

REVISED PRELIMINARY SITE ASSESSMENT REPORT

**651 Country Club Road
Jesse B. Overton, et al Property, Parcel 28
Rocky Mount, North Carolina
State Project U-3331
WBS Element #34927.1.1
Nash County**

North Carolina Department of Transportation
Geotechnical Engineering Unit
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

October 28, 2013

REVISED PRELIMINARY SITE ASSESSMENT REPORT

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651 Country Club Road
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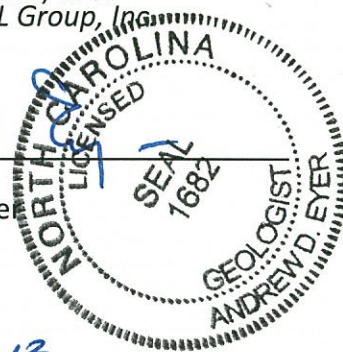
Signature Page

This document, entitled *Revised Preliminary Site Assessment Report*, has been prepared for the Jesse B. Overton, et al Property, Parcel 28, located at 651 Country Club Road in Rocky Mount, North Carolina (State Project U-3331, WBS Element # 34927.1.1, Nash County). It has been prepared by GEL Engineering of NC, Inc. in accordance with the Notice to Proceed provided by the North Carolina Department of Transportation-GeoEnvironmental Section, Geotechnical Engineering Unit for the exclusive use of the North Carolina Department of Transportation. It has been prepared in accordance with accepted quality control practices and has been reviewed by the undersigned.

GEL ENGINEERING OF NC, INC.
an Affiliate of The GEL Group, Inc.



Andrew D. Eyer, L.G.
Senior Project Manager



10-28-13

Date

REVISED PRELIMINARY SITE ASSESSMENT REPORT

**Parcel 28
651 Country Club Road
Rocky Mount, North Carolina
State Project U-3331
WBS Element #34927.1.1
Nash County**

Executive Summary

The subject site is Parcel 28, located at 651 Country Club Road in Rocky Mount, North Carolina. The primary purpose of this investigation was to evaluate the presence or absence of underground storage tanks (USTs) and constituents of concern in soil within the North Carolina Department of Transportation (NCDOT) Rights-of-Way (ROWs) adjacent to Parcel 28, as a result of previous and/or current operations at the subject site.

Parcel 28 is located on the corner of Country Club Road and Overton Drive and contains a former fire station that is currently used as a search and rescue response facility. Two underground storage tanks (USTs) were reportedly removed in 1989, but there is no known North Carolina Department of Environment and Natural Resources (NCDENR) Groundwater Incident assigned to the site. A single monitoring well is located in the center of the former UST pit. There is no other evidence of USTs, vents, or UST removal.

GEL performed a preliminary site assessment within the NCDOT easterly ROW of Country Club Road adjacent to Parcel 28 that included a geophysical investigation, and the collection and analysis of soil samples. No subsurface anomalies indicative of suspected or known USTs were identified within the investigation area, and it has been concluded that there are no USTs present within the easterly ROW of Country Club Road or the southerly ROW of Overton Drive adjacent to the site.

Executive Summary (continued)

Soil samples were collected for analysis from nine borings constructed within the investigation area, and analyzed for DRO and GRO. Neither DRO nor GRO was detected in any of the collected soil samples.

Based on the soil data generated from this investigation, there is no evidence that a release of constituents of concern has occurred within the investigation area at Parcel 28. No additional environmental investigation of the soil or groundwater at the site is recommended at this time.

REVISED PRELIMINARY SITE ASSESSMENT REPORT

**Parcel 28
651 Country Club Road
Rocky Mount, North Carolina
State Project U-3331
WBS Element #34927.1.1
Nash County**

1.0 Introduction

This document presents the details of a geophysical survey and preliminary site assessment performed within the North Carolina Department of Transportation (NCDOT) Rights-of-Way (ROWs) at Parcel 28 (the Jesse B. Overton, et al Property), located at 651 Country Club Road in Rocky Mount, North Carolina.

Parcel 28 is located on the corner of Country Club Road and Overton Drive and contains a former fire station that is currently used as a search and rescue response facility. Two underground storage tanks (USTs) were reportedly removed in 1989, but there is no known North Carolina Department of Environment and Natural Resources (NCDENR) Groundwater Incident assigned to the site. A single monitoring well is located in the center of the former UST pit. There is no other evidence of USTs, vents, or UST removal.

The site location is shown on Figure 1, an excerpt from the United States Geological Survey (USGS) 7.5-minute quadrangle map of Rocky Mount, North Carolina. The preliminary site assessment was conducted by GEL Engineering of NC, Inc. (GEL) in accordance with the Notice to Proceed issued by NCDOT on August 20, 2013.

The primary purpose of this investigation was to evaluate the presence or absence of USTs and/or constituents of concern in soil within the NCDOT ROWs at the subject site as a result of current and/or former operations.

2.0 Background

NCDOT is planning road improvements to the area in the vicinity of Country Club Road in Rocky Mount, North Carolina. NCDOT wanted to assess the area in the easterly ROW of Country Club Road and the southerly ROW of Overton Drive adjacent to Parcel 28 to evaluate the presence or absence of USTs and soil contamination related to the current

and/or former on-site operations, and the impact (if any) of these operations on the proposed road improvements. Figures 2 and 3 show the general site layout for Parcel 28. One aboveground groundwater monitoring well was observed on the property on September 10, 2013, at the approximate location shown in Figure 2. The monitoring well is also shown in photographs provided in Appendix I. A handheld Magellan 330 map grade global positioning system (GPS) was used to measure the longitude and latitude coordinate for the well, which are listed below. No other monitoring wells were observed on properties adjacent to parcel 28.

Existing Groundwater Monitoring Well Located on Parcel 28

Well ID *	Latitude/Longitude (NAD83)
MW-1	35°58'11.82"N / 77°49'27.72"W

Notes:

- 1) * Assumed ID; corresponds with assumed well ID shown on Figure 2.
- 2) Coordinates are based on North American Datum of 1983 (NAD83)

The NCDENR UST database indicates that two USTs were removed from the site in 1989; however, there are no UST incidents listed for the 651 Country Club Road property in the database. Neither representatives for the search and rescue response operation at the site nor representatives of the NCDENR UST Section could confirm that the monitoring well is currently included in a groundwater monitoring program.

3.0 Local Geology and Surroundings

Parcel 28 is in a developed area of Rocky Mount in Nash County, North Carolina. Surrounding land uses include residential and commercial activities.

The site is located approximately 3.5 miles northwest of the center of Rocky Mount, North Carolina. This area is located on the Fall Line separating the Inner Piedmont and Coastal Plain physiographic provinces of North Carolina. The land surface of the area is characterized by nearly level, and gently sloping, well drained to poorly drained soils. The Eastern Slate Belt of the Inner Piedmont east of the site is typified by mostly metamorphosed volcanic and sedimentary rocks that are Early Paleozoic in age. The Coastal Plain west of the site is comprised of mostly sand and clay sediments, and typifies the geology in the vicinity of the site.

The United States Department of Agriculture's *Web Soil Survey* (2013) (<http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>) maps the soil in the investigation area as "Altavista Sandy Loam" (AaA) and "Bibb Loam" (Bb), which are both characterized as sandy and loamy alluvium. The soils encountered at the site during the preliminary site assessment consisted predominantly of tan/grey mottled, sandy, silty clay.

Groundwater was encountered in borings SB-1 through SB-5 during construction of the borings at depths ranging from 6 to 7 feet bgs. Based on the USGS topographic map presented as Figure 1, the site is located approximately 105 feet above mean sea level. The topography in Figure 1 indicates that groundwater in the vicinity of Parcel 28 most likely flows in a southwesterly direction towards Stony Creek.

4.0 Subsurface Investigation

To evaluate the presence or absence of USTs and/or impact to subsurface soil within the NCDOT ROWs of Parcel 28, GEL performed a limited site assessment that consisted of the following tasks:

- Performance of a geophysical investigation to identify the presence or absence of USTs and associated appurtenances within the easterly ROW of Country Club Road and the southerly ROW of Overton Drive at Parcel 28.
- Soil vapor screening of soil samples collected from subsurface soil borings at Parcel 28 within the easterly ROW of Country Club Road and the southerly ROW of Overton Drive to evaluate the potential presence or absence of soil impact from petroleum constituents of concern.
- Collection and laboratory analysis of soil samples from the easterly ROW of Country Club Road and the southerly ROW of Overton Drive.

The details of these tasks are discussed in the following sections.

4.1 Geophysical Survey

The geophysical survey included the deployment of ground penetrating radar (GPR) technology and time domain electromagnetic technology (TDEM) to the site. These technologies were used in concert with one another in order to identify subsurface metallic anomalies and, more specifically, to identify the potential presence of USTs within the investigation area. A brief description of each technology is presented in the

following paragraphs followed by a discussion of the results of the geophysical investigation.

4.1.1 Ground Penetrating Radar Methodology

A RAMAC digital radar control system configured with a 250 Megahertz (MHz) antenna array was used in this investigation. GPR is an electromagnetic geophysical method that detects interfaces between subsurface materials with differing dielectric constants. The GPR system consists of an antenna that houses the transmitter and receiver, a digital control unit that both generates and digitally records the GPR data, and a color video monitor to view data as they are collected in the field.

The transmitter radiates repetitive short-duration electromagnetic waves (at radar frequencies) into the earth from an antenna moving across the ground surface. These radar waves are reflected back to the receiver from the interface of materials with different dielectric constants. The intensity of the reflected signal is a function of the contrast in the dielectric constant between the materials, the conductivity of the material through which the wave is traveling, and the frequency of the signal. Subsurface features that commonly cause such reflections are: 1) natural geologic conditions, such as changes in sediment composition, bedding, and cementation horizons and voids; or 2) unnatural changes to the subsurface, such as disturbed soils, soil backfill, buried debris, tanks, pipelines, and utilities. The digital control unit processes the signal from the receiver and produces a continuous cross-section of the subsurface interface reflection events.

GPR data profiles are collected along transects, which are measured paths along which the GPR antenna is moved. During a survey, marks are placed in the data by the operator at designated points along the GPR transects or with a survey wheel odometer. These marks allow for a correlation between the GPR data and the position of the GPR antenna on the ground.

Depth of investigation of the GPR signal is highly site-specific and is limited by signal attenuation (absorption) in the subsurface materials. Signal attenuation is dependent on the electrical conductivity of the subsurface materials. Signal attenuation is greatest in materials with relatively high electrical conductivities, such as clays, brackish groundwater, or groundwater with a high dissolved solid content from natural or man-

made sources. Signal attenuation is lowest in relatively low-conductivity materials, such as dry sand or rock. Depth of investigation is also dependent on the antenna's transmitting frequency. Depth of investigation generally increases as transmitting frequency decreases; however, the ability to resolve smaller subsurface features is diminished as frequency is decreased.

The GPR antenna used at this site is internally shielded from aboveground interference sources. Accordingly, the GPR response is not affected by overhead power lines, metallic buildings, or nearby objects.

4.1.2 Time Domain Electromagnetic Methodology

The TDEM methods measure the electrical conductivity of subsurface materials. The conductivity is determined by inducing (from a transmitter) a time or frequency-varying magnetic field and measuring (with a receiver) the amplitude and phase shift of an induced secondary magnetic field. The secondary magnetic field is created by subsurface conductive materials behaving as an inductor as the primary magnetic field is passed through them.

The Geonics EM-61 system used in this investigation operates within these principles. However, the EM-61 TDEM system can discriminate between moderately conductive earth materials and very conductive metallic targets. The EM-61 consists of a portable coincident loop time domain transmitter and receiver with a 0.5-meter by 1.0-meter coil system. The EM-61 generates 150 pulses per second and measures the response from the ground after transmission or between pulses. The secondary EM responses from metallic targets are of longer duration than those created by conductive earth materials. By recording the later time EM arrivals, only the response from metallic targets is measured, rather than the field generated by the earth material.

4.1.3 Field Procedures

The GPR and TDEM field investigation was performed on August 26-27, 2013, within the landscaped easterly ROW of Country Club Road and southerly ROW of Overton Drive adjacent to Parcel 28, as shown in Figure 3. A GPR system time range setting of 90 nanoseconds (ns) was used during the entire investigation. This range was determined after a series of test lines were conducted to evaluate the GPR response in the local geologic section. Interpretation of the GPR data was conducted in the field and any

potential anomalies were marked in the field. GPR data processing typically included band pass filtering, background removal, horizontal smoothing, and gain adjustments. TDEM was also used to scan the project site. Any electromagnetic anomalies indicative of buried metallic objects were marked in the field.

It should be noted that "One Call" underground utility locations had been performed within the easterly ROW of Country Club road and the southerly ROW of Overton Drive at Parcel 28 prior to the initiation of the preliminary site assessment field activities at the site. A minimal number of underground utilities were marked by "One Call" within the ROWs.

As shown on Figure 3, a large EM-61 anomaly was identified in the concrete driveway for the site on Country Club Road. The anomaly is interpreted as an EM-61 response to the steel reinforcement rebar used as part of the construction of the driveway. Another, smaller anomaly was identified along the pavement of Overton Drive, as shown in Figure 3. The anomaly location corresponds with the location of an existing reinforced concrete culvert underlying Overton Drive. The anomaly is interpreted as an EM-61 response to the steel reinforcement rebar used as part of the culvert's construction. The TDEM and GPR data did not indicate the presence of "Known USTs," "Probable USTs," or "Possible USTs" in the subsurface of the investigation area. Additionally, there was no visual evidence of USTs in the investigation area.

4.2 Subsurface Soil Investigation

To evaluate the presence or absence of impact to subsurface soil by constituents of concern, GEL collected soil samples from three subsurface soil borings, SB-1 through SB-8, at Parcel 28 on September 10, 2013, for analysis of total petroleum hydrocarbon indicator parameters. The soil borings were constructed within the easterly ROW of Country Club Road, as shown on Figure 2. The longitude and latitude coordinates for the boring locations are listed in the table below, and photographs of the boring locations in presented in Appendix I.

All borings were advanced to a total depth of 8 feet below ground surface (bgs). Soil samples were collected at 3-4 feet and 7-8 feet from each borehole. All soil samples were inspected for indications of impact by constituents of concern, including petroleum hydrocarbons, such as odors, discoloration, or visible sheen. This sampling

was accomplished using direct push technology (DPT) provided by Regional Probing Services of Wake Forest, North Carolina (Regional Probing). Soil boring lithologic logs are attached as Appendix II of this document. Groundwater was encountered in borings SB-1 through SB-5 during construction of the borings at depths ranging from 6 to 7 feet bgs.

The soil samples were screened for the presence of organic vapors using a portable photoionization detector (PID). The PID measures the concentration of organic compounds in the vapor space above a soil sample resulting from volatilization of organic compounds contained in the soil. To screen the soils, each sample was placed in a clean, resealable polyethylene bag. The bag was sealed, and the sample was allowed to equilibrate for approximately 5 minutes, after which time a small opening was made in the bag. The probe of the PID was then inserted into the bag, and the airspace above the soil was screened for organic vapors.

To assess the subsurface soil quality, one soil sample was collected from each soil boring at the sampled depth interval with the highest PID reading and submitted for laboratory analysis. The depth intervals and PID measurements of the collected soil samples submitted to the laboratory for analysis are listed below.

**Summary of Location Data and PID Measurements
for Soil Samples Collected for Analysis at Parcel 28**

Soil Boring	Depth Interval of Soil Sample Collected for Analysis (feet bgs)	PID Reading (ppm)	Latitude/Longitude (NAD83)
SB-1	7-8	4.4	35°58'10.62"N / 77°49'29.52"W
SB-2	7-8	4.9	35°58'11.10"N / 77°49'29.10"W
SB-3	3-4	11.9	35°58'12.12"N / 77°49'28.02"W
SB-4	3-4	5.6	35°58'10.56"N / 77°49'24.78"W
SB-5	7-8	19.2	35°58'11.28"N / 77°49'26.52"W
SB-6	7-8	0.0	35°58'10.86"N / 77°49'25.26"W
SB-7	7-8	0.0	35°58'10.56"N / 77°49'24.60"W
SB-8	7-8	0.0	35°58'10.26"N / 77°49'23.76"W

Notes:

- 1) Coordinates are based on North American Datum of 1983 (NAD83)
- 2) bgs = below ground surface
- 3) PID = photoionization detector
- 4) ppm = parts per million

Following completion of the soil sampling activities, all borings were abandoned by filling the boreholes with soil cuttings and hydrated bentonite. Soil samples were submitted to Pace Analytical Services, Inc. in Huntersville, North Carolina for analysis of diesel range organics (DRO) by EPA Method 8015 with EPA Method 3545 sample preparation, and gasoline range organics (GRO) by EPA Method 8015 with EPA Method 5035A/5030B sample preparation. The analytical results are included on the Certificates of Analysis provided in Appendix III. The results indicate that neither DRO nor GRO were detected in any of the soil samples collected from borings SB-1 through SB-8.

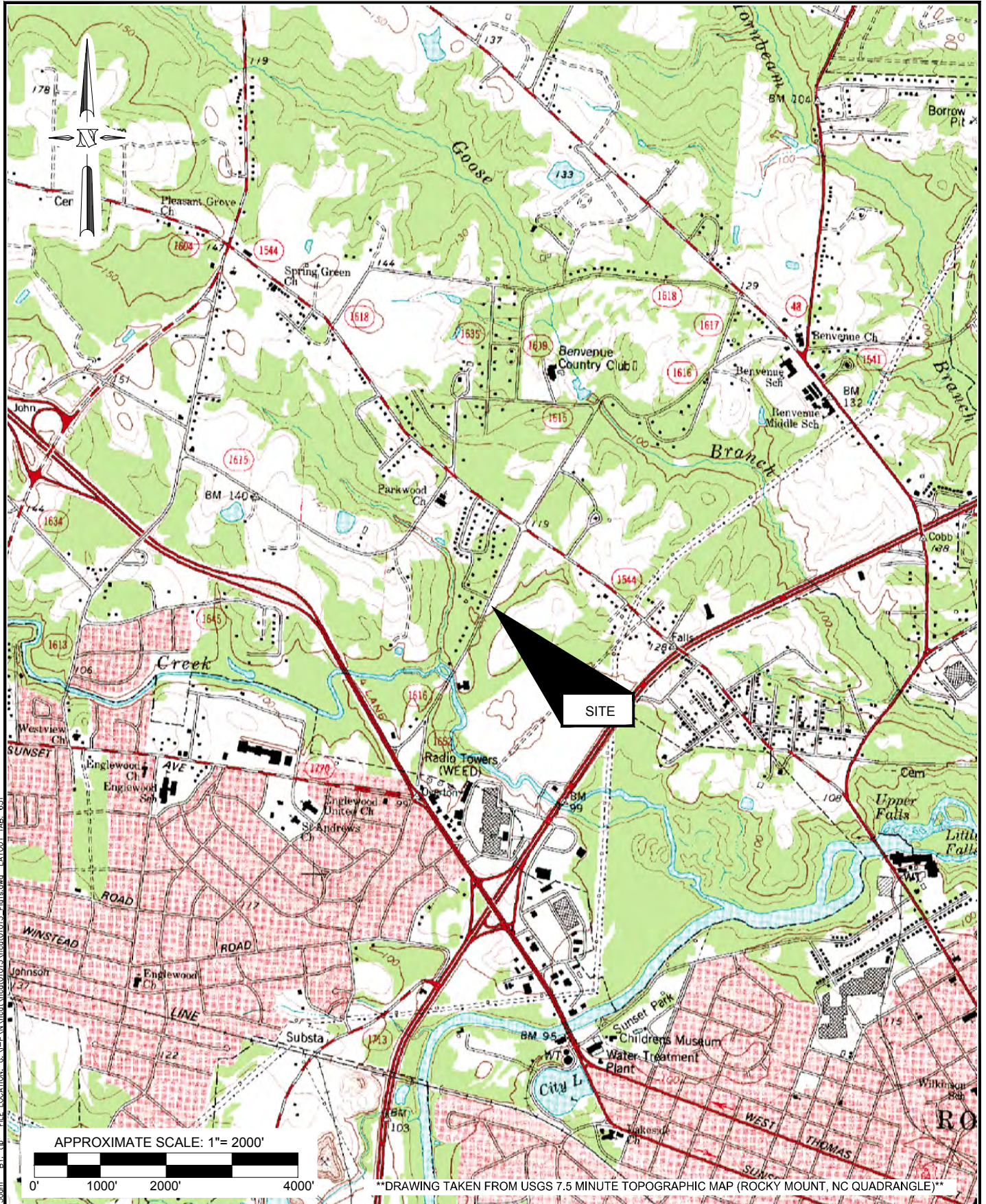
5.0 Conclusions and Recommendations

GEL performed a preliminary site assessment within the NCDOT easterly ROW of Country Club Road adjacent to Parcel 28 that included a geophysical investigation, and the collection and analysis of soil samples. No subsurface anomalies indicative of suspected or known USTs were identified within the investigation area, and it has been concluded that there are no USTs present within the easterly ROW of Country Club Road or the southerly ROW of Overton Drive adjacent to the site.

Soil samples were collected for analysis from eight borings constructed within the investigation area, and analyzed for DRO and GRO. Neither DRO nor GRO was detected in any of the collected soil samples.

Based on the soil data generated from this investigation, there is no evidence that a release of constituents of concern has occurred within the investigation area at Parcel 28. No additional environmental investigation of the soil or groundwater at the site is recommended at this time.

FIGURES



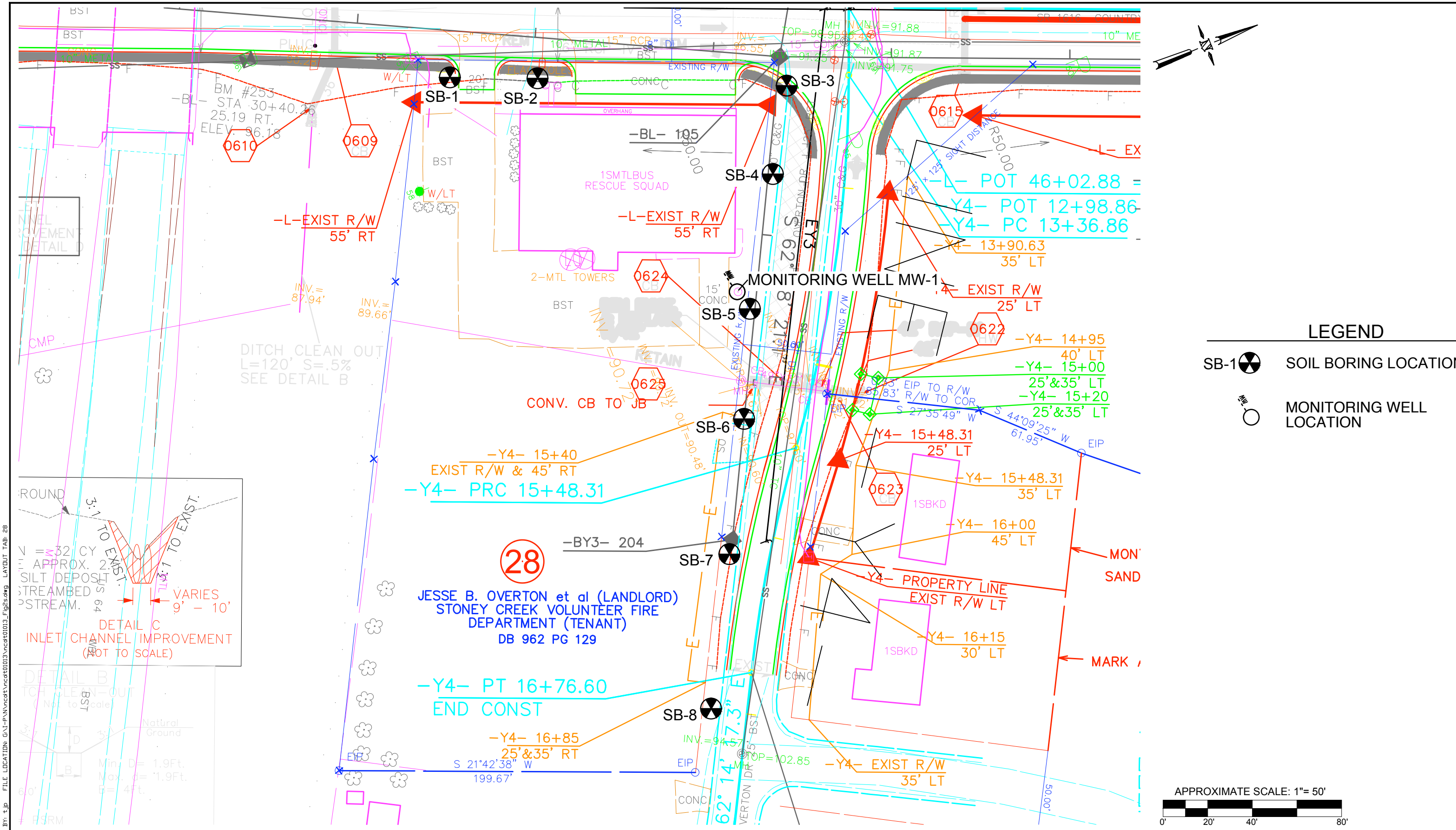
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PROJECT: ncd01013
PRELIMINARY SITE ASSESSMENT REPORT PARCEL 28 651 COUNTRY CLUB ROAD ROCKY MOUNT, NORTH CAROLINA STATE PROJECT U-3331, WBS ELEMENT #34927.1.1 NASH COUNTY
DATE: September 24, 2013

SITE LOCATION MAP	DRAWN BY: TJP	APPRV. BY: ADE
----------------------	---------------	----------------

FIGURE 1



LEGEND

- SB-1 SOIL BORING LOCATION
- MW-1 MONITORING WELL LOCATION

DETAIL C
INLET CHANNEL IMPROVEMENT
(NOT TO SCALE)

VARIES 9' - 10'

3:1 TO EXIST.
7:1 TO EXIST.

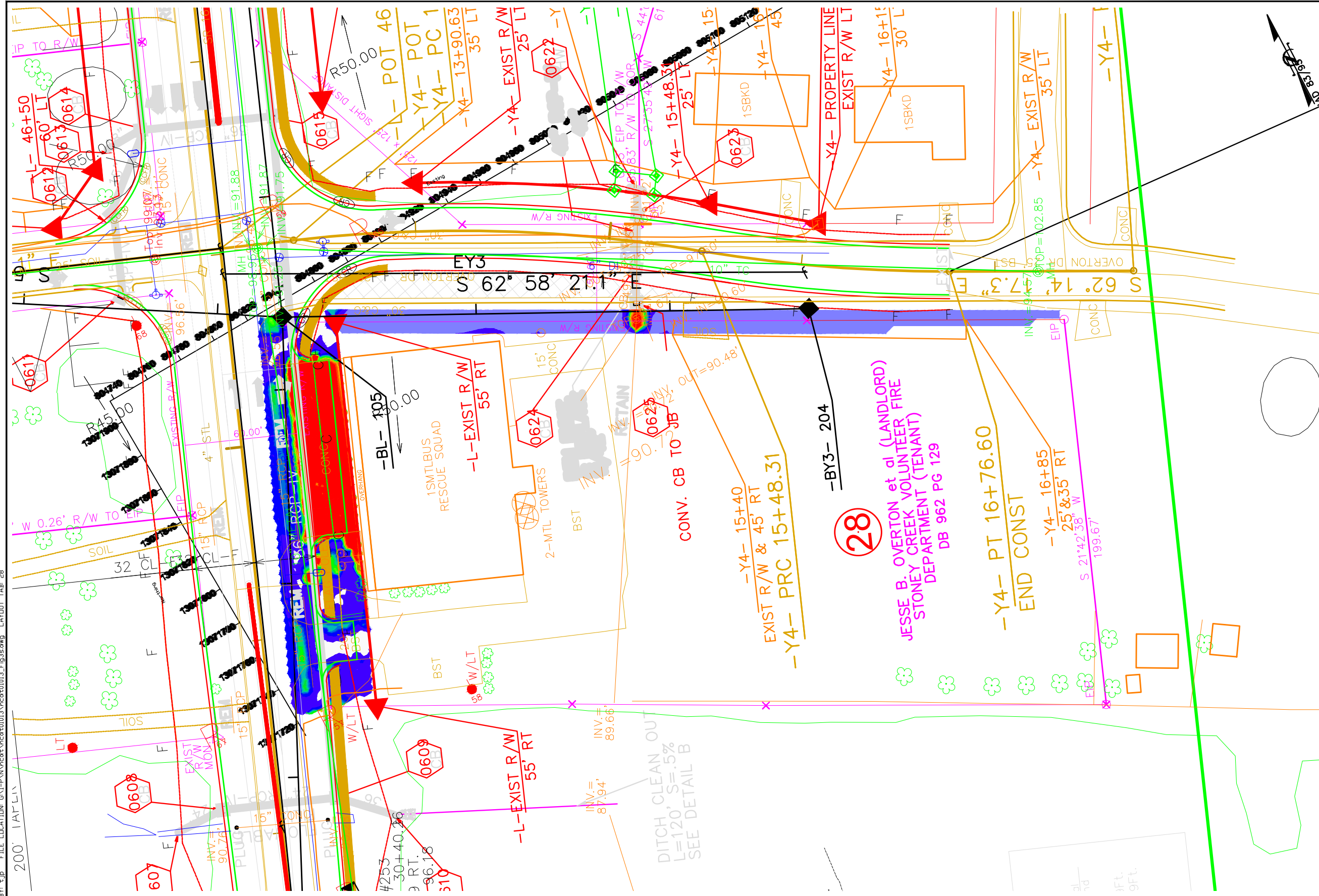
DETAIL B
DITCH CLEAN-OUT
(NOT TO SCALE)

Natural Ground

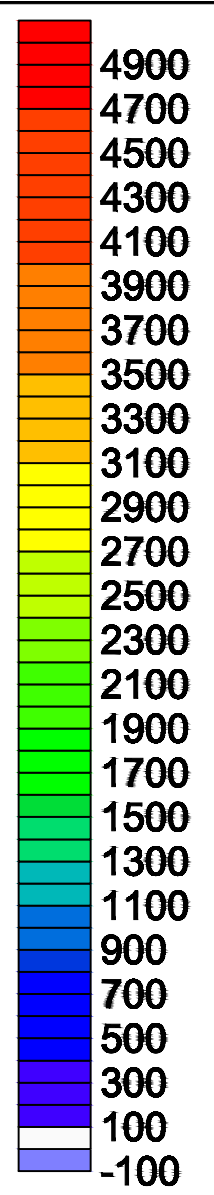
Min. D = 1.9Ft.
Max. d = 1.9Ft.
B = 4ft.

<p>GEL Engineering of NC Inc. an Affiliate of THE GEL GROUP INC ENVIRONMENTAL ■ ENGINEERING ■ SURVEYING</p> <p>Post Office Box 14262 Research Triangle Park, NC 27709 P 919-544-1100 F 919-406-1807 www.gel.com</p>	<p>PROJECT: ncdt01013</p>	<p>SITE MAP SHOWING LOCATIONS OF SOIL BORINGS AND EXISTING GROUNDWATER MONITORING WELL</p>	<p>FIGURE 2</p>	
	<p>PRELIMINARY SITE ASSESSMENT REPORT 651 COUNTRY CLUB DRIVE, PARCEL 28 ROCKY MOUNT, NASH COUNTY, NC STATE PROJECT U-3331, WBS ELEMENT #34927.1.1</p>			<p>DRAWN BY: TJP APPRV. BY: ADE</p>
	<p>DATE: October 28, 2013</p>			<p>problem solved</p>

BY: tjp FILE LOCATION: G:\I-P\N\ncat\ncdt01013\Fig3a.dwg LAYOUT: TAB: 28 PLOTTED: Oct 21, 2013 - 14:7pm

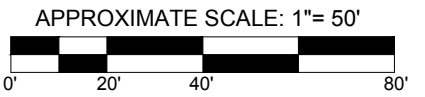


EM Response in mV CH-1



NOTES

- 1) UNDERGROUND FEATURES WERE LOCATED USING VISUAL EVIDENCE, GROUND PENETRATING RADAR (GPR), AND TIME DOMAIN ELECTROMAGNETIC (TDEM) METHODS. OTHER BURIED UTILITIES AND STRUCTURES MAY EXIST BUT WERE NOT DETECTED DUE TO LIMITATIONS OF THE GEOPHYSICAL METHODS, SITE ACCESS, AND/OR HIGH TARGET CONGESTION. THEREFORE, DUE CAUTION SHOULD BE USED WHEN PERFORMING SUBSURFACE EXCAVATION ACTIVITIES WHERE POTENTIAL CONFLICTS EXIST. GEL ENGINEERING OF NC, INC. IS NOT RESPONSIBLE FOR DAMAGES THAT MAY OCCUR. IDENTIFYING THE LOCATION OF SOME UTILITIES MAY ONLY BE POSSIBLE WITH VACUUM OR OTHER EXCAVATION METHODS.
- 2) FIELD SURVEY CONDUCTED ON 8.26.13 AND 8.27.13.
- 3) DATA FROM GEONICS, LTD. EM-61 MKII AND MALA GEOSCIENCE GROUND PENETRATING RADAR.



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problem solved

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PROJECT: ncdt01013	SITE MAP SHOWING RESULTS OF GEOPHYSICAL INVESTIGATION	FIGURE 3
PRELIMINARY SITE ASSESSMENT REPORT 651 COUNTRY CLUB DRIVE, PARCEL 28 ROCKY MOUNT, NASH COUNTY, NC STATE PROJECT U-3331, WBS ELEMENT #34927.1.1		
DATE: October 17, 2013	DRAWN BY: TJP	APPRV. BY: ADE

APPENDICES

APPENDIX I
PHOTOGRAPHS



Photograph 1: View looking north at soil boring locations, SB-1 and SB-2.



Photograph 2: View looking east at soil boring locations SB-3 and SB-4.



Photograph 3: View looking south at soil boring location SB-5 and monitoring Well MW-1.



Photograph 4: View looking southwest at soil boring locations SB-6, SB-7, and SB-8

APPENDIX II

SOIL BORING LITHOLOGIC LOGS

SOIL BORING LOG

Boring/Well No.: **SB-1**
 Date Started: 09/10/13
 Date Completed: 09/10/13

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 2.0'	--	--	Brown/tan loamy, sandy topsoil/fill; dry to damp; friable; no odor	SM
2	3.0' - 4.0'	--	1.3	Tan/grey mottled silty clay; firm, dense; dry; no odor	CL
3	4.0' - 6.5'	--	--	Same	CL
4	6.5' - 7.0'	--	--	Tan/grey medium to coarse-grained sand; poorly graded; wet; no odor	SP
5	7.0' - 8.0'	--	4.4	Grey/orange mottled clay; firm, dense; damp to wet; no odor	CL
6					
7				Total depth = 8 feet below land surface	
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at 3.0' to 4.0' and 7.0' to 8.0'.

SOIL BORING LOG

Boring/Well No.: **SB-2**
 Date Started: 09/10/13
 Date Completed: 09/10/13

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 2.0'	--	--	Brown/tan loamy, sandy topsoil/fill; dry to damp; friable; no odor	SM
2	3.0' - 4.0'	--	2.2	Tan/grey mottled silty clay; firm, dense; dry; no odor	CL
3	4.0' - 6.5'	--	--	Same	CL
4	6.5' - 7.0'	--	--	Tan/grey medium to coarse-grained sand; moderately graded; wet; no odor	SP
5	7.0' - 8.0'	--	4.9	Grey/orange mottled clay; firm, dense; damp; no odor	CL
6					
7				Total depth = 8 feet below land surface	
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at 3.0' to 4.0' and 7.0' to 8.0'.

SOIL BORING LOG

Boring/Well No.: **SB-3**
 Date Started: 09/10/13
 Date Completed: 09/10/13

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 2.0'	--	--	Brown /tan loamy, sandy topsoil/fill; dry to damp; friable; no odor	SM
2	3.0' - 4.0'	--	11.9	Tan/grey mottled silty clay; firm, dense; dry; no odor	CL
3	4.0' - 7.0'	--	--	Same, with 2" thick stratum of tan/grey medium to coarse-grained sand at 6.0'; dry; no odor	CL/SP
4	7.0' - 8.0'	--	9.7	Grey/orange mottled clay; firm, dense; wet; no odor	CL
5					
6				Total depth = 8 feet below land surface	
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at 3.0' to 4.0' and 7.0' to 8.0'.

SOIL BORING LOG

Boring/Well No.: **SB-4**
 Date Started: 09/10/13
 Date Completed: 09/10/13

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 3.0'	--	--	Brown sandy, silty topsoil/fill; dry, friable; no odor	SM
2	3.0' - 4.0'	--	5.6	Grey clay; firm, dense; dry; no odor	CL
3	4.0' - 6.5'	--	--	Tan/orange mottled clay; firm, dense; damp; no odor	CL
4	6.5' - 7.5'	--	--	Orange fat clay with coarse sand; wet; no odor	CH
5	7.5' - 8.0'	--	3.4	Tan/orange mottled clay; firm, dense; damp to wet; no odor	CL
6					
7				Total depth = 8 feet below land surface	
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at 3.0' to 4.0' and 7.0' to 8.0'.

SOIL BORING LOG

Boring/Well No.: **SB-5**
 Date Started: 09/10/13
 Date Completed: 09/10/13

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 0.5'	--	--	Brown topsoil; friable; dry; no odor	SM
2	0.5' - 2.0'	--	--	Tan/white fine silt; friable, dry, no odor	ML
3	2.0' - 4.0'	--	1.8	Tan/orange coarse sand/silt/clay; friable; damp; no odor	SC
4	4.0' - 4.5'	--	--	Same, but with more clay	SC/CL
5	4.5' - 6.5'	--	--	Tan silty fine-grained sand; wet, friable, no odor	SM
6	6.5' - 8.0'	--	19.2	Grey clay with coarse sand; very firm/stiff, dense, damp; slight old petroleum odor	CL
7					
8				Total depth = 8 feet below land surface	
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at 3.0' to 4.0' and 7.0' to 8.0'.

SOIL BORING LOG

Boring/Well No.: **SB-6**
 Date Started: 09/10/13
 Date Completed: 09/10/13

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 3.0'	--	--	Tan sandy silt; dry, friable; no odor	SM
2	3.0' - 4.0'	--	0.0	Brown sandy silt; friable to firm; dry; no odor	SM
3	4.0' - 5.0'	--	--	Tan/grey mottled fat clay; dry; no odor	CL
4	5.0' - 8.0'	--	0.0	Grey sandy, silty clay; stiff/firm, dense, damp; no odor	CL
5					
6				Total depth = 8 feet below land surface	
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at 3.0' to 4.0' and 7.0' to 8.0'.

SOIL BORING LOG

Boring/Well No.: **SB-7**
 Date Started: 09/10/13
 Date Completed: 09/10/13

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 2.0'	--	--	Tan silt; dry, friable; no odor	SM
2	2.0' - 4.0'	--	0.0	Tan clayey silt; stiff/firm, dense; dry, no odor	SM/ML
3	4.0' - 6.0'	--	--	Tan silty fine-grained sand; friable; dry; no odor	SM
4	6.0' - 8.0'	--	0.0	Orange/brown clayey, coarse sand; friable; wet at 7.5 feet; no odor	SC
5					
6				Total depth = 8 feet below land surface	
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at 3.0' to 4.0' and 7.0' to 8.0'.

SOIL BORING LOG

Boring/Well No.: **SB-8**

Date Started: 09/10/13

Date Completed: 09/10/13

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 3.0'	--	--	Tan silt; dry, friable; no odor	SM
2	3.0' - 4.0'	--	0.0	Tan clayey silt; stiff/firm, dense; dry, no odor	SM/ML
3	4.0' - 6.0'	--	--	Tan silty fine-grained sand; friable; dry; no odor	SM
4	6.0' - 8.0'	--	0.0	Tan/orange mottled clay; firm, dense; dry; no odor	CL
5					
6				Total depth = 8 feet below land surface	
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous cores using DPT.
- 2) PID readings shown are for discrete samples collected at 3.0' to 4.0' and 7.0' to 8.0'.

APPENDIX III

**CERTIFICATES OF ANALYSIS AND
CHAIN OF CUSTODY RECORD FOR SOIL SAMPLES**

September 23, 2013

Andrew Eyer
NCDOT North East

RE: Project: WBS #34927.1.1 NASH CO.
Pace Project No.: 92171843

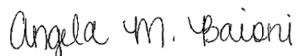
Dear Andrew Eyer:

Enclosed are the analytical results for sample(s) received by the laboratory on September 11, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Angela Baioni

angela.baioni@pacelabs.com
Project Manager

Enclosures

cc: Chemical Testing Engineer, NCDOT



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CERTIFICATIONS

Project: WBS #34927.1.1 NASH CO.
Pace Project No.: 92171843

Charlotte Certification IDs

9800 Kinsey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001

Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

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SAMPLE ANALYTE COUNT

Project: WBS #34927.1.1 NASH CO.

Pace Project No.: 92171843

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92171843001	SB-1	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92171843002	SB-2	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92171843003	SB-3	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92171843004	SB-4	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92171843005	SB-5	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92171843006	SB-6	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92171843007	SB-7	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C
92171843008	SB-8	EPA 8015 Modified	EJK	2	PASI-C
		EPA 8015 Modified	GAW	2	PASI-C
		ASTM D2974-87	TNM	1	PASI-C

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HITS ONLY

Project: WBS #34927.1.1 NASH CO.
Pace Project No.: 92171843

Lab Sample ID Method	Client Sample ID Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
92171843001	SB-1					
ASTM D2974-87	Percent Moisture	20.0 %		0.10	09/13/13 15:29	
92171843002	SB-2					
ASTM D2974-87	Percent Moisture	12.0 %		0.10	09/13/13 15:29	
92171843003	SB-3					
ASTM D2974-87	Percent Moisture	16.3 %		0.10	09/13/13 15:29	
92171843004	SB-4					
ASTM D2974-87	Percent Moisture	10.2 %		0.10	09/13/13 15:30	
92171843005	SB-5					
ASTM D2974-87	Percent Moisture	12.9 %		0.10	09/13/13 15:30	
92171843006	SB-6					
ASTM D2974-87	Percent Moisture	10.9 %		0.10	09/17/13 16:32	
92171843007	SB-7					
ASTM D2974-87	Percent Moisture	13.3 %		0.10	09/17/13 16:32	
92171843008	SB-8					
ASTM D2974-87	Percent Moisture	21.5 %		0.10	09/17/13 16:33	

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ANALYTICAL RESULTS

Project: WBS #34927.1.1 NASH CO.

Pace Project No.: 92171843

Sample: SB-1 **Lab ID: 92171843001** Collected: 09/10/13 12:13 Received: 09/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel		Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546						
Diesel Components	ND	mg/kg	6.2	1	09/11/13 17:06	09/12/13 19:47	68334-30-5	
Surrogates								
n-Pentacosane (S)	87	%	41-119	1	09/11/13 17:06	09/12/13 19:47	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.7	1	09/18/13 09:25	09/18/13 14:49	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	80	%	70-167	1	09/18/13 09:25	09/18/13 14:49	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	20.0	%	0.10	1		09/13/13 15:29		

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ANALYTICAL RESULTS

Project: WBS #34927.1.1 NASH CO.

Pace Project No.: 92171843

Sample: SB-2 **Lab ID: 92171843002** Collected: 09/10/13 12:50 Received: 09/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel		Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546						
Diesel Components	ND	mg/kg	5.7	1	09/11/13 17:06	09/12/13 19:47	68334-30-5	
Surrogates								
n-Pentacosane (S)	99 %		41-119	1	09/11/13 17:06	09/12/13 19:47	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.5	1	09/18/13 09:25	09/18/13 15:12	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	80 %		70-167	1	09/18/13 09:25	09/18/13 15:12	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	12.0 %		0.10	1		09/13/13 15:29		

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ANALYTICAL RESULTS

Project: WBS #34927.1.1 NASH CO.

Pace Project No.: 92171843

Sample: SB-3 **Lab ID: 92171843003** Collected: 09/10/13 13:21 Received: 09/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel		Analytical Method: EPA 8015 Modified		Preparation Method: EPA 3546				
Diesel Components	ND	mg/kg	6.0	1	09/11/13 17:06	09/12/13 20:10	68334-30-5	
Surrogates								
n-Pentacosane (S)	112	%	41-119	1	09/11/13 17:06	09/12/13 20:10	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified		Preparation Method: EPA 5035A/5030B				
Gasoline Range Organics	ND	mg/kg	6.3	1	09/18/13 09:25	09/18/13 15:35	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	86	%	70-167	1	09/18/13 09:25	09/18/13 15:35	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	16.3	%	0.10	1		09/13/13 15:29		

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ANALYTICAL RESULTS

Project: WBS #34927.1.1 NASH CO.
 Pace Project No.: 92171843

Sample: SB-4 **Lab ID: 92171843004** Collected: 09/10/13 13:55 Received: 09/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel		Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546						
Diesel Components	ND	mg/kg	5.6	1	09/11/13 17:06	09/12/13 20:10	68334-30-5	
Surrogates								
n-Pentacosane (S)	100	%	41-119	1	09/11/13 17:06	09/12/13 20:10	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.0	1	09/18/13 09:25	09/18/13 15:57	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	85	%	70-167	1	09/18/13 09:25	09/18/13 15:57	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	10.2	%	0.10	1		09/13/13 15:30		

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ANALYTICAL RESULTS

Project: WBS #34927.1.1 NASH CO.

Pace Project No.: 92171843

Sample: SB-5 **Lab ID: 92171843005** Collected: 09/10/13 14:30 Received: 09/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel		Analytical Method: EPA 8015 Modified		Preparation Method: EPA 3546				
Diesel Components	ND	mg/kg	5.7	1	09/11/13 17:06	09/12/13 20:33	68334-30-5	
Surrogates								
n-Pentacosane (S)	94	%	41-119	1	09/11/13 17:06	09/12/13 20:33	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified		Preparation Method: EPA 5035A/5030B				
Gasoline Range Organics	ND	mg/kg	5.2	1	09/18/13 09:25	09/18/13 16:20	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	84	%	70-167	1	09/18/13 09:25	09/18/13 16:20	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	12.9	%	0.10	1		09/13/13 15:30		

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ANALYTICAL RESULTS

Project: WBS #34927.1.1 NASH CO.

Pace Project No.: 92171843

Sample: SB-6 **Lab ID: 92171843006** Collected: 09/10/13 15:05 Received: 09/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel		Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546						
Diesel Components	ND	mg/kg	5.6	1	09/11/13 17:06	09/12/13 20:33	68334-30-5	
Surrogates								
n-Pentacosane (S)	97 %		41-119	1	09/11/13 17:06	09/12/13 20:33	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.0	1	09/18/13 09:25	09/18/13 16:43	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	88 %		70-167	1	09/18/13 09:25	09/18/13 16:43	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	10.9 %		0.10	1		09/17/13 16:32		

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ANALYTICAL RESULTS

Project: WBS #34927.1.1 NASH CO.

Pace Project No.: 92171843

Sample: SB-7 **Lab ID: 92171843007** Collected: 09/10/13 15:48 Received: 09/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel		Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546						
Diesel Components	ND	mg/kg	5.8	1	09/11/13 17:06	09/12/13 20:56	68334-30-5	
Surrogates								
n-Pentacosane (S)	82	%	41-119	1	09/11/13 17:06	09/12/13 20:56	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.1	1	09/18/13 09:25	09/18/13 17:07	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	88	%	70-167	1	09/18/13 09:25	09/18/13 17:07	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	13.3	%	0.10	1		09/17/13 16:32		

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ANALYTICAL RESULTS

Project: WBS #34927.1.1 NASH CO.
 Pace Project No.: 92171843

Sample: SB-8 **Lab ID: 92171843008** Collected: 09/10/13 16:09 Received: 09/11/13 15:40 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel		Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546						
Diesel Components	ND	mg/kg	6.4	1	09/11/13 17:06	09/12/13 20:56	68334-30-5	
Surrogates								
n-Pentacosane (S)	88 %		41-119	1	09/11/13 17:06	09/12/13 20:56	629-99-2	
Gasoline Range Organics		Analytical Method: EPA 8015 Modified Preparation Method: EPA 5035A/5030B						
Gasoline Range Organics	ND	mg/kg	5.6	1	09/18/13 09:25	09/18/13 17:30	8006-61-9	
Surrogates								
4-Bromofluorobenzene (S)	84 %		70-167	1	09/18/13 09:25	09/18/13 17:30	460-00-4	
Percent Moisture		Analytical Method: ASTM D2974-87						
Percent Moisture	21.5 %		0.10	1		09/17/13 16:33		

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QUALITY CONTROL DATA

Project: WBS #34927.1.1 NASH CO.
Pace Project No.: 92171843

QC Batch: GCV/7305 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 5035A/5030B Analysis Description: Gasoline Range Organics
Associated Lab Samples: 92171843001, 92171843002, 92171843003, 92171843004, 92171843005, 92171843006, 92171843007, 92171843008

METHOD BLANK: 1048949 Matrix: Solid
Associated Lab Samples: 92171843001, 92171843002, 92171843003, 92171843004, 92171843005, 92171843006, 92171843007, 92171843008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Gasoline Range Organics	mg/kg	ND	6.0	09/18/13 11:47	
4-Bromofluorobenzene (S)	%	84	70-167	09/18/13 11:47	

LABORATORY CONTROL SAMPLE: 1048950

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Gasoline Range Organics	mg/kg	50	55.3	111	70-165	
4-Bromofluorobenzene (S)	%			83	70-167	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1048951 1048952

Parameter	Units	92171841001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	mg/kg	7.9	42.4	42.4	57.3	61.3	117	126	47-187	7	
4-Bromofluorobenzene (S)	%						87	83	70-167		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1048953 1048954

Parameter	Units	92171841003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Gasoline Range Organics	mg/kg	6.2	40.3	40.3	58.1	54.6	129	120	47-187	6	
4-Bromofluorobenzene (S)	%						87	87	70-167		

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QUALITY CONTROL DATA

Project: WBS #34927.1.1 NASH CO.

Pace Project No.: 92171843

QC Batch: OEXT/23812 Analysis Method: EPA 8015 Modified
 QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
 Associated Lab Samples: 92171843001, 92171843002, 92171843003, 92171843004, 92171843005, 92171843006, 92171843007, 92171843008

METHOD BLANK: 1045409 Matrix: Solid
 Associated Lab Samples: 92171843001, 92171843002, 92171843003, 92171843004, 92171843005, 92171843006, 92171843007, 92171843008

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diesel Components	mg/kg	ND	5.0	09/12/13 17:27	
n-Pentacosane (S)	%	84	41-119	09/12/13 17:27	

LABORATORY CONTROL SAMPLE: 1045410

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Components	mg/kg	66.7	53.4	80	49-113	
n-Pentacosane (S)	%			91	41-119	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1045411 1045412

Parameter	Units	92171745001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Diesel Components	mg/kg	ND	78.5	78.5	70.1	70.2	87	88	10-146	0	
n-Pentacosane (S)	%						91	88	41-119		

REPORT OF LABORATORY ANALYSIS

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Pace Analytical Services, Inc.
 205 East Meadow Road - Suite A
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 (336)623-8921

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 Asheville, NC 28804
 (828)254-7176

Pace Analytical Services, Inc.
 9800 Kinsey Ave. Suite 100
 Huntersville, NC 28078
 (704)875-9092

QUALITY CONTROL DATA

Project: WBS #34927.1.1 NASH CO.
 Pace Project No.: 92171843

QC Batch: PMST/5831 Analysis Method: ASTM D2974-87
 QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
 Associated Lab Samples: 92171843001, 92171843002, 92171843003, 92171843004, 92171843005

SAMPLE DUPLICATE: 1046642

Parameter	Units	92172053044 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	11.8	11.8	0	

SAMPLE DUPLICATE: 1046643

Parameter	Units	92171843005 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	12.9	12.7	1	

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QUALITY CONTROL DATA

Project: WBS #34927.1.1 NASH CO.
 Pace Project No.: 92171843

QC Batch: PMST/5835 Analysis Method: ASTM D2974-87
 QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
 Associated Lab Samples: 92171843006, 92171843007, 92171843008

SAMPLE DUPLICATE: 1048247

Parameter	Units	92172181007 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	17.8	16.6	7	

SAMPLE DUPLICATE: 1048248

Parameter	Units	92172133005 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	14.8	15.3	3	

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QUALIFIERS

Project: WBS #34927.1.1 NASH CO.
Pace Project No.: 92171843

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WBS #34927.1.1 NASH CO.

Pace Project No.: 92171843

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92171843001	SB-1	EPA 3546	OEXT/23812	EPA 8015 Modified	GCSV/15522
92171843002	SB-2	EPA 3546	OEXT/23812	EPA 8015 Modified	GCSV/15522
92171843003	SB-3	EPA 3546	OEXT/23812	EPA 8015 Modified	GCSV/15522
92171843004	SB-4	EPA 3546	OEXT/23812	EPA 8015 Modified	GCSV/15522
92171843005	SB-5	EPA 3546	OEXT/23812	EPA 8015 Modified	GCSV/15522
92171843006	SB-6	EPA 3546	OEXT/23812	EPA 8015 Modified	GCSV/15522
92171843007	SB-7	EPA 3546	OEXT/23812	EPA 8015 Modified	GCSV/15522
92171843008	SB-8	EPA 3546	OEXT/23812	EPA 8015 Modified	GCSV/15522
92171843001	SB-1	EPA 5035A/5030B	GCV/7305	EPA 8015 Modified	GCV/7315
92171843002	SB-2	EPA 5035A/5030B	GCV/7305	EPA 8015 Modified	GCV/7315
92171843003	SB-3	EPA 5035A/5030B	GCV/7305	EPA 8015 Modified	GCV/7315
92171843004	SB-4	EPA 5035A/5030B	GCV/7305	EPA 8015 Modified	GCV/7315
92171843005	SB-5	EPA 5035A/5030B	GCV/7305	EPA 8015 Modified	GCV/7315
92171843006	SB-6	EPA 5035A/5030B	GCV/7305	EPA 8015 Modified	GCV/7315
92171843007	SB-7	EPA 5035A/5030B	GCV/7305	EPA 8015 Modified	GCV/7315
92171843008	SB-8	EPA 5035A/5030B	GCV/7305	EPA 8015 Modified	GCV/7315
92171843001	SB-1	ASTM D2974-87	PMST/5831		
92171843002	SB-2	ASTM D2974-87	PMST/5831		
92171843003	SB-3	ASTM D2974-87	PMST/5831		
92171843004	SB-4	ASTM D2974-87	PMST/5831		
92171843005	SB-5	ASTM D2974-87	PMST/5831		
92171843006	SB-6	ASTM D2974-87	PMST/5835		
92171843007	SB-7	ASTM D2974-87	PMST/5835		
92171843008	SB-8	ASTM D2974-87	PMST/5835		

REPORT OF LABORATORY ANALYSIS

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Document Name: **Sample Condition Upon Receipt (SCUR)**
 Document Number: **F-CHR-CS-03-rev.11**

Page 1 of 2
 Issuing Authority:
 Pace Huntersville Quality Office

Client Name: GFC

Where Received: Huntersville Asheville Eden Raleigh

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Custody Seal on Cooler/Box Present: yes no Seals intact: yes no

Packing Material: Bubble Wrap Bubble Bags None Other _____

Thermometer Used: IR Gun T1102 T1301 Type of Ice: Wet Blue None Samples on ice, cooling process has begun

Temp Correction Factor T1102: No Correction T1301: No Correction

Corrected Cooler Temp.: 2.1 C Biological Tissue is Frozen: Yes No N/A

Temp should be above freezing to 6°C

Date and Initials of person examining contents: Comfor 9/11/13

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Pace Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix:		
All containers needing preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Samples checked for dechlorination:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	15.
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	16.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: _____ Field Data Required? Y / N
 Person Contacted: _____ Date/Time: _____
 Comments/ Resolution: _____

SCUR Review: AMB Date: 9-11-13
 SRF Review: AMB Date: 9-11-13

WO#: 92171843

 92171843
 (if no label available)

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. out of hold, incorrect preservative, out of temp, incorrect containers)

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

(05) COUNTRY CLUB RD.

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:		Page: <u>1</u> of <u>1</u> <div style="font-size: 1.5em; color: red; text-align: center;">1699422</div>	
Company: <u>GEL Eng of NC</u> Address: <u>P.O. Box 14262 RTP, NC 27709</u> Email To: <u>ade@gel.com</u> Phone: <u>919-323-8828</u> Fax: _____ Requested Due Date/TAT: <u>Normal</u>		Report To: <u>ade@gel.com</u> Copy To: _____ Purchase Order No.: <u>NC DOT WBS# 34927.1.1</u> Project Name: <u>NASH C. - 651 CNTRY. CLUB RD</u> Project Number: <u>U-3331 / NCDOT 01013</u>		Attention: _____ Company Name: <u>NCDOT</u> Address: _____ Pace Quote Reference: _____ Pace Project Manager: _____ Pace Profile #: <u>6096-1</u>		REGULATORY AGENCY <input type="checkbox"/> NPDES <input type="checkbox"/> GROUND WATER <input type="checkbox"/> DRINKING WATER <input type="checkbox"/> UST <input type="checkbox"/> RCRA <input checked="" type="checkbox"/> OTHER Site Location STATE: <u>NC</u>	

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE Drinking Water DW Water WT Waste Water WW Product P Soil/Solid SL Oil OL Wipe WP Air AR Tissue TS Other OT	Matrix Code (see valid codes to left)	Sample Type (G=GRAB C=COMP)	COLLECTED				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives							Analysis Test Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.	
					COMPOSITE START		COMPOSITE END/GRAB				Unpreserved	H ₂ SO ₄	HNO ₃	HCl	NaOH	Na ₂ S ₂ O ₅	Methanol					Other
					DATE	TIME	DATE	TIME														
1	<u>SB-1</u>		<u>SL</u>	<u>G</u>			<u>9/10/13</u>	<u>1213</u>		<u>4</u>	<u>2</u>								<u>001</u>			
2	<u>SB-2</u>						<u>9/10/13</u>	<u>1250</u>		<u>4</u>	<u>2</u>								<u>002</u>			
3	<u>SB-3</u>						<u>9/10/13</u>	<u>1321</u>		<u>4</u>	<u>2</u>								<u>003</u>			
4	<u>SB-4</u>						<u>9/10/13</u>	<u>1355</u>		<u>4</u>	<u>2</u>								<u>004</u>			
5	<u>SB-5</u>						<u>9/10/13</u>	<u>1430</u>		<u>4</u>	<u>2</u>								<u>005</u>			
6	<u>SB-6</u>						<u>9/10/13</u>	<u>1505</u>		<u>4</u>	<u>2</u>								<u>006</u>			
7	<u>SB-7</u>						<u>9/10/13</u>	<u>1548</u>		<u>4</u>	<u>2</u>								<u>007</u>			
8	<u>SB-8</u>						<u>9/10/13</u>	<u>1609</u>		<u>4</u>	<u>2</u>								<u>008</u>			

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS	
	<u>Andrew Eyer</u> / <u>GEL</u>	<u>9/11/13</u>	<u>1020</u>	<u>[Signature]</u> / <u>Pace</u>	<u>9/11/13</u>	<u>1020</u>		
	<u>[Signature]</u> / <u>the</u>	<u>9/10/13</u>	<u>1540</u>	<u>[Signature]</u> / <u>cap</u>	<u>9/11/13</u>	<u>1540</u>	<u>[Signature]</u>	<u>gr</u>

SAMPLER NAME AND SIGNATURE	Temp in °C	Received on ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER: <u>ANDREW EYER</u>				
SIGNATURE of SAMPLER: <u>[Signature]</u>				
DATE Signed (MM/DD/YY): <u>09/11/13</u>				

ORIGINAL

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.