

**PRELIMINARY SITE ASSESSMENT
PARCEL 010, STATE PROJECT B-4490
WBS ELEMENT 33727.1.1, CUMBERLAND COUNTY**

**REPLACE BRIDGE NO. 116 OVER CXS RAILROAD,
NORTH SOUTH RAILROAD, AND HILLSBORO STREET
ON NC 24-210, FAYETTEVILLE, NORTH CAROLINA**

Schnabel Project 11821014.33
April 8, 2014





April 8, 2014

Mr. Mohammed A. Mulla, P.E., CPM, MCE
NCDOT, Geotechnical Engineering Unit
1020 Birch Ridge Drive
Raleigh, NC 27610

RE: State Project: B-4490
WBS Element: 33727.1.1
County: Cumberland
Description: Replace Bridge No. 116 over CSX Railroad, North South Railroad, and Hillsboro Street on NC 24-210 in Fayetteville

Subject: **Preliminary Site Assessment for Parcel 010, Fayetteville, NC**
Schnabel Engineering Project 11821014.33

Dear Mr. Mulla:

SCHNABEL ENGINEERING SOUTH, P.C. (Schnabel) is pleased to submit our report for this project. This study was performed in accordance with our proposal dated January 23, 2014 as authorized by the Notice to Proceed on January 24, 2014 and was conducted under our June 2, 2011 Agreement with the NCDOT.

We appreciate the opportunity to be of service for this project. Please call us if you have any questions regarding this report.

Sincerely,

SCHNABEL ENGINEERING SOUTH, PC

A handwritten signature in blue ink that reads "Benjamin L. Bradley".

Benjamin L. Bradley, GIT
Project Scientist

A handwritten signature in blue ink that reads "Gregory B. Kuntz".

Gregory B. Kuntz, LG
Senior Associate Scientist

BB/GK

schnabel-eng.com

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

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
PRELIMINARY SITE ASSESSMENT FOR PARCEL 010
STATE PROJECT B-4490, WBS ELEMENT 33727.1.1
REPLACE BRIDGE NO. 116 OVER CSX RAILROAD, NORTH SOUTH RAILROAD,
AND HILLSBORO STREET ON NC 24-210
FAYETTEVILLE, CUMBERLAND COUNTY, NORTH CAROLINA**

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1.0 INTRODUCTION

The North Carolina Department of Transportation (NCDOT) is replacing a bridge over CSX Railroad, North South Railroad, and Hillsboro Street on Highway 24/210 (W. Rowan Street) in the town of Fayetteville, located in Cumberland County, North Carolina. Acquisition of properties within the right-of-way (ROW) is necessary prior to road and bridge construction. Schnabel Engineering conducted Preliminary Site Assessments (PSAs) on 10 sites (thirteen parcels) located within the proposed ROW that are of concern to the NCDOT.

This report summarizes the results of field activities conducted during the PSA for the proposed property acquisition area (Study Area) identified by NCDOT on Parcel 010. The property is located at 614 W. Rowan Street and is a vacant property, currently owned by Utley Rentals, LLC (Figure 1). The property line and topography are shown on Figure 2. The approximate NCDOT project limits that delineate the property acquisition area are shown on Figure 3.

The scope of work executed at the site was performed in general accordance with our cost proposal dated January 23, 2014 and was initiated based on a Notice to Proceed issued by the NCDOT Geotechnical Engineering Unit on January 24, 2014 under contract 7000012208, dated June 2, 2011.

2.0 BACKGROUND AND SITE DESCRIPTION

A one-story cinder block structure is located on Parcel 010. The surface of the proposed ROW is covered with a paved parking lot and some grassy areas. A culvert is located along the western part of the property boundary. Several utilities cross the site including buried water and storm sewer lines, and overhead electric lines are located along the ROW. The information regarding prior site use provided to Schnabel Engineering by NCDOT was that the architectural style of the building suggests the site operated as a gas station. This PSA is for the investigation of the entire parcel. Photographs of the Study Area are presented in Appendix A.

3.0 FIELD METHODOLOGY

Prior to mobilizing to the site to conduct the field investigation, Schnabel Engineering contacted North Carolina One Call to locate underground utilities in the Study Area of the site. Schnabel Engineering mobilized a geophysical crew to the site on January 29, 2014 and performed an electromagnetic survey of the subsurface in the proposed ROW area within the parcel. The electromagnetic survey equipment (EM61-MK2) identified various magnetic anomalies within the Study Area. The Schnabel geophysical crew returned to the Study Area on February 10, 2014 to perform ground penetrating radar (GPR) survey with a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna. Results of the survey suggested the presence of buried utility lines or conduits within the Study Area.

After reviewing the background information and geophysical data, Schnabel returned to Parcel 010 to conduct field screening of soils from within the Study Area. Three soil borings designated B-10-01 through B-10-03 were advanced by SAEDACCO of Fort Mill, SC along Rowan Street on February 19, 2014. The location of the soil borings are shown on Figure 3. The borings were advanced to a total depth of 10 to 12 feet below ground surface (bgs). The borings drilled within the Study Area were advanced utilizing a track-mounted Geoprobe[®] (Model 7822-DT) with direct push probe technology. At the completion of the sampling activities, the borings were backfilled with soil removed from the boring during sampling and/or bentonite chips.

Soils for field screening were obtained from the borings using a MacroCore[®] sampler fitted with a new, single-use, five foot long disposable polyvinyl chloride (PVC) liner. A portion of each 2-foot interval was placed in a separate re-sealable plastic bag. These bags were sealed and placed at ambient temperature for field screening with a MiniRAE Plus photo ionization detector (PID). Volatiles were allowed to accumulate in the headspace of each bag for approximately 15 minutes, and then the headspace of each sealed bag was scanned with the PID. Headspace screening of the soil samples indicated a concentration of 0 ppm at each boring location at intervals of two, four, six, eight, ten, and twelve feet bgs (Table 1, Sampling Intervals and Field Volatile Measurements). The PID was calibrated on February 19, 2014 in general accordance with the manufacturer's recommended calibration procedures. The PID readings were recorded with the soil descriptions and indications of staining or odors, if present. Logs for each boring are presented in Appendix C.

Soil samples were not submitted for laboratory analysis and Ultra Violet Fluorescence (UVF) was not performed at this parcel because PID readings did not meet or exceed 10 ppm at the screened intervals noted above. A groundwater sample was collected at B-10-01 using a peristaltic GeoPump 2 with a Teflon[™]-lined polyethylene tube. A groundwater sample was collected from this boring because it was advanced in a planned cut area for a proposed culvert. The water samples were placed in laboratory-supplied containers and stored on ice pending shipment to Pace Analytical in Hampstead, NC. Sample information was recorded on the Chain-of-Custody form and the samples were submitted for chemical analysis of chromium and lead by EPA Method 6010, 602 volatiles by Method 6200, EPA Method 625 with top 10 tentatively identified compounds (TICS), MADEP EPH and VPH, and EPA Method 6200B. The Summary of Laboratory Results is shown on Table 2.

Soils collected from borings within the Study Area generally consisted of orangish brown Silty Sand with Clay (SM) or gray Sandy Lean Clay (CL). GPS coordinates for each boring were obtained using a Trimble Pro-XRS DGPS system (Appendix D) with coordinates reported in US State Plane 1983 system, North Carolina 3200 zone, using the NAD 83 datum, with units in US survey feet.

4.0 GROUNDWATER MONITORING WELLS OR REMEDIATION WELLS

Groundwater monitoring wells and remediation wells were not observed within the proposed ROW or easement on this parcel.

5.0 DISCUSSION OF RESULTS

The geophysical survey conducted at the site did not indicate the presence of probable USTs on Parcel 010. The geophysical survey did indicate the presence of buried utility lines and conduits.

Chromium was detected in the groundwater sample collected from B-10-01 at a concentration of 16.1 ug/L which exceeds the NC 2L groundwater quality standard. Lead and two unknown TICS were detected by laboratory. The detected lead is below the NC 2L groundwater quality standard. Laboratory analytical results are summarized in Table 2. The laboratory report for this sample is presented in Appendix E.

6.0 CONCLUSIONS

Anomalies were not observed in the EM or the GPR geophysical data at the subject property that we interpret to be the results of metallic USTs within about 6 feet of the ground surface.

Three soil borings B-10-01, B-10-02, and B-10-03 were advanced to evaluate potential petroleum impact within the Study Area, and to document soil conditions.

Chromium exceeds the NC 2L groundwater quality standards, however, the remainder of the results did not indicate petroleum impacts on this property.

7.0 RECOMMENDATIONS

Based on the currently available information presented in this report, additional assessment is not recommended.

8.0 LIMITATIONS

This PSA was prepared for the use of the NCDOT. The scope of work performed at the site is limited to the tasks described in our cost proposal dated January 23, 2014. This report is not intended to represent an exhaustive research of all potential hazards that may exist. Schnabel makes no other declarations, or any express or implied warranty, as to the professional services provided under the terms of the agreement.

TABLES

Table 1, Sampling Intervals and Field Volatile Measurements

Table 2, Summary of Laboratory Results

TABLE 1
SAMPLING INTERVALS AND FIELD VOLATILE MEASUREMENTS
PARCEL 010
NCDOT B-4490, CUMBERLAND COUNTY

Depth Below Ground Surface	Soil Borings		
	B-10-01	B-10-02	B-10-03
0 - 2 feet	0.0	0.0	0.0
2 - 4 feet	0.0	0.0	0.0
4 - 6 feet	0.0	0.0	0.0
6 - 8 feet	0.0	0.0	0.0
8 - 10 feet	0.0	0.0	0.0
10 - 12 feet	0.0**	NS	NS

Notes:

Shaded cells were submitted for laboratory analysis

NS: Not Screened

** : Water Sample Taken

Field volatile measurements obtained with a MiniRae Photo Ionization Detector
Measurements in parts per million (ppm)

**TABLE 2
SUMMARY OF LABORATORY RESULTS
PARCEL 010
NCDOT B-4490, CUMBERLAND COUNTY**

Sample ID:	NC 2L Standards	B-10-01
Matrix:		Water
Sampled Date:		2/19/2014
Metals 6010		
Chromium	10	16.1
Lead	15	5.9
MADEP EPH		
Various	Various	ND
MADEP VPH		
Various	Various	ND
602 Volatiles by Method 6200B		
Various	Various	ND
EPA Method 625 Semi-volatile Organic Compounds (SVOCs)		
Various	Various	ND

Notes:

Units in ug/L

ND: Not Detected

Classifications and Water Quality Standards Applicable to the Groundwaters of North Carolina,
NCAC Title 15A Subchapter 2L, Amended April 1, 2013

Bold exceeds the standard

FIGURES

Figure 1, Vicinity Map

Figure 2, Site Map

Figure 3 and 3A, Boring Locations and Legend



Source: 1. Cumberland County, NC, GIS Department
http://www.co.cumberland.nc.us/is_technology/gis.asp
 Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet

240 120 0 240 Feet
 Scale: 1:3,000






SITE PROJECT B-4490, PSA PARCELS
 CUMBERLAND COUNTY, NORTH CAROLINA
 NC DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 11821014.33

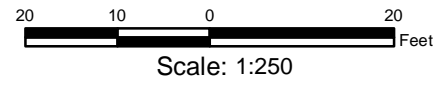
VICINITY MAP

FIGURE 1



2008 AERIAL NOT REPRESENTATIVE OF CURRENT CONDITIONS

-  Boring Locations
-  4 Foot Contours
-  Site Property Line



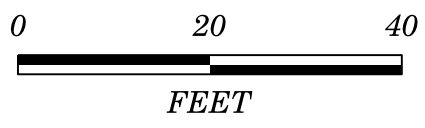
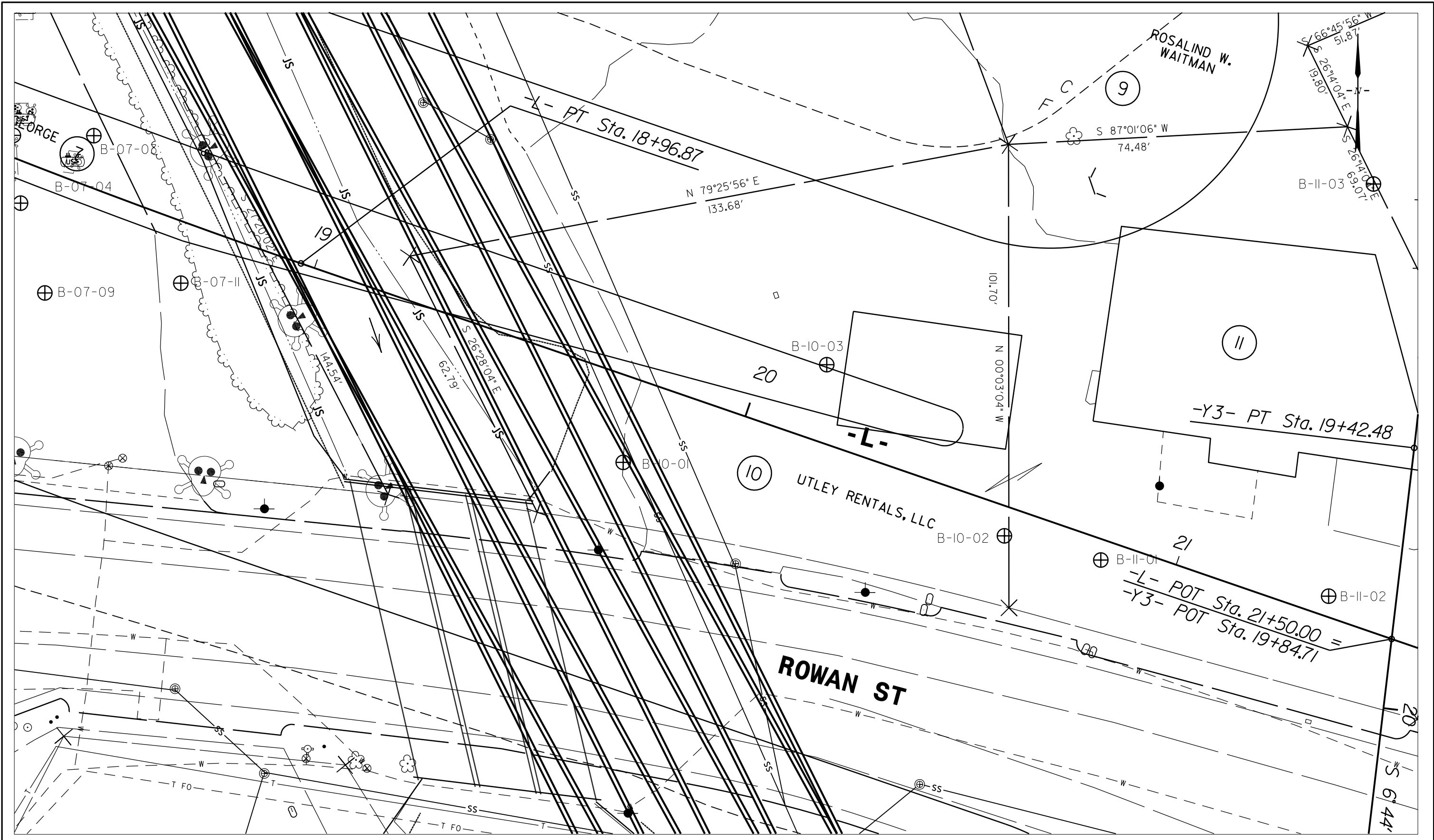
Source: 1. Cumberland County, NC, GIS Department
http://www.co.cumberland.nc.us/is_technology/gis.aspx
 Projection: NAD 1983 StatePlane North Carolina FIPS 3200 Feet



SITE PROJECT B-4490, PARCEL 010
 CUMBERLAND COUNTY, NORTH CAROLINA
 NC DEPARTMENT OF TRANSPORTATION
 PROJECT NO. 11821014.33

SITE MAP
 PARCEL 010

FIGURE 2



NC Department of Transportation
Geotechnical Engineering Unit
State Project No. B-4490
Cumberland County, North Carolina

BORING LOCATIONS
Parcel 010
Figure 3

04/16/11

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	○ EP
Property Corner	-----
Property Monument	□ ECM
Parcel/Sequence Number	⑫③
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----
Known Soil Contamination: Boundary or Site	☠
Potential Soil Contamination: Boundary or Site	?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	○
Sign	○
Well	♀
Small Mine	⌘
Foundation	□
Area Outline	□
Cemetery	†
Building	□
School	□
Church	□
Dam	-----

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	-----
Buffer Zone 1	-----
Buffer Zone 2	-----
Flow Arrow	-----
Disappearing Stream	-----
Spring	○
Wetland	-----
Proposed Lateral, Tail, Head Ditch	-----
False Sump	-----

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○ MILEPOST 35
Switch	□ SWITCH
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	-----
Proposed Right of Way Line	-----
Proposed Right of Way Line with Iron Pin and Cap Marker	-----
Proposed Right of Way Line with Concrete or Granite Marker	-----
Existing Control of Access	-----
Proposed Control of Access	-----
Existing Easement Line	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----

ROADS AND RELATED FEATURES:

Proposed Permanent Easement with Iron Pin and Cap Marker	◆
Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	-----
Proposed Slope Stakes Fill	-----
Proposed Curb Ramp	○ CR
Curb Cut Future Ramp	○ CCFR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	-----

VEGETATION:

Single Tree	○
Single Shrub	○
Hedge	-----
Woods Line	-----

Orchard	-----
Vineyard	-----

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	-----
Bridge Wing Wall, Head Wall and End Wall	-----
MINOR:	
Head and End Wall	-----
Pipe Culvert	-----
Footbridge	-----
Drainage Box: Catch Basin, DI or JB	□ CB
Paved Ditch Gutter	-----
Storm Sewer Manhole	○ S
Storm Sewer	-----

UTILITIES:

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○ P
Power Line Tower	⊗
Power Transformer	⊗
U/G Power Cable Hand Hole	-----
H-Frame Pole	-----
Recorded U/G Power Line	-----
Designated U/G Power Line (S.U.E.*)	-----

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	○ T
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	-----
Recorded U/G Telephone Cable	-----
Designated U/G Telephone Cable (S.U.E.*)	-----
Recorded U/G Telephone Conduit	-----
Designated U/G Telephone Conduit (S.U.E.*)	-----
Recorded U/G Fiber Optics Cable	-----
Designated U/G Fiber Optics Cable (S.U.E.*)	-----

WATER:

Water Manhole	○
Water Meter	○
Water Valve	⊗
Water Hydrant	⊕
Recorded U/G Water Line	-----
Designated U/G Water Line (S.U.E.*)	-----
Above Ground Water Line	-----

TV:

TV Satellite Dish	⊗
TV Pedestal	□
TV Tower	⊗
U/G TV Cable Hand Hole	-----
Recorded U/G TV Cable	-----
Designated U/G TV Cable (S.U.E.*)	-----
Recorded U/G Fiber Optic Cable	-----
Designated U/G Fiber Optic Cable (S.U.E.*)	-----

GAS:

Gas Valve	◇
Gas Meter	⊕
Recorded U/G Gas Line	-----
Designated U/G Gas Line (S.U.E.*)	-----
Above Ground Gas Line	-----

SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

MISCELLANEOUS:

Utility Pole	●
Utility Pole with Base	□
Utility Located Object	○
Utility Traffic Signal Box	□
Utility Unknown U/G Line	-----
U/G Tank; Water, Gas, Oil	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊕
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

APPENDIX A
PHOTOGRAPHS



Parcel 010, facing north toward B-10-01.



Parcel 010, facing north toward B-10-03.



STATE PROJECT B-4490
CUMBERLAND CO.
NORTH CAROLINA
NC DEPT. OF TRANSPORTATION
PROJECT NO. 11821014.33

SOIL BORINGS
PARCEL 010



Parcel 010, facing north toward B-10-02.

APPENDIX B
GEOPHYSICS REPORT



March 27, 2014

Mr. Mohammed A. Mulla, P.E., CPM, MCE
NCDOT, Geotechnical Engineering Unit
1020 Birch Ridge Drive
Raleigh, NC 27610

RE: State Project: B-4490
 WBS Element: 33727.1.1
 County: Cumberland
 Description: Replace Bridge No. 116 over CSX Railroad, North South Railroad, and Hillsboro Street on NC 24-210

**Subject: Project 11821014.33, Report on Geophysical Surveys
 Parcel 010, Utley Rentals LLC Property, Fayetteville, North Carolina**

Dear Mr. Mulla:

SCHNABEL ENGINEERING SOUTH, PC (Schnabel) is pleased to present this report on the geophysical surveys we performed on the subject property. The report includes two 11x17 inch color figures and two 8.5x11 inch color figures. This study was performed in accordance with our proposal for Geophysical Surveys to Locate Possible USTs dated December 26, 2013, as approved by Terry Farr on January 24, 2014, and our existing agreement dated June 2, 2011. Gordon Box provided a verbal notice to proceed on January 23, 2014.

INTRODUCTION

The field work described in this report was performed on January 29, 2014 and February 7 and February 11, 2014, by Schnabel under our 2011 contract with the NCDOT. The purpose of the geophysical surveys was to evaluate the potential presence of metal underground storage tanks (USTs) in the accessible areas of Parcel 010. Photographs of the property are included on Figure 1. The property is located on the north side of the NC 210 (Rowan Street) near the intersection with Murchison Road in Fayetteville, NC.

The geophysical surveys consisted of an electromagnetic (EM) induction survey and a ground penetrating radar (GPR) survey. The EM survey was performed using a Geonics EM61-MK2 (EM61) instrument. The EM61 is a time domain metal detector that stores data digitally for later processing and review. Sensitivity to metallic objects is dependent on the size, depth, and orientation of the buried object and the amount of noise (i.e. response from spurious metallic objects) in the area. The EM61 can generally observe a single

buried 55 gallon drum at a depth of 10 feet or less. The EM61 makes measurements by creating an electromagnetic pulse and then measuring the response from metallic objects over time after the pulse is generated. We measured and recorded the response at several time increments after the pulse to help evaluate relative size and depth of metallic objects in the subsurface.

The GPR survey was performed over selected EM61 anomalies using a Geophysical Survey Systems SIR-3000 system equipped with a 400 MHz antenna to further investigate and evaluate EM responses that could indicate a potential UST. The depth penetration of the GPR signal, when using a 400 MHz antenna, is normally limited to 6 feet or less.

Photographs of the equipment used are shown on Figure 2.

FIELD METHODOLOGY

We obtained locations of geophysical data points using a sub-meter Trimble Pro-XRS differential global positioning system (DGPS). References to direction and location in this report are based on the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 83 datum, with units in US survey feet. We also recorded the locations of existing site features (utilities, concrete, etc.) with the DGPS for later correlation with the geophysical data and a site plan provided by the NCDOT. The Microstation data provided by the NCDOT appears to be offset from the DGPS data we collected. The amount (approximately 5 feet) and direction (WNN) of offset of the Microstation data appear to be consistent for all parcels where we collected data for this project.

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

DISCUSSION OF RESULTS

The contoured EM61 data collected over Parcel 010 and the GPR survey area locations are shown on Figure 3, EM61 Early Time Gate Response, and Figure 4, EM61 Differential Response. Areas outside the colored, contoured EM61 data were not surveyed. Early time data refer to the response measured at a short time after the initial EM pulse is generated. Early time data typically contain responses from all metal objects, small or large and shallow or deep, within the sensitivity range of the instrument. Differential data represent the difference in response between the top and bottom coils of the EM61 instrument at a later time after the initial pulse than early time data. Differential data naturally tend to filter out the effect of surface and very shallowly buried metallic objects. Typically, the differential response emphasizes anomalies from deeper and larger objects such as USTs.

We were not able to access an area in the western portion of the planned survey area due to the presence of thick vegetation. We were unable to access another portion of the planned survey area due to the presence of vehicles that were not moved despite multiple conversations with the tenant. The EM data contain multiple anomalies that we investigated with GPR (as shown on Figures 3 and 4), all of

which appear to be the result of buried utilities, reinforced concrete, or other metal objects at the ground surface or at shallow depths. The geophysical data collected at the site do not indicate the presence of metallic USTs within the areas surveyed.

CONCLUSIONS

As shown in Figures 3 and 4, the EM data we collected over Parcel 010 did not cover portions of the planned survey area due to the presence of thick vegetation and vehicles within the planned survey area. The EM data include responses from several visible metallic objects at grade (e.g. vehicles, utility meters, etc.). We did not observe anomalies in the EM or the GPR geophysical data at the subject property that we interpret to be the results of metallic USTs within about 6 feet of the ground surface.

LIMITATIONS

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

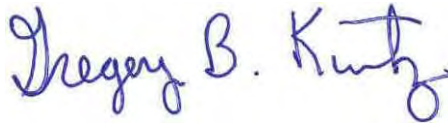
We appreciate the opportunity to have provided these services. Please call if you need additional information or have any questions.

Sincerely,

SCHNABEL ENGINEERING SOUTH, PC



James W. Whitt, LG
Senior Staff Geophysicist



Gregory B. Kuntz, LG
Senior Associate

JWW:JCD:GBK

Attachments: Figures (4)

CC: NCDOT, Gordon Box

FILE: G:\2011-SDE-JOBS\11821014_00_NCDOT_2011_GEOTECHNICAL_UNIT_SERVICES\11821014_33_B-4490_CUMBERLAND_COUNTY\REPORT\GEOPHYSICS\PARCEL 10\SCHNABEL
GEOPHYSICAL REPORT ON PARCEL 10 (B-4490) FINAL.DOCX

Attachments:

- Figure 1 - Parcel 010 Site Photos
- Figure 2 - Photos of Geophysical Equipment Used
- Figure 3 - EM61 Early Time Gate Response
- Figure 4 - EM61 Differential Response



Parcel 010 (Utley Rentals LLC Property), looking northwest



Parcel 010 (Utley Rentals LLC Property), looking northeast



Geonics EM61-MK2 Metal Detector with Trimble DGPS Unit



GSSI SIR-3000 Ground-Penetrating Radar with 400 MHz Antenna

Note: Stock photographs – not taken on site.

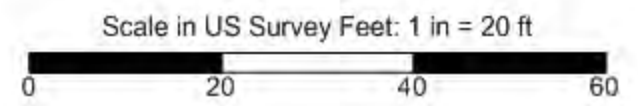
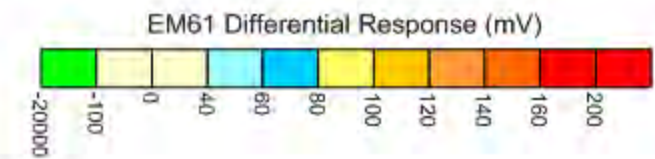
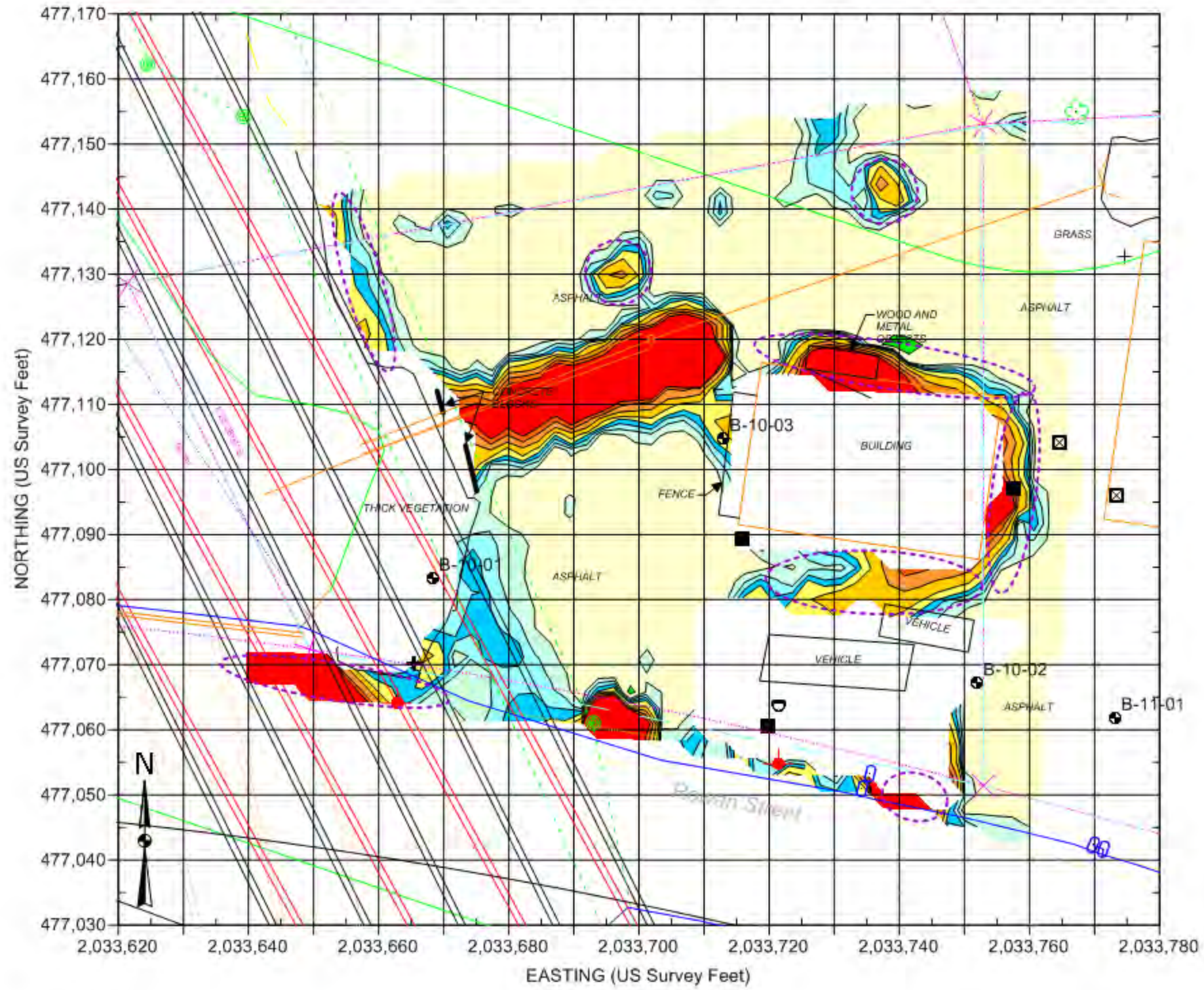


STATE PROJECT B-4490
NC DEPT. OF TRANSPORTATION
CUMBERLAND CO., NORTH CAROLINA
PROJECT NO. 11821014.33

PHOTOS OF
GEOPHYSICAL
EQUIPMENT USED

FIGURE 2

PARCEL 010



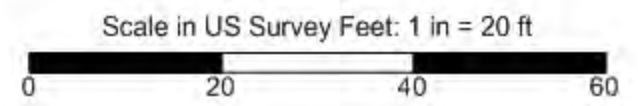
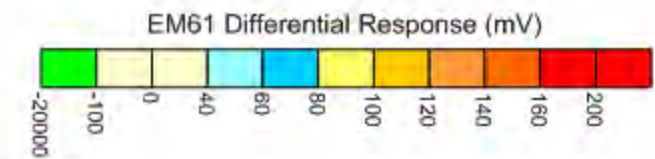
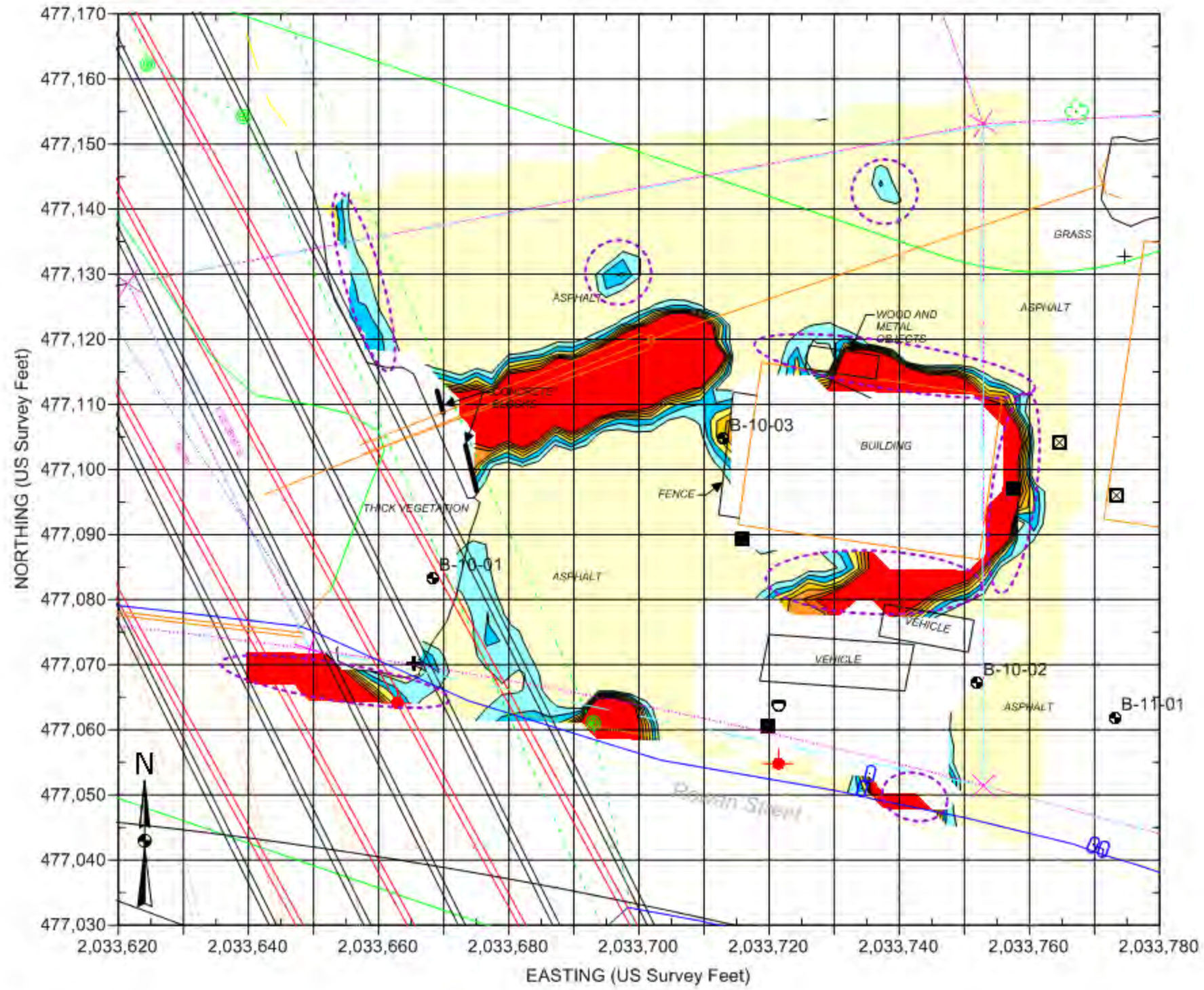
EXPLANATION	
	SIGN
	MISCELLANEOUS METALLIC OBJECT
	UTILITY MANHOLE, METER, BOX, ETC.
	EDGE OF NCDOT PROPOSED RW
	PROPERTY LINE
	GPR SURVEY AREA
	BORING LOCATION

BASE PLAN FROM NCDOT FILE:
B-4490_rdy_psh_06.dgn
(FOR SOME SITE FEATURES)

Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on January 29 and February 7, 2014, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 1983 datum. GPR data were acquired on February 11, 2014, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

	STATE PROJECT B-4490	EM61
	NC DEPARTMENT OF TRANSPORTATION	EARLY TIME GATE
	CUMBERLAND COUNTY, NC	RESPONSE
	PROJECT NO. 11821014.33	FIGURE 3

PARCEL 010



EXPLANATION	
	SIGN
	MISCELLANEOUS METALLIC OBJECT
	UTILITY MANHOLE, METER, BOX, ETC.
	EDGE OF NCDOT PROPOSED RW
	PROPERTY LINE
	GPR SURVEY AREA
	BORING LOCATION

BASE PLAN FROM NCDOT FILE:
B-4490_rdy_psh_06.dgn
(FOR SOME SITE FEATURES)

Note: The contour plot shows the difference, in millivolts (mV), between the readings from the top and bottom coils of the EM61. The difference is taken to reduce the effect of shallow metal objects and emphasize anomalies caused by deeper metallic objects, such as drums and tanks. The EM data were collected on January 29 and February 7, 2014, using a Geonics EM61-MK2 instrument. Positioning for the EM61 survey was provided using a submeter Trimble ProXRS DGPS system. Coordinates are in the US State Plane 1983 System, North Carolina 3200 Zone, using the NAD 1983 datum. GPR data were acquired on February 11, 2014, using a Geophysical Survey Systems SIR 3000 equipped with a 400 MHz antenna.

	STATE PROJECT B-4490 NC DEPARTMENT OF TRANSPORTATION CUMBERLAND COUNTY, NC PROJECT NO. 11821014.33	EM61 DIFFERENTIAL RESPONSE FIGURE 4
--	---	--

APPENDIX C
SOIL BORING LOGS



Project: Preliminary Site Assessments
Cumberland County
Fayetteville, North Carolina

Geo Probe Number: B-10-01
Contract Number: B-4490
Sheet: 1 of 1

Contractor: Saedacco, Inc.
Fort Mill, South Carolina

Contractor Foreman: W. Hall

Schnabel Representative: B. Bradley

Equipment: Geoprobe 7822DT

Method: 3-1/4" Probe Rod,
Macrocore

Hammer Type:

Dates Started: 2/19/14 **Finished:** 2/19/14

X: 477083.321 m **Y:** 2033668.327 m

Ground Surface Elevation: **Total Depth:** 12.0 ft

Groundwater Observations

	Date	Time	Depth	Casing	Caved
Encountered ∇	2/19	9:28 AM	8.0'	---	---

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DATA		TESTS	REMARKS
					DEPTH	DATA		
0.3	Topsoil							
	PROBABLE FILL, sampled as silty sand with clay; moist, orangeish brown	FILL					PID = 0.0 ppm	
4.0	SILTY SAND WITH CLAY; moist, dark brownish gray, probable RESIDUAL material	SM			5		PID = 0.0 ppm	
							PID = 0.0 ppm	
7.5	SAND; wet, orangeish white, probable RESIDUAL material	SW					PID = 0.0 ppm	
8.0	SANDY LEAN CLAY; moist, gray, probable RESIDUAL material	CL			10		PID = 0.0 ppm	
							PID = 0.0 ppm	
12.0						B-10-01	PID = 0.0 ppm	

Bottom of Geo Probe at 12.0 ft.
Boring terminated at selected depth.
Boring backfilled with bentonite and cuttings upon completion.

TEST BORING LOG PSA.GPJ SCHNABEL DATA TEMPLATE 2008_07_06.GDT 3/27/14



GEO PROBE LOG

Project: Preliminary Site Assessments
Cumberland County
Fayetteville, North Carolina

Geo Probe Number: B-10-02
Contract Number: B-4490
Sheet: 1 of 1

Contractor: Saedacco, Inc.
Fort Mill, South Carolina
Contractor Foreman: W. Hall
Schnabel Representative: B. Bradley
Equipment: Geoprobe 7822DT
Method: 3-1/4" Probe Rod,
Macrocore
Hammer Type:
Dates Started: 2/19/14 **Finished:** 2/19/14
X: 477067.203 m **Y:** 2033751.981 m
Ground Surface Elevation: **Total Depth:** 10.0 ft

Groundwater Observations						
	Date	Time	Depth	Casing	Caved	
Encountered	2/19	10:16 AM	8.5'	---	---	

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DATA		TESTS	REMARKS
					DEPTH	DATA		
0.2	Asphalt							
	PROBABLE FILL, sampled as silty sand with clay; moist, orangeish brown	FILL					PID = 0.0 ppm	
3.0	SILTY SAND; wet, orangeish brown, probable RESIDUAL material, Gray 9 to 10	SM			5		PID = 0.0 ppm	
							PID = 0.0 ppm	
							PID = 0.0 ppm	
10.0					10		PID = 0.0 ppm	

Bottom of Geo Probe at 10.0 ft.
Boring terminated at selected depth.
Boring backfilled with bentonite and cuttings upon completion.

TEST BORING LOG PSA.GPJ SCHNABEL DATA TEMPLATE 2008_07_06.GDT 3/27/14



Project: Preliminary Site Assessments
Cumberland County
Fayetteville, North Carolina

Geo Probe Number: B-10-03
Contract Number: B-4490
Sheet: 1 of 1

Contractor: Saedacco, Inc.
Fort Mill, South Carolina
Contractor Foreman: W. Hall
Schnabel Representative: B. Bradley
Equipment: Geoprobe 7822DT
Method: 3-1/4" Probe Rod,
Macrocore
Hammer Type:
Dates Started: 2/19/14 **Finished:** 2/19/14
X: 477104.757 m **Y:** 2033712.997 m
Ground Surface Elevation: **Total Depth:** 10.0 ft

Groundwater Observations						
	Date	Time	Depth	Casing	Caved	
Encountered	2/19	10:06 AM	10.0'	---	---	

DEPTH (ft)	MATERIAL DESCRIPTION	SYMBOL	ELEV (ft)	STRATUM	SAMPLING DATA		TESTS	REMARKS
					DEPTH	DATA		
0.2	Asphalt	FILL					PID = 0.0 ppm	
	PROBABLE FILL, sampled as silty sand with clay; moist, orangeish brown							
4.7	SILTY SAND; moist, grayish brown, probable RESIDUAL material, wet at 10	SM			5		PID = 0.0 ppm	
10.0					10		PID = 0.0 ppm	

Bottom of Geo Probe at 10.0 ft.
Boring terminated at selected depth.
Boring backfilled with bentonite and cuttings upon completion.

TEST BORING LOG PSA.GPJ SCHNABEL DATA TEMPLATE 2008_07_06.GDT 3/27/14

APPENDIX D
SOIL BORING GPS COORDINATES

**SOIL BORING GPS COORDINATES
NCDOT B-4490, CUMBERLAND COUNTY**

Soil Boring GPS Coordinates		
Boring Identification	Easting	Northing
	X	Y
B-10-01	2033668.327	477083.321
B-10-02	2033751.981	477067.203
B-10-03	2033712.997	477104.757

* NC State Plane 1983 System, NC 3200 Zone,
NAD 83 Datum, US Survey Feet

APPENDIX E
LABORATORY ANALYTICAL RESULTS

March 07, 2014

Chemical Testing Engineer
Materials and Tests Unit
1801 Blue Ridge Road
Raleigh, NC 27607

RE: Project: Fayetteville PSAs 33727.1.1
Pace Project No.: 92190359

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on February 20, 2014. 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,



Kevin Godwin
kevin.godwin@pacelabs.com
Project Manager

Enclosures

cc: Ben Bradley, Schnabel Engineering



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

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

Asheville Certification IDs

2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712

North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92190359001	B-10-01	MADEP EPH	EJK	7	PASI-C
		MADEP VPH	GAW	5	PASI-C
		EPA 6010	JMW	2	PASI-A
		EPA 625	RES	60	PASI-C
		SM 6200B	CAH	16	PASI-C
		SM 6200B	CAH	64	PASI-C

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Method: MADEP EPH

Description: MADEP EPH NC Water

Client: NCDOT South East

Date: March 07, 2014

General Information:

1 sample was analyzed for MADEP EPH. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with MADEP EPH with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: OEXT/26031

N2: The lab does not hold TNI accreditation for this parameter.

- B-10-01 (Lab ID: 92190359001)
 - Aliphatic (C09-C18)
 - Aliphatic (C19-C36)
 - Aromatic (C11-C22)
- BLANK (Lab ID: 1142333)
 - Aliphatic (C09-C18)
 - Aliphatic (C19-C36)
 - Aromatic (C11-C22)
- LCS (Lab ID: 1142334)
 - Aliphatic (C09-C18)
 - Aliphatic (C19-C36)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Method: MADEP EPH

Description: MADEP EPH NC Water

Client: NCDOT South East

Date: March 07, 2014

Analyte Comments:

QC Batch: OEXT/26031

N2: The lab does not hold TNI accreditation for this parameter.

- LCS (Lab ID: 1142334)
 - Aromatic (C11-C22)
- LCSD (Lab ID: 1142335)
 - Aliphatic (C09-C18)
 - Aliphatic (C19-C36)
 - Aromatic (C11-C22)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Fayetteville PSAs 33727.1.1
Pace Project No.: 92190359

Method: MADEP VPH
Description: VPH NC Water
Client: NCDOT South East
Date: March 07, 2014

General Information:

1 sample was analyzed for MADEP VPH. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

Analyte Comments:

QC Batch: GCV/7838

N2: The lab does not hold TNI accreditation for this parameter.

- B-10-01 (Lab ID: 92190359001)
 - Aliphatic (C05-C08)
 - Aliphatic (C09-C12)
 - Aromatic (C09-C10)
- BLANK (Lab ID: 1148803)
 - Aliphatic (C05-C08)
 - Aliphatic (C09-C12)
 - Aromatic (C09-C10)
- LCS (Lab ID: 1148804)
 - Aliphatic (C05-C08)
 - Aliphatic (C09-C12)
 - Aromatic (C09-C10)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Method: MADEP VPH

Description: VPH NC Water

Client: NCDOT South East

Date: March 07, 2014

Analyte Comments:

QC Batch: GCV/7838

N2: The lab does not hold TNI accreditation for this parameter.

- LCSD (Lab ID: 1148805)
 - Aliphatic (C05-C08)
 - Aliphatic (C09-C12)
 - Aromatic (C09-C10)

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Method: EPA 6010

Description: 6010 MET ICP

Client: NCDOT South East

Date: March 07, 2014

General Information:

1 sample was analyzed for EPA 6010. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 3010 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Method: EPA 625

Description: 625 MSSV

Client: NCDOT South East

Date: March 07, 2014

General Information:

1 sample was analyzed for EPA 625. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Sample Preparation:

The samples were prepared in accordance with EPA 625 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: OEXT/26010

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92190065001

R1: RPD value was outside control limits.

- MSD (Lab ID: 1141553)
 - 2,4-Dimethylphenol
 - 2-Chlorophenol
 - N-Nitroso-di-n-propylamine
 - Phenol
 - bis(2-Chloroisopropyl) ether

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Method: SM 6200B

Description: 602 Volatiles by Method 6200

Client: NCDOT South East

Date: March 07, 2014

General Information:

1 sample was analyzed for SM 6200B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

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PROJECT NARRATIVE

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Method: SM 6200B

Description: 6200B MSV

Client: NCDOT South East

Date: March 07, 2014

General Information:

1 sample was analyzed for SM 6200B. All samples were received in acceptable condition with any exceptions noted below.

Hold Time:

The samples were analyzed within the method required hold times with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

All criteria were within method requirements with any exceptions noted below.

Continuing Calibration:

All criteria were within method requirements with any exceptions noted below.

Internal Standards:

All internal standards were within QC limits with any exceptions noted below.

Surrogates:

All surrogates were within QC limits with any exceptions noted below.

Method Blank:

All analytes were below the report limit in the method blank, where applicable, with any exceptions noted below.

Laboratory Control Spike:

All laboratory control spike compounds were within QC limits with any exceptions noted below.

Matrix Spikes:

All percent recoveries and relative percent differences (RPDs) were within acceptance criteria with any exceptions noted below.

QC Batch: MSV/25905

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92190689006

R1: RPD value was outside control limits.

- MSD (Lab ID: 1145844)
 - 1,2,3-Trichloropropane
 - 1,2-Dibromo-3-chloropropane
 - Ethanol

Additional Comments:

This data package has been reviewed for quality and completeness and is approved for release.

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Sample: B-10-01	Lab ID: 92190359001	Collected: 02/19/14 09:45	Received: 02/20/14 09:30	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
MADEP EPH NC Water								
Analytical Method: MADEP EPH Preparation Method: MADEP EPH								
Aliphatic (C09-C18)	ND ug/L		100	1	02/21/14 10:25	02/24/14 20:49		N2
Aliphatic (C19-C36)	ND ug/L		100	1	02/21/14 10:25	02/24/14 20:49		N2
Aromatic (C11-C22)	ND ug/L		100	1	02/21/14 10:25	02/24/14 20:49		N2
Surrogates								
Nonatriacontane (S)	53 %		40-140	1	02/21/14 10:25	02/24/14 20:49	7194-86-7	
o-Terphenyl (S)	61 %		40-140	1	02/21/14 10:25	02/24/14 20:49	84-15-1	
2-Fluorobiphenyl (S)	60 %		40-140	1	02/21/14 10:25	02/24/14 20:49	321-60-8	
2-Bromonaphthalene (S)	79 %		40-140	1	02/21/14 10:25	02/24/14 20:49	580-13-2	
VPH NC Water								
Analytical Method: MADEP VPH								
Aliphatic (C05-C08)	ND ug/L		50.0	1		03/03/14 11:41		N2
Aliphatic (C09-C12)	ND ug/L		50.0	1		03/03/14 11:41		N2
Aromatic (C09-C10)	ND ug/L		50.0	1		03/03/14 11:41		N2
Surrogates								
4-Bromofluorobenzene (FID) (S)	104 %		70-130	1		03/03/14 11:41	460-00-4	
4-Bromofluorobenzene (PID) (S)	79 %		70-130	1		03/03/14 11:41	460-00-4	
6010 MET ICP								
Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Chromium	16.1 ug/L		5.0	1	02/21/14 10:00	02/21/14 22:40	7440-47-3	
Lead	5.9 ug/L		5.0	1	02/21/14 10:00	02/21/14 22:40	7439-92-1	
625 MSSV								
Analytical Method: EPA 625 Preparation Method: EPA 625								
Acenaphthene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	83-32-9	
Acenaphthylene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	208-96-8	
Anthracene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	120-12-7	
Benzo(a)anthracene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	56-55-3	
Benzo(a)pyrene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	50-32-8	
Benzo(b)fluoranthene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	205-99-2	
Benzo(g,h,i)perylene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	191-24-2	
Benzo(k)fluoranthene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	207-08-9	
4-Bromophenylphenyl ether	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	101-55-3	
Butylbenzylphthalate	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	85-68-7	
4-Chloro-3-methylphenol	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	59-50-7	
bis(2-Chloroethoxy)methane	ND ug/L		10.0	1	02/20/14 13:00	02/28/14 04:44	111-91-1	
bis(2-Chloroethyl) ether	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	111-44-4	
bis(2-Chloroisopropyl) ether	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	108-60-1	
2-Chloronaphthalene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	91-58-7	
2-Chlorophenol	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	95-57-8	
4-Chlorophenylphenyl ether	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	7005-72-3	
Chrysene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	218-01-9	
Dibenz(a,h)anthracene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	53-70-3	
3,3'-Dichlorobenzidine	ND ug/L		25.0	1	02/20/14 13:00	02/28/14 04:44	91-94-1	
2,4-Dichlorophenol	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	120-83-2	
Diethylphthalate	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	84-66-2	
2,4-Dimethylphenol	ND ug/L		10.0	1	02/20/14 13:00	02/28/14 04:44	105-67-9	
Dimethylphthalate	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	131-11-3	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Sample: B-10-01 **Lab ID: 92190359001** Collected: 02/19/14 09:45 Received: 02/20/14 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
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625 MSSV

Analytical Method: EPA 625 Preparation Method: EPA 625

Di-n-butylphthalate	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	84-74-2	
4,6-Dinitro-2-methylphenol	ND ug/L		20.0	1	02/20/14 13:00	02/28/14 04:44	534-52-1	
2,4-Dinitrophenol	ND ug/L		50.0	1	02/20/14 13:00	02/28/14 04:44	51-28-5	
2,4-Dinitrotoluene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	121-14-2	
2,6-Dinitrotoluene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	606-20-2	
Di-n-octylphthalate	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	117-84-0	
bis(2-Ethylhexyl)phthalate	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	117-81-7	
Fluoranthene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	206-44-0	
Fluorene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	86-73-7	
Hexachloro-1,3-butadiene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	87-68-3	
Hexachlorobenzene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	118-74-1	
Hexachlorocyclopentadiene	ND ug/L		10.0	1	02/20/14 13:00	02/28/14 04:44	77-47-4	
Hexachloroethane	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	67-72-1	
Indeno(1,2,3-cd)pyrene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	193-39-5	
Isophorone	ND ug/L		10.0	1	02/20/14 13:00	02/28/14 04:44	78-59-1	
Naphthalene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	91-20-3	
Nitrobenzene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	98-95-3	
2-Nitrophenol	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	88-75-5	
4-Nitrophenol	ND ug/L		50.0	1	02/20/14 13:00	02/28/14 04:44	100-02-7	
N-Nitrosodimethylamine	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	62-75-9	
N-Nitroso-di-n-propylamine	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	621-64-7	
N-Nitrosodiphenylamine	ND ug/L		10.0	1	02/20/14 13:00	02/28/14 04:44	86-30-6	
Pentachlorophenol	ND ug/L		10.0	1	02/20/14 13:00	02/28/14 04:44	87-86-5	
Phenanthrene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	85-01-8	
Phenol	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	108-95-2	
Pyrene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	129-00-0	
1,2,4-Trichlorobenzene	ND ug/L		5.0	1	02/20/14 13:00	02/28/14 04:44	120-82-1	
2,4,6-Trichlorophenol	ND ug/L		10.0	1	02/20/14 13:00	02/28/14 04:44	88-06-2	

Surrogates

Nitrobenzene-d5 (S)	60 %		10-120	1	02/20/14 13:00	02/28/14 04:44	4165-60-0	
2-Fluorobiphenyl (S)	66 %		15-120	1	02/20/14 13:00	02/28/14 04:44	321-60-8	
Terphenyl-d14 (S)	79 %		11-131	1	02/20/14 13:00	02/28/14 04:44	1718-51-0	
Phenol-d6 (S)	31 %		10-120	1	02/20/14 13:00	02/28/14 04:44	13127-88-3	
2-Fluorophenol (S)	38 %		10-120	1	02/20/14 13:00	02/28/14 04:44	367-12-4	
2,4,6-Tribromophenol (S)	82 %		10-137	1	02/20/14 13:00	02/28/14 04:44	118-79-6	

Tentatively Identified Compounds

Unknown	7.5 ug/L			1	02/20/14 13:00	02/28/14 04:44		N
Unknown	5.9 ug/L			1	02/20/14 13:00	02/28/14 04:44		N

602 Volatiles by Method 6200

Analytical Method: SM 6200B

Benzene	ND ug/L		1.0	1		03/05/14 13:19	71-43-2	
Chlorobenzene	ND ug/L		1.0	1		03/05/14 13:19	108-90-7	
1,2-Dichlorobenzene	ND ug/L		1.0	1		03/05/14 13:19	95-50-1	
1,3-Dichlorobenzene	ND ug/L		1.0	1		03/05/14 13:19	541-73-1	
1,4-Dichlorobenzene	ND ug/L		1.0	1		03/05/14 13:19	106-46-7	
Diisopropyl ether	ND ug/L		1.0	1		03/05/14 13:19	108-20-3	
Ethylbenzene	ND ug/L		1.0	1		03/05/14 13:19	100-41-4	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Sample: B-10-01		Lab ID: 92190359001	Collected: 02/19/14 09:45	Received: 02/20/14 09:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
602 Volatiles by Method 6200		Analytical Method: SM 6200B						
Isopropylbenzene (Cumene)	ND ug/L		1.0	1		03/05/14 13:19	98-82-8	
Methyl-tert-butyl ether	ND ug/L		1.0	1		03/05/14 13:19	1634-04-4	
Naphthalene	ND ug/L		2.0	1		03/05/14 13:19	91-20-3	
Toluene	ND ug/L		1.0	1		03/05/14 13:19	108-88-3	
m&p-Xylene	ND ug/L		2.0	1		03/05/14 13:19	179601-23-1	
o-Xylene	ND ug/L		1.0	1		03/05/14 13:19	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	95 %		70-130	1		03/05/14 13:19	460-00-4	
1,2-Dichloroethane-d4 (S)	103 %		70-130	1		03/05/14 13:19	17060-07-0	
Toluene-d8 (S)	100 %		70-130	1		03/05/14 13:19	2037-26-5	
6200B MSV		Analytical Method: SM 6200B						
Benzene	ND ug/L		0.50	1		02/26/14 22:21	71-43-2	
Bromobenzene	ND ug/L		0.50	1		02/26/14 22:21	108-86-1	
Bromochloromethane	ND ug/L		0.50	1		02/26/14 22:21	74-97-5	
Bromodichloromethane	ND ug/L		0.50	1		02/26/14 22:21	75-27-4	
Bromoform	ND ug/L		0.50	1		02/26/14 22:21	75-25-2	
Bromomethane	ND ug/L		5.0	1		02/26/14 22:21	74-83-9	
n-Butylbenzene	ND ug/L		0.50	1		02/26/14 22:21	104-51-8	
sec-Butylbenzene	ND ug/L		0.50	1		02/26/14 22:21	135-98-8	
tert-Butylbenzene	ND ug/L		0.50	1		02/26/14 22:21	98-06-6	
Carbon tetrachloride	ND ug/L		0.50	1		02/26/14 22:21	56-23-5	
Chlorobenzene	ND ug/L		0.50	1		02/26/14 22:21	108-90-7	
Chloroethane	ND ug/L		1.0	1		02/26/14 22:21	75-00-3	
Chloroform	ND ug/L		0.50	1		02/26/14 22:21	67-66-3	
Chloromethane	ND ug/L		1.0	1		02/26/14 22:21	74-87-3	
2-Chlorotoluene	ND ug/L		0.50	1		02/26/14 22:21	95-49-8	
4-Chlorotoluene	ND ug/L		0.50	1		02/26/14 22:21	106-43-4	
1,2-Dibromo-3-chloropropane	ND ug/L		1.0	1		02/26/14 22:21	96-12-8	
Dibromochloromethane	ND ug/L		0.50	1		02/26/14 22:21	124-48-1	
1,2-Dibromoethane (EDB)	ND ug/L		0.50	1		02/26/14 22:21	106-93-4	
Dibromomethane	ND ug/L		0.50	1		02/26/14 22:21	74-95-3	
1,2-Dichlorobenzene	ND ug/L		0.50	1		02/26/14 22:21	95-50-1	
1,3-Dichlorobenzene	ND ug/L		0.50	1		02/26/14 22:21	541-73-1	
1,4-Dichlorobenzene	ND ug/L		0.50	1		02/26/14 22:21	106-46-7	
Dichlorodifluoromethane	ND ug/L		0.50	1		02/26/14 22:21	75-71-8	
1,1-Dichloroethane	ND ug/L		0.50	1		02/26/14 22:21	75-34-3	
1,2-Dichloroethane	ND ug/L		0.50	1		02/26/14 22:21	107-06-2	
1,1-Dichloroethene	ND ug/L		0.50	1		02/26/14 22:21	75-35-4	
cis-1,2-Dichloroethene	ND ug/L		0.50	1		02/26/14 22:21	156-59-2	
trans-1,2-Dichloroethene	ND ug/L		0.50	1		02/26/14 22:21	156-60-5	
1,2-Dichloropropane	ND ug/L		0.50	1		02/26/14 22:21	78-87-5	
1,3-Dichloropropane	ND ug/L		0.50	1		02/26/14 22:21	142-28-9	
2,2-Dichloropropane	ND ug/L		0.50	1		02/26/14 22:21	594-20-7	
1,1-Dichloropropene	ND ug/L		0.50	1		02/26/14 22:21	563-58-6	
cis-1,3-Dichloropropene	ND ug/L		0.50	1		02/26/14 22:21	10061-01-5	
trans-1,3-Dichloropropene	ND ug/L		0.50	1		02/26/14 22:21	10061-02-6	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Sample: B-10-01		Lab ID: 92190359001	Collected: 02/19/14 09:45	Received: 02/20/14 09:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6200B MSV		Analytical Method: SM 6200B						
Diisopropyl ether	ND	ug/L	0.50	1		02/26/14 22:21	108-20-3	
Ethanol	ND	ug/L	200	1		02/26/14 22:21	64-17-5	
Ethylbenzene	ND	ug/L	0.50	1		02/26/14 22:21	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1		02/26/14 22:21	87-68-3	
Isopropylbenzene (Cumene)	ND	ug/L	0.50	1		02/26/14 22:21	98-82-8	
Methylene Chloride	ND	ug/L	2.0	1		02/26/14 22:21	75-09-2	
Methyl-tert-butyl ether	ND	ug/L	0.50	1		02/26/14 22:21	1634-04-4	
Naphthalene	ND	ug/L	2.0	1		02/26/14 22:21	91-20-3	
n-Propylbenzene	ND	ug/L	0.50	1		02/26/14 22:21	103-65-1	
Styrene	ND	ug/L	0.50	1		02/26/14 22:21	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		02/26/14 22:21	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		02/26/14 22:21	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		02/26/14 22:21	127-18-4	
Toluene	ND	ug/L	0.50	1		02/26/14 22:21	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	1		02/26/14 22:21	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	1		02/26/14 22:21	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		02/26/14 22:21	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		02/26/14 22:21	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		02/26/14 22:21	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/26/14 22:21	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	0.50	1		02/26/14 22:21	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/L	0.50	1		02/26/14 22:21	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	0.50	1		02/26/14 22:21	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		02/26/14 22:21	75-01-4	
m&p-Xylene	ND	ug/L	1.0	1		02/26/14 22:21	179601-23-1	
o-Xylene	ND	ug/L	0.50	1		02/26/14 22:21	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	104 %		70-130	1		02/26/14 22:21	17060-07-0	
4-Bromofluorobenzene (S)	96 %		70-130	1		02/26/14 22:21	460-00-4	
Toluene-d8 (S)	102 %		70-130	1		02/26/14 22:21	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1
Pace Project No.: 92190359

QC Batch: GCV/7838 Analysis Method: MADEP VPH
QC Batch Method: MADEP VPH Analysis Description: VPH NC Water
Associated Lab Samples: 92190359001

METHOD BLANK: 1148803 Matrix: Water
Associated Lab Samples: 92190359001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aliphatic (C05-C08)	ug/L	ND	50.0	03/03/14 10:09	N2
Aliphatic (C09-C12)	ug/L	ND	50.0	03/03/14 10:09	N2
Aromatic (C09-C10)	ug/L	ND	50.0	03/03/14 10:09	N2
4-Bromofluorobenzene (FID) (S)	%	107	70-130	03/03/14 10:09	
4-Bromofluorobenzene (PID) (S)	%	81	70-130	03/03/14 10:09	

LABORATORY CONTROL SAMPLE & LCSD: 1148804

Parameter	Units	1148805							Max RPD	Qualifiers
		Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD		
Aliphatic (C05-C08)	ug/L	300	292	282	97	94	70-130	3	25 N2	
Aliphatic (C09-C12)	ug/L	300	295	300	98	100	30-130	2	25 N2	
Aromatic (C09-C10)	ug/L	100	84.9	83.9	85	84	70-130	1	25 N2	
4-Bromofluorobenzene (FID) (S)	%				85	97	70-130			
4-Bromofluorobenzene (PID) (S)	%				70	81	70-130			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

QC Batch:	MPRP/15285	Analysis Method:	EPA 6010
QC Batch Method:	EPA 3010	Analysis Description:	6010 MET
Associated Lab Samples:	92190359001		

METHOD BLANK: 1142293 Matrix: Water

Associated Lab Samples: 92190359001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chromium	ug/L	ND	5.0	02/21/14 20:58	
Lead	ug/L	ND	5.0	02/21/14 20:58	

LABORATORY CONTROL SAMPLE: 1142294

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chromium	ug/L	500	509	102	80-120	
Lead	ug/L	500	501	100	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1142295 1142296

Parameter	Units	92190489009		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	% Rec	% Rec				
Chromium	ug/L	28.9	500	500	523	523	99	99	75-125	0		
Lead	ug/L	20.4	500	500	468	469	90	90	75-125	0		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

QC Batch:	MSV/25984	Analysis Method:	SM 6200B
QC Batch Method:	SM 6200B	Analysis Description:	602 by 6200B
Associated Lab Samples:	92190359001		

METHOD BLANK: 1150564 Matrix: Water

Associated Lab Samples: 92190359001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2-Dichlorobenzene	ug/L	ND	1.0	03/05/14 12:46	
1,3-Dichlorobenzene	ug/L	ND	1.0	03/05/14 12:46	
1,4-Dichlorobenzene	ug/L	ND	1.0	03/05/14 12:46	
Benzene	ug/L	ND	1.0	03/05/14 12:46	
Chlorobenzene	ug/L	ND	1.0	03/05/14 12:46	
Diisopropyl ether	ug/L	ND	1.0	03/05/14 12:46	
Ethylbenzene	ug/L	ND	1.0	03/05/14 12:46	
Isopropylbenzene (Cumene)	ug/L	ND	1.0	03/05/14 12:46	
m&p-Xylene	ug/L	ND	2.0	03/05/14 12:46	
Methyl-tert-butyl ether	ug/L	ND	1.0	03/05/14 12:46	
Naphthalene	ug/L	ND	2.0	03/05/14 12:46	
o-Xylene	ug/L	ND	1.0	03/05/14 12:46	
Toluene	ug/L	ND	1.0	03/05/14 12:46	
1,2-Dichloroethane-d4 (S)	%	103	70-130	03/05/14 12:46	
4-Bromofluorobenzene (S)	%	95	70-130	03/05/14 12:46	
Toluene-d8 (S)	%	100	70-130	03/05/14 12:46	

LABORATORY CONTROL SAMPLE: 1150565

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichlorobenzene	ug/L	50	52.9	106	60-140	
1,3-Dichlorobenzene	ug/L	50	51.3	103	60-140	
1,4-Dichlorobenzene	ug/L	50	52.6	105	60-140	
Benzene	ug/L	50	49.5	99	60-140	
Chlorobenzene	ug/L	50	51.7	103	60-140	
Diisopropyl ether	ug/L	50	51.6	103	60-140	
Ethylbenzene	ug/L	50	49.6	99	60-140	
Isopropylbenzene (Cumene)	ug/L	50	51.1	102	60-140	
m&p-Xylene	ug/L	100	104	104	60-140	
Methyl-tert-butyl ether	ug/L	50	51.8	104	60-140	
Naphthalene	ug/L	50	57.1	114	60-140	
o-Xylene	ug/L	50	52.5	105	60-140	
Toluene	ug/L	50	47.2	94	60-140	
1,2-Dichloroethane-d4 (S)	%			101	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			97	70-130	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

QC Batch: MSV/25905

Analysis Method: SM 6200B

QC Batch Method: SM 6200B

Analysis Description: 6200B MSV

Associated Lab Samples: 92190359001

METHOD BLANK: 1145841

Matrix: Water

Associated Lab Samples: 92190359001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	0.50	02/26/14 18:47	
1,1,1-Trichloroethane	ug/L	ND	0.50	02/26/14 18:47	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	02/26/14 18:47	
1,1,2-Trichloroethane	ug/L	ND	0.50	02/26/14 18:47	
1,1-Dichloroethane	ug/L	ND	0.50	02/26/14 18:47	
1,1-Dichloroethene	ug/L	ND	0.50	02/26/14 18:47	
1,1-Dichloropropene	ug/L	ND	0.50	02/26/14 18:47	
1,2,3-Trichlorobenzene	ug/L	ND	2.0	02/26/14 18:47	
1,2,3-Trichloropropane	ug/L	ND	0.50	02/26/14 18:47	
1,2,4-Trichlorobenzene	ug/L	ND	2.0	02/26/14 18:47	
1,2,4-Trimethylbenzene	ug/L	ND	0.50	02/26/14 18:47	
1,2-Dibromo-3-chloropropane	ug/L	ND	1.0	02/26/14 18:47	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	02/26/14 18:47	
1,2-Dichlorobenzene	ug/L	ND	0.50	02/26/14 18:47	
1,2-Dichloroethane	ug/L	ND	0.50	02/26/14 18:47	
1,2-Dichloropropane	ug/L	ND	0.50	02/26/14 18:47	
1,3,5-Trimethylbenzene	ug/L	ND	0.50	02/26/14 18:47	
1,3-Dichlorobenzene	ug/L	ND	0.50	02/26/14 18:47	
1,3-Dichloropropane	ug/L	ND	0.50	02/26/14 18:47	
1,4-Dichlorobenzene	ug/L	ND	0.50	02/26/14 18:47	
2,2-Dichloropropane	ug/L	ND	0.50	02/26/14 18:47	
2-Chlorotoluene	ug/L	ND	0.50	02/26/14 18:47	
4-Chlorotoluene	ug/L	ND	0.50	02/26/14 18:47	
Benzene	ug/L	ND	0.50	02/26/14 18:47	
Bromobenzene	ug/L	ND	0.50	02/26/14 18:47	
Bromochloromethane	ug/L	ND	0.50	02/26/14 18:47	
Bromodichloromethane	ug/L	ND	0.50	02/26/14 18:47	
Bromoform	ug/L	ND	0.50	02/26/14 18:47	
Bromomethane	ug/L	ND	5.0	02/26/14 18:47	
Carbon tetrachloride	ug/L	ND	0.50	02/26/14 18:47	
Chlorobenzene	ug/L	ND	0.50	02/26/14 18:47	
Chloroethane	ug/L	ND	1.0	02/26/14 18:47	
Chloroform	ug/L	ND	0.50	02/26/14 18:47	
Chloromethane	ug/L	ND	1.0	02/26/14 18:47	
cis-1,2-Dichloroethene	ug/L	ND	0.50	02/26/14 18:47	
cis-1,3-Dichloropropene	ug/L	ND	0.50	02/26/14 18:47	
Dibromochloromethane	ug/L	ND	0.50	02/26/14 18:47	
Dibromomethane	ug/L	ND	0.50	02/26/14 18:47	
Dichlorodifluoromethane	ug/L	ND	0.50	02/26/14 18:47	
Diisopropyl ether	ug/L	ND	0.50	02/26/14 18:47	
Ethanol	ug/L	ND	200	02/26/14 18:47	
Ethylbenzene	ug/L	ND	0.50	02/26/14 18:47	
Hexachloro-1,3-butadiene	ug/L	ND	2.0	02/26/14 18:47	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

METHOD BLANK: 1145841

Matrix: Water

Associated Lab Samples: 92190359001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Isopropylbenzene (Cumene)	ug/L	ND	0.50	02/26/14 18:47	
m&p-Xylene	ug/L	ND	1.0	02/26/14 18:47	
Methyl-tert-butyl ether	ug/L	ND	0.50	02/26/14 18:47	
Methylene Chloride	ug/L	ND	2.0	02/26/14 18:47	
n-Butylbenzene	ug/L	ND	0.50	02/26/14 18:47	
n-Propylbenzene	ug/L	ND	0.50	02/26/14 18:47	
Naphthalene	ug/L	ND	2.0	02/26/14 18:47	
o-Xylene	ug/L	ND	0.50	02/26/14 18:47	
sec-Butylbenzene	ug/L	ND	0.50	02/26/14 18:47	
Styrene	ug/L	ND	0.50	02/26/14 18:47	
tert-Butylbenzene	ug/L	ND	0.50	02/26/14 18:47	
Tetrachloroethene	ug/L	ND	0.50	02/26/14 18:47	
Toluene	ug/L	ND	0.50	02/26/14 18:47	
trans-1,2-Dichloroethene	ug/L	ND	0.50	02/26/14 18:47	
trans-1,3-Dichloropropene	ug/L	ND	0.50	02/26/14 18:47	
Trichloroethene	ug/L	ND	0.50	02/26/14 18:47	
Trichlorofluoromethane	ug/L	ND	1.0	02/26/14 18:47	
Vinyl chloride	ug/L	ND	1.0	02/26/14 18:47	
1,2-Dichloroethane-d4 (S)	%	101	70-130	02/26/14 18:47	
4-Bromofluorobenzene (S)	%	98	70-130	02/26/14 18:47	
Toluene-d8 (S)	%	101	70-130	02/26/14 18:47	

LABORATORY CONTROL SAMPLE: 1145842

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	49.0	98	60-140	
1,1,1-Trichloroethane	ug/L	50	53.7	107	60-140	
1,1,2,2-Tetrachloroethane	ug/L	50	50.2	100	60-140	
1,1,2-Trichloroethane	ug/L	50	52.9	106	60-140	
1,1-Dichloroethane	ug/L	50	49.2	98	60-140	
1,1-Dichloroethene	ug/L	50	48.0	96	60-140	
1,1-Dichloropropene	ug/L	50	51.3	103	60-140	
1,2,3-Trichlorobenzene	ug/L	50	49.1	98	60-140	
1,2,3-Trichloropropane	ug/L	50	49.8	100	60-140	
1,2,4-Trichlorobenzene	ug/L	50	49.1	98	60-140	
1,2,4-Trimethylbenzene	ug/L	50	51.4	103	60-140	
1,2-Dibromo-3-chloropropane	ug/L	50	64.7	129	60-140	
1,2-Dibromoethane (EDB)	ug/L	50	52.8	106	60-140	
1,2-Dichlorobenzene	ug/L	50	48.3	97	60-140	
1,2-Dichloroethane	ug/L	50	47.9	96	60-140	
1,2-Dichloropropane	ug/L	50	50.1	100	60-140	
1,3,5-Trimethylbenzene	ug/L	50	52.4	105	60-140	
1,3-Dichlorobenzene	ug/L	50	47.3	95	60-140	
1,3-Dichloropropane	ug/L	50	51.3	103	60-140	
1,4-Dichlorobenzene	ug/L	50	47.7	95	60-140	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

LABORATORY CONTROL SAMPLE: 1145842

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	55.4	111	60-140	
2-Chlorotoluene	ug/L	50	48.4	97	60-140	
4-Chlorotoluene	ug/L	50	49.8	100	60-140	
Benzene	ug/L	50	52.3	105	60-140	
Bromobenzene	ug/L	50	49.8	100	60-140	
Bromochloromethane	ug/L	50	52.0	104	60-140	
Bromodichloromethane	ug/L	50	55.3	111	60-140	
Bromoform	ug/L	50	44.8	90	60-140	
Bromomethane	ug/L	50	36.3	73	60-140	
Carbon tetrachloride	ug/L	50	46.6	93	60-140	
Chlorobenzene	ug/L	50	50.6	101	60-140	
Chloroethane	ug/L	50	48.7	97	60-140	
Chloroform	ug/L	50	51.2	102	60-140	
Chloromethane	ug/L	50	45.3	91	60-140	
cis-1,2-Dichloroethene	ug/L	50	48.1	96	60-140	
cis-1,3-Dichloropropene	ug/L	50	48.3	97	60-140	
Dibromochloromethane	ug/L	50	48.0	96	60-140	
Dibromomethane	ug/L	50	50.6	101	60-140	
Dichlorodifluoromethane	ug/L	50	38.5	77	60-140	
Diisopropyl ether	ug/L	50	50.4	101	60-140	
Ethanol	ug/L	2000	1710	85	60-140	
Ethylbenzene	ug/L	50	50.8	102	60-140	
Hexachloro-1,3-butadiene	ug/L	50	50.4	101	60-140	
Isopropylbenzene (Cumene)	ug/L	50	54.0	108	60-140	
m&p-Xylene	ug/L	100	105	105	60-140	
Methyl-tert-butyl ether	ug/L	50	50.5	101	60-140	
Methylene Chloride	ug/L	50	53.9	108	60-140	
n-Butylbenzene	ug/L	50	50.8	102	60-140	
n-Propylbenzene	ug/L	50	52.7	105	60-140	
Naphthalene	ug/L	50	49.0	98	60-140	
o-Xylene	ug/L	50	52.2	104	60-140	
sec-Butylbenzene	ug/L	50	52.1	104	60-140	
Styrene	ug/L	50	55.3	111	60-140	
tert-Butylbenzene	ug/L	50	51.8	104	60-140	
Tetrachloroethene	ug/L	50	51.2	102	60-140	
Toluene	ug/L	50	50.5	101	60-140	
trans-1,2-Dichloroethene	ug/L	50	46.7	93	60-140	
trans-1,3-Dichloropropene	ug/L	50	47.5	95	60-140	
Trichloroethene	ug/L	50	49.9	100	60-140	
Trichlorofluoromethane	ug/L	50	50.3	101	60-140	
Vinyl chloride	ug/L	50	48.4	97	60-140	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1145843												1145844											
Parameter	Units	92190689006		MS	MSD	MS		MSD	% Rec		Limits	RPD	Qual										
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec														
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	20	17.9	14.3	89	72	60-140	22												
1,1,1-Trichloroethane	ug/L	ND	20	20	20	21.3	17.1	106	85	60-140	22												
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	20	20.6	15.3	103	76	60-140	30												
1,1,2-Trichloroethane	ug/L	ND	20	20	20	21.3	16.5	107	83	60-140	25												
1,1-Dichloroethane	ug/L	ND	20	20	20	21.0	16.8	105	84	60-140	22												
1,1-Dichloroethene	ug/L	ND	20	20	20	20.2	16.8	101	84	60-140	19												
1,1-Dichloropropene	ug/L	ND	20	20	20	21.4	17.2	107	86	60-140	22												
1,2,3-Trichlorobenzene	ug/L	ND	20	20	20	17.4	14.0	87	70	60-140	22												
1,2,3-Trichloropropane	ug/L	ND	20	20	20	20.3	14.8	101	74	60-140	31	R1											
1,2,4-Trichlorobenzene	ug/L	ND	20	20	20	17.4	14.0	87	70	60-140	22												
1,2,4-Trimethylbenzene	ug/L	ND	20	20	20	19.3	15.1	96	76	60-140	24												
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	20	22.5	16.2	113	81	60-140	32	R1											
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	20	21.5	16.4	108	82	60-140	27												
1,2-Dichlorobenzene	ug/L	ND	20	20	20	18.2	14.2	91	71	60-140	24												
1,2-Dichloroethane	ug/L	2.4	20	20	20	23.0	18.1	103	79	60-140	24												
1,2-Dichloropropane	ug/L	ND	20	20	20	20.6	16.0	103	80	60-140	25												
1,3,5-Trimethylbenzene	ug/L	ND	20	20	20	19.5	15.5	97	77	60-140	23												
1,3-Dichlorobenzene	ug/L	ND	20	20	20	17.7	13.9	89	70	60-140	24												
1,3-Dichloropropane	ug/L	ND	20	20	20	21.2	16.2	106	81	60-140	26												
1,4-Dichlorobenzene	ug/L	ND	20	20	20	17.6	14.1	88	70	60-140	23												
2,2-Dichloropropane	ug/L	ND	20	20	20	18.8	15.5	94	78	60-140	19												
2-Chlorotoluene	ug/L	ND	20	20	20	18.7	14.9	94	74	60-140	23												
4-Chlorotoluene	ug/L	ND	20	20	20	19.0	14.9	95	74	60-140	24												
Benzene	ug/L	ND	20	20	20	20.7	16.6	104	83	60-140	22												
Bromobenzene	ug/L	ND	20	20	20	19.0	14.8	95	74	60-140	25												
Bromochloromethane	ug/L	ND	20	20	20	22.3	17.5	112	88	60-140	24												
Bromodichloromethane	ug/L	ND	20	20	20	19.5	15.6	98	78	60-140	22												
Bromoform	ug/L	ND	20	20	20	15.7	13.0	78	65	60-140	19												
Bromomethane	ug/L	ND	20	20	20	14.7	15.1	74	76	60-140	3												
Carbon tetrachloride	ug/L	ND	20	20	20	17.5	15.6	88	78	60-140	11												
Chlorobenzene	ug/L	ND	20	20	20	19.8	15.6	99	78	60-140	24												
Chloroethane	ug/L	ND	20	20	20	22.3	19.5	111	97	60-140	13												
Chloroform	ug/L	ND	20	20	20	21.3	16.7	106	83	60-140	24												
Chloromethane	ug/L	ND	20	20	20	18.5	17.8	93	89	60-140	4												
cis-1,2-Dichloroethene	ug/L	ND	20	20	20	20.4	16.2	102	81	60-140	23												
cis-1,3-Dichloropropene	ug/L	ND	20	20	20	16.9	13.6	85	68	60-140	21												
Dibromochloromethane	ug/L	ND	20	20	20	17.2	13.8	86	69	60-140	22												
Dibromomethane	ug/L	ND	20	20	20	20.0	15.2	100	76	60-140	27												
Dichlorodifluoromethane	ug/L	ND	20	20	20	15.3	17.9	77	90	60-140	16												
Diisopropyl ether	ug/L	0.55	20	20	20	22.1	17.1	108	83	60-140	26												
Ethanol	ug/L	ND	800	800	800	772	559	97	70	60-140	32	R1											
Ethylbenzene	ug/L	ND	20	20	20	19.7	15.7	99	78	60-140	23												
Hexachloro-1,3-butadiene	ug/L	ND	20	20	20	17.6	14.2	88	71	60-140	21												
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20	20.5	16.2	102	81	60-140	23												
m&p-Xylene	ug/L	ND	40	40	40	39.0	31.5	97	79	60-140	21												
Methyl-tert-butyl ether	ug/L	6.6	20	20	20	28.2	22.8	108	81	60-140	21												
Methylene Chloride	ug/L	ND	20	20	20	21.6	16.0	108	80	60-140	30												

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Parameter	92190689006		MS		MSD		MS		MSD		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	MSD Spike Conc.	Result	MSD Result	% Rec	% Rec						
n-Butylbenzene	ug/L	ND	20	20	17.8	14.6	89	73	60-140	20				
n-Propylbenzene	ug/L	ND	20	20	19.8	15.8	99	79	60-140	23				
Naphthalene	ug/L	ND	20	20	18.6	14.2	93	71	60-140	27				
o-Xylene	ug/L	ND	20	20	20.0	15.8	100	79	60-140	24				
sec-Butylbenzene	ug/L	ND	20	20	19.4	15.7	97	78	60-140	21				
Styrene	ug/L	ND	20	20	20.8	16.2	104	81	60-140	25				
tert-Butylbenzene	ug/L	ND	20	20	19.4	15.6	97	78	60-140	22				
Tetrachloroethene	ug/L	ND	20	20	19.9	16.1	99	81	60-140	21				
Toluene	ug/L	ND	20	20	19.7	15.8	99	79	60-140	22				
trans-1,2-Dichloroethene	ug/L	ND	20	20	19.3	15.6	97	78	60-140	21				
trans-1,3-Dichloropropene	ug/L	ND	20	20	16.9	13.6	85	68	60-140	21				
Trichloroethene	ug/L	ND	20	20	19.3	15.3	96	77	60-140	23				
Trichlorofluoromethane	ug/L	ND	20	20	21.3	18.2	106	91	60-140	15				
Vinyl chloride	ug/L	ND	20	20	20.1	18.6	101	93	60-140	8				
1,2-Dichloroethane-d4 (S)	%						101	100	70-130					
4-Bromofluorobenzene (S)	%						100	100	70-130					
Toluene-d8 (S)	%						100	100	70-130					

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

QC Batch: OEXT/26010

Analysis Method: EPA 625

QC Batch Method: EPA 625

Analysis Description: 625 MSS

Associated Lab Samples: 92190359001

METHOD BLANK: 1141550

Matrix: Water

Associated Lab Samples: 92190359001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	5.0	02/28/14 07:26	
2,4,6-Trichlorophenol	ug/L	ND	10.0	02/28/14 07:26	
2,4-Dichlorophenol	ug/L	ND	5.0	02/28/14 07:26	
2,4-Dimethylphenol	ug/L	ND	10.0	02/28/14 07:26	
2,4-Dinitrophenol	ug/L	ND	50.0	02/28/14 07:26	
2,4-Dinitrotoluene	ug/L	ND	5.0	02/28/14 07:26	
2,6-Dinitrotoluene	ug/L	ND	5.0	02/28/14 07:26	
2-Chloronaphthalene	ug/L	ND	5.0	02/28/14 07:26	
2-Chlorophenol	ug/L	ND	5.0	02/28/14 07:26	
2-Nitrophenol	ug/L	ND	5.0	02/28/14 07:26	
3,3'-Dichlorobenzidine	ug/L	ND	25.0	02/28/14 07:26	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	02/28/14 07:26	
4-Bromophenylphenyl ether	ug/L	ND	5.0	02/28/14 07:26	
4-Chloro-3-methylphenol	ug/L	ND	5.0	02/28/14 07:26	
4-Chlorophenylphenyl ether	ug/L	ND	5.0	02/28/14 07:26	
4-Nitrophenol	ug/L	ND	50.0	02/28/14 07:26	
Acenaphthene	ug/L	ND	5.0	02/28/14 07:26	
Acenaphthylene	ug/L	ND	5.0	02/28/14 07:26	
Anthracene	ug/L	ND	5.0	02/28/14 07:26	
Benzo(a)anthracene	ug/L	ND	5.0	02/28/14 07:26	
Benzo(a)pyrene	ug/L	ND	5.0	02/28/14 07:26	
Benzo(b)fluoranthene	ug/L	ND	5.0	02/28/14 07:26	
Benzo(g,h,i)perylene	ug/L	ND	5.0	02/28/14 07:26	
Benzo(k)fluoranthene	ug/L	ND	5.0	02/28/14 07:26	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	02/28/14 07:26	
bis(2-Chloroethyl) ether	ug/L	ND	5.0	02/28/14 07:26	
bis(2-Chloroisopropyl) ether	ug/L	ND	5.0	02/28/14 07:26	
bis(2-Ethylhexyl)phthalate	ug/L	ND	5.0	02/28/14 07:26	
Butylbenzylphthalate	ug/L	ND	5.0	02/28/14 07:26	
Chrysene	ug/L	ND	5.0	02/28/14 07:26	
Di-n-butylphthalate	ug/L	ND	5.0	02/28/14 07:26	
Di-n-octylphthalate	ug/L	ND	5.0	02/28/14 07:26	
Dibenz(a,h)anthracene	ug/L	ND	5.0	02/28/14 07:26	
Diethylphthalate	ug/L	ND	5.0	02/28/14 07:26	
Dimethylphthalate	ug/L	ND	5.0	02/28/14 07:26	
Fluoranthene	ug/L	ND	5.0	02/28/14 07:26	
Fluorene	ug/L	ND	5.0	02/28/14 07:26	
Hexachloro-1,3-butadiene	ug/L	ND	5.0	02/28/14 07:26	
Hexachlorobenzene	ug/L	ND	5.0	02/28/14 07:26	
Hexachlorocyclopentadiene	ug/L	ND	10.0	02/28/14 07:26	
Hexachloroethane	ug/L	ND	5.0	02/28/14 07:26	
Indeno(1,2,3-cd)pyrene	ug/L	ND	5.0	02/28/14 07:26	
Isophorone	ug/L	ND	10.0	02/28/14 07:26	

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

METHOD BLANK: 1141550

Matrix: Water

Associated Lab Samples: 92190359001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
N-Nitroso-di-n-propylamine	ug/L	ND	5.0	02/28/14 07:26	
N-Nitrosodimethylamine	ug/L	ND	5.0	02/28/14 07:26	
N-Nitrosodiphenylamine	ug/L	ND	10.0	02/28/14 07:26	
Naphthalene	ug/L	ND	5.0	02/28/14 07:26	
Nitrobenzene	ug/L	ND	5.0	02/28/14 07:26	
Pentachlorophenol	ug/L	ND	10.0	02/28/14 07:26	
Phenanthrene	ug/L	ND	5.0	02/28/14 07:26	
Phenol	ug/L	ND	5.0	02/28/14 07:26	
Pyrene	ug/L	ND	5.0	02/28/14 07:26	
2,4,6-Tribromophenol (S)	%	88	10-137	02/28/14 07:26	
2-Fluorobiphenyl (S)	%	74	15-120	02/28/14 07:26	
2-Fluorophenol (S)	%	46	10-120	02/28/14 07:26	
Nitrobenzene-d5 (S)	%	73	10-120	02/28/14 07:26	
Phenol-d6 (S)	%	33	10-120	02/28/14 07:26	
Terphenyl-d14 (S)	%	99	11-131	02/28/14 07:26	

LABORATORY CONTROL SAMPLE: 1141551

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	36.0	72	44-142	
2,4,6-Trichlorophenol	ug/L	50	19.6	39	37-144	
2,4-Dichlorophenol	ug/L	50	23.9	48	1-191	
2,4-Dimethylphenol	ug/L	50	31.7	63	32-119	
2,4-Dinitrophenol	ug/L	250	49.5J	20	1-181	
2,4-Dinitrotoluene	ug/L	50	54.3	109	39-139	
2,6-Dinitrotoluene	ug/L	50	51.3	103	50-158	
2-Chloronaphthalene	ug/L	50	34.2	68	60-118	
2-Chlorophenol	ug/L	50	23.6	47	23-134	
2-Nitrophenol	ug/L	50	20.8	42	29-182	
3,3'-Dichlorobenzidine	ug/L	100	107	107	1-262	
4,6-Dinitro-2-methylphenol	ug/L	100	34.2	34	1-181	
4-Bromophenylphenyl ether	ug/L	50	44.3	89	53-127	
4-Chloro-3-methylphenol	ug/L	100	59.7	60	22-147	
4-Chlorophenylphenyl ether	ug/L	50	48.4	97	25-158	
4-Nitrophenol	ug/L	250	48.6J	19	1-132	
Acenaphthene	ug/L	50	40.8	82	47-145	
Acenaphthylene	ug/L	50	42.0	84	33-145	
Anthracene	ug/L	50	46.2	92	1-166	
Benzo(a)anthracene	ug/L	50	45.7	91	33-143	
Benzo(a)pyrene	ug/L	50	49.2	98	17-163	
Benzo(b)fluoranthene	ug/L	50	44.9	90	24-159	
Benzo(g,h,i)perylene	ug/L	50	45.0	90	1-219	
Benzo(k)fluoranthene	ug/L	50	41.4	83	11-162	
bis(2-Chloroethoxy)methane	ug/L	50	41.6	83	33-184	
bis(2-Chloroethyl) ether	ug/L	50	44.4	89	12-158	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

LABORATORY CONTROL SAMPLE: 1141551

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
bis(2-Chloroisopropyl) ether	ug/L	50	44.1	88	36-166	
bis(2-Ethylhexyl)phthalate	ug/L	50	47.1	94	8-158	
Butylbenzylphthalate	ug/L	50	45.3	91	1-152	
Chrysene	ug/L	50	47.2	94	17-168	
Di-n-butylphthalate	ug/L	50	45.1	90	1-118	
Di-n-octylphthalate	ug/L	50	54.2	108	4-146	
Dibenz(a,h)anthracene	ug/L	50	49.3	99	1-227	
Diethylphthalate	ug/L	50	45.5	91	1-114	
Dimethylphthalate	ug/L	50	41.6	83	1-112	
Fluoranthene	ug/L	50	50.5	101	26-137	
Fluorene	ug/L	50	47.8	96	59-121	
Hexachloro-1,3-butadiene	ug/L	50	32.1	64	24-116	
Hexachlorobenzene	ug/L	50	40.0	80	1-152	
Hexachlorocyclopentadiene	ug/L	50	25.9	52	25-150	
Hexachloroethane	ug/L	50	33.9	68	40-113	
Indeno(1,2,3-cd)pyrene	ug/L	50	48.5	97	1-171	
Isophorone	ug/L	50	48.3	97	21-196	
N-Nitroso-di-n-propylamine	ug/L	50	51.2	102	1-230	
N-Nitrosodimethylamine	ug/L	50	18.9	38	25-150	
N-Nitrosodiphenylamine	ug/L	50	34.8	70	25-150	
Naphthalene	ug/L	50	41.5	83	21-133	
Nitrobenzene	ug/L	50	39.1	78	35-180	
Pentachlorophenol	ug/L	100	39.6	40	14-176	
Phenanthrene	ug/L	50	44.9	90	54-120	
Phenol	ug/L	50	15.0	30	5-112	
Pyrene	ug/L	50	47.2	94	52-115	
2,4,6-Tribromophenol (S)	%			58	10-137	
2-Fluorobiphenyl (S)	%			75	15-120	
2-Fluorophenol (S)	%			25	10-120	
Nitrobenzene-d5 (S)	%			73	10-120	
Phenol-d6 (S)	%			22	10-120	
Terphenyl-d14 (S)	%			94	11-131	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1141552 1141553

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
		92190065001 Result	Spike Conc.	Spike Conc.	MS Result					
1,2,4-Trichlorobenzene	ug/L	ND	100	100	78.9	64.5	79	65	44-142	20
2,4,6-Trichlorophenol	ug/L	ND	100	100	87.6	77.0	88	77	37-144	13
2,4-Dichlorophenol	ug/L	ND	100	100	106	84.4	106	84	1-191	23
2,4-Dimethylphenol	ug/L	ND	100	100	73.8	48.8	74	49	32-119	41 R1
2,4-Dinitrophenol	ug/L	ND	500	500	263	286	53	57	1-181	9
2,4-Dinitrotoluene	ug/L	ND	100	100	105	95.2	105	95	39-139	10
2,6-Dinitrotoluene	ug/L	ND	100	100	105	97.3	105	97	50-158	7
2-Chloronaphthalene	ug/L	ND	100	100	76.9	64.0	77	64	60-118	18
2-Chlorophenol	ug/L	ND	100	100	114	78.3	114	78	23-134	37 R1
2-Nitrophenol	ug/L	ND	100	100	94.9	74.9	95	75	29-182	24

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Parameter	1141552			1141553			MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
	92190065001 Units	MS Spike Result	MSD Spike Conc.	MS Result	MSD Result	MSD Conc.					
3,3'-Dichlorobenzidine	ug/L	ND	200	200	115	124	58	62	1-262	7	
4,6-Dinitro-2-methylphenol	ug/L	ND	200	200	156	152	78	76	1-181	3	
4-Bromophenylphenyl ether	ug/L	ND	100	100	95.3	87.4	95	87	53-127	9	
4-Chloro-3-methylphenol	ug/L	ND	200	200	218	191	109	96	22-147	13	
4-Chlorophenylphenyl ether	ug/L	ND	100	100	98.1	89.0	98	89	25-158	10	
4-Nitrophenol	ug/L	ND	500	500	272	225	54	45	1-132	19	
Acenaphthene	ug/L	ND	100	100	88.4	75.5	88	76	47-145	16	
Acenaphthylene	ug/L	ND	100	100	91.1	77.9	91	78	33-145	16	
Anthracene	ug/L	ND	100	100	93.0	81.8	93	82	1-166	13	
Benzo(a)anthracene	ug/L	ND	100	100	90.0	83.6	90	84	33-143	7	
Benzo(a)pyrene	ug/L	ND	100	100	96.2	87.6	96	88	17-163	9	
Benzo(b)fluoranthene	ug/L	ND	100	100	94.0	86.8	94	87	24-159	8	
Benzo(g,h,i)perylene	ug/L	ND	100	100	89.4	78.4	89	78	1-219	13	
Benzo(k)fluoranthene	ug/L	ND	100	100	84.7	79.4	85	79	11-162	6	
bis(2-Chloroethoxy)methane	ug/L	ND	100	100	92.3	74.8	92	75	33-184	21	
bis(2-Chloroethyl) ether	ug/L	ND	100	100	97.6	78.5	98	78	12-158	22	
bis(2-Chloroisopropyl) ether	ug/L	ND	100	100	97.2	70.9	97	71	36-166	31	R1
bis(2-Ethylhexyl)phthalate	ug/L	ND	100	100	90.9	86.0	91	86	8-158	5	
Butylbenzylphthalate	ug/L	ND	100	100	89.1	86.1	89	86	1-152	3	
Chrysene	ug/L	ND	100	100	93.5	88.6	94	89	17-168	5	
Di-n-butylphthalate	ug/L	ND	100	100	87.5	79.7	88	80	1-118	9	
Di-n-octylphthalate	ug/L	ND	100	100	101	91.7	101	92	4-146	10	
Dibenz(a,h)anthracene	ug/L	ND	100	100	96.1	85.8	96	86	1-227	11	
Diethylphthalate	ug/L	ND	100	100	86.6	80.4	87	80	1-114	7	
Dimethylphthalate	ug/L	ND	100	100	84.2	79.0	84	79	1-112	6	
Fluoranthene	ug/L	ND	100	100	97.9	82.5	98	82	26-137	17	
Fluorene	ug/L	ND	100	100	95.9	86.7	96	87	59-121	10	
Hexachloro-1,3-butadiene	ug/L	ND	100	100	67.7	57.7	68	58	24-116	16	
Hexachlorobenzene	ug/L	ND	100	100	83.7	76.0	84	76	1-152	10	
Hexachlorocyclopentadiene	ug/L	ND	100	100	67.6	53.4	68	53	25-150	24	
Hexachloroethane	ug/L	ND	100	100	69.9	54.7	70	55	40-113	24	
Indeno(1,2,3-cd)pyrene	ug/L	ND	100	100	95.7	84.4	96	84	1-171	13	
Isophorone	ug/L	ND	100	100	104	84.1	104	84	21-196	21	
N-Nitroso-di-n-propylamine	ug/L	ND	100	100	124	74.2	124	74	1-230	50	R1
N-Nitrosodimethylamine	ug/L	ND	100	100	55.1	44.2	55	44	25-150	22	
N-Nitrosodiphenylamine	ug/L	ND	100	100	76.3	70.5	76	70	25-150	8	
Naphthalene	ug/L	ND	100	100	91.5	73.2	92	73	21-133	22	
Nitrobenzene	ug/L	ND	100	100	96.7	75.6	97	76	35-180	24	
Pentachlorophenol	ug/L	ND	200	200	168	139	84	70	14-176	19	
Phenanthrene	ug/L	ND	100	100	92.6	82.6	93	83	54-120	11	
Phenol	ug/L	ND	100	100	91.8	53.4	92	53	5-112	53	R1
Pyrene	ug/L	ND	100	100	97.9	93.6	98	94	52-115	4	
2,4,6-Tribromophenol (S)	%						107	95	10-137		
2-Fluorobiphenyl (S)	%						84	74	15-120		
2-Fluorophenol (S)	%						71	55	10-120		
Nitrobenzene-d5 (S)	%						82	68	10-120		
Phenol-d6 (S)	%						84	50	10-120		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1
Pace Project No.: 92190359

MATRIX SPIKE & MATRIX SPIKE DUPLICATE:		1141552		1141553							
Parameter	Units	92190065001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Terphenyl-d14 (S)	%						98	99	11-131		

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QUALITY CONTROL DATA

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

QC Batch: OEXT/26031	Analysis Method: MADEP EPH
QC Batch Method: MADEP EPH	Analysis Description: MADEP EPH NC Water
Associated Lab Samples: 92190359001	

METHOD BLANK: 1142333 Matrix: Water

Associated Lab Samples: 92190359001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Aliphatic (C09-C18)	ug/L	ND	100	02/24/14 17:37	N2
Aliphatic (C19-C36)	ug/L	ND	100	02/24/14 17:37	N2
Aromatic (C11-C22)	ug/L	ND	100	02/24/14 17:37	N2
2-Bromonaphthalene (S)	%	103	40-140	02/24/14 17:37	
2-Fluorobiphenyl (S)	%	84	40-140	02/24/14 17:37	
Nonatriacontane (S)	%	60	40-140	02/24/14 17:37	
o-Terphenyl (S)	%	77	40-140	02/24/14 17:37	

LABORATORY CONTROL SAMPLE & LCSD: 1142334

1142335

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Aliphatic (C09-C18)	ug/L	300	150	148	50	49	40-140	2	50	N2
Aliphatic (C19-C36)	ug/L	400	226	225	56	56	40-140	0	50	N2
Aromatic (C11-C22)	ug/L	850	583	811	69	95	40-140	33	50	N2
2-Bromonaphthalene (S)	%				83	112	40-140			
2-Fluorobiphenyl (S)	%				71	103	40-140			
Nonatriacontane (S)	%				64	66	40-140			
o-Terphenyl (S)	%				75	95	40-140			

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QUALIFIERS

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

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-A Pace Analytical Services - Asheville

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

N Tentatively identified compound (TIC) based on mass spectral library search

N2 The lab does not hold TNI accreditation for this parameter.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: Fayetteville PSAs 33727.1.1

Pace Project No.: 92190359

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92190359001	B-10-01	MADEP EPH	OEXT/26031	MADEP EPH	GCSV/16758
92190359001	B-10-01	MADEP VPH	GCV/7838		
92190359001	B-10-01	EPA 3010	MPRP/15285	EPA 6010	ICP/13867
92190359001	B-10-01	EPA 625	OEXT/26010	EPA 625	MSSV/8797
92190359001	B-10-01	SM 6200B	MSV/25984		
92190359001	B-10-01	SM 6200B	MSV/25905		

REPORT OF LABORATORY ANALYSIS

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Sample Condition Upon Receipt (SCUR)

Document Number:
F-CHR-CS-03-rev.13

Page 1 of 2
Issuing Authority:
Pace Huntersville Quality Office

Client Name: Scheibel

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

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

Optional
Proj. Due Date:
Proj. Name:

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.: 5.8 °C Biological Tissue is Frozen: Yes No N/A
Temp should be above freezing to 6°C

Date and Initials of person examining contents: EW 2/16/14

		Comments:
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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Samples checked for dechlorination:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	14.
Headspace in VOA Vials (>6mm):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input 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: _____

SCURF Review: [Signature] Date: 2/20/14
SRF Review: [Signature] Date: 2/21/14

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)

WO# : 92190359

92190359

CHAIN-OF-CUSTODY / Analytical Request Document
The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A Required Client Information: **Sample Engineering**
Section B Required Project Information: **Ben Bradley**
Section C Invoice Information: **NBS Element 3727.1.1**

Address: **11A Oak Branch Dr.** Copy To: **Ben Bradley**
 Company: **Sample Engineering** Report To: **Ben Bradley**
 Email To: **bradley@sample-ops.com** Purchase Order No.: **For the 10 PSAs**
 Phone: **704-271-0101** Fax: **704-271-0101** Project Name: **For the 10 PSAs**
 Requested Due Date/TAT: **3-24-08** Project Number: **B-4490**

Attention: **Ben Bradley** Company Name: **Sample Engineering**
 Address: **NBS Element 3727.1.1** Pace Quote Reference: **PSAs**
 Pace Project Manager: **PSAs** Pace Profile #:

REGULATORY AGENCY: NPDES GROUND WATER DRINKING WATER
 UST RCRA OTHER

Site Location STATE: _____

ITEM #	Section D Required Client Information	Matrix Codes MATRIX / CODE	COLLECTED				Preservatives	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)
			DATE	TIME	DATE	TIME			
1	B-10-01	SAMPLE ID (A-Z, 0-9 / -) Sample IDs MUST BE UNIQUE	DATE	TIME	DATE	TIME	Analysis Test ↓	Y/N ↓	
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION ¹	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	Benjamin L Bradley	2-19	16:00	Zack W Rice	2/19/08	09:30	5.8

ORIGINAL

SAMPLER NAME AND SIGNATURE: _____
 PRINT Name of SAMPLER: _____
 SIGNATURE of SAMPLER: _____

DATE Signed (MM/DD/YY): _____

Temp in °C: _____
 Received on Ice (Y/N): _____
 Custody Sealed Cooler (Y/N): _____
 Samples Intact (Y/N): _____