

2017 and 2018 Groundwater Monitoring Report
Former ATL Site 48
240 Sugar Lake Road
Pittsboro, Chatham County, North Carolina

Prepared for:

North Carolina Department of Transportation
Raleigh, North Carolina

Prepared by:

Duncklee & Dunham, P.C.
Cary, North Carolina

December 12, 2018





DUNCKLEE &
DUNHAM

ENVIRONMENTAL GEOLOGISTS & ENGINEERS
511 KEISLER DRIVE – SUITE 102
CARY, NORTH CAROLINA 27518
OFFICE: (919) 858-9898
WWW.DUNCKLEEDUNHAM.COM

December 12, 2018

Mr. Jason Prosser, P.G.
North Carolina Department of Transportation
Roadside Environmental Unit
1557 Mail Service Center
Raleigh, North Carolina 27699-1557

Reference: **2017 and 2018 Groundwater Monitoring Report
Former ATL Site 48 (State WBS: 51216.02D)
240 Sugar Lake Road
Pittsboro, Chatham County, North Carolina**

Dear Mr. Prosser:

Duncklee & Dunham, P.C. (Duncklee & Dunham) is pleased to submit this *Groundwater Monitoring Report* for the former Asphalt Testing Laboratory (ATL) Site 48, operated on the S.T. Wooten Corporation property at 240 Sugar Lake Road in Pittsboro, North Carolina. The former ATL was near the active asphalt production plant on the north-central portion of the property. Hart & Hickman, P.C. (H&H) conducted groundwater monitoring events in May-June 2017, November 2017, January 2018, and April 2018 pursuant to a separate scope of work authorized by the North Carolina Department of Transportation (NCDOT) Roadside Environmental Unit. H&H also collected samples from select surface-water sampling locations along an intermittent creek to the Haw River downgradient of the site. Duncklee & Dunham is under contract with the NCDOT to prepare the report herein, which provides an overview of the historical information about the site, H&H's monitoring methods and results, and our findings and recommendations based on the H&H-collected data.

The primary target volatile organic compounds (VOCs) for this site include trichloroethene (TCE) and its biological degradation products cis-1,2-dichloroethene and vinyl chloride, which are present in groundwater above the Title 15A North Carolina Administrative Code 2L Groundwater Quality Standards (2L Standards). Groundwater in the saprolite, partially weathered rock (PWR), and bedrock zones of the aquifer contains dissolved TCE as well as other VOCs. According to the May-June 2017 sample results, the area with the highest dissolved-phase TCE concentrations extended from the former ATL and source area in a southeastern direction toward monitoring wells 48MW-1, 48MW-11R, and 48DW-2.

During July 2015, October 2017, and December 2017, H&H injected Beverage Remediation Product (BRP) into groundwater to augment *in situ* remediation of the chlorinated compounds. The January-February 2018 data document significant reductions in TCE concentrations in samples from monitoring wells 48MW-1, 48MW-11R, and 48DW-2 due to this remediation strategy. Therefore, the area of highest TCE

concentrations in groundwater in the saprolite/PWR and bedrock permeable zones are now found in a more easterly, downgradient location toward the intermittent creek near monitoring wells 48MW-19, 48DW-8, and 48DW-10.

Duncklee & Dunham conducted an additional groundwater monitoring event at the site in early October 2018. The results from this work will be contained in a future report. Based on results from that sampling event, Duncklee & Dunham may recommend additional BRP injections at the site. We may also recommend evaluating potential options to increase the effectiveness of the strategy by extending the treatment zone farther downgradient. Duncklee & Dunham also recommends additional investigative measures on the east side of the intermittent creek to define the spatial extent of TCE in groundwater near monitoring wells 48MW-19, 48DW-8, and 48DW-10, and the permanent closure of monitoring well 48DW-1. This well monitors only groundwater in the saprolite/PWR permeable zone and may serve as a vertical migration pathway.

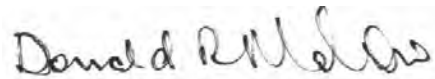
Please contact James Wallace at budd@dunckleedunham.com or (919) 858-9898, ext. 124 or Don Malone at don@dunckleedunham.com or (919) 858-9898, ext. 110, if you have any questions or require additional information.

Sincerely,

Duncklee & Dunham, P.C.



James A. Wallace
Project Manager



Donald R. Malone, P.E.
Senior Engineer / Sr. Project Manager

Senior Peer Review:



David L. Duncklee, L.G.
President / Principal Geologist



Table of Contents

1	Introduction.....	1
1.1	Purpose	1
1.2	Scope	1
2	Background	1
2.1	Physical Setting	2
2.1.1	Geomorphology	2
2.1.2	Regional Geology and Hydrogeology	3
2.2	Surrounding Properties	5
2.3	Summary of Previous Investigations and Remedial Action History	5
2.3.1	Previous Site Investigations.....	5
2.3.2	Previous Remedial Actions.....	6
3	Sample Collection Methods.....	8
3.1	Groundwater Sampling Procedures	8
3.2	Surface Water Sampling Procedures	9
3.3	Water Supply Well Sampling Procedures	9
3.4	Data Quality Review	10
4	Results and Data Evaluation.....	10
4.1	Groundwater Elevations and Hydrogeology	10
4.2	Groundwater Analytical Results.....	11
4.2.1	TCE Detections in Saprolite/PWR Screened Monitor wells	12
4.2.2	TCE Detections in Bedrock Permeable Zone Monitor wells.....	12
4.2.3	TCE-Degradation Product Detections in Saprolite/PWR Screened Monitoring Wells....	13
4.2.4	TCE-Degradation Product Detections in Bedrock Permeable Zone Monitoring Wells ...	14
4.2.5	Detections of 1,1,1-TCA and Degradation Products	15
4.2.6	Detections of PCE.....	15
4.3	Surface Water Analytical Result	15
4.4	Water Supply Well Analytical Results	16
4.5	Data Review and Validation Quality Parameters	16
4.6	Investigation-Derived Wastes.....	17
5	Remediation System Performance	17
5.1	Evaluation of the Pump-and-Treat System.....	17
5.1.1	Groundwater Extraction Rates	18
5.1.2	Hydraulic Capture Zone.....	18



5.1.3	Target Compounds Recovery	18
5.1.4	Treatment System Efficiency.....	19
5.1.5	Future Operation and Maintenance Activities	19
5.2	Evaluation of the Phytoremediation System.....	19
5.3	Evaluation of the Beverage Remediation Product Injection Strategy	20
6	Recommendations	21
7	References	22

Figures

1	Site Location and Topographic Map
2	Site Features and Well Location Map
3	Site Map with Geologic Cross-Section Transects
4	Generalized Geologic Cross-Section A – A’
5	Generalized Geologic Cross-Section B – B’
6	Water Supply Well Location Map
7	Saprolite and PWR Permeable Zone Potentiometric Surface Map – May 30, 2017
8	Saprolite and PWR Permeable Zone Potentiometric Surface Map – January 29, 2018
9	Saprolite and PWR Permeable Zone TCE Isoconcentration Map – May-June 2017
10	Saprolite and PWR Permeable Zone TCE Isoconcentration Map – January-February 2018
11	Geologic Cross Section A – A’ with TCE Isoconcentration Contours – January-February 2018
12	Saprolite and PWR Permeable Zone Vinyl Chloride Isoconcentration Map – May-June 2017
13	Saprolite and PWR Permeable Zone Vinyl Chloride Isoconcentration Map – January-February 2018
14	Geologic Cross Section A – A’ with Vinyl Chloride Isoconcentration Contours – January-February 2018
15	Molar Concentration Ratios for TCE and TCE-Daughter Products in the Shallow Aquifer Zone
16	Molar Concentration Ratios for TCE and TCE-Daughter Products in the Deep Aquifer Zone



Tables

- 1 Water Supply Wells Summary
- 2 Site Well Construction and Water Levels Measured on May 30, 2017 and January 29, 2018
- 3 Summary of Groundwater VOC Analytical Results from the In Situ Remediation Strategy
- 4 Summary of Historical Groundwater Analytical Results for Select VOCs
- 5 Summary of Biodegradation Parameters
- 6 Summary of Surface Water Analytical Results
- 7 Summary of Off-Site Supply Well Analytical Results

Appendices

- A Groundwater Sample Collection Records
- B Laboratory Analytical Reports for Groundwater and Surface Water Samples
- C Hart & Hickman, P.C. Private Well Sampling Reports
- D Hart & Hickman, P.C. Discharge Monitoring Reports and Treatment System Influent and Effluent Sampling Analytical Reports
- E Charts of Historical Concentration Trends
- F Groundwater Sampling and Analysis Plan



2017 and 2018 Groundwater Monitoring Report
Former ATL Site 48
Pittsboro, Chatham County, North Carolina
December 12, 2018

1 Introduction

1.1 Purpose

Duncklee & Dunham, P.C. (Duncklee & Dunham) prepared this report on the behalf of the North Carolina Department of Transportation (NCDOT) to present the results of semi-annual groundwater monitoring, quarterly water supply well sampling, and surface water sampling activities performed by Hart & Hickman, P.C. (H&H) at the former Asphalt Testing Laboratory (ATL) No. 48 Site at 240 Sugar Lake Road in Pittsboro, North Carolina (Figure 1). Figure 2 provides well locations and various site features. This report also includes an evaluation of several ongoing remedial strategies including a groundwater extraction system, a phytoremediation plot, and an *in situ* enhanced reductive dechlorinated (ERD) remediation strategy.

1.2 Scope

H&H conducted several comprehensive groundwater monitoring events in May-June 2017, November 2017, January-February 2018 and April 2018 pursuant to a scope of work authorized by the NCDOT Roadside Environmental Unit. The May-June 2017 and January-February 2018 semi-annual sampling events included the collection of groundwater samples from 31 monitor wells and 2 inactive recovery wells. H&H collected post-injection performance data during the November 2017 and April 2018 events to evaluate the effectiveness of the ERD injections using the NCDOT's Beverage Remediation Product (BRP). H&H also collected quarterly water samples from two private water supply wells and from select surface water sampling locations along an unnamed intermittent creek near the eastern property boundary. H&H neglected to prepare monitoring reports for these sampling events. Duncklee & Dunham prepared this report to summarize and evaluate the data collected by H&H during these monitoring events.

2 Background

The former NCDOT ATL Site 48 is on an active asphalt production plant (the plant) owned and operated by S.T. Wooten Corporation (S.T. Wooten) at 240 Sugar Lake Road (SR1714) approximately 5 miles east of Pittsboro, Chatham County, North Carolina (Figure 1). Lee Paving owned and operated the plant and ATL from 1968 through 2000. S.T. Wooten purchased the property in 2000 and still owns and operates the plant. Various contractors conducted asphalt testing at the former ATL prior to 1989. Asphalt testing methods used chlorinated aliphatic compounds during production gradation testing of the asphalt mix, which likely included carbon tetrachloride; 1,1,1-trichloroethane (1,1,1-TCA); and trichloroethene (TCE). In 1989, the NCDOT entered into a Memorandum of Agreement (MOA) with the North Carolina Department of Environment and Natural Resources (NCDENR). During a reorganization on October 22, 2015, NCDENR changed its name to the North Carolina Department of Environmental Quality (NCDEQ). Additional MOAs dated July 1996 and February 1999 established a list of ATL-related target compounds and directed the NCDOT to perform Comprehensive Site Assessments (CSAs) and to prepare Corrective Action Plans (CAPs) to address soil and groundwater contamination at former ATLs. The target compound list, as defined by the 1996 MOA, included three primary volatile organic compounds (VOCs) (carbon tetrachloride; 1,1,1-TCA; and TCE) and associated degradation products as presented in the following table:



Primary Compound→	TCE	CT	1,1,1-TCA
Degradation Products	<i>cis</i> -1,2-DCE	chloroform	1,1-DCA
	<i>trans</i> -1,2-DCE	methylene chloride	chloroethane
	1,1-DCE	chloromethane	
	vinyl chloride		

cis-1,2-DCE = *cis*-1,2-dichloroethene
 1,1-DCA = 1,1-dichloroethane
trans-1,2-DCE = *trans*-1,2-dichloroethene
 1,1-DCE = 1,1-dichloroethene

Non-target compounds are those VOCs included as analytes under United States Environmental Protection Agency (USEPA) Method 8260 and, if present, may be associated with non-ATL releases.

Of these compounds, only TCE and vinyl chloride were present in a sufficient number of samples to allow for the development of maps depicting isoconcentration contours.

2.1 Physical Setting

Historical reports (Geraghty & Miller, 1997; S&ME, Inc. [S&ME], 1999, 2000; AECOM, 2010; H&H, 2016, 2017) provide an overview of the site’s physical setting, including the geomorphology, regional geology and hydrogeology, surrounding properties, and results from prior site assessment and remedial actions since 1999. The following subsections present a discussion of the site’s physical setting.

2.1.1 Geomorphology

Surface topography at the site varies from about 440 feet national geodetic vertical datum (NGVD) near the northwest corner of the site to approximately 380 feet NGVD near the southeast corner of the site (Figure 1). Surface topography in the asphalt-production plant is relatively flat ranging from about 410 feet NGVD along the southern limits of the paved plant areas to 420 feet NGVD along the northern limits of the aggregate staging area. Site topography is steep between the plant production area and an intermittent creek of the Haw River along the eastern property boundary of the site. The topography ranges from approximately 410 feet NGVD on the active plant to 370 feet NGVD near the creek’s confluence with Sugar Lake Road. Surface drainage generally occurs from northwest-west to east-southeast toward the creek. According to the USGS map, the headwater of the creek is about 250 feet north-northeast of the site near elevation 470 NGVD and flows in a south-southeast direction. The intermittent creek discharges to an unnamed perennial stream south of the site and ultimately to the Haw River, approximately 1.4 miles southwest of the site. Additional surface water features near the site include an abandoned quarry immediately south of the site and several small, unnamed ponds east, south, and southwest of the site. Jordan Lake is about 2.3 miles to the east. The site, Jordan Lake, and the Haw River are in the Cape Fear River Basin.

S.T Wooten’s plant is on an approximate 40-acre parcel, which includes the asphalt production areas, access roads, equipment staging areas, aggregate stockpiles, and administrative and current ATL buildings. The active plant area is near the approximate south center of the site. Access to the plant is via a paved road that intersects Sugar Lake Road/SR 1714 near the southwest corner of the property. Non-plant areas are undeveloped and wooded.



The former ATL was in an unpaved area immediately east of the plant access road and southeast of the current active plant production area (Figure 2). S.T. Wooten's current ATL is immediately west of the access road and southwest of the active plant area. Various contractors conducted soil and groundwater assessment and remediation activities in an area around and topographically downgradient of the former ATL in a wooded area southeast of the former ATL.

Underground electric and telephone utilities serve the plant and originate from primary transmission service lines along the right-of-way of Sugar Lake Road. An on-site water-supply well provides production water for the plant. Bottle water is the source of potable water for the plant. Sanitary utilities included two gravity drain septic systems located 110 feet southwest of the current ATL.

2.1.2 Regional Geology and Hydrogeology

The *Comprehensive Site Assessment Report* prepared by Geraghty & Miller (June 1997) and the *2010 Site Assessment Report* prepared by AECOM (November 2010) describe the regional and site geology and hydrogeology. The Geologic Map of North Carolina (1985) shows the site is in the Carolina Slate Belt of the Piedmont Physiographic Province of North Carolina (Piedmont), characterized by unconsolidated to consolidated sediments overlying metamorphic and igneous bedrock. Bedrock at the site is heterogeneous tuffs of felsic to intermediate composition with lesser interlayers of andesitic to basaltic lavas and epiclastic rocks (Bradley *et al.*, 2007). Varying thicknesses of weathered in-place rock or saprolite overly a transition zone of partially weathered rock (PWR) and fractured bedrock. The PWR zone generally grades into more consolidated, less fractured rock with depth.

Groundwater in the Piedmont occurs in one or more permeable zones, including the saprolite when present, PWR when present, and bedrock. Most of the shallow-screened monitor wells have screens that partially intersect both the saprolite and the PWR zones of the surficial aquifer. Likewise, most of the deeper-screened monitor wells are in the fractured rock zone of the surficial aquifer. For the purposes of this report, Duncklee & Dunham grouped our discussions to wells screened in the saprolite/PWR-permeable zone and the bedrock permeable zone of the common surficial aquifer. Groundwater flow in the saprolite/PWR generally flows parallel to the upper contact of the bedrock and discharges into low topographic drainage features and surface water bodies (LeGrand, 2004). In general, primary and relic secondary porosity features control groundwater flow through saprolite. Saprolite transmits water slowly and has a high storage capacity with porosity ranges of 35 to 55 percent near the ground surface and decreases with depth (LeGrand, 2004; Heath, 1980). The PWR zone can exhibit larger groundwater flux of the three transmissive zones. Secondary porosity features such as fractures, faults, relic structures, and weathered zones determine the rate and direction of groundwater flow in the PWR zone.

Groundwater flow in the bedrock zone occurs in fractures that can have complex fracture patterns and orientations that can range from completely horizontal to vertical. Fractured bedrock can transmit water rapidly depending on the interconnectivity of the fractures, but has a relatively low storage capacity (Heath, 1980). Groundwater contained in the bedrock zone of the aquifer typically discharges to low topographic features and mixes with the water discharged from the saprolite/PWR.

Geraghty & Miller (1999) documented the lithology beneath the site using widely-spaced soil borings installed during the CSA. The lithology beneath the plant consists of surficial fills underlain by natural silty-clays and clayey-silts with depths to about 37 feet below ground surface (BGS). The lithology documented



during the CSA consists of surficial fills to approximately 2 feet BGS. These are predominantly sands and gravel probably installed during construction of the plant. Saprolitic soils underlay the construction fills, which range from 35-37 feet thick near the southwestern limits of the plant to 13-15 feet thick along the eastern limits of the site. The saprolite is comprised of low permeability stiff, to very stiff, clayey silts, silty clays, and sandy silts. A cross-section location map and generalized east-west and north-south geologic cross-section profiles are presented in Figures 3, 4, and 5, respectively.

The saprolite grades to a less weathered PWR zone immediately above the upper contact of the underlying bedrock. The PWR zone ranges from about 3 to 6 feet in thickness across the site (Geraghty & Miller, 1999 and AECOM, 2010). According to the assessment reports, groundwater flow in the saprolite/PWR permeable zone likely occurs horizontally along the PWR and bedrock interface and is the primary pathway for groundwater flow and contaminant transport. The potentiometric surface maps generated based on the historical depth-to-water measurements suggest a southeastern flow direction in the saprolite/PWR permeable zone. The historic groundwater data also documented a trend of eastern contaminant migration in the saprolite/PWR permeable zone.

Geraghty & Miller (1999) performed rising head slug tests in monitor wells 48MW-4 and 48MW-5 screened in the saprolite/PWR permeable zone of the surficial aquifer. Hydraulic conductivity values ranged from 1.75×10^{-3} centimeters per second (cm/sec) at 48MW-5 and 3.02×10^{-3} cm/sec at 48MW-4. Geraghty & Miller calculated an average hydraulic conductivity of 2.39×10^{-3} cm/sec or 6.77 feet per day (ft/day) for the saprolite/PWR permeable zone, which is likely more reflective of the PWR and bedrock interface zone than the saprolite zone.

The CSA (Geraghty & Miller, 1997) documented bedrock at depths of 26 feet BGS at 48DW-2 to 46 feet BGS at 48DW-1. Subsequent assessments by S&ME (1999 and 2000), AECOM (2010 and 2012), and H&H (2014) confirmed these depths to bedrock. The *Corrective Action Plan* (S&ME, 1999) documented bedrock fractures and zones and groundwater flow by video logging of the open boreholes in the on-site water supply well and bedrock-screened monitor wells 48DW-1 and 48DW-2 at about 60 feet BGS, 75 feet BGS, and 125 feet BGS. The primary vertical zone of groundwater flow observed at the PWR and PWR/bedrock interface ranged in elevation from 380 feet mean sea level (msl) to an elevation of 365 feet msl. S&ME's video analysis identified no water-bearing bedrock fractures in the boring for monitor well 48DW-1. S&ME determined groundwater recharge into monitor well 48DW-1 occurred only through inflow from the PWR zone. Accordingly, monitor well 48DW-1 appeared to monitor only groundwater in the PWR permeable zone. The video logging results document that bedrock in some areas of the site does not contain fractures.

S&ME mapped bedrock fractures in the north wall of the quarry south of the site, along outcrops in the unnamed creek east of the site, and in the on-site water supply well. They video-logged well 48DW-2 to document the inflow at a mid-depth fracture at 61.3 feet BGS. The video log identified three water-bearing zones in the on-site water supply well borehole including at the bottom of the casing at approximately 35 feet BGS (at PWR and bedrock interface) and at bedrock fractures at 57.5 feet BGS and 74 feet BGS. S&ME noted that both vertical and horizontal fracture orientations in the borehole, including water-bearing fractures oriented to the east-west and north-south. S&ME concluded that the north-south striking fracture set was the predominate bedrock fracture set; therefore, the maximum hydraulic conductivity and groundwater flow in bedrock was oriented in a north-south direction. S&ME considered the extent of bedrock fracturing to the east-west to be highly variable. S&ME performed an in-well aquifer test at several points in the well, and measured groundwater inflow at a rate of approximately 0.4 gallons per minute (gpm). The inflow they observed in the open boreholes at the PWR- and bedrock-surface interface suggested these interfaces serve



as the primary zone of groundwater flow. S&ME estimated the bulk hydraulic conductivity of the bedrock fractures to be 4.71×10^{-4} cm/sec (1.33 ft/day).

AECOM (2010) conducted a limited fracture trace analysis in their *2010 Site Assessment Report*. AECOM concluded the dominant fracture orientation was oriented in a north-northwest to south-southeast direction with a weaker subparallel east-northeast to west-southwest fracture set. When compared with the local topography, the fracture patterns suggested the primary direction of groundwater flows is toward the east-southeast. This is consistent with historical groundwater flow directions for the site determined from depth-to-water measurements in monitor wells.

2.2 Surrounding Properties

The general site area is rural residential, or undeveloped and wooded. Mixed residential properties bordered by undeveloped and wooded land are immediately north and west of the plant, and undeveloped land lies to the east and south. A former aggregate mine is immediately south of the site and Sugar Lake Road (Figure 1). Surface water bodies near the site include the open mining pit on the former aggregate mine site, a south-flowing intermittent creek immediately east of the plant (Figure 2), and an intermittent tributary of the Haw River south of the site and Sugar Lake Road. Residential developments are east and south of the former quarry and the plant.

According to the *2012 Receptor Survey Summary* by AECOM (2013a), public water supply (PWS) systems including campground, community, non-transient non-community and/or transient PWS systems were absent within a 0.5-mile radius of the site. Regulatory-approved wellhead protection areas are absent near the site. Chatham County Public Works & Utilities provides potable water to private properties approximately 0.5-half mile west of the plant. Private residences near the site obtain potable water from private water supply wells. Table 1 lists the location of known water supply wells within 1,500 feet radius of the site (Figure 6) as updated by H&H (2015b).

2.3 Summary of Previous Investigations and Remedial Action History

According to previous reports (Geraghty & Miller, 1997 and AECOM, 2010), the laboratory location and period of use was unclear. The CAP (S&ME, 1999) indicated the former laboratory was northeast of monitor well 48DW-1 (Figure 2). A review of historic aerial photographs from 1977 and 1987 by AECOM failed to identify the former ATL location. The 1987 aerial photograph documented a structure in the same approximate location as the current ATL. AECOM observed no structures near the location S&ME designated as the former ATL location. In 2010, AECOM conducted an assessment in the area designated by S&ME and documented chlorinated aliphatic compounds in soil. AECOM identified this area of the site as the likely source area and former ATL location. Figure 2 shows the current layout of the plant, the presumed location of the former ATL, monitor well locations, and other site features.

2.3.1 Previous Site Investigations

Between 1996 and 2014, several entities including Geraghty & Miller (1999), S&ME (1999 and 2000), AECOM (2010), and H&H (2013) performed assessments to identify and delineate the spatial extents of chlorinated aliphatic compounds in soil and groundwater. The following summarizes the primary findings from these works:



- Between 1999 and 2014, investigatory work attempted to define the former ATL source areas and the spatial extents of VOCs in soil and groundwater. The target VOCs included 1,1,1-TCA and TCE and their chemical degradation products. These assessments also detected non-target VOCs, including tetrachloroethene (PCE). The investigations defined the spatial extent of TCE in soil (S&ME, 1999 and 2000; AECOM, 2010; and H&H 2013 and 2015b).
- Geraghty & Miller (1999), S&ME (1999 and 2000), AECOM (2010), and H&H (2013) performed multiple phases of groundwater assessments between 1996 and 2014. These assessments identified target VOCs and their degradation products and non-target VOCs in groundwater samples collected from the saprolite/PWR and bedrock permeable zones, and delineated the spatial extent of chlorinated aliphatic compounds in groundwater to the north, south, and west of the former ATL. However, these assessments did not delineate the spatial extent of chlorinated aliphatic compounds east of the former ATL and the intermittent creek.
- S&ME (2003) collected surface water samples in July 2003 from the intermittent creek immediately east of the site. The laboratory detected TCE in the samples at concentrations above the Title 15A North Carolina Administrative Code (NCAC) 2B Surface Water Quality Standard (2B Standard) (NCDEQ 2017) in the stream sample near a permitted outfall for an on-site pump-and-treat system. The laboratory detected no target VOCs in surface-water samples hydraulically upgradient or downgradient of the designated outfall. Arcadis (2006) attributed the presence of TCE in the surface water sample to a temporary shut down of the pump-and-treat system in September 2005. S&ME collected additional samples 48-HS-2-SW and 48-HS-3-SW (Figure 2) between 2014 to 2016 from the intermittent creek hydraulically downgradient of the site (i.e., immediately east of the phytoremediation plot area). These samples exhibited TCE, vinyl chloride, and PCE at concentrations above the 2B Standards. The samples they collected during the current reporting periods in February 2018 and April 2018 did not exhibit these analytes.
- S&ME (1999) and AECOM (2010) identified multiple areas of chlorinated aliphatic compound contamination in soil during their site investigations, including an area southeast of the former ATL and an area near the former ATL.

AECOM conducted additional non-assessment activities related to adjacent private properties. In 2013, AECOM installed Point of Entry (POE) water treatment systems at the wellheads of two private water supply wells east of the site at 681 Mt. Gilead Church Road (Mitchell Property) and at 771 Mt. Gilead Church Road (Sanders Property) (Figure 2). Both systems utilize ultraviolet light and granular activated carbon (GAC) treatment units. As we present in later sections of this report, the laboratory did not detect target VOCs in samples from these water supply wells.

2.3.2 Previous Remedial Actions

NCDENR directed NCDOT in 1999 to evaluate active groundwater remedial options to treat soil and groundwater contaminant “hot spots.” The following present the pilot-testing activities and multiple remedial technologies implemented at this site:

- S&ME designed, installed, and operated a soil vapor extraction (SVE) at the site from 2000 to 2010. H&H (2015a) excavated and removed soil in 2014 and 2015 from the main source area at the site.



Neither the SVE area or the excavation area currently serve as long-term contaminant sources for groundwater.

- In June 2000, S&ME (2000) submitted a revised CAP that recommended active soil remediation using air sparging with SVE and a pump-and-treat system to remediate groundwater in the saprolite/PWR and bedrock permeable zones. S&ME installed the air sparging and SVE system in October 2002 to address dissolved-phase target VOCs in the shallow saprolite/PWR permeable zone, and discontinued its operation in 2010.
- In 2003, S&ME began operation of the groundwater extraction and treatment system. The monitoring data S&ME collected during sampling events between 2003 and 2005 documented a reduction in the target VOCs in groundwater. However, the test results showed an increase in the lateral extent of chlorinated aliphatic compounds in groundwater in 2005 and 2006, when S&ME shut down the pump-and-treat system for maintenance. The test results showed decreases of VOC concentrations during 2007 and 2008, after S&ME re-initiated operation of the pump-and-treat system.
- In May 2013, AECOM (2013b) submitted a *Phytoremediation Interim Work Plan* to NCDEQ to construct a phytoremediation system within the riparian buffer of the intermittent creek (Figure 2). NCDEQ approved the system and subsequently AECOM constructed it at the site in April 2013. AECOM collected pore water samples hydraulically side gradient and down gradient of the phytoremediation plot to evaluate the effectiveness of phytoremediation in reducing the target VOCs in groundwater. AECOM collected groundwater samples during subsequent sampling events that suggested target VOCs decreased in the shallow saprolite/PWR permeable zone and surface water downgradient of the phytoremediation plot.
- In 2014, H&H (2015b) evaluated the feasibility of implementing ERD through the injection of bioenhancement amendments to address the target VOCs in groundwater. In April 2014, H&H installed additional injection wells as authorized by an Underground Injection Control (UIC) permit issue by NCDEQ. H&H installed the injection wells in association with a planned full-scale BRP injection strategy to treat the saprolite/PWR and bedrock permeable zones at the site. They installed single saprolite/PWR screened injection well (BR-IW1) and five bedrock-screened injection wells (BR-IW2 through BR-IW6) as shown in Figure 2. H&H utilized Terra Systems' emulsified vegetable oil product SRS-FR[®] as the bioenhancement amendment for use in fractured rock settings. After application of the SRS-FR[®] injectant, and when the aquifer conditions were conducive to anaerobic microbes, H&H returned to the site to inject *Dehalococcoides mccartyi* bioaugmentation culture product (TSI-DC) into each of the five injection wells. H&H (2015b) included a performance evaluation of the SRS-FR[®] injection in their *Semi-Annual Groundwater Monitoring and Bioenhancement Injection Evaluation Report* dated October 27, 2015. H&H reported in their October 2015 report that the injections were highly effective at enhancing the reductive dechlorination of the target compounds TCE and 1,1,1-TCA. H&H (2016) documented the 2014 well installation and injection activities in their *BRP Injection and Semi-Annual Groundwater Monitoring Report* dated May 11, 2016.



- Between December 2014 and March 2015, H&H excavated soil in the source area near the former ATL and constructed an infiltration gallery in the bottom of the excavation to use for future injections of remediation amendments.
- In July 2015, H&H injected BRP into the infiltration gallery to increase the total organic carbon (TOC) concentrations in groundwater near the former ATL and to help stimulate *in situ* ERD of the chlorinated solvents in groundwater. H&H performed post-injection performance monitoring of the remediation process at 1-month, 3-month, and 6-month intervals. The analytical results of the 6-month samples indicated a range of 74 percent to 99 percent reduction in the dissolved-phase TCE concentrations in samples from downgradient monitor wells, including the source area monitor well 48SVE-01R and downgradient monitor wells 48MW-16R, 48DW-5R, and RW-1. Their *BRP Injection and Semi-Annual Groundwater Monitoring Report* dated May 11, 2016 documented the 2015 injection activities. H&H's *Semi-Annual Groundwater Monitoring Report* dated November 17, 2016 included a performance evaluation of the July 2015 BRP injection.
- In October 2017 and December 2017, H&H applied the BRP into the five injection wells. UIC Permit Injection Event Record and Status Update – WI0500883 dated November 2, 2017 and January 9, 2018, provided records of the injection events to NCDEQ. In accordance with the monitoring plan in the approved UIC permit application, H&H completed performance monitoring 1 month following the first injection event, followed by four quarterly monitoring events. Duncklee & Dunham provides an evaluation of the post-injection groundwater data in later sections of this report.

3 Sample Collection Methods

H&H conducted groundwater sampling events in May-June 2017, November 2017, January-February 2018 and April 2018. According to the April 21, 2017 *Semi-Annual and Baseline Monitoring Report*, H&H (2017) measured the water levels in site monitor wells and then collected groundwater samples from existing monitor wells and two inactive recovery wells during each sampling event. H&H also collected four surface water samples from the intermittent creek east of the site, and water samples on a quarterly basis from two private water supply wells at 681 and 771 Mt. Gilead Church Rd (Sanders Map ID 110 and Mitchell Map ID 119). A summary of H&H's monitoring activities is provided below.

3.1 Groundwater Sampling Procedures

Prior to collecting samples from the monitor wells, H&H measured the depth to water in each well relative to the top of casing using an electric water-level meter. They subtracted the depth-to-groundwater measurements from surveyed well top-of-casing elevations to calculate groundwater potentiometric surface elevations. H&H's *Low Flow Groundwater Sampling Records* for each monitor well are in Appendix A. Prior to sample collection, H&H purged each monitor well using a peristaltic pump equipped with new polyethylene tubing or a decontaminated stainless-steel submersible pump equipped with new polyethylene tubing until pH, specific conductivity, and turbidity readings were stable or until the well was dry.

H&H collected groundwater samples from each well following purging. They discharged each groundwater sample into laboratory-supplied sample containers and labeled each sample container with the sample



identification, site name, sampling date and time, sample preservative, and sampler's initials. After collection, they placed the samples in a cooler with ice, which was under chain-of-custody (COC) control until a courier delivered the cooler to Pace Analytical Services, LLC (Pace). Pace analyzed the samples for VOCs by USEPA Method 8260B. Laboratory analytical reports for the groundwater samples are in Appendix B.

H&H containerized the purge water from contaminated wells temporarily in polyethylene totes to allow suspended solids to settle. H&H discharged the purge water to the on-site pump-and-treat system for treatment, or used the laboratory results to characterize the purge water prior to sending it to an off-site permitted treatment facility.

3.2 *Surface Water Sampling Procedures*

H&H collected surface water samples from select sample locations 48-HS-1-SW, 48-HS-2-SW, 48-HS-3-SW and 48-HS-5-SW hydraulically and topographically upgradient, downgradient, and immediately east of the site along the intermittent creek (Figure 2). The creek crosses the site from north to south near the eastern property boundary. H&H collected the surface water samples using low-flow sampling techniques employing a peristaltic pump and new polyethylene tubing at each sample location. H&H collected these samples, in order from downstream to upstream, in laboratory-supplied sample containers, labeled the containers, logged the containers on to the COC record, and place the containers in an iced cooler. A courier delivered the cooler to Pace, which analyzed the samples for VOCs by USEPA Method 8260B.

3.3 *Water Supply Well Sampling Procedures*

H&H collected groundwater samples from the water supply wells at 681 Mt. Gilead Church Rd (Mitchell Well) and 771 Mt. Gilead Church Rd (Sanders Well) on September 20, 2017; December 20, 2017; March 20, 2018; and June 20, 2018. H&H purged each well by allowing the pump to run for approximately 10 minutes prior to collecting each sample. H&H collected each water sample from wellhead sample ports prior to treatment by the POE treatment system (influent) and immediately after the treatment system (effluent). They discharged the samples into laboratory-supplied sample containers, logged the containers on a COC record, and placed the containers in an iced cooler. A courier delivered the cooler to Pace, which analyzed the samples for VOCs by USEPA Method 8260B and 1,4-dioxane by USEPA Method 8270 Selected Ion Monitoring (SIM). Appendix C contains copies of the H&H quarterly private well reports and analytical results.

H&H inspected the POE systems during each quarterly sampling event to assess the need for maintenance and repairs. From June 2017 to April 2018, H&H personnel made four visits to the site to perform maintenance and/or repairs to the POE treatment systems. Maintenance activities included cleaning and replacing the ultraviolet lamp crystal, cleaning or replacing the particulate filter, and occasional repair of minor leaks or replacement of reinforced hoses. H&H cleaned and/or replaced, as needed, the activated carbon filter media and the ultraviolet lamps in each POE system, typically as a minimum in December of each year.



3.4 *Data Quality Review*

Duncklee & Dunham reviewed Pace's laboratory analytical reports and data from H&H's sample logs to ensure that H&H had met specific data-quality objectives. Pace tested the samples for the target VOCs and their degradation product compounds according to USEPA Method 8260B, using Level 2 quality assurance and quality control (QA/QC) procedures. Pace also tested quality control samples, including trip blanks and duplicate samples collected by H&H, to evaluate the overall data quality of the field sampling and laboratory testing procedures.

4 **Results and Data Evaluation**

4.1 *Groundwater Elevations and Hydrogeology*

H&H collected depth-to-water measurements on May 30, 2017; November 15, 2017; January 29, 2018; and April 23, 2018. The on-site pump-and-treat system was recovering groundwater from recovery well 48RW-2R at approximately 2.8 gpm prior to its shut down on September 29, 2017 for maintenance. Neither H&H or Duncklee & Dunham restarted the system since that time. Duncklee & Dunham utilized the May 30, 2017 and January 29, 2018 depth-to-water measurements (Table 2) to prepare generalized potentiometric surface maps of the saprolite/PWR permeable zone since we deemed these measurements to be representative of the aquifer's response during pumping and non-pumping conditions, respectively.

Figures 7 and 8 are potentiometric surface maps for the saprolite/PWR permeable zone. The general direction of groundwater flow in the saprolite/PWR zone is toward the east-southeast. The primary difference between the potentiometric surfaces for the saprolite/PWR zone is that the 374 foot-msl contour extended farther north while pumping (Figure 7) as compared to the non-pumping (Figure 8) conditions due to the capture zone established by the recovery operations.

Duncklee & Dunham calculated horizontal hydraulic gradients for the saprolite/PWR permeable zones utilizing the groundwater elevations from each gauging event. Horizontal hydraulic gradients for the saprolite/PWR permeable zone were approximately 0.11 foot per foot (ft/ft) on May 30, 2017 and 0.094 ft/ft (static) on January 29, 2018 between monitor wells 48MW-4R and 48MW-3. The gradient in this area of the site was similar between these gauging events. Farther downgradient of the site between 48MW-11R to 48MR-23 (near the intermittent creek), the hydraulic gradient was flatter at approximately 0.0064 ft/ft (on May 30, 2017) and 0.0087 ft/ft (on January 29, 2018).

Duncklee & Dunham calculated vertical hydraulic gradients by dividing the difference between the hydraulic head measured at two paired wells screened in the saprolite/PWR and bedrock permeable zones by the vertical distance between the midpoints of the screened intervals. We performed this calculation for the following well pairs during each gauging event:

- At "background" well cluster 48MW-16R/48DW-5R approximately 180 feet west of recovery well 48RW-2R, Duncklee & Dunham calculated an apparent vertical hydraulic gradient ranging from 0.0005 ft/ft upward on May 30, 2017 (while pumping) to 0.027 ft/ft upward on January 29, 2018 (after ceasing pumping). These data represent a small upward gradient after succession of pumping, as compared to the somewhat neutral gradient (0.0005 ft/ft upward) while pumping.



- At well cluster 48MW-11R/48DW-2, approximately 35 feet west of recovery well 48RW-2R, Duncklee & Dunham calculated vertical gradients ranging from 0.13 ft/ft downward on May 30, 2017 (while pumping) to 0.007 ft/ft downward on January 29, 2018 (after ceasing pumping). These changes are indicative of the water table recovering to background conditions after cessation of groundwater recovery. Also, a nearly horizontal gradient (i.e., 0.007 ft/ft downward) was observed for the non-pumping condition.
- At well cluster pair 48MW-19/48DW-10, on the eastern side of the intermittent creek approximately 475 feet from recovery well 48RW-2R, Duncklee & Dunham calculated vertical hydraulic gradients ranging from 0.37 ft/ft downward on May 30, 2017 (while pumping) to 0.43 ft/ft downward on January 29, 2018 (after ceasing pumping). This well cluster is relatively far from the pumping system; thus, these data possibly represent background changes in vertical gradient during the period.

The 48MW-16R/48DW-5R well cluster is in an upland area, which can serve as a recharge zone for the surficial aquifer (i.e., comprised of both the saprolite/PWR and the bedrock permeable zones). The screen for shallow well (48MW-16R) is partially in the PWR, and the screen for the deeper well (48DW-5R) is in the fractured rock permeable zone. Because an upward vertical gradient predominates in this area, the PWR likely serves as flux zone of higher permeability that receives groundwater from the underlying bedrock permeable zone. The PWR likely serves as a higher flux zone for groundwater to migrate toward downgradient areas of the site.

According to the generalized geologic cross-section A-A' (Figure 4), the elevation of the surface water in the intermittent creek is higher than the water table in several adjacent wells (48MW-12, 48MW-13, 48MW-15, 48MW-22, 48MW-23). This is also evident from the two potentiometric surface maps (Figures 7 and 8). Based on the data used to develop these figures, the intermittent creek is a losing stream during parts of the year, and contributes water into the surficial aquifer. During other times during the year, groundwater in the saprolite/PWR permeable zone possibly discharges into creek and/or secondary porosity zones or relic structures beneath the creek. Duncklee & Dunham recommends resurveying of the top of the stream gauges and monitor wells to verify the elevations of the staff gauges and a few surrounding monitoring wells.

The 48MW-19/48DW-10 well cluster is in a flat, lowland area. In other hydrogeologic settings, groundwater in similar low-lying areas would typically discharge into a surface water feature in the bottom of the basin. For this site, the PWR likely contributes groundwater into the underlying fractured rock permeable zone because downward vertical gradients predominate in this area. The quarry south of Sugar Lake Road is the likely cause of this effect. Additional investigations could assess the local and regional groundwater flow patterns at and downgradient of the site.

4.2 Groundwater Analytical Results

Table 3 summarizes the analytical results from the May-June 2017 and January-February 2018 semi-annual monitoring events. Table 4 provides a summary of historical analytical results for target and non-target VOC compounds. Copies of H&H's groundwater sampling records and the laboratory analytical reports for each semi-annual sampling event are in Appendices A and B, respectively. Table 5 summarizes geochemical parameter results for the May-June 2017 to April 2018 sampling events.



4.2.1 TCE Detections in Saprolite/PWR Screened Monitor wells

The primary target VOC, TCE, has been the primary constituent in groundwater at this site since the initial CSA activities in 1996 (Geraghty & Miller, 1997). Samples from the following 7 wells exhibited TCE above the NCAC 2L Groundwater Standard (2L Standard) (NCDEQ 2013) in samples from the following 7 of 20 monitor wells during the May-June 2017 semi-annual sampling event:

- 48MW-1 (123 µg/L)
- 48MW-11R (4.5 µg/L)
- 48MW-15 (5.1 µg/L)
- 48MW-16R (34.4 µg/L)
- 48MW-19 (34.2 µg/L)
- 48MW-22 (45.9 µg/L)
- 48MW-23 (12.5 µg/L)

The laboratory did not detect TCE above the 2L Standard during the January-February 2018 semi-annual sampling event except at 48MW-13 (6.7 µg/L) and 48MW-19 (25.9 µg/L) that are east of the intermittent creek. Dunclee & Dunham prepared TCE isoconcentration maps to present the approximate lateral extent of contamination in the saprolite/PWR permeable zone from the May-June 2017 data (Figure 9) and January-February 2018 data (Figure 10). The lateral extent of TCE in the saprolite/PWR permeable zone originally extended from the source area and location of the former ATL to the east-southeast to the eastern limits of the current monitor well network as defined by well 48MW-18 to the northeast, well 48MW-19 to the east, and 48MW-13 to the southeast. The well network appears to have delineated the lateral extent of dissolved phase TCE in groundwater to the north, west, and south.

As suggested by May-June 2017 data (Figure 9), the area of greatest TCE concentration was near monitor wells 48MW-1 (123 µg/L) and 48MW-16R (34.4 µg/L) hydraulically downgradient of the former ATL. A second area of greater concentration was east of the intermittent creek near well 48MW-19 (34.2 µg/L). The January-February 2018 TCE isoconcentration map (Figure 10) presents significant reductions in TCE concentrations west of the creek, presumably from the effects of *in situ* reductive dechlorination due to the BRP injections in 2015 and 2017. According to the sample results (Table 3 and Figure 10), the area with the greatest TCE concentrations in the saprolite/PWR permeable zone is now east of the intermittent creek near well 48MW-19 (25.9 µg/L).

4.2.2 TCE Detections in Bedrock Permeable Zone Monitor Wells

In May-June 2017, the laboratory detected TCE in samples from six monitor wells in the bedrock permeable zone above the 2L Standard including:

- 48DW-2 (34.1 µg/L)
- 48DW-3 (26.6 µg/L)
- 48DW-4 (4.2 µg/L)
- 48DW-5R (9.1 µg/L)
- 48DW-8 (92.8 µg/L)
- 48RW-1 (17.9 µg/L)

During the January-February 2018 semi-annual monitoring event, Pace detected TCE above the 2L Standard in samples from three bedrock-screened monitor wells: 48DW-4 (8.2 µg/L), 48DW-5R (3.2 µg/L), and 48DW-8 (71.7 µg/L). The laboratory detected no TCE above the 2L Standard in samples from 48DW-1, 48DW-2, 48DW-3, 48DW-6, 48DW-7, 48DW-9, 48DW-10, 48DW-11, 48RW-1, or 48RW-2 during the January-February 2018 monitoring event. Pace detected TCE above the 2L Standard in samples primarily from bedrock-screened monitor wells hydraulically downgradient of the former ATL and source area and



west of the intermittent creek. Pace also detected TCE in the samples from 48DW-8, east of the intermittent creek, at decreasing concentrations during each of the quarterly sampling events:

- 92.8 µg/L (May 2017),
- 68.7 µg/L (November 2017),
- 71.7 µg/L (January 2018), and
- <1.0 µg/L (April 2018).

Results from future monitoring events will help assess the potential for continued reductions in TCE concentration in samples from monitor well 48DW-8.

According to the data from wells screened in the bedrock zone, the extents of TCE extended originally from the source area to the downgradient limits of the current monitor well network, as defined by wells 48DW-9 to the north, 48DW-10 to the east, 48DW-4 to the south, and 48DW-11 to the southeast. The May-June 2017 sample results suggest the area of greatest TCE concentration in the bedrock permeable zone was in the vicinity of monitor wells 48DW-2 (43.1 µg/L) and 48DW-3 (26.6 µg/L), located hydraulically downgradient of the former ATL and west of the intermittent creek. A second area of higher TCE concentration appears near well 48DW-8 (92.8 µg/L), on the east side of the intermittent creek.

TCE data from the January-February 2018 sampling event presents significant reductions in TCE concentrations in samples from wells 48DW-2 (<1.0 µg/L) and 48DW-3 (<1.0 µg/L) west of the intermittent creek. These concentration reductions were presumably due to *in situ* treatment promoted by the BRP injection activities. The greatest TCE concentrations in the bedrock permeable zone during the January-February 2018 monitoring event is now east of the intermittent creek near well 48DW-8 (71.7 µg/L).

4.2.3 TCE-Degradation Product Detections in Saprolite/PWR Screened Monitoring Wells

In situ ERD reactions cause decreases in TCE concentrations followed by the concomitant production of degradation products such as cis-1,2-DCE and vinyl chloride. The historical data (Table 4) indicate increases in cis-1,2-DCE and/or vinyl chloride concentrations in the samples from select wells (48MW-1, 48MW-3, 48MW-11R, 48MW-15, 48MW-16/48MW-16R, 48MW-22, 48MW-23) during the 2014 – 2016 time period, followed by subsequent decreases in cis-1,2-DCE and vinyl chloride concentrations. Vinyl chloride is the only degradation product of TCE above its respective 2L Standard.

The bar chart in Figure 11 presents the changes in molar concentration of TCE; cis-1,2-DCE; and vinyl chloride from the sampling events in June 2014 (baseline prior to injections), May 2017, and January 2018 using data from select wells along the centerline of the plume. Dunclee & Dunham categorized the wells based on the location within either the:

- BRP injection and reactive zones (48SVE-01R, 48MW-16R, and 48MW-1),
- VOC transport zone downgradient of the reactive zone (48MW-11R and 48MW-23), and
- downgradient wells likely not effected by the BRP treatment activities (48MW-13 and 48MW-19).

TCE was the predominant chlorinated compound during the June 2014 sampling event, which became mostly depleted within samples from wells within the BRP injection and reactive zones. Based on data from



the January 2018 sampling event (Figure 11), the predominate species in samples from wells in the BRP reactive zone and transport zone were cis-1,2-DCE and vinyl chloride.

Charts depicting the changes in molar concentrations of TCE; cis-1,2-DCE; and vinyl chloride for select wells are included in Appendix E (Figures E.1 through E.8). Changes in daughter-product concentrations were due to H&H's injection of SRS-FR[®] and *Dehalococcoides mccartyi* bioaugmentation culture in 2014 and additional BRP injections in July 2015, October 2017, and December 2017. During the May-June 2017 and January-February 2018 sampling events (Table 3), Pace detected cis-1,2-DCE and vinyl chloride above one or both of the 2L Standards in samples from saprolite/PWR-screened monitor wells. Pace detected cis-1,2-DCE above its 2L Standard in only the sample from monitor well 48MW-1 (76.3 µg/L) in May-June 2017. The data suggest a general trend of decreasing cis-1,2-DCE concentrations in groundwater in the saprolite/PWR permeable zone between May-June 2017 and January-February 2018.

Pace detected vinyl chloride above the 2L Standard of 0.03 µg/L in the samples from saprolite/PWR screened wells:

- 48MW-1 (10.9 µg/L in May-June 2017 and 14.5 µg/L in January-February 2018),
- 48MW-11R (1.4 µg/L in January-February 2018),
- 48MW-15 (1.7 µg/L in January-February 2018),
- 48MW-16R (8.8 µg/L in May-June 2017),
- 48MW-22 (5.1 µg/L in May-June 2017 and 7.4 µg/L in January-February 2018), and
- 48MW-23 (7.1 µg/L in January-February 2018).

Pace detected no cis-1,2-DCE or vinyl chloride in samples from other saprolite/PWR screened well samples during the May-June 2017 or January-February 2018 monitoring events (Table 3).

4.2.4 TCE-Degradation Product Detections in Bedrock Permeable Zone Monitoring Wells

The bar chart in Figure 12 presents the changes in molar concentration of TCE; cis-1,2-DCE; and vinyl chloride from the sampling events in June 2014 (baseline prior to injections), May 2017, and January 2018, using data from select wells along the centerline of the plume. Similar to the Saprolite/PWR permeable zone, Duncklee & Dunham categorized key indicator wells depending on the location within either the BRP injection & reactive zones (48DW-5R and 48DW-2), VOC transport zone downgradient of the reactive zone (48DW-4) and downgradient wells likely not effected by the BRP treatment activities (48DW-8 and 48DW-10). TCE was the predominant chlorinated compound during the June 2014 sampling event, which became mostly depleted within samples from wells within the BRP injection and reactive zones. Based on data from the January 2018 sampling event (Figure 12), the predominate species in samples from wells in the BRP reactive zone and transport zone was cis-1,2-DCE.

Charts depicting the changes in molar concentrations of TCE; cis-1,2-DCE; and vinyl chloride for select wells in the Bedrock Permeable Zone are in Appendix E (Figures E.9 through E.14). The historical data (Table 4) suggested that cis-1,2-DCE and/or vinyl chloride concentrations began to increase in samples from select wells (48DW-2, 48DW-3, 48DW-5R, 48SVE-01/48SVE-01R, RW-1, RW-2, and 48RW-2R) during



the 2014-2017 timeframe, with concomitant concentration decreases after the June 2017 sampling event. Pace did not detect cis-1,2-DCE in samples from the bedrock-screened monitoring wells or recovery wells above its 2L Standard of 70 µg/L during the May-June 2017 and January-February 2018 semi-annual monitoring events. Pace detected cis-1,2-DCE in samples from the bedrock screened wells at concentrations ranging from 5.3 µg/L at 48DW-5R to 38.5 µg/L at 48DW-2, both collected during the January-February 2018 sampling event. Pace detected cis-1,2-DCE in the recovery well samples ranging from 34.3 µg/L at 48RW-1 in May-June 2017 to 62.2 µg/L at 48RW-2 in January-February 2018. The cis-1,2-DCE results suggested a general recent trend of decreasing dissolved-phase concentrations in bedrock screened wells. Pace detected cis-1,2-DCE in samples from only bedrock screened monitor wells west of the intermittent creek in May-June 2017 and January-February 2018, and did not detect cis-1,2-DCE in samples from bedrock screened monitor wells east of the intermittent creek (48DW-8, 48DW-9 and 48DW-10).

Pace detected vinyl chloride above its 2L Standard of 0.03 µg/L in samples from bedrock-screened monitor wells 48DW-2 at 2.1 µg/L in May-June 2017 and 48DW-5R at 7.1 µg/L in May-June 2017 and 2.4 µg/L in January-February 2018 (Table 3). Pace detected vinyl chloride in samples from bedrock screened recovery wells 48RW-1 at 13.3 µg/L and 12.8 µg/L during both semi-annual sampling events and in 48RW-2 at 24.9 µg/L in January-February 2018 and 20.1 µg/L in May-June 2017 (Table 4). Bedrock screened wells 48DW-2, 48DW-5R, 48RW-1, 48RW-2 and 48RW-2R are all downgradient of the former ATL source area and west of the intermittent creek.

4.2.5 *Detections of 1,1,1-TCA and Degradation Products*

Table 4 shows the laboratory detected 1,1,1-TCA at concentrations less than the 2L Standard of 200 µg/L in samples from most site wells since 1998. The samples from well 48SVE-01/48SVE-01R exhibited 1,1,1-TCA concentrations from 10,700 µg/L in November 2014 to <20 µg/L in April 2018. 1,1,1-TCA degradation products include 1,1-DCA via reductive dechlorination and 1,1-DCE via hydrolysis. Pace detected 1,1-DCE and 1,1-DCA in samples from a few wells during the May-June 2017 and/or January-February 2018 monitoring events; however, none of the concentrations were greater than the respective 2L Standards.

4.2.6 *Detections of PCE*

Pace detected the non-target VOC, PCE, in several groundwater samples at concentrations greater than the 2L Standard of 0.7 µg/L (Table 3). Results from the samples collected in May-June 2017 from saprolite/PWR-screened wells include: 48MW-1 (4.1 µg/L), 48MW-3 (9.7 µg/L), 48MW-11 (1.1 µg/L), and 48MW-15 (1.2 µg/L) and bedrock-screened monitoring well 48DW-2 (2.9 µg/L).

Pace detected PCE in the sample from saprolite/PWR-screened well 48MW-3 (1.5 µg/L) during the January-February 2018 event, and in the samples from bedrock-screened wells 48DW-2 (3.2 µg/L) and 48DW-3 (1.1 µg/L) during the November 2017 monitoring event. These concentrations were greater than the 2L Standard of 0.7 µg/L.

4.3 *Surface Water Analytical Result*

H&H collected samples from the intermittent creek on the eastern side of the site on June 2, 2017; November 16, 2017; February 2, 2018; and April 24, 2018. NCDEQ classified the intermittent creek as a Class WS-IV water supply stream because it is within the drainage basin for Windfall Branch Creek, which feeds into



Lake Jordan. H&H collected the surface water samples from historic sample locations 48-HS-1-SW, 48-HS-2-SW, 48-HS-3-SW, and 48-HS-5-SW (Figure 2).

Pace detected vinyl chloride in the sample collected from 48-HS-3-SW at a concentration of 1.1 µg/L in November 2017. This was the only constituent detected in the surface water samples during the June 2017 to April 2018 period that exceeded an applicable water quality criterion. Table 6 summarizes the surface water analytical results. Appendix B contains copies of the analytical reports.

4.4 Water Supply Well Analytical Results

During the reporting period of May 30, 2017 to June 6, 2018, H&H collected samples from the private water supply wells at 681 and 771 Mt. Gilead Church Road. H&H collected samples from each water supply well in June 2017, September 2017, December 2017, March 2018, and June 2018. Pace tested the samples for VOCs by Method 8260B and for 1,4-dioxane by Method 8270 SIM. Figure 2 shows the locations of the private water supply wells.

Pace did not detect VOCs or 1,4-dioxane in the samples collected from the untreated wellhead effluent before POE treatment or in the effluent samples after POE treatment. Table 7 summarizes the analytical data for each sampling event. Appendix C contains H&H's Private Well Sampling Reports and copies of the laboratory reports.

H&H last sampled the plant's water supply well 48PW-2 on June 2, 2017. Pace did not detect VOCs in the sample. The plant's water supply well is hydraulically upgradient and west of the former ATL and source area as shown in Figure 2. Table 4 summarizes historic sampling data. Appendix B contains a copy of the analytical report.

4.5 Data Review and Validation Quality Parameters

The following is an overview of Duncklee & Dunham's data validation activities for this work, which included the review of the sampling procedures documented in H&H's field notes, laboratory QA/QC procedures, and results from the groundwater sampling events conducted in May-June 2017, November 2017, January-February 2018, and April 2018. According to the COC records, Pace received all water samples in intact and properly labeled containers. Pace reported the cooler custody seals were intact and that H&H completed the COCs properly. The temperatures of the samples on arrival at Pace were above freezing and below 6 degrees Celsius. The samples were analyzed within proper laboratory holding times.

Pace received the water samples on November 16 and 17, 2017 and noted H&H had supplied trip blanks and the blanks were on the COC. In the case narrative section of the analytical report, Pace reported they tested the duplicates for USEPA 8260B and RSK 175 Modified. Pace reported; however, that H&H omitted the duplicate samples on the COC. All sample identifiers corresponded with the laboratory report and COC.

Pace reported the samples received on January 29 and February 2, 2018 included trip blanks. H&H listed the blanks on the COC record. Pace tested the duplicate samples for USEPA 8260 and RSK 175 Modified; however, Pace reported that H&H omitted the duplicate samples on the COC. All sample ID's corresponded with the lab report and COC. However, Pace did note that a sample label on 48MW-2 showed a different sampling time than what the COC showed.



For the April 2018 sampling event, Pace reported the samples arrived intact and at temperatures above freezing and below 6 degrees Celsius, except for the sample from 48DW-7, which H&H omitted from the cooler. Pace stated they informed the project manager of the missing sample and that H&H submitted the sample at a later date (unspecified by the report). Pace also noted that samples for 48DW-5R and 48SVE-01R arrived out of pH range and that one sample arrived without identification. Through process of elimination by comparing sample IDs to the COC, and correspondence with the project manager, Pace determined that H&H had labeled the unidentified sample as 48RW-1. Pace noted that H&H listed the trip blanks on the COC for this event. Pace tested the duplicates for USEPA Method 8260B and RSK 175 Modified; however, H&H omitted the duplicate samples on the COC. All sample IDs corresponded with the lab report and COC with the exceptions of the samples noted above.

4.6 Investigation-Derived Wastes

H&H containerized purge water while purging historically-impacted wells in polyethylene totes to allow suspended solids to settle before discharge to the on-site pump-and-treat system. H&H conducted this practice for each sampling event prior to shut down of the pump-and-treat system on September 29, 2017. H&H collected purge water generated during the January-February 2018 and April 2018 sampling events in a 55-gallon metal drum adjacent to the storage container on the site pending characterization testing and disposal.

5 Remediation System Performance

5.1 Evaluation of the Pump-and-Treat System

The pump-and-treat system utilized an air stripper equipped with a blower and stackable aeration trays to partition and volatilize the dissolved-phase VOCs from the recovered groundwater. The GAC filter treated the water prior to discharge to a permitted outfall (NPDES Permit No. NC0087629) in the intermittent creek near Sugar Lake Road. This system treated VOC-contaminated groundwater from recovery wells 48RW-1 and 48RW-2R east-southeast of the former ATL and the source area. The screens for these recovery wells are set to withdraw groundwater from both the saprolite/PWR and bedrock permeable zones of the aquifer. Figure 2 shows the locations of the recovery wells and treatment system building.

Environmental Field Management, Inc. (EFM) provided operation and maintenance (O&M) the treatment system prior to its shut down on September 29, 2017. EFM provided an Operator in Responsible Charge (ORC) and backup ORC who were responsible for the O&M of the system. Initially, the ORC visited the site on a weekly basis to check the treatment system operation and to perform system maintenance. During each site visit, the ORC recorded the recovery well pumping rates, treatment system inflow and discharge rates, and GAC backpressure and air stripper pressure. The ORC performed treatment system maintenance, including change-out of spent GAC vessels and cleaning of the bag filters, as required based on the pressure readings. System component maintenance activities included cleaning the air stripper trays, batch tanks, and other system appurtenances on regular intervals and/or in response to unscheduled system shut downs or component failures.

EFM collected treatment system influent samples on a monthly basis for VOCs analyses by USEPA Method 8260B, including the target VOCs, total nitrogen, and total phosphorus analyses. EFM collected effluent samples on a quarterly basis for chronic toxicity in accordance with the NPDES permit. EFM included the



effluent sample results in the Discharge Monitoring Reports (DMRs), which they submitted to the NCDEQ Division of Water Resources for each monthly sampling event. NCDEQ waived the monthly reporting requirement by NCDEQ in a letter dated October 23, 2017 based on a request submitted by H&H because they shut down the pump-and-treat system for maintenance. The September 2017 DMR Report was the most recent report submitted to NCDEQ. Appendix D contains copies of the H&H DMR Reports and laboratory influent and effluent sampling analytical reports.

5.1.1 Groundwater Extraction Rates

The December 2016 *Groundwater Monitoring Report* shows the pump-and-treat system recovered and treated approximately 9.7 million gallons of groundwater since initiation of the system in September 2003. The system recovered and treated an additional 31,899 gallons of groundwater containing VOCs during the reporting period from January 1, 2017 to September 29, 2017, when EFM shut down the system for maintenance. The system extracted groundwater from only recovery well 48RW-2R during this period. According to the O&M logs, the extraction rates for recovery well RW-2R generally varied from 1.2 gpm to 5.5 gpm during the reporting period. The extraction rates varied mostly due to the extent of mineral fouling in the GAC filters and air stripper trays.

5.1.2 Hydraulic Influence of the Pump-and-Treat System

The pump-and-treat system operated during the reporting period while utilizing 48RW-2R as the only groundwater recovery well. The H&H-collected data shows the recovery operations from this well influenced strongly the potentiometric surface in the bedrock permeable zone. Duncklee & Dunham calculated a drawdown of 4.17 feet below the static groundwater potentiometric surface in bedrock screened well 48DW-2 based on data from the May 30, 2017 gauging event. We did not observe apparent drawdown of the water level in monitoring well 48MW-11R, which is screened in the saprolite/PWR permeable zone. The calculated vertical hydraulic gradients for well cluster 48MW-11R/48DW-2 suggest a significant vertical upward gradient of 0.126 ft/ft (i.e., greater hydraulic head with depth) while extracting from recovery well 48RW-2R, based on data from May 30, 2017, versus a very slight upward vertical gradient of 0.007 ft/ft under static groundwater conditions based on the data from January 29, 2018. These data suggest that recovery from 48RW-2R has more hydraulic influence on the bedrock permeable zone as compared to the saprolite/PWR permeable zone.

5.1.3 Target Compounds Recovery

During the period from January 2017 to September 2017, EFM collected influent and effluent samples from the pump-and-treat system on a monthly basis for NPDES Permit specific parameters and on a quarterly basis for aquatic chronic toxicity testing. Pace detected target and non-target VOCs and their degradation products in samples collected from the influent of the pump-and-treat system and from 48RW-2R. They detected TCE in each of the monthly influent samples above its 2L Standard at concentrations ranging from 22 µg/L on September 20, 2017 to 33 µg/L in two separate samples collected on February 7, 2017 and April 20, 2017. Pace detected vinyl chloride above its 2L Standard in each monthly influent sample collected during the reporting period, ranging from 0.67 µg/L on September 20, 2017 to 2.4 µg/L on February 7, 2017. They detected cis-1,2-DCE; 1,1-DCE; and 1,1-DCA in the system influent samples below the respective 2L Standards. PCE ranged from 1.2 µg/L to 1.6 µg/L in the system influent samples from January 2017 to September 2017, which were greater than the 2L Standard. The treatment system influent results suggest a



general trend of nearly stable COC concentrations in the recovered groundwater in the area hydraulically downgradient of the former ATL and source area.

5.1.4 Treatment System Efficiency

H&H collected effluent samples from the treatment system on a monthly basis in accordance with NPDES permit requirements. These include laboratory analytical results collected on a monthly basis and chronic toxicity testing results collected on a quarterly basis. The DMR reports were submitted in electronic format to NCDEQ. The DMRs for January 2017 to September 2017 (Appendix D) show the pump-and-treat system operated in compliance with the NPDES Permit discharge parameters. Furthermore, H&H reported that the treatment system has operated in compliance the NPDES Permit since May 18, 2012.

5.1.5 Future Operation and Maintenance Activities

Duncklee & Dunham anticipates keeping the extraction system deactivated for at least a 3- to 4-month period (i.e., until at least March 2019), while we re-evaluate the treatment-system's effectiveness and potential benefits to groundwater and surface water quality at the site.

5.2 Evaluation of the Phytoremediation System

In April 2013, AECOM constructed the phytoremediation plot between saporlite/PWR screened monitor wells 48MW-15, 48MW-22, 48MW-12, and 48MW-23 near the riparian buffer of the intermittent creek (Figure 2). Detailed descriptions of the phytoremediation system and installation procedures were provided in the *Former Lee Paving Asphalt Testing Site Phytoremediation System Final Construction Report* (AECOM, 2013c). According to the report, the phytoremediation plot was expected to reach full maturity in approximately 5 to 7 years (i.e., during 2018 to 2020). AECOM reported a reduction in target VOC concentrations in samples from saporlite/PWR permeable zone wells and surface water samples hydraulically downgradient of the phytoremediation plot. AECOM sampled shallow pore water in the surficial saturated zone at select locations hydraulically upgradient and downgradient of the phytoremediation plot. AECOM documented a reduction in dissolved-phase TCE concentrations to below the applicable standard in shallow groundwater and surface water samples during subsequent sampling events in October 2013.

As presented in Section 4.4, H&H collected surface water samples at locations 48-HS-1-SW, 48-HS-2-SW, 48-HS-3-SW, and 48-SW-5-SW in May-June 2017, November 2017, January-February 2018 and April 2018 (Figure 2). Pace detected only vinyl chloride in surface water samples from the June 2018 to April 2018 reporting period (Table 6). Historically, several constituents including cis-1,2-DCE; TCE; 1,1-DCE; vinyl chloride; acetone; and PCE were in the samples from surface water location 48-HS-3-SW. However, the frequency and magnitude have reduced significantly. This suggests a potential benefit for construction of the phytoremediation plot, as well as the other remedial strategies (e.g., excavation of the source area, operation of the pump-and-treat system, ERD injection events).

Duncklee and Dunham reviewed the results from groundwater samples from saporlite/PWR screened monitor wells 48MW-22 west and hydraulically upgradient of the phytoremediation plot and 48MW-23 east and hydraulically downgradient of the phytoremediation plot. H&H sampled the monitoring wells only during the May-June 2017 and January-February 2018 sampling events. The data showed decreasing VOC



concentrations in groundwater beneath the phytoremediation plot on the order of 4 percent to 28 percent. The data suggested similar changes in 1,1-DCE and 1,1-DCA concentrations as well.

5.3 Evaluation of the Beverage Remediation Product Injection Strategy

In October 2017 and December 2017, H&H performed two BRP injection events to provide additional TOC into groundwater and continue to promote *in situ* reductive dechlorination reactions for the chlorinated VOCs. H&H (2016) summarized this work in their *BRP Injection and Semi-Annual Groundwater Monitoring Report*. Tables 3, 4, and 5 of this report summarize post-injection monitoring data. Copies of the laboratory analytical reports are in Appendix B. During their post-injection monitoring activities, H&H collected biogeochemical parameter data while purging the wells under low-flow conditions including dissolved oxygen (DO), oxidation-reduction potential (ORP), specific conductivity, ferrous iron, pH, ethene, ethane, methane, and TOC. Table 5 summarizes these data. The following paragraphs summarize the primary biogeochemical parameter results to assess the groundwater conditions and the status of the ERD remediation strategy:

- The DO results ranged from 0.03 to 6.4 mg/L in the saprolite/PWR permeable zone, with an average DO concentration of 1.5 mg/L. The DO results for the bedrock permeable zone ranged from <0.01 to 6.3 mg/L, with an average DO concentration of 0.8 mg/L. The smaller DO values were nearest to or within the influence of the BRP injection system (i.e., near wells with the greatest TOC concentrations (Table 5). USEPA (1998) identified target DO concentrations for optimal degradation as less than 0.50 mg/L. In general, many of the samples from monitoring wells near the source area exhibited DO concentration of less than 0.5 mg/L. Thus, the groundwater conditions in this zone were likely conducive to ERD treatment of the target VOCs and their degradation products.
- The ORP results ranged from -200 to -20 millivolts (mV) in the saprolite/PWR and bedrock permeable zones nearest to the ERD treatment area (Table 5). In general, the wells nearest to the source zone exhibited the lowest ORP values. Thus, the groundwater conditions in this zone likely were conducive to *in situ* reductive dechlorination reactions. USEPA (1998) identified target ORP values of less than 50 mV for the ERD pathway to occur and less than -100 mV for optimal reductive dechlorination. Based on these data, the ORP conditions of the aquifer should promote ERD reactions.
- Methane is absent in most natural groundwater environments. Therefore, methane detections can be indicative of microbial degradation of organic carbon (i.e., TOC from the BRP) and of strongly reducing conditions in groundwater. The following increasing methane concentration trends in samples from key indicator wells suggested that the groundwater conditions were strongly anaerobic and thus conducive to ERD reactions:
 - Saprolite/PWR zone:
 - Source area well 48SVE-01R (methane concentrations increased from 195 µg/L in May-June 2017 to 1,300 µg/L in April 2018) and
 - Hydraulically downgradient monitoring well 48MW-16R (methane concentrations increased from 8,280 µg/L in November 2017 to 20,900 µg/L in April 2018).
 - Bedrock zone:
 - Bedrock-screened well 48DW-2 (methane concentrations increased from 7,300 µg/L in May-June 2017 to 15,600 µg/L in January-February 2018) and



- Bedrock-screened, inactive, recovery well 48RW-1 (methane concentrations increased from 4,490 µg/L in May-June 2017 to 18,500 µg/L in April 2018).
- Methane concentrations in samples from wells east of the intermittent creek exhibited the following ranges between May 2017 to April 2018:
 - 48DW-8: ranged from less than 10 mg/L to 24.5 mg/L.
 - 48DW-10: ranged from less than 10 mg/L to 40.7 mg/L.

Therefore, the ERD treatment zone likely remains farther north of this area of the site.

- According to USEPA (1998), groundwater pH values should be between 5 – 9 standard pH units (s.u.) for optimal reductive dechlorination rates. The pH values for the saprolite/PWR permeable zone ranged from 4.9 – 7.6 s.u., with an average pH value of 6.2 s.u. The pH values for the bedrock permeable zone ranged from 5.1 – 7.9 s.u., with an average pH value of 7.1 s.u. These ranges excluded an anomalous pH value of 9.35 to 10.01 s.u. in the samples from well 48DW-10, which were the likely result of grout intrusion into the well during well construction. Overall, the average pH values for both stratigraphic units should be conducive to reductive dechlorination reactions.
- According to USEPA (1998), the detection of degradation products such as ethene at more than 10 µg/L or ethane at more than 100 µg/L provides evidence of on-going reductive dechlorination reactions. Most of the sample results suggested that ethene and ethane concentrations were less than the laboratory reporting limits of 10 µg/L (Table 5). However, Pace detected ethene in the samples from monitoring well 48MW-16R at 27.4 µg/L during the June 2017 monitoring event and 48MW-4R at 44.8 µg/L during the January-February 2018 monitoring event. Pace detected ethane in the sample from monitoring well 48SVE-01R at 22.4 µg/L during the January 2018 sampling event. These data are indicative of ethene and ethane generation due to reductive-dechlorination reactions, followed by subsequent concentration reductions due to *in situ* biodegradation of these compounds, typically by aerobic processes.

6 Recommendations

Based on the data within this report, Duncklee & Dunham recommends continuation of the ERD injection strategy using BRP at this site, pending our review of the groundwater quality data from the September 26, 2018 monitoring event. During our review of those data, we will evaluate potential options to enhance the lateral distribution of the BRP solution to areas hydraulically downgradient of the injection points 48IW-1 through 48IW-5 to increase the effectiveness of the strategy. Duncklee & Dunham also recommends:

- Collecting more surface water samples downgradient of the site, potentially from the quarry south of Sugar Lake Road.
- Constructing additional monitoring wells in the saprolite/PWR and bedrock zones near to the Mitchell and Sanders properties to understand the spatial extent of TCE in groundwater north and east of the existing monitoring well network.
- Re-surveying the top of stream gauges (48-HS-1-SW, 48-HS-2-SW, and 48-HS-3-SW) to better understand groundwater and surface water interactions, and the top of casings of select monitor



wells (48MW-12, 48MW-13, 48MW-18, 48MW-19, 48MW-20, 48MW-23, 48DW-4, 48DW-8, 48DW-9, 48DW-10, and 48DW-11) to better horizontal and vertical gradients at the site.

Duncklee & Dunham also recommends abandoning bedrock monitoring well 48DW-1 in accordance with 15 NCAC 2C.0100 Well Construction Standards (October 2009). S&ME (1999) determined that groundwater recharge into 48DW-1 occurred only through inflow from the PWR zone through a leaky surface casing and did not observe water-bearing fractures in the bedrock during video logging of this well. Therefore, the samples collected from monitoring well 48DW-1 are likely more representative of groundwater quality in the PWR.

Duncklee & Dunham initiated an additional groundwater monitoring event in late September 2018. We will present the results of these activities in a future report. Duncklee & Dunham may recommend additional BRP injection events at the site, based on the results from those samples. Unless modified by subsequent submittals, Duncklee & Dunham will conduct future groundwater monitoring activities at the site in accordance with the Sampling and Analysis Plan in Appendix F. The next groundwater monitoring event is scheduled for a semi-annual basis, to be conducted in March 2019 (i.e., 6 months from the September 2018 event).

7 References

AECOM, 2010. 2010 Site Assessment Report, North Carolina Department of Transportation, Pittsboro Asphalt Site No. 6-48 (34613.3.13), 240 Sugar Lake Road, Pittsboro, Chatham County, North Carolina, November.

AECOM, 2013a, 2012, Receptor Survey Summary, Former Lee Paving Asphalt Testing Site, North Carolina Department of Transportation Priority Testing Site No. 6-48, Pittsboro, North Carolina, April.

AECOM, 2013b, Phytoremediation Interim Measures Work Plan North Carolina Department of Transportation, NCDOT Pittsboro Asphalt Site No. 6-48 (34613.3.13), 240 Sugar Lake Road, Pittsboro, Chatham County, North Carolina, May.

AECOM, 2013c, Former Lee Paving Asphalt Testing Site Phytoremediation System Final Construction Report, NCDOT Priority Testing Site No. 6-48, 240 Sugar Lake Road, Pittsboro, North Carolina, July 2013.

Arcadis, 2006, Semi-Annual Report on Groundwater Remediation System O&M and Monitor Well Sampling – October 2005 through April 2006, NCDOT Asphalt Testing Site #6-48, 240 Sugar Lake Road, Pittsboro, North Carolina. August 31.

Bradley, P.J., Gay, N.K., Bechtel, R., Clark, T.W., 2007, Geologic Map of the Farrington 7.5-Minute Quadrangle, Chatham, Orange and Durham Counties, North Carolina, North Carolina, Geological Survey Open File Report 2007-03.

Geraghty & Miller, Inc., 1997, Comprehensive Site Assessment, NCDOT Asphalt Testing Site #48, Chatham County, North Carolina, May 13.



Hart & Hickman, P.C. (Hart & Hickman), 2013, Soil Assessment Report, Former Asphalt Testing Site No. 6-48, Pittsboro, North Carolina, September 5.

Hart & Hickman, 2015a, Soil Area Soil Excavation Report, Former ATL NO. 48, Pittsboro, North Carolina. May 26.

Hart & Hickman, 2015b, Semi-Annual Groundwater Monitoring and Bioenhancement Injection Evaluation Report, Former Asphalt Testing Site No. 48, Pittsboro, North Carolina, October 27.

Hart & Hickman, 2016, BRP Injection and Semi-Annual Groundwater Monitoring Report, Former Asphalt Testing Site No. 48, Pittsboro, North Carolina, May 11.

Hart & Hickman, 2017, Semi-Annual and Baseline Groundwater Monitoring Report, Former ATL No. 48, 240 Sugar Lake Road Pittsboro, North Carolina, April 21, 2017.

Heath, Ralph C., 1980, Basic Elements of Ground-Water Hydrology with Reference to Conditions in North Carolina, U.S. Geological Survey, Water-Resources Investigations, Open-File Report 80-44.

LeGrand, H. E. Sr., 2004, Master Conceptual Model for Hydrogeological Site Characterization in the Piedmont and Mountain Region of North Carolina. Prepared for the North Carolina Department of Environment and Natural Resources, Division of Water Quality, Groundwater Section, February 2004.

North Carolina Department of Environmental Quality (NCDEQ), 2009, Title 15A North Carolina Administrative Code (NCAC) Subchapter 2C Well Construction Standards. State of North Carolina, Division of Water Quality, October 1.

NCDEQ, 2013, Title 15A NCAC Subchapter 2L Groundwater Standards, State of North Carolina, Division of Water Quality, April 1.

NCDEQ, 2017, Title 15A NCAC Subchapter 2B Surface Water Quality Standards, State of North Carolina, Division of Water Quality, September 22.

North Carolina Geologic Survey (NCGS), 1985, Geologic Map of North Carolina. Department of Natural Resources and Community Development.

Soil & Material Engineers (S&ME), 1999, Corrective Action Plan. NCDOT Asphalt Testing Site #6-48, 240 Sugar Lake Road, Pittsboro, North Carolina.

S&ME, 2000, Revised Corrective Action Plan. NCDOT Asphalt Testing Site #6-48, 240 Sugar Lake Road, Pittsboro, North Carolina.

S&ME, 2003, Groundwater Monitoring Report, Former Asphaltic Materials Testing Laboratory Sites, Site NO. 6-48 (S.T. Wooten Construction, 240 Sugar Lake Road, Pittsboro, North Carolina. March 2003.

United States Environmental Protection Agency (USEPA), 1998, Technical Protocol for Evaluating Natural Attenuation of Chlorinated Solvents in Ground Water. USEPA, Office of Research and Development, EPA/600/R-98/128. September.



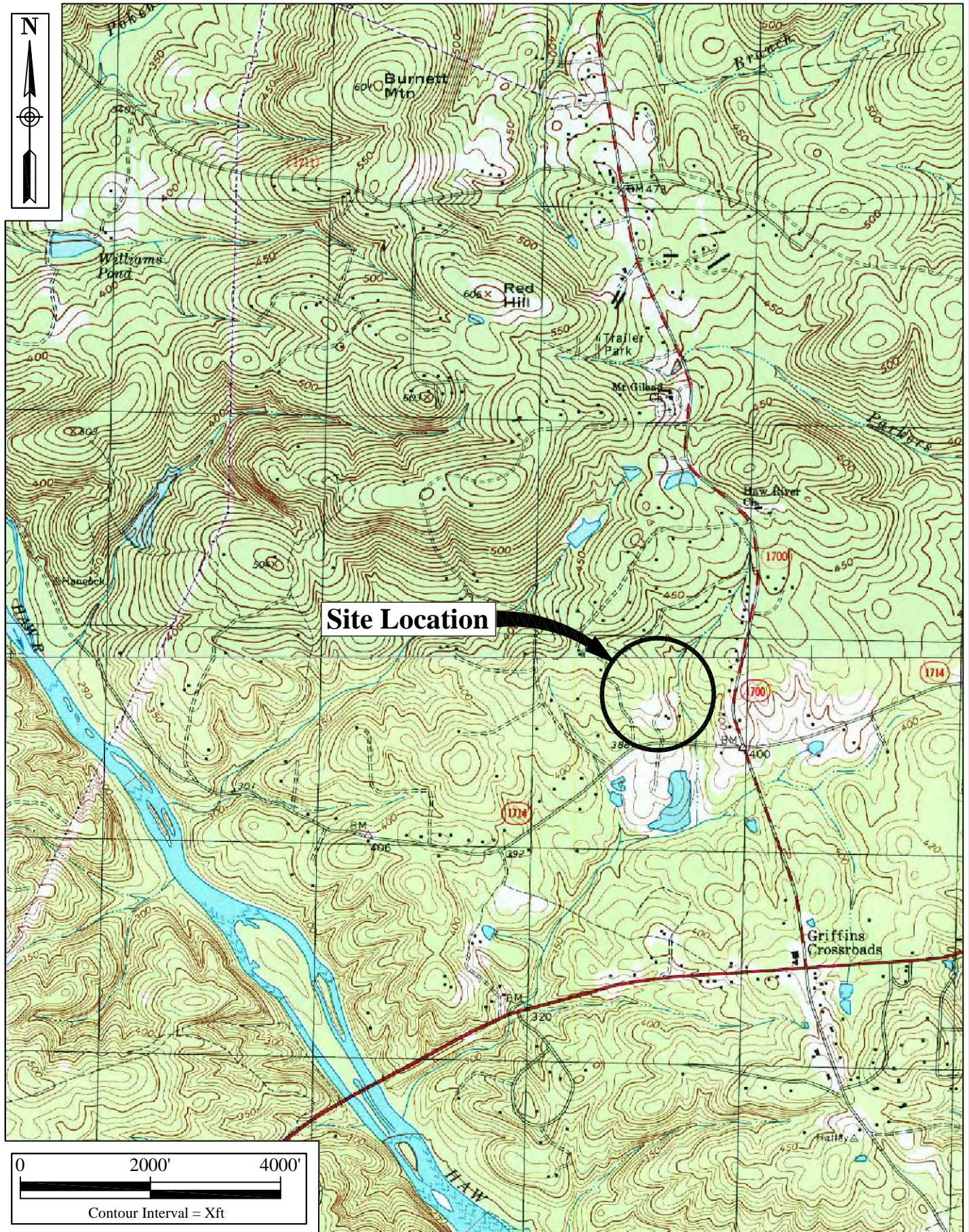
USEPA, 2011, Operating Procedure: Groundwater Sampling. Science and Ecosystem Support Division. SESDPROC-301-R2.

United States Geological Survey (USGS), 1993, Farrington Quadrangle, 7.5-Minute Series (Topographic), State of North Carolina, Department of Environment and Natural Resources, Division of Land Resources, North Carolina Geological Survey.

USGS, 1993, Merry Oaks Quadrangle, 7.5-Minute Series (Topographic), State of North Carolina, Department of Environment and Natural Resources, Division of Land Resources, North Carolina Geological Survey.



Figures



Site Location



DUNCKLEE & DUNHAM
 ENVIRONMENTAL GEOLOGISTS & ENGINEERS

511 Keisler Drive Suite 102
 Cary, North Carolina 27518
 NC Eng. License No. C-3559

(919) 858-9898
 www.dunckleedunham.com
 NC Geo. License No. C-261

Site Location and Topographic Map
 Former Asphalt Testing Laboratory No. 6-48
 Pittsboro, North Carolina

Drawn By: dmw	Checked By: DRM	Project Number: 2018135	Date: September 2018	References: USGS 7.5 min. Quadrangles: Merry Oaks and Farrington, 1993.
Scale: 1" = 2000'	Size: 8.5" x 11"	Layers: 0,1	Filename: 2018135 NCDOT Pittsboro/ 2018135 Site Location Map	

Figure

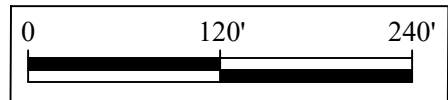
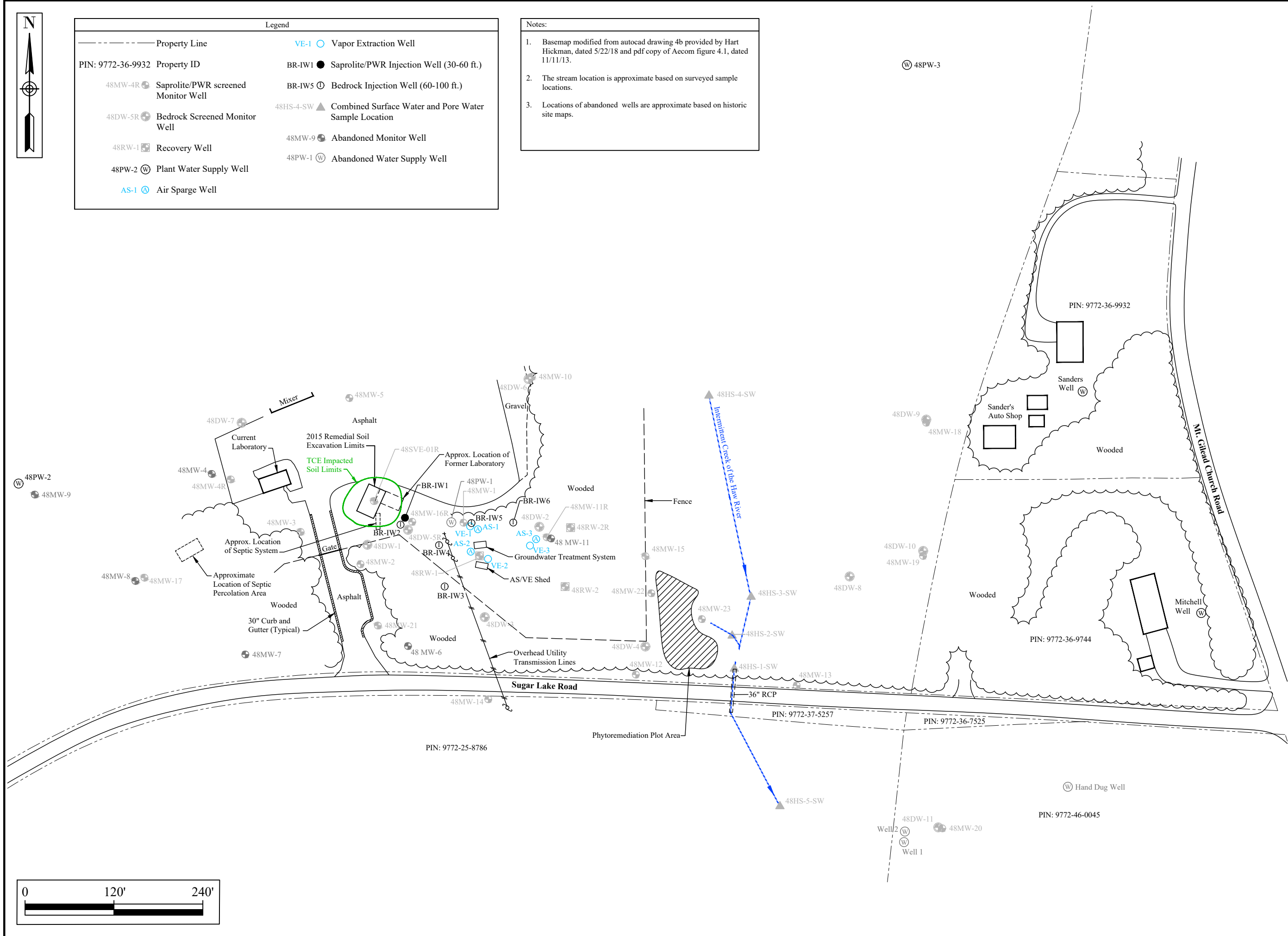
1



Legend	
----- Property Line	VE-1 ○ Vapor Extraction Well
PIN: 9772-36-9932 Property ID	BR-IW1 ● Saproliite/PWR Injection Well (30-60 ft.)
48MW-4R ● Saproliite/PWR screened Monitor Well	BR-IW5 ○ Bedrock Injection Well (60-100 ft.)
48DW-5R ● Bedrock Screened Monitor Well	48HS-4-SW ▲ Combined Surface Water and Pore Water Sample Location
48RW-1 ● Recovery Well	48MW-9 ● Abandoned Monitor Well
48PW-2 ● Plant Water Supply Well	48PW-1 ● Abandoned Water Supply Well
AS-1 ● Air Sparge Well	

Notes:

1. Basemap modified from autocad drawing 4b provided by Hart Hickman, dated 5/22/18 and pdf copy of Aecom figure 4.1, dated 11/11/13.
2. The stream location is approximate based on surveyed sample locations.
3. Locations of abandoned wells are approximate based on historic site maps.



DUNCKLEE & DUNHAM
 ENVIRONMENTAL GEOLOGISTS & ENGINEERS
 511 Keisler Drive Suite 102
 Cary, North Carolina 27518
 (919) 858-9898
 www.dunckleedunham.com
 NC Eng. License No. C-3559
 NC Geo. License No. C-261

Site Features and Well Location Map	
Former Asphalt Testing Laboratory No. 6-48 Pittsboro, North Carolina	
Drawn By: dnm	Checked By: DRA
Scale: 1" = 120'	Size: 11" x 17"
Project Number: 2018135	Date: November 2018
Layers: 0 - 10*	Filename: NCDOT Pittsboro/2018135 Site Map
References:	

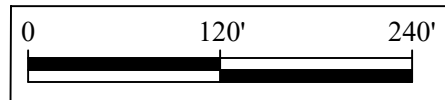
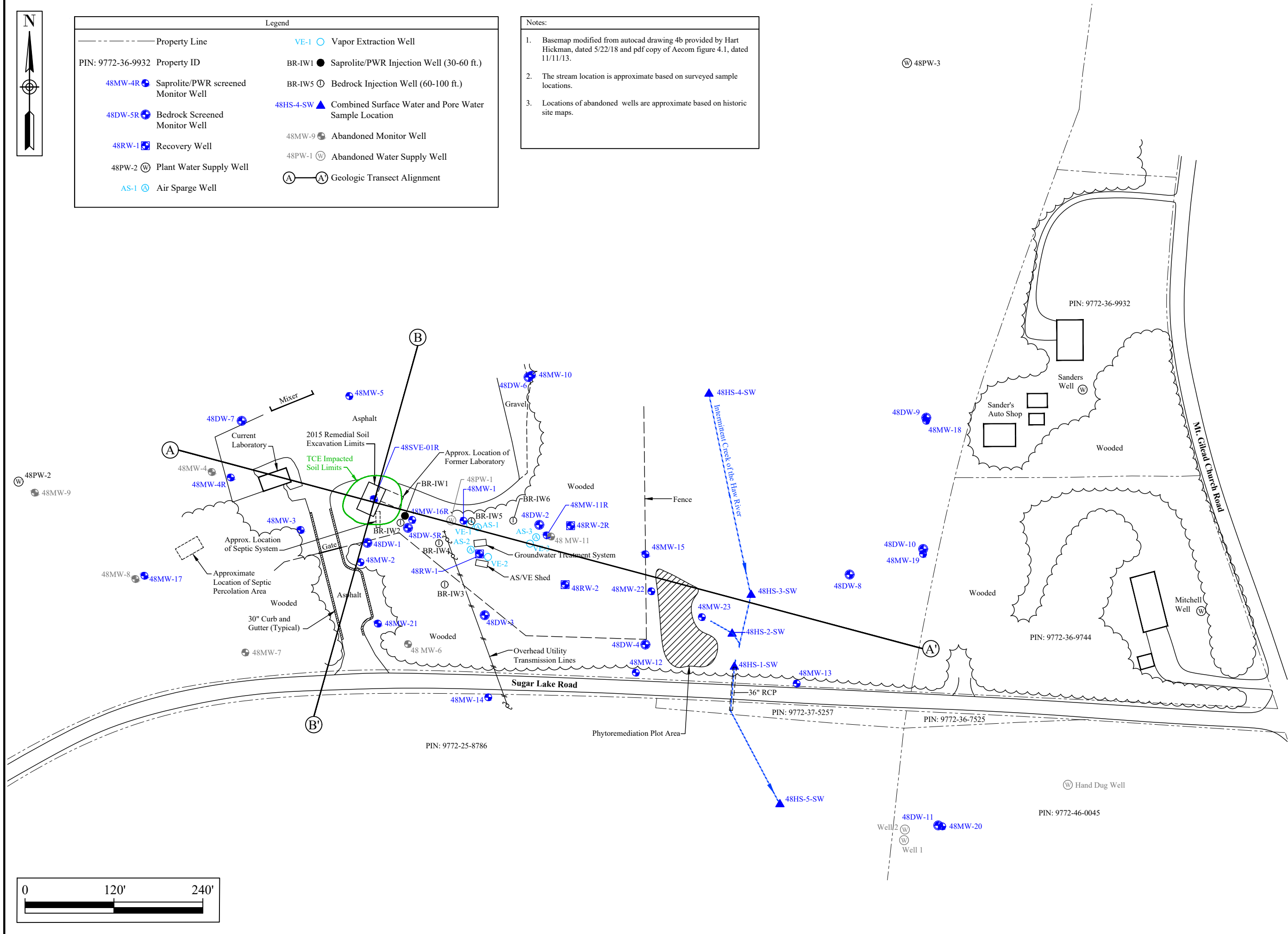
Figure
2



Legend	
----- Property Line	VE-1 ○ Vapor Extraction Well
PIN: 9772-36-9932 Property ID	BR-IW1 ● Saprolite/PWR Injection Well (30-60 ft.)
48MW-4R ● Saprolite/PWR screened Monitor Well	BR-IW5 ○ Bedrock Injection Well (60-100 ft.)
48DW-5R ● Bedrock Screened Monitor Well	48HS-4-SW ▲ Combined Surface Water and Pore Water Sample Location
48RW-1 ● Recovery Well	48MW-9 ● Abandoned Monitor Well
48PW-2 ● Plant Water Supply Well	48PW-1 ● Abandoned Water Supply Well
AS-1 ● Air Sparge Well	○—○ Geologic Transect Alignment

Notes:

1. Basemap modified from autocad drawing 4b provided by Hart Hickman, dated 5/22/18 and pdf copy of Aecom figure 4.1, dated 11/11/13.
2. The stream location is approximate based on surveyed sample locations.
3. Locations of abandoned wells are approximate based on historic site maps.

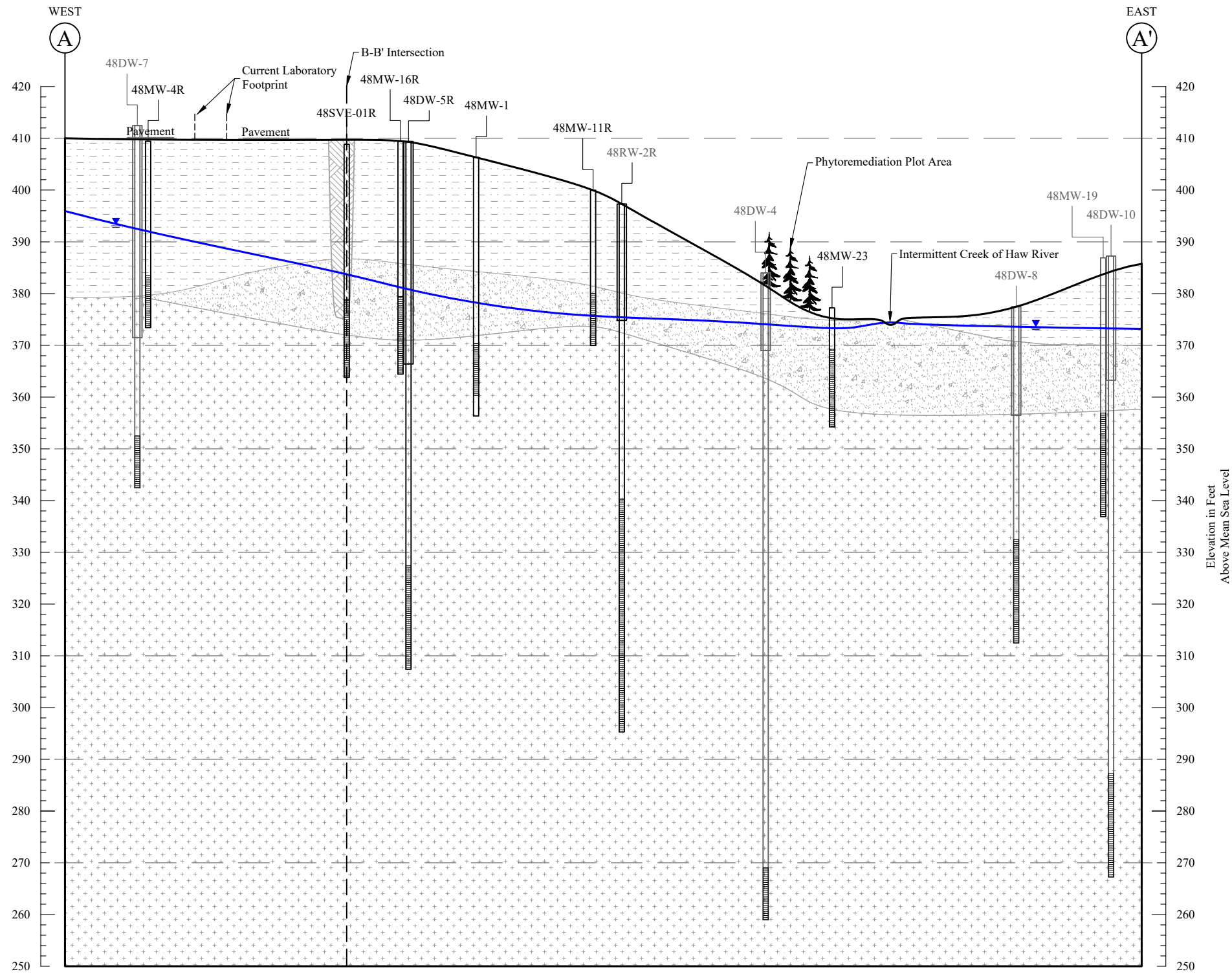


Site Map with Geologic Cross-Section Transects		References:	
Former Asphalt Testing Laboratory No. 6-48 Pittsboro, North Carolina		Date:	November 2018
Checked By:	PRM	Project Number:	2018135
Drawn By:	dmw	Layers:	0 - 10*, 11
Scale:	1" = 120'	Filename:	NCDOT Pittsboro/2018135 Site Map
Size:	11" x 17"		

Figure
3

DUNCKLEE & DUNHAM
ENVIRONMENTAL GEOLOGISTS & ENGINEERS

511 Keisler Drive Suite 102
Cary, North Carolina 27518
www.dunckleedunham.com
NC Eng. License No. C-3559 (919) 858-9898
NC Geo. License No. C-261



Vertical Scale 1" = 20'
 Horizontal Scale 1" = 120'



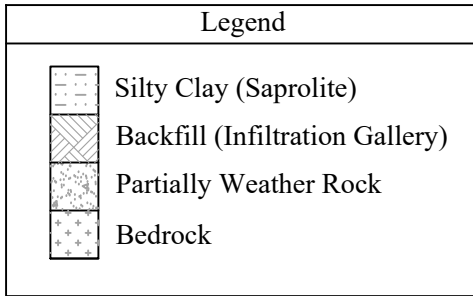
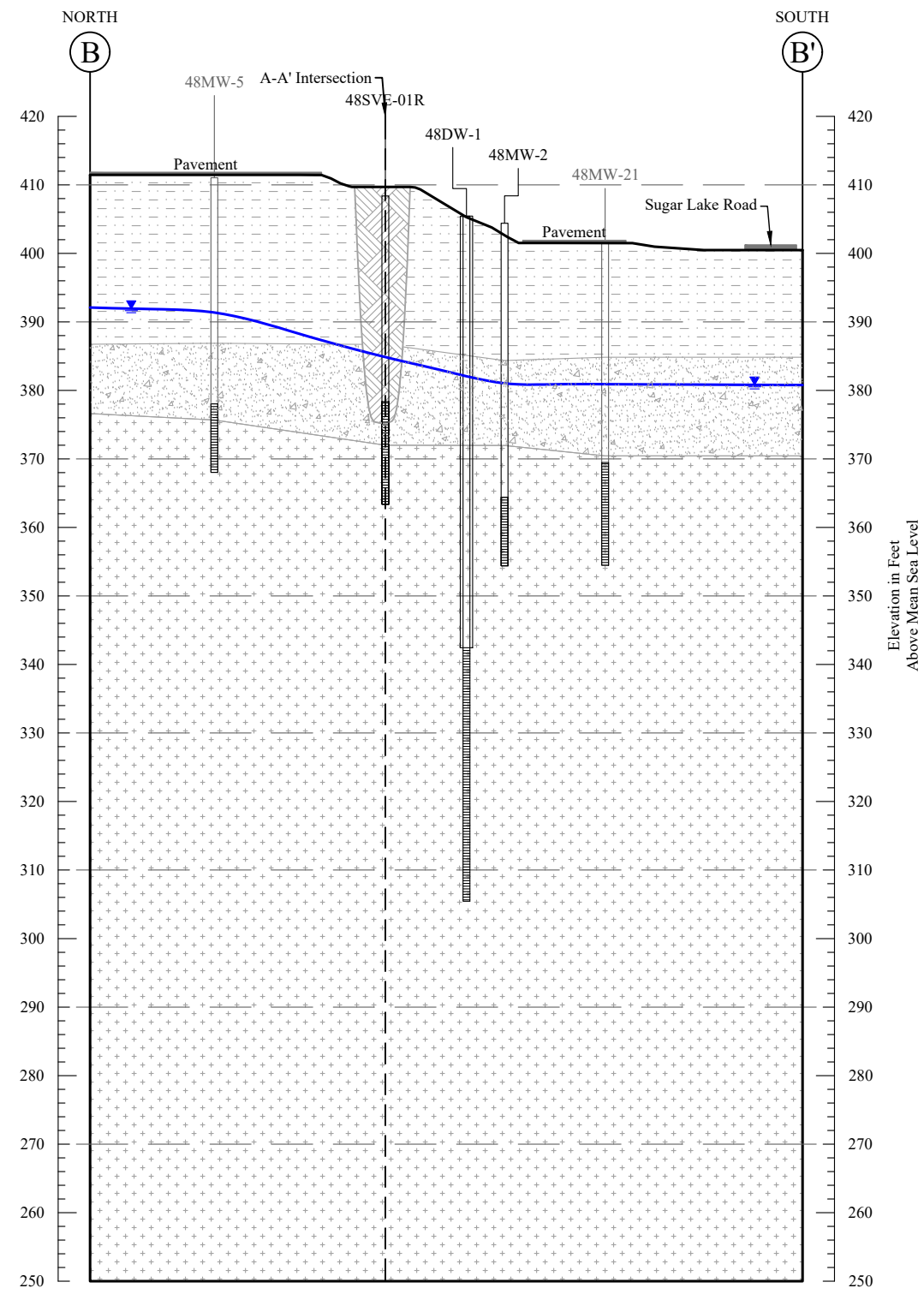
Legend	
	Silty Clay (Saprolite)
	Backfill (Infiltration Gallery)
	Partially Weather Rock
	Bedrock

Generalized Geologic Cross Section A-A'

Former Asphalt Testing Laboratory No. 6-48
 Pittsboro, North Carolina

Drawn By: mrw/ml	Checked By: PRM	Project Number: 2018135	Date: November 2018	References: Cross Section Details referenced from Hart Hickman Reports, Field Notes
Scale: See Scale Bar	Size: 11" x 17"	Layers: 0, 1, 3-5, 11-16	Filename: P:\NC\DOT-ATL\Pittsboro (48)-2018135\CAD\Cross Sections.dwg	

Figure



Vertical Scale 1" = 20'
 Horizontal Scale 1" = 120'







Generalized Geologic Cross Section B-B'			
Former Asphalt Testing Laboratory No. 6-48 Pittsboro, North Carolina			
Drawn By:	Checked By:	Project Number:	Date:
mrw/ml		2018135	November 2018
Scale:	Size:	Layers:	Filename:
See Scale Bar	11" x 17"	0,2-5,11-16	P:\NC\DOT-ATL\Pittsboro (48)-2018135\CAD\Cross Sections.dwg
References:		Cross Section Details referenced from Hart Hickman Reports, Field Notes	

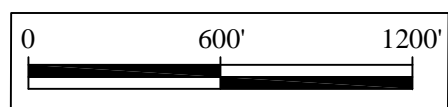
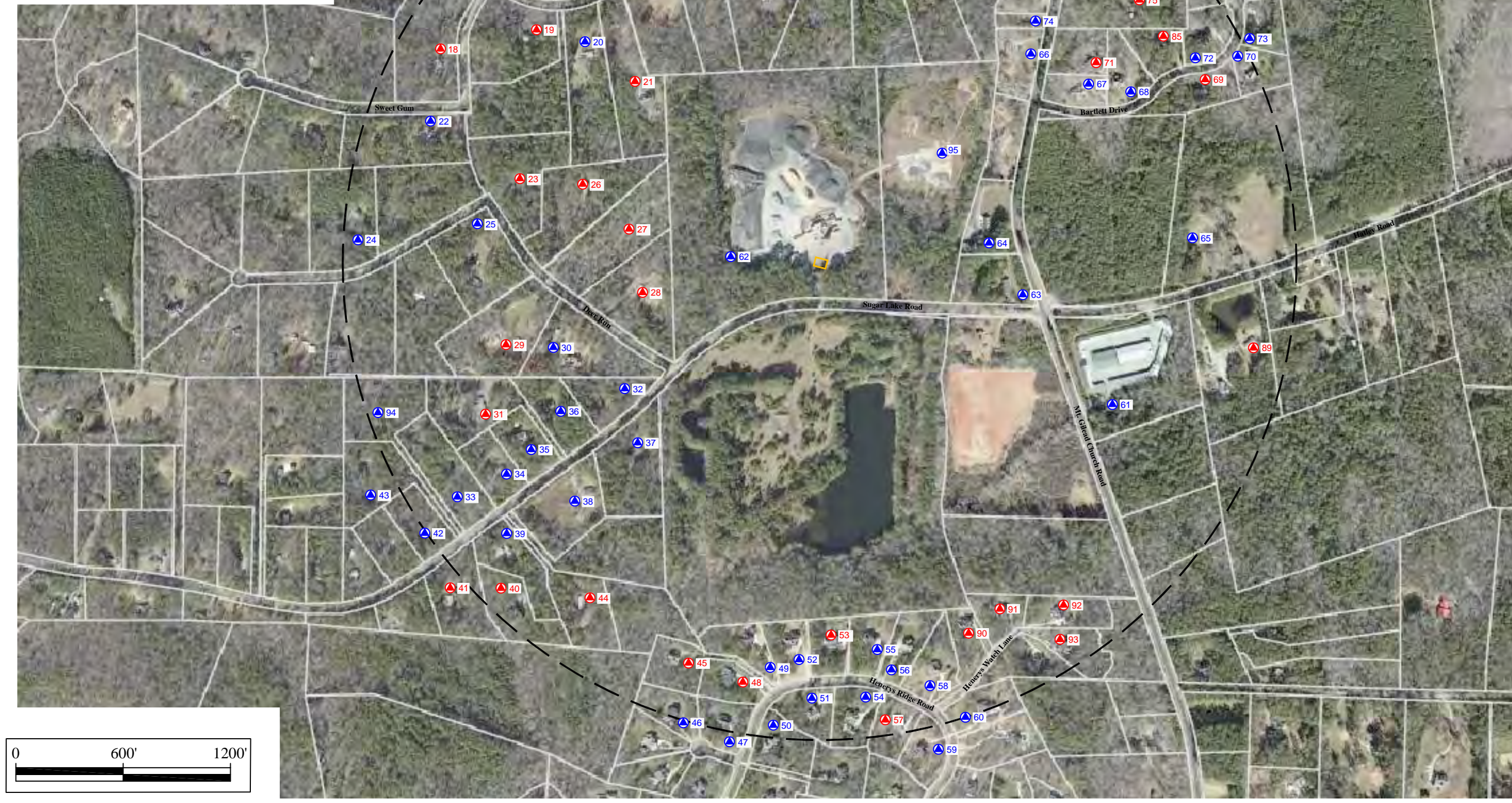
Figure
5



Legend

-  Former ATL
-  0.5 Mile Radius From Former ATL
-  Water Supply Well
-  Water Supply Well Suspected (No Visual Confirmation)

- Notes:
1. Basemap modified from autocad drawing provided by Hart Hickman, entitled "Water Supply Well Location Map", dated 9/19/17.
 2. All locations are approximate.



511 Keisler Drive Suite 102
 Cary, North Carolina 27518
 NC Eng. License No. C-3559
 (919) 858-9898
 www.dunckleedunham.com
 NC Geo. License No. C-261

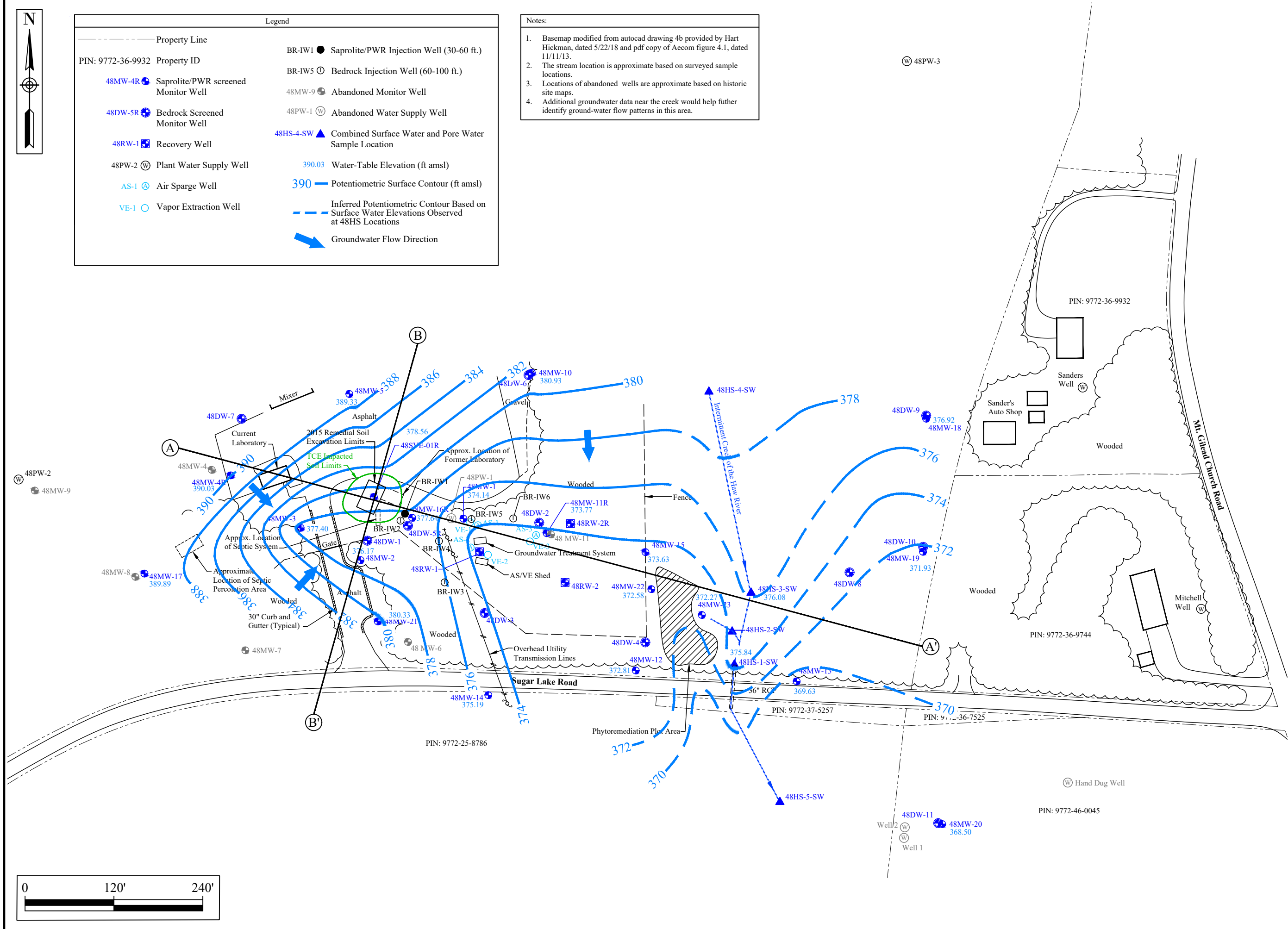
Water Supply Well Location Map		References:	
Former Asphalt Testing Laboratory No. 6-48		Date:	September 2018
Pittsboro, North Carolina		Project Number:	2018135
Checked By:	DMW	Layers:	0 - 10*, 11
Drawn By:	dmw	Size:	11" x 17"
Scale:	1" = 600'	Filename:	NC DOT Pittsboro/2018135 Water Supply

Figure
6



Legend	
--- Property Line	BR-IW1 ● Saprolite/PWR Injection Well (30-60 ft.)
PIN: 9772-36-9932 Property ID	BR-IW5 ○ Bedrock Injection Well (60-100 ft.)
48MW-4R ● Saprolite/PWR screened Monitor Well	48MW-9 ● Abandoned Monitor Well
48DW-5R ● Bedrock Screened Monitor Well	48PW-1 Ⓜ Abandoned Water Supply Well
48RW-1 ● Recovery Well	48HS-4-SW ▲ Combined Surface Water and Pore Water Sample Location
48PW-2 Ⓜ Plant Water Supply Well	390.03 Water-Table Elevation (ft amsl)
AS-1 ● Air Sparge Well	390 — Potentiometric Surface Contour (ft amsl)
VE-1 ○ Vapor Extraction Well	- - - Inferred Potentiometric Contour Based on Surface Water Elevations Observed at 48HS Locations
	➔ Groundwater Flow Direction

- Notes:
1. Basemap modified from autocad drawing 4b provided by Hart Hickman, dated 5/22/18 and pdf copy of Aecom figure 4.1, dated 11/11/13.
 2. The stream location is approximate based on surveyed sample locations.
 3. Locations of abandoned wells are approximate based on historic site maps.
 4. Additional groundwater data near the creek would help further identify ground-water flow patterns in this area.



Saprolite and PWR Permeable Zone Potentiometric Surface Map - May 30, 2017			
Former Asphalt Testing Laboratory No. 6-48 Pittsboro, North Carolina			
Drawn By:	Checked By:	Project Number:	References:
dmw	DRM	2018135	Date: November 2018
Scale:	Size:	Layers:	Filename:
1" = 120'	11" x 17"	0 - 10*, 12	P:\NCDOT-ATL\Pittsboro (48) -2018135\CAD

DUNCKLEE & DUNHAM
 ENVIRONMENTAL GEOLOGISTS & ENGINEERS

511 Keister Drive Suite 102
 Cary, North Carolina 27518
 NC Eng. License No. C-3559

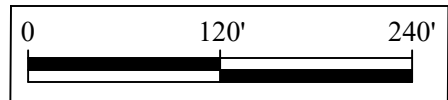
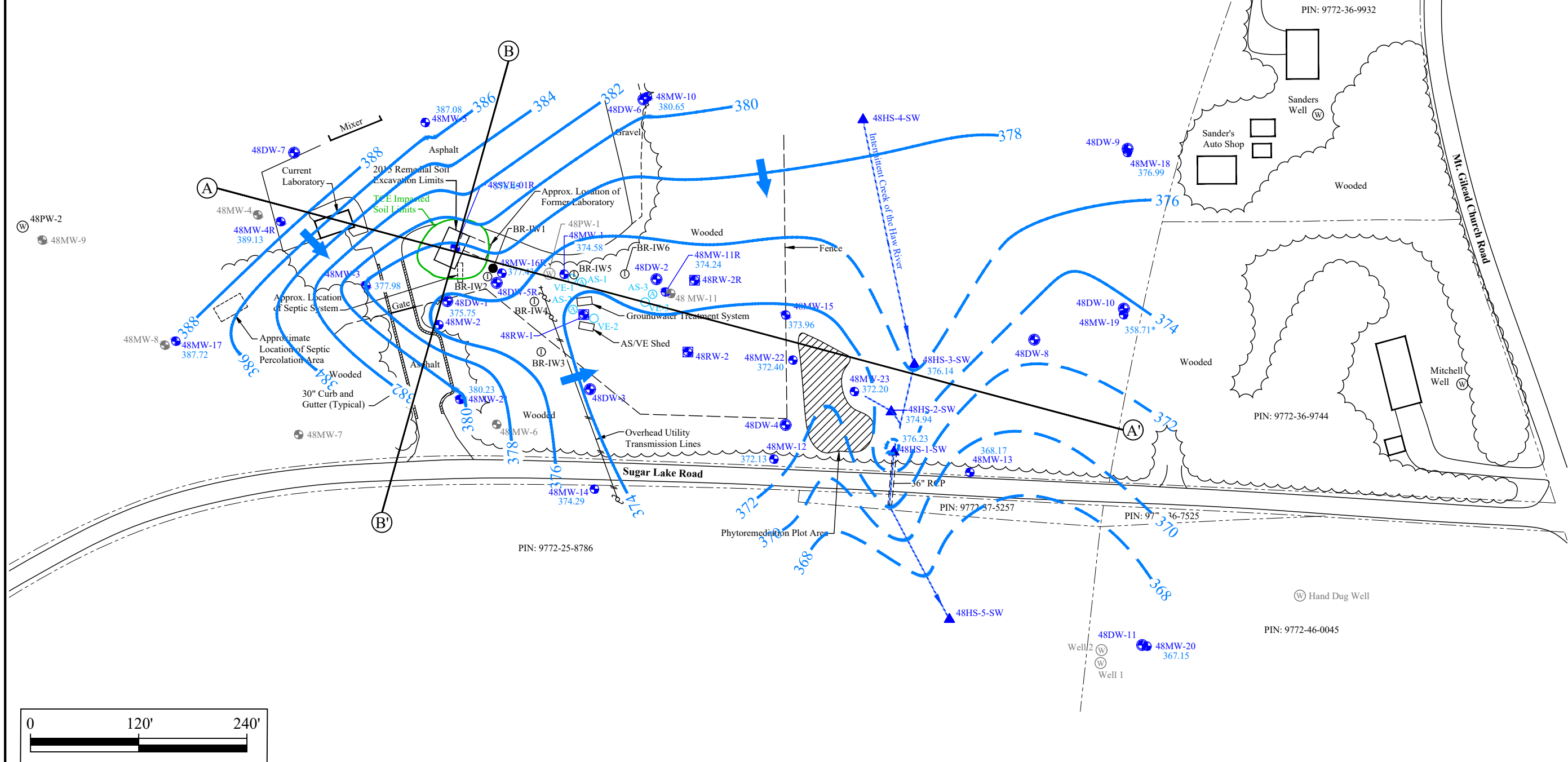
(919) 858-9898
 www.dunckleedunham.com
 NC Geo. License No. C-261

Figure
7



Legend	
----- Property Line	BR-IW1 ● Saprolite/PWR Injection Well (30-60 ft.)
PIN: 9772-36-9932 Property ID	BR-IW5 ○ Bedrock Injection Well (60-100 ft.)
48MW-4R ● Saprolite/PWR screened Monitor Well	48MW-9 ● Abandoned Monitor Well
48DW-5R ● Bedrock Screened Monitor Well	48PW-1 (W) Abandoned Water Supply Well
48RW-1 (W) Recovery Well	48HS-4-SW ▲ Combined Surface Water and Pore Water Sample Location
48PW-2 (W) Plant Water Supply Well	389.13 Water-Table Elevation (ft amsl)
AS-1 (C) Air Sparge Well	358.71* Water-Table Elevation not used to Create Potentiometric Surface Contours
VE-1 (O) Vapor Extraction Well	388 — Potentiometric Surface Contour (ft amsl)
	- - - Inferred Potentiometric Contour Based on Surface Water Elevations Observed at 48HS Locations
	➔ Groundwater Flow Direction

- Notes:
1. Basemap modified from autocad drawing 4b provided by Hart Hickman, dated 5/22/18 and pdf copy of Aecom figure 4.1, dated 11/11/13.
 2. The stream location is approximate based on surveyed sample locations.
 3. Locations of abandoned wells are approximate based on historic site maps.
 4. Additional groundwater data near the creek would help further identify ground-water flow patterns in this area.



DUNCKLEE & DUNHAM
 ENVIRONMENTAL GEOLOGISTS & ENGINEERS
 511 Keisler Drive Suite 102
 Cary, North Carolina 27518
 (919) 858-9898
 www.dunckleedunham.com
 NC Eng. License No. C-3559
 NC Geo. License No. C-261

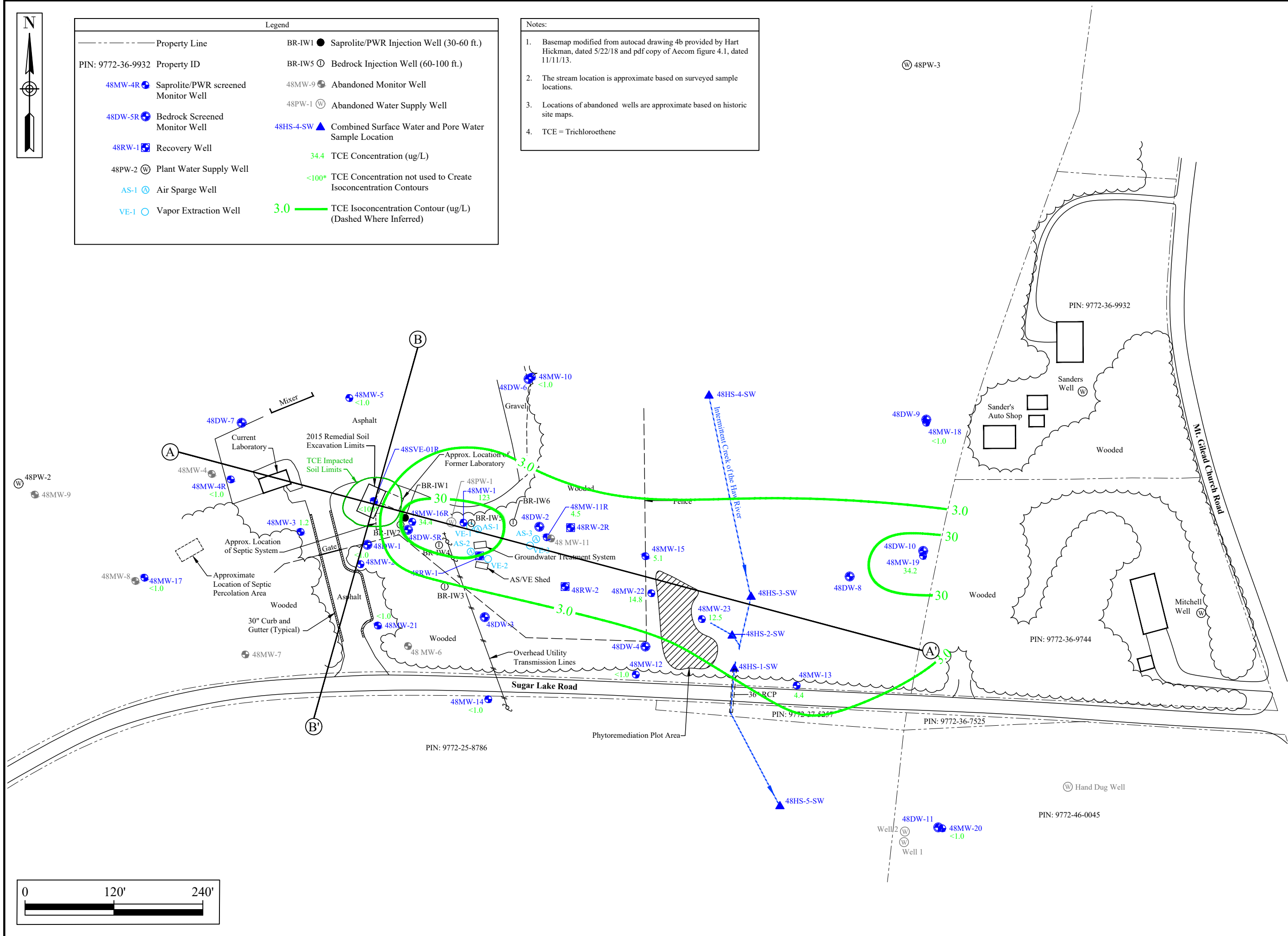
Saprolite and PWR Permeable Zone Potentiometric Surface Map - January 29, 2018			
Former Asphalt Testing Laboratory No. 6-48 Pittsboro, North Carolina			
Drawn By:	Checked By:	Project Number:	References:
dmw	PRM	2018135	Date: November 2018
Scale:	Size:	Layers:	Filename:
1" = 120'	11" x 17"	0 - 10*, 13	P:\NCDOT-ATL\Pittsboro (48) -2018135\CAD

Figure
8



Legend	
----- Property Line	BR-IW1 ● Saprolite/PWR Injection Well (30-60 ft.)
PIN: 9772-36-9932 Property ID	BR-IW5 ○ Bedrock Injection Well (60-100 ft.)
48MW-4R ● Saprolite/PWR screened Monitor Well	48MW-9 ● Abandoned Monitor Well
48DW-5R ● Bedrock Screened Monitor Well	48PW-1 (W) Abandoned Water Supply Well
48RW-1 (R) Recovery Well	48HS-4-SW ▲ Combined Surface Water and Pore Water Sample Location
48PW-2 (W) Plant Water Supply Well	34.4 TCE Concentration (ug/L)
AS-1 (A) Air Sparge Well	<100* TCE Concentration not used to Create Isoconcentration Contours
VE-1 (V) Vapor Extraction Well	3.0 TCE Isoconcentration Contour (ug/L) (Dashed Where Inferred)

- Notes:
1. Basemap modified from autocad drawing 4b provided by Hart Hickman, dated 5/22/18 and pdf copy of Aecom figure 4.1, dated 11/11/13.
 2. The stream location is approximate based on surveyed sample locations.
 3. Locations of abandoned wells are approximate based on historic site maps.
 4. TCE = Trichloroethene



DUNCKLEE & DUNHAM
 ENVIRONMENTAL GEOLOGISTS & ENGINEERS
 511 Keisler Drive Suite 102
 Cary, North Carolina 27518
 (919) 858-9898
 www.dunckleedunham.com
 NC Eng. License No. C-3559
 NC Geo. License No. C-261

Saprolite and PWR Permeable Zone TCE Isoconcentration Map - May-June, 2017	
Former Asphalt Testing Laboratory No. 6-48 Pittsboro, North Carolina	
Checked By: dmw	References:
Drawn By: PRM	Date: September 2018
Scale: 1" = 120'	Project Number: 2018135
Size: 11" x 17"	Layers: 0 - 10*, 18
	Filename: NCDOT Pittsboro/2018135 Site Map

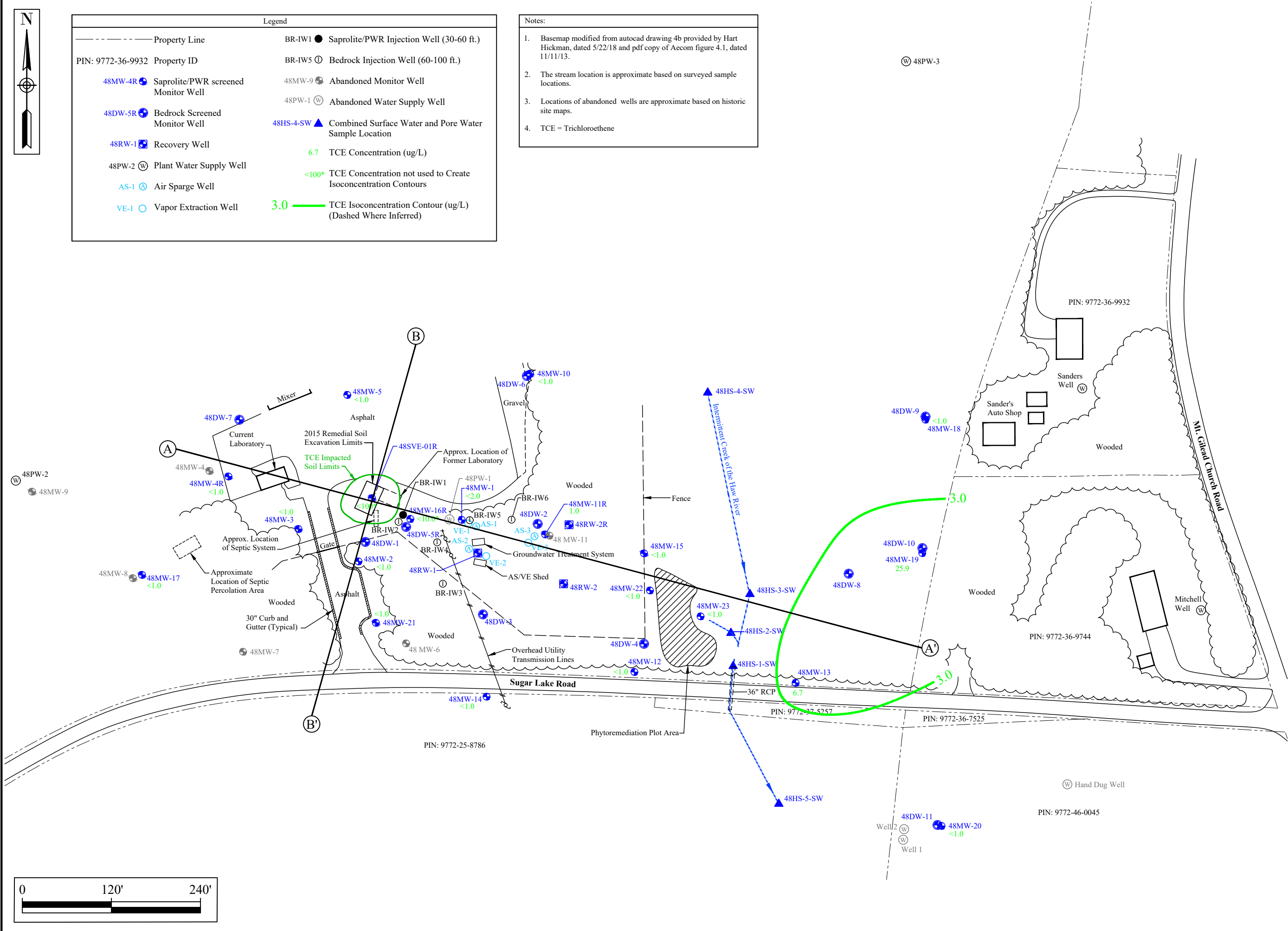
Figure
9



Legend	
----- Property Line	BR-IW1 ● Sapolite/PWR Injection Well (30-60 ft.)
PIN: 9772-36-9932 Property ID	BR-IW5 ○ Bedrock Injection Well (60-100 ft.)
48MW-4R ● Sapolite/PWR screened Monitor Well	48MW-9 ● Abandoned Monitor Well
48DW-5R ● Bedrock Screened Monitor Well	48PW-1 (W) Abandoned Water Supply Well
48RW-1 (R) Recovery Well	48HS-4-SW ▲ Combined Surface Water and Pore Water Sample Location
48PW-2 (W) Plant Water Supply Well	6.7 TCE Concentration (ug/L)
AS-1 (A) Air Sparge Well	<100* TCE Concentration not used to Create Isoconcentration Contours
VE-1 (V) Vapor Extraction Well	3.0 TCE Isoconcentration Contour (ug/L) (Dashed Where Inferred)

Notes:

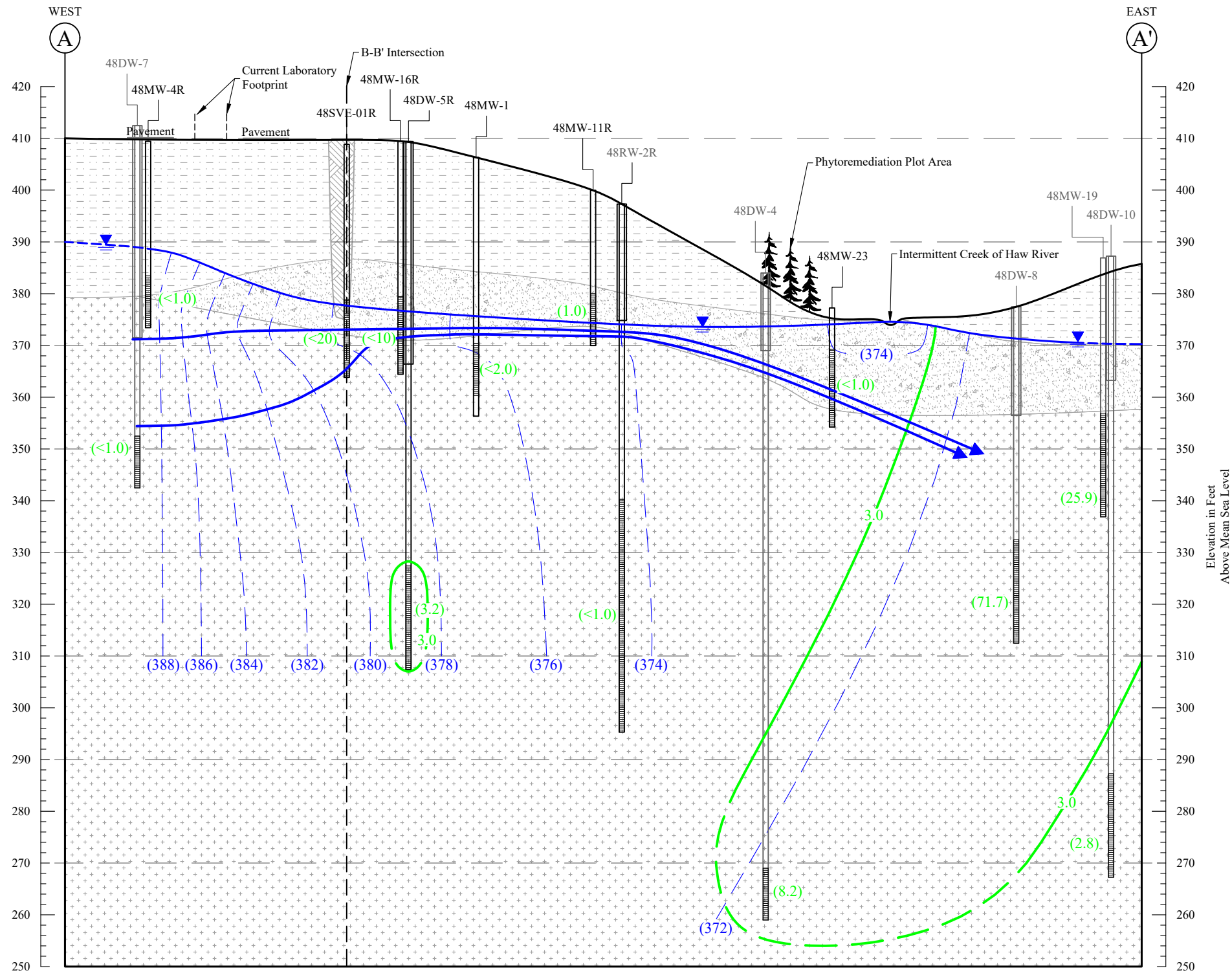
1. Basemap modified from autocad drawing 4b provided by Hart Hickman, dated 5/22/18 and pdf copy of Aecom figure 4.1, dated 11/11/13.
2. The stream location is approximate based on surveyed sample locations.
3. Locations of abandoned wells are approximate based on historic site maps.
4. TCE = Trichloroethene



DUNCKLEE & DUNHAM
 ENVIRONMENTAL GEOLOGISTS & ENGINEERS
 511 Keisler Drive Suite 102
 Cary, North Carolina 27518
 (919) 858-9898
 www.dunckleedunham.com
 NC Eng. License No. C-3559
 NC Geo. License No. C-261

Sapolite and PWR Permeable Zone TCE Isoconcentration Map - January-February 2018			
Former Asphalt Testing Laboratory No. 6-48 Pittsboro, North Carolina			
Drawn By:	Checked By:	Project Number:	References:
dmw	DRM	2018135	Date: September 2018
Scale:	Size:	Layers:	Filename:
1" = 120'	11" x 17"	0 - 10*, 19	NCDOT Pittsboro/2018135 Site Map

Figure
10



Vertical Scale 1" = 20'
Horizontal Scale 1" = 120'



Legend	
	Silty Clay (Saprolite)
	Backfill (Infiltration Gallery)
	Partially Weather Rock
	Bedrock
	Water-Table Elevation
	(388) Equipotential Contour (Estimated)
	Groundwater Flow Path (Inferred)
	3 Trichloroethene Isoconcentration Contour in µg/L (Dashed Where Inferred)
	(<1.0) Trichloroethene Concentration in µg/L

Geologic Cross Section A-A' with TCE Isoconcentration Contours - January-February 2018
Former Asphalt Testing Laboratory No. 6-48
Pittsboro, North Carolina

Drawn By: mrw/ml	Checked By: DRM	Project Number: 2018135	Date: November 2018	References: Cross Section Details referenced from Hart Hickman Reports, Field Notes
Scale: See Scale Bar	Size: 11" x 17"	Layers: 0,1,3-5,6-11	Filename: P:\NCDOT\ATL\Pittsboro (48)-2018.135\CAD\Cross Sections.dwg	

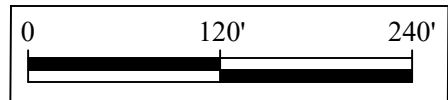
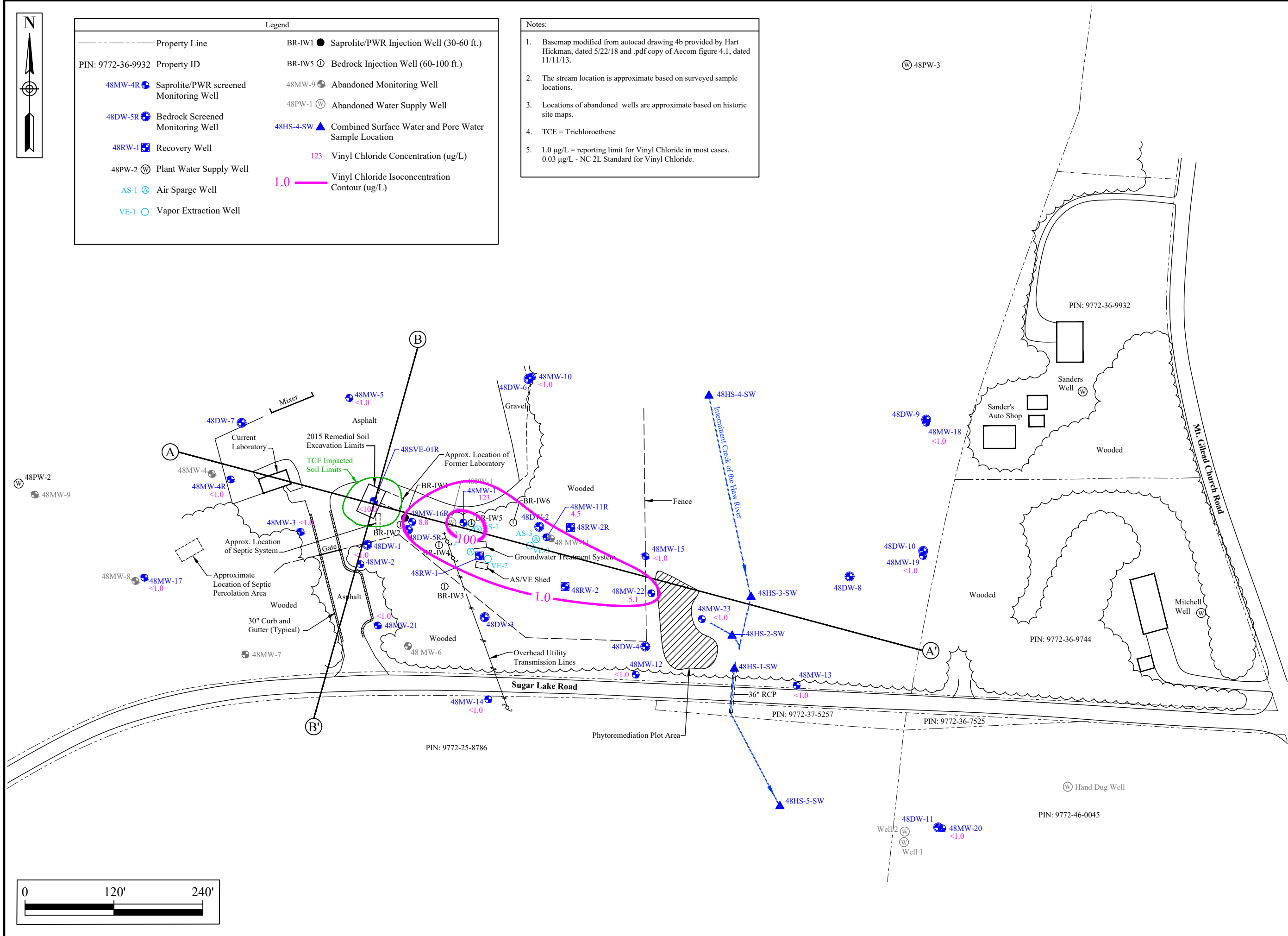
Figure

11



Legend	
----- Property Line	BR-IW1 ● Saprolite/PWR Injection Well (30-60 ft.)
PIN: 9772-36-9932 Property ID	BR-IW5 ○ Bedrock Injection Well (60-100 ft.)
48MW-4R ● Saprolite/PWR screened Monitoring Well	48MW-9 ● Abandoned Monitoring Well
48DW-5R ● Bedrock Screened Monitoring Well	48PW-1 (W) Abandoned Water Supply Well
48RW-1 (R) Recovery Well	48HS-4-SW ▲ Combined Surface Water and Pore Water Sample Location
48PW-2 (W) Plant Water Supply Well	123 Vinyl Chloride Concentration (ug/L)
AS-1 (A) Air Sparge Well	1.0 Vinyl Chloride Isoconcentration Contour (ug/L)
VE-1 (V) Vapor Extraction Well	

- Notes:
1. Basemap modified from autocad drawing 4b provided by Hart Hickman, dated 5/22/18 and .pdf copy of Aecom figure 4.1, dated 11/11/13.
 2. The stream location is approximate based on surveyed sample locations.
 3. Locations of abandoned wells are approximate based on historic site maps.
 4. TCE = Trichloroethene
 5. 1.0 µg/L = reporting limit for Vinyl Chloride in most cases. 0.03 µg/L - NC 2L Standard for Vinyl Chloride.



DUNCKLEE & DUNHAM
 ENVIRONMENTAL GEOLOGISTS & ENGINEERS
 511 Keisler Drive Suite 102
 Cary, North Carolina 27518
 (919) 858-9898
 www.dunckleedunham.com
 NC Eng. License No. C-3559
 NC Geo. License No. C-261

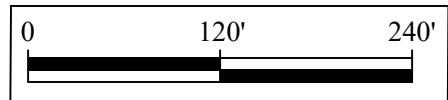
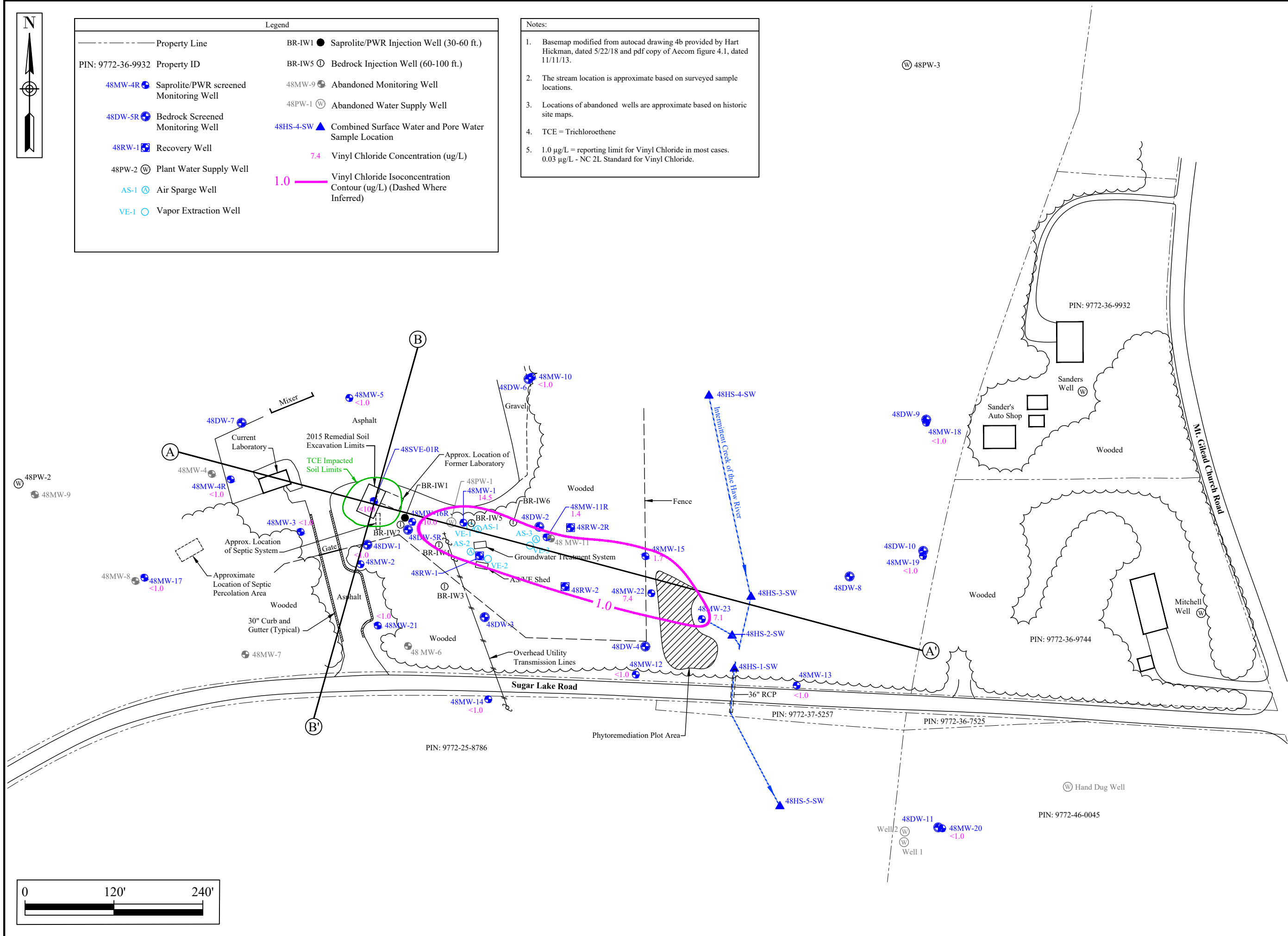
Saprolite and PWR Permeable Zone Vinyl Chloride Isoconcentration Map - May-June, 2017	
Former Asphalt Testing Laboratory No. 6-48 Pittsboro, North Carolina	
Drawn By: dmm/rml	Checked By: DRM
Scale: 1" = 120'	Size: 11" x 17"
Project Number: 2018135	Date: November 2018
Layers: 0 - 10,20	Filename: P:\NCDOT-ATL\Pittsboro (48) -2018135\CAD
References:	

Figure
12



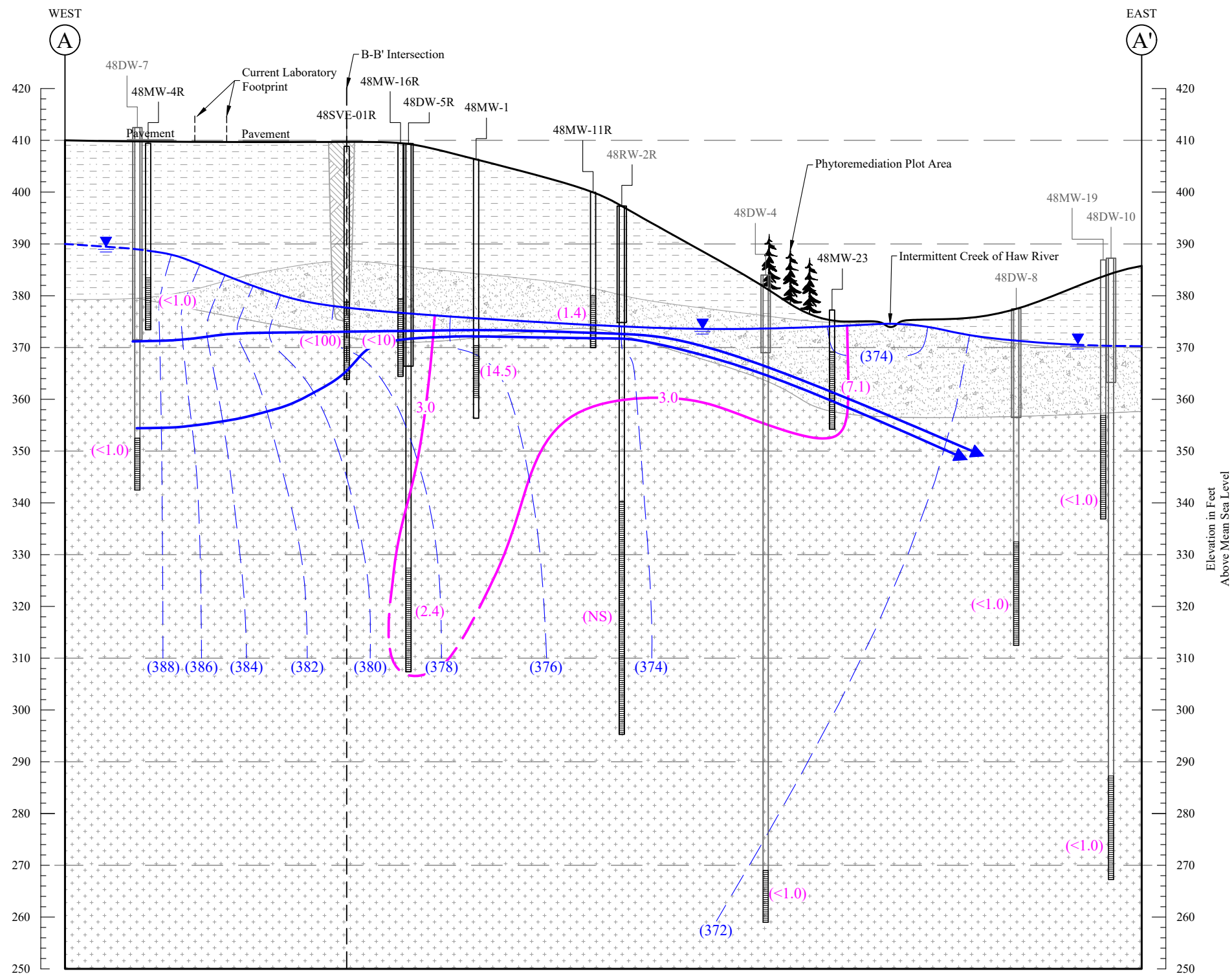
Legend	
----- Property Line	BR-IW1 ● Saprolite/PWR Injection Well (30-60 ft.)
PIN: 9772-36-9932 Property ID	BR-IW5 ○ Bedrock Injection Well (60-100 ft.)
48MW-4R ● Saprolite/PWR screened Monitoring Well	48MW-9 ● Abandoned Monitoring Well
48DW-5R ● Bedrock Screened Monitoring Well	48PW-1 (W) Abandoned Water Supply Well
48RW-1 (R) Recovery Well	48HS-4-SW ▲ Combined Surface Water and Pore Water Sample Location
48PW-2 (W) Plant Water Supply Well	7.4 Vinyl Chloride Concentration (ug/L)
AS-1 (A) Air Sparge Well	1.0 Vinyl Chloride Isoconcentration Contour (ug/L) (Dashed Where Inferred)
VE-1 (V) Vapor Extraction Well	

- Notes:
1. Basemap modified from autocad drawing 4b provided by Hart Hickman, dated 5/22/18 and pdf copy of Aecom figure 4.1, dated 11/11/13.
 2. The stream location is approximate based on surveyed sample locations.
 3. Locations of abandoned wells are approximate based on historic site maps.
 4. TCE = Trichloroethene
 5. 1.0 µg/L = reporting limit for Vinyl Chloride in most cases. 0.03 µg/L - NC 2L Standard for Vinyl Chloride.



Sapro-lite and PWR Permeable Zone Vinyl Chloride Isoconcentration Map - January-February, 2018	
Former Asphalt Testing Laboratory No. 6-48 Pittsboro, North Carolina	
Drawn By: dmw	Checked By: PRM
Scale: 1" = 120'	Size: 11" x 17"
Project Number: 2018135	Date: September 2018
Layers: 0 - 10,21	Filename: P:\NCDOT-ATL\Pittsboro (48) -2018135\CAD
References:	

Figure
13



Vertical Scale 1" = 20'
Horizontal Scale 1" = 120'



Legend	
	Silty Clay (Saprolite)
	Backfill (Infiltration Gallery)
	Partially Weather Rock
	Bedrock
	Water-Table Elevation
	(388) Equipotential Contour (Estimated)
	Groundwater Flow Path (Inferred)
	3 Vinyl Chloride Isoconcentration Contour in $\mu\text{g/L}$ (Dashed Where Inferred)
	(<1.0) Vinyl Chloride Concentration in $\mu\text{g/L}$

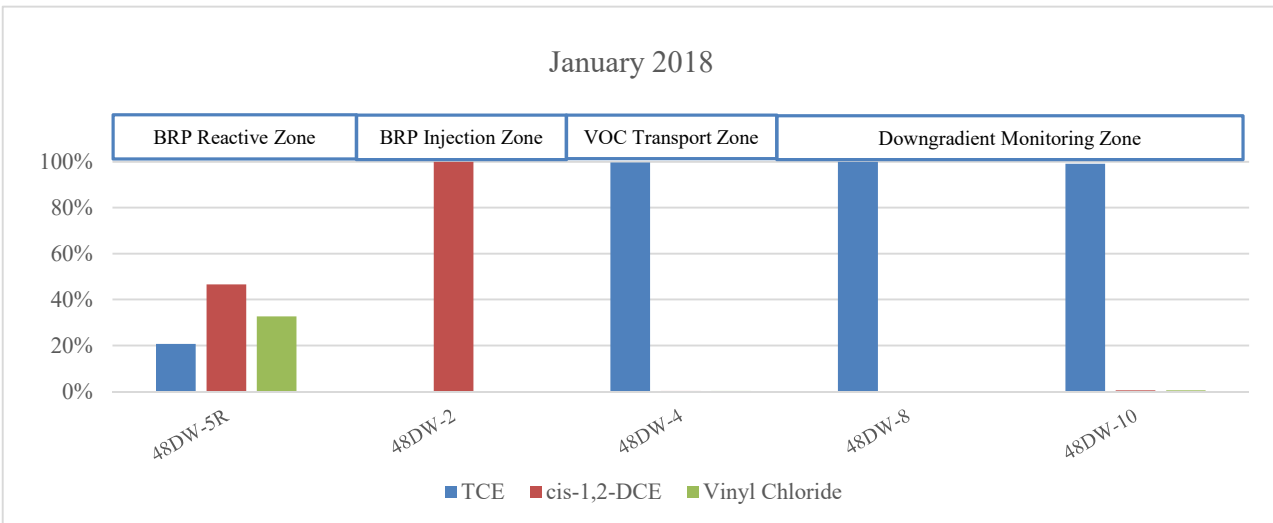
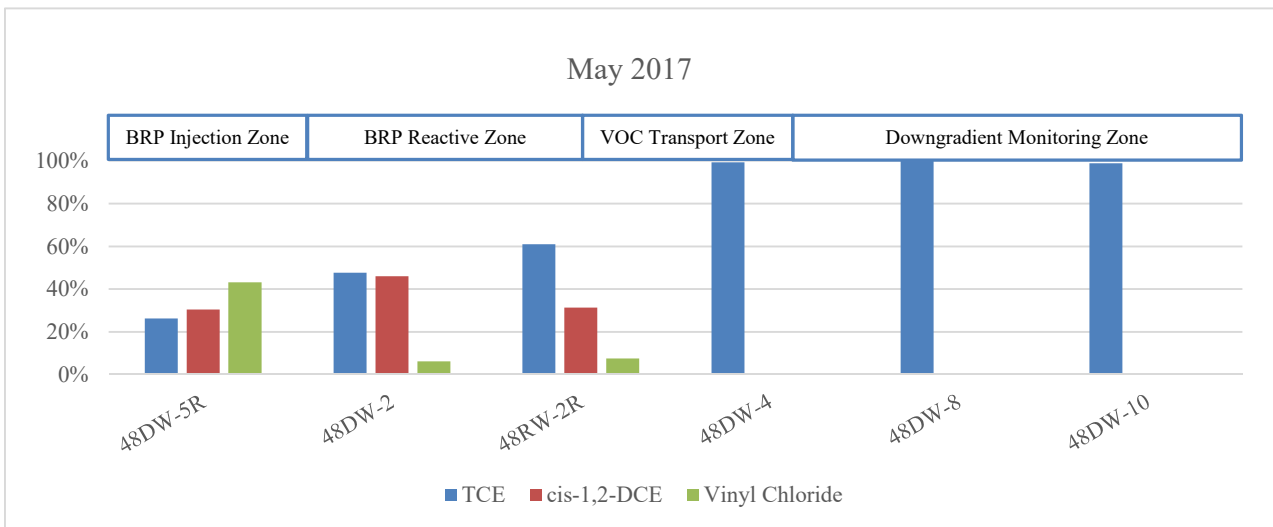
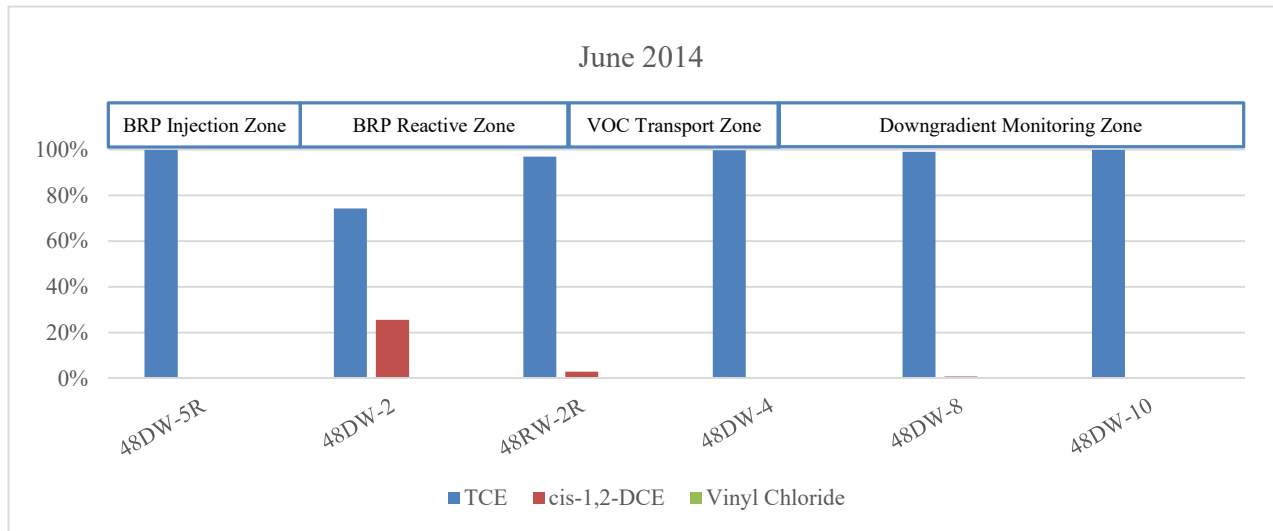
Geologic Cross Section A-A' with Vinyl Chloride Isoconcentration Contours - January-February 2018	
Former Asphalt Testing Laboratory No. 6-48 Pittsboro, North Carolina	
Drawn By: mrw/ml	Checked By: DRM
Scale: See Scale Bar	Size: 11" x 17"
Project Number: 2018135	Date: November 2018
Layers: 0,1,3-5,6-10,12	Filename: P:\NC01\A-TL\Pittsboro (48)-2018.135\CAD\Cross Sections.dwg
References: Cross Section Details referenced from Hart Hickman Reports, Field Notes	

Figure
14

Figure 15. Molar Concentration Ratios for TCE and TCE-Daughter Products in the Shallow Aquifer Zone



Figure 16. Molar Concentration Ratios for TCE and TCE-Daughter Products in the Deep Aquifer Zone



Tables

**Table 1
Water Supply Well Summary
Former ATL No. 48
Pittsboro, North Carolina**

Supply Well ID	Parcel ID Number	Well Owner and Address	Well Status	Municipal Connection	Available Well Details	Approximate Distance and Direction from Former ATL
1	9772-39-9341	Steve and Robin Cyr 114 Rabbit Run, Pittsboro, NC 27312	Active	No	None	0.50 miles northeast
2	9772-48-0806	Paul C. Dean and Virginia A. Bailey 101 Rabbit Run, Pittsboro, NC 27312	Active	No	None	0.42 miles northeast
3	9772-39-5129	Karen Krellwitz and Robert Henning 166 Rabbit Run, Pittsboro, NC 27312	Unknown	No	None	0.45 miles northeast
4	9772-38-7498	Cathy Keck Head 175 Rabbit Run, Pittsboro, NC 27312	Active	No	None	0.36 miles northeast
5	9772-38-7498	Cathy Keck Head 175 Rabbit Run, Pittsboro, NC 27312	Unknown	No	None	0.36 miles northeast
6	9772-39-2021	Eric and Heather Stevens 208 Rabbit Run, Pittsboro, NC 27312	Active	No	None	0.41 miles north
7	9772-38-6209	Cheryl K. Oxendine 103 Rabbit Run, Pittsboro, NC 27312	Active	No	None	0.31 miles northeast
8	9772-28-8709	Cristina Virsida and Timothy Ryan Lee 300 Rabbit Run, Pittsboro, NC 27312	Active	No	None	0.37 miles north
9	9772-38-3300	Cheryl K. Oxendine 103 Rabbit Run, Pittsboro, NC 27312	Active	No	None	0.32 miles north
10	9772-28-6370	Mildred Cason and Samuel Baggett 309 Rabbit Run, Pittsboro, NC 27312	Unknown	No	None	0.27 miles north
11	9772-29-0156	Kimberly Preble 544 Silverberry Rd, Pittsboro, NC 27312	Active	No	None	0.45 miles north
12	9772-28-5910	Neil Allen 483 Silverberry Rd, Pittsboro, NC 27312	Active	No	None	0.41 miles north
13	9772-28-3335	James and Judy Bober, 521 Silverberry Rd, Pittsboro, NC 27312	Active	No	None	0.31 miles northwest
14	9772-28-0282	Eric and Judy Sebben 577 Silverberry Rd, Pittsboro, NC 27312	Unknown	No	None	0.33 miles northwest
15	9772-18-7993	Anna Leonard 544 Silverberry Rd., Pittsboro, NC 27312	Active	No	None	0.42 miles northwest
16	9772-18-5778	John and Rondi Pelikan 604 Silverberry Rd., Pittsboro, NC 27312	Active	No	None	0.41 miles northwest
17	9772-18-3719	Kimberly Mihaliak 746 Silverberry Rd., Pittsboro, NC 27312	Unknown	No	None	0.47 miles northwest
18	9772-08-7191	Jean Riddle 94 Sweet Gum, Pittsboro, NC 27312	Unknown	No	None	0.47 miles northwest
19	9772-18-2066	Andrew and Melissa Foshee 85 Sweet Gum, Pittsboro, NC 27312	Unknown	No	None	0.41 miles northwest
20	9772-17-6890	Douglas and Bonnie Leonard 637 Silverberry Rd., Pittsboro, NC 27312	Unknown	No	None	0.34 miles northwest
21	9772-17-6890	Edward and Patty Holloway 625 Silverberry Rd., Pittsboro, NC 27312	Unknown	No	None	0.27 miles northwest
22	9772-17-9813	Alan D. and Jane M. Louder 175 Sweet Gum, Pittsboro, NC 27312-7978	Active	No	None	0.45 miles west
23	9772-17-3368	Virginia Brantley 246 Deer Run, Pittsboro, NC 27312-7978	Unknown	No	None	0.35 miles west
24	9772-07-3101	Gene and Pattie Davis 458 Deer Run Rd, Pittsboro, NC 27312-7978	Active	No	None	0.50 miles west
25	9772-16-0895	Jody Jameson 287 Deer Run, Pittsboro, NC 27312	Active	No	None	0.38 miles west
26	9772-17-6139	Anton Simopoulos 190 Deer Run, Pittsboro, NC 27312	Unknown	No	None	0.27 miles west
27	9772-16-8937	Irene Ellis 154 Deer Run, Pittsboro, NC 27312	Unknown	No	None	0.22 miles west
28	9772-16-9677	Erskine Heatherly 96 Deer Run, Pittsboro, NC 27312	Unknown	No	None	0.20 miles west
29	9772-16-1493	Loretta Riddell and Rita Shope Trustees 155 Deer Run, Pittsboro, NC 27312	Unknown	No	None	0.37 miles west
30	9772-16-7307	Mahesh and Loksikh Ganorkar 127 Deer Run, Pittsboro, NC 27312	Active	No	None	0.31 miles west
31	9772-16-0034	Doug and Suzanne Crawley 562 Sugar Lake Rd, Pittsboro, NC 27312	Unknown	No	None	0.39 miles southwest
32	9772-16-7190	Ronald Graham and Phyllis Murray 500 Sugar Lake Rd., Pittsboro, NC 27312	Active	No	None	0.29 miles southwest
33	9772-05-8790	Brian Moore 650 Sugar Lake Rd, Pittsboro, NC 27312	Active	No	None	0.46 miles southwest
34	9772-15-1770	Douglas Wakeman 624 Sugar Lake Rd., Pittsboro, NC 27312	Active	No	None	0.41 miles southwest
35	9772-15-3853	Elizabeth Cooper 580 Sugar Lake Rd., Pittsboro, NC 27312	Unknown	No	None	0.37 miles southwest
36	9772-16-5040	Gene and Annette Womble 550 Sugar Lake Rd., Pittsboro, NC 27312	Unknown	No	None	0.32 miles southwest
37	9772-15-9710	Theodore and Julia Taydus 495 Sugar Lake Rd, Pittsboro, NC 27312	Active	No	None	0.28 miles southwest
38	9772-15-5458	Archie and Shana Hankins 555 Sugar Lake Rd, Pittsboro, NC 27312	Active	No	None	0.29 miles southwest
39	9772-15-2280	Margaret Shelton 50 Sierra Trail, Pittsboro, NC 27312	Active	No	None	0.45 miles southwest
40	9772-14-2899	Patricia and Thomas Hill 62 Sierra Trail, Pittsboro, NC 27312	Unknown	No	None	0.48 miles southwest
41	9772-04-9987	Lamour Fuquay 555 Sugar Lake Rd, Pittsboro, NC 27312	Unknown	No	None	0.52 miles southwest
42	9772-05-7450	Grant and Marion Munn 694 Sugar Lake Rd., Pittsboro, NC 27312	Active	No	None	0.51 miles southwest
43	9772-05-5615	Keith Adams 700 Sugar Lake Rd., Pittsboro, NC 27312	Active	No	None	0.54 miles southwest
44	9772-14-6962	Peggy Taylor and David Culbertson 82 Sierra Trail, Pittsboro, NC 27312	Unknown	No	None	0.44 miles southwest
45	9772-24-2684	Peggy Taylor 306 Henrys Ridge, Pittsboro, NC 27312	Unknown	No	None	0.43 miles southwest
46	9772-24-1345	Ricky Spoon Builders, Inc., 38 Henrys Hill Ln, Pittsboro, NC 27312	Active	No	None	0.48 miles southwest
47	9772-24-4248	Jacob and Kristen Lane 10 Henrys Hill Ln, Pittsboro, NC 27312	Active	No	None	0.50 miles south
48	9772-24-4580	Jared and Nicole Ebersole 310 Henrys Hill Ln, Pittsboro, NC 27312	Unknown	No	None	0.44 miles south
49	9772-24-5629	M. Jones and Julia Jacoby 300 Henrys Hill Ln, Pittsboro, NC 27312	Active	No	None	0.40 miles south
50	9772-24-7186	Robert and Susan Gardiner 361 Henrys Ridge Rd, Pittsboro, NC 27312	Active	No	None	0.50 miles south
51	9772-24-9304	Anthony and Linda Farinacci 247 Henrys Ridge Rd, Pittsboro, NC 27312	Active	No	None	0.45 miles south

**Table 1
Water Supply Well Summary
Former ATL No. 48
Pittsboro, North Carolina**

Supply Well ID	Parcel ID Number	Well Owner and Address	Well Status	Municipal Connection	Available Well Details	Approximate Distance and Direction from Former ATL
52	9772-24-8629	Scott and Susan Spinka 274 Henrys Ridge Rd, Pittsboro, NC 27312	Active	No	None	0.41 miles south
53	9772-34-0740	Charles and Sherilyn 242 Henrys Ridge Rd, Pittsboro, NC 27312	Unknown	No	None	0.41 miles south
54	9772-34-1373	Peter and Susan Stevens 225 Henrys Ridge Rd, Pittsboro, NC 27312	Active	No	None	0.47 miles south
55	9772-34-2772	Joseph and Cherie Jakubowski 222 Henrys Ridge Rd, Pittsboro, NC 27312	Active	No	None	0.42 miles south
56	9772-34-4782	Jonathan and Rebecca York 210 Henrys Ridge Rd, Pittsboro, NC 27312	Active	No	None	0.42 miles south
57	9772-34-3286	Christine Eng Trustee 191 Henrys Ridge Rd, Pittsboro, NC 27312	Unknown	No	None	0.48 miles south
58	9772-34-6529	Joseph and Bonnie Drust 178 Henrys Ridge Rd, Pittsboro, NC 27312	Active	No	None	0.43 miles south
59	9772-34-5173	Jay and Deborah Hodshon 109 Henrys Ridge Rd, Pittsboro, NC 27312	Active	No	None	0.52 miles south
60	9772-34-9305	Richard and Darlene Hansinger 134 Henry's Ridge Rd., Pittsboro, NC 27312	Active	No	None	0.50 miles south
61	9772-46-7321	Boat RV Motorsport Storage LLC 576 Mt Gilead Church Rd, Pittsboro, NC 27312	Active	No	None	0.33 miles southeast
62	9772-27-6281	S.T. Wooten Corp. 240 Sugar Lake Rd, Pittsboro, NC 27312	Active	No	None	0.13 miles west
63	9772-36-9744	Timothy Mitchell 681 Mt Gilead Ch Rd, Pittsboro, NC 27312-7418	Active	No	None	0.20 miles east
64	9772-36-9932	Mark Sanders 771 Mt Gilead Ch Rd, Pittsboro, NC 27312	Active	No	None	0.16 miles east
65	9772-57-3246	Rena Perry and Anne Oakley 641 Hatley Rd, Pittsboro, NC 27312	Active	No	None	0.41 miles east
66	9772-47-0986	Jonathan and Mary Lovingood 903 Mt Gilead Ch Rd, Pittsboro, NC 27312	Active	No	None	0.29 miles northeast
67	9772-47-3891	James and Carolyn Bryant 49 Bartlett Drive, Pittsboro, NC 27312	Active	No	None	0.32 miles northeast
68	9772-47-6888	Sarah Shook 85 Bartlett Drive, Pittsboro, NC 27312	Active	No	None	0.36 miles northeast
69	9772-57-0870	Eric and Terri Kinn 182 Bartlett Drive, Pittsboro, NC 27312	Unknown	No	None	0.44 miles northeast
70	9772-57-4922	Lynn and Elizabeth Sarver 204 Bartlett Drive, Pittsboro, NC 27312	Active	No	None	0.48 miles northeast
71	9772-48-4023	Frank and Gayle Green 65 Bartlett Dr, Pittsboro, NC 27312	Unknown	No	None	0.35 miles northeast
72	9772-58-1143	William and Brenda Moore 233 Barlett Dr, Pittsboro, NC 27312	Active	No	None	0.45 miles northeast
73	9772-58-4157	James and Heather Buster 238 Bartlett Dr, Pittsboro, NC 27312	Active	No	None	0.52 miles northeast
74	9772-48-0178	Alvis Page 911 Mt Gilead Ch Rd, Pittsboro, NC 27312	Active	No	None	0.33 miles northeast
75	9772-48-7219	Edward Tostanoski 1026 Mt Gilead Ch Rd, Pittsboro, NC 27312	Unknown	No	None	0.42 miles northeast
76	9772-58-1541	Lillegaard and Cynthia Hansen 251 Bartlett Dr, Pittsboro, NC 27312	Active	No	None	0.51 miles northeast
77	9772-48-1346	Dexter Perry, The Dexter V Perry Trust 1035 Mt Gilead Ch Rd, Pittsboro, NC 27312	Active	No	None	0.37 miles northeast
78	9772-48-6680	James and Ann Marlow 1070 Mt Gilead Ch Rd, Pittsboro, NC 27312	Unknown	No	None	0.47 miles northeast
79	9772-48-2633	Stanley and Thomas Burnette 1073 Mt Gilead Ch Rd, Pittsboro, NC 27312	Active	No	None	0.42 miles northeast
80	9772-48-6680	James and Ann Marlow 1070 Mt Gilead Ch Rd, Pittsboro, NC 27312	Unknown	No	None	0.50 miles northeast
81	9772-48-2873	Regina Barnes 1115 Mt Gilead Church Rd, Pittsboro, NC 27312	Active	No	None	0.45 miles northeast
82	9772-49-3034	Alvis and Willene Page 1135 Mt Gilead Church Rd, Pittsboro, NC 27312	Active	No	None	0.50 miles northeast
83	9772-49-8013	John and Annie Roach 1076 Mt Gilead Church Rd, Pittsboro, NC 27312	Unknown	No	None	0.50 miles northeast
84	9772-49-8013	John and Annie Roach 1076 Mt Gilead Church Rd, Pittsboro, NC 27312	Unknown	No	None	0.52 miles northeast
85	9772-48-8064	Ralph and Julia Antheniem 147 Bartlett Dr, Pittsboro, NC 27312	Unknown	No	None	0.41 miles northeast
86	9772-29-8462	Paulette and Dorman Smith 351 Silverberry Rd, Pittsboro, NC 27312	Active	No	None	0.50 miles north
87	9772-39-1654	Cynthia Heuer 219 Silverberry Rd, Pittsboro, NC 27312	Active	No	None	0.55 miles north
88	9772-39-3676	David and Deborah Walton 167 Silverberry Rd, Pittsboro, NC 27312	Active	No	None	0.55 miles north
89	9772-56-2350	Todd and Suzanne Yanders 190 Hatley Rd, Pittsboro, NC 27312	Unknown	No	None	0.44 miles east
90	9772-34-8731	Gary and Crystal Horne 85 Henrys Watch Ln, Pittsboro, NC 27312	Unknown	No	None	0.42 miles south
91	9772-34-9889	Kris and Lisa Watt 123 Henrys Watch Ln, Pittsboro, NC 27312	Unknown	No	None	0.40 miles south
92	9772-44-3869	Isaac and Jacqueline Bonilla 139 Henrys Watch Ln, Pittsboro, NC 27312	Unknown	No	None	0.42 miles south
93	9772-44-2799	Clarence Lipe III and Tanya Hamilton 138 Henrys Watch Ln, Pittsboro, NC 27312	Unknown	No	None	0.45 miles south
94	9772-06-5064	Karen Crowell 696 Sugar Lake Rd, Pittsboro, NC 27312	Active	No	None	0.50 miles southwest
95	9772-37-5257	S.T. Wooten Corp. 240 Sugar Lake Rd, Pittsboro, NC 27312	Active	No	None	0.17 miles northeast

- Notes:
- Parcel ID number and property owner/address obtained from Chatham County's GIS Mapping Website, 2015.
 - Refer to Figure 3 for approximate supply well locations.
 - Only parcels within or close to a 0.5-mile radius of the former ATL are listed in this table.
 - A municipal water connection is not available to residences located within a 0.5-mile radius of the former ATL. It is assumed that all residences obtain their drinking water from a water supply well.
 - A well with an unknown status listed indicates that a supply well could not be visually identified during H&H's 2014 water supply well survey and no information is available from Chatham County.

Table 2
Site Well Construction and Water Levels Measured on May 30, 2017 and January 29, 2018
Former ATL No. 48
Pittsboro, North Carolina

Well ID	Installation Date	Total Well Depth (ft bgs)	Type III Surface Casing Depth (ft bgs)	Screened Interval Depth (ft bgs)	Latitude	Longitude	Top of Casing Elevation (ft msl)	Depth to Water ³ May 30, 2017 (ft btoc)	Groundwater Elevation May 30, 2017 (ft msl)	Depth to Water ³ January 29, 2018 (ft btoc)	Groundwater Elevation January 29, 2018 (ft msl)	Geology of Screened Interval ⁴	Aquifer Unit ⁵
48MW-1	11/15/96	50	--	36-46	35.747036512	-79.090676727	405.80	31.66	374.14	31.22	374.58	BR	S
48MW-2	11/14/96	50	--	40-50	35.746875873	-79.091145150	404.41	28.24	376.17	28.66	375.75	PWR/BR	S
48MW-3	11/16/96	56	--	40-50	35.746995215	-79.091423297	408.31	30.91	377.40	30.33	377.98	BR	S
48MW-4 ¹	11/13/96	36	--	26-36	--	--	--	--	--	--	--	SAP/PWR	--
48MW-4R	03/31/04	36	--	26-36	35.747189907	-79.091743252	409.33	19.30	390.03	20.20	389.13	SAP/PWR	S
48MW-5	11/12/96	43	--	33-43	35.747492337	-79.091203237	411.04	21.71	389.33	23.96	387.08	PWR/BR	S
48MW-6 ¹	01/15/97	44	--	34-44	--	--	--	--	--	--	--	BR	--
48MW-7 ¹	01/16/97	34	--	24-34	--	--	--	--	--	--	--	BR	--
48MW-8 ¹	01/16/97	32	--	22-32	--	--	--	--	--	--	--	PWR	--
48MW-9 ¹	01/16/97	22	--	11-21	--	--	--	--	--	--	--	SAP/PWR	--
48MW-10	03/03/97	40	--	30-40	35.747572730	-79.090371538	409.57	28.64	380.93	28.92	380.65	BR	S
48MW-11	03/03/97	29	--	19-29	--	--	--	--	--	--	--	BR	--
48MW-11R	03/31/04	30	--	20-30	35.746979624	-79.090294307	400.30	26.53	373.77	26.06	374.24	BR	S
48MW-12	04/17/97	37.5	--	27.5-37.5	35.746466734	-79.089888439	383.37	10.56	372.81	11.24	372.13	PWR/BR	S
48MW-13	04/17/97	32.5	--	22.5-32.5	35.746428184	-79.089153978	378.28	8.65	369.63	10.11	368.17	BR	S
48MW-14	4/1/2000	27.5	--	22.5-27.5	35.746377347	-79.090570178	393.49	18.30	375.19	19.20	374.29	BR	S
48MW-15	02/06/02	13.6	--	3.6-13.6	35.746904978	-79.089888385	380.81	7.18	373.63	6.85	373.96	SAP	S
48MW-16R	4/9/2015	45	--	30-45	35.747028106	-79.090929864	409.40	31.76	377.64	31.97	377.43	PWR	S
48MW-17	06/09/10	35	--	25-35	35.746810334	-79.092129647	402.92	13.03	389.89	15.20	387.72	PWR	S
48MW-18	07/23/14	30	--	15-30	35.747408134	-79.088571566	394.21	17.29	376.92	17.22	376.99	SAP/PWR	S
48MW-19	07/24/14	50	--	35-50	35.746923380	-79.088640231	384.01	12.08	371.93	25.30	358.71	PWR	S
48MW-20	07/23/14	30	--	15-30	35.745891034	-79.088499782	382.30	13.80	368.50	15.15	367.15	PWR/BR	S
48MW-21	07/24/14	47	--	32-47	35.746632182	-79.091086586	401.48	21.15	380.33	21.25	380.23	PWR/BR	S
48MW-22	07/24/14	23	--	7-23	35.746770308	-79.089824907	379.06	6.48	372.58	6.66	372.40	PWR	S
48MW-23	07/24/14	23	--	7-23	35.746665128	-79.089594889	375.53	3.26	372.27	3.33	372.20	PWR/BR	S
48DW-1	01/17/97	100	63	63-100	35.746946875	-79.091117935	405.29	7.34	397.95	0.25	405.04	BR	D
48DW-2	04/25/97	66	43	43-66	35.747019864	-79.090334228	402.48	32.43	370.05	28.44	374.04	BR	D
48DW-3	07/26/99	125	31	115-125	35.746662833	-79.090595606	399.26	25.04	374.22	26.78	372.48	BR	D
48DW-4	02/18/02	125	15	115-125	35.746571663	-79.089842650	381.79	11.47	370.32	12.56	369.23	BR	D
48DW-5R	4/8/2015	102	43	82-102	35.747004998	-79.090940205	409.82	32.15	377.67	30.75	379.07	BR	D
48DW-6	03/09/12	140	47	120-140	35.747564581	-79.090387410	409.80	27.96	381.84	30.25	379.55	BR	D
48DW-7	03/09/12	70	41	60-70	35.747399384	-79.091693589	414.82	37.39	377.43	62.98	351.84	BR	D
48DW-8 ²	03/15/12	65	21	45-65	35.746833069	-79.088910892	376.61	5.29	371.32	7.30	369.31	BR	D
48DW-9	07/29/14	120	24	100-120	35.747424548	-79.088569879	394.44	21.29	373.15	24.16	370.28	BR	D
48DW-10	07/24/14	120	24	100-120	35.746910924	-79.088603928	383.95	37.12	346.83	54.15	329.80	BR	D
48DW-11	07/29/14	120	20	80-100	35.745893096	-79.088518620	381.78	9.82	371.96	15.51	366.27	BR	D
RW-1	02/04/02	85	30	34-79	35.746898478	-79.090613931	401.89	28.05	373.84	27.21	374.68	BR	S & D
RW-2	02/05/02	86	30	37-82	35.746803513	-79.090205134	395.85	22.94	372.91	23.21	372.64	BR	S & D
48RW-2R	07/29/14	102	22.5	57-102	35.747007146	-79.090195695	397.23	NM	--	--	--	BR	D
48SVE-01R	04/16/15	45	--	30-45	35.747099036	-79.091119477	408.64	30.08	378.56	32.19	376.45	PWR/BR	S
48HS-1-SW ⁵	--	--	--	--	35.746517883	-79.089420379	378.73	2.89	375.84	2.5	376.23	--	--
48HS-2-SW ⁵	--	--	--	--	35.746608690	-79.089433135	377.54	DRY	--	2.6	374.94	--	--
48HS-3-SW ⁵	--	--	--	--	35.746738394	-79.089377060	378.32	2.24	376.08	2.18	376.14	--	--
48HS-4-SW	--	--	--	--	Not Measured	Not Measured	--	DRY	--	--	--	--	--
48HS-5-SW	--	--	--	--	35.745991034	-79.089249008	--	2.44	--	2.4	--	--	--
48IW-1	07/23/14	50	--	35-50	--	--	409.45	--	--	--	--	PWR/BR	S
48IW-2	07/24/14	50	--	35-50	--	--	409.19	--	--	--	--	PWR/BR	S
48IW-3	07/22/14	47	--	32-47	--	--	408.87	--	--	--	--	PWR/BR	S
48IW-4	07/22/14	50	--	35-50	--	--	408.30	--	--	--	--	PWR/BR	S
48IW-5	07/23/14	50	--	35-50	--	--	408.48	--	--	--	--	PWR/BR	S

- Notes:
- 1) Wells shown with grey text have been abandoned.
 - 2) 48DW-8 converted from a 21 to 120-foot open rock well to a screened Type III well on 9/25/14. TOC elevation based on surface casing. 48DW-8 screened interval based on depth interval with highest potential chlorinated VOC concentrations based on Color-Tec field screening during September 2014 packer testing.
 - 3) SAP = Saprolite; PWR = Partially Weathered Rock; BR = Bedrock
 - 4) Aquifer Units
 S - Shallow Aquifer Well
 D - Deeper Aquifer Well
 - 5) Surface water sample location. Surface water elevations were calculated by subtracting the depth of the surface water from the top of a surveyed stake elevation.
 - ft bgs - feet below ground surface, ft msl - feet above mean sea level, ft btoc - ft below top of casing elevation
 - Well coordinates collected using a Trimble GPS capable of sub-meter accuracy.
 - Well construction data for wells installed prior to July 2014 are based on data presented in AECOM Environmental's April 2014 Semi-Annual Monitoring Report

Table 3
Summary of Groundwater Analytical Results from the *In Situ* Remediation Strategy
Former ATL No. 48
Pittsboro, North Carolina

Well ID	NC 2L Groundwater Standard	48SVE-01R				48MW-1		48MW-2				48MW-3		48MW-4R		48MW-5				
		5/31/2017	11/15/2017	1/29/2018	4/23/2018	5/31/2017	1/30/2018	6/1/2017	11/15/2017	1/31/2018	4/24/2018	5/31/2017	1/30/2018	6/1/2017	1/31/2018	6/1/2017	11/15/2017	2/1/2018	4/25/2018	
Potential NC DOT Target Compounds																				
Chloroform	70	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	
TCE	3	<10.0	<100	<100	<20.0	123	<2.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
cis-1,2-DCE	70	12.8	<100	<100	<20.0	76.3	7.1	<1.0	2.4	<1.0	<1.0	2.5	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
trans-1,2-DCE	100	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Vinyl Chloride	0.03	<10.0	<100	<100	<20.0	10.9	14.5	<1.0	1.2	<1.0	<1.0	<10.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
1,1-DCE	350	<10.0	<100	<100	<20.0	12.2	<2.0	<1.0	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
1,1-DCA	6	<10.0	<100	<100	<20.0	2.5	3.2	<1.0	<1.0	<1.0	<1.0	5.8	2.1	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
1,1,1-TCA	200	<10.0	<100	<100	<1.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Methylene Chloride	5	<20.0	<200	<200	<40.0	<2.0	10.6	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NA	<2.0	NA
Chloromethane	3	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Chloroethane	3,000	<10.0	<100	<100	<20.0	1.2	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Non-NC DOT Target Compounds																				
1,2-Dichlorobenzene	20	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
1,4-Dichlorobenzene	6	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
1,2,4-Trichlorobenzene	70	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
1,1,1-TCA	0.6 ¹	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Acetone	6,000	490	<2500	<2500	536	<25.0	<50.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	NA	<25.0	NA
Arsenic	NE	NA	14.8	<20.0	<50.0	NA	NA	NA	<10.0	<10.0	<10.0	NA	NA	NA	<50.0	NA	NA	NA	NA	NA
Barium	NE	NA	860	1,070	<25.0	NA	NA	NA	39.9	6.7	<5.0	NA	NA	NA	195	NA	NA	NA	NA	NA
Benzene	1	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Chromium	NE	NA	55.1	113	<25.0	NA	NA	NA	<5.0	<5.0	<5.0	NA	NA	NA	<25.0	NA	NA	NA	NA	NA
Chloride (mg/L)	250	137	64.4	76.8	51.2	NA	NA	5.1	5.3	4.4	4.0	NA	NA	NA	6.6	7.2	5.4	6.7	25.1	
Total Organic Carbon (mg/L)	NE	27,900	12,600	20,300	12,000	NA	NA	3.3	7.5	2.2	1.8	NA	NA	NA	<1.0	17.7	7.6	12.4	29.6	
Ethene	NE	<10.0	<10.0	<10.0	<10.0	NA	NA	<10.0	<10.0	<10.0	<10.0	NA	NA	NA	44.8	<10.0	<10.0	<10.0	<10.0	
Ethylbenzene	600	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Lead	NE	NA	23.9	35.4	40.1	NA	NA	NA	<5.0	<5.0	<5.0	NA	NA	NA	<25.0	NA	NA	NA	NA	
Methane	NE	195	661	569	1,300	NA	NA	49.0	4,880	689	50.5	NA	NA	NA	325	472	939	811	520	
2-Butanone (MEK)	4,000	3,910	<500	14,700	5,770	<5.0	284	<5.0	117	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	NA	<5.0	NA
MTBE	20	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Naphthalene	6	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Nitrogen, Nitrite (mg/L)	1	NA	0.028	0.085	0.70	NA	NA	NA	<0.020	<0.020	<0.020	NA	NA	NA	<0.020	NA	<0.020	0.02	<0.020	
PCE	0.7	<10.0	<100	<100	97.6	4.1	<2.0	<1.0	<1.0	<1.0	<1.0	9.7	1.5	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Phosphorus (mg/L)	NE	NA	98.3	38.0	41.2	NA	NA	NA	0.21	0.10	0.068	NA	NA	NA	<0.050	NA	0.65	5.7	0.41	
Sulfate (mg/L)	250	NA	62.7	27.6	77.5	NA	NA	NA	2.8	5.7	4.1	NA	NA	NA	2.3	NA	6.4	12.1	56.3	
Toluene	600	<10.0	<100	<100	<20.0	<1.0	6.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
p-Isopropyltoluene	25 ¹	<10.0	<100	<100	<20.0	<1.0	6.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA
Xylenes (total)	500	<10.0	<100	<100	<20.0	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA

Notes:
- Concentrations are shown in micrograms per liter (µg/l)
- Bolded concentration indicates exceedance of NC 2L Groundwater Standard (April 2013)
- < - The compound was not detected above the indicated laboratory reporting limit
- Only compounds detected in at least one sample are shown
- NA = Sample not analyzed for specific contaminant
- cis-1,2-DCE = cis-1,2-dichloroethene; TCE = trichloroethene; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane
- PCE = tetrachloroethene
- VOC = volatile organic compound
1 - Indicates Interim Maximum Allowable Concentration under 15A NCAC 02L .0202
* - Sample data from June 2017 NPDES sampling event
- NE = 2L Standard not established

Table 3
Summary of Groundwater Analytical Results from the *In Situ* Remediation Strategy
Former ATL No. 48
Pittsboro, North Carolina

Well ID	NC 2L Groundwater Standard	48MW-10		48MW-11R		48MW-12				48MW-13				48MW-14				48MW-15	
		05/30/17	1/31/2018	06/01/17	2/1/2018	06/02/17	11/16/2017	2/1/2018	04/23/18	06/01/17	11/16/2017	2/2/2018	4/24/2018	06/02/17	11/16/2017	1/31/2018	04/23/18	06/01/17	2/1/2018
Potential NC DOT Target Compounds																			
Chloroform	70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TCE	3	<1.0	<1.0	4.5	1.0	<1.0	<1.0	<1.0	<1.0	2.2	4.4	6.7	6.9	<1.0	<1.0	<1.0	<1.0	5.1	<1.0
cis-1,2-DCE	70	<1.0	<1.0	2.9	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.8	2.3
trans-1,2-DCE	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	0.03	<1.0	<1.0	<1.0	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.7
1,1-DCE	350	<1.0	<1.0	1.4	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.4	1.2
1,1-DCA	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-TCA	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chloromethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	3,000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Non-NC DOT Target Compounds																			
1,2-Dichlorobenzene	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-TCA	0.6 ¹	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acetone	6,000	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0
Arsenic	NE	NA	NA	NA	NA	NA	<10.0	<10.0	<10.0	NA	<10.0	<10.0	<10.0	NA	<10.0	<10.0	<10.0	<10.0	NA
Barium	NE	NA	NA	NA	NA	NA	94.5	80.9	60.3	NA	<5.0	132	143	NA	45.3	127	21.0	NA	NA
Benzene	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	NE	NA	NA	NA	NA	NA	<5.0	<5.0	<5.0	NA	<5.0	<5.0	<5.0	NA	<5.0	11.3	<5.0	NA	NA
Chloride (mg/L)	250	NA	NA	NA	NA	11.4	11.9	12.2	11.9	14	9.1	8.5	7.3	3.5	3.7	4.6	3.7	NA	NA
Total Organic Carbon (mg/L)	NE	NA	NA	NA	NA	<1.0	<1.0	1.3	1.3	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA
Ethene	NE	NA	NA	NA	NA	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	NA
Ethylbenzene	600	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	NE	NA	NA	NA	NA	NA	<5.0	<5.0	<5.0	NA	<5.0	<5.0	<5.0	NA	<5.0	12.6	<5.0	NA	NA
Methane	NE	NA	NA	NA	NA	14.7	<10.0	89.7	<10.0	<10.0	<10.0	16.4	<10.0	<10.0	<10.0	13.7	<10.0	NA	NA
2-Butanone (MEK)	4,000	<5.0	<5.0	<5.0	10.3	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	24.5
MTBE	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nitrogen, Nitrite (mg/L)	1	NA	NA	NA	NA	NA	<0.020	<0.020	0.023	NA	<0.020	<0.020	<0.020	NA	<0.020	0.040	<0.020	NA	NA
PCE	0.7	<1.0	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<1.0
Phosphorus (mg/L)	NE	NA	NA	NA	NA	NA	0.052	<0.050	<0.050	NA	<0.050	<0.050	<0.050	NA	0.35	0.22	0.093	NA	NA
Sulfate (mg/L)	250	NA	NA	NA	NA	NA	18.4	17.1	15.0	NA	2.4	3.3	2.4	NA	10.7	7.0	12.5	NA	NA
Toluene	600	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	25 ¹	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (total)	500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Notes:
- Concentrations are shown in micrograms per liter (µg/l)
- Bolded concentration indicates exceedance of NC 2L Groundwater Standard (April 2013)
- < - The compound was not detected above the indicated laboratory reporting limit
- Only compounds detected in at least one sample are shown
- NA = Sample not analyzed for specific contaminant
- cis-1,2-DCE = cis-1,2-dichloroethene; TCE = trichloroethene; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane
- PCE = tetrachloroethene
- VOC = volatile organic compound
1 - Indicates Interim Maximum Allowable Concentration under 15A NCAC 02L .0202
* - Sample data from June 2017 NPDES sampling event
- NE = 2L Standard not established

Table 3
Summary of Groundwater Analytical Results from the *In Situ* Remediation Strategy
Former ATL No. 48
Pittsboro, North Carolina

Well ID	NC 2L Groundwater Standard	48MW-16R				48MW-17		48MW-18		48MW-19		48MW-20		48MW-21				48MW-22	
		05/31/17	11/15/2017	1/30/2018	04/23/18	06/01/17	1/31/2018	6/1/2017	1/29/2018	5/31/2017	1/29/2018	5/31/2017	1/30/2018	06/02/17	11/15/2017	1/31/2018	4/24/2018	6/1/2017	2/1/2018
Potential NC DOT Target Compounds																			
Chloroform	70	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TCE	3	34.4	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	34.2	25.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	45.9	<1.0
cis-1,2-DCE	70	20.7	2.6	<10	9.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	24	1.4
trans-1,2-DCE	100	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	0.03	8.8	4.2	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.1	7.4
1,1-DCE	350	3.4	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	2.3	1.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.5	<1.0
1,1-DCA	6	3.9	4.7	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.5	<1.0
1,1,1-TCA	200	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	5	<1.0	<2.0	<20	16.2	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chloromethane	3	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	3,000	2.7	7.3	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Non-NC DOT Target Compounds																			
1,2-Dichlorobenzene	20	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	6	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	70	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-TCA	0.6 ¹	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acetone	6,000	<25.0	59.9	609	259	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	68.2
Arsenic	NE	NA	<10.0	<10.0	<10.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	<10.0	<10.0	<10.0	NA	NA
Barium	NE	NA	426	503	434	NA	NA	NA	NA	NA	NA	NA	NA	NA	49.0	37	29.5	NA	NA
Benzene	1	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	NE	NA	20.4	25.8	11.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	<5.0	NA	NA
Chloride (mg/L)	250	7.5	19.4	18.5	19.7	NA	NA	NA	NA	NA	NA	NA	NA	5.8	8.9	8.0	6.9	NA	NA
Total Organic Carbon (mg/L)	NE	4.1	1,580	2,720	1,520	NA	NA	NA	NA	NA	NA	NA	NA	7.0	15.7	9.8	7.5	NA	NA
Ethene	NE	27.4	<10.0	<10.0	<20.0	NA	NA	NA	NA	NA	NA	NA	NA	<10.0	<10.0	<10.0	<10.0	NA	NA
Ethylbenzene	600	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	NE	NA	6.7	12.0	8.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	<5.0	<5.0	<5.0	NA	NA
Methane	NE	12,800	8,280	4,150	20,900	NA	NA	NA	NA	NA	NA	NA	NA	73.7	280	49.2	<10.0	NA	NA
2-Butanone (MEK)	4,000	<5.0	71.4	3390	1590	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	369
MTBE	20	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	6	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nitrogen, Nitrite (mg/L)	1	NA	0.027	0.045	0.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.020	<0.020	<0.020	NA	NA
PCE	0.7	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phosphorus (mg/L)	NE	NA	13.7	25.3	9.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	<0.050	<0.050	<0.050	NA	NA
Sulfate (mg/L)	250	NA	6.7	2.3	<1.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	41.5	29.9	20.2	NA	NA
Toluene	600	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	25 ¹	<1.0	17.5	53.4	115	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	7.1
Xylenes (total)	500	<1.0	<1.0	<10	<5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

Notes:
- Concentrations are shown in micrograms per liter (µg/l)
- Bolded concentration indicates exceedance of NC 2L Groundwater Standard (April 2013)
- < - The compound was not detected above the indicated laboratory reporting limit
- Only compounds detected in at least one sample are shown
- NA = Sample not analyzed for specific contaminant
- cis-1,2-DCE = cis-1,2-dichloroethene; TCE = trichloroethene; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane
- PCE = tetrachloroethene
- VOC = volatile organic compound
1 - Indicates Interim Maximum Allowable Concentration under 15A NCAC 02L .0202
* - Sample data from June 2017 NPDES sampling event
- NE = 2L Standard not established

**Table 3
Summary of Groundwater Analytical Results from the *In Situ* Remediation Strategy
Former ATL No. 48
Pittsboro, North Carolina**

Well ID	NC 2L Groundwater Standard	48MW-23		48DW-1				48DW-2				48DW-3				48DW-4			
		6/1/2017	2/1/2018	6/1/2017	11/16/2017	1/31/2018	4/24/2018	6/1/2017	11/16/2017	1/29/2018	4/24/2018	6/1/2017	11/16/2017	2/1/2018	4/24/2018	6/1/2017	11/16/2017	2/1/2018	4/24/2018
Potential NC DOT Target Compounds																			
Chloroform	70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
TCE	3	12.5	<1.0	<1.0	<1.0	<1.0	<1.0	34.1	34.5	<5.0	<1.0	26.6	73.3	<4.0	<1.0	4.2	9.3	8.2	6.9
cis-1,2-DCE	70	4.9	4.9	<1.0	<1.0	<1.0	<1.0	24.3	24.7	38.5	<1.0	<1.0	1.4	15.7	62.6	<1.0	<1.0	<1.0	<1.0
trans-1,2-DCE	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	0.03	<1.0	7.1	<1.0	<1.0	<1.0	<1.0	2.1	3.2	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-DCE	350	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5.2	5.3	<5.0	3.8	1.4	3.5	<4.0	2.6	<1.0	1.4	1.5	<1.0
1,1-DCA	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.9	2.3	<5.0	1.9	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-TCA	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.1	<2.0	<2.0	18.1	<2.0	<2.0	<2.0	16.3	<2.0	<2.0	<2.0	<2.0	<2.0
Chloromethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	3,000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	1.9	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Non-NC DOT Target Compounds																			
1,2-Dichlorobenzene	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-TCA	0.6 ¹	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acetone	6,000	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<125	99.9	<25.0	<25.0	784	<25.0	<25.0	<25.0	<25.0	<25.0
Arsenic	NE	NA	NA	NA	<10.0	<10.0	<10.0	NA	<10.0	<10.0	20.7	NA	<10.0	<50.0	<10.0	NA	<10.0	<10.0	<10.0
Barium	NE	NA	NA	NA	<5.0	49.7	39.4	NA	33.9	1,380	3,070	NA	48.5	29,900	262	NA	175	<1.0	213
Benzene	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chromium	NE	NA	NA	NA	<5.0	<5.0	<5.0	NA	<5.0	<5.0	<5.0	NA	<5.0	<25.0	<5.0	NA	<5.0	<5.0	<5.0
Chloride (mg/L)	250	NA	NA	2.3	1.9	2.1	2.1	6.8	7.1	9.6	8.6	4.8	4.2	12.4	4.2	6.8	6.3	<10.0	7.0
Total Organic Carbon (mg/L)	NE	NA	NA	4.4	41.2	31.3	26.4	5.1	15.5	314	299	2.7	1.5	1,490	10.1	<1.0	<5.0	<5.0	<5.0
Ethene	NE	NA	NA	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<50.0	106	<10.0	<10.0	<10.0	21.0	12.6	16.0	<10.0	<10.0
Ethylbenzene	600	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	NE	NA	NA	NA	<5.0	29.4	<5.0	NA	7.8	6.4	<5.0	NA	<5.0	27.4	<5.0	NA	15.7	<5.0	<5.0
Methane	NE	NA	NA	<10.0	<10.0	6,220	5,140	7,310	11,300	15,600	12,600	41.4	20.9	16,900	22,300	207	122	<10.0	124
2-Butanone (MEK)	4,000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	1,020	299	<5.0	<5.0	475	10.8	<5.0	<5.0	<5.0	<5.0
MTBE	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nitrogen, Nitrite (mg/L)	1	NA	NA	NA	<0.020	0.031	0.022	NA	0.042	0.026	0.024	NA	<0.020	<0.020	0.026	NA	<0.020	<0.020	<0.020
PCE	0.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.9	3.2	<5.0	<1.0	<1.0	1.1	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phosphorus (mg/L)	NE	NA	NA	NA	0.066	0.18	0.081	NA	<0.050	0.45	0.57	NA	<0.050	0.084	<0.050	NA	<0.050	<0.050	<0.050
Sulfate (mg/L)	250	NA	NA	NA	2.8	<1.0	<1.0	NA	<1.0	<1.0	<1.0	NA	6.0	<1.0	<1.0	NA	2.2	<1.0	2.9
Toluene	600	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.1	<1.0	<1.0	<1.0	11.6	<1.0	<1.0	<1.0	<1.0	<1.0
p-Isopropyltoluene	25 ¹	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (total)	500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<1.0	<1.0	<1.0	<4.0	<1.0	<1.0	1.2	1.6	2.2

Notes:

- Concentrations are shown in micrograms per liter (µg/l)
- Bolded concentration indicates exceedance of NC 2L Groundwater Standard (April 2013)
- < - The compound was not detected above the indicated laboratory reporting limit
- Only compounds detected in at least one sample are shown
- NA = Sample not analyzed for specific contaminant
- cis-1,2-DCE = cis-1,2-dichloroethene; TCE = trichloroethene; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane
- PCE = tetrachloroethene
- VOC = volatile organic compound
- 1 - Indicates Interim Maximum Allowable Concentration under 15A NCAC 02L .0202
- * - Sample data from June 2017 NPDES sampling event
- NE = 2L Standard not established

Table 3
Summary of Groundwater Analytical Results from the *In Situ* Remediation Strategy
Former ATL No. 48
Pittsboro, North Carolina

Well ID	NC 2L Groundwater Standard	48DW-5R				48DW-6		48DW-7				48DW-8				48DW-9	
		5/31/2017	11/15/2017	1/29/2018	4/23/2018	05/30/17	1/31/2018	05/30/17	11/15/2017	1/29/2018	4/23/2018	5/31/2017	11/16/2017	1/30/2018	4/23/2018	06/01/17	1/30/2018
Potential NC DOT Target Compounds																	
Chloroform	70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
TCE	3	9.1	2.9	3.2	4.2	<1.0	<1.0	1.3	NA	<1.0	NA	92.8	68.7	71.7	<1.0	<1.0	
cis-1,2-DCE	70	7.8	2.1	5.3	3.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
trans-1,2-DCE	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Vinyl Chloride	0.03	7.1	2.9	2.4	1.8	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1-DCE	350	1.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	8.9	7.0	8.1	5.6	<1.0	
1,1-DCA	6	2.9	1.8	1.3	1.2	<1.0	<1.0	<1.0	NA	<1.0	NA	1.1	<1.0	1.2	<1.0	<1.0	
1,1,1-TCA	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Methylene Chloride	5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NA	<2.0	NA	<2.0	<2.0	<2.0	<2.0	<2.0	
Chloromethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Chloroethane	3,000	2.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Non-NC DOT Target Compounds																	
1,2-Dichlorobenzene	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
1,4-Dichlorobenzene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
1,2,4-Trichlorobenzene	70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
1,1,2-TCA	0.6 ¹	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Acetone	6,000	<25.0	273	113	220	<25.0	<25.0	<25.0	NA	<25.0	NA	<25.0	<25.0	<25.0	<25.0	<25.0	
Arsenic	NE	NA	<10.0	<50.0	<10.0	NA	<10.0	NA	NA	<10.0	NA	NA	<10.0	<10.0	<10.0	<10.0	
Barium	NE	NA	1,100	7,830	17,800	NA	<1.0	NA	NA	<1.0	NA	NA	121	144	109	<1.0	
Benzene	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Chromium	NE	NA	49.2	103	91.2	NA	<5.0	NA	NA	<5.0	NA	NA	<5.0	<5.0	<5.0	<5.0	
Chloride (mg/L)	250	6.9	32.7	31.9	37.3	NA	<10.0	8.9	9.4	9.1	NA	9.7	10	10	8.4	NA	
Total Organic Carbon (mg/L)	NE	4.2	5,250	8,570	7,040	NA	<5.0	12.4	10.4	10.7	18.0	1.4	<5.0	1.9	1.8	NA	
Ethene	NE	12.8	<10.0	<10.0	<10.0	NA	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	NA	
Ethylbenzene	600	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Lead	NE	NA	11.9	34.3	55.6	NA	<5.0	NA	NA	<5.0	NA	NA	<5.0	<5.0	<5.0	<5.0	
Methane	NE	8,180	711	<10.0	795	NA	<10.0	<10.0	<10.0	24.3	<10.0	24.5	<10.0	<10.0	17.5	NA	
2-Butanone (MEK)	4,000	<5.0	<5.0	101	162	<5.0	<5.0	<5.0	NA	<5.0	NA	<5.0	<5.0	<5.0	<5.0	<5.0	
MTBE	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Naphthalene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Nitrogen, Nitrite (mg/L)	1	NA	0.083	0.11	<0.080	NA	<0.020	NA	0.045	0.054	NA	NA	<0.020	<0.020	0.040	NA	
PCE	0.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Phosphorus (mg/L)	NE	NA	41.2	66.2	114	NA	<0.050	NA	<0.050	<0.050	NA	NA	<0.050	<0.050	<0.050	NA	
Sulfate (mg/L)	250	NA	10.4	10.3	57.6	NA	<1.0	NA	430	549	NA	NA	21.1	80.3	48.9	NA	
Toluene	600	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
p-Isopropyltoluene	25 ¹	<1.0	9.6	15.2	3.5	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	
Xylenes (total)	500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	NA	<1.0	NA	<1.0	<1.0	<1.0	<1.0	<1.0	

Notes:

- Concentrations are shown in micrograms per liter (µg/l)
- Bolded concentration indicates exceedance of NC 2L Groundwater Standard (April 2013)
- < - The compound was not detected above the indicated laboratory reporting limit
- Only compounds detected in at least one sample are shown
- NA = Sample not analyzed for specific contaminant
- cis-1,2-DCE = cis-1,2-dichloroethene; TCE = trichloroethene; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane
- PCE = tetrachloroethene
- VOC = volatile organic compound
- 1 - Indicates Interim Maximum Allowable Concentration under 15A NCAC 02L .0202
- * - Sample data from June 2017 NPDES sampling event
- NE = 2L Standard not established

Table 3
Summary of Groundwater Analytical Results from the *In Situ* Remediation Strategy
Former ATL No. 48
Pittsboro, North Carolina

Well ID	NC 2L Groundwater Standard	48DW-10				48DW-11		48RW-1				48RW-2/48RW-2R			
		5/31/2017	11/15/2017	1/29/2018	4/23/2018	5/31/2017	1/30/2018	6/1/2017	11/16/2017	2/1/2018	4/24/2018	6/1/2017	11/16/2017	2/1/2018	4/24/2018
Potential NC DOT Target Compounds															
Chloroform	70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
TCE	3	2.5	3.9	2.8	<1.0	<1.0	<1.0	17.9	11.6	<4.0	<1.0	<1.0	26.7	1.0	5.0
cis-1,2-DCE	70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	34.3	<5.0	<4.0	1.2	<1.0	3.8	62.2	64.4
trans-1,2-DCE	100	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	3.1	<1.0	<1.0
Vinyl Chloride	0.03	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	13.3	<5.0	12.8	1.5	<1.0	<1.0	24.9	20.1
1,1-DCE	350	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2	<10.0	<4.0	<1.0	<1.0	<2.0	2.1	2.6
1,1-DCA	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.9	<5.0	<4.0	1.2	2.6	<1.0	2.4	2.2
1,1,1-TCA	200	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Methylene Chloride	5	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<10.0	<8.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chloromethane	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	3,000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	<5.0	<4.0	1.6	<1.0	<1.0	<1.0	<1.0
Non-NC DOT Target Compounds															
1,2-Dichlorobenzene	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<125	<4.0	<1.0	<1.0	<25.0	<25.0	<1.0
1,2,4-Trichlorobenzene	70	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-TCA	0.6 ¹	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	567	<4.0	<1.0	<1.0	<5.0	<5.0	<1.0
Acetone	6,000	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<25.0	<5.0	<100	<25.0	<25.0	<1.0	<1.0	<25.0
Arsenic	NE	NA	<10.0	<10.0	<10.0	NA	<10.0	NA	<10.0	<10.0	<10.0	NA	<10.0	<10.0	<10.0
Barium	NE	NA	54.1	65.3	55.3	NA	<10.0	NA	131	241	106	<1.0	28.8	38.1	36.2
Benzene	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	NA	<1.0	<1.0	<1.0
Chromium	NE	NA	<5.0	<5.0	6.4	NA	<5.0	NA	<5.0	8.7	<5.0	NA	<5.0	<5.0	<5.0
Chloride (mg/L)	250	13.8	14.2	15.2	14.3	<1.0	<10.0	6.4	10.4	12.6	8.0	8.1	6.5	6.7	6.5
Total Organic Carbon (mg/L)	NE	18.2	18.4	19.4	20.6	<1.0	<1.0	3.5	276	462	18.2	4.7	3.4	4.2	4.4
Ethene	NE	<10.0	<10.0	<10.0	<10.0	NA	<10.0	13	32.4	13.1	25.7	112	<10.0	11.2	17.6
Ethylbenzene	600	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Lead	NE	NA	<5.0	<5.0	<5.0	NA	<5.0	NA	<5.0	7.9	<5.0	NA	<5.0	<5.0	<5.0
Methane	NE	13.7	<10.0	40.7	<10.0	NA	<10.0	4,490	12,100	7,340	18,500	43,200	1,620	3,890	2,670
2-Butanone (MEK)	4,000	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	723	12.8	<5.0	<1.0	<1.0	<5.0
MTBE	20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Naphthalene	6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Nitrogen, Nitrite (mg/L)	1	NA	<0.020	<0.020	<0.020	NA	<0.020	NA	0.079	0.10	0.050	NA	<0.020	<0.020	<0.020
PCE	0.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0
Phosphorus (mg/L)	NE	NA	0.14	0.17	0.15	NA	<0.050	NA	3.5	6.8	2.6	NA	0.079	0.14	0.12
Sulfate (mg/L)	250	NA	32.7	30.2	24.9	NA	<1.0	NA	<1.0	<1.0	<1.0	NA	10	7.5	6.5
Toluene	600	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	4.6	<1.0	1.1	<1.0	<1.0	<1.0
p-Isopropyltoluene	25 ¹	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	4.7	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (total)	500	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<5.0	<4.0	<1.0	<1.0	<1.0	<1.0	<1.0

Notes:
- Concentrations are shown in micrograms per liter (µg/l)
- Bolded concentration indicates exceedance of NC 2L Groundwater Standard (April 2013)
- < - The compound was not detected above the indicated laboratory reporting limit
- Only compounds detected in at least one sample are shown
- NA = Sample not analyzed for specific contaminant
- cis-1,2-DCE = cis-1,2-dichloroethene; TCE = trichloroethene; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane
- PCE = tetrachloroethene
- VOC = volatile organic compound
1 - Indicates Interim Maximum Allowable Concentration under 15A NCAC 02L .0202
* - Sample data from June 2017 NPDES sampling event
- NE = 2L Standard not established

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48MW-1	09/28/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/20/04	50	3.1	30	87	<1.0	<1.0
	04/13/04	35	2.7	36	84	<1.0	<1.0
	07/12/04	44	5.3	<1.0	81	<1.0	<1.0
	10/05/04	38	3.9	37	67	1.2	<1.0
	01/17/05	28	3.3	30	54	<1.0	<1.0
	03/15/05	31	3.5	32	69	<1.0	<1.0
	07/13/05	26	4.9	41	72	1.6	<1.0
	09/29/05	28	4.6	39	79	1.5	<1.0
	04/12/06	11.9	3.3	16.5	53.6	1.37	<1.0
	10/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/16/08	11	4.6	30	93	2.1	<1.0
	10/09/08	13	5.1	42	130	3.3	<1.0
	04/07/09	9.3	4.3	34	91	2.4	<1.0
	10/19/09	<8.0	<8.0	28	153	<8.0	<8.0
	04/27/10	10	4.7 J	48	150	3.4 J	<5.0
	10/26/10	<8.0	<8.0	9.92	67.3	<8.0	<8.0
	04/29/11	1.2	<1.0	5.16	30.3	<1.0	<1.0
	10/20/11	<1.0	<1.0	2.73	3.3	7.89	<1.0
	04/12/12	<1.0	<1.0	2.22	16.2	<1.0	<1.0
	10/10/12	<1.0	<1.0	3.8	19	1.4	<1.0
	04/23/13	<1.0	0.36 J	3.5	24	0.45 J	<1.0
	10/03/13	0.16 J	<0.50	1.3	8.5	0.14 J	<0.50
	06/25/14	<1.0	<1.0	5.7	37.8	1.8	<1.0
	11/19/14	<1.0	<1.0	7.1	42.1	6.1	<1.0
	04/15/15	1.4	2	17.1	80.5	83.9	1.9
	06/18/15	<1.0	1.4	13.4	94.2	63.3	1.5
	12/07/15	1.8	2.8	19.2	72.4	178	19.1
	06/14/16	2.8	4.1	18.8	191	141	27.6
	12/14/16	<2.0	2.4	17.5	209	133	12.4
	05/31/17	<1.0	2.5	12.2	123	76.3	10.9
	1/30/2018	<2.0	3.2	<2.0	<2.0	7.1	14.5
48MW-2	09/28/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/29/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/01/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/02/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/14/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/20/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/12/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/13/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/04/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	01/18/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	03/14/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/13/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	09/29/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/12/06	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/04/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/16/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/08/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/07/09	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/20/09	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/26/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	10/26/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/29/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/19/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/10/12	<1.0	<1.0	<1.0	14.5	<1.0	<1.0
	04/23/13	<1.0	<1.0	<1.0	0.94 J	<1.0	<1.0
	10/02/13	13	1.5 J	22	500	3.2	<1.0
	06/25/14	<1.0	<1.0	<1.0	10.3	<1.0	<1.0
12/10/14	<1.0	<1.0	<1.0	12.7	<1.0	<1.0	
06/19/15	<1.0	<1.0	<1.0	2.1	<1.0	<1.0	
12/10/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
08/02/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/01/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
11/15/17	<1.0	<1.0	<1.0	<1.0	2.4	1.2	
1/30/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
4/24/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48MW-3	09/28/98	17	<1.0	9.0	5.0	<1.0	<1.0
	04/11/00	6.1	0.93	2.2	0.077	1.6	<1.0
	01/29/02	8.7	2.1	2.2	6.7	2.1	<1.0
	10/01/02	20	3.1	12	12	1.9	<1.0
	01/08/03	9	3.9	9.6	8.8	2.9	<1.0
	04/08/03	11	3.8	7.0	15	1.8	<1.0
	07/02/03	3.7	2.7	4.9	1.5	2	<1.0
	10/14/03	5.3	4.5	6.5	2.1	2.3	<1.0
	01/20/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/12/04	5.8	2.8	9.9	6.0	1.4	<1.0
	07/13/04	<1.0	3.6	<1.0	6.0	<1.0	<1.0
	10/06/04	4.8	2.8	5.7	4.6	1.2	<1.0
	01/19/05	4.7	2.9	5.8	3.7	<1.0	<1.0
	03/15/05	4.2	2.4	5.0	6.6	<1.0	<1.0
	07/13/05	4.6	3.9	7.7	3.4	1.3	<1.0
	09/29/05	3.9	3.7	5.6	<1.0	1.1	<1.0
	04/11/06	4.2	4.3	5.2	5.5	1.3	<1.0
	10/12/06	6	5.1	9.4	16	1.5	<1.0
	04/04/07	2.4	2.3	5.2	6.5	<1.0	<1.0
	10/03/07	4.5	7.6	6.0	2.9	1.4	<1.0
	04/16/08	2.6	4.4	5.6	5.5	1.1	<1.0
	10/08/08	2.7	5	7.5	5.4	1.5	<1.0
	04/07/09	2.6	5.5	7.0	8.6	1.6	<1.0
	10/20/09	1.67	5.88	3.44	<1.0	1.27	<1.0
	04/26/10	2.0 J	6.5	7.1	3.5 J	<5.0	<5.0
	10/26/10	1.23	5.39	2.95	1.54	1.4	<1.0
	04/29/11	<1.0	4.3	3.42	<1.0	1.21	<1.0
	10/19/11	<1.0	5.4	3.86	1.05	1.59	<1.0
	04/11/12	<1.0	3.42	2.51	<1.0	<1.0	<1.0
	10/10/12	<1.0	4.2	3.2	<1.0	<1.0	<1.0
	04/23/13	0.60 J	4.2	2.4	0.36 J	1.2	<1.0
	10/03/13	0.69	7.9	2.7	1.2	2.3	<1.0
	06/24/14	<1.0	7.9	2.6	3.3	2.4	<1.0
12/10/14	<1.0	6.8	<1.0	<1.0	5.7	<1.0	
06/19/15	<1.0	8.0	2.0	1.7	4.4	<1.0	
12/10/15	<1.0	6.6	1.7	1.1	4.3	<1.0	
06/13/16	<1.0	7.7	1.5	1.2	3.6	<1.0	
12/13/16	<1.0	7.9	1.6	1.6	3.6	<1.0	
05/31/17	<1.0	5.8	1.3	1.2	2.5	<1.0	
1/30/2018	<1.0	2.1	<1.0	<1.0	<1.0	<1.0	
48MW-4R	04/11/02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/12/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/12/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/06/04	<1.0	<1.0	1.2	<1.0	<1.0	<1.0
	01/17/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	03/15/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/13/05	<1.0	<1.0	1.2	<1.0	<1.0	<1.0
	09/29/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/13/06	<1.0	<1.0	0.77 J	<2.0	<1.0	<1.0
	04/04/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/03/07	<1.0	<1.0	1.8	<2.0	<1.0	<1.0
	04/17/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/08/08	<1.0	<1.0	0.80 J	<2.0	<1.0	<1.0
	04/07/09	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/20/09	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/26/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	10/27/10	<1.0	<1.0	1.46	<1.0	<1.0	<1.0
	04/27/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/20/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/10/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/23/13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/03/13	<0.50	<0.50	1.4	0.54	<0.50	<0.50
	06/24/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/09/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/17/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
12/07/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/14/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/01/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1/31/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride	
NC 2L Groundwater Standard		200	6	350	3	70	0.03	
48MW-5	04/12/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	07/12/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	10/06/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	01/17/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	03/15/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	07/14/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	09/30/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	04/11/06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	10/13/06	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	
	04/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	
	10/04/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	
	04/17/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	
	10/08/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	
	04/07/09	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	
	10/19/09	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	04/27/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
	10/27/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	04/29/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	10/20/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	04/12/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	10/10/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	04/23/13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	10/03/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	06/24/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	12/09/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	06/19/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	12/07/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	06/15/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	08/01/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	12/15/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	06/01/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	11/15/17	NA	NA	NA	NA	NA	NA	
2/1/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
09/28/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		
48MW-6	04/11/00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	01/29/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	10/01/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	01/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	04/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	07/02/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	10/14/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	01/20/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
	04/12/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	07/13/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	10/04/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	01/17/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	03/14/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	07/13/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	09/28/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	48MW-7	04/11/00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
		01/29/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
		10/01/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
01/08/03		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
04/08/03		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
07/02/03		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
10/14/03		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
01/20/04		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
04/13/04		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
07/12/04		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
10/04/04		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
01/17/05		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
03/14/05		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
07/13/05		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48MW-10	09/28/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/29/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/01/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/02/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/14/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/20/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/13/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/12/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/05/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	01/17/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	03/15/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/13/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/12/06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/12/06	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/16/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/08/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/07/09	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/19/09	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/27/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	10/26/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/29/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/20/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/12/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/10/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/23/13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/03/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	06/24/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/08/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
06/17/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/08/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/12/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
05/30/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1/31/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
04/13/04	18	4.7	24	160	2.3	<1.0	
48MW-11R	07/14/04	<1.0	1.2	<1.0	38	<1.0	<1.0
	10/05/04	2.3	1.4	<1.0	17	3.0	<1.0
	01/19/05	2.3	2.2	2.9	11	<1.0	<1.0
	03/15/05	<1.0	<1.0	1.6	5.2	<1.0	<1.0
	07/13/05	<1.0	1.4	1.8	6.3	<1.0	<1.0
	09/29/05	3.1	1.9	4.6	23	<1.0	<1.0
	04/12/06	2.6	2.4	3.8	34.3	1.03	<1.0
	10/12/06	6.4	3.3	12	51	1.8	<1.0
	04/03/07	<1.0	<1.0	2.4	11	<1.0	<1.0
	10/04/07	<1.0	1.8	3.1	15	1.8	<1.0
	04/16/08	<1.0	0.54 J	0.61 J	2.5	<1.0	<1.0
	10/09/08	<1.0	1.1	1.5	6.5	0.59 J	<1.0
	04/07/09	<1.0	0.92 J	1.3	2.3	0.74 J	<1.0
	10/19/09	<1.0	1.12	1.34	7.67	<1.0	<1.0
	04/27/10	<5.0	<5.0	<5.0	2.0 J	<5.0	<5.0
	10/27/10	<1.0	<1.0	<1.0	4.49	3.19	<1.0
	04/29/11	<1.0	<1.0	<1.0	2.8	4.08	<1.0
	10/21/11	<1.0	<1.0	1.55	7.33	5.98	<1.0
	04/12/12	<1.0	<1.0	<1.0	4.52	1.89	<1.0
	10/10/12	<1.0	<1.0	1.1	7.5	1.9	<1.0
	04/24/13	3.1 J	1.2 J	18	230	0.93 J	<1.0
	10/03/13	<0.50	0.74	1.2	6.6	2.0	<1.0
	12/10/14	<1.0	<1.0	<1.0	<1.0	1.5	<1.0
	06/19/15	<1.0	1.1	5.2	29.9	30.2	<1.0
	12/10/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/14/16	1.4	2.7	10.7	97.5	93.2	17.9
	12/15/16	<1.0	<1.0	2.0	15.9	13.8	<1.0
	06/01/17	<1.0	<1.0	1.4	4.5	2.9	<1.0
	2/1/2018	<1.0	<1.0	1.1	1.0	2.9	1.4

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48MW-12	09/28/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/29/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/01/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/02/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/14/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/20/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/13/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/14/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/05/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	01/18/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	03/14/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/13/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	09/29/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/12/06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/13/06	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/07/04	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/17/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/08/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/08/09	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/20/09	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/27/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/19/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/11/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/24/13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/02/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
06/24/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/09/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/17/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/08/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/15/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/14/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/02/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
11/16/2017	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
2/1/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
04/23/18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48MW-13	09/28/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/29/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/01/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/02/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/14/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/20/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/14/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/14/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/06/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	01/18/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	03/14/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/14/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	09/29/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/12/06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/13/06	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/04/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/17/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/08/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/08/09	<1.0	<1.0	<1.0	0.85 J	<1.0	<1.0
	10/20/09	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/27/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	10/26/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/27/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/19/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/12/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/11/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/24/13	<1.0	<1.0	<1.0	0.81 J	<1.0	<1.0
	10/02/13	<0.50	<0.50	<0.50	0.67	<0.50	<0.50
	06/24/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
12/09/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/17/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/09/15	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	
06/14/16	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	
12/13/16	<1.0	<1.0	<1.0	2.1	<1.0	<1.0	
06/01/17	<1.0	<1.0	<1.0	4.4	<1.0	<1.0	
11/16/17	<1.0	<1.0	<1.0	4.4	<1.0	<1.0	
2/2/2018	<1.0	<1.0	<1.0	6.7	<1.0	<1.0	
04/23/18	<1.0	<1.0	<1.0	6.9	<1.0	<1.0	

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48MW-14	01/29/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/01/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/02/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/14/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/20/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/13/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/14/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/05/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	01/18/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	03/14/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/14/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	09/29/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/12/06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/12/06	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/17/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/08/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/08/09	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/20/09	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/27/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	10/26/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/27/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/19/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/11/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/24/13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/02/13	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
06/24/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/09/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/17/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/09/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/14/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/14/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/02/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
11/16/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1/31/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
04/23/18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
48MW-15	01/29/02	40	17	26	53	4.2	<1.0
	10/01/02	40	20	21	21	4.0	<1.0
	01/08/03	18	10	12	40	3.2	<1.0
	04/08/03	14	5.3	10	79	2.2	<1.0
	07/02/03	23	7.5	18	260	3.8	<1.0
	10/14/03	5.1	5.9	6.0	12	2.4	<1.0
	01/20/04	<5.0	<5.0	<5.0	7.7	<5.0	<5.0
	04/13/04	14	6.6	21	120	2.9	<1.0
	07/15/04	2.3	3.1	<1.0	2.9	<1.0	<1.0
	10/06/04	4.4	5.8	6.4	4.8	2.1	<1.0
	01/17/05	1	1.9	2.1	3.1	<1.0	<1.0
	03/14/05	<1.0	<1.0	1.2	2.6	<1.0	<1.0
	07/13/05	3.8	5.8	8.7	3.2	3.1	<1.0
	09/30/05	6.7	6.8	13	16	3.3	<1.0
	04/11/06	1.4	2.8	3.17	2.27	1.3	<1.0
	10/12/06	3.8	3.8	8.6	22	2.7	<1.0
	04/03/07	1.3	1.4	4.4	26	1.5	<1.0
	10/03/07	4.3	4.8	13	6.2	3.7	<1.0
	04/17/08	0.6	1.6	2.6	1.3	1.2	<1.0
	10/09/08	0.81	2.6	5.3	4.7	2.3	<1.0
	04/08/09	<1.0	1	2.0	4.0	0.97	<1.0
	10/20/09	<1.0	1.57	4.09	1.66	2.04	<1.0
	04/27/10	<5.0	3	9.6	15	3.4	<5.0
	10/26/10	<1.0	1.44	3.3	1.95	2.71	<1.0
	04/27/11	<1.0	<1.0	1.22	<1.0	1.37	<1.0
	10/19/11	<1.0	<1.0	2.23	1.03	1.61	<1.0
	04/11/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/11/12	<1.0	<1.0	1.8	1.5	1.4	<1.0
	04/23/13	<1.0	0.26 J	0.49 J	0.73 J	0.54 J	<1.0
	10/02/13	0.28 J	1.2	5.0	6.2	2.2	<1.0
06/24/14	<1.0	<1.0	2.0	1.8	1.7	<1.0	
12/10/14	<1.0	<1.0	<1.0	<1.0	1.4	<1.0	
06/17/15	<1.0	<1.0	2.5	1.5	2.6	<1.0	
12/08/15	<1.0	<1.0	<1.0	<1.0	1.1	<1.0	
06/15/16	<1.0	1.2	3.3	24.4	29.3	6.4	
12/14/16	<1.0	<1.0	1.8	<1.0	1.6	<1.0	
06/01/17	<1.0	<1.0	1.4	5.1	3.8	<1.0	
2/1/2018	<1.0	<1.0	1.2	<1.0	2.3	1.7	

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48MW-16	07/09/10	<80	<80	84.8	1,060	<80	<80
	10/27/10	<80	<80	<80	870	<80	<80
	04/29/11	<40	<40	57.2	704	<40	<40
	10/20/11	<40	<40	40.8	482	<40	<40
	04/12/12	<20	<20	46.8	478	<20	<20
	10/11/12	6.4	2.3	40	263	2.2	<1.0
	04/23/13	0.12 J	0.80 J	1.2	7.1	2.3	<1.0
	10/03/13	<0.50	<0.50	2.0	19	0.52	<0.50
	06/25/14	8.9	<2.0	54.3	749	2.3	<2.0
	11/19/14	17.2	5.3	113	651	586	<1.0
48MW-16R	04/16/15	8.7	12	36.5	122	308	27.5
	06/18/15	7.7	17.5	14.7	111	131	49.7
	08/25/15	1.9	17.6	2.5	4.1	20.7	19.6
	10/27/15	1.6	19.3	1.4	7.4	10.8	4.6
	12/07/15	2.6	10	<1.0	1.4	3.8	4.5
	01/26/16	<1.0	4.9	3.6	27.5	23.5	5.3
	04/19/16	<1.0	5.1	3.3	29.4	22	9.1
	06/14/16	<1.0	2.7	<1.0	<1.0	4.3	4.9
	08/02/16	<1.0	3.7	<1.0	5.0	6.6	4.4
	12/14/16	<1.0	6.3	<1.0	2.7	8.3	7.7
	05/31/17	<1.0	3.9	3.4	34.4	20.7	8.8
	11/15/17	<1.0	4.7	<1.0	<1.0	2.6	4.2
	1/30/2018	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
	04/23/18	<5.0	<5.0	<5.0	<5.0	9.1	<5.0
	48MW-17	07/09/10	<1.0	<1.0	<1.0	<1.0	<1.0
10/27/10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
04/27/11		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10/20/11		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
04/11/12		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10/10/12		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
04/23/13		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
10/03/13		<0.50	0.31 J	<0.50	<0.50	<0.50	<0.50
06/24/14		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
12/09/14		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
06/17/15		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
12/07/15		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
06/13/16		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
12/15/16		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
06/01/17		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/31/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
48MW-18	08/07/14	<1.0	<1.0	<1.0	18.5	<1.0	<1.0
	12/08/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/16/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/09/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/14/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/01/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	1/29/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
48MW-19	08/07/14	<1.0	<1.0	<1.0	24.4	<1.0	<1.0
	12/09/14	<1.0	<1.0	3.8	70.6	<1.0	<1.0
	06/16/15	<1.0	<1.0	5.9	66.5	<1.0	<1.0
	12/09/15	<1.0	<1.0	3.7	55.8	<1.0	<1.0
	06/14/16	<1.0	<1.0	3.1	43.2	<1.0	<1.0
	12/13/16	<1.0	<1.0	3.2	41.7	<1.0	<1.0
	05/31/17	<1.0	<1.0	2.3	34.2	<1.0	<1.0
	1/29/2018	<1.0	<1.0	1.7	25.9	<1.0	<1.0
48MW-20	08/07/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/09/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/16/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/10/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/14/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	05/31/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	1/30/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
48MW-21	08/07/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/10/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/17/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/08/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/14/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/02/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	11/15/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	1/31/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/24/18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
48MW-23	08/07/14	<1.0	<1.0	2.2	42.4	2.5	<1.0
	12/10/14	1.2	<1.0	3.5	45.2	42.7	<1.0
	06/17/15	1.8	1.7	8.9	92.6	38.7	2.8
	12/09/15	<1.0	<1.0	<1.0	7.2	8.2	<1.0
	06/15/16	<1.0	<1.0	<1.0	9.2	3.5	<1.0
	12/14/16	<1.0	<1.0	2.2	24.8	15.0	2.0
	06/01/17	<1.0	<1.0	<1.0	12.5	4.9	<1.0
	2/1/2018	<1.0	<1.0	<1.0	<1.0	4.9	7.1

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48DW-1	09/28/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	11/04/00	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/29/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/01/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/02/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/14/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/20/04	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/14/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/06/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	03/16/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	09/30/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/12/06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/12/06	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/04/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/16/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/09/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/07/09	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/20/09	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/26/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	04/27/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	10/26/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/20/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/12/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/10/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/18/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/08/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	06/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
08/02/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/15/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/01/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
11/16/17	NA	NA	NA	NA	NA	NA	
1/31/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
4/24/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48DW-2	09/28/98	53	8	61	470	5.0	<1.0
	04/11/00	64	11	93	420	5.6	<1.0
	01/28/02	120	5.2	96	110	2.2	<1.0
	10/01/02	64	8.1	46	300	2.1	<1.0
	01/08/03	74	<5.0	54	340	<5.0	<5.0
	04/08/03	48	5.8	42	300	<5.0	<5.0
	07/02/03	48	11	33	260	<5.0	<5.0
	10/14/03	53	8.8	47	260	<5.0	<5.0
	01/20/04	26	<5.0	52	220	<5.0	<5.0
	04/13/04	42	8	62	260	2.1	<1.0
	07/14/04	39	9.1	<1.0	250	<1.0	<1.0
	10/05/04	37	9.0	49	240	2.4	<1.0
	01/19/05	33	8.9	46	190	2.4	<1.0
	03/16/05	25	7.6	39	240	<1.0	<1.0
	07/13/05	19	7.6	43	210	4.0	<1.0
	09/29/05	24	8.0	42	180	3.9	<1.0
	04/12/06	15	7.1	31	131	48.4	<1.0
	10/12/08	16	7.6	38	140	24	<1.0
	04/03/07	11	5.0	26	95	9.2	<1.0
	10/04/07	12	6.4	29	120	12	<1.0
	04/16/08	7.8	5.2	23	74	11	<1.0
	10/09/08	6.6	5.8	21	69	16	<1.0
	04/07/09	8.2	8.7	30	44	36	<1.0
	10/19/09	3.23	4.02	10.3	36.8	14.6	<1.0
	04/27/10	4.9	5.7	22	42	7.4	<1.0
	10/27/10	2.92	3.94	12.6	54	7.52	<1.0
	04/29/11	1.64	2.98	7.89	26.2	6.81	<1.0
	10/20/11	1.36	3.15	8.09	27.3	7.68	<1.0
	04/12/12	<1.0	2.38	5.82	15.7	4.98	<1.0
	10/10/12	1.5	3.2	11.6	28.6	4.9	<1.0
	04/24/13	2.4 J	1.3 J	19	220	1.7 J	<5.0
	10/03/13	1.1	2.7	12	22	27	<1.0
	06/25/14	<1.0	1.2	2.1	10.6	2.7	<1.0
11/19/14	<1.0	1.9	8.4	33.9	10	<1.0	
04/15/15	<1.0	3.3	15.1	52.4	74.1	2.4	
06/18/15	<1.0	2.9	12.1	64	75.6	4.1	
12/08/15	<1.0	3.8	10.6	39.9	87.2	10.6	
06/14/16	<1.0	2.6	8.3	51.9	66.5	9.8	
08/01/16	<1.0	3.2	9.2	60.5	69.6	9.9	
12/13/16	<1.0	2.6	7.0	42.7	49.6	4.3	
06/01/17	<1.0	1.9	5.2	34.1	24.3	2.1	
11/16/17	<1.0	2.3	5.3	34.5	24.7	3.2	
1/29/2018	<1.0	<1.0	<1.0	<1.0	38.5	<1.0	
4/24/2018	<1.0	1.9	3.8	<1.0	43	2.6	

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48DW-3	04/11/00	<0.50	<0.50	<0.50	1.5	<0.50	<0.50
	01/28/02	<0.50	<0.50	<0.50	0.58	<0.50	<0.50
	10/01/02	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	04/08/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	07/02/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	10/14/03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
	01/20/04	3.4	3.4	7.8	1.4	1.2	<1.0
	04/14/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/13/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/05/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	01/17/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	03/16/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/13/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	09/29/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/12/06	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/12/06	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/03/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/04/07	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/16/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/09/08	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	04/08/09	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
	10/20/09	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/27/10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
	10/26/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/29/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/20/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/11/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	10/11/12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	04/23/13	<1.0	<1.0	<1.0	0.26 J	<1.0	<1.0
	10/02/13	2.2	0.38 J	3.9	92	0.53	<1.0
	06/25/14	1.1	<1.0	2.7	63.1	<1.0	<1.0
	11/19/14	5	<1.0	12	344	2.0	<1.0
	04/15/15	<2.5	<2.5	7.7	140	<2.5	<2.5
	06/18/15	2.2	<1.0	5.4	116	1.4	<1.0
	12/09/15	<1.0	<1.0	4.2	89.0	1.7	<1.0
	06/15/16	<1.0	<1.0	3.0	56.0	1.0	<1.0
	08/02/16	<1.0	<1.0	3.4	62.8	1.0	<1.0
	12/15/16	<1.0	<1.0	2.0	41.8	<1.0	<1.0
	06/01/17	<1.0	<1.0	1.4	26.6	<1.0	<1.0
	11/16/17	<1.0	2.3	5.3	34.5	24.7	3.2
	2/1/2018	<1.0	<1.0	<1.0	<1.0	15.7	<1.0
	4/24/2018	<1.0	<1.0	2.6	<1.0	62.6	<1.0
48DW-4	01/28/02	<0.50	<0.50	<0.50	7.3	<0.50	<0.50
	10/01/02	<0.50	<0.50	<0.50	7.8	<0.50	<0.50
	01/08/03	<0.50	<0.50	<0.50	8.6	<0.50	<0.50
	04/08/03	<0.50	<0.50	<0.50	9.3	<0.50	<0.50
	07/02/03	<0.50	<0.50	<0.50	9.8	<0.50	<0.50
	10/14/03	<0.50	<0.50	<0.50	7	<0.50	<0.50
	01/20/04	<0.50	<0.50	<0.50	4.9	<0.50	<0.50
	04/14/04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	07/14/04	<1.0	<1.0	<1.0	6.4	<1.0	<1.0
	10/06/04	<1.0	<1.0	1.3	6.3	<1.0	<1.0
	01/18/05	<1.0	<1.0	<1.0	4.2	<1.0	<1.0
	03/16/05	<1.0	<1.0	<1.0	3.6	<1.0	<1.0
	07/13/05	<1.0	<1.0	<1.0	3.0	<1.0	<1.0
	09/29/05	<1.0	<1.0	<1.0	4.2	<1.0	<1.0
	04/12/06	<1.0	<1.0	<1.0	2.76	<1.0	<1.0
	10/12/06	<1.0	<1.0	<1.0	4.2	<1.0	<1.0
	04/03/07	<1.0	<1.0	<1.0	2.2	<1.0	<1.0
	10/04/07	<1.0	<1.0	<1.0	3.5	<1.0	<1.0
	04/17/08	<1.0	<1.0	<1.0	2.3	<1.0	<1.0
	10/08/08	<1.0	<1.0	<1.0	2.7	<1.0	<1.0
	04/08/09	<1.0	<1.0	<1.0	1.6	<1.0	<1.0
	10/20/09	<1.0	<1.0	<1.0	1.62	<1.0	<1.0
	04/27/10	<5.0	<5.0	<5.0	2.2	<5.0	<5.0
	10/27/10	<1.0	<1.0	<1.0	2.32	<1.0	<1.0
	04/27/11	<1.0	<1.0	<1.0	3.45	<1.0	<1.0
	10/19/11	<1.0	<1.0	<1.0	2.74	<1.0	<1.0
	04/11/12	<1.0	<1.0	<1.0	3.3	<1.0	<1.0
	10/11/12	<1.0	<1.0	<1.0	1.5	<1.0	<1.0
	04/24/13	<1.0	<1.0	<1.0	1.8	<1.0	<1.0
	10/02/13	<0.50	0.13 J	0.56	4.4	0.43 J	<1.0
	06/24/14	<1.0	<1.0	1.1	9.6	<1.0	<1.0
	12/10/14	<1.0	<1.0	1.5	11.3	1.4	<1.0
	06/17/15	<1.0	<1.0	1.9	9.6	<1.0	<1.0
	12/08/15	<1.0	<1.0	1.6	10.8	<1.0	<1.0
	06/15/16	<1.0	<1.0	1.4	9.0	<1.0	<1.0
	08/01/16	<1.0	<1.0	1.4	8.6	<1.0	<1.0
	12/14/16	<1.0	<1.0	1.3	8.9	<1.0	<1.0
	06/01/17	<1.0	<1.0	<1.0	4.2	<1.0	<1.0
	11/16/17	<1.0	<1.0	1.4	9.3	<1.0	<1.0
	2/1/2018	<1.0	<1.0	1.5	8.2	<1.0	<1.0
	4/24/2018	<1.0	<1.0	<1.0	6.9	<1.0	<1.0

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride	
NC 2L Groundwater Standard		200	6	350	3	70	0.03	
48DW-5(60 ft bgs)	09/10/07	<20	<20	30.2	313	<20	<20	
48DW-5(80 ft bgs)	09/10/07	<20	<20	27.4	283	<20	<20	
48DW-5(100 ft bgs)	09/10/07	<20	<20	28.2	356	<20	<20	
48DW-5 (~90 ft bgs)	10/27/10	<20	<20	30	280	<20	<20	
	04/29/11	<10	<10	25	219	<10	<10	
	10/20/11	<10	<10	36.6	360	<10	<10	
	04/12/12	<16	<16	39.4	413	<16	<16	
	10/11/12	5.8	3.2	45	296	2.5	<1.0	
	04/23/13	1.5	2.3	11	47	4.5	<1.0	
	10/03/13	6	2.8	43	530	2.6	<1.0	
	06/25/14	2.1	<2.0	22.2	328	<2.0	<2.0	
	11/19/14	15.6	1.6	46.6	708	11.1	<1.0	
	04/16/15	<10	<10	48.4	654	275	20	
48DW-5R	06/18/15	9.9	9.6	21.8	279	97.3	18	
	08/25/15	9.1	9.3	24.9	264	112	15.4	
	10/27/15	3.6	13.8	14.2	134	74.5	24.8	
	12/09/15	<1.0	8.8	8.4	87.5	33.3	12	
	01/26/16	<1.0	5.8	5.4	73.4	17.4	3.2	
	04/19/16	<1.0	4.5	4.6	36.9	31.7	5.7	
	06/14/16	<1.0	3.0	<1.0	3.5	7.0	6.3	
	08/02/16	<1.0	3.2	<1.0	1.8	6.0	6.7	
	12/14/16	<1.0	3.3	<1.0	6.4	10.3	9.0	
	05/31/17	<1.0	2.9	1.1	9.1	7.8	7.1	
	11/15/17	<1.0	1.8	<1.0	2.9	2.1	2.9	
	1/29/2018	<1.0	1.3	<1.0	3.2	5.3	2.4	
	4/23/2018	<1.0	1.2	<1.0	4.2	3	1.8	
	48DW-6	04/12/12	<1.0	<1.0	<1.0	1.58	<1.0	<1.0
10/10/12		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
04/23/13		<1.0	<1.0	<1.0	0.30 J	<1.0	<1.0	
10/03/13		<0.50	<0.50	<0.50	0.24 J	<0.50	<0.50	
06/24/14		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/08/14		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/17/15		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/08/15		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/13/16		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/12/16		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
05/30/17		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1/31/2018		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
48DW-7		04/12/12	<1.0	<1.0	<1.0	1.61	<1.0	<1.0
		10/10/12	<1.0	<1.0	<1.0	2.7	<1.0	<1.0
	04/23/13	0.13 J	<1.0	<1.0	3.2	<1.0	<1.0	
	10/03/13	0.21 J	<0.50	<0.50	3.3	<0.50	<0.50	
	06/24/14	<1.0	<1.0	<1.0	3.0	<1.0	<1.0	
	12/11/14	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	
	06/17/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	12/07/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	06/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	08/01/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	12/12/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	05/30/17	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	
	1/29/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	48DW-8 ¹	04/12/12	<5.0	<5.0	13.6	178	<5.0	<5.0
10/11/12		2.8	2.2	21.3	180	1.3	<1.0	
04/23/13		<1.0	1.4	10	170	1.1	<1.0	
10/02/13		2.3	2.1	16	230	1.3	<1.0	
06/25/14		1.6	1.6	14.9	169	1.1	<1.0	
12/09/14		<1.0	<1.0	4.7	49.5	<1.0	<1.0	
06/16/15		<1.0	<1.0	6.9	50.4	<1.0	<1.0	
12/09/15		<1.0	1.3	10.9	101	<1.0	<1.0	
06/14/16		<1.0	1.1	9.1	76.6	<1.0	<1.0	
08/02/16		<1.0	1.3	9.4	70.7	<1.0	<1.0	
12/13/16		<1.0	1.1	9.8	87.7	<1.0	<1.0	
05/31/17		<1.0	1.1	8.9	92.8	<1.0	<1.0	
11/16/17		<1.0	<1.0	7.0	68.7	<1.0	<1.0	
1/30/2018		<1.0	1.2	8.1	71.7	<1.0	<1.0	
4/23/2018	<1.0	<1.0	5.6	<1.0	<1.0	<1.0		
48DW-9 (100-120 ft bgs)	07/25/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
48DW-9 (80-100 ft bgs)	07/25/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
48DW-9 (60-80 ft bgs)	07/25/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
48DW-9 (40-60 ft bgs)	07/25/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
48DW-9	08/07/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	12/08/14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	06/16/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	12/09/15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	06/14/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	12/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
	06/01/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
1/30/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0		

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride
NC 2L Groundwater Standard		200	6	350	3	70	0.03
48DW-10 (100-120 ft bgs)	07/23/14	<1.0	<1.0	2.9	47.5	<1.0	<1.0
48DW-10 (80-100 ft bgs)	07/23/14	<1.0	<1.0	1.6	35.2	<1.0	<1.0
48DW-10 (60-80 ft bgs)	07/24/14	<1.0	<1.0	<1.0	1.9	<1.0	<1.0
48DW-10 (60-40 ft bgs)	07/24/14	<1.0	<1.0	4.4	56.1	<1.0	<1.0
48DW-10 (25-40 ft bgs)	07/24/14	<1.0	<1.0	1.7	32.5	<1.0	<1.0
48DW-10	08/07/14	<1.0	<1.0	1.9	33.9	<1.0	<1.0
	12/09/14	<1.0	<1.0	<1.0	10	<1.0	<1.0
	06/16/15	<1.0	<1.0	<1.0	5.0	<1.0	<1.0
	12/10/15	<1.0	<1.0	<1.0	3.4	<1.0	<1.0
	06/13/16	<1.0	<1.0	<1.0	2.7	<1.0	<1.0
	08/01/16	<1.0	<1.0	<1.0	2.7	1.0	<1.0
	12/13/16	<1.0	<1.0	<1.0	2.3	<1.0	<1.0
	05/31/17	<1.0	<1.0	<1.0	2.5	<1.0	<1.0
	11/15/17	<1.0	<1.0	<1.0	3.9	<1.0	<1.0
	1/29/2018	<1.0	<1.0	<1.0	2.8	<1.0	<1.0
	4/23/2018	<1.0	<1.0	<1.0	3.0	<1.0	<1.0
	48DW-11 (20-40 ft bgs)	07/22/14	<1.0	<1.0	<1.0	<1.0	<1.0
48DW-11 (40-60 ft bgs)	07/22/14	<1.0	<1.0	<1.0	1.6	<1.0	<1.0
48DW-11 (60-80 ft bgs)	07/22/14	<1.0	<1.0	<1.0	2.6	<1.0	<1.0
48DW-11 (80-100 ft bgs)	07/23/14	<1.0	<1.0	1.1	30.4	<1.0	<1.0
48DW-11 (100-120 ft bgs)	07/23/14	<1.0	<1.0	<1.0	2.2	<1.0	<1.0
48DW-11	08/07/14	<1.0	<1.0	<1.0	1.9	<1.0	<1.0
	12/09/14	<1.0	<1.0	<1.0	1.1	<1.0	<1.0
	06/16/15	<1.0	<1.0	<1.0	1.0	<1.0	<1.0
	12/08/15	<1.0	<1.0	1.4	1.0	1.8	<1.0
	06/14/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	12/13/16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	05/31/17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
	1/30/2018	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
48SVE-01	12/12/04	<2,000	<2,000	<2,000	48,600	<2,000	<2,000
48SVE-01 (1010)	05/31/12	3,200	<1,600	1,860	70,700	<1,600	<1,600
48SVE-01 (1030)	05/31/12	1,710	<1,250	<1,250	41,300	<1,250	<1,250
48SVE-01	06/21/12	NA	NA	NA	NA	NA	NA
	10/11/12	2,660	3.8	1,100	36,300	10.1	<1.0
	04/24/13	2,800	<500	1,200	56,000	<500	<500
	10/03/13	6,700	<500	1,700	99,000	<500	<500
	06/25/14	1,290	<200	592	29,100	<200	<200
	11/19/14	10,700	24.5	1,520	137,000	24,300	74.9
48SVE-01R	04/16/15	31.5	27.6	7.5	32.8	188	77.8
	06/18/15	14.7	<12.5	48.4	779	1,180	23.7
	08/25/15	<10	<10	23.6	460	560	25.5
	10/27/15	<5.0	7.9	10.9	133	733	41.1
	12/09/15	<12.5	<12.5	<12.5	66.3	533	41
	01/26/16	<5.0	6.9	5.6	82	490	37.9
	04/19/16	<4.0	5.9	8.1	53.1	534	53.1
	06/14/16	<2.0	4.8	6.2	25.8	298	41.0
	08/03/16	<4.0	5.0	6.3	22.3	384	51.7
	12/14/16	<1.0	2.1	2.2	76.9	65.2	19.9
	05/31/17	<10.0	<10.0	<10.0	<10.0	12.8	<10.0
	11/15/17	<100	<100	<100	<100	<100	<100
	1/29/2018	<100	<100	<100	<100	<100	<100
	4/23/2018	<20	<20	<20	<20	<20	<20
	10/19/09	<10	<10	13.4	280	<10	<10
RW-1	04/27/11	<10	<10	23.9	450	<10	<10
	10/20/11	<10	<10	<10	140	<10	<10
	04/11/12	<10	<10	15	324	<10	<10
	10/11/12	<1.0	<1.0	7.3	108	<1.0	<1.0
	04/24/13	2.7 J	<5.0	3.6 J	110	<5.0	<5.0
	10/03/13	<0.50	<0.50	2.0	32	0.23 J	<0.50
	06/25/14	9.5	2.0	22.3	430	3.8	<1.0
	11/19/14	7.2	5.3	45.2	153	397	2.0
	04/15/15	<4.0	5.0	10.9	33.7	116	12.7
	06/18/15	2.7	6.5	20.5	129	211	18.2
	08/25/15	<2.0	8.2	26.2	<1.0	360	25.7
	10/27/15	<2.5	6.5	11.9	7.4	200	34.3
	12/09/15	<2.0	4.3	<2.0	<2.0	28.7	15.8
	01/26/16	<1.0	2.9	<1.0	<1.0	6.7	6.8
	04/19/16	<1.0	3.4	6.2	58.8	74	22.5
	06/13/16	<1.0	3.9	<1.0	<1.0	6.8	11.9
	08/02/16	<1.0	4.3	<1.0	<1.0	10.7	22.3
	12/14/16	<1.0	4.6	6.1	65.3	90.5	27.6
	06/01/17	<1.0	2.9	2.0	17.9	34.3	13.3
	11/16/17	<5.0	<5.0	<5.0	<5.0	<5.0	11.6
	1/29/2018	<4.0	<4.0	<4.0	<4.0	<4.0	12.8
	4/24/2018	<1.0	1.2	<1.0	<1.0	1.2	1.5

Table 4
Summary of Historical Groundwater Analytical Results for Select VOCs
ATL No. 48
Pittsboro, North Carolina

Well ID	Sample Date	1,1,1-TCA	1,1-DCA	1,1-DCE	TCE	cis-1,2-DCE	Vinyl Chloride	
NC 2L Groundwater Standard		200	6	350	3	70	0.03	
RW-2	10/19/09	<5.0	<5.0	7.3	104	<5.0	<5.0	
	04/29/11	<2.0	<2.0	5.9	71.8	<2.0	<2.0	
	10/20/11	<4.0	<4.0	7.88	126	<4.0	<4.0	
	04/11/12	<5.0	<5.0	6.35	86.1	<5.0	<5.0	
	10/11/12	<1.0	<1.0	13.7	174	1.9	<1.0	
	06/16/16	<1.0	2.6	<1.0	1.9	10.5	24.1	
	08/01/16	<1.0	3.5	<1.0	<1.0	<1.0	2.0	
	12/15/16	<1.0	2.9	<1.0	2.0	10.0	7.1	
	06/01/17	<1.0	2.6	<1.0	<1.0	<1.0	<1.0	
	11/16/17	<1.0	3.1	3.8	12.8	90.3	26.7	
	2/1/2018	<1.0	2.4	2.1	1.0	62.2	24.9	
	4/24/2018	<1.0	2.2	2.6	5.0	64.4	20.1	
	48RW-2R (74-94)	07/28/14	1.2	2.9	15.1	68.3	1.8	<1.0
48RW-2R (60-80)	07/29/14	<1.0	2.6	9.1	52.3	1.6	<1.0	
48RW-2R (40-60)	07/29/14	<1.0	2.3	7.8	42.3	1.3	<1.0	
48RW-2R ²	08/07/14	1.4	2.8	14	80.1	1.8	<1.0	
	12/11/14	<1.0	2.4	9.6	36.2	3.5	<1.0	
	02/19/15	1.3	2.1	12	100	17	<0.5	
	03/16/15	1.2	1.9	11	97	20	0.31 J	
	04/08/15	1.8	2.1	13	120	29	0.46 J	
	05/07/15	1.8	1.8	11	95	31	0.82	
	06/03/15	1.3	1.5	7.2	89	30	0.70	
	07/02/15	1.9	2.4	9.7	94	42	1.3	
	08/03/15	<0.50	<0.50	8.0	78	38	1.2	
	09/02/15	1.4	2.6	8.7	67	52	2.6	
	11/19/15	1.2	2.5	6.4	60	40	1.7	
	12/07/15	0.90	2.0	5.8	54	36	1.3	
	06/08/16	<0.50	1.8	3.8	36	21	1.3	
	12/05/16	0.61	2.2	3.9	34	22	2.8	
	06/08/17	<0.50	1.4	2.6	29	11	1.7	
	48PW-2	09/29/05	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
		10/13/06	<1.0	<1.0	<1.0	<2.0	<1.0	<1.0
04/03/04		<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	
04/17/08		<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	
10/08/08		<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	
04/07/09		<1.0	<1.0	<1.0	<2.0	<1.0	<1.0	
10/19/09		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
04/26/10		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
10/27/10		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
04/27/11		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
10/20/11		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
04/11/12		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
10/10/12		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
04/24/13		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
10/03/13		<0.50	<0.50	0.23 J	<0.50	<0.50	<0.50	
06/19/15		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/10/15		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/15/16		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
12/15/16		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
06/02/17		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	

Notes:

1 - 48DW-8 converted from open rock well to Type III well on 9/25/14. Refer to Table 1 for well construction. 48DW-8 screened interval based on depth interval with highest potential chlorinated VOC concentrations based on Color-Tec field screening.

2 - 48RW-2R connected to pump and treat system in February 2015.

Bolded concentration indicates exceedance of NC 2L Standard (April 2013)

Concentrations are shown in micrograms per liter (µg/l)

(40-60) - Indicates packer test depth interval in feet below ground surface

Data presented in this table prior to June 2014 are based on data presented in AECOM Environmental's April 2014 Semi-Annual Monitoring Report

J - indicates approximate concentration

< - The compound was not detected above the indicated laboratory reporting limit

1,1,1-TCA = 1,1,1-Trichloroethane; 1,1-DCA = 1,1-dichloroethane; 1,1-DCE = 1,1-dichloroethene; TCE = trichloroethene; cis-1,2-DCE = cis-1,2-dichloroethene

**Table 5
Summary of Biodegradation Parameters
Former ATL No. 48
Pittsboro, North Carolina**

Well ID	Sample Date	DO (mg/l)	ORP (mV)	S. Cond. (µS/cm)	Fe 2 ⁺ (mg/l)	pH (SU)	Ethane (µg/l)	Ethene (µg/l)	Methane (µg/l)	TOC (mg/l)	Chloride (mg/l)
NC 2L Standard		NS	NS	NS	0.3	6.5-8.5	NS	NS	NS	NS	250
48MW-2	6/1/2017	0.88	94.8	170	0	5.91	<10.0	<10.0	49	3.3	5.1
	11/15/17	0.30	10.1	255.5	2	6.00	<10.0	<10.0	4,880	7.5	5.3
	01/31/18	0.27	64.5	150	0.5	5.73	<10.0	<10.0	689	2.2	4.4
	4/24/2018	0.44	43.6	133	0	5.68	<10.0	<10.0	50.5	1.8	4
48MW-4R	02/01/18	0.30	-130.3	305.4	0	7.60	<10.0	44.8	325.0	<1.0	6.6
48MW-5	6/1/2017	0.64	-24.1	0.354	4.5	6.26	<10.0	<10.0	472	17.7	7.2
	11/15/17	0.04	-8.7	292.8	1.0	6.35	<10.0	<10.0	939	7.6	5.4
	02/01/18	0.36	-22.5	301.3	1.5	6.06	<10.0	<10.0	811	12.4	6.7
	4/24/2018	0.76	15.9	497	1.2	6.11	<10.0	<10.0	520	29.6	25.1
48MW-12	6/2/2017	0.44	25.6	508.2	0	6.75	<10.0	<10.0	14.7	<1.0	11.4
	11/16/17	NF	46.5	576	0.0	6.99	<10.0	<10.0	<10.0	<1.0	11.9
	02/01/18	1.65	55.3	584	0.5	6.75	<10.0	<10.0	89.7	1.3	12.2
	4/23/2018	1.08	24.1	601	0	6.76	<10.0	<10.0	<10.0	1.3	11.9
48MW-13	6/1/2017	1.36	25.4	294.7	0	7.25	<10.0	<10.0	<10.0	<1.0	14
	11/16/17	1.67	50.8	341	0.0	7.36	<10.0	<10.0	<10.0	<1.0	9.1
	02/02/18	3.37	89.7	336	0.0	7.12	<10.0	<10.0	16.4	1.0	8.5
	4/23/2018	3.4	16	359	0	7.16	<10.0	<10.0	<10.0	<1.0	7.3
48MW-14	6/1/2017	3.61	82.3	182	0	6.59	<10.0	<10.0	<10.0	<1.0	3.5
	11/16/17	1.95	25.1	209	0.5	6.16	<10.0	<10.0	<10.0	<1.0	3.7
	01/31/18	6.43	66.5	173	0	6.49	<10.0	<10.0	13.7	<1.0	4.6
	4/24/2018	5.75	60.3	194	0	6.51	<10.0	<10.0	<10.0	<1.0	3.7
48MW-16R	6/1/2017	0.3	-60.2	571	2	6.51	<10.0	27.4	12,800	4.1	7.5
	11/15/17	0.45	-201.0	3,843	1.5	5.87	<10.0	<10.0	8,280	1,580	19.4
	01/30/18	0.76	-157.5	5,360	4.0	5.86	<10.0	<10.0	4,150	2,720	18.5
	4/23/2018						<10.0	<10.0	20,900	1,520	19.7
48MW-21	6/2/2017	0.29	83.1	156	1.0	5.75	<10.0	<10.0	73.7	7	5.8
	11/15/17	2.37	71.2	298	0.0	5.94	<10.0	<10.0	280.0	15.7	8.9
	01/31/18	0.42	114.7	236	0.5	5.86	<10.0	<10.0	49.2	9.8	8
	4/24/2018	0.42	8.2	177	0	5.69	<10.0	<10.0	<10.0	7.5	6.9
48SVE-01R	5/31/2017	0.19	-111.6	11,200	6.5	5.07	<10.0	<10.0	195	27,900	137
	11/15/17	0.44	-94.8	10,917	4.0	4.91	<10.0	<10.0	661	12,600	64.4
	01/29/18	4.11	-148.2	12,123	3.5	5.05	22.4	<10.0	569	20,300	76.8
	4/23/2018	0.03	-71.3	11,397	5	5.32	<10.0	<10.0	1,300	12,000	51.2
48DW-1	6/1/2017	1.76	41.2	105	NA	7.84	<10.0	<10.0	<10.0	4.4	2.3
	11/16/17	0.50	-17.1	275	0.0	6.99	<10.0	<10.0	2360	41.2	1.9
	01/31/18	0.26	-0.4	224	0.5	7.37	<10.0	<10.0	6,220	31.3	2.1
	4/24/2018	0.29	-0.6	203	0.5	7.41	<10.0	<10.0	5,140	26.4	2.1
48DW-2	6/1/2017	0.04	-47.1	480	1	6.75	<10.0	<10.0	7,310	5.1	6.8
	11/16/17	0.69	-51.1	618	0.5	6.70	<10.0	<10.0	11300	15.5	7.1
	01/30/18	NF	123.9	948	1.0	5.55	<10.0	<10.0	15,600	314	9.6
	4/24/2018	0.32	-28.6	1,485	1.5	6.2	<10.0	10.6	12,600	299	8.6
48DW-3	6/1/2017	1.28	-60.2	317	0	7.6	<10.0	<10.0	41.4	2.7	4.8
	11/16/17	0.25	-42.4	327	0.0	7.79	<10.0	<10.0	20.9	1.5	4.2
	02/01/18	0.52	-49.1	3,712	5.0	6.15	<10.0	<10.0	16,900	1490	12.4
	4/24/2018	0.41	-197.8	341	0	7.48	<10.0	21	22,300	10.1	4.2

**Table 5
Summary of Biodegradation Parameters
Former ATL No. 48
Pittsboro, North Carolina**

Well ID	Sample Date	DO (mg/l)	ORP (mV)	S. Cond. (µS/cm)	Fe 2 ⁺ (mg/l)	pH (SU)	Ethane (µg/l)	Ethene (µg/l)	Methane (µg/l)	TOC (mg/l)	Chloride (mg/l)
NC 2L Standard		NS	NS	NS	0.3	6.5-8.5	NS	NS	NS	NS	250
48DW-4	6/1/2017	0.7	-86.6	288.2	0	7.68	<10.0	12.6	207	<1.0	6.8
	11/16/17	0.07	-70.3	308	0.0	7.87	<10.0	16.0	122	<1.0	6.3
	02/01/18	0.30	-130.3	305.4	0.0	7.60	<10.0	44.8	325.0	<1.0	6.6
	4/24/2018	0.64	-96.2	336	0	7.76	<10.0	<10.0	124	<1.0	7
48DW-5R	5/31/2017	1.7	10.5	518	2	6.63	<10.0	12.8	8,180	4.2	6.9
	11/15/17	0.59	-85.1	5221	3.0	5.09	<10.0	<10.0	711	5,250	32.7
	01/29/18	NF	64.9	6724	2.5	7.59	<10.0	<10.0	1,300	8,570	31.9
	4/23/2018	0.23	-71.2	7,922	4.5	5.46	<10.0	<10.0	795	7,040	37.3
48DW-7	5/30/2017	0.43	58.1	1500	0	7.34	<10.0	<10.0	<10.0	12.4	8.9
	11/15/17	2.86	-21.2	1,571	0.0	7.34	<10.0	<10.0	<10.0	10.4	9.4
	01/30/18	NF	160.2	1,396	0.0	7.32	<10.0	<10.0	24.3	10.7	9.1
	4/23/2018	0.48	-9.0	1,673	0.0	7.20	<10.0	<10.0	<10.0	18	NA
48DW-8	5/31/2017	4.26	-13.8	449.9	0	7.61	<10.0	<10.0	24.5	1.4	9.7
	11/16/17	NF	27.1	437	0.0	7.85	<10.0	<10.0	<10.0	<1.0	10.0
	01/30/18	0.76	-90.5	618	0.0	7.45	<10.0	<10.0	<10.0	1.9	10
	4/23/2018	0.46	-80.2	450	0	7.6	<10.0	<10.0	17.5	1.8	8.4
48DW-10	5/31/2017	0.83	-198.4	383	0	9.38	<10.0	<10.0	13.7	18.2	13.8
	11/15/17	1.07	41.6	449	0.0	9.35	<10.0	<10.0	<10.0	18.4	14.2
	01/29/18	<0.01	32.8	337	0.0	10.01	<10.0	<10.0	40.7	19.4	15.2
	4/23/2018	0.67	-195.8	430	0	9.44	<10.0	<10.0	<10.0	20.6	14.3
RW-1	6/1/2017	1.71	-36.1	354	2	6.47	<10.0	13	4,490	3.5	6.4
	11/16/17	0.78	-47.1	1,560	1.0	6.00	<10.0	32.4	12100	276	10.4
	02/01/18	0.32	-91.5	2,262	2.75	6.31	<10.0	13.1	7,340	462	12.6
	4/24/2018	0.61	-20.3	1,192	4.5	6.41	<10.0	25.7	18,500	18.2	8
RW-2	6/1/2017	0.68	-90.9	477	2	6.67	<10.0	112	43,200	4.7	8.1
	11/16/17	0.74	-14.0	430	1.5	6.40	<10.0	<10.0	1,620	3.4	6.5
	02/01/18	0.41	-49.9	417	3.0	6.65	<10.0	11.2	3,890	4.2	6.7
	4/24/2018	0.34	42.6	423	1.5	6.54	<10.0	17.6	2,670	4.4	6.5
48HS-1-SW	11/16/17	3.14	31.4	305	NA	6.77	NA	NA	NA	12.8	NA
	2/2/2018	13.82	48.4	259	NA	7.36	NA	NA	NA	10.4	NA
	04/24/18	9.26	59.4	88	NA	6.91	NA	NA	NA	13.7	NA
48HS-2-SW	11/16/17	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
	2/2/2018	3.5	17.3	292	NA	6.87	NA	NA	NA	23.8	NA
	04/24/18	2.62	61.0	177	NA	6.55	NA	NA	NA	12.2	NA
48HS-3-SW	11/16/17	0.76	3.9	967	NA	6.38	NA	NA	NA	36.8	NA
	2/2/2018	11.95	12.2	331	NA	7.08	NA	NA	NA	9.7	NA
	04/24/18	9.48	52.6	88	NA	6.12	NA	NA	NA	13.1	NA
48HS-5-SW	11/16/17	3.81	23.6	276	NA	6.50	NA	NA	NA	9.3	NA
	2/2/2018	14.30	45.5	260	NA	7.79	NA	NA	NA	10.3	NA
	04/24/18	9.71	82.4	87	NA	7.29	NA	NA	NA	12.5	NA

Notes:

- NA - Not Analyzed, NS - No Established NC 2L Standard, NF - DI probe not functioning
- DO - Dissolved Oxygen; ORP - Oxidation/Reduction Potential, S. Cond. = Specific Conductivity
- SU - Standard Unit; Fe 2⁺ = Ferrous Iron; TOC = Total Organic Carbon
- mg/l = milligrams per liter; mV = millivolts; µS/cm = micro Siemens per centimeter; µg/l = micrograms per liter

**Table 6
Summary of Surface Water Analytical Results
Former ATL No. 48
Pittsboro, North Carolina**

Well ID	NC Water Quality Criteria for Water Supply	NC Water Quality Criteria for Human Health	48-HS-1-SW											48-HS-2-SW										
			6/23/2014	12/10/2014	6/19/2015	12/9/2015	6/15/2016	8/3/2016	12/15/2016	6/2/2017	11/16/2017	2/2/2018	04/24/18	6/23/2014	12/10/2014	6/19/2015 ¹	12/9/2015	6/15/2016 ¹	8/3/2016	12/15/2016	6/2/2017 ¹	11/16/17 ¹	2/2/2018	04/24/18
Potential NC DOT Target Compounds																								
Chloroform	60+	2,000++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
cis-1,2-DCE	60 -	720 - -	< 1.0	3.1	<1.0	<1.0	2.0	1.3	2.2	1.6	<1.0	<1.0	<1.0	< 1.0	51.6	NS	13.4	NS	11.9	17.9	NS	NS	<1.0	<1.0
TCE	2.5*	30**	< 1.0	2.0	<1.0	<1.0	1.1	<1.0	2.0	1.5	<1.0	<1.0	<1.0	1.3	24.6	NS	1.6	NS	1.3	2.7	NS	NS	<1.0	<1.0
1,1-DCE	3,000+	20,000++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	5.0	NS	<1.0	NS	<1.0	1.2	NS	NS	<1.0	<1.0
1,1-DCA	9.9+	650++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	1.3	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
1,1,1-TCA	10,000+	200,000++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
Vinyl Chloride	0.025*	2.4**	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	4.1	3.3	NS	NS	<1.0	<1.0
Non-NC DOT Target Compounds																								
1,2-Dichlorobenzene	488 (total)*	3,000++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
1,4-Dichlorobenzene	488 (total)*	900++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
1,2,4-Trichlorobenzene	488 (total)*	0.076++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
Acetone	3,100 -	2,000 - - -	<25	<25	<25	<25	<25	<25	<25	<25	<25.0	<25.0	<25.0	< 25	39.6	NS	<25	NS	<25	<25	NS	NS	<25.0	<25.0
Benzene	1.19*	51**	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
Ethylbenzene	68+	130++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
MTBE	19 -	34,000 - - -	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
PCE	0.7*	3.3**	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
Toluene	57+	11**	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	NS	<1.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0
Xylenes (total)	6,200 -	670 - - -	< 2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 2.0	<2.0	NS	<2.0	NS	<1.0	<1.0	NS	NS	<1.0	<1.0

Notes:
- **Bolded** concentration indicates constituent was detected above the laboratory reporting limit.
- **Bold and shaded** concentration indicates exceedance of the one or more color-coded standards.
- Shaded concentration indicates exceedance of Human Health Water Quality Criteria (NC 2B Surface Water Standards and Protective Values & EPA Nationally Recommended Water Quality Criteria)
+Indicates Water Quality Criteria based on EPA Nationally Recommended Water Quality Criteria for Aquatic Life & Human Health for Water Supply (September 22, 2017)
++Indicates Water Quality Criteria based on EPA Nationally Recommended Water Quality Criteria for Aquatic Life & Human Health for Fish Consumption (September 22, 2017)
- Indicates Water Quality Criteria based on North Carolina Protective Values for Surface Waters for Water Supply (September 22, 2017)
-- Indicates Water Quality Criteria based on North Carolina Protective Values for Surface Waters for Fish Consumption (September 22, 2017)
--- Indicates Water Quality Criteria based on North Carolina Protective Values based on Aquatic Life and Secondary Recreation (September 22, 2017)
*Indicates Water Quality Criteria is a NC 2B Surface Water Standard based on Water Supply (September 22, 2017)
*Indicates Water Quality Criteria is a NC 2B Surface Water Standard based on Fish Consumption (September 22, 2017)
- Concentrations are shown in micrograms per liter (µg/l)
- Surface water samples analyzed by Environmental Protection Agency Method 8260
- < - The compound was not detected above the indicated laboratory reporting limit
- Stream classification is water supply class IV
- cis-1,2-DCE = cis-1,2-dichloroethene; TCE = trichloroethene; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane
- 1,1,1-TCA = 1,1,1-trichloroethane; MTBE = Methyl-tert-butyl ether; PCE = tetrachloroethene; VOC = volatile organic compound
1 - 48HS-2-SW location was dry during the June 2015, 2016, & 2017 monitoring events and could not be sampled.
NS = Not Sampled

**Table 6
Summary of Surface Water Analytical Results
Former ATL No. 48
Pittsboro, North Carolina**

Well ID	NC Water Quality Criteria for Water Supply	NC Water Quality Criteria for Human Health	48-HS-3-SW											48-HS-5-SW										
			6/23/2014	12/10/2014	6/19/2015	12/9/2015	6/15/2016	8/3/2016	12/15/2016	6/2/2017	11/16/2017	2/2/2018	04/24/18	6/23/2014	12/10/2014	6/19/2015	12/9/2015	6/15/2016	8/3/2016	12/15/2016	6/2/2017	11/16/2017	2/2/2018	04/24/18
Potential NC DOT Target Compounds																								
Chloroform	60+	2,000++	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis-1,2-DCE	60 -	720 - -	2.1	<1.0	20.4	<1.0	<1.0	<1.0	12.0	<1.0	<1.0	2.1	2.1	< 1.0	2.1	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TCE	2.5*	30**	30.7	<1.0	32.7	<1.0	<1.0	<1.0	10.9	<1.0	1.2	<1.0	<1.0	< 1.0	1.4	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-DCE	3,000+	20,000++	1.4	<1.0	3.2	<1.0	<1.0	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-DCA	9.9+	650++	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,1-TCA	10,000+	200,000++	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	0.025*	2.4**	< 1.0	<1.0	1.1	<1.0	<1.0	<1.0	2.8	<1.0	<1.0	1.1	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Non-NC DOT Target Compounds																								
1,2-Dichlorobenzene	488 (total)*	3,000++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	488 (total)*	900++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,2,4-Trichlorobenzene	488 (total)*	0.076++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Acetone	3,100 -	2,000 - - -	< 25	<25	<25	<25	<25	<25	<25	<25	34.0	<25	<25	< 25	<25	< 25	<25	<25	<25	<25	<25	<25	<25	<1.0
Benzene	1.19*	51**	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	68+	130++	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
MTBE	19 -	34,000 - - -	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PCE	0.7*	3.3**	1.1	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	57+	11**	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	< 1.0	<1.0	< 1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (total)	6,200 -	670 - - -	< 2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	< 2.0	<2.0	< 2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0

Notes:
- **Bolded** concentration indicates constituent was detected above the laboratory reporting limit.
- **Bold and shaded** concentration indicates exceedance of the one or more color-coded standards.
- Shaded concentration indicates exceedance of Human Health Water Quality Criteria (NC 2B Surface Water Standards and Protective Values & EPA Nationally Recommended Water Quality Criteria)
+Indicates Water Quality Criteria based on EPA Nationally Recommended Water Quality Criteria for Aquatic Life & Human Health for Water Supply (September 22, 2017)
++Indicates Water Quality Criteria based on EPA Nationally Recommended Water Quality Criteria for Aquatic Life & Human Health for Fish Consumption (September 22, 2017)
- Indicates Water Quality Criteria based on North Carolina Protective Values for Surface Waters for Water Supply (September 22, 2017)
-- Indicates Water Quality Criteria based on North Carolina Protective Values for Surface Waters for Fish Consumption (September 22, 2017)
--- Indicates Water Quality Criteria based on North Carolina Protective Values based on Aquatic Life and Secondary Recreation (September 22, 2017)
*Indicates Water Quality Criteria is a NC 2B Surface Water Standard based on Water Supply (September 22, 2017)
**Indicates Water Quality Criteria is a NC 2B Surface Water Standard based on Fish Consumption (September 22, 2017)
- Concentrations are shown in micrograms per liter (µg/l)
- Surface water samples analyzed by Environmental Protection Agency Method 8260
- < - The compound was not detected above the indicated laboratory reporting limit
- Stream classification is water supply class IV
- cis-1,2-DCE = cis-1,2-dichloroethene; TCE = trichloroethene; 1,1-DCE = 1,1-dichloroethene; 1,1-DCA = 1,1-dichloroethane
- 1,1,1-TCA = 1,1,1-trichloroethane; MTBE = Methyl-tert-butyl ether; PCE = tetrachloroethene; VOC = volatile organic compound
1 - 48HS-2-SW location was dry during the June 2015, 2016, & 2017 monitoring events and could not be sampled.
NS = Not Sampled

**Table 7
Summary of Off-Site Supply Well Analytical Results
Former ATL No. 48
Pittsboro, North Carolina**

Potential NC DOT Target Compounds	NC 2L Groundwater Standard	681 Mt. Gilead Church (Mitchell Well)																		
		7/12/13	10/3/13		1/23/14		5/22/14		8/14/14		11/19/14		2/6/15		5/12/15		8/25/15		11/18/15	
			Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent
TCE (8260)	3	<0.50	<0.50	<0.50	0.13 J	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Non-NC DOT Target Compounds																				
Acetone (8260)	6,000	<10	<10	7.1 J	<10	<10	<25	<25	<1.0	<1.0	<25	<25	<25	<25	<25	<25	<25	<25	<25	
1,4-Dioxane (8270SIM)	3	NS	NS	NS	NS	NS	<3.0	<3.0	<3.0	<3.0	<15	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	
Potential NC DOT Target Compounds	NC 2L Groundwater Standard	771 Mt. Gilead Church (Sanders Well)																		
		7/12/13	10/3/13		1/23/14		5/22/14		8/14/14		11/19/14		2/6/15		5/12/15		8/25/15		11/18/15	
			Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent
TCE (8260)	3	<0.50	NS	<0.50	<0.50	<0.50	NS	<0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Non-NC DOT Target Compounds																				
Acetone (8260)	6,000	<10	NS	7.3 J	<10	<10	NS	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
1,4-Dioxane (8270SIM)	3	NS	NS	NS	NS	NS	NS	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	

Notes:
- units are ug/l
- Point of entry (POE) groundwater treatment systems were installed at 681 Mt. Gilead Church and 771 Mt. Gilead Church on June 25, 2013 and September 30, 2013, respectively
- Collection of treatment system influent and effluent samples was initiated in October 2013
- The treatment shed at 771 Mt. Gilead Church was locked and a pre-treatment sample could not be collected in October 2013 or May 2014
- 2L Standard - Title 15A North Carolina Administrative Code (NCAC) Subchapter 2L Groundwater Quality Standards (April 2013)
- Only VOCs detected in at least one sample shown above.
- EPA analytical method shown in parenthesis
- J - Estimated concentration
- NS - Not sar
TCE = trichloroethene
VOC = volatile organic compound

**Table 7
Summary of Off-Site Supply Well Analytical Results
Former ATL No. 48
Pittsboro, North Carolina**

Potential NC DOT Target Compounds	NC 2L Groundwater Standard	681 Mt. Gilead Church (Mitchell Well)																				
		3/8/16		6/15/16		9/28/16		12/1/16		3/15/17		6/2/17		9/28/17		12/6/17		3/6/18		6/6/18		
		Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	
TCE (8260)	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
Non-NC DOT Target Compounds																						
Acetone (8260)	6,000	<25	<25	<25	<25	<25	<25	<25	<25	<25.0	<25.0	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	
1,4-Dioxane (8270SIM)	3	<3.0	<3.0	<3.0	<3.0	<1.0	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<2.0	<2.0	<2.0	<2.0
Potential NC DOT Target Compounds	NC 2L Groundwater Standard	771 Mt. Gilead Church (Sanders Well)																				
		3/8/16		6/15/16		9/28/16		12/1/16		3/15/17		6/2/17		9/28/17		12/6/17		3/6/18		6/6/18		
		Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	Influent	Effluent	
TCE (8260)	3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Non-NC DOT Target Compounds																						
Acetone (8260)	6,000	<25	<25	<25	<25	<25	<25	<25	<25	<25.0	<25.0	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25	<25
1,4-Dioxane (8270SIM)	3	<3.0	<3.0	<3.0	<3.0	<1.0	<1.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<2.0	<2.0	<2.0	<2.0

Notes:
- units are ug/l
- Point of entry (POE) groundwater treatment systems were installed at 681 Mt. Gilead Church and 771 Mt. Gilead Church on June 25, 2013 and September 30, 2013, respectively
- Collection of treatment system influent and effluent samples was initiated in October 2013
- The treatment shed at 771 Mt. Gilead Church was locked and a pre-treatment sample could not be collected in October 2013 or May 2014
- 2L Standard - Title 15A North Carolina Administrative Code (NCAC) Subchapter 2L Groundwater Quality Standards (April 2013)
- Only VOCs detected in at least one sample shown above.
- EPA analytical method shown in parenthesis
- J - Estimated concentration
- NS - Not seen
TCE = trichloroethene
VOC = volatile organic compound

Appendix A

Appendix B

Appendix C

December 2017

Via US Mail

December 22, 2017

Timothy and Paula Mitchell
681 Mt. Gilead Church Rd.
Pittsboro, NC 27312

Re: December 2017 Water Supply Sampling Results
Pittsboro, NC
H&H Job No. DOT-515

Dear Mr. and Mrs. Mitchell:

On behalf of the North Carolina Department of Transportation, Hart and Hickman, PC (H&H) is providing this letter to document the results of the water supply well sampling conducted at your residence at 681 Mt. Gilead Church Rd on December 6, 2017. A point of entry carbon treatment system was installed on this water supply well in June 2013 as a precautionary measure. During the December 6, 2017 sampling event, H&H personnel collected a pre-treatment water sample (sample identified as 681 MT. GILEAD-INF) and a post-treatment water sample (sample identified as 681 MT. GILEAD-EFF). The samples were collected in laboratory-supplied sample containers and submitted to Pace Analytical Services Inc. for analysis of certain volatile organic compounds (VOCs). A quality control sample labeled trip blank was also analyzed.

The results of the laboratory analyses indicate that target compounds were not present above laboratory reporting limits in the pre-treatment water sample or the post-treatment water sample. No compounds were detected in the quality control trip blank sample. The laboratory reports documenting the results are attached for your reference. The next sampling event is scheduled for March 2018.

Mr. and Mrs. Mitchell,
December 22, 2017
Page 2 of 2

Following sampling of the system, the carbon filter media and ultraviolet lamp were replaced as part of the annual maintenance of the system.

If you have any questions, please do not hesitate to contact us at (704) 586-0007.

Very truly yours,

Hart & Hickman, PC



Greg Kanellis, PE
Senior Project Engineer



Matt Bramblett, PE
Principal

Attachment: Laboratory Analytical Results

Cc: Mr. Jason Prosser, NCDOT (Via Email)
Mr. Layton Long, Chatham County Health Dept. (Via Email)
Ms. Stephanie Grubbs, NC DEQ (Via Email)

Divider
Page

December 15, 2017

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

RE: Project: DOT-515 PITTSBORO 34613.3.13
Pace Project No.: 92366172

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on December 07, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92366172001	681 MT. GILEAD-EFF	EPA 8270 by SIM	RES	1	PASI-C
		EPA 8260	CAH	63	PASI-C
92366172002	681 MT. GILEAD-IN	EPA 8270 by SIM	RES	1	PASI-C
		EPA 8260	CAH	63	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT-515 PITTSBORO 34613.3.13
Pace Project No.: 92366172

Method: EPA 8270 by SIM
Description: 8270 MSSV 1,4 Dioxane SIM
Client: NCDOT East Central
Date: December 15, 2017

General Information:

2 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

QC Batch: 390076

IS: The internal standard response is below criteria. Results may be biased high.

- 681 MT. GILEAD-IN (Lab ID: 92366172002)
- 1,4-Dioxane (p-Dioxane)

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

Analyte Comments:

QC Batch: 390076

1g: Sample re-extracted outside method hold time. Results of re-analysis confirmed original analysis performed within hold time.

- 681 MT. GILEAD-IN (Lab ID: 92366172002)
- 1,4-Dioxane (p-Dioxane)

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT-515 PITTSBORO 34613.3.13
Pace Project No.: 92366172

Method: EPA 8260
Description: 8260 MSV Low Level
Client: NCDOT East Central
Date: December 15, 2017

General Information:

2 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: 390126

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92366139009

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2167447)
- Bromomethane

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

Sample: 681 MT. GILEAD-EFF	Lab ID: 92366172001	Collected: 12/06/17 09:35	Received: 12/07/17 08:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV 1,4 Dioxane SIM		Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510						
1,4-Dioxane (p-Dioxane)	ND	ug/L	3.0	1	12/08/17 13:56	12/14/17 13:29	123-91-1	
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		12/12/17 18:11	67-64-1	
Benzene	ND	ug/L	1.0	1		12/12/17 18:11	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/12/17 18:11	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/12/17 18:11	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/12/17 18:11	75-27-4	
Bromoform	ND	ug/L	1.0	1		12/12/17 18:11	75-25-2	
Bromomethane	ND	ug/L	2.0	1		12/12/17 18:11	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/12/17 18:11	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		12/12/17 18:11	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/12/17 18:11	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/12/17 18:11	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/12/17 18:11	67-66-3	
Chloromethane	ND	ug/L	1.0	1		12/12/17 18:11	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 18:11	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 18:11	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		12/12/17 18:11	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/12/17 18:11	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/12/17 18:11	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		12/12/17 18:11	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:11	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:11	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:11	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/12/17 18:11	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/12/17 18:11	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/12/17 18:11	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/12/17 18:11	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 18:11	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 18:11	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 18:11	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/12/17 18:11	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 18:11	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/12/17 18:11	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 18:11	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 18:11	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		12/12/17 18:11	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		12/12/17 18:11	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/12/17 18:11	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		12/12/17 18:11	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/12/17 18:11	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		12/12/17 18:11	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/12/17 18:11	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/12/17 18:11	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		12/12/17 18:11	91-20-3	
Styrene	ND	ug/L	1.0	1		12/12/17 18:11	100-42-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

Sample: 681 MT. GILEAD-EFF	Lab ID: 92366172001	Collected: 12/06/17 09:35	Received: 12/07/17 08:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 18:11	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 18:11	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/12/17 18:11	127-18-4	
Toluene	ND	ug/L	1.0	1		12/12/17 18:11	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:11	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:11	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/12/17 18:11	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/12/17 18:11	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		12/12/17 18:11	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/12/17 18:11	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		12/12/17 18:11	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		12/12/17 18:11	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		12/12/17 18:11	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		12/12/17 18:11	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		12/12/17 18:11	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		12/12/17 18:11	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	88	%	70-130	1		12/12/17 18:11	460-00-4	
1,2-Dichloroethane-d4 (S)	91	%	70-130	1		12/12/17 18:11	17060-07-0	
Toluene-d8 (S)	96	%	70-130	1		12/12/17 18:11	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

Sample: 681 MT. GILEAD-IN	Lab ID: 92366172002	Collected: 12/06/17 09:40	Received: 12/07/17 08:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV 1,4 Dioxane SIM		Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510						
1,4-Dioxane (p-Dioxane)	ND	ug/L	3.0	1	12/08/17 13:56	12/14/17 14:29	123-91-1	1g,IS
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		12/12/17 18:29	67-64-1	
Benzene	ND	ug/L	1.0	1		12/12/17 18:29	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/12/17 18:29	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/12/17 18:29	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/12/17 18:29	75-27-4	
Bromoform	ND	ug/L	1.0	1		12/12/17 18:29	75-25-2	
Bromomethane	ND	ug/L	2.0	1		12/12/17 18:29	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/12/17 18:29	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		12/12/17 18:29	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/12/17 18:29	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/12/17 18:29	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/12/17 18:29	67-66-3	
Chloromethane	ND	ug/L	1.0	1		12/12/17 18:29	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 18:29	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 18:29	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		12/12/17 18:29	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/12/17 18:29	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/12/17 18:29	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		12/12/17 18:29	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:29	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:29	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:29	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/12/17 18:29	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/12/17 18:29	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/12/17 18:29	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/12/17 18:29	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 18:29	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 18:29	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 18:29	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/12/17 18:29	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 18:29	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/12/17 18:29	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 18:29	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 18:29	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		12/12/17 18:29	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		12/12/17 18:29	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/12/17 18:29	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		12/12/17 18:29	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/12/17 18:29	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		12/12/17 18:29	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/12/17 18:29	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/12/17 18:29	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		12/12/17 18:29	91-20-3	
Styrene	ND	ug/L	1.0	1		12/12/17 18:29	100-42-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

Sample: 681 MT. GILEAD-IN		Lab ID: 92366172002		Collected: 12/06/17 09:40		Received: 12/07/17 08:04		Matrix: Water	
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual	
8260 MSV Low Level		Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 18:29	630-20-6		
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 18:29	79-34-5		
Tetrachloroethene	ND	ug/L	1.0	1		12/12/17 18:29	127-18-4		
Toluene	ND	ug/L	1.0	1		12/12/17 18:29	108-88-3		
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:29	87-61-6		
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:29	120-82-1		
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/12/17 18:29	71-55-6		
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/12/17 18:29	79-00-5		
Trichloroethene	ND	ug/L	1.0	1		12/12/17 18:29	79-01-6		
Trichlorofluoromethane	ND	ug/L	1.0	1		12/12/17 18:29	75-69-4		
1,2,3-Trichloropropane	ND	ug/L	1.0	1		12/12/17 18:29	96-18-4		
Vinyl acetate	ND	ug/L	2.0	1		12/12/17 18:29	108-05-4		
Vinyl chloride	ND	ug/L	1.0	1		12/12/17 18:29	75-01-4		
Xylene (Total)	ND	ug/L	1.0	1		12/12/17 18:29	1330-20-7		
m&p-Xylene	ND	ug/L	2.0	1		12/12/17 18:29	179601-23-1		
o-Xylene	ND	ug/L	1.0	1		12/12/17 18:29	95-47-6		
Surrogates									
4-Bromofluorobenzene (S)	87	%	70-130	1		12/12/17 18:29	460-00-4		
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		12/12/17 18:29	17060-07-0		
Toluene-d8 (S)	104	%	70-130	1		12/12/17 18:29	2037-26-5		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

QC Batch: 390126

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92366172001, 92366172002

METHOD BLANK: 2164728

Matrix: Water

Associated Lab Samples: 92366172001, 92366172002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,1,1-Trichloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,1,2-Trichloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,1-Dichloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,1-Dichloroethene	ug/L	ND	1.0	12/12/17 14:57	
1,1-Dichloropropene	ug/L	ND	1.0	12/12/17 14:57	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
1,2,3-Trichloropropane	ug/L	ND	1.0	12/12/17 14:57	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	12/12/17 14:57	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	12/12/17 14:57	
1,2-Dichlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
1,2-Dichloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,2-Dichloropropane	ug/L	ND	1.0	12/12/17 14:57	
1,3-Dichlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
1,3-Dichloropropane	ug/L	ND	1.0	12/12/17 14:57	
1,4-Dichlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
2,2-Dichloropropane	ug/L	ND	1.0	12/12/17 14:57	
2-Butanone (MEK)	ug/L	ND	5.0	12/12/17 14:57	
2-Chlorotoluene	ug/L	ND	1.0	12/12/17 14:57	
2-Hexanone	ug/L	ND	5.0	12/12/17 14:57	
4-Chlorotoluene	ug/L	ND	1.0	12/12/17 14:57	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	12/12/17 14:57	
Acetone	ug/L	ND	25.0	12/12/17 14:57	
Benzene	ug/L	ND	1.0	12/12/17 14:57	
Bromobenzene	ug/L	ND	1.0	12/12/17 14:57	
Bromochloromethane	ug/L	ND	1.0	12/12/17 14:57	
Bromodichloromethane	ug/L	ND	1.0	12/12/17 14:57	
Bromoform	ug/L	ND	1.0	12/12/17 14:57	
Bromomethane	ug/L	ND	2.0	12/12/17 14:57	
Carbon tetrachloride	ug/L	ND	1.0	12/12/17 14:57	
Chlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
Chloroethane	ug/L	ND	1.0	12/12/17 14:57	
Chloroform	ug/L	ND	1.0	12/12/17 14:57	
Chloromethane	ug/L	ND	1.0	12/12/17 14:57	
cis-1,2-Dichloroethene	ug/L	ND	1.0	12/12/17 14:57	
cis-1,3-Dichloropropene	ug/L	ND	1.0	12/12/17 14:57	
Dibromochloromethane	ug/L	ND	1.0	12/12/17 14:57	
Dibromomethane	ug/L	ND	1.0	12/12/17 14:57	
Dichlorodifluoromethane	ug/L	ND	1.0	12/12/17 14:57	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

METHOD BLANK: 2164728

Matrix: Water

Associated Lab Samples: 92366172001, 92366172002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	12/12/17 14:57	
Ethylbenzene	ug/L	ND	1.0	12/12/17 14:57	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	12/12/17 14:57	
m&p-Xylene	ug/L	ND	2.0	12/12/17 14:57	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/12/17 14:57	
Methylene Chloride	ug/L	ND	2.0	12/12/17 14:57	
Naphthalene	ug/L	ND	1.0	12/12/17 14:57	
o-Xylene	ug/L	ND	1.0	12/12/17 14:57	
p-Isopropyltoluene	ug/L	ND	1.0	12/12/17 14:57	
Styrene	ug/L	ND	1.0	12/12/17 14:57	
Tetrachloroethene	ug/L	ND	1.0	12/12/17 14:57	
Toluene	ug/L	ND	1.0	12/12/17 14:57	
trans-1,2-Dichloroethene	ug/L	ND	1.0	12/12/17 14:57	
trans-1,3-Dichloropropene	ug/L	ND	1.0	12/12/17 14:57	
Trichloroethene	ug/L	ND	1.0	12/12/17 14:57	
Trichlorofluoromethane	ug/L	ND	1.0	12/12/17 14:57	
Vinyl acetate	ug/L	ND	2.0	12/12/17 14:57	
Vinyl chloride	ug/L	ND	1.0	12/12/17 14:57	
Xylene (Total)	ug/L	ND	1.0	12/12/17 14:57	
1,2-Dichloroethane-d4 (S)	%	93	70-130	12/12/17 14:57	
4-Bromofluorobenzene (S)	%	92	70-130	12/12/17 14:57	
Toluene-d8 (S)	%	95	70-130	12/12/17 14:57	

LABORATORY CONTROL SAMPLE: 2164729

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	50.9	102	70-130	
1,1,1-Trichloroethane	ug/L	50	52.5	105	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	49.0	98	70-130	
1,1,2-Trichloroethane	ug/L	50	53.9	108	70-130	
1,1-Dichloroethane	ug/L	50	50.1	100	70-130	
1,1-Dichloroethene	ug/L	50	50.4	101	70-132	
1,1-Dichloropropene	ug/L	50	52.2	104	70-130	
1,2,3-Trichlorobenzene	ug/L	50	54.4	109	70-135	
1,2,3-Trichloropropane	ug/L	50	51.1	102	70-130	
1,2,4-Trichlorobenzene	ug/L	50	54.4	109	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	52.0	104	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	51.2	102	70-130	
1,2-Dichlorobenzene	ug/L	50	50.5	101	70-130	
1,2-Dichloroethane	ug/L	50	53.7	107	70-130	
1,2-Dichloropropane	ug/L	50	51.9	104	70-130	
1,3-Dichlorobenzene	ug/L	50	50.2	100	70-130	
1,3-Dichloropropane	ug/L	50	52.9	106	70-130	
1,4-Dichlorobenzene	ug/L	50	50.0	100	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

LABORATORY CONTROL SAMPLE: 2164729

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	53.1	106	58-145	
2-Butanone (MEK)	ug/L	100	115	115	70-145	
2-Chlorotoluene	ug/L	50	53.3	107	70-130	
2-Hexanone	ug/L	100	122	122	70-144	
4-Chlorotoluene	ug/L	50	52.2	104	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	113	113	70-140	
Acetone	ug/L	100	112	112	50-175	
Benzene	ug/L	50	49.9	100	70-130	
Bromobenzene	ug/L	50	50.9	102	70-130	
Bromochloromethane	ug/L	50	51.4	103	70-130	
Bromodichloromethane	ug/L	50	50.8	102	70-130	
Bromoform	ug/L	50	49.9	100	70-130	
Bromomethane	ug/L	50	38.9	78	54-130	
Carbon tetrachloride	ug/L	50	52.6	105	70-132	
Chlorobenzene	ug/L	50	50.3	101	70-130	
Chloroethane	ug/L	50	59.2	118	64-134	
Chloroform	ug/L	50	48.4	97	70-130	
Chloromethane	ug/L	50	40.0	80	64-130	
cis-1,2-Dichloroethene	ug/L	50	53.8	108	70-131	
cis-1,3-Dichloropropene	ug/L	50	57.2	114	70-130	
Dibromochloromethane	ug/L	50	50.4	101	70-130	
Dibromomethane	ug/L	50	48.5	97	70-131	
Dichlorodifluoromethane	ug/L	50	45.9	92	56-130	
Diisopropyl ether	ug/L	50	53.8	108	70-130	
Ethylbenzene	ug/L	50	51.9	104	70-130	
Hexachloro-1,3-butadiene	ug/L	50	51.8	104	70-130	
m&p-Xylene	ug/L	100	107	107	70-130	
Methyl-tert-butyl ether	ug/L	50	50.0	100	70-130	
Methylene Chloride	ug/L	50	54.4	109	63-130	
Naphthalene	ug/L	50	57.1	114	70-138	
o-Xylene	ug/L	50	51.6	103	70-130	
p-Isopropyltoluene	ug/L	50	55.1	110	70-130	
Styrene	ug/L	50	51.1	102	70-130	
Tetrachloroethene	ug/L	50	49.5	99	70-130	
Toluene	ug/L	50	51.7	103	70-130	
trans-1,2-Dichloroethene	ug/L	50	51.5	103	70-130	
trans-1,3-Dichloropropene	ug/L	50	55.9	112	70-132	
Trichloroethene	ug/L	50	48.4	97	70-130	
Trichlorofluoromethane	ug/L	50	47.1	94	62-133	
Vinyl acetate	ug/L	100	111	111	66-157	
Vinyl chloride	ug/L	50	50.7	101	50-150	
Xylene (Total)	ug/L	150	158	105	70-130	
1,2-Dichloroethane-d4 (S)	%			103	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			105	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

MATRIX SPIKE SAMPLE: 2167447		92366139009	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.5	107	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	23.3	117	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	19.3	96	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	19.2	96	70-130	
1,1-Dichloroethane	ug/L	ND	20	22.7	114	70-130	
1,1-Dichloroethene	ug/L	ND	20	22.9	114	70-166	
1,1-Dichloropropene	ug/L	ND	20	23.1	116	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	22.7	114	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	18.1	91	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	22.4	112	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	19.1	96	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20.7	104	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	21.5	107	70-130	
1,2-Dichloroethane	ug/L	ND	20	22.8	114	70-130	
1,2-Dichloropropane	ug/L	ND	20	22.8	114	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	21.3	107	70-130	
1,3-Dichloropropane	ug/L	ND	20	20.7	103	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	20.8	104	70-130	
2,2-Dichloropropane	ug/L	ND	20	24.1	121	70-130	
2-Butanone (MEK)	ug/L	ND	40	44.6	112	70-130	
2-Chlorotoluene	ug/L	ND	20	20.9	104	70-130	
2-Hexanone	ug/L	ND	40	37.9	95	70-130	
4-Chlorotoluene	ug/L	ND	20	20.7	104	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	32.9	82	70-130	
Acetone	ug/L	ND	40	44.3	111	70-130	
Benzene	ug/L	ND	20	22.5	112	70-148	
Bromobenzene	ug/L	ND	20	22.0	110	70-130	
Bromochloromethane	ug/L	ND	20	21.8	109	70-130	
Bromodichloromethane	ug/L	ND	20	21.7	109	70-130	
Bromoform	ug/L	ND	20	18.2	91	70-130	
Bromomethane	ug/L	ND	20	6.5	33	70-130 M1	
Carbon tetrachloride	ug/L	ND	20	23.3	116	70-130	
Chlorobenzene	ug/L	ND	20	21.8	109	70-146	
Chloroethane	ug/L	ND	20	24.2	121	70-130	
Chloroform	ug/L	ND	20	21.5	108	70-130	
Chloromethane	ug/L	ND	20	18.8	94	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	23.5	117	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	22.0	110	70-130	
Dibromochloromethane	ug/L	ND	20	19.5	98	70-130	
Dibromomethane	ug/L	ND	20	21.2	106	70-130	
Dichlorodifluoromethane	ug/L	ND	20	21.6	108	70-130	
Diisopropyl ether	ug/L	ND	20	23.9	119	70-130	
Ethylbenzene	ug/L	ND	20	21.5	107	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	22.8	114	70-130	
m&p-Xylene	ug/L	ND	40	44.0	110	70-130	
Methyl-tert-butyl ether	ug/L	0.54J	20	22.0	107	70-130	
Methylene Chloride	ug/L	ND	20	21.4	107	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

MATRIX SPIKE SAMPLE: 2167447		92366139009	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Naphthalene	ug/L	ND	20	22.1	110	70-130	
o-Xylene	ug/L	ND	20	21.8	109	70-130	
p-Isopropyltoluene	ug/L	ND	20	22.7	113	70-130	
Styrene	ug/L	ND	20	21.4	107	70-130	
Tetrachloroethene	ug/L	ND	20	22.8	114	70-130	
Toluene	ug/L	ND	20	20.1	100	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	23.2	116	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	17.6	88	70-130	
Trichloroethene	ug/L	ND	20	21.9	109	69-151	
Trichlorofluoromethane	ug/L	ND	20	21.7	108	70-130	
Vinyl acetate	ug/L	ND	40	46.9	117	70-130	
Vinyl chloride	ug/L	ND	20	22.9	115	70-130	
1,2-Dichloroethane-d4 (S)	%				103	70-130	
4-Bromofluorobenzene (S)	%				95	70-130	
Toluene-d8 (S)	%				96	70-130	

SAMPLE DUPLICATE: 2167448

Parameter	Units	92366172001 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	ND		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	ND	ND		
Benzene	ug/L	ND	ND		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

SAMPLE DUPLICATE: 2167448

Parameter	Units	92366172001 Result	Dup Result	RPD	Qualifiers
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		
Bromomethane	ug/L	ND	ND		
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	ND		
Ethylbenzene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	ND	ND		
Methyl-tert-butyl ether	ug/L	ND	ND		
Methylene Chloride	ug/L	ND	ND		
Naphthalene	ug/L	ND	ND		
o-Xylene	ug/L	ND	ND		
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	91	88	3	
4-Bromofluorobenzene (S)	%	88	85	3	
Toluene-d8 (S)	%	96	98	2	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

QC Batch:	390076	Analysis Method:	EPA 8270 by SIM
QC Batch Method:	EPA 3510	Analysis Description:	8270 Water 1,4 Dioxane by SIM
Associated Lab Samples:	92366172001, 92366172002		

METHOD BLANK: 2164370 Matrix: Water

Associated Lab Samples: 92366172001, 92366172002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	3.0	12/14/17 12:33	

LABORATORY CONTROL SAMPLE & LCSD: 2164371 2164372

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	10	7.0	7.5	70	75	50-150	7	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

1g Sample re-extracted outside method hold time. Results of re-analysis confirmed original analysis performed within hold time.

IS The internal standard response is below criteria. Results may be biased high.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366172

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92366172001	681 MT. GILEAD-EFF	EPA 3510	390076	EPA 8270 by SIM	390901
92366172002	681 MT. GILEAD-IN	EPA 3510	390076	EPA 8270 by SIM	390901
92366172001	681 MT. GILEAD-EFF	EPA 8260	390126		
92366172002	681 MT. GILEAD-IN	EPA 8260	390126		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name: Hart & Hickman Project #: _____

WO#: **92366172**



Courier: Commercial Fed Ex UPS USPS Other: _____ Client

Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: 12/8/17

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer: IR Gun ID: IN04 Type of Ice: Wet Blue None Yes No N/A

Correction Factor: Cooler Temp Corrected (°C): 3.3

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?
 Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>in</u>	
Headspace in VOA Vials (>5-6mm)? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: [Signature]

Date: 12/8/17

Project Manager SRF Review: [Signature]

Date: 12/8/17

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)



Document Name:
Sample Condition Upon Receipt(SCUR)
 Document No.:
F-CAR-CS-033-Rev.04

Document Revised: August 4, 2017
 Page 2 of 2
 Issuing Authority:
 Pace Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Project #

WO# : 92366172

PM: KRG Due Date: 12/14/17
 CLIENT: 92-NCDOEAST

**Bottom half of box is to list number of bottles

pa

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (C-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (C-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic Zn Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (C-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG3U-1 liter Amber Unpreserved (N/A) (C-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (C-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(C-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2SO3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-S035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH4)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN	
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

pH Adjustment Log for Preserved Samples

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Divider Page

December 15, 2017

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

RE: Project: DOT-515 PITTSBORO 34613.3.13
Pace Project No.: 92366229

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on December 07, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92366172005	TRIP BLANK	EPA 8260	GAW	63	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: December 15, 2017

General Information:

1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Sample: TRIP BLANK		Lab ID: 92366172005	Collected: 12/06/17 00:00	Received: 12/07/17 08:05	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		12/12/17 23:49	67-64-1	
Benzene	ND	ug/L	1.0	1		12/12/17 23:49	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/12/17 23:49	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/12/17 23:49	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/12/17 23:49	75-27-4	
Bromoform	ND	ug/L	1.0	1		12/12/17 23:49	75-25-2	
Bromomethane	ND	ug/L	2.0	1		12/12/17 23:49	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/12/17 23:49	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		12/12/17 23:49	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/12/17 23:49	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/12/17 23:49	67-66-3	
Chloromethane	ND	ug/L	1.0	1		12/12/17 23:49	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 23:49	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 23:49	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		12/12/17 23:49	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/12/17 23:49	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/12/17 23:49	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		12/12/17 23:49	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/12/17 23:49	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/12/17 23:49	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/12/17 23:49	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/12/17 23:49	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 23:49	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 23:49	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 23:49	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/12/17 23:49	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 23:49	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/12/17 23:49	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 23:49	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 23:49	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		12/12/17 23:49	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		12/12/17 23:49	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/12/17 23:49	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		12/12/17 23:49	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/12/17 23:49	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		12/12/17 23:49	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/12/17 23:49	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/12/17 23:49	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		12/12/17 23:49	91-20-3	
Styrene	ND	ug/L	1.0	1		12/12/17 23:49	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 23:49	630-20-6	
1,1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 23:49	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/12/17 23:49	127-18-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Sample: TRIP BLANK	Lab ID: 92366172005	Collected: 12/06/17 00:00	Received: 12/07/17 08:05	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Toluene	ND	ug/L	1.0	1		12/12/17 23:49	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/12/17 23:49	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/12/17 23:49	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		12/12/17 23:49	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/12/17 23:49	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		12/12/17 23:49	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		12/12/17 23:49	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		12/12/17 23:49	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		12/12/17 23:49	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		12/12/17 23:49	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		12/12/17 23:49	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		12/12/17 23:49	460-00-4	
1,2-Dichloroethane-d4 (S)	80	%	70-130	1		12/12/17 23:49	17060-07-0	
Toluene-d8 (S)	110	%	70-130	1		12/12/17 23:49	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13
Pace Project No.: 92366229

QC Batch: 390500 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92366172005

METHOD BLANK: 2166868 Matrix: Water
Associated Lab Samples: 92366172005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,1,1-Trichloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,1,2-Trichloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,1-Dichloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,1-Dichloroethene	ug/L	ND	1.0	12/12/17 22:40	
1,1-Dichloropropene	ug/L	ND	1.0	12/12/17 22:40	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
1,2,3-Trichloropropane	ug/L	ND	1.0	12/12/17 22:40	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	12/12/17 22:40	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	12/12/17 22:40	
1,2-Dichlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
1,2-Dichloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,2-Dichloropropane	ug/L	ND	1.0	12/12/17 22:40	
1,3-Dichlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
1,3-Dichloropropane	ug/L	ND	1.0	12/12/17 22:40	
1,4-Dichlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
2,2-Dichloropropane	ug/L	ND	1.0	12/12/17 22:40	
2-Butanone (MEK)	ug/L	ND	5.0	12/12/17 22:40	
2-Chlorotoluene	ug/L	ND	1.0	12/12/17 22:40	
2-Hexanone	ug/L	ND	5.0	12/12/17 22:40	
4-Chlorotoluene	ug/L	ND	1.0	12/12/17 22:40	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	12/12/17 22:40	
Acetone	ug/L	ND	25.0	12/12/17 22:40	
Benzene	ug/L	ND	1.0	12/12/17 22:40	
Bromobenzene	ug/L	ND	1.0	12/12/17 22:40	
Bromochloromethane	ug/L	ND	1.0	12/12/17 22:40	
Bromodichloromethane	ug/L	ND	1.0	12/12/17 22:40	
Bromoform	ug/L	ND	1.0	12/12/17 22:40	
Bromomethane	ug/L	ND	2.0	12/12/17 22:40	
Carbon tetrachloride	ug/L	ND	1.0	12/12/17 22:40	
Chlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
Chloroethane	ug/L	ND	1.0	12/12/17 22:40	
Chloroform	ug/L	ND	1.0	12/12/17 22:40	
Chloromethane	ug/L	ND	1.0	12/12/17 22:40	
cis-1,2-Dichloroethene	ug/L	ND	1.0	12/12/17 22:40	
cis-1,3-Dichloropropene	ug/L	ND	1.0	12/12/17 22:40	
Dibromochloromethane	ug/L	ND	1.0	12/12/17 22:40	
Dibromomethane	ug/L	ND	1.0	12/12/17 22:40	
Dichlorodifluoromethane	ug/L	ND	1.0	12/12/17 22:40	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

METHOD BLANK: 2166868

Matrix: Water

Associated Lab Samples: 92366172005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	12/12/17 22:40	
Ethylbenzene	ug/L	ND	1.0	12/12/17 22:40	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	12/12/17 22:40	
m&p-Xylene	ug/L	ND	2.0	12/12/17 22:40	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/12/17 22:40	
Methylene Chloride	ug/L	ND	2.0	12/12/17 22:40	
Naphthalene	ug/L	ND	1.0	12/12/17 22:40	
o-Xylene	ug/L	ND	1.0	12/12/17 22:40	
p-Isopropyltoluene	ug/L	ND	1.0	12/12/17 22:40	
Styrene	ug/L	ND	1.0	12/12/17 22:40	
Tetrachloroethene	ug/L	ND	1.0	12/12/17 22:40	
Toluene	ug/L	ND	1.0	12/12/17 22:40	
trans-1,2-Dichloroethene	ug/L	ND	1.0	12/12/17 22:40	
trans-1,3-Dichloropropene	ug/L	ND	1.0	12/12/17 22:40	
Trichloroethene	ug/L	ND	1.0	12/12/17 22:40	
Trichlorofluoromethane	ug/L	ND	1.0	12/12/17 22:40	
Vinyl acetate	ug/L	ND	2.0	12/12/17 22:40	
Vinyl chloride	ug/L	ND	1.0	12/12/17 22:40	
Xylene (Total)	ug/L	ND	1.0	12/12/17 22:40	
1,2-Dichloroethane-d4 (S)	%	80	70-130	12/12/17 22:40	
4-Bromofluorobenzene (S)	%	100	70-130	12/12/17 22:40	
Toluene-d8 (S)	%	110	70-130	12/12/17 22:40	

LABORATORY CONTROL SAMPLE: 2166869

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	44.7	89	70-130	
1,1,1-Trichloroethane	ug/L	50	50.7	101	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	41.1	82	70-130	
1,1,2-Trichloroethane	ug/L	50	50.5	101	70-130	
1,1-Dichloroethane	ug/L	50	47.0	94	70-130	
1,1-Dichloroethene	ug/L	50	48.1	96	70-132	
1,1-Dichloropropene	ug/L	50	48.1	96	70-130	
1,2,3-Trichlorobenzene	ug/L	50	48.4	97	70-135	
1,2,3-Trichloropropane	ug/L	50	42.3	85	70-130	
1,2,4-Trichlorobenzene	ug/L	50	48.8	98	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	37.1	74	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	44.7	89	70-130	
1,2-Dichlorobenzene	ug/L	50	45.9	92	70-130	
1,2-Dichloroethane	ug/L	50	46.1	92	70-130	
1,2-Dichloropropane	ug/L	50	52.7	105	70-130	
1,3-Dichlorobenzene	ug/L	50	46.0	92	70-130	
1,3-Dichloropropane	ug/L	50	49.9	100	70-130	
1,4-Dichlorobenzene	ug/L	50	45.6	91	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

LABORATORY CONTROL SAMPLE: 2166869

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	41.2	82	58-145	
2-Butanone (MEK)	ug/L	100	80.0	80	70-145	
2-Chlorotoluene	ug/L	50	44.6	89	70-130	
2-Hexanone	ug/L	100	75.6	76	70-144	
4-Chlorotoluene	ug/L	50	44.7	89	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	78.8	79	70-140	
Acetone	ug/L	100	82.3	82	50-175	
Benzene	ug/L	50	50.6	101	70-130	
Bromobenzene	ug/L	50	47.0	94	70-130	
Bromochloromethane	ug/L	50	48.9	98	70-130	
Bromodichloromethane	ug/L	50	50.6	101	70-130	
Bromoform	ug/L	50	40.9	82	70-130	
Bromomethane	ug/L	50	45.8	92	54-130	
Carbon tetrachloride	ug/L	50	49.8	100	70-132	
Chlorobenzene	ug/L	50	47.3	95	70-130	
Chloroethane	ug/L	50	50.6	101	64-134	
Chloroform	ug/L	50	45.6	91	70-130	
Chloromethane	ug/L	50	44.0	88	64-130	
cis-1,2-Dichloroethene	ug/L	50	48.7	97	70-131	
cis-1,3-Dichloropropene	ug/L	50	48.7	97	70-130	
Dibromochloromethane	ug/L	50	50.0	100	70-130	
Dibromomethane	ug/L	50	48.9	98	70-131	
Dichlorodifluoromethane	ug/L	50	53.2	106	56-130	
Diisopropyl ether	ug/L	50	52.6	105	70-130	
Ethylbenzene	ug/L	50	46.6	93	70-130	
Hexachloro-1,3-butadiene	ug/L	50	47.0	94	70-130	
m&p-Xylene	ug/L	100	93.2	93	70-130	
Methyl-tert-butyl ether	ug/L	50	43.9	88	70-130	
Methylene Chloride	ug/L	50	48.4	97	63-130	
Naphthalene	ug/L	50	46.4	93	70-138	
o-Xylene	ug/L	50	47.4	95	70-130	
p-Isopropyltoluene	ug/L	50	46.0	92	70-130	
Styrene	ug/L	50	46.3	93	70-130	
Tetrachloroethene	ug/L	50	50.6	101	70-130	
Toluene	ug/L	50	47.5	95	70-130	
trans-1,2-Dichloroethene	ug/L	50	50.3	101	70-130	
trans-1,3-Dichloropropene	ug/L	50	43.8	88	70-132	
Trichloroethene	ug/L	50	54.6	109	70-130	
Trichlorofluoromethane	ug/L	50	47.0	94	62-133	
Vinyl acetate	ug/L	100	84.5	85	66-157	
Vinyl chloride	ug/L	50	52.7	105	50-150	
Xylene (Total)	ug/L	150	141	94	70-130	
1,2-Dichloroethane-d4 (S)	%			91	70-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			97	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

MATRIX SPIKE SAMPLE:	2168289	92365803002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.2	106	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	22.2	111	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	19.6	98	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	22.0	110	70-130	
1,1-Dichloroethane	ug/L	ND	20	22.1	110	70-130	
1,1-Dichloroethene	ug/L	ND	20	24.2	121	70-166	
1,1-Dichloropropene	ug/L	ND	20	22.5	113	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	20.2	101	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	20.3	102	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	21.1	105	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	18.0	90	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.9	109	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	20.2	101	70-130	
1,2-Dichloroethane	ug/L	ND	20	21.2	106	70-130	
1,2-Dichloropropane	ug/L	ND	20	21.3	107	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	20.7	104	70-130	
1,3-Dichloropropane	ug/L	ND	20	21.7	109	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	20.2	101	70-130	
2,2-Dichloropropane	ug/L	ND	20	22.0	110	70-130	
2-Butanone (MEK)	ug/L	ND	40	43.1	108	70-130	
2-Chlorotoluene	ug/L	ND	20	20.1	100	70-130	
2-Hexanone	ug/L	1.5J	40	41.8	101	70-130	
4-Chlorotoluene	ug/L	ND	20	20.4	102	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	41.6	104	70-130	
Acetone	ug/L	ND	40	49.0	122	70-130	
Benzene	ug/L	ND	20	21.7	109	70-148	
Bromobenzene	ug/L	ND	20	19.9	99	70-130	
Bromochloromethane	ug/L	ND	20	22.9	115	70-130	
Bromodichloromethane	ug/L	ND	20	21.4	107	70-130	
Bromoform	ug/L	ND	20	20.5	103	70-130	
Bromomethane	ug/L	ND	20	23.7	119	70-130	
Carbon tetrachloride	ug/L	ND	20	22.3	111	70-130	
Chlorobenzene	ug/L	ND	20	21.3	107	70-146	
Chloroethane	ug/L	ND	20	25.4	127	70-130	
Chloroform	ug/L	ND	20	21.5	107	70-130	
Chloromethane	ug/L	ND	20	22.2	111	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	22.4	112	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	22.1	110	70-130	
Dibromochloromethane	ug/L	ND	20	21.2	106	70-130	
Dibromomethane	ug/L	ND	20	22.3	111	70-130	
Dichlorodifluoromethane	ug/L	ND	20	24.9	125	70-130	
Diisopropyl ether	ug/L	ND	20	22.9	115	70-130	
Ethylbenzene	ug/L	ND	20	21.0	105	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	25.3	127	70-130	
m&p-Xylene	ug/L	ND	40	42.6	106	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	20.6	103	70-130	
Methylene Chloride	ug/L	ND	20	22.6	113	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

MATRIX SPIKE SAMPLE: 2168289		92365803002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Naphthalene	ug/L	ND	20	18.7	93	70-130	
o-Xylene	ug/L	ND	20	21.2	106	70-130	
p-Isopropyltoluene	ug/L	ND	20	20.8	104	70-130	
Styrene	ug/L	ND	20	21.1	106	70-130	
Tetrachloroethene	ug/L	ND	20	22.2	111	70-130	
Toluene	ug/L	ND	20	21.2	106	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	22.7	113	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	21.1	105	70-130	
Trichloroethene	ug/L	ND	20	22.4	112	69-151	
Trichlorofluoromethane	ug/L	ND	20	24.6	123	70-130	
Vinyl acetate	ug/L	ND	40	44.4	111	70-130	
Vinyl chloride	ug/L	ND	20	25.8	129	70-130	
1,2-Dichloroethane-d4 (S)	%				100	70-130	
4-Bromofluorobenzene (S)	%				102	70-130	
Toluene-d8 (S)	%				100	70-130	

SAMPLE DUPLICATE: 2168288

Parameter	Units	92365803001	Dup	RPD	Qualifiers
		Result	Result		
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	.66J		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	ND	ND		
Benzene	ug/L	ND	ND		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

SAMPLE DUPLICATE: 2168288

Parameter	Units	92365803001 Result	Dup Result	RPD	Qualifiers
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		
Bromomethane	ug/L	ND	ND		
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	ND		
Ethylbenzene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	ND	ND		
Methyl-tert-butyl ether	ug/L	ND	ND		
Methylene Chloride	ug/L	ND	ND		
Naphthalene	ug/L	ND	ND		
o-Xylene	ug/L	ND	ND		
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	83	99	18	
4-Bromofluorobenzene (S)	%	100	99	1	
Toluene-d8 (S)	%	110	99	11	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92366172005	TRIP BLANK	EPA 8260	390500		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples: Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt: **Client Name:** Hart & Hickman **Project #:** _____
 Courier: Fed Ex UPS USPS Client Pace Other: _____
 Commercial

WO# 92366229



92366229

Custody Seal Present? Yes No Seals Intact? Yes No
 Date/Initials Person Examining Contents: 12/7/17

Packing Material: Bubble Wrap Bubble Bags None Other
 Thermometer: Gun ID: IN04 Type of Ice: Wet Blue None
 Correction Factor: Cooler Temp Corrected (°C): 3.3 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil N/A, water sample)
 Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A -Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>W</u>	
Headspace in VOA Vials (>5-6mm)? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: JJ Date: 12/5/17

Project Manager SRF Review: JJ Date: 12/8/17

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)



Document Name:
Sample Condition Upon Receipt(SCUR)
 Document No.:
F-CAR-CS-033-Rev.04

Document Revised: August 4, 2017
 Page 2 of 2
 Issuing Authority:
 Pace Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

**Bottom half of box is to list number of bottles

Project

WO# : 92366229

PM: KRG

Due Date: 12/14/17

CLIENT: 92-NCDOEAST

pg 3

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic 2N Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG3H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.9-9.7)	Cubitrainer	VSGU-20 mL Scintillation vials (N/A)	GN	
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

771

Via US Mail

December 22, 2017

Erica and Mark Sanders
771 Mt. Gilead Church Rd.
Pittsboro, NC 27312

Re: December 2017 Water Supply Sampling Results
Pittsboro, NC
H&H Job No. DOT-515

Dear Mr. and Mrs. Sanders:

On behalf of the North Carolina Department of Transportation, Hart and Hickman, PC (H&H) is providing this letter to document the results of the water supply well sampling conducted at your residence at 771 Mt. Gilead Church Rd on December 6, 2017. A point of entry carbon treatment system was installed on this water supply well in September 2013 as a precautionary measure. During the December 6, 2017 sampling event, H&H personnel collected a pre-treatment system water sample (sample identified as 771 MT. GILEAD-INF) and a post-treatment water sample (sample identified as 771 MT. GILEAD-EFF). The samples were collected in laboratory-supplied sample containers and submitted to Pace Analytical Services Inc. for analysis of certain volatile organic compounds (VOCs). A quality control sample labeled trip blank was also analyzed.

The results of the laboratory analyses indicate that target compounds were not present above laboratory reporting limits in the pre-treatment water sample or the post-treatment water sample. No compounds were detected in the quality control trip blank sample. The laboratory reports documenting the results are attached for your reference. The next sampling event is scheduled for March 2018.

Mr. and Mrs. Sanders
December 22, 2017
Page 2 of 2

Following sampling of the system, the carbon filter media and ultraviolet lamp were replaced as part of the annual maintenance of the system.

If you have any questions, please do not hesitate to contact us at (704) 586-0007.

Very truly yours,

Hart & Hickman, PC



Greg Kanellis, PE
Senior Project Engineer



Matt Bramblett, PE
Principal

Attachment: Laboratory Analytical Results

Cc: Mr. Jason Prosser, NCDOT (Via Email)
Mr. Layton Long, Chatham County Health Dept. (Via Email)
Ms. Stephanie Grubbs, NC DEQ (Via Email)

Divider
Page

December 15, 2017

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

RE: Project: DOT-515 PITTSBORO 34613.3.13
Pace Project No.: 92366227

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on December 07, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92366172003	771 MT. GILEAD-EFF	EPA 8270 by SIM	RES	1	PASI-C
		EPA 8260	CAH	63	PASI-C
92366172004	771 MT. GILEAD-IN	EPA 8270 by SIM	RES	1	PASI-C
		EPA 8260	CAH	63	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

Method: EPA 8270 by SIM

Description: 8270 MSSV 1,4 Dioxane SIM

Client: NCDOT East Central

Date: December 15, 2017

General Information:

2 samples were analyzed for EPA 8270 by SIM. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Sample Preparation:

The samples were prepared in accordance with EPA 3510 with any exceptions noted below.

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: December 15, 2017

General Information:

2 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: 390126

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92366139009

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2167447)

- Bromomethane

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

Sample: 771 MT. GILEAD-EFF	Lab ID: 92366172003	Collected: 12/06/17 13:00	Received: 12/07/17 08:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV 1,4 Dioxane SIM		Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510						
1,4-Dioxane (p-Dioxane)	ND	ug/L	3.0	1	12/08/17 13:56	12/14/17 14:07	123-91-1	
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		12/12/17 18:46	67-64-1	
Benzene	ND	ug/L	1.0	1		12/12/17 18:46	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/12/17 18:46	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/12/17 18:46	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/12/17 18:46	75-27-4	
Bromoform	ND	ug/L	1.0	1		12/12/17 18:46	75-25-2	
Bromomethane	ND	ug/L	2.0	1		12/12/17 18:46	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/12/17 18:46	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		12/12/17 18:46	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/12/17 18:46	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/12/17 18:46	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/12/17 18:46	67-66-3	
Chloromethane	ND	ug/L	1.0	1		12/12/17 18:46	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 18:46	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 18:46	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		12/12/17 18:46	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/12/17 18:46	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/12/17 18:46	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		12/12/17 18:46	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:46	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:46	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:46	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/12/17 18:46	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/12/17 18:46	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/12/17 18:46	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/12/17 18:46	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 18:46	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 18:46	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 18:46	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/12/17 18:46	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 18:46	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/12/17 18:46	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 18:46	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 18:46	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		12/12/17 18:46	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		12/12/17 18:46	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/12/17 18:46	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		12/12/17 18:46	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/12/17 18:46	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		12/12/17 18:46	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/12/17 18:46	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/12/17 18:46	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		12/12/17 18:46	91-20-3	
Styrene	ND	ug/L	1.0	1		12/12/17 18:46	100-42-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

Sample: 771 MT. GILEAD-EFF	Lab ID: 92366172003	Collected: 12/06/17 13:00	Received: 12/07/17 08:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 18:46	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 18:46	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/12/17 18:46	127-18-4	
Toluene	ND	ug/L	1.0	1		12/12/17 18:46	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:46	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 18:46	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/12/17 18:46	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/12/17 18:46	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		12/12/17 18:46	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/12/17 18:46	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		12/12/17 18:46	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		12/12/17 18:46	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		12/12/17 18:46	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		12/12/17 18:46	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		12/12/17 18:46	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		12/12/17 18:46	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	92	%	70-130	1		12/12/17 18:46	460-00-4	
1,2-Dichloroethane-d4 (S)	87	%	70-130	1		12/12/17 18:46	17060-07-0	
Toluene-d8 (S)	108	%	70-130	1		12/12/17 18:46	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

Sample: 771 MT. GILEAD-IN	Lab ID: 92366172004	Collected: 12/06/17 13:05	Received: 12/07/17 08:04	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV 1,4 Dioxane SIM		Analytical Method: EPA 8270 by SIM Preparation Method: EPA 3510						
1,4-Dioxane (p-Dioxane)	ND	ug/L	3.0	1	12/08/17 13:56	12/14/17 14:18	123-91-1	
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		12/12/17 19:04	67-64-1	
Benzene	ND	ug/L	1.0	1		12/12/17 19:04	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/12/17 19:04	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/12/17 19:04	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/12/17 19:04	75-27-4	
Bromoform	ND	ug/L	1.0	1		12/12/17 19:04	75-25-2	
Bromomethane	ND	ug/L	2.0	1		12/12/17 19:04	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/12/17 19:04	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		12/12/17 19:04	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/12/17 19:04	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/12/17 19:04	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/12/17 19:04	67-66-3	
Chloromethane	ND	ug/L	1.0	1		12/12/17 19:04	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 19:04	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 19:04	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		12/12/17 19:04	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/12/17 19:04	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/12/17 19:04	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		12/12/17 19:04	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 19:04	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 19:04	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 19:04	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/12/17 19:04	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/12/17 19:04	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/12/17 19:04	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/12/17 19:04	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 19:04	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 19:04	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 19:04	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/12/17 19:04	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 19:04	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/12/17 19:04	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 19:04	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 19:04	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		12/12/17 19:04	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		12/12/17 19:04	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/12/17 19:04	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		12/12/17 19:04	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/12/17 19:04	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		12/12/17 19:04	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/12/17 19:04	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/12/17 19:04	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		12/12/17 19:04	91-20-3	
Styrene	ND	ug/L	1.0	1		12/12/17 19:04	100-42-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

Sample: 771 MT. GILEAD-IN		Lab ID: 92366172004	Collected: 12/06/17 13:05	Received: 12/07/17 08:04	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 19:04	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 19:04	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/12/17 19:04	127-18-4	
Toluene	ND	ug/L	1.0	1		12/12/17 19:04	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 19:04	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 19:04	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/12/17 19:04	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/12/17 19:04	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		12/12/17 19:04	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/12/17 19:04	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		12/12/17 19:04	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		12/12/17 19:04	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		12/12/17 19:04	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		12/12/17 19:04	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		12/12/17 19:04	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		12/12/17 19:04	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	102	%	70-130	1		12/12/17 19:04	460-00-4	
1,2-Dichloroethane-d4 (S)	104	%	70-130	1		12/12/17 19:04	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		12/12/17 19:04	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

QC Batch: 390126

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92366172003, 92366172004

METHOD BLANK: 2164728

Matrix: Water

Associated Lab Samples: 92366172003, 92366172004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,1,1-Trichloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,1,2-Trichloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,1-Dichloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,1-Dichloroethene	ug/L	ND	1.0	12/12/17 14:57	
1,1-Dichloropropene	ug/L	ND	1.0	12/12/17 14:57	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
1,2,3-Trichloropropane	ug/L	ND	1.0	12/12/17 14:57	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	12/12/17 14:57	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	12/12/17 14:57	
1,2-Dichlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
1,2-Dichloroethane	ug/L	ND	1.0	12/12/17 14:57	
1,2-Dichloropropane	ug/L	ND	1.0	12/12/17 14:57	
1,3-Dichlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
1,3-Dichloropropane	ug/L	ND	1.0	12/12/17 14:57	
1,4-Dichlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
2,2-Dichloropropane	ug/L	ND	1.0	12/12/17 14:57	
2-Butanone (MEK)	ug/L	ND	5.0	12/12/17 14:57	
2-Chlorotoluene	ug/L	ND	1.0	12/12/17 14:57	
2-Hexanone	ug/L	ND	5.0	12/12/17 14:57	
4-Chlorotoluene	ug/L	ND	1.0	12/12/17 14:57	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	12/12/17 14:57	
Acetone	ug/L	ND	25.0	12/12/17 14:57	
Benzene	ug/L	ND	1.0	12/12/17 14:57	
Bromobenzene	ug/L	ND	1.0	12/12/17 14:57	
Bromochloromethane	ug/L	ND	1.0	12/12/17 14:57	
Bromodichloromethane	ug/L	ND	1.0	12/12/17 14:57	
Bromoform	ug/L	ND	1.0	12/12/17 14:57	
Bromomethane	ug/L	ND	2.0	12/12/17 14:57	
Carbon tetrachloride	ug/L	ND	1.0	12/12/17 14:57	
Chlorobenzene	ug/L	ND	1.0	12/12/17 14:57	
Chloroethane	ug/L	ND	1.0	12/12/17 14:57	
Chloroform	ug/L	ND	1.0	12/12/17 14:57	
Chloromethane	ug/L	ND	1.0	12/12/17 14:57	
cis-1,2-Dichloroethene	ug/L	ND	1.0	12/12/17 14:57	
cis-1,3-Dichloropropene	ug/L	ND	1.0	12/12/17 14:57	
Dibromochloromethane	ug/L	ND	1.0	12/12/17 14:57	
Dibromomethane	ug/L	ND	1.0	12/12/17 14:57	
Dichlorodifluoromethane	ug/L	ND	1.0	12/12/17 14:57	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

METHOD BLANK: 2164728

Matrix: Water

Associated Lab Samples: 92366172003, 92366172004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	12/12/17 14:57	
Ethylbenzene	ug/L	ND	1.0	12/12/17 14:57	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	12/12/17 14:57	
m&p-Xylene	ug/L	ND	2.0	12/12/17 14:57	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/12/17 14:57	
Methylene Chloride	ug/L	ND	2.0	12/12/17 14:57	
Naphthalene	ug/L	ND	1.0	12/12/17 14:57	
o-Xylene	ug/L	ND	1.0	12/12/17 14:57	
p-Isopropyltoluene	ug/L	ND	1.0	12/12/17 14:57	
Styrene	ug/L	ND	1.0	12/12/17 14:57	
Tetrachloroethene	ug/L	ND	1.0	12/12/17 14:57	
Toluene	ug/L	ND	1.0	12/12/17 14:57	
trans-1,2-Dichloroethene	ug/L	ND	1.0	12/12/17 14:57	
trans-1,3-Dichloropropene	ug/L	ND	1.0	12/12/17 14:57	
Trichloroethene	ug/L	ND	1.0	12/12/17 14:57	
Trichlorofluoromethane	ug/L	ND	1.0	12/12/17 14:57	
Vinyl acetate	ug/L	ND	2.0	12/12/17 14:57	
Vinyl chloride	ug/L	ND	1.0	12/12/17 14:57	
Xylene (Total)	ug/L	ND	1.0	12/12/17 14:57	
1,2-Dichloroethane-d4 (S)	%	93	70-130	12/12/17 14:57	
4-Bromofluorobenzene (S)	%	92	70-130	12/12/17 14:57	
Toluene-d8 (S)	%	95	70-130	12/12/17 14:57	

LABORATORY CONTROL SAMPLE: 2164729

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	50.9	102	70-130	
1,1,1-Trichloroethane	ug/L	50	52.5	105	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	49.0	98	70-130	
1,1,2-Trichloroethane	ug/L	50	53.9	108	70-130	
1,1-Dichloroethane	ug/L	50	50.1	100	70-130	
1,1-Dichloroethene	ug/L	50	50.4	101	70-132	
1,1-Dichloropropene	ug/L	50	52.2	104	70-130	
1,2,3-Trichlorobenzene	ug/L	50	54.4	109	70-135	
1,2,3-Trichloropropane	ug/L	50	51.1	102	70-130	
1,2,4-Trichlorobenzene	ug/L	50	54.4	109	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	52.0	104	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	51.2	102	70-130	
1,2-Dichlorobenzene	ug/L	50	50.5	101	70-130	
1,2-Dichloroethane	ug/L	50	53.7	107	70-130	
1,2-Dichloropropane	ug/L	50	51.9	104	70-130	
1,3-Dichlorobenzene	ug/L	50	50.2	100	70-130	
1,3-Dichloropropane	ug/L	50	52.9	106	70-130	
1,4-Dichlorobenzene	ug/L	50	50.0	100	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

LABORATORY CONTROL SAMPLE: 2164729

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	53.1	106	58-145	
2-Butanone (MEK)	ug/L	100	115	115	70-145	
2-Chlorotoluene	ug/L	50	53.3	107	70-130	
2-Hexanone	ug/L	100	122	122	70-144	
4-Chlorotoluene	ug/L	50	52.2	104	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	113	113	70-140	
Acetone	ug/L	100	112	112	50-175	
Benzene	ug/L	50	49.9	100	70-130	
Bromobenzene	ug/L	50	50.9	102	70-130	
Bromochloromethane	ug/L	50	51.4	103	70-130	
Bromodichloromethane	ug/L	50	50.8	102	70-130	
Bromoform	ug/L	50	49.9	100	70-130	
Bromomethane	ug/L	50	38.9	78	54-130	
Carbon tetrachloride	ug/L	50	52.6	105	70-132	
Chlorobenzene	ug/L	50	50.3	101	70-130	
Chloroethane	ug/L	50	59.2	118	64-134	
Chloroform	ug/L	50	48.4	97	70-130	
Chloromethane	ug/L	50	40.0	80	64-130	
cis-1,2-Dichloroethene	ug/L	50	53.8	108	70-131	
cis-1,3-Dichloropropene	ug/L	50	57.2	114	70-130	
Dibromochloromethane	ug/L	50	50.4	101	70-130	
Dibromomethane	ug/L	50	48.5	97	70-131	
Dichlorodifluoromethane	ug/L	50	45.9	92	56-130	
Diisopropyl ether	ug/L	50	53.8	108	70-130	
Ethylbenzene	ug/L	50	51.9	104	70-130	
Hexachloro-1,3-butadiene	ug/L	50	51.8	104	70-130	
m&p-Xylene	ug/L	100	107	107	70-130	
Methyl-tert-butyl ether	ug/L	50	50.0	100	70-130	
Methylene Chloride	ug/L	50	54.4	109	63-130	
Naphthalene	ug/L	50	57.1	114	70-138	
o-Xylene	ug/L	50	51.6	103	70-130	
p-Isopropyltoluene	ug/L	50	55.1	110	70-130	
Styrene	ug/L	50	51.1	102	70-130	
Tetrachloroethene	ug/L	50	49.5	99	70-130	
Toluene	ug/L	50	51.7	103	70-130	
trans-1,2-Dichloroethene	ug/L	50	51.5	103	70-130	
trans-1,3-Dichloropropene	ug/L	50	55.9	112	70-132	
Trichloroethene	ug/L	50	48.4	97	70-130	
Trichlorofluoromethane	ug/L	50	47.1	94	62-133	
Vinyl acetate	ug/L	100	111	111	66-157	
Vinyl chloride	ug/L	50	50.7	101	50-150	
Xylene (Total)	ug/L	150	158	105	70-130	
1,2-Dichloroethane-d4 (S)	%			103	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			105	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

MATRIX SPIKE SAMPLE: 2167447		92366139009	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.5	107	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	23.3	117	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	19.3	96	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	19.2	96	70-130	
1,1-Dichloroethane	ug/L	ND	20	22.7	114	70-130	
1,1-Dichloroethene	ug/L	ND	20	22.9	114	70-166	
1,1-Dichloropropene	ug/L	ND	20	23.1	116	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	22.7	114	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	18.1	91	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	22.4	112	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	19.1	96	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20.7	104	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	21.5	107	70-130	
1,2-Dichloroethane	ug/L	ND	20	22.8	114	70-130	
1,2-Dichloropropane	ug/L	ND	20	22.8	114	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	21.3	107	70-130	
1,3-Dichloropropane	ug/L	ND	20	20.7	103	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	20.8	104	70-130	
2,2-Dichloropropane	ug/L	ND	20	24.1	121	70-130	
2-Butanone (MEK)	ug/L	ND	40	44.6	112	70-130	
2-Chlorotoluene	ug/L	ND	20	20.9	104	70-130	
2-Hexanone	ug/L	ND	40	37.9	95	70-130	
4-Chlorotoluene	ug/L	ND	20	20.7	104	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	32.9	82	70-130	
Acetone	ug/L	ND	40	44.3	111	70-130	
Benzene	ug/L	ND	20	22.5	112	70-148	
Bromobenzene	ug/L	ND	20	22.0	110	70-130	
Bromochloromethane	ug/L	ND	20	21.8	109	70-130	
Bromodichloromethane	ug/L	ND	20	21.7	109	70-130	
Bromoform	ug/L	ND	20	18.2	91	70-130	
Bromomethane	ug/L	ND	20	6.5	33	70-130	M1
Carbon tetrachloride	ug/L	ND	20	23.3	116	70-130	
Chlorobenzene	ug/L	ND	20	21.8	109	70-146	
Chloroethane	ug/L	ND	20	24.2	121	70-130	
Chloroform	ug/L	ND	20	21.5	108	70-130	
Chloromethane	ug/L	ND	20	18.8	94	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	23.5	117	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	22.0	110	70-130	
Dibromochloromethane	ug/L	ND	20	19.5	98	70-130	
Dibromomethane	ug/L	ND	20	21.2	106	70-130	
Dichlorodifluoromethane	ug/L	ND	20	21.6	108	70-130	
Diisopropyl ether	ug/L	ND	20	23.9	119	70-130	
Ethylbenzene	ug/L	ND	20	21.5	107	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	22.8	114	70-130	
m&p-Xylene	ug/L	ND	40	44.0	110	70-130	
Methyl-tert-butyl ether	ug/L	0.54J	20	22.0	107	70-130	
Methylene Chloride	ug/L	ND	20	21.4	107	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

MATRIX SPIKE SAMPLE: 2167447		92366139009	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Naphthalene	ug/L	ND	20	22.1	110	70-130	
o-Xylene	ug/L	ND	20	21.8	109	70-130	
p-Isopropyltoluene	ug/L	ND	20	22.7	113	70-130	
Styrene	ug/L	ND	20	21.4	107	70-130	
Tetrachloroethene	ug/L	ND	20	22.8	114	70-130	
Toluene	ug/L	ND	20	20.1	100	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	23.2	116	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	17.6	88	70-130	
Trichloroethene	ug/L	ND	20	21.9	109	69-151	
Trichlorofluoromethane	ug/L	ND	20	21.7	108	70-130	
Vinyl acetate	ug/L	ND	40	46.9	117	70-130	
Vinyl chloride	ug/L	ND	20	22.9	115	70-130	
1,2-Dichloroethane-d4 (S)	%				103	70-130	
4-Bromofluorobenzene (S)	%				95	70-130	
Toluene-d8 (S)	%				96	70-130	

SAMPLE DUPLICATE: 2167448

Parameter	Units	92366172001 Result	Dup Result	RPD	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	ND		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	ND	ND		
Benzene	ug/L	ND	ND		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

SAMPLE DUPLICATE: 2167448

Parameter	Units	92366172001 Result	Dup Result	RPD	Qualifiers
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		
Bromomethane	ug/L	ND	ND		
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	ND		
Ethylbenzene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	ND	ND		
Methyl-tert-butyl ether	ug/L	ND	ND		
Methylene Chloride	ug/L	ND	ND		
Naphthalene	ug/L	ND	ND		
o-Xylene	ug/L	ND	ND		
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	91	88	3	
4-Bromofluorobenzene (S)	%	88	85	3	
Toluene-d8 (S)	%	96	98	2	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

QC Batch:	390076	Analysis Method:	EPA 8270 by SIM
QC Batch Method:	EPA 3510	Analysis Description:	8270 Water 1,4 Dioxane by SIM
Associated Lab Samples:	92366172003, 92366172004		

METHOD BLANK: 2164370 Matrix: Water

Associated Lab Samples: 92366172003, 92366172004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	3.0	12/14/17 12:33	

LABORATORY CONTROL SAMPLE & LCSD: 2164371 2164372

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	10	7.0	7.5	70	75	50-150	7	30	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE


Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366227

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92366172003	771 MT. GILEAD-EFF	EPA 3510	390076	EPA 8270 by SIM	390901
92366172004	771 MT. GILEAD-IN	EPA 3510	390076	EPA 8270 by SIM	390901
92366172003	771 MT. GILEAD-EFF	EPA 8260	390126		
92366172004	771 MT. GILEAD-IN	EPA 8260	390126		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: August 4, 2017 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.04	Issuing Authority: Pace Quality Office


Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name: Hart & Hackman Project #:

WO# : 92366227



92366227

Courier: Commercial Fed Ex UPS USPS Client Pace Other: _____

Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: 12/8/17

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen? Yes No N/A

Thermometer: IR/Gun ID: TR04 Type of Ice: Wet Blue None

Correction Factor: Cooler Temp Corrected (°C): 3.3

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>M</u>	
Headspace in VOA Vials (>5-6mm)? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

CLIENT NOTIFICATION/RESOLUTION

Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: JJ

Date: 12/8/17

Project Manager SRF Review: JJ

Date: 12/8/17

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)

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Project # **WO# : 92366227**

1092

PM **KRG** Due Date: **12/14/17**
CLIENT: **92-NCD0TEAST**

**Bottom half of box is to list number of bottles

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3W-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic Zn Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFLU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	Cubitainer	VSGU-20 mL Scintillation vials (N/A)	GN
1	/	/	/	/	/	/	/	/	/	2	/	/	/	/	/	N	/	/	/	/	/	/	/	/	/	/	/
2	/	/	/	/	/	/	/	/	/	2	/	/	/	/	/	N	/	/	/	/	/	/	/	/	/	/	/
3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
4	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
10	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
11	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
12	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

Divider
Page

December 15, 2017

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

RE: Project: DOT-515 PITTSBORO 34613.3.13
Pace Project No.: 92366229

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on December 07, 2017. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92366172005	TRIP BLANK	EPA 8260	GAW	63	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: December 15, 2017

General Information:

1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Sample: TRIP BLANK	Lab ID: 92366172005	Collected: 12/06/17 00:00	Received: 12/07/17 08:05	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		12/12/17 23:49	67-64-1	
Benzene	ND	ug/L	1.0	1		12/12/17 23:49	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		12/12/17 23:49	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		12/12/17 23:49	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		12/12/17 23:49	75-27-4	
Bromoform	ND	ug/L	1.0	1		12/12/17 23:49	75-25-2	
Bromomethane	ND	ug/L	2.0	1		12/12/17 23:49	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		12/12/17 23:49	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		12/12/17 23:49	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	108-90-7	
Chloroethane	ND	ug/L	1.0	1		12/12/17 23:49	75-00-3	
Chloroform	ND	ug/L	1.0	1		12/12/17 23:49	67-66-3	
Chloromethane	ND	ug/L	1.0	1		12/12/17 23:49	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 23:49	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		12/12/17 23:49	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		12/12/17 23:49	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		12/12/17 23:49	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		12/12/17 23:49	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		12/12/17 23:49	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		12/12/17 23:49	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		12/12/17 23:49	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		12/12/17 23:49	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		12/12/17 23:49	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 23:49	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		12/12/17 23:49	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 23:49	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		12/12/17 23:49	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		12/12/17 23:49	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		12/12/17 23:49	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 23:49	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		12/12/17 23:49	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		12/12/17 23:49	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		12/12/17 23:49	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		12/12/17 23:49	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		12/12/17 23:49	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		12/12/17 23:49	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		12/12/17 23:49	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		12/12/17 23:49	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		12/12/17 23:49	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		12/12/17 23:49	91-20-3	
Styrene	ND	ug/L	1.0	1		12/12/17 23:49	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 23:49	630-20-6	
1,1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		12/12/17 23:49	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		12/12/17 23:49	127-18-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Sample: TRIP BLANK	Lab ID: 92366172005	Collected: 12/06/17 00:00	Received: 12/07/17 08:05	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Toluene	ND	ug/L	1.0	1		12/12/17 23:49	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		12/12/17 23:49	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		12/12/17 23:49	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		12/12/17 23:49	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		12/12/17 23:49	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		12/12/17 23:49	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		12/12/17 23:49	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		12/12/17 23:49	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		12/12/17 23:49	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		12/12/17 23:49	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		12/12/17 23:49	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		12/12/17 23:49	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	99	%	70-130	1		12/12/17 23:49	460-00-4	
1,2-Dichloroethane-d4 (S)	80	%	70-130	1		12/12/17 23:49	17060-07-0	
Toluene-d8 (S)	110	%	70-130	1		12/12/17 23:49	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13
Pace Project No.: 92366229

QC Batch: 390500 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92366172005

METHOD BLANK: 2166868 Matrix: Water
Associated Lab Samples: 92366172005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,1,1-Trichloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,1,2-Trichloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,1-Dichloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,1-Dichloroethene	ug/L	ND	1.0	12/12/17 22:40	
1,1-Dichloropropene	ug/L	ND	1.0	12/12/17 22:40	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
1,2,3-Trichloropropane	ug/L	ND	1.0	12/12/17 22:40	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	12/12/17 22:40	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	12/12/17 22:40	
1,2-Dichlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
1,2-Dichloroethane	ug/L	ND	1.0	12/12/17 22:40	
1,2-Dichloropropane	ug/L	ND	1.0	12/12/17 22:40	
1,3-Dichlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
1,3-Dichloropropane	ug/L	ND	1.0	12/12/17 22:40	
1,4-Dichlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
2,2-Dichloropropane	ug/L	ND	1.0	12/12/17 22:40	
2-Butanone (MEK)	ug/L	ND	5.0	12/12/17 22:40	
2-Chlorotoluene	ug/L	ND	1.0	12/12/17 22:40	
2-Hexanone	ug/L	ND	5.0	12/12/17 22:40	
4-Chlorotoluene	ug/L	ND	1.0	12/12/17 22:40	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	12/12/17 22:40	
Acetone	ug/L	ND	25.0	12/12/17 22:40	
Benzene	ug/L	ND	1.0	12/12/17 22:40	
Bromobenzene	ug/L	ND	1.0	12/12/17 22:40	
Bromochloromethane	ug/L	ND	1.0	12/12/17 22:40	
Bromodichloromethane	ug/L	ND	1.0	12/12/17 22:40	
Bromoform	ug/L	ND	1.0	12/12/17 22:40	
Bromomethane	ug/L	ND	2.0	12/12/17 22:40	
Carbon tetrachloride	ug/L	ND	1.0	12/12/17 22:40	
Chlorobenzene	ug/L	ND	1.0	12/12/17 22:40	
Chloroethane	ug/L	ND	1.0	12/12/17 22:40	
Chloroform	ug/L	ND	1.0	12/12/17 22:40	
Chloromethane	ug/L	ND	1.0	12/12/17 22:40	
cis-1,2-Dichloroethene	ug/L	ND	1.0	12/12/17 22:40	
cis-1,3-Dichloropropene	ug/L	ND	1.0	12/12/17 22:40	
Dibromochloromethane	ug/L	ND	1.0	12/12/17 22:40	
Dibromomethane	ug/L	ND	1.0	12/12/17 22:40	
Dichlorodifluoromethane	ug/L	ND	1.0	12/12/17 22:40	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13
Pace Project No.: 92366229

METHOD BLANK: 2166868 Matrix: Water
Associated Lab Samples: 92366172005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	12/12/17 22:40	
Ethylbenzene	ug/L	ND	1.0	12/12/17 22:40	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	12/12/17 22:40	
m&p-Xylene	ug/L	ND	2.0	12/12/17 22:40	
Methyl-tert-butyl ether	ug/L	ND	1.0	12/12/17 22:40	
Methylene Chloride	ug/L	ND	2.0	12/12/17 22:40	
Naphthalene	ug/L	ND	1.0	12/12/17 22:40	
o-Xylene	ug/L	ND	1.0	12/12/17 22:40	
p-Isopropyltoluene	ug/L	ND	1.0	12/12/17 22:40	
Styrene	ug/L	ND	1.0	12/12/17 22:40	
Tetrachloroethene	ug/L	ND	1.0	12/12/17 22:40	
Toluene	ug/L	ND	1.0	12/12/17 22:40	
trans-1,2-Dichloroethene	ug/L	ND	1.0	12/12/17 22:40	
trans-1,3-Dichloropropene	ug/L	ND	1.0	12/12/17 22:40	
Trichloroethene	ug/L	ND	1.0	12/12/17 22:40	
Trichlorofluoromethane	ug/L	ND	1.0	12/12/17 22:40	
Vinyl acetate	ug/L	ND	2.0	12/12/17 22:40	
Vinyl chloride	ug/L	ND	1.0	12/12/17 22:40	
Xylene (Total)	ug/L	ND	1.0	12/12/17 22:40	
1,2-Dichloroethane-d4 (S)	%	80	70-130	12/12/17 22:40	
4-Bromofluorobenzene (S)	%	100	70-130	12/12/17 22:40	
Toluene-d8 (S)	%	110	70-130	12/12/17 22:40	

LABORATORY CONTROL SAMPLE: 2166869

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	44.7	89	70-130	
1,1,1-Trichloroethane	ug/L	50	50.7	101	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	41.1	82	70-130	
1,1,2-Trichloroethane	ug/L	50	50.5	101	70-130	
1,1-Dichloroethane	ug/L	50	47.0	94	70-130	
1,1-Dichloroethene	ug/L	50	48.1	96	70-132	
1,1-Dichloropropene	ug/L	50	48.1	96	70-130	
1,2,3-Trichlorobenzene	ug/L	50	48.4	97	70-135	
1,2,3-Trichloropropane	ug/L	50	42.3	85	70-130	
1,2,4-Trichlorobenzene	ug/L	50	48.8	98	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	37.1	74	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	44.7	89	70-130	
1,2-Dichlorobenzene	ug/L	50	45.9	92	70-130	
1,2-Dichloroethane	ug/L	50	46.1	92	70-130	
1,2-Dichloropropane	ug/L	50	52.7	105	70-130	
1,3-Dichlorobenzene	ug/L	50	46.0	92	70-130	
1,3-Dichloropropane	ug/L	50	49.9	100	70-130	
1,4-Dichlorobenzene	ug/L	50	45.6	91	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

LABORATORY CONTROL SAMPLE: 2166869

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	41.2	82	58-145	
2-Butanone (MEK)	ug/L	100	80.0	80	70-145	
2-Chlorotoluene	ug/L	50	44.6	89	70-130	
2-Hexanone	ug/L	100	75.6	76	70-144	
4-Chlorotoluene	ug/L	50	44.7	89	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	78.8	79	70-140	
Acetone	ug/L	100	82.3	82	50-175	
Benzene	ug/L	50	50.6	101	70-130	
Bromobenzene	ug/L	50	47.0	94	70-130	
Bromochloromethane	ug/L	50	48.9	98	70-130	
Bromodichloromethane	ug/L	50	50.6	101	70-130	
Bromoform	ug/L	50	40.9	82	70-130	
Bromomethane	ug/L	50	45.8	92	54-130	
Carbon tetrachloride	ug/L	50	49.8	100	70-132	
Chlorobenzene	ug/L	50	47.3	95	70-130	
Chloroethane	ug/L	50	50.6	101	64-134	
Chloroform	ug/L	50	45.6	91	70-130	
Chloromethane	ug/L	50	44.0	88	64-130	
cis-1,2-Dichloroethene	ug/L	50	48.7	97	70-131	
cis-1,3-Dichloropropene	ug/L	50	48.7	97	70-130	
Dibromochloromethane	ug/L	50	50.0	100	70-130	
Dibromomethane	ug/L	50	48.9	98	70-131	
Dichlorodifluoromethane	ug/L	50	53.2	106	56-130	
Diisopropyl ether	ug/L	50	52.6	105	70-130	
Ethylbenzene	ug/L	50	46.6	93	70-130	
Hexachloro-1,3-butadiene	ug/L	50	47.0	94	70-130	
m&p-Xylene	ug/L	100	93.2	93	70-130	
Methyl-tert-butyl ether	ug/L	50	43.9	88	70-130	
Methylene Chloride	ug/L	50	48.4	97	63-130	
Naphthalene	ug/L	50	46.4	93	70-138	
o-Xylene	ug/L	50	47.4	95	70-130	
p-Isopropyltoluene	ug/L	50	46.0	92	70-130	
Styrene	ug/L	50	46.3	93	70-130	
Tetrachloroethene	ug/L	50	50.6	101	70-130	
Toluene	ug/L	50	47.5	95	70-130	
trans-1,2-Dichloroethene	ug/L	50	50.3	101	70-130	
trans-1,3-Dichloropropene	ug/L	50	43.8	88	70-132	
Trichloroethene	ug/L	50	54.6	109	70-130	
Trichlorofluoromethane	ug/L	50	47.0	94	62-133	
Vinyl acetate	ug/L	100	84.5	85	66-157	
Vinyl chloride	ug/L	50	52.7	105	50-150	
Xylene (Total)	ug/L	150	141	94	70-130	
1,2-Dichloroethane-d4 (S)	%			91	70-130	
4-Bromofluorobenzene (S)	%			97	70-130	
Toluene-d8 (S)	%			97	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

MATRIX SPIKE SAMPLE:	2168289	92365803002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.2	106	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	22.2	111	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	19.6	98	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	22.0	110	70-130	
1,1-Dichloroethane	ug/L	ND	20	22.1	110	70-130	
1,1-Dichloroethene	ug/L	ND	20	24.2	121	70-166	
1,1-Dichloropropene	ug/L	ND	20	22.5	113	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	20.2	101	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	20.3	102	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	21.1	105	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	18.0	90	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.9	109	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	20.2	101	70-130	
1,2-Dichloroethane	ug/L	ND	20	21.2	106	70-130	
1,2-Dichloropropane	ug/L	ND	20	21.3	107	70-130	
1,3-Dichlorobenzene	ug/L	ND	20	20.7	104	70-130	
1,3-Dichloropropane	ug/L	ND	20	21.7	109	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	20.2	101	70-130	
2,2-Dichloropropane	ug/L	ND	20	22.0	110	70-130	
2-Butanone (MEK)	ug/L	ND	40	43.1	108	70-130	
2-Chlorotoluene	ug/L	ND	20	20.1	100	70-130	
2-Hexanone	ug/L	1.5J	40	41.8	101	70-130	
4-Chlorotoluene	ug/L	ND	20	20.4	102	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	41.6	104	70-130	
Acetone	ug/L	ND	40	49.0	122	70-130	
Benzene	ug/L	ND	20	21.7	109	70-148	
Bromobenzene	ug/L	ND	20	19.9	99	70-130	
Bromochloromethane	ug/L	ND	20	22.9	115	70-130	
Bromodichloromethane	ug/L	ND	20	21.4	107	70-130	
Bromoform	ug/L	ND	20	20.5	103	70-130	
Bromomethane	ug/L	ND	20	23.7	119	70-130	
Carbon tetrachloride	ug/L	ND	20	22.3	111	70-130	
Chlorobenzene	ug/L	ND	20	21.3	107	70-146	
Chloroethane	ug/L	ND	20	25.4	127	70-130	
Chloroform	ug/L	ND	20	21.5	107	70-130	
Chloromethane	ug/L	ND	20	22.2	111	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	22.4	112	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	22.1	110	70-130	
Dibromochloromethane	ug/L	ND	20	21.2	106	70-130	
Dibromomethane	ug/L	ND	20	22.3	111	70-130	
Dichlorodifluoromethane	ug/L	ND	20	24.9	125	70-130	
Diisopropyl ether	ug/L	ND	20	22.9	115	70-130	
Ethylbenzene	ug/L	ND	20	21.0	105	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	25.3	127	70-130	
m&p-Xylene	ug/L	ND	40	42.6	106	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	20.6	103	70-130	
Methylene Chloride	ug/L	ND	20	22.6	113	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

MATRIX SPIKE SAMPLE: 2168289		92365803002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Naphthalene	ug/L	ND	20	18.7	93	70-130	
o-Xylene	ug/L	ND	20	21.2	106	70-130	
p-Isopropyltoluene	ug/L	ND	20	20.8	104	70-130	
Styrene	ug/L	ND	20	21.1	106	70-130	
Tetrachloroethene	ug/L	ND	20	22.2	111	70-130	
Toluene	ug/L	ND	20	21.2	106	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	22.7	113	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	21.1	105	70-130	
Trichloroethene	ug/L	ND	20	22.4	112	69-151	
Trichlorofluoromethane	ug/L	ND	20	24.6	123	70-130	
Vinyl acetate	ug/L	ND	40	44.4	111	70-130	
Vinyl chloride	ug/L	ND	20	25.8	129	70-130	
1,2-Dichloroethane-d4 (S)	%				100	70-130	
4-Bromofluorobenzene (S)	%				102	70-130	
Toluene-d8 (S)	%				100	70-130	

SAMPLE DUPLICATE: 2168288

Parameter	Units	92365803001	Dup	RPD	Qualifiers
		Result	Result		
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	.66J		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	ND	ND		
Benzene	ug/L	ND	ND		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

SAMPLE DUPLICATE: 2168288

Parameter	Units	92365803001 Result	Dup Result	RPD	Qualifiers
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		
Bromomethane	ug/L	ND	ND		
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	ND		
Ethylbenzene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	ND	ND		
Methyl-tert-butyl ether	ug/L	ND	ND		
Methylene Chloride	ug/L	ND	ND		
Naphthalene	ug/L	ND	ND		
o-Xylene	ug/L	ND	ND		
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	83	99	18	
4-Bromofluorobenzene (S)	%	100	99	1	
Toluene-d8 (S)	%	110	99	11	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT-515 PITTSBORO 34613.3.13

Pace Project No.: 92366229

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92366172005	TRIP BLANK	EPA 8260	390500		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples: Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt
 Client Name: Hart & Hickman Project #: **WO# 92366229**
 Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Custody Seal Present? Yes No Seals Intact? Yes No
 Date/Initials Person Examining Contents: 12/7/17
 Packing Material: Bubble Wrap Bubble Bags None Other
 Thermometer: In Gun ID: IN04 Type of Ice: Ice Blue None
 Correction Factor: Cooler Temp Corrected (°C): 3.3 Biological Tissue Frozen? Yes No N/A
 Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil N/A, water sample)
 Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? Yes No
 Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>W</u>	
Headspace in VOA Vials (>5-6mm)? <input checked="" type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

CLIENT NOTIFICATION/RESOLUTION Field Data Required? Yes No

Person Contacted: _____ Date/Time: _____

Comments/Sample Discrepancy: _____

Lot ID of split containers: _____

Project Manager SCURF Review: JJ Date: 12/5/17

Project Manager SRF Review: JJ Date: 12/8/17

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)



Document Name:
Sample Condition Upon Receipt(SCUR)
 Document No.:
F-CAR-CS-033-Rev.04

Document Revised: August 4, 2017
 Page 2 of 2
 Issuing Authority:
 Pace Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

**Bottom half of box is to list number of bottles

Project

WO# : 92366229
 PM: KRG Due Date: 12/14/17
 CLIENT: 92-NCDOEAST

pg 3

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic 2N Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG3H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.9-9.7)	Cubitrainer	VSGU-20 mL Scintillation vials (N/A)	GN	
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

March 2018

Via US Mail

March 16, 2018

Timothy and Paula Mitchell
681 Mt. Gilead Church Rd.
Pittsboro, NC 27312

Re: March 2018 Water Supply Sampling Results
Pittsboro, NC
H&H Job No. DOT-515

Dear Mr. and Mrs. Mitchell:

On behalf of the North Carolina Department of Transportation, Hart and Hickman, PC (H&H) is providing this letter to document the results of the water supply well sampling conducted at your residence at 681 Mt. Gilead Church Rd on March 6, 2018. A point of entry carbon treatment system was installed on this water supply well in June 2013 as a precautionary measure. During the March 6, 2018 sampling event, H&H personnel collected a pre-treatment water sample (sample identified as 681 MT. GILEAD CHURCH RD-INF) and a post-treatment water sample (sample identified as 681 MT. GILEAD CHURCH RD-EFF). The samples were collected in laboratory-supplied sample containers and submitted to Pace Analytical Services Inc. for analysis of certain volatile organic compounds (VOCs). A quality control sample labeled trip blank was also analyzed.

The results of the laboratory analyses indicate that target compounds were not present above laboratory reporting limits in the pre-treatment water sample or the post-treatment water sample. No compounds were detected in the quality control trip blank sample. The laboratory reports documenting the results are attached for your reference. The next sampling event is scheduled for June 2018.

Mr. and Mrs. Mitchell,
March 16, 2018
Page 2 of 2

If you have any questions, please do not hesitate to contact us at (704) 586-0007.

Very truly yours,

Hart & Hickman, PC



Greg Kanellis, PE
Senior Project Engineer



Matt Bramblett, PE
Principal

Attachment: Laboratory Analytical Results

Cc: Mr. Jason Prosser, NCDOT (Via Email)
Mr. Layton Long, Chatham County Health Dept. (Via Email)
Ms. Stephanie Grubbs, NC DEQ (Via Email)

Divider
Page

March 15, 2018

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

RE: Project: DOT 515 34613.3.13
Pace Project No.: 92376381

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on March 09, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92376381001	681 MT GILEAD CHURCH RD-EFF	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92376381002	681 MT GILEAD CHURCH RD-INF	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: March 15, 2018

General Information:

2 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

QC Batch: 401749

S3: Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.

- 681 MT GILEAD CHURCH RD-EFF (Lab ID: 92376381001)
- Toluene-d8 (S)

Method Blank:

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

Laboratory Control Spike:

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

QC Batch: 401749

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

- LCS (Lab ID: 2228296)
- Acetone
- Methylene Chloride

Matrix Spikes:

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

QC Batch: 401749

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92376381002

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 2228298)
- Acetone

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: March 15, 2018

QC Batch: 401749

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92376381002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2228298)
 - 1,2-Dichloropropane
 - 2-Hexanone
 - 4-Methyl-2-pentanone (MIBK)
 - Vinyl chloride

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13
Pace Project No.: 92376381

Method: EPA 8260B Mod.
Description: 8260 MSV SIM
Client: NCDOT East Central
Date: March 15, 2018

General Information:

2 samples were analyzed for EPA 8260B Mod.. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

Sample: 681 MT GILEAD CHURCH RD-EFF **Lab ID: 92376381001** Collected: 03/06/18 13:15 Received: 03/09/18 14:14 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		03/13/18 13:12	67-64-1	L1
Benzene	ND	ug/L	1.0	1		03/13/18 13:12	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		03/13/18 13:12	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		03/13/18 13:12	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		03/13/18 13:12	75-27-4	
Bromoform	ND	ug/L	1.0	1		03/13/18 13:12	75-25-2	
Bromomethane	ND	ug/L	2.0	1		03/13/18 13:12	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		03/13/18 13:12	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		03/13/18 13:12	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		03/13/18 13:12	108-90-7	
Chloroethane	ND	ug/L	1.0	1		03/13/18 13:12	75-00-3	
Chloroform	ND	ug/L	1.0	1		03/13/18 13:12	67-66-3	
Chloromethane	ND	ug/L	1.0	1		03/13/18 13:12	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 13:12	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 13:12	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		03/13/18 13:12	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		03/13/18 13:12	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		03/13/18 13:12	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		03/13/18 13:12	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 13:12	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 13:12	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 13:12	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		03/13/18 13:12	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		03/13/18 13:12	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		03/13/18 13:12	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		03/13/18 13:12	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 13:12	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 13:12	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 13:12	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		03/13/18 13:12	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 13:12	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		03/13/18 13:12	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 13:12	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 13:12	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		03/13/18 13:12	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		03/13/18 13:12	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		03/13/18 13:12	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		03/13/18 13:12	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		03/13/18 13:12	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		03/13/18 13:12	75-09-2	L1
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		03/13/18 13:12	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		03/13/18 13:12	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		03/13/18 13:12	91-20-3	
Styrene	ND	ug/L	1.0	1		03/13/18 13:12	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 13:12	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 13:12	79-34-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

Sample: 681 MT GILEAD CHURCH RD-EFF **Lab ID:** 92376381001 Collected: 03/06/18 13:15 Received: 03/09/18 14:14 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Tetrachloroethene	ND	ug/L	1.0	1		03/13/18 13:12	127-18-4	
Toluene	ND	ug/L	1.0	1		03/13/18 13:12	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 13:12	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 13:12	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		03/13/18 13:12	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		03/13/18 13:12	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		03/13/18 13:12	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		03/13/18 13:12	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		03/13/18 13:12	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		03/13/18 13:12	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		03/13/18 13:12	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		03/13/18 13:12	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		03/13/18 13:12	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		03/13/18 13:12	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	94	%	70-130	1		03/13/18 13:12	460-00-4	
1,2-Dichloroethane-d4 (S)	89	%	70-130	1		03/13/18 13:12	17060-07-0	
Toluene-d8 (S)	137	%	70-130	1		03/13/18 13:12	2037-26-5	S3
8260 MSV SIM		Analytical Method: EPA 8260B Mod.						
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		03/14/18 14:15	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	111	%	50-150	1		03/14/18 14:15	17060-07-0	
Toluene-d8 (S)	108	%	50-150	1		03/14/18 14:15	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

Sample: 681 MT GILEAD CHURCH RD-INF **Lab ID: 92376381002** Collected: 03/06/18 13:25 Received: 03/09/18 14:14 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		03/13/18 14:01	67-64-1	L1,M0
Benzene	ND	ug/L	1.0	1		03/13/18 14:01	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		03/13/18 14:01	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		03/13/18 14:01	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		03/13/18 14:01	75-27-4	
Bromoform	ND	ug/L	1.0	1		03/13/18 14:01	75-25-2	
Bromomethane	ND	ug/L	2.0	1		03/13/18 14:01	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		03/13/18 14:01	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		03/13/18 14:01	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		03/13/18 14:01	108-90-7	
Chloroethane	ND	ug/L	1.0	1		03/13/18 14:01	75-00-3	
Chloroform	ND	ug/L	1.0	1		03/13/18 14:01	67-66-3	
Chloromethane	ND	ug/L	1.0	1		03/13/18 14:01	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 14:01	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 14:01	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		03/13/18 14:01	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		03/13/18 14:01	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		03/13/18 14:01	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		03/13/18 14:01	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:01	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:01	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:01	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		03/13/18 14:01	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		03/13/18 14:01	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		03/13/18 14:01	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		03/13/18 14:01	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 14:01	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 14:01	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 14:01	78-87-5	M1
1,3-Dichloropropane	ND	ug/L	1.0	1		03/13/18 14:01	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 14:01	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		03/13/18 14:01	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 14:01	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 14:01	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		03/13/18 14:01	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		03/13/18 14:01	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		03/13/18 14:01	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		03/13/18 14:01	591-78-6	M1
p-Isopropyltoluene	ND	ug/L	1.0	1		03/13/18 14:01	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		03/13/18 14:01	75-09-2	L1
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		03/13/18 14:01	108-10-1	M1
Methyl-tert-butyl ether	ND	ug/L	1.0	1		03/13/18 14:01	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		03/13/18 14:01	91-20-3	
Styrene	ND	ug/L	1.0	1		03/13/18 14:01	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 14:01	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 14:01	79-34-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

Sample: 681 MT GILEAD CHURCH RD-INF **Lab ID: 92376381002** Collected: 03/06/18 13:25 Received: 03/09/18 14:14 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Tetrachloroethene	ND	ug/L	1.0	1		03/13/18 14:01	127-18-4	
Toluene	ND	ug/L	1.0	1		03/13/18 14:01	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:01	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:01	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		03/13/18 14:01	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		03/13/18 14:01	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		03/13/18 14:01	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		03/13/18 14:01	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		03/13/18 14:01	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		03/13/18 14:01	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		03/13/18 14:01	75-01-4	M1
Xylene (Total)	ND	ug/L	1.0	1		03/13/18 14:01	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		03/13/18 14:01	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		03/13/18 14:01	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	95	%	70-130	1		03/13/18 14:01	460-00-4	
1,2-Dichloroethane-d4 (S)	91	%	70-130	1		03/13/18 14:01	17060-07-0	
Toluene-d8 (S)	114	%	70-130	1		03/13/18 14:01	2037-26-5	
8260 MSV SIM		Analytical Method: EPA 8260B Mod.						
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		03/14/18 14:34	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	110	%	50-150	1		03/14/18 14:34	17060-07-0	
Toluene-d8 (S)	106	%	50-150	1		03/14/18 14:34	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

QC Batch: 401749

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92376381001, 92376381002

METHOD BLANK: 2228295

Matrix: Water

Associated Lab Samples: 92376381001, 92376381002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1,1-Trichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1,2-Trichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1-Dichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
1,1-Dichloropropene	ug/L	ND	1.0	03/13/18 10:40	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,2,3-Trichloropropane	ug/L	ND	1.0	03/13/18 10:40	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	03/13/18 10:40	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloropropane	ug/L	ND	1.0	03/13/18 10:40	
1,3-Dichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,3-Dichloropropane	ug/L	ND	1.0	03/13/18 10:40	
1,4-Dichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
2,2-Dichloropropane	ug/L	ND	1.0	03/13/18 10:40	
2-Butanone (MEK)	ug/L	ND	5.0	03/13/18 10:40	
2-Chlorotoluene	ug/L	ND	1.0	03/13/18 10:40	
2-Hexanone	ug/L	ND	5.0	03/13/18 10:40	
4-Chlorotoluene	ug/L	ND	1.0	03/13/18 10:40	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	03/13/18 10:40	
Acetone	ug/L	ND	25.0	03/13/18 10:40	
Benzene	ug/L	ND	1.0	03/13/18 10:40	
Bromobenzene	ug/L	ND	1.0	03/13/18 10:40	
Bromochloromethane	ug/L	ND	1.0	03/13/18 10:40	
Bromodichloromethane	ug/L	ND	1.0	03/13/18 10:40	
Bromoform	ug/L	ND	1.0	03/13/18 10:40	
Bromomethane	ug/L	ND	2.0	03/13/18 10:40	
Carbon tetrachloride	ug/L	ND	1.0	03/13/18 10:40	
Chlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
Chloroethane	ug/L	ND	1.0	03/13/18 10:40	
Chloroform	ug/L	ND	1.0	03/13/18 10:40	
Chloromethane	ug/L	ND	1.0	03/13/18 10:40	
cis-1,2-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
cis-1,3-Dichloropropene	ug/L	ND	1.0	03/13/18 10:40	
Dibromochloromethane	ug/L	ND	1.0	03/13/18 10:40	
Dibromomethane	ug/L	ND	1.0	03/13/18 10:40	
Dichlorodifluoromethane	ug/L	ND	1.0	03/13/18 10:40	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

METHOD BLANK: 2228295

Matrix: Water

Associated Lab Samples: 92376381001, 92376381002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	03/13/18 10:40	
Ethylbenzene	ug/L	ND	1.0	03/13/18 10:40	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	03/13/18 10:40	
m&p-Xylene	ug/L	ND	2.0	03/13/18 10:40	
Methyl-tert-butyl ether	ug/L	ND	1.0	03/13/18 10:40	
Methylene Chloride	ug/L	ND	2.0	03/13/18 10:40	
Naphthalene	ug/L	ND	1.0	03/13/18 10:40	
o-Xylene	ug/L	ND	1.0	03/13/18 10:40	
p-Isopropyltoluene	ug/L	ND	1.0	03/13/18 10:40	
Styrene	ug/L	ND	1.0	03/13/18 10:40	
Tetrachloroethene	ug/L	ND	1.0	03/13/18 10:40	
Toluene	ug/L	ND	1.0	03/13/18 10:40	
trans-1,2-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
trans-1,3-Dichloropropene	ug/L	ND	1.0	03/13/18 10:40	
Trichloroethene	ug/L	ND	1.0	03/13/18 10:40	
Trichlorofluoromethane	ug/L	ND	1.0	03/13/18 10:40	
Vinyl acetate	ug/L	ND	2.0	03/13/18 10:40	
Vinyl chloride	ug/L	ND	1.0	03/13/18 10:40	
Xylene (Total)	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloroethane-d4 (S)	%	101	70-130	03/13/18 10:40	
4-Bromofluorobenzene (S)	%	100	70-130	03/13/18 10:40	
Toluene-d8 (S)	%	110	70-130	03/13/18 10:40	

LABORATORY CONTROL SAMPLE: 2228296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	49.8	100	80-125	
1,1,1-Trichloroethane	ug/L	50	59.7	119	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	53.2	106	79-124	
1,1,2-Trichloroethane	ug/L	50	56.3	113	85-125	
1,1-Dichloroethane	ug/L	50	56.0	112	73-126	
1,1-Dichloroethene	ug/L	50	59.4	119	66-135	
1,1-Dichloropropene	ug/L	50	56.9	114	74-135	
1,2,3-Trichlorobenzene	ug/L	50	52.1	104	73-135	
1,2,3-Trichloropropane	ug/L	50	59.0	118	75-130	
1,2,4-Trichlorobenzene	ug/L	50	54.4	109	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	55.2	110	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	53.4	107	83-124	
1,2-Dichlorobenzene	ug/L	50	52.2	104	80-133	
1,2-Dichloroethane	ug/L	50	62.4	125	67-128	
1,2-Dichloropropane	ug/L	50	64.7	129	75-132	
1,3-Dichlorobenzene	ug/L	50	53.6	107	77-130	
1,3-Dichloropropane	ug/L	50	57.6	115	76-131	
1,4-Dichlorobenzene	ug/L	50	53.1	106	78-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

LABORATORY CONTROL SAMPLE: 2228296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	58.8	118	40-160	
2-Butanone (MEK)	ug/L	100	125	125	61-144	
2-Chlorotoluene	ug/L	50	55.6	111	74-132	
2-Hexanone	ug/L	100	130	130	68-143	
4-Chlorotoluene	ug/L	50	55.4	111	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	122	122	72-135	
Acetone	ug/L	100	147	147	48-146	L1
Benzene	ug/L	50	56.5	113	80-125	
Bromobenzene	ug/L	50	52.1	104	75-125	
Bromochloromethane	ug/L	50	54.4	109	71-125	
Bromodichloromethane	ug/L	50	61.3	123	78-124	
Bromoform	ug/L	50	55.3	111	71-128	
Bromomethane	ug/L	50	36.9	74	40-160	
Carbon tetrachloride	ug/L	50	55.3	111	69-131	
Chlorobenzene	ug/L	50	53.7	107	81-122	
Chloroethane	ug/L	50	58.2	116	39-148	
Chloroform	ug/L	50	55.1	110	73-127	
Chloromethane	ug/L	50	56.6	113	44-146	
cis-1,2-Dichloroethene	ug/L	50	61.3	123	74-124	
cis-1,3-Dichloropropene	ug/L	50	63.2	126	72-132	
Dibromochloromethane	ug/L	50	54.3	109	78-125	
Dibromomethane	ug/L	50	49.9	100	82-120	
Dichlorodifluoromethane	ug/L	50	46.5	93	34-157	
Diisopropyl ether	ug/L	50	60.3	121	69-135	
Ethylbenzene	ug/L	50	54.6	109	79-121	
Hexachloro-1,3-butadiene	ug/L	50	51.0	102	72-131	
m&p-Xylene	ug/L	100	116	116	81-124	
Methyl-tert-butyl ether	ug/L	50	54.3	109	74-131	
Methylene Chloride	ug/L	50	68.7	137	64-133	L1
Naphthalene	ug/L	50	53.8	108	73-133	
o-Xylene	ug/L	50	57.9	116	79-131	
p-Isopropyltoluene	ug/L	50	55.4	111	80-131	
Styrene	ug/L	50	57.5	115	84-126	
Tetrachloroethene	ug/L	50	49.8	100	78-122	
Toluene	ug/L	50	48.9	98	80-121	
trans-1,2-Dichloroethene	ug/L	50	60.3	121	71-127	
trans-1,3-Dichloropropene	ug/L	50	61.2	122	69-141	
Trichloroethene	ug/L	50	56.3	113	78-122	
Trichlorofluoromethane	ug/L	50	46.6	93	53-137	
Vinyl acetate	ug/L	100	120	120	40-160	
Vinyl chloride	ug/L	50	60.4	121	50-150	
Xylene (Total)	ug/L	150	174	116	81-126	
1,2-Dichloroethane-d4 (S)	%			117	70-130	
4-Bromofluorobenzene (S)	%			104	70-130	
Toluene-d8 (S)	%			93	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

MATRIX SPIKE SAMPLE:	2228298	92376381002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.3	107	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	23.7	119	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	21.7	108	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	22.0	110	70-130	
1,1-Dichloroethane	ug/L	ND	20	22.6	113	70-130	
1,1-Dichloroethene	ug/L	ND	20	25.0	125	70-166	
1,1-Dichloropropene	ug/L	ND	20	21.0	105	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	23.4	117	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	24.2	121	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	22.8	114	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	24.1	121	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.4	107	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	22.1	110	70-130	
1,2-Dichloroethane	ug/L	ND	20	24.3	122	70-130	
1,2-Dichloropropane	ug/L	ND	20	26.8	134	70-130	M1
1,3-Dichlorobenzene	ug/L	ND	20	21.5	108	70-130	
1,3-Dichloropropane	ug/L	ND	20	22.5	112	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	21.8	109	70-130	
2,2-Dichloropropane	ug/L	ND	20	22.7	113	70-130	
2-Butanone (MEK)	ug/L	ND	40	51.0	127	70-130	
2-Chlorotoluene	ug/L	ND	20	23.0	115	70-130	
2-Hexanone	ug/L	ND	40	61.6	154	70-130	M1
4-Chlorotoluene	ug/L	ND	20	22.8	114	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	54.9	137	70-130	M1
Acetone	ug/L	ND	40	58.3	146	70-130	M0
Benzene	ug/L	ND	20	23.7	118	70-148	
Bromobenzene	ug/L	ND	20	21.6	108	70-130	
Bromochloromethane	ug/L	ND	20	21.0	105	70-130	
Bromodichloromethane	ug/L	ND	20	24.8	124	70-130	
Bromoform	ug/L	ND	20	20.1	100	70-130	
Bromomethane	ug/L	ND	20	15.3	77	70-130	
Carbon tetrachloride	ug/L	ND	20	24.6	123	70-130	
Chlorobenzene	ug/L	ND	20	22.6	113	70-146	
Chloroethane	ug/L	ND	20	24.4	122	70-130	
Chloroform	ug/L	ND	20	21.9	110	70-130	
Chloromethane	ug/L	ND	20	25.4	127	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	24.9	124	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	23.1	116	70-130	
Dibromochloromethane	ug/L	ND	20	20.5	103	70-130	
Dibromomethane	ug/L	ND	20	21.5	108	70-130	
Dichlorodifluoromethane	ug/L	ND	20	21.2	106	70-130	
Diisopropyl ether	ug/L	ND	20	23.6	118	70-130	
Ethylbenzene	ug/L	ND	20	23.4	117	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	23.4	117	70-130	
m&p-Xylene	ug/L	ND	40	47.4	119	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	19.9	100	70-130	
Methylene Chloride	ug/L	ND	20	25.3	127	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

MATRIX SPIKE SAMPLE: 2228298		92376381002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Naphthalene	ug/L	ND	20	24.3	121	70-130	
o-Xylene	ug/L	ND	20	23.2	116	70-130	
p-Isopropyltoluene	ug/L	ND	20	22.8	114	70-130	
Styrene	ug/L	ND	20	22.6	113	70-130	
Tetrachloroethene	ug/L	ND	20	20.9	105	70-130	
Toluene	ug/L	ND	20	21.1	106	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	24.3	122	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	23.5	118	70-130	
Trichloroethene	ug/L	ND	20	23.6	118	69-151	
Trichlorofluoromethane	ug/L	ND	20	20.9	104	70-130	
Vinyl acetate	ug/L	ND	40	42.7	107	70-130	
Vinyl chloride	ug/L	ND	20	26.3	132	70-130	M1
Xylene (Total)	ug/L	ND	60	70.7	118	70-130	
1,2-Dichloroethane-d4 (S)	%				107	70-130	
4-Bromofluorobenzene (S)	%				106	70-130	
Toluene-d8 (S)	%				97	70-130	

SAMPLE DUPLICATE: 2228297

Parameter	Units	92376381001	Dup	RPD	Qualifiers
		Result	Result		
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	ND		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	ND	ND		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

SAMPLE DUPLICATE: 2228297

Parameter	Units	92376381001 Result	Dup Result	RPD	Qualifiers
Benzene	ug/L	ND	ND		
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		
Bromomethane	ug/L	ND	ND		
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	ND		
Ethylbenzene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	ND	ND		
Methyl-tert-butyl ether	ug/L	ND	ND		
Methylene Chloride	ug/L	ND	ND		
Naphthalene	ug/L	ND	ND		
o-Xylene	ug/L	ND	ND		
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	89	95	6	
4-Bromofluorobenzene (S)	%	94	98	4	
Toluene-d8 (S)	%	137	118	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

QC Batch: 401927 Analysis Method: EPA 8260B Mod.
QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM
Associated Lab Samples: 92376381001, 92376381002

METHOD BLANK: 2229298 Matrix: Water

Associated Lab Samples: 92376381001, 92376381002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	03/14/18 13:55	
1,2-Dichloroethane-d4 (S)	%	111	50-150	03/14/18 13:55	
Toluene-d8 (S)	%	106	50-150	03/14/18 13:55	

LABORATORY CONTROL SAMPLE: 2229299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	19.7	99	71-125	
1,2-Dichloroethane-d4 (S)	%			114	50-150	
Toluene-d8 (S)	%			109	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2229300 2229301

Parameter	Units	92376382001		MS	MSD	MS	MSD	MS	MSD	% Rec	RPD	Qual
		Result	Conc.	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec	Limits		
1,4-Dioxane (p-Dioxane)	ug/L	ND	20	20	20	18.3	18.9	91	95	50-150	3	
1,2-Dichloroethane-d4 (S)	%							113	115	50-150		
Toluene-d8 (S)	%							110	113	50-150		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

- | | |
|----|---|
| L1 | Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high. |
| M0 | Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| S3 | Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample. |

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT 515 34613.3.13

Pace Project No.: 92376381

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92376381001	681 MT GILEAD CHURCH RD-EFF	EPA 8260	401749		
92376381002	681 MT GILEAD CHURCH RD-INF	EPA 8260	401749		
92376381001	681 MT GILEAD CHURCH RD-EFF	EPA 8260B Mod.	401927		
92376381002	681 MT GILEAD CHURCH RD-INF	EPA 8260B Mod.	401927		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name: Hart & Hickman

Project #: **WO# : 92376381**



Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: 103-918

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen? Yes No N/A

Thermometer: IR Gun ID: 92T036 Type of Ice: Wet Blue None

Cooler Temp (°C): 2.2 Correction Factor: Add/Subtract (°C) +0.1

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 2.3

USDA Regulated Soil N/A, water sample

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
Headspace in VOA Vials (>5-6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? Yes No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: [Signature]

Date: 3/9/18

Project Manager SRF Review: [Signature]

Date: 3/9/18



Document Name:
Sample Condition Upon Receipt(SCUR)

Document Revised: February 7, 2018
Page 1 of 2

Document No.:
F-CAR-CS-033-Rev.06

Issuing Authority:
Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project # **WO# : 92376381**

PM: KRG

Due Date: 03/16/18

CLIENT: 92-NCDOTEAST

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)		
1																													
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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).

Divider
Page

March 14, 2018

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

RE: Project: DOT 515 34613.3.13
Pace Project No.: 92376379

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on March 09, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92376379001	TRIP BLANK	EPA 8260	GAW	63	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: March 14, 2018

General Information:

1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

QC Batch: 401749

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

- LCS (Lab ID: 2228296)
 - Acetone
 - Methylene Chloride

Matrix Spikes:

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

QC Batch: 401749

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92376381002

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 2228298)
 - Acetone

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2228298)
 - 1,2-Dichloropropane
 - 2-Hexanone

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: March 14, 2018

QC Batch: 401749

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92376381002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- 4-Methyl-2-pentanone (MIBK)
- Vinyl chloride

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Sample: TRIP BLANK	Lab ID: 92376379001	Collected: 03/09/18 00:00	Received: 03/09/18 14:14	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		03/13/18 12:38	67-64-1	L1
Benzene	ND	ug/L	1.0	1		03/13/18 12:38	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		03/13/18 12:38	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		03/13/18 12:38	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		03/13/18 12:38	75-27-4	
Bromoform	ND	ug/L	1.0	1		03/13/18 12:38	75-25-2	
Bromomethane	ND	ug/L	2.0	1		03/13/18 12:38	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		03/13/18 12:38	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		03/13/18 12:38	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	108-90-7	
Chloroethane	ND	ug/L	1.0	1		03/13/18 12:38	75-00-3	
Chloroform	ND	ug/L	1.0	1		03/13/18 12:38	67-66-3	
Chloromethane	ND	ug/L	1.0	1		03/13/18 12:38	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 12:38	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 12:38	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		03/13/18 12:38	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		03/13/18 12:38	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		03/13/18 12:38	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		03/13/18 12:38	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		03/13/18 12:38	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		03/13/18 12:38	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		03/13/18 12:38	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		03/13/18 12:38	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 12:38	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 12:38	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 12:38	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		03/13/18 12:38	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 12:38	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		03/13/18 12:38	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 12:38	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 12:38	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		03/13/18 12:38	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		03/13/18 12:38	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		03/13/18 12:38	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		03/13/18 12:38	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		03/13/18 12:38	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		03/13/18 12:38	75-09-2	L1
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		03/13/18 12:38	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		03/13/18 12:38	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		03/13/18 12:38	91-20-3	
Styrene	ND	ug/L	1.0	1		03/13/18 12:38	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 12:38	630-20-6	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 12:38	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		03/13/18 12:38	127-18-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Sample: TRIP BLANK	Lab ID: 92376379001	Collected: 03/09/18 00:00	Received: 03/09/18 14:14	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Toluene	ND	ug/L	1.0	1		03/13/18 12:38	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		03/13/18 12:38	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		03/13/18 12:38	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		03/13/18 12:38	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		03/13/18 12:38	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		03/13/18 12:38	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		03/13/18 12:38	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		03/13/18 12:38	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		03/13/18 12:38	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		03/13/18 12:38	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		03/13/18 12:38	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	96	%	70-130	1		03/13/18 12:38	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		03/13/18 12:38	17060-07-0	
Toluene-d8 (S)	114	%	70-130	1		03/13/18 12:38	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13
Pace Project No.: 92376379

QC Batch: 401749 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92376379001

METHOD BLANK: 2228295 Matrix: Water
Associated Lab Samples: 92376379001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1,1-Trichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1,2-Trichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1-Dichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
1,1-Dichloropropene	ug/L	ND	1.0	03/13/18 10:40	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,2,3-Trichloropropane	ug/L	ND	1.0	03/13/18 10:40	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	03/13/18 10:40	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloropropane	ug/L	ND	1.0	03/13/18 10:40	
1,3-Dichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,3-Dichloropropane	ug/L	ND	1.0	03/13/18 10:40	
1,4-Dichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
2,2-Dichloropropane	ug/L	ND	1.0	03/13/18 10:40	
2-Butanone (MEK)	ug/L	ND	5.0	03/13/18 10:40	
2-Chlorotoluene	ug/L	ND	1.0	03/13/18 10:40	
2-Hexanone	ug/L	ND	5.0	03/13/18 10:40	
4-Chlorotoluene	ug/L	ND	1.0	03/13/18 10:40	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	03/13/18 10:40	
Acetone	ug/L	ND	25.0	03/13/18 10:40	
Benzene	ug/L	ND	1.0	03/13/18 10:40	
Bromobenzene	ug/L	ND	1.0	03/13/18 10:40	
Bromochloromethane	ug/L	ND	1.0	03/13/18 10:40	
Bromodichloromethane	ug/L	ND	1.0	03/13/18 10:40	
Bromoform	ug/L	ND	1.0	03/13/18 10:40	
Bromomethane	ug/L	ND	2.0	03/13/18 10:40	
Carbon tetrachloride	ug/L	ND	1.0	03/13/18 10:40	
Chlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
Chloroethane	ug/L	ND	1.0	03/13/18 10:40	
Chloroform	ug/L	ND	1.0	03/13/18 10:40	
Chloromethane	ug/L	ND	1.0	03/13/18 10:40	
cis-1,2-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
cis-1,3-Dichloropropene	ug/L	ND	1.0	03/13/18 10:40	
Dibromochloromethane	ug/L	ND	1.0	03/13/18 10:40	
Dibromomethane	ug/L	ND	1.0	03/13/18 10:40	
Dichlorodifluoromethane	ug/L	ND	1.0	03/13/18 10:40	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

METHOD BLANK: 2228295

Matrix: Water

Associated Lab Samples: 92376379001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	03/13/18 10:40	
Ethylbenzene	ug/L	ND	1.0	03/13/18 10:40	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	03/13/18 10:40	
m&p-Xylene	ug/L	ND	2.0	03/13/18 10:40	
Methyl-tert-butyl ether	ug/L	ND	1.0	03/13/18 10:40	
Methylene Chloride	ug/L	ND	2.0	03/13/18 10:40	
Naphthalene	ug/L	ND	1.0	03/13/18 10:40	
o-Xylene	ug/L	ND	1.0	03/13/18 10:40	
p-Isopropyltoluene	ug/L	ND	1.0	03/13/18 10:40	
Styrene	ug/L	ND	1.0	03/13/18 10:40	
Tetrachloroethene	ug/L	ND	1.0	03/13/18 10:40	
Toluene	ug/L	ND	1.0	03/13/18 10:40	
trans-1,2-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
trans-1,3-Dichloropropene	ug/L	ND	1.0	03/13/18 10:40	
Trichloroethene	ug/L	ND	1.0	03/13/18 10:40	
Trichlorofluoromethane	ug/L	ND	1.0	03/13/18 10:40	
Vinyl acetate	ug/L	ND	2.0	03/13/18 10:40	
Vinyl chloride	ug/L	ND	1.0	03/13/18 10:40	
Xylene (Total)	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloroethane-d4 (S)	%	101	70-130	03/13/18 10:40	
4-Bromofluorobenzene (S)	%	100	70-130	03/13/18 10:40	
Toluene-d8 (S)	%	110	70-130	03/13/18 10:40	

LABORATORY CONTROL SAMPLE: 2228296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	49.8	100	80-125	
1,1,1-Trichloroethane	ug/L	50	59.7	119	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	53.2	106	79-124	
1,1,2-Trichloroethane	ug/L	50	56.3	113	85-125	
1,1-Dichloroethane	ug/L	50	56.0	112	73-126	
1,1-Dichloroethene	ug/L	50	59.4	119	66-135	
1,1-Dichloropropene	ug/L	50	56.9	114	74-135	
1,2,3-Trichlorobenzene	ug/L	50	52.1	104	73-135	
1,2,3-Trichloropropane	ug/L	50	59.0	118	75-130	
1,2,4-Trichlorobenzene	ug/L	50	54.4	109	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	55.2	110	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	53.4	107	83-124	
1,2-Dichlorobenzene	ug/L	50	52.2	104	80-133	
1,2-Dichloroethane	ug/L	50	62.4	125	67-128	
1,2-Dichloropropane	ug/L	50	64.7	129	75-132	
1,3-Dichlorobenzene	ug/L	50	53.6	107	77-130	
1,3-Dichloropropane	ug/L	50	57.6	115	76-131	
1,4-Dichlorobenzene	ug/L	50	53.1	106	78-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

LABORATORY CONTROL SAMPLE: 2228296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	58.8	118	40-160	
2-Butanone (MEK)	ug/L	100	125	125	61-144	
2-Chlorotoluene	ug/L	50	55.6	111	74-132	
2-Hexanone	ug/L	100	130	130	68-143	
4-Chlorotoluene	ug/L	50	55.4	111	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	122	122	72-135	
Acetone	ug/L	100	147	147	48-146	L1
Benzene	ug/L	50	56.5	113	80-125	
Bromobenzene	ug/L	50	52.1	104	75-125	
Bromochloromethane	ug/L	50	54.4	109	71-125	
Bromodichloromethane	ug/L	50	61.3	123	78-124	
Bromoform	ug/L	50	55.3	111	71-128	
Bromomethane	ug/L	50	36.9	74	40-160	
Carbon tetrachloride	ug/L	50	55.3	111	69-131	
Chlorobenzene	ug/L	50	53.7	107	81-122	
Chloroethane	ug/L	50	58.2	116	39-148	
Chloroform	ug/L	50	55.1	110	73-127	
Chloromethane	ug/L	50	56.6	113	44-146	
cis-1,2-Dichloroethene	ug/L	50	61.3	123	74-124	
cis-1,3-Dichloropropene	ug/L	50	63.2	126	72-132	
Dibromochloromethane	ug/L	50	54.3	109	78-125	
Dibromomethane	ug/L	50	49.9	100	82-120	
Dichlorodifluoromethane	ug/L	50	46.5	93	34-157	
Diisopropyl ether	ug/L	50	60.3	121	69-135	
Ethylbenzene	ug/L	50	54.6	109	79-121	
Hexachloro-1,3-butadiene	ug/L	50	51.0	102	72-131	
m&p-Xylene	ug/L	100	116	116	81-124	
Methyl-tert-butyl ether	ug/L	50	54.3	109	74-131	
Methylene Chloride	ug/L	50	68.7	137	64-133	L1
Naphthalene	ug/L	50	53.8	108	73-133	
o-Xylene	ug/L	50	57.9	116	79-131	
p-Isopropyltoluene	ug/L	50	55.4	111	80-131	
Styrene	ug/L	50	57.5	115	84-126	
Tetrachloroethene	ug/L	50	49.8	100	78-122	
Toluene	ug/L	50	48.9	98	80-121	
trans-1,2-Dichloroethene	ug/L	50	60.3	121	71-127	
trans-1,3-Dichloropropene	ug/L	50	61.2	122	69-141	
Trichloroethene	ug/L	50	56.3	113	78-122	
Trichlorofluoromethane	ug/L	50	46.6	93	53-137	
Vinyl acetate	ug/L	100	120	120	40-160	
Vinyl chloride	ug/L	50	60.4	121	50-150	
Xylene (Total)	ug/L	150	174	116	81-126	
1,2-Dichloroethane-d4 (S)	%			117	70-130	
4-Bromofluorobenzene (S)	%			104	70-130	
Toluene-d8 (S)	%			93	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

MATRIX SPIKE SAMPLE:	2228298	92376381002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.3	107	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	23.7	119	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	21.7	108	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	22.0	110	70-130	
1,1-Dichloroethane	ug/L	ND	20	22.6	113	70-130	
1,1-Dichloroethene	ug/L	ND	20	25.0	125	70-166	
1,1-Dichloropropene	ug/L	ND	20	21.0	105	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	23.4	117	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	24.2	121	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	22.8	114	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	24.1	121	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.4	107	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	22.1	110	70-130	
1,2-Dichloroethane	ug/L	ND	20	24.3	122	70-130	
1,2-Dichloropropane	ug/L	ND	20	26.8	134	70-130	M1
1,3-Dichlorobenzene	ug/L	ND	20	21.5	108	70-130	
1,3-Dichloropropane	ug/L	ND	20	22.5	112	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	21.8	109	70-130	
2,2-Dichloropropane	ug/L	ND	20	22.7	113	70-130	
2-Butanone (MEK)	ug/L	ND	40	51.0	127	70-130	
2-Chlorotoluene	ug/L	ND	20	23.0	115	70-130	
2-Hexanone	ug/L	ND	40	61.6	154	70-130	M1
4-Chlorotoluene	ug/L	ND	20	22.8	114	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	54.9	137	70-130	M1
Acetone	ug/L	ND	40	58.3	146	70-130	M0
Benzene	ug/L	ND	20	23.7	118	70-148	
Bromobenzene	ug/L	ND	20	21.6	108	70-130	
Bromochloromethane	ug/L	ND	20	21.0	105	70-130	
Bromodichloromethane	ug/L	ND	20	24.8	124	70-130	
Bromoform	ug/L	ND	20	20.1	100	70-130	
Bromomethane	ug/L	ND	20	15.3	77	70-130	
Carbon tetrachloride	ug/L	ND	20	24.6	123	70-130	
Chlorobenzene	ug/L	ND	20	22.6	113	70-146	
Chloroethane	ug/L	ND	20	24.4	122	70-130	
Chloroform	ug/L	ND	20	21.9	110	70-130	
Chloromethane	ug/L	ND	20	25.4	127	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	24.9	124	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	23.1	116	70-130	
Dibromochloromethane	ug/L	ND	20	20.5	103	70-130	
Dibromomethane	ug/L	ND	20	21.5	108	70-130	
Dichlorodifluoromethane	ug/L	ND	20	21.2	106	70-130	
Diisopropyl ether	ug/L	ND	20	23.6	118	70-130	
Ethylbenzene	ug/L	ND	20	23.4	117	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	23.4	117	70-130	
m&p-Xylene	ug/L	ND	40	47.4	119	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	19.9	100	70-130	
Methylene Chloride	ug/L	ND	20	25.3	127	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13
Pace Project No.: 92376379

MATRIX SPIKE SAMPLE: 2228298		92376381002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Naphthalene	ug/L	ND	20	24.3	121	70-130	
o-Xylene	ug/L	ND	20	23.2	116	70-130	
p-Isopropyltoluene	ug/L	ND	20	22.8	114	70-130	
Styrene	ug/L	ND	20	22.6	113	70-130	
Tetrachloroethene	ug/L	ND	20	20.9	105	70-130	
Toluene	ug/L	ND	20	21.1	106	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	24.3	122	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	23.5	118	70-130	
Trichloroethene	ug/L	ND	20	23.6	118	69-151	
Trichlorofluoromethane	ug/L	ND	20	20.9	104	70-130	
Vinyl acetate	ug/L	ND	40	42.7	107	70-130	
Vinyl chloride	ug/L	ND	20	26.3	132	70-130	M1
Xylene (Total)	ug/L	ND	60	70.7	118	70-130	
1,2-Dichloroethane-d4 (S)	%				107	70-130	
4-Bromofluorobenzene (S)	%				106	70-130	
Toluene-d8 (S)	%				97	70-130	

SAMPLE DUPLICATE: 2228297

Parameter	Units	92376381001	Dup	RPD	Qualifiers
		Result	Result		
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	ND		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	ND	ND		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

SAMPLE DUPLICATE: 2228297

Parameter	Units	92376381001 Result	Dup Result	RPD	Qualifiers
Benzene	ug/L	ND	ND		
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		
Bromomethane	ug/L	ND	ND		
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	ND		
Ethylbenzene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	ND	ND		
Methyl-tert-butyl ether	ug/L	ND	ND		
Methylene Chloride	ug/L	ND	ND		
Naphthalene	ug/L	ND	ND		
o-Xylene	ug/L	ND	ND		
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	89	95	6	
4-Bromofluorobenzene (S)	%	94	98	4	
Toluene-d8 (S)	%	137	118	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

L1 Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92376379001	TRIP BLANK	EPA 8260	401749		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

WO# : 92376379



Date/Initials Person Examining Contents: UD 3-9-18

Sample Condition Upon Receipt

Client Name: Hart & Hickman

Project #:

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Custody Seal Present? Yes No Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer: IR Gun ID: 92T036 Type of Ice: Wet Blue None

Biological Tissue Frozen? Yes No N/A

Cooler Temp (°C): 2.2 Correction Factor: Add/Subtract (°C) +0.1

Cooler Temp Corrected (°C): 2.3

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

USDA Regulated Soil N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

Yes No

			Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Samples Arrived within Hold Time?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Sufficient Volume?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.	
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.	
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	<u>No info on trip blanks</u>
-Includes Date/Time/ID/Analysis Matrix:	<u>WT</u>		
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.	
Trip Blank Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? Yes No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Samples submitted with TRIP blank were all collected on 3/6/18. KG. 92376382 & 92376381.

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: JS

Date: 3/9/18

Project Manager SRF Review: JS

Date: 3/9/18

***Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.**

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

****Bottom half of box is to list number of bottle**

Project #

WO# : 92376379

PM: KRG

Due Date: 03/16/18

CLIENT: 92-NCDOTEAST

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (C-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (C-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic 2N Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (C-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (C-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (C-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(C-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SPST-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)	
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

2

pH Adjustment Log for Preserved Samples						
Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

771

Via US Mail

March 16, 2018

Erica and Mark Sanders
771 Mt. Gilead Church Rd.
Pittsboro, NC 27312

Re: March 2018 Water Supply Sampling Results
Pittsboro, NC
H&H Job No. DOT-515

Dear Mr. and Mrs. Sanders:

On behalf of the North Carolina Department of Transportation, Hart and Hickman, PC (H&H) is providing this letter to document the results of the water supply well sampling conducted at your residence at 771 Mt. Gilead Church Rd on March 6, 2018. A point of entry carbon treatment system was installed on this water supply well in September 2013 as a precautionary measure. During the March 6, 2018 sampling event, H&H personnel collected a pre-treatment system water sample (sample identified as 771 MT. GILEAD CHURCH RD-INF) and a post-treatment water sample (sample identified as 771 MT. GILEAD CHRUCH RD-EFF). The samples were collected in laboratory-supplied sample containers and submitted to Pace Analytical Services Inc. for analysis of certain volatile organic compounds (VOCs). A quality control sample labeled trip blank was also analyzed.

The results of the laboratory analyses indicate that target compounds were not present above laboratory reporting limits in the pre-treatment water sample or the post-treatment water sample. No compounds were detected in the quality control trip blank sample. The laboratory reports documenting the results are attached for your reference. The next sampling event is scheduled for June 2018.

Mr. and Mrs. Sanders
March 16, 2018
Page 2 of 2

If you have any questions, please do not hesitate to contact us at (704) 586-0007.

Very truly yours,

Hart & Hickman, PC



Greg Kanellis, PE
Senior Project Engineer



Matt Bramblett, PE
Principal

Attachment: Laboratory Analytical Results

Cc: Mr. Jason Prosser, NCDOT (Via Email)
Mr. Layton Long, Chatham County Health Dept. (Via Email)
Ms. Stephanie Grubbs, NC DEQ (Via Email)

Divider
Page

March 15, 2018

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

RE: Project: DOT 515 34613.3.13
Pace Project No.: 92376382

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on March 09, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92376382001	771 MT GILEAD CHURCH RD-EFF	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92376382002	771 MT GILEAD CHURCH RD-INF	EPA 8260	GAW	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: March 15, 2018

General Information:

2 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

QC Batch: 401749

S3: Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.

- 771 MT GILEAD CHURCH RD-EFF (Lab ID: 92376382001)
- Toluene-d8 (S)

Method Blank:

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

Laboratory Control Spike:

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

QC Batch: 401749

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

- LCS (Lab ID: 2228296)
- Acetone
- Methylene Chloride

Matrix Spikes:

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

QC Batch: 401749

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92376381002

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 2228298)
- Acetone

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: March 15, 2018

QC Batch: 401749

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92376381002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2228298)
 - 1,2-Dichloropropane
 - 2-Hexanone
 - 4-Methyl-2-pentanone (MIBK)
 - Vinyl chloride

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13
Pace Project No.: 92376382

Method: EPA 8260B Mod.
Description: 8260 MSV SIM
Client: NCDOT East Central
Date: March 15, 2018

General Information:

2 samples were analyzed for EPA 8260B Mod.. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

Sample: 771 MT GILEAD CHURCH RD-EFF **Lab ID: 92376382001** Collected: 03/06/18 12:10 Received: 03/09/18 14:14 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		03/13/18 14:18	67-64-1	L1
Benzene	ND	ug/L	1.0	1		03/13/18 14:18	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		03/13/18 14:18	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		03/13/18 14:18	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		03/13/18 14:18	75-27-4	
Bromoform	ND	ug/L	1.0	1		03/13/18 14:18	75-25-2	
Bromomethane	ND	ug/L	2.0	1		03/13/18 14:18	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		03/13/18 14:18	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		03/13/18 14:18	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		03/13/18 14:18	108-90-7	
Chloroethane	ND	ug/L	1.0	1		03/13/18 14:18	75-00-3	
Chloroform	ND	ug/L	1.0	1		03/13/18 14:18	67-66-3	
Chloromethane	ND	ug/L	1.0	1		03/13/18 14:18	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 14:18	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 14:18	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		03/13/18 14:18	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		03/13/18 14:18	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		03/13/18 14:18	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		03/13/18 14:18	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:18	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:18	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:18	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		03/13/18 14:18	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		03/13/18 14:18	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		03/13/18 14:18	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		03/13/18 14:18	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 14:18	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 14:18	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 14:18	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		03/13/18 14:18	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 14:18	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		03/13/18 14:18	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 14:18	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 14:18	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		03/13/18 14:18	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		03/13/18 14:18	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		03/13/18 14:18	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		03/13/18 14:18	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		03/13/18 14:18	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		03/13/18 14:18	75-09-2	L1
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		03/13/18 14:18	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		03/13/18 14:18	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		03/13/18 14:18	91-20-3	
Styrene	ND	ug/L	1.0	1		03/13/18 14:18	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 14:18	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 14:18	79-34-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

Sample: 771 MT GILEAD CHURCH RD-EFF **Lab ID: 92376382001** Collected: 03/06/18 12:10 Received: 03/09/18 14:14 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Tetrachloroethene	ND	ug/L	1.0	1		03/13/18 14:18	127-18-4	
Toluene	ND	ug/L	1.0	1		03/13/18 14:18	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:18	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:18	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		03/13/18 14:18	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		03/13/18 14:18	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		03/13/18 14:18	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		03/13/18 14:18	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		03/13/18 14:18	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		03/13/18 14:18	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		03/13/18 14:18	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		03/13/18 14:18	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		03/13/18 14:18	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		03/13/18 14:18	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	93	%	70-130	1		03/13/18 14:18	460-00-4	
1,2-Dichloroethane-d4 (S)	82	%	70-130	1		03/13/18 14:18	17060-07-0	
Toluene-d8 (S)	139	%	70-130	1		03/13/18 14:18	2037-26-5	S3
8260 MSV SIM		Analytical Method: EPA 8260B Mod.						
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		03/14/18 14:54	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	108	%	50-150	1		03/14/18 14:54	17060-07-0	
Toluene-d8 (S)	107	%	50-150	1		03/14/18 14:54	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

Sample: 771 MT GILEAD CHURCH RD-INF **Lab ID: 92376382002** Collected: 03/06/18 12:25 Received: 03/09/18 14:14 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		03/13/18 14:35	67-64-1	L1
Benzene	ND	ug/L	1.0	1		03/13/18 14:35	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		03/13/18 14:35	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		03/13/18 14:35	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		03/13/18 14:35	75-27-4	
Bromoform	ND	ug/L	1.0	1		03/13/18 14:35	75-25-2	
Bromomethane	ND	ug/L	2.0	1		03/13/18 14:35	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		03/13/18 14:35	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		03/13/18 14:35	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		03/13/18 14:35	108-90-7	
Chloroethane	ND	ug/L	1.0	1		03/13/18 14:35	75-00-3	
Chloroform	ND	ug/L	1.0	1		03/13/18 14:35	67-66-3	
Chloromethane	ND	ug/L	1.0	1		03/13/18 14:35	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 14:35	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 14:35	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		03/13/18 14:35	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		03/13/18 14:35	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		03/13/18 14:35	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		03/13/18 14:35	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:35	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:35	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:35	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		03/13/18 14:35	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		03/13/18 14:35	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		03/13/18 14:35	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		03/13/18 14:35	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 14:35	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 14:35	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 14:35	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		03/13/18 14:35	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 14:35	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		03/13/18 14:35	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 14:35	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 14:35	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		03/13/18 14:35	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		03/13/18 14:35	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		03/13/18 14:35	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		03/13/18 14:35	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		03/13/18 14:35	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		03/13/18 14:35	75-09-2	L1
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		03/13/18 14:35	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		03/13/18 14:35	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		03/13/18 14:35	91-20-3	
Styrene	ND	ug/L	1.0	1		03/13/18 14:35	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 14:35	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 14:35	79-34-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

Sample: 771 MT GILEAD CHURCH RD-INF **Lab ID: 92376382002** Collected: 03/06/18 12:25 Received: 03/09/18 14:14 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Tetrachloroethene	ND	ug/L	1.0	1		03/13/18 14:35	127-18-4	
Toluene	ND	ug/L	1.0	1		03/13/18 14:35	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:35	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 14:35	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		03/13/18 14:35	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		03/13/18 14:35	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		03/13/18 14:35	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		03/13/18 14:35	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		03/13/18 14:35	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		03/13/18 14:35	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		03/13/18 14:35	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		03/13/18 14:35	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		03/13/18 14:35	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		03/13/18 14:35	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	96	%	70-130	1		03/13/18 14:35	460-00-4	
1,2-Dichloroethane-d4 (S)	93	%	70-130	1		03/13/18 14:35	17060-07-0	
Toluene-d8 (S)	121	%	70-130	1		03/13/18 14:35	2037-26-5	
8260 MSV SIM		Analytical Method: EPA 8260B Mod.						
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		03/14/18 15:53	123-91-1	
Surrogates								
1,2-Dichloroethane-d4 (S)	122	%	50-150	1		03/14/18 15:53	17060-07-0	
Toluene-d8 (S)	116	%	50-150	1		03/14/18 15:53	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

QC Batch: 401749

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92376382001, 92376382002

METHOD BLANK: 2228295

Matrix: Water

Associated Lab Samples: 92376382001, 92376382002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1,1-Trichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1,2-Trichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1-Dichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,1-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
1,1-Dichloropropene	ug/L	ND	1.0	03/13/18 10:40	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,2,3-Trichloropropane	ug/L	ND	1.0	03/13/18 10:40	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	03/13/18 10:40	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloroethane	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloropropane	ug/L	ND	1.0	03/13/18 10:40	
1,3-Dichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
1,3-Dichloropropane	ug/L	ND	1.0	03/13/18 10:40	
1,4-Dichlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
2,2-Dichloropropane	ug/L	ND	1.0	03/13/18 10:40	
2-Butanone (MEK)	ug/L	ND	5.0	03/13/18 10:40	
2-Chlorotoluene	ug/L	ND	1.0	03/13/18 10:40	
2-Hexanone	ug/L	ND	5.0	03/13/18 10:40	
4-Chlorotoluene	ug/L	ND	1.0	03/13/18 10:40	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	03/13/18 10:40	
Acetone	ug/L	ND	25.0	03/13/18 10:40	
Benzene	ug/L	ND	1.0	03/13/18 10:40	
Bromobenzene	ug/L	ND	1.0	03/13/18 10:40	
Bromochloromethane	ug/L	ND	1.0	03/13/18 10:40	
Bromodichloromethane	ug/L	ND	1.0	03/13/18 10:40	
Bromoform	ug/L	ND	1.0	03/13/18 10:40	
Bromomethane	ug/L	ND	2.0	03/13/18 10:40	
Carbon tetrachloride	ug/L	ND	1.0	03/13/18 10:40	
Chlorobenzene	ug/L	ND	1.0	03/13/18 10:40	
Chloroethane	ug/L	ND	1.0	03/13/18 10:40	
Chloroform	ug/L	ND	1.0	03/13/18 10:40	
Chloromethane	ug/L	ND	1.0	03/13/18 10:40	
cis-1,2-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
cis-1,3-Dichloropropene	ug/L	ND	1.0	03/13/18 10:40	
Dibromochloromethane	ug/L	ND	1.0	03/13/18 10:40	
Dibromomethane	ug/L	ND	1.0	03/13/18 10:40	
Dichlorodifluoromethane	ug/L	ND	1.0	03/13/18 10:40	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

METHOD BLANK: 2228295

Matrix: Water

Associated Lab Samples: 92376382001, 92376382002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	03/13/18 10:40	
Ethylbenzene	ug/L	ND	1.0	03/13/18 10:40	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	03/13/18 10:40	
m&p-Xylene	ug/L	ND	2.0	03/13/18 10:40	
Methyl-tert-butyl ether	ug/L	ND	1.0	03/13/18 10:40	
Methylene Chloride	ug/L	ND	2.0	03/13/18 10:40	
Naphthalene	ug/L	ND	1.0	03/13/18 10:40	
o-Xylene	ug/L	ND	1.0	03/13/18 10:40	
p-Isopropyltoluene	ug/L	ND	1.0	03/13/18 10:40	
Styrene	ug/L	ND	1.0	03/13/18 10:40	
Tetrachloroethene	ug/L	ND	1.0	03/13/18 10:40	
Toluene	ug/L	ND	1.0	03/13/18 10:40	
trans-1,2-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
trans-1,3-Dichloropropene	ug/L	ND	1.0	03/13/18 10:40	
Trichloroethene	ug/L	ND	1.0	03/13/18 10:40	
Trichlorofluoromethane	ug/L	ND	1.0	03/13/18 10:40	
Vinyl acetate	ug/L	ND	2.0	03/13/18 10:40	
Vinyl chloride	ug/L	ND	1.0	03/13/18 10:40	
Xylene (Total)	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloroethane-d4 (S)	%	101	70-130	03/13/18 10:40	
4-Bromofluorobenzene (S)	%	100	70-130	03/13/18 10:40	
Toluene-d8 (S)	%	110	70-130	03/13/18 10:40	

LABORATORY CONTROL SAMPLE: 2228296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	49.8	100	80-125	
1,1,1-Trichloroethane	ug/L	50	59.7	119	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	53.2	106	79-124	
1,1,2-Trichloroethane	ug/L	50	56.3	113	85-125	
1,1-Dichloroethane	ug/L	50	56.0	112	73-126	
1,1-Dichloroethene	ug/L	50	59.4	119	66-135	
1,1-Dichloropropene	ug/L	50	56.9	114	74-135	
1,2,3-Trichlorobenzene	ug/L	50	52.1	104	73-135	
1,2,3-Trichloropropane	ug/L	50	59.0	118	75-130	
1,2,4-Trichlorobenzene	ug/L	50	54.4	109	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	55.2	110	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	53.4	107	83-124	
1,2-Dichlorobenzene	ug/L	50	52.2	104	80-133	
1,2-Dichloroethane	ug/L	50	62.4	125	67-128	
1,2-Dichloropropane	ug/L	50	64.7	129	75-132	
1,3-Dichlorobenzene	ug/L	50	53.6	107	77-130	
1,3-Dichloropropane	ug/L	50	57.6	115	76-131	
1,4-Dichlorobenzene	ug/L	50	53.1	106	78-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

LABORATORY CONTROL SAMPLE: 2228296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	58.8	118	40-160	
2-Butanone (MEK)	ug/L	100	125	125	61-144	
2-Chlorotoluene	ug/L	50	55.6	111	74-132	
2-Hexanone	ug/L	100	130	130	68-143	
4-Chlorotoluene	ug/L	50	55.4	111	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	122	122	72-135	
Acetone	ug/L	100	147	147	48-146	L1
Benzene	ug/L	50	56.5	113	80-125	
Bromobenzene	ug/L	50	52.1	104	75-125	
Bromochloromethane	ug/L	50	54.4	109	71-125	
Bromodichloromethane	ug/L	50	61.3	123	78-124	
Bromoform	ug/L	50	55.3	111	71-128	
Bromomethane	ug/L	50	36.9	74	40-160	
Carbon tetrachloride	ug/L	50	55.3	111	69-131	
Chlorobenzene	ug/L	50	53.7	107	81-122	
Chloroethane	ug/L	50	58.2	116	39-148	
Chloroform	ug/L	50	55.1	110	73-127	
Chloromethane	ug/L	50	56.6	113	44-146	
cis-1,2-Dichloroethene	ug/L	50	61.3	123	74-124	
cis-1,3-Dichloropropene	ug/L	50	63.2	126	72-132	
Dibromochloromethane	ug/L	50	54.3	109	78-125	
Dibromomethane	ug/L	50	49.9	100	82-120	
Dichlorodifluoromethane	ug/L	50	46.5	93	34-157	
Diisopropyl ether	ug/L	50	60.3	121	69-135	
Ethylbenzene	ug/L	50	54.6	109	79-121	
Hexachloro-1,3-butadiene	ug/L	50	51.0	102	72-131	
m&p-Xylene	ug/L	100	116	116	81-124	
Methyl-tert-butyl ether	ug/L	50	54.3	109	74-131	
Methylene Chloride	ug/L	50	68.7	137	64-133	L1
Naphthalene	ug/L	50	53.8	108	73-133	
o-Xylene	ug/L	50	57.9	116	79-131	
p-Isopropyltoluene	ug/L	50	55.4	111	80-131	
Styrene	ug/L	50	57.5	115	84-126	
Tetrachloroethene	ug/L	50	49.8	100	78-122	
Toluene	ug/L	50	48.9	98	80-121	
trans-1,2-Dichloroethene	ug/L	50	60.3	121	71-127	
trans-1,3-Dichloropropene	ug/L	50	61.2	122	69-141	
Trichloroethene	ug/L	50	56.3	113	78-122	
Trichlorofluoromethane	ug/L	50	46.6	93	53-137	
Vinyl acetate	ug/L	100	120	120	40-160	
Vinyl chloride	ug/L	50	60.4	121	50-150	
Xylene (Total)	ug/L	150	174	116	81-126	
1,2-Dichloroethane-d4 (S)	%			117	70-130	
4-Bromofluorobenzene (S)	%			104	70-130	
Toluene-d8 (S)	%			93	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

MATRIX SPIKE SAMPLE:	2228298	92376381002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.3	107	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	23.7	119	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	21.7	108	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	22.0	110	70-130	
1,1-Dichloroethane	ug/L	ND	20	22.6	113	70-130	
1,1-Dichloroethene	ug/L	ND	20	25.0	125	70-166	
1,1-Dichloropropene	ug/L	ND	20	21.0	105	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	23.4	117	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	24.2	121	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	22.8	114	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	24.1	121	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.4	107	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	22.1	110	70-130	
1,2-Dichloroethane	ug/L	ND	20	24.3	122	70-130	
1,2-Dichloropropane	ug/L	ND	20	26.8	134	70-130	M1
1,3-Dichlorobenzene	ug/L	ND	20	21.5	108	70-130	
1,3-Dichloropropane	ug/L	ND	20	22.5	112	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	21.8	109	70-130	
2,2-Dichloropropane	ug/L	ND	20	22.7	113	70-130	
2-Butanone (MEK)	ug/L	ND	40	51.0	127	70-130	
2-Chlorotoluene	ug/L	ND	20	23.0	115	70-130	
2-Hexanone	ug/L	ND	40	61.6	154	70-130	M1
4-Chlorotoluene	ug/L	ND	20	22.8	114	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	54.9	137	70-130	M1
Acetone	ug/L	ND	40	58.3	146	70-130	M0
Benzene	ug/L	ND	20	23.7	118	70-148	
Bromobenzene	ug/L	ND	20	21.6	108	70-130	
Bromochloromethane	ug/L	ND	20	21.0	105	70-130	
Bromodichloromethane	ug/L	ND	20	24.8	124	70-130	
Bromoform	ug/L	ND	20	20.1	100	70-130	
Bromomethane	ug/L	ND	20	15.3	77	70-130	
Carbon tetrachloride	ug/L	ND	20	24.6	123	70-130	
Chlorobenzene	ug/L	ND	20	22.6	113	70-146	
Chloroethane	ug/L	ND	20	24.4	122	70-130	
Chloroform	ug/L	ND	20	21.9	110	70-130	
Chloromethane	ug/L	ND	20	25.4	127	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	24.9	124	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	23.1	116	70-130	
Dibromochloromethane	ug/L	ND	20	20.5	103	70-130	
Dibromomethane	ug/L	ND	20	21.5	108	70-130	
Dichlorodifluoromethane	ug/L	ND	20	21.2	106	70-130	
Diisopropyl ether	ug/L	ND	20	23.6	118	70-130	
Ethylbenzene	ug/L	ND	20	23.4	117	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	23.4	117	70-130	
m&p-Xylene	ug/L	ND	40	47.4	119	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	19.9	100	70-130	
Methylene Chloride	ug/L	ND	20	25.3	127	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

MATRIX SPIKE SAMPLE: 2228298		92376381002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Naphthalene	ug/L	ND	20	24.3	121	70-130	
o-Xylene	ug/L	ND	20	23.2	116	70-130	
p-Isopropyltoluene	ug/L	ND	20	22.8	114	70-130	
Styrene	ug/L	ND	20	22.6	113	70-130	
Tetrachloroethene	ug/L	ND	20	20.9	105	70-130	
Toluene	ug/L	ND	20	21.1	106	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	24.3	122	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	23.5	118	70-130	
Trichloroethene	ug/L	ND	20	23.6	118	69-151	
Trichlorofluoromethane	ug/L	ND	20	20.9	104	70-130	
Vinyl acetate	ug/L	ND	40	42.7	107	70-130	
Vinyl chloride	ug/L	ND	20	26.3	132	70-130	M1
Xylene (Total)	ug/L	ND	60	70.7	118	70-130	
1,2-Dichloroethane-d4 (S)	%				107	70-130	
4-Bromofluorobenzene (S)	%				106	70-130	
Toluene-d8 (S)	%				97	70-130	

SAMPLE DUPLICATE: 2228297

Parameter	Units	92376381001	Dup	RPD	Qualifiers
		Result	Result		
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	ND		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	ND	ND		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

SAMPLE DUPLICATE: 2228297

Parameter	Units	92376381001 Result	Dup Result	RPD	Qualifiers
Benzene	ug/L	ND	ND		
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		
Bromomethane	ug/L	ND	ND		
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	ND		
Ethylbenzene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	ND	ND		
Methyl-tert-butyl ether	ug/L	ND	ND		
Methylene Chloride	ug/L	ND	ND		
Naphthalene	ug/L	ND	ND		
o-Xylene	ug/L	ND	ND		
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	89	95	6	
4-Bromofluorobenzene (S)	%	94	98	4	
Toluene-d8 (S)	%	137	118	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

QC Batch: 401927 Analysis Method: EPA 8260B Mod.

QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM

Associated Lab Samples: 92376382001, 92376382002

METHOD BLANK: 2229298 Matrix: Water

Associated Lab Samples: 92376382001, 92376382002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	03/14/18 13:55	
1,2-Dichloroethane-d4 (S)	%	111	50-150	03/14/18 13:55	
Toluene-d8 (S)	%	106	50-150	03/14/18 13:55	

LABORATORY CONTROL SAMPLE: 2229299

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	19.7	99	71-125	
1,2-Dichloroethane-d4 (S)	%			114	50-150	
Toluene-d8 (S)	%			109	50-150	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2229300 2229301

Parameter	Units	92376382001		MS		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result	% Rec	% Rec					
1,4-Dioxane (p-Dioxane)	ug/L	ND	20	20	18.3	18.9	91	95	50-150	3				
1,2-Dichloroethane-d4 (S)	%						113	115	50-150					
Toluene-d8 (S)	%						110	113	50-150					

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT 515 34613.3.13
Pace Project No.: 92376382

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

- | | |
|----|---|
| L1 | Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high. |
| M0 | Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| S3 | Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample. |

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT 515 34613.3.13

Pace Project No.: 92376382

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92376382001	771 MT GILEAD CHURCH RD-EFF	EPA 8260	401749		
92376382002	771 MT GILEAD CHURCH RD-INF	EPA 8260	401749		
92376382001	771 MT GILEAD CHURCH RD-EFF	EPA 8260B Mod.	401927		
92376382002	771 MT GILEAD CHURCH RD-INF	EPA 8260B Mod.	401927		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

WO# : 92376382



Date/Initials Person Examining Contents: LD 3-9-18

Sample Condition Upon Receipt

Client Name: Hart & Hickman

Project #:

Courier: Commercial Fed Ex Pace UPS USPS Other: Client

Custody Seal Present? Yes No Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen? Yes No N/A

Thermometer: IR Gun ID: 92T036 Type of Ice: Wet Blue None

Cooler Temp (°C): 2.2 Correction Factor: Add/Subtract (°C) +0.1

Temp should be above freezing to 6°C Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 2.3

USDA Regulated Soil (N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>WNY</u>	
Headspace in VOA Vials (>5-6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? Yes No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: [Signature]

Date: 3/9/18

Project Manager SRF Review: [Signature]

Date: 3/9/18



Document Name:
Sample Condition Upon Receipt(SCUR)

Document Revised: February 7, 2018
Page 1 of 2

Document No.:
F-CAR-CS-033-Rev.06

Issuing Authority:
Pace Carolinas Quality Office

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project: **WO# : 92376382**
 PM: KRG Due Date: 03/16/18
 CLIENT: 92-NCDOTEAST

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)		
1																													
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

pH Adjustment Log for Preserved Samples						
Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

Divider
Page

March 14, 2018

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

RE: Project: DOT 515 34613.3.13
Pace Project No.: 92376379

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on March 09, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92376379001	TRIP BLANK	EPA 8260	GAW	63	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: March 14, 2018

General Information:

1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

QC Batch: 401749

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

- LCS (Lab ID: 2228296)
 - Acetone
 - Methylene Chloride

Matrix Spikes:

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

QC Batch: 401749

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92376381002

M0: Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

- MS (Lab ID: 2228298)
 - Acetone

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2228298)
 - 1,2-Dichloropropane
 - 2-Hexanone

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: March 14, 2018

QC Batch: 401749

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92376381002

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- 4-Methyl-2-pentanone (MIBK)
- Vinyl chloride

Duplicate Sample:

All duplicate sample results were within method acceptance criteria with any exceptions noted below.

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Sample: TRIP BLANK	Lab ID: 92376379001	Collected: 03/09/18 00:00	Received: 03/09/18 14:14	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Acetone	ND	ug/L	25.0	1		03/13/18 12:38	67-64-1	L1
Benzene	ND	ug/L	1.0	1		03/13/18 12:38	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		03/13/18 12:38	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		03/13/18 12:38	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		03/13/18 12:38	75-27-4	
Bromoform	ND	ug/L	1.0	1		03/13/18 12:38	75-25-2	
Bromomethane	ND	ug/L	2.0	1		03/13/18 12:38	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		03/13/18 12:38	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		03/13/18 12:38	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	108-90-7	
Chloroethane	ND	ug/L	1.0	1		03/13/18 12:38	75-00-3	
Chloroform	ND	ug/L	1.0	1		03/13/18 12:38	67-66-3	
Chloromethane	ND	ug/L	1.0	1		03/13/18 12:38	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 12:38	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		03/13/18 12:38	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		03/13/18 12:38	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		03/13/18 12:38	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		03/13/18 12:38	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		03/13/18 12:38	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		03/13/18 12:38	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		03/13/18 12:38	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		03/13/18 12:38	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		03/13/18 12:38	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 12:38	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		03/13/18 12:38	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 12:38	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		03/13/18 12:38	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		03/13/18 12:38	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		03/13/18 12:38	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 12:38	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		03/13/18 12:38	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		03/13/18 12:38	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		03/13/18 12:38	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		03/13/18 12:38	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		03/13/18 12:38	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		03/13/18 12:38	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		03/13/18 12:38	75-09-2	L1
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		03/13/18 12:38	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		03/13/18 12:38	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		03/13/18 12:38	91-20-3	
Styrene	ND	ug/L	1.0	1		03/13/18 12:38	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 12:38	630-20-6	
1,1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		03/13/18 12:38	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		03/13/18 12:38	127-18-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Sample: TRIP BLANK	Lab ID: 92376379001	Collected: 03/09/18 00:00	Received: 03/09/18 14:14	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Toluene	ND	ug/L	1.0	1		03/13/18 12:38	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		03/13/18 12:38	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		03/13/18 12:38	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		03/13/18 12:38	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		03/13/18 12:38	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		03/13/18 12:38	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		03/13/18 12:38	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		03/13/18 12:38	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		03/13/18 12:38	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		03/13/18 12:38	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		03/13/18 12:38	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		03/13/18 12:38	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	96	%	70-130	1		03/13/18 12:38	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130	1		03/13/18 12:38	17060-07-0	
Toluene-d8 (S)	114	%	70-130	1		03/13/18 12:38	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

METHOD BLANK: 2228295

Matrix: Water

Associated Lab Samples: 92376379001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	03/13/18 10:40	
Ethylbenzene	ug/L	ND	1.0	03/13/18 10:40	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	03/13/18 10:40	
m&p-Xylene	ug/L	ND	2.0	03/13/18 10:40	
Methyl-tert-butyl ether	ug/L	ND	1.0	03/13/18 10:40	
Methylene Chloride	ug/L	ND	2.0	03/13/18 10:40	
Naphthalene	ug/L	ND	1.0	03/13/18 10:40	
o-Xylene	ug/L	ND	1.0	03/13/18 10:40	
p-Isopropyltoluene	ug/L	ND	1.0	03/13/18 10:40	
Styrene	ug/L	ND	1.0	03/13/18 10:40	
Tetrachloroethene	ug/L	ND	1.0	03/13/18 10:40	
Toluene	ug/L	ND	1.0	03/13/18 10:40	
trans-1,2-Dichloroethene	ug/L	ND	1.0	03/13/18 10:40	
trans-1,3-Dichloropropene	ug/L	ND	1.0	03/13/18 10:40	
Trichloroethene	ug/L	ND	1.0	03/13/18 10:40	
Trichlorofluoromethane	ug/L	ND	1.0	03/13/18 10:40	
Vinyl acetate	ug/L	ND	2.0	03/13/18 10:40	
Vinyl chloride	ug/L	ND	1.0	03/13/18 10:40	
Xylene (Total)	ug/L	ND	1.0	03/13/18 10:40	
1,2-Dichloroethane-d4 (S)	%	101	70-130	03/13/18 10:40	
4-Bromofluorobenzene (S)	%	100	70-130	03/13/18 10:40	
Toluene-d8 (S)	%	110	70-130	03/13/18 10:40	

LABORATORY CONTROL SAMPLE: 2228296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	49.8	100	80-125	
1,1,1-Trichloroethane	ug/L	50	59.7	119	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	53.2	106	79-124	
1,1,2-Trichloroethane	ug/L	50	56.3	113	85-125	
1,1-Dichloroethane	ug/L	50	56.0	112	73-126	
1,1-Dichloroethene	ug/L	50	59.4	119	66-135	
1,1-Dichloropropene	ug/L	50	56.9	114	74-135	
1,2,3-Trichlorobenzene	ug/L	50	52.1	104	73-135	
1,2,3-Trichloropropane	ug/L	50	59.0	118	75-130	
1,2,4-Trichlorobenzene	ug/L	50	54.4	109	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	55.2	110	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	53.4	107	83-124	
1,2-Dichlorobenzene	ug/L	50	52.2	104	80-133	
1,2-Dichloroethane	ug/L	50	62.4	125	67-128	
1,2-Dichloropropane	ug/L	50	64.7	129	75-132	
1,3-Dichlorobenzene	ug/L	50	53.6	107	77-130	
1,3-Dichloropropane	ug/L	50	57.6	115	76-131	
1,4-Dichlorobenzene	ug/L	50	53.1	106	78-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

LABORATORY CONTROL SAMPLE: 2228296

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	58.8	118	40-160	
2-Butanone (MEK)	ug/L	100	125	125	61-144	
2-Chlorotoluene	ug/L	50	55.6	111	74-132	
2-Hexanone	ug/L	100	130	130	68-143	
4-Chlorotoluene	ug/L	50	55.4	111	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	122	122	72-135	
Acetone	ug/L	100	147	147	48-146	L1
Benzene	ug/L	50	56.5	113	80-125	
Bromobenzene	ug/L	50	52.1	104	75-125	
Bromochloromethane	ug/L	50	54.4	109	71-125	
Bromodichloromethane	ug/L	50	61.3	123	78-124	
Bromoform	ug/L	50	55.3	111	71-128	
Bromomethane	ug/L	50	36.9	74	40-160	
Carbon tetrachloride	ug/L	50	55.3	111	69-131	
Chlorobenzene	ug/L	50	53.7	107	81-122	
Chloroethane	ug/L	50	58.2	116	39-148	
Chloroform	ug/L	50	55.1	110	73-127	
Chloromethane	ug/L	50	56.6	113	44-146	
cis-1,2-Dichloroethene	ug/L	50	61.3	123	74-124	
cis-1,3-Dichloropropene	ug/L	50	63.2	126	72-132	
Dibromochloromethane	ug/L	50	54.3	109	78-125	
Dibromomethane	ug/L	50	49.9	100	82-120	
Dichlorodifluoromethane	ug/L	50	46.5	93	34-157	
Diisopropyl ether	ug/L	50	60.3	121	69-135	
Ethylbenzene	ug/L	50	54.6	109	79-121	
Hexachloro-1,3-butadiene	ug/L	50	51.0	102	72-131	
m&p-Xylene	ug/L	100	116	116	81-124	
Methyl-tert-butyl ether	ug/L	50	54.3	109	74-131	
Methylene Chloride	ug/L	50	68.7	137	64-133	L1
Naphthalene	ug/L	50	53.8	108	73-133	
o-Xylene	ug/L	50	57.9	116	79-131	
p-Isopropyltoluene	ug/L	50	55.4	111	80-131	
Styrene	ug/L	50	57.5	115	84-126	
Tetrachloroethene	ug/L	50	49.8	100	78-122	
Toluene	ug/L	50	48.9	98	80-121	
trans-1,2-Dichloroethene	ug/L	50	60.3	121	71-127	
trans-1,3-Dichloropropene	ug/L	50	61.2	122	69-141	
Trichloroethene	ug/L	50	56.3	113	78-122	
Trichlorofluoromethane	ug/L	50	46.6	93	53-137	
Vinyl acetate	ug/L	100	120	120	40-160	
Vinyl chloride	ug/L	50	60.4	121	50-150	
Xylene (Total)	ug/L	150	174	116	81-126	
1,2-Dichloroethane-d4 (S)	%			117	70-130	
4-Bromofluorobenzene (S)	%			104	70-130	
Toluene-d8 (S)	%			93	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

MATRIX SPIKE SAMPLE:	2228298	92376381002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	20	21.3	107	70-130	
1,1,1-Trichloroethane	ug/L	ND	20	23.7	119	70-130	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	21.7	108	70-130	
1,1,2-Trichloroethane	ug/L	ND	20	22.0	110	70-130	
1,1-Dichloroethane	ug/L	ND	20	22.6	113	70-130	
1,1-Dichloroethene	ug/L	ND	20	25.0	125	70-166	
1,1-Dichloropropene	ug/L	ND	20	21.0	105	70-130	
1,2,3-Trichlorobenzene	ug/L	ND	20	23.4	117	70-130	
1,2,3-Trichloropropane	ug/L	ND	20	24.2	121	70-130	
1,2,4-Trichlorobenzene	ug/L	ND	20	22.8	114	70-130	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	24.1	121	70-130	
1,2-Dibromoethane (EDB)	ug/L	ND	20	21.4	107	70-130	
1,2-Dichlorobenzene	ug/L	ND	20	22.1	110	70-130	
1,2-Dichloroethane	ug/L	ND	20	24.3	122	70-130	
1,2-Dichloropropane	ug/L	ND	20	26.8	134	70-130	M1
1,3-Dichlorobenzene	ug/L	ND	20	21.5	108	70-130	
1,3-Dichloropropane	ug/L	ND	20	22.5	112	70-130	
1,4-Dichlorobenzene	ug/L	ND	20	21.8	109	70-130	
2,2-Dichloropropane	ug/L	ND	20	22.7	113	70-130	
2-Butanone (MEK)	ug/L	ND	40	51.0	127	70-130	
2-Chlorotoluene	ug/L	ND	20	23.0	115	70-130	
2-Hexanone	ug/L	ND	40	61.6	154	70-130	M1
4-Chlorotoluene	ug/L	ND	20	22.8	114	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	54.9	137	70-130	M1
Acetone	ug/L	ND	40	58.3	146	70-130	M0
Benzene	ug/L	ND	20	23.7	118	70-148	
Bromobenzene	ug/L	ND	20	21.6	108	70-130	
Bromochloromethane	ug/L	ND	20	21.0	105	70-130	
Bromodichloromethane	ug/L	ND	20	24.8	124	70-130	
Bromoform	ug/L	ND	20	20.1	100	70-130	
Bromomethane	ug/L	ND	20	15.3	77	70-130	
Carbon tetrachloride	ug/L	ND	20	24.6	123	70-130	
Chlorobenzene	ug/L	ND	20	22.6	113	70-146	
Chloroethane	ug/L	ND	20	24.4	122	70-130	
Chloroform	ug/L	ND	20	21.9	110	70-130	
Chloromethane	ug/L	ND	20	25.4	127	70-130	
cis-1,2-Dichloroethene	ug/L	ND	20	24.9	124	70-130	
cis-1,3-Dichloropropene	ug/L	ND	20	23.1	116	70-130	
Dibromochloromethane	ug/L	ND	20	20.5	103	70-130	
Dibromomethane	ug/L	ND	20	21.5	108	70-130	
Dichlorodifluoromethane	ug/L	ND	20	21.2	106	70-130	
Diisopropyl ether	ug/L	ND	20	23.6	118	70-130	
Ethylbenzene	ug/L	ND	20	23.4	117	70-130	
Hexachloro-1,3-butadiene	ug/L	ND	20	23.4	117	70-130	
m&p-Xylene	ug/L	ND	40	47.4	119	70-130	
Methyl-tert-butyl ether	ug/L	ND	20	19.9	100	70-130	
Methylene Chloride	ug/L	ND	20	25.3	127	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

MATRIX SPIKE SAMPLE: 2228298		92376381002	Spike	MS	MS	% Rec	
Parameter	Units	Result	Conc.	Result	% Rec	Limits	Qualifiers
Naphthalene	ug/L	ND	20	24.3	121	70-130	
o-Xylene	ug/L	ND	20	23.2	116	70-130	
p-Isopropyltoluene	ug/L	ND	20	22.8	114	70-130	
Styrene	ug/L	ND	20	22.6	113	70-130	
Tetrachloroethene	ug/L	ND	20	20.9	105	70-130	
Toluene	ug/L	ND	20	21.1	106	70-155	
trans-1,2-Dichloroethene	ug/L	ND	20	24.3	122	70-130	
trans-1,3-Dichloropropene	ug/L	ND	20	23.5	118	70-130	
Trichloroethene	ug/L	ND	20	23.6	118	69-151	
Trichlorofluoromethane	ug/L	ND	20	20.9	104	70-130	
Vinyl acetate	ug/L	ND	40	42.7	107	70-130	
Vinyl chloride	ug/L	ND	20	26.3	132	70-130	M1
Xylene (Total)	ug/L	ND	60	70.7	118	70-130	
1,2-Dichloroethane-d4 (S)	%				107	70-130	
4-Bromofluorobenzene (S)	%				106	70-130	
Toluene-d8 (S)	%				97	70-130	

SAMPLE DUPLICATE: 2228297

Parameter	Units	92376381001	Dup	RPD	Qualifiers
		Result	Result		
1,1,1,2-Tetrachloroethane	ug/L	ND	ND		
1,1,1-Trichloroethane	ug/L	ND	ND		
1,1,2,2-Tetrachloroethane	ug/L	ND	ND		
1,1,2-Trichloroethane	ug/L	ND	ND		
1,1-Dichloroethane	ug/L	ND	ND		
1,1-Dichloroethene	ug/L	ND	ND		
1,1-Dichloropropene	ug/L	ND	ND		
1,2,3-Trichlorobenzene	ug/L	ND	ND		
1,2,3-Trichloropropane	ug/L	ND	ND		
1,2,4-Trichlorobenzene	ug/L	ND	ND		
1,2-Dibromo-3-chloropropane	ug/L	ND	ND		
1,2-Dibromoethane (EDB)	ug/L	ND	ND		
1,2-Dichlorobenzene	ug/L	ND	ND		
1,2-Dichloroethane	ug/L	ND	ND		
1,2-Dichloropropane	ug/L	ND	ND		
1,3-Dichlorobenzene	ug/L	ND	ND		
1,3-Dichloropropane	ug/L	ND	ND		
1,4-Dichlorobenzene	ug/L	ND	ND		
2,2-Dichloropropane	ug/L	ND	ND		
2-Butanone (MEK)	ug/L	ND	ND		
2-Chlorotoluene	ug/L	ND	ND		
2-Hexanone	ug/L	ND	ND		
4-Chlorotoluene	ug/L	ND	ND		
4-Methyl-2-pentanone (MIBK)	ug/L	ND	ND		
Acetone	ug/L	ND	ND		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

SAMPLE DUPLICATE: 2228297

Parameter	Units	92376381001 Result	Dup Result	RPD	Qualifiers
Benzene	ug/L	ND	ND		
Bromobenzene	ug/L	ND	ND		
Bromochloromethane	ug/L	ND	ND		
Bromodichloromethane	ug/L	ND	ND		
Bromoform	ug/L	ND	ND		
Bromomethane	ug/L	ND	ND		
Carbon tetrachloride	ug/L	ND	ND		
Chlorobenzene	ug/L	ND	ND		
Chloroethane	ug/L	ND	ND		
Chloroform	ug/L	ND	ND		
Chloromethane	ug/L	ND	ND		
cis-1,2-Dichloroethene	ug/L	ND	ND		
cis-1,3-Dichloropropene	ug/L	ND	ND		
Dibromochloromethane	ug/L	ND	ND		
Dibromomethane	ug/L	ND	ND		
Dichlorodifluoromethane	ug/L	ND	ND		
Diisopropyl ether	ug/L	ND	ND		
Ethylbenzene	ug/L	ND	ND		
Hexachloro-1,3-butadiene	ug/L	ND	ND		
m&p-Xylene	ug/L	ND	ND		
Methyl-tert-butyl ether	ug/L	ND	ND		
Methylene Chloride	ug/L	ND	ND		
Naphthalene	ug/L	ND	ND		
o-Xylene	ug/L	ND	ND		
p-Isopropyltoluene	ug/L	ND	ND		
Styrene	ug/L	ND	ND		
Tetrachloroethene	ug/L	ND	ND		
Toluene	ug/L	ND	ND		
trans-1,2-Dichloroethene	ug/L	ND	ND		
trans-1,3-Dichloropropene	ug/L	ND	ND		
Trichloroethene	ug/L	ND	ND		
Trichlorofluoromethane	ug/L	ND	ND		
Vinyl acetate	ug/L	ND	ND		
Vinyl chloride	ug/L	ND	ND		
Xylene (Total)	ug/L	ND	ND		
1,2-Dichloroethane-d4 (S)	%	89	95	6	
4-Bromofluorobenzene (S)	%	94	98	4	
Toluene-d8 (S)	%	137	118	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

L1 Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

M0 Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT 515 34613.3.13

Pace Project No.: 92376379

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92376379001	TRIP BLANK	EPA 8260	401749		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

WO# : 92376379



Sample Condition
Upon Receipt

Client Name: Hart & Hickman

Project #:

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____

Date/Initials Person Examining Contents: UD 3-9-18

Custody Seal Present? Yes No Seals Intact? Yes No

Packing Material: Bubble Wrap Bubble Bags None Other

Thermometer: IR Gun ID: 92T036 Type of Ice: Wet Blue None

Biological Tissue Frozen?
 Yes No N/A

Cooler Temp (°C): 2.2 Correction Factor: Add/Subtract (°C) +0.1

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 2.3

USDA Regulated Soil N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

Yes No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	<u>No info on trip blanks</u>
Headspace in VOA Vials (>5-6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? Yes No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Samples submitted with TRIP blank were all collected on 3/6/18. KG. 92376382 & 92376381.

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: JS

Date: 3/9/18

Project Manager SRF Review: JS

Date: 3/9/18

June 2018

Via US Mail

June 18, 2018

Timothy and Paula Mitchell
681 Mt. Gilead Church Rd.
Pittsboro, NC 27312

Re: June 2018 Water Supply Sampling Results
Pittsboro, NC
H&H Job No. DOT-515

Dear Mr. and Mrs. Mitchell:

On behalf of the North Carolina Department of Transportation, Hart and Hickman, PC (H&H) is providing this letter to document the results of the water supply well sampling conducted at your residence at 681 Mt. Gilead Church Rd on June 6, 2018. A point of entry carbon treatment system was installed on this water supply well in June 2013 as a precautionary measure. During the June 6, 2018 sampling event, H&H personnel collected a pre-treatment water sample (sample identified as 681 MT. GILEAD CHURCH RD-INF) and a post-treatment water sample (sample identified as 681 MT. GILEAD CHURCH RD-EFF). The samples were collected in laboratory-supplied sample containers and submitted to Pace Analytical Services Inc. for analysis of certain volatile organic compounds (VOCs). A quality control sample labeled trip blank was also analyzed.

The results of the laboratory analyses indicate that target compounds were not present above laboratory reporting limits in the pre-treatment water sample or the post-treatment water sample. No compounds were detected in the quality control trip blank sample. The laboratory reports documenting the results are attached for your reference. The next sampling event is scheduled for September 2018.

Mr. and Mrs. Mitchell,
June 18, 2018
Page 2 of 2

If you have any questions, please do not hesitate to contact us at (704) 586-0007.

Very truly yours,

Hart & Hickman, PC



Greg Kanellis, PE
Senior Project Engineer



Matt Bramblett, PE
Principal

Attachment: Laboratory Analytical Results

Cc: Mr. Jason Prosser, NCDOT (Via Email)
Mr. Layton Long, Chatham County Health Dept. (Via Email)
Ms. Stephanie Grubbs, NC DEQ (Via Email)

Divider Page

June 15, 2018

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

RE: Project: DOT 515 34613.3.13
Pace Project No.: 92387603

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on June 07, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92387603001	681-MtGileadChurchRd-EFF	EPA 8260	CAH	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92387603002	681-MtGileadChurchRd-INF	EPA 8260	CAH	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

General Information:

2 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2303485)
 - Bromomethane
 - Methylene Chloride
- MSD (Lab ID: 2303486)
 - 1,1,1,2-Tetrachloroethane
 - 1,1,1-Trichloroethane
 - 1,1,2,2-Tetrachloroethane
 - 1,1,2-Trichloroethane
 - 1,1-Dichloroethane
 - 1,1-Dichloroethene
 - 1,1-Dichloropropene
 - 1,2,3-Trichlorobenzene
 - 1,2,3-Trichloropropane

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13
Pace Project No.: 92387603

Method: EPA 8260
Description: 8260 MSV Low Level
Client: NCDOT East Central
Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- 1,2,4-Trichlorobenzene
- 1,2-Dibromo-3-chloropropane
- 1,2-Dibromoethane (EDB)
- 1,2-Dichlorobenzene
- 1,2-Dichloroethane
- 1,2-Dichloropropane
- 1,3-Dichlorobenzene
- 1,3-Dichloropropane
- 1,4-Dichlorobenzene
- 2,2-Dichloropropane
- 2-Butanone (MEK)
- 2-Chlorotoluene
- 2-Hexanone
- 4-Chlorotoluene
- 4-Methyl-2-pentanone (MIBK)
- Acetone
- Benzene
- Bromobenzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform
- Bromomethane
- Carbon tetrachloride
- Chlorobenzene
- Chloroethane
- Chloroform
- Chloromethane
- Dibromochloromethane
- Dibromomethane
- Dichlorodifluoromethane
- Diisopropyl ether
- Ethylbenzene
- Hexachloro-1,3-butadiene
- Methyl-tert-butyl ether
- Methylene Chloride
- Naphthalene
- Styrene
- Tetrachloroethene
- Toluene
- Trichloroethene
- Trichlorofluoromethane
- Vinyl acetate
- Vinyl chloride

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- cis-1,2-Dichloroethene
- cis-1,3-Dichloropropene
- m&p-Xylene
- o-Xylene
- p-Isopropyltoluene
- trans-1,2-Dichloroethene
- trans-1,3-Dichloropropene

R1: RPD value was outside control limits.

- MSD (Lab ID: 2303486)
 - 1,1,1,2-Tetrachloroethane
 - 1,1,1-Trichloroethane
 - 1,1,2,2-Tetrachloroethane
 - 1,1,2-Trichloroethane
 - 1,1-Dichloroethane
 - 1,1-Dichloroethene
 - 1,1-Dichloropropene
 - 1,2,3-Trichlorobenzene
 - 1,2,3-Trichloropropane
 - 1,2,4-Trichlorobenzene
 - 1,2-Dibromo-3-chloropropane
 - 1,2-Dibromoethane (EDB)
 - 1,2-Dichlorobenzene
 - 1,2-Dichloroethane
 - 1,2-Dichloropropane
 - 1,3-Dichlorobenzene
 - 1,3-Dichloropropane
 - 1,4-Dichlorobenzene
 - 2,2-Dichloropropane
 - 2-Butanone (MEK)
 - 2-Chlorotoluene
 - 2-Hexanone
 - 4-Chlorotoluene
 - 4-Methyl-2-pentanone (MIBK)
 - Benzene
 - Bromobenzene
 - Bromochloromethane
 - Bromodichloromethane
 - Bromoform
 - Bromomethane
 - Carbon tetrachloride
 - Chlorobenzene
 - Chloroethane
 - Chloroform

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

R1: RPD value was outside control limits.

- Chloromethane
- Dibromochloromethane
- Dibromomethane
- Dichlorodifluoromethane
- Diisopropyl ether
- Ethylbenzene
- Hexachloro-1,3-butadiene
- Methyl-tert-butyl ether
- Naphthalene
- Styrene
- Tetrachloroethene
- Toluene
- Trichloroethene
- Trichlorofluoromethane
- Vinyl acetate
- Vinyl chloride
- cis-1,2-Dichloroethene
- cis-1,3-Dichloropropene
- m&p-Xylene
- o-Xylene
- p-Isopropyltoluene
- trans-1,2-Dichloroethene
- trans-1,3-Dichloropropene

Additional Comments:

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Method: EPA 8260B Mod.

Description: 8260 MSV SIM

Client: NCDOT East Central

Date: June 15, 2018

General Information:

2 samples were analyzed for EPA 8260B Mod.. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

QC Batch: 414845

S0: Surrogate recovery outside laboratory control limits.

- LCS (Lab ID: 2300406)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)
- MS (Lab ID: 2300407)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)
- MSD (Lab ID: 2300408)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)

S3: Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.

- 681-MtGileadChurchRd-EFF (Lab ID: 92387603001)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)
- 681-MtGileadChurchRd-INF (Lab ID: 92387603002)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)
- BLANK (Lab ID: 2300405)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)

Method Blank:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Method: EPA 8260B Mod.

Description: 8260 MSV SIM

Client: NCDOT East Central

Date: June 15, 2018

Laboratory Control Spike:

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

QC Batch: 414845

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

- LCS (Lab ID: 2300406)
 - 1,4-Dioxane (p-Dioxane)

Matrix Spikes:

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

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Sample: 681-MtGileadChurchRd-EFF **Lab ID: 92387603001** Collected: 06/06/18 12:20 Received: 06/07/18 12:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		06/13/18 21:58	67-64-1	
Benzene	ND	ug/L	1.0	1		06/13/18 21:58	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/13/18 21:58	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/13/18 21:58	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/13/18 21:58	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/13/18 21:58	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/13/18 21:58	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/13/18 21:58	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/13/18 21:58	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/13/18 21:58	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/13/18 21:58	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/13/18 21:58	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/13/18 21:58	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 21:58	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 21:58	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/13/18 21:58	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/13/18 21:58	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/13/18 21:58	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/13/18 21:58	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 21:58	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 21:58	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 21:58	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/13/18 21:58	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/13/18 21:58	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/13/18 21:58	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/13/18 21:58	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 21:58	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 21:58	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 21:58	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/13/18 21:58	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 21:58	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/13/18 21:58	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 21:58	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 21:58	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/13/18 21:58	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/13/18 21:58	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/13/18 21:58	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		06/13/18 21:58	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/13/18 21:58	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/13/18 21:58	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/13/18 21:58	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/13/18 21:58	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/13/18 21:58	91-20-3	
Styrene	ND	ug/L	1.0	1		06/13/18 21:58	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 21:58	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 21:58	79-34-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Sample: 681-MtGileadChurchRd-EFF **Lab ID:** 92387603001 Collected: 06/06/18 12:20 Received: 06/07/18 12:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Tetrachloroethene	ND	ug/L	1.0	1		06/13/18 21:58	127-18-4	
Toluene	ND	ug/L	1.0	1		06/13/18 21:58	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 21:58	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 21:58	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/13/18 21:58	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/13/18 21:58	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/13/18 21:58	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/13/18 21:58	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/13/18 21:58	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/13/18 21:58	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/13/18 21:58	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/13/18 21:58	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/13/18 21:58	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/13/18 21:58	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	1		06/13/18 21:58	460-00-4	
1,2-Dichloroethane-d4 (S)	100	%	70-130	1		06/13/18 21:58	17060-07-0	
Toluene-d8 (S)	100	%	70-130	1		06/13/18 21:58	2037-26-5	
8260 MSV SIM		Analytical Method: EPA 8260B Mod.						
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/12/18 11:37	123-91-1	L1
Surrogates								
1,2-Dichloroethane-d4 (S)	102	%	50-150	1		06/12/18 11:37	17060-07-0	S3
Toluene-d8 (S)	101	%	50-150	1		06/12/18 11:37	2037-26-5	S3

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Sample: 681-MtGileadChurchRd-
INF **Lab ID:** 92387603002 **Collected:** 06/06/18 12:30 **Received:** 06/07/18 12:30 **Matrix:** Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		06/13/18 22:14	67-64-1	
Benzene	ND	ug/L	1.0	1		06/13/18 22:14	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/13/18 22:14	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/13/18 22:14	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/13/18 22:14	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/13/18 22:14	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/13/18 22:14	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/13/18 22:14	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/13/18 22:14	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/13/18 22:14	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/13/18 22:14	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/13/18 22:14	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/13/18 22:14	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 22:14	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 22:14	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/13/18 22:14	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/13/18 22:14	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/13/18 22:14	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/13/18 22:14	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:14	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:14	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:14	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/13/18 22:14	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/13/18 22:14	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/13/18 22:14	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/13/18 22:14	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 22:14	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 22:14	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 22:14	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/13/18 22:14	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 22:14	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/13/18 22:14	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 22:14	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 22:14	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/13/18 22:14	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/13/18 22:14	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/13/18 22:14	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		06/13/18 22:14	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/13/18 22:14	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/13/18 22:14	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/13/18 22:14	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/13/18 22:14	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/13/18 22:14	91-20-3	
Styrene	ND	ug/L	1.0	1		06/13/18 22:14	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 22:14	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 22:14	79-34-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Sample: 681-MtGileadChurchRd-
INF **Lab ID:** 92387603002 Collected: 06/06/18 12:30 Received: 06/07/18 12:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Tetrachloroethene	ND	ug/L	1.0	1		06/13/18 22:14	127-18-4	
Toluene	ND	ug/L	1.0	1		06/13/18 22:14	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:14	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:14	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/13/18 22:14	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/13/18 22:14	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/13/18 22:14	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/13/18 22:14	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/13/18 22:14	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/13/18 22:14	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/13/18 22:14	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/13/18 22:14	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/13/18 22:14	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/13/18 22:14	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	96	%	70-130	1		06/13/18 22:14	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130	1		06/13/18 22:14	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		06/13/18 22:14	2037-26-5	
8260 MSV SIM		Analytical Method: EPA 8260B Mod.						
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/12/18 12:55	123-91-1	L1
Surrogates								
1,2-Dichloroethane-d4 (S)	106	%	50-150	1		06/12/18 12:55	17060-07-0	S3
Toluene-d8 (S)	108	%	50-150	1		06/12/18 12:55	2037-26-5	S3

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

QC Batch: 414936

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92387603001, 92387603002

METHOD BLANK: 2300999

Matrix: Water

Associated Lab Samples: 92387603001, 92387603002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,1-Trichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,2-Trichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2,3-Trichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	06/13/18 18:59	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,3-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,3-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,4-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
2,2-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
2-Butanone (MEK)	ug/L	ND	5.0	06/13/18 18:59	
2-Chlorotoluene	ug/L	ND	1.0	06/13/18 18:59	
2-Hexanone	ug/L	ND	5.0	06/13/18 18:59	
4-Chlorotoluene	ug/L	ND	1.0	06/13/18 18:59	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	06/13/18 18:59	
Acetone	ug/L	ND	25.0	06/13/18 18:59	
Benzene	ug/L	ND	1.0	06/13/18 18:59	
Bromobenzene	ug/L	ND	1.0	06/13/18 18:59	
Bromochloromethane	ug/L	ND	1.0	06/13/18 18:59	
Bromodichloromethane	ug/L	ND	1.0	06/13/18 18:59	
Bromoform	ug/L	ND	1.0	06/13/18 18:59	
Bromomethane	ug/L	ND	2.0	06/13/18 18:59	
Carbon tetrachloride	ug/L	ND	1.0	06/13/18 18:59	
Chlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
Chloroethane	ug/L	ND	1.0	06/13/18 18:59	
Chloroform	ug/L	ND	1.0	06/13/18 18:59	
Chloromethane	ug/L	ND	1.0	06/13/18 18:59	
cis-1,2-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
cis-1,3-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
Dibromochloromethane	ug/L	ND	1.0	06/13/18 18:59	
Dibromomethane	ug/L	ND	1.0	06/13/18 18:59	
Dichlorodifluoromethane	ug/L	ND	1.0	06/13/18 18:59	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

METHOD BLANK: 2300999

Matrix: Water

Associated Lab Samples: 92387603001, 92387603002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	06/13/18 18:59	
Ethylbenzene	ug/L	ND	1.0	06/13/18 18:59	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	06/13/18 18:59	
m&p-Xylene	ug/L	ND	2.0	06/13/18 18:59	
Methyl-tert-butyl ether	ug/L	ND	1.0	06/13/18 18:59	
Methylene Chloride	ug/L	ND	2.0	06/13/18 18:59	
Naphthalene	ug/L	ND	1.0	06/13/18 18:59	
o-Xylene	ug/L	ND	1.0	06/13/18 18:59	
p-Isopropyltoluene	ug/L	ND	1.0	06/13/18 18:59	
Styrene	ug/L	ND	1.0	06/13/18 18:59	
Tetrachloroethene	ug/L	ND	1.0	06/13/18 18:59	
Toluene	ug/L	ND	1.0	06/13/18 18:59	
trans-1,2-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
trans-1,3-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
Trichloroethene	ug/L	ND	1.0	06/13/18 18:59	
Trichlorofluoromethane	ug/L	ND	1.0	06/13/18 18:59	
Vinyl acetate	ug/L	ND	2.0	06/13/18 18:59	
Vinyl chloride	ug/L	ND	1.0	06/13/18 18:59	
Xylene (Total)	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloroethane-d4 (S)	%	99	70-130	06/13/18 18:59	
4-Bromofluorobenzene (S)	%	98	70-130	06/13/18 18:59	
Toluene-d8 (S)	%	101	70-130	06/13/18 18:59	

LABORATORY CONTROL SAMPLE: 2301000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	47.5	95	80-125	
1,1,1-Trichloroethane	ug/L	50	45.7	91	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	45.9	92	79-124	
1,1,2-Trichloroethane	ug/L	50	44.7	89	85-125	
1,1-Dichloroethane	ug/L	50	46.1	92	73-126	
1,1-Dichloroethene	ug/L	50	46.5	93	66-135	
1,1-Dichloropropene	ug/L	50	45.6	91	74-135	
1,2,3-Trichlorobenzene	ug/L	50	49.0	98	73-135	
1,2,3-Trichloropropane	ug/L	50	47.2	94	75-130	
1,2,4-Trichlorobenzene	ug/L	50	48.6	97	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	51.0	102	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	47.7	95	83-124	
1,2-Dichlorobenzene	ug/L	50	47.3	95	80-133	
1,2-Dichloroethane	ug/L	50	44.3	89	67-128	
1,2-Dichloropropane	ug/L	50	45.4	91	75-132	
1,3-Dichlorobenzene	ug/L	50	46.8	94	77-130	
1,3-Dichloropropane	ug/L	50	47.0	94	76-131	
1,4-Dichlorobenzene	ug/L	50	47.2	94	78-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

LABORATORY CONTROL SAMPLE: 2301000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	45.8	92	40-160	
2-Butanone (MEK)	ug/L	100	93.3	93	61-144	
2-Chlorotoluene	ug/L	50	46.0	92	74-132	
2-Hexanone	ug/L	100	95.1	95	68-143	
4-Chlorotoluene	ug/L	50	46.5	93	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	91.8	92	72-135	
Acetone	ug/L	100	97.2	97	48-146	
Benzene	ug/L	50	44.9	90	80-125	
Bromobenzene	ug/L	50	47.6	95	75-125	
Bromochloromethane	ug/L	50	45.5	91	71-125	
Bromodichloromethane	ug/L	50	47.6	95	78-124	
Bromoform	ug/L	50	52.6	105	71-128	
Bromomethane	ug/L	50	42.4	85	40-160	
Carbon tetrachloride	ug/L	50	47.8	96	69-131	
Chlorobenzene	ug/L	50	45.7	91	81-122	
Chloroethane	ug/L	50	29.0	58	39-148	
Chloroform	ug/L	50	45.2	90	73-127	
Chloromethane	ug/L	50	41.6	83	44-146	
cis-1,2-Dichloroethene	ug/L	50	47.4	95	74-124	
cis-1,3-Dichloropropene	ug/L	50	47.4	95	72-132	
Dibromochloromethane	ug/L	50	50.3	101	78-125	
Dibromomethane	ug/L	50	45.7	91	82-120	
Dichlorodifluoromethane	ug/L	50	42.9	86	34-157	
Diisopropyl ether	ug/L	50	47.3	95	69-135	
Ethylbenzene	ug/L	50	45.8	92	79-121	
Hexachloro-1,3-butadiene	ug/L	50	49.0	98	72-131	
m&p-Xylene	ug/L	100	92.4	92	81-124	
Methyl-tert-butyl ether	ug/L	50	46.9	94	74-131	
Methylene Chloride	ug/L	50	46.6	93	64-133	
Naphthalene	ug/L	50	49.1	98	73-133	
o-Xylene	ug/L	50	46.7	93	79-131	
p-Isopropyltoluene	ug/L	50	47.3	95	80-131	
Styrene	ug/L	50	46.4	93	84-126	
Tetrachloroethene	ug/L	50	43.9	88	78-122	
Toluene	ug/L	50	44.4	89	80-121	
trans-1,2-Dichloroethene	ug/L	50	47.9	96	71-127	
trans-1,3-Dichloropropene	ug/L	50	47.5	95	69-141	
Trichloroethene	ug/L	50	46.0	92	78-122	
Trichlorofluoromethane	ug/L	50	38.2	76	53-137	
Vinyl acetate	ug/L	100	109	109	40-160	
Vinyl chloride	ug/L	50	45.8	92	50-150	
Xylene (Total)	ug/L	150	139	93	81-126	
1,2-Dichloroethane-d4 (S)	%			101	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			100	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Parameter	92387546047		MS	MSD	2303485		2303486		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	20.0	9.6	100	48	70-130	70	M1,R1	
1,1,1-Trichloroethane	ug/L	ND	20	20	21.0	10.2	105	51	70-130	70	M1,R1	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	19.1	9.6	96	48	70-130	66	M1,R1	
1,1,2-Trichloroethane	ug/L	ND	20	20	19.3	9.6	97	48	70-130	67	M1,R1	
1,1-Dichloroethane	ug/L	ND	20	20	20.3	10	102	50	70-130	68	M1,R1	
1,1-Dichloroethene	ug/L	ND	20	20	22.6	10.7	113	54	70-166	71	M1,R1	
1,1-Dichloropropene	ug/L	ND	20	20	21.1	10.5	106	52	70-130	67	M1,R1	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	20.4	10.3	102	51	70-130	66	M1,R1	
1,2,3-Trichloropropane	ug/L	ND	20	20	19.2	9.4	96	47	70-130	69	M1,R1	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	21.0	10.4	105	52	70-130	67	M1,R1	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	19.5	10.4	97	52	70-130	61	M1,R1	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	20.0	9.9	100	50	70-130	67	M1,R1	
1,2-Dichlorobenzene	ug/L	ND	20	20	19.7	9.8	98	49	70-130	67	M1,R1	
1,2-Dichloroethane	ug/L	ND	20	20	18.8	9.5	94	47	70-130	66	M1,R1	
1,2-Dichloropropane	ug/L	ND	20	20	19.6	9.4	98	47	70-130	70	M1,R1	
1,3-Dichlorobenzene	ug/L	ND	20	20	19.4	9.5	97	48	70-130	68	M1,R1	
1,3-Dichloropropane	ug/L	ND	20	20	20.0	9.7	100	48	70-130	70	M1,R1	
1,4-Dichlorobenzene	ug/L	ND	20	20	19.5	9.6	97	48	70-130	67	M1,R1	
2,2-Dichloropropane	ug/L	ND	20	20	23.9	11.7	119	59	70-130	68	M1,R1	
2-Butanone (MEK)	ug/L	ND	40	40	41.4	21.8	104	55	70-130	62	M1,R1	
2-Chlorotoluene	ug/L	ND	20	20	18.6	9.5	93	47	70-130	65	M1,R1	
2-Hexanone	ug/L	ND	40	40	41.1	20.8	103	52	70-130	65	M1,R1	
4-Chlorotoluene	ug/L	ND	20	20	19.5	9.7	97	48	70-130	67	M1,R1	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	40	40.1	21.4	100	53	70-130	61	M1,R1	
Acetone	ug/L	ND	40	40	41.3	22.6J	103	56	70-130		M1	
Benzene	ug/L	ND	20	20	19.8	9.8	99	49	70-148	68	M1,R1	
Bromobenzene	ug/L	ND	20	20	19.5	9.8	97	49	70-130	66	M1,R1	
Bromochloromethane	ug/L	ND	20	20	20.1	10.0	101	50	70-130	67	M1,R1	
Bromodichloromethane	ug/L	ND	20	20	20.0	10	100	50	70-130	67	M1,R1	
Bromoform	ug/L	ND	20	20	20.1	9.8	101	49	70-130	69	M1,R1	
Bromomethane	ug/L	ND	20	20	13.8	4.5	69	23	70-130	102	M1,R1	
Carbon tetrachloride	ug/L	ND	20	20	21.5	10.5	108	53	70-130	69	M1,R1	
Chlorobenzene	ug/L	ND	20	20	19.7	9.5	98	47	70-146	70	M1,R1	
Chloroethane	ug/L	ND	20	20	19.7	10.7	99	53	70-130	59	M1,R1	
Chloroform	ug/L	ND	20	20	19.7	9.7	98	48	70-130	68	M1,R1	
Chloromethane	ug/L	ND	20	20	18.0	9.3	90	47	70-130	63	M1,R1	
cis-1,2-Dichloroethene	ug/L	ND	20	20	21.2	10.0	106	50	70-130	72	M1,R1	
cis-1,3-Dichloropropene	ug/L	ND	20	20	20.5	10.1	103	51	70-130	68	M1,R1	
Dibromochloromethane	ug/L	ND	20	20	20.2	9.9	101	50	70-130	68	M1,R1	
Dibromomethane	ug/L	ND	20	20	19.4	9.7	97	48	70-130	67	M1,R1	
Dichlorodifluoromethane	ug/L	ND	20	20	23.9	11.7	119	59	70-130	68	M1,R1	
Diisopropyl ether	ug/L	ND	20	20	20.1	10.1	101	50	70-130	67	M1,R1	
Ethylbenzene	ug/L	ND	20	20	19.9	9.8	99	49	70-130	68	M1,R1	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	21.4	10.2	107	51	70-130	71	M1,R1	
m&p-Xylene	ug/L	ND	40	40	40.6	19.8	101	49	70-130	69	M1,R1	
Methyl-tert-butyl ether	ug/L	ND	20	20	19.9	9.9	99	49	70-130	67	M1,R1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Parameter	92387546047		MS		MSD		MS		MSD		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	MS Spike Conc.	MS Result	MSD Result	% Rec	% Rec						
Methylene Chloride	ug/L	ND	20	20	12.6	1.1J	63	6	70-130				M1	
Naphthalene	ug/L	ND	20	20	20.0	10.1	100	51	70-130	66	M1,R1			
o-Xylene	ug/L	ND	20	20	20.2	9.9	101	49	70-130	69	M1,R1			
p-Isopropyltoluene	ug/L	ND	20	20	20.3	10.1	101	50	70-130	67	M1,R1			
Styrene	ug/L	ND	20	20	19.9	9.8	100	49	70-130	68	M1,R1			
Tetrachloroethene	ug/L	ND	20	20	20.1	10.3	100	52	70-130	64	M1,R1			
Toluene	ug/L	ND	20	20	19.8	9.9	99	49	70-155	67	M1,R1			
trans-1,2-Dichloroethene	ug/L	ND	20	20	21.4	10.3	107	52	70-130	70	M1,R1			
trans-1,3-Dichloropropene	ug/L	ND	20	20	20.2	10.2	101	51	70-130	66	M1,R1			
Trichloroethene	ug/L	ND	20	20	20.0	10	100	50	69-151	67	M1,R1			
Trichlorofluoromethane	ug/L	ND	20	20	22.7	10.8	114	54	70-130	72	M1,R1			
Vinyl acetate	ug/L	ND	40	40	44.6	22.2	112	56	70-130	67	M1,R1			
Vinyl chloride	ug/L	ND	20	20	22.4	10.9	112	55	70-130	69	M1,R1			
Xylene (Total)	ug/L	ND	60	60	60.8	29.6	101	49	70-130	69	MS,RS			
1,2-Dichloroethane-d4 (S)	%						100	102	70-130					
4-Bromofluorobenzene (S)	%						101	100	70-130					
Toluene-d8 (S)	%						101	103	70-130					

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

QC Batch: 414845 Analysis Method: EPA 8260B Mod.

QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM

Associated Lab Samples: 92387603001, 92387603002

METHOD BLANK: 2300405 Matrix: Water

Associated Lab Samples: 92387603001, 92387603002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	06/12/18 12:36	
1,2-Dichloroethane-d4 (S)	%	105	50-150	06/12/18 12:36	S3
Toluene-d8 (S)	%	105	50-150	06/12/18 12:36	S3

LABORATORY CONTROL SAMPLE: 2300406

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	26.5	132	71-125	L1
1,2-Dichloroethane-d4 (S)	%			100	50-150	S0
Toluene-d8 (S)	%			98	50-150	S0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2300407 2300408

Parameter	Units	92387603001		2300407		2300408		% Rec Limits	RPD	Qual
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec			
1,4-Dioxane (p-Dioxane)	ug/L	ND	20	20	22.9	23.7	107	110	50-150	3
1,2-Dichloroethane-d4 (S)	%						102	102	50-150	S0
Toluene-d8 (S)	%						101	103	50-150	S0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

L1	Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
MS	Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.
R1	RPD value was outside control limits.
RS	The RPD value in one of the constituent analytes was outside the control limits.
S0	Surrogate recovery outside laboratory control limits.
S3	Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT 515 34613.3.13

Pace Project No.: 92387603

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92387603001	681-MtGileadChurchRd-EFF	EPA 8260	414936		
92387603002	681-MtGileadChurchRd-INF	EPA 8260	414936		
92387603001	681-MtGileadChurchRd-EFF	EPA 8260B Mod.	414845		
92387603002	681-MtGileadChurchRd-INF	EPA 8260B Mod.	414845		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples:
 Asheville Eden Greenwood ~~Huntersville~~ Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name: Hart & Hickman

Project #:

WO#: 92387603



Courier: Commercial Fed Ex Pace UPS USPS Other: Client

Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: 10/6-7-18

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen? Yes No N/A

Thermometer: IR Gun ID: 92T040 Type of Ice: Wet Blue None

Cooler Temp (°C): 2.5 Correction Factor: Add/Subtract (°C) +0.4

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 2.9

USDA Regulated Soil N/A, water sample

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?
 Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

		Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>		
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

Field Data Required? Yes No

COMMENTS/SAMPLE DISCREPANCY

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: [Signature]
 Project Manager SRF Review: [Signature]

Date: 10/7/18
 Date: 10/7/18

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Project # **WO# : 92387603**

PM: KRG

Due Date: 06/14/18

CLIENT: 92-NCDOTEAST

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	V5GU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)		
1																													
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

Divider
Page

June 15, 2018

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

RE: Project: DOT 515 34613.3.13
Pace Project No.: 92387609

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on June 07, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92387609001	Trip Blank	EPA 8260	CAH	63	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

General Information:

1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2303485)
 - Bromomethane
 - Methylene Chloride
- MSD (Lab ID: 2303486)
 - 1,1,1,2-Tetrachloroethane
 - 1,1,1-Trichloroethane
 - 1,1,2,2-Tetrachloroethane
 - 1,1,2-Trichloroethane
 - 1,1-Dichloroethane
 - 1,1-Dichloroethene
 - 1,1-Dichloropropene
 - 1,2,3-Trichlorobenzene
 - 1,2,3-Trichloropropane

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- 1,2,4-Trichlorobenzene
- 1,2-Dibromo-3-chloropropane
- 1,2-Dibromoethane (EDB)
- 1,2-Dichlorobenzene
- 1,2-Dichloroethane
- 1,2-Dichloropropane
- 1,3-Dichlorobenzene
- 1,3-Dichloropropane
- 1,4-Dichlorobenzene
- 2,2-Dichloropropane
- 2-Butanone (MEK)
- 2-Chlorotoluene
- 2-Hexanone
- 4-Chlorotoluene
- 4-Methyl-2-pentanone (MIBK)
- Acetone
- Benzene
- Bromobenzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform
- Bromomethane
- Carbon tetrachloride
- Chlorobenzene
- Chloroethane
- Chloroform
- Chloromethane
- Dibromochloromethane
- Dibromomethane
- Dichlorodifluoromethane
- Diisopropyl ether
- Ethylbenzene
- Hexachloro-1,3-butadiene
- Methyl-tert-butyl ether
- Methylene Chloride
- Naphthalene
- Styrene
- Tetrachloroethene
- Toluene
- Trichloroethene
- Trichlorofluoromethane
- Vinyl acetate
- Vinyl chloride

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13
Pace Project No.: 92387609

Method: EPA 8260
Description: 8260 MSV Low Level
Client: NCDOT East Central
Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- cis-1,2-Dichloroethene
- cis-1,3-Dichloropropene
- m&p-Xylene
- o-Xylene
- p-Isopropyltoluene
- trans-1,2-Dichloroethene
- trans-1,3-Dichloropropene

R1: RPD value was outside control limits.

- MSD (Lab ID: 2303486)
 - 1,1,1,2-Tetrachloroethane
 - 1,1,1-Trichloroethane
 - 1,1,2,2-Tetrachloroethane
 - 1,1,2-Trichloroethane
 - 1,1-Dichloroethane
 - 1,1-Dichloroethene
 - 1,1-Dichloropropene
 - 1,2,3-Trichlorobenzene
 - 1,2,3-Trichloropropane
 - 1,2,4-Trichlorobenzene
 - 1,2-Dibromo-3-chloropropane
 - 1,2-Dibromoethane (EDB)
 - 1,2-Dichlorobenzene
 - 1,2-Dichloroethane
 - 1,2-Dichloropropane
 - 1,3-Dichlorobenzene
 - 1,3-Dichloropropane
 - 1,4-Dichlorobenzene
 - 2,2-Dichloropropane
 - 2-Butanone (MEK)
 - 2-Chlorotoluene
 - 2-Hexanone
 - 4-Chlorotoluene
 - 4-Methyl-2-pentanone (MIBK)
 - Benzene
 - Bromobenzene
 - Bromochloromethane
 - Bromodichloromethane
 - Bromoform
 - Bromomethane
 - Carbon tetrachloride
 - Chlorobenzene
 - Chloroethane
 - Chloroform

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

R1: RPD value was outside control limits.

- Chloromethane
- Dibromochloromethane
- Dibromomethane
- Dichlorodifluoromethane
- Diisopropyl ether
- Ethylbenzene
- Hexachloro-1,3-butadiene
- Methyl-tert-butyl ether
- Naphthalene
- Styrene
- Tetrachloroethene
- Toluene
- Trichloroethene
- Trichlorofluoromethane
- Vinyl acetate
- Vinyl chloride
- cis-1,2-Dichloroethene
- cis-1,3-Dichloropropene
- m&p-Xylene
- o-Xylene
- p-Isopropyltoluene
- trans-1,2-Dichloroethene
- trans-1,3-Dichloropropene

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Sample: Trip Blank		Lab ID: 92387609001	Collected: 06/06/18 00:00	Received: 06/07/18 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		06/13/18 20:20	67-64-1	
Benzene	ND	ug/L	1.0	1		06/13/18 20:20	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/13/18 20:20	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/13/18 20:20	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/13/18 20:20	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/13/18 20:20	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/13/18 20:20	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/13/18 20:20	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/13/18 20:20	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/13/18 20:20	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/13/18 20:20	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/13/18 20:20	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 20:20	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 20:20	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/13/18 20:20	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/13/18 20:20	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/13/18 20:20	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/13/18 20:20	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/13/18 20:20	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/13/18 20:20	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/13/18 20:20	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/13/18 20:20	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 20:20	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 20:20	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 20:20	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/13/18 20:20	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 20:20	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/13/18 20:20	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 20:20	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 20:20	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/13/18 20:20	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/13/18 20:20	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/13/18 20:20	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		06/13/18 20:20	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/13/18 20:20	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/13/18 20:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/13/18 20:20	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/13/18 20:20	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/13/18 20:20	91-20-3	
Styrene	ND	ug/L	1.0	1		06/13/18 20:20	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 20:20	630-20-6	
1,1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 20:20	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/13/18 20:20	127-18-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Sample: Trip Blank	Lab ID: 92387609001	Collected: 06/06/18 00:00	Received: 06/07/18 12:30	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/13/18 20:20	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/13/18 20:20	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/13/18 20:20	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/13/18 20:20	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/13/18 20:20	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/13/18 20:20	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/13/18 20:20	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/13/18 20:20	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/13/18 20:20	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/13/18 20:20	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/13/18 20:20	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	1		06/13/18 20:20	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		06/13/18 20:20	17060-07-0	
Toluene-d8 (S)	99	%	70-130	1		06/13/18 20:20	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13
Pace Project No.: 92387609

QC Batch: 414936 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92387609001

METHOD BLANK: 2300999 Matrix: Water
Associated Lab Samples: 92387609001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,1-Trichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,2-Trichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2,3-Trichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	06/13/18 18:59	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,3-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,3-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,4-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
2,2-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
2-Butanone (MEK)	ug/L	ND	5.0	06/13/18 18:59	
2-Chlorotoluene	ug/L	ND	1.0	06/13/18 18:59	
2-Hexanone	ug/L	ND	5.0	06/13/18 18:59	
4-Chlorotoluene	ug/L	ND	1.0	06/13/18 18:59	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	06/13/18 18:59	
Acetone	ug/L	ND	25.0	06/13/18 18:59	
Benzene	ug/L	ND	1.0	06/13/18 18:59	
Bromobenzene	ug/L	ND	1.0	06/13/18 18:59	
Bromochloromethane	ug/L	ND	1.0	06/13/18 18:59	
Bromodichloromethane	ug/L	ND	1.0	06/13/18 18:59	
Bromoform	ug/L	ND	1.0	06/13/18 18:59	
Bromomethane	ug/L	ND	2.0	06/13/18 18:59	
Carbon tetrachloride	ug/L	ND	1.0	06/13/18 18:59	
Chlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
Chloroethane	ug/L	ND	1.0	06/13/18 18:59	
Chloroform	ug/L	ND	1.0	06/13/18 18:59	
Chloromethane	ug/L	ND	1.0	06/13/18 18:59	
cis-1,2-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
cis-1,3-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
Dibromochloromethane	ug/L	ND	1.0	06/13/18 18:59	
Dibromomethane	ug/L	ND	1.0	06/13/18 18:59	
Dichlorodifluoromethane	ug/L	ND	1.0	06/13/18 18:59	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

METHOD BLANK: 2300999

Matrix: Water

Associated Lab Samples: 92387609001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	06/13/18 18:59	
Ethylbenzene	ug/L	ND	1.0	06/13/18 18:59	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	06/13/18 18:59	
m&p-Xylene	ug/L	ND	2.0	06/13/18 18:59	
Methyl-tert-butyl ether	ug/L	ND	1.0	06/13/18 18:59	
Methylene Chloride	ug/L	ND	2.0	06/13/18 18:59	
Naphthalene	ug/L	ND	1.0	06/13/18 18:59	
o-Xylene	ug/L	ND	1.0	06/13/18 18:59	
p-Isopropyltoluene	ug/L	ND	1.0	06/13/18 18:59	
Styrene	ug/L	ND	1.0	06/13/18 18:59	
Tetrachloroethene	ug/L	ND	1.0	06/13/18 18:59	
Toluene	ug/L	ND	1.0	06/13/18 18:59	
trans-1,2-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
trans-1,3-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
Trichloroethene	ug/L	ND	1.0	06/13/18 18:59	
Trichlorofluoromethane	ug/L	ND	1.0	06/13/18 18:59	
Vinyl acetate	ug/L	ND	2.0	06/13/18 18:59	
Vinyl chloride	ug/L	ND	1.0	06/13/18 18:59	
Xylene (Total)	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloroethane-d4 (S)	%	99	70-130	06/13/18 18:59	
4-Bromofluorobenzene (S)	%	98	70-130	06/13/18 18:59	
Toluene-d8 (S)	%	101	70-130	06/13/18 18:59	

LABORATORY CONTROL SAMPLE: 2301000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	47.5	95	80-125	
1,1,1-Trichloroethane	ug/L	50	45.7	91	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	45.9	92	79-124	
1,1,2-Trichloroethane	ug/L	50	44.7	89	85-125	
1,1-Dichloroethane	ug/L	50	46.1	92	73-126	
1,1-Dichloroethene	ug/L	50	46.5	93	66-135	
1,1-Dichloropropene	ug/L	50	45.6	91	74-135	
1,2,3-Trichlorobenzene	ug/L	50	49.0	98	73-135	
1,2,3-Trichloropropane	ug/L	50	47.2	94	75-130	
1,2,4-Trichlorobenzene	ug/L	50	48.6	97	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	51.0	102	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	47.7	95	83-124	
1,2-Dichlorobenzene	ug/L	50	47.3	95	80-133	
1,2-Dichloroethane	ug/L	50	44.3	89	67-128	
1,2-Dichloropropane	ug/L	50	45.4	91	75-132	
1,3-Dichlorobenzene	ug/L	50	46.8	94	77-130	
1,3-Dichloropropane	ug/L	50	47.0	94	76-131	
1,4-Dichlorobenzene	ug/L	50	47.2	94	78-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

LABORATORY CONTROL SAMPLE: 2301000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	45.8	92	40-160	
2-Butanone (MEK)	ug/L	100	93.3	93	61-144	
2-Chlorotoluene	ug/L	50	46.0	92	74-132	
2-Hexanone	ug/L	100	95.1	95	68-143	
4-Chlorotoluene	ug/L	50	46.5	93	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	91.8	92	72-135	
Acetone	ug/L	100	97.2	97	48-146	
Benzene	ug/L	50	44.9	90	80-125	
Bromobenzene	ug/L	50	47.6	95	75-125	
Bromochloromethane	ug/L	50	45.5	91	71-125	
Bromodichloromethane	ug/L	50	47.6	95	78-124	
Bromoform	ug/L	50	52.6	105	71-128	
Bromomethane	ug/L	50	42.4	85	40-160	
Carbon tetrachloride	ug/L	50	47.8	96	69-131	
Chlorobenzene	ug/L	50	45.7	91	81-122	
Chloroethane	ug/L	50	29.0	58	39-148	
Chloroform	ug/L	50	45.2	90	73-127	
Chloromethane	ug/L	50	41.6	83	44-146	
cis-1,2-Dichloroethene	ug/L	50	47.4	95	74-124	
cis-1,3-Dichloropropene	ug/L	50	47.4	95	72-132	
Dibromochloromethane	ug/L	50	50.3	101	78-125	
Dibromomethane	ug/L	50	45.7	91	82-120	
Dichlorodifluoromethane	ug/L	50	42.9	86	34-157	
Diisopropyl ether	ug/L	50	47.3	95	69-135	
Ethylbenzene	ug/L	50	45.8	92	79-121	
Hexachloro-1,3-butadiene	ug/L	50	49.0	98	72-131	
m&p-Xylene	ug/L	100	92.4	92	81-124	
Methyl-tert-butyl ether	ug/L	50	46.9	94	74-131	
Methylene Chloride	ug/L	50	46.6	93	64-133	
Naphthalene	ug/L	50	49.1	98	73-133	
o-Xylene	ug/L	50	46.7	93	79-131	
p-Isopropyltoluene	ug/L	50	47.3	95	80-131	
Styrene	ug/L	50	46.4	93	84-126	
Tetrachloroethene	ug/L	50	43.9	88	78-122	
Toluene	ug/L	50	44.4	89	80-121	
trans-1,2-Dichloroethene	ug/L	50	47.9	96	71-127	
trans-1,3-Dichloropropene	ug/L	50	47.5	95	69-141	
Trichloroethene	ug/L	50	46.0	92	78-122	
Trichlorofluoromethane	ug/L	50	38.2	76	53-137	
Vinyl acetate	ug/L	100	109	109	40-160	
Vinyl chloride	ug/L	50	45.8	92	50-150	
Xylene (Total)	ug/L	150	139	93	81-126	
1,2-Dichloroethane-d4 (S)	%			101	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			100	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Parameter	92387546047		MS	MSD	2303485		2303486		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	20.0	9.6	100	48	70-130	70	M1,R1	
1,1,1-Trichloroethane	ug/L	ND	20	20	21.0	10.2	105	51	70-130	70	M1,R1	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	19.1	9.6	96	48	70-130	66	M1,R1	
1,1,2-Trichloroethane	ug/L	ND	20	20	19.3	9.6	97	48	70-130	67	M1,R1	
1,1-Dichloroethane	ug/L	ND	20	20	20.3	10	102	50	70-130	68	M1,R1	
1,1-Dichloroethene	ug/L	ND	20	20	22.6	10.7	113	54	70-166	71	M1,R1	
1,1-Dichloropropene	ug/L	ND	20	20	21.1	10.5	106	52	70-130	67	M1,R1	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	20.4	10.3	102	51	70-130	66	M1,R1	
1,2,3-Trichloropropane	ug/L	ND	20	20	19.2	9.4	96	47	70-130	69	M1,R1	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	21.0	10.4	105	52	70-130	67	M1,R1	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	19.5	10.4	97	52	70-130	61	M1,R1	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	20.0	9.9	100	50	70-130	67	M1,R1	
1,2-Dichlorobenzene	ug/L	ND	20	20	19.7	9.8	98	49	70-130	67	M1,R1	
1,2-Dichloroethane	ug/L	ND	20	20	18.8	9.5	94	47	70-130	66	M1,R1	
1,2-Dichloropropane	ug/L	ND	20	20	19.6	9.4	98	47	70-130	70	M1,R1	
1,3-Dichlorobenzene	ug/L	ND	20	20	19.4	9.5	97	48	70-130	68	M1,R1	
1,3-Dichloropropane	ug/L	ND	20	20	20.0	9.7	100	48	70-130	70	M1,R1	
1,4-Dichlorobenzene	ug/L	ND	20	20	19.5	9.6	97	48	70-130	67	M1,R1	
2,2-Dichloropropane	ug/L	ND	20	20	23.9	11.7	119	59	70-130	68	M1,R1	
2-Butanone (MEK)	ug/L	ND	40	40	41.4	21.8	104	55	70-130	62	M1,R1	
2-Chlorotoluene	ug/L	ND	20	20	18.6	9.5	93	47	70-130	65	M1,R1	
2-Hexanone	ug/L	ND	40	40	41.1	20.8	103	52	70-130	65	M1,R1	
4-Chlorotoluene	ug/L	ND	20	20	19.5	9.7	97	48	70-130	67	M1,R1	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	40	40.1	21.4	100	53	70-130	61	M1,R1	
Acetone	ug/L	ND	40	40	41.3	22.6J	103	56	70-130		M1	
Benzene	ug/L	ND	20	20	19.8	9.8	99	49	70-148	68	M1,R1	
Bromobenzene	ug/L	ND	20	20	19.5	9.8	97	49	70-130	66	M1,R1	
Bromochloromethane	ug/L	ND	20	20	20.1	10.0	101	50	70-130	67	M1,R1	
Bromodichloromethane	ug/L	ND	20	20	20.0	10	100	50	70-130	67	M1,R1	
Bromoform	ug/L	ND	20	20	20.1	9.8	101	49	70-130	69	M1,R1	
Bromomethane	ug/L	ND	20	20	13.8	4.5	69	23	70-130	102	M1,R1	
Carbon tetrachloride	ug/L	ND	20	20	21.5	10.5	108	53	70-130	69	M1,R1	
Chlorobenzene	ug/L	ND	20	20	19.7	9.5	98	47	70-146	70	M1,R1	
Chloroethane	ug/L	ND	20	20	19.7	10.7	99	53	70-130	59	M1,R1	
Chloroform	ug/L	ND	20	20	19.7	9.7	98	48	70-130	68	M1,R1	
Chloromethane	ug/L	ND	20	20	18.0	9.3	90	47	70-130	63	M1,R1	
cis-1,2-Dichloroethene	ug/L	ND	20	20	21.2	10.0	106	50	70-130	72	M1,R1	
cis-1,3-Dichloropropene	ug/L	ND	20	20	20.5	10.1	103	51	70-130	68	M1,R1	
Dibromochloromethane	ug/L	ND	20	20	20.2	9.9	101	50	70-130	68	M1,R1	
Dibromomethane	ug/L	ND	20	20	19.4	9.7	97	48	70-130	67	M1,R1	
Dichlorodifluoromethane	ug/L	ND	20	20	23.9	11.7	119	59	70-130	68	M1,R1	
Diisopropyl ether	ug/L	ND	20	20	20.1	10.1	101	50	70-130	67	M1,R1	
Ethylbenzene	ug/L	ND	20	20	19.9	9.8	99	49	70-130	68	M1,R1	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	21.4	10.2	107	51	70-130	71	M1,R1	
m&p-Xylene	ug/L	ND	40	40	40.6	19.8	101	49	70-130	69	M1,R1	
Methyl-tert-butyl ether	ug/L	ND	20	20	19.9	9.9	99	49	70-130	67	M1,R1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Parameter	92387546047		MS		MSD		MS		MSD		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	MS Spike Conc.	MS Result	MSD Result	% Rec	% Rec						
Methylene Chloride	ug/L	ND	20	20	12.6	1.1J	63	6	70-130				M1	
Naphthalene	ug/L	ND	20	20	20.0	10.1	100	51	70-130	66	M1,R1			
o-Xylene	ug/L	ND	20	20	20.2	9.9	101	49	70-130	69	M1,R1			
p-Isopropyltoluene	ug/L	ND	20	20	20.3	10.1	101	50	70-130	67	M1,R1			
Styrene	ug/L	ND	20	20	19.9	9.8	100	49	70-130	68	M1,R1			
Tetrachloroethene	ug/L	ND	20	20	20.1	10.3	100	52	70-130	64	M1,R1			
Toluene	ug/L	ND	20	20	19.8	9.9	99	49	70-155	67	M1,R1			
trans-1,2-Dichloroethene	ug/L	ND	20	20	21.4	10.3	107	52	70-130	70	M1,R1			
trans-1,3-Dichloropropene	ug/L	ND	20	20	20.2	10.2	101	51	70-130	66	M1,R1			
Trichloroethene	ug/L	ND	20	20	20.0	10	100	50	69-151	67	M1,R1			
Trichlorofluoromethane	ug/L	ND	20	20	22.7	10.8	114	54	70-130	72	M1,R1			
Vinyl acetate	ug/L	ND	40	40	44.6	22.2	112	56	70-130	67	M1,R1			
Vinyl chloride	ug/L	ND	20	20	22.4	10.9	112	55	70-130	69	M1,R1			
Xylene (Total)	ug/L	ND	60	60	60.8	29.6	101	49	70-130	69	MS,RS			
1,2-Dichloroethane-d4 (S)	%						100	102	70-130					
4-Bromofluorobenzene (S)	%						101	100	70-130					
Toluene-d8 (S)	%						101	103	70-130					

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT 515 34613.3.13
Pace Project No.: 92387609

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

MS Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.

R1 RPD value was outside control limits.

RS The RPD value in one of the constituent analytes was outside the control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92387609001	Trip Blank	EPA 8260	414936		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name: Hart & Hickman

Project: **WO# : 92387609**

Courier: Fed Ex UPS USPS Client
 Commercial Pace Other: _____



Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: LOL-7-78

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen? Yes No N/A

Thermometer: IR Gun ID: 92T040 Type of Ice: Wet Blue None

Cooler Temp (°C): 2.5 Correction Factor: Add/Subtract (°C) +0.4

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 2.9

USDA Regulated Soil N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?
 Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

			Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.	
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.	
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>			
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.	
Trip Blank Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? Yes No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Samples submitted with Trip Blank on separate projects (92387603 & 92387605) collected 6/6/18. KG.

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: [Signature]
 Project Manager SRF Review: [Signature]

Date: 6/7/18
 Date: 6/7/18

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project # **WO# : 92387609**

PM: KRG

Due Date: 06/14/18

CLIENT: 92-NCDOTEAST

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved Vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)	
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

771

Via US Mail

June 18, 2018

Erica and Mark Sanders
771 Mt. Gilead Church Rd.
Pittsboro, NC 27312

Re: June 2018 Water Supply Sampling Results
Pittsboro, NC
H&H Job No. DOT-515

Dear Mr. and Mrs. Sanders:

On behalf of the North Carolina Department of Transportation, Hart and Hickman, PC (H&H) is providing this letter to document the results of the water supply well sampling conducted at your residence at 771 Mt. Gilead Church Rd on June 6, 2018. A point of entry carbon treatment system was installed on this water supply well in September 2013 as a precautionary measure. During the June 6, 2018 sampling event, H&H personnel collected a pre-treatment system water sample (sample identified as 771 MT. GILEAD CHURCH RD-INF) and a post-treatment water sample (sample identified as 771 MT. GILEAD CHURCH RD-EFF). The samples were collected in laboratory-supplied sample containers and submitted to Pace Analytical Services Inc. for analysis of certain volatile organic compounds (VOCs). A quality control sample labeled trip blank was also analyzed.

The results of the laboratory analyses indicate that target compounds were not present above laboratory reporting limits in the pre-treatment water sample or the post-treatment water sample. No compounds were detected in the quality control trip blank sample. The laboratory reports documenting the results are attached for your reference. The next sampling event is scheduled for September 2018.

Mr. and Mrs. Sanders
June 18, 2018
Page 2 of 2

If you have any questions, please do not hesitate to contact us at (704) 586-0007.

Very truly yours,

Hart & Hickman, PC



Greg Kanellis, PE
Senior Project Engineer



Matt Bramblett, PE
Principal

Attachment: Laboratory Analytical Results

Cc: Mr. Jason Prosser, NCDOT (Via Email)
Mr. Layton Long, Chatham County Health Dept. (Via Email)
Ms. Stephanie Grubbs, NC DEQ (Via Email)

Divider
Page

June 15, 2018

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

RE: Project: DOT 515 34613.3.13
Pace Project No.: 92387605

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on June 07, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT 515 34613.3.13
Pace Project No.: 92387605

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92387605001	771-MtGileadChurchRd-EFF	EPA 8260	CAH	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C
92387605002	771-MtGileadChurchRd-INF	EPA 8260	CAH	63	PASI-C
		EPA 8260B Mod.	DLK	3	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

General Information:

2 samples were analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2303485)
 - Bromomethane
 - Methylene Chloride
- MSD (Lab ID: 2303486)
 - 1,1,1,2-Tetrachloroethane
 - 1,1,1-Trichloroethane
 - 1,1,2,2-Tetrachloroethane
 - 1,1,2-Trichloroethane
 - 1,1-Dichloroethane
 - 1,1-Dichloroethene
 - 1,1-Dichloropropene
 - 1,2,3-Trichlorobenzene
 - 1,2,3-Trichloropropane

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- 1,2,4-Trichlorobenzene
- 1,2-Dibromo-3-chloropropane
- 1,2-Dibromoethane (EDB)
- 1,2-Dichlorobenzene
- 1,2-Dichloroethane
- 1,2-Dichloropropane
- 1,3-Dichlorobenzene
- 1,3-Dichloropropane
- 1,4-Dichlorobenzene
- 2,2-Dichloropropane
- 2-Butanone (MEK)
- 2-Chlorotoluene
- 2-Hexanone
- 4-Chlorotoluene
- 4-Methyl-2-pentanone (MIBK)
- Acetone
- Benzene
- Bromobenzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform
- Bromomethane
- Carbon tetrachloride
- Chlorobenzene
- Chloroethane
- Chloroform
- Chloromethane
- Dibromochloromethane
- Dibromomethane
- Dichlorodifluoromethane
- Diisopropyl ether
- Ethylbenzene
- Hexachloro-1,3-butadiene
- Methyl-tert-butyl ether
- Methylene Chloride
- Naphthalene
- Styrene
- Tetrachloroethene
- Toluene
- Trichloroethene
- Trichlorofluoromethane
- Vinyl acetate
- Vinyl chloride

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- cis-1,2-Dichloroethene
- cis-1,3-Dichloropropene
- m&p-Xylene
- o-Xylene
- p-Isopropyltoluene
- trans-1,2-Dichloroethene
- trans-1,3-Dichloropropene

R1: RPD value was outside control limits.

- MSD (Lab ID: 2303486)
 - 1,1,1,2-Tetrachloroethane
 - 1,1,1-Trichloroethane
 - 1,1,2,2-Tetrachloroethane
 - 1,1,2-Trichloroethane
 - 1,1-Dichloroethane
 - 1,1-Dichloroethene
 - 1,1-Dichloropropene
 - 1,2,3-Trichlorobenzene
 - 1,2,3-Trichloropropane
 - 1,2,4-Trichlorobenzene
 - 1,2-Dibromo-3-chloropropane
 - 1,2-Dibromoethane (EDB)
 - 1,2-Dichlorobenzene
 - 1,2-Dichloroethane
 - 1,2-Dichloropropane
 - 1,3-Dichlorobenzene
 - 1,3-Dichloropropane
 - 1,4-Dichlorobenzene
 - 2,2-Dichloropropane
 - 2-Butanone (MEK)
 - 2-Chlorotoluene
 - 2-Hexanone
 - 4-Chlorotoluene
 - 4-Methyl-2-pentanone (MIBK)
 - Benzene
 - Bromobenzene
 - Bromochloromethane
 - Bromodichloromethane
 - Bromoform
 - Bromomethane
 - Carbon tetrachloride
 - Chlorobenzene
 - Chloroethane
 - Chloroform

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

R1: RPD value was outside control limits.

- Chloromethane
- Dibromochloromethane
- Dibromomethane
- Dichlorodifluoromethane
- Diisopropyl ether
- Ethylbenzene
- Hexachloro-1,3-butadiene
- Methyl-tert-butyl ether
- Naphthalene
- Styrene
- Tetrachloroethene
- Toluene
- Trichloroethene
- Trichlorofluoromethane
- Vinyl acetate
- Vinyl chloride
- cis-1,2-Dichloroethene
- cis-1,3-Dichloropropene
- m&p-Xylene
- o-Xylene
- p-Isopropyltoluene
- trans-1,2-Dichloroethene
- trans-1,3-Dichloropropene

Additional Comments:

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Method: EPA 8260B Mod.

Description: 8260 MSV SIM

Client: NCDOT East Central

Date: June 15, 2018

General Information:

2 samples were analyzed for EPA 8260B Mod.. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

QC Batch: 414845

S0: Surrogate recovery outside laboratory control limits.

- LCS (Lab ID: 2300406)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)
- MS (Lab ID: 2300407)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)
- MSD (Lab ID: 2300408)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)

S3: Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.

- 771-MtGileadChurchRd-EFF (Lab ID: 92387605001)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)
- 771-MtGileadChurchRd-INF (Lab ID: 92387605002)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)
- BLANK (Lab ID: 2300405)
 - 1,2-Dichloroethane-d4 (S)
 - Toluene-d8 (S)

Method Blank:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Method: EPA 8260B Mod.

Description: 8260 MSV SIM

Client: NCDOT East Central

Date: June 15, 2018

Laboratory Control Spike:

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

QC Batch: 414845

L1: Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.

- LCS (Lab ID: 2300406)
 - 1,4-Dioxane (p-Dioxane)

Matrix Spikes:

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

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Sample: 771-MtGileadChurchRd-EFF **Lab ID: 92387605001** Collected: 06/06/18 11:30 Received: 06/07/18 12:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		06/13/18 22:30	67-64-1	
Benzene	ND	ug/L	1.0	1		06/13/18 22:30	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/13/18 22:30	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/13/18 22:30	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/13/18 22:30	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/13/18 22:30	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/13/18 22:30	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/13/18 22:30	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/13/18 22:30	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/13/18 22:30	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/13/18 22:30	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/13/18 22:30	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/13/18 22:30	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 22:30	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 22:30	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/13/18 22:30	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/13/18 22:30	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/13/18 22:30	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/13/18 22:30	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:30	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:30	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:30	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/13/18 22:30	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/13/18 22:30	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/13/18 22:30	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/13/18 22:30	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 22:30	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 22:30	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 22:30	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/13/18 22:30	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 22:30	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/13/18 22:30	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 22:30	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 22:30	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/13/18 22:30	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/13/18 22:30	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/13/18 22:30	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		06/13/18 22:30	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/13/18 22:30	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/13/18 22:30	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/13/18 22:30	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/13/18 22:30	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/13/18 22:30	91-20-3	
Styrene	ND	ug/L	1.0	1		06/13/18 22:30	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 22:30	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 22:30	79-34-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Sample: 771-MtGileadChurchRd-EFF **Lab ID:** 92387605001 Collected: 06/06/18 11:30 Received: 06/07/18 12:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Tetrachloroethene	ND	ug/L	1.0	1		06/13/18 22:30	127-18-4	
Toluene	ND	ug/L	1.0	1		06/13/18 22:30	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:30	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:30	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/13/18 22:30	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/13/18 22:30	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/13/18 22:30	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/13/18 22:30	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/13/18 22:30	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/13/18 22:30	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/13/18 22:30	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/13/18 22:30	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/13/18 22:30	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/13/18 22:30	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	1		06/13/18 22:30	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		06/13/18 22:30	17060-07-0	
Toluene-d8 (S)	101	%	70-130	1		06/13/18 22:30	2037-26-5	
8260 MSV SIM		Analytical Method: EPA 8260B Mod.						
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/12/18 13:15	123-91-1	L1
Surrogates								
1,2-Dichloroethane-d4 (S)	105	%	50-150	1		06/12/18 13:15	17060-07-0	S3
Toluene-d8 (S)	107	%	50-150	1		06/12/18 13:15	2037-26-5	S3

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

**Sample: 771-MtGileadChurchRd-
INF** **Lab ID: 92387605002** Collected: 06/06/18 11:45 Received: 06/07/18 12:30 Matrix: Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		06/13/18 22:46	67-64-1	
Benzene	ND	ug/L	1.0	1		06/13/18 22:46	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/13/18 22:46	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/13/18 22:46	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/13/18 22:46	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/13/18 22:46	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/13/18 22:46	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/13/18 22:46	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/13/18 22:46	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/13/18 22:46	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/13/18 22:46	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/13/18 22:46	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/13/18 22:46	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 22:46	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 22:46	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/13/18 22:46	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/13/18 22:46	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/13/18 22:46	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/13/18 22:46	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:46	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:46	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:46	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/13/18 22:46	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/13/18 22:46	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/13/18 22:46	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/13/18 22:46	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 22:46	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 22:46	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 22:46	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/13/18 22:46	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 22:46	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/13/18 22:46	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 22:46	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 22:46	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/13/18 22:46	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/13/18 22:46	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/13/18 22:46	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		06/13/18 22:46	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/13/18 22:46	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/13/18 22:46	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/13/18 22:46	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/13/18 22:46	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/13/18 22:46	91-20-3	
Styrene	ND	ug/L	1.0	1		06/13/18 22:46	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 22:46	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 22:46	79-34-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13
Pace Project No.: 92387605

Sample: 771-MtGileadChurchRd-
INF **Lab ID:** 92387605002 **Collected:** 06/06/18 11:45 **Received:** 06/07/18 12:30 **Matrix:** Water

Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Tetrachloroethene	ND	ug/L	1.0	1		06/13/18 22:46	127-18-4	
Toluene	ND	ug/L	1.0	1		06/13/18 22:46	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:46	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 22:46	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/13/18 22:46	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/13/18 22:46	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/13/18 22:46	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/13/18 22:46	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/13/18 22:46	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/13/18 22:46	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/13/18 22:46	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/13/18 22:46	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/13/18 22:46	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/13/18 22:46	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	98	%	70-130	1		06/13/18 22:46	460-00-4	
1,2-Dichloroethane-d4 (S)	97	%	70-130	1		06/13/18 22:46	17060-07-0	
Toluene-d8 (S)	102	%	70-130	1		06/13/18 22:46	2037-26-5	
8260 MSV SIM		Analytical Method: EPA 8260B Mod.						
1,4-Dioxane (p-Dioxane)	ND	ug/L	2.0	1		06/12/18 13:34	123-91-1	L1
Surrogates								
1,2-Dichloroethane-d4 (S)	106	%	50-150	1		06/12/18 13:34	17060-07-0	S3
Toluene-d8 (S)	108	%	50-150	1		06/12/18 13:34	2037-26-5	S3

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

QC Batch: 414936

Analysis Method: EPA 8260

QC Batch Method: EPA 8260

Analysis Description: 8260 MSV Low Level

Associated Lab Samples: 92387605001, 92387605002

METHOD BLANK: 2300999

Matrix: Water

Associated Lab Samples: 92387605001, 92387605002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,1-Trichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,2-Trichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2,3-Trichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	06/13/18 18:59	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,3-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,3-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,4-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
2,2-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
2-Butanone (MEK)	ug/L	ND	5.0	06/13/18 18:59	
2-Chlorotoluene	ug/L	ND	1.0	06/13/18 18:59	
2-Hexanone	ug/L	ND	5.0	06/13/18 18:59	
4-Chlorotoluene	ug/L	ND	1.0	06/13/18 18:59	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	06/13/18 18:59	
Acetone	ug/L	ND	25.0	06/13/18 18:59	
Benzene	ug/L	ND	1.0	06/13/18 18:59	
Bromobenzene	ug/L	ND	1.0	06/13/18 18:59	
Bromochloromethane	ug/L	ND	1.0	06/13/18 18:59	
Bromodichloromethane	ug/L	ND	1.0	06/13/18 18:59	
Bromoform	ug/L	ND	1.0	06/13/18 18:59	
Bromomethane	ug/L	ND	2.0	06/13/18 18:59	
Carbon tetrachloride	ug/L	ND	1.0	06/13/18 18:59	
Chlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
Chloroethane	ug/L	ND	1.0	06/13/18 18:59	
Chloroform	ug/L	ND	1.0	06/13/18 18:59	
Chloromethane	ug/L	ND	1.0	06/13/18 18:59	
cis-1,2-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
cis-1,3-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
Dibromochloromethane	ug/L	ND	1.0	06/13/18 18:59	
Dibromomethane	ug/L	ND	1.0	06/13/18 18:59	
Dichlorodifluoromethane	ug/L	ND	1.0	06/13/18 18:59	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

METHOD BLANK: 2300999

Matrix: Water

Associated Lab Samples: 92387605001, 92387605002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	06/13/18 18:59	
Ethylbenzene	ug/L	ND	1.0	06/13/18 18:59	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	06/13/18 18:59	
m&p-Xylene	ug/L	ND	2.0	06/13/18 18:59	
Methyl-tert-butyl ether	ug/L	ND	1.0	06/13/18 18:59	
Methylene Chloride	ug/L	ND	2.0	06/13/18 18:59	
Naphthalene	ug/L	ND	1.0	06/13/18 18:59	
o-Xylene	ug/L	ND	1.0	06/13/18 18:59	
p-Isopropyltoluene	ug/L	ND	1.0	06/13/18 18:59	
Styrene	ug/L	ND	1.0	06/13/18 18:59	
Tetrachloroethene	ug/L	ND	1.0	06/13/18 18:59	
Toluene	ug/L	ND	1.0	06/13/18 18:59	
trans-1,2-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
trans-1,3-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
Trichloroethene	ug/L	ND	1.0	06/13/18 18:59	
Trichlorofluoromethane	ug/L	ND	1.0	06/13/18 18:59	
Vinyl acetate	ug/L	ND	2.0	06/13/18 18:59	
Vinyl chloride	ug/L	ND	1.0	06/13/18 18:59	
Xylene (Total)	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloroethane-d4 (S)	%	99	70-130	06/13/18 18:59	
4-Bromofluorobenzene (S)	%	98	70-130	06/13/18 18:59	
Toluene-d8 (S)	%	101	70-130	06/13/18 18:59	

LABORATORY CONTROL SAMPLE: 2301000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	47.5	95	80-125	
1,1,1-Trichloroethane	ug/L	50	45.7	91	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	45.9	92	79-124	
1,1,2-Trichloroethane	ug/L	50	44.7	89	85-125	
1,1-Dichloroethane	ug/L	50	46.1	92	73-126	
1,1-Dichloroethene	ug/L	50	46.5	93	66-135	
1,1-Dichloropropene	ug/L	50	45.6	91	74-135	
1,2,3-Trichlorobenzene	ug/L	50	49.0	98	73-135	
1,2,3-Trichloropropane	ug/L	50	47.2	94	75-130	
1,2,4-Trichlorobenzene	ug/L	50	48.6	97	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	51.0	102	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	47.7	95	83-124	
1,2-Dichlorobenzene	ug/L	50	47.3	95	80-133	
1,2-Dichloroethane	ug/L	50	44.3	89	67-128	
1,2-Dichloropropane	ug/L	50	45.4	91	75-132	
1,3-Dichlorobenzene	ug/L	50	46.8	94	77-130	
1,3-Dichloropropane	ug/L	50	47.0	94	76-131	
1,4-Dichlorobenzene	ug/L	50	47.2	94	78-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

LABORATORY CONTROL SAMPLE: 2301000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	45.8	92	40-160	
2-Butanone (MEK)	ug/L	100	93.3	93	61-144	
2-Chlorotoluene	ug/L	50	46.0	92	74-132	
2-Hexanone	ug/L	100	95.1	95	68-143	
4-Chlorotoluene	ug/L	50	46.5	93	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	91.8	92	72-135	
Acetone	ug/L	100	97.2	97	48-146	
Benzene	ug/L	50	44.9	90	80-125	
Bromobenzene	ug/L	50	47.6	95	75-125	
Bromochloromethane	ug/L	50	45.5	91	71-125	
Bromodichloromethane	ug/L	50	47.6	95	78-124	
Bromoform	ug/L	50	52.6	105	71-128	
Bromomethane	ug/L	50	42.4	85	40-160	
Carbon tetrachloride	ug/L	50	47.8	96	69-131	
Chlorobenzene	ug/L	50	45.7	91	81-122	
Chloroethane	ug/L	50	29.0	58	39-148	
Chloroform	ug/L	50	45.2	90	73-127	
Chloromethane	ug/L	50	41.6	83	44-146	
cis-1,2-Dichloroethene	ug/L	50	47.4	95	74-124	
cis-1,3-Dichloropropene	ug/L	50	47.4	95	72-132	
Dibromochloromethane	ug/L	50	50.3	101	78-125	
Dibromomethane	ug/L	50	45.7	91	82-120	
Dichlorodifluoromethane	ug/L	50	42.9	86	34-157	
Diisopropyl ether	ug/L	50	47.3	95	69-135	
Ethylbenzene	ug/L	50	45.8	92	79-121	
Hexachloro-1,3-butadiene	ug/L	50	49.0	98	72-131	
m&p-Xylene	ug/L	100	92.4	92	81-124	
Methyl-tert-butyl ether	ug/L	50	46.9	94	74-131	
Methylene Chloride	ug/L	50	46.6	93	64-133	
Naphthalene	ug/L	50	49.1	98	73-133	
o-Xylene	ug/L	50	46.7	93	79-131	
p-Isopropyltoluene	ug/L	50	47.3	95	80-131	
Styrene	ug/L	50	46.4	93	84-126	
Tetrachloroethene	ug/L	50	43.9	88	78-122	
Toluene	ug/L	50	44.4	89	80-121	
trans-1,2-Dichloroethene	ug/L	50	47.9	96	71-127	
trans-1,3-Dichloropropene	ug/L	50	47.5	95	69-141	
Trichloroethene	ug/L	50	46.0	92	78-122	
Trichlorofluoromethane	ug/L	50	38.2	76	53-137	
Vinyl acetate	ug/L	100	109	109	40-160	
Vinyl chloride	ug/L	50	45.8	92	50-150	
Xylene (Total)	ug/L	150	139	93	81-126	
1,2-Dichloroethane-d4 (S)	%			101	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			100	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Parameter	92387546047		MS	MSD	2303485		2303486		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	20.0	9.6	100	48	70-130	70	M1,R1	
1,1,1-Trichloroethane	ug/L	ND	20	20	21.0	10.2	105	51	70-130	70	M1,R1	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	19.1	9.6	96	48	70-130	66	M1,R1	
1,1,2-Trichloroethane	ug/L	ND	20	20	19.3	9.6	97	48	70-130	67	M1,R1	
1,1-Dichloroethane	ug/L	ND	20	20	20.3	10	102	50	70-130	68	M1,R1	
1,1-Dichloroethene	ug/L	ND	20	20	22.6	10.7	113	54	70-166	71	M1,R1	
1,1-Dichloropropene	ug/L	ND	20	20	21.1	10.5	106	52	70-130	67	M1,R1	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	20.4	10.3	102	51	70-130	66	M1,R1	
1,2,3-Trichloropropane	ug/L	ND	20	20	19.2	9.4	96	47	70-130	69	M1,R1	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	21.0	10.4	105	52	70-130	67	M1,R1	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	19.5	10.4	97	52	70-130	61	M1,R1	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	20.0	9.9	100	50	70-130	67	M1,R1	
1,2-Dichlorobenzene	ug/L	ND	20	20	19.7	9.8	98	49	70-130	67	M1,R1	
1,2-Dichloroethane	ug/L	ND	20	20	18.8	9.5	94	47	70-130	66	M1,R1	
1,2-Dichloropropane	ug/L	ND	20	20	19.6	9.4	98	47	70-130	70	M1,R1	
1,3-Dichlorobenzene	ug/L	ND	20	20	19.4	9.5	97	48	70-130	68	M1,R1	
1,3-Dichloropropane	ug/L	ND	20	20	20.0	9.7	100	48	70-130	70	M1,R1	
1,4-Dichlorobenzene	ug/L	ND	20	20	19.5	9.6	97	48	70-130	67	M1,R1	
2,2-Dichloropropane	ug/L	ND	20	20	23.9	11.7	119	59	70-130	68	M1,R1	
2-Butanone (MEK)	ug/L	ND	40	40	41.4	21.8	104	55	70-130	62	M1,R1	
2-Chlorotoluene	ug/L	ND	20	20	18.6	9.5	93	47	70-130	65	M1,R1	
2-Hexanone	ug/L	ND	40	40	41.1	20.8	103	52	70-130	65	M1,R1	
4-Chlorotoluene	ug/L	ND	20	20	19.5	9.7	97	48	70-130	67	M1,R1	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	40	40.1	21.4	100	53	70-130	61	M1,R1	
Acetone	ug/L	ND	40	40	41.3	22.6J	103	56	70-130		M1	
Benzene	ug/L	ND	20	20	19.8	9.8	99	49	70-148	68	M1,R1	
Bromobenzene	ug/L	ND	20	20	19.5	9.8	97	49	70-130	66	M1,R1	
Bromochloromethane	ug/L	ND	20	20	20.1	10.0	101	50	70-130	67	M1,R1	
Bromodichloromethane	ug/L	ND	20	20	20.0	10	100	50	70-130	67	M1,R1	
Bromoform	ug/L	ND	20	20	20.1	9.8	101	49	70-130	69	M1,R1	
Bromomethane	ug/L	ND	20	20	13.8	4.5	69	23	70-130	102	M1,R1	
Carbon tetrachloride	ug/L	ND	20	20	21.5	10.5	108	53	70-130	69	M1,R1	
Chlorobenzene	ug/L	ND	20	20	19.7	9.5	98	47	70-146	70	M1,R1	
Chloroethane	ug/L	ND	20	20	19.7	10.7	99	53	70-130	59	M1,R1	
Chloroform	ug/L	ND	20	20	19.7	9.7	98	48	70-130	68	M1,R1	
Chloromethane	ug/L	ND	20	20	18.0	9.3	90	47	70-130	63	M1,R1	
cis-1,2-Dichloroethene	ug/L	ND	20	20	21.2	10.0	106	50	70-130	72	M1,R1	
cis-1,3-Dichloropropene	ug/L	ND	20	20	20.5	10.1	103	51	70-130	68	M1,R1	
Dibromochloromethane	ug/L	ND	20	20	20.2	9.9	101	50	70-130	68	M1,R1	
Dibromomethane	ug/L	ND	20	20	19.4	9.7	97	48	70-130	67	M1,R1	
Dichlorodifluoromethane	ug/L	ND	20	20	23.9	11.7	119	59	70-130	68	M1,R1	
Diisopropyl ether	ug/L	ND	20	20	20.1	10.1	101	50	70-130	67	M1,R1	
Ethylbenzene	ug/L	ND	20	20	19.9	9.8	99	49	70-130	68	M1,R1	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	21.4	10.2	107	51	70-130	71	M1,R1	
m&p-Xylene	ug/L	ND	40	40	40.6	19.8	101	49	70-130	69	M1,R1	
Methyl-tert-butyl ether	ug/L	ND	20	20	19.9	9.9	99	49	70-130	67	M1,R1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Parameter	92387546047		MS		MSD		MS		MSD		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec						
Methylene Chloride	ug/L	ND	20	20	12.6	1.1J	63	6	70-130				M1	
Naphthalene	ug/L	ND	20	20	20.0	10.1	100	51	70-130	66	M1,R1			
o-Xylene	ug/L	ND	20	20	20.2	9.9	101	49	70-130	69	M1,R1			
p-Isopropyltoluene	ug/L	ND	20	20	20.3	10.1	101	50	70-130	67	M1,R1			
Styrene	ug/L	ND	20	20	19.9	9.8	100	49	70-130	68	M1,R1			
Tetrachloroethene	ug/L	ND	20	20	20.1	10.3	100	52	70-130	64	M1,R1			
Toluene	ug/L	ND	20	20	19.8	9.9	99	49	70-155	67	M1,R1			
trans-1,2-Dichloroethene	ug/L	ND	20	20	21.4	10.3	107	52	70-130	70	M1,R1			
trans-1,3-Dichloropropene	ug/L	ND	20	20	20.2	10.2	101	51	70-130	66	M1,R1			
Trichloroethene	ug/L	ND	20	20	20.0	10	100	50	69-151	67	M1,R1			
Trichlorofluoromethane	ug/L	ND	20	20	22.7	10.8	114	54	70-130	72	M1,R1			
Vinyl acetate	ug/L	ND	40	40	44.6	22.2	112	56	70-130	67	M1,R1			
Vinyl chloride	ug/L	ND	20	20	22.4	10.9	112	55	70-130	69	M1,R1			
Xylene (Total)	ug/L	ND	60	60	60.8	29.6	101	49	70-130	69	MS,RS			
1,2-Dichloroethane-d4 (S)	%						100	102	70-130					
4-Bromofluorobenzene (S)	%						101	100	70-130					
Toluene-d8 (S)	%						101	103	70-130					

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

QC Batch: 414845 Analysis Method: EPA 8260B Mod.

QC Batch Method: EPA 8260B Mod. Analysis Description: 8260 MSV SIM

Associated Lab Samples: 92387605001, 92387605002

METHOD BLANK: 2300405 Matrix: Water

Associated Lab Samples: 92387605001, 92387605002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	ND	2.0	06/12/18 12:36	
1,2-Dichloroethane-d4 (S)	%	105	50-150	06/12/18 12:36	S3
Toluene-d8 (S)	%	105	50-150	06/12/18 12:36	S3

LABORATORY CONTROL SAMPLE: 2300406

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,4-Dioxane (p-Dioxane)	ug/L	20	26.5	132	71-125	L1
1,2-Dichloroethane-d4 (S)	%			100	50-150	S0
Toluene-d8 (S)	%			98	50-150	S0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2300407 2300408

Parameter	Units	92387603001		MS		MSD		MS		MSD		% Rec Limits	RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec						
1,4-Dioxane (p-Dioxane)	ug/L	ND	20	20	22.9	23.7	107	110	50-150	3				
1,2-Dichloroethane-d4 (S)	%						102	102	50-150				S0	
Toluene-d8 (S)	%						101	103	50-150				S0	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT 515 34613.3.13
Pace Project No.: 92387605

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above adjusted reporting limit.
TNTC - Too Numerous To Count
J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.
MDL - Adjusted Method Detection Limit.
PQL - Practical Quantitation Limit.
RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
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.
Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.
A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

L1 Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high.
M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
MS Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.
R1 RPD value was outside control limits.
RS The RPD value in one of the constituent analytes was outside the control limits.
S0 Surrogate recovery outside laboratory control limits.
S3 Surrogate recovery exceeded laboratory control limits. Analyte presence below reporting limits in associated sample.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT 515 34613.3.13

Pace Project No.: 92387605

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92387605001	771-MtGileadChurchRd-EFF	EPA 8260	414936		
92387605002	771-MtGileadChurchRd-INF	EPA 8260	414936		
92387605001	771-MtGileadChurchRd-EFF	EPA 8260B Mod.	414845		
92387605002	771-MtGileadChurchRd-INF	EPA 8260B Mod.	414845		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name: Hart & Hickman

Project #:

WO#: 92387605



Courier: Fed Ex UPS USPS Client
 Commercial Pace Other:

Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: WOL-1-18

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen? Yes No N/A

Thermometer: IR Gun ID: 92T040 Type of Ice: Wet Blue None

Cooler Temp (°C): 2.5 Correction Factor: Add/Subtract (°C) +0.4

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 2.9

USDA Regulated Soil N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?
 Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

	Comments/Discrepancy:
Chain of Custody Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Samples Arrived within Hold Time? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Short Hold Time Analysis (<72 hr.)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.
Rush Turn Around Time Requested? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.
Sufficient Volume? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.
Correct Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A -Pace Containers Used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.
Containers Intact? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.
Dissolved analysis: Samples Field Filtered? <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.
Sample Labels Match COC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>	
Headspace in VOA Vials (>5-6mm)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.
Trip Blank Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.
Trip Blank Custody Seals Present? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

Field Data Required? Yes No

COMMENTS/SAMPLE DISCREPANCY

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: [Signature]

Date: 6/6/18

Project Manager SRF Review: [Signature]

Date: 6/6/18

Project **WO# : 92387605**

PM: KRG

Due Date: 06/14/18

CLIENT: 92-NCDOTEAST

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFLU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)		
1																													
2																													
3																													
4																													
5																													
6																													
7																													
8																													
9																													
10																													
11																													
12																													

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

Divider
Page

June 15, 2018

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

RE: Project: DOT 515 34613.3.13
Pace Project No.: 92387609

Dear Chemical Engineer:

Enclosed are the analytical results for sample(s) received by the laboratory on June 07, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,



Kevin Godwin
kevin.godwin@pacelabs.com
1(704)875-9092
Project Manager

Enclosures



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078

Louisiana/NELAP Certification # LA170028

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

Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92387609001	Trip Blank	EPA 8260	CAH	63	PASI-C

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

General Information:

1 sample was analyzed for EPA 8260. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

Hold Time:

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

Initial Calibrations (including MS Tune as applicable):

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

Continuing Calibration:

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

Internal Standards:

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

Surrogates:

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

Method Blank:

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

Laboratory Control Spike:

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

Matrix Spikes:

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

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- MS (Lab ID: 2303485)
 - Bromomethane
 - Methylene Chloride
- MSD (Lab ID: 2303486)
 - 1,1,1,2-Tetrachloroethane
 - 1,1,1-Trichloroethane
 - 1,1,2,2-Tetrachloroethane
 - 1,1,2-Trichloroethane
 - 1,1-Dichloroethane
 - 1,1-Dichloroethene
 - 1,1-Dichloropropene
 - 1,2,3-Trichlorobenzene
 - 1,2,3-Trichloropropane

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- 1,2,4-Trichlorobenzene
- 1,2-Dibromo-3-chloropropane
- 1,2-Dibromoethane (EDB)
- 1,2-Dichlorobenzene
- 1,2-Dichloroethane
- 1,2-Dichloropropane
- 1,3-Dichlorobenzene
- 1,3-Dichloropropane
- 1,4-Dichlorobenzene
- 2,2-Dichloropropane
- 2-Butanone (MEK)
- 2-Chlorotoluene
- 2-Hexanone
- 4-Chlorotoluene
- 4-Methyl-2-pentanone (MIBK)
- Acetone
- Benzene
- Bromobenzene
- Bromochloromethane
- Bromodichloromethane
- Bromoform
- Bromomethane
- Carbon tetrachloride
- Chlorobenzene
- Chloroethane
- Chloroform
- Chloromethane
- Dibromochloromethane
- Dibromomethane
- Dichlorodifluoromethane
- Diisopropyl ether
- Ethylbenzene
- Hexachloro-1,3-butadiene
- Methyl-tert-butyl ether
- Methylene Chloride
- Naphthalene
- Styrene
- Tetrachloroethene
- Toluene
- Trichloroethene
- Trichlorofluoromethane
- Vinyl acetate
- Vinyl chloride

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13
Pace Project No.: 92387609

Method: EPA 8260
Description: 8260 MSV Low Level
Client: NCDOT East Central
Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

M1: Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

- cis-1,2-Dichloroethene
- cis-1,3-Dichloropropene
- m&p-Xylene
- o-Xylene
- p-Isopropyltoluene
- trans-1,2-Dichloroethene
- trans-1,3-Dichloropropene

R1: RPD value was outside control limits.

- MSD (Lab ID: 2303486)
 - 1,1,1,2-Tetrachloroethane
 - 1,1,1-Trichloroethane
 - 1,1,2,2-Tetrachloroethane
 - 1,1,2-Trichloroethane
 - 1,1-Dichloroethane
 - 1,1-Dichloroethene
 - 1,1-Dichloropropene
 - 1,2,3-Trichlorobenzene
 - 1,2,3-Trichloropropane
 - 1,2,4-Trichlorobenzene
 - 1,2-Dibromo-3-chloropropane
 - 1,2-Dibromoethane (EDB)
 - 1,2-Dichlorobenzene
 - 1,2-Dichloroethane
 - 1,2-Dichloropropane
 - 1,3-Dichlorobenzene
 - 1,3-Dichloropropane
 - 1,4-Dichlorobenzene
 - 2,2-Dichloropropane
 - 2-Butanone (MEK)
 - 2-Chlorotoluene
 - 2-Hexanone
 - 4-Chlorotoluene
 - 4-Methyl-2-pentanone (MIBK)
 - Benzene
 - Bromobenzene
 - Bromochloromethane
 - Bromodichloromethane
 - Bromoform
 - Bromomethane
 - Carbon tetrachloride
 - Chlorobenzene
 - Chloroethane
 - Chloroform

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

PROJECT NARRATIVE

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Method: EPA 8260

Description: 8260 MSV Low Level

Client: NCDOT East Central

Date: June 15, 2018

QC Batch: 414936

A matrix spike and/or matrix spike duplicate (MS/MSD) were performed on the following sample(s): 92387546047

R1: RPD value was outside control limits.

- Chloromethane
- Dibromochloromethane
- Dibromomethane
- Dichlorodifluoromethane
- Diisopropyl ether
- Ethylbenzene
- Hexachloro-1,3-butadiene
- Methyl-tert-butyl ether
- Naphthalene
- Styrene
- Tetrachloroethene
- Toluene
- Trichloroethene
- Trichlorofluoromethane
- Vinyl acetate
- Vinyl chloride
- cis-1,2-Dichloroethene
- cis-1,3-Dichloropropene
- m&p-Xylene
- o-Xylene
- p-Isopropyltoluene
- trans-1,2-Dichloroethene
- trans-1,3-Dichloropropene

Additional Comments:

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Sample: Trip Blank		Lab ID: 92387609001	Collected: 06/06/18 00:00	Received: 06/07/18 12:30	Matrix: Water			
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level		Analytical Method: EPA 8260						
Acetone	ND	ug/L	25.0	1		06/13/18 20:20	67-64-1	
Benzene	ND	ug/L	1.0	1		06/13/18 20:20	71-43-2	
Bromobenzene	ND	ug/L	1.0	1		06/13/18 20:20	108-86-1	
Bromochloromethane	ND	ug/L	1.0	1		06/13/18 20:20	74-97-5	
Bromodichloromethane	ND	ug/L	1.0	1		06/13/18 20:20	75-27-4	
Bromoform	ND	ug/L	1.0	1		06/13/18 20:20	75-25-2	
Bromomethane	ND	ug/L	2.0	1		06/13/18 20:20	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	1		06/13/18 20:20	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	1		06/13/18 20:20	56-23-5	
Chlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	108-90-7	
Chloroethane	ND	ug/L	1.0	1		06/13/18 20:20	75-00-3	
Chloroform	ND	ug/L	1.0	1		06/13/18 20:20	67-66-3	
Chloromethane	ND	ug/L	1.0	1		06/13/18 20:20	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 20:20	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	1		06/13/18 20:20	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	2.0	1		06/13/18 20:20	96-12-8	
Dibromochloromethane	ND	ug/L	1.0	1		06/13/18 20:20	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	1		06/13/18 20:20	106-93-4	
Dibromomethane	ND	ug/L	1.0	1		06/13/18 20:20	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	1		06/13/18 20:20	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	1		06/13/18 20:20	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	1		06/13/18 20:20	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	1		06/13/18 20:20	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 20:20	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	1		06/13/18 20:20	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 20:20	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	1		06/13/18 20:20	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	1		06/13/18 20:20	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	1		06/13/18 20:20	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 20:20	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	1		06/13/18 20:20	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	1		06/13/18 20:20	108-20-3	
Ethylbenzene	ND	ug/L	1.0	1		06/13/18 20:20	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	1		06/13/18 20:20	87-68-3	
2-Hexanone	ND	ug/L	5.0	1		06/13/18 20:20	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	1		06/13/18 20:20	99-87-6	
Methylene Chloride	ND	ug/L	2.0	1		06/13/18 20:20	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	1		06/13/18 20:20	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	1		06/13/18 20:20	1634-04-4	
Naphthalene	ND	ug/L	1.0	1		06/13/18 20:20	91-20-3	
Styrene	ND	ug/L	1.0	1		06/13/18 20:20	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 20:20	630-20-6	
1,1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	1		06/13/18 20:20	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	1		06/13/18 20:20	127-18-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Sample: Trip Blank	Lab ID: 92387609001	Collected: 06/06/18 00:00	Received: 06/07/18 12:30	Matrix: Water				
Parameters	Results	Units	Report Limit	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260							
Toluene	ND	ug/L	1.0	1		06/13/18 20:20	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	1		06/13/18 20:20	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	1		06/13/18 20:20	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	1		06/13/18 20:20	79-00-5	
Trichloroethene	ND	ug/L	1.0	1		06/13/18 20:20	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	1		06/13/18 20:20	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	1		06/13/18 20:20	96-18-4	
Vinyl acetate	ND	ug/L	2.0	1		06/13/18 20:20	108-05-4	
Vinyl chloride	ND	ug/L	1.0	1		06/13/18 20:20	75-01-4	
Xylene (Total)	ND	ug/L	1.0	1		06/13/18 20:20	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	1		06/13/18 20:20	179601-23-1	
o-Xylene	ND	ug/L	1.0	1		06/13/18 20:20	95-47-6	
Surrogates								
4-Bromofluorobenzene (S)	97	%	70-130	1		06/13/18 20:20	460-00-4	
1,2-Dichloroethane-d4 (S)	99	%	70-130	1		06/13/18 20:20	17060-07-0	
Toluene-d8 (S)	99	%	70-130	1		06/13/18 20:20	2037-26-5	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13
Pace Project No.: 92387609

QC Batch: 414936 Analysis Method: EPA 8260
QC Batch Method: EPA 8260 Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92387609001

METHOD BLANK: 2300999 Matrix: Water
Associated Lab Samples: 92387609001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,1-Trichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1,2-Trichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
1,1-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2,3-Trichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dibromo-3-chloropropane	ug/L	ND	2.0	06/13/18 18:59	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloroethane	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,3-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
1,3-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
1,4-Dichlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
2,2-Dichloropropane	ug/L	ND	1.0	06/13/18 18:59	
2-Butanone (MEK)	ug/L	ND	5.0	06/13/18 18:59	
2-Chlorotoluene	ug/L	ND	1.0	06/13/18 18:59	
2-Hexanone	ug/L	ND	5.0	06/13/18 18:59	
4-Chlorotoluene	ug/L	ND	1.0	06/13/18 18:59	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	06/13/18 18:59	
Acetone	ug/L	ND	25.0	06/13/18 18:59	
Benzene	ug/L	ND	1.0	06/13/18 18:59	
Bromobenzene	ug/L	ND	1.0	06/13/18 18:59	
Bromochloromethane	ug/L	ND	1.0	06/13/18 18:59	
Bromodichloromethane	ug/L	ND	1.0	06/13/18 18:59	
Bromoform	ug/L	ND	1.0	06/13/18 18:59	
Bromomethane	ug/L	ND	2.0	06/13/18 18:59	
Carbon tetrachloride	ug/L	ND	1.0	06/13/18 18:59	
Chlorobenzene	ug/L	ND	1.0	06/13/18 18:59	
Chloroethane	ug/L	ND	1.0	06/13/18 18:59	
Chloroform	ug/L	ND	1.0	06/13/18 18:59	
Chloromethane	ug/L	ND	1.0	06/13/18 18:59	
cis-1,2-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
cis-1,3-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
Dibromochloromethane	ug/L	ND	1.0	06/13/18 18:59	
Dibromomethane	ug/L	ND	1.0	06/13/18 18:59	
Dichlorodifluoromethane	ug/L	ND	1.0	06/13/18 18:59	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

METHOD BLANK: 2300999

Matrix: Water

Associated Lab Samples: 92387609001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Diisopropyl ether	ug/L	ND	1.0	06/13/18 18:59	
Ethylbenzene	ug/L	ND	1.0	06/13/18 18:59	
Hexachloro-1,3-butadiene	ug/L	ND	1.0	06/13/18 18:59	
m&p-Xylene	ug/L	ND	2.0	06/13/18 18:59	
Methyl-tert-butyl ether	ug/L	ND	1.0	06/13/18 18:59	
Methylene Chloride	ug/L	ND	2.0	06/13/18 18:59	
Naphthalene	ug/L	ND	1.0	06/13/18 18:59	
o-Xylene	ug/L	ND	1.0	06/13/18 18:59	
p-Isopropyltoluene	ug/L	ND	1.0	06/13/18 18:59	
Styrene	ug/L	ND	1.0	06/13/18 18:59	
Tetrachloroethene	ug/L	ND	1.0	06/13/18 18:59	
Toluene	ug/L	ND	1.0	06/13/18 18:59	
trans-1,2-Dichloroethene	ug/L	ND	1.0	06/13/18 18:59	
trans-1,3-Dichloropropene	ug/L	ND	1.0	06/13/18 18:59	
Trichloroethene	ug/L	ND	1.0	06/13/18 18:59	
Trichlorofluoromethane	ug/L	ND	1.0	06/13/18 18:59	
Vinyl acetate	ug/L	ND	2.0	06/13/18 18:59	
Vinyl chloride	ug/L	ND	1.0	06/13/18 18:59	
Xylene (Total)	ug/L	ND	1.0	06/13/18 18:59	
1,2-Dichloroethane-d4 (S)	%	99	70-130	06/13/18 18:59	
4-Bromofluorobenzene (S)	%	98	70-130	06/13/18 18:59	
Toluene-d8 (S)	%	101	70-130	06/13/18 18:59	

LABORATORY CONTROL SAMPLE: 2301000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	47.5	95	80-125	
1,1,1-Trichloroethane	ug/L	50	45.7	91	71-129	
1,1,2,2-Tetrachloroethane	ug/L	50	45.9	92	79-124	
1,1,2-Trichloroethane	ug/L	50	44.7	89	85-125	
1,1-Dichloroethane	ug/L	50	46.1	92	73-126	
1,1-Dichloroethene	ug/L	50	46.5	93	66-135	
1,1-Dichloropropene	ug/L	50	45.6	91	74-135	
1,2,3-Trichlorobenzene	ug/L	50	49.0	98	73-135	
1,2,3-Trichloropropane	ug/L	50	47.2	94	75-130	
1,2,4-Trichlorobenzene	ug/L	50	48.6	97	75-134	
1,2-Dibromo-3-chloropropane	ug/L	50	51.0	102	71-133	
1,2-Dibromoethane (EDB)	ug/L	50	47.7	95	83-124	
1,2-Dichlorobenzene	ug/L	50	47.3	95	80-133	
1,2-Dichloroethane	ug/L	50	44.3	89	67-128	
1,2-Dichloropropane	ug/L	50	45.4	91	75-132	
1,3-Dichlorobenzene	ug/L	50	46.8	94	77-130	
1,3-Dichloropropane	ug/L	50	47.0	94	76-131	
1,4-Dichlorobenzene	ug/L	50	47.2	94	78-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

LABORATORY CONTROL SAMPLE: 2301000

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,2-Dichloropropane	ug/L	50	45.8	92	40-160	
2-Butanone (MEK)	ug/L	100	93.3	93	61-144	
2-Chlorotoluene	ug/L	50	46.0	92	74-132	
2-Hexanone	ug/L	100	95.1	95	68-143	
4-Chlorotoluene	ug/L	50	46.5	93	76-133	
4-Methyl-2-pentanone (MIBK)	ug/L	100	91.8	92	72-135	
Acetone	ug/L	100	97.2	97	48-146	
Benzene	ug/L	50	44.9	90	80-125	
Bromobenzene	ug/L	50	47.6	95	75-125	
Bromochloromethane	ug/L	50	45.5	91	71-125	
Bromodichloromethane	ug/L	50	47.6	95	78-124	
Bromoform	ug/L	50	52.6	105	71-128	
Bromomethane	ug/L	50	42.4	85	40-160	
Carbon tetrachloride	ug/L	50	47.8	96	69-131	
Chlorobenzene	ug/L	50	45.7	91	81-122	
Chloroethane	ug/L	50	29.0	58	39-148	
Chloroform	ug/L	50	45.2	90	73-127	
Chloromethane	ug/L	50	41.6	83	44-146	
cis-1,2-Dichloroethene	ug/L	50	47.4	95	74-124	
cis-1,3-Dichloropropene	ug/L	50	47.4	95	72-132	
Dibromochloromethane	ug/L	50	50.3	101	78-125	
Dibromomethane	ug/L	50	45.7	91	82-120	
Dichlorodifluoromethane	ug/L	50	42.9	86	34-157	
Diisopropyl ether	ug/L	50	47.3	95	69-135	
Ethylbenzene	ug/L	50	45.8	92	79-121	
Hexachloro-1,3-butadiene	ug/L	50	49.0	98	72-131	
m&p-Xylene	ug/L	100	92.4	92	81-124	
Methyl-tert-butyl ether	ug/L	50	46.9	94	74-131	
Methylene Chloride	ug/L	50	46.6	93	64-133	
Naphthalene	ug/L	50	49.1	98	73-133	
o-Xylene	ug/L	50	46.7	93	79-131	
p-Isopropyltoluene	ug/L	50	47.3	95	80-131	
Styrene	ug/L	50	46.4	93	84-126	
Tetrachloroethene	ug/L	50	43.9	88	78-122	
Toluene	ug/L	50	44.4	89	80-121	
trans-1,2-Dichloroethene	ug/L	50	47.9	96	71-127	
trans-1,3-Dichloropropene	ug/L	50	47.5	95	69-141	
Trichloroethene	ug/L	50	46.0	92	78-122	
Trichlorofluoromethane	ug/L	50	38.2	76	53-137	
Vinyl acetate	ug/L	100	109	109	40-160	
Vinyl chloride	ug/L	50	45.8	92	50-150	
Xylene (Total)	ug/L	150	139	93	81-126	
1,2-Dichloroethane-d4 (S)	%			101	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Toluene-d8 (S)	%			100	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Parameter	92387546047		MS	MSD	2303485		2303486		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec				
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	20.0	9.6	100	48	70-130	70	M1,R1	
1,1,1-Trichloroethane	ug/L	ND	20	20	21.0	10.2	105	51	70-130	70	M1,R1	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	19.1	9.6	96	48	70-130	66	M1,R1	
1,1,2-Trichloroethane	ug/L	ND	20	20	19.3	9.6	97	48	70-130	67	M1,R1	
1,1-Dichloroethane	ug/L	ND	20	20	20.3	10	102	50	70-130	68	M1,R1	
1,1-Dichloroethene	ug/L	ND	20	20	22.6	10.7	113	54	70-166	71	M1,R1	
1,1-Dichloropropene	ug/L	ND	20	20	21.1	10.5	106	52	70-130	67	M1,R1	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	20.4	10.3	102	51	70-130	66	M1,R1	
1,2,3-Trichloropropane	ug/L	ND	20	20	19.2	9.4	96	47	70-130	69	M1,R1	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	21.0	10.4	105	52	70-130	67	M1,R1	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	19.5	10.4	97	52	70-130	61	M1,R1	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	20.0	9.9	100	50	70-130	67	M1,R1	
1,2-Dichlorobenzene	ug/L	ND	20	20	19.7	9.8	98	49	70-130	67	M1,R1	
1,2-Dichloroethane	ug/L	ND	20	20	18.8	9.5	94	47	70-130	66	M1,R1	
1,2-Dichloropropane	ug/L	ND	20	20	19.6	9.4	98	47	70-130	70	M1,R1	
1,3-Dichlorobenzene	ug/L	ND	20	20	19.4	9.5	97	48	70-130	68	M1,R1	
1,3-Dichloropropane	ug/L	ND	20	20	20.0	9.7	100	48	70-130	70	M1,R1	
1,4-Dichlorobenzene	ug/L	ND	20	20	19.5	9.6	97	48	70-130	67	M1,R1	
2,2-Dichloropropane	ug/L	ND	20	20	23.9	11.7	119	59	70-130	68	M1,R1	
2-Butanone (MEK)	ug/L	ND	40	40	41.4	21.8	104	55	70-130	62	M1,R1	
2-Chlorotoluene	ug/L	ND	20	20	18.6	9.5	93	47	70-130	65	M1,R1	
2-Hexanone	ug/L	ND	40	40	41.1	20.8	103	52	70-130	65	M1,R1	
4-Chlorotoluene	ug/L	ND	20	20	19.5	9.7	97	48	70-130	67	M1,R1	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	40	40	40.1	21.4	100	53	70-130	61	M1,R1	
Acetone	ug/L	ND	40	40	41.3	22.6J	103	56	70-130		M1	
Benzene	ug/L	ND	20	20	19.8	9.8	99	49	70-148	68	M1,R1	
Bromobenzene	ug/L	ND	20	20	19.5	9.8	97	49	70-130	66	M1,R1	
Bromochloromethane	ug/L	ND	20	20	20.1	10.0	101	50	70-130	67	M1,R1	
Bromodichloromethane	ug/L	ND	20	20	20.0	10	100	50	70-130	67	M1,R1	
Bromoform	ug/L	ND	20	20	20.1	9.8	101	49	70-130	69	M1,R1	
Bromomethane	ug/L	ND	20	20	13.8	4.5	69	23	70-130	102	M1,R1	
Carbon tetrachloride	ug/L	ND	20	20	21.5	10.5	108	53	70-130	69	M1,R1	
Chlorobenzene	ug/L	ND	20	20	19.7	9.5	98	47	70-146	70	M1,R1	
Chloroethane	ug/L	ND	20	20	19.7	10.7	99	53	70-130	59	M1,R1	
Chloroform	ug/L	ND	20	20	19.7	9.7	98	48	70-130	68	M1,R1	
Chloromethane	ug/L	ND	20	20	18.0	9.3	90	47	70-130	63	M1,R1	
cis-1,2-Dichloroethene	ug/L	ND	20	20	21.2	10.0	106	50	70-130	72	M1,R1	
cis-1,3-Dichloropropene	ug/L	ND	20	20	20.5	10.1	103	51	70-130	68	M1,R1	
Dibromochloromethane	ug/L	ND	20	20	20.2	9.9	101	50	70-130	68	M1,R1	
Dibromomethane	ug/L	ND	20	20	19.4	9.7	97	48	70-130	67	M1,R1	
Dichlorodifluoromethane	ug/L	ND	20	20	23.9	11.7	119	59	70-130	68	M1,R1	
Diisopropyl ether	ug/L	ND	20	20	20.1	10.1	101	50	70-130	67	M1,R1	
Ethylbenzene	ug/L	ND	20	20	19.9	9.8	99	49	70-130	68	M1,R1	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	21.4	10.2	107	51	70-130	71	M1,R1	
m&p-Xylene	ug/L	ND	40	40	40.6	19.8	101	49	70-130	69	M1,R1	
Methyl-tert-butyl ether	ug/L	ND	20	20	19.9	9.9	99	49	70-130	67	M1,R1	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Parameter	92387546047		MS		MSD		MS		MSD		% Rec	Limits	RPD	Qual
	Units	Result	Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	% Rec	% Rec						
Methylene Chloride	ug/L	ND	20	20	12.6	1.1J	63	6	70-130				M1	
Naphthalene	ug/L	ND	20	20	20.0	10.1	100	51	70-130	66	M1,R1			
o-Xylene	ug/L	ND	20	20	20.2	9.9	101	49	70-130	69	M1,R1			
p-Isopropyltoluene	ug/L	ND	20	20	20.3	10.1	101	50	70-130	67	M1,R1			
Styrene	ug/L	ND	20	20	19.9	9.8	100	49	70-130	68	M1,R1			
Tetrachloroethene	ug/L	ND	20	20	20.1	10.3	100	52	70-130	64	M1,R1			
Toluene	ug/L	ND	20	20	19.8	9.9	99	49	70-155	67	M1,R1			
trans-1,2-Dichloroethene	ug/L	ND	20	20	21.4	10.3	107	52	70-130	70	M1,R1			
trans-1,3-Dichloropropene	ug/L	ND	20	20	20.2	10.2	101	51	70-130	66	M1,R1			
Trichloroethene	ug/L	ND	20	20	20.0	10	100	50	69-151	67	M1,R1			
Trichlorofluoromethane	ug/L	ND	20	20	22.7	10.8	114	54	70-130	72	M1,R1			
Vinyl acetate	ug/L	ND	40	40	44.6	22.2	112	56	70-130	67	M1,R1			
Vinyl chloride	ug/L	ND	20	20	22.4	10.9	112	55	70-130	69	M1,R1			
Xylene (Total)	ug/L	ND	60	60	60.8	29.6	101	49	70-130	69	MS,RS			
1,2-Dichloroethane-d4 (S)	%						100	102	70-130					
4-Bromofluorobenzene (S)	%						101	100	70-130					
Toluene-d8 (S)	%						101	103	70-130					

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: DOT 515 34613.3.13
Pace Project No.: 92387609

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

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.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

A separate vial preserved to a pH of 4-5 is recommended in SW846 Chapter 4 for the analysis of Acrolein and Acrylonitrile by EPA Method 8260.

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

M1 Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.

MS Analyte recovery in the matrix spike was outside QC limits for one or more of the constituent analytes used in the calculated result.

R1 RPD value was outside control limits.

RS The RPD value in one of the constituent analytes was outside the control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DOT 515 34613.3.13

Pace Project No.: 92387609

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92387609001	Trip Blank	EPA 8260	414936		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Laboratory receiving samples:

Asheville Eden Greenwood Huntersville Raleigh Mechanicsville

Sample Condition Upon Receipt

Client Name: Hart & Hickman

Project:

WO#: 92387609



Courier: Fed Ex UPS USPS Client
 Commercial Pace Other:

Custody Seal Present? Yes No Seals Intact? Yes No

Date/Initials Person Examining Contents: WLV-7-78

Packing Material: Bubble Wrap Bubble Bags None Other

Biological Tissue Frozen? Yes No N/A

Thermometer: IR Gun ID: 92T040 Type of Ice: Wet Blue None

Cooler Temp (°C): 2.5 Correction Factor: Add/Subtract (°C) +0.4

Temp should be above freezing to 6°C
 Samples out of temp criteria. Samples on ice, cooling process has begun

Cooler Temp Corrected (°C): 2.9

USDA Regulated Soil N/A, water sample)

Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)?
 Yes No

Did samples originate from a foreign source (internationally, including Hawaii and Puerto Rico)? Yes No

			Comments/Discrepancy:
Chain of Custody Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.	
Samples Arrived within Hold Time?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.	
Short Hold Time Analysis (<72 hr.)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	3.	
Rush Turn Around Time Requested?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	4.	
Sufficient Volume?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	5.	
Correct Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	6.	
-Pace Containers Used?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		
Containers Intact?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	7.	
Dissolved analysis: Samples Field Filtered?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	8.	
Sample Labels Match COC?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	9.	
-Includes Date/Time/ID/Analysis Matrix: <u>WT</u>			
Headspace in VOA Vials (>5-6mm)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	10.	
Trip Blank Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	11.	
Trip Blank Custody Seals Present?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A		

COMMENTS/SAMPLE DISCREPANCY

Field Data Required? Yes No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Samples submitted with Trip Blank on separate projects (92387603 & 92387605) collected 6/6/18. KG.

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: [Signature]
 Project Manager SRF Review: [Signature]

Date: 6/7/18
 Date: 6/7/18

*Check mark top half of box if pH and/or dechlorination is verified and within the acceptance range for preservation samples.

Exceptions: VOA, Coliform, TOC, Oil and Grease, DRO/8015 (water) DOC, LLHg

**Bottom half of box is to list number of bottle

Project # **WO# : 92387609**

PM: KRG

Due Date: 06/14/18

CLIENT: 92-NCDOTEAST

Item#	BP4U-125 mL Plastic Unpreserved (N/A) (Cl-)	BP3U-250 mL Plastic Unpreserved (N/A)	BP2U-500 mL Plastic Unpreserved (N/A)	BP1U-1 liter Plastic Unpreserved (N/A)	BP4S-125 mL Plastic H2SO4 (pH < 2) (Cl-)	BP3N-250 mL plastic HNO3 (pH < 2)	BP4Z-125 mL Plastic ZN Acetate & NaOH (>9)	BP4C-125 mL Plastic NaOH (pH > 12) (Cl-)	WGFU-Wide-mouthed Glass Jar Unpreserved	AG1U-1 liter Amber Unpreserved (N/A) (Cl-)	AG1H-1 liter Amber HCl (pH < 2)	AG3U-250 mL Amber Unpreserved (N/A) (Cl-)	AG1S-1 liter Amber H2SO4 (pH < 2)	AG3S-250 mL Amber H2SO4 (pH < 2)	AG3A(DG3A)-250 mL Amber NH4Cl (N/A)(Cl-)	DG9H-40 mL VOA HCl (N/A)	VG9T-40 mL VOA Na2S2O3 (N/A)	VG9U-40 mL VOA Unp (N/A)	DG9P-40 mL VOA H3PO4 (N/A)	VOAK (6 vials per kit)-5035 kit (N/A)	V/GK (3 vials per kit)-VPH/Gas kit (N/A)	SP5T-125 mL Sterile Plastic (N/A - lab)	SP2T-250 mL Sterile Plastic (N/A - lab)	BP3A-250 mL Plastic (NH2)2SO4 (9.3-9.7)	AG0U-100 mL Amber Unpreserved Vials (N/A)	VSGU-20 mL Scintillation vials (N/A)	DG9U-40 mL Amber Unpreserved vials (N/A)	
1																												
2																												
3																												
4																												
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

Sample ID	Type of Preservative	pH upon receipt	Date preservation adjusted	Time preservation adjusted	Amount of Preservative added	Lot #

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.

Appendix D

Appendix E

Figure E.1. Historical VOC Concentrations,
Monitoring Well 48SVE-01R

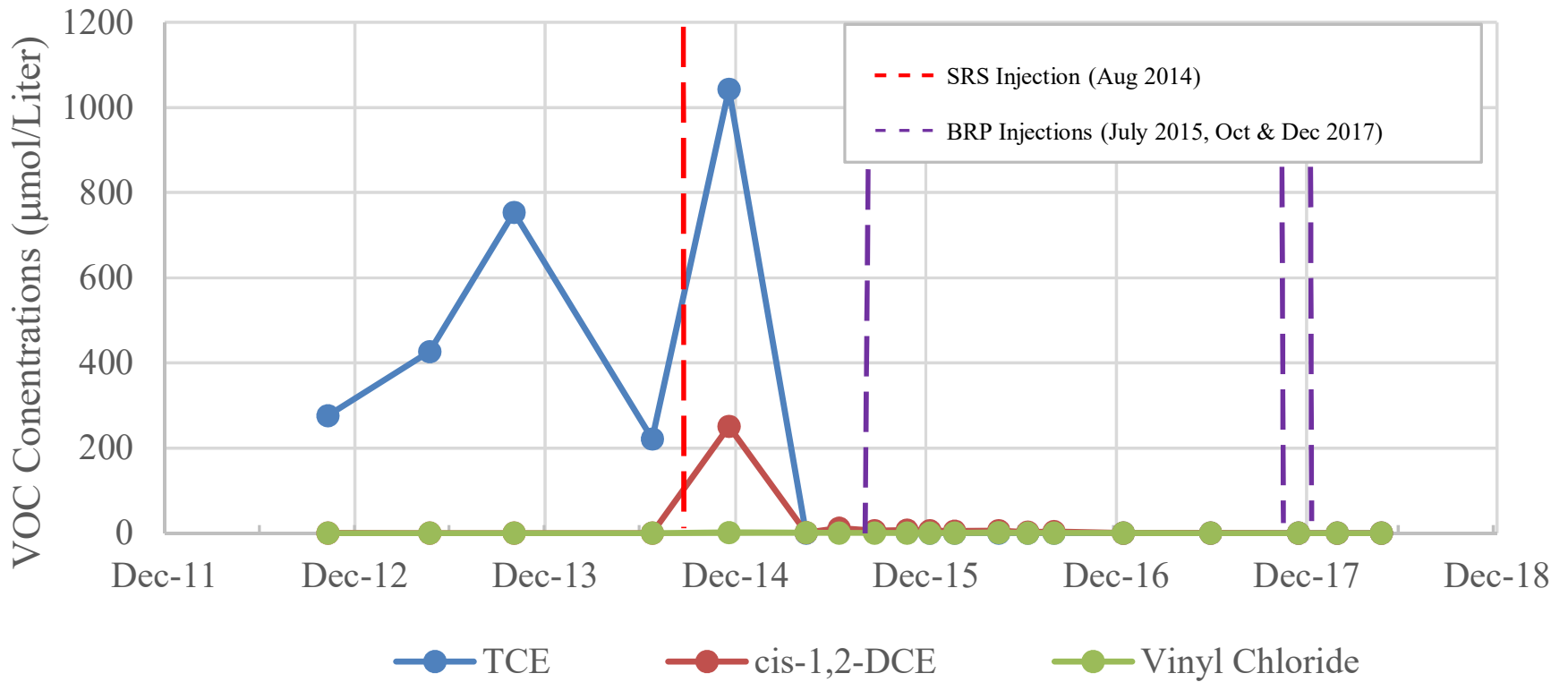


Figure E.2. Historical VOC Concentrations,
Monitoring Well 48MW-16/48MW-16R

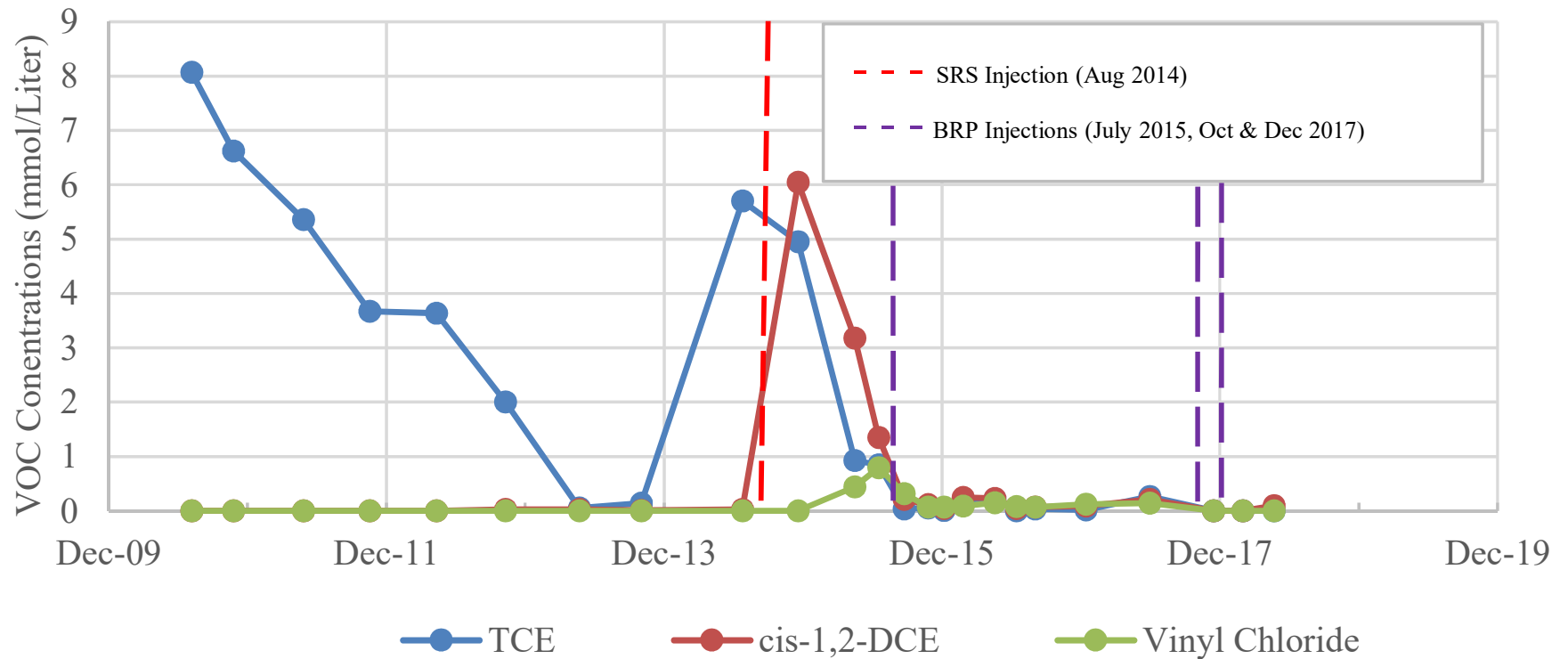


Figure E.3. Historical VOC Concentrations,
Monitoring Well 48MW-1

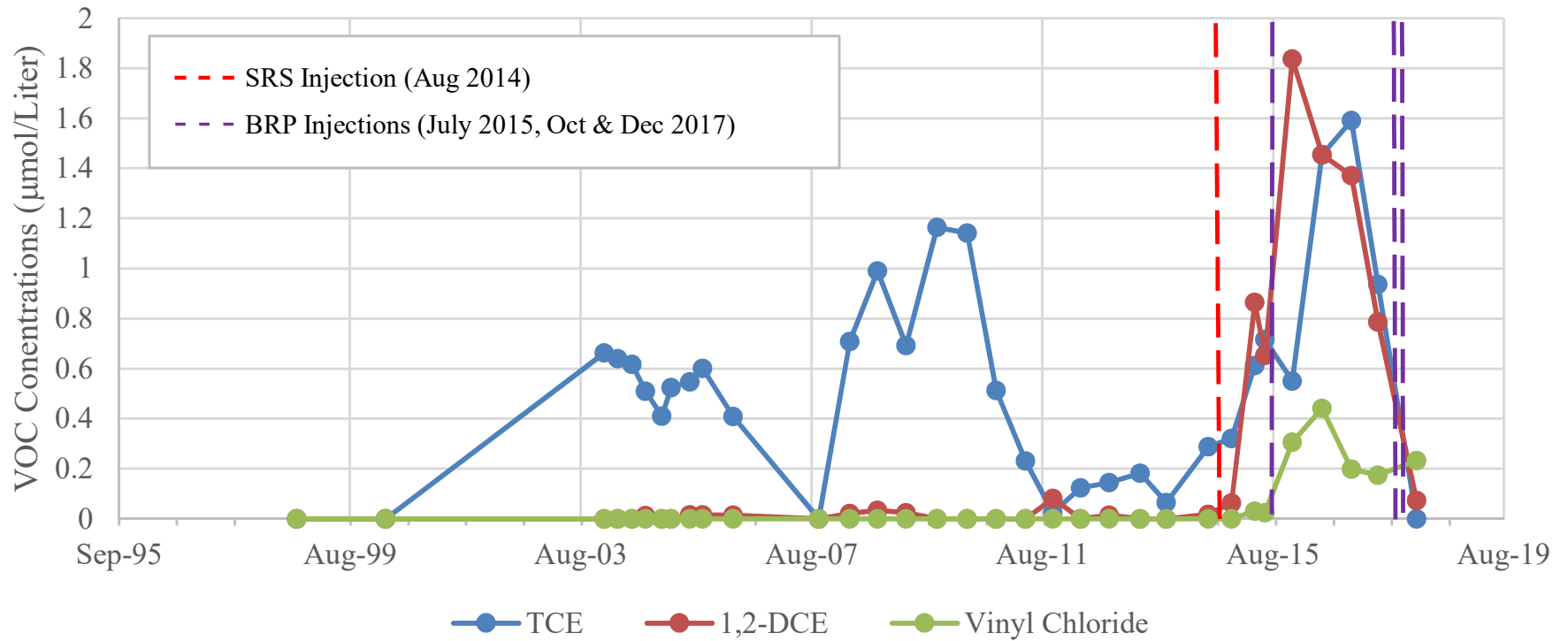


Figure E.4. Historical VOC Concentrations,
Monitoring Well 48MW-11R

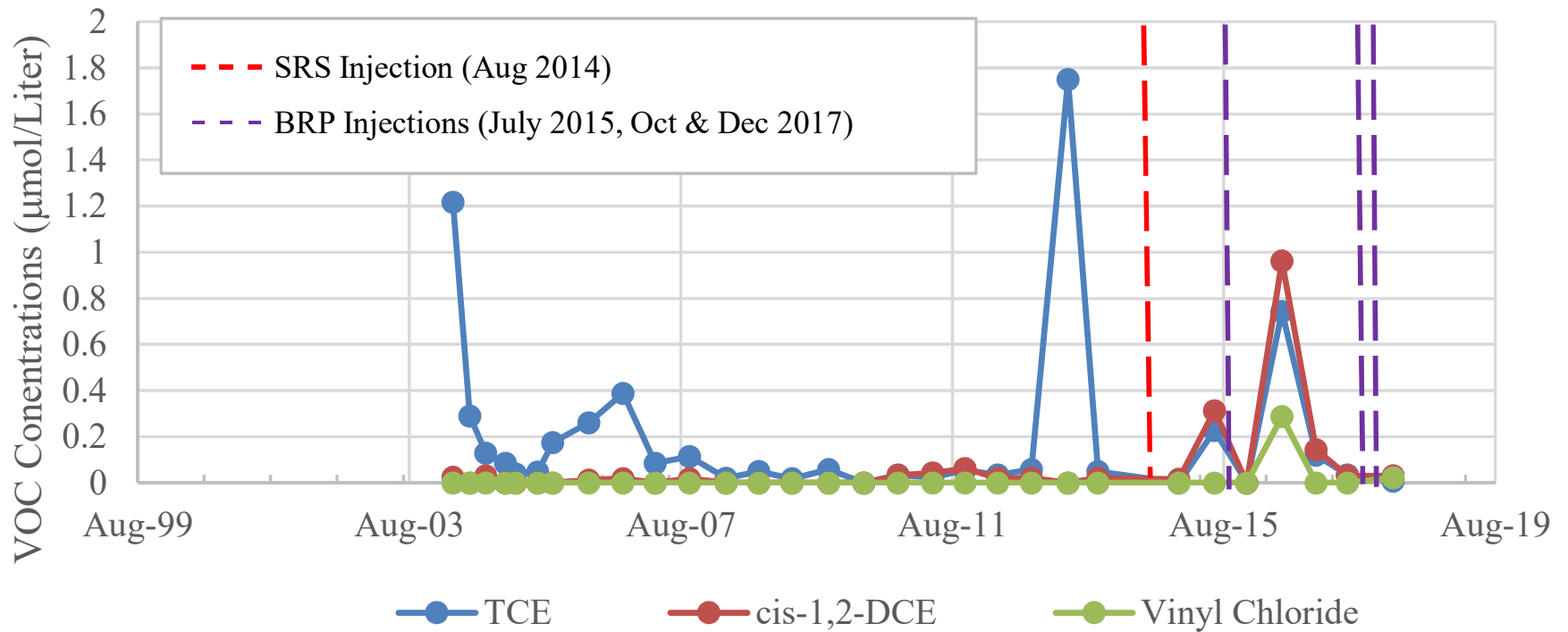


Figure E.5. Historical VOC Concentrations,
Monitoring Well 48MW-22

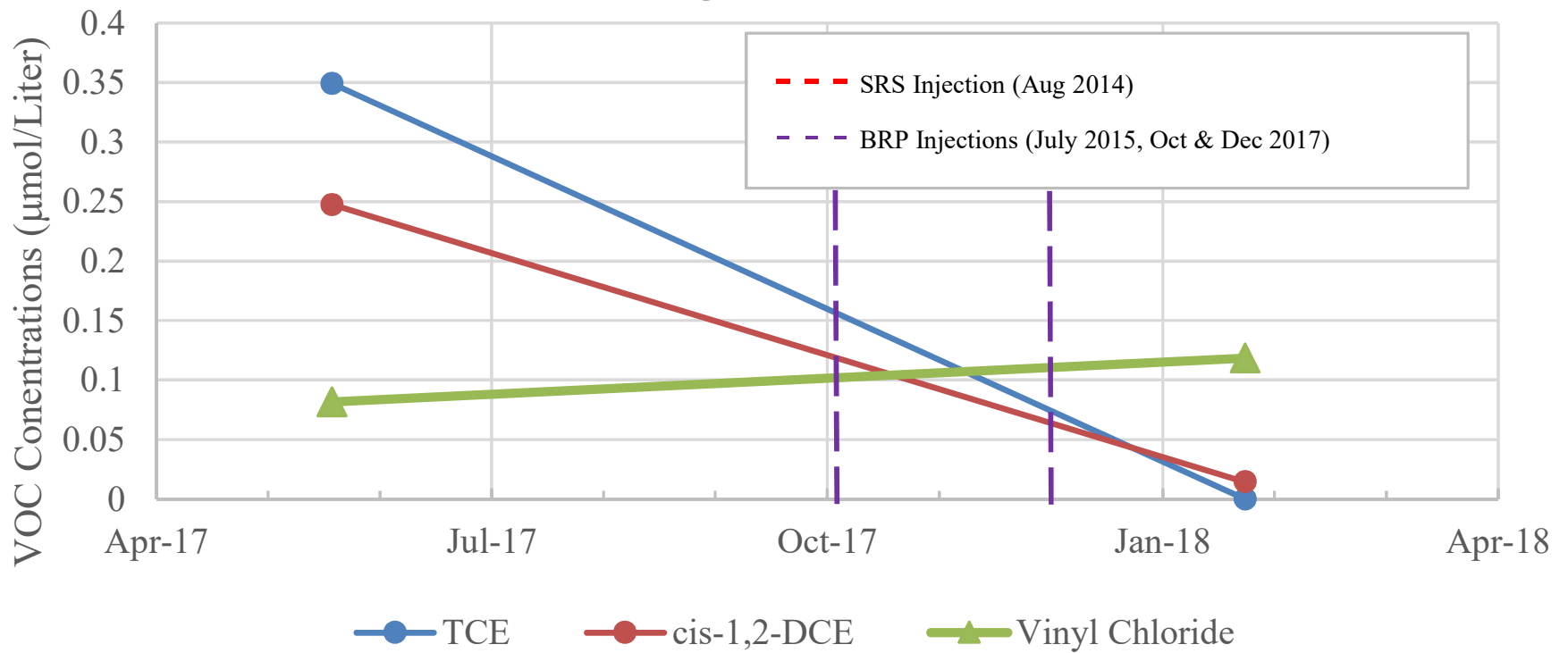


Figure E.6. Historical VOC Concentrations,
Monitoring Well 48MW-23

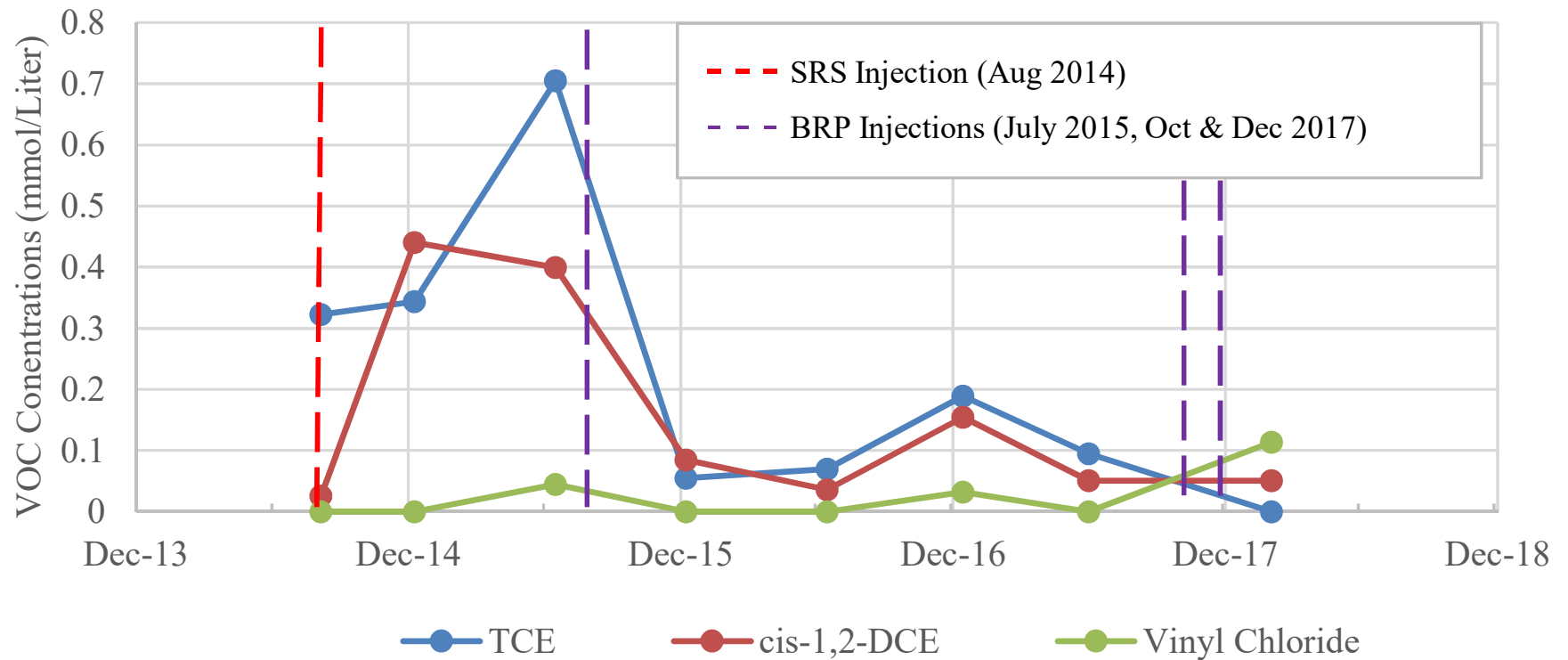


Figure E.7. Historical VOC Concentrations,
Monitoring Well 48MW-13

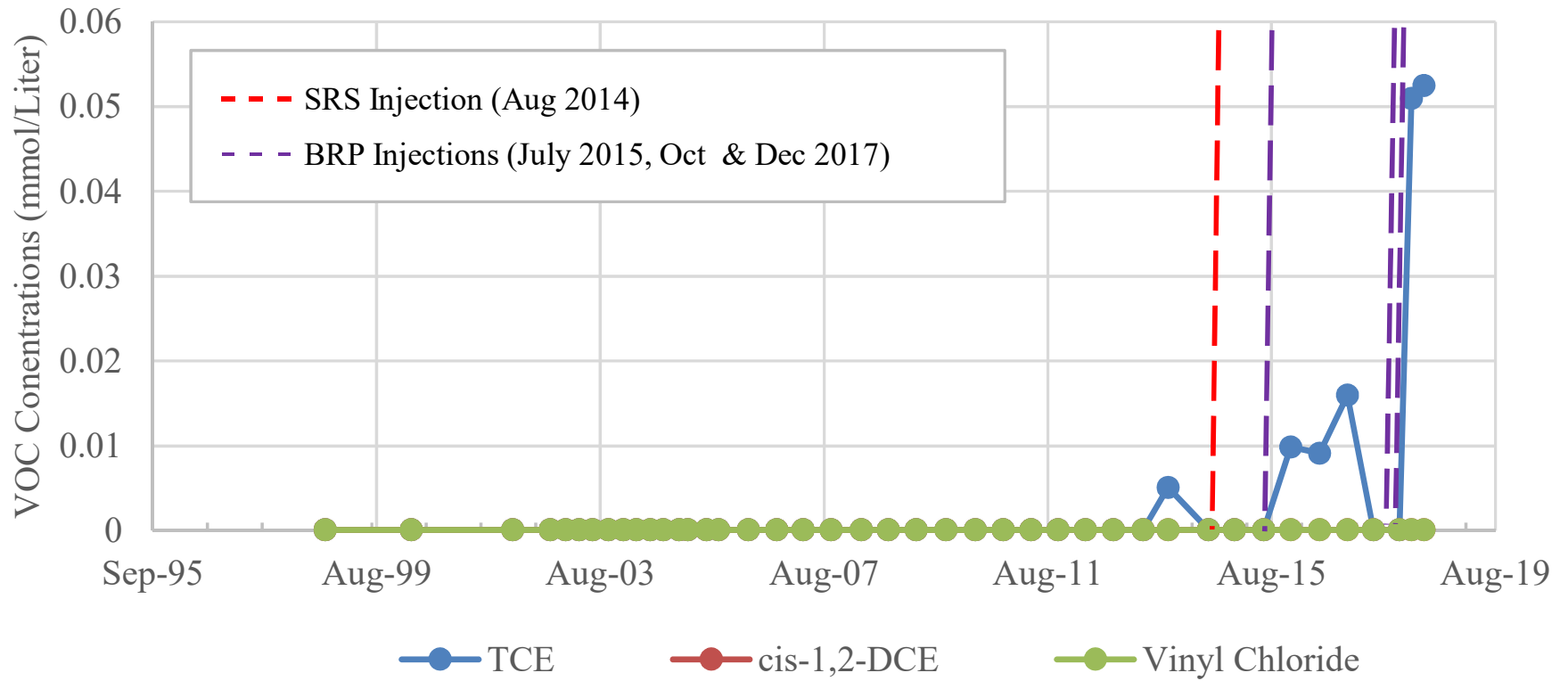


Figure E.8. Historical VOC Concentrations,
Monitoring Well 48MW-19

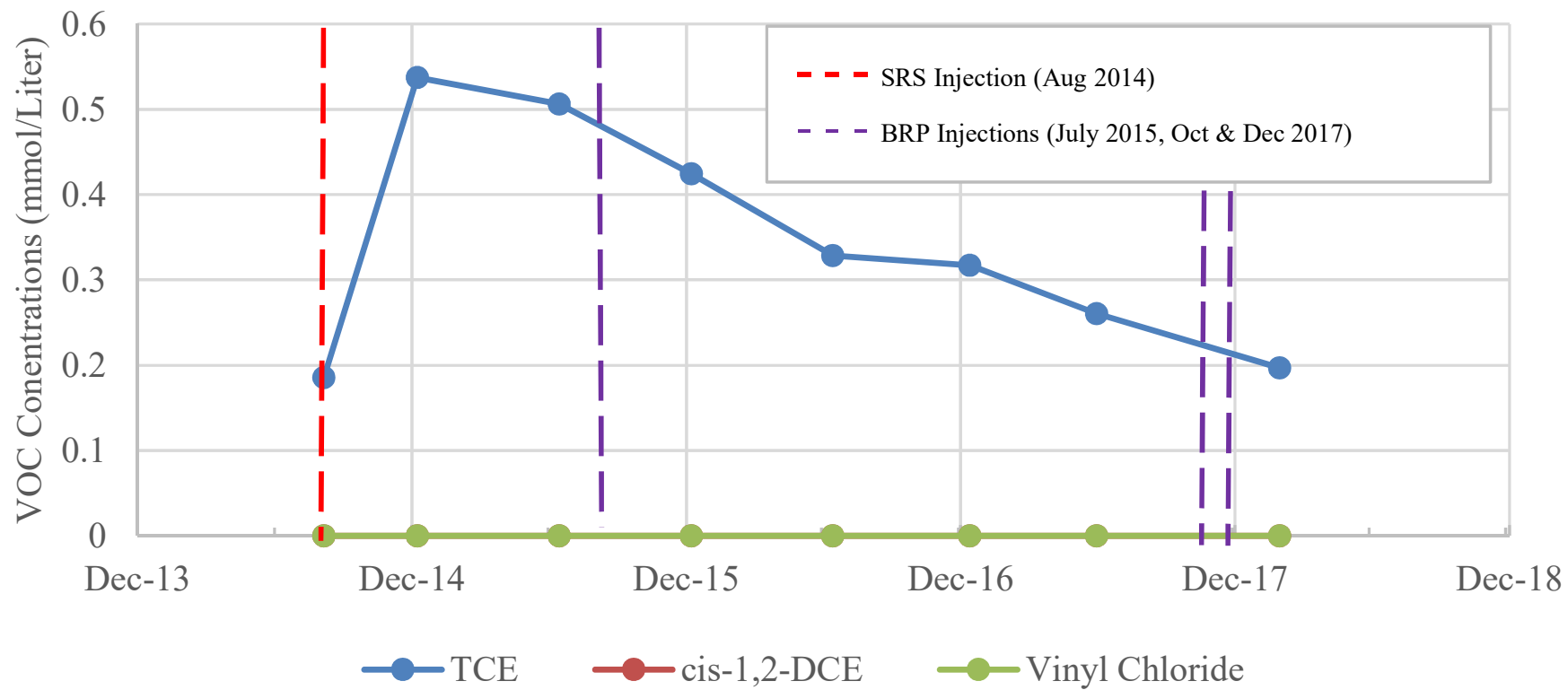


Figure E.9. Historical VOC Concentrations,
Monitoring Well 48DW-5/48DW-5R

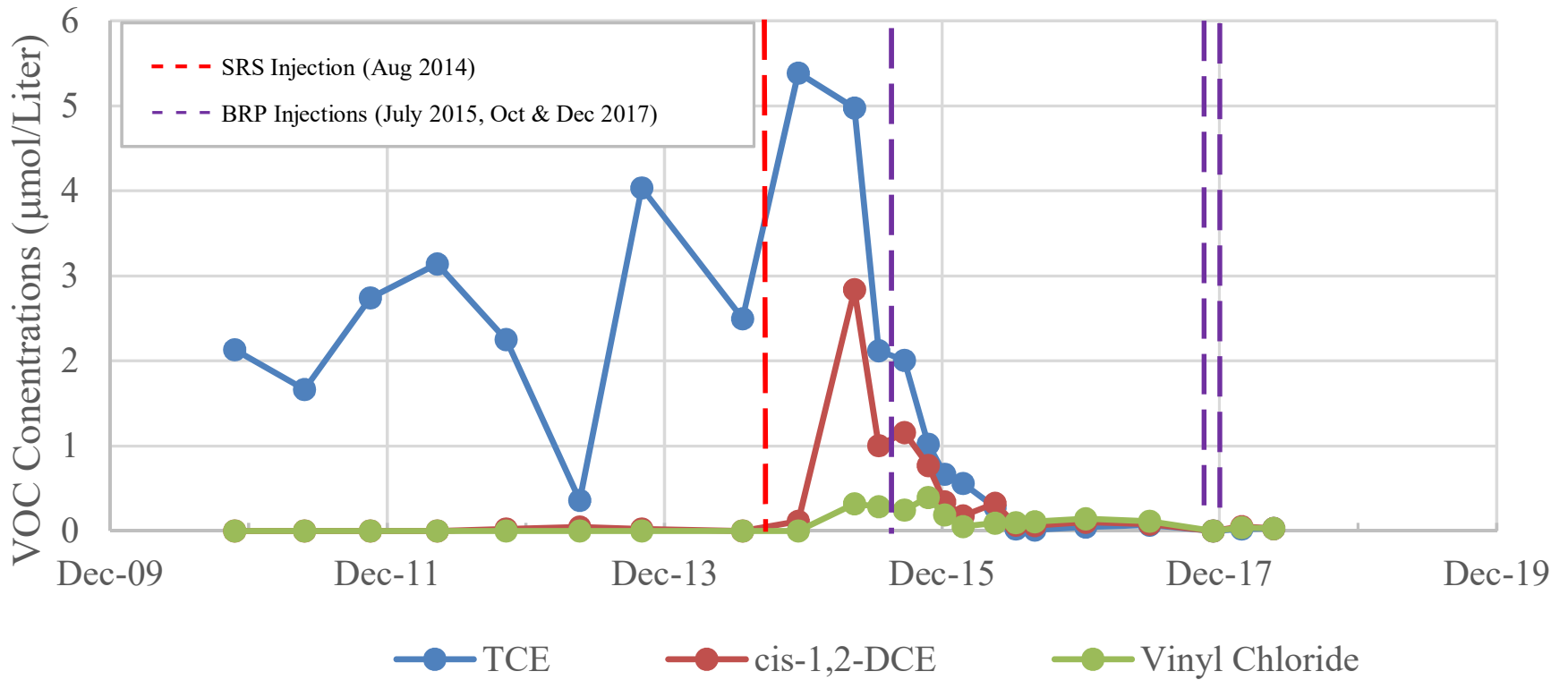


Figure E.10. Historical VOC Concentrations,
Monitoring Well 48DW-2

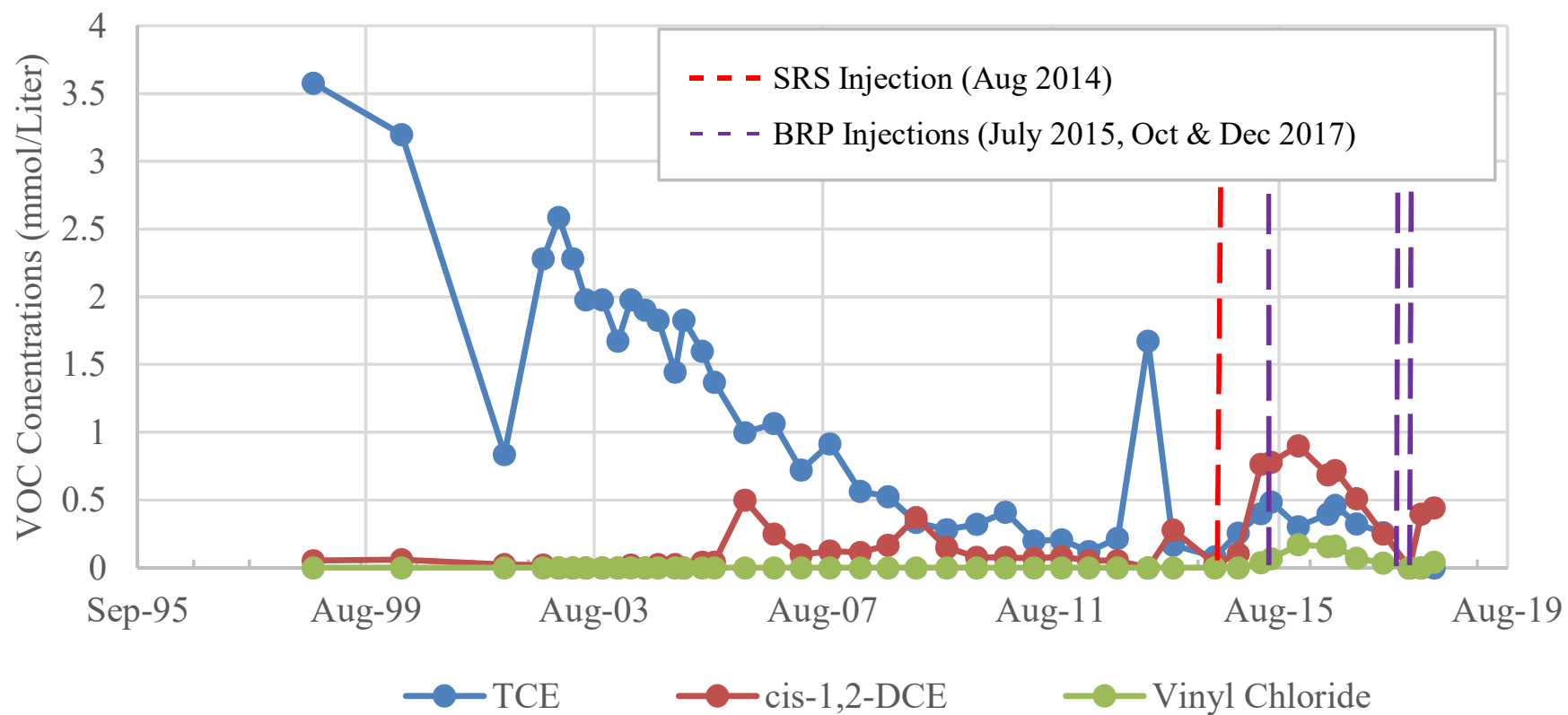


Figure E.11. Historical VOC Concentrations,
Monitoring Well 48RW-2 / 48RW-2R

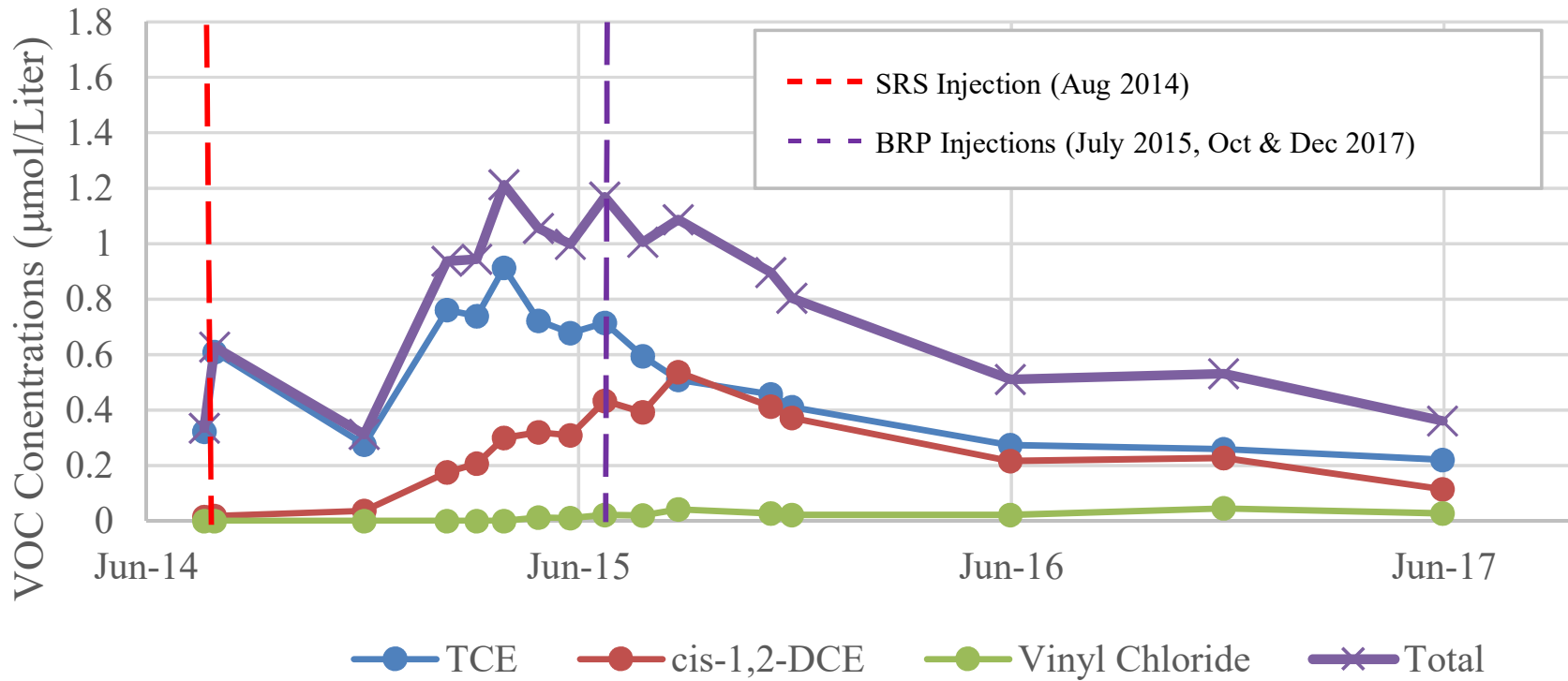


Figure E.12. Historical VOC Concentrations,
Monitoring Well 48DW-4

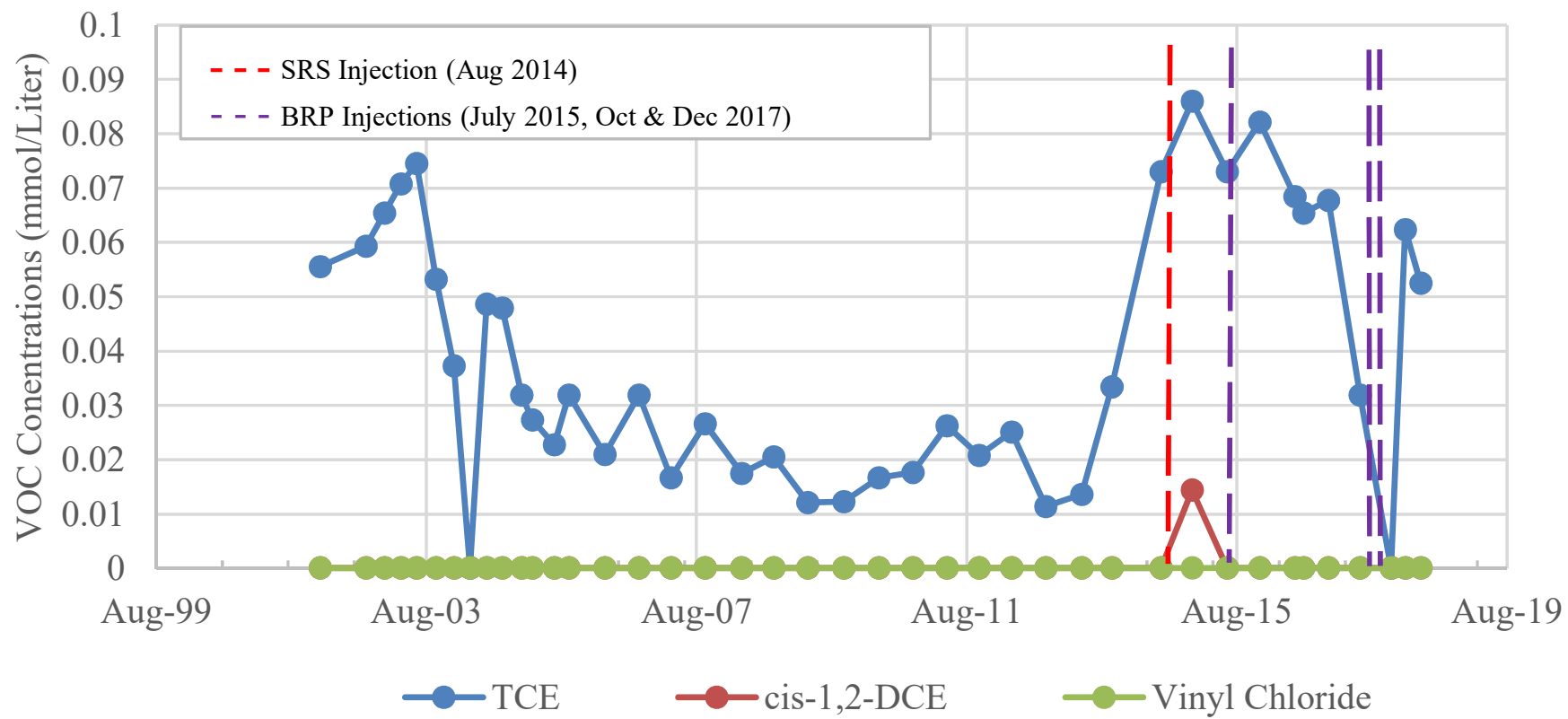


Figure E.13. Historical VOC Concentrations,
Monitoring Well 48DW-8

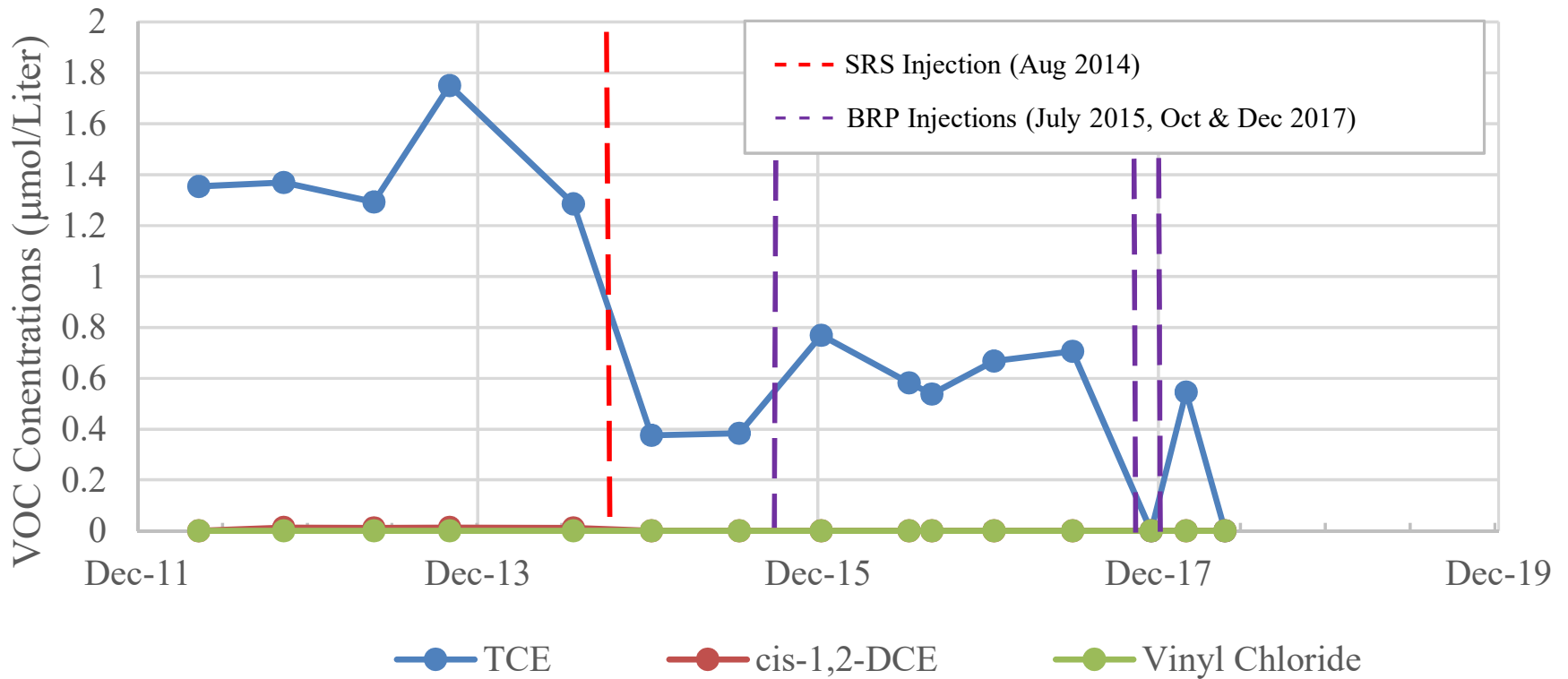
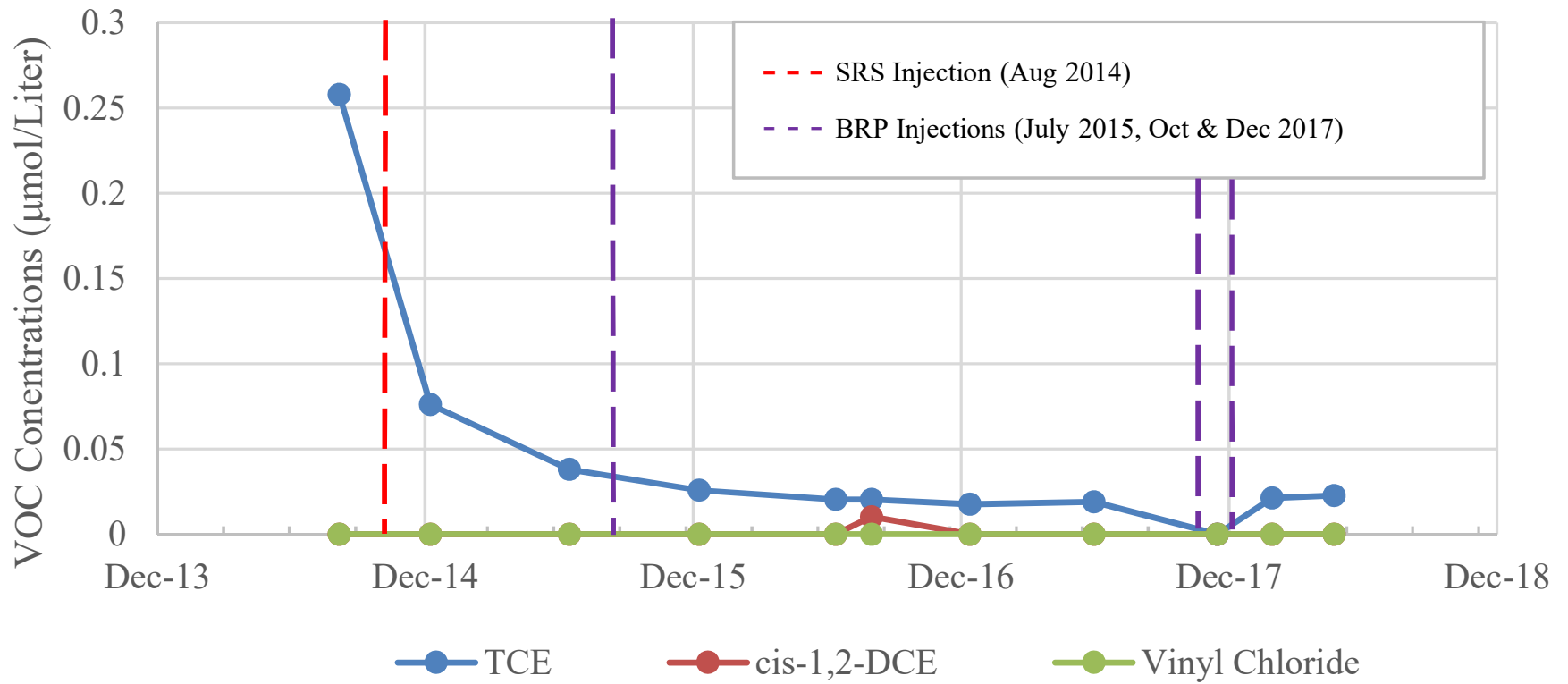


Figure E.14. Historical VOC Concentrations,
Monitoring Well 48DW-10



Appendix F

NCDOT-Pittsboro (48) SAP (Quarterly and Annual Events)

Sampling Order	Well ID	Total Well Depth (ft bgs)	Type III Surface Casing Depth (ft bgs)	Screened Interval Depth (ft bgs)	Depth to Water ¹ (ft btoc)	Sample Parameters
1 ²	48MW-10	40	--	30 - 40	29.57	a
2 ²	48MW-17	35	--	25 - 35	17.88	a
3 ²	48MW-18	30	--	15 - 30	19.00	a
4 ²	48MW-20	30	--	15 - 30	14.73	a
5 ²	48DW-6	140	47	120 - 140	29.33	a
6 ²	48DW-9	120	24	100 - 120	21.44	a
7 ²	48DW-11	120	20	80 - 100	14.55	a
8	48MW-3	56	--	40 - 50	32.26	a
9	48MW-23	23	--	23-Jul	3.44	a
10	48MW-11R	30	--	20 - 30	27.11	a
11	48DW-7	70	41	60 - 70	42.24	a,b,c,d,e,f,g,h,i
12	48MW-19	50	--	35 - 50	13.63	a
13	48MW-15	13.6	--	3.6 - 13.6	7.83	a
14	48MW-14	27.5	--	22.5 - 27.5	21.85	a,b,c,d,e,f,g,h,i
15	48MW-2	50	--	40 - 50	29.79	a,b,c,d,e,f,g,h,i
16	48MW-21	47	--	32 - 47	24.07	a,b,c,d,e,f,g,h,i
17	48MW-12	37.5	--	27.5 - 37.5	11.19	a,b,c,d,e,f,g,h,i
18	48DW-10	120	24	100 - 120	27.61	a,b,c,d,e,f,g,h,i
19	48MW-13	32.5	--	22.5 - 32.5	9.29	a,b,c,d,e,f,g,h,i
20	48DW-8 ³	65	21	45 - 65	7.02	a,b,c,d,e,f,g,h,i
21	48MW-1	50	--	36 - 46	32.30	a
22	48DW-4	125	15	115 - 125	12.17	a,b,c,d,e,f,g,h,i
23	48MW-22	23	--	7 - 23	6.84	a
24	48MW-4R	36	--	26 - 36	24.20	a
25	48MW-5	43	--	33 - 43	25.11	a,b,c,d,e,f,g,h,i
26	RW-2	86	30	37 - 82	23.57	a,b,c,d,e,f,g,h,i
27	48DW-1	100	63	63 - 100	5.43	a,b,c,d,e,f,g,h,i
28	48DW-2	66	43	43 - 66	33.23	a,b,c,d,e,f,g,h,i
29	RW-1	85	30	34 - 79	28.77	a,b,c,d,e,f,g,h,i
30	48SVE-01R	45	--	30 - 45	30.43	a,b,c,d,e,f,g,h,i
31	48DW-3	125	31	115 - 125	27.01	a,b,c,d,e,f,g,h,i
32	48MW-16R	45	--	30 - 45	33.18	a,b,c,d,e,f,g,h,i
33	48DW-5R	102	43	82 - 102	32.75	a,b,c,d,e,f,g,h,i
-	48-HS-1-SW ⁴	--	--	- -	--	a,b,c
-	48-HS-2-SW ⁴	--	--	- -	--	a,b,c
-	48-HS-3-SW ⁴	--	--	- -	--	a,b,c
-	Equip. Break	--	--	- -	--	a
-	Dup-1	--	--	- -	--	a
-	Dup-2	--	--	- -	--	a
-	48IW-1	50	--	35 - 50	--	
-	48IW-2	50	--	35 - 50	--	
-	48IW-3	47	--	32 - 47	--	
-	48IW-4	50	--	35 - 50	--	
-	48IW-5	50	--	35 - 50	--	

Notes:
 1) Water levels measured on December 12, 2016.
 2) Shaded cells monitoring wells non-hazardous based on most recent data, do not containerize
 3) 48DW-8 converted from a 21 to 120-foot open rock well to a screened Type III well on 9/25/14. TOC elevation based on surface casing. 48DW-8 screened interval based on depth interval with highest potential chlorinated VOC concentrations based on Color-Tec field screening during September 2014 packer testing.
 4) Surface water sample location. Surface water elevations were calculated by subtracting the depth of the surface water from the top of a surveyed stake elevation.
 - ft bgs - feet below ground surface, ft msl - feet above mean sea level, ft btoc - ft below top of casing elevation
 - Well coordinates collected using a Trimble GPS capable of sub-meter accuracy.
 a) - VOCs by 8260B
 b) - Ethane, Ethene, and Methane by USEPA Method RSK-175
 c) - TOC by SM 5310B (BLUE preservative)
 d) - Nitrate and Nitrite by USEPA Method 353.2 (YELLOW preservative)
 e) - sulfate by USEPA Method 300.0
 f) - Phosphorus by USEPA Method 365.1
 g) - Chloride by SM4500 CL
 h) - RCRA Metals by USEPA Method 6010/7471A (RED preservative)
 i) - Fe²⁺ Screening
 Note: Collect geochemical parameters (DO, ORP, EC, Temp, pH, turb) and WL from all wells