
	✓ 163 DPT-18 (6-7')		920						Maybe Hot
	✓ 163 DPT-19 (6-7')		940						maybe Hot
	✓ 168 DPT-01 (3-4')	11.15.10	1630						
	✓ 168 DPT-02 (3-4')		1645						check sample label ID maybe (2-4') not (3-4')
	✓ 168 DPT-03 (3-4')		1700						
	✓ 168 DPT-04 (3-4')		1715						

(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

White Pa

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- North Carolina
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099562

SGS Reference: G128-2619

PAGE 9 OF 9

(1) CLIENT: CATLIN / NCDOT

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

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

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

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

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP, G=GRAB)	Preservatives Used	Analysis Required (3) GRO	DRO	8260	8270	REMARKS
✓	168 DPT-05 (3-4')	11.15.10	1730	SOIL	3	G		✓	✓			
✓	168 DPT-06 (0-2')	11.15.10	1735	SOIL	3	G		✓	✓			
✓	813 DPT-02	11.18.10	1730	H2O	4	G				X	X	NO LABELS maybe HOT

(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 EDP

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

White Pink Yellow

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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
Barbara Hager

Date

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: 81B DPT-18 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2622-6A
Lab Project ID: G128-2622
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/22/2010 12:00
Date Received: 11/23/2010
Matrix: Soil
Solids 94.06

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	4.80	mg/Kg	1	12/01/10 19:11

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	93.0	93.0		70-130

Comments:

Batch Information

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

Prep Method: 5035
Initial Wt/Vol: 6.64 g
Final Volume: 5 mL

Analyst: LMC

NC Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-19 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2622-7A
Lab Project ID: G128-2622
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/22/2010 12:30
Date Received: 11/23/2010
Matrix: Soil
Solids 91.93

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.00	mg/Kg	1	12/01/10 19:38

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	94.9	94.9		70-130

Comments:

Batch Information

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

Prep Method: 5035
Initial Wt/Vol: 6.53 g
Final Volume: 5 mL

Analyst: _____

NC Certification #481

Reviewed By: _____

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-20 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2622-8A
Lab Project ID: G128-2622
Report Basis: Dry Weight

Analyzed By: LMC
Date Collected: 11/22/2010 13:00
Date Received: 11/23/2010
Matrix: Soil
Solids 88.94

Analyte	Result	RL	Units	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.35	mg/Kg	1	12/01/10 20:05

Surrogate Spike Results

	Added	Result	Recovery	Flag	Limits
BFB	100	93.4	93.4		70-130

Comments:

Batch Information

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

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

Analyst: LMC

NC Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-18 (1-2')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2622-6D
Lab Project ID: G128-2622

Date Collected: 11/22/2010 12:00
Date Received: 11/23/2010
Matrix: Soil
Solids 94.06
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	44.3	6.71	mg/Kg	1	11/25/10 00:36

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	31.2	77.9

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: 31.7 G
Prep Final Vol: 10 mL

Analyst: FK

NC Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-19 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2622-7D
Lab Project ID: G128-2622

Date Collected: 11/22/2010 12:30
Date Received: 11/23/2010
Matrix: Soil
Solids 91.93
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.82	mg/Kg	1	11/25/10 01:04

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	30.7	76.8

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: 31.9 G
Prep Final Vol: 10 mL

Analyst: FA

NC Certification #481

Reviewed By:

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: 81B DPT-20 (2-3')
Client Project ID: NCDOT Stedman PSAs
Lab Sample ID: G128-2622-8D
Lab Project ID: G128-2622

Date Collected: 11/22/2010 13:00
Date Received: 11/23/2010
Matrix: Soil
Solids 88.94
Report Basis: Dry Weight

Parameter	Result	RL	Units	Dilution Factor	Date Analyzed
Diesel Range Organics	BQL	6.97	mg/Kg	1	11/25/10 01:32

Surrogate Spike Results	Spike Added	Control Limits	Spike Result	Percent Recovery
OTP	40	40-140	30.2	75.6

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: 32.28 G
Prep Final Vol: 10 mL

Analyst: FX

NC Certification #481

Reviewed By:

210124.

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- New York
- Ohio

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099711

(1) CLIENT: CAJUN / NCDOT

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

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

REPORTS TO: Ben @ CAJUN NCDOT email: ben.ashe@cajuninc.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) GRO	DRO	REMARKS
	907 DPT-09 (2-3')	11.22.10	1550	SOIL	3	G	MeOH	✓	✓	
✓	78 DPT-08 (6-7')		1410							HOT
✓	78 DPT-09 (6-7')		1430							HOT
	78 DPT-10 (6-7')		1500							HOT
25-53 ✓	78 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

☐ 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
Pink - Retained by Client

APPENDIX C

SCHNABEL GEOPHYSICAL REPORT

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 81B, 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 four 8.5x11 color figures.

INTRODUCTION

The work described in this report was conducted on November 12, 17, and 18, 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 Blake 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.

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 81B 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 southeastern and southwestern corners of the building on Parcel 81B indicated the presence of five probable UST's. Three of the probable UST's are located within approximately 30 to 40 feet of the southeastern corner of the building, and two of the probable UST's are located within approximately 20 to 30 feet of the southwestern corner of the building. The UST's are inside the limits of the planned right-of way and/or easement. Example GPR images showing the reflections from the probable UST's on Parcel 81B are shown on Figures 3 and 4. Figures 3 and 4 also include the location of the probable UST's as marked in the field.

Probable UST No. 1 is located approximately 10 feet southwest of the southeastern corner of the building. The GPR data indicate that probable UST No. 1 is buried approximately 2.5 to 3.5 feet below ground surface and is about 4 feet in diameter and about 10.5 feet long, equivalent to a capacity of about 1000 gallons. Probable UST No. 2 is located approximately 20 feet south of the southeastern corner of the building; probable UST No. 3 is located immediately south of probable UST No. 2 and is located approximately 35 feet south of the southeastern corner of the building. The GPR data indicate that probable UST's Nos. 2 and 3 are buried approximately 2.5 to 3.5 feet below ground surface. The GPR data indicate that probable UST's Nos. 2 and 3 are both about 5 feet in diameter and about 24 feet long, equivalent to capacities of about 4,000 gallons. Probable UST's Nos. 4 and 5 are located approximately 25 feet southeast of the southwestern corner of the building, with probable UST No. 4 being west of probable UST No. 5. The GPR data indicate that probable UST's Nos. 4 and 5 are buried approximately

1.0 to 2.0 feet below ground surface. The GPR data indicate that probable UST No. 4 is about 3 feet in diameter about 3 feet long, equivalent to a capacity of about 150 gallons. Probable UST No. 5 is about 4 feet in diameter and about 6 feet long, equivalent to a capacity of about 550 gallons. Photographs of the probable UST locations, as marked in the field, are included on Figures 5 and 6.

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 five probable UST's on Parcel 81B located within approximately 40 feet of the building. The UST's are inside the planned right-of-way and/or easement. Probable UST No. 1 is about 1,000-gallon capacity and is buried about 2.5 to 3.5 feet below ground surface. Probable UST's Nos. 2 and 3 are about 4,000-gallon capacity and are buried about 2.5 to 3.5 feet below ground surface. Probable UST No. 4 is about 150-gallon capacity and is buried about 1.0 to 2.0 feet below ground surface. Probable UST No. 5 is about 550-gallon capacity and is buried about 1.0 to 2.0 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 (6)
FILE: G:\2009 PROJECTS\09210013 (NCDOT 2009 GEOTECH UNIT SERVICES)\09210013.31 (R-2303A, CUMBERLAND CO.)\REPORT\PARCEL 81B\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 81B (R-2303A).DOCX

Parcel 81B – Robert Lee Long Property, looking north

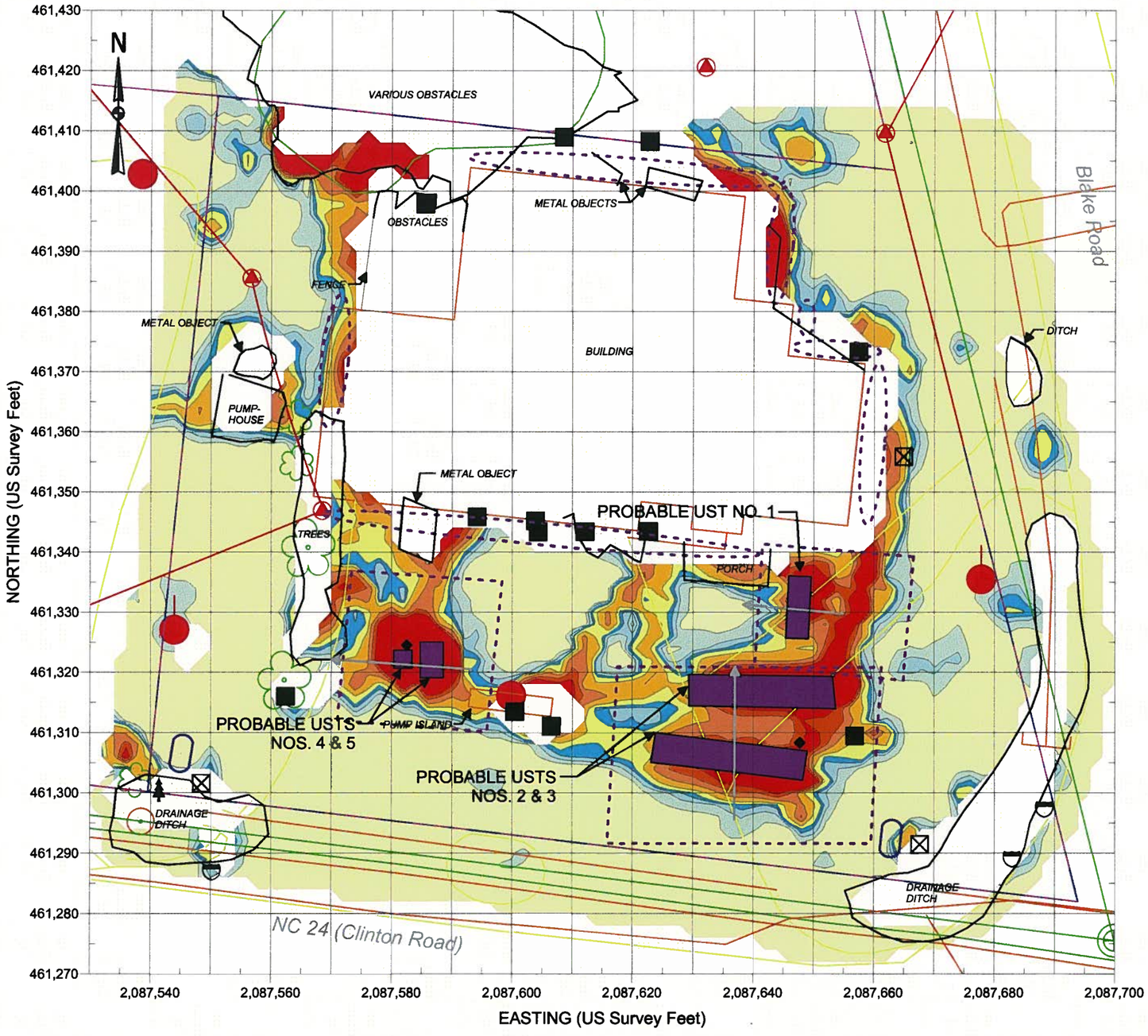
Parcel 81B – Robert Lee Long Property, looking west

Schnabel ENGINEERING	STATE PROJECT R-2303A NC DEPT. OF TRANSPORTATION CUMBERLAND CO., NORTH CAROLINA PROJECT NO. 09210013.31	PARCEL 81B SITE PHOTOS FIGURE 1

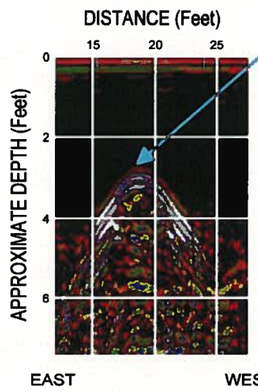
Geonics EM61-MK2

GSSI SIR-3000

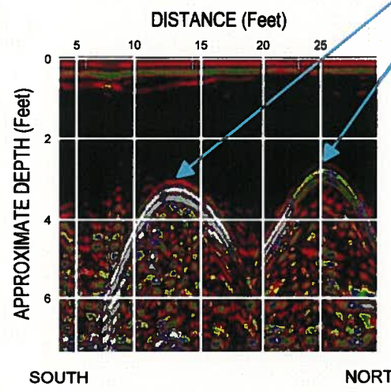
Schnabel ENGINEERING	STATE PROJECT R-2303A NC DEPT. OF TRANSPORTATION CUMBERLAND CO., NORTH CAROLINA PROJECT NO. 09210013.31	PHOTOS OF GEOPHYSICAL EQUIPMENT USED FIGURE 2



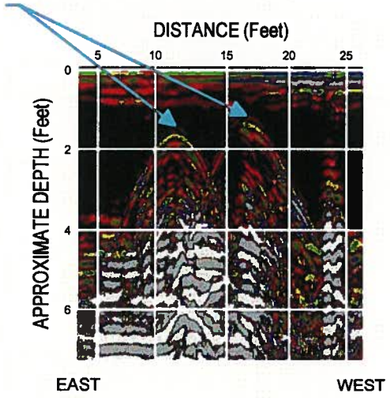
EXAMPLE GPR RESPONSE FROM PROBABLE UST NO. 1



EXAMPLE GPR RESPONSES FROM PROBABLE USTS NOS. 2 & 3



EXAMPLE GPR RESPONSES FROM PROBABLE USTS NOS. 4 & 5



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

EM61 Early Time Gate Response (mV)

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

Scale in US Survey Feet

0 20 40 60

REF.: NCDOT FILE: r2303a_rdy_psh_18.dgn
(FOR SOME SITE FEATURES)

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 17 and 18, 2010, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

Schnabel ENGINEERING

STATE PROJECT R-2303A
CUMBERLAND COUNTY, NORTH CAROLINA
NC DEPARTMENT OF TRANSPORTATION
PROJECT NO. 09210013.31

PARCEL 81B
EM61 EARLY TIME GATE RESPONSE
FIGURE 3

Parcel 81B – Robert Lee Long Property, looking north. Photo shows approximate marked location of probable UST No. 1 near the southeastern corner of the building.

Parcel 81B – Robert Lee Long Property, looking west. Photo shows approximate marked locations of probable UST's Nos. 2 and 3 near the southeastern corner of the building.

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

Parcel 81B – Robert Lee Long Property, looking north. Photo shows approximate marked location of probable UST's Nos. 4 and 5 near the southwestern corner of the building.

Schnabel ENGINEERING	STATE PROJECT R-2303A CUMBERLAND CO., NORTH CAROLINA NC DEPT. OF TRANSPORTATION PROJECT NO. 09210013.31	PHOTO OF PROBABLE UST LOCATIONS FIGURE 6