PRELIMINARY SITE ASSESSMENT

PARCEL 006, CHARLES WILLIAMS, JR.
701 BRAGG BLVD.
FAYETTEVILLE, CUMBERLAND COUNTY, NORTH CAROLINA
STATE PROJECT: B-4490
WBS ELEMENT: 33727.1.1
MARCH 14, 2014

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EXECUTIVE SUMMARY OF RESULTS

Pyramid Environmental & Engineering P.C. (Pyramid) has prepared this Preliminary Site Assessment (PSA) report documenting background information, field activities, assessment activities, findings, conclusions, and recommendations for Parcel 006, Charles Williams, Jr. The purpose of this assessment was to determine the presence or absence of underground storage tanks (USTs) and impacted soils at the subject property within the proposed right-of-way (ROW) and/or easement and edge of pavement (State Project B-4490). The PSA was conducted with particular attention to the areas to be cut as indicated by slope stake lines and cross sections or to be excavated for the installation of drainage features. This preliminary site assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Pyramid's December 20, 2013, technical proposal.

The following statements summarize the results of the PSA:

- **Site History:** A review of the North Carolina Department of Environment and Natural Resources (DENR) registered UST database and incident database indicated no environmental incidents were on file for the Charles Williams, Jr. property (Parcel 006). On January 23, 2013, Pyramid emailed the Cumberland County B-4490 parcel addresses to Mr. James Brown, the Fayetteville Region Incident Manager for the DENR UST Section, with a request to investigate any environmental incidents associated with the parcels. On January 24, 2014, Mr. Brown responded to the email and stated that site address 701 Bragg Blvd. (Parcel 006) had an environmental incident (incident #10471) associated with the property, with the facility ID listed as 4-1739, Former Exxon Retail Station. Mr. Brown sent Pyramid all documents associated with this release electronically. The materials indicated the following:

    - The former Exxon service station contained several gasoline and diesel USTs on the southeast side of the property (mentioned in the NCDOT RFP). These USTs were removed in 1985.
    - Figures in the DENR documents indicate that a fuel oil UST was present on the north side of the service station, a fuel oil AST was present on the west side, and a used oil UST was present on the south side.

- The AST on the west side of the building was not present during our investigation, and the used oil UST on the south side of the building was well outside of the area of investigation for this PSA.
- The gasoline/diesel USTs were reportedly removed in 1985, and some soil excavation was performed. There is no evidence to suggest that the two USTs on the north (fuel oil) and south side (used oil) of the building were removed.
- A soil investigation was performed in 1991 and a report submitted in 1992 by Hollowell Testing that indicated the concentrations of petroleum hydrocarbons in the soil did not exceed DENR action levels; however, this investigation was deemed to be inadequate/inaccurate.
- The soil investigation performed by ERM-Southeast in 1993 found concentrations of petroleum hydrocarbons in the soils near the former UST basin that exceeded DENR action levels.
- The UST Leak Reporting Form submitted in July of 1993 indicated that there was "minor soil contamination," and no groundwater contamination.
- The letter generated by the DENR in July of 1993 stated that "only those soils containing high levels of oil and grease must be removed or treated in place."

On January 20, 2014, Pyramid Project Manager Eric Cross performed a site visit at the property. The facility was a vacant service station. Evidence of a former pump island was observed on the east side of the building, and evidence of the former UST field was observed on the south side of the property. Additionally, a fill port was observed on the north side of the building that correlated to the approximate location of the fuel oil UST mentioned in the above section. No fill ports or other evidence of an additional UST was observed on the south side of the building. Evidence of the soil borings performed during the soil investigations in 1991 and 1993 was apparent throughout the parking lot.

- **Geophysical Survey:** One probable metallic UST located partially within the NCDOT easement was evidenced in the EM data and verified by the GPR at X=35, Y=220. The probable UST was approximately 6 feet wide and 9 feet long at a depth of approximately 2.5-3.0 feet. The coordinates of the tank location in NC State Plane (Zone 3200, US Survey Feet), are 2033170.678 E, 477226.046 N.

- **Limited Soil Assessment:** A total of eight borings were performed across the property. The QED results for soil samples at boring locations 6-4 and 6-5 did not detect TPH-GRO or TPH-DRO concentrations above 10 milligrams per kilogram (mg/kg). The QED results did detect DRO concentrations above 10 mg/kg at the locations of borings 6-1, 6-2, 6-3, 6-6, 6-7, and 6-8. Specifically, DRO concentrations ranging from 12.3 mg/kg to 1,193 mg/kg were recorded in

these borings. Additionally, boring 6-2 recorded a GRO concentration exceeding 10 mg/kg between 6 to 8 feet below land surface (378 mg/kg).

Two soil samples [6-1(4-6) and 6-2(4-6)] were sent to the laboratory for analysis of soils using EPA Methods 8260/8270 for volatile and semi-volatile organic compounds based on the site usage history. The laboratory results detected concentrations of Napthalene and n-Propylbenzene in soil sample 6-2(4-6) that exceeded the soil-to-groundwater Maximum Soil Contaminant Concentrations (MSCC). A Napthalene concentration of 2.93 mg/kg was detected, and an n-Propylbenzene concentration of 2.27 mg/kg was detected. The soil-to-groundwater MSCCs for Napthalene and n-Propylbenzene are 0.16 and 1.7 mg/kg, respectively. No other compounds were detected above residential or soil-to-groundwater MSCCs in the samples that were analyzed.

- **Limited Groundwater Assessment:** Soil boring 6-2 was converted into a 1-inch diameter temporary monitoring well to a total depth of 16 feet below land surface (BLS). The depth-to-groundwater was measured at 5.8 feet BLS. The 6200B laboratory analysis detected concentrations of Benzene (6.6 µ/L), Napthalene (104 µ/L), and n-Propylbenzene (102 µ/L) above NCAC 2L groundwater standards in the sample. The 2L standards for Benzene, Napthalene, and n-Propylbenzene under the 6200B method are 1.0, 6.0, and 70.0 µ/L, respectively. The 625 laboratory analysis detected concentrations of Napthalene (34.3 µ/L) above the NCAC 2L groundwater standard for the 625 method. The 2L standard for Napthalene under the 625 method is 6 µg/L.

  Review of the NCDOT engineering plans indicates that the NCDOT may encounter groundwater at the property during construction activities. Should the NCDOT perform any dewatering procedures, they should be aware of the potential contamination in the shallow groundwater of the compounds Napthalene, Benzene, and n-Propylbenzene. Additionally, if the NCDOT typically implements alternate design features for underground drainage structures such as gaskets, changes in material type, etc., when dealing with contaminated groundwater, it may be prudent to discuss such alternatives based on the groundwater analytical results.

- **Contaminated Soil Volumes:** Pyramid's PSA investigation resulted in an estimated area of 4,127 square feet of impacted soil in the vicinity of borings 6-1, 6-2, 6-3, and 6-8, and an estimated are of 532 square feet of impacted soil in the vicinity of borings 6-6 and 6-7. **This results in a total estimated area of contamination of 4,659 square feet of impacted soil at the property**. The deepest soil samples exhibiting contamination was observed to be at the sample depth 6-8 feet. For this reason, a maximum depth of 8 feet will be used to approximate total volumes of contaminated soil. It should be noted that this is a

gross estimate based on the data available. Using a total thickness of 8 feet of contaminated soil, Pyramid estimates a total of approximately 37,272 cubic feet, or **1,380 cubic yards of impacted soils between 0 and 8 feet BLS** at the two areas of contamination combined. The boundaries of the areas of contamination are approximate due to limited soil data.

1.0 Introduction

Pyramid Environmental & Engineering P.C. (Pyramid) has prepared this Preliminary Site Assessment (PSA) report documenting background information, field activities, assessment activities, findings, conclusions, and recommendations for Parcel 006, Charles Williams, Jr. The Charles Williams, Jr. property is currently a vacant service station and parking lot located at 701 Bragg Blvd., Fayetteville, NC. This preliminary site assessment was conducted on behalf of the North Carolina Department of Transportation (NCDOT) in accordance with Pyramid's December 20, 2013, technical proposal.

The purpose of this assessment was to determine the presence or absence of underground storage tanks (USTs) and the potential for impacted soils at the subject properties within the proposed ROW and/or easement and edge of pavement (State Project B-4490). The location of the subject site is shown on **Figure 1**.

1.1 Background Information

Based on the NCDOT's December 13, 2013, *Request for Technical and Cost Proposal*, the PSA was conducted in the proposed easement/proposed right of way (ROW) and the area between the existing NCDOT right of way and the edge of pavement, with emphasis on the areas to be cut as indicated by slope stake lines and cross sections or to be excavated for the installation of drainage features and/or other utilities, in accordance with the CADD files provided to Pyramid by the NCDOT. The PSA included the following:

- Research the properties for past uses and possible releases.
- Conduct a preliminary geophysical site assessment and limited soil assessment in the proposed easement and the area between the existing ROW and the edge of pavement with emphasis on the areas to be cut as indicated by slope stake lines and cross sections or to be excavated for the installation of drainage features and/or other utilities.
- Should groundwater be encountered at a depth that might impact the NCDOT construction activities, report the depth to groundwater for that site and attempt to obtain one groundwater sample for laboratory analysis by installing a temporary monitoring well.

1.2 Project Information

Prior to field activities, a Health and Safety Plan was prepared. Prior to drilling activities, the public underground utilities were located and marked by the North Carolina One-Call Service. A private utility locator, Northstate Utility Locating Incorporated of Colfax, North Carolina was used to mark the on-site private, buried utilities.

2.0 Site History

The NCDOT description of the parcel in the RFP provided to Pyramid on December 13, 2013, provided the following background information related to the site:

"The building at this parcel was observed to be vacant during a site visit on April 30, 2009. Formerly the facility operated as a gas station. It is located on the northwest quadrant of the intersection of W. Rowan St. and Bragg Blvd. According to NCDENR's UST Section registry UST Num. FA-2037 is associated with Exxon Retail Station 4-1739. No known NCDENR's UST Section Facility Identification Numbers or Groundwater Incidents Identification Numbers associated with this property. Several USTs and vents were observed on site. A UST bed was observed north of the building approximately 40 feet from the edge of pavement of Bragg Blvd. during a site visit on April 30, 2009. Another UST bed was observed south of the building approximately 30 feet from the edge of pavement of W. Rowan St."

Pyramid completed a records review of the parcel, interviewed DENR personnel, interviewed property tenants, and reviewed aerial photographs, city directories, and Sanborn maps to assess past uses of the property. Pyramid reviewed historical aerial photographs dating back to 1960 available from the Cumberland County Soil and Water Conservation office in Fayetteville and on Google Earth for past uses. The 1960, 1966, 1972, 1993, 2003, 2009, 2010, and 2011 aerial photographs are included in **Appendix A**. Historical information reviewed as part of the PSA indicated that the building currently present at the property has been there since at least 1960. Additionally, a second smaller structure was observed in the 1972 and 1993 aerial photographs to the east of the existing building near Bragg Blvd. This structure is presumed to be the cover for the pump islands associated with the former gas station due to its correlating location to the former pump islands observed during our site visit. The pump island structure was constructed sometime between 1966 and 1972, and demolished between 1993 and 2003. The 2003 aerial indicates the property may have been used as a used car lot.

City directories dated 1937, 1951, 1957, 1963, 1968, 1973, 1980, 1985, 1990, 1995, to 2000 were reviewed at the Cumberland County Public Library in Fayetteville, North Carolina. The table below includes a list of the building occupants from 1937 to 2000 based on the city directory review.

Year	Occupant
1937	No listing
1951	No listing
1957	Kirby's Exxon Service Center & Service Station
1963	Whitaker's Exxon Service Center
1968	Huck's Exxon Service Gas Station
1973	Huck's Exxon Service Gas Station
1980	Vacant
1985	Vacant
1990	Terry's Auto Sales
1995	Tommy's Auto Wax
2000	Auto Tech Auto Repair

The above listings confirm that the property was utilized as a service station intermittently from 1957 to 1973, and then as an auto sales and/or repair facility from 1990 to 2000.

On January 23, 2013, Pyramid emailed the Cumberland County B-4490 parcel addresses to Mr. James Brown, the Fayetteville Region Incident Manager for the DENR UST Section, with a request to investigate any environmental incidents associated with the parcels. On January 24, 2014, Mr. Brown responded to the email and stated that site address 701 Bragg Blvd. (Parcel 006) had an environmental incident (incident #10471) associated with the property, with the facility ID listed as 4-1739, Former Exxon Retail Station. Mr. Brown sent Pyramid all documents associated with this release electronically.

The documents sent to Pyramid included: 1) A Soil Investigation Summary Report submitted to Exxon Company, USA, prepared by ERM-Southeast in April of 1993, 2) A UST Leak Reporting Form submitted to the DENR in July of 1993, and 3) A Review of Site Assessment letter generated by the DENR in July of 1993. The following is a summary of these materials:

- The former Exxon service station contained a several gasoline and diesel USTs on the southeast side of the property (mentioned in the NCDOT RFP). These USTs were removed in 1985.
- Figures in the DENR documents indicate that a fuel oil UST was present on the north side of the service station, a fuel oil AST was present on the west side, and a used oil UST was present on the south side.
- The AST on the west side of the building was not present during our investigation, and the used oil UST on the south side of the building was well outside of the area of investigation for this PSA.

- The gasoline/diesel USTs were reportedly removed in 1985, and some soil excavation was performed. There is no evidence to suggest that the two USTs on the north (fuel oil) and south side (used oil) of the building were removed.
- A soil investigation was performed in 1991 and a report submitted in 1992 by Hollowell Testing that indicated the concentrations of petroleum hydrocarbons in the soil did not exceed DENR action levels; however, this investigation was deemed to be inadequate/inaccurate.
- The soil investigation performed by ERM-Southeast in 1993 found concentrations of petroleum hydrocarbons in the soils near the former UST basin that exceeded DENR action levels.
- The UST Leak Reporting Form submitted in July of 1993 indicated that there was "minor soil contamination," and no groundwater contamination.
- The letter generated by the DENR in July of 1993 stated that "only those soils containing high levels of oil and grease must be removed or treated in place."

The above information summarizes the documents provided to us by DENR for this site. Copies of the 1993 ERM-Southeast report (excluding the laboratory results appendices), the UST Leak Reporting Form, and the DENR Review of Site Assessment letter are included in this report as **Appendix B**. It is unclear whether additional remedial action/soil removal was performed subsequent to the 1993 soil investigation.

On January 20, 2014, Pyramid Project Manager Eric Cross performed a site visit at the property. The facility was a vacant service station. Evidence of a former pump island was observed on the east side of the building, and evidence of the former UST field was observed on the south side of the property. Additionally, a fill port was observed on the north side of the building that correlated to the approximate location of the fuel oil UST mentioned in the above section. No fill ports or other evidence of an additional UST was observed on the south side of the building. Evidence of the soil borings performed during the soil investigations in 1991 and 1993 was apparent throughout the parking lot.

3.0 Geophysical Investigation

Pyramid performed electromagnetic (EM) and ground penetrating radar (GPR) surveys across the accessible portions of the Parcel. Several of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as signs, culverts, and other cultural features. Large areas of reinforced concrete were recorded as anomalies by the EM, and verified by the GPR. No structures were observed beneath the reinforcement that were indicative of USTs. Reconnaissance GPR transects were performed across the apparent former UST field, and no evidence of USTs was recorded in this area.

One probable metallic UST was evidenced in the EM data and verified by the GPR at X=35, Y=220. The probable UST was approximately 6 feet wide and 9 feet long at a depth of approximately 2.5-3.0 feet. The coordinates of the tank location in NC State Plane (Zone 3200, US Survey Feet), are **2033170.678 E, 477226.046 N**. This location correlates to the location of the fuel oil UST mentioned in the Site History section of this report. The UST is observed to lie partially within the proposed NCDOT easement.

The full details of the geophysical investigation are included in the Geophysical Investigation Report as **Appendix C**.

4.0 Soil Sampling Activities & Results

4.1 Soil Assessment Field Activities

On February 14, 2014, Pyramid mobilized to the site and drilled soil borings, installed one temporary monitoring well, and collected some of the proposed soil samples for the PSA. The soil borings and temporary well (TW) were completed using a track mounted Geoprobe® Direct-Push rig. Six (6) soil borings (6-1, 6-2, 6-3, 6-4, 6-5 and 6-6) were advanced on the subject property between the NCDOT proposed ROW and easements, and edge of pavement. The selected locations were chosen to avoid public utilities along the adjacent roads and private utilities associated with the business while remaining in the proposed right of way and/or easement.

The soil borings were installed at or adjacent to proposed drainage piping, as indicated by the NCDOT engineering plans, near the probable UST identified by the geophysical survey, or within the proposed ROW and/or easement to obtain additional information. Subsequent to the initial contaminant analysis (see below), two additional borings (6-7 and 6-8) were performed on February 18, 2014, to further delineate potential soil contamination at the parcel. It should be noted that a third boring was attempted between borings 6-3 and 6-8, but met refusal at 6 inches below the ground surface. The locations of the borings are shown on **Figure 2**.

Soil samples were continuously collected in four-foot long disposable sleeves from each boring for geologic description, and visual examination for signs of contamination. Soil recovered from each sleeve was screened in the field using a Photo-Ionization Detector (PID) approximately every 2 feet depending on the soil recovery of each sleeve. In general, the soil sample with the highest PID reading was selected from each boring for laboratory analysis. If field screening detected an elevated reading, then additional soil samples from each boring were selectively analyzed with the QED UVF HC-1 Analyzer. The soil boring logs with the soil descriptions, visual examination, and PID screening results are included in **Appendix D**. The PID field screening results are summarized in **Table 1**. To prevent cross contamination, new disposable nitrile gloves were worn by the sampling technician during the sampling activities, and were changed between samples.

Possible to strong petroleum odors were detected in borings 6-1, 6-2, 6-3, and 6-7 during the field screening.

The soil samples selected for Total Petroleum Hydrocarbon (TPH) analyses were analyzed utilizing the QED UVF HC-1 Analyzer system from QROS-US. The NCDOT has indicated that this instrument is an acceptable method to provide total petroleum hydrocarbon (TPH) results for soil analysis for the PSA projects. Pyramid's QED-certified technician performed the soil analyses. The soil samples selected for analysis using the QED Analyzer were analyzed for TPH as diesel range organics (DRO) and TPH as gasoline range organics (GRO). The soil samples selected for analysis using the QED were preserved in the field with methanol and were analyzed at the end of each day using the QED.

In addition to the QED analysis, select samples were collected for more comprehensive laboratory analysis using EPA Methods 8260 and 8270 for volatile and semi-volatile organic compounds. These additional analyses were performed based on the site history of the property, which suggested that other potential contaminants such as solvents may have been utilized in the past in association with automobile repair. In general, soils that exhibited the highest PID readings and were above the water table were selected for the additional laboratory analyses. Specifically, samples 6-1(4-6) and 6-2(4-6) were placed in laboratory prepared containers and shipped to Pace Analytical in Huntersville, NC for analysis of volatile and semi-volatile organic compounds.

4.2 Soil Sample Analytical Results

QED Results

The DENR action levels for both TPH-GRO and TPH-DRO are 10 mg/kg. The QED results for soil samples at boring locations 6-4 and 6-5 did not detect TPH-GRO or TPH-DRO concentrations above 10 mg/kg. The QED results did detect DRO concentrations above 10 mg/kg at the locations of borings 6-1, 6-2, 6-3, 6-6, 6-7, and 6-8. Specifically, DRO concentrations ranging from 12.3 mg/kg to 1,193 mg/kg were recorded in these borings. Additionally, boring 6-2 recorded a GRO concentration exceeding 10 mg/kg between 6 to 8 feet below land surface (378 mg/kg). The soil sample QED results are summarized in **Table 2**. A copy of the QED analysis report is included in **Appendix E**.

Laboratory Analysis for Methods 8260/8270

Two soil samples [6-1(4-6) and 6-2(4-6)] were sent to the laboratory for analysis of soils using EPA Methods 8260/8270 for volatile and semi-volatile organic compounds based on the site use as a former retail gasoline station. The laboratory results detected concentrations of Napthalene and n-Propylbenzene in soil sample 6-2(4-6) that exceeded the soil-to-groundwater Maximum Soil Contaminant Concentrations (MSCC). A Napthalene concentration of 2.93 mg/kg was detected, and an n-Propylbenzene concentration of 2.27 mg/kg was detected. The soil-to-groundwater MSCCs for Napthalene and n-Propylbenzene are 0.16 and 1.7 mg/kg, respectively. No other

compounds were detected of residential or soil-to-groundwater MSCCs in the samples that were analyzed. The soil sample laboratory results are summarized in **Table 3**. A copy of the laboratory report and chain-of-custody is included in **Appendix F**.

4.3 Temporary Monitoring Well Installation

On February 14, 2014, Pyramid converted soil boring 6-2 into a 1-inch diameter temporary monitoring well (TW). This location was chosen based on high PID readings, its location near the most contaminated soil observed in the previous soil investigation report for the site, and its apparent down-gradient (downhill) position relative to the rest of the property. Soil boring 6-2(TW) was completed to a total depth of 16 feet below land surface (BLS). The temporary well was constructed with 6 feet of 1-inch diameter of schedule 80 PVC casing and 10 feet of 1-inch diameter of schedule 80 PVC slotted screen. The temporary well was set in the boring with 10 feet of slotted screen at the bottom of the well.

On February 14, 2014, the temporary monitoring well 6-2(TW) was gauged using a properly decontaminated electric water level probe. The depth-to-groundwater was measured at 5.8 feet BLS. The temporary monitoring well was sampled using a new 0.5-inch diameter disposable bailer. Upon completion of the gauging and sampling, the temporary monitoring well was properly abandoned by the drillers by removing the casing, and filling the borehole with bentonite chips and portland cement.

4.4 Groundwater Analytical Results

The groundwater sample 6-2(TW) was placed in laboratory prepared containers for analysis of volatile organic compounds (VOCs) using EPA Method 6200B and semi-volatile organic compounds (SVOCs) using EPA Method 625. The sample was shipped to Pace Analytical in Huntersville, NC. The 6200B laboratory analysis detected concentrations of Benzene (6.6 µ/L), Napthalene (104 µ/L), and n-Propylbenzene (102 µ/L) above NCAC 2L groundwater standards in the sample. The 2L standards for Benzene, Napthalene, and n-Propylbenzene under the 6200B method are 1.0, 6.0, and 70.0 µ/L, respectively. The 625 laboratory analysis detected concentrations of Napthalene (34.3 µ/L) above the NCAC 2L groundwater standard for the 625 method. The 2L standard for Napthalene under the 625 method is 6 µg/L. The groundwater results for sample 6-2(TW) are summarized in **Table 4**. A copy of the laboratory report and chain-of-custody is included in **Appendix F**.

5.0 Conclusions and Recommendations

As requested by NCDOT, Pyramid has completed a PSA at the Charles Williams, Jr. property located 701 Bragg Blvd., Fayetteville, NC (Parcel 006). The following is a summary of the assessment activities and results. Personnel logs for all field work are included in **Appendix G.**

5.1 Geophysical Investigation

One probable metallic UST was evidenced in the EM data and verified by the GPR at X=35, Y=220. The probable UST was approximately 6 feet wide and 9 feet long at a depth of approximately 2.5-3.0 feet. The coordinates of the tank location in NC State Plane (Zone 3200, US Survey Feet), are **2033170.678 E, 477226.046 N**. This location correlates to the location of the fuel oil UST mentioned in the Site History section of this report. The UST is observed to lie partially within the NCDOT proposed easement.

5.2 Limited Soil Assessment

The DENR action levels for both TPH-GRO and TPH-DRO are 10 mg/kg. The QED results for soil samples at boring locations 6-4 and 6-5 did not detect TPH-GRO or TPH-DRO concentrations above 10 mg/kg. The QED results did detect DRO concentrations above 10 mg/kg at the locations of borings 6-1, 6-2, 6-3, 6-6, 6-7, and 6-8. Specifically, DRO concentrations ranging from 12.3 mg/kg to 1,193 mg/kg were recorded in these borings. Additionally, boring 6-2 recorded a GRO concentration exceeding 10 mg/kg between 6 to 8 feet below land surface (378 mg/kg).

Two soil samples [6-1(4-6) and 6-2(4-6)] were sent to the laboratory for analysis of soils using EPA Methods 8260/8270 for volatile and semi-volatile organic compounds based on the site use as a former retail gasoline station. The laboratory results detected concentrations of Napthalene and n-Propylbenzene in soil sample 6-2(4-6) that exceeded the soil-to-groundwater Maximum Soil Contaminant Concentrations (MSCC). A Napthalene concentration of 2.93 mg/kg was detected, and an n-Propylbenzene concentration of 2.27 mg/kg was detected. The soil-to-groundwater MSCCs for Napthalene and n-Propylbenzene are 0.16 and 1.7 mg/kg, respectively. No other compounds were detected above residential or soil-to-groundwater MSCCs in the samples that were analyzed.

5.3 Limited Groundwater Assessment

Soil boring 6-2 was converted into a 1-inch diameter temporary monitoring well to a total depth of 16 feet BLS. The depth-to-groundwater was measured at 5.8 feet BLS. The 6200B laboratory analysis detected concentrations of Benzene (6.6 µ/L), Napthalene (104 µ/L), and n-Propylbenzene (102 µ/L) above NCAC 2L groundwater standards in the sample. The 2L standards for Benzene, Napthalene, and n-Propylbenzene under the 6200B method are 1.0, 6.0, and 70.0 µ/L, respectively. The 625 laboratory analysis

detected concentrations of Napthalene (34.3 µ/L) above the NCAC 2L groundwater standard for the 625 method. The 2L standard for Napthalene under the 625 method is 6 µg/L.

Review of the NCDOT engineering plans indicates that the NCDOT may encounter groundwater at the property during construction activities. Should the NCDOT perform any dewatering procedures, they should be aware of the potential contamination in the shallow groundwater of the compounds Napthalene, Benzene, and n-Propylbenzene. Additionally, if the NCDOT typically implements alternate design features for underground drainage structures such as gaskets, changes in material type, etc., when dealing with contaminated groundwater, it may be prudent to discuss such alternatives based on the groundwater analytical results.

5.4 Recommendations

Petroleum-Impacted Soils

During road construction activities, it is possible the NCDOT may encounter petroleum impacted soil near soil borings 6-1, 6-2, 6-3, 6-6, 6-7, and 6-8. The direct source of this petroleum is likely from the former UST field on the south side of the property and the probable fuel oil UST evidenced on the north side of the building. Additionally, the NCDOT may also encounter contaminated shallow groundwater during construction.

Soils with DRO above 10 mg/kg were observed at the location of borings 6-1, 6-2, 6-3, 6-6, 6-7, and 6-8. The NCDOT Microstation slope stake information does not indicate any cuts to be made in this area, however, there are drainage features proposed to be constructed at the parcel that will require soil excavation.

Estimating the Areas of Contamination

The estimated areas of contamination are depicted on **Figure 2**. Two areas of contamination are identified. The boundaries of the areas of contamination are generally estimated by applying a circular area of contamination around a boring exhibiting DRO/GRO levels above 10 mg/kg with a radius equal to half the distance between that boring and the nearest "clean" boring. In cases where this approach is not feasible, such as near property boundaries or where data does not exist to provide a definitive boundary, the area of contamination is terminated using the distance to the property boundary as a radius, or an educated approximation is applied. For this parcel, the distance between boring 6-4 and 6-8 was used as the diameter for contamination surrounding borings 6-1, 6-2, 6-3, and 6-8. The distances between the contaminated borings (6-6 and 6-7) and the adjacent clean borings (6-4 and 6-5) were used to delineate this zone of contamination.

Pyramid's PSA investigation resulted in an estimated area of 4,127 square feet of impacted soil in the vicinity of borings 6-1, 6-2, 6-3, and 6-8, and an estimated are of 532 square feet of impacted soil in the vicinity of borings 6-6 and 6-7. **This results in a total estimated area of contamination of 4,659 square feet of impacted soil at the**

property. The deepest soil samples exhibiting contamination was observed to be at the sample depth 6-8 feet. For this reason, a maximum depth of 8 feet will be used to approximate total volumes of contaminated soil. It should be noted that this is a gross estimate based on the data available. Using a total thickness of 8 feet of contaminated soil, Pyramid estimates a total of approximately 37,272 cubic feet, or **1,380 cubic yards of impacted soils between 0 and 8 feet BLS** at the two areas of contamination combined. The boundaries of the areas of contamination are approximate due to limited soil data.

It should be noted that, if impacted soil is encountered during road construction outside of the area analyzed by this investigation, the impacted soil should be managed according to NC DENR Division of Waste Management (DWM) UST Section Guidelines and disposed of at a permitted facility.

6.0 Limitations

The results of this preliminary investigation are limited to the boring locations completed during this limited assessment and presented in this report. The laboratory results only reflect the current conditions at the locations sampled on the date this PSA was performed.

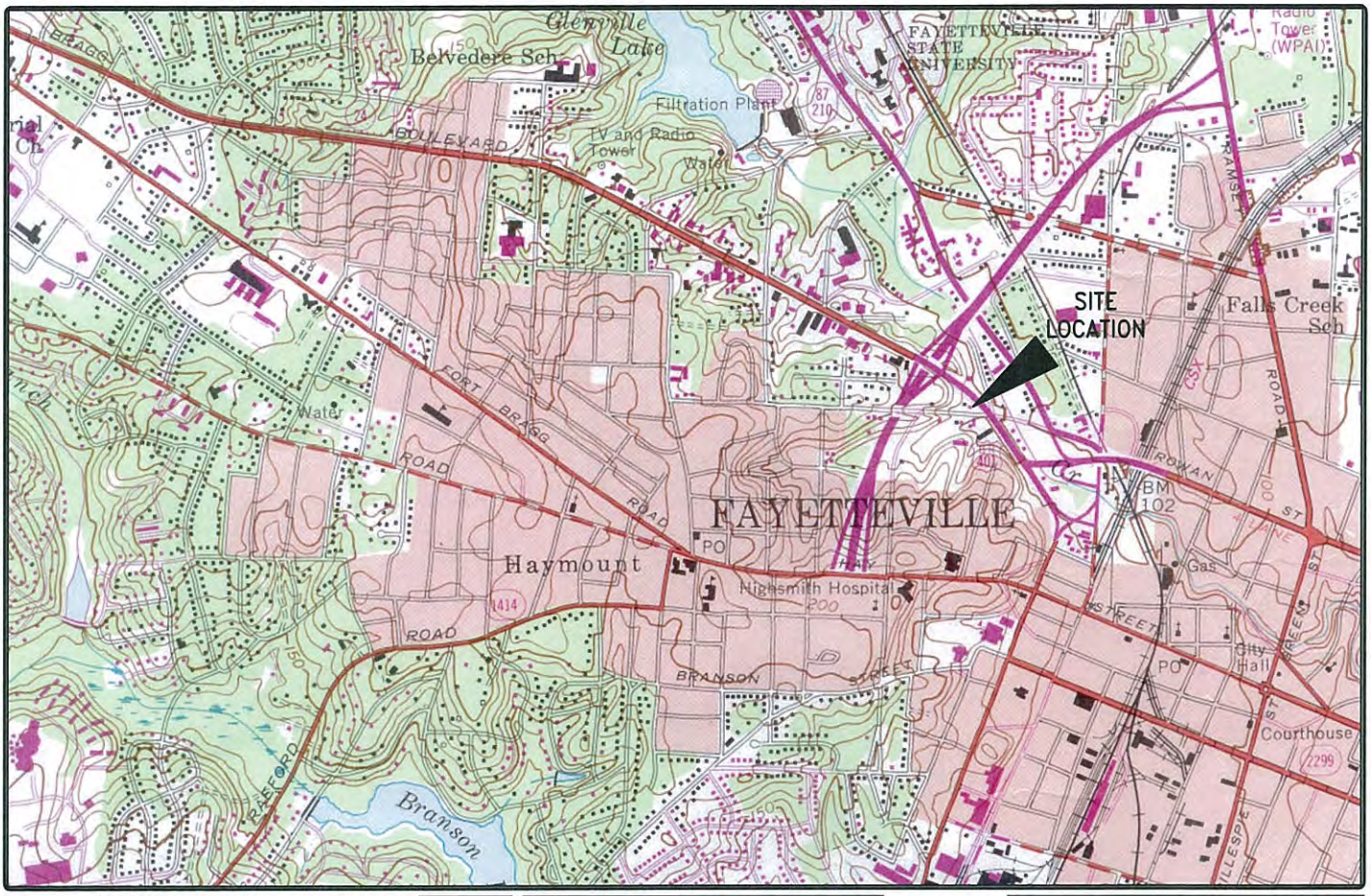
7.0 Closure

This report was prepared for, and is available solely for use by NCDOT and their designees. The contents thereof may not be used or relied upon by any other person without the express written consent and authorization of Pyramid Environmental & Engineering, P.C. (Pyramid). The observations, conclusions, and recommendations documented in this report are based on site conditions and information reviewed at the time of Pyramid's investigation. Pyramid appreciates the opportunity to provide this environmental service.

FIGURES

USGS TOPOGRAPHIC MAP

SITE: 701 BRAGG BLVD. LOCATION: FAYETTEVILLE, NORTH CAROLINA



USGS IDENTIFICATION

USGS 7.5 MINUTE MAP	FAYETTEVILLE, N.C.
ORIGINAL DATE:	1957
PHOTOREVISION DATE:	1987

	PRIMARY HIGHWAY, HARD SURFACE
	SECONDARY HIGHWAY, HARD SURFACE
	LIGHT-DUTY ROAD HARD OR IMPROVED SURFACE
	UNIMPROVED ROAD
	STATE ROAD
	U.S. ROUTE
	INTERSTATE ROUTE

SCALES

MILES: 1/2 0 1

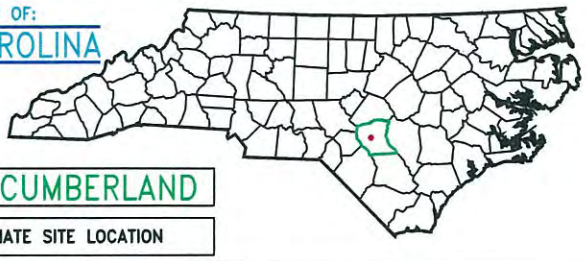
FEET: 1000 0 2000 4000 6000

1" = 2000'

NOTES:
- TOPOGRAPHICAL CONTOUR INTERVAL = 10 FEET
- PHOTOREVISIONS DENOTED IN PURPLE

MAGNETIC NORTH

COUNTY MAP OF: NORTH CAROLINA



COUNTY: CUMBERLAND

APPROXIMATE SITE LOCATION

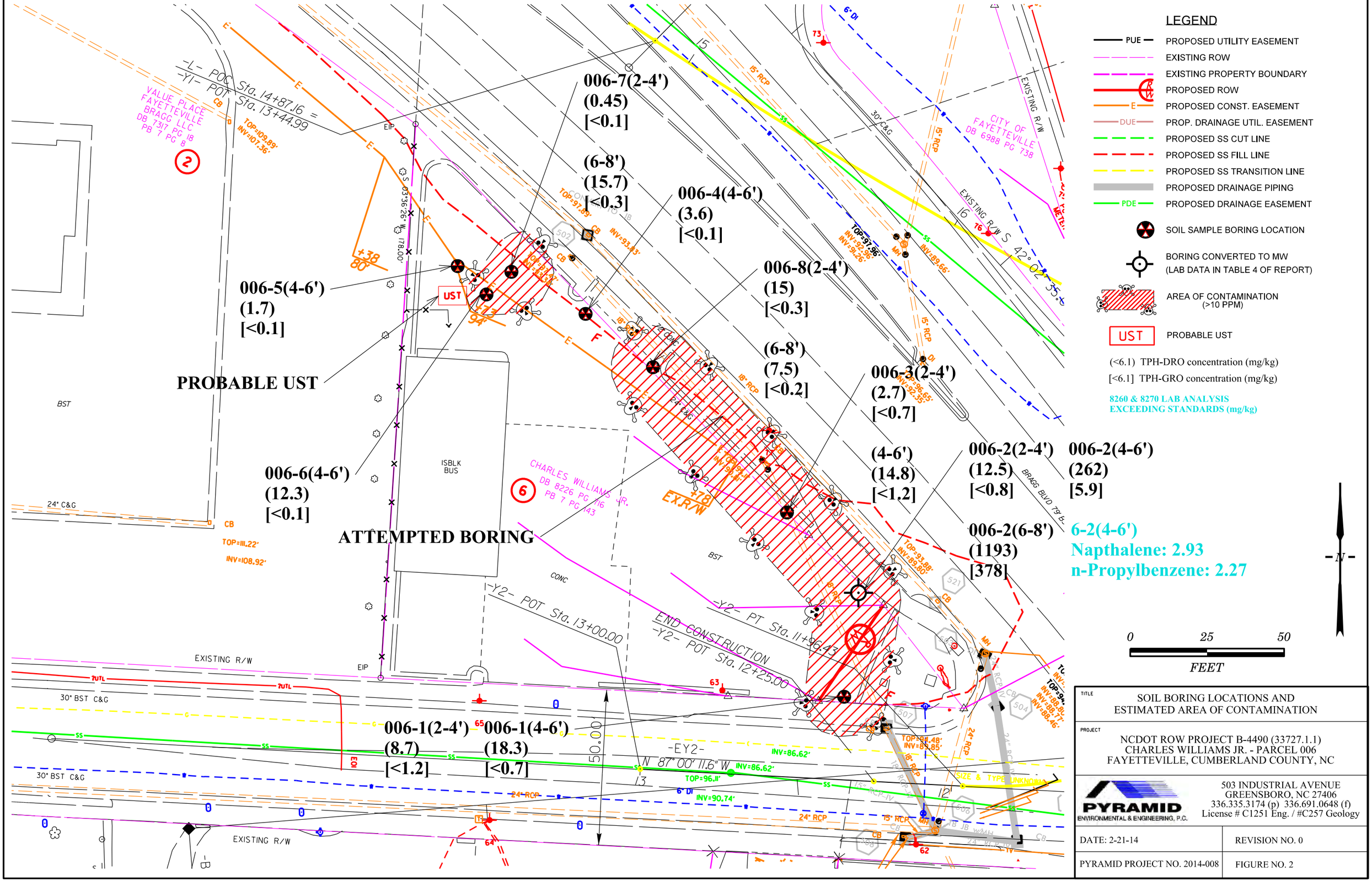
PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

CLIENT: NC DOT B-4490		SCALE: 1"=2000'	DRAWN BY: KAM
PROPERTY NAME: PARCEL 006, CHARLES WILLIAMS, JR.			CHECK BY: TDL
CITY: FAYETTEVILLE	STATE: NORTH CAROLINA	DATE: 2/5/14	JOB NO.: 2014-008
TITLE: TOPOGRAPHIC MAP		DRAWING NAME: USGSTOPO	TYPE: PSA
			FIGURE NUMBER: 1

NOTES

TOPOGRAPHIC MAP USED IN THIS GRAPHIC IS MAPPED, EDITED, AND PUBLISHED BY THE UNITED STATES GEOLOGIC SURVEY, DEPARTMENT OF THE INTERIOR, RESTON VIRGINIA.

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS.


LEGEND
PUE — PROPOSED UTILITY EASEMENT
EXISTING ROW
EXISTING PROPERTY BOUNDARY
PROPOSED ROW
E — PROPOSED CONST. EASEMENT
DUE — PROP. DRAINAGE UTIL. EASEMENT
PROPOSED SS CUT LINE
PROPOSED SS FILL LINE
PROPOSED SS TRANSITION LINE
PROPOSED DRAINAGE PIPING
PDE — PROPOSED DRAINAGE EASEMENT
SOIL SAMPLE BORING LOCATION
BORING CONVERTED TO MW
(LAB DATA IN TABLE 4 OF REPORT)
AREA OF CONTAMINATION
(>10 PPM)
UST — PROBABLE UST
(<6.1) TPH-DRO concentration (mg/kg)
[<6.1] TPH-GRO concentration (mg/kg)
8260 & 8270 LAB ANALYSIS
EXCEEDING STANDARDS (mg/kg)
006-7(2-4')
(0.45)
[<0.1]
(6-8')
(15.7)
[<0.3]
006-4(4-6')
(3.6)
[<0.1]
006-5(4-6')
(1.7)
[<0.1]
006-8(2-4')
(15)
[<0.3]
(6-8')
(7.5)
[<0.2]
006-3(2-4')
(2.7)
[<0.7]
(4-6')
(14.8)
[<1.2]
006-2(2-4')
(12.5)
[<0.8]
006-2(4-6')
(262)
[5.9]
006-2(6-8')
(1193)
[378]
PROBABLE UST
006-6(4-6')
(12.3)
[<0.1]
ATTEMPTED BORING
006-1(2-4')
(8.7)
[<1.2]
006-1(4-6')
(18.3)
[<0.7]
6-2(4-6')
Napthalene: 2.93
n-Propylbenzene: 2.27
-L- POC Sta. 14+87.16 =
-Y1- POT Sta. 13+44.99
-Y2- POT Sta. 13+00.00
-Y2- PT Sta. 11+96.43
END CONSTRUCTION
-Y2- POT Sta. 12+25.00
VALUE PLACE FAYETTEVILLE BRAGG LLC
DB 7317 PG 18
PB 7 PG 8
CHARLES WILLIAMS JR.
DB 8226 PG 116
PB 7 PG 143
CITY OF FAYETTEVILLE
DB 6988 PG 738
EXISTING R/W
30' BST C&G
24" C&G
CONC
BST
EIP
CB
MH
UST
EX.R/W
BRAGG BLVD 79' B-
S 42° 02' 35" E
S 03°36'26" W 178.00'
N 87° 00' 11.6" W
50.00'
0
25
50
FEET
N
TITLE
SOIL BORING LOCATIONS AND
ESTIMATED AREA OF CONTAMINATION
PROJECT
NCDOT ROW PROJECT B-4490 (33727.1.1)
CHARLES WILLIAMS JR. - PARCEL 006
FAYETTEVILLE, CUMBERLAND COUNTY, NC
PYRAMID
ENVIRONMENTAL & ENGINEERING, P.C.
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
336.335.3174 (p) 336.691.0648 (f)
License # C1251 Eng. / #C257 Geology
DATE: 2-21-14
REVISION NO. 0
PYRAMID PROJECT NO. 2014-008
FIGURE NO. 2

TABLES

TABLE 1
Summary of Soil Field Screening Results
NCDOT Project B-4490
701 Bragg Blvd. - Parcel 006
Fayetteville, Cumberland County, North Carolina

SOIL BORING	SAMPLE ID	DEPTH (feet bgs)	PID READINGS (PPM)
6-1	6-1(1-2)	1 to 2	20.0
	6-1(2-4)	2 to 4	510.0
	6-1(4-6)	4 to 6	630.0
	6-1(6-8)	6 to 8	206.0
6-2	6-2(1-2)	1 to 2	200.0
	6-2(2-4)	2 to 4	700.0
	6-2(4-6)	4 to 6	1050.0
	6-2(6-8)	6 to 8	3900.0
6-3	6-3(1-2)	1 to 2	6.0
	6-3(2-4)	2 to 4	670.0
	6-3(4-6)	4 to 6	700.0
	6-3(6-8)	6 to 8	410.0
6-4	6-4(2-4)	2 to 4	15.0
	6-4(4-6)	4 to 6	190.0
	6-4(6-8)	6 to 8	85.0
6-5	6-5(1-2)	1 to 2	0.0
	6-5(2-4)	2 to 4	0.0
	6-5(4-6)	4 to 6	140.0
	6-5(6-8)	6 to 8	50.0
6-6	6-6(1-2)	1 to 2	5.0
	6-6(2-4)	2 to 4	30.0
	6-6(4-6)	4 to 6	295.0
	6-6(6-8)	6 to 8	60.0
6-7	6-7(1-2)	1 to 2	15.0
	6-7(2-4)	2 to 4	35.0
	6-7(6-8)	6 to 8	650.0
6-8	6-8(0.5-2)	0.5 to 2	35.0
	6-8(2-4)	2 to 4	100.0
	6-8(6-8)	6 to 8	260.0

bgs= below ground surface
PID= photo-ionization detector
PPM= parts-per-million
= sampled for lab analysis &/or QROS-QED analysis
OVA= Organic Vapor Analyzer

TABLE 2

Summary of Soil Sample QED Analytical Results for GRO/DRO

NCDOT State Project B-4490
701 Bragg Blvd. - Parcel 006
Fayetteville, Cumberland County, North Carolina

				QROS - QED Analysis			Laboratory Analysis (Pace)	
SAMPLE ID	**DATE**	**DEPTH (feet)**	**PID (ppm)**	**GRO (mg/kg) (C5-C10)**	**DRO (mg/kg) (C10-C35)**	**TPH (mg/kg) (C5-C35)**	**EPA Method 3550 DRO (mg/kg)**	**EPA Method 5035 GRO (mg/kg)**
6-1(2-4)	2/14/2014	2 to 4	510.0	<1.2	8.7	8.7	------	------
6-1(4-6)	2/14/2014	4 to 6	630.0	<0.7	18.3	18.3	------	------
6-2(2-4)	2/14/2014	2 to 4	700.0	<0.8	12.5	12.5	------	------
6-2(4-6)	2/14/2014	4 to 6	1050.0	5.9	262	267.9	------	------
6-2(6-8)	2/14/2014	6 to 8	3900	378	1193	1571	------	------
6-3(2-4)	2/14/2014	2 to 4	610	<0.7	2.7	2.7	------	------
6-3(4-6)	2/14/2014	4 to 6	700	<1.2	14.8	14.8	------	------
6-4(4-6)	2/14/2014	4 to 6	190	<0.1	3.6	3.6	------	------
6-5(4-6)	2/14/2014	4 to 6	140	<0.1	1.7	1.7	------	------
6-6(4-6)	2/14/2014	4 to 6	295	<0.1	12.3	12.3	------	------
6-7(2-4)	2/18/2014	2 to 4	35	<0.1	0.45	0.45	------	------
6-7(6-8)	2/18/2014	6 to 8	650	<0.3	15.7	15.7	------	------
6-8(2-4)	2/18/2014	2 to 4	100	<0.3	15	15	------	------
6-8(6-8)	2/18/2014	6 to 8	260.0	<0.2	7.5	7.5	------	------
NC Initial Action Level - UST Section for 5035/5030-GRO; 3550-DRO				10	10	NA	10	10

PID= photo-ionizaton detector
PPM= parts-per-million
GRO= Gasoline Range Organics
DRO= Diesel Range Organics
mg/kg= milligrams-per-kilogram
TPH= Total Petroleum Hydrocarbons (GRO + DRO)
NA= Not Applicable
"------" = No Laboratory Analysis

* Bold values indicate concentrations above initial action levels

TABLE 3

Summary of Volatile/Semi-Volatile Laboratory Results of Soil Samples

Parcel 006 - Charles Williams, Jr.

701 Bragg Blvd., Cumberland County, NC

Analytical Parameter	Analytical Method	SAMPLE ID NUMBER		Residential MSCC (mg/kg)	Soil to Groundwater MSCC (mg/kg)
		6-1(4-6)	6-2(4-6)		
	Sample Date:	2/14/2014	2/14/2014		
	Depth (feet):	4 to 6	4 to 6		
	Location	SE parcel	SE parcel		
Acetone	8260	0.102	ND	14000	24
Benzene	8260	ND	ND	18	0.0056
Bromobenzene	8260	ND	ND	NMSCC	NMSCC
Bromoform	8260	ND	ND	81	0.026
2-Butanone (MEK)	8260	ND	ND	9385	16
n-Butylbenzene	8260	ND	0.751	626	4.3
sec-Butylbenzene	8260	ND	0.295	626	3.3
Styrene	8260	ND	ND	3128	1.5
tert-Butylbenzene	8260	ND	ND	626	3.4
4-Chlorotoluene	8260	ND	ND	1000	0.1
Ethylbenzene	8260	ND	1.38	1560	4.9
1,2-Dichloroethane	8260	ND	ND	7	0.0019
Isopropyl ether (IPE)	8260	0.062	ND	156	0.37
Isopropylbenzene	8260	ND	0.949	1564	1.7
P-Isopropyltoluene	8260	ND	0.274	NMSCC	NMSCC
Naphthalene	8260	ND	**2.93**	313	0.16
n-Propylbenzene	8260	0.289	**2.27**	626	1.7
Toluene	8260	ND	ND	1200	4.3
1,2,4-Trimethylbenzene	8260	ND	0.318	782	8.5
1,3,5-Trimethylbenzene	8260	ND	0.163	782	8.3
Total Xylenes	8260	ND	ND	3129	4.6
MTBE	8260	ND	ND	350	0.091
2-Hexanone	8260	ND	ND	70	0.1
Methylene chloride	8260	ND	ND	85	0.02
All Other 8260 Parameters	8260	ND	ND	NA	NA
Acenaphthene	8270	ND	ND	940	8.2
bis(2-Ethylhexyl)phthalate	8270	ND	ND	46	6.6
1-Methylnaphthalene	8270	ND	ND	20	0.004
2-Methylnaphthalene	8270	ND	ND	63	3.6
Naphthalene	8270	ND	ND	313	0.16
All Other 8270 Parameters	8270	ND	ND	NA	NA
PID Field Screening (ppm)	PID	630.0	1050.0	NA	NA

mg/kg = parts per million (ppm).
BOLD values are above MSCC levels.
NS=Not Sampled for Parameter

MSCC = Maximum Soil Contaminant Concentrations
ND = Not Detected.
J= Estimated Concentration

NMSCC= No MSCC
NA Not Applicable
CI= Considered Immobile

TABLE 4

Summary of Groundwater Analytical Results

NCDOT State Project B-4490

701 Bragg Blvd. - Parcel 006

Fayetteville, Cumberland County, North Carolina

PARAMETER	UNITS	SAMPLE ID	NCAC 2L GROUNDWATER STANDARD
		6-2(TW)	
EPA Method 6200B VOCs; Sample Collection Date: 2/14/14			
Benzene	**ug/L**	**6.6**	**1**
Chloroform	ug/L	ND	70
Diisopropyl Ether (IPE)	ug/L	60.6	70
Ethyl Benzene	ug/L	91	600
Isopropylbenzene (Cumene)	ug/L	58.2	70
Naphthalene	**ug/L**	**104**	**6**
Styrene	ug/L	ND	70
Toluene	ug/L	4.9	600
Total Xylenes	ug/L	10.6	500
n-Propylbenzene	**ug/L**	**102**	**70**
sec-Butylbenzene	ug/L	ND	70
n-Butylbenzene	ug/L	15.6	70
tert-Butyl methyl ether (MTBE)	ug/L	7.9	20
tert-Butylbenzene	ug/L	2.5	70
1,2,4-Trimethylbenzene	ug/L	ND	400
1,2-Dichloroethane	ug/L	ND	0.4
1,3,5-Trimethylbenzene	ug/L	0.92	400
4-Isopropyltoluene	ug/L	ND	25
All Other Parameters	ug/L	ND	NA
EPA Method 625 Semi-Volatile Organic Compounds			
Acenaphthene	ug/L	ND	80
Diethylphthalate	ug/L	ND	6000
bis(2-Ethylhexyl)phthalate	ug/L	ND	3
Naphthalene	**ug/L**	**34.3**	**6**
Phenanthrene	ug/L	ND	200
Phenol	ug/L	ND	30
Pyrene	ug/L	ND	200
All Other Parameters	ug/L	ND	NA

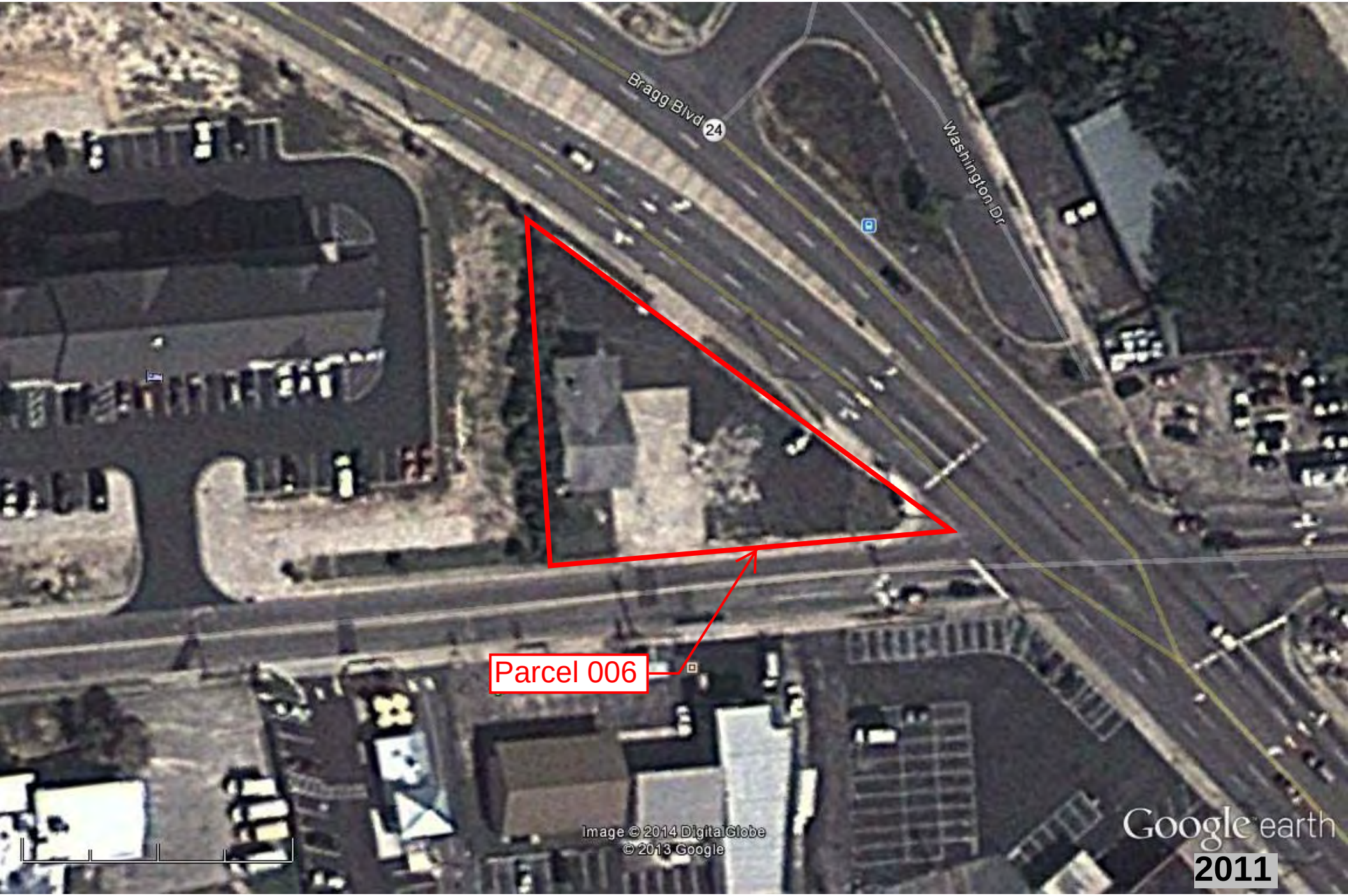
ug/L= micrograms-per-liter

ND= Not Detected at or above adjusted reporting limit.

NA= Not Applicable

Bold values above 2L

APPENDIX A



Google earth

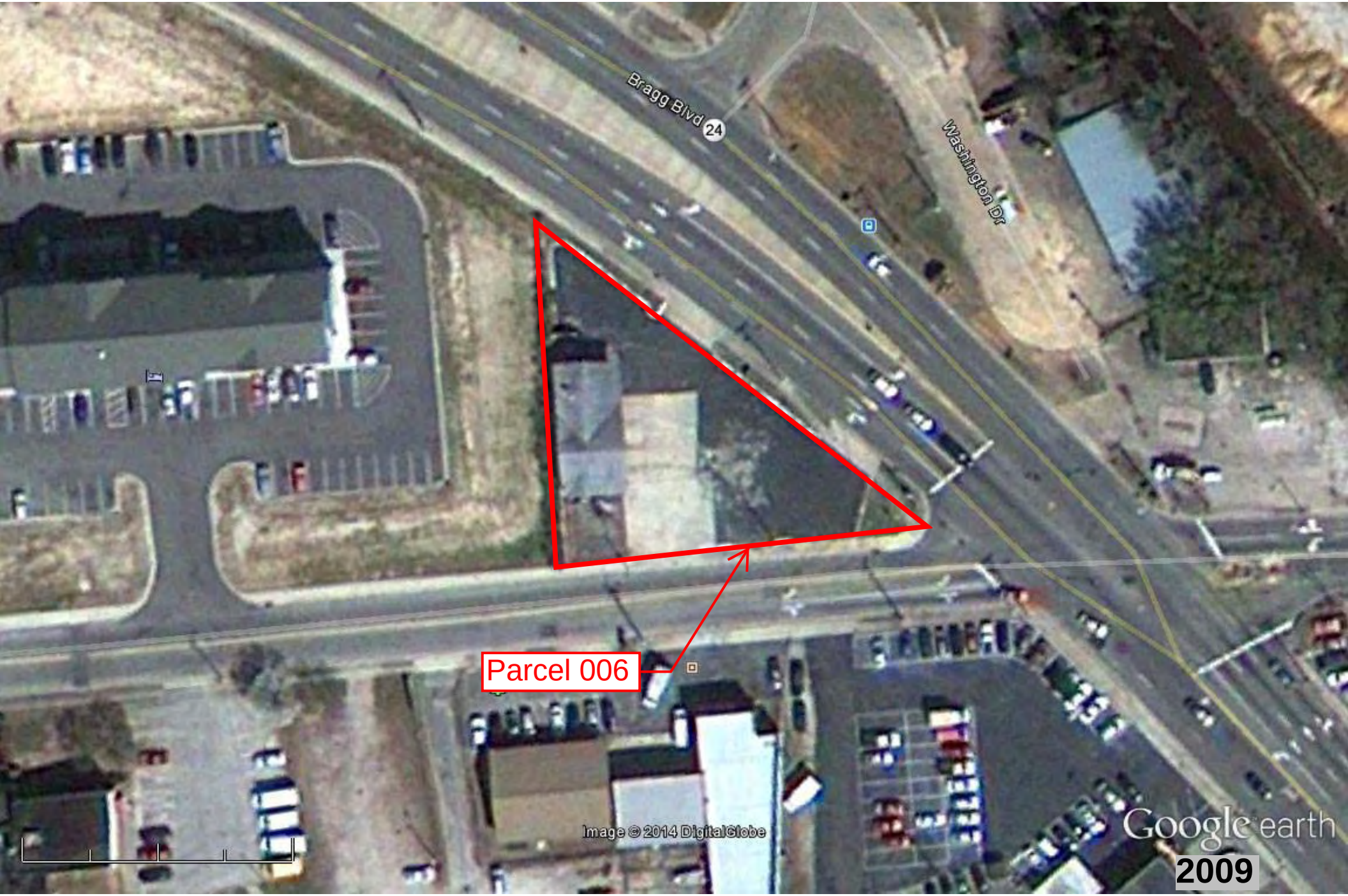
feet 300

meters 100

Google earth

feet 200

meters 70



Google earth

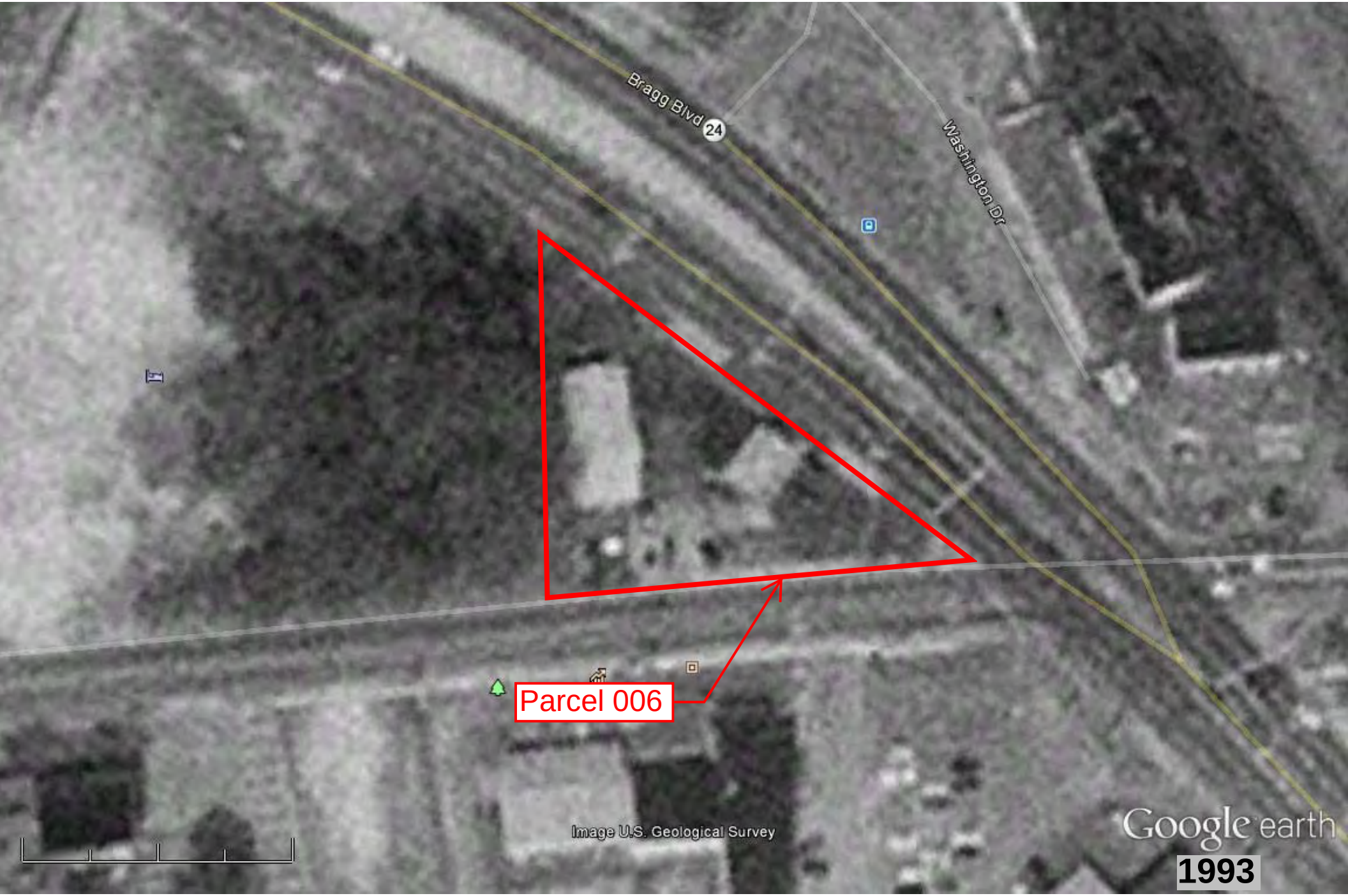
feet 300

meters 100

Google earth

feet 300

meters 100



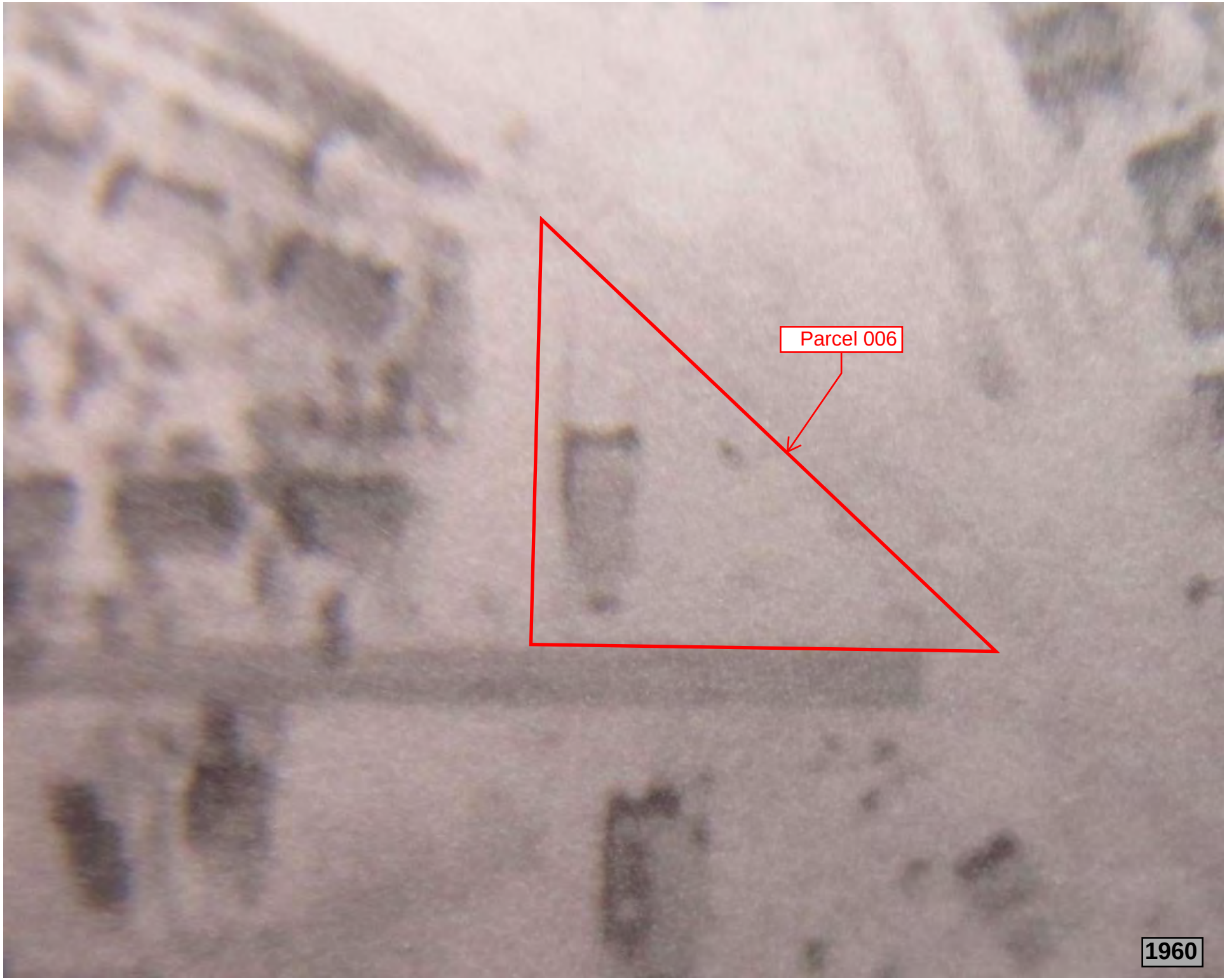
Google earth

feet 300

meters 100


Parcel 006
1972


Parcel 006
1966


Parcel 006
1960

APPENDIX B

State of North Carolina
Department of Environment,
Health and Natural Resources
Fayetteville Regional Office

James B. Hunt, Jr., Governor
Jonathan B. Howes, Secretary
Andrew McCall, Regional Manager

DEHNR

DIVISION OF ENVIRONMENTAL MANAGEMENT

July 28, 1993

Mr. James F. Medlin
Exxon Company, U.S.A.
PO Box 30451
Charlotte, NC 28230-0451

SUBJECT: Review of Site Assessment
Former Exxon Facility
RAS #4-1739
701 Bragg Boulevard
Fayetteville, Cumberland County

Dear Mr. Medlin:

This is to acknowledge receipt of the subject report dated April 23, 1993. This report has been evaluated by the Groundwater staff of the Fayetteville Regional Office and a sensitivity evaluation of the site was conducted by us on July 27, 1993. It has been determined that only those soils containing high levels of oil and grease must be removed or treated in place.

Should new information become available concerning this matter, we reserve the right to reverse this finding.

If you have any questions or need clarification, please contact me at (919) 486-1541.

Sincerely,

Gene Jackson
Hydrogeologist

GJ/mla

cc: Bob Bryan

POLLUTION INCIDENT/U.S.T. LEAK REPORTING FORM

Department of Environment, Health, Natural Resources
Division of Environmental Management
GROUNDWATER SECTION

Confirm. GW Contamination (Y/N) N
Major Soil Contamination (Y/N) N
Minor Soil Contaminatin (Y/N) Y

Incident # 10471

Date Incident Occurred or Leak Detected _____

INCIDENT DESCRIPTION

Incident Location/Name Former Exxon RAS #4-1739 (Now Tommy's Auto Wax)

Address 401 Bragg Blvd

City/Town Fayetteville | County Cumberland | Region Fayetteville

Briefly Describe Incident Apparent release of petroleum from underground storage tanks

POTENTIAL SOURCE OWNER-OPERATOR

Potential Source Owner-Operator Exxon Company USA | Telephone 704-529-4263

Company Exxon Corporation | Street Address P.O. Box 30451

City Charlotte | County Mecklenburg | State N.C. | Zip Code 28230-0451

OWNERSHIP
0. N/A 1. Municipal 2. Military 3. Unknown (4.Private) 5.Federal 6. County 7. State

OPERATION TYPE
0. N/A 1. Public Service 2. Agricultrural 3. Residential 4. Educational/Relig. 5. Industrial (6. Commercial) 7. Mining

POLLUTANTS INVOLVED

MATERIALS INVOLVED	AMOUNT LOST	AMOUNT RECOVERED

SOURCE OF POLLUTION

PRIMARY SOURCE OF POLLUTION (Select one)
1. Intentional dump
2. Pit, pond, lagoon
(3. Leak-underground)
4. Spray irrigation
5. Land application
6. Animal feedlot
7. Source unknown
8. Septic tank
9. Sewer line
10. Stockpile
11. Landfill
12. Spill-surface
13. Well
14. Dredge spoil
15. Nonpoint source

PRIMARY POLLUTANT TYPE (Select one)
1. Pesticide/herbicide
2. Radioactive waste
(3. Gasoline/diesel)
4. Heating oil
5. Other petroleum prod.
6. Sewage/septage
7. Fertilizers
8. Sludge
9. Solid waste leachate
10. Metals
11. Other inorganics
12. Other organics

LOCATION
(1. Facility)
2. Railroad
3. Waterway
4. Pipeline
5. Dumpsite
6. Highway
7. Residence
8. Other

SETTING
1. Residential
2. Industrial
(3. Urban)
4. Rural

Site Priority Ranking _____

D.E.M. Regional Contact Mark Jackson | Signature Kirk Gaerl | Date 7-1-93

GW-61 Revised 3/92

IMPACT ON DRINKING WATER SUPPLIES

WELLS AFFECTED 1. YES (2. NO)

NUMBER OF WELLS AFFECTED _____

Well(s) Contaminated: (Users Name)

1.

2.

3.

4.

5.

Circle Appropriate Responses

Lab Samples Taken By: 1. DEM 2. DHS (3. Responsible Party) 4. Other 5. None

Samples Taken Include: 1. Groundwater (2. Soil)

LOCATION OF INCIDENT

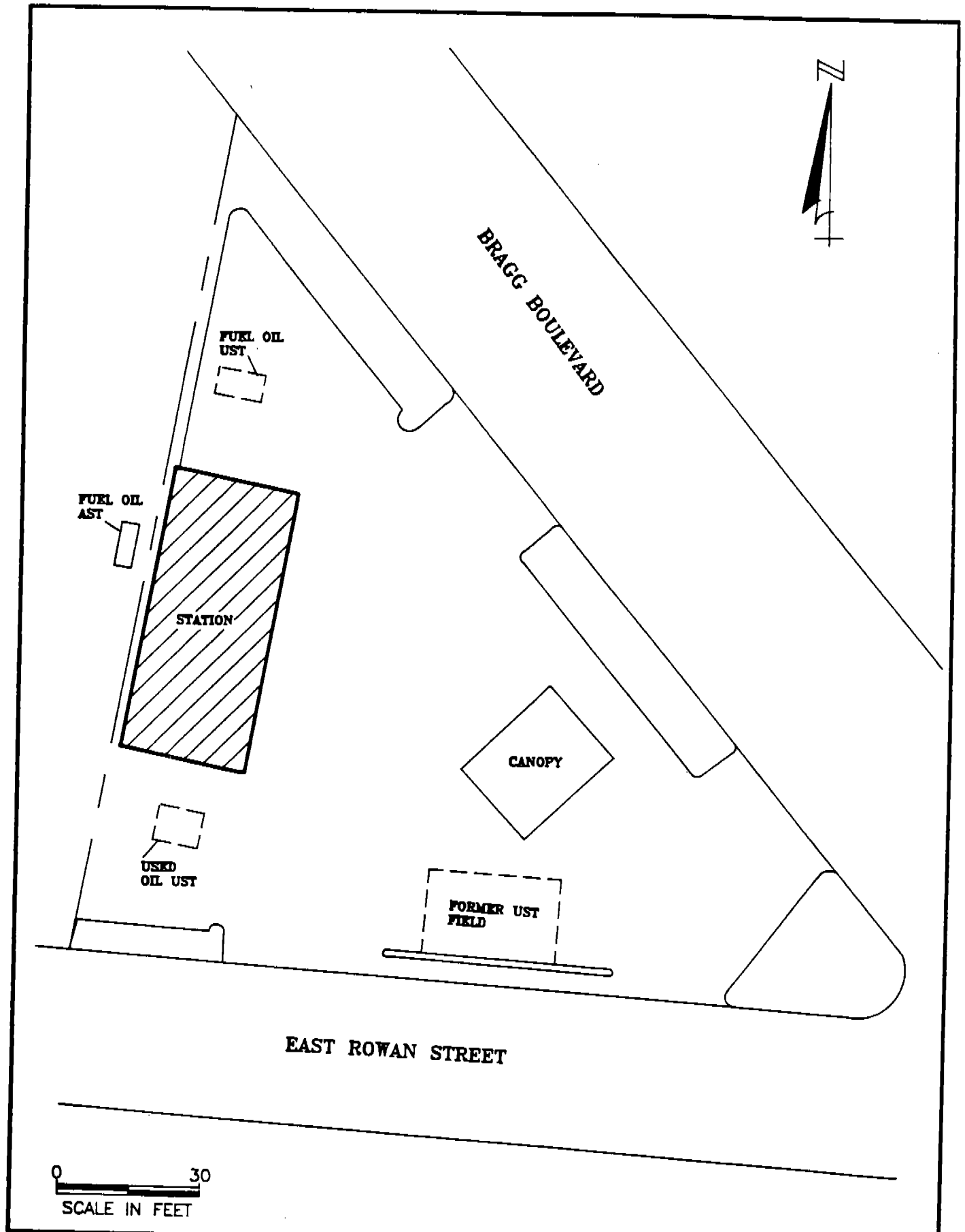
7 1/2 Min. Quad Name Fayetteville

Lat. : Deg : Min : Sec : 35° 3' 30"

5 Min. Quad Number

Long. : Deg : Min : Sec : 78° 53' 40"

Draw Sketch of Area or Attach Additional Maps



FORMER EXXON RETAIL LOCATION #4-1739 701 BRAGG BOULEVARD FAYETTEVILLE, NORTH CARLOINA	FIGURE 2. SITE PLAN MAP	ERM-SOUTHEAST, INC CHARLOTTE, NC ERM JP 9172SAMP.DWG

EXXON COMPANY, U.S.A.
POST OFFICE BOX 30451 - CHARLOTTE, NORTH CAROLINA 28230-0451

MARKETING DEPARTMENT
ENVIRONMENTAL ENGINEERING

J. F. (Frank) Medlin
Senior Staff Engineer

April 30, 1993

Re: Suspected Release Notification
Former Exxon RAS#4-1739
701 Bragg Boulevard
Fayetteville, North Carolina

Mr. Gene Jackson
Fayetteville Regional Office
Wachovia Building, Suite 714
Fayetteville, N.C. 28301

Dear Gene:

Please find one(1) bound copy of the results of a recent soil investigation conducted at the former Exxon facility referenced above. This investigation was initiated as a result of a previous soil investigation that was conducted by Hollowell Testing at the property owner's request (copy in appendix).

You can reach me at the letterhead address or call (704) 529 - 4263 on any questions or comments.

Sincerely,

FOR EXXON COMPANY, U.S.A.

James F. Medlin

JFM:jfm

Attachment

c: File
ERM Southeast, Inc.
Mr. Bryan

SOIL INVESTIGATION SUMMARY REPORT FORMER EXXON RETAIL LOCATION #4-1739 701 BRAGG BOULEVARD FAYETTEVILLE, NORTH CAROLINA

Prepared for:

Exxon Company, U.S.A.
P.O. Box 30451
Charlotte, NC 28230

Prepared by:

ERM-Southeast
7300 Carmel Executive Park
Suite 200
Charlotte, NC 28226

April 23, 1993

ERM

SOIL INVESTIGATION SUMMARY REPORT
FORMER EXXON RETAIL LOCATION #4-1739
701 BRAGG BOULEVARD
FAYETTEVILLE, NORTH CAROLINA

TABLE OF CONTENTS

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SOIL INVESTIGATION SUMMARY REPORT
FORMER EXXON RETAIL LOCATION #4-1739
701 BRAGG BOULEVARD
FAYETTEVILLE, NORTH CAROLINA

1.0 INTRODUCTION

This report presents the investigative procedures and results of a soil investigation conducted by ERM-Southeast, Inc. (ERM) at Exxon Retail Location #4-1739 located in Fayetteville, North Carolina. The project background is provided below.

1.1 Project Background

Former Exxon Retail Location #4-1739 is located in Fayetteville, North Carolina. A site location map is provided in Figure 1.

According to one of the original owners of the site, Mr. Harry P. Hamilton, the service station was originally built in approximately 1949 and rebuilt around 1964. A site plan is provided in Figure 2. Mr. Underwood believes that Exxon rebuilt the station and installed several underground storage tanks (USTs) at this time. The site was operated as a service station until approximately 1985. The property was sold to Mr. Robert Bryan on December 31, 1986. Exxon canceled its lease with Mr. Underwood on December 30, 1986, and subsequently canceled a lease with Mr. Bryan on March 17, 1987. The site has been used for a number of automobile maintenance related businesses since that time. The site is presently under lease to Tommy's Auto Wax, a car wash and detailing business.

According to the present owner, the gasoline USTs present at the site were removed in 1985. The location of the gasoline UST field is shown in Figure 2. A fuel oil UST and used oil UST are still present at the site. At this time, the fuel oil UST contains fuel oil and the used oil UST is empty.

Mr. Bryan retained Hollowell Testing in December 1991 to collect soil samples in the vicinity of the former gasoline UST field. In a report dated January 10, 1992, Hollowell Testing noted that the concentrations of petroleum hydrocarbons detected in the six soil samples collected did not exceed the North Carolina Department of Environment, Health, and Natural Resources (DEHNR) general action level for low boiling point petroleum hydrocarbons of 10 milligrams/kilogram (mg/kg). However, the reliability of these data are questionable due to inadequate sampling locations and indications of poor quality control in the laboratory results. A copy of the Hollowell Testing report is provided in Appendix C.

In July 1992, Exxon retained ERM-Southeast, Inc. (ERM) to conduct an additional soil investigation at the site if a review of the existing soil quality data indicated that further investigation was warranted. The methods and results of this soil investigation are discussed in the proceeding sections of this report.

2.0 SOIL SAMPLING ACTIVITIES

2.1 Field and Analytical Methods

Soil sampling field activities were conducted on December 29-30, 1992. Ten soil samples were collected in the vicinity of potential sources of petroleum hydrocarbon releases at the site. Soil samples for laboratory analysis were collected using a stainless steel hand auger. Holes were chiseled into the asphalt pavement to access subsurface soils at all but two of the sample locations. Soil sample locations HAS-8 and HAS-9 were advanced through holes that were saw cut through concrete pavement. All sampling equipment was decontaminated by washing with a detergent solution, rinsing with tap water, and rinsing with distilled water prior to, and between each use. Soil cuttings were used to backfill the holes from which they originated after the soil sampling had been completed.

Soil samples collected in the vicinity of the former gasoline UST field and pump island were analyzed for TPH by EPA Method 8000 with sample preparation by EPA Method 3550 and for TPH by Modified EPA Method 8015 with sample preparation by EPA Method 5030. One soil sample (HAS-1) from the base of the former gasoline UST field was also analyzed by EPA Method 8020 for petroleum hydrocarbon constituents (BTEX). A soil sample collected down gradient of the used oil UST was analyzed for oil and grease by EPA Method 9071.

Sample collection, handling, and preservation were conducted in accordance with accepted protocol, including chain-of-custody documentation. The samples were analyzed by NDRC Laboratories, Inc. (NDRC) of Richardson, Texas. NDRC is a State approved and EPA contract laboratory.

3.0 SOIL INVESTIGATION RESULTS

Sampling locations were based on the known locations of present and former USTs at the site, and their associated ancillary piping and pump dispensers. The potential sources of petroleum hydrocarbon releases include the former gasoline UST field, the pump island area, and a used oil UST south of the station building. Soils in the vicinity of the heating oil UST were not included in the scope of this soil investigation because Exxon does not appear to be liable for potential releases from this UST. Soil types noted at the site range from sandy clay to sand. The soil sampling locations, sample depths, and their associated analytical results are presented in Figure 3. Soil sample analytical data are summarized in Table 1.

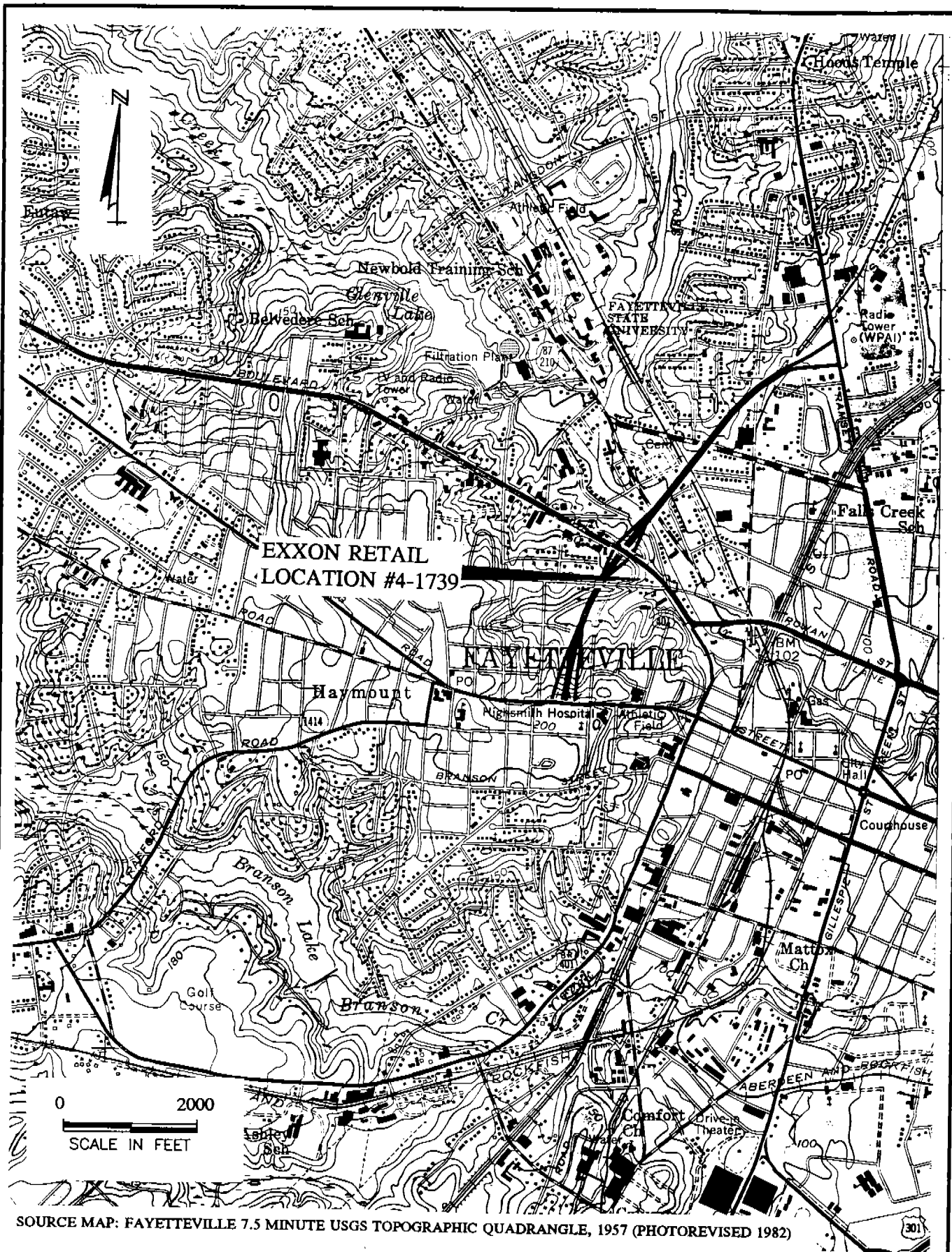
Soil sample HAS-1 was collected from within the former gasoline UST field in an attempt to sample soils beneath the original UST excavation. Two separate borings were advanced by hand auger and both encountered auger refusal in clayey sand containing wood and concrete debris at a depth of five to six feet. The sample collected at five feet appears to be representative of native soil from the UST excavation, but was probably not in-situ. The wood and concrete debris appear to have been used as fill at the base of the excavation. The upper 3.5 feet of the excavation appears to have been backfilled with sand imported to the site.

Laboratory analysis of HAS-1 indicates that TPH concentrations at the base of the former gasoline UST excavation are less than the DEHNR general action levels of 10 mg/kg (EPA Method 5030) and 40 mg/kg (EPA Method 3550). Inspection of the HAS-1 TPH analysis chromatogram indicates that the detected petroleum hydrocarbons are similar to the range of peaks representative of diesel fuel according to NDRC laboratory personnel. However, a positive identification could not be made due to the low concentrations detected in the sample. Soil samples collected in the vicinity of the former gasoline UST field, collected from depths of 5 to 5.5 feet (HAS-3, 4, 8, and 9), did not indicate petroleum hydrocarbon concentrations in excess of the DEHNR general action levels.

Analyses of soil samples collected in the vicinity of the former pump island (HAS-5, 6, 7, and 9) did not detect concentrations of petroleum hydrocarbons in excess of the DEHNR general action levels. However, HAS-10, collected at the topographically downslope property boundary detected TPH concentrations just above the DEHNR general action levels (44 mg/kg by Method 3550 and 44 mg/kg by Method 5030). The source of the detected petroleum hydrocarbons in this sample is unclear because only trace concentrations of TPH were detected in the vicinity of the former UST field and the former pump island. Based on the available soil data for the pump island area and the gasoline UST, it appears that the TPH detected in sample HAS-10 may not be associated with the site UST system.

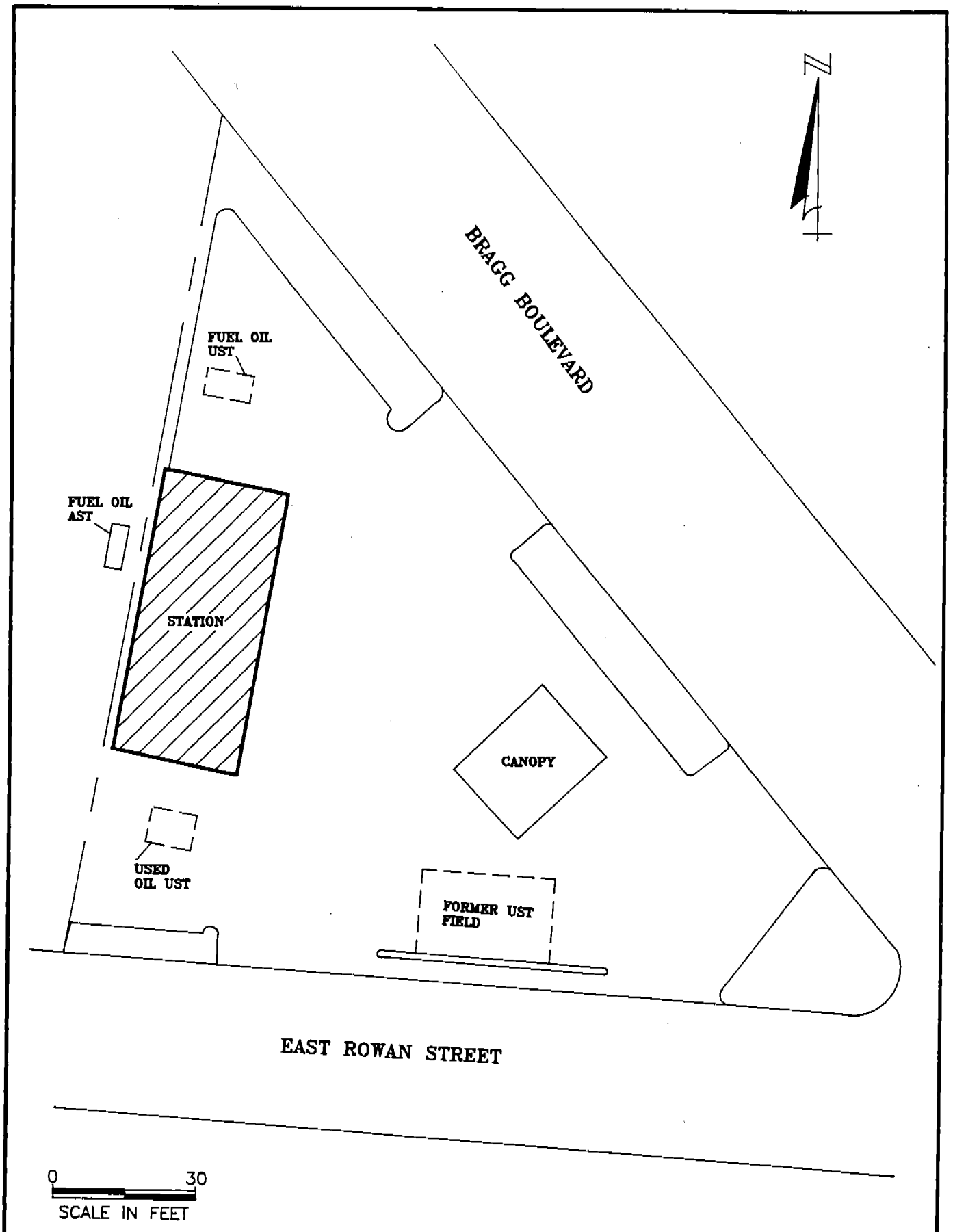
Soil sample HAS-2 was collected topographically downslope of the used oil UST, which is currently empty. Laboratory analysis of HAS-2 indicates a concentration of 1,350 mg/kg oil and grease at a depth of five feet. The DEHNR general action level for oil and grease is 250 mg/kg.

FIGURES



SOURCE MAP: FAYETTEVILLE 7.5 MINUTE USGS TOPOGRAPHIC QUADRANGLE, 1957 (PHOTOREVISED 1982)

EXXON COMPANY, U.S.A. EXXON RETAIL LOCATION #4-1739 701 BRAGG BOULEVARD FAYETTEVILLE, NORTH CAROLINA	FIGURE 1. SITE LOCATION MAP	ERM--SOUTHEAST, INC CHARLOTTE, NC ERM



FORMER EXXON RETAIL LOCATION
#4-1739
701 BRAGG BOULEVARD
FAYETTEVILLE, NORTH CARLOINA

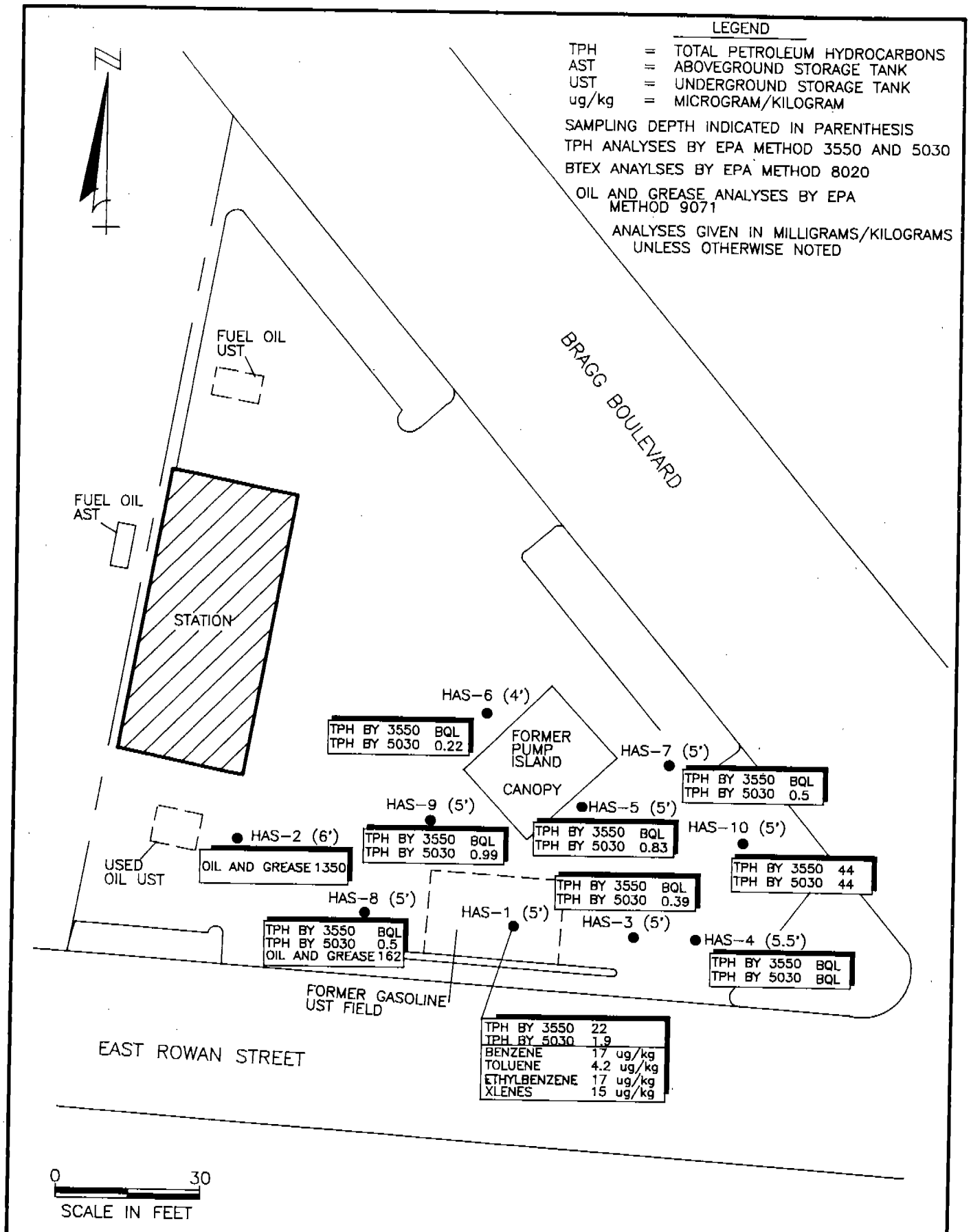
FIGURE 2.

SITE PLAN MAP

ERM-SOUTHEAST, INC
CHARLOTTE, NC

ERM

JP 9172SAMP.DWG



FORMER EXXON RETAIL LOCATION
#4-1739
701 BRAGG BOULEVARD
FAYETTEVILLE, NORTH CARLOINA

FIGURE 3.
SAMPLE LOCATIONS AND ANALYTICAL RESULTS OF 12/29-30/92 SAMPLING EVENT

ERM-SOUTHEAST, INC
CHARLOTTE, NC

ERM

JP 9172ANAL.DWG

TABLES

TABLE 1
SOIL SAMPLE ANALYTICAL RESULTS
EXXON RETAIL LOCATION #4-1739
701 BRAGG BOULEVARD
FAYETTEVILLE, NORTH CAROLINA

SAMPLE NUMBER	DEPTH (feet)	TPH BY EPA METHOD 3550 (mg/kg)	TPH BY EPA METHOD 5030 (mg/kg)	OIL & GREASE BY EPA METHOD 9071 (mg/kg)	BENZENE EPA METHOD 8020 (ug/kg)	TOLUENE EPA METHOD 8020 (ug/kg)	ETHYLBENZENE EPA METHOD 8020 (ug/kg)	XYLENES EPA METHOD 8020 (ug/kg)	TOTAL BTEX EPA METHOD 8020 (ug/kg)
HAS-1	5	22	1.9	--	17	4.2	17	15	53.2
HAS-2	6	--	--	1350	--	--	--	--	--
HAS-3	5	BQL	0.39	--	--	--	--	--	--
HAS-4	5.5	BQL	BQL	--	--	--	--	--	--
HAS-5	5	BQL	0.83	--	--	--	--	--	--
HAS-6	4	BQL	0.22	--	--	--	--	--	--
HAS-7	5	BQL	0.5	--	--	--	--	--	--
HAS-8	5	BQL	0.5	162	--	--	--	--	--
HAS-9	5	BQL	0.99	--	--	--	--	--	--
HAS-10	5	44	44	--	--	--	--	--	--

NOTES:

- Soil samples collected December 29 and 30, 1992.
- Laboratory analyses conducted by NDRC Laboratories, Richardson, TX.
- TPH = Total Petroleum Hydrocarbon
- mg/kg = milligrams per kilogram
- ug/kg = micrograms per kilograms
- BQL = Below Quantitation Limit
- "--" indicates not analyzed

bs/mlt/b:bragg

APPENDIX C

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C.

PYRAMID ENVIRONMENTAL & ENGINEERING
(PROJECT 2014-008)

GEOPHYSICAL SURVEY

PARCEL 006 – CHARLES WILLIAMS JR.
701 BRAGG BLVD.
NCDOT PROJECT B-4490 (33727.1.1)

FAYETTEVILL, CUMBERLAND COUNTY, NC

FEBRUARY 12, 2014

Report prepared for: **Mr. Gordon Box**
GeoEnvironmental Project Manager
Geotechnical Engineering Unit
1020 Birch Ridge Drive
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Prepared by: _____

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C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 006, 701 Bragg Blvd.
Fayetteville, Cumberland County, North Carolina

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Figures

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for the North Carolina Department of Transportation (NCDOT), at the Charles Williams, Jr. property, Parcel 006, 701 Bragg Blvd., Fayetteville, Cumberland County, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project B-4490). The geophysical survey boundaries at the project site were designed to include the portions of the property between the existing edge of pavement and the proposed ROW and easements, whichever distance was greater. The geophysical investigation consisted of an electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys.

Geophysical Results: Several of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as signs, culverts, and other cultural features. Large areas of reinforced concrete were recorded as anomalies by the EM, and verified by the GPR. No structures were observed beneath the reinforcement that were indicative of USTs. One probable metallic UST was evidenced in the EM data and verified by the GPR at X=35, Y=220. The probable UST was approximately 6 feet wide and 9 feet long at a depth of approximately 2.5-3.0 feet. The coordinates of the tank location in NC State Plane (Zone 3200, US Survey Feet), are **2033170.678 E, 477226.046 N**.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for the North Carolina Department of Transportation (NCDOT), at the Charles Williams, Jr. property, Parcel 006, 701 Bragg Blvd., Fayetteville, Cumberland County, NC. The survey was part of an NCDOT Right-of-Way (ROW) investigation (NCDOT Project B-4490). The geophysical survey boundaries at the project site were designed to include the portions of the property between the existing edge of pavement and the proposed ROW and easements, whichever distance was greater. The survey grid spanned approximately 50 feet from west to east and approximately 240 feet from north to south. Conducted on January 27, 30, and February 4, 2014, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site contained a vacant former service station building, and otherwise consisted primarily of open asphalt parking space. Evidence of former pump islands was observed east of the building, and evidence of former USTs was observed southwest of the former pump island. Aerial photographs showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

Prior to conducting the geophysical investigation, a 20-foot by 10-foot survey grid was established across the geophysical survey areas using measuring tapes and water-based marking paint. These grid marks were used as X-Y coordinates for location control when collecting the geophysical data and establishing base maps for the geophysical results.

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. The EM survey was performed on January 27, 2014, using a Geonics EM61 metal detection instrument. According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data

were digitally collected at approximately 0.8 foot intervals along north-south trending or east-west trending, parallel survey lines spaced five feet apart. The data were downloaded to a computer and reviewed in the field and office using the Geonics DAT61 and Surfer for Windows Version 11.0 software programs.

GPR data were acquired across select EM differential anomalies on January 30 and February 4, 2014, using a Geophysical Survey Systems, Inc. (GSSI) SIR-2000 unit equipped with a 400 MHz antenna. Data were collected generally from east to west and north to south across the property. The GPR data were viewed in real time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 8 feet, based on an estimated two-way travel time of 8 nanoseconds per foot. GPR Transects across specific anomalies were saved to the hard drive of the SIR unit for post-processing and figure generation.

DISCUSSION OF RESULTS

Contour plots of the EM61 bottom coil and differential results obtained across survey area at the property are presented in **Figure 2**. The bottom coil results represent the most sensitive component of the EM61 instrument and detect metal objects regardless of size. The bottom coil response can be used to delineate metal conduits or utility lines; small, isolated metal objects, and areas containing insignificant metal debris. The differential results are obtained from the difference between the top and bottom coils of the EM61 instrument. The differential results focus on the larger metal objects such as drum and UST-size objects and ignore the smaller insignificant metal objects.

Discussion of EM Anomalies: Reinforced concrete created high amplitude EM responses across the full width of the survey area between Y=90 and Y=125. Reinforced concrete was also present from Y=140 to Y=160 centered at X=40, at X=25, Y=45, from Y=50 to Y=80 at X=70, and from Y=160 to Y=190 at X=70. The EM anomaly at X=65, Y=25 was the result of a utility box and reinforced concrete sign base. The EM anomaly at X=40 from Y=50 to Y=90 was a suspected power line, and was observed to extend to the southeast towards the utility box. The EM anomaly at X=70, Y=205 was due to a storm drain. The scattered EM responses throughout the majority of the survey area between Y=160 and Y=200 not discussed above are suspected to be

the result of a combination of utilities and metallic debris. The EM anomaly at X=65, Y=255 was the result of a reinforced concrete sign base. Lastly, the EM anomaly at X=35, Y=220 was at the location of a visible fill port, and was suspected to be the result of a metallic UST. This feature, as well as all areas of reinforced concrete, were further investigated with the GPR. **Figure 3** presents an overlay of the EM61 bottom coil contour map on the NCDOT engineering plans for reference.

Discussion of GPR Survey: **Figure 4** presents the locations of the formal GPR transects performed at the property, as well as images of some of the transects. **Appendix A** includes images of all GPR transects performed at the site. GPR Transects 1 and 2 were performed across an anomaly at X=65, Y=220 that appeared to not be associated with any utilities. These transects recorded isolated down-warped reflectors and disruptions in the subsurface that suggested a zone of buried debris. GPR Transects 3-21 were performed across the areas of reinforced concrete as well as the EM features to the north of the concrete. These transects all verified the presence of reinforcement within the concrete at the locations discussed in the previous section. No evidence of an USTs was observed in these GPR transects.

GPR Transects 22 and 23 were performed across the anomaly at X=35, Y=220. These transects confirmed the presence of a probable metallic UST at this location. The GPR survey indicates that the probable UST was approximately 6 feet in width and 9 feet in length, at a depth of approximately 2.5-3.0 feet below the ground surface. A fill port was also observed in the ground at this location. The coordinates of the tank location in NC State Plane (Zone 3200, US Survey Feet), are **2033170.678 E, 477226.046 N**.

The geophysical investigation recorded evidence of one probable metallic UST at the property within the survey area limits.

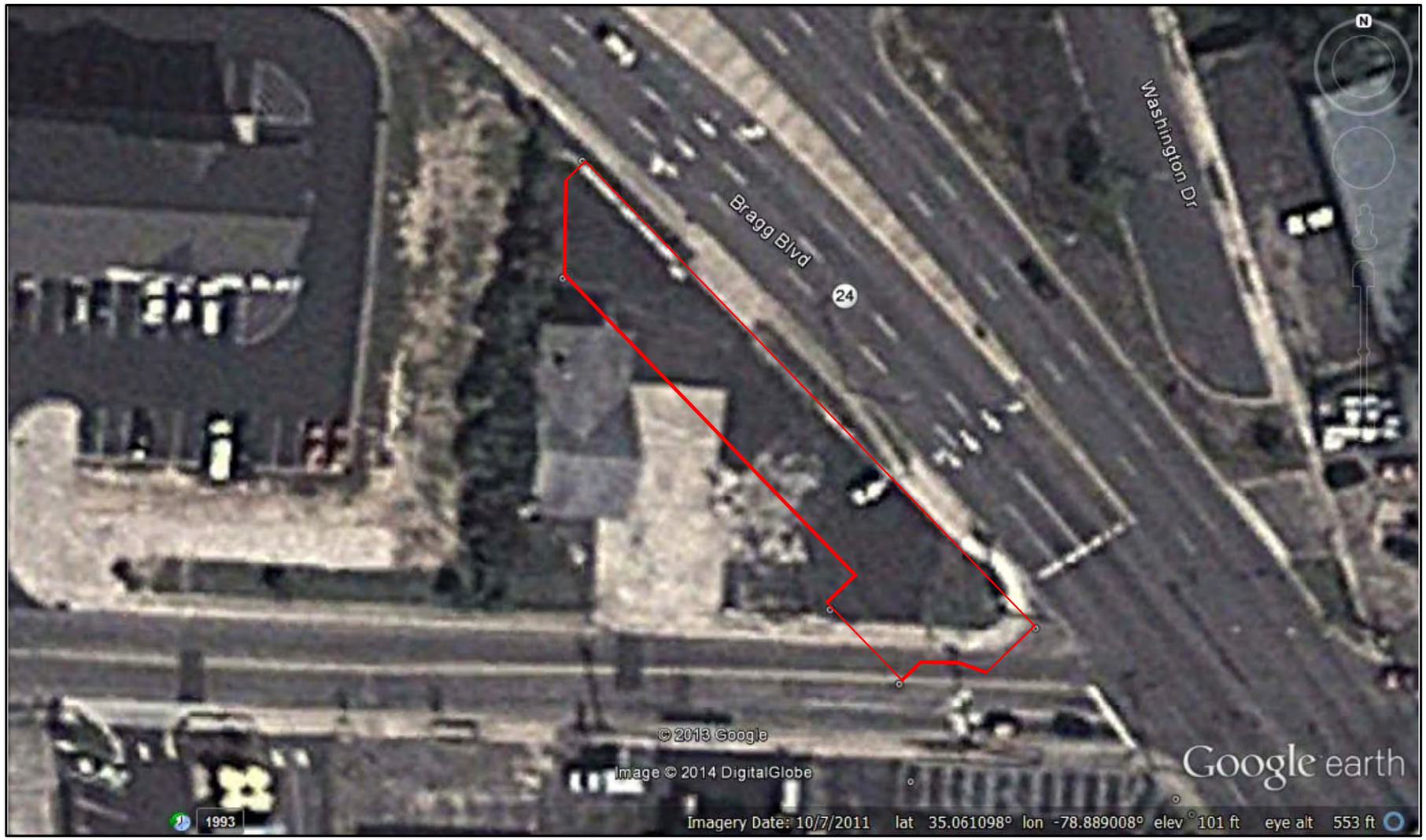
SUMMARY & CONCLUSIONS

Our evaluation of the EM61 and GPR data collected across Parcel 006 in Fayetteville, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- Several of the EM61 anomalies detected could be attributed to visible objects at the ground surface such as signs, culverts, and other cultural features.
- Large areas of reinforced concrete were recorded as anomalies by the EM, and verified by the GPR. No structures were observed beneath the reinforcement that were indicative of USTs.
- One probable metallic UST was evidenced in the EM data and verified by the GPR at X=35, Y=220. The probable UST was approximately 6 feet wide and 9 feet long at a depth of approximately 2.5-3.0 feet.
- The geophysical investigation recorded evidence of one probable metallic UST at the property.

LIMITATIONS

Geophysical surveys have been performed and this report prepared for the NCDOT in accordance with generally accepted guidelines for EM61 and GPR surveys. It is generally recognized that the results of the EM61 and GPR surveys are non-unique and may not represent actual subsurface conditions. The EM61 and GPR results obtained for this project have not conclusively determined the definitive presence or absence of metallic USTs, but that the evidence collected is sufficient to result in the conclusions made in this report. Additionally, it should be understood that areas containing extensive vegetation, reinforced concrete, or other restrictions to the accessibility of the geophysical instruments could not be fully investigated.



Approximate Boundaries of the Geophysical Survey Area

View of Northeast Portion of Survey Area
(Facing Approximately North)

View of South Portion of Survey Area
(Facing Approximately Southeast)

TITLE	PARCEL 006: GEOPHYSICAL SURVEY BOUNDARIES AND SITE PHOTOGRAPHS
PROJECT	NCDOT PROJECT B-4490 (33727.1.1) FAYETTEVILLE, CUMBERLAND COUNTY, NC

PYRAMID ENVIRONMENTAL & ENGINEERING, P.C
503 INDUSTRIAL AVENUE
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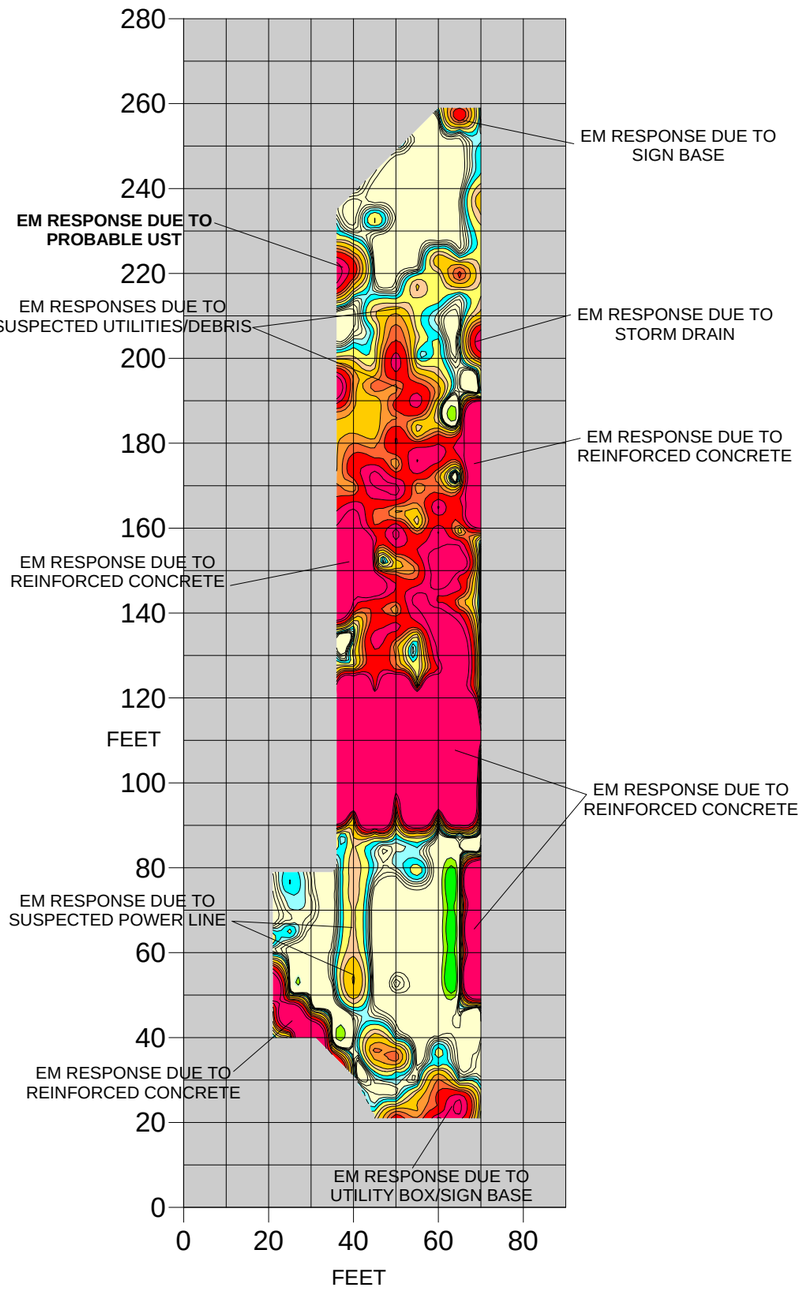
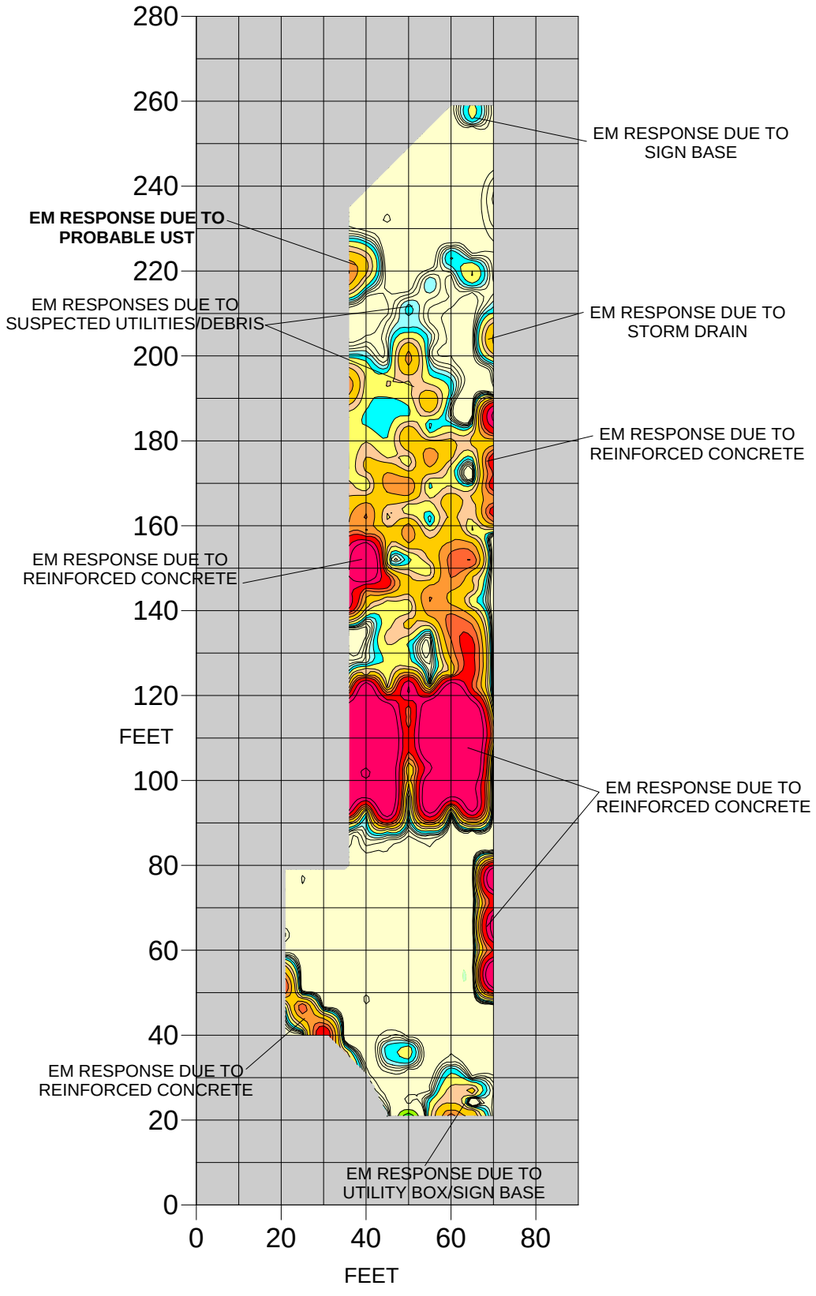
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE 2/7/2014	CLIENT NCDOT
PYRAMID PROJECT #: 2014-008	**FIGURE 1**

EM61 Bottom Coil Results



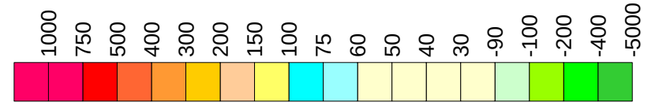
EM61 Differential Results



EVIDENCE OF ONE PROBABLE METALLIC UST OBSERVED

The contour plots show the bottom coil (most sensitive) and differential results of the EM61 instrument in millivolts (mV). The bottom coil response shows buried metallic objects regardless of size. The differential response focuses on larger, buried metallic objects such as drums and USTs and ignores smaller miscellaneous buried, metal debris.The EM61 data were collected on January 27, 2013 using a Geonics EM61 instrument. Ground penetrating radar (GPR) data were collected on January 30 & February 4, 2013, using aGSSI SIR 2000 unit coupled to a 400 MHz antennae.

EM61 Metal Detection Response (millivolts)



TITLE
PARCEL 006:
EM61 BOTTOM COIL & DIFFERENTIAL RESULTS CONTOUR MAPS

PROJECT
NCDOT PROJECT B-4490 (34437.1.1)
FAYETTEVILLE, CUMBERLAND COUNTY, NC

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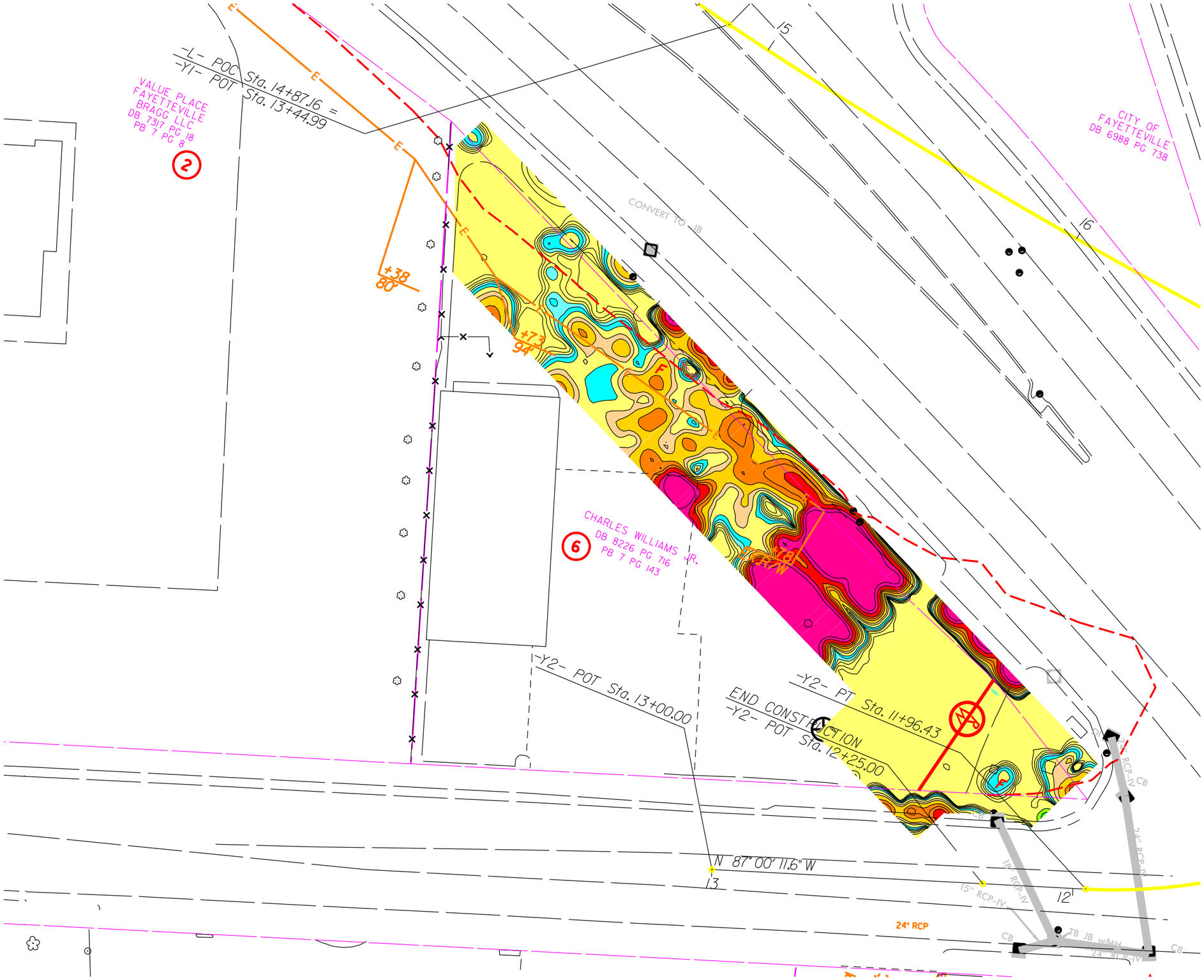
DATE 2/7/2014

CLIENT NCDOT

PYRAMID PROJECT #: 2014-008

FIGURE 2



LEGEND

- PUE — PROPOSED UTILITY EASEMENT
- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW
- E — PROPOSED CONST. EASEMENT
- DUE — PROP. DRAINAGE UTIL. EASEMENT
- PROPOSED SS CUT LINE
- PROPOSED SS FILL LINE
- PROPOSED SS TRANSITION LINE
- PROPOSED DRAINAGE PIPING
- PDE — PROPOSED DRAINAGE EASEMENT
- YELLOW ZONE REPRESENTS GEOPHYSICAL SURVEY AREA, CONTOURS ARE EM61 RESULTS (METALLIC RESPONSES)

N

0 25 50

FEET

TITLE: OVERLAY OF EM61 CONTOUR MAP ON ENGINEERING PLANS

PROJECT: NCDOT ROW PROJECT B-4490 (33727.1.1)
CHARLES WILLIAMS JR. - PARCEL 006
FAYETTEVILLE, CUMBERLAND COUNTY, NC

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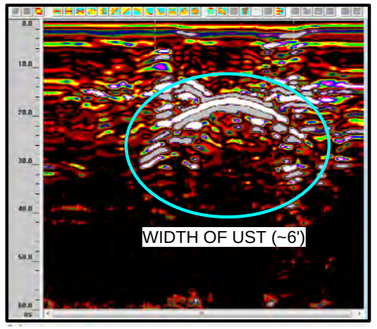
License # C1251 Eng. / #C257 Geology

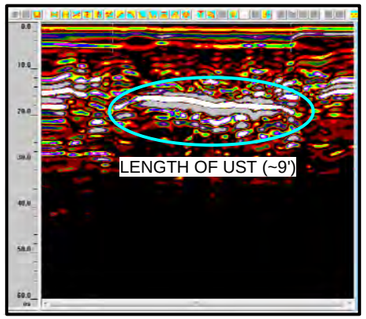
DATE: 2-21-14	REVISION NO. 0
PYRAMID PROJECT NO. 2014-008	FIGURE NO. 3

Approximate Locations of GPR Transects

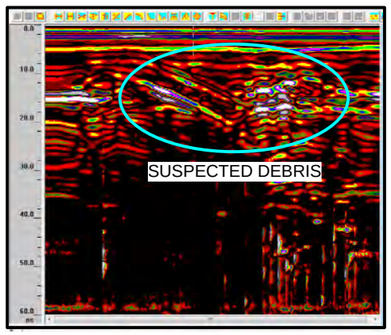
Location of Probable UST
(Approximately 2.5-3.0' bls)



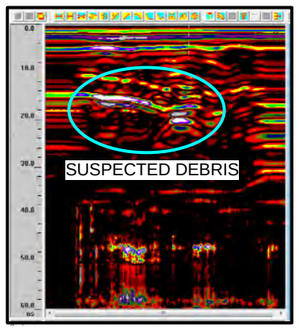
GPR Transect 22



GPR Transect 23



GPR Transect 1



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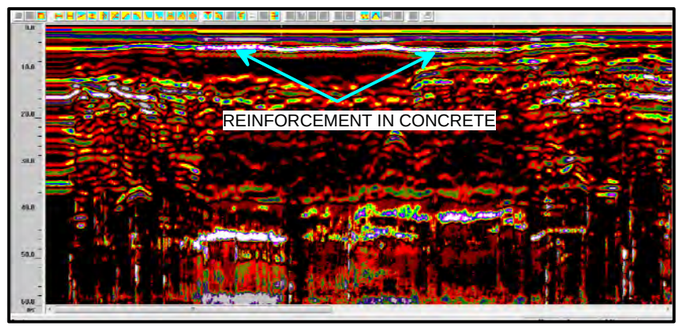
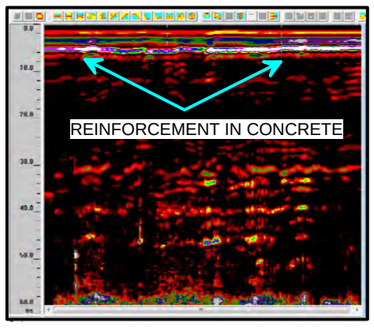


GPR Transect 3



GPR Transect 18

TITLE
PARCEL 006:
GPR TRANSECT LOCATIONS
AND SELECT IMAGES

PROJECT
NCDOT PROJECT B-4490 (33727.1.1)
FAYETTEVILLE, CUMBERLAND COUNTY, NC

PYRAMID
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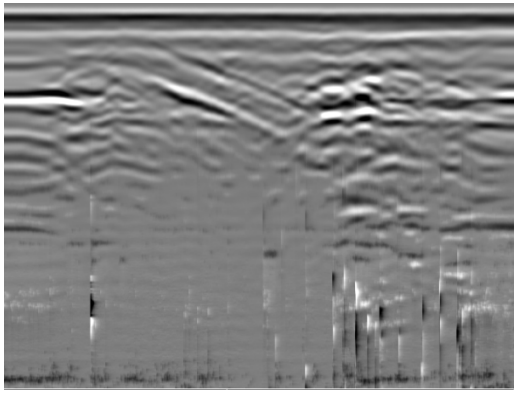
License # C1251 Eng. / License # C257 Geology

DATE 2/7/2014	CLIENT NCDOT
PYRAMID PROJECT #: 2014-008	**FIGURE 4**

Appendix A – GPR Transect Images



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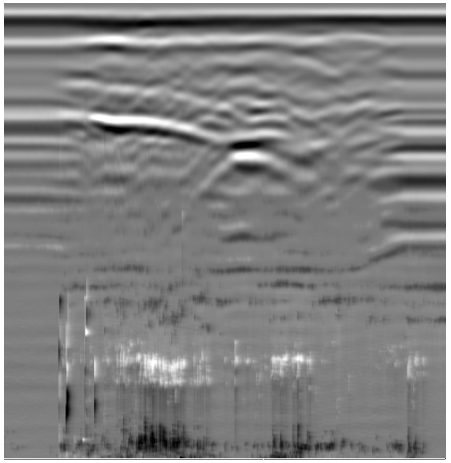
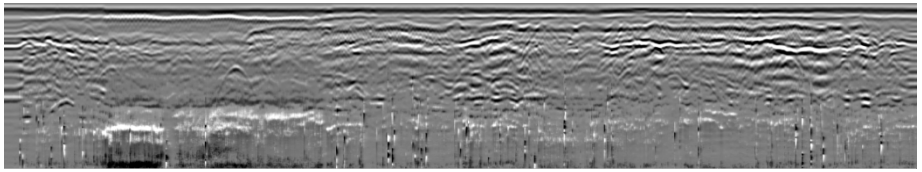


Transect 2



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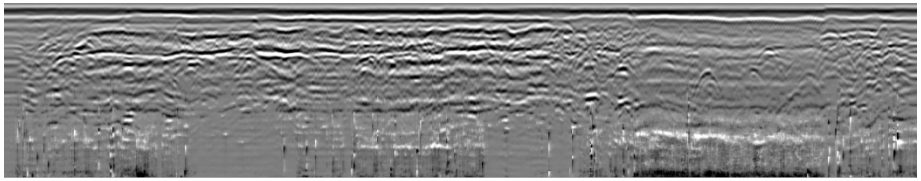

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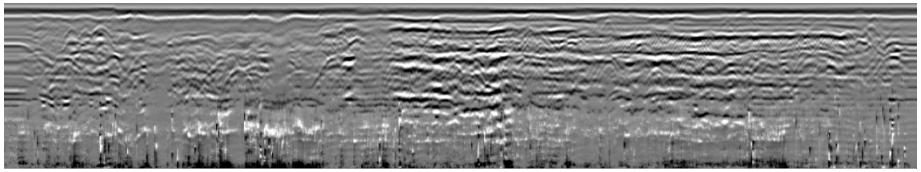

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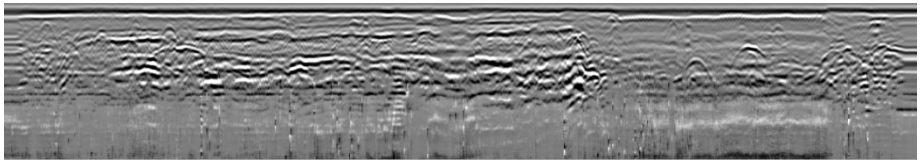

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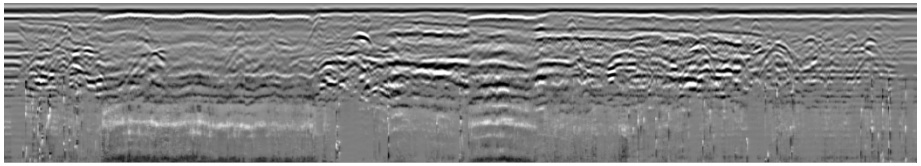

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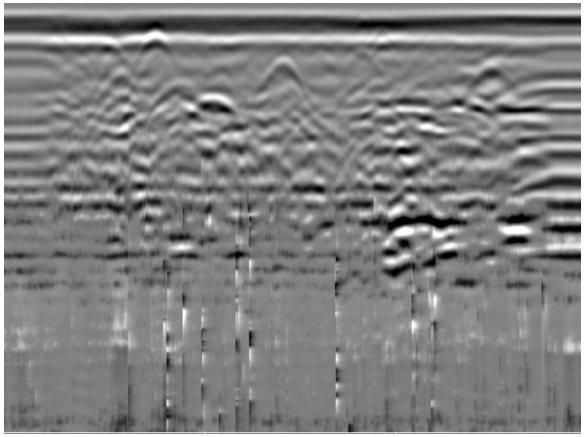

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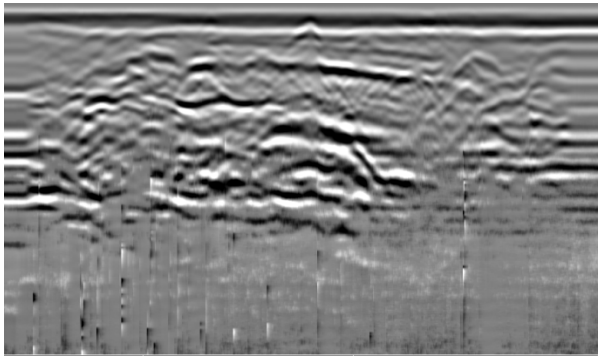

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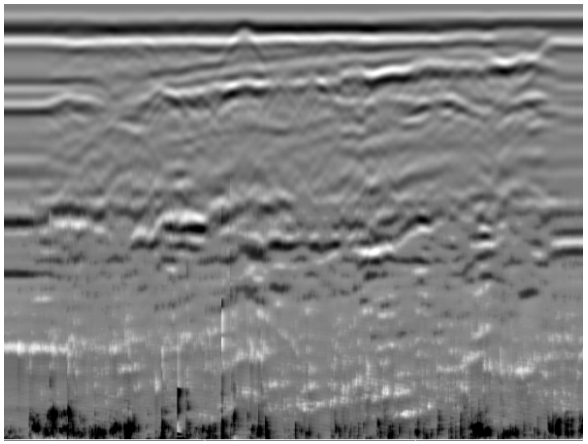

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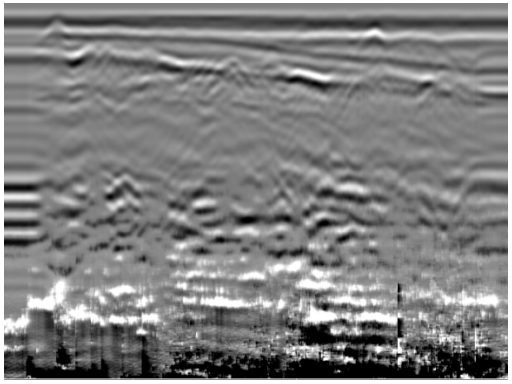

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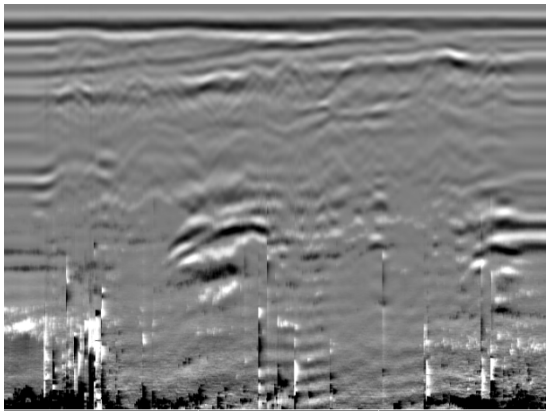

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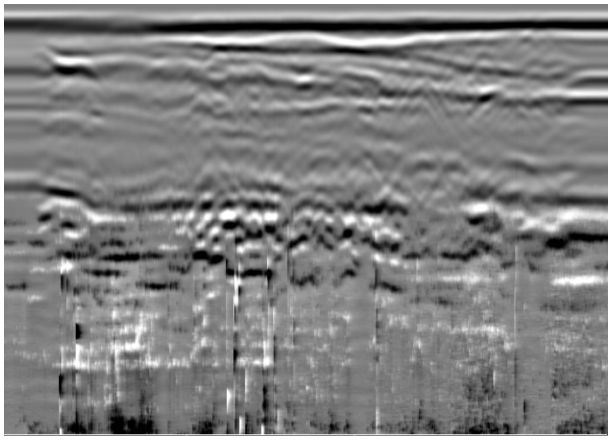

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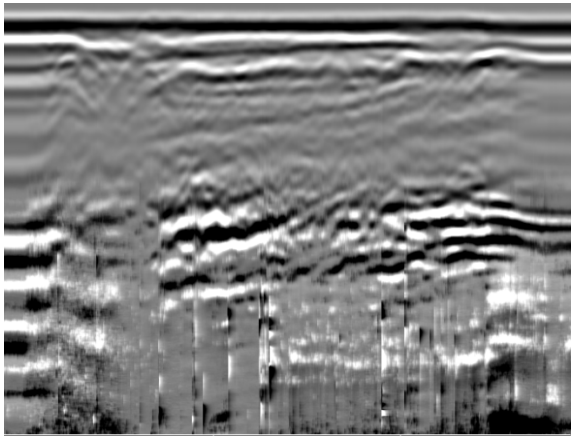

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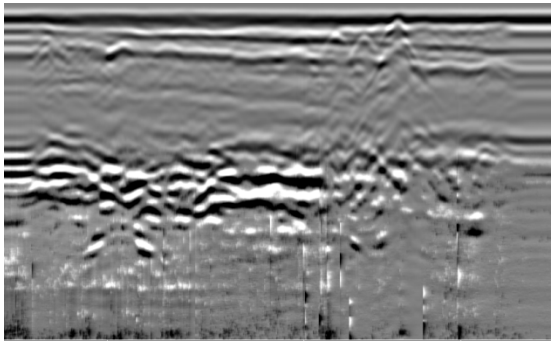

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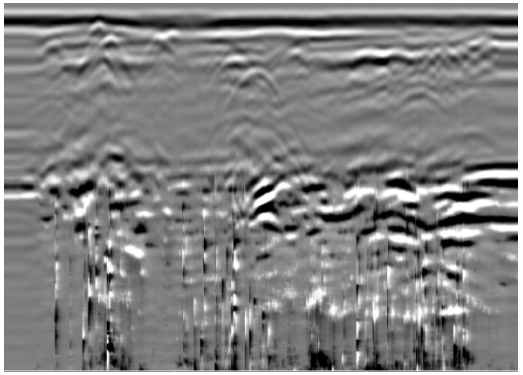

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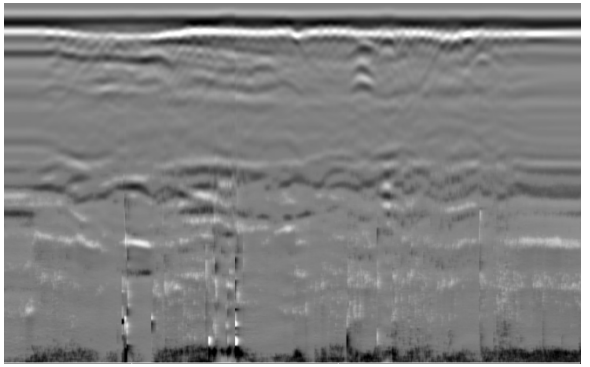

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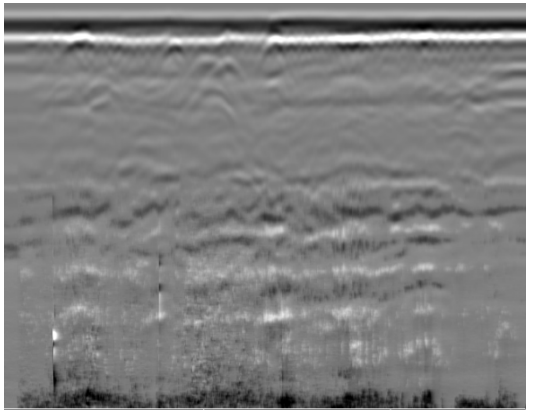

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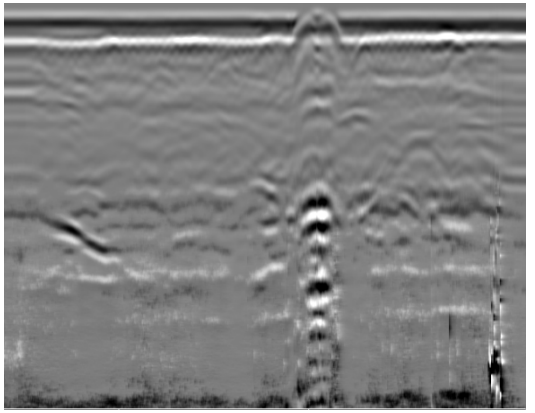

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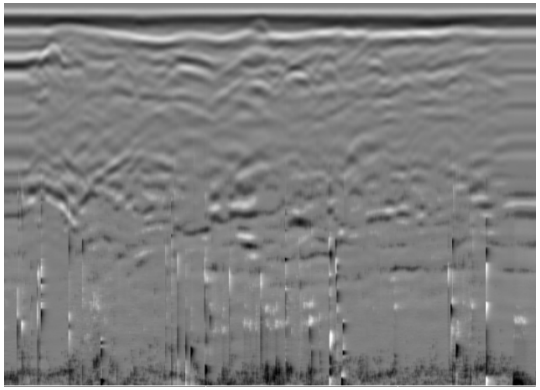

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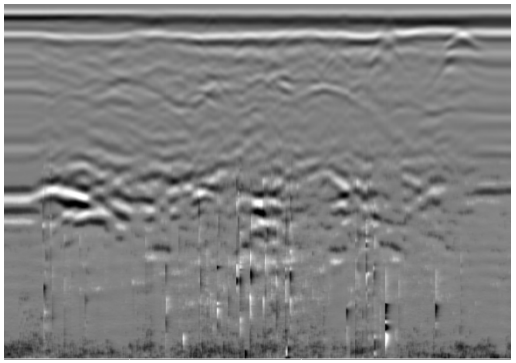

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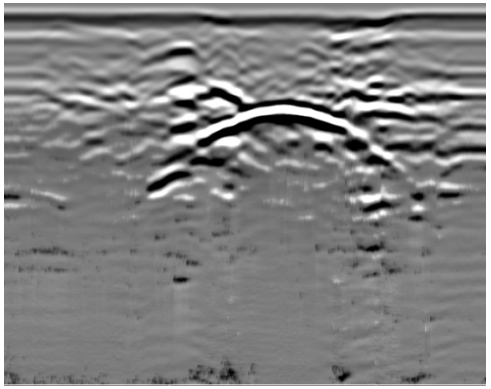

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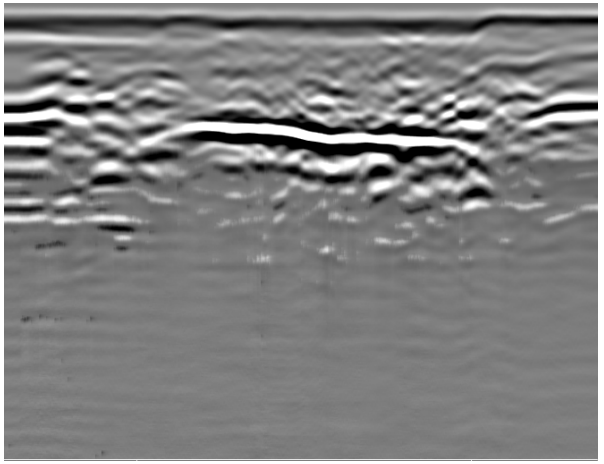


Transect 23

APPENDIX D

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT B-4490, Parcel 6, Charles Williams Jr, Fayetteville, NC / 2014-008	**BORING/WELL NO:**	6-1
SITE LOCATION:	Cumberland County, NC	**BORING/WELL LOCATION:**	Parcel 6, Charles Williams Jr, southeast corner at intersection
START DATE:	2/14/14	**COMPLETED:**	2/14/14
GEOLOGIST:	Tim Leatherman	**DRILLER:**	Solutions-IES
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	N/A
TOTAL DEPTH:	8 feet	**CASING DEPTH:**	N/A

DEPTH (ft.)	**VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.**	**OVA RESULTS PERCENT RECOVERY BLOW COUNTS**
		Core Sample Depths
1-2'	clayey silty sand (SP-SM) to clayey sand (SC); brown, tan, gray, to dark	OVA=6-1(1-2): 20 PPM
	gray, moist to very moist, possible petroleum odor	
2-4'	clayey silty sand (SP-SM) to clayey sand (SC); brown, tan, gray, to dark	OVA=6-1(2-4): 510 PPM
	gray, moist to very moist, possible petroleum odor	
4-6'	clayey silty sand (SP-SM); gray to dark gray-black, very moist to	OVA=6-1(4-6): 630 PPM
	saturated	
6-8'	clayey silty sand (SP-SM); gray to dark gray-black, very moist to	OVA=6-1(6-8): 206 PPM
	saturated	

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
SCREEN LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
DEPTH TO TOP OF SAND _____ BAGS OF SAND ___.
DEPTH TO TOP SEAL _____ BENTONITE USED _____ BAGS OF CEMENT USED 0___.

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT B-4490, Parcel 6, Charles Williams Jr, Fayetteville, NC / 2014-008	**BORING/WELL NO:**	6-2(TW)
SITE LOCATION:	Cumberland County, NC	**BORING/WELL LOCATION:**	Parcel 6, Charles Williams Jr, southeast corner north of 6-1
START DATE:	2/14/14	**COMPLETED:**	2/14/14
GEOLOGIST:	Tim Leatherman	**DRILLER:**	Solutions-IES
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	1-inch
TOTAL DEPTH:	16 feet	**CASING DEPTH:**	16 feet

DEPTH (ft.)	**VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.**	**OVA RESULTS PERCENT RECOVERY BLOW COUNTS**
		Core Sample Depths
1-2'	clayey silty sand (SP-SM); brown to gray, moist, petroleum odor	OVA=6-2(1-2): 200 PPM
2-4'	clayey sand (SC); gray, moist, petroleum odor	OVA=6-2(2-4): 700 PPM
4-6'	clayey silty sand (SP-SM); gray, very moist, petroleum odor	OVA=6-2(4-6): 1050 PPM
6-8'	clayey silty sand (SP-SM); gray, very moist to saturated, petroleum odor	OVA=6-2(6-8): 3900 PPM
	Set 1-inch diameter temporary well at 16 feet with bottom 10 feet of	
	screen	
	Depth to groundwater = 5.8 feet below land surface	

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) 6 DEPTH (ft) 0-6 DIAMETER (in) 1 MATERIAL PVC.
SCREEN LENGTH (ft) 10 DEPTH (ft) 6-16 DIAMETER (in) 1 MATERIAL PVC.
DEPTH TO TOP OF SAND _____ BAGS OF SAND ___.
DEPTH TO TOP SEAL _____ BENTONITE USED .25 BAGS OF CEMENT USED 0.

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT B-4490, Parcel 6, Charles Williams Jr, Fayetteville, NC / 2014-008	**BORING/WELL NO:**	6-3
SITE LOCATION:	Cumberland County, NC	**BORING/WELL LOCATION:**	Parcel 6, Charles Williams Jr, east of former pump islands
START DATE:	2/14/14	**COMPLETED:**	2/14/14
GEOLOGIST:	Tim Leatherman	**DRILLER:**	Solutions-IES
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	N/A
TOTAL DEPTH:	8 feet	**CASING DEPTH:**	N/A

DEPTH (ft.)	**VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.**	**OVA RESULTS PERCENT RECOVERY BLOW COUNTS**
		Core Sample Depths
1-2'	clayey silty sand (SP-SM); brown to gray, moist, slight petroleum odor	OVA=6-3(1-2): 6 PPM
2-4'	clayey sand (SC); gray, moist, petroleum odor	OVA=6-3(2-4): 610 PPM
4-6'	clayey silty sand (SP-SM); gray, very moist, petroleum odor	OVA=6-3(4-6): 700 PPM
6-8'	clayey silty sand (SP-SM); gray, very moist to saturated, petroleum odor	OVA=6-3(6-8): 410 PPM

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
SCREEN LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
DEPTH TO TOP OF SAND _____ BAGS OF SAND ___.
DEPTH TO TOP SEAL _____ BENTONITE USED _____ BAGS OF CEMENT USED 0 .

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT B-4490, Parcel 6, Charles Williams Jr, Fayetteville, NC / 2014-008	**BORING/WELL NO:**	6-4
SITE LOCATION:	Cumberland County, NC	**BORING/WELL LOCATION:**	Parcel 6, Charles Williams Jr, east of UST at Bragg Blvd.
START DATE:	2/14/14	**COMPLETED:**	2/14/14
GEOLOGIST:	Tim Leatherman	**DRILLER:**	Solutions-IES
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	N/A
TOTAL DEPTH:	8 feet	**CASING DEPTH:**	N/A

DEPTH (ft.)	**VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.**	**OVA RESULTS PERCENT RECOVERY BLOW COUNTS**
		Core Sample Depths
2-4'	clayey silty sand (SP-SM); brown, moist, no odor	OVA=6-4(2-4): 15 PPM
4-6'	clayey silty sand (SP-SM); gray, very moist, no odor	OVA=6-4(4-6): 190 PPM
6-8'	clayey silty sand (SP-SM); gray, very moist to saturated, no odor	OVA=6-4(6-8): 85 PPM

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
SCREEN LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
DEPTH TO TOP OF SAND _____ BAGS OF SAND ___.
DEPTH TO TOP SEAL _____ BENTONITE USED _____ BAGS OF CEMENT USED 0 .

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT B-4490, Parcel 6, Charles Williams Jr, Fayetteville, NC / 2014-008	**BORING/WELL NO:**	6-5
SITE LOCATION:	Cumberland County, NC	**BORING/WELL LOCATION:**	Parcel 6, Charles Williams Jr, north side of UST
START DATE:	2/14/14	**COMPLETED:**	2/14/14
GEOLOGIST:	Tim Leatherman	**DRILLER:**	Solutions-IES
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	N/A
TOTAL DEPTH:	8 feet	**CASING DEPTH:**	N/A

DEPTH (ft.)	**VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.**	**OVA RESULTS PERCENT RECOVERY BLOW COUNTS**
		Core Sample Depths
1-2'	clayey sand (SC) to sandy clay (CL); brown, moist, no odor	OVA=6-5(1-2): 0 PPM
2-4'	clayey sand (SC) to sandy clay (CL); brown, moist, no odor	OVA=6-5(2-4): 0 PPM
4-6'	sandy clayey silt (ML); dark brown to brown, very moist, no odor	OVA=6-5(4-6): 140 PPM
6-8'	silty sandy clay (CL); brown to dark brown, very firm to hard, moist	OVA=6-5(6-8): 50 PPM
	no odor	

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
SCREEN LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
DEPTH TO TOP OF SAND _____ BAGS OF SAND ___.
DEPTH TO TOP SEAL _____ BENTONITE USED _____ BAGS OF CEMENT USED 0 .

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT B-4490, Parcel 6, Charles Williams Jr, Fayetteville, NC / 2014-008	**BORING/WELL NO:**	6-6
SITE LOCATION:	Cumberland County, NC	**BORING/WELL LOCATION:**	Parcel 6, Charles Williams Jr, east side of UST
START DATE:	2/14/14	**COMPLETED:**	2/14/14
GEOLOGIST:	Tim Leatherman	**DRILLER:**	Solutions-IES
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	N/A
TOTAL DEPTH:	8 feet	**CASING DEPTH:**	N/A

DEPTH (ft.)	**VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.**	**OVA RESULTS PERCENT RECOVERY BLOW COUNTS**
		Core Sample Depths
1-2'	clayey sand (SC); brown, moist, no odor	OVA=6-6(1-2): 5 PPM
2-4'	clayey sand (SC); brown, firm, moist to very moist, no odor	OVA=6-6(2-4): 30 PPM
4-6'	clayey sand (SC); brown to dark gray, moist to very moist, no odor	OVA=6-6(4-6): 295 PPM
6-8'	sandy silty clay (CL); dark gray, firm to hard, no odor	OVA=6-6(6-8): 60 PPM

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
SCREEN LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
DEPTH TO TOP OF SAND _____ BAGS OF SAND ___.
DEPTH TO TOP SEAL _____ BENTONITE USED _____ BAGS OF CEMENT USED 0 .

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT B-4490, Parcel 6, Charles Williams Jr, Fayetteville, NC / 2014-008	**BORING/WELL NO:**	6-7
SITE LOCATION:	Cumberland County, NC	**BORING/WELL LOCATION:**	Parcel 6, Charles Williams Jr, east of UST
START DATE:	2/18/14	**COMPLETED:**	2/18/14
GEOLOGIST:	Eric Cross	**DRILLER:**	Solutions-IES
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	N/A
TOTAL DEPTH:	8 feet	**CASING DEPTH:**	N/A

DEPTH (ft.)	**VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.**	**OVA RESULTS PERCENT RECOVERY BLOW COUNTS**
		Core Sample Depths
1-2'	sand (SP) with gravel; brown, fine grained, no odor	OVA=6-7(1-2): 15 PPM
2-4'	sand (SP) and clayey sand (SC); brown, fine grained, no odor	OVA=6-7(2-4): 35 PPM
4-6'	no recovery	
6-8'	sandy clay (CL); grayish brown, fine grained, moderate petroleum odor,	OVA=6-7(6-8): 650 PPM
	organic debris	

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
SCREEN LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
DEPTH TO TOP OF SAND _____ BAGS OF SAND ___.
DEPTH TO TOP SEAL _____ BENTONITE USED _____ BAGS OF CEMENT USED 0 .

Pyramid Environmental & Engineering, P.C.

FIELD DRILLING RECORD

PROJECT NAME: PROJECT NUMBER:	NC DOT B-4490, Parcel 6, Charles Williams Jr, Fayetteville, NC / 2014-008	**BORING/WELL NO:**	6-8
SITE LOCATION:	Cumberland County, NC	**BORING/WELL LOCATION:**	Parcel 6, Charles Williams Jr, NE of former pump islands
START DATE:	2/18/14	**COMPLETED:**	2/18/14
GEOLOGIST:	Eric Cross	**DRILLER:**	Solutions-IES
DRILL METHOD:	Geoprobe	**SAMPLE METHOD:**	Macro-core
BORING DIA:	2-inch	**CASING DIA:**	N/A
TOTAL DEPTH:	8 feet	**CASING DEPTH:**	N/A

DEPTH (ft.)	**VISUAL MANUAL SOIL CLASSIFICATION COLOR, TEXTURE, STRUCTURE, CONSISTENCY, ODOR, ETC.**	**OVA RESULTS PERCENT RECOVERY BLOW COUNTS**
		Core Sample Depths
0.5-2'	asphalt/concrete/rocks and sand (SP); brown, fine grained, no odor	OVA=6-8(0.5-2): 35 PPM
2-4'	sand (SP); brown, fine grained, no odor	OVA=6-8(2-4): 100 PPM
4-6'	no recovery	
6-8'	sand (SP); grayish brown, fine grained, no odor, wet	OVA=6-8(6-8): 260 PPM

MONITORING WELL INFORMATION (IF APPLICABLE)

RISER LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
SCREEN LENGTH (ft) ___ DEPTH (ft) _____ DIAMETER (in) ___ MATERIAL _____.
DEPTH TO TOP OF SAND _____ BAGS OF SAND ___.
DEPTH TO TOP SEAL _____ BENTONITE USED _____ BAGS OF CEMENT USED 0 .

APPENDIX E

Hydrocarbon Analysis Results

Client: NCDOT Cumberland County - Parcel 006
Address: 701 Bragg Blvd. - Parcel 006
Fayetteville, NC

Samples taken Ten (10) Samples Taken
Samples extracted Ten (10) Samples Extracted
Samples analysed Ten (10) Samples Analysed

Contact:

Operator Tim Leatherman

Project: NCDOT Cumberland County B-4490

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	6-6(4-6)	14.0	<0.1	<0.1	12.3	12.3	5.6	0.29	<0.01	62	22.4	15.7	Deg.Fuel (FCM) 88.4%
s	6-4(4-6)	13.0	<0.1	<0.1	3.6	3.6	3.3	0.2	<0.01	48.9	28.5	22.6	V.Deg.PHC 81.2%
s	6-3(4-6)	115.0	<1.2	<1.2	14.8	14.8	12	0.39	<0.06	61	31.1	7.8	V.Deg.PHC 96.3%
s	6-2(4-6)	116.0	<1.2	5.9	262	267.9	53.4	1.8	0.11	74.9	19.1	6	motor oil (FCM) 75.1%
s	6-1(2-4)	122.0	<1.2	<1.2	8.7	8.7	6.5	0.36	<0.06	34.4	52.8	12.8	V.Deg.PHC 99.2%
s	6-5(4-6)	14.0	<0.1	<0.1	1.7	1.7	1.5	0.1	<0.01	59.6	23	17.4	V.Deg.PHC 92.4%
s	6-1(4-6)	70.0	<0.7	<0.7	18.3	18.3	6.6	0.33	<0.04	52.3	34.2	13.4	Deg.Fuel (FCM) 96%
s	6-2(2-4)	77.0	<0.8	<0.8	12.5	12.5	11.4	0.74	<0.04	50	29.5	20.5	V.Deg.PHC 89.3%
s	6-2(6-8)	86.0	236	378	1193	1571	105	3.3	<0.04	99	0.9	0.1	Waste Oil (FCM) 93.1%
s	6-3(2-4)	72.0	<0.7	<0.7	2.7	2.7	2	0.18	<0.04	57.3	32	10.7	V.Deg.PHC 97.6%
	Initial Calibrator QC check				OK								

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

Hydrocarbon Analysis Results

Client: NCDOT Cumberland County - Parcel 006
Address: 701 Bragg Blvd. - Parcel 006
Fayetteville, NC

Samples taken Four (4) Samples Taken
Samples extracted Four (4) Samples Extracted
Samples analysed Four (4) Samples Analysed

Contact:

Operator Ryan Kramer

Project: NCDOT Cumberland County B-4490

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	Ratios			HC Fingerprint Match
										% light	% mid	% heavy	
s	006-7(2-4)	13.0	<0.1	<0.1	0.45	0.45	0.35	0.02	<0.01	0	51.4	48.6	V.Deg.PHC 75.3%
s	006-7(6-8)	27.0	<0.3	<0.3	15.7	15.7	11.7	0.51	<0.01	65.6	21.6	12.8	V.Deg.PHC 86.8%
s	006-8(2-4)	26.0	<0.3	<0.3	15	15	6.9	0.19	<0.01	73.1	18.5	8.4	Deg.Fuel (FCM) 90.7%
s	006-8(6-8)	25.0	<0.2	<0.2	7.5	7.5	5.9	0.24	<0.01	38.6	38.5	22.9	V.Deg.PHC 83.9%

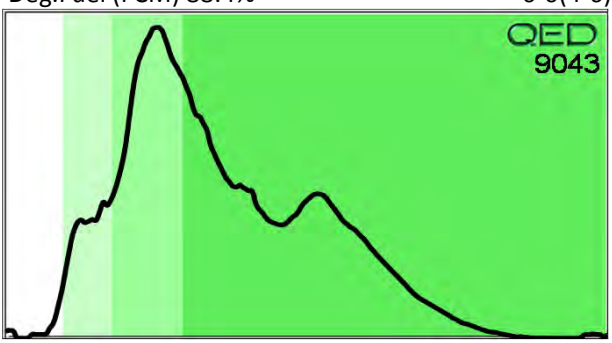
Initial Calibrator QC check OK

Results generated by a QED HC-1 analyser. Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values are not corrected for moisture or stone content

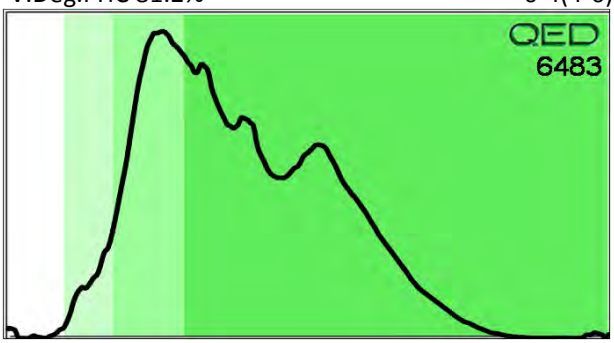
Fingerprints provide a tentative hydrocarbon identification. The abbreviations are:- FCM = Results calculated using Fundamental Calibration Mode : % = confidence for sample fingerprint match to library

(SBS) or (LBS) = Site Specific or Library Background Subtraction applied to result : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate present

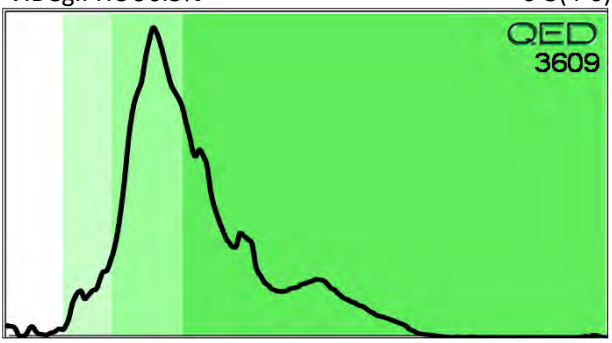
Deg.Fuel (FCM) 88.4% 6-6(4-6)



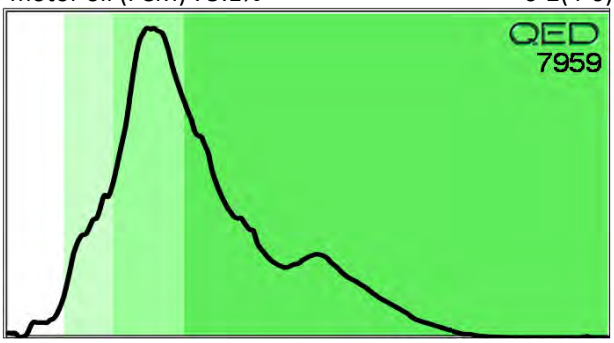
V.Deg.PHC 81.2% 6-4(4-6)



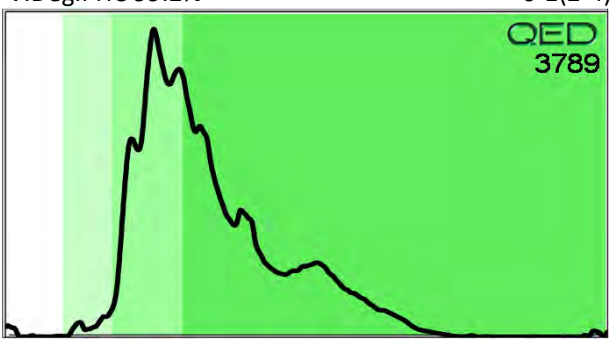
V.Deg.PHC 96.3% 6-3(4-6)



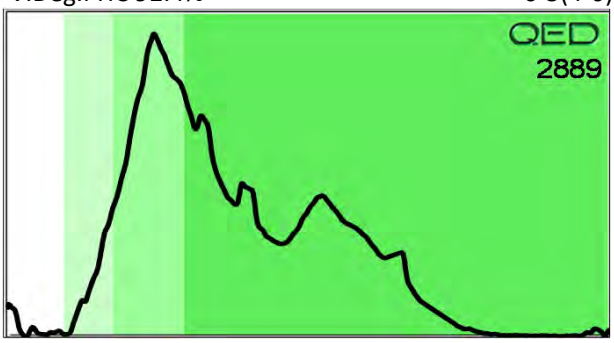
motor oil (FCM) 75.1% 6-2(4-6)



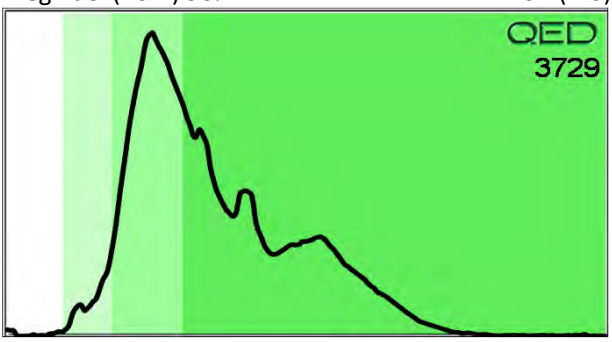
V.Deg.PHC 99.2% 6-1(2-4)



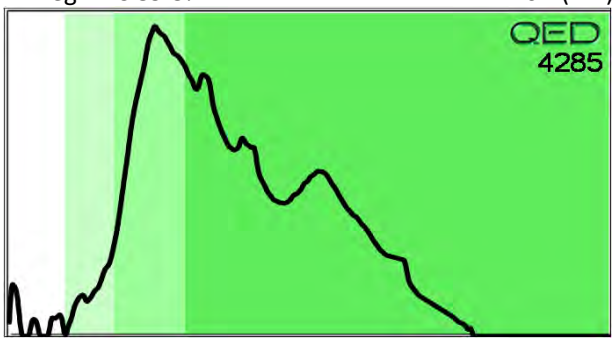
V.Deg.PHC 92.4% 6-5(4-6)



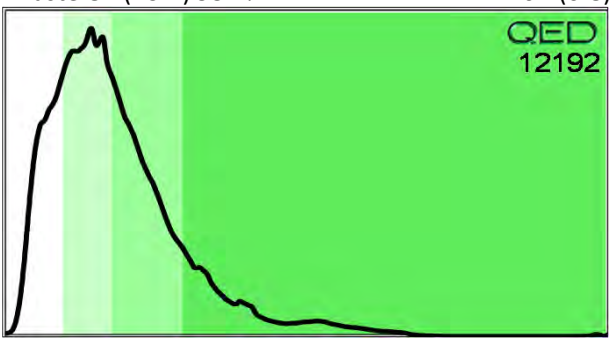
Deg.Fuel (FCM) 96% 6-1(4-6)



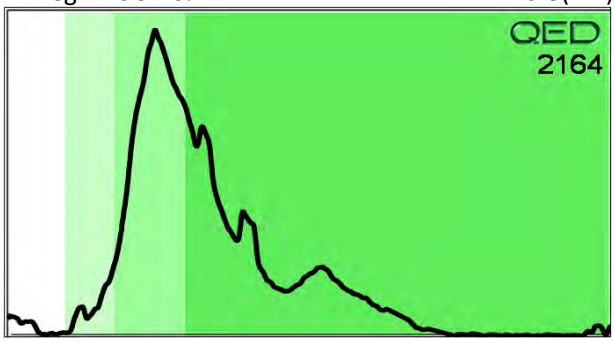
V.Deg.PHC 89.3% 6-2(2-4)



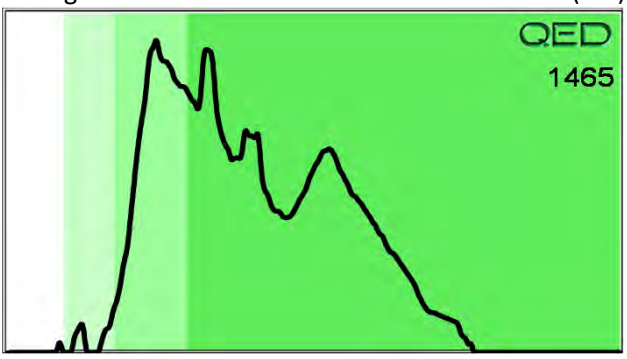
Waste Oil (FCM) 93.1% 6-2(6-8)



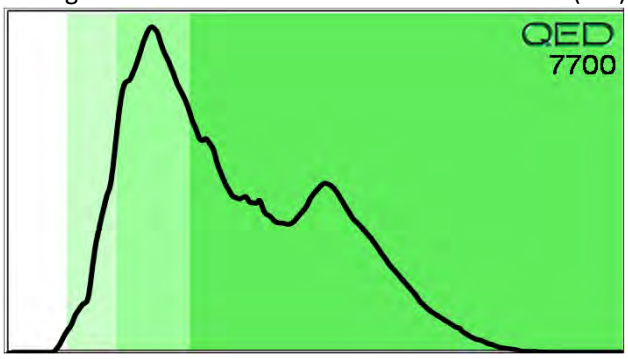
V.Deg.PHC 97.6% 6-3(2-4)



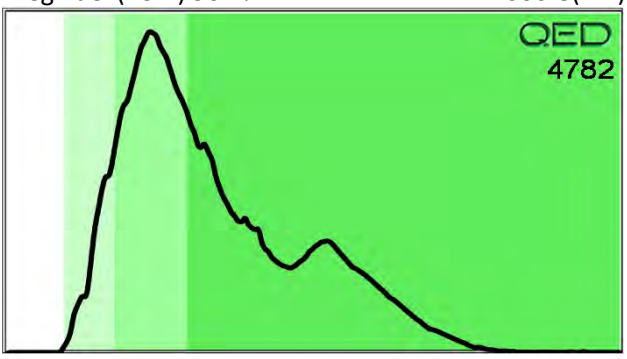
V.Deg.PHC 75.3% 006-7(2-4)



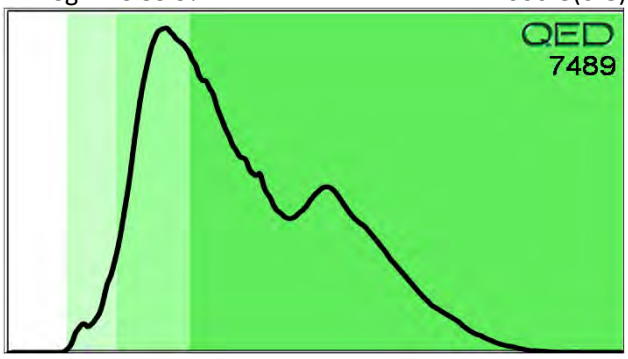
V.Deg.PHC 86.8% 006-7(6-8)



Deg.Fuel (FCM) 90.7% 006-8(2-4)



V.Deg.PHC 83.9% 006-8(6-8)



Parcel #006

CHAIN-OF-CUSTODY / Analytical Request Document - QROS / QED

Page: 1 of 1

Pyramid Environmental & Engineering, P.C.

Company:
Pyramid Environmental & Engineering, P.C.
Address: 503 Industrial Ave.
Greensboro, NC 27406

Purchase Order No.:
Project Name: NCDOT Cumberland County Parcel 006
Project Number:

ITEM	SAMPLE ID	Matrix	C=Comp. G=Grab	COLLECTED Date	COLLECTED Time	Containers	Un-preserved	Methanol	Requested Analysis GRO	DRO	TPH
1	B-1 (2-4)	Soil	G	2/14/14	9:25	~~1~~ (4)	10.0g	20 mL	<1.2	8.7	8.7
2	B-1 (4-6)	Soil	G	2/14/14	9:30	1	11.7g	20 mL	<0.9	18.3	18.3
3	B-2 (4-6)	-11-	-11-	-11-	9:55	1	10.5g	20 mL	5.9	260	267.9
4	B-2 (2-4)	-11-	-11-	-11-	9:50	1	10.6g	20 mL	<0.8	12.5	12.5
5	B-2 (6-8)	-11-	-11-	-11-	10:00	1	9.5g	20 mL	378	1193	1571
6	B-3 (2-4)	-11-	-11-	-11-	10:35	1	11.4g	20 mL	<0.9	2.7	2.7
7	B-3 (4-6)	-11-	-11-	-11-	10:40	1	10.6g	20 mL	<1.2	14.8	14.8
8	B-4 (4-6)	-11-	-11-	-11-	11:05	1	10.6g	20 mL	<0.1	3.6	3.6
9	B-5 (4-6)	-11-	-11-	-11-	11:35	1	10.2g	20 mL	<0.1	1.7	1.7
10	B-6 (4-6)	-11-	-11-	-11-	11:55	1	10.0g	20 mL	<0.1	12.3	12.3
11	B-7 (2-4)	-11-	-11-	2/18/14	1445	1	10.4g	20mL	<0.1	0.45	0.45
12	B-7 (6-8)	-11-	-11-	2/18/14	1500	1	9.5g	20 mL	<0.3	15.7	15.7
13	B-8 (2-4)	-11-	-11-	2/18/14	1520	1	10.1g	20 mL	<0.3	15	15
14	B-8 (6-8)	-11-	-11-	2/18/14	1530	1	10.5g	20mL	<0.2	7.5	7.5

Relinquished By / Affiliation	Date	Time	Accepted By / Affiliation	Date	Time

SAMPLER NAME AND SIGNATURE

Print Name of Sampler: Timothy D. Lagerman
Signature of Sampler: Timothy D. Lagerman
Date Signed: 2/14/14

APPENDIX F

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

March 03, 2014

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

RE: Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory on February 19, 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,

Jon D Bradley
jon.bradley@pacelabs.com
Project Manager

Enclosures

cc: Tim Leatherman, Pyramid Environmental

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

CERTIFICATIONS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Charlotte Certification IDs
9800 Kincey 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

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-1(4-6) **Lab ID: 92190304001** Collected: 02/14/14 09:30 Received: 02/19/14 17:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Acenaphthene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	83-32-9	
Acenaphthylene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	208-96-8	
Aniline	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	62-53-3	
Anthracene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	120-12-7	
Benzo(a)anthracene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	56-55-3	
Benzo(a)pyrene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	207-08-9	
Benzoic Acid	ND	ug/kg	1900	1	02/20/14 08:54	02/21/14 19:12	65-85-0	
Benzyl alcohol	ND	ug/kg	761	1	02/20/14 08:54	02/21/14 19:12	100-51-6	
4-Bromophenylphenyl ether	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	101-55-3	
Butylbenzylphthalate	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	85-68-7	
4-Chloro-3-methylphenol	ND	ug/kg	761	1	02/20/14 08:54	02/21/14 19:12	59-50-7	
4-Chloroaniline	ND	ug/kg	1900	1	02/20/14 08:54	02/21/14 19:12	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	108-60-1	
2-Chloronaphthalene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	91-58-7	
2-Chlorophenol	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	7005-72-3	
Chrysene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	53-70-3	
Dibenzofuran	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	1900	1	02/20/14 08:54	02/21/14 19:12	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	120-83-2	
Diethylphthalate	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	105-67-9	
Dimethylphthalate	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	131-11-3	
Di-n-butylphthalate	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	761	1	02/20/14 08:54	02/21/14 19:12	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	1900	1	02/20/14 08:54	02/21/14 19:12	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	606-20-2	
Di-n-octylphthalate	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	117-81-7	
Fluoranthene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	206-44-0	
Fluorene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	87-68-3	
Hexachlorobenzene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	118-74-1	
Hexachlorocyclopentadiene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	77-47-4	
Hexachloroethane	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	193-39-5	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-1(4-6) **Lab ID: 92190304001** Collected: 02/14/14 09:30 Received: 02/19/14 17:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Isophorone	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	78-59-1	
1-Methylnaphthalene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	90-12-0	
2-Methylnaphthalene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12		
Naphthalene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	91-20-3	
2-Nitroaniline	ND	ug/kg	1900	1	02/20/14 08:54	02/21/14 19:12	88-74-4	
3-Nitroaniline	ND	ug/kg	1900	1	02/20/14 08:54	02/21/14 19:12	99-09-2	
4-Nitroaniline	ND	ug/kg	761	1	02/20/14 08:54	02/21/14 19:12	100-01-6	
Nitrobenzene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	98-95-3	
2-Nitrophenol	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	88-75-5	
4-Nitrophenol	ND	ug/kg	1900	1	02/20/14 08:54	02/21/14 19:12	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	86-30-6	
Pentachlorophenol	ND	ug/kg	1900	1	02/20/14 08:54	02/21/14 19:12	87-86-5	
Phenanthrene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	85-01-8	
Phenol	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	108-95-2	
Pyrene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	380	1	02/20/14 08:54	02/21/14 19:12	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	60	%	23-110	1	02/20/14 08:54	02/21/14 19:12	4165-60-0	
2-Fluorobiphenyl (S)	45	%	30-110	1	02/20/14 08:54	02/21/14 19:12	321-60-8	
Terphenyl-d14 (S)	60	%	28-110	1	02/20/14 08:54	02/21/14 19:12	1718-51-0	
Phenol-d6 (S)	71	%	22-110	1	02/20/14 08:54	02/21/14 19:12	13127-88-3	
2-Fluorophenol (S)	73	%	13-110	1	02/20/14 08:54	02/21/14 19:12	367-12-4	
2,4,6-Tribromophenol (S)	77	%	27-110	1	02/20/14 08:54	02/21/14 19:12	118-79-6	
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	**102**	ug/kg	69.9	1		02/24/14 21:11	67-64-1	A+
Benzene	ND	ug/kg	3.5	1		02/24/14 21:11	71-43-2	
Bromobenzene	ND	ug/kg	3.5	1		02/24/14 21:11	108-86-1	
Bromochloromethane	ND	ug/kg	3.5	1		02/24/14 21:11	74-97-5	
Bromodichloromethane	ND	ug/kg	3.5	1		02/24/14 21:11	75-27-4	
Bromoform	ND	ug/kg	3.5	1		02/24/14 21:11	75-25-2	
Bromomethane	ND	ug/kg	7.0	1		02/24/14 21:11	74-83-9	
2-Butanone (MEK)	ND	ug/kg	69.9	1		02/24/14 21:11	78-93-3	
n-Butylbenzene	ND	ug/kg	3.5	1		02/24/14 21:11	104-51-8	
sec-Butylbenzene	ND	ug/kg	3.5	1		02/24/14 21:11	135-98-8	
tert-Butylbenzene	ND	ug/kg	3.5	1		02/24/14 21:11	98-06-6	
Carbon tetrachloride	ND	ug/kg	3.5	1		02/24/14 21:11	56-23-5	
Chlorobenzene	ND	ug/kg	3.5	1		02/24/14 21:11	108-90-7	
Chloroethane	ND	ug/kg	7.0	1		02/24/14 21:11	75-00-3	
Chloroform	ND	ug/kg	3.5	1		02/24/14 21:11	67-66-3	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-1(4-6) **Lab ID: 92190304001** Collected: 02/14/14 09:30 Received: 02/19/14 17:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Chloromethane	ND	ug/kg	7.0	1		02/24/14 21:11	74-87-3	
2-Chlorotoluene	ND	ug/kg	3.5	1		02/24/14 21:11	95-49-8	
4-Chlorotoluene	ND	ug/kg	3.5	1		02/24/14 21:11	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	3.5	1		02/24/14 21:11	96-12-8	
Dibromochloromethane	ND	ug/kg	3.5	1		02/24/14 21:11	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	3.5	1		02/24/14 21:11	106-93-4	
Dibromomethane	ND	ug/kg	3.5	1		02/24/14 21:11	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	3.5	1		02/24/14 21:11	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	3.5	1		02/24/14 21:11	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	3.5	1		02/24/14 21:11	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	7.0	1		02/24/14 21:11	75-71-8	1g
1,1-Dichloroethane	ND	ug/kg	3.5	1		02/24/14 21:11	75-34-3	
1,2-Dichloroethane	ND	ug/kg	3.5	1		02/24/14 21:11	107-06-2	
1,1-Dichloroethene	ND	ug/kg	3.5	1		02/24/14 21:11	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	3.5	1		02/24/14 21:11	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	3.5	1		02/24/14 21:11	156-60-5	
1,2-Dichloropropane	ND	ug/kg	3.5	1		02/24/14 21:11	78-87-5	
1,3-Dichloropropane	ND	ug/kg	3.5	1		02/24/14 21:11	142-28-9	
2,2-Dichloropropane	ND	ug/kg	3.5	1		02/24/14 21:11	594-20-7	
1,1-Dichloropropene	ND	ug/kg	3.5	1		02/24/14 21:11	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	3.5	1		02/24/14 21:11	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	3.5	1		02/24/14 21:11	10061-02-6	
Diisopropyl ether	**6.2**	ug/kg	3.5	1		02/24/14 21:11	108-20-3	
Ethylbenzene	ND	ug/kg	3.5	1		02/24/14 21:11	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	3.5	1		02/24/14 21:11	87-68-3	
2-Hexanone	ND	ug/kg	34.9	1		02/24/14 21:11	591-78-6	
Isopropylbenzene (Cumene)	ND	ug/kg	3.5	1		02/24/14 21:11	98-82-8	
p-Isopropyltoluene	ND	ug/kg	3.5	1		02/24/14 21:11	99-87-6	
Methylene Chloride	ND	ug/kg	14.0	1		02/24/14 21:11	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	34.9	1		02/24/14 21:11	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	3.5	1		02/24/14 21:11	1634-04-4	
Naphthalene	ND	ug/kg	3.5	1		02/24/14 21:11	91-20-3	
n-Propylbenzene	**28.9**	ug/kg	3.5	1		02/24/14 21:11	103-65-1	
Styrene	ND	ug/kg	3.5	1		02/24/14 21:11	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	3.5	1		02/24/14 21:11	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	3.5	1		02/24/14 21:11	79-34-5	
Tetrachloroethene	ND	ug/kg	3.5	1		02/24/14 21:11	127-18-4	
Toluene	ND	ug/kg	3.5	1		02/24/14 21:11	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	3.5	1		02/24/14 21:11	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	3.5	1		02/24/14 21:11	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	3.5	1		02/24/14 21:11	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	3.5	1		02/24/14 21:11	79-00-5	
Trichloroethene	ND	ug/kg	3.5	1		02/24/14 21:11	79-01-6	
Trichlorofluoromethane	ND	ug/kg	3.5	1		02/24/14 21:11	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	3.5	1		02/24/14 21:11	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/kg	3.5	1		02/24/14 21:11	95-63-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-1(4-6) **Lab ID: 92190304001** Collected: 02/14/14 09:30 Received: 02/19/14 17:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
1,3,5-Trimethylbenzene	ND	ug/kg	3.5	1		02/24/14 21:11	108-67-8	
Vinyl acetate	ND	ug/kg	34.9	1		02/24/14 21:11	108-05-4	
Vinyl chloride	ND	ug/kg	7.0	1		02/24/14 21:11	75-01-4	
Xylene (Total)	ND	ug/kg	7.0	1		02/24/14 21:11	1330-20-7	
m&p-Xylene	ND	ug/kg	7.0	1		02/24/14 21:11	179601-23-1	
o-Xylene	ND	ug/kg	3.5	1		02/24/14 21:11	95-47-6	
Surrogates								
Toluene-d8 (S)	103	%	70-130	1		02/24/14 21:11	2037-26-5	
4-Bromofluorobenzene (S)	80	%	70-130	1		02/24/14 21:11	460-00-4	
1,2-Dichloroethane-d4 (S)	95	%	70-132	1		02/24/14 21:11	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.2**	%	0.10	1		03/03/14 16:12		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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Huntersville, NC 28078
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ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-2(4-6) **Lab ID: 92190304002** Collected: 02/14/14 09:55 Received: 02/19/14 17:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Acenaphthene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	83-32-9	
Acenaphthylene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	208-96-8	
Aniline	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	62-53-3	
Anthracene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	120-12-7	
Benzo(a)anthracene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	56-55-3	
Benzo(a)pyrene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	50-32-8	
Benzo(b)fluoranthene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	205-99-2	
Benzo(g,h,i)perylene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	191-24-2	
Benzo(k)fluoranthene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	207-08-9	
Benzoic Acid	ND	ug/kg	19000	10	02/20/14 08:54	02/24/14 15:11	65-85-0	
Benzyl alcohol	ND	ug/kg	7590	10	02/20/14 08:54	02/24/14 15:11	100-51-6	
4-Bromophenylphenyl ether	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	101-55-3	
Butylbenzylphthalate	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	85-68-7	
4-Chloro-3-methylphenol	ND	ug/kg	7590	10	02/20/14 08:54	02/24/14 15:11	59-50-7	
4-Chloroaniline	ND	ug/kg	19000	10	02/20/14 08:54	02/24/14 15:11	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	108-60-1	
2-Chloronaphthalene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	91-58-7	
2-Chlorophenol	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	7005-72-3	
Chrysene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	218-01-9	
Dibenz(a,h)anthracene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	53-70-3	
Dibenzofuran	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	132-64-9	
1,2-Dichlorobenzene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/kg	19000	10	02/20/14 08:54	02/24/14 15:11	91-94-1	
2,4-Dichlorophenol	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	120-83-2	
Diethylphthalate	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	84-66-2	
2,4-Dimethylphenol	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	105-67-9	
Dimethylphthalate	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	131-11-3	
Di-n-butylphthalate	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/kg	7590	10	02/20/14 08:54	02/24/14 15:11	534-52-1	
2,4-Dinitrophenol	ND	ug/kg	19000	10	02/20/14 08:54	02/24/14 15:11	51-28-5	
2,4-Dinitrotoluene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	121-14-2	
2,6-Dinitrotoluene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	606-20-2	
Di-n-octylphthalate	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	117-81-7	
Fluoranthene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	206-44-0	
Fluorene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	87-68-3	
Hexachlorobenzene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	118-74-1	
Hexachlorocyclopentadiene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	77-47-4	
Hexachloroethane	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	193-39-5	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-2(4-6) **Lab ID: 92190304002** Collected: 02/14/14 09:55 Received: 02/19/14 17:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Microwave	Analytical Method: EPA 8270 Preparation Method: EPA 3546							
Isophorone	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	78-59-1	
1-Methylnaphthalene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	90-12-0	
2-Methylnaphthalene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11		
Naphthalene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	91-20-3	
2-Nitroaniline	ND	ug/kg	19000	10	02/20/14 08:54	02/24/14 15:11	88-74-4	
3-Nitroaniline	ND	ug/kg	19000	10	02/20/14 08:54	02/24/14 15:11	99-09-2	
4-Nitroaniline	ND	ug/kg	7590	10	02/20/14 08:54	02/24/14 15:11	100-01-6	
Nitrobenzene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	98-95-3	
2-Nitrophenol	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	88-75-5	
4-Nitrophenol	ND	ug/kg	19000	10	02/20/14 08:54	02/24/14 15:11	100-02-7	
N-Nitrosodimethylamine	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	621-64-7	
N-Nitrosodiphenylamine	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	86-30-6	
Pentachlorophenol	ND	ug/kg	19000	10	02/20/14 08:54	02/24/14 15:11	87-86-5	
Phenanthrene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	85-01-8	
Phenol	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	108-95-2	
Pyrene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	120-82-1	
2,4,5-Trichlorophenol	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	95-95-4	
2,4,6-Trichlorophenol	ND	ug/kg	3800	10	02/20/14 08:54	02/24/14 15:11	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	0	%	23-110	10	02/20/14 08:54	02/24/14 15:11	4165-60-0	D3,S4
2-Fluorobiphenyl (S)	0	%	30-110	10	02/20/14 08:54	02/24/14 15:11	321-60-8	
Terphenyl-d14 (S)	0	%	28-110	10	02/20/14 08:54	02/24/14 15:11	1718-51-0	
Phenol-d6 (S)	0	%	22-110	10	02/20/14 08:54	02/24/14 15:11	13127-88-3	
2-Fluorophenol (S)	0	%	13-110	10	02/20/14 08:54	02/24/14 15:11	367-12-4	
2,4,6-Tribromophenol (S)	0	%	27-110	10	02/20/14 08:54	02/24/14 15:11	118-79-6	
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Acetone	ND	ug/kg	2290	25		02/21/14 15:49	67-64-1	
Benzene	ND	ug/kg	114	25		02/21/14 15:49	71-43-2	
Bromobenzene	ND	ug/kg	114	25		02/21/14 15:49	108-86-1	
Bromochloromethane	ND	ug/kg	114	25		02/21/14 15:49	74-97-5	
Bromodichloromethane	ND	ug/kg	114	25		02/21/14 15:49	75-27-4	
Bromoform	ND	ug/kg	114	25		02/21/14 15:49	75-25-2	
Bromomethane	ND	ug/kg	229	25		02/21/14 15:49	74-83-9	
2-Butanone (MEK)	ND	ug/kg	2290	25		02/21/14 15:49	78-93-3	
n-Butylbenzene	**751**	ug/kg	114	25		02/21/14 15:49	104-51-8	
sec-Butylbenzene	**295**	ug/kg	114	25		02/21/14 15:49	135-98-8	
tert-Butylbenzene	ND	ug/kg	114	25		02/21/14 15:49	98-06-6	
Carbon tetrachloride	ND	ug/kg	114	25		02/21/14 15:49	56-23-5	
Chlorobenzene	ND	ug/kg	114	25		02/21/14 15:49	108-90-7	
Chloroethane	ND	ug/kg	229	25		02/21/14 15:49	75-00-3	
Chloroform	ND	ug/kg	114	25		02/21/14 15:49	67-66-3	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
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ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-2(4-6) **Lab ID: 92190304002** Collected: 02/14/14 09:55 Received: 02/19/14 17:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
Chloromethane	ND	ug/kg	229	25		02/21/14 15:49	74-87-3	
2-Chlorotoluene	ND	ug/kg	114	25		02/21/14 15:49	95-49-8	
4-Chlorotoluene	ND	ug/kg	114	25		02/21/14 15:49	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/kg	114	25		02/21/14 15:49	96-12-8	
Dibromochloromethane	ND	ug/kg	114	25		02/21/14 15:49	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/kg	114	25		02/21/14 15:49	106-93-4	
Dibromomethane	ND	ug/kg	114	25		02/21/14 15:49	74-95-3	
1,2-Dichlorobenzene	ND	ug/kg	114	25		02/21/14 15:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/kg	114	25		02/21/14 15:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/kg	114	25		02/21/14 15:49	106-46-7	
Dichlorodifluoromethane	ND	ug/kg	229	25		02/21/14 15:49	75-71-8	
1,1-Dichloroethane	ND	ug/kg	114	25		02/21/14 15:49	75-34-3	
1,2-Dichloroethane	ND	ug/kg	114	25		02/21/14 15:49	107-06-2	
1,1-Dichloroethene	ND	ug/kg	114	25		02/21/14 15:49	75-35-4	
cis-1,2-Dichloroethene	ND	ug/kg	114	25		02/21/14 15:49	156-59-2	
trans-1,2-Dichloroethene	ND	ug/kg	114	25		02/21/14 15:49	156-60-5	
1,2-Dichloropropane	ND	ug/kg	114	25		02/21/14 15:49	78-87-5	
1,3-Dichloropropane	ND	ug/kg	114	25		02/21/14 15:49	142-28-9	
2,2-Dichloropropane	ND	ug/kg	114	25		02/21/14 15:49	594-20-7	
1,1-Dichloropropene	ND	ug/kg	114	25		02/21/14 15:49	563-58-6	
cis-1,3-Dichloropropene	ND	ug/kg	114	25		02/21/14 15:49	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/kg	114	25		02/21/14 15:49	10061-02-6	
Diisopropyl ether	ND	ug/kg	114	25		02/21/14 15:49	108-20-3	
Ethylbenzene	**1380**	ug/kg	114	25		02/21/14 15:49	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/kg	114	25		02/21/14 15:49	87-68-3	
2-Hexanone	ND	ug/kg	1140	25		02/21/14 15:49	591-78-6	
Isopropylbenzene (Cumene)	**949**	ug/kg	114	25		02/21/14 15:49	98-82-8	
p-Isopropyltoluene	**274**	ug/kg	114	25		02/21/14 15:49	99-87-6	
Methylene Chloride	ND	ug/kg	457	25		02/21/14 15:49	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/kg	1140	25		02/21/14 15:49	108-10-1	
Methyl-tert-butyl ether	ND	ug/kg	114	25		02/21/14 15:49	1634-04-4	
Naphthalene	**2930**	ug/kg	114	25		02/21/14 15:49	91-20-3	
n-Propylbenzene	**2270**	ug/kg	114	25		02/21/14 15:49	103-65-1	
Styrene	ND	ug/kg	114	25		02/21/14 15:49	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/kg	114	25		02/21/14 15:49	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/kg	114	25		02/21/14 15:49	79-34-5	
Tetrachloroethene	ND	ug/kg	114	25		02/21/14 15:49	127-18-4	
Toluene	ND	ug/kg	114	25		02/21/14 15:49	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/kg	114	25		02/21/14 15:49	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/kg	114	25		02/21/14 15:49	120-82-1	
1,1,1-Trichloroethane	ND	ug/kg	114	25		02/21/14 15:49	71-55-6	
1,1,2-Trichloroethane	ND	ug/kg	114	25		02/21/14 15:49	79-00-5	
Trichloroethene	ND	ug/kg	114	25		02/21/14 15:49	79-01-6	
Trichlorofluoromethane	ND	ug/kg	114	25		02/21/14 15:49	75-69-4	
1,2,3-Trichloropropane	ND	ug/kg	114	25		02/21/14 15:49	96-18-4	
1,2,4-Trimethylbenzene	**318**	ug/kg	114	25		02/21/14 15:49	95-63-6	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-2(4-6) **Lab ID: 92190304002** Collected: 02/14/14 09:55 Received: 02/19/14 17:45 Matrix: Solid

Results reported on a "dry-weight" basis

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260/5035A Volatile Organics	Analytical Method: EPA 8260							
1,3,5-Trimethylbenzene	**163**	ug/kg	114	25		02/21/14 15:49	108-67-8	
Vinyl acetate	ND	ug/kg	1140	25		02/21/14 15:49	108-05-4	
Vinyl chloride	ND	ug/kg	229	25		02/21/14 15:49	75-01-4	
Xylene (Total)	ND	ug/kg	229	25		02/21/14 15:49	1330-20-7	
m&p-Xylene	ND	ug/kg	229	25		02/21/14 15:49	179601-23-1	
o-Xylene	ND	ug/kg	114	25		02/21/14 15:49	95-47-6	
Surrogates								
Toluene-d8 (S)	109	%	70-130	25		02/21/14 15:49	2037-26-5	
4-Bromofluorobenzene (S)	97	%	70-130	25		02/21/14 15:49	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-132	25		02/21/14 15:49	17060-07-0	
Percent Moisture	Analytical Method: ASTM D2974-87							
Percent Moisture	**13.1**	%	0.10	1		03/03/14 16:13		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-2(TW) **Lab ID: 92190304003** Collected: 02/14/14 13:00 Received: 02/19/14 17:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
625 MSSV	Analytical Method: EPA 625 Preparation Method: EPA 625							
Acenaphthene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	83-32-9	
Acenaphthylene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	208-96-8	
Anthracene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	120-12-7	
Benzo(a)anthracene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	56-55-3	
Benzo(a)pyrene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	207-08-9	
4-Bromophenylphenyl ether	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	101-55-3	
Butylbenzylphthalate	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	59-50-7	
bis(2-Chloroethoxy)methane	ND	ug/L	10.2	1	02/20/14 13:00	02/27/14 23:23	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	108-60-1	
2-Chloronaphthalene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	91-58-7	
2-Chlorophenol	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	7005-72-3	
Chrysene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	53-70-3	
3,3'-Dichlorobenzidine	ND	ug/L	25.5	1	02/20/14 13:00	02/27/14 23:23	91-94-1	
2,4-Dichlorophenol	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	120-83-2	
Diethylphthalate	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.2	1	02/20/14 13:00	02/27/14 23:23	105-67-9	
Dimethylphthalate	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	131-11-3	
Di-n-butylphthalate	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	20.4	1	02/20/14 13:00	02/27/14 23:23	534-52-1	
2,4-Dinitrophenol	ND	ug/L	51.0	1	02/20/14 13:00	02/27/14 23:23	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	606-20-2	
Di-n-octylphthalate	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	117-81-7	
Fluoranthene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	206-44-0	
Fluorene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	87-68-3	
Hexachlorobenzene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	10.2	1	02/20/14 13:00	02/27/14 23:23	77-47-4	
Hexachloroethane	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	193-39-5	
Isophorone	ND	ug/L	10.2	1	02/20/14 13:00	02/27/14 23:23	78-59-1	
Naphthalene	**34.3**	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	91-20-3	
Nitrobenzene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	98-95-3	
2-Nitrophenol	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	88-75-5	
4-Nitrophenol	ND	ug/L	51.0	1	02/20/14 13:00	02/27/14 23:23	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	10.2	1	02/20/14 13:00	02/27/14 23:23	86-30-6	
Pentachlorophenol	ND	ug/L	10.2	1	02/20/14 13:00	02/27/14 23:23	87-86-5	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-2(TW) **Lab ID: 92190304003** Collected: 02/14/14 13:00 Received: 02/19/14 17:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
625 MSSV	Analytical Method: EPA 625 Preparation Method: EPA 625							
Phenanthrene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	85-01-8	
Phenol	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	108-95-2	
Pyrene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	5.1	1	02/20/14 13:00	02/27/14 23:23	120-82-1	
2,4,6-Trichlorophenol	ND	ug/L	10.2	1	02/20/14 13:00	02/27/14 23:23	88-06-2	
Surrogates								
Nitrobenzene-d5 (S)	53	%	10-120	1	02/20/14 13:00	02/27/14 23:23	4165-60-0	
2-Fluorobiphenyl (S)	55	%	15-120	1	02/20/14 13:00	02/27/14 23:23	321-60-8	
Terphenyl-d14 (S)	65	%	11-131	1	02/20/14 13:00	02/27/14 23:23	1718-51-0	
Phenol-d6 (S)	26	%	10-120	1	02/20/14 13:00	02/27/14 23:23	13127-88-3	
2-Fluorophenol (S)	38	%	10-120	1	02/20/14 13:00	02/27/14 23:23	367-12-4	
2,4,6-Tribromophenol (S)	76	%	10-137	1	02/20/14 13:00	02/27/14 23:23	118-79-6	
6200B MSV	Analytical Method: SM 6200B							
Benzene	**6.6**	ug/L	0.50	1		02/26/14 15:05	71-43-2	
Bromobenzene	ND	ug/L	0.50	1		02/26/14 15:05	108-86-1	
Bromochloromethane	ND	ug/L	0.50	1		02/26/14 15:05	74-97-5	
Bromodichloromethane	ND	ug/L	0.50	1		02/26/14 15:05	75-27-4	
Bromoform	ND	ug/L	0.50	1		02/26/14 15:05	75-25-2	
Bromomethane	ND	ug/L	5.0	1		02/26/14 15:05	74-83-9	
n-Butylbenzene	**15.6**	ug/L	0.50	1		02/26/14 15:05	104-51-8	
sec-Butylbenzene	ND	ug/L	0.50	1		02/26/14 15:05	135-98-8	
tert-Butylbenzene	**2.5**	ug/L	0.50	1		02/26/14 15:05	98-06-6	
Carbon tetrachloride	ND	ug/L	0.50	1		02/26/14 15:05	56-23-5	
Chlorobenzene	ND	ug/L	0.50	1		02/26/14 15:05	108-90-7	
Chloroethane	ND	ug/L	1.0	1		02/26/14 15:05	75-00-3	
Chloroform	ND	ug/L	0.50	1		02/26/14 15:05	67-66-3	
Chloromethane	ND	ug/L	1.0	1		02/26/14 15:05	74-87-3	
2-Chlorotoluene	ND	ug/L	0.50	1		02/26/14 15:05	95-49-8	
4-Chlorotoluene	ND	ug/L	0.50	1		02/26/14 15:05	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	1		02/26/14 15:05	96-12-8	
Dibromochloromethane	ND	ug/L	0.50	1		02/26/14 15:05	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	1		02/26/14 15:05	106-93-4	
Dibromomethane	ND	ug/L	0.50	1		02/26/14 15:05	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	0.50	1		02/26/14 15:05	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	1		02/26/14 15:05	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	1		02/26/14 15:05	106-46-7	
Dichlorodifluoromethane	ND	ug/L	0.50	1		02/26/14 15:05	75-71-8	
1,1-Dichloroethane	ND	ug/L	0.50	1		02/26/14 15:05	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	1		02/26/14 15:05	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	1		02/26/14 15:05	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	1		02/26/14 15:05	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	1		02/26/14 15:05	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	1		02/26/14 15:05	78-87-5	
1,3-Dichloropropane	ND	ug/L	0.50	1		02/26/14 15:05	142-28-9	
2,2-Dichloropropane	ND	ug/L	0.50	1		02/26/14 15:05	594-20-7	
1,1-Dichloropropene	ND	ug/L	0.50	1		02/26/14 15:05	563-58-6	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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(704)875-9092

ANALYTICAL RESULTS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Sample: 6-2(TW) **Lab ID: 92190304003** Collected: 02/14/14 13:00 Received: 02/19/14 17:45 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
6200B MSV	Analytical Method: SM 6200B							
cis-1,3-Dichloropropene	ND	ug/L	0.50	1		02/26/14 15:05	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	1		02/26/14 15:05	10061-02-6	
Diisopropyl ether	**60.6**	ug/L	0.50	1		02/26/14 15:05	108-20-3	
Ethylbenzene	**91.0**	ug/L	0.50	1		02/26/14 15:05	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1		02/26/14 15:05	87-68-3	
Isopropylbenzene (Cumene)	**58.2**	ug/L	0.50	1		02/26/14 15:05	98-82-8	
Methylene Chloride	ND	ug/L	2.0	1		02/26/14 15:05	75-09-2	
Methyl-tert-butyl ether	**7.9**	ug/L	0.50	1		02/26/14 15:05	1634-04-4	
Naphthalene	**104**	ug/L	2.0	1		02/26/14 15:05	91-20-3	
n-Propylbenzene	**102**	ug/L	0.50	1		02/26/14 15:05	103-65-1	
Styrene	ND	ug/L	0.50	1		02/26/14 15:05	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	1		02/26/14 15:05	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	1		02/26/14 15:05	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	1		02/26/14 15:05	127-18-4	
Toluene	**4.9**	ug/L	0.50	1		02/26/14 15:05	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	1		02/26/14 15:05	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	1		02/26/14 15:05	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	0.50	1		02/26/14 15:05	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	1		02/26/14 15:05	79-00-5	
Trichloroethene	ND	ug/L	0.50	1		02/26/14 15:05	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		02/26/14 15:05	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	0.50	1		02/26/14 15:05	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/L	0.50	1		02/26/14 15:05	95-63-6	
1,3,5-Trimethylbenzene	**0.92**	ug/L	0.50	1		02/26/14 15:05	108-67-8	
Vinyl chloride	ND	ug/L	1.0	1		02/26/14 15:05	75-01-4	
m&p-Xylene	**8.3**	ug/L	1.0	1		02/26/14 15:05	179601-23-1	
o-Xylene	**2.3**	ug/L	0.50	1		02/26/14 15:05	95-47-6	
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	70-130	1		02/26/14 15:05	17060-07-0	
4-Bromofluorobenzene (S)	99	%	70-130	1		02/26/14 15:05	460-00-4	
Toluene-d8 (S)	104	%	70-130	1		02/26/14 15:05	2037-26-5	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

QC Batch: MSV/25897 Analysis Method: SM 6200B
QC Batch Method: SM 6200B Analysis Description: 6200B MSV
Associated Lab Samples: 92190304003

METHOD BLANK: 1144909 Matrix: Water
Associated Lab Samples: 92190304003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	0.50	02/26/14 10:13	
1,1,1-Trichloroethane	ug/L	ND	0.50	02/26/14 10:13	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	02/26/14 10:13	
1,1,2-Trichloroethane	ug/L	ND	0.50	02/26/14 10:13	
1,1-Dichloroethane	ug/L	ND	0.50	02/26/14 10:13	
1,1-Dichloroethene	ug/L	ND	0.50	02/26/14 10:13	
1,1-Dichloropropene	ug/L	ND	0.50	02/26/14 10:13	
1,2,3-Trichlorobenzene	ug/L	ND	2.0	02/26/14 10:13	
1,2,3-Trichloropropane	ug/L	ND	0.50	02/26/14 10:13	
1,2,4-Trichlorobenzene	ug/L	ND	2.0	02/26/14 10:13	
1,2,4-Trimethylbenzene	ug/L	ND	0.50	02/26/14 10:13	
1,2-Dibromo-3-chloropropane	ug/L	ND	1.0	02/26/14 10:13	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	02/26/14 10:13	
1,2-Dichlorobenzene	ug/L	ND	0.50	02/26/14 10:13	
1,2-Dichloroethane	ug/L	ND	0.50	02/26/14 10:13	
1,2-Dichloropropane	ug/L	ND	0.50	02/26/14 10:13	
1,3,5-Trimethylbenzene	ug/L	ND	0.50	02/26/14 10:13	
1,3-Dichlorobenzene	ug/L	ND	0.50	02/26/14 10:13	
1,3-Dichloropropane	ug/L	ND	0.50	02/26/14 10:13	
1,4-Dichlorobenzene	ug/L	ND	0.50	02/26/14 10:13	
2,2-Dichloropropane	ug/L	ND	0.50	02/26/14 10:13	
2-Chlorotoluene	ug/L	ND	0.50	02/26/14 10:13	
4-Chlorotoluene	ug/L	ND	0.50	02/26/14 10:13	
Benzene	ug/L	ND	0.50	02/26/14 10:13	
Bromobenzene	ug/L	ND	0.50	02/26/14 10:13	
Bromochloromethane	ug/L	ND	0.50	02/26/14 10:13	
Bromodichloromethane	ug/L	ND	0.50	02/26/14 10:13	
Bromoform	ug/L	ND	0.50	02/26/14 10:13	
Bromomethane	ug/L	ND	5.0	02/26/14 10:13	
Carbon tetrachloride	ug/L	ND	0.50	02/26/14 10:13	
Chlorobenzene	ug/L	ND	0.50	02/26/14 10:13	
Chloroethane	ug/L	ND	1.0	02/26/14 10:13	
Chloroform	ug/L	ND	0.50	02/26/14 10:13	
Chloromethane	ug/L	ND	1.0	02/26/14 10:13	
cis-1,2-Dichloroethene	ug/L	ND	0.50	02/26/14 10:13	
cis-1,3-Dichloropropene	ug/L	ND	0.50	02/26/14 10:13	
Dibromochloromethane	ug/L	ND	0.50	02/26/14 10:13	
Dibromomethane	ug/L	ND	0.50	02/26/14 10:13	
Dichlorodifluoromethane	ug/L	ND	0.50	02/26/14 10:13	
Diisopropyl ether	ug/L	ND	0.50	02/26/14 10:13	
Ethylbenzene	ug/L	ND	0.50	02/26/14 10:13	
Hexachloro-1,3-butadiene	ug/L	ND	2.0	02/26/14 10:13	
Isopropylbenzene (Cumene)	ug/L	ND	0.50	02/26/14 10:13	

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

METHOD BLANK: 1144909 Matrix: Water
Associated Lab Samples: 92190304003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
m&p-Xylene	ug/L	ND	1.0	02/26/14 10:13	
Methyl-tert-butyl ether	ug/L	ND	0.50	02/26/14 10:13	
Methylene Chloride	ug/L	ND	2.0	02/26/14 10:13	
n-Butylbenzene	ug/L	ND	0.50	02/26/14 10:13	
n-Propylbenzene	ug/L	ND	0.50	02/26/14 10:13	
Naphthalene	ug/L	ND	2.0	02/26/14 10:13	
o-Xylene	ug/L	ND	0.50	02/26/14 10:13	
sec-Butylbenzene	ug/L	ND	0.50	02/26/14 10:13	
Styrene	ug/L	ND	0.50	02/26/14 10:13	
tert-Butylbenzene	ug/L	ND	0.50	02/26/14 10:13	
Tetrachloroethene	ug/L	ND	0.50	02/26/14 10:13	
Toluene	ug/L	ND	0.50	02/26/14 10:13	
trans-1,2-Dichloroethene	ug/L	ND	0.50	02/26/14 10:13	
trans-1,3-Dichloropropene	ug/L	ND	0.50	02/26/14 10:13	
Trichloroethene	ug/L	ND	0.50	02/26/14 10:13	
Trichlorofluoromethane	ug/L	ND	1.0	02/26/14 10:13	
Vinyl chloride	ug/L	ND	1.0	02/26/14 10:13	
1,2-Dichloroethane-d4 (S)	%	104	70-130	02/26/14 10:13	
4-Bromofluorobenzene (S)	%	98	70-130	02/26/14 10:13	
Toluene-d8 (S)	%	101	70-130	02/26/14 10:13	

LABORATORY CONTROL SAMPLE: 1144910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	45.3	91	60-140	
1,1,1-Trichloroethane	ug/L	50	49.4	99	60-140	
1,1,2,2-Tetrachloroethane	ug/L	50	49.8	100	60-140	
1,1,2-Trichloroethane	ug/L	50	50.9	102	60-140	
1,1-Dichloroethane	ug/L	50	46.0	92	60-140	
1,1-Dichloroethene	ug/L	50	43.8	88	60-140	
1,1-Dichloropropene	ug/L	50	46.3	93	60-140	
1,2,3-Trichlorobenzene	ug/L	50	46.2	92	60-140	
1,2,3-Trichloropropane	ug/L	50	49.7	99	60-140	
1,2,4-Trichlorobenzene	ug/L	50	45.2	90	60-140	
1,2,4-Trimethylbenzene	ug/L	50	46.9	94	60-140	
1,2-Dibromo-3-chloropropane	ug/L	50	65.7	131	60-140	
1,2-Dibromoethane (EDB)	ug/L	50	51.7	103	60-140	
1,2-Dichlorobenzene	ug/L	50	45.0	90	60-140	
1,2-Dichloroethane	ug/L	50	46.6	93	60-140	
1,2-Dichloropropane	ug/L	50	47.7	95	60-140	
1,3,5-Trimethylbenzene	ug/L	50	47.9	96	60-140	
1,3-Dichlorobenzene	ug/L	50	43.7	87	60-140	
1,3-Dichloropropane	ug/L	50	49.0	98	60-140	
1,4-Dichlorobenzene	ug/L	50	43.6	87	60-140	
2,2-Dichloropropane	ug/L	50	40.1	80	60-140	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

LABORATORY CONTROL SAMPLE: 1144910

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Chlorotoluene	ug/L	50	44.7	89	60-140	
4-Chlorotoluene	ug/L	50	45.5	91	60-140	
Benzene	ug/L	50	48.0	96	60-140	
Bromobenzene	ug/L	50	46.2	92	60-140	
Bromochloromethane	ug/L	50	45.9	92	60-140	
Bromodichloromethane	ug/L	50	51.7	103	60-140	
Bromoform	ug/L	50	41.8	84	60-140	
Bromomethane	ug/L	50	36.1	72	60-140	
Carbon tetrachloride	ug/L	50	41.8	84	60-140	
Chlorobenzene	ug/L	50	46.9	94	60-140	
Chloroethane	ug/L	50	44.3	89	60-140	
Chloroform	ug/L	50	46.8	94	60-140	
Chloromethane	ug/L	50	44.8	90	60-140	
cis-1,2-Dichloroethene	ug/L	50	44.5	89	60-140	
cis-1,3-Dichloropropene	ug/L	50	43.4	87	60-140	
Dibromochloromethane	ug/L	50	44.5	89	60-140	
Dibromomethane	ug/L	50	48.0	96	60-140	
Dichlorodifluoromethane	ug/L	50	44.0	88	60-140	
Diisopropyl ether	ug/L	50	48.0	96	60-140	
Ethylbenzene	ug/L	50	47.1	94	60-140	
Hexachloro-1,3-butadiene	ug/L	50	42.9	86	60-140	
Isopropylbenzene (Cumene)	ug/L	50	49.2	98	60-140	
m&p-Xylene	ug/L	100	96.6	97	60-140	
Methyl-tert-butyl ether	ug/L	50	49.7	99	60-140	
Methylene Chloride	ug/L	50	51.1	102	60-140	
n-Butylbenzene	ug/L	50	43.8	88	60-140	
n-Propylbenzene	ug/L	50	47.6	95	60-140	
Naphthalene	ug/L	50	49.2	98	60-140	
o-Xylene	ug/L	50	48.5	97	60-140	
sec-Butylbenzene	ug/L	50	46.8	94	60-140	
Styrene	ug/L	50	51.5	103	60-140	
tert-Butylbenzene	ug/L	50	47.1	94	60-140	
Tetrachloroethene	ug/L	50	46.5	93	60-140	
Toluene	ug/L	50	46.4	93	60-140	
trans-1,2-Dichloroethene	ug/L	50	43.0	86	60-140	
trans-1,3-Dichloropropene	ug/L	50	43.5	87	60-140	
Trichloroethene	ug/L	50	45.7	91	60-140	
Trichlorofluoromethane	ug/L	50	44.9	90	60-140	
Vinyl chloride	ug/L	50	47.1	94	60-140	
1,2-Dichloroethane-d4 (S)	%			100	70-130	
4-Bromofluorobenzene (S)	%			101	70-130	
Toluene-d8 (S)	%			99	70-130	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1144911 1144912

Parameter	Units	92190587002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	18.6	16.3	93	81	60-140	13	
1,1,1-Trichloroethane	ug/L	ND	20	20	22.2	19.2	111	96	60-140	14	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	20.1	17.1	100	85	60-140	16	
1,1,2-Trichloroethane	ug/L	ND	20	20	20.8	18.1	104	90	60-140	14	
1,1-Dichloroethane	ug/L	ND	20	20	20.4	17.7	102	89	60-140	14	
1,1-Dichloroethene	ug/L	ND	20	20	20.4	17.6	102	88	60-140	14	
1,1-Dichloropropene	ug/L	ND	20	20	21.7	18.7	108	94	60-140	15	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	18.2	16.0	91	80	60-140	13	
1,2,3-Trichloropropane	ug/L	ND	20	20	19.8	16.9	99	84	60-140	16	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	18.2	15.9	91	80	60-140	13	
1,2,4-Trimethylbenzene	ug/L	ND	20	20	19.6	17.0	98	85	60-140	14	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	24.0	19.8	120	99	60-140	19	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	20.9	18.2	105	91	60-140	14	
1,2-Dichlorobenzene	ug/L	ND	20	20	18.4	16.1	92	81	60-140	13	
1,2-Dichloroethane	ug/L	ND	20	20	19.2	16.8	96	84	60-140	14	
1,2-Dichloropropane	ug/L	ND	20	20	20.0	17.6	100	88	60-140	13	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	20.0	17.4	100	87	60-140	14	
1,3-Dichlorobenzene	ug/L	ND	20	20	17.9	15.7	90	78	60-140	13	
1,3-Dichloropropane	ug/L	ND	20	20	20.4	17.9	102	90	60-140	13	
1,4-Dichlorobenzene	ug/L	ND	20	20	18.0	15.7	90	78	60-140	14	
2,2-Dichloropropane	ug/L	ND	20	20	22.3	19.2	112	96	60-140	15	
2-Chlorotoluene	ug/L	ND	20	20	18.5	16.1	92	81	60-140	13	
4-Chlorotoluene	ug/L	ND	20	20	19.2	16.7	96	83	60-140	14	
Benzene	ug/L	ND	20	20	20.5	18.2	103	91	60-140	12	
Bromobenzene	ug/L	ND	20	20	19.1	16.7	95	84	60-140	13	
Bromochloromethane	ug/L	ND	20	20	21.5	18.6	108	93	60-140	15	
Bromodichloromethane	ug/L	ND	20	20	20.4	17.7	102	89	60-140	14	
Bromoform	ug/L	ND	20	20	17.2	15.2	86	76	60-140	12	
Bromomethane	ug/L	ND	20	20	20.9	18.5	104	93	60-140	12	
Carbon tetrachloride	ug/L	ND	20	20	20.1	17.5	100	87	60-140	14	
Chlorobenzene	ug/L	ND	20	20	19.9	17.3	99	86	60-140	14	
Chloroethane	ug/L	ND	20	20	21.6	18.7	108	94	60-140	14	
Chloroform	ug/L	ND	20	20	20.5	18.0	103	90	60-140	13	
Chloromethane	ug/L	ND	20	20	19.1	16.7	95	83	60-140	14	
cis-1,2-Dichloroethene	ug/L	ND	20	20	19.7	17.3	99	86	60-140	13	
cis-1,3-Dichloropropene	ug/L	ND	20	20	17.9	15.7	90	78	60-140	13	
Dibromochloromethane	ug/L	ND	20	20	18.3	16.1	92	80	60-140	13	
Dibromomethane	ug/L	ND	20	20	19.6	16.6	98	83	60-140	16	
Dichlorodifluoromethane	ug/L	ND	20	20	16.3	14.3	82	72	60-140	13	
Diisopropyl ether	ug/L	ND	20	20	20.5	17.9	103	90	60-140	13	
Ethylbenzene	ug/L	ND	20	20	20.1	17.5	100	88	60-140	14	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	19.6	17.4	98	87	60-140	12	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	20.8	18.1	104	91	60-140	14	
m&p-Xylene	ug/L	ND	40	40	40.8	35.3	102	88	60-140	14	
Methyl-tert-butyl ether	ug/L	ND	20	20	20.1	17.6	101	88	60-140	14	
Methylene Chloride	ug/L	ND	20	20	19.7	17.2	98	86	60-140	14	
n-Butylbenzene	ug/L	ND	20	20	18.9	16.6	95	83	60-140	13	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1144911 1144912

Parameter	Units	92190587002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
n-Propylbenzene	ug/L	ND	20	20	20.5	17.9	103	89	60-140	14	
Naphthalene	ug/L	ND	20	20	18.5	15.8	93	79	60-140	16	
o-Xylene	ug/L	ND	20	20	19.9	17.4	100	87	60-140	13	
sec-Butylbenzene	ug/L	ND	20	20	20.2	17.6	101	88	60-140	14	
Styrene	ug/L	ND	20	20	20.8	17.9	104	90	60-140	15	
tert-Butylbenzene	ug/L	ND	20	20	20.0	17.5	100	88	60-140	13	
Tetrachloroethene	ug/L	ND	20	20	20.8	18.1	104	91	60-140	14	
Toluene	ug/L	ND	20	20	19.8	17.3	99	86	60-140	14	
trans-1,2-Dichloroethene	ug/L	ND	20	20	19.4	17.0	97	85	60-140	13	
trans-1,3-Dichloropropene	ug/L	ND	20	20	18.0	15.6	90	78	60-140	14	
Trichloroethene	ug/L	ND	20	20	19.6	17.2	98	86	60-140	13	
Trichlorofluoromethane	ug/L	ND	20	20	21.7	18.7	108	93	60-140	15	
Vinyl chloride	ug/L	ND	20	20	20.6	18.1	103	91	60-140	13	
1,2-Dichloroethane-d4 (S)	%						99	99	70-130		
4-Bromofluorobenzene (S)	%						101	100	70-130		
Toluene-d8 (S)	%						100	100	70-130		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

QC Batch: MSV/25854
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92190304002

METHOD BLANK: 1142401
Matrix: Solid
Associated Lab Samples: 92190304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.6	02/21/14 11:54	
1,1,1-Trichloroethane	ug/kg	ND	5.6	02/21/14 11:54	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.6	02/21/14 11:54	
1,1,2-Trichloroethane	ug/kg	ND	5.6	02/21/14 11:54	
1,1-Dichloroethane	ug/kg	ND	5.6	02/21/14 11:54	
1,1-Dichloroethene	ug/kg	ND	5.6	02/21/14 11:54	
1,1-Dichloropropene	ug/kg	ND	5.6	02/21/14 11:54	
1,2,3-Trichlorobenzene	ug/kg	ND	5.6	02/21/14 11:54	
1,2,3-Trichloropropane	ug/kg	ND	5.6	02/21/14 11:54	
1,2,4-Trichlorobenzene	ug/kg	ND	5.6	02/21/14 11:54	
1,2,4-Trimethylbenzene	ug/kg	ND	5.6	02/21/14 11:54	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.6	02/21/14 11:54	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.6	02/21/14 11:54	
1,2-Dichlorobenzene	ug/kg	ND	5.6	02/21/14 11:54	
1,2-Dichloroethane	ug/kg	ND	5.6	02/21/14 11:54	
1,2-Dichloropropane	ug/kg	ND	5.6	02/21/14 11:54	
1,3,5-Trimethylbenzene	ug/kg	ND	5.6	02/21/14 11:54	
1,3-Dichlorobenzene	ug/kg	ND	5.6	02/21/14 11:54	
1,3-Dichloropropane	ug/kg	ND	5.6	02/21/14 11:54	
1,4-Dichlorobenzene	ug/kg	ND	5.6	02/21/14 11:54	
2,2-Dichloropropane	ug/kg	ND	5.6	02/21/14 11:54	
2-Butanone (MEK)	ug/kg	ND	111	02/21/14 11:54	
2-Chlorotoluene	ug/kg	ND	5.6	02/21/14 11:54	
2-Hexanone	ug/kg	ND	55.6	02/21/14 11:54	
4-Chlorotoluene	ug/kg	ND	5.6	02/21/14 11:54	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	55.6	02/21/14 11:54	
Acetone	ug/kg	ND	111	02/21/14 11:54	
Benzene	ug/kg	ND	5.6	02/21/14 11:54	
Bromobenzene	ug/kg	ND	5.6	02/21/14 11:54	
Bromochloromethane	ug/kg	ND	5.6	02/21/14 11:54	
Bromodichloromethane	ug/kg	ND	5.6	02/21/14 11:54	
Bromoform	ug/kg	ND	5.6	02/21/14 11:54	
Bromomethane	ug/kg	ND	11.1	02/21/14 11:54	
Carbon tetrachloride	ug/kg	ND	5.6	02/21/14 11:54	
Chlorobenzene	ug/kg	ND	5.6	02/21/14 11:54	
Chloroethane	ug/kg	ND	11.1	02/21/14 11:54	
Chloroform	ug/kg	ND	5.6	02/21/14 11:54	
Chloromethane	ug/kg	ND	11.1	02/21/14 11:54	
cis-1,2-Dichloroethene	ug/kg	ND	5.6	02/21/14 11:54	
cis-1,3-Dichloropropene	ug/kg	ND	5.6	02/21/14 11:54	
Dibromochloromethane	ug/kg	ND	5.6	02/21/14 11:54	
Dibromomethane	ug/kg	ND	5.6	02/21/14 11:54	
Dichlorodifluoromethane	ug/kg	ND	11.1	02/21/14 11:54	

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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

METHOD BLANK: 1142401 Matrix: Solid
Associated Lab Samples: 92190304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	ND	5.6	02/21/14 11:54	
Ethylbenzene	ug/kg	ND	5.6	02/21/14 11:54	
Hexachloro-1,3-butadiene	ug/kg	ND	5.6	02/21/14 11:54	
Isopropylbenzene (Cumene)	ug/kg	ND	5.6	02/21/14 11:54	
m&p-Xylene	ug/kg	ND	11.1	02/21/14 11:54	
Methyl-tert-butyl ether	ug/kg	ND	5.6	02/21/14 11:54	
Methylene Chloride	ug/kg	ND	22.2	02/21/14 11:54	
n-Butylbenzene	ug/kg	ND	5.6	02/21/14 11:54	
n-Propylbenzene	ug/kg	ND	5.6	02/21/14 11:54	
Naphthalene	ug/kg	ND	5.6	02/21/14 11:54	
o-Xylene	ug/kg	ND	5.6	02/21/14 11:54	
p-Isopropyltoluene	ug/kg	ND	5.6	02/21/14 11:54	
sec-Butylbenzene	ug/kg	ND	5.6	02/21/14 11:54	
Styrene	ug/kg	ND	5.6	02/21/14 11:54	
tert-Butylbenzene	ug/kg	ND	5.6	02/21/14 11:54	
Tetrachloroethene	ug/kg	ND	5.6	02/21/14 11:54	
Toluene	ug/kg	ND	5.6	02/21/14 11:54	
trans-1,2-Dichloroethene	ug/kg	ND	5.6	02/21/14 11:54	
trans-1,3-Dichloropropene	ug/kg	ND	5.6	02/21/14 11:54	
Trichloroethene	ug/kg	ND	5.6	02/21/14 11:54	
Trichlorofluoromethane	ug/kg	ND	5.6	02/21/14 11:54	
Vinyl acetate	ug/kg	ND	55.6	02/21/14 11:54	
Vinyl chloride	ug/kg	ND	11.1	02/21/14 11:54	
Xylene (Total)	ug/kg	ND	11.1	02/21/14 11:54	
1,2-Dichloroethane-d4 (S)	%	97	70-132	02/21/14 11:54	
4-Bromofluorobenzene (S)	%	87	70-130	02/21/14 11:54	
Toluene-d8 (S)	%	97	70-130	02/21/14 11:54	

LABORATORY CONTROL SAMPLE: 1142402

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	48.6	48.6	100	70-131	
1,1,1-Trichloroethane	ug/kg	48.6	52.4	108	70-141	
1,1,2,2-Tetrachloroethane	ug/kg	48.6	49.7	102	70-130	
1,1,2-Trichloroethane	ug/kg	48.6	48.9	101	70-132	
1,1-Dichloroethane	ug/kg	48.6	50.9	105	70-143	
1,1-Dichloroethene	ug/kg	48.6	51.6	106	70-137	
1,1-Dichloropropene	ug/kg	48.6	55.3	114	70-135	
1,2,3-Trichlorobenzene	ug/kg	48.6	54.8	113	69-153	
1,2,3-Trichloropropane	ug/kg	48.6	48.3	99	70-130	
1,2,4-Trichlorobenzene	ug/kg	48.6	55.9	115	55-171	
1,2,4-Trimethylbenzene	ug/kg	48.6	55.6	114	70-149	
1,2-Dibromo-3-chloropropane	ug/kg	48.6	49.2	101	68-141	
1,2-Dibromoethane (EDB)	ug/kg	48.6	51.7	106	70-130	
1,2-Dichlorobenzene	ug/kg	48.6	50.2	103	70-140	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

LABORATORY CONTROL SAMPLE: 1142402

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/kg	48.6	46.5	96	70-137	
1,2-Dichloropropane	ug/kg	48.6	49.5	102	70-133	
1,3,5-Trimethylbenzene	ug/kg	48.6	53.8	111	70-143	
1,3-Dichlorobenzene	ug/kg	48.6	48.8	100	70-144	
1,3-Dichloropropane	ug/kg	48.6	49.8	102	70-132	
1,4-Dichlorobenzene	ug/kg	48.6	50.1	103	70-142	
2,2-Dichloropropane	ug/kg	48.6	54.6	112	68-152	
2-Butanone (MEK)	ug/kg	97.3	112	115	70-149	
2-Chlorotoluene	ug/kg	48.6	51.4	106	70-141	
2-Hexanone	ug/kg	97.3	105	108	70-149	
4-Chlorotoluene	ug/kg	48.6	51.5	106	70-149	
4-Methyl-2-pentanone (MIBK)	ug/kg	97.3	100	103	70-153	
Acetone	ug/kg	97.3	112	115	70-157	
Benzene	ug/kg	48.6	52.0	107	70-130	
Bromobenzene	ug/kg	48.6	49.5	102	70-141	
Bromochloromethane	ug/kg	48.6	51.4	106	70-149	
Bromodichloromethane	ug/kg	48.6	48.0	99	70-130	
Bromoform	ug/kg	48.6	48.2	99	70-131	
Bromomethane	ug/kg	48.6	67.1	138	64-136	L3
Carbon tetrachloride	ug/kg	48.6	47.1	97	70-154	
Chlorobenzene	ug/kg	48.6	47.5	98	70-135	
Chloroethane	ug/kg	48.6	51.1	105	68-151	
Chloroform	ug/kg	48.6	50.3	103	70-130	
Chloromethane	ug/kg	48.6	50.8	104	70-132	
cis-1,2-Dichloroethene	ug/kg	48.6	50.6	104	70-140	
cis-1,3-Dichloropropene	ug/kg	48.6	49.8	102	70-137	
Dibromochloromethane	ug/kg	48.6	47.7	98	70-130	
Dibromomethane	ug/kg	48.6	48.3	99	70-136	
Dichlorodifluoromethane	ug/kg	48.6	56.6	116	36-148	
Diisopropyl ether	ug/kg	48.6	51.8	107	70-139	
Ethylbenzene	ug/kg	48.6	50.0	103	70-137	
Hexachloro-1,3-butadiene	ug/kg	48.6	45.4	93	70-145	
Isopropylbenzene (Cumene)	ug/kg	48.6	52.5	108	70-141	
m&p-Xylene	ug/kg	97.3	102	105	70-140	
Methyl-tert-butyl ether	ug/kg	48.6	53.8	111	45-150	
Methylene Chloride	ug/kg	48.6	71.0	146	70-133	L3
n-Butylbenzene	ug/kg	48.6	59.2	122	65-155	
n-Propylbenzene	ug/kg	48.6	54.0	111	70-148	
Naphthalene	ug/kg	48.6	70.6	145	70-148	
o-Xylene	ug/kg	48.6	50.4	104	70-141	
p-Isopropyltoluene	ug/kg	48.6	54.5	112	70-148	
sec-Butylbenzene	ug/kg	48.6	53.8	111	70-145	
Styrene	ug/kg	48.6	51.4	106	70-138	
tert-Butylbenzene	ug/kg	48.6	49.8	102	70-143	
Tetrachloroethene	ug/kg	48.6	48.2	99	70-140	
Toluene	ug/kg	48.6	48.7	100	70-130	
trans-1,2-Dichloroethene	ug/kg	48.6	52.0	107	70-136	
trans-1,3-Dichloropropene	ug/kg	48.6	48.8	100	70-138	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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(704)875-9092

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

LABORATORY CONTROL SAMPLE: 1142402

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	48.6	48.6	100	70-132	
Trichlorofluoromethane	ug/kg	48.6	55.0	113	69-134	
Vinyl acetate	ug/kg	97.3	142	146	24-161	
Vinyl chloride	ug/kg	48.6	58.3	120	55-140	
Xylene (Total)	ug/kg	146	153	105	70-141	
1,2-Dichloroethane-d4 (S)	%			105	70-132	
4-Bromofluorobenzene (S)	%			90	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE SAMPLE: 1143259

Parameter	Units	92190305005 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	ND	34.6	37.0	107	49-180	
Benzene	ug/kg	ND	34.6	32.4	94	50-166	
Chlorobenzene	ug/kg	ND	34.6	21.3	62	43-169	
Toluene	ug/kg	ND	34.6	27.4	79	52-163	
Trichloroethene	ug/kg	ND	34.6	29.5	85	49-167	
1,2-Dichloroethane-d4 (S)	%				89	70-132	
4-Bromofluorobenzene (S)	%				83	70-130	
Toluene-d8 (S)	%				104	70-130	

SAMPLE DUPLICATE: 1143258

Parameter	Units	92190181001 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,1-Trichloroethane	ug/kg	ND	ND		
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,2-Trichloroethane	ug/kg	ND	ND		
1,1-Dichloroethane	ug/kg	ND	ND		
1,1-Dichloroethene	ug/kg	ND	ND		
1,1-Dichloropropene	ug/kg	ND	ND		
1,2,3-Trichlorobenzene	ug/kg	ND	ND		
1,2,3-Trichloropropane	ug/kg	ND	ND		
1,2,4-Trichlorobenzene	ug/kg	ND	ND		
1,2,4-Trimethylbenzene	ug/kg	ND	ND		
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		
1,2-Dichlorobenzene	ug/kg	ND	ND		
1,2-Dichloroethane	ug/kg	ND	ND		
1,2-Dichloropropane	ug/kg	ND	ND		
1,3,5-Trimethylbenzene	ug/kg	ND	ND		
1,3-Dichlorobenzene	ug/kg	ND	ND		
1,3-Dichloropropane	ug/kg	ND	ND		
1,4-Dichlorobenzene	ug/kg	ND	ND		
2,2-Dichloropropane	ug/kg	ND	ND		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

SAMPLE DUPLICATE: 1143258

Parameter	Units	92190181001 Result	Dup Result	RPD	Qualifiers
2-Butanone (MEK)	ug/kg	ND	ND		
2-Chlorotoluene	ug/kg	ND	ND		
2-Hexanone	ug/kg	ND	ND		
4-Chlorotoluene	ug/kg	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		
Acetone	ug/kg	12.2J	ND		
Benzene	ug/kg	ND	ND		
Bromobenzene	ug/kg	ND	ND		
Bromochloromethane	ug/kg	ND	ND		
Bromodichloromethane	ug/kg	ND	ND		
Bromoform	ug/kg	ND	ND		
Bromomethane	ug/kg	ND	ND		
Carbon tetrachloride	ug/kg	ND	ND		
Chlorobenzene	ug/kg	ND	ND		
Chloroethane	ug/kg	ND	ND		
Chloroform	ug/kg	ND	ND		
Chloromethane	ug/kg	ND	ND		
cis-1,2-Dichloroethene	ug/kg	ND	ND		
cis-1,3-Dichloropropene	ug/kg	ND	ND		
Dibromochloromethane	ug/kg	ND	ND		
Dibromomethane	ug/kg	ND	ND		
Dichlorodifluoromethane	ug/kg	ND	ND		
Diisopropyl ether	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	ND		
Hexachloro-1,3-butadiene	ug/kg	ND	ND		
Isopropylbenzene (Cumene)	ug/kg	ND	ND		
m&p-Xylene	ug/kg	ND	ND		
Methyl-tert-butyl ether	ug/kg	ND	ND		
Methylene Chloride	ug/kg	ND	ND		
n-Butylbenzene	ug/kg	ND	ND		
n-Propylbenzene	ug/kg	ND	ND		
Naphthalene	ug/kg	ND	ND		
o-Xylene	ug/kg	ND	ND		
p-Isopropyltoluene	ug/kg	ND	ND		
sec-Butylbenzene	ug/kg	ND	ND		
Styrene	ug/kg	ND	ND		
tert-Butylbenzene	ug/kg	ND	ND		
Tetrachloroethene	ug/kg	ND	ND		
Toluene	ug/kg	ND	ND		
trans-1,2-Dichloroethene	ug/kg	ND	ND		
trans-1,3-Dichloropropene	ug/kg	ND	ND		
Trichloroethene	ug/kg	ND	ND		
Trichlorofluoromethane	ug/kg	ND	ND		
Vinyl acetate	ug/kg	ND	ND		
Vinyl chloride	ug/kg	ND	ND		
Xylene (Total)	ug/kg	ND	ND		
1,2-Dichloroethane-d4 (S)	%	131	79	54	
4-Bromofluorobenzene (S)	%	89	94	1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

SAMPLE DUPLICATE: 1143258

Parameter	Units	92190181001 Result	Dup Result	RPD	Qualifiers
Toluene-d8 (S)	%	94	110	12	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

QC Batch: MSV/25877 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV 5035A Volatile Organics
Associated Lab Samples: 92190304001

METHOD BLANK: 1143876 Matrix: Solid
Associated Lab Samples: 92190304001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	5.0	02/24/14 17:33	
1,1,1-Trichloroethane	ug/kg	ND	5.0	02/24/14 17:33	
1,1,2,2-Tetrachloroethane	ug/kg	ND	5.0	02/24/14 17:33	
1,1,2-Trichloroethane	ug/kg	ND	5.0	02/24/14 17:33	
1,1-Dichloroethane	ug/kg	ND	5.0	02/24/14 17:33	
1,1-Dichloroethene	ug/kg	ND	5.0	02/24/14 17:33	
1,1-Dichloropropene	ug/kg	ND	5.0	02/24/14 17:33	
1,2,3-Trichlorobenzene	ug/kg	ND	5.0	02/24/14 17:33	
1,2,3-Trichloropropane	ug/kg	ND	5.0	02/24/14 17:33	
1,2,4-Trichlorobenzene	ug/kg	ND	5.0	02/24/14 17:33	
1,2,4-Trimethylbenzene	ug/kg	ND	5.0	02/24/14 17:33	
1,2-Dibromo-3-chloropropane	ug/kg	ND	5.0	02/24/14 17:33	
1,2-Dibromoethane (EDB)	ug/kg	ND	5.0	02/24/14 17:33	
1,2-Dichlorobenzene	ug/kg	ND	5.0	02/24/14 17:33	
1,2-Dichloroethane	ug/kg	ND	5.0	02/24/14 17:33	
1,2-Dichloropropane	ug/kg	ND	5.0	02/24/14 17:33	
1,3,5-Trimethylbenzene	ug/kg	ND	5.0	02/24/14 17:33	
1,3-Dichlorobenzene	ug/kg	ND	5.0	02/24/14 17:33	
1,3-Dichloropropane	ug/kg	ND	5.0	02/24/14 17:33	
1,4-Dichlorobenzene	ug/kg	ND	5.0	02/24/14 17:33	
2,2-Dichloropropane	ug/kg	ND	5.0	02/24/14 17:33	
2-Butanone (MEK)	ug/kg	ND	99.0	02/24/14 17:33	
2-Chlorotoluene	ug/kg	ND	5.0	02/24/14 17:33	
2-Hexanone	ug/kg	ND	49.5	02/24/14 17:33	
4-Chlorotoluene	ug/kg	ND	5.0	02/24/14 17:33	
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	49.5	02/24/14 17:33	
Acetone	ug/kg	ND	99.0	02/24/14 17:33	
Benzene	ug/kg	ND	5.0	02/24/14 17:33	
Bromobenzene	ug/kg	ND	5.0	02/24/14 17:33	
Bromochloromethane	ug/kg	ND	5.0	02/24/14 17:33	
Bromodichloromethane	ug/kg	ND	5.0	02/24/14 17:33	
Bromoform	ug/kg	ND	5.0	02/24/14 17:33	
Bromomethane	ug/kg	ND	9.9	02/24/14 17:33	
Carbon tetrachloride	ug/kg	ND	5.0	02/24/14 17:33	
Chlorobenzene	ug/kg	ND	5.0	02/24/14 17:33	
Chloroethane	ug/kg	ND	9.9	02/24/14 17:33	
Chloroform	ug/kg	ND	5.0	02/24/14 17:33	
Chloromethane	ug/kg	ND	9.9	02/24/14 17:33	
cis-1,2-Dichloroethene	ug/kg	ND	5.0	02/24/14 17:33	
cis-1,3-Dichloropropene	ug/kg	ND	5.0	02/24/14 17:33	
Dibromochloromethane	ug/kg	ND	5.0	02/24/14 17:33	
Dibromomethane	ug/kg	ND	5.0	02/24/14 17:33	
Dichlorodifluoromethane	ug/kg	ND	9.9	02/24/14 17:33	

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

METHOD BLANK: 1143876 Matrix: Solid
Associated Lab Samples: 92190304001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/kg	ND	5.0	02/24/14 17:33	
Ethylbenzene	ug/kg	ND	5.0	02/24/14 17:33	
Hexachloro-1,3-butadiene	ug/kg	ND	5.0	02/24/14 17:33	
Isopropylbenzene (Cumene)	ug/kg	ND	5.0	02/24/14 17:33	
m&p-Xylene	ug/kg	ND	9.9	02/24/14 17:33	
Methyl-tert-butyl ether	ug/kg	ND	5.0	02/24/14 17:33	
Methylene Chloride	ug/kg	ND	19.8	02/24/14 17:33	
n-Butylbenzene	ug/kg	ND	5.0	02/24/14 17:33	
n-Propylbenzene	ug/kg	ND	5.0	02/24/14 17:33	
Naphthalene	ug/kg	ND	5.0	02/24/14 17:33	
o-Xylene	ug/kg	ND	5.0	02/24/14 17:33	
p-Isopropyltoluene	ug/kg	ND	5.0	02/24/14 17:33	
sec-Butylbenzene	ug/kg	ND	5.0	02/24/14 17:33	
Styrene	ug/kg	ND	5.0	02/24/14 17:33	
tert-Butylbenzene	ug/kg	ND	5.0	02/24/14 17:33	
Tetrachloroethene	ug/kg	ND	5.0	02/24/14 17:33	
Toluene	ug/kg	ND	5.0	02/24/14 17:33	
trans-1,2-Dichloroethene	ug/kg	ND	5.0	02/24/14 17:33	
trans-1,3-Dichloropropene	ug/kg	ND	5.0	02/24/14 17:33	
Trichloroethene	ug/kg	ND	5.0	02/24/14 17:33	
Trichlorofluoromethane	ug/kg	ND	5.0	02/24/14 17:33	
Vinyl acetate	ug/kg	ND	49.5	02/24/14 17:33	
Vinyl chloride	ug/kg	ND	9.9	02/24/14 17:33	
Xylene (Total)	ug/kg	ND	9.9	02/24/14 17:33	
1,2-Dichloroethane-d4 (S)	%	87	70-132	02/24/14 17:33	
4-Bromofluorobenzene (S)	%	97	70-130	02/24/14 17:33	
Toluene-d8 (S)	%	111	70-130	02/24/14 17:33	

LABORATORY CONTROL SAMPLE: 1143877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	49.3	51.7	105	70-131	
1,1,1-Trichloroethane	ug/kg	49.3	61.1	124	70-141	
1,1,2,2-Tetrachloroethane	ug/kg	49.3	46.6	94	70-130	
1,1,2-Trichloroethane	ug/kg	49.3	57.5	117	70-132	
1,1-Dichloroethane	ug/kg	49.3	56.4	114	70-143	
1,1-Dichloroethene	ug/kg	49.3	58.4	119	70-137	
1,1-Dichloropropene	ug/kg	49.3	57.9	117	70-135	
1,2,3-Trichlorobenzene	ug/kg	49.3	50.0	101	69-153	
1,2,3-Trichloropropane	ug/kg	49.3	51.0	103	70-130	
1,2,4-Trichlorobenzene	ug/kg	49.3	47.7	97	55-171	
1,2,4-Trimethylbenzene	ug/kg	49.3	50.7	103	70-149	
1,2-Dibromo-3-chloropropane	ug/kg	49.3	47.0	95	68-141	
1,2-Dibromoethane (EDB)	ug/kg	49.3	53.1	108	70-130	
1,2-Dichlorobenzene	ug/kg	49.3	50.2	102	70-140	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

LABORATORY CONTROL SAMPLE: 1143877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2-Dichloroethane	ug/kg	49.3	57.7	117	70-137	
1,2-Dichloropropane	ug/kg	49.3	55.1	112	70-133	
1,3,5-Trimethylbenzene	ug/kg	49.3	51.0	103	70-143	
1,3-Dichlorobenzene	ug/kg	49.3	48.5	98	70-144	
1,3-Dichloropropane	ug/kg	49.3	52.3	106	70-132	
1,4-Dichlorobenzene	ug/kg	49.3	50.3	102	70-142	
2,2-Dichloropropane	ug/kg	49.3	56.7	115	68-152	
2-Butanone (MEK)	ug/kg	98.6	109	111	70-149	
2-Chlorotoluene	ug/kg	49.3	49.7	101	70-141	
2-Hexanone	ug/kg	98.6	92.9	94	70-149	
4-Chlorotoluene	ug/kg	49.3	51.3	104	70-149	
4-Methyl-2-pentanone (MIBK)	ug/kg	98.6	99.5	101	70-153	
Acetone	ug/kg	98.6	105	106	70-157	
Benzene	ug/kg	49.3	56.4	114	70-130	
Bromobenzene	ug/kg	49.3	51.2	104	70-141	
Bromochloromethane	ug/kg	49.3	61.6	125	70-149	
Bromodichloromethane	ug/kg	49.3	55.7	113	70-130	
Bromoform	ug/kg	49.3	45.5	92	70-131	
Bromomethane	ug/kg	49.3	84.7	172	64-136	L3
Carbon tetrachloride	ug/kg	49.3	52.0	105	70-154	
Chlorobenzene	ug/kg	49.3	50.3	102	70-135	
Chloroethane	ug/kg	49.3	61.4	124	68-151	
Chloroform	ug/kg	49.3	58.2	118	70-130	
Chloromethane	ug/kg	49.3	57.5	117	70-132	
cis-1,2-Dichloroethene	ug/kg	49.3	58.5	119	70-140	
cis-1,3-Dichloropropene	ug/kg	49.3	54.0	109	70-137	
Dibromochloromethane	ug/kg	49.3	48.8	99	70-130	
Dibromomethane	ug/kg	49.3	52.7	107	70-136	
Dichlorodifluoromethane	ug/kg	49.3	53.4	108	36-148	
Diisopropyl ether	ug/kg	49.3	57.8	117	70-139	
Ethylbenzene	ug/kg	49.3	50.6	103	70-137	
Hexachloro-1,3-butadiene	ug/kg	49.3	51.7	105	70-145	
Isopropylbenzene (Cumene)	ug/kg	49.3	52.0	105	70-141	
m&p-Xylene	ug/kg	98.6	101	102	70-140	
Methyl-tert-butyl ether	ug/kg	49.3	62.8	127	45-150	
Methylene Chloride	ug/kg	49.3	57.9	117	70-133	
n-Butylbenzene	ug/kg	49.3	52.0	105	65-155	
n-Propylbenzene	ug/kg	49.3	54.2	110	70-148	
Naphthalene	ug/kg	49.3	50.1	102	70-148	
o-Xylene	ug/kg	49.3	50.2	102	70-141	
p-Isopropyltoluene	ug/kg	49.3	53.3	108	70-148	
sec-Butylbenzene	ug/kg	49.3	53.7	109	70-145	
Styrene	ug/kg	49.3	51.2	104	70-138	
tert-Butylbenzene	ug/kg	49.3	53.4	108	70-143	
Tetrachloroethene	ug/kg	49.3	51.5	104	70-140	
Toluene	ug/kg	49.3	53.2	108	70-130	
trans-1,2-Dichloroethene	ug/kg	49.3	58.4	118	70-136	
trans-1,3-Dichloropropene	ug/kg	49.3	53.1	108	70-138	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

LABORATORY CONTROL SAMPLE: 1143877

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Trichloroethene	ug/kg	49.3	57.1	116	70-132	
Trichlorofluoromethane	ug/kg	49.3	64.0	130	69-134	
Vinyl acetate	ug/kg	98.6	101	102	24-161	F3
Vinyl chloride	ug/kg	49.3	58.8	119	55-140	
Xylene (Total)	ug/kg	148	151	102	70-141	
1,2-Dichloroethane-d4 (S)	%			96	70-132	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			98	70-130	

MATRIX SPIKE SAMPLE: 1144253

Parameter	Units	92190447002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
1,1-Dichloroethene	ug/kg	ND	42.8	50.9	119	49-180	
Benzene	ug/kg	ND	42.8	45.4	106	50-166	
Chlorobenzene	ug/kg	ND	42.8	42.2	99	43-169	
Toluene	ug/kg	ND	42.8	39.9	93	52-163	
Trichloroethene	ug/kg	ND	42.8	42.9	100	49-167	
1,2-Dichloroethane-d4 (S)	%				99	70-132	
4-Bromofluorobenzene (S)	%				75	70-130	
Toluene-d8 (S)	%				101	70-130	

SAMPLE DUPLICATE: 1144441

Parameter	Units	92190453001 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,1-Trichloroethane	ug/kg	ND	ND		
1,1,2,2-Tetrachloroethane	ug/kg	ND	ND		
1,1,2-Trichloroethane	ug/kg	ND	ND		
1,1-Dichloroethane	ug/kg	ND	ND		
1,1-Dichloroethene	ug/kg	ND	ND		
1,1-Dichloropropene	ug/kg	ND	ND		
1,2,3-Trichlorobenzene	ug/kg	ND	ND		
1,2,3-Trichloropropane	ug/kg	ND	ND		
1,2,4-Trichlorobenzene	ug/kg	ND	ND		
1,2,4-Trimethylbenzene	ug/kg	ND	ND		
1,2-Dibromo-3-chloropropane	ug/kg	ND	ND		
1,2-Dibromoethane (EDB)	ug/kg	ND	ND		
1,2-Dichlorobenzene	ug/kg	ND	ND		
1,2-Dichloroethane	ug/kg	ND	ND		
1,2-Dichloropropane	ug/kg	ND	ND		
1,3,5-Trimethylbenzene	ug/kg	ND	ND		
1,3-Dichlorobenzene	ug/kg	ND	ND		
1,3-Dichloropropane	ug/kg	ND	ND		
1,4-Dichlorobenzene	ug/kg	ND	ND		
2,2-Dichloropropane	ug/kg	ND	ND		

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

SAMPLE DUPLICATE: 1144441

Parameter	Units	92190453001 Result	Dup Result	RPD	Qualifiers
2-Butanone (MEK)	ug/kg	ND	ND		
2-Chlorotoluene	ug/kg	ND	ND		
2-Hexanone	ug/kg	ND	ND		
4-Chlorotoluene	ug/kg	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/kg	ND	ND		
Acetone	ug/kg	ND	20.3J		
Benzene	ug/kg	ND	ND		
Bromobenzene	ug/kg	ND	ND		
Bromochloromethane	ug/kg	ND	ND		
Bromodichloromethane	ug/kg	ND	ND		
Bromoform	ug/kg	ND	ND		
Bromomethane	ug/kg	ND	ND		
Carbon tetrachloride	ug/kg	ND	ND		
Chlorobenzene	ug/kg	ND	ND		
Chloroethane	ug/kg	ND	ND		
Chloroform	ug/kg	ND	ND		
Chloromethane	ug/kg	ND	ND		
cis-1,2-Dichloroethene	ug/kg	ND	ND		
cis-1,3-Dichloropropene	ug/kg	ND	ND		
Dibromochloromethane	ug/kg	ND	ND		
Dibromomethane	ug/kg	ND	ND		
Dichlorodifluoromethane	ug/kg	ND	ND		
Diisopropyl ether	ug/kg	ND	ND		
Ethylbenzene	ug/kg	ND	ND		
Hexachloro-1,3-butadiene	ug/kg	ND	ND		
Isopropylbenzene (Cumene)	ug/kg	ND	ND		
m&p-Xylene	ug/kg	ND	ND		
Methyl-tert-butyl ether	ug/kg	ND	ND		
Methylene Chloride	ug/kg	ND	2.4J		
n-Butylbenzene	ug/kg	ND	ND		
n-Propylbenzene	ug/kg	ND	ND		
Naphthalene	ug/kg	ND	1.1J		
o-Xylene	ug/kg	ND	ND		
p-Isopropyltoluene	ug/kg	ND	ND		
sec-Butylbenzene	ug/kg	ND	ND		
Styrene	ug/kg	ND	ND		
tert-Butylbenzene	ug/kg	ND	ND		
Tetrachloroethene	ug/kg	ND	ND		
Toluene	ug/kg	ND	ND		
trans-1,2-Dichloroethene	ug/kg	ND	ND		
trans-1,3-Dichloropropene	ug/kg	ND	ND		
Trichloroethene	ug/kg	ND	ND		
Trichlorofluoromethane	ug/kg	ND	ND		
Vinyl acetate	ug/kg	ND	ND		
Vinyl chloride	ug/kg	ND	ND		
Xylene (Total)	ug/kg	ND	ND		
1,2-Dichloroethane-d4 (S)	%	93	96	1	
4-Bromofluorobenzene (S)	%	90	80	16	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

SAMPLE DUPLICATE: 1144441

Parameter	Units	92190453001 Result	Dup Result	RPD	Qualifiers
Toluene-d8 (S)	%	111	116	0	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

QC Batch: OEXT/26010 Analysis Method: EPA 625
QC Batch Method: EPA 625 Analysis Description: 625 MSS
Associated Lab Samples: 92190304003

METHOD BLANK: 1141550 Matrix: Water
Associated Lab Samples: 92190304003

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	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

METHOD BLANK: 1141550 Matrix: Water
Associated Lab Samples: 92190304003

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

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

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

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	92190065001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
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: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

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
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

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

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

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		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

QC Batch: OEXT/26001 Analysis Method: EPA 8270
QC Batch Method: EPA 3546 Analysis Description: 8270 Solid MSSV Microwave
Associated Lab Samples: 92190304001, 92190304002

METHOD BLANK: 1141134 Matrix: Solid
Associated Lab Samples: 92190304001, 92190304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	ND	330	02/20/14 16:32	
1,2-Dichlorobenzene	ug/kg	ND	330	02/20/14 16:32	
1,3-Dichlorobenzene	ug/kg	ND	330	02/20/14 16:32	
1,4-Dichlorobenzene	ug/kg	ND	330	02/20/14 16:32	
1-Methylnaphthalene	ug/kg	ND	330	02/20/14 16:32	
2,4,5-Trichlorophenol	ug/kg	ND	330	02/20/14 16:32	
2,4,6-Trichlorophenol	ug/kg	ND	330	02/20/14 16:32	
2,4-Dichlorophenol	ug/kg	ND	330	02/20/14 16:32	
2,4-Dimethylphenol	ug/kg	ND	330	02/20/14 16:32	
2,4-Dinitrophenol	ug/kg	ND	1650	02/20/14 16:32	
2,4-Dinitrotoluene	ug/kg	ND	330	02/20/14 16:32	
2,6-Dinitrotoluene	ug/kg	ND	330	02/20/14 16:32	
2-Chloronaphthalene	ug/kg	ND	330	02/20/14 16:32	
2-Chlorophenol	ug/kg	ND	330	02/20/14 16:32	
2-Methylnaphthalene	ug/kg	ND	330	02/20/14 16:32	
2-Methylphenol(o-Cresol)	ug/kg	ND	330	02/20/14 16:32	
2-Nitroaniline	ug/kg	ND	1650	02/20/14 16:32	
2-Nitrophenol	ug/kg	ND	330	02/20/14 16:32	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	330	02/20/14 16:32	
3,3'-Dichlorobenzidine	ug/kg	ND	1650	02/20/14 16:32	
3-Nitroaniline	ug/kg	ND	1650	02/20/14 16:32	
4,6-Dinitro-2-methylphenol	ug/kg	ND	660	02/20/14 16:32	
4-Bromophenylphenyl ether	ug/kg	ND	330	02/20/14 16:32	
4-Chloro-3-methylphenol	ug/kg	ND	660	02/20/14 16:32	
4-Chloroaniline	ug/kg	ND	1650	02/20/14 16:32	
4-Chlorophenylphenyl ether	ug/kg	ND	330	02/20/14 16:32	
4-Nitroaniline	ug/kg	ND	660	02/20/14 16:32	
4-Nitrophenol	ug/kg	ND	1650	02/20/14 16:32	
Acenaphthene	ug/kg	ND	330	02/20/14 16:32	
Acenaphthylene	ug/kg	ND	330	02/20/14 16:32	
Aniline	ug/kg	ND	330	02/20/14 16:32	
Anthracene	ug/kg	ND	330	02/20/14 16:32	
Benzo(a)anthracene	ug/kg	ND	330	02/20/14 16:32	
Benzo(a)pyrene	ug/kg	ND	330	02/20/14 16:32	
Benzo(b)fluoranthene	ug/kg	ND	330	02/20/14 16:32	
Benzo(g,h,i)perylene	ug/kg	ND	330	02/20/14 16:32	
Benzo(k)fluoranthene	ug/kg	ND	330	02/20/14 16:32	
Benzoic Acid	ug/kg	ND	1650	02/20/14 16:32	
Benzyl alcohol	ug/kg	ND	660	02/20/14 16:32	
bis(2-Chloroethoxy)methane	ug/kg	ND	330	02/20/14 16:32	
bis(2-Chloroethyl) ether	ug/kg	ND	330	02/20/14 16:32	
bis(2-Chloroisopropyl) ether	ug/kg	ND	330	02/20/14 16:32	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	330	02/20/14 16:32	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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(704)875-9092

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

METHOD BLANK: 1141134 Matrix: Solid
Associated Lab Samples: 92190304001, 92190304002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/kg	ND	330	02/20/14 16:32	
Chrysene	ug/kg	ND	330	02/20/14 16:32	
Di-n-butylphthalate	ug/kg	ND	330	02/20/14 16:32	
Di-n-octylphthalate	ug/kg	ND	330	02/20/14 16:32	
Dibenz(a,h)anthracene	ug/kg	ND	330	02/20/14 16:32	
Dibenzofuran	ug/kg	ND	330	02/20/14 16:32	
Diethylphthalate	ug/kg	ND	330	02/20/14 16:32	
Dimethylphthalate	ug/kg	ND	330	02/20/14 16:32	
Fluoranthene	ug/kg	ND	330	02/20/14 16:32	
Fluorene	ug/kg	ND	330	02/20/14 16:32	
Hexachloro-1,3-butadiene	ug/kg	ND	330	02/20/14 16:32	
Hexachlorobenzene	ug/kg	ND	330	02/20/14 16:32	
Hexachlorocyclopentadiene	ug/kg	ND	330	02/20/14 16:32	
Hexachloroethane	ug/kg	ND	330	02/20/14 16:32	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	330	02/20/14 16:32	
Isophorone	ug/kg	ND	330	02/20/14 16:32	
N-Nitroso-di-n-propylamine	ug/kg	ND	330	02/20/14 16:32	
N-Nitrosodimethylamine	ug/kg	ND	330	02/20/14 16:32	
N-Nitrosodiphenylamine	ug/kg	ND	330	02/20/14 16:32	
Naphthalene	ug/kg	ND	330	02/20/14 16:32	
Nitrobenzene	ug/kg	ND	330	02/20/14 16:32	
Pentachlorophenol	ug/kg	ND	1650	02/20/14 16:32	
Phenanthrene	ug/kg	ND	330	02/20/14 16:32	
Phenol	ug/kg	ND	330	02/20/14 16:32	
Pyrene	ug/kg	ND	330	02/20/14 16:32	
2,4,6-Tribromophenol (S)	%	79	27-110	02/20/14 16:32	
2-Fluorobiphenyl (S)	%	72	30-110	02/20/14 16:32	
2-Fluorophenol (S)	%	75	13-110	02/20/14 16:32	
Nitrobenzene-d5 (S)	%	70	23-110	02/20/14 16:32	
Phenol-d6 (S)	%	71	22-110	02/20/14 16:32	
Terphenyl-d14 (S)	%	94	28-110	02/20/14 16:32	

LABORATORY CONTROL SAMPLE: 1141135

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/kg	1670	1050	63	39-101	
1,2-Dichlorobenzene	ug/kg	1670	1080	65	36-110	
1,3-Dichlorobenzene	ug/kg	1670	1050	63	35-110	
1,4-Dichlorobenzene	ug/kg	1670	1070	64	35-110	
1-Methylnaphthalene	ug/kg	1670	1160	70	45-105	
2,4,5-Trichlorophenol	ug/kg	1670	1220	73	48-109	
2,4,6-Trichlorophenol	ug/kg	1670	1130	68	45-111	
2,4-Dichlorophenol	ug/kg	1670	1190	71	51-116	
2,4-Dimethylphenol	ug/kg	1670	1310	79	42-103	
2,4-Dinitrophenol	ug/kg	8330	5680	68	28-103	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

LABORATORY CONTROL SAMPLE: 1141135

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dinitrotoluene	ug/kg	1670	1390	83	46-114	
2,6-Dinitrotoluene	ug/kg	1670	1370	82	48-112	
2-Chloronaphthalene	ug/kg	1670	1000	60	44-105	
2-Chlorophenol	ug/kg	1670	1260	76	36-110	
2-Methylnaphthalene	ug/kg	1670	1200	72	39-112	
2-Methylphenol(o-Cresol)	ug/kg	1670	1210	73	39-101	
2-Nitroaniline	ug/kg	3330	2580	77	44-111	
2-Nitrophenol	ug/kg	1670	1160	70	41-100	
3&4-Methylphenol(m&p Cresol)	ug/kg	1670	1200	72	43-103	
3,3'-Dichlorobenzidine	ug/kg	3330	2500	75	10-150	
3-Nitroaniline	ug/kg	3330	2690	81	35-110	
4,6-Dinitro-2-methylphenol	ug/kg	3330	2800	84	38-118	
4-Bromophenylphenyl ether	ug/kg	1670	1380	83	47-115	
4-Chloro-3-methylphenol	ug/kg	3330	2510	75	43-127	
4-Chloroaniline	ug/kg	3330	2470	74	34-109	
4-Chlorophenylphenyl ether	ug/kg	1670	1260	76	44-115	
4-Nitroaniline	ug/kg	3330	2630	79	37-111	
4-Nitrophenol	ug/kg	8330	6180	74	21-152	
Acenaphthene	ug/kg	1670	1180	71	38-117	
Acenaphthylene	ug/kg	1670	1200	72	46-107	
Aniline	ug/kg	1670	1120	67	29-110	
Anthracene	ug/kg	1670	1380	83	50-110	
Benzo(a)anthracene	ug/kg	1670	1390	83	47-116	
Benzo(a)pyrene	ug/kg	1670	1480	89	47-106	
Benzo(b)fluoranthene	ug/kg	1670	1340	80	47-109	
Benzo(g,h,i)perylene	ug/kg	1670	1300	78	39-115	
Benzo(k)fluoranthene	ug/kg	1670	1390	83	45-117	
Benzoic Acid	ug/kg	8330	4980	60	16-110	
Benzyl alcohol	ug/kg	3330	2160	65	38-105	
bis(2-Chloroethoxy)methane	ug/kg	1670	1160	69	39-110	
bis(2-Chloroethyl) ether	ug/kg	1670	1160	70	19-119	
bis(2-Chloroisopropyl) ether	ug/kg	1670	1100	66	21-110	
bis(2-Ethylhexyl)phthalate	ug/kg	1670	1330	80	35-116	
Butylbenzylphthalate	ug/kg	1670	1330	80	38-110	
Chrysene	ug/kg	1670	1440	87	49-110	
Di-n-butylphthalate	ug/kg	1670	1220	73	43-109	
Di-n-octylphthalate	ug/kg	1670	1260	76	37-109	
Dibenz(a,h)anthracene	ug/kg	1670	1350	81	43-116	
Dibenzofuran	ug/kg	1670	1100	66	45-106	
Diethylphthalate	ug/kg	1670	1170	70	41-114	
Dimethylphthalate	ug/kg	1670	1170	70	43-110	
Fluoranthene	ug/kg	1670	1320	79	50-114	
Fluorene	ug/kg	1670	1260	76	46-114	
Hexachloro-1,3-butadiene	ug/kg	1670	1060	63	28-111	
Hexachlorobenzene	ug/kg	1670	1220	73	46-120	
Hexachlorocyclopentadiene	ug/kg	1670	1330	80	18-119	
Hexachloroethane	ug/kg	1670	1040	63	33-110	
Indeno(1,2,3-cd)pyrene	ug/kg	1670	1390	83	42-115	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

LABORATORY CONTROL SAMPLE: 1141135

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/kg	1670	1220	73	44-109	
N-Nitroso-di-n-propylamine	ug/kg	1670	984	59	43-104	
N-Nitrosodimethylamine	ug/kg	1670	982	59	29-110	
N-Nitrosodiphenylamine	ug/kg	1670	1180	71	48-113	
Naphthalene	ug/kg	1670	1180	71	41-110	
Nitrobenzene	ug/kg	1670	1190	71	38-110	
Pentachlorophenol	ug/kg	3330	2460	74	32-128	
Phenanthrene	ug/kg	1670	1360	81	50-110	
Phenol	ug/kg	1670	1310	79	28-106	
Pyrene	ug/kg	1670	1570	94	45-114	
2,4,6-Tribromophenol (S)	%			88	27-110	
2-Fluorobiphenyl (S)	%			68	30-110	
2-Fluorophenol (S)	%			76	13-110	
Nitrobenzene-d5 (S)	%			66	23-110	
Phenol-d6 (S)	%			75	22-110	
Terphenyl-d14 (S)	%			93	28-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1141136 1141137

Parameter	Units	92190305003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
1,2,4-Trichlorobenzene	ug/kg	ND	1670	1670	1180	1290	71	78	18-119	9	
1,2-Dichlorobenzene	ug/kg	ND	1670	1670	1180	1230	71	74	50-110	4	
1,3-Dichlorobenzene	ug/kg	ND	1670	1670	1150	1220	69	73	27-110	6	
1,4-Dichlorobenzene	ug/kg	ND	1670	1670	1180	1260	71	75	28-110	6	
1-Methylnaphthalene	ug/kg	ND	1670	1670	1250	1390	75	83	24-116	10	
2,4,5-Trichlorophenol	ug/kg	ND	1670	1670	1410	1440	85	87	28-110	2	
2,4,6-Trichlorophenol	ug/kg	ND	1670	1670	1300	1340	78	81	17-117	3	
2,4-Dichlorophenol	ug/kg	ND	1670	1670	1360	1390	81	83	21-128	2	
2,4-Dimethylphenol	ug/kg	ND	1670	1670	1480	1530	89	92	10-120	3	
2,4-Dinitrophenol	ug/kg	ND	8330	8330	330J	1160J	4	14	10-107		M1
2,4-Dinitrotoluene	ug/kg	ND	1670	1670	1450	1480	87	89	36-109	2	
2,6-Dinitrotoluene	ug/kg	ND	1670	1670	1470	1530	88	92	32-110	4	
2-Chloronaphthalene	ug/kg	ND	1670	1670	1110	1190	66	72	30-107	7	
2-Chlorophenol	ug/kg	ND	1670	1670	1400	1410	84	85	14-106	1	
2-Methylnaphthalene	ug/kg	ND	1670	1670	1310	1450	79	87	10-135	10	
2-Methylphenol(o-Cresol)	ug/kg	ND	1670	1670	1340	1330	81	80	10-124	1	
2-Nitroaniline	ug/kg	ND	3330	3330	2740	2600	82	78	26-116	5	
2-Nitrophenol	ug/kg	ND	1670	1670	1340	1480	80	89	28-103	10	
3&4-Methylphenol(m&p Cresol)	ug/kg	ND	1670	1670	1340	1340	80	80	10-109	0	
3,3'-Dichlorobenzidine	ug/kg	ND	3330	3330	3120	3100	94	93	10-150	1	
3-Nitroaniline	ug/kg	ND	3330	3330	2800	2670	84	80	22-110	5	
4,6-Dinitro-2-methylphenol	ug/kg	ND	3330	3330	1490	1320	45	39	13-121	13	
4-Bromophenylphenyl ether	ug/kg	ND	1670	1670	1380	1580	83	95	31-109	14	
4-Chloro-3-methylphenol	ug/kg	ND	3330	3330	2710	2770	81	83	13-128	2	
4-Chloroaniline	ug/kg	ND	3330	3330	2690	2760	81	83	18-102	2	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
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QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1141136 1141137

Parameter	Units	92190305003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
4-Chlorophenylphenyl ether	ug/kg	ND	1670	1670	1300	1460	78	87	29-112	11	
4-Nitroaniline	ug/kg	ND	3330	3330	2700	2710	81	81	16-111	0	
4-Nitrophenol	ug/kg	ND	8330	8330	5420	5290	65	63	14-135	2	
Acenaphthene	ug/kg	ND	1670	1670	1230	1290	74	77	26-114	5	
Acenaphthylene	ug/kg	ND	1670	1670	1290	1360	77	81	32-108	5	
Aniline	ug/kg	ND	1670	1670	1210	1150	72	69	10-107	5	
Anthracene	ug/kg	ND	1670	1670	1380	1440	83	87	32-111	4	
Benzo(a)anthracene	ug/kg	ND	1670	1670	1360	1370	80	80	25-117	1	
Benzo(a)pyrene	ug/kg	ND	1670	1670	1430	1490	83	87	25-106	4	
Benzo(b)fluoranthene	ug/kg	ND	1670	1670	1330	1360	77	79	24-110	3	
Benzo(g,h,i)perylene	ug/kg	ND	1670	1670	1420	1490	85	90	19-112	5	
Benzo(k)fluoranthene	ug/kg	ND	1670	1670	1260	1350	73	78	24-114	7	
Benzoic Acid	ug/kg	ND	8330	8330	240J	253J	3	3	10-110		M1
Benzyl alcohol	ug/kg	ND	3330	3330	2470	2490	74	75	24-106	1	
bis(2-Chloroethoxy)methane	ug/kg	ND	1670	1670	1270	1290	76	77	13-119	1	
bis(2-Chloroethyl) ether	ug/kg	ND	1670	1670	1310	1320	78	79	10-134	1	
bis(2-Chloroisopropyl) ether	ug/kg	ND	1670	1670	1190	1100	71	66	10-113	8	
bis(2-Ethylhexyl)phthalate	ug/kg	ND	1670	1670	1410	1240	84	74	10-125	13	
Butylbenzylphthalate	ug/kg	ND	1670	1670	1340	1340	81	80	18-110	0	
Chrysene	ug/kg	ND	1670	1670	1460	1460	84	85	30-110	0	
Di-n-butylphthalate	ug/kg	ND	1670	1670	1240	1350	75	81	19-112	8	
Di-n-octylphthalate	ug/kg	ND	1670	1670	1610	1210	97	72	17-105	29	
Dibenz(a,h)anthracene	ug/kg	ND	1670	1670	1510	1480	90	89	23-111	2	
Dibenzofuran	ug/kg	ND	1670	1670	1140	1200	69	72	35-103	5	
Diethylphthalate	ug/kg	ND	1670	1670	1220	1290	73	77	27-113	6	
Dimethylphthalate	ug/kg	ND	1670	1670	1220	1270	73	76	26-111	4	
Fluoranthene	ug/kg	ND	1670	1670	1540	1770	87	101	33-109	14	
Fluorene	ug/kg	ND	1670	1670	1300	1370	78	82	32-113	5	
Hexachloro-1,3-butadiene	ug/kg	ND	1670	1670	1170	1350	70	81	16-116	14	
Hexachlorobenzene	ug/kg	ND	1670	1670	1220	1490	73	89	27-120	19	
Hexachlorocyclopentadiene	ug/kg	ND	1670	1670	1530	1480	92	89	10-108	4	
Hexachloroethane	ug/kg	ND	1670	1670	1100	1210	66	72	10-117	9	
Indeno(1,2,3-cd)pyrene	ug/kg	ND	1670	1670	1510	1560	91	94	10-122	3	
Isophorone	ug/kg	ND	1670	1670	1380	1420	83	85	28-114	3	
N-Nitroso-di-n-propylamine	ug/kg	ND	1670	1670	1060	1060	64	64	27-113	0	
N-Nitrosodimethylamine	ug/kg	ND	1670	1670	1050	1050	63	63	10-109	0	
N-Nitrosodiphenylamine	ug/kg	ND	1670	1670	1200	1200	72	72	10-128	0	
Naphthalene	ug/kg	ND	1670	1670	1320	1360	79	81	25-110	3	
Nitrobenzene	ug/kg	ND	1670	1670	1310	1320	79	79	18-114	1	
Pentachlorophenol	ug/kg	ND	3330	3330	2480	2740	74	82	10-122	10	
Phenanthrene	ug/kg	ND	1670	1670	1450	1580	82	90	30-114	8	
Phenol	ug/kg	ND	1670	1670	1390	1380	83	83	11-102	0	
Pyrene	ug/kg	ND	1670	1670	1520	1520	87	87	25-116	0	
2,4,6-Tribromophenol (S)	%						96	125	27-110		S0
2-Fluorobiphenyl (S)	%						67	70	30-110		
2-Fluorophenol (S)	%						84	83	13-110		
Nitrobenzene-d5 (S)	%						70	66	23-110		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1141136 1141137

Parameter	Units	92190305003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Qual
Phenol-d6 (S)	%						81	79	22-110		
Terphenyl-d14 (S)	%						81	82	28-110		

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Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

QC Batch: PMST/6292
QC Batch Method: ASTM D2974-87
Analysis Method: ASTM D2974-87
Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92190304001, 92190304002

SAMPLE DUPLICATE: 1148438

Parameter	Units	92189807001 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	0.32	0.28	13	

SAMPLE DUPLICATE: 1148439

Parameter	Units	92190762002 Result	Dup Result	RPD	Qualifiers
Percent Moisture	%	94.0	94.0	0	

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

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.

ANALYTE QUALIFIERS

1g	The internal standard response is below criteria. No hits associated with this internal standard. Results unaffected by high bias.
A+	The reaction of the soil preservative, sodium bisulfate, is known to react with humic acid in soils to produce ketones. Based upon method blank results, the laboratory feels the ketones in this sample are a result of that reaction.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
F3	The recovery of the second source standard used to verify the initial calibration curve for this analyte is outside the laboratory's control limits. The result is estimated.
L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.
S4	Surrogate recovery not evaluated against control limits due to sample dilution.

Pace Analytical Services, Inc.
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Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: WBS33727.1.1 B-4490 Cumberland
Pace Project No.: 92190304

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92190304003	**6-2(TW)**	EPA 625	OEXT/26010	EPA 625	MSSV/8797
92190304001	**6-1(4-6)**	EPA 3546	OEXT/26001	EPA 8270	MSSV/8768
92190304002	**6-2(4-6)**	EPA 3546	OEXT/26001	EPA 8270	MSSV/8768
92190304003	**6-2(TW)**	SM 6200B	MSV/25897		
92190304001	**6-1(4-6)**	EPA 8260	MSV/25877		
92190304002	**6-2(4-6)**	EPA 8260	MSV/25854		
92190304001	**6-1(4-6)**	ASTM D2974-87	PMST/6292		
92190304002	**6-2(4-6)**	ASTM D2974-87	PMST/6292		

Pace Analytical	Sample Condition Upon Receipt (SCUR)	Page 1 of 2
	Document Number: F-CHR-CS-03-rev.13	Issuing Authority: Pace Huntersville Quality Office

Client Name: Pyramid

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other_____

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

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other_____

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

Temp Correction Factor **T1102**: No Correction **T1301**: No Correction

Corrected Cooler Temp.: 4.5 °C **Biological Tissue is Frozen:** Yes No N/A

Temp should be above freezing to 6°C

Optional
Proj. Due Date:
Proj. Name:

Date and Initials of person examining contents: CMF 2/15/14

Comments:

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

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

SCURF Review: JDB Date: 2/19/14

SRF Review: JDB Date: 2/20/14

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#: 92190304

92190304

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: | of |

1785948

Section A — Required Client Information:

Company: Pyramid Environmental
Address: P.O. Box 16265, Greensboro, NC
Email To: tim
Phone: 336.335.3174 Fax:
Requested Due Date/TAT: Normal

Section B — Required Project Information:

Report To: Pyramid-Tim Leatherman
Copy To:
Purchase Order No.: ~~Parcel 006~~ WBS#33727.1.1
Project Name: NCDOT Cumberland Cty B-4490
Project Number: 2014-008

Section C — Invoice Information:

Attention:
Company Name: NCDOT
Address:
Pace Quote Reference: WBS#33727.1.1
Pace Project Manager: Jon Bradley
Pace Profile #: ip527-1,7

REGULATORY AGENCY

☐ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☑ UST ☐ RCRA ☐ OTHER

Site Location STATE: NC

Section D — Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Matrix Codes (MATRIX / CODE): Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Tissue TS; Other OT

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test Y/N: 8260/5035	8270	6200B	625	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	6-1 (4-6)	SL	G			2/14/14	9:30		5	X					XX			XX	XX				92190304001
2	6-2 (4-6)	SL	G			2/14/14	9:55		5	X					XX			XX	XX				002
3	6-2 (TW)	WT	G			2/14/14	13:00		6	X			X							XX			003
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
	~~Timothy D Leatherman/Pyramid~~	~~2/14/14~~	~~1625~~				
	Timothy D Leatherman/Pyramid	2/19/14	1330	[signature]/Pace	2/19/14	1330	
	[signature]	2/15/14	1745		2/15/14	17:41	9.5 y/n ~ y/n

ORIGINAL

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: ~~Timothy D Leatherman~~

SIGNATURE of SAMPLER: [signature] DATE Signed (MM/DD/YY): 2/14/14

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

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

F-ALL-Q-020rev.07, 15-Ma

APPENDIX G

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Eric Cross **Date:** 1/20/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross:
On site: 9AM
Mobilize to site. Performed site visits and owner interviews.
Leave site: 3:30PM

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Eric Cross, Mika Trifunovic **Date:** 1/26/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross & M. Trifunovic:
On site: 9AM
Mobilize to site. Performed geophysical surveys.
Leave site: 4:00PM

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Eric Cross, Alan McFadden **Date:** 1/27/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross & A. McFadden:
On site: 8AM
Mobilize to site. Performed geophysical surveys.
Leave site: ~6PM

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Eric Cross, Alan McFadden **Date:** 1/28/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross & A. McFadden:
On site: 8AM
Mobilize to site. Performed geophysical surveys.
Leave site: ~6PM

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Eric Cross **Date:** 1/30/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross:
On site: 9AM
Mobilize to site. Performed geophysical surveys.
Leave site: ~5PM

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Eric Cross **Date:** 2/4/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross:
On site: 9AM
Mobilize to site. Performed geophysical surveys.
Leave site: ~4PM

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Eric Cross, Tim Leatherman **Date:** 2/6/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross & T. Leatherman:
On site: 9AM
Mobilize to site. Performed geophysical surveys, GPS collection, meet locators, research.
Leave site: ~4PM

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Tim Leatherman, Mika Trifunovic **Date:** 2/14/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

T. Leatherman & M. Trifunovic:
On site: 9AM
Mobilize to site. Performed soil boring supervision and QED analysis.
Leave site: ~5PM with additional evening processing

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Tim Leatherman, Eric Cross, Ryan Kramer **Date:** 2/17/14
Mon Tue Wed Th Fri Sat Sun

TASKS PERFORMED:

T. Leatherman, E. Cross, R. Kramer:
On site: 9AM
Mobilize to site. Performed soil boring supervision and QED analysis.
Leave site: ~5PM with additional evening processing

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Eric Cross, Ryan Kramer **Date:** 2/18/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross, R. Kramer:
On site: 9AM
Mobilize to site. Performed soil boring supervision and QED analysis.
Leave site: ~5PM with additional evening processing

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Ryan Kramer **Date:** 2/19/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

R. Kramer:
On site: 9AM
Mobilize to site. Performed QED analysis.
Leave site: ~2PM

FIELD PERSONNEL LOG

PROJECT NAME: NCDOT Cumberland County ROW **PROJECT NO.:** B-4490
PARCELS 6, 8, 23, 25, 29, 38 and 44

Name: Eric Cross **Date:** 2/20/14 **Mon Tue Wed Th Fri Sat Sun**

TASKS PERFORMED:

E. Cross:
On site: 11AM
Mobilize to site. Performed groundwater sample collection.
Leave site: ~3PM