Revised Preliminary Site Assessment Report

Parcel 65
US 17 North of NC 171 to Multi-lanes South of Williamston
8889 U.S. Highway 17 North
Beaufort County, North Carolina
WBS Number 35494.1.1
TIP Number R-2511
NCDOT Parcel No. 65
Beaufort County PIN 5770-06-4184

Prepared for

North Carolina Department of Transportation
Geotechnical Engineering Unit
GeoEnvironmental Section
Raleigh, North Carolina

Prepared by

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

June 14, 2019

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VIA EMAIL TO: dgli@ncdot.gov

June 14, 2019

Mr. Dennis Li, L.G., PhD
North Carolina Department of Transportation
Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Reference: **Revised Preliminary Site Assessment Report**
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Dear Mr. Li:

Duncklee & Dunham, P.C. (Duncklee & Dunham) is pleased to submit this *Revised Preliminary Site Assessment Report* for the referenced site. The objective of our services was to assist the North Carolina Department of Transportation (NCDOT) – Geotechnical Engineering Unit with identifying potential environmental concerns within the rights-of-way and/or easements of the above-referenced parcel. This work is consistent with the NCDOT's Request for Technical and Cost Proposal dated March 5, 2019 and our *Revised Technical and Cost Proposal for Preliminary Site Assessments* dated May 14, 2019. Based on the findings from this work, Duncklee & Dunham recommends submitting this report to the Washington Regional Office of the North Carolina Department of Environmental Quality.

Please contact Rick Kolb at rkolb@dunckleedunham.com or (919) 858-9898, ext. 111 if you have any questions or require additional information.

Sincerely,

Duncklee & Dunham, P.C.

Alec N. Dziwanowski, G.I.T.
Staff Geologist II

Richard A. Kolb, L.G.
Senior Geologist
North Carolina License No. 1153

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Senior Engineer/Director of Engineering
North Carolina No. 24576

Attachment: Revised Preliminary Site Assessment Report

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1 Introduction

Duncklee & Dunham, P.C. (Duncklee & Dunham) conducted a Preliminary Site Assessment (PSA) of the referenced site located on the western side of U.S. Highway 17 (US 17) north of Washington in Beaufort County, North Carolina (Figures 1 and 2). The North Carolina Department of Transportation (NCDOT) plans to widen the two-lane portion of US 17 between Washington and Williamston, North Carolina. Our work is consistent with the NCDOT's *Request for Technical and Cost Proposal* dated March 5, 2019 and our *Revised Technical and Cost Proposal* dated May 14, 2019. The objective of this work was to assist the NCDOT – Geotechnical Engineering Unit with identifying potential environmental concerns within the rights-of-way and/or easements of the above-referenced site. Our services included a geophysical survey to identify subsurface metallic features such as underground storage tank (UST) systems, and the advancement of nine soil borings to test for the presence of contaminants in the areas where the new roadway will be constructed, along rights-of-way for NCDOT and at new utility easements.

2 History

The NCDOT prepared a Hazardous Materials Report dated November 14, 2011 that identified the site as a former Wynn's Gulf gasoline station, now converted to a private residence. NCDOT determined that three USTs were reportedly filled with concrete and closed in-place. After review of the incident list of the UST Section of the North Carolina Department of Environment and Natural Resources (NCDENR, now the North Carolina Department of Environmental Quality – NCDEQ), the NCDOT determined that there were no known incidents associated with the site.

3 Methods

Duncklee & Dunham called NC811 on March 26, 2019 and requested utilities to be marked in the areas of investigation. NC811 notified the Beaufort County Water Department, USIC Locating Services, CenturyLink, MCNC, Piedmont Natural Gas, Suddenlink Communications, and the City of Washington. The clearance was valid through April 16, 2019.

Duncklee & Dunham reviewed regulatory records on NCDEQ's Laserfiche website and did not find records for this parcel. During a site reconnaissance, Duncklee & Dunham did not observe evidence of past or present hydraulic lifts or drains in a storage shed present in the right of way, west of the residence. Duncklee & Dunham interviewed Sandra Wynne, owner of the property, and she stated that the three USTs were formerly used to store gasoline and kerosene. She was not aware of when the tanks were installed or closed out.

3.1 Geophysics

ESP Associates (ESP), under contract to Duncklee & Dunham, conducted geophysical survey at the site on April 1, 5, and 6, 2019. ESP used a Geonics EM61 MK2® metal detector with a DGPS instrument to locate buried metal objects, and then used a Sensors and Software Noggin GPR® instrument with a 250 MHz antenna to image selected anomalies. ESP traced underground lines using a Fisher Gemini-3® conduction tool.

3.2 Soil Borings

Troxler Geologic Services, Inc. (Troxler), under contract to Duncklee & Dunham, used a Geoprobe® equipped with direct-push technology to advance nine soil borings, nos. B-1 through B-9 (Photograph No. 1, Appendix A) on April 8, 2019. The locations of these borings are shown on Figure 2. Troxler advanced B-1 through B-5 near the three USTs beneath a concrete pad east of the residence (Photograph No. 2), B-6 and B-7 adjacent to the former location of the dispensing island beneath the carport (Photograph No. 3), and B-8 and B-9 near a heating oil UST west of the residence (Photograph No. 4). Troxler advanced borings B-1, -2, -3, -6, and -8 to a depth of 8 feet below land surface (bls) and the remaining borings to a depth of 4 feet bls. We encountered the water table at a depth of approximately 4 feet bls. Duncklee & Dunham used a Trimble Geo 7x® handheld data collector to determine the locations and elevations of each boring. Approximate Northings, Eastings, and elevations above sea level for these borings are shown in Table 1. Duncklee & Dunham contacted Tiffany Puett, Support Specialist with Duncan-Parnell, to inquire about the difference in elevation between B-16 and the other borings advanced on the site. Ms. Puett stated that this elevation difference is due to a reduction in vertical accuracy caused by the carport canopy that was present above B-6.

Troxler collected soil samples in new acetate sleeves, each 4 feet long. A majority of the soil samples were comprised of dark brown, clayey sand and light brown, sandy, silty clay. Boring logs are provided in Appendix B. Duncklee & Dunham collected representative samples of native material at selected intervals in each soil boring and stored the samples in twin Ziploc® bags. After allowing one of the bags to sit untouched in the sun and the other in the shade for approximately 15 minutes, we used a photoionization detector (PID) to screen the headspace in each bag left in the sun for volatile organic compounds (VOCs). We recorded the soil-screening results in the field log. Table 2 summarizes the screening results. The soil samples collected above the water table were not stained and did not exhibit petroleum odors except for the samples from B-6, which exhibited petroleum odors with increasing concentration from 0.5 feet to 8 feet bls. The PID readings of these soil samples ranged from 0.0 to 25.0 parts per million (ppm). The PID readings of the samples collected from 7 to 8 feet bls did not exceed 24.6 ppm, except the reading taken from B-6 at 7.5 feet bls, which was 363 ppm. This sample exhibited a petroleum odor.

Duncklee & Dunham collected a soil sample from B-6 at 3 feet bls to be tested in the laboratory because, of all the samples above the water table, this sample exhibited the highest concentration of VOCs on the PID. We placed the soil sample in the other twin bag in a laboratory-supplied container, placed the container in a cooler with ice, and shipped the cooler under chain of custody to RED Lab, LLC (RED Lab) in Wilmington, North Carolina. The laboratory received the cooler and tested the sample for total petroleum hydrocarbons (TPH) – diesel range organics (DRO) and TPH – gasoline range organics (GRO) using Ultraviolet Fluorescence methodology.

3.3 Groundwater

The soil sample collected from B-6 below the water table at 7.5 feet bls exhibited an anomalous response on the PID. Therefore, Troxler constructed temporary monitoring well TW-1 in boring B-6 to a depth of 8 feet bls using Screen Point 16 groundwater sampling rods. Troxler screened the well from 4 to 8 feet bls. Duncklee & Dunham purged groundwater from the well using a peristaltic pump with a new length of low-density polyethylene tubing and silicon tubing for the pump head. Once the purge water appeared clear, Duncklee & Dunham sampled TW-1 with a peristaltic pump. We placed the groundwater sample in laboratory-supplied containers, placed the containers in a cooler with ice, and brought the cooler back to our office under chain of custody. A courier for Pace National Laboratory (Pace) shipped the cooler by overnight express mail to their laboratory in Mt. Juliet, Tennessee. The laboratory tested the groundwater samples for VOCs according to EPA Method 6200B, semivolatile organic compounds (SVOCs) according to EPA Method 625, and volatile petroleum hydrocarbons (VPH) according to the method of the Massachusetts Department of Environmental Protection (MADEP). In accordance with NCDEQ guidance, Duncklee & Dunham discharged the purge water on the ground around TW-1 once we had collected the groundwater sample.

4 Results

4.1 Geophysics

ESP's *Geophysical Survey* report dated May 6, 2019 is provided in Appendix C. ESP identified the presence of four probable USTs on the site. The three USTs on the eastern side of the residence had capacities of approximately 900 gallons each and were located approximately 2 feet bls. The fourth UST, on the western side of the house, had a capacity of approximately 300 gallons and was located approximately 1.5 feet bls. ESP used ground penetrating radar to confirm the locations of these USTs. ESP used a conduction tool to locate the underground propane line that penetrated the ground on the northern side of the house and extended to an aboveground storage tank used to store propane north of the residence.

4.2 Soil Borings

Table 2 and Figure 3 summarize the laboratory results for the soil sample collected from soil boring B-6. The laboratory report is in Appendix D. RED Lab did not detect TPH-GRO in the sample and detected TPH-DRO at a concentration of 1.9 milligrams per kilogram (mg/kg). This concentration does not exceed the action level of 100 mg/kg established by NCDEQ. RED Lab identified the hydrocarbon fingerprint of the TPH-DRO in B-6 as "very degraded diesel," which is indicative of diesel that has had a substantial amount of time to degrade.

4.3 Groundwater

Table 3 and Figure 3 summarize the laboratory results for the sample collected from TW-1. Pace detected 16 petroleum constituents in this groundwater sample; the concentrations of six analytes exceeded the respective North Carolina groundwater quality standards promulgated in Title 15A, Subchapter 2L, Section .0202 of the North Carolina Administrative Code (15A NCAC 2L .0202; the "2L standards"). The concentrations did not exceed the respective Gross Contamination Levels.

5 Conclusions

5.1 Geophysics

ESP identified four probable USTs on Parcel 65. The three the USTs on the eastern side of the residence had capacities of approximately 900 gallons each, and the fourth UST on the western side of the residence had a capacity of approximately 300 gallons.

5.2 Soil Sampling

The soil sample from B-6 did not exhibit TPH-DRO at a concentration that exceeded NCDEQ's action level. Duncklee & Dunham did not detect petroleum odors or observe stains in the other soil samples collected above the water table. We do not have evidence that soil on the site exhibits petroleum constituents at concentrations that exceed the action levels established by NCDEQ.

5.3 Groundwater Sampling

Pace detected six analytes at concentrations that exceeded the respective 2L Standards in the groundwater sample collected from TW-1. Most of the exceedances were VOCs and VPH, which suggests that a majority of the contaminants were derived from a low boiling point fuel such as gasoline that were stored in the USTs at the site. The estimated extent of contamination is shown on Figure 3. The shape of the plume reflects what we estimate is the direction of groundwater flow.

6 Recommendations

Duncklee & Dunham recommends 1) closing by removal the two UST systems at the site in accordance with NCDEQ guidance to facilitate widening of the roadway and right of way, and 2) submitting this report to the Washington Regional Office of the NCDEQ.

Tables

Table 1
Coordinates of Soil Borings
Parcel 65
Beaufort County, North Carolina
TIP No. R-2511; WBS No. 35494.1.1

Boring Identification	Northing (feet)	Easting (feet)	Elevation (feet asl)
B-1	706187.495	2570644.385	46.251
B-2	706181.266	2570646.662	46.036
B-3	706175.142	2570648.700	45.561
B-4	706185.386	2570639.320	46.066
B-5	706171.420	2570643.066	46.499
B-6	706178.732	2570631.056	30.721
B-7	706170.056	2570636.701	43.373
B-8	706125.905	2570574.061	45.012
B-9	706116.332	2570575.900	44.777

Notes:

Coordinate system NAD83 NC State Plane - Survey Feet

GPS data collected using a Trimble Geo 7x handheld data collector

GPS data are approximate

Table 2
Summary of Soil Screening and Soil Test Results
Parcel 65
Beaufort County, North Carolina
TIP Number R-2511; WBS No. 35494.1.1

Soil Screening Results		
Boring Identification	**Depth (feet bls)**	**PID Reading (ppm)**
B-1	1	0.0
	3	0.0
	7	2.8
B-2	1	0.1
	2	0.1
	7	24.6
B-3	1	1.0
	3.5	0.3
	7.5	0.4
B-4	2	2.0
	3	2.7
B-5	1.5	4.2
	3	0.5
B-6	1.5	0.6
	3*	25.0
	7.5	363
B-7	2	3.1
	3.5	2.1
B-8	1	2.2
	3	0.2
	8	0.6
B-9	2	0.3
	3	0.3
Soil Test Results		
Sample Identification	**TPH-GRO (mg/kg)**	**TPH-DRO (mg/kg)**
B-6	<0.5	**1.9**

Notes:

Soil sample and PID data collected on April 8, 2019

** - Sample selected from this interval for laboratory testing*

TPH-GRO - Total Petroleum Hydrocarbons-Gasoline Range Organics

TPH-DRO - Total Petroleum Hydrocarbons-Diesel Range Organics

NCDEQ Action Level for TPH-GRO - 50 mg/kg

NCDEQ Action Level for TPH-DRO - 100 mg/kg

mg/kg - Milligrams per kilogram

bls - Feet below land surface

ppm - Parts per million

PID - Photoionization detector

Result in bold exceeds the report limit

Results shaded in blue were collected from below the water table

<# - Analyte not detected at a concentration that exceeds the reporting limit shown

Table 3
Summary of Groundwater Test Results
Parcel 65
Beaufort County, North Carolina
TIP No. R-2511; WBS No. 35494.1.1

Sample Identification→			TW-1	
Analyte	**2L Standard**	**GCL**	**Value**	**Q**
Volatile Organic Compounds by EPA Method 6200B				
n-Butylbenzene	70	6,900	**14.9**	
sec-Butylbenzene	70	8,500	**11.8**	
tert-Butylbenzene	70	15,000	0.800	J
Ethylbenzene	600	84,500	**23.5**	
Isopropylbenzene	70	25,000	**11.7**	
p-Isopropyltoluene	NE	NE	**6.58**	
Naphthalene	6	6,000	**48.2**	
n-Propylbenzene	70	30,000	**27.7**	
1,2,4-Trimethylbenzene	400	28,500	**492**	
1,3,5-Trimethylbenzene	400	25,000	**201**	
Xylenes, total	500	85,500	**266**	
Semivolatile Organic Compounds by EPA Method 625.1				
Naphthalene	6	6,000	**13.9**	
Phenol	30	30,000	3.10	J
Volatile Petroleum Hydrocarbons by MADEP Method				
C5-C8 Aliphatics	400	NE	**1,310**	
C9-C12 Aliphatics	700	NE	**2,250**	
C9-C10 Aromatics	200	NE	**3,540**	

Notes:

Units are µg/L

Sample collected on April 8, 2019

2L Standard - North Carolina Groundwater Quality Standard (15A NCAC 2L .0202)

GCL - North Carolina Gross Contamination Levels for groundwater

Result in bold exceeds the reported detection limit

Result with shaded cell exceeds the 2L Standard

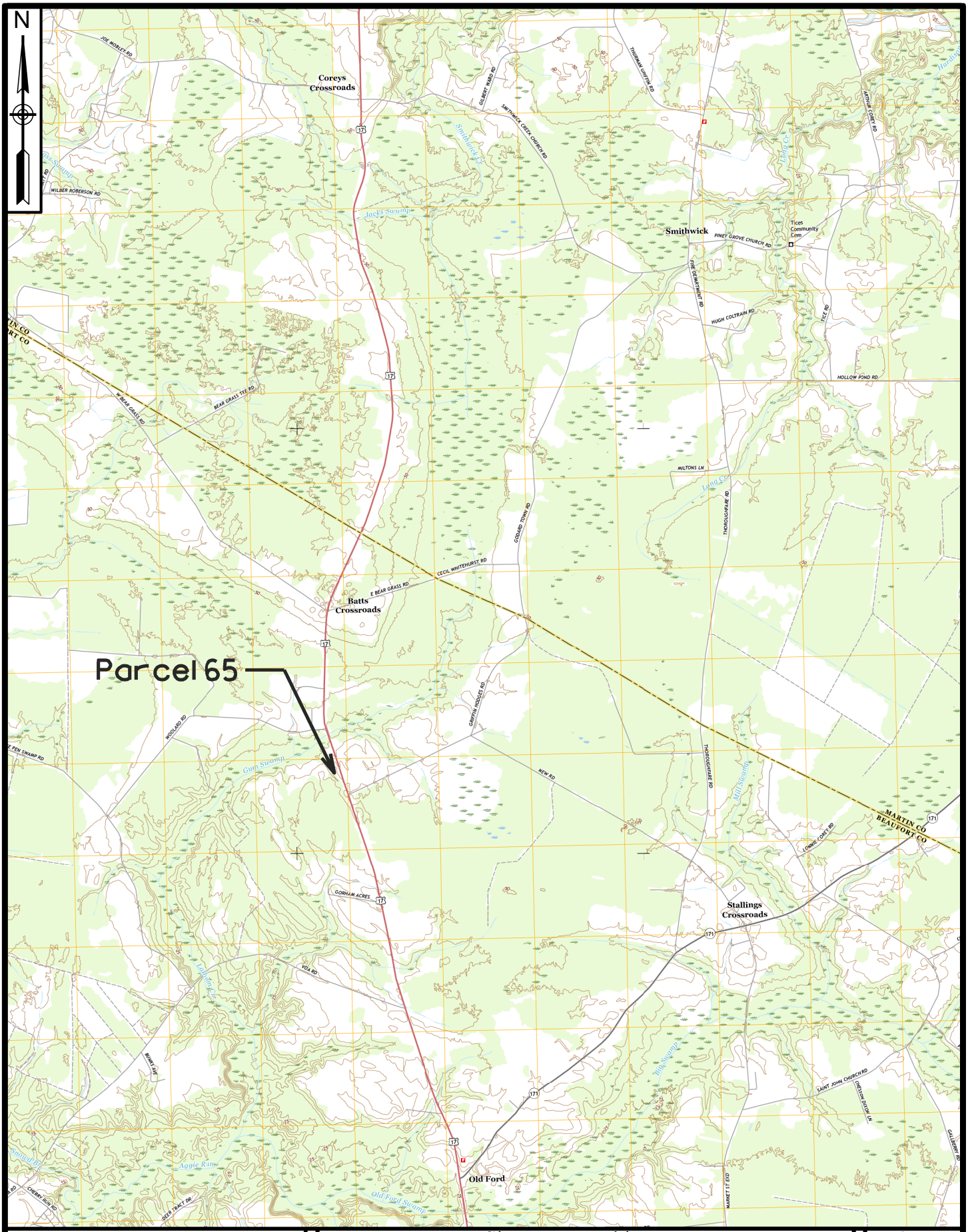
MADEP - Massachusetts Department of Environmental Protection

NE - Not Established

Q - Qualifier

J - Estimated concentration above the method detection limit and below the reported detection limit

Figures



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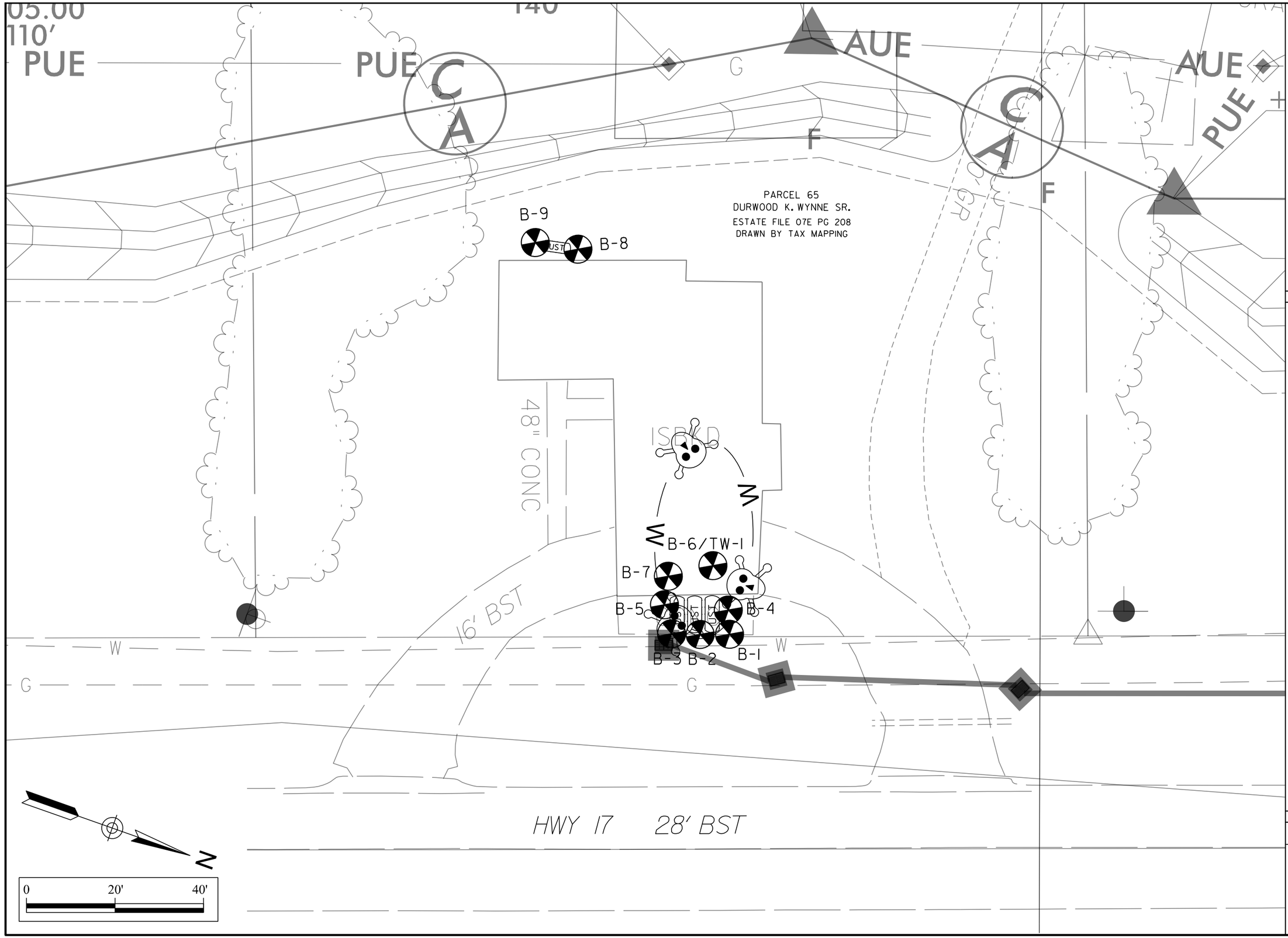
Site Topographic Map

NCDOT Parcel 65
Beaufort County, North Carolina

Figure 1

Drawn By:	Checked By:	Project Number:	Date:	References:
SBM	EDB	R-2511	4/30/2019	USGS US TOPO 7.5 Minute Old Fort Quadrangle

Scale: (Original)	Size:	Layers:	Filename:
1" = 24,000'	8.5" x 11"	N/A	R:\ProjectsÊ9 (H)\HO40.300 (Duncklee and Dunham R-2511 NCDOT Geophysics)\CADD\R2511_Geo_TopoMap_65



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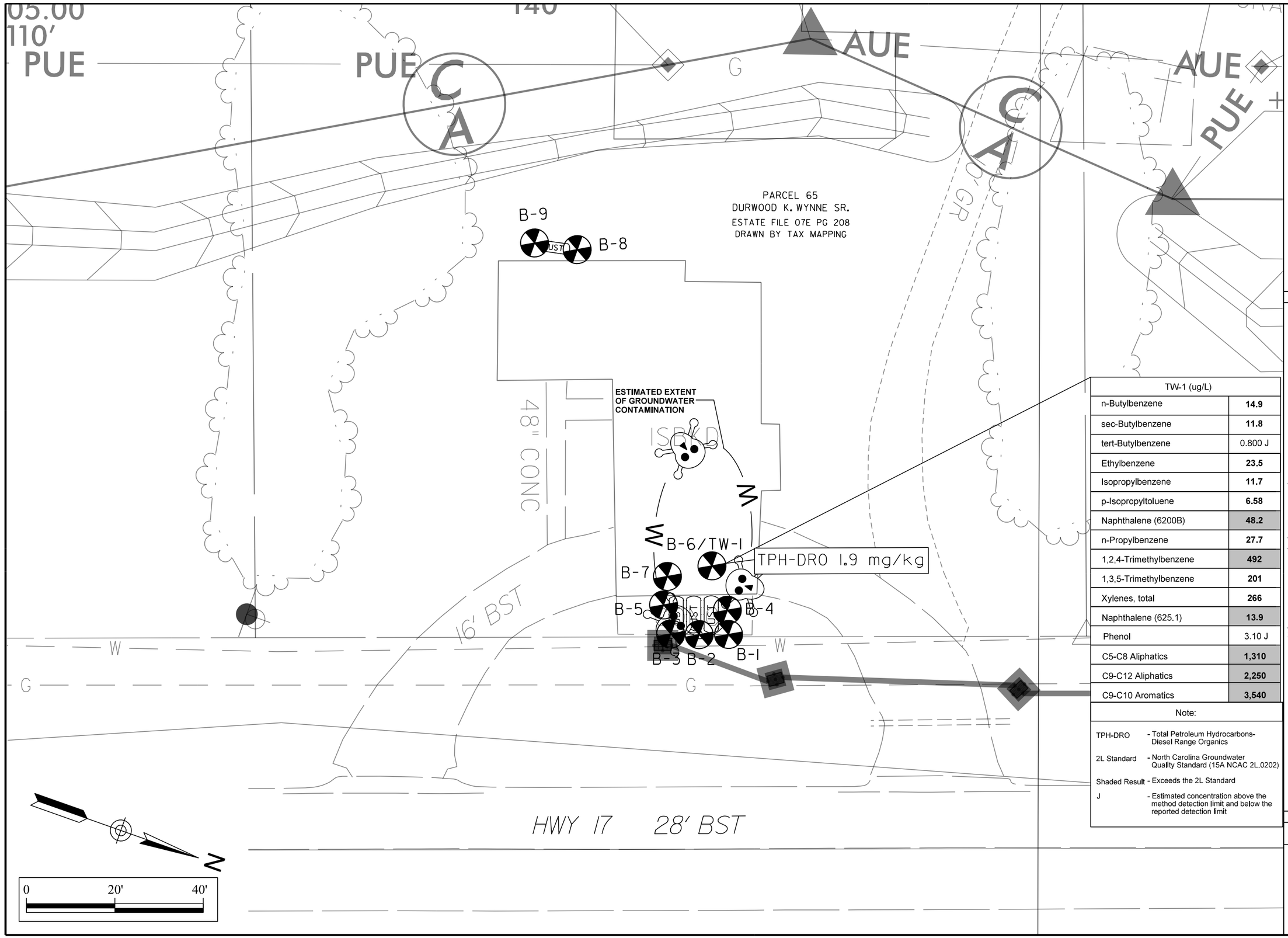
Site Map
NCDOT Parcel 65
8889 US 17 N Washington, Beaufort Countym NC 27899

Drawn By: SBM	Checked By: EDB	Project Number: R-2511	Date: 5/1/19
Scale: 1" = 20'	Size: 11" x 17"	Layers: N/A	Filename: R:\Projects\59 (H)\HG40.300 (Duncklee and Dunham R-2511 NCDOT Geophysics)\CADD\R2511_Geo_SiteMap_65

References:
R2511_NCDOT_FS.dgn
r2511_tdy_dsn.dgn

Figure
2



TW-1 (ug/L)	
n-Butylbenzene	**14.9**
sec-Butylbenzene	**11.8**
tert-Butylbenzene	0.800 J
Ethylbenzene	**23.5**
Isopropylbenzene	**11.7**
p-Isopropyltoluene	**6.58**
Naphthalene (6200B)	**48.2**
n-Propylbenzene	**27.7**
1,2,4-Trimethylbenzene	**492**
1,3,5-Trimethylbenzene	**201**
Xylenes, total	**266**
Naphthalene (625.1)	**13.9**
Phenol	3.10 J
C5-C8 Aliphatics	**1,310**
C9-C12 Aliphatics	**2,250**
C9-C10 Aromatics	**3,540**

Note:

TPH-DRO	- Total Petroleum Hydrocarbons-Diesel Range Organics
2L Standard	- North Carolina Groundwater Quality Standard (15A NCAC 2L.0202)
Shaded Result	- Exceeds the 2L Standard
J	- Estimated concentration above the method detection limit and below the reported detection limit

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Site Map with Results

NCDOT Parcel 65
8889 US 17 N, Washington, Beaufort County, NC 27899

References:
R2511_NCDOT_FS.dgn
r2511_tdy_dsn.dgn

Date: 5/1/19
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Project Number: R-2511
Layers: N/A

Checked By: EDB
Size: 11" x 17"

Drawn By: SBM
Scale: 1" = 20'

Figure

3

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS
CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

State Line
County Line
Township Line
City Line
Reservation Line
Property Line
Existing Iron Pin — EIP
Computed Property Corner
Property Monument — ECM
Parcel/Sequence Number — 123
Existing Fence Line
Proposed Woven Wire Fence
Proposed Chain Link Fence
Proposed Barbed Wire Fence
Existing Wetland Boundary — WLB
Proposed Wetland Boundary — WLB
Existing Endangered Animal Boundary — EAB
Existing Endangered Plant Boundary — EPB
Existing Historic Property Boundary — HPB
Known Contamination Area: Soil — S
Potential Contamination Area: Soil — S
Known Contamination Area: Water — W
Potential Contamination Area: Water — W
Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap
Sign
Well
Small Mine
Foundation
Area Outline
Cemetery
Building
School
Church
Dam

HYDROLOGY:

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

RAILROADS:

Standard Gauge — CSX TRANSPORTATION
RR Signal Milepost — MILEPOST 35
Switch — SWITCH
RR Abandoned
RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

Secondary Horiz and Vert Control Point
Primary Horiz Control Point
Primary Horiz and Vert Control Point
Exist Permanent Easment Pin and Cap
New Permanent Easement Pin and Cap
Vertical Benchmark
Existing Right of Way Marker
Existing Right of Way Line
New Right of Way Line
New Right of Way Line with Pin and Cap
New Right of Way Line with Concrete or Granite R/W Marker
New Control of Access Line with Concrete C/A Marker
Existing Control of Access
New Control of Access
Existing Easement Line — E
New Temporary Construction Easement — E
New Temporary Drainage Easement — TDE
New Permanent Drainage Easement — PDE
New Permanent Drainage / Utility Easement — DUE
New Permanent Utility Easement — PUE
New Temporary Utility Easement — TUE
New Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

Existing Edge of Pavement
Existing Curb
Proposed Slope Stakes Cut — C
Proposed Slope Stakes Fill — F
Proposed Curb Ramp — CR
Existing Metal Guardrail
Proposed Guardrail
Existing Cable Guiderail
Proposed Cable Guiderail
Equality Symbol
Pavement Removal

VEGETATION:

Single Tree
Single Shrub

Hedge
Woods Line
Orchard
Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:
Bridge, Tunnel or Box Culvert — CONC
Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:
Head and End Wall — CONC HW
Pipe Culvert
Footbridge
Drainage Box: Catch Basin, DI or JB — CB
Paved Ditch Gutter
Storm Sewer Manhole — S
Storm Sewer — S

UTILITIES:

POWER:
Existing Power Pole
Proposed Power Pole
Existing Joint Use Pole
Proposed Joint Use Pole
Power Manhole — P
Power Line Tower
Power Transformer
U/G Power Cable Hand Hole
H–Frame Pole
U/G Power Line LOS B (S.U.E.*) — P
U/G Power Line LOS C (S.U.E.*) — P
U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:
Existing Telephone Pole
Proposed Telephone Pole
Telephone Manhole — T
Telephone Pedestal — T
Telephone Cell Tower
U/G Telephone Cable Hand Hole — HH
U/G Telephone Cable LOS B (S.U.E.*) — T
U/G Telephone Cable LOS C (S.U.E.*) — T
U/G Telephone Cable LOS D (S.U.E.*) — T
U/G Telephone Conduit LOS B (S.U.E.*) — TC
U/G Telephone Conduit LOS C (S.U.E.*) — TC
U/G Telephone Conduit LOS D (S.U.E.*) — TC
U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:
Water Manhole — W
Water Meter
Water Valve
Water Hydrant
U/G Water Line LOS B (S.U.E*) — W
U/G Water Line LOS C (S.U.E*) — W
U/G Water Line LOS D (S.U.E*) — W
Above Ground Water Line — A/G Water

TV:
TV Pedestal — C
TV Tower
U/G TV Cable Hand Hole — HH
U/G TV Cable LOS B (S.U.E.*) — TV
U/G TV Cable LOS C (S.U.E.*) — TV
U/G TV Cable LOS D (S.U.E.*) — TV
U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:
Gas Valve
Gas Meter
U/G Gas Line LOS B (S.U.E.*) — G
U/G Gas Line LOS C (S.U.E.*) — G
U/G Gas Line LOS D (S.U.E.*) — G
Above Ground Gas Line — A/G Gas

SANITARY SEWER:
Sanitary Sewer Manhole
Sanitary Sewer Cleanout
U/G Sanitary Sewer Line — SS
Above Ground Sanitary Sewer — A/G Sanitary Sewer
SS Forced Main Line LOS B (S.U.E.*) — FSS
SS Forced Main Line LOS C (S.U.E.*) — FSS
SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:
Utility Pole
Utility Pole with Base
Utility Located Object
Utility Traffic Signal Box — S
Utility Unknown U/G Line LOS B (S.U.E.*) — PUTL
U/G Tank; Water, Gas, Oil
Underground Storage Tank, Approx. Loc. — UST
A/G Tank; Water, Gas, Oil
Geoenvironmental Boring
U/G Test Hole LOS A (S.U.E.*)
Abandoned According to Utility Records — AATUR
End of Information — E.O.I.

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

Legend for Plan Sheet Figures
NCDOT Parcel 65
Beaufort County, North Carolina

References: NCDOT PLAN SHEET SYMBOLOGY, Microstation Cell, 12/2/2016

Date: 5/3/2019

Filename: R:\Projects\59 (H)\H340.300 (Duncklee and Dunham R-2511 NCDOT Geophysics)\CADD\R2511_Geo_Legend_.65

Project Number: R-2511

Layers: N/A

Checked By: EDB

Size: 11" x 17"

Drawn By: SBM

Scale: N/A

Figure

4

Appendix A

PHOTOGRAPHIC LOG

DUNCKLEE & DUNHAM
ENVIRONMENTAL GEOLOGISTS & ENGINEERS

Client Name:	Site Location:	Project No.
NCDOT-GeoEnvironmental	R-2511 Parcel 65; Beaufort County, North Carolina	201939

Photo No.	Date:
1	4/8/19

Direction of Photo:

Northwest

Description:

Soil boring B-1, which was advanced using a Geoprobe®. U.S. Highway 17 is to the right. Ben Troxler of Troxler Geologic Services is pictured.

Photo No.	Date:
2	4/8/19

Direction of Photo:

Southwest

Description:

The three USTs (outlined in pink) and the vent pipe identified by ESP Associates along the eastern side of the residence.

PHOTOGRAPHIC LOG

DUNCKLEE & DUNHAM
ENVIRONMENTAL GEOLOGISTS & ENGINEERS

Client Name:	Site Location:	Project No.
NCDOT-GeoEnvironmental	R-2511 Parcel 65; Beaufort County, North Carolina	201939

Photo No.	Date:
3	4/8/19

Direction of Photo:

Northeast

Description:

Soil borings B-6 and B-7 advanced adjacent to the former dispensing island beneath the carport. U.S. Highway 17 is in the background.

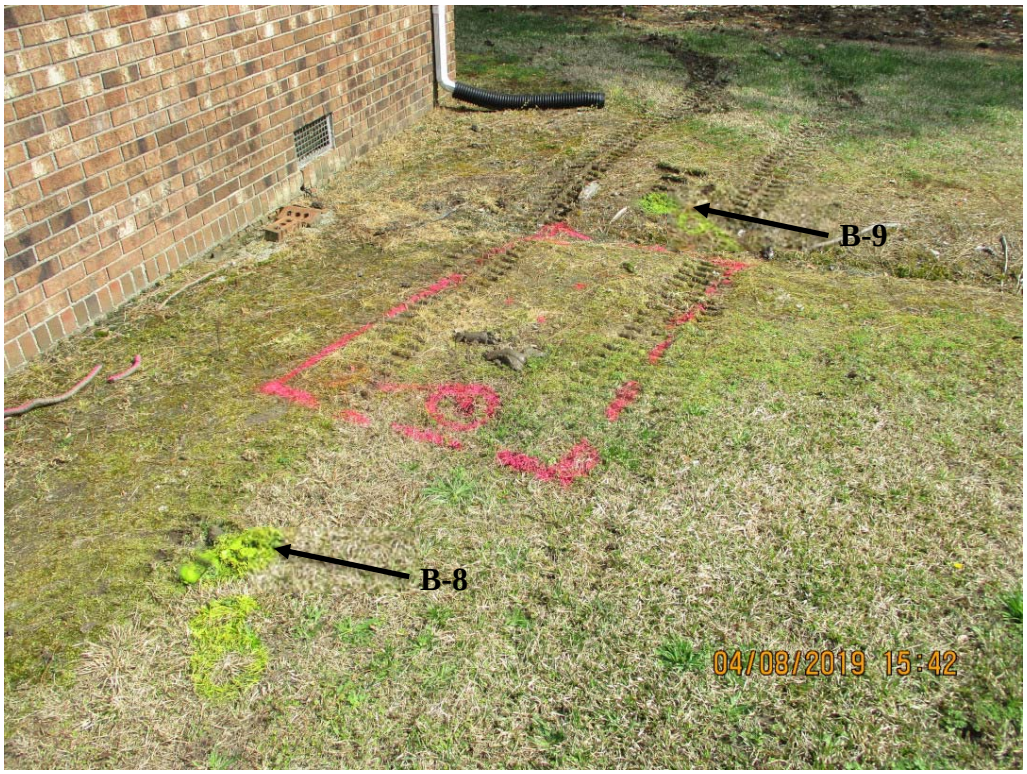
Photo No.	Date:
4	4/8/19

Direction of Photo:

Southeast

Description:

The heating oil UST identified by ESP Associates (outlined in pink) along the western side of the residence.



Appendix B

Boring/Well Construction Log

DUNCKLEE & DUNHAM

I. D. Number	B-1	**Purpose**	Soil Boring
Project Name	Beaufort & Martin Co. PII - Site 6	**Contractor**	Troxler Geologic
Project No.	204139	**Registration No.**	2511
Geologist	Alec Dziwanowski	**Driller**	Ben Troxler
Start Date	4/8/19 **Complete Date** 4/8/19	**Equipment**	Geoprobe

Drilling Method Direct-push

Comments WT at ~ 4'
Petroleum odors noted from 6.5-8' bls, no oder/staining elsewhere
Collected soil from 7' to see where to pull well

Well Construction Information	Depth From - To (ft.)	Lithology	FID / PID (ppm) @ Depth (ft.)	Petroleum odor?
Borehole Diameter	0-1.5	dark brown, clayey sand (SM) SAND	0.0 @ 1'	no
Riser Type WT @ 4'	1.5-6.5	light brown, sandy, silty, CLAY	0.0 @ 3'	no
Diameter	6.5-8	light gray, sandy CLAY	2.8 @ 7'	yes
Screen Type				
Diameter				
Riser Interval				
Screen Interval				
Slot Size				
Grout Type				
Interval				
Bentonite Type				
Interval				
Filter Pack				
Interval				
Total Depth				
R.P. Elevation				
Datum				

Water Level Information

Date	W.L. Below R.P.

R.P. = Reference Point *W.L. = Water Level* *TBM = Temporary Benchmark* *MSL = Mean Sea Level*

Boring/Well Construction Log

DUNCKLEE & DUNHAM

I. D. Number	B-2	**Purpose**	Soil boring
Project Name	Beaufort & Martin Co. PII - Site 6	**Contractor**	Troxler Geologic
Project No.	20939	**Registration No.**	2511
Geologist	Alex Dziwanowski	**Driller**	Ben Troxler
Start Date	4/8/19 **Complete Date** 4/8/19	**Equipment**	Geoprobe

Drilling Method Direct-push

Comments WT at: 4'

Petroleum odors noted from 6.5-8 feet bls, no odor/staining elsewhere

Collected soil from 7' to see where to put well

Well Construction Information	Depth From - To (ft.)	Lithology	FID / PID (ppm) @ Depth (ft.)	Petroleum odor?
Borehole Diameter	0-1.5	dark brown, clayey SAND	0.1 @ 1'	no
Riser Type WT @ 4'	1.5-6.5	light brown, sandy, silty CLAY	0.1 @ 2'	no
Diameter	6.5-8	light gray, sandy CLAY	24.6 @ 7'	yes
Screen Type				
Diameter				
Riser Interval				
Screen Interval				
Slot Size				
Grout Type				
Interval				
Bentonite Type				
Interval				
Filter Pack				
Interval				
Total Depth				
R.P. Elevation				
Datum				

Water Level Information

Date	W.L. Below R.P.

R.P. = Reference Point *W.L. = Water Level* *TBM = Temporary Benchmark* *MSL = Mean Sea Level*

Boring/Well Construction Log

DUNCKLEE & DUNHAM

I. D. Number	B-3	**Purpose**	Soil boring
Project Name	Beaufort & Martin Co. - Site 6	**Contractor**	Troxler Geologic
Project No.	201939	**Registration No.**	2511
Geologist	Alec Dziwanowski	**Driller**	Ben Troxler
Start Date	4/8/19 **Complete Date** 4/8/19	**Equipment**	Geoprobe

Drilling Method direct-push,
Comments WT at ~4'
Petroleum odors noted at 6.5-8' bls, no odors/staining elsewhere
collected soil from 7.5' to see where to put well

Well Construction Information	Depth From - To (ft.)	Lithology	FID / PID (ppm) @ Depth (ft.)	Petroleum odor?
Borehole Diameter	0 - 1.5	dark brown, Clayey SAND	1.0 @ 1'	no
Riser Type WT @ 4'	1.5 - 6.5	light brown, Sandy, Silty CLAY	0.3 @ 3.5'	no
Diameter	6.5 - 8	light gray, Sandy CLAY	0.4 @ 7.5'	yes
Screen Type				
Diameter				
Riser Interval				
Screen Interval				
Slot Size				
Grout Type				
Interval				
Bentonite Type				
Interval				
Filter Pack				
Interval				
Total Depth				
R.P. Elevation				
Datum				

Water Level Information

Date	W.L. Below R.P.

R.P. = Reference Point *W.L. = Water Level* *TBM = Temporary Benchmark* *MSL = Mean Sea Level*

Boring/Well Construction Log

DUNCKLEE & DUNHAM

I. D. Number	B-4	**Purpose**	Soil boring
Project Name	Beaufort & Martin Co. - Site 6	**Contractor**	Troxler Geologic
Project No.	201939	**Registration No.**	2511
Geologist	Alec Dziwanowski	**Driller**	Ben Troxler
Start Date	4/8/19 **Complete Date** 4/8/19	**Equipment**	Geoprobe

Drilling Method direct-push
Comments WT at: 4'
Petroleum odors/staining not observed

Well Construction Information	Depth From - To (ft.)	Lithology	FID / PID (ppm) @ Depth (ft.)
Borehole Diameter	0.0-0.5	concrete	NA
Riser Type	0.5-4	light brown, sand, silty CLAY → bag 1	2.0@2'
Diameter		bag 2	2.7@3'
Screen Type			
Diameter			
Riser Interval			
Screen Interval			
Slot Size			
Grout Type			
Interval			
Bentonite Type			
Interval			
Filter Pack			
Interval			
Total Depth			
R.P. Elevation			
Datum			

Petroleum oder?
no
no
no

Water Level Information

Date	W.L. Below R.P.

R.P. = Reference Point *W.L. = Water Level* *TBM = Temporary Benchmark* *MSL = Mean Sea Level*

Boring/Well Construction Log

DUNCKLEE & DUNHAM

I. D. Number	B-5	**Purpose**	Soil boring
Project Name	Beaufort & Martin Co. - Site 6	**Contractor**	Troxler Geologic
Project No.	201939	**Registration No.**	2511
Geologist	Alec Dziwanowski	**Driller**	Ben Troxler
Start Date	4/8/19 **Complete Date** 4/8/19	**Equipment**	Geoprobe

Drilling Method direct-push

Comments WT @ 4'
petroleum odors/staing not observed

Well Construction Information	Depth From - To (ft.)	Lithology	FID / PID (ppm) @ Depth (ft.)
Borehole Diameter	0-0.5	Concrete	NA
Riser Type	0.5-4	light brown, Sandy, silty CLAY → bag 1	4.2 @ 1.5'
Diameter		→ bag 2	0.5 @ 3'
Screen Type			
Diameter			
Riser Interval			
Screen Interval			
Slot Size			
Grout Type			
Interval			
Bentonite Type			
Interval			
Filter Pack			
Interval			
Total Depth			
R.P. Elevation			
Datum			

Water Level Information	
Date	W.L. Below R.P.

Petroleum odor?
no
no
no

R.P. = Reference Point *W.L. = Water Level* *TBM = Temporary Benchmark* *MSL = Mean Sea Level*

Boring/Well Construction Log

DUNCKLEE & DUNHAM

I. D. Number	B-6 / TW-1	**Purpose**	Soil boring/GW sampling
Project Name	Beaufort & Martin Co. - Site 6	**Contractor**	Traxler Geologic
Project No.	201939	**Registration No.**	2511
Geologist	Alec Dziwanowski	**Driller**	Ben Traxler
Start Date	4/8/19 **Complete Date** 4/8/19	**Equipment**	Geoprobe

Drilling Method direct-push, well type - gw sampling rods (screen point 16)

Comments WT @ 4'

Slight Petroleum odors – 0.5-4, stronger odor - 4-7, strongest odor - 7-8

Collected soil from 2.5' to 5ec' where to put well

Constructed TW-1, collected gw sample at 1450 at 7' bls

Collected soil sample at 1405 at ~3' bls

Well Construction Information		Depth From - To (ft.)	Lithology	FID / PID (ppm) @ Depth (ft.)
Borehole Diameter	2.75"	0.0 - 0.5	Concrete	
Riser Type	Sampling rod (WT @ 4')	0.5 - 4	light brown, sandy, silty CLAY	bag1: 0.6 @ 1.5'
Diameter	1.25"	4 - ~~6~~ 7	orange brown, CLAY w/ sand	NA
Screen Type	Sampling rod	7 - 8	light gray sandy CLAY	3.3 @ 7.5'
Diameter	1.25"		*water did not have odor while sampling	
Riser Interval	switch> 4' - 8' bls			
Screen Interval	0' - 4' bls			
Slot Size	0.006"			
Grout Type	↑			
Interval				
Bentonite Type	NA			
Interval				
Filter Pack	↓			
Interval				
Total Depth	8' bls			
R.P. Elevation	0' bls			
Datum	Land Surface			

Petroleum Odor? no

bag 2: 25.0 @ 3'

slight odor

strong odor

strongest odor

Water Level Information

Date	W.L. Below R.P.
4/8/19	3.65

R.P. = Reference Point *W.L. = Water Level* *TBM = Temporary Benchmark* *MSL = Mean Sea Level*

Boring/Well Construction Log

DUNCKLEE & DUNHAM

I. D. Number	B-7	**Purpose**	Soil Boring
Project Name	Beaufort & Martin Co. - Site 6	**Contractor**	Troxler Geologic
Project No.	201939	**Registration No.**	2511
Geologist	Alec Dziwanowski	**Driller**	Ben Troxler
Start Date	4/8/19 **Complete Date** 4/8/19	**Equipment**	Geoprobe

Drilling Method direct-push
Comments WT @ 4'
No petroleum odors/stains observed

Well Construction Information	Depth From - To (ft.)	Lithology	FID / PID (ppm) @ Depth (ft.)	Petroleum Odor?
Borehole Diameter	0-0.5	concrete		
Riser Type	0.5-4	light brown, sandy, silty CLAY → bag1	3.1 @ 2'	no
Diameter		→ bag2	2.1 @ 3.5'	no
Screen Type				
Diameter				
Riser Interval				
Screen Interval				
Slot Size				
Grout Type				
Interval				
Bentonite Type				
Interval				
Filter Pack				
Interval				
Total Depth				
R.P. Elevation				
Datum				

Water Level Information

Date	W.L. Below R.P.

R.P. = Reference Point *W.L. = Water Level* *TBM = Temporary Benchmark* *MSL = Mean Sea Level*

Boring/Well Construction Log

DUNCKLEE & DUNHAM

I. D. Number	B-8	**Purpose**	Soil boring
Project Name	Beaufort & Martin Co. - Site 6	**Contractor**	Troxler Geologic
Project No.	201939	**Registration No.**	2511
Geologist	Alec Dziwanowski	**Driller**	Ben Troxler
Start Date	4/8/19 **Complete Date** 4/8/19	**Equipment**	Geoprobe

Drilling Method Direct-push

Comments WT @ 4' with perched water table near land surface
Petroleum odor noted at 7-8 feet bls
Collected sample at ~8' bls to see if well is needed

Well Construction Information	Depth From - To (ft.)	Lithology	FID / PID (ppm) @ Depth (ft.)	Petroleum odor?
Borehole Diameter	0-5	dark brown sandy, silty CLAY → bag 1 / bag 2	2.2 @ 1'	no
Riser Type			0.2 @ 3'	no
Diameter	5-7	light brown, sandy silty CLAY	NA	no
Screen Type	7-8	light gray, sandy CLAY	0.6 @ 8'	yes
Diameter				
Riser Interval				
Screen Interval				
Slot Size				
Grout Type				
Interval				
Bentonite Type				
Interval				
Filter Pack				
Interval				
Total Depth				
R.P. Elevation				
Datum				

Water Level Information

Date	W.L. Below R.P.

R.P. = Reference Point *W.L. = Water Level* *TBM = Temporary Benchmark* *MSL = Mean Sea Level*

Boring/Well Construction Log

DUNCKLEE & DUNHAM

I. D. Number	B-9	**Purpose**	Soil boring
Project Name	Beaufort & Martin Co. - Site 6	**Contractor**	Troxler Geologic
Project No.	201939	**Registration No.**	2511
Geologist	Alec Dziwanowski	**Driller**	Ben Troxler
Start Date	4/8/19 **Complete Date** 4/8/19	**Equipment**	Geoprobe

Drilling Method Direct-push

Comments WT at 4' with perched water table near land surface
no petroleum odors/staining observed

Well Construction Information	Depth From - To (ft.)	Lithology	FID / PID (ppm) @ Depth (ft.)	Petroleum Odor?
Borehole Diameter	0-2	dark brown, sandy, silty CLAY	0.3 @ 2'	no
Riser Type	2-4	light brown, sandy, silty CLAY	0.3 @ 3'	no
Diameter				
Screen Type				
Diameter				
Riser Interval				
Screen Interval				
Slot Size				
Grout Type				
Interval				
Bentonite Type				
Interval				
Filter Pack				
Interval				
Total Depth				
R.P. Elevation				
Datum				

Water Level Information

Date	W.L. Below R.P.

R.P. = Reference Point *W.L. = Water Level* *TBM = Temporary Benchmark* *MSL = Mean Sea Level*

Appendix C

May 6, 2019

Richard A. Kolb, L.G.
Duncklee & Dunham, P.C.
511 Keisler Drive, Suite 102
Cary, North Carolina 27518

Reference: **REPORT ON GEOPHYSICAL SERVICES**
NCDOT Project R-2511, Parcel 65, Durwood K Wynne Sr.
8889 US 17 North, Washington, North Carolina
ESP Project No. HO40.300

TIP Number: R-2511
WBS Number: 35494.1.1
County: Beaufort and Martin
Description: US 17 North of NC 171 to Multi-lanes South of Williamston in Beaufort and Martin Counties

Dear Mr. Kolb:

ESP Associates, Inc. (ESP) is pleased to present this report to Duncklee & Dunham, P.C. (Duncklee & Dunham) on the geophysical services we provided for the referenced project. This work was performed under our subcontractor agreement dated January 28, 2019, as authorized by the Work Authorization dated March 26, 2019, and in accordance with our cost proposal to you dated April 26, 2019. The purpose of the work was to help identify possible underground storage tanks (USTs).

1.0 GEOPHYSICAL DATA COLLECTION

On April 1, 5 and 6, 2019, ESP performed geophysical studies at Parcel 65, located on the west side of US 17, north of Washington, North Carolina. The work consisted of metal detection using a Geonics EM61 MK2 instrument, obtaining the approximate locations of relevant site features using a DGPS instrument, collecting ground-penetrating radar (GPR) data over selected EM61 anomalies, and tracing a buried propane line with a Fisher Gemini-3 conduction tool.

The limits of the study area were based on NCDOT field staking and on the NCDOT MicroStation file provided by Duncklee & Dunham, and extended from the edge of the current roadway to the proposed permanent utility easement (PUE). Representative photographs of the geophysical findings are provided on Figure 1.

The EM61 data were collected over the accessible areas of the study area using a line spacing of approximately 3 feet. We used a Hemisphere XF101 differential GPS instrument (DGPS) connected to an Archer field computer to provide approximate locations of the EM61 data in real time. The DGPS instrument was also used to obtain the approximate location of site features that could affect the EM61 readings.

We compared the location of the EM61 responses to the location of site features and noted several anomalies that did not correspond to known features. We collected GPR data in three areas using a Sensors and Software Noggin GPR system with a 250 MHz antenna, as noted on Figures 2 and 3.

2.0 DATA ANALYSIS AND PRESENTATION

The EM61 data were gridded and contoured in Surfer to produce plan view contour maps of the early time gate response (Figure 2) and the differential response (Figure 3). The differential response is calculated by subtracting the response of the bottom coil from the response of the top coil of the EM61. Typically, the differential response diminishes the response from smaller, near-surface metallic objects, thus emphasizing the response from deeper and larger metallic objects, such as USTs. The DGPS locations of observed site features were superimposed on the EM61 contour maps so that anomalies caused by site features such as metal objects on the ground surface could be recognized. Figures 2 and 3 show the EM61 data and the site features that we observed and mapped in the field with DGPS; these figures do not necessarily show all existing site features.

The GPR data collected over the EM61 anomalies were reviewed in the field. The GPR data collected over the concrete pad on the east side of the house indicated 3 probable USTs that were approximately 14 feet combined width by at least 9.5 feet long and buried about 2.0 feet below the concrete surface (Figure 4, images A and B). The individual USTs appear to be about 4 feet diameter by 9.5 feet long, although the west end is undetermined due the location of a low brick wall.

The GPR data collected over the EM61 anomaly by the southwest corner of the house indicated one probable UST that was approximately 3 feet diameter by 6 feet in length and buried about 1.5 feet below ground surface (Figure 4, images C and D). The GPR data did not indicate the presence of abandoned USTs in the other areas.

The EM61 early time gate response and differential response were exported from Surfer as geo-referenced images and attached to the NCDOT plan sheet in MicroStation (Figures 5 and 6). The legend for the NCDOT line types and symbols is shown on Figure 7.

4.0 SUMMARY AND CONCLUSIONS

Our review of the geophysical data collected for this project indicates the presence of 4 probable USTs within the PUE of Parcel 65. Three probable USTs are located on the east side of the house, beneath a concrete pad with 3 metal fill port covers. These USTs are each approximately 900 gallons in size. The fourth UST is located near the southwest corner of the house and is approximately 300 gallons in size.

5.0 LIMITATIONS

These services have been provided to Duncklee & Dunham in accordance with generally accepted guidelines for performing geophysical surveys. It is recognized that the results of geophysical surveys are non-unique and subject to interpretation. Further, the locations of data and features included in this report are approximate and were collected using a DGPS instrument. ESP makes no guarantee as to the accuracy of these locations.

Thank you for the opportunity to be of service on this project. Please contact us if you have any questions or need further information.

Sincerely,

ESP Associates, Inc.

Edward D. Billington, PG
Senior Geophysicist

SBM/EDB

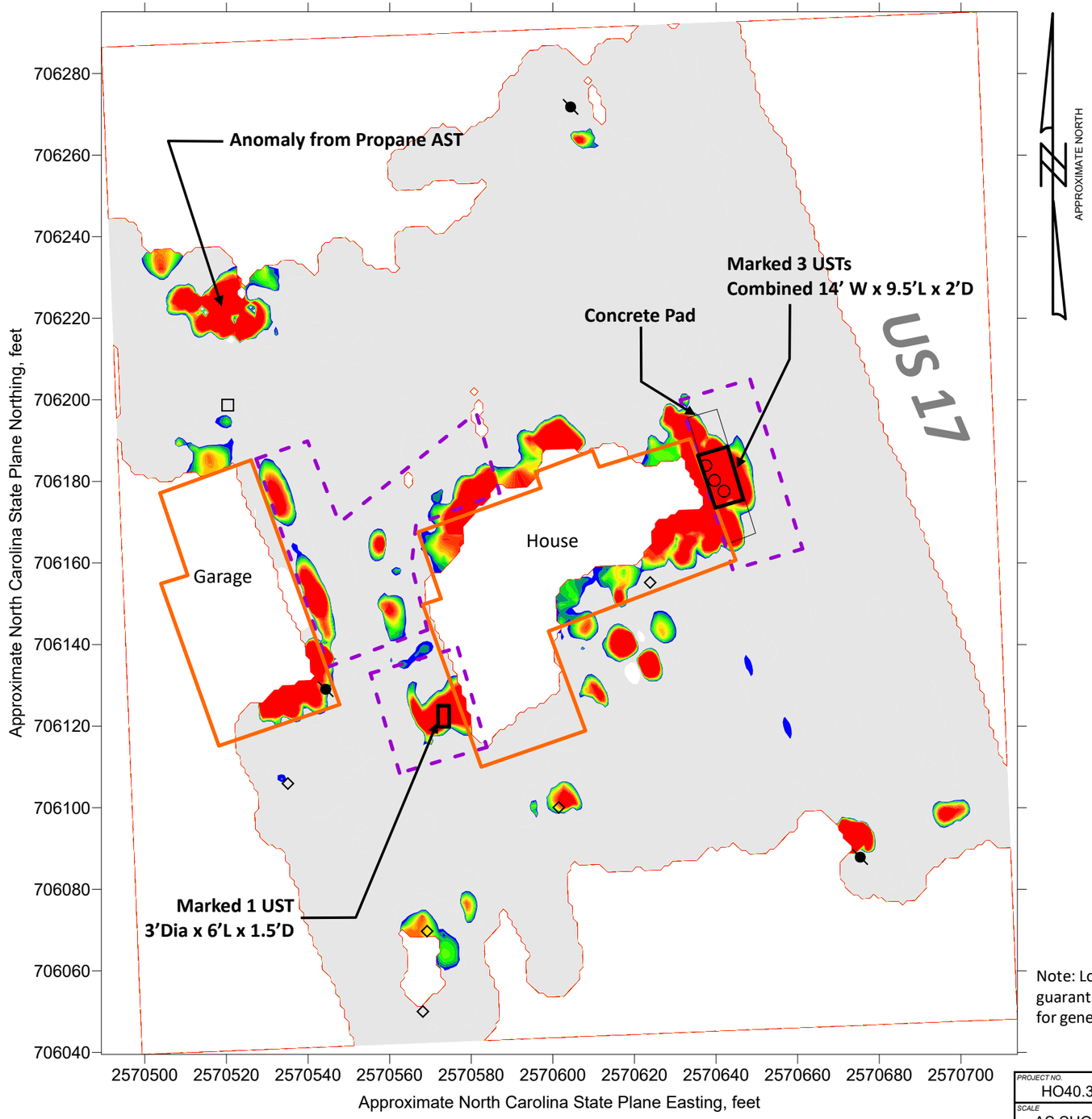
Attachments: Figures 1 – 7

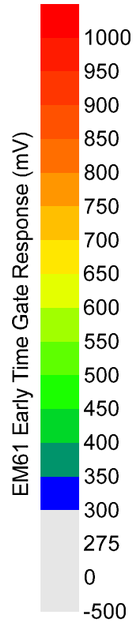
A. Three probable USTs marked on east side of house. The combined area of the USTs is approximately 14 ft x 9.5 ft, although the west side is undetermined due to presence of low brick wall.

B. One probable UST marked near southwest corner of house. The probable UST is approximately 3 ft diameter x 6 ft long. The circle on the left side of the photo marks an apparent open fill port.

C. Approximate location of line leading from propane AST to north side of house.

PROJECT NO. HO40.300 SCALE N/A DATE 5/6/19 BY SBM/EDB	***FIGURE 1 – PARCEL 65, DURWOOD K WYNNE, SR. SITE PHOTOGRAPHS*** ***NCDOT PROJECT R-2511, US 17 NORTH OF NC 171 TO MULTI-LANES SOUTH OF WILLIAMSTON BEAUFORT AND MARTIN COUNTIES, NORTH CAROLINA***	ESP Associates, Inc. 7011 Albert Pick Rd., Suite E Greensboro, NC 27409 336.334.7724 www.espassociates.com





EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Storm drain
- Utility pole
- Guy wire anchor
- Sign pole, other pole
- UST Valve Cover or Fill Port
- Buried utility line (marked by others)
- Existing Building (per NCDOT file)
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Underground Storage Tank

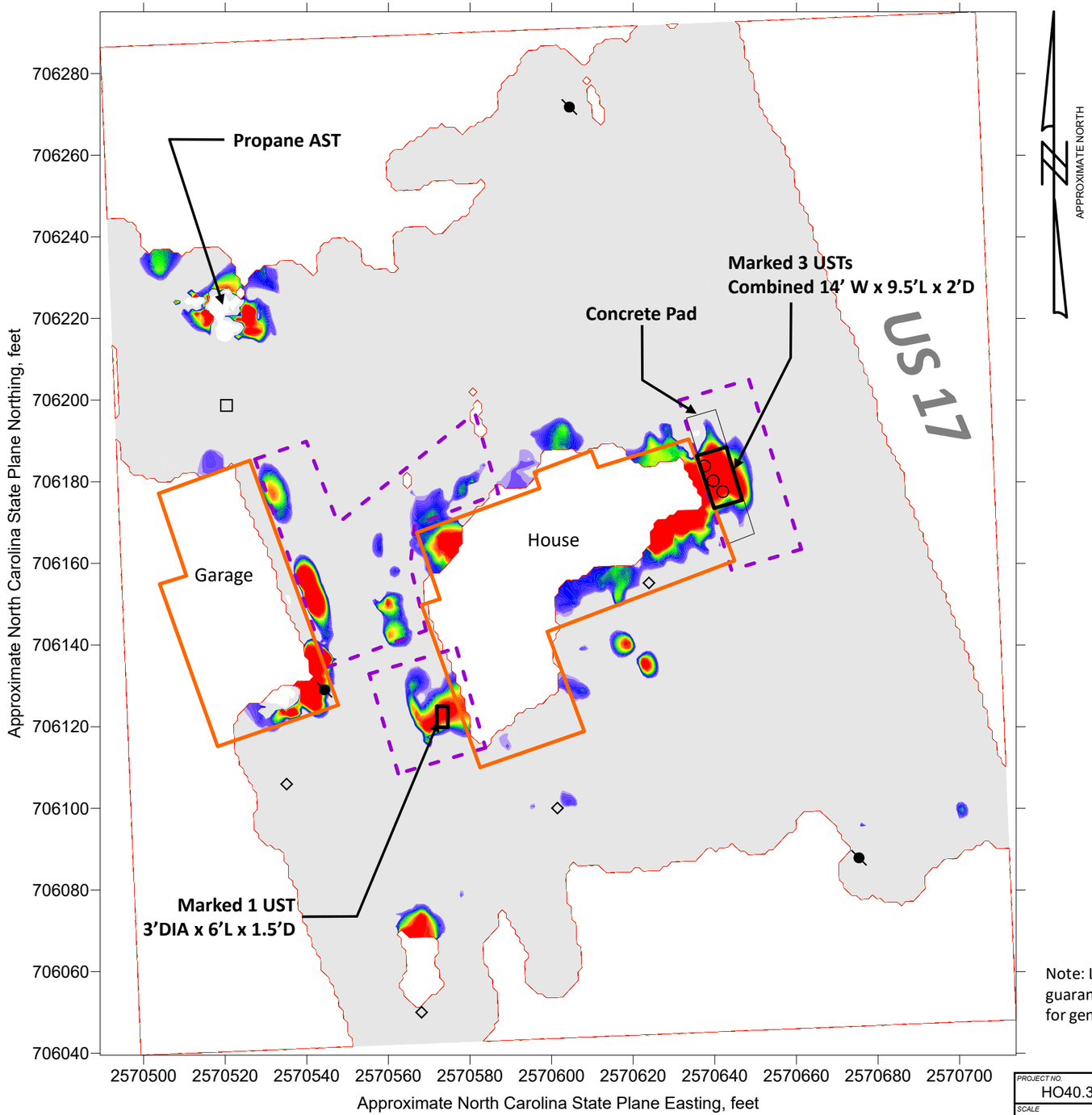
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

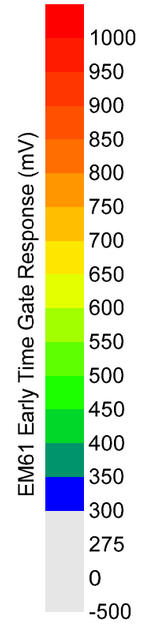
PROJECT NO.	HO40.300
SCALE	AS SHOWN
DATE	5/6/19
BY	SBM/EDB

FIGURE 2 – PARCEL 65, DURWOOD K WYNNE, SR. EM61 EARLY TIME GATE DATA

NCDOT PROJECT R-2511, US 17 NORTH OF NC 171 TO MULTI-LANES SOUTH OF WILLIAMSTON BEAUFORT AND MARTIN COUNTIES, NORTH CAROLINA

ESP Associates, Inc.
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
www.espassociates.com





EXPLANATION

- Miscellaneous metal object (pipe, debris, etc.)
- Utility Box (water meter, electrical outlet, etc.)
- Storm drain
- Utility pole
- Guy wire anchor
- Sign pole, other pole
- UST Valve Cover or Fill Port
- Buried utility line (marked by others)
- Existing Building (per NCDOT file)
- EM61 Data Collection Areas
- GPR Data Collection Areas
- Underground Storage Tank

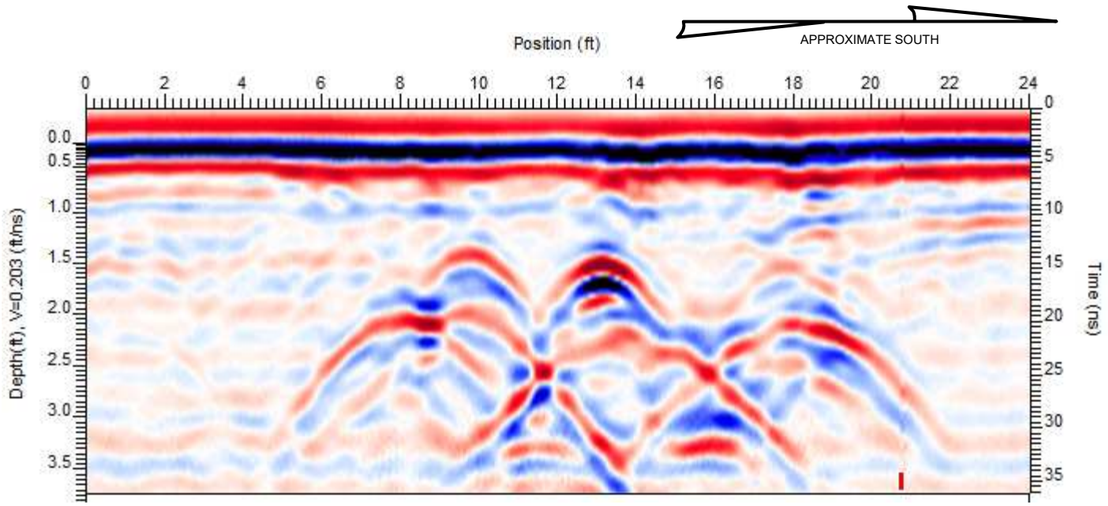
Note: Locations of data and features are approximate and were collected using a DGPS instrument. ESP make no guarantees as to the accuracy of these locations. Coordinates on the axes of the maps are approximate and provided for general reference only.

PROJECT NO.	HO40.300
SCALE	AS SHOWN
DATE	5/6/19
BY	SBM/EDB

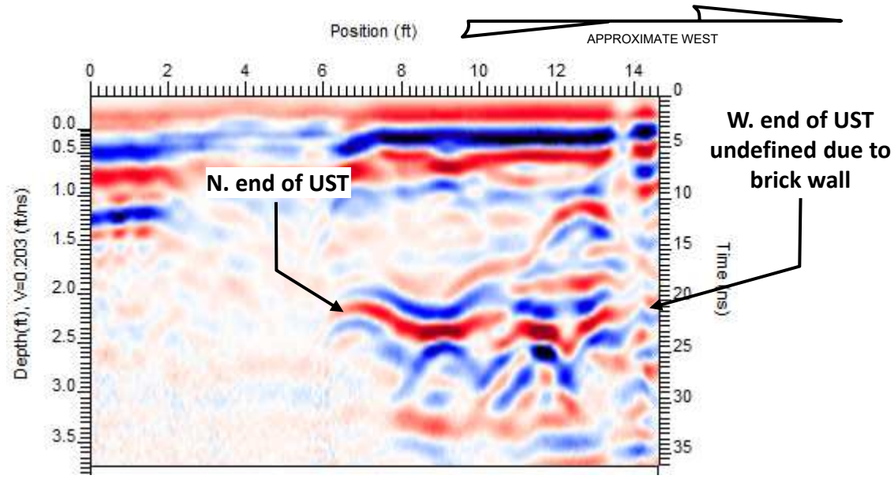
FIGURE 3 – PARCEL 65, DURWOOD K WYNNE, SR. EM61 DIFFERENTIAL DATA

NCDOT PROJECT R-2511, US 17 NORTH OF NC 171 TO MULTI-LANES SOUTH OF WILLIAMSTON BEAUFORT AND MARTIN COUNTIES, NORTH CAROLINA

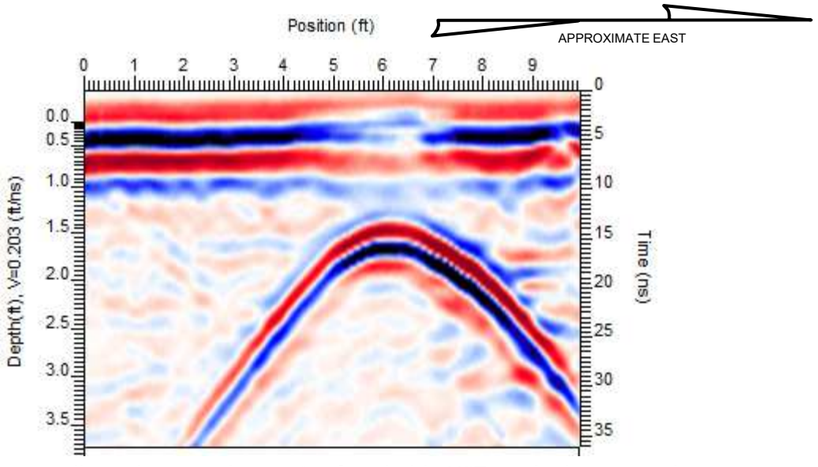
ESP Associates, Inc.
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
www.espassociates.com



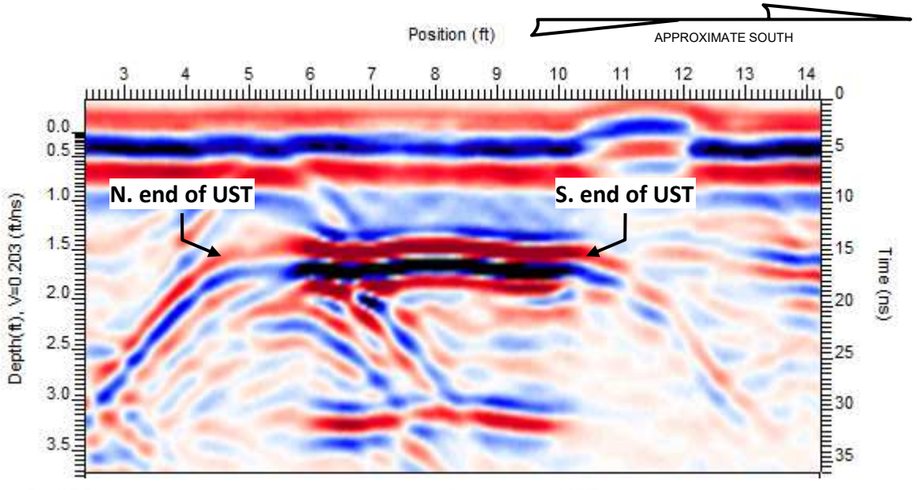
A. GPR image collected across short axes of three probable USTs marked on east side of house.



B. GPR image collected across long axis of one of three probable USTs marked on east side of house.



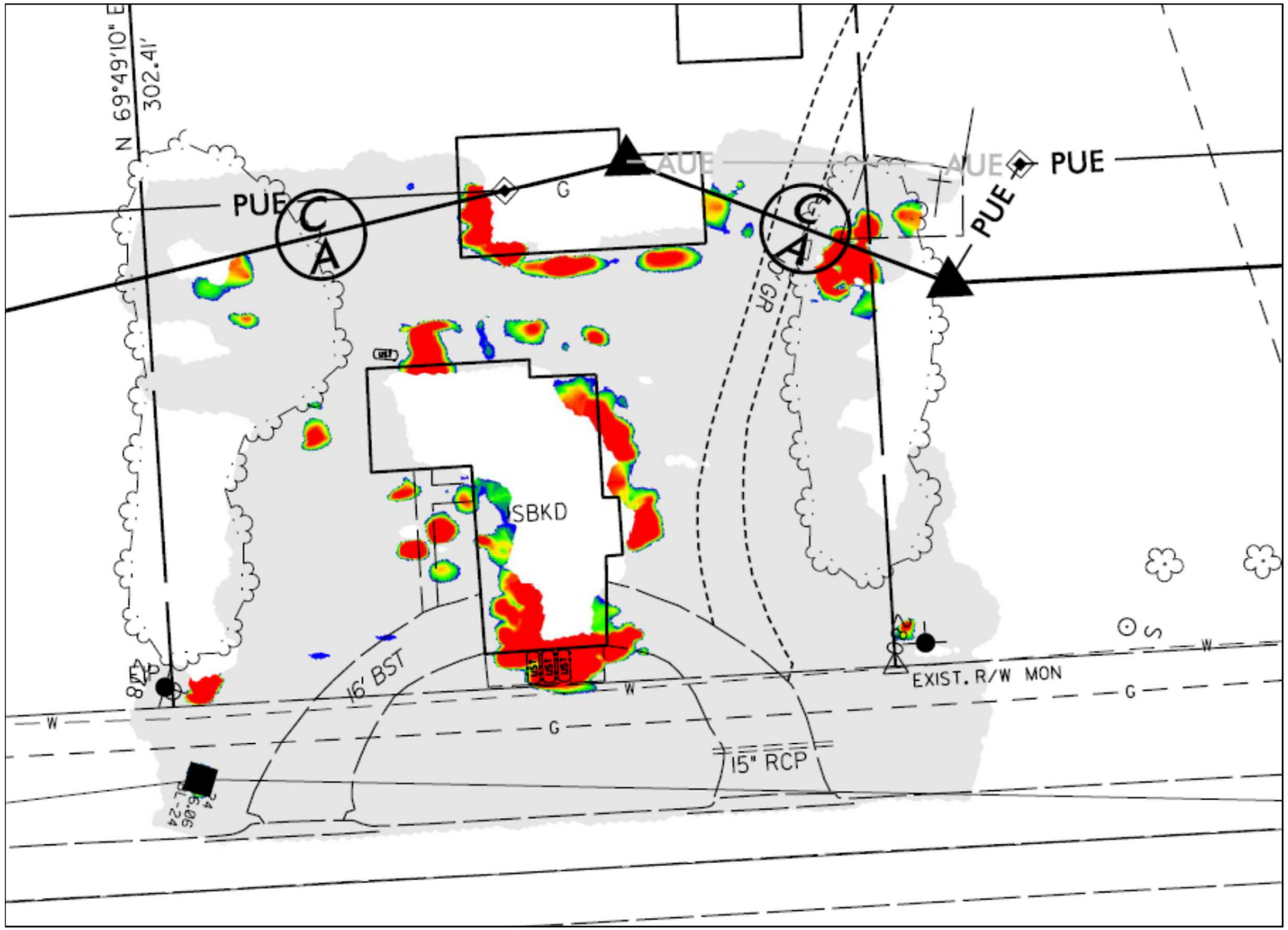
C. GPR image collected across short axis of probable UST marked near southwest corner of house.



D. GPR image collected across long axis of probable UST marked near southwest corner of house.

PROJECT NO. HO40.300	***FIGURE 4 – PARCEL 65, DURWOOD K WYNNE, SR. GPR IMAGES OF PROBABLE USTS***
SCALE AS SHOWN	
DATE 5/6/19	***NCDOT PROJECT R-2511, US 17 NORTH OF NC 171 TO MULTI-LANES SOUTH OF WILLIAMSTON BEAUFORT AND MARTIN COUNTIES, NORTH CAROLINA***
BY SBM/EDB	

ESP Associates, Inc.
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
www.espassociates.com



See Figure 7 for explanation of symbols and line types

List of NCDOT reference files

- R2511_Geo_Env.dgn
  - R2511_NCDOT_FS.dgn
  - R2511_Rdy_row.dgn

30′ 0′ 30′
GRAPHIC SCALE

PROJECT NO.	HO40.300
SCALE	1" = 30'
DATE	5/6/19
BY	SBM/EDB

FIGURE 5 – PARCEL 65, DURWOOD K WYNNE, SR. EM61 EARLY TIME GATE DATA ON PLAN SHEET

NCDOT PROJECT R-2511, US 17 NORTH OF NC 171 TO MULTI-LANES SOUTH OF WILLIAMSTON BEAUFORT AND MARTIN COUNTIES, NORTH CAROLINA

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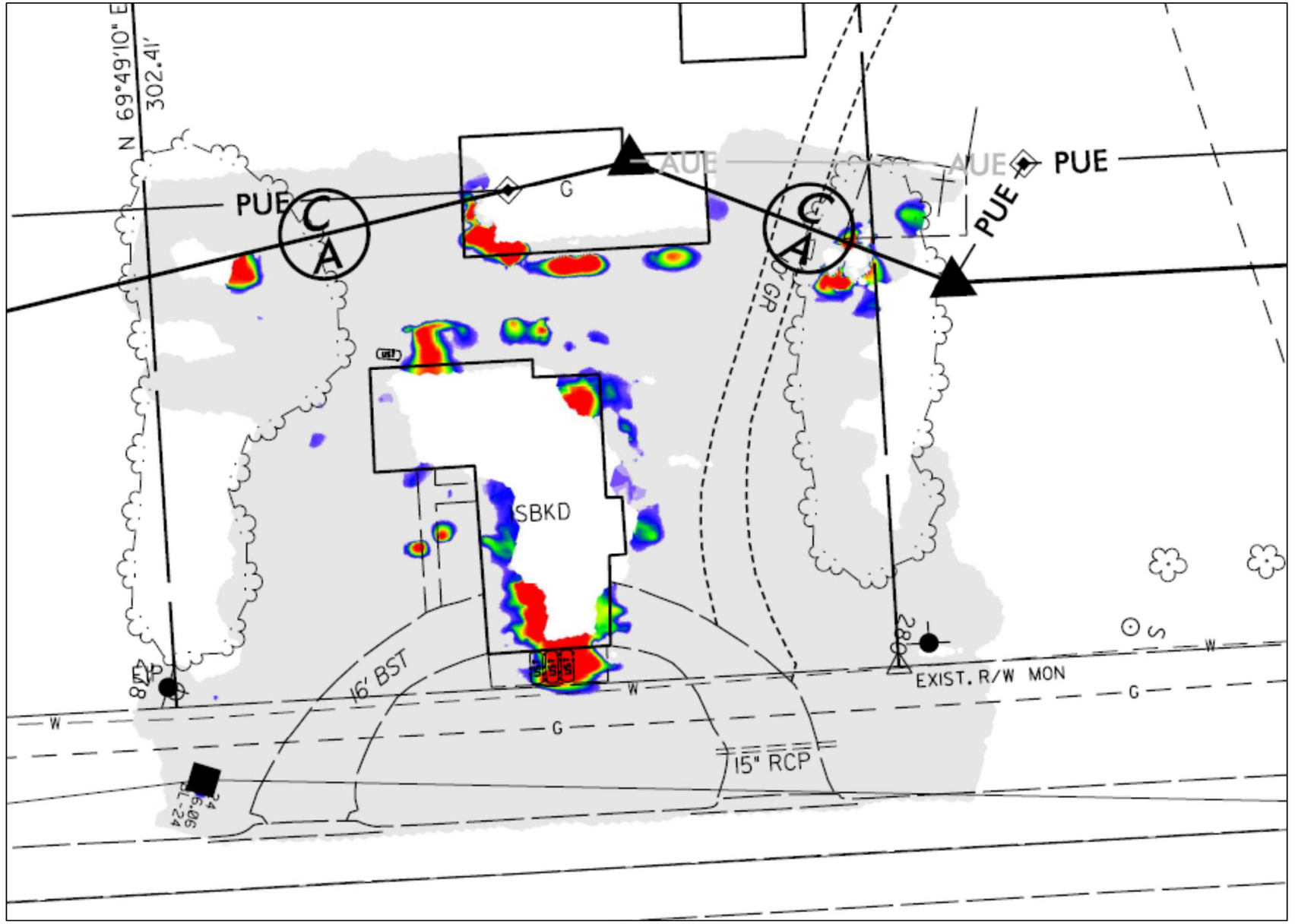

See Figure 7 for explanation of symbols and line types

List of NCDOT reference files

- R2511_Geo_Env.dgn
  - R2511_NCDOT_FS.dgn
  - R2511_Rdy_row.dgn

30′ 0′ 30′
GRAPHIC SCALE

PROJECT NO.	HO40.300
SCALE	1" = 30'
DATE	5/6/19
BY	SBM/EDB

FIGURE 6 – PARCEL 65, DURWOOD K WYNNE, SR. EM61 DIFFERENTIAL DATA ON PLAN SHEET

NCDOT PROJECT R-2511, US 17 NORTH OF NC 171 TO MULTI-LANES SOUTH OF WILLIAMSTON BEAUFORT AND MARTIN COUNTIES, NORTH CAROLINA

ESP Associates, Inc.
7011 Albert Pick Rd., Suite E
Greensboro, NC 27409
336.334.7724
www.espassociates.com

04/26/15

PROJECT REFERENCE NO. | SHEET NO.

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin
- Property Corner
- Property Monument
- Parcel/Sequence Number
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary
- Proposed Wetland Boundary
- Existing Endangered Animal Boundary
- Existing Endangered Plant Boundary
- Existing Historic Property Boundary
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

- Standard Gauge
- RR Signal Milepost
- Switch
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut
- Proposed Slope Stakes Fill
- Proposed Curb Ramp
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard

EXISTING STRUCTURES:

MAJOR:
- Bridge, Tunnel or Box Culvert
- Bridge Wing Wall, Head Wall and End Wall

MINOR:
- Head and End Wall
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB
- Paved Ditch Gutter
- Storm Sewer Manhole
- Storm Sewer

UTILITIES:

POWER:
- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*)
- U/G Power Line LOS C (S.U.E.*)
- U/G Power Line LOS D (S.U.E.*)

TELEPHONE:
- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole
- Telephone Pedestal
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- U/G Telephone Cable LOS B (S.U.E.*)
- U/G Telephone Cable LOS C (S.U.E.*)
- U/G Telephone Cable LOS D (S.U.E.*)
- U/G Telephone Conduit LOS B (S.U.E.*)
- U/G Telephone Conduit LOS C (S.U.E.*)
- U/G Telephone Conduit LOS D (S.U.E.*)
- U/G Fiber Optics Cable LOS B (S.U.E.*)
- U/G Fiber Optics Cable LOS C (S.U.E.*)
- U/G Fiber Optics Cable LOS D (S.U.E.*)

WATER:
- Water Manhole
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*)
- U/G Water Line LOS C (S.U.E*)
- U/G Water Line LOS D (S.U.E*)
- Above Ground Water Line

TV:
- TV Pedestal
- TV Tower
- U/G TV Cable Hand Hole
- U/G TV Cable LOS B (S.U.E.*)
- U/G TV Cable LOS C (S.U.E.*)
- U/G TV Cable LOS D (S.U.E.*)
- U/G Fiber Optic Cable LOS B (S.U.E.*)
- U/G Fiber Optic Cable LOS C (S.U.E.*)
- U/G Fiber Optic Cable LOS D (S.U.E.*)

GAS:
- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*)
- U/G Gas Line LOS C (S.U.E.*)
- U/G Gas Line LOS D (S.U.E.*)
- Above Ground Gas Line

SANITARY SEWER:
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line
- Above Ground Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*)
- SS Forced Main Line LOS C (S.U.E.*)
- SS Forced Main Line LOS D (S.U.E.*)

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

PROJECT NO.	HO40.300
SCALE	N/A
DATE	5/6/19
BY	SBM/EDB

FIGURE 7 – PARCEL 65, DURWOOD K WYNNE, SR. LEGEND FOR PLAN SHEET FIGURES

NCDOT PROJECT R-2511, US 17 NORTH OF NC 171 TO MULTI-LANES SOUTH OF WILLIAMSTON BEAUFORT AND MARTIN COUNTIES, NORTH CAROLINA

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Appendix D

QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: DUNCKLEE AND DUNHAM
Address: 511 KEISLER DR STE 102
CARY NC 27518

Contact: RICK KOLB

Project: 201939

Samples taken Monday, April 08, 2019
Samples extracted Monday, April 08, 2019
Samples analysed Thursday, April 11, 2019

Operator JENN RYAN

U04049

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
Soil	B - 6	19.8	<0.5	<0.5	1.9	1.9	0.38	0.03	<0.006	0	98.6	1.4	V.Deg.Diesel 59.3%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 91.3%

Concentration values in mg/kg for soil samples and mg/L for water samples. Soil values uncorrected for moisture or stone content. Fingerprints provide a tentative hydrocarbon identification.

Abbreviations :- FCM = Results calculated using Fundamental Calibration Mode : % = confidence of hydrocarbon identification : (PFM) = Poor Fingerprint Match : (T) = Turbid : (P) = Particulate detected

B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

Client Name:	Dunckree & Dunham
Address:	511 Keisler Drive, Suite 102 Cary, NC 27518
Contact:	Rick Kolb
Project Ref.:	2019391
Email:	rkolb@dunckreedunham.com
Phone #:	(919) 858-9898
Collected by:	Alec Dziwanowski

REDLAB™
RAPID ENVIRONMENTAL DIAGNOSTICS

CHAIN OF CUSTODY AND ANALYTICAL REQUEST FORM

RED Lab, LLC
5598 Marvin K Moss Lane
MARBIONC Bldg, Suite 2003
Wilmington, NC 28409

Each sample will be analyzed for BTEX, GRO, DRO, TPH, PAH total aromatics and BaP

Sample Collection Date/Time	TAT Requested 24 Hour	TAT Requested 48 Hour	Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
4/8/19 1405		✓	AD	B-6	57.5	44.4	13.1

Comments:

RED Lab USE ONLY

1

Relinquished by	Date/Time	Accepted by	Date/Time
[signature]	4/10/19 1640	[signature]	4/11
Relinquished by	Date/Time	Accepted by	Date/Time

Divider
Page

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

April 26, 2019

Duncklee and Dunham

Sample Delivery Group:	L1088281
Samples Received:	04/11/2019
Project Number:	201939
Description:	NCDOT R-2511 Beaufort and Martin Counties-Parcel 65

Report To: Rick Kolb
PO Box 639
Cary, NC 27512

Entire Report Reviewed By:

Heather J Wagner
Project Manager

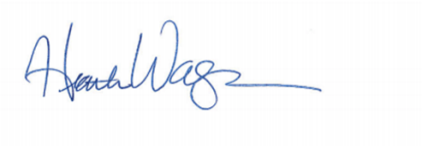
TABLE OF CONTENTS

TW-1 L1088281-01 GW

Collected by: Alec Dziwanowski
Collected date/time: 04/08/19 14:50
Received date/time: 04/11/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 6200B-2011	WG1265185	1	04/12/19 22:43	04/12/19 22:43	GLN	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 6200B-2011	WG1267331	10	04/17/19 12:07	04/17/19 12:07	GLN	Mt. Juliet, TN
Semi Volatile Organic Compounds (GC/MS) by Method 625.1	WG1264757	1	04/12/19 16:46	04/13/19 12:49	LEA	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Heather J Wagner
Project Manager

Project Narrative

Sample TW-1 are reported separately per client request. All samples listed on the attached COC have been reported individually under SDG number L1088281 based on their Parcel ID.

Volatile Organic Compounds (GC/MS) by Method 6200B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acetone	U		10.0	50.0	1	04/12/2019 22:43	WG1265185
Acrolein	U		8.87	50.0	1	04/12/2019 22:43	WG1265185
Acrylonitrile	U		1.87	10.0	1	04/12/2019 22:43	WG1265185
Benzene	U		0.331	1.00	1	04/12/2019 22:43	WG1265185
Bromobenzene	U		0.352	1.00	1	04/12/2019 22:43	WG1265185
Bromodichloromethane	U		0.380	1.00	1	04/12/2019 22:43	WG1265185
Bromoform	U		0.469	1.00	1	04/12/2019 22:43	WG1265185
Bromomethane	U		0.866	5.00	1	04/12/2019 22:43	WG1265185
n-Butylbenzene	14.9		0.361	1.00	1	04/12/2019 22:43	WG1265185
sec-Butylbenzene	11.8		0.365	1.00	1	04/12/2019 22:43	WG1265185
tert-Butylbenzene	0.800	J	0.399	1.00	1	04/12/2019 22:43	WG1265185
Carbon tetrachloride	U		0.379	1.00	1	04/12/2019 22:43	WG1265185
Chlorobenzene	U		0.348	1.00	1	04/12/2019 22:43	WG1265185
Chlorodibromomethane	U		0.327	1.00	1	04/12/2019 22:43	WG1265185
Chloroethane	U		0.453	5.00	1	04/12/2019 22:43	WG1265185
Chloroform	U		0.324	5.00	1	04/12/2019 22:43	WG1265185
Chloromethane	U		0.276	2.50	1	04/12/2019 22:43	WG1265185
2-Chlorotoluene	U		0.375	1.00	1	04/12/2019 22:43	WG1265185
4-Chlorotoluene	U		0.351	1.00	1	04/12/2019 22:43	WG1265185
1,2-Dibromo-3-Chloropropane	U		1.33	5.00	1	04/12/2019 22:43	WG1265185
1,2-Dibromoethane	U		0.381	1.00	1	04/12/2019 22:43	WG1265185
Dibromomethane	U		0.346	1.00	1	04/12/2019 22:43	WG1265185
1,2-Dichlorobenzene	U		0.349	1.00	1	04/12/2019 22:43	WG1265185
1,3-Dichlorobenzene	U		0.220	1.00	1	04/12/2019 22:43	WG1265185
1,4-Dichlorobenzene	U		0.274	1.00	1	04/12/2019 22:43	WG1265185
Dichlorodifluoromethane	U		0.551	5.00	1	04/12/2019 22:43	WG1265185
1,1-Dichloroethane	U		0.259	1.00	1	04/12/2019 22:43	WG1265185
1,2-Dichloroethane	U		0.361	1.00	1	04/12/2019 22:43	WG1265185
1,1-Dichloroethene	U		0.398	1.00	1	04/12/2019 22:43	WG1265185
cis-1,2-Dichloroethene	U		0.260	1.00	1	04/12/2019 22:43	WG1265185
trans-1,2-Dichloroethene	U		0.396	1.00	1	04/12/2019 22:43	WG1265185
1,2-Dichloropropane	U		0.306	1.00	1	04/12/2019 22:43	WG1265185
1,1-Dichloropropene	U		0.352	1.00	1	04/12/2019 22:43	WG1265185
1,3-Dichloropropane	U		0.366	1.00	1	04/12/2019 22:43	WG1265185
2,2-Dichloropropane	U		0.321	1.00	1	04/12/2019 22:43	WG1265185
Di-isopropyl ether	U		0.320	1.00	1	04/12/2019 22:43	WG1265185
Ethylbenzene	23.5		0.384	1.00	1	04/12/2019 22:43	WG1265185
Hexachloro-1,3-butadiene	U		0.256	1.00	1	04/12/2019 22:43	WG1265185
Isopropylbenzene	11.7		0.326	1.00	1	04/12/2019 22:43	WG1265185
p-Isopropyltoluene	6.58		0.350	1.00	1	04/12/2019 22:43	WG1265185
2-Butanone (MEK)	U		3.93	10.0	1	04/12/2019 22:43	WG1265185
Methylene Chloride	U		1.00	5.00	1	04/12/2019 22:43	WG1265185
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0	1	04/12/2019 22:43	WG1265185
Methyl tert-butyl ether	U		0.367	1.00	1	04/12/2019 22:43	WG1265185
Naphthalene	48.2		1.00	5.00	1	04/12/2019 22:43	WG1265185
n-Propylbenzene	27.7		0.349	1.00	1	04/12/2019 22:43	WG1265185
Styrene	U		0.307	1.00	1	04/12/2019 22:43	WG1265185
1,1,1,2-Tetrachloroethane	U		0.385	1.00	1	04/12/2019 22:43	WG1265185
1,1,2,2-Tetrachloroethane	U		0.130	1.00	1	04/12/2019 22:43	WG1265185
Tetrachloroethene	U		0.372	1.00	1	04/12/2019 22:43	WG1265185
Toluene	U		0.412	1.00	1	04/12/2019 22:43	WG1265185
1,2,3-Trichlorobenzene	U		0.230	1.00	1	04/12/2019 22:43	WG1265185
1,2,4-Trichlorobenzene	U		0.355	1.00	1	04/12/2019 22:43	WG1265185
1,1,1-Trichloroethane	U		0.319	1.00	1	04/12/2019 22:43	WG1265185
1,1,2-Trichloroethane	U		0.383	1.00	1	04/12/2019 22:43	WG1265185
Trichloroethene	U		0.398	1.00	1	04/12/2019 22:43	WG1265185

Volatile Organic Compounds (GC/MS) by Method 6200B-2011

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Trichlorofluoromethane	U		1.20	5.00	1	04/12/2019 22:43	WG1265185
1,2,3-Trichloropropane	U		0.807	2.50	1	04/12/2019 22:43	WG1265185
1,2,4-Trimethylbenzene	492		3.73	10.0	10	04/17/2019 12:07	WG1267331
1,3,5-Trimethylbenzene	201		3.87	10.0	10	04/17/2019 12:07	WG1267331
Vinyl chloride	U		0.259	1.00	1	04/12/2019 22:43	WG1265185
Xylenes, Total	266		1.06	3.00	1	04/12/2019 22:43	WG1265185
(S) Toluene-d8	*85.1*			*80.0-120*		*04/12/2019 22:43*	WG1265185
(S) Toluene-d8	*94.3*			*80.0-120*		*04/17/2019 12:07*	WG1267331
(S) a,a,a-Trifluorotoluene	*94.2*			*80.0-120*		*04/12/2019 22:43*	WG1265185
(S) a,a,a-Trifluorotoluene	*97.7*			*80.0-120*		*04/17/2019 12:07*	WG1267331
(S) 4-Bromofluorobenzene	*89.2*			*77.0-126*		*04/12/2019 22:43*	WG1265185
(S) 4-Bromofluorobenzene	*96.5*			*77.0-126*		*04/17/2019 12:07*	WG1267331
(S) 1,2-Dichloroethane-d4	*104*			*70.0-130*		*04/12/2019 22:43*	WG1265185
(S) 1,2-Dichloroethane-d4	*96.5*			*70.0-130*		*04/17/2019 12:07*	WG1267331

Semi Volatile Organic Compounds (GC/MS) by Method 625.1

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Acenaphthene	U		0.316	1.00	1	04/13/2019 12:49	WG1264757
Acenaphthylene	U		0.309	1.00	1	04/13/2019 12:49	WG1264757
Anthracene	U		0.291	1.00	1	04/13/2019 12:49	WG1264757
Benzidine	U		4.32	10.0	1	04/13/2019 12:49	WG1264757
Benzo(a)anthracene	U		0.0975	1.00	1	04/13/2019 12:49	WG1264757
Benzo(b)fluoranthene	U		0.0896	1.00	1	04/13/2019 12:49	WG1264757
Benzo(k)fluoranthene	U		0.355	1.00	1	04/13/2019 12:49	WG1264757
Benzo(g,h,i)perylene	U		0.161	1.00	1	04/13/2019 12:49	WG1264757
Benzo(a)pyrene	U		0.340	1.00	1	04/13/2019 12:49	WG1264757
Bis(2-chlorethoxy)methane	U		0.329	10.0	1	04/13/2019 12:49	WG1264757
Bis(2-chloroethyl)ether	U		1.62	10.0	1	04/13/2019 12:49	WG1264757
Bis(2-chloroisopropyl)ether	U		0.445	10.0	1	04/13/2019 12:49	WG1264757
4-Bromophenyl-phenylether	U		0.335	10.0	1	04/13/2019 12:49	WG1264757
2-Chloronaphthalene	U	J4	0.330	1.00	1	04/13/2019 12:49	WG1264757
4-Chlorophenyl-phenylether	U		0.303	10.0	1	04/13/2019 12:49	WG1264757
Chrysene	U		0.332	1.00	1	04/13/2019 12:49	WG1264757
Dibenz(a,h)anthracene	U		0.279	1.00	1	04/13/2019 12:49	WG1264757
3,3-Dichlorobenzidine	U		2.02	10.0	1	04/13/2019 12:49	WG1264757
2,4-Dinitrotoluene	U		1.65	10.0	1	04/13/2019 12:49	WG1264757
2,6-Dinitrotoluene	U		0.279	10.0	1	04/13/2019 12:49	WG1264757
Fluoranthene	U		0.310	1.00	1	04/13/2019 12:49	WG1264757
Fluorene	U		0.323	1.00	1	04/13/2019 12:49	WG1264757
Hexachlorobenzene	U		0.341	1.00	1	04/13/2019 12:49	WG1264757
Hexachloro-1,3-butadiene	U		0.329	10.0	1	04/13/2019 12:49	WG1264757
Hexachlorocyclopentadiene	U		2.33	10.0	1	04/13/2019 12:49	WG1264757
Hexachloroethane	U	J4	0.365	10.0	1	04/13/2019 12:49	WG1264757
Indeno(1,2,3-cd)pyrene	U		0.279	1.00	1	04/13/2019 12:49	WG1264757
Isophorone	U		0.272	10.0	1	04/13/2019 12:49	WG1264757
Naphthalene	13.9		0.372	1.00	1	04/13/2019 12:49	WG1264757
Nitrobenzene	U		0.367	10.0	1	04/13/2019 12:49	WG1264757
n-Nitrosodimethylamine	U		1.26	10.0	1	04/13/2019 12:49	WG1264757
n-Nitrosodiphenylamine	U		1.19	10.0	1	04/13/2019 12:49	WG1264757
n-Nitrosodi-n-propylamine	U		0.403	10.0	1	04/13/2019 12:49	WG1264757
Phenanthrene	U		0.366	1.00	1	04/13/2019 12:49	WG1264757
Benzylbutyl phthalate	U		0.275	3.00	1	04/13/2019 12:49	WG1264757
Bis(2-ethylhexyl)phthalate	U		0.709	3.00	1	04/13/2019 12:49	WG1264757
Di-n-butyl phthalate	U		0.266	3.00	1	04/13/2019 12:49	WG1264757
Diethyl phthalate	U		0.282	3.00	1	04/13/2019 12:49	WG1264757

Semi Volatile Organic Compounds (GC/MS) by Method 625.1

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Dimethyl phthalate	U		0.283	3.00	1	04/13/2019 12:49	WG1264757
Di-n-octyl phthalate	U		0.278	3.00	1	04/13/2019 12:49	WG1264757
Pyrene	U		0.330	1.00	1	04/13/2019 12:49	WG1264757
1,2,4-Trichlorobenzene	U	J4	0.355	10.0	1	04/13/2019 12:49	WG1264757
4-Chloro-3-methylphenol	U		0.263	10.0	1	04/13/2019 12:49	WG1264757
2-Chlorophenol	U		0.283	10.0	1	04/13/2019 12:49	WG1264757
2,4-Dichlorophenol	U		0.284	10.0	1	04/13/2019 12:49	WG1264757
2,4-Dimethylphenol	U		0.624	10.0	1	04/13/2019 12:49	WG1264757
4,6-Dinitro-2-methylphenol	U		2.62	10.0	1	04/13/2019 12:49	WG1264757
2,4-Dinitrophenol	U		3.25	10.0	1	04/13/2019 12:49	WG1264757
2-Nitrophenol	U		0.320	10.0	1	04/13/2019 12:49	WG1264757
4-Nitrophenol	U		2.01	10.0	1	04/13/2019 12:49	WG1264757
Pentachlorophenol	U		0.313	10.0	1	04/13/2019 12:49	WG1264757
Phenol	3.10	J	0.334	10.0	1	04/13/2019 12:49	WG1264757
2,4,6-Trichlorophenol	U		0.297	10.0	1	04/13/2019 12:49	WG1264757
(S) Nitrobenzene-d5	*31.7*			*15.0-314*		*04/13/2019 12:49*	WG1264757
(S) 2-Fluorobiphenyl	*27.9*			*22.0-127*		*04/13/2019 12:49*	WG1264757
(S) p-Terphenyl-d14	*61.4*			*29.0-141*		*04/13/2019 12:49*	WG1264757
(S) Phenol-d5	*22.4*			*8.00-424*		*04/13/2019 12:49*	WG1264757
(S) 2-Fluorophenol	*32.6*			*10.0-120*		*04/13/2019 12:49*	WG1264757
(S) 2,4,6-Tribromophenol	*64.0*			*10.0-153*		*04/13/2019 12:49*	WG1264757

Method Blank (MB)

(MB) R3402078-3 04/12/19 15:56

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acetone	U		10.0	50.0
Acrolein	U		8.87	50.0
Acrylonitrile	U		1.87	10.0
Benzene	U		0.331	1.00
Bromobenzene	U		0.352	1.00
Bromodichloromethane	U		0.380	1.00
Bromoform	U		0.469	1.00
Bromomethane	U		0.866	5.00
n-Butylbenzene	U		0.361	1.00
sec-Butylbenzene	U		0.365	1.00
tert-Butylbenzene	U		0.399	1.00
Carbon tetrachloride	U		0.379	1.00
Chlorobenzene	U		0.348	1.00
Chlorodibromomethane	U		0.327	1.00
Chloroethane	U		0.453	5.00
Chloroform	U		0.324	5.00
Chloromethane	U		0.276	2.50
2-Chlorotoluene	U		0.375	1.00
4-Chlorotoluene	U		0.351	1.00
1,2-Dibromo-3-Chloropropane	U		1.33	5.00
1,2-Dibromoethane	U		0.381	1.00
Dibromomethane	U		0.346	1.00
1,2-Dichlorobenzene	U		0.349	1.00
1,3-Dichlorobenzene	U		0.220	1.00
1,4-Dichlorobenzene	U		0.274	1.00
Dichlorodifluoromethane	U		0.551	5.00
1,1-Dichloroethane	U		0.259	1.00
1,2-Dichloroethane	U		0.361	1.00
1,1-Dichloroethene	U		0.398	1.00
cis-1,2-Dichloroethene	U		0.260	1.00
trans-1,2-Dichloroethene	U		0.396	1.00
1,2-Dichloropropane	U		0.306	1.00
1,1-Dichloropropene	U		0.352	1.00
1,3-Dichloropropane	U		0.366	1.00
2,2-Dichloropropane	U		0.321	1.00
Di-isopropyl ether	U		0.320	1.00
Ethylbenzene	U		0.384	1.00
Hexachloro-1,3-butadiene	U		0.256	1.00
Isopropylbenzene	U		0.326	1.00
p-Isopropyltoluene	U		0.350	1.00

Method Blank (MB)

(MB) R3402078-3 04/12/19 15:56

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
2-Butanone (MEK)	U		3.93	10.0
Methylene Chloride	U		1.00	5.00
4-Methyl-2-pentanone (MIBK)	U		2.14	10.0
Methyl tert-butyl ether	U		0.367	1.00
Naphthalene	U		1.00	5.00
n-Propylbenzene	U		0.349	1.00
Styrene	U		0.307	1.00
1,1,1,2-Tetrachloroethane	U		0.385	1.00
1,1,2,2-Tetrachloroethane	U		0.130	1.00
Tetrachloroethene	U		0.372	1.00
Toluene	U		0.412	1.00
1,2,3-Trichlorobenzene	U		0.230	1.00
1,2,4-Trichlorobenzene	U		0.355	1.00
1,1,1-Trichloroethane	U		0.319	1.00
1,1,2-Trichloroethane	U		0.383	1.00
Trichloroethene	U		0.398	1.00
Trichlorofluoromethane	U		1.20	5.00
1,2,3-Trichloropropane	U		0.807	2.50
Vinyl chloride	U		0.259	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	*102*			*80.0-120*
(S) a,a,a-Trifluorotoluene	*98.5*			*80.0-120*
(S) 4-Bromofluorobenzene	*98.7*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*94.4*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3402078-1 04/12/19 14:53 • (LCSD) R3402078-2 04/12/19 15:14

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	125	134	142	107	114	19.0-160			5.73	27
Acrolein	125	126	131	101	105	10.0-160			3.94	26
Acrylonitrile	125	128	136	103	109	55.0-149			5.92	20
Benzene	25.0	24.7	25.6	98.7	102	70.0-123			3.67	20
Bromobenzene	25.0	23.0	24.0	92.0	96.0	73.0-121			4.31	20
Bromodichloromethane	25.0	25.2	26.1	101	104	75.0-120			3.49	20
Bromoform	25.0	24.9	26.0	99.5	104	68.0-132			4.55	20
Bromomethane	25.0	28.2	30.3	113	121	10.0-160			7.10	25
n-Butylbenzene	25.0	24.7	25.8	99.0	103	73.0-125			4.17	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3402078-1 04/12/19 14:53 • (LCSD) R3402078-2 04/12/19 15:14

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
sec-Butylbenzene	25.0	25.5	26.2	102	105	75.0-125			3.00	20
tert-Butylbenzene	25.0	25.6	26.8	102	107	76.0-124			4.56	20
Carbon tetrachloride	25.0	26.2	27.4	105	109	68.0-126			4.27	20
Chlorobenzene	25.0	24.7	25.7	99.0	103	80.0-121			3.79	20
Chlorodibromomethane	25.0	25.2	25.9	101	104	77.0-125			2.85	20
Chloroethane	25.0	25.4	27.1	101	108	47.0-150			6.49	20
Chloroform	25.0	25.5	26.9	102	107	73.0-120			5.06	20
Chloromethane	25.0	24.9	27.6	99.4	111	41.0-142			10.6	20
2-Chlorotoluene	25.0	25.2	26.7	101	107	76.0-123			5.62	20
4-Chlorotoluene	25.0	24.9	26.0	99.7	104	75.0-122			4.00	20
1,2-Dibromo-3-Chloropropane	25.0	24.8	26.2	99.2	105	58.0-134			5.54	20
1,2-Dibromoethane	25.0	25.9	26.4	103	106	80.0-122			2.19	20
Dibromomethane	25.0	25.0	26.0	99.8	104	80.0-120			4.01	20
1,2-Dichlorobenzene	25.0	25.1	26.5	101	106	79.0-121			5.48	20
1,3-Dichlorobenzene	25.0	25.6	26.6	102	107	79.0-120			3.94	20
1,4-Dichlorobenzene	25.0	23.5	24.5	94.1	98.1	79.0-120			4.24	20
Dichlorodifluoromethane	25.0	22.4	23.5	89.8	94.1	51.0-149			4.75	20
1,1-Dichloroethane	25.0	24.3	26.1	97.0	104	70.0-126			7.21	20
1,2-Dichloroethane	25.0	22.7	23.8	90.8	95.0	70.0-128			4.53	20
1,1-Dichloroethene	25.0	24.9	26.3	99.4	105	71.0-124			5.72	20
cis-1,2-Dichloroethene	25.0	24.8	26.4	99.2	106	73.0-120			6.26	20
trans-1,2-Dichloroethene	25.0	27.8	28.7	111	115	73.0-120			3.33	20
1,2-Dichloropropane	25.0	25.1	25.6	101	102	77.0-125			1.73	20
1,1-Dichloropropene	25.0	25.9	26.8	104	107	74.0-126			3.40	20
1,3-Dichloropropane	25.0	26.5	26.8	106	107	80.0-120			0.930	20
2,2-Dichloropropane	25.0	19.0	19.4	76.1	77.7	58.0-130			2.04	20
Di-isopropyl ether	25.0	24.2	25.4	96.8	101	58.0-138			4.71	20
Ethylbenzene	25.0	26.7	26.9	107	108	79.0-123			1.07	20
Hexachloro-1,3-butadiene	25.0	24.2	25.0	96.9	99.8	54.0-138			2.92	20
Isopropylbenzene	25.0	25.4	26.4	102	106	76.0-127			3.98	20
p-Isopropyltoluene	25.0	24.8	26.2	99.2	105	76.0-125			5.50	20
2-Butanone (MEK)	125	119	124	95.6	99.0	44.0-160			3.57	20
Methylene Chloride	25.0	23.5	24.2	94.0	96.7	67.0-120			2.84	20
4-Methyl-2-pentanone (MIBK)	125	128	129	102	103	68.0-142			0.817	20
Methyl tert-butyl ether	25.0	25.0	25.4	100	102	68.0-125			1.46	20
Naphthalene	25.0	24.2	26.2	97.0	105	54.0-135			7.92	20
n-Propylbenzene	25.0	24.7	25.9	99.0	103	77.0-124			4.45	20
Styrene	25.0	27.4	28.3	110	113	73.0-130			3.30	20
1,1,1,2-Tetrachloroethane	25.0	25.0	25.7	100	103	75.0-125			2.52	20
1,1,2,2-Tetrachloroethane	25.0	24.0	24.8	95.9	99.2	65.0-130			3.46	20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3402078-1 04/12/19 14:53 • (LCSD) R3402078-2 04/12/19 15:14

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Tetrachloroethene	25.0	25.6	26.5	102	106	72.0-132			3.76	20
Toluene	25.0	24.0	24.6	95.8	98.5	79.0-120			2.76	20
1,2,3-Trichlorobenzene	25.0	25.5	27.9	102	112	50.0-138			9.02	20
1,2,4-Trichlorobenzene	25.0	25.4	27.0	102	108	57.0-137			6.03	20
1,1,1-Trichloroethane	25.0	25.1	26.4	101	105	73.0-124			4.80	20
1,1,2-Trichloroethane	25.0	24.6	25.2	98.5	101	80.0-120			2.16	20
Trichloroethene	25.0	28.8	29.4	115	118	78.0-124			2.18	20
Trichlorofluoromethane	25.0	27.2	28.1	109	112	59.0-147			3.12	20
1,2,3-Trichloropropane	25.0	25.4	27.1	102	108	73.0-130			6.33	20
Vinyl chloride	25.0	25.8	27.7	103	111	67.0-131			7.31	20
Xylenes, Total	75.0	78.2	80.0	104	107	79.0-123			2.28	20
(S) Toluene-d8				*98.1*	*98.7*	*80.0-120*				
(S) a,a,a-Trifluorotoluene				*97.1*	*101*	*80.0-120*				
(S) 4-Bromofluorobenzene				*101*	*103*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*107*	*106*	*70.0-130*				

Method Blank (MB)

(MB) R3402560-4 04/17/19 10:08

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
1,2,4-Trimethylbenzene	U		0.373	1.00
1,3,5-Trimethylbenzene	U		0.387	1.00
(S) Toluene-d8	*97.7*			*80.0-120*
(S) a,a,a-Trifluorotoluene	*98.0*			*80.0-120*
(S) 4-Bromofluorobenzene	*95.9*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*94.8*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3402560-1 04/17/19 08:50 • (LCSD) R3402560-2 04/17/19 09:09

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
1,2,4-Trimethylbenzene	25.0	23.2	24.4	92.9	97.6	76.0-121			4.87	20
1,3,5-Trimethylbenzene	25.0	23.1	24.0	92.4	95.9	76.0-122			3.65	20
(S) Toluene-d8				*94.9*	*96.1*	*80.0-120*				
(S) a,a,a-Trifluorotoluene				*97.7*	*98.6*	*80.0-120*				
(S) 4-Bromofluorobenzene				*101*	*96.5*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*93.9*	*92.4*	*70.0-130*				

Method Blank (MB)

(MB) R3401482-3 04/13/19 12:08

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Acenaphthene	U		0.316	1.00
Acenaphthylene	U		0.309	1.00
Anthracene	U		0.291	1.00
Benzidine	U		4.32	10.0
Benzo(a)anthracene	U		0.0975	1.00
Benzo(b)fluoranthene	U		0.0896	1.00
Benzo(k)fluoranthene	U		0.355	1.00
Benzo(g,h,i)perylene	U		0.161	1.00
Benzo(a)pyrene	U		0.340	1.00
Bis(2-chlorethoxy)methane	U		0.329	10.0
Bis(2-chloroethyl)ether	U		1.62	10.0
Bis(2-chloroisopropyl)ether	U		0.445	10.0
4-Bromophenyl-phenylether	U		0.335	10.0
2-Chloronaphthalene	U		0.330	1.00
4-Chlorophenyl-phenylether	U		0.303	10.0
Chrysene	U		0.332	1.00
Dibenz(a,h)anthracene	U		0.279	1.00
3,3-Dichlorobenzidine	U		2.02	10.0
2,4-Dinitrotoluene	U		1.65	10.0
2,6-Dinitrotoluene	U		0.279	10.0
Fluoranthene	U		0.310	1.00
Fluorene	U		0.323	1.00
Hexachlorobenzene	U		0.341	1.00
Hexachloro-1,3-butadiene	U		0.329	10.0
Hexachlorocyclopentadiene	U		2.33	10.0
Hexachloroethane	U		0.365	10.0
Indeno(1,2,3-cd)pyrene	U		0.279	1.00
Isophorone	U		0.272	10.0
Naphthalene	U		0.372	1.00
Nitrobenzene	U		0.367	10.0
n-Nitrosodimethylamine	U		1.26	10.0
n-Nitrosodiphenylamine	U		1.19	10.0
n-Nitrosodi-n-propylamine	U		0.403	10.0
Phenanthrene	U		0.366	1.00
Benzylbutyl phthalate	U		0.275	3.00
Bis(2-ethylhexyl)phthalate	U		0.709	3.00
Di-n-butyl phthalate	U		0.266	3.00
Diethyl phthalate	U		0.282	3.00
Dimethyl phthalate	U		0.283	3.00
Di-n-octyl phthalate	U		0.278	3.00

Method Blank (MB)

(MB) R3401482-3 04/13/19 12:08

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Pyrene	U		0.330	1.00
1,2,4-Trichlorobenzene	U		0.355	10.0
4-Chloro-3-methylphenol	U		0.263	10.0
2-Chlorophenol	U		0.283	10.0
2,4-Dichlorophenol	U		0.284	10.0
2,4-Dimethylphenol	U		0.624	10.0
4,6-Dinitro-2-methylphenol	U		2.62	10.0
2,4-Dinitrophenol	U		3.25	10.0
2-Nitrophenol	U		0.320	10.0
4-Nitrophenol	U		2.01	10.0
Pentachlorophenol	U		0.313	10.0
Phenol	U		0.334	10.0
2,4,6-Trichlorophenol	U		0.297	10.0
(S) Nitrobenzene-d5	*49.5*			*15.0-314*
(S) 2-Fluorobiphenyl	*48.0*			*22.0-127*
(S) p-Terphenyl-d14	*63.6*			*29.0-141*
(S) Phenol-d5	*24.1*			*8.00-424*
(S) 2-Fluorophenol	*37.8*			*10.0-120*
(S) 2,4,6-Tribromophenol	*51.0*			*10.0-153*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3401482-1 04/13/19 11:27 • (LCSD) R3401482-2 04/13/19 11:47

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Acenaphthene	50.0	32.8	31.7	65.6	63.4	47.0-145			3.41	48
Acenaphthylene	50.0	31.5	30.7	63.0	61.4	33.0-145			2.57	74
Anthracene	50.0	36.0	35.5	72.0	71.0	27.0-133			1.40	66
Benzidine	100	34.7	40.5	34.7	40.5	1.00-120			15.4	36
Benzo(a)anthracene	50.0	37.0	36.6	74.0	73.2	33.0-143			1.09	53
Benzo(b)fluoranthene	50.0	36.0	35.9	72.0	71.8	24.0-159			0.278	71
Benzo(k)fluoranthene	50.0	36.9	35.9	73.8	71.8	11.0-162			2.75	63
Benzo(g,h,i)perylene	50.0	35.4	35.0	70.8	70.0	1.00-219			1.14	97
Benzo(a)pyrene	50.0	35.0	34.4	70.0	68.8	17.0-163			1.73	72
Bis(2-chlorethoxy)methane	50.0	30.1	29.2	60.2	58.4	1.00-219			3.04	54
Bis(2-chloroethyl)ether	50.0	30.0	28.5	60.0	57.0	33.0-185			5.13	108
Bis(2-chloroisopropyl)ether	50.0	29.9	28.7	59.8	57.4	36.0-166			4.10	76
4-Bromophenyl-phenylether	50.0	37.0	35.7	74.0	71.4	53.0-127			3.58	43
2-Chloronaphthalene	50.0	29.7	28.3	59.4	56.6	60.0-120	J4	J4	4.83	24

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3401482-1 04/13/19 11:27 • (LCSD) R3401482-2 04/13/19 11:47

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
4-Chlorophenyl-phenylether	50.0	33.7	33.2	67.4	66.4	25.0-158			1.49	61
Chrysene	50.0	37.6	36.9	75.2	73.8	17.0-168			1.88	87
Dibenz(a,h)anthracene	50.0	35.7	35.2	71.4	70.4	1.00-227			1.41	126
3,3-Dichlorobenzidine	100	73.2	72.0	73.2	72.0	1.00-262			1.65	108
2,4-Dinitrotoluene	50.0	37.4	37.7	74.8	75.4	39.0-139			0.799	42
2,6-Dinitrotoluene	50.0	34.9	34.4	69.8	68.8	50.0-158			1.44	48
Fluoranthene	50.0	38.3	38.2	76.6	76.4	26.0-137			0.261	66
Fluorene	50.0	33.9	33.4	67.8	66.8	59.0-121			1.49	38
Hexachlorobenzene	50.0	36.4	35.3	72.8	70.6	1.00-152			3.07	55
Hexachloro-1,3-butadiene	50.0	21.0	18.9	42.0	37.8	24.0-120			10.5	62
Hexachlorocyclopentadiene	50.0	21.4	20.0	42.8	40.0	10.0-120			6.76	31
Hexachloroethane	50.0	19.0	17.4	38.0	34.8	40.0-120	J4	J4	8.79	52
Indeno(1,2,3-cd)pyrene	50.0	33.8	34.2	67.6	68.4	1.00-171			1.18	99
Isophorone	50.0	31.2	30.0	62.4	60.0	21.0-196			3.92	93
Naphthalene	50.0	26.0	24.4	52.0	48.8	21.0-133			6.35	65
Nitrobenzene	50.0	27.6	26.8	55.2	53.6	35.0-180			2.94	62
n-Nitrosodimethylamine	50.0	21.5	20.8	43.0	41.6	10.0-120			3.31	34
n-Nitrosodiphenylamine	50.0	35.0	35.0	70.0	70.0	44.0-120			0.000	21
n-Nitrosodi-n-propylamine	50.0	34.5	33.4	69.0	66.8	1.00-230			3.24	87
Phenanthrene	50.0	36.1	35.4	72.2	70.8	54.0-120			1.96	39
Benzylbutyl phthalate	50.0	37.6	37.4	75.2	74.8	1.00-152			0.533	60
Bis(2-ethylhexyl)phthalate	50.0	38.4	37.6	76.8	75.2	8.00-158			2.11	82
Di-n-butyl phthalate	50.0	39.2	39.3	78.4	78.6	1.00-120			0.255	47
Diethyl phthalate	50.0	35.5	35.3	71.0	70.6	1.00-120			0.565	100
Dimethyl phthalate	50.0	34.9	34.3	69.8	68.6	1.00-120			1.73	183
Di-n-octyl phthalate	50.0	38.9	38.9	77.8	77.8	4.00-146			0.000	69
Pyrene	50.0	37.2	36.7	74.4	73.4	52.0-120			1.35	49
1,2,4-Trichlorobenzene	50.0	23.0	21.2	46.0	42.4	44.0-142		J4	8.14	50
4-Chloro-3-methylphenol	50.0	33.5	33.6	67.0	67.2	22.0-147			0.298	73
2-Chlorophenol	50.0	29.1	28.0	58.2	56.0	23.0-134			3.85	61
2,4-Dichlorophenol	50.0	29.4	28.4	58.8	56.8	39.0-135			3.46	50
2,4-Dimethylphenol	50.0	29.4	28.6	58.8	57.2	32.0-120			2.76	58
4,6-Dinitro-2-methylphenol	50.0	39.7	40.2	79.4	80.4	1.00-181			1.25	203
2,4-Dinitrophenol	50.0	30.0	29.8	60.0	59.6	1.00-191			0.669	132
2-Nitrophenol	50.0	31.1	30.4	62.2	60.8	29.0-182			2.28	55
4-Nitrophenol	50.0	17.6	17.9	35.2	35.8	1.00-132			1.69	131
Pentachlorophenol	50.0	30.4	30.5	60.8	61.0	14.0-176			0.328	86
Phenol	50.0	15.4	15.2	30.8	30.4	5.00-120			1.31	64
2,4,6-Trichlorophenol	50.0	31.3	30.5	62.6	61.0	37.0-144			2.59	58
(S) Nitrobenzene-d5				*56.3*	*53.7*	*15.0-314*				

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3401482-1 04/13/19 11:27 • (LCSD) R3401482-2 04/13/19 11:47

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
(S) 2-Fluorobiphenyl				*60.1*	*58.1*	*22.0-127*				
(S) p-Terphenyl-d14				*72.1*	*70.2*	*29.0-141*				
(S) Phenol-d5				*28.4*	*27.8*	*8.00-424*				
(S) 2-Fluorophenol				*43.3*	*41.7*	*10.0-120*				
(S) 2,4,6-Tribromophenol				*66.0*	*66.0*	*10.0-153*				

L1087068-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1087068-01 04/13/19 14:47 • (MS) R3401475-1 04/13/19 15:11 • (MSD) R3401475-2 04/13/19 15:34

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acenaphthene	50.0	U	26.4	30.2	52.8	60.4	1	47.0-145			13.4	48
Acenaphthylene	50.0	U	24.8	28.6	49.6	57.2	1	33.0-145			14.2	74
Anthracene	50.0	U	31.2	35.7	62.4	71.4	1	27.0-133			13.5	66
Benzo(a)anthracene	50.0	U	33.9	37.0	67.8	74.0	1	33.0-143			8.74	53
Benzo(b)fluoranthene	50.0	0.0164	31.3	33.8	62.6	67.6	1	24.0-159			7.68	71
Benzo(k)fluoranthene	50.0	U	32.5	34.3	65.0	68.6	1	11.0-162			5.39	63
Benzo(g,h,i)perylene	50.0	U	33.3	36.1	66.6	72.2	1	1.00-219			8.07	97
Benzo(a)pyrene	50.0	U	31.0	33.2	62.0	66.4	1	17.0-163			6.85	72
Bis(2-chlorethoxy)methane	50.0	U	21.2	23.8	42.4	47.6	1	33.0-184			11.6	54
Bis(2-chloroethyl)ether	50.0	U	18.9	22.7	37.8	45.4	1	12.0-158			18.3	108
Bis(2-chloroisopropyl)ether	50.0	U	22.7	27.5	45.4	55.0	1	36.0-166			19.1	76
4-Bromophenyl-phenylether	50.0	U	30.4	33.3	60.8	66.6	1	53.0-127			9.11	43
2-Chloronaphthalene	50.0	U	22.9	26.6	45.8	53.2	1	60.0-120	J6	J6	14.9	24
4-Chlorophenyl-phenylether	50.0	U	27.6	31.1	55.2	62.2	1	25.0-158			11.9	61
Chrysene	50.0	U	31.4	34.1	62.8	68.2	1	17.0-168			8.24	87
Dibenz(a,h)anthracene	50.0	U	32.7	35.2	65.4	70.4	1	1.00-227			7.36	126
3,3-Dichlorobenzidine	100	U	38.9	50.5	38.9	50.5	1	1.00-262			26.0	108
2,4-Dinitrotoluene	50.0	U	33.7	38.7	67.4	77.4	1	39.0-139			13.8	42
2,6-Dinitrotoluene	50.0	U	29.2	33.2	58.4	66.4	1	50.0-158			12.8	48
Benzidine	100	U	ND	4.71	0.000	4.71	1	1.00-120	J6	J3	200	40
Fluoranthene	50.0	U	36.0	39.4	72.0	78.8	1	26.0-137			9.02	66
Fluorene	50.0	U	28.6	32.7	57.2	65.4	1	59.0-121	J6		13.4	38
Hexachlorobenzene	50.0	U	29.5	32.9	59.0	65.8	1	1.00-152			10.9	55
Hexachloro-1,3-butadiene	50.0	U	18.2	21.3	36.4	42.6	1	24.0-120			15.7	62
Hexachlorocyclopentadiene	50.0	U	17.1	20.3	34.2	40.6	1	10.0-146			17.1	34
Hexachloroethane	50.0	U	15.7	18.4	31.4	36.8	1	40.0-120	J6	J6	15.8	52
Indeno(1,2,3-cd)pyrene	50.0	U	32.0	34.8	64.0	69.6	1	1.00-171			8.38	99
Isophorone	50.0	U	22.0	24.6	44.0	49.2	1	21.0-196			11.2	93

L1087068-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1087068-01 04/13/19 14:47 • (MS) R3401475-1 04/13/19 15:11 • (MSD) R3401475-2 04/13/19 15:34

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Naphthalene	50.0	U	20.9	24.0	41.8	48.0	1	21.0-133			13.8	65
Nitrobenzene	50.0	0.827	21.3	25.2	40.9	48.7	1	35.0-180			16.8	62
n-Nitrosodimethylamine	50.0	U	19.6	24.1	39.2	48.2	1	10.0-120			20.6	40
n-Nitrosodiphenylamine	50.0	U	31.1	35.5	62.2	71.0	1	16.0-160			13.2	28
n-Nitrosodi-n-propylamine	50.0	U	23.1	27.2	46.2	54.4	1	1.00-230			16.3	87
Phenanthrene	50.0	U	31.9	34.9	63.8	69.8	1	54.0-120			8.98	39
Benzylbutyl phthalate	50.0	U	37.4	40.2	74.8	80.4	1	1.00-152			7.22	60
Bis(2-ethylhexyl)phthalate	50.0	0.772	38.4	41.5	75.3	81.5	1	8.00-158			7.76	82
Di-n-butyl phthalate	50.0	U	38.9	43.0	77.8	86.0	1	1.00-120			10.0	47
Diethyl phthalate	50.0	U	33.2	36.8	66.4	73.6	1	1.00-120			10.3	100
Dimethyl phthalate	50.0	U	30.0	33.5	60.0	67.0	1	1.00-120			11.0	183
Di-n-octyl phthalate	50.0	0.420	40.9	44.6	81.0	88.4	1	4.00-146			8.65	69
Pyrene	50.0	U	31.1	34.2	62.2	68.4	1	52.0-120			9.49	49
1,2,4-Trichlorobenzene	50.0	U	18.7	21.3	37.4	42.6	1	44.0-142	J6	J6	13.0	50
4-Chloro-3-methylphenol	50.0	U	30.1	34.3	60.2	68.6	1	22.0-147			13.0	73
2-Chlorophenol	50.0	U	22.0	25.8	44.0	51.6	1	23.0-134			15.9	61
2,4-Dichlorophenol	50.0	U	26.9	31.8	53.8	63.6	1	39.0-135			16.7	50
2,4-Dimethylphenol	50.0	U	26.1	29.3	52.2	58.6	1	32.0-120			11.6	58
4,6-Dinitro-2-methylphenol	50.0	U	42.7	49.2	85.4	98.4	1	1.00-181			14.1	203
2,4-Dinitrophenol	50.0	U	28.9	33.6	57.8	67.2	1	1.00-191			15.0	132
2-Nitrophenol	50.0	U	28.7	33.1	57.4	66.2	1	29.0-182			14.2	55
4-Nitrophenol	50.0	U	16.2	18.4	32.4	36.8	1	1.00-132			12.7	131
Pentachlorophenol	50.0	U	29.8	32.8	59.6	65.6	1	14.0-176			9.58	86
Phenol	50.0	U	11.1	13.7	22.2	27.4	1	5.00-120			21.0	64
2,4,6-Trichlorophenol	50.0	U	27.5	32.2	55.0	64.4	1	37.0-144			15.7	58
(S) Nitrobenzene-d5					*44.0*	*50.0*		*15.0-314*				
(S) 2-Fluorobiphenyl					*47.6*	*54.3*		*22.0-127*				
(S) p-Terphenyl-d14					*60.3*	*65.4*		*29.0-141*				
(S) Phenol-d5					*19.9*	*22.0*		*8.00-424*				
(S) 2-Fluorophenol					*32.5*	*38.3*		*10.0-120*				
(S) 2,4,6-Tribromophenol					*65.0*	*72.0*		*10.0-153*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

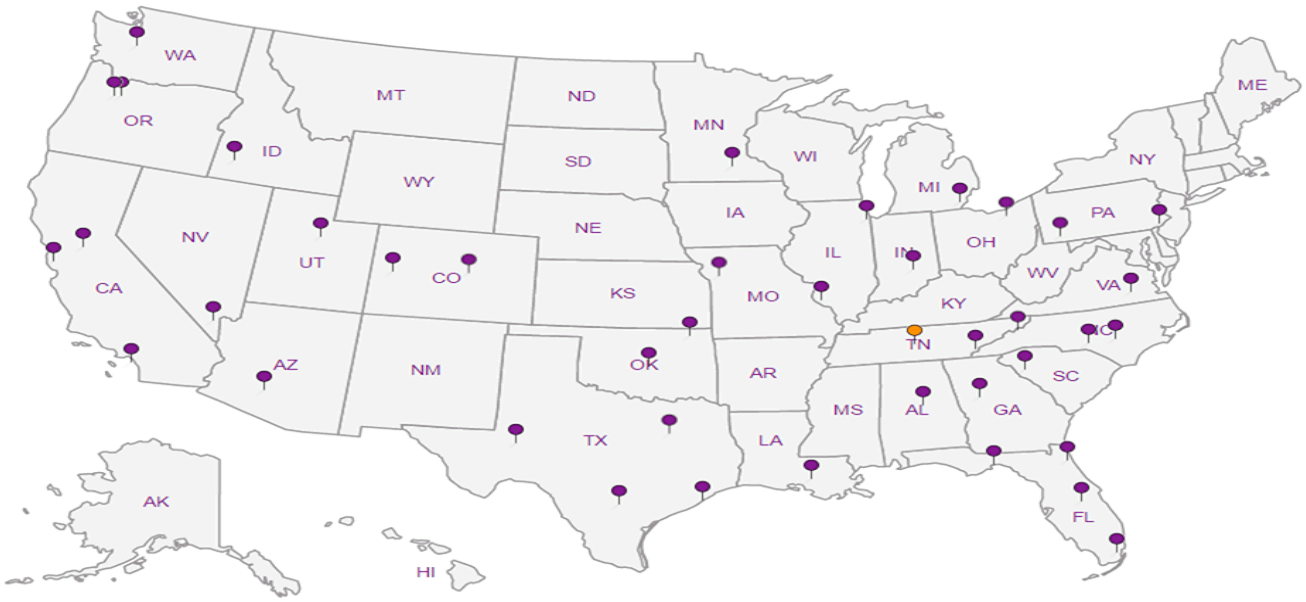
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Duncklee and Dunham

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Billing Information:
Project Manager
511 Keisler Drive, Suite 102
Cary, NC 27518

Report to: **Rick Kolb**

Email To: **rkolb@dunckleedunham.com**

Project Description: **NCDOT R-2511 Beaufort and Martin Countie**

City/State Collected: Washington and Williamston / NC

Phone: **919-858-9898**
Fax: **919-858-9899**

Client Project # 201939

Lab Project # **DUNDUNNC-NCDOT R2511**

Collected by (print): Alec Dziwanowski

Site/Facility ID # D&D standard

P.O. #

Collected by (signature): Alec Dziwanowski

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ✓ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Pres Chk:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	1000 100ml Amb NoPres 6/25	VA250 40mlAmb-HCl 6/20									
TW-1	Grab	GW	NA	4/8/19	1450	5	X	X									-01
TW-2	↓	GW	↓	4/8/19	1800	5	X	X									-02
TW-3		GW		4/9/19	1655	5	X	X									-03
TW-4		GW		4/10/19	1120	5	X	X									-04
TW-5		GW		4/10/19	1215	5	X	X									
		~~GW~~				~~5~~	~~X~~	X									

RAD SCREEN: <0.5 mR/hr

Chain of Custody Page ___ of ___

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# L1068281

F078

Acctnum: **DUNDUNNC**
Template: **T147651**
Prelogin: **P699279**
TSR: **873 - Heather J Wagner**
PB:
Shipped Via: **FedEX Ground**

Remarks | Sample # (lab only)

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: HOLD TW-5 → we will contact the lab when we know if we need it tested

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS ✓ FedEx __ Courier _____

Tracking # 4871 0896 3900

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		✓Y N
Bottles arrive intact:		✓Y N
Correct bottles used:		✓Y N
Sufficient volume sent:		✓Y N
If Applicable		
VOA Zero Headspace:		✓Y N
Preservation Correct/Checked:		✓Y N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Alec Dziwanowski	4/10/19	1541	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	4/10/19	1555	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 2.5 -0.1 = 2.4 °C Bottles Received: 25

If preservation required by Login: Date/Time

Date: 4/11/19 Time: 0900

Hold: 03-0237

Condition: NCF / OK

Divider
Page

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National Center for Testing & Innovation

ANALYTICAL REPORT

April 26, 2019

Duncklee and Dunham

Sample Delivery Group:	L1091336
Samples Received:	04/11/2019
Project Number:	201939
Description:	NCDOT R-2511 Beaufort and Martin Counties-Parcel 65

Report To: Rick Kolb
PO Box 639
Cary, NC 27512

Entire Report Reviewed By:

Heather J Wagner
Project Manager

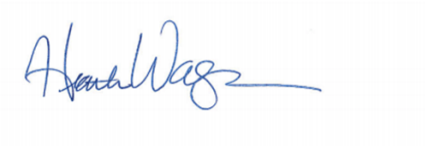
TABLE OF CONTENTS

TW-1 L1091336-01 GW

Collected by: Alec Dziwanowski
Collected date/time: 04/08/19 14:50
Received date/time: 04/11/19 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Petroleum Hydrocarbons by Method MADEPV	WG1270096	5	04/22/19 18:44	04/22/19 18:44	ACG	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Heather J Wagner
Project Manager

Project Narrative

Sample TW-1 is reported separately per client request. All samples listed on the attached COC have been reported individually under SDG number L1091336 based on their Parcel ID.

Volatile Petroleum Hydrocarbons by Method MADEPV

Analyte	Result	Qualifier	MDL	RDL	Dilution	Analysis	Batch
	ug/l		ug/l	ug/l		date / time	
Unadjusted C5-C8 Aliphatics	1310		166	500	5	04/22/2019 18:44	WG1270096
Unadjusted C9-C12 Aliphatics	2250		166	500	5	04/22/2019 18:44	WG1270096
Unadjusted C9-C10 Aromatics	3540		166	500	5	04/22/2019 18:44	WG1270096
Total VPH	7100		166	500	5	04/22/2019 18:44	WG1270096
(S) 2,5-Dibromotoluene(FID)	*99.5*			*70.0-130*		*04/22/2019 18:44*	WG1270096
(S) 2,5-Dibromotoluene(PID)	*91.9*			*70.0-130*		*04/22/2019 18:44*	WG1270096

Method Blank (MB)

(MB) R3404446-3 04/22/19 17:38

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Unadjusted C5-C8 Aliphatics	U		33.3	100
Unadjusted C9-C12 Aliphatics	U		33.3	100
Unadjusted C9-C10 Aromatics	U		33.3	100
Total VPH	U		33.3	100
(S) 2,5-Dibromotoluene(FID)	*96.7*			*70.0-130*
(S) 2,5-Dibromotoluene(PID)	*91.2*			*70.0-130*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3404446-1 04/22/19 15:28 • (LCSD) R3404446-2 04/22/19 15:59

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Unadjusted C5-C8 Aliphatics	1200	1030	1030	86.0	86.2	70.0-130			0.289	25
Unadjusted C9-C12 Aliphatics	1400	1280	1290	91.5	92.1	70.0-130			0.700	25
Unadjusted C9-C10 Aromatics	200	159	160	79.5	79.9	70.0-130			0.510	25
Total VPH	2800	2470	2480	88.2	88.6	70.0-130			0.445	25
(S) 2,5-Dibromotoluene(FID)				*95.5*	*99.0*	*70.0-130*				
(S) 2,5-Dibromotoluene(PID)				*90.8*	*92.8*	*70.0-130*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

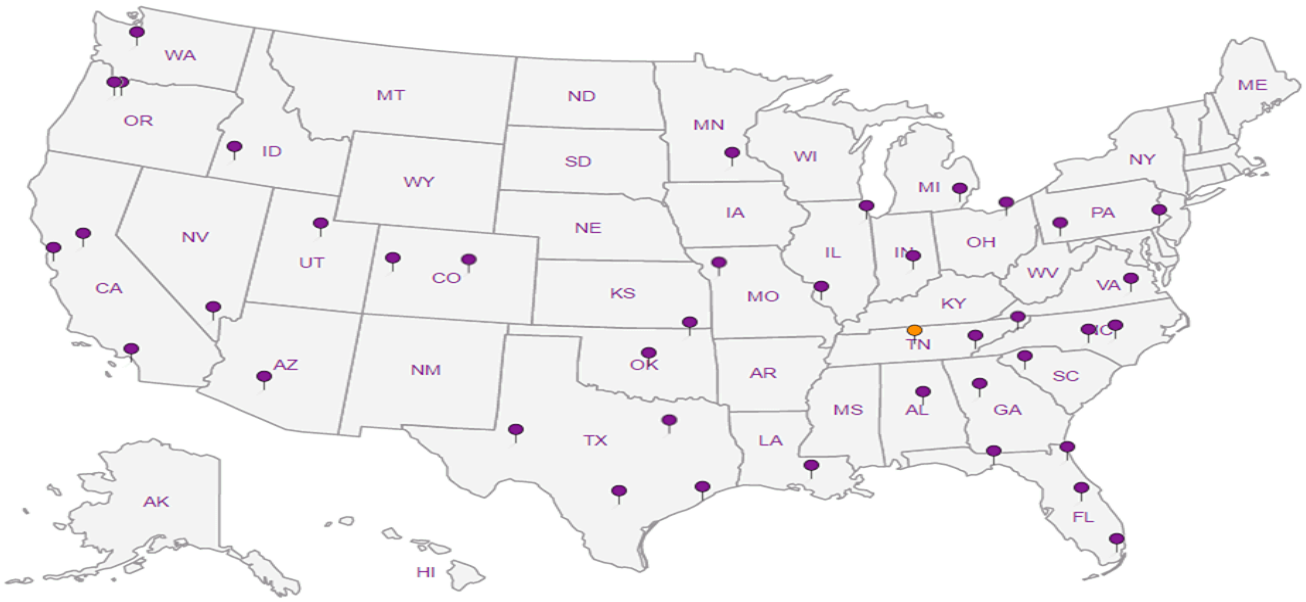
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Dunckiee and Dunham

PO Box 639
Cary, NC 27512

Billing information:
Project Manager
511 Keisler Drive, Suite 102
Cary, NC 27518

Report to: **Rick Kolb**

Email To: **rkolb@dunckleedunham.com**

Project Description: **NCDOT R-2511 Beaufort and Martin Countie**

City/State Collected: Washington and Williamston / NC

Phone: **919-858-9898**
Fax: **919-858-9899**

Client Project # 201939

Lab Project # **DUNDUNNC-NCDOT R2511**

Collected by (print): Alec Dziwanowski

Site/Facility ID # D&D standard

P.O. #

Collected by (signature): Alec Dziwanowski

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ✓ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Pres Chk:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	250 100ml Amb NoPres 625 2C	VA240 40mlAmb-HCl 6200 2C
TW-1	Grab	GW	NA	4/8/19	1450	5	X	X
TW-2	↓	GW	↓	4/8/19	1800	5	X	X
TW-3		GW		4/9/19	1655	5	X	X
TW-4		GW		4/10/19	1120	5	X	X
TW-5	↓	GW	↓	4/10/19	1215	5	X	X
		~~GW~~				~~5~~ 10	~~X~~	~~X~~

RAD SCREEN: <0.5 mR/hr

Chain of Custody Page ___ of ___

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Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# ~~L1066281~~ F078 L1091336

Acctnum: DUNDUNNC
Template: T147651
Prelogin: P699279
TSR: 873 - Heather J Wagner
PB:

Shipped Via: FedEX Ground

Remarks	Sample # (lab only)
	01 -01
	~~02~~ 02
	~~03~~ 03
	~~04~~ 04

RJ 4/22/19

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks: HOLD TW-5 → we will contact the lab when we know if we need it tested

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS ✓ FedEx __ Courier _____

Tracking # 4871 [illegible] 6390

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: ✓Y __N
Preservation Correct/Checked: ✓Y __N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
Alec Dziwanowski	4/10/19	54/	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	4/10/19	1555	
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No (No) HCL / MeoH TBR

Temp: 2.5 - 0.1 = 2.4 °C Bottles Received: 25

Date: 4/11/19 Time: 0900

If preservation required by Login: Date/Time

Hold: 03-0237

Condition: NCF / OK

Andy Vann

From: Heather Wagner
Sent: Monday, April 22, 2019 9:09 AM
To: Login
Subject: L1088281 - relog for VPH - expires today

Please relog L1088281-01, -02, -03 and -04 for VPHNC. -01 and -02 go out of hold today. R5 due 4/29

Thanks,

Heather Wagner
Project Manager
Pace Analytical National Center for Testing & Innovation
12065 Lebanon Road | Mt. Juliet, TN 37122
Office 615.773.9686 | Cell 615.289.9801
hwagner@pacenational.com | pacenational.com

ESC Lab Sciences is now Pace Analytical National Center for Testing & Innovation! Please make note of my new email address and website.