PRELIMINARY SITE ASSESSMENT
FOR
PARCEL #071, AUDRY FAYE NUNNERY GODBOLD PROPERTY
STATE PROJECT: R-2303B
WBS ELEMENT: 34416.1.1
NC 24 FROM SR 1853 (JOHN NUNNERY RD.) IN CUMBERLAND COUNTY TO SR 1404 (DOWDY RD.) IN SAMPSON COUNTY

PREPARED FOR:

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

JULY 26, 2011

PREPARED BY:

CATLIN ENGINEERS AND SCIENTISTS
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CATLIN PROJECT NO. 211043

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

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Preliminary Site Assessment
for
Parcel #071 Audry Faye Nunnery Godbold Property

State Project: R-2303B
WBS Element: 34416.1.1
NC 24 from SR 1853 (John Nunnery Rd.) in Cumberland County
to SR 1404 (Dowdy Rd.) in Sampson County

July 26, 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 property. In response to a Request for Technical and Cost Proposal (RFP) dated May 10, 2011 and discussions with NCDOT GeoEnvironmental Project Manager Mr. Terry Fox, LG, CATLIN submitted a proposal for conducting an investigation at five (5) parcels near Stedman and Autryville, North Carolina. Notice to Proceed was received from NCDOT in correspondence dated May 27, 2011.

Acquisition of the right-of-way is necessary for NC 24 roadway construction (above referenced State Project R-2303B) and specifically at the above referenced parcel. A site investigation is necessary to determine the presence of underground storage tanks (USTs) and/or contaminated soil in the proposed right-of-way and/or easement. Figure 1 illustrates the State Project location.

This report documents our activities and findings at Parcel #037, Douglas L. New Property. The site is illustrated on Figure 2. The following specific parcel information was provided by NCDOT:

<u>Parcel #071 Audry Faye Nunnery Godbold Property</u>

Plan sheet 20
White Store
2401 Carry Bridge Road
Autryville, NC 28318

Property Owner:
Audrey Faye Nunnery Godbold
10642 Clay Fork Hill Road
Roseboro, NC 28382

Facility I.D. #: None Identified

This site is a private residence on the intersection of NC 24 (Autry Highway) and Carry Bridge Road. The site sits on the north side of NC 24. It appears to have been a former gas station as there is a pump

island on the front yard of the residence. According to NCDENR's UST Section Registry, there are no known Facility IDs or Groundwater Incidents associated with this property. The site is illustrated on Figure 2.

The work scope as requested includes:

- Locate all USTs and determine approximate size and contents (if any).
- 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.
- Provide a Microstation file with the location of USTs, soil contamination and monitoring wells.
- Prepare a report 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.

2.0 METHODS

Approximate proposed borings were discussed with NCDOT personnel 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. The geophysical investigation methods are detailed in the Schnable Engineering report provided in Appendix C. Final boring/sample locations were determined based on proposed drainage feature locations, geophysical results, and field observations. CATLIN's field activities concluded on June 24, 2011.

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: 71-DPT-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, OVA/PID reading, and any indication of petroleum impact were recorded on field logs and have 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 feet) below land surface (BLS) in parentheses [example: 71-DPT-01 (3-4')].

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

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

Seven (7) borings were advanced for soil sample collection and one sample was collected from each boring for laboratory analysis. Borings were advanced near the probable UST and former dispenser pump island. No proposed drainage features were identified on the NCDOT provided plan sheets. Boring/sample locations are illustrated on Figure 2.

2.2 LABORATORY TESTING

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

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

3.0 RESULTS

In the event a cut is required for roadway construction or utility installation, any soil samples revealing detectable TPH concentrations will be considered petroleum impacted for handling and disposal purposes. The complete laboratory analytical reports are provided in Appendix B. Results of Schnabel's geophysical 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.

The geophysical data indicate the presence of one (1) probable UST at the site. The probable UST is within the planned right-of-way and/or easement. The probable UST is about 560-gallon capacity and is buried about 0.5 to 1.5 feet BLS. The UST is illustrated on Figure 2. Photographs of the site including the probable UST location and former dispenser pump island located between the UST and the building are included in the geophysical report provided in Appendix C. The UST location photograph was taken before utilities were marked at the site. As illustrated on Figure 2, a water line was identified running through the identified tank location and a number of additional utilities were identified between the UST and Autry Highway (NC 24). Due to the presence of numerous utilities near the UST, soil boring/sampling was prohibited south of the UST.

Boring 71-DPT-02 was terminated (by refusal) at 11 feet BLS in clayey sand. Saturated soils were encountered at approximately 5.5 feet BLS and depth to water was measured in the bore hole at approximately 6.5 feet BLS. A strong petroleum odor was noted in the 71-DPT-02 boring at approximately seven (7) feet BLS. Borings 71-DPT-01 and 71-DPT-03 through 71-DPT-07 were terminated at four (4) feet BLS. Sands were encountered from the surface to two (2) feet BLS underlain by clayey sand across the site. Soil samples were collected for laboratory analysis from within the two (2) foot interval with the highest OVA/PID reading. No physical indications (petroleum odor or staining) of petroleum impacted soils were noted in the field except as previously noted at the 71-DPT-02 boring. 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 2.

No TPH GRO concentrations were detected above the laboratory reporting limit in any of the soil samples. The soil samples collected from the boring 71-DPT-02 (north-east of the possible UST), 71-DPT-05 (north of the former dispenser pump island), and 71-DPT-07 (east 71-DPT-02 and the UST) revealed minor TPH DRO concentrations [less than 9 milligrams per kilogram (mg/kg)].

The estimated extent of TPH impacted soil is illustrated on Figure 2. These two (2) areas are based on TPH concentrations above the laboratory reporting limit, not regulatory standards/limits. The TPH DRO impacted soil area around the probable UST adjacent to the dispenser encompasses approximately 280 ft^2. Based on contamination from the surface to the estimated water table depth of six (6) feet BLS, approximately 62 yds^3 of TPH impacted soils may be in the area. It should be noted (as illustrated on Figure 2), there is not a clean soil sample located to the south or east of the estimated extent, however, only minor TPH DRO concentrations (less than 9 mg/kg) were detected in soil samples.

The TPH DRO impacted soil around the former dispenser pump island encompasses approximately 98 ft^2. Based on an assumed zone of contamination from the surface to the estimated water table depth of six (6) feet BLS, approximately 22 yds^3 of TPH impacted soils may be in the area. However, it should be noted (as illustrated on Figure 2), there is not a clean soil sample located to the north of the estimated extent (due to the existing structure/building). Only minor TPH DRO concentrations (less than 8 mg/kg) were detected in soil samples.

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.

A probable UST and former dispenser pump island are located at the site. No drainage features were identified on the NCDOT provided plan sheets.

Seven (7) borings were advanced for soil sample collection. Minor petroleum impacts (less than 9 mg/kg) were detected in a soil sample collected near the probable UST and in a soil sample collected adjacent to the former dispenser pump island. These two (2) areas encompass approximately 280 ft^2 and 98 ft^2, respectively. However, clean soil sample locations do not completely define these estimated extents and the vertical limits of petroleum impacts have not been determined. Based on assumed petroleum impacts from the surface to the estimated water table depth (six feet BLS), approximately 84 yds^3 or roughly 125 tons of TPH impacted soils may be encountered in the probable UST area and former dispenser pump island area.

CATLIN recommends removing the (probable) UST, former dispenser pump island and any associated piping. Petroleum impacted soil volume may be reduced by removing possibly clean soils above the UST. CATLIN also recommends notifying any utility or construction contractor of these findings and advising them to be prepared to handle petroleum impacted soil if disturbing soil near areas indicated on Figure 2.

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

NORTH CAROLINA LICENSED SEAL 1052 GEOLOGIST GEORGE RICHARD GARRETT

7/26/11

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

TABLES

TABLE 1
SUMMARY OF SOIL LABORATORY RESULTS
EPA METHOD 8015

Parcel #071
Audry Faye Nunnery Godbold Property
White Store (currently Residence)
2401 Carry Bridge Road
Autryville, North Carolina

Sample ID	Location		Contaminant of Concern →	Diesel Range Organics	Gasoline Range Organics
	Northing	Easting	Date Collected		
71-DPT-01 (3-4ft)	448156.977	2123044.768	6/22/2011	<6.63	<3.02
71-DPT-02 (2-3ft)	448153.720	2123052.136	6/22/2011	**7.67**	<3.38
71-DPT-03 (2-3ft)	448167.505	2123058.675	6/22/2011	<6.72	<3.11
71-DPT-04 (2-3ft)	448174.565	2123055.474	6/22/2011	<6.55	<3.62
71-DPT-05 (2-3ft)	448177.485	2123065.487	6/22/2011	**7.64**	<3.45
71-DPT-06 (2-3ft)	448173.140	2123071.015	6/22/2011	<6.76	<3.15
71-DPT-07 (2-3ft)	448150.479	2123068.287	6/22/2011	**8.51**	<2.81

All results in milligrams per kilogram (mg/kg).
Location coordinates: US State Plane 1983, NC Zone 3200, NAD 1983, US Survey feet
Sample depth in feet provided in parenthesis ( ) as part of the Sample ID.
< = Less than reporting limit
Results in bold exceed the reporting limit.

FIGURES

DESCRIPTION:
GENERAL LOCATION

ENGLISH

FIGURE:	1
WBS NO.:	34416.1.1
TIP NO.:	R-2303B
COUNTY:	SAMPSON

PARCEL #071

ELECTRONIC TOPOGRAPHIC QUADRANGLES: AUTRYVILLE, ROSEBORO, SALEMBURG, AND STEDMAN
OBTAINED FROM TERRAIN NAVIGATOR PRO.
ELECTRONIC DESIGN FILES OBTAINED FROM NCDOT

2000 1000 0 2000
SCALE IN FEET

DESCRIPTION:
PARCEL #071
AUDREY FAYE NUNNERY
GODBOLD PROPERTY

ENGLISH

FIGURE:	2
WBS NO.:	34416.1.1
TIP NO.:	R-2303B
COUNTY:	SAMPSON

Sample ID	Contaminant of Concern → Date Collected	Diesel Range Organics	Gasoline Range Organics
71-DPT-01 (3-4ft)	6/22/2011	<6.63	<3.02
71-DPT-02 (2-3ft)	6/22/2011	**7.67**	<3.38
71-DPT-03 (2-3ft)	6/22/2011	<6.72	<3.11
71-DPT-04 (2-3ft)	6/22/2011	<6.55	<3.62
71-DPT-05 (2-3ft)	6/22/2011	**7.64**	<3.45
71-DPT-06 (2-3ft)	6/22/2011	<6.76	<3.15
71-DPT-07 (2-3ft)	6/22/2011	**8.51**	<2.81

All results in milligrams per kilogram (mg/kg).
Location coordinates: US State Plane 1983, NC Zone 3200, NAD 1983, US Survey feet
Sample depth in feet provided in parenthesis ( ) as part of the Sample ID.
< = Less than reporting
Results in bold exceed the reporting limit.

71
AUDREY FAYE NUNNERY GODBOLD
DB 197 PG 443

74
JESSE P. BUTLER
DB 750 PG 254

2401
CARY BRIDGE ROAD

SR 1256 CARRY BRIDGE

ESTIMATED EXTENT
OF DIESEL IMPACTED SOIL

PROBABLE
UST

ABAND
GAS PUMPS

NC 24 AUTRY HWY 24" BST

*01 *02 *03 *04 *05 *06 *07

SD = 125' X 125'

SOIL

15" RCP-IV

-L- S 69° 32' 36.7" E

2005

TB DI

LEGEND
DPT SOIL BORING/SAMPLE
EXISTING MONITORING WELL

NOTES:
* = ALL BORINGS PREFACED WITH "71-DPT-"
ELECTRONIC FILES OBTAINED FROM NCDOT

20 10 0 20
SCALE IN FEET

APPENDICES

APPENDIX A

BORING LOGS

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC

PROJECT NO.: 211043	STATE: NC	COUNTY: Sampson		LOCATION: Autryville	
PROJECT NAME: NC 24 from SR 1853 to SR 1404		LOGGED BY: Ben Ashba		BORING ID: 71-DPT-01	
		DRILLER: Michael D. Mason			
NORTHING: 448,153.72	EASTING: 2,123,052.14	CREW:			
SYSTEM:	BORING LOCATION: W. of orphan UST			LAND ELEV.: NM	
DRILL MACHINE: Power Probe	METHOD: Direct Push		0 HOUR DTW: N/A	BORING DEPTH: 4.0	
START DATE: 6/22/11	FINISH DATE: 6/22/11		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		D	▲0.0		SP			Vf. to f. SAND. Varying brown colors.	
2.0		D	▲0.0	71-DPT-02 (2-3') @ 1300	SC		2.0	Clayey SAND. Varying brown colors. Moist @ 4' BLS.	
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 211043 NCDOT NC24-SR1404 GPJ CATLIN GDT 7/25/11

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC

PROJECT NO.:	211043	STATE:	NC	COUNTY:	Sampson	LOCATION:	Autryville
PROJECT NAME:	NC 24 from SR 1853 to SR 1404	LOGGED BY:	Ben Ashba	BORING ID:	71-DPT-02		
		DRILLER:	Michael D. Mason				
NORTHING:	448,156.98	EASTING:	2,123,044.77	CREW:			
SYSTEM:		BORING LOCATION:	E. of orphan UST			LAND ELEV.:	NM
DRILL MACHINE:	Power Probe	METHOD:	Direct Push	0 HOUR DTW:	6.5	BORING DEPTH:	11.0
START DATE:	6/22/11	FINISH DATE:	6/22/11	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		D	▲422		SP			F. SAND. Varying brown colors.	
2.0		D	▲958	71-DPT-0	SP		2.0	S.A.A.	
4.0		M	▲40.5		SP		4.0	S.A.A.	
6.0		M	▲694	▽	SC		5.0	Clayey SAND. Mottled oranges and browns.	
8.0		M			SC		6.0	S.A.A. Gray color at 7' BLS. Strong petro odor.	
10.0		M			SC		8.0	S.A.A.	
11.0		M			SP		10.0	Light brownish-gray, clean f. SAND. No odor. *REFUSAL at 11' BLS.	
12.0							11.0	Boring Terminated at Depth 11.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 211043 NCDOT NC24-SR1404.GPJ CATLIN.GDT 7/25/11

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC

PROJECT NO.: 211043	STATE: NC	COUNTY: Sampson		LOCATION: Autryville	
PROJECT NAME: NC 24 from SR 1853 to SR 1404		LOGGED BY: Ben Ashba		BORING ID: 71-DPT-03	
		DRILLER: Michael D. Mason			
NORTHING: 448,167.51	EASTING: 2,123,058.68	CREW:			
SYSTEM:	BORING LOCATION: S. of Dispenser Island			LAND ELEV.: NM	
DRILL MACHINE: Power Probe	METHOD: Direct Push		0 HOUR DTW: N/A	BORING DEPTH: 4.0	
START DATE: 6/22/11	FINISH DATE: 6/22/11		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		D	▲0.0		SP		2.0	Vf. to f. SAND. Varying brown colors.	
2.0		D	▲0.0	71-DPT-03 (2-3') @ 1315	SC		4.0	Clayey SAND. Varying brown colors. Moist @ 4' BLS.	
4.0								Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 211043 NCDOT NC24-SR1404.GPJ CATLIN.GDT 7/25/11

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC

PROJECT NO.: 211043	STATE: NC	COUNTY: Sampson		LOCATION: Autryville	
PROJECT NAME: NC 24 from SR 1853 to SR 1404		LOGGED BY: Ben Ashba		BORING ID: 71-DPT-04	
		DRILLER: Michael D. Mason			
NORTHING: 448,174.57	EASTING: 2,123,055.47	CREW:			
SYSTEM:	BORING LOCATION: W. side of Dispenser Island			LAND ELEV.: NM	
DRILL MACHINE: Power Probe	METHOD: Direct Push		0 HOUR DTW: N/A	BORING DEPTH: 4.0	
START DATE: 6/22/11	FINISH DATE: 6/22/11		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		D	▲0.0		SP			Vf. to f. SAND. Varying brown colors.	
2.0		D	▲0.0	71-DPT-04 (2-3') @ 1330	SC		2.0	Clayey SAND. Varying brown colors.	
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

CATLIN ENVIRO LOG 211043 NCDOT NC24-SR1404.GPJ CATLIN.GDT 7/25/11

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC

PROJECT NO.: 211043	STATE: NC	COUNTY: Sampson		LOCATION: Autryville	
PROJECT NAME: NC 24 from SR 1853 to SR 1404		LOGGED BY: Ben Ashba		BORING ID: 71-DPT-05	
		DRILLER: Michael D. Mason			
NORTHING: 448,177.49	EASTING: 2,123,065.49	CREW:			
SYSTEM:	BORING LOCATION: N. side of Dispenser Island			LAND ELEV.: NM	
DRILL MACHINE: Power Probe	METHOD: Direct Push		0 HOUR DTW: N/A	BORING DEPTH: 4.0	
START DATE: 6/22/11	FINISH DATE: 6/22/11		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		D	▲0.0		SP			Vf. to f. SAND. Varying brown colors.	
2.0		D	▲0.0	71-DPT-05 (2-3') @ 1330	SC		2.0	Clayey SAND. Varying brown colors.	
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC

PROJECT NO.: 211043	STATE: NC	COUNTY: Sampson		LOCATION: Autryville	
PROJECT NAME: NC 24 from SR 1853 to SR 1404		LOGGED BY: Ben Ashba		BORING ID: 71-DPT-06	
		DRILLER: Michael D. Mason			
NORTHING: 448,173.14	EASTING: 2,123,071.02	CREW:			
SYSTEM:	BORING LOCATION: E. side of Dispenser Island			LAND ELEV.: NM	
DRILL MACHINE: Power Probe	METHOD: Direct Push		0 HOUR DTW: N/A	BORING DEPTH: 4.0	
START DATE: 6/22/11	FINISH DATE: 6/22/11		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		D	▲0.6		SP			Vf. to f. SAND. Varying brown colors.	
2.0		D	▲0.9	71-DPT-06 (2-3') @ 1345	SC		2.0	Clayey SAND. Varying brown colors.	
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

BORING LOG

CATLIN Engineers and Scientists
Wilmington, NC

PROJECT NO.: 211043	STATE: NC	COUNTY: Sampson		LOCATION: Autryville	
PROJECT NAME: NC 24 from SR 1853 to SR 1404		LOGGED BY: Ben Ashba		BORING ID: 71-DPT-07	
		DRILLER: Michael D. Mason			
NORTHING: 448,150.48	EASTING: 2,123,068.29	CREW:			
SYSTEM:	BORING LOCATION: ~15' SE of DPT-01			LAND ELEV.: NM	
DRILL MACHINE: Power Probe	METHOD: Direct Push		0 HOUR DTW: N/A	BORING DEPTH: 4.0	
START DATE: 6/22/11	FINISH DATE: 6/22/11		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		D	▲1.2		SP			Vf. to f. SAND. Varying brown colors.	
2.0		D	▲1.1	71-DPT-07 (2-3') @ 1400	SC		2.0	Clayey SAND. Varying brown colors.	
4.0							4.0	Boring Terminated at Depth 4.0 ft	

▽ = 0hr. DTW ▼ = 24hr. DTW

APPENDIX B

LABORATORY REPORT AND CHAIN OF CUSTODY RECORD

Laboratory Report of Analysis

To: Ben Ashba
RICHARD CATLIN & ASSOCIATES
P.O. Box 10279
Wilmington, NC 28404

Report Number: **31101645**

Client Project: **Godbold Prop-Parcel 71**

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. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. 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 A. 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 A. Hager Date
Project Manager
barbara.hager@sgs.com

Laboratory Qualifiers

Report Definitions

DL	Method, Instrument, or Estimated Detection Limit per Analytical Method
CL	Control Limits for the recovery result of a parameter
LOQ	Reporting Limit
DF	Dilution Factor
RPD	Relative Percent Difference
LCS(D)	Laboratory Control Spike (Duplicate)
MS(D)	Matrix Spike (Duplicate)
MB	Method Blank

Qualifier Definitions

*	Recovery or RPD outside of control limits
B	Analyte was detected in the Lab Method Blank at a level above the LOQ
U	Undetected (Reported as ND or < LOD)
V	Recovery is below quality control limit. The data has been validated based on a favorable signal-to-noise and detection limit
A	Amount detected is less than the Lower Method Calibration Limit
J	Amount detected is between the Method Detection Limit and the Lower Calibration Limit
O	The recovery of this analyte in the OPR is above the Method QC Limits and the reported concentration in the sample may be biased high
E	Amount detected is greater than the Upper Calibration Limit
S	The amount of analyte present has saturated the detector. This situation results in an underestimation of the affected analyte(s)
Q	Indicates the presence of a quantitative interference. This situation may result in an underestimation of the affected analyte(s)
I	Indicates the presence of a qualitative interference that could cause a false positive or an overestimation of the affected analyte(s)
DPE	Indicates the presence of a peak in the polychlorinated diphenylether channel that could cause a false positive or an overestimation of the affected analyte(s)
TIC	Tentatively Identified Compound
EMC	Estimated Maximum possible Concentration due to ion ratio failure
ND	Not Detected
K	Result is estimated due to ion ratio failure in High Resolution PCB Analysis
P	RPD > 40% between results of dual columns
D	Spike or surrogate was diluted out in order to achieve a parameter result within instrument calibration range
M1	Mis-identified peak
M2	Software did not integrate peak
M3	Incorrect baseline construction (i.e. not all of peak included; two peaks integrated as one)
M4	Pattern integration required (i.e. DRO, GRO, PCB, Toxaphene and Technical Chlordane)
M5	Other - Explained in case narrative

Note Results pages that include a value for "Solids (%)" have been adjusted for moisture content.

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Sample Summary

Client Sample ID	Lab Sample ID	Collected	Received	Matrix
71-DPT-01 (3-4ft)	31101645001	06/22/2011 12:45	06/24/2011 11:30	Soil-Solid as dr
71-DPT-02 (2-3ft)	31101645002	06/22/2011 13:00	06/24/2011 11:30	Soil-Solid as dr
71-DPT-03 (2-3ft)	31101645003	06/22/2011 13:15	06/24/2011 11:30	Soil-Solid as dr
71-DPT-04 (2-3ft)	31101645004	06/22/2011 13:30	06/24/2011 11:30	Soil-Solid as dr
71-DPT-05 (2-3ft)	31101645005	06/22/2011 13:30	06/24/2011 11:30	Soil-Solid as dr
71-DPT-06 (2-3ft)	31101645006	06/22/2011 13:45	06/24/2011 11:30	Soil-Solid as dr
71-DPT-07 (2-3ft)	31101645007	06/22/2011 14:00	06/24/2011 11:30	Soil-Solid as dr

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Results of **71-DPT-01 (3-4ft)**

Client Sample ID: **71-DPT-01 (3-4ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645001-A
Lab Project ID: 31101645

Collection Date: 06/22/2011 12:45
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 92

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND		3.02	mg/kg	1	06/28/2011 14:25
Surrogates						
4-Bromofluorobenzene	103		70.0-130	%	1	06/28/2011 14:25

Batch Information

Analytical Batch: **VGC1284**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC4**
Analyst: **LMC**
Analytical Date/Time: **06/28/2011 14:25**

Prep Batch: **VXX1706**
Prep Method: **SW-846 5035**
Prep Date/Time: **06/28/2011 09:01**
Prep Initial Wt./Vol.: **7.23 g**
Prep Extract Vol: **5 mL**

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Results of **71-DPT-01 (3-4ft)**

Client Sample ID: **71-DPT-01 (3-4ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645001-C
Lab Project ID: 31101645

Collection Date: 06/22/2011 12:45
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 92

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND		6.63	mg/kg	1	06/29/2011 21:58
Surrogates						
o-Terphenyl	77.0		40.0-140	%	1	06/29/2011 21:58

Batch Information

Analytical Batch: **XGC1331**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**
Analytical Date/Time: **06/29/2011 21:58**

Prep Batch: **XXX1482**
Prep Method: **SW-846 3541**
Prep Date/Time: **06/28/2011 13:20**
Prep Initial Wt./Vol.: **32.91 g**
Prep Extract Vol: **10 mL**

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Results of **71-DPT-02 (2-3ft)**

Client Sample ID: **71-DPT-02 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645002-A
Lab Project ID: 31101645

Collection Date: 06/22/2011 13:00
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 92

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND		3.38	mg/kg	1	06/28/2011 14:52
Surrogates						
4-Bromofluorobenzene	102		70.0-130	%	1	06/28/2011 14:52

Batch Information

Analytical Batch: **VGC1284**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC4**
Analyst: **LMC**
Analytical Date/Time: **06/28/2011 14:52**

Prep Batch: **VXX1706**
Prep Method: **SW-846 5035**
Prep Date/Time: **06/28/2011 09:01**
Prep Initial Wt./Vol.: **6.4 g**
Prep Extract Vol: **5 mL**

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Results of **71-DPT-02 (2-3ft)**

Client Sample ID: **71-DPT-02 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645002-C
Lab Project ID: 31101645

Collection Date: 06/22/2011 13:00
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 92

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	**7.67**		6.66	mg/kg	1	06/29/2011 22:26
Surrogates						
o-Terphenyl	65.3		40.0-140	%	1	06/29/2011 22:26

Batch Information

Analytical Batch: **XGC1331**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**
Analytical Date/Time: **06/29/2011 22:26**

Prep Batch: **XXX1482**
Prep Method: **SW-846 3541**
Prep Date/Time: **06/28/2011 13:20**
Prep Initial Wt./Vol.: **32.48 g**
Prep Extract Vol: **10 mL**

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Results of **71-DPT-03 (2-3ft)**

Client Sample ID: **71-DPT-03 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645003-A
Lab Project ID: 31101645

Collection Date: 06/22/2011 13:15
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 89

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND		3.11	mg/kg	1	06/28/2011 15:19
Surrogates						
4-Bromofluorobenzene	99.6		70.0-130	%	1	06/28/2011 15:19

Batch Information

Analytical Batch: **VGC1284**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC4**
Analyst: **LMC**
Analytical Date/Time: **06/28/2011 15:19**

Prep Batch: **VXX1706**
Prep Method: **SW-846 5035**
Prep Date/Time: **06/28/2011 09:01**
Prep Initial Wt./Vol.: **7.23 g**
Prep Extract Vol: **5 mL**

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Results of **71-DPT-03 (2-3ft)**

Client Sample ID: **71-DPT-03 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645003-C
Lab Project ID: 31101645

Collection Date: 06/22/2011 13:15
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 89

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND		6.72	mg/kg	1	06/29/2011 22:54
Surrogates						
o-Terphenyl	59.8		40.0-140	%	1	06/29/2011 22:54

Batch Information

Analytical Batch: **XGC1331**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**
Analytical Date/Time: **06/29/2011 22:54**

Prep Batch: **XXX1482**
Prep Method: **SW-846 3541**
Prep Date/Time: **06/28/2011 13:20**
Prep Initial Wt./Vol.: **33.44 g**
Prep Extract Vol: **10 mL**

Results of **71-DPT-04 (2-3ft)**

Client Sample ID: **71-DPT-04 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645004-A
Lab Project ID: 31101645

Collection Date: 06/22/2011 13:30
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 93

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND		3.62	mg/kg	1	06/28/2011 15:46
Surrogates						
4-Bromofluorobenzene	102		70.0-130	%	1	06/28/2011 15:46

Batch Information

Analytical Batch: **VGC1284**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC4**
Analyst: **LMC**
Analytical Date/Time: **06/28/2011 15:46**

Prep Batch: **VXX1706**
Prep Method: **SW-846 5035**
Prep Date/Time: **06/28/2011 09:01**
Prep Initial Wt./Vol.: **5.94 g**
Prep Extract Vol: **5 mL**

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Results of **71-DPT-04 (2-3ft)**

Client Sample ID: **71-DPT-04 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645004-C
Lab Project ID: 31101645

Collection Date: 06/22/2011 13:30
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 93

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND		6.55	mg/kg	1	06/29/2011 23:23
Surrogates						
o-Terphenyl	74.9		40.0-140	%	1	06/29/2011 23:23

Batch Information

Analytical Batch: **XGC1331**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**
Analytical Date/Time: **06/29/2011 23:23**

Prep Batch: **XXX1482**
Prep Method: **SW-846 3541**
Prep Date/Time: **06/28/2011 13:20**
Prep Initial Wt./Vol.: **32.87 g**
Prep Extract Vol: **10 mL**

Results of **71-DPT-05 (2-3ft)**

Client Sample ID: **71-DPT-05 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645005-A
Lab Project ID: 31101645

Collection Date: 06/22/2011 13:30
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 94

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND		3.45	mg/kg	1	06/28/2011 16:14
Surrogates						
4-Bromofluorobenzene	101		70.0-130	%	1	06/28/2011 16:14

Batch Information

Analytical Batch: **VGC1284**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC4**
Analyst: **LMC**
Analytical Date/Time: **06/28/2011 16:14**

Prep Batch: **VXX1706**
Prep Method: **SW-846 5035**
Prep Date/Time: **06/28/2011 09:01**
Prep Initial Wt./Vol.: **6.17 g**
Prep Extract Vol: **5 mL**

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Results of **71-DPT-05 (2-3ft)**

Client Sample ID: **71-DPT-05 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645005-C
Lab Project ID: 31101645

Collection Date: 06/22/2011 13:30
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 94

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	**7.64**		6.53	mg/kg	1	06/29/2011 23:51
Surrogates						
o-Terphenyl	61.4		40.0-140	%	1	06/29/2011 23:51

Batch Information

Analytical Batch: **XGC1331**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**
Analytical Date/Time: **06/29/2011 23:51**

Prep Batch: **XXX1482**
Prep Method: **SW-846 3541**
Prep Date/Time: **06/28/2011 13:20**
Prep Initial Wt./Vol.: **32.66 g**
Prep Extract Vol: **10 mL**

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Results of **71-DPT-06 (2-3ft)**

Client Sample ID: **71-DPT-06 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645006-A
Lab Project ID: 31101645

Collection Date: 06/22/2011 13:45
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 92

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND		3.15	mg/kg	1	06/28/2011 16:41
Surrogates						
4-Bromofluorobenzene	104		70.0-130	%	1	06/28/2011 16:41

Batch Information

Analytical Batch: **VGC1284**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC4**
Analyst: **LMC**
Analytical Date/Time: **06/28/2011 16:41**

Prep Batch: **VXX1706**
Prep Method: **SW-846 5035**
Prep Date/Time: **06/28/2011 09:01**
Prep Initial Wt./Vol.: **6.9 g**
Prep Extract Vol: **5 mL**

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Results of **71-DPT-06 (2-3ft)**

Client Sample ID: **71-DPT-06 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645006-C
Lab Project ID: 31101645

Collection Date: 06/22/2011 13:45
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 92

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	ND		6.76	mg/kg	1	06/30/2011 0:19
Surrogates						
o-Terphenyl	75.4		40.0-140	%	1	06/30/2011 0:19

Batch Information

Analytical Batch: **XGC1331**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**
Analytical Date/Time: **06/30/2011 00:19**

Prep Batch: **XXX1482**
Prep Method: **SW-846 3541**
Prep Date/Time: **06/28/2011 13:20**
Prep Initial Wt./Vol.: **32.18 g**
Prep Extract Vol: **10 mL**

Results of **71-DPT-07 (2-3ft)**

Client Sample ID: **71-DPT-07 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645007-A
Lab Project ID: 31101645

Collection Date: 06/22/2011 14:00
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 93

Results by **SW-846 8015C GRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Gasoline Range Organics (GRO)	ND		2.81	mg/kg	1	06/28/2011 17:08
Surrogates						
4-Bromofluorobenzene	105		70.0-130	%	1	06/28/2011 17:08

Batch Information

Analytical Batch: **VGC1284**
Analytical Method: **SW-846 8015C GRO**
Instrument: **GC4**
Analyst: **LMC**
Analytical Date/Time: **06/28/2011 17:08**

Prep Batch: **VXX1706**
Prep Method: **SW-846 5035**
Prep Date/Time: **06/28/2011 09:01**
Prep Initial Wt./Vol.: **7.68 g**
Prep Extract Vol: **5 mL**

Results of **71-DPT-07 (2-3ft)**

Client Sample ID: **71-DPT-07 (2-3ft)**
Client Project ID: **Godbold Prop-Parcel 71**
Lab Sample ID: 31101645007-C
Lab Project ID: 31101645

Collection Date: 06/22/2011 14:00
Received Date: 06/24/2011 11:30
Matrix: Soil-Solid as dry weight
Solids (%): 93

Results by **SW-846 8015C DRO**

Parameter	Result	Qual	LOQ/CL	Units	DF	Date Analyzed
Diesel Range Organics (DRO)	**8.51**		6.68	mg/kg	1	06/30/2011 0:47
Surrogates						
o-Terphenyl	78.6		40.0-140	%	1	06/30/2011 0:47

Batch Information

Analytical Batch: **XGC1331**
Analytical Method: **SW-846 8015C DRO**
Instrument: **GC6**
Analyst: **DTF**
Analytical Date/Time: **06/30/2011 00:47**

Prep Batch: **XXX1482**
Prep Method: **SW-846 3541**
Prep Date/Time: **06/28/2011 13:20**
Prep Initial Wt./Vol.: **32.33 g**
Prep Extract Vol: **10 mL**

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101904

(1)
CLIENT: CATLIN / NCDOT
CONTACT: Ben Ashby@CATLIN PHONE NO:(910) 452-5861
PROJECT: GODWOLD Prop - Parcel 71 SITE/RWSID#:
REPORTS TO: Ben @ CATLIN ben.ashby@catlinusa.com FAX NO.:( )
INVOICE TO: NCDOT QUOTE #: Sampson County WBS: 34416.1.1 P.O. NUMBER: R-2303B

SGS Reference: 3110645

PAGE 1 OF 1

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE	Preservatives Used: Meoh, Ice	Analysis Required (3): TPH GRO	TPH DRO	REMARKS
	71-DPT-01 (3-4')	6.22.11	1245	SOIL	3	G	✓	✓		"HOT"
	71-DPT-02 (2-3')		1300							
	71-DPT-03 (2-3')		1315							
	71-DPT-04 (2-3')		1330							
	71-DPT-05 (2-3')		1330							
	71-DPT-06 (2-3')		1345							
	71-DPT-07 (2-3')		1400							

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:
Ben Ashby	6.24.11	1130	
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: 5.20 &
Special Deliverable Requirements:
Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT
Special Instructions:
Requested Turnaround Time:
☐ RUSH _____ Date Needed ☑ STD

200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
2500 Business Drive **Wilmington, NC 28405** Tel: (910) 350-1903 Fax: (910) 350-1557

White - Retained by Lab
Pink - Retained by Client

SGS North America Inc.

Sample Receipt Checklist (SRC)

Client: **Catlin** Work Order No.: **31101645**

1. ___ Shipped
   x Hand Delivered
   Notes:

2. x COC Present on Receipt
   ___ No COC
   ___ Additional Transmittal Forms

3. ___ Custody Tape on Container
   x No Custody Tape

4. x Samples Intact
   ___ Samples Broken / Leaking

5. x Chilled on Receipt Actual Temp.(s) in °C: 5.2
   ___ Ambient on Receipt
   ___ Walk-in on Ice; Coming down to temp.
   ___ Received Outside of Temperature Specifications

6. x Sufficient Sample Submitted
   ___ Insufficient Sample Submitted

7. ___ Chlorine absent — NA
   ___ HNO3 < 2
   ___ HCL < 2
   ___ Additional Preservatives verified (see notes)

8. x Received Within Holding Time
   ___ Not Received Within Holding Time

9. x No Discrepancies Noted
   ___ Discrepancies Noted

10. ___ No Headspace present in VOC vials
    ___ Headspace present in VOC vials >6mm

Comments:

Inspected and Logged in by: TP

Date: Fri-6/24/11 00:00

APPENDIX C
SCHNABEL GEOPHYSICAL REPORT

Schnabel ENGINEERING

July 20, 2011

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

RE:	State Project:	R-2303B
	WBS Element:	34416.1.1
	County:	Cumberland - Sampson
	Description:	NC 24 from SR 1853 (John Nunnery Rd) in Cumberland County to SR 1404 (Dowdy Rd) in Sampson County

Subject: **Project 09210013.41, Report on Geophysical Surveys**
Parcel 71, Audry Faye Nunnery Godbold Property, Sampson 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. The report includes two 11x17 color figures and three 8.5x11 color figures.

INTRODUCTION

The work described in this report was conducted on May 27, and June 7 and 8, 2011, by Schnabel under our 2009 contract with the NCDOT. The work was conducted over the accessible areas of the property as indicated by the NCDOT to support their environmental assessment of the subject property. Photographs of the property are included on Figure 1. The property is located on the north side of NC 24 (Autry Highway) at the intersection of Carry Bridge Road in Autryville, NC. The purpose of the geophysical surveys was to locate suspect metal underground storage tanks (USTs) 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.

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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 USTs. 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 71 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 USTs.

The early time gate and differential EM61 results show anomalies of unknown cause, in addition to those apparently caused by reinforced concrete, buried utilities, or known site features (Figures 3 and 4). The GPR data collected to the southwest of the pump island indicate the presence of one probable UST located approximately 15 feet from the northern edge of NC 24 (Autry Highway). The probable UST is inside the limits of the planned right-of-way and/or easement. Example GPR images showing the reflection from the probable UST are shown on Figures 3 and 4. Figures 3 and 4 also include the location of the probable UST as marked in the field. The GPR data indicate that the probable UST is buried approximately 0.5 to 1.5 feet below ground surface and is about 3.5 feet in diameter and about 7.5 feet long, equivalent to a capacity of about 560 gallons. Photographs of the probable UST location, as marked in the field, are included on Figure 5.

CONCLUSIONS

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

The geophysical data indicate the presence of one probable UST on Parcel 71. The probable UST is within the planned right-of-way and/or easement. The probable UST is about 560-gallon capacity and is buried about 0.5 to 1.5 feet below ground surface.

LIMITATIONS

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

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

Sincerely,

SCHNABEL ENGINEERING SOUTH, PC

Jeremy S. Strohmeyer, LG
Project Manager

Edward D. Billington, LG
Senior Vice President

JS:NB
Attachments: Figures (5)
FILE: G:\2009 PROJECTS\09210013 (NCDOT 2009 GEOTECH UNIT SERVICES)\09210013.41 (R-2303B, CUMBERLAND-SAMPSON CO.)\REPORT\PARCEL 71\SCHNABEL GEOPHYSICAL REPORT ON PARCEL 71 (R-2303B).DOCX

Parcel 71 – Audry Faye Nunnery Godbold Property, looking northeast

Parcel 71 – Audry Faye Nunnery Godbold Property, looking northwest

Schnabel ENGINEERING	STATE PROJECT R-2303B NC DEPT. OF TRANSPORTATION CUMBERLAND-SAMPSON COS., NC PROJECT NO. 09210013.41	PARCEL 71 SITE PHOTOS FIGURE 1

Geonics EM61-MK2

GSSI SIR-3000

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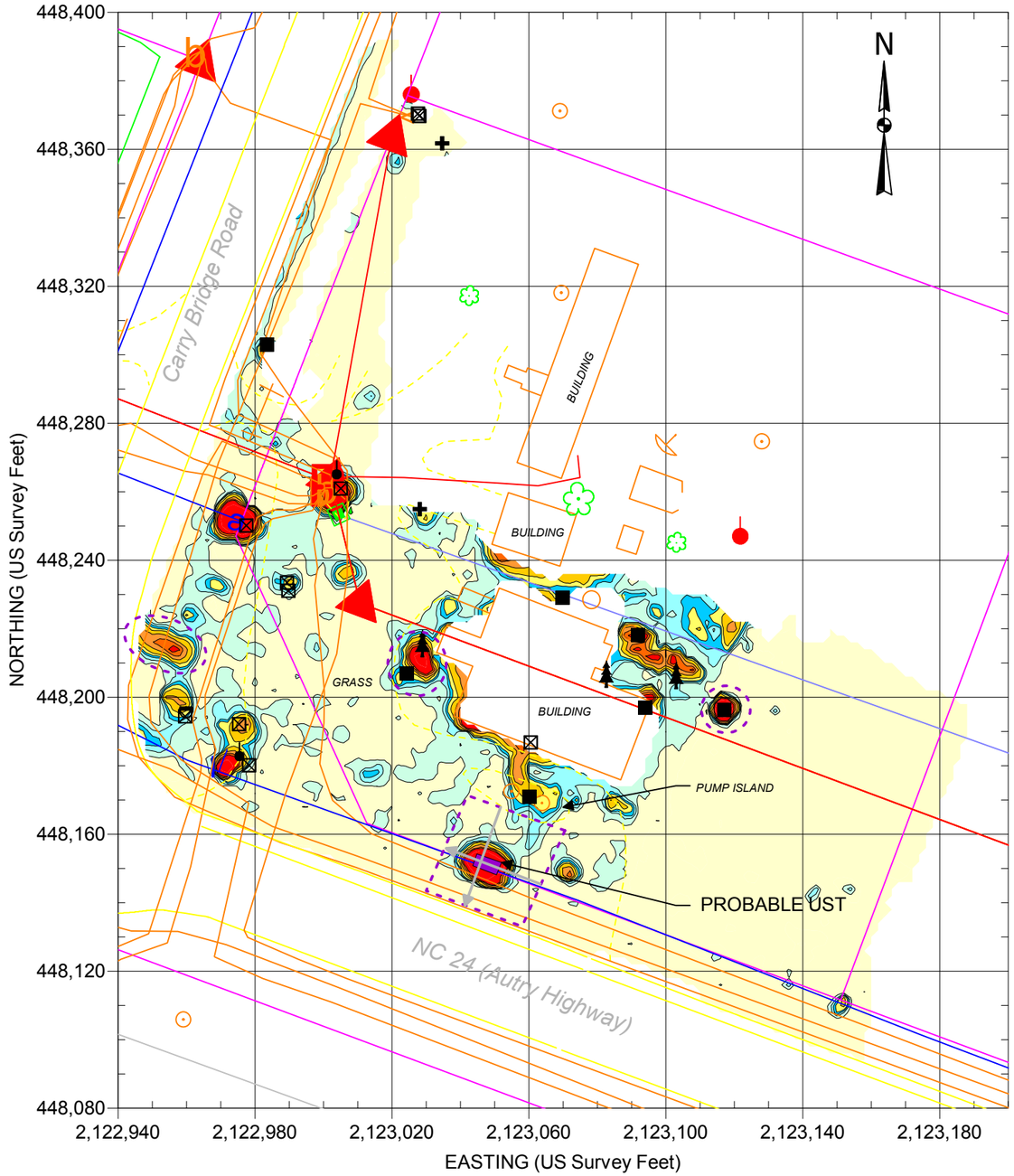
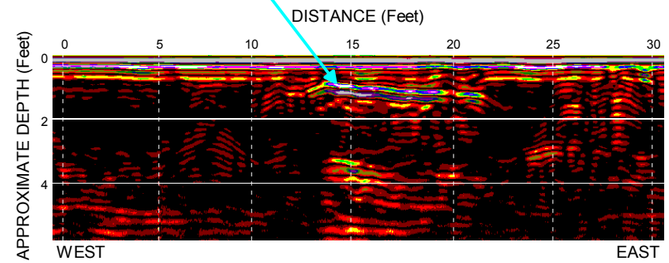
PHOTOS OF
GEOPHYSICAL
EQUIPMENT USED

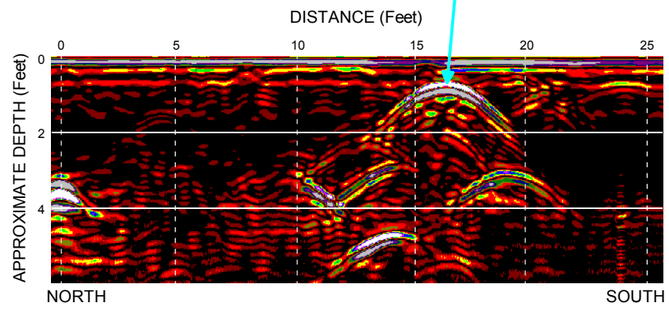
FIGURE 2



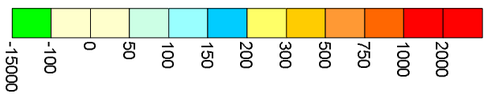
EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF THE PROBABLE UST



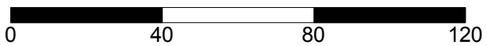
EXAMPLE GPR RESPONSE FROM THE SHORT AXIS OF THE PROBABLE UST



EM61 Early Time Gate Response (mV)



Scale in US Survey Feet



EXPLANATION

- SIGN
- UTILITY POLE
- GUY WIRE
- MISCELLANEOUS METALLIC OBJECT
- UTILITY MANHOLE, METER, BOX, ETC.
- LIGHT POLE
- MONITORING WELL
- 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 KNOWN OR SUSPECT USTS MARKED ON SITE

REF.: NCDOT FILE: r2303b_rdy_psh20.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 May 27, 2011, 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 June 8, 2011, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

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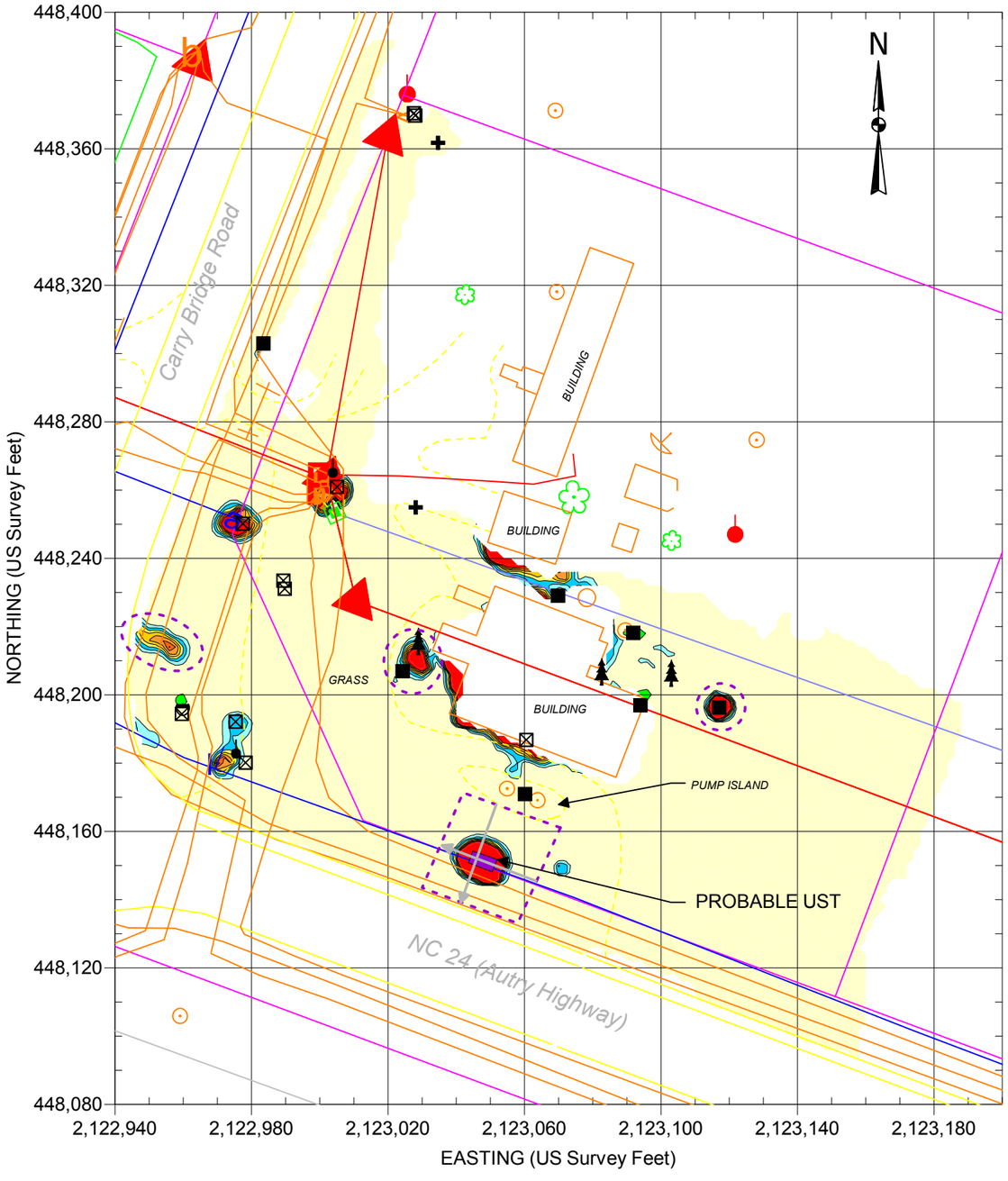
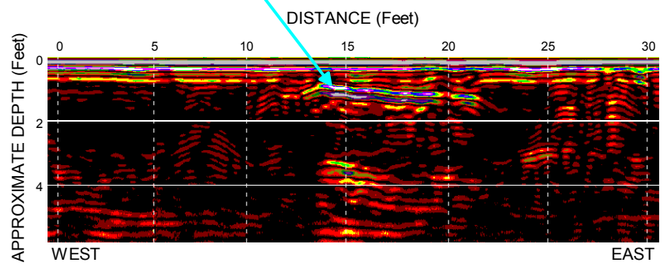
PARCEL 71
EM61 EARLY TIME GATE RESPONSE

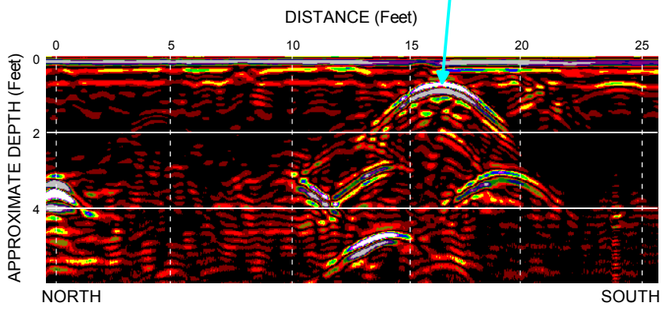
FIGURE 3



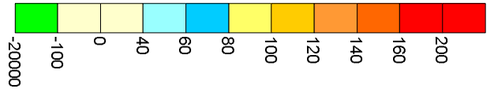
EXAMPLE GPR RESPONSE FROM THE LONG AXIS OF THE PROBABLE UST



EXAMPLE GPR RESPONSE FROM THE SHORT AXIS OF THE PROBABLE UST



EM61 Differential Response (mV)



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PARCEL 71
EM61 DIFFERENTIAL RESPONSE
FIGURE 4

Parcel 71 – Audry Faye Nunnery Godbold Property, looking northeast. Photo shows approximate marked location of the probable UST on the south side of the property.

Parcel 71 – Audry Faye Nunnery Godbold Property, looking northwest. Photo shows approximate marked location of the probable UST on the south side of the property.

Schnabel ENGINEERING	STATE PROJECT R-2303B NC DEPT. OF TRANSPORTATION CUMBERLAND-SAMPSON COS., NC PROJECT NO. 09210013.41	PHOTOS OF UST LOCATION FIGURE 5