

PRELIMINARY SITE ASSESSMENT REPORT

**Parcel #13
Lawrence H. Oliver Property
5111 U.S Highway 301
State Project I-4413
WBS Element # 35901.2.1
Robeson County**

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

January 7, 2011

PRELIMINARY SITE ASSESSMENT REPORT

**Parcel #13, 5111 North Fayetteville Road (U.S. Highway 301)
Lawrence H. Oliver. Property
Bridge 36 Over I-95 (Exit 22) on U. S. Highway 301
State Project I-4413
WBS Element # 35901.2.1
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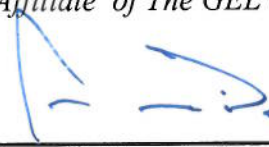
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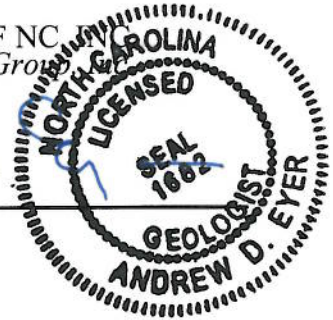
Signature Page

This document, entitled "Preliminary Site Assessment Report," has been prepared for Parcel #13, located at 5111 North Fayetteville Road in Robeson County, North Carolina (State Project I-4413, WBS Element # 35901.2.1). 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
an Affiliate of The GEL Group



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



01 - 07 - 11

Date

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Executive Summary

The subject site is Parcel #13, located at 5111 North Fayetteville Road in Robeson County, North Carolina. The primary purpose of this investigation was to determine the presence or absence of underground storage tanks (USTs) and constituents of concern in soil and groundwater within the North Carolina Department of Transportation (NCDOT) existing southwesterly Right-of-Way (ROW) of U.S. Highway 301 and easterly ROW of Dawn Drive. This document presents the details of a preliminary site assessment performed within the NCDOT existing ROWs adjacent to and within Parcel #13.

GEL Engineering of NC, Inc. (GEL) performed a preliminary site assessment that included a geophysical survey, and the collection and analysis of soil samples and one groundwater sample. The results of the geophysical investigation at the site identified three nested “Known USTs,” but no “Probable USTs” or “Possible USTs” were identified in the subsurface of the investigation area.

Soil samples were collected for analysis from eight borings constructed within and adjacent to the NCDOT existing ROWs of U.S. Highway 301 and Dawn Drive. The soil samples were analyzed for Diesel Range Organics (DRO) and Gasoline Range Organics (GRO). The analytical results indicate that GRO was detected in one sample, SB-5111-2, at a concentration exceeding the North Carolina Department of Environment and Natural Resources (NCDENR) action level of 10 milligrams per kilogram (mg/kg). DRO was detected in two soil samples, but at concentrations below the NCDENR action level. The detection of the elevated level of GRO in SB-5111-2 is believed to be the result of “soil smearing” by the underlying impacted groundwater.

Based on the detection of an elevated GRO concentration in soil sample SB-5111-2, it is estimated that there is a volume of 771 cubic yards of impacted soil in the vicinity of boring SB-5111-2.

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Robeson County**

Executive Summary (continued)

One groundwater sample was collected from boring MW-5111-2 and analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). Nine VOCs and one SVOC were detected in the groundwater sample, and concentrations reported for four detected constituents exceed their respective NCDENR 2L groundwater standards.

Based on the soil and groundwater data generated from this investigation, there is evidence that petroleum impacted soil and groundwater underlie the existing NCDOT southwesterly ROW of U.S. Highway 301 at the subject site, and will most likely be encountered during excavation associated with planned drainage and roadway modifications. No additional environmental investigation of potential impact to the site soil is recommended at this time; however, it is recommended that soil excavated within and adjacent to the existing ROW be evaluated if offsite disposal is a consideration.

Although VOCs and one SVOC exceeding regulatory standards were detected in the groundwater sample collected during the preliminary site assessment, no additional assessment of groundwater is recommended at this time. The detection of elevated concentrations of VOCs and SVOCs in the groundwater sample indicates petroleum-impacted groundwater underlies the site. The impacted groundwater most likely migrated downgradient from Parcel #9, across U.S. Highway 301 from the site, which is currently undergoing corrective action for previous releases of petroleum. Therefore, no additional assessment of groundwater is recommended at this time.

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WBS Element # 35901.2.1
Robeson County**

1.0 Introduction

This document presents the details of a preliminary site assessment performed within the existing North Carolina Department of Transportation (NCDOT) (ROW) of U.S. Highway 301 at 5111 North Fayetteville Road (Parcel #13) in Robeson County, North Carolina. Currently, Parcel #13 houses an active convenience store with gasoline dispensers. The site location is shown on Figure 1, an excerpt from the United States Geological Survey (USGS) 7.5-minute quadrangle map of Northwest Lumberton, North Carolina. The preliminary site assessment, which included a geophysical survey, was conducted by GEL Engineering of NC, Inc. (GEL) in accordance with the Notice to Proceed issued by NCDOT on November 15, 2010.

The primary purpose of this investigation was to determine the presence or absence of USTs and on-site constituents of concern in soil and groundwater within the NCDOT existing southwesterly ROW of U.S. Highway 301 and easterly ROW of Dawn Drive at the subject site as a result of current and/or former operations.

2.0 Background

NCDOT is planning road improvements to U.S. Highway 301 and Dawn Drive near Interstate 95 Exit 22 in Lumberton, North Carolina. NCDOT wanted to assess the proposed ROW adjacent to Parcel #13 to evaluate the presence or absence of USTs, and soil and groundwater contamination related to the current and/or former on-site operations, and the impact (if any) of these operations on the proposed road improvements, especially the proposed routing for planned storm water drainage system within the proposed ROW. Figures 2 and 3 show the general site layout for Parcel #13 and its location on U.S. Highway 301, respectively.

There are no known files regarding reported petroleum releases at the site currently filed with the North Carolina Department of Environment and Natural Resources (NCDENR) UST.

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3.0 Local Geology and Surroundings

Parcel #13 is located within a commercially developed area of Robeson County, near Exit 22 for Interstate 95. The site is approximately 4 miles north of the center of Lumberton, North Carolina. This area is located in the Coastal Plain physiographic province of North Carolina. The land surface of the area is characterized by nearly level, loamy soils. Coastal Plain geology in the vicinity of the site is typically undifferentiated post-Miocene interbedded sand and clay stream terrace deposits (USGS, 1955). The Cretaceous Black Creek Formation, a regional aquifer, underlies the area.

The United States Department of Agriculture's *Soil Survey of Gates County, North Carolina* (1978) maps the area as Megget Fine Sandy Loam (Me), which is characterized by soil that is typically composed of moderately poorly-drained loamy fluviomarine deposits over marley sand and clayey alluvium. The soils encountered at the site during the preliminary site assessment consisted predominantly of brown/grey/tan sandy loam, becoming grey, clayey, sandy silt with depth, as shown in Appendix I.

Depth to groundwater measured within the existing ROW during the preliminary site assessment at Parcel #13 was 5.9 feet below land surface (bls). Based on the USGS topographic map presented as Figure 1, the site is located approximately 130 feet above mean sea level. The results of previous groundwater assessments performed at 5102 North Fayetteville Road, across the street from Parcel #13, indicate that groundwater flows in a westerly/southwesterly direction towards the Saddletree Swamp.

4.0 Subsurface Investigation

To determine the presence or absence of USTs and impact to subsurface soil within the NCDOT existing ROWs at Parcel #13, GEL performed a limited site assessment that consisted of the following tasks:

- A geophysical investigation to identify the presence or absence of USTs and associated appurtenances within and adjacent to the existing southwesterly ROW of U.S. Highway 301 and the easterly ROW of Dawn Drive at Parcel #13.
- Soil vapor screening of soil samples collected from subsurface soil borings at Parcel #13 within the existing southwesterly ROW of U.S. Highway 301 and the easterly ROW of Dawn Drive to determine the potential presence or absence of soil impact from petroleum constituents of concern.

- Collection and laboratory analysis of soil samples from the existing southwesterly ROW of U.S. Highway 301 and the easterly ROW of Dawn Drive at Parcel #13.
- Collection and laboratory analysis of one groundwater sample from the existing southwesterly ROW of U.S. Highway 301 and the easterly ROW of Dawn Drive at Parcel #13.

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

4.1 Geophysical Evaluation at Parcel #13

The geophysical investigation 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 on site. 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 at Parcel #13 on November 22, 2010, as shown in Figure 4.

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. A preliminary interpretation of the GPR data was conducted in the field and potential subsurface anomalies were marked on the ground. Following the completion of the fieldwork, the data were post-processed and analyzed in more detail. GPR data processing typically included band pass filtering, background removal, horizontal smoothing, and gain adjustments.

TDEM was also used to scan the project site. Electromagnetic anomalies indicative of buried metallic objects were marked in the field. TDEM was also used to scan the project site. 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 southwesterly ROW of U.S. Highway 301, and the southerly and easterly ROWs of Dawn Drive at Parcel #13 prior to the initiation of the preliminary site assessment field activities at the site. No underground utilities were marked by “One Call” within the ROWs at Parcel #13.

As shown on Figure 4, identified EM and GPR anomalies confirmed the presence of three nested “Known USTs” in the southwestern portion of the site. GPR cross-section A – A’ shown in Figure 4 identifies the three anomalies. No USTs or other subsurface solid objects were encountered. The linear EM anomaly identified along the southwesterly and southerly portions of the investigation area (7,000 – 10,500 millivolt (mv) response shown in Figure 4) is an interpreted effect from reinforced concrete paving and curbing within the investigation area.

Based on the results of the geophysical survey, no “Probable USTs” or “Possible USTs” are suspected to be present within the investigation area, and the only “Known USTs” identified are the ones indicated in Figure 4.

4.2 Subsurface Soil Investigation at Parcel #13

To determine the presence or absence of impact to subsurface soil by constituents of concern, GEL collected soil samples from eight subsurface soil borings, SB-5111-1 through SB-5111-8, at Parcel #13 on November 30, 2010, for analysis of total petroleum hydrocarbon indicator parameters. All soil borings except SB-5111-6, SB-5111-7, and SB-5111-8 were constructed within the existing NCDOT southwesterly ROW of U.S. Highway 301 or easterly ROW of Dawn Drive, as shown on Figure 2 and in the photographs in Appendix II. Soil borings SB-5111-6, SB-5111-7, and SB-5111-8 were constructed slightly east of the easterly ROW of Dawn Drive. The locations of all eight of the soil borings were biased towards the proposed routing for the planned storm water drainage system within the existing NCDOT ROWs adjacent to Parcel #13, as shown in Figure 2. The longitude and latitude coordinates for the boring locations are listed in the table below.

All borings were advanced to a total depth of 5 feet bls (depth the water table was encountered), and soil samples were collected at depths of 4-5 feet bls in each boring. 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 I of this document.

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, the soil sample from each soil boring was submitted for laboratory analysis. The depth intervals and PID measurements of the collected soil samples submitted to the laboratory for analysis are listed below. As shown in the table, no organic vapors were measured in any of the soil samples except the samples collected from SB-5111-2 and SB-5111-3.

**Summary of Location Data and PID Measurements
for Soil Samples Collected for Analysis at Parcel #13**

Soil Boring	Depth Interval of Soil Sample Collected for Analysis (feet bls)	PID Reading (ppm)	Latitude/Longitude (NAD83)
SB-5111-1	4-5	0.0	34°40'19.86"N / 79°00'29.22"W
SB-5111-2	4-5	32.0	34°40'21.12"N / 79°00'29.58"W
SB-5111-3	4-5	12.0	34°40'21.60"N / 79°00'29.94"W
SB-5111-4	4-5	0.0	34°40'21.30"N / 79°00'30.72"W
SB-5111-5	4-5	0.0	34°40'20.94"N / 79°00'31.38"W
SB-5111-6	4-5	0.0	34°40'20.34"N / 79°00'31.80"W
SB-5111-7	4-5	0.0	34°40'19.68"N / 79°00'31.92"W
SB-5111-8	4-5	0.0	34°40'19.26"N / 79°00'31.86"W

Notes:

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

Following completion of the soil sampling activities (and groundwater sampling activities discussed in Section 4.3 below), all borings were abandoned by filling the boreholes with soil cuttings and hydrated bentonite. Soil samples were submitted to SGS Laboratories, Inc. in Wilmington, North Carolina (North Carolina Certification No. 481) 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 summarized in the following table and are included on the Certificates of Analysis provided in Appendix III.

Summary of Analytical Results for Soil Samples

Soil Sample	Depth Interval of Soil Sample Collected for Analysis (feet bls)	DRO	GRO
SB-5111-1	4-5	7.98	BQL
SB-5111-2	4-5	BQL	16.3
SB-5111-3	4-5	BQL	BQL
SB-5111-4	4-5	BQL	BQL
SB-5111-5	4-5	BQL	BQL
SB-5111-6	4-5	BQL	BQL
SB-5111-7	4-5	BQL	BQL
SB-5111-8	4-5	8.31	BQL
NCDENR Action Level		10*	10

Notes:

- 1) BQL = Below Quantitation Limit
- 2) Concentrations shown are in milligram per kilogram (mg/kg).
- 3) **Bold** = detected concentration above the NCDENR action level
- 4) * = Recommended action level for DRO. Currently the enforced NCDENR action level is 40 mg/kg.

Potential soil impact is indicated by the GRO concentration detected in the soil sample collected from boring SB-5111-2, which slightly exceeds the North Carolina Department of Environment and Natural Resources (NCDENR) action level for GRO. The potentially impacted soil is not believed to have been caused by underground or surface releases of petroleum at Parcel #13. It is most likely associated with “soil smearing” resulting from the rise and fall of underlying impacted groundwater. Analysis of the soil for NCDENR’s risk-based petroleum hydrocarbon parameters would be needed to confirm the presence or absence of soil impact.

It is estimated that there is an approximate total volume of 771 cubic yards of impacted soil (DRO >10 milligrams per kilogram (mg/kg) and/or GRO >10 mg/kg) in the vicinity of boring SB-5111-2, based on the following assumed area (as shown on Figure 2) and depth of impacted soil:

- 3530 sq. feet (within proposed ROW x 5.9 feet (measured water table depth) = 20,827 cubic feet = 771 cubic yards

4.3 Groundwater Investigation at Parcel #13

To determine the presence or absence of impact to groundwater by constituents of concern, groundwater sample MW-5111-2 was collected after soil boring location SB-

5111-2 was converted to a temporary groundwater monitoring well, as shown in Figure 2. Groundwater sample MW-5111-2 was collected at this location because the PID measurement of the soil sample collected from SB-5111-2 was the highest of all soil samples collected at the site during the PSA, as indicated in the table above.

Regional Probing collected the groundwater sample using DPT. To collect the groundwater sample, the DPT probe was advanced to a depth of approximately 12 feet bls. The DPT probe was then retracted while an internal PVC slotted screen was released from the bottom of the probe. The groundwater sample was collected from within the slotted screen using new Teflon[®] tubing and a peristaltic pump. The measured depth to groundwater was 5.9 feet bls. The collected groundwater sample was submitted to SGS Laboratories, Inc. for analysis of volatile organic compounds (VOCs) by EPA Method 8260B and semi-volatile organic compounds (SVOCs) by EPA method 8270D.

The analytical results are included on the Certificate of Analysis provided in Appendix III. The results for MW-5111-2 indicate that nine VOCs and one SVOC were detected, some of which had detected concentrations exceeding the respective NCDENR 2L standards, as shown in the table below.

Summary of VOCs and SVOCs Detected in Groundwater

Constituent	MW-5111-2	NCDENR 15A NCAC 2L .0115 GWQS
VOCs		
Benzene	7.55	1
Ethylbenzene	31.9	600
Methyl-tert-butyl ether (MTBE)	124	20
Napthalene	10.8	6
Toluene	12.8	600
1,2,4-Trimethylbenzene	48.2	400
1,3,5-Trimethylbenzene	11.3	400
m,p-Xylene	158	500
o-Xylene	5.55	500
SVOCs		
Napthalene	10.7	6

Notes:

- 1) All concentrations shown are in micrograms per liter (µg/L)
- 2) Detected concentrations exceeding the NCDENR 2L standards (January 2010) are shown in **bold**.

5.0 Conclusions and Recommendations

GEL performed a preliminary site assessment within the existing NCDOT southwesterly ROW of U.S. Highway 301 and westerly ROW of Dawn Drive adjacent to and within Parcel #13 that included a geophysical survey, and the collection and analysis of soil samples and one groundwater sample. The results of the geophysical investigation at the site identified three nested “Known USTs,” but no “Probable USTs” or “Possible USTs” in the subsurface of the investigation area.

Soil samples were collected for analysis from eight borings constructed within and adjacent to the NCDOT existing ROWs of U.S. Highway 301 and Dawn Drive. The soil samples were analyzed for DRO and GRO. The analytical results indicate that GRO was detected in soil sample SB-5111-2 at a concentration slightly exceeding the NCDENR action level of 10 milligrams per kilogram (mg/kg). DRO was detected in soil samples SB-5111-1 and SB-5111-8, but the detected concentrations were below the NCDENR action level of 10 mg/kg. The detection of GRO in SB-5111-2 is believed to be the result of “soil smearing” by the underlying impacted groundwater.

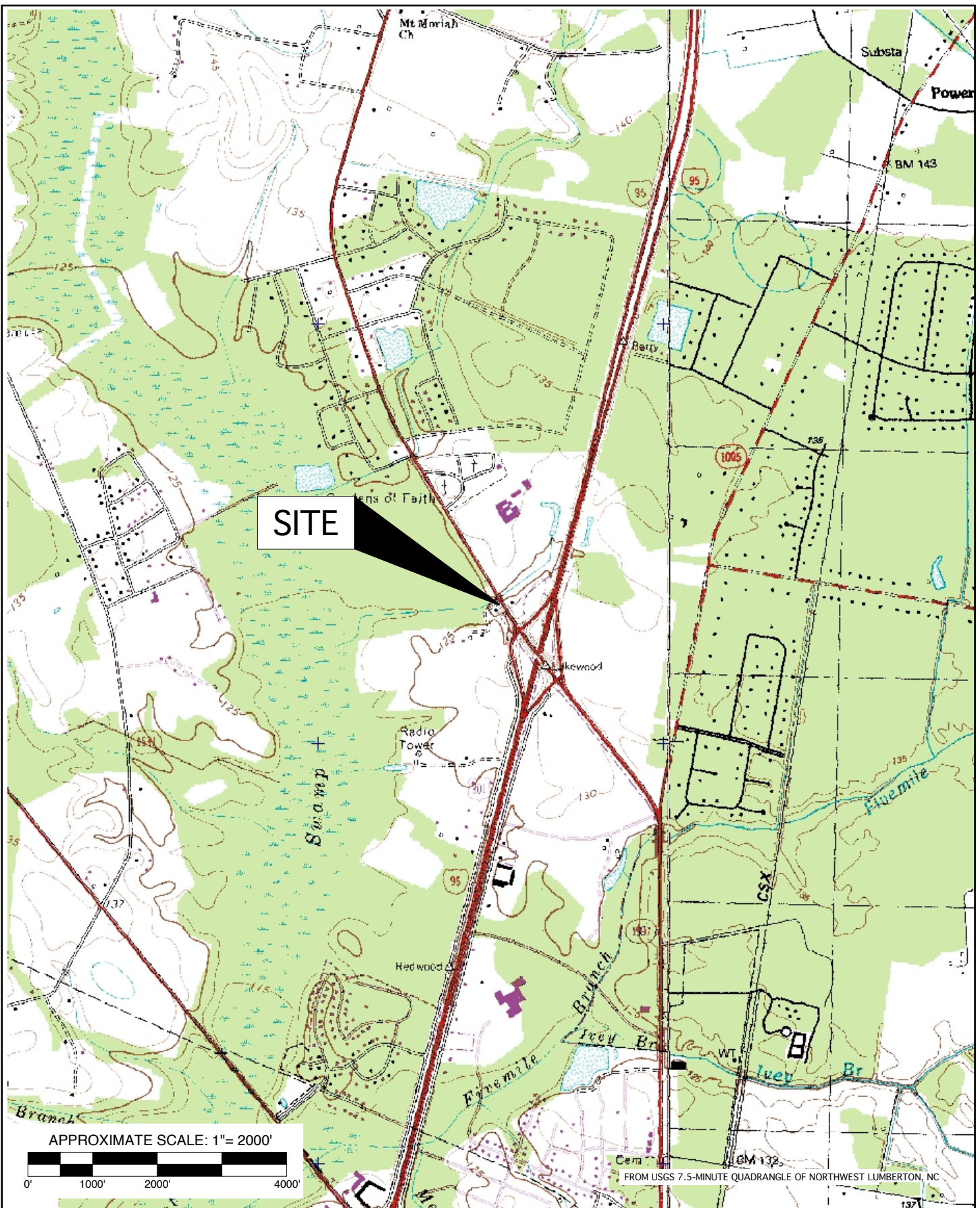
Based on the detection of the elevated GRO concentration in soil sample SB-5111-2, it is estimated that there is a volume of 771 cubic yards of impacted soil in the vicinity of boring SB-5111-2.

One groundwater sample was collected from boring SB-5111-2 and analyzed for VOCs and SVOCs. Nine VOCs and one SVOC were detected in the groundwater sample. Four of the detected concentrations exceed the respective NCDENR 2L groundwater standards.

Based on the soil and groundwater data generated from this investigation, there is evidence that petroleum impacted soil and groundwater underlie the existing NCDOT southwesterly ROW of U.S. Highway 301 at the subject site, and will most likely be encountered during excavation associated with planned drainage and roadway modifications. No additional environmental investigation of potential impact to the site soil is recommended at this time; however, it is recommended that soil excavated within and adjacent to the existing ROW be evaluated if offsite disposal is a consideration.

Although VOCs and one SVOC exceeding regulatory standards were detected in the groundwater sample collected during the preliminary site assessment, no additional assessment of groundwater is recommended at this time. The detection of elevated concentrations of VOCs and SVOCs in the groundwater sample indicates petroleum-

impacted groundwater underlies the site. The impacted groundwater most likely migrated downgradient from Parcel #9, across U.S. Highway 301 from the site, which is currently undergoing corrective action for previous releases of petroleum. Therefore, no additional assessment of groundwater is recommended at this time.



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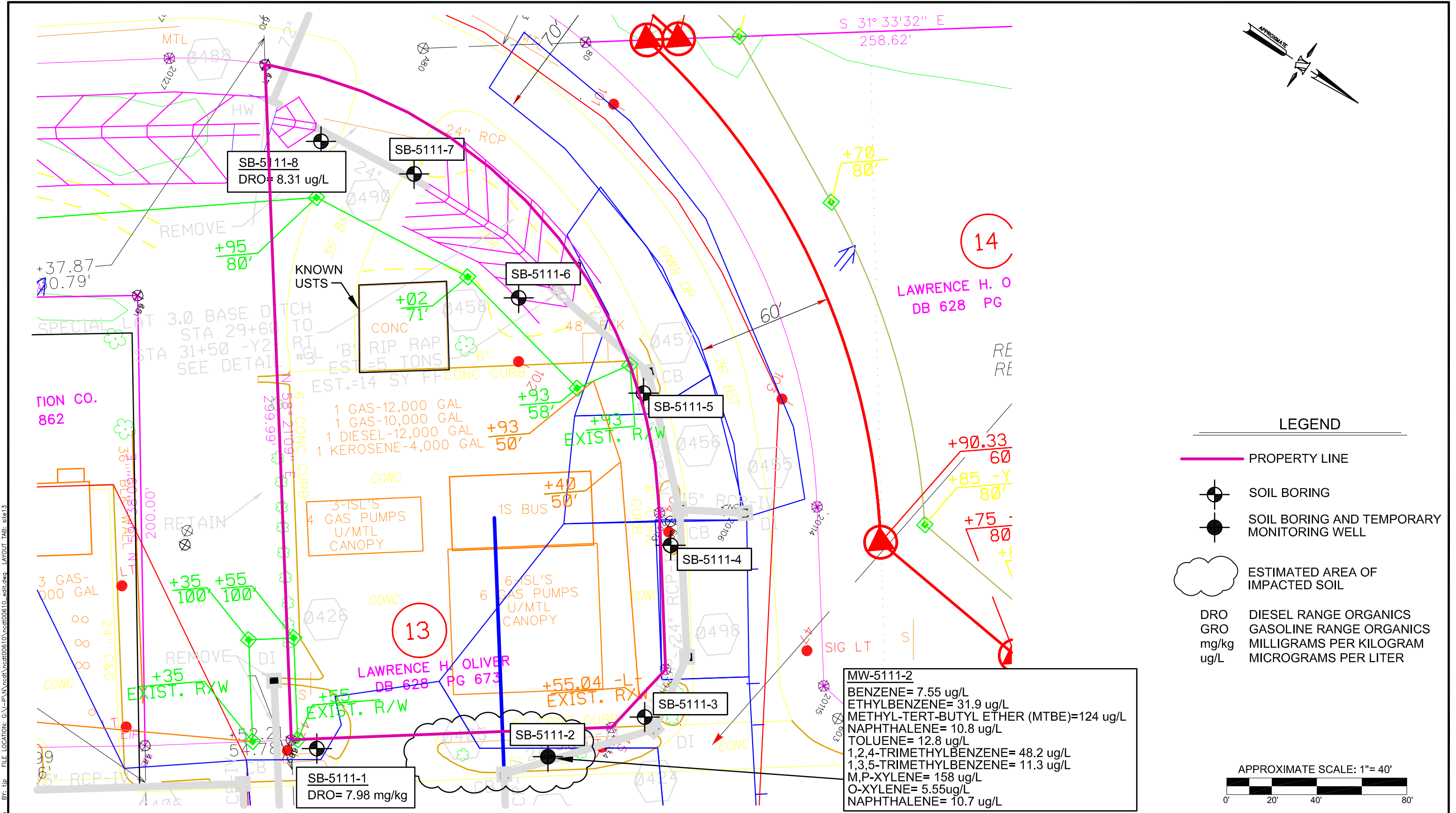
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 PARCEL #13
 5111 NORTH FAYETTEVILLE ROAD
 LUMBERTON, NORTH CAROLINA
 STATE PROJECT I-4413, WBS #35901.2.1

DATE: December 28, 2010

TOPOGRAPHIC MAP SHOWING
 LOCATION OF SITE

DRAWN BY: ADE APPRV. BY:

FIGURE
 1



PLOTTED: Jan 07, 2011, 12:09pm By: jlp FILE LOCATION: G:\P\N\ncdt00610\ncdt00610_edit.dwg LAYOUT: TAB: site3

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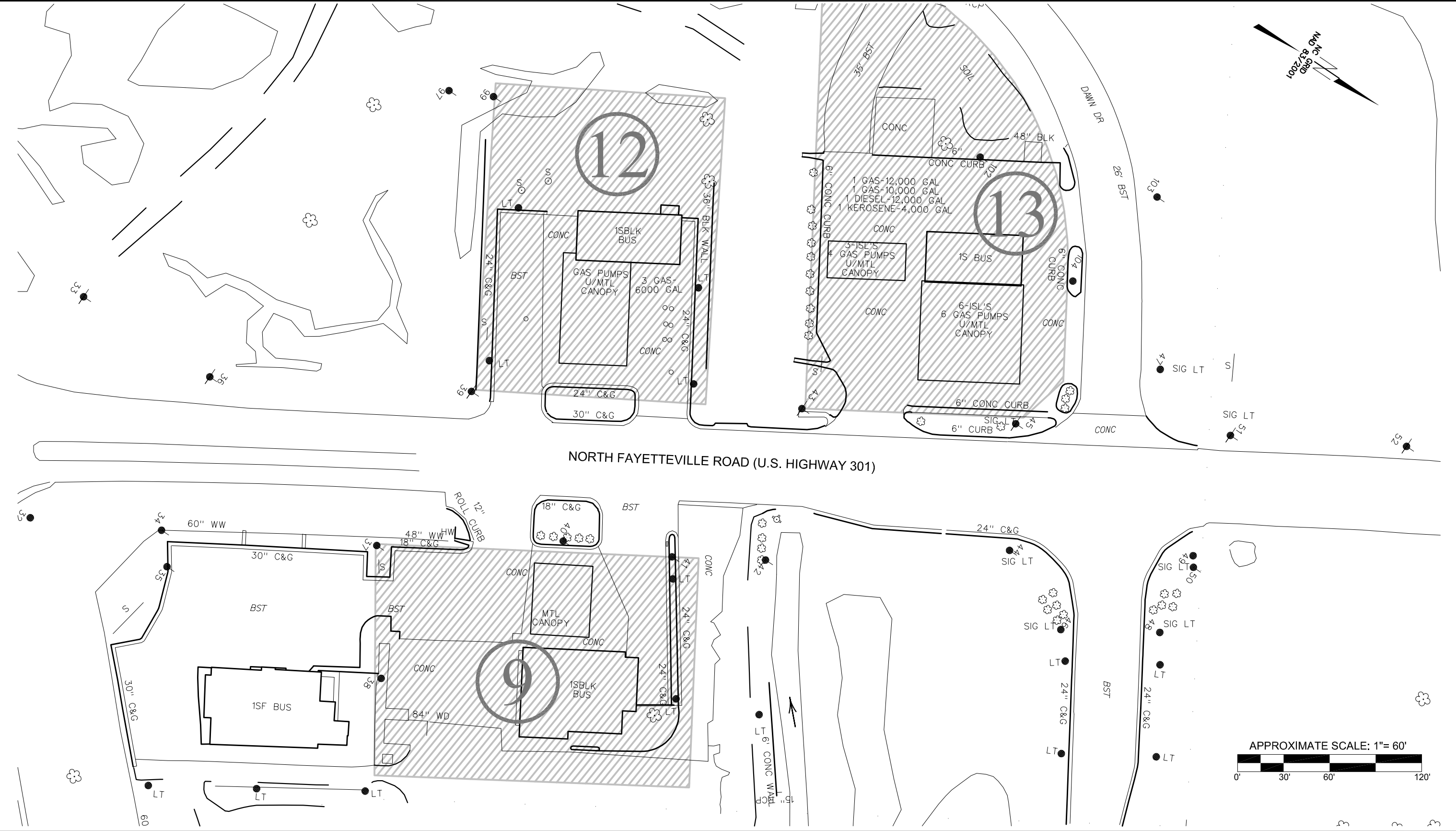
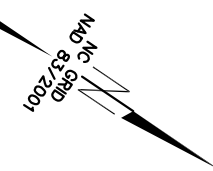
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STATE PROJECT I-4413, WBS ELEMENT NO. 235901.2.1

DATE: January 4, 2011

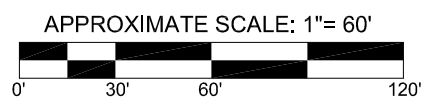
SITE MAP SHOWING LOCATIONS OF
SOIL BORINGS AND TEMPORARY
GROUNDWATER MONITORING WELL

FIGURE
2

DRAWN BY: EJA/TJP APPRV. BY: ADE



NORTH FAYETTEVILLE ROAD (U.S. HIGHWAY 301)



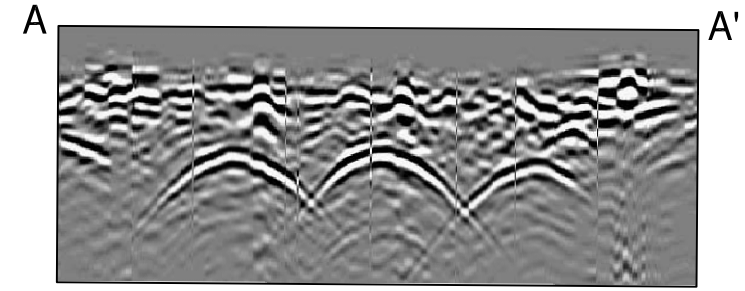
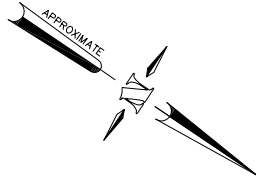
PLOTTED: Jan 07, 2011 - 10:24am By: tjp FILE LOCATION: G:\-P\N\ncdt\ncdt00610\ncdt00610_KeyMap.dwg LAYOUT: TAB-KEY MAP

GEL ENGINEERING of NC, Inc.
 an Affiliate of THE GEL GROUP, INC.

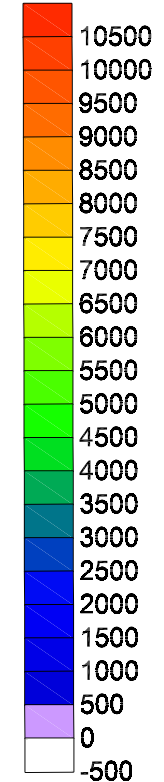


Post Office Box 14262
 Research Triangle Park, NC 27709
 (919) 544-1100

PROJECT: ncdt00610		KEY MAP SHOWING LOCATIONS OF PARCEL #9, PARCEL #12, AND PARCEL #13	FIGURE 3
PRELIMINARY SITE ASSESSMENT REPORT PARCELS #9, #12, AND #13 NORTH FAYETTEVILLE ROAD ROBESON COUNTY, NORTH CAROLINA STATE PROJECT I-4413, WBS ELEMENT NO. 235901.2.1			
DATE: January 4, 2011	DRAWN BY: TJP	APPRV. BY: ADE	



GPR PROFILE ACROSS KNOWN USTs

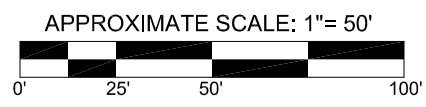


NOTES

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 11.22.10
3. DATA FROM GEONICS, LTD. EM-61 MKII AND MALA GEOSCIENCE GROUND PENETRATING RADAR.
4. COORDINATES IN US STATE PLANE NAD 1983 DATUM.
5. FIGURE BASE FROM NCDOT DESIGN DRAWINGS FOR I-4413
6. NO UNKNOWN UNDERGROUND STORAGE TANKS FOUND UNLESS NOTED IN DRAWING

LEGEND

--- SURVEY AREA



PLOTTED: Dec 14, 2010 10:31am By: lip FILE LOCATION: G:_P\N\ncdt\ncdt00610\working_2004.dwg LAYOUT: TAB: site13

GEL ENGINEERING of NC, Inc.
an Affiliate of THE GEL GROUP, INC.



Post Office Box 14262
Research Triangle Park, NC 27709
(919) 544-1100

PROJECT: ncdt00610
PRELIMINARY SITE ASSESSMENT REPORT
PARCEL #13, 5111 N. FAYETTEVILLE ROAD
ROBESON COUNTY, NORTH CAROLINA
STATE PROJECT I-4413, WBS ELEMENT NO.35901.2.1
DATE: December 3, 2010

SITE MAP SHOWING RESULTS OF
GEOPHYSICS INVESTIGATION
DRAWN BY: WSD/TJP APPRV. BY: ADE

FIGURE
4

APPENDIX I
SOIL BORING LITHOLOGIC LOGS

SOIL BORING LOG

Boring/Well No.: **SB-5111-1**

Date Started: 11/30/10

Date Completed: 11/30/10

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 4.0'	--	--	Grey/brown/tan loamy, silty fine-grained sand; moist; no odor	SM
2	4.0' - 5.0'	--	0.0	Same; wet at 5'; no odor	SM
3					
4				Total depth = 5 feet below land surface	
5					
6					
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous core using DPT.
- 2) PID reading shown is for discrete sample collected at 4.0' to 5.0'.

SOIL BORING LOG

Boring/Well No.: **SB-5111-2**

Date Started: 11/30/10

Date Completed: 11/30/10

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 4.0'	--	--	Brown/tan loamy, silty fine-grained sand, becoming more grey and clayey with depth; moist; no odor	SM/ML
2	4.0' - 5.0'	--	32.0	Dark grey sandy, clayey silt; wet at 5'; no odor	ML
3					
4				Total depth = 5 feet below land surface	
5					
6					
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous core using DPT.
- 2) PID reading shown is for discrete sample collected at 4.0' to 5.0'.

SOIL BORING LOG

Boring/Well No.: **SB-5111-3**

Date Started: 11/30/10

Date Completed: 11/30/10

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 4.0'	--	--	Grey sandy, clayey silt; moist; no odor	ML
2	4.0' - 5.0'	--	12.0	Same; wet at 5'; no odor	ML
3					
4				Total depth = 5 feet below land surface	
5					
6					
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous core using DPT.
- 2) PID reading shown is for discrete sample collected at 4.0' to 5.0'.

SOIL BORING LOG

Boring/Well No.: **SB-5111-4**

Date Started: 11/30/10

Date Completed: 11/30/10

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 4.0'	--	--	Brown/grey loamy, silty fine-grained sand, becoming more clayey with depth; moist; no odor	SM/ML
2	4.0' - 5.0'	--	0.0	Same; wet at 5'; no odor	SM/ML
3					
4				Total depth = 5 feet below land surface	
5					
6					
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous core using DPT.
- 2) PID reading shown is for discrete sample collected at 4.0' to 5.0'.

SOIL BORING LOG

Boring/Well No.: **SB-5111-5**

Date Started: 11/30/10

Date Completed: 11/30/10

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 4.0'	--	--	Brown/grey loamy, silty fine-grained sand, becoming more clayey with depth; moist; no odor	SM/ML
2	4.0' - 5.0'	--	0.0	Same; wet at 5'; no odor	SM/ML
3					
4				Total depth = 5 feet below land surface	
5					
6					
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous core using DPT.
- 2) PID reading shown is for discrete sample collected at 4.0' to 5.0'.

SOIL BORING LOG

Boring/Well No.: **SB-5111-6**

Date Started: 11/30/10

Date Completed: 11/30/10

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 4.0'	--	--	Tan loamy, silty fine-grained sand, becoming blacker and more grey, and more clayey with depth; moist; no odor	SM/ML
2	4.0' - 5.0'	--	0.0	Grey/black sandy, clayey silt; wet at 5'; no odor	ML
3					
4				Total depth = 5 feet below land surface	
5					
6					
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous core using DPT.
- 2) PID reading shown is for discrete sample collected at 4.0' to 5.0'.

SOIL BORING LOG

Boring/Well No.: **SB-5111-7**

Date Started: 11/30/10

Date Completed: 11/30/10

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 4.0'	--	--	Tan loamy fine to coarse-grained sand, becoming blacker and more grey, and more clayey with depth; moist; no odor	SM/ML
2	4.0' - 5.0'	--	0.0	Grey/black sandy, clayey silt; wet at 5'; no odor	ML
3					
4				Total depth = 5 feet below land surface	
5					
6					
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous core using DPT.
- 2) PID reading shown is for discrete sample collected at 4.0' to 5.0'.

SOIL BORING LOG

Boring/Well No.: **SB-5111-8**

Date Started: 11/30/10

Date Completed: 11/30/10

No.	Depth Interval	Blow Counts	PID (ppm)	Soil Description	Soil Type
1	0.0' - 4.0'	--	--	Brown/grey loamy fine-grained sand, becoming more grey and clayey with depth; moist; no odor	SM/ML
2	4.0' - 5.0'	--	0.0	Grey sandy, clayey silt; wet at 5'; no odor	ML
3					
4				Total depth = 5 feet below land surface	
5					
6					
7					
8					
9					
10					
11					
12					

Notes:

- 1) 4-foot continuous core using DPT.
- 2) PID reading shown is for discrete sample collected at 4.0' to 5.0'.

APPENDIX II

PHOTOGRAPHS SHOWING SOIL BORING LOCATIONS



SB-5111-1



SB-5111-3

SB-5111-2



APPENDIX III

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



Andrew Eyer
GEL Engineering of NC, Inc.
PO Box 14262
RTP, NC 27709

Report Number: G341-631

Client Project: Robeson Co. PSAs

Dear Andrew Eyer,

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

If there are any questions about the report or services performed during this project, please call Lori Lockamy 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.

Project Manager
Lori Lockamy

Date

List of Reporting Abbreviations and Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantitation Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

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

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL/CL = Reporting Limit / Control Limit

RPD = Relative Percent Difference

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

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

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

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

% Rec = Percent Recovery

% solids = Percent Solids

Special Notes:

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



Print Date: 12/16/2010

Client Sample ID: **SB-5111-1**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-1D
Lab Project ID: G341-631

Collection Date: 30-Nov-10 14:00
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 89.2
Basis: Dry

Results by 8015DRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	7.98	6.81	MG/KG	1	10-Dec-10 22:29

Surrogates

OTP	65.3	40-140	%	1	10-Dec-10 22:29
-----	------	--------	---	---	-----------------

Batch Information

Analytical Batch: EP121010
Analytical Method: 8015DRO
Instrument: GC6
Analyst: DTF

Prep Batch:
Prep Method: 3541
Prep Date/Time:
Initial Prep Wt./Vol.: 32.91
Prep Extract Vol: 10



Print Date: 12/16/2010

Client Sample ID: **SB-5111-2**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-2D
Lab Project ID: G341-631

Collection Date: 30-Nov-10 14:10
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 84.9
Basis: Dry

Results by 8015DRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	BQL	7.05	MG/KG	1	10-Dec-10 22:56

Surrogates

OTP	60.2	40-140	%	1	10-Dec-10 22:56
-----	------	--------	---	---	-----------------

Batch Information

Analytical Batch: EP121010
Analytical Method: 8015DRO
Instrument: GC6
Analyst: DTF

Prep Batch:
Prep Method: 3541
Prep Date/Time:
Initial Prep Wt./Vol.: 33.41
Prep Extract Vol: 10



Print Date: 12/16/2010

Client Sample ID: **SB-5111-3**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-3D
Lab Project ID: G341-631

Collection Date: 30-Nov-10 14:30
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 83.5
Basis: Dry

Results by 8015DRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	BQL	7.27	MG/KG	1	10-Dec-10 23:24

Surrogates

OTP	69	40-140	%	1	10-Dec-10 23:24
-----	----	--------	---	---	-----------------

Batch Information

Analytical Batch: EP121010
Analytical Method: 8015DRO
Instrument: GC6
Analyst: DTF

Prep Batch:
Prep Method: 3541
Prep Date/Time:
Initial Prep Wt./Vol.: 32.95
Prep Extract Vol: 10



Print Date: 12/16/2010

Client Sample ID: **SB-5111-4**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-4D
Lab Project ID: G341-631

Collection Date: 30-Nov-10 14:45
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 84.0
Basis: Dry

Results by 8015DRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	BQL	7.32	MG/KG	1	10-Dec-10 23:52

Surrogates

OTP	71.7	40-140	%	1	10-Dec-10 23:52
-----	------	--------	---	---	-----------------

Batch Information

Analytical Batch: EP121010
Analytical Method: 8015DRO
Instrument: GC6
Analyst: DTF

Prep Batch:
Prep Method: 3541
Prep Date/Time:
Initial Prep Wt./Vol.: 32.53
Prep Extract Vol: 10



Print Date: 12/16/2010

Client Sample ID: **SB-5111-5**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-5D
Lab Project ID: G341-631

Collection Date: 30-Nov-10 15:05
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 85.3
Basis: Dry

Results by 8015DRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	BQL	7.35	MG/KG	1	11-Dec-10 0:20

Surrogates

OTP	65.9	40-140	%	1	11-Dec-10 0:20
-----	------	--------	---	---	----------------

Batch Information

Analytical Batch: EP121010
Analytical Method: 8015DRO
Instrument: GC6
Analyst: DTF

Prep Batch:
Prep Method: 3541
Prep Date/Time:
Initial Prep Wt./Vol.: 31.92
Prep Extract Vol: 10



Print Date: 12/16/2010

Client Sample ID: **SB-5111-6**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-6D
Lab Project ID: G341-631

Collection Date: 30-Nov-10 15:20
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 85.4
Basis: Dry

Results by 8015DRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	BQL	7.35	MG/KG	1	11-Dec-10 0:47

Surrogates

OTP	72	40-140	%	1	11-Dec-10 0:47
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Batch Information

Analytical Batch: EP121010
Analytical Method: 8015DRO
Instrument: GC6
Analyst: DTF

Prep Batch:
Prep Method: 3541
Prep Date/Time:
Initial Prep Wt./Vol.: 31.88
Prep Extract Vol: 10



Print Date: 12/16/2010

Client Sample ID: **SB-5111-7**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-7D
Lab Project ID: G341-631

Collection Date: 30-Nov-10 15:35
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 86.2
Basis: Dry

Results by 8015DRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	BQL	7.09	MG/KG	1	11-Dec-10 1:15

Surrogates

OTP	61.6	40-140	%	1	11-Dec-10 1:15
-----	------	--------	---	---	----------------

Batch Information

Analytical Batch: EP121010
Analytical Method: 8015DRO
Instrument: GC6
Analyst: DTF

Prep Batch:
Prep Method: 3541
Prep Date/Time:
Initial Prep Wt./Vol.: 32.73
Prep Extract Vol: 10



Print Date: 12/16/2010

Client Sample ID: **SB-5111-8**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-8D
Lab Project ID: G341-631

Collection Date: 30-Nov-10 15:50
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 85.3
Basis: Dry

Results by 8015DRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Diesel Range Organics	8.31	7.25	MG/KG	1	11-Dec-10 1:43

Surrogates

OTP	72.3	40-140	%	1	11-Dec-10 1:43
-----	------	--------	---	---	----------------

Batch Information

Analytical Batch: EP121010
Analytical Method: 8015DRO
Instrument: GC6
Analyst: DTF

Prep Batch:
Prep Method: 3541
Prep Date/Time:
Initial Prep Wt./Vol.: 32.36
Prep Extract Vol: 10



Print Date: 12/16/2010

Client Sample ID: **SB-5111-1**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-1A
Lab Project ID: G341-631

Collection Date: 30-Nov-10 14:00
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 89.2
Basis: Dry

Results by 8015GRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	BQL	4.63	MG/KG	1	14-Dec-10 12:32

Surrogates

BFB	82.9	70-130	%	1	14-Dec-10 12:32
-----	------	--------	---	---	-----------------

Batch Information

Analytical Batch: VP121410
Analytical Method: 8015GRO
Instrument: GC4
Analyst: LMC

Prep Batch:
Prep Method: 5035
Prep Date/Time:
Initial Prep Wt./Vol.: 7.27
Prep Extract Vol: 5



Print Date: 12/16/2010

Client Sample ID: **SB-5111-2**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-2A
Lab Project ID: G341-631

Collection Date: 30-Nov-10 14:10
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 84.9
Basis: Dry

Results by 8015GRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	16.3	5.01	MG/KG	1	14-Dec-10 12:59

Surrogates

BFB	90.1	70-130	%	1	14-Dec-10 12:59
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Batch Information

Analytical Batch: VP121410
Analytical Method: 8015GRO
Instrument: GC4
Analyst: LMC

Prep Batch:
Prep Method: 5035
Prep Date/Time:
Initial Prep Wt./Vol.: 7.06
Prep Extract Vol: 5



Print Date: 12/16/2010

Client Sample ID: **SB-5111-3**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-3A
Lab Project ID: G341-631

Collection Date: 30-Nov-10 14:30
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 83.5
Basis: Dry

Results by 8015GRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	BQL	4.42	MG/KG	1	14-Dec-10 13:26

Surrogates

BFB	82.9	70-130	%	1	14-Dec-10 13:26
-----	------	--------	---	---	-----------------

Batch Information

Analytical Batch: VP121410
Analytical Method: 8015GRO
Instrument: GC4
Analyst: LMC

Prep Batch:
Prep Method: 5035
Prep Date/Time:
Initial Prep Wt./Vol.: 8.13
Prep Extract Vol: 5



Print Date: 12/16/2010

Client Sample ID: **SB-5111-4**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-4A
Lab Project ID: G341-631

Collection Date: 30-Nov-10 14:45
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 84.0
Basis: Dry

Results by 8015GRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	BQL	4.66	MG/KG	1	14-Dec-10 13:53

Surrogates

BFB	81.3	70-130	%	1	14-Dec-10 13:53
-----	------	--------	---	---	-----------------

Batch Information

Analytical Batch: VP121410
Analytical Method: 8015GRO
Instrument: GC4
Analyst: LMC

Prep Batch:
Prep Method: 5035
Prep Date/Time:
Initial Prep Wt./Vol.: 7.66
Prep Extract Vol: 5



Print Date: 12/16/2010

Client Sample ID: **SB-5111-5**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-5A
Lab Project ID: G341-631

Collection Date: 30-Nov-10 15:05
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 85.3
Basis: Dry

Results by 8015GRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	BQL	4.39	MG/KG	1	14-Dec-10 14:20

Surrogates

BFB	85.5	70-130	%	1	14-Dec-10 14:20
-----	------	--------	---	---	-----------------

Batch Information

Analytical Batch: VP121410
Analytical Method: 8015GRO
Instrument: GC4
Analyst: LMC

Prep Batch:
Prep Method: 5035
Prep Date/Time:
Initial Prep Wt./Vol.: 8.01
Prep Extract Vol: 5



Print Date: 12/16/2010

Client Sample ID: **SB-5111-6**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-6A
Lab Project ID: G341-631

Collection Date: 30-Nov-10 15:20
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 85.4
Basis: Dry

Results by 8015GRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	BQL	4.34	MG/KG	1	14-Dec-10 14:46

Surrogates

BFB	81.4	70-130	%	1	14-Dec-10 14:46
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Batch Information

Analytical Batch: VP121410
Analytical Method: 8015GRO
Instrument: GC4
Analyst: LMC

Prep Batch:
Prep Method: 5035
Prep Date/Time:
Initial Prep Wt./Vol.: 8.09
Prep Extract Vol: 5



Print Date: 12/16/2010

Client Sample ID: **SB-5111-7**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-7A
Lab Project ID: G341-631

Collection Date: 30-Nov-10 15:35
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 86.2
Basis: Dry

Results by 8015GRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	BQL	4.89	MG/KG	1	14-Dec-10 15:13

Surrogates

BFB	84.1	70-130	%	1	14-Dec-10 15:13
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Batch Information

Analytical Batch: VP121410
Analytical Method: 8015GRO
Instrument: GC4
Analyst: LMC

Prep Batch:
Prep Method: 5035
Prep Date/Time:
Initial Prep Wt./Vol.: 7.11
Prep Extract Vol: 5



Print Date: 12/16/2010

Client Sample ID: **SB-5111-8**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-8A
Lab Project ID: G341-631

Collection Date: 30-Nov-10 15:50
Received Date: 01-Dec-10
Matrix: SOIL
Solids: 85.3
Basis: Dry

Results by 8015GRO

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Gasoline Range Organics	BQL	4.37	MG/KG	1	14-Dec-10 15:40

Surrogates

BFB	82.3	70-130	%	1	14-Dec-10 15:40
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Batch Information

Analytical Batch: VP121410
Analytical Method: 8015GRO
Instrument: GC4
Analyst: LMC

Prep Batch:
Prep Method: 5035
Prep Date/Time:
Initial Prep Wt./Vol.: 8.05
Prep Extract Vol: 5



Print Date: 12/16/2010

Client Sample ID: **MW-5111-2**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-9A
Lab Project ID: G341-631

Collection Date: 30-Nov-10 16:30
Received Date: 01-Dec-10
Matrix: WATER

Results by 8260

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Acetone	BQL	125	UG/L	5	06-Dec-10 15:52
Benzene	7.55	5.00	UG/L	5	06-Dec-10 15:52
Bromobenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
Bromochloromethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
Bromodichloromethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
Bromoform	BQL	5.00	UG/L	5	06-Dec-10 15:52
Bromomethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
2-Butanone	BQL	125	UG/L	5	06-Dec-10 15:52
n-Butylbenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
sec-Butylbenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
tert-Butylbenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
Carbon disulfide	BQL	5.00	UG/L	5	06-Dec-10 15:52
Carbon tetrachloride	BQL	5.00	UG/L	5	06-Dec-10 15:52
Chlorobenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
Chloroethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
Chloroform	BQL	5.00	UG/L	5	06-Dec-10 15:52
Chloromethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
2-Chlorotoluene	BQL	5.00	UG/L	5	06-Dec-10 15:52
4-Chlorotoluene	BQL	5.00	UG/L	5	06-Dec-10 15:52
Dibromochloromethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,2-Dibromo-3-chloropropane	BQL	25.0	UG/L	5	06-Dec-10 15:52
Dibromomethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,2-Dibromoethane (EDB)	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,2-Dichlorobenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,3-Dichlorobenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,4-Dichlorobenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
trans-1,4-Dichloro-2-butene	BQL	25.0	UG/L	5	06-Dec-10 15:52
1,1-Dichloroethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,1-Dichloroethene	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,2-Dichloroethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
cis-1,2-Dichloroethene	BQL	5.00	UG/L	5	06-Dec-10 15:52
trans-1,2-dichloroethene	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,2-Dichloropropane	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,3-Dichloropropane	BQL	5.00	UG/L	5	06-Dec-10 15:52
2,2-Dichloropropane	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,1-Dichloropropene	BQL	5.00	UG/L	5	06-Dec-10 15:52
cis-1,3-Dichloropropene	BQL	5.00	UG/L	5	06-Dec-10 15:52
trans-1,3-Dichloropropene	BQL	5.00	UG/L	5	06-Dec-10 15:52
Dichlorodifluoromethane	BQL	25.0	UG/L	5	06-Dec-10 15:52
Diisopropyl ether (DIPE)	BQL	5.00	UG/L	5	06-Dec-10 15:52
Ethylbenzene	31.9	5.00	UG/L	5	06-Dec-10 15:52
Hexachlorobutadiene	BQL	5.00	UG/L	5	06-Dec-10 15:52
2-Hexanone	BQL	25.0	UG/L	5	06-Dec-10 15:52
Iodomethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
Isopropylbenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
4-Isopropyltoluene	BQL	5.00	UG/L	5	06-Dec-10 15:52



Print Date: 12/16/2010

Client Sample ID: **MW-5111-2**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-9A
Lab Project ID: G341-631

Collection Date: 30-Nov-10 16:30
Received Date: 01-Dec-10
Matrix: WATER

Results by 8260

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Methylene chloride	BQL	25.0	UG/L	5	06-Dec-10 15:52
4-Methyl-2-pentanone	BQL	25.0	UG/L	5	06-Dec-10 15:52
Methyl-tert-butyl ether (MTBE)	124	5.00	UG/L	5	06-Dec-10 15:52
Naphthalene	10.8	5.00	UG/L	5	06-Dec-10 15:52
n-Propyl benzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
Styrene	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,1,1,2-Tetrachloroethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,1,2,2-Tetrachloroethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
Tetrachloroethene	BQL	5.00	UG/L	5	06-Dec-10 15:52
Toluene	12.8	5.00	UG/L	5	06-Dec-10 15:52
1,2,3-Trichlorobenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,2,4-Trichlorobenzene	BQL	5.00	UG/L	5	06-Dec-10 15:52
Trichloroethene	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,1,1-Trichloroethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,1,2-Trichloroethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
Trichlorofluoromethane	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,2,3-Trichloropropane	BQL	5.00	UG/L	5	06-Dec-10 15:52
1,2,4-Trimethylbenzene	48.2	5.00	UG/L	5	06-Dec-10 15:52
1,3,5-Trimethylbenzene	11.3	5.00	UG/L	5	06-Dec-10 15:52
Vinyl chloride	BQL	5.00	UG/L	5	06-Dec-10 15:52
m-,p-Xylene	158	10.0	UG/L	5	06-Dec-10 15:52
o-Xylene	5.55	5.00	UG/L	5	06-Dec-10 15:52

Surrogates

1,2-Dichloroethane-d4	97	64-140	%	5	06-Dec-10 15:52
Toluene-d8	101	82-117	%	5	06-Dec-10 15:52
4-Bromofluorobenzene	103	85-115	%	5	06-Dec-10 15:52

Batch Information

Analytical Batch: 3120610
Analytical Method: 8260
Instrument: MSD3
Analyst: BWS

Prep Batch:
Prep Method:
Prep Date/Time:
Initial Prep Wt./Vol.: 5
Prep Extract Vol: 5



Print Date: 12/16/2010

Client Sample ID: **MW-5111-2**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-9F
Lab Project ID: G341-631

Collection Date: 30-Nov-10 16:30
Received Date: 01-Dec-10
Matrix: WATER

Results by 8270

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
Acenaphthene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Acenaphthylene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Anthracene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Benzo[a]anthracene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Benzo[a]pyrene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Benzo[b]fluoranthene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Benzo[g,h,i]perylene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Benzo[k]fluoranthene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Benzoic Acid	BQL	25.3	UG/L	1	03-Dec-10 20:40
Bis(2-chloroethoxy)methane	BQL	5.05	UG/L	1	03-Dec-10 20:40
Bis(2-chloroethyl)ether	BQL	5.05	UG/L	1	03-Dec-10 20:40
Bis(2-chloroisopropyl)ether	BQL	5.05	UG/L	1	03-Dec-10 20:40
Bis(2-ethylhexyl)phthalate	BQL	5.05	UG/L	1	03-Dec-10 20:40
4-bromophenyl phenyl ether	BQL	5.05	UG/L	1	03-Dec-10 20:40
Butylbenzylphthalate	BQL	5.05	UG/L	1	03-Dec-10 20:40
2-Chloronaphthalene	BQL	5.05	UG/L	1	03-Dec-10 20:40
2-Chlorophenol	BQL	5.05	UG/L	1	03-Dec-10 20:40
4-Chloro-3-methylphenol	BQL	5.05	UG/L	1	03-Dec-10 20:40
4-Chloroaniline	BQL	25.3	UG/L	1	03-Dec-10 20:40
4-Chlorophenyl phenyl ether	BQL	5.05	UG/L	1	03-Dec-10 20:40
Chrysene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Dibenzo[a,h]anthracene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Dibenzofuran	BQL	5.05	UG/L	1	03-Dec-10 20:40
Di-n-Butylphthalate	BQL	5.05	UG/L	1	03-Dec-10 20:40
1,2-Dichlorobenzene	BQL	5.05	UG/L	1	03-Dec-10 20:40
1,3-Dichlorobenzene	BQL	5.05	UG/L	1	03-Dec-10 20:40
1,4-Dichlorobenzene	BQL	5.05	UG/L	1	03-Dec-10 20:40
3,3'-Dichlorobenzidine	BQL	10.1	UG/L	1	03-Dec-10 20:40
2,4-Dichlorophenol	BQL	5.05	UG/L	1	03-Dec-10 20:40
Diethylphthalate	BQL	5.05	UG/L	1	03-Dec-10 20:40
Dimethylphthalate	BQL	5.05	UG/L	1	03-Dec-10 20:40
2,4-Dimethylphenol	BQL	5.05	UG/L	1	03-Dec-10 20:40
Di-n-octylphthalate	BQL	5.05	UG/L	1	03-Dec-10 20:40
4,6-Dinitro-2-methylphenol	BQL	25.3	UG/L	1	03-Dec-10 20:40
2,4-Dinitrophenol	BQL	25.3	UG/L	1	03-Dec-10 20:40
2,4-Dinitrotoluene	BQL	5.05	UG/L	1	03-Dec-10 20:40
2,6-Dinitrotoluene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Diphenylamine *	BQL	5.05	UG/L	1	03-Dec-10 20:40
Fluoranthene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Fluorene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Hexachlorobenzene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Hexachlorobutadiene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Hexachlorocyclopentadiene	BQL	10.1	UG/L	1	03-Dec-10 20:40
Hexachloroethane	BQL	5.05	UG/L	1	03-Dec-10 20:40
Indeno(1,2,3-c,d)pyrene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Isophorone	BQL	5.05	UG/L	1	03-Dec-10 20:40



Print Date: 12/16/2010

Client Sample ID: **MW-5111-2**
Client Project ID: Robeson Co. PSAs
Lab Sample ID: G341-631-9F
Lab Project ID: G341-631

Collection Date: 30-Nov-10 16:30
Received Date: 01-Dec-10
Matrix: WATER

Results by 8270

<u>Parameter</u>	<u>Result</u>	<u>RL/CL</u>	<u>Units</u>	<u>DF</u>	<u>Date Analyzed</u>
2-Methylnaphthalene	BQL	5.05	UG/L	1	03-Dec-10 20:40
2-Methylphenol	BQL	5.05	UG/L	1	03-Dec-10 20:40
3- & 4-Methylphenol	BQL	5.05	UG/L	1	03-Dec-10 20:40
Naphthalene	10.7	5.05	UG/L	1	03-Dec-10 20:40
2-Nitroaniline	BQL	5.05	UG/L	1	03-Dec-10 20:40
3-Nitroaniline	BQL	25.3	UG/L	1	03-Dec-10 20:40
4-Nitroaniline	BQL	25.3	UG/L	1	03-Dec-10 20:40
Nitrobenzene	BQL	5.05	UG/L	1	03-Dec-10 20:40
2-Nitrophenol	BQL	5.05	UG/L	1	03-Dec-10 20:40
4-Nitrophenol	BQL	25.3	UG/L	1	03-Dec-10 20:40
N-Nitrosodi-n-propylamine	BQL	5.05	UG/L	1	03-Dec-10 20:40
Pentachlorophenol	BQL	25.3	UG/L	1	03-Dec-10 20:40
Phenanthrene	BQL	5.05	UG/L	1	03-Dec-10 20:40
Phenol	BQL	5.05	UG/L	1	03-Dec-10 20:40
Pyrene	BQL	5.05	UG/L	1	03-Dec-10 20:40
1,2,4-Trichlorobenzene	BQL	5.05	UG/L	1	03-Dec-10 20:40
2,4,5-Trichlorophenol	BQL	5.05	UG/L	1	03-Dec-10 20:40
2,4,6-Trichlorophenol	BQL	5.05	UG/L	1	03-Dec-10 20:40

Surrogates

2-Fluorobiphenyl	73	-	%	1	03-Dec-10 20:40
2-Fluorophenol	80	-	%	1	03-Dec-10 20:40
Nitrobenzene-d5	68	-	%	1	03-Dec-10 20:40
Phenol-d6	83	-	%	1	03-Dec-10 20:40
2,4,6-Tribromophenol	91	-	%	1	03-Dec-10 20:40
4-Terphenyl-d14	77	-	%	1	03-Dec-10 20:40

Batch Information

Analytical Batch: 6120310
Analytical Method: 8270
Instrument: MSD6
Analyst: CMP

Prep Batch: 17856
Prep Method: 3520
Prep Date/Time: 02-Dec-10 11:45
Initial Prep Wt./Vol.: 990
Prep Extract Vol: 5.0



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1 CLIENT: <u>GEL Eng. of NC</u> PHONE NO.: <u>(919) 323-8828</u> CONTACT: <u>Andrew Eyer</u> SITE/PWSID#: <u>I-4413</u> PROJECT: <u>Robeson Co. PSAs</u> <u>ade@gel.com</u> REPORTS TO: <u>GEL Eng. of NC</u> <u>PO Box 14862</u> <u>RTP, NC 27709</u> FAX NO.: <u>(919) 237-9188</u> INVOICE TO: <u>NC DOT</u> QUOTE #: _____ P.O. NUMBER: <u>WBS # 35701.2.1</u>				SGS Reference: <u>G341-631</u> PAGE _____ OF _____																	
LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	REMARKS																
					<table border="0" style="width: 100%;"> <tr> <td style="width: 20%;">Preservatives Used</td> <td style="width: 10%;">MDDM</td> <td style="width: 10%;">HCl</td> <td style="width: 60%;"></td> </tr> <tr> <td>Analysis Required</td> <td></td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">③</td> <td>DRO</td> <td>VOCs</td> <td>5VOCs</td> </tr> <tr> <td></td> <td>GRO</td> <td></td> <td></td> </tr> </table>	Preservatives Used	MDDM	HCl		Analysis Required				③	DRO	VOCs	5VOCs		GRO		
Preservatives Used	MDDM	HCl																			
Analysis Required																					
③	DRO	VOCs	5VOCs																		
	GRO																				
	SB-5111-1	11/30/10	1400	SO	G 1 2																
	SB-5111-2	↓	1410	SO	G 1 2																
	SB-5111-3	↓	1430	SO	G 1 2																
	SB-5111-4	↓	1445	SO	G 1 2																
	SB-5111-5	↓	1505	SO	G 1 2																
	SB-5111-6	↓	1520	SO	G 1 2																
	SB-5111-7	↓	1535	SO	G 1 2																
	SB-5111-8	↓	1550	SO	G 1 2																
	MW-5111-2	↓	1630	GW	A 3 2																

5 Collected/Relinquished By: (1) [Signature] Date 12/1/10 Time 12:10 Received By: [Signature]

Relinquished By: (2) [Signature] Date 12/1/10 Time 15:00 Received By: [Signature]

Relinquished By: (3) _____ Date _____ Time _____ Received By: _____

Relinquished By: (4) _____ Date _____ Time _____ Received By: _____

4 Shipping Carrier: _____ Samples Received Cold? (Circle) YES NO

Shipping Ticket No: _____ Temperature °C: 4.6, 4.8

Special Deliverable Requirements: _____ Chain of Custody Seal: (Circle) INTACT BROKEN

Special Instructions: _____ (Circle) ABSENT

Requested Turnaround Time: _____ RUSH STD Date Needed _____