Phase II Site Assessment Report
November 30, 2021
WBS Element: 45786.1.1
State Project: B-5833
Yadkin County

At

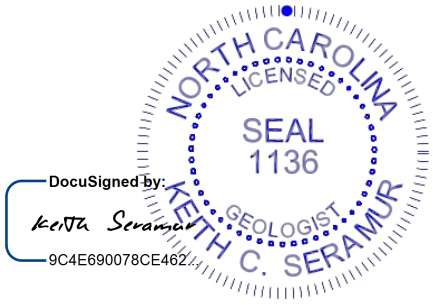
Parcel #: 015
Lanny G. & Benny H. Wilkins Property
5616 US Hwy 21; Jonesville, NC, 28642
PIN #: 486904641907
Facility ID No.: 00-0-0000006728
Groundwater Incident #: 45225

Prepared For:

Mr. Gordon Box
NCDOT, Geotechnical Engineering Unit
GeoEnvironmental Section
1589 Mail Service Center
Raleigh, NC 27699-1589

Prepared By:

Seramur & Associates, PC
165 Knoll Drive
Boone, NC 28607



Keith C. Seramur, P.G.

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1.0 Introduction

1.1 General Site Background Information

Seramur & Associates, PC was contracted to complete a Phase II Environmental Site Assessment at:

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Lanny G. & Benny H. Wilkins Property
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Parcel #015 is located along the eastern side of US Hwy 21 at the intersection with Little Mountain Road. The property is located on a drainage divide between Sandyberry Creek and South Deep Creek. Bedrock in the area is mapped as Granitic Rock of the Inner Piedmont belt, a gneissic muscovite-biotite quartz monzonite (Espenshade, G.H., Rankin, D.W., Shaw, K.W., and Neumann, R.B.. Geologic map of the east half of the Winston-Salem quadrangle, North Carolina-Virginia, U.S. Geologic Survey Misc. Inv. Series Map I-709-B, 1975).

A Notice to Proceed was obtained on September 24, 2021. Our area of investigation included the existing Right-of-Way (R/W) and Proposed Drainage Easements (PDE) along U.S. Hwy 21 and Little Mountain Road as well as the Permanent Utility Easement (PUE) along Little Mountain Road (Figure 2). The Phase II Site Assessment scope of work included completing a geophysical survey, soil sample collection and laboratory analysis. Two of the existing monitoring wells on the property were also sampled for laboratory analysis. Geophysical investigations evaluate the potential for underground storage tanks and remnant UST system infrastructure. The purpose of laboratory analysis is to assess soil and water quality across the easement (Figure 3). Background research for this project included reviewing historic aerial photographs and NCDEQ databases.

2.0 Scope of Work

2.1 Background Research

According to the Yadkin County Tax Administration records, the property is owned by Gregory Hayes and Benny Wilkins. Available historic aerial photographs from the USGS EarthExplorer website and Google Earth Pro were reviewed.

The following NCDEQ databases were queried for incidents at Parcel #015:

- Dry Cleaners
- Active USTs
- UST Incident Map
- UST Database
- Hazardous Waste Sites

2.2 Geophysical Surveys

Seramur & Associates used the Pythagorean Theorem to establish one grid within the proposed PDE and existing R/W along US Hwy 21. Five additional GPR transects were collected in areas across the easements and existing R/W where grid data could not be collected (Figure 4). Geophysical grid data was collected along transects at a two-foot spacing.

The magnetometer data was collected with a GEM Systems GSM-19W Walking Overhauser magnetometer. The data was compiled in Excel spreadsheets and a grayscale contour and hillshade maps of the magnetic data was drafted using Golden Software's Surfer® modeling program. The lighter shades are higher magnetic readings and the darker colors are lower magnetic readings (Figure 5). Ferrous objects in the subsurface have a magnetic field distinct from the surrounding soil and produce magnetic anomalies on the contour maps.

A Ground Penetrating Radar (GPR) survey was completed across the grid and transects using Geophysical Survey Systems, Inc. UtilityScan GPR System with a 350 MHz hyperstacking antenna. This GPR system is equipped with a calibrated survey wheel. The GPR data was downloaded and saved onto a computer. The GPR grid data has been processed and modeled using GPR Slice® software. The GPR transect data has been processed and modeled using Radan® software. The GPR data processing included adjusting time zero, completing a background removal and adjusting the time variable gain to enhance deep reflections. Three-dimensional models of the GPR grid data were produced with GPR Slice® software. Three time slices (or depth slices) were imaged in each 3D model at depths of 0.2 to 0.5 feet, 1.6 to 1.9 feet and 2.8 to 3.1 feet (Figures 6 through 8). Each depth slice is a horizontal slice or plan view of the reflections across a 0.3-foot thickness of the subsurface. For example, the deep GPR depth slices show reflections in the radar data between depths of 2.8 and 3.1 feet. The profiles of the GPR transects show the subsurface directly under the path of the antenna to a depth of 8.0 feet (Figures 9a and 9b).

2.3 Soil Sampling and Analyses

On November 9, 2021 Carolina Soil Investigations, LLC mobilized to the site to drill Geoprobe borings and collect soil samples. Our project design typically calls for collecting a shallow and deep soil sample from each boring (Figure 3). The purpose of collecting samples at a depth of ~3.0 feet is to test for petroleum releases related to surface spills and releases from product lines. The purpose of collecting samples at a depth of ~9.0 feet is to test for petroleum releases related to underground storage tanks. Soil borings were drilled within the existing R/W and proposed PDE along US Hwy 21 and Little Mountain Road with a focus on areas where new drainage is to be installed. One boring was drilled within the PUE along Little Mountain Road. As there was little area to be investigated that could be reasonably accessed with the Geoprobe, we were limited to the flat areas within the easements.

A track-mounted Geoprobe rig was used to drill five soil borings. The texture and type of soil material in the Geoprobe cores was described and recorded. A new pair of Nitrile gloves was worn while collecting each soil sample. A representative portion of each soil sample was placed in a zip lock bag and allowed to rest for a period of time to allow volatile vapors to accumulate in

the headspace of the bag. A calibrated PhoCheck Tiger Photoionization Detector (PID) was used to screen the headspace in each bag and the concentration of volatile petroleum vapors was measured and recorded (Table 1). Table 1 lists the boring data including sample number, depth, PID reading, lithology, and type of soil material.

REDLab, LLC provided laboratory analyses for six of the soil samples collected from the Geoprobe cores. REDLab analyzed the soil samples for petroleum constituents by Ultra-Violet Fluorescence using a QED HC-1 analyzer. The analytical results are reported as Gasoline Range Organics (GRO) and Diesel Range Organics (DRO) and Total Petroleum Hydrocarbons (TPH). REDLab provided a hydrocarbon spectrum with each of the sample results. This spectrum is used for a tentative identification of the type of hydrocarbon detected by the analytical method. The hydrocarbon fingerprint is interpreted by REDLab using a library search of spectra for known hydrocarbon types and concentrations. The laboratory reports and fingerprint spectra are included in Appendix B.

2.4 Groundwater Sampling and Analysis

SAPC personnel observed well vaults for eleven monitoring wells on the property during our site visits. Two of these wells (MW-5 and MW-9) are within the existing R/W near proposed drainage features in the PDEs along US Hwy 21 and Little Mountain Road (Figure 3). Additionally, two monitoring wells related to the groundwater incident at the property are located on Parcel #014, one of which (MW-11) is located within a Permanent Utility Easement (See the attached supplemental figure and updated GeoEnvironmental file).

SAPC mobilized to the site to collect groundwater samples from MW-5 and MW-9 on November 10, 2021. Groundwater was measured at a depth of 14.40 feet below the top of the well casing in MW-5 and a depth of 15.88 feet below the top of the well casing in MW-9. A new disposable bailer and line was used to purge three well volumes of water from each monitoring well. One groundwater sample was collected from each well in laboratory supplied sample jars. The groundwater samples were labeled, placed in a cooler on ice and a chain of custody was initiated. Groundwater samples were shipped via FedEx to Waypoint Analytical in Charlotte, NC for analysis using constituent specific, risk-based methods.

On November 17, 2021, Seramur & Associates was informed that the 1L jars containing water for analytical methods 625 and EPH were broken by FedEx on the way to the lab. Only one jar containing water from MW-9 for 625 analysis survived the shipping event. SAPC remobilized to the site on November 18, 2021 to collect new water samples for the remaining analyses. Groundwater was measured at a depth of 14.49 feet below the top of the well casing in MW-5 and a depth of 15.98 feet below the top of the well casing in MW-9. As before, a new disposable bailer and line was used to purge three well volumes of water from each monitoring well. One groundwater sample was collected from each well in laboratory supplied sample jars. The groundwater samples were labeled, placed in a cooler on ice and a chain of custody was initiated. This time, the groundwater samples were transferred by SAPC personnel to Waypoint Analytical in Charlotte, NC.

2.5 Plate 1 – Photographs of Parcel #015

Photo 1. Collecting GPR grid data at Parcel #015.

Photo 2. Collecting magnetometer data in Grid 1 along the PDE at Parcel #015.

Photo 3. Bailing water from MW-9 in order to collect water samples.

Photo 4. Carolina Soil Investigations using the Geoprobe to drill boring B-5 in the PUE along Little Mountain Road.

3.0 Results of Investigation

Parcel #015 previously operated as a gas station and currently operates as Jody's Automotive Repair and Lube Shop. According to the Yadkin County Tax Administration, the building was built in 1968. A 1966 aerial photograph shows the property as an undeveloped field. The NCDEQ UST Database indicates that tanks were installed at the property in 1968, 1969 and 1971 and that those tanks had all been removed by 1990. The tanks installed in 1990 were removed in 2019. A release was discovered from the UST system at the time of removal and Progress Environmental was contracted to complete a Limited Site Assessment and a Comprehensive Site Assessment following the closure. Over the course of these two site assessments, 13 monitoring wells were installed on the property and the adjacent property (Parcel #014) across Little Mountain Road.

SAPC personnel made a pedestrian reconnaissance of the property during the initial site visit on October 21, 2021. No evidence of an active UST system was observed on the property. There is an aboveground storage tank near the southeast corner of the building that appears to be used for heating the building. Additionally, there is an aboveground used oil tank located on the northeast side of the building and there are designated containers for used oil filters north of the building between the tire changing bay and the building. All of these tanks and storage containers should be far enough out of the easements that a release from any of them is not likely to impact the project area.

3.1 Plate 2 – Photographs of Parcel #015

Photo 1. Disposal bins for used oil filters located between the main building and the tire center.

Photo 2. A view inside one of the used oil filter disposal bins at Parcel #015.

Photo 3. A used oil AST located near the northeast corner of the main building.

Photo 4. Fuel oil AST located near the southeast corner of the main building.

3.2 Geophysical Surveys

The magnetometer hillshade map shows numerous magnetic anomalies in the eastern portion of the grid. These anomalies were produced by the metal canopy above the dispenser island and the western edge of the active UST system (Figure 5). The western portion of the grid shows a few isolated anomalies produced by metal traffic control poles and signs. Larger magnetic anomalies that could represent abandoned USTs were not recorded in Grid 1.

The shallow GPR depth slice (0.2-0.5 feet) for Grid 1 shows an area of reflection-free fill material under the pavement on the west side of the former UST system (Figure 6). This is different than the medium to high amplitude reflections under the pavement of the southern entrance drive. The area on the west side of the former UST system was probably excavated and backfilled with different material during the installation of the UST system. There is a northeast-southwest trending, linear, reflection free area in the center of the grid (Figure 6). This could be a backfilled utility trench.

Dispersed and isolated, high amplitude reflections (1.6 to 1.9 feet) were imaged on the intermediate GPR depth slice (Figure 7). These do not appear to be related to underground utility lines or an abandoned UST system. A northeast-southwest trending, linear, high amplitude reflection was imaged in the center of the grid on the deep GPR depth slice (2.8 to 3.1 feet) (Figure 8). This was the only anomaly of interest imaged at this depth. GPR anomalies characteristic of an abandoned UST system were not observed on any of the GPR depth slices for Grid 1.

GPR profiles for transects 1 through 5 were reviewed for possible evidence of USTs or UST infrastructure (Figures 9a and 9b). Transects 1 and 2 were collected on the northwest corner of the property (Figure 4). Transect 1 shows a horizontal reflection dipping to the northwest toward the road between a depth of 1 and 2 feet (Figure 9a). This reflection is likely related to buried utility lines on the corner of this intersection. A hyperbola at a depth of 3.5 feet on the GPR profile for Transect 2 likely represents a buried utility line.

GPR Transects 3, 4 and 5 were collected across a permanent utility easement on the northeast corner of the property (Figure 4). The numerous small, localized reflections on the profiles collected across this area are likely related to inhomogeneous fill material used in this area of the parcel. GPR reflections and anomalies characteristic of a UST system were not observed in any of the GPR profiles collected at Parcel 15.

3.3 Soil Borings, Sampling and Laboratory Analysis

The soil at Parcel #015 consists of fill material over residuum (saprolite) (Table 1). The fill material is primarily silt loam and the residuum is primarily a sandy silt with gravel. Groundwater was not encountered in any of the five borings. A soil sample was collected from the shallow and deep portions of the Geoprobe cores at each boring.

Five borings were drilled and ten soil samples were collected. The shallow soil sample from each boring and the deep sample from boring B-3 was analyzed for TPH-GRO and DRO (Table B-3).

Soil borings B-1, B-2, and B-3 were drilled within the existing R/W just outside of the PDE along the southwest side of the property. Boring B-4 was drilled in the ditch in the existing R/W just outside of the PDE along Little Mountain Road. The Geoprobe had to carefully straddle the ditch to access this boring. Boring B-5 was drilled in the PUE along Little Mountain Road. This boring was drilled in the flattest area that could be accessed within the confines of this easement (Figure

3). Petroleum constituents were not detected above NCDEQ UST Action Levels in any of the soil samples collected at Parcel #015 (Table B-3 and Figure 10).

3.4 Groundwater Sampling and Laboratory Analysis

The two groundwater samples were analyzed for petroleum constituents using methods 6200B, 625, MADEP EPH, and MADEP VPH. The only constituent detected by the laboratory analysis was Methyl tert-butyl ether (MTBE) in the groundwater sample from MW-9 at a concentration of 0.378 ppb. This is well below the NCDEQ groundwater standard of 20 ppb.

3.5 Conclusions

Parcel #015 previously operated as a gas station and currently operates as Jody's Automotive Repair and Lube Shop. The USTs installed in 1990 were removed in 2019. A release was discovered from the UST system and Progress Environmental completed a Limited Site Assessment and a Comprehensive Site Assessment. No evidence of an active UST system was observed on the property. The geophysical surveys did not find evidence of an abandoned UST system.

The Geoprobe drilling, soil sampling, and laboratory analysis did not detect petroleum constituents at or above the NCDEQ UST Action Levels. The groundwater sampling and laboratory analysis also did not detect petroleum constituents at or above the NCDEQ UST Action Levels.

4.0 Recommendations

Seramur & Associates does not recommend any further assessment work for Parcel #015. A licensed well-driller should be contracted to properly abandon the two monitoring wells within the existing R/W and proposed easements on Parcel #015. The well closure activities should include closing monitoring well MW-11 which is also in the PUE at Parcel #014.

Appendix A

Tables and Figures

Table 1. Soil Boring Data - Parcel #015 - Lanny G. and Benny H. Wilkins Property						
Boring No.	**Depth (ft)**	**Lithology**	**Soil type**	**Soil Sample**	**PID ppm**	**Comments**
B-1	0.0 to 4.0	Silt loam	Fill	S-1	0.0	Sample at 3.0 feet.
B-1	4.0 to 5.0	N/A	N/A	N/A	N/A	No recovery.
B-1	5.0 to 10.0	Silt loam	Fill	S-2	0.0	Sample at 8.0 feet.
B-2	0.0 to 5.0	Silt loam	Fill	S-3	0.0	Sample at 3.0 feet.
B-2	5.0 to 10.0	Silt loam	Fill	S-4	0.0	Sample at 8.0 feet.
B-3	0.0 to 3.0	Silt loam	Fill	S-5	0.1	Sample at 3.0 feet.
B-3	3.0 to 5.0	N/A	N/A	N/A	N/A	No recovery.
B-3	5.0 to 10.0	Silt loam	Fill	S-6	0.2	Sample at 6.5 feet.
B-4	0.0 to 4.0	Silt loam	Fill	S-7	0.1	Sample at 3.0 feet.
B-4	4.0 to 5.0	N/A	N/A	N/A	N/A	No recovery.
B-4	5.0 to 6.0	Silt loam	Fill	N/A	N/A	
B-4	6.0 to 8.0	Sandy silt w/ gravel	Residuum	S-8	0.0	Sample at 8.0 feet.
B-4	8.0 to 10.0	N/A	N/A	N/A	N/A	No recovery.
B-5	0.0 to 3.5	Silt loam	Fill	S-9	0.0	Sample at 3.0 feet.
B-5	3.5 to 5.0	N/A	N/A	N/A	N/A	No recovery.
B-5	5.0 to 9.0	Silt loam	Fill	S-10	0.0	Sample at 8.0 feet.
B-5	9.0 to 10.0	Sandy silt w/ gravel	Residuum	N/A	N/A	

Table B-3: Summary of Soil Sampling Results
Revision Date: 11/16/21
Incident Name: Parcel #015

Analytical Method (e.g., VOC by EPA 8260) →					UVF	UVF
Contaminant of Concern →					TPH GRO (mg/kg)	TPH DRO (mg/kg)
Sample ID	**Date Collected** (mm/dd/yy)	**Source Area**	**Sample Depth** (ft BGS)	**Incident Phase**		
S-1	11/09/21	B-1	3.0	Phase II	<0.65	<0.26
S-3	11/09/21	B-2	3.0	Phase II	<0.52	5.8
S-5	11/09/21	B-3	3.0	Phase II	<0.52	1.16
S-6	11/09/21	B-3	6.5	Phase II	<0.57	2.7
S-7	11/09/21	B-4	3.0	Phase II	<0.55	0.74
S-9	11/09/21	B-5	3.0	Phase II	<0.52	0.082
NC DEQ Action Level (mg/kg)					50	100

ft. BGS = feet below ground surface
mg/kg =milligrams per kilogram

Table B-4: Summary of Groundwater Sampling Results

Revision Date: 11/29/21

Incident Name: Parcel #015

Analytical Method				6200B	625	VPH	EPH
Contaminant of Concern/Field Measurement →				Methyl tert-butyl ether (MTBE)	No Analytes Detected	No Analytes Detected	No Analytes Detected
Well or SW ID	**Date Collected** (mm/dd/yy)	**Sample ID**	**Incident Phase**				
MW-5	11/10/21 & 11/18/21	MW-5	Phase II	--			
MW-9	11/10/21 & 11/18/21	MW-9	Phase II	0.378			
2L Standard (ug/l)				20			
GCL (ug/l)				20,000			

Results must be reported in ug/l
ug/l =micrograms per liter
GCL = gross contamination level

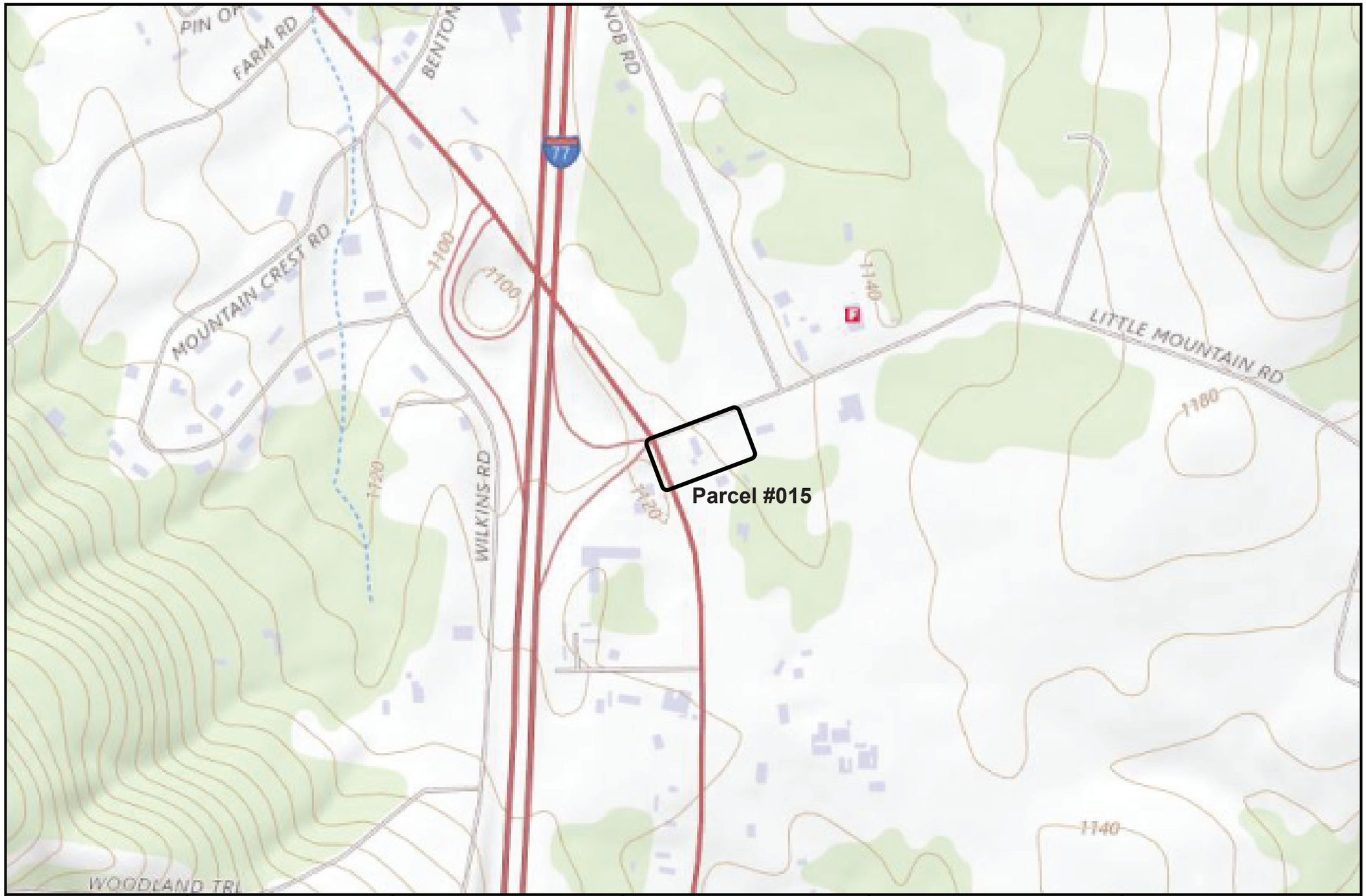


Figure 1 Site Location Map Source: U.S.G.S. The National Map	TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC	Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC	0 300 600 Feet N

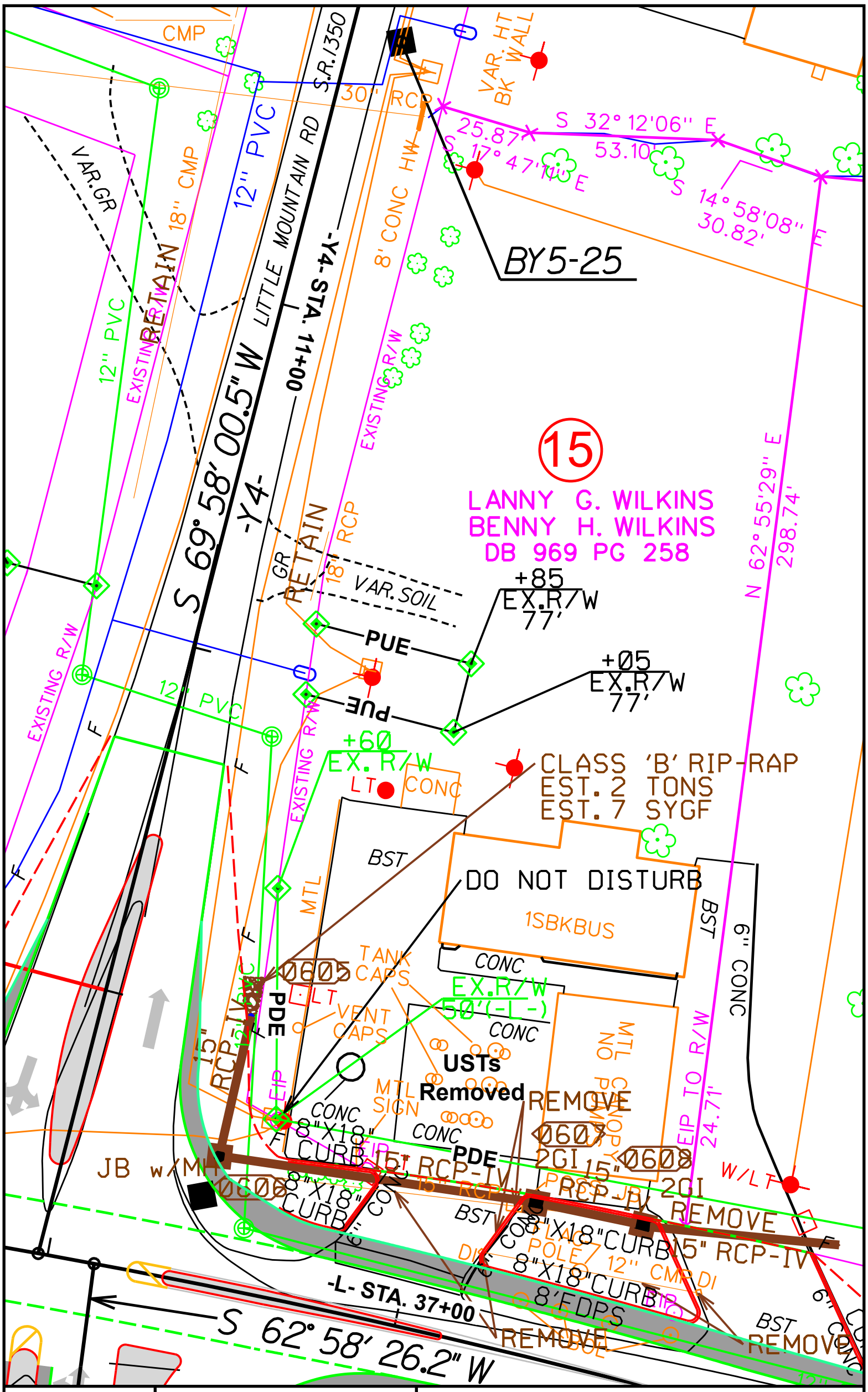


Figure 2 Site Plan	TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC
Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC	0 20 40 Feet N

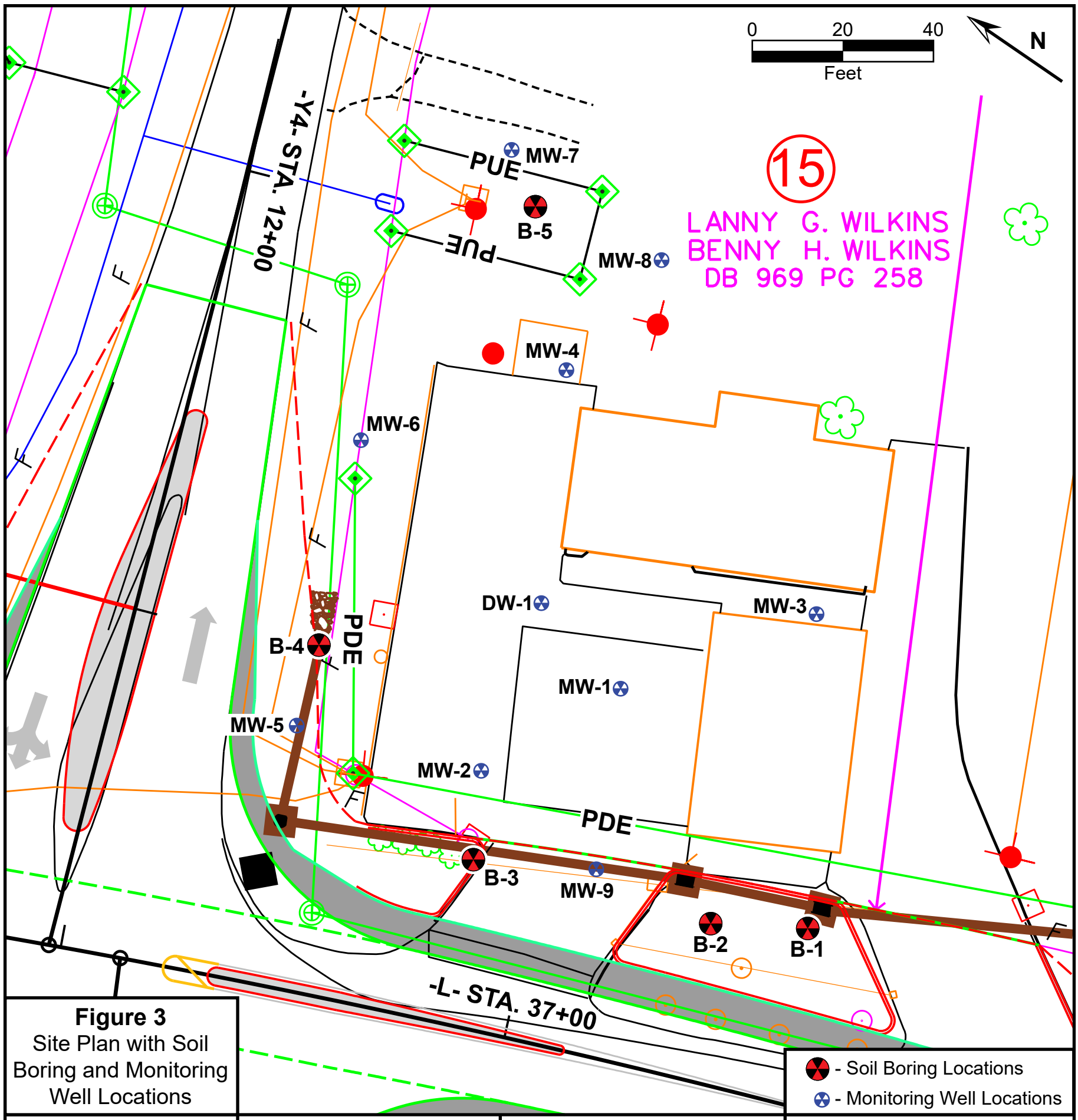


Figure 3
Site Plan with Soil Boring and Monitoring Well Locations

TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC	Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC

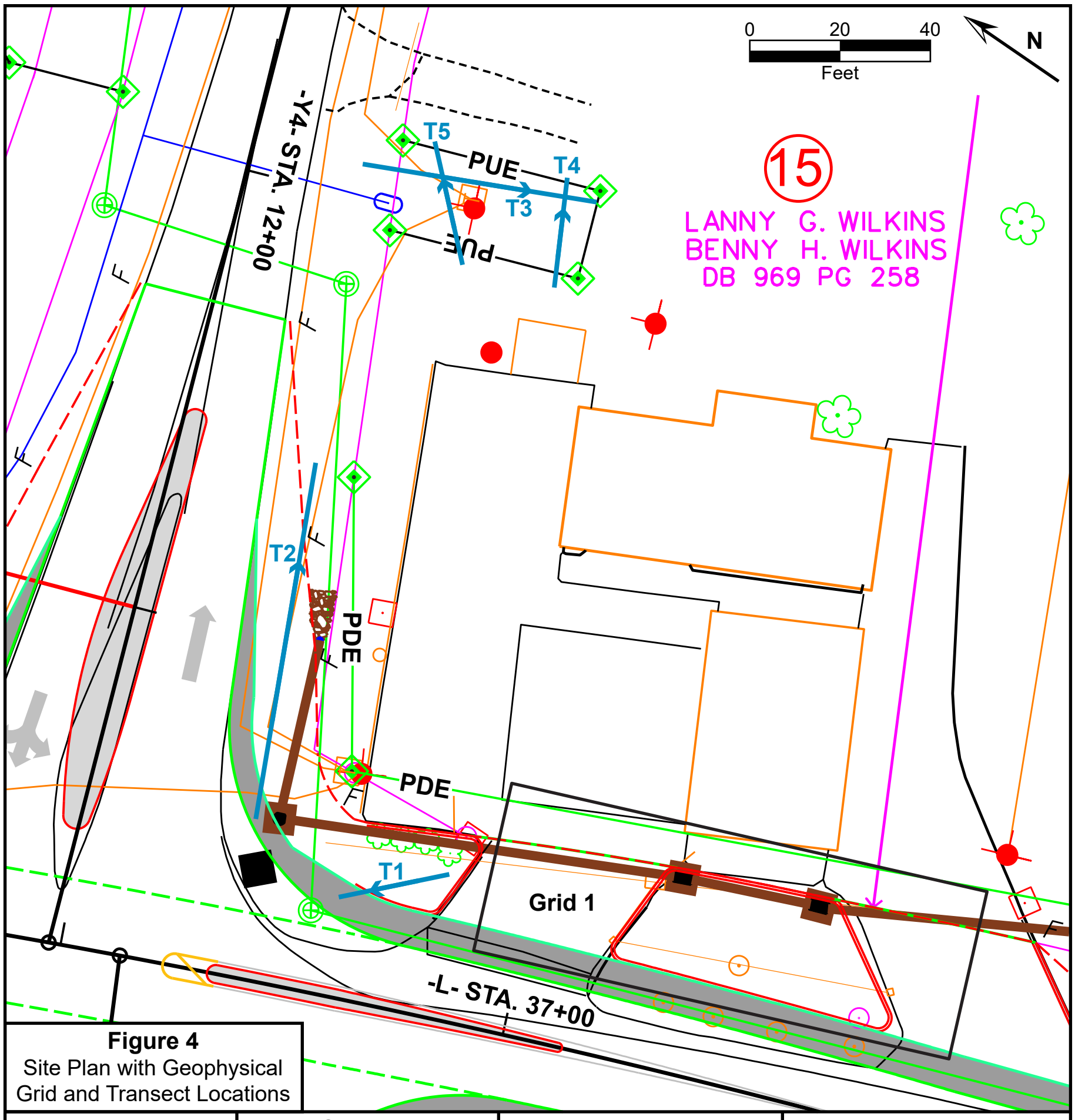


Figure 4
Site Plan with Geophysical Grid and Transect Locations

TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC	Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC

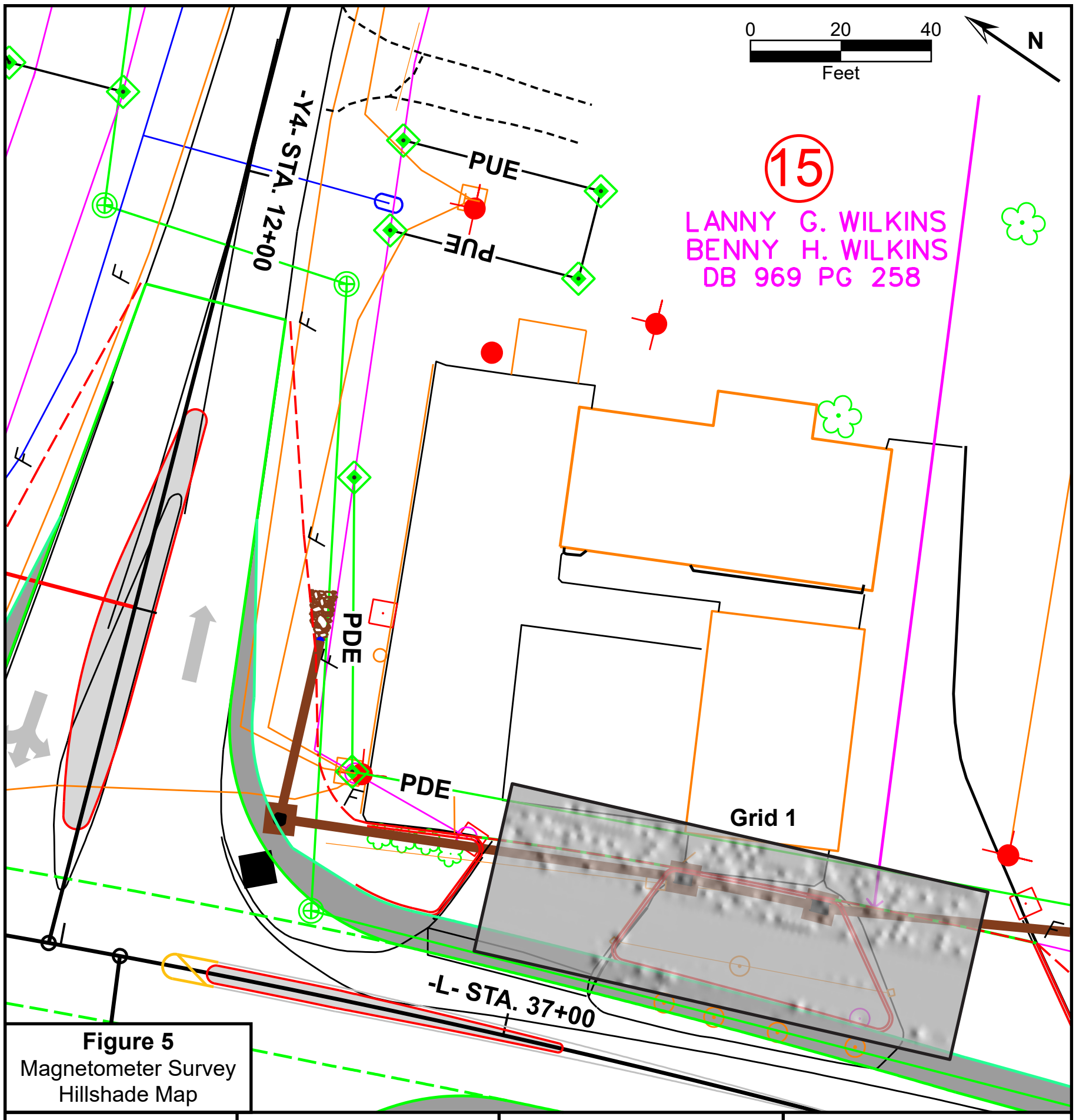


Figure 5
Magnetometer Survey
Hillshade Map

TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC	Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC

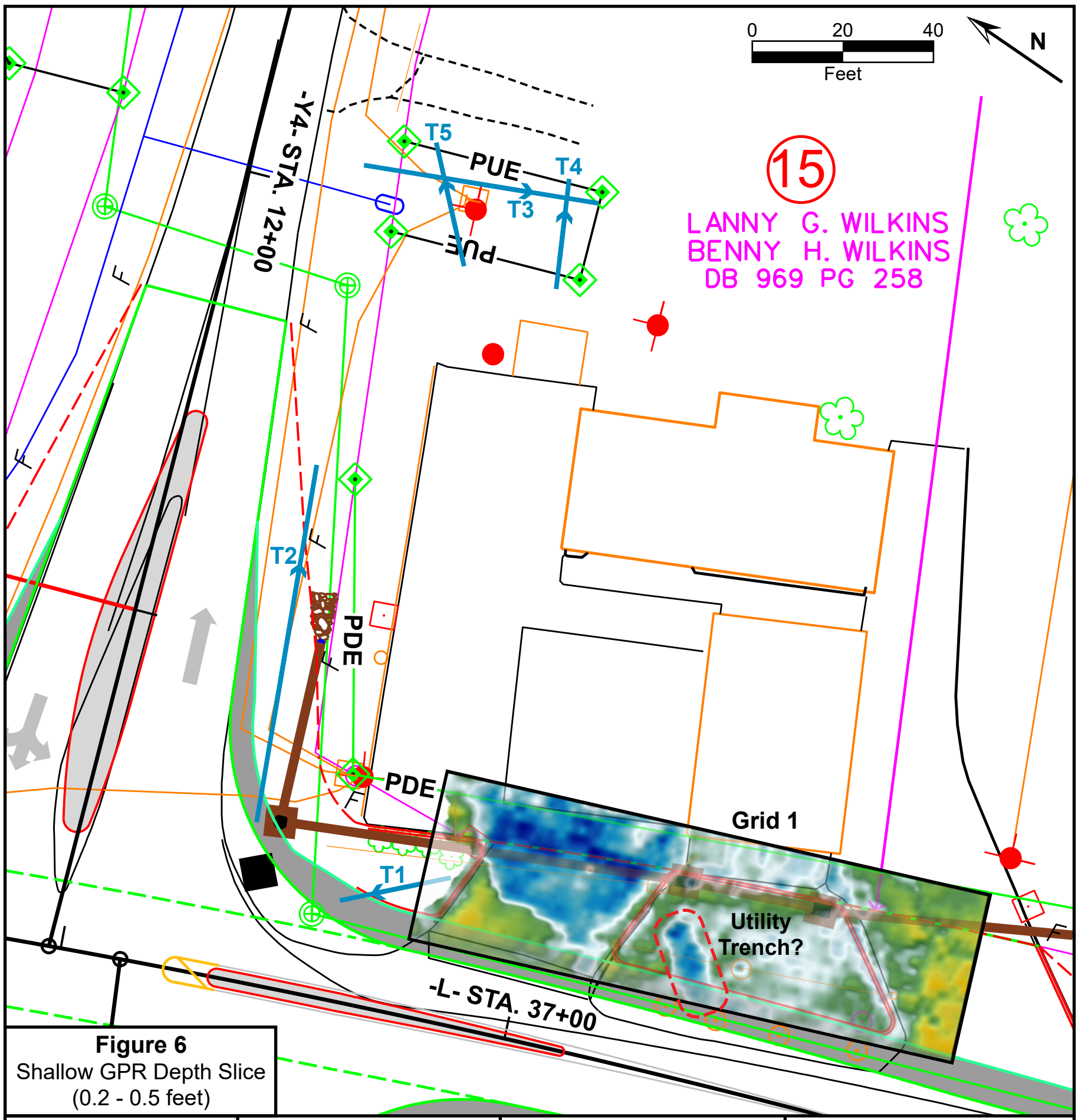


Figure 6
Shallow GPR Depth Slice
(0.2 - 0.5 feet)

TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC	Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC

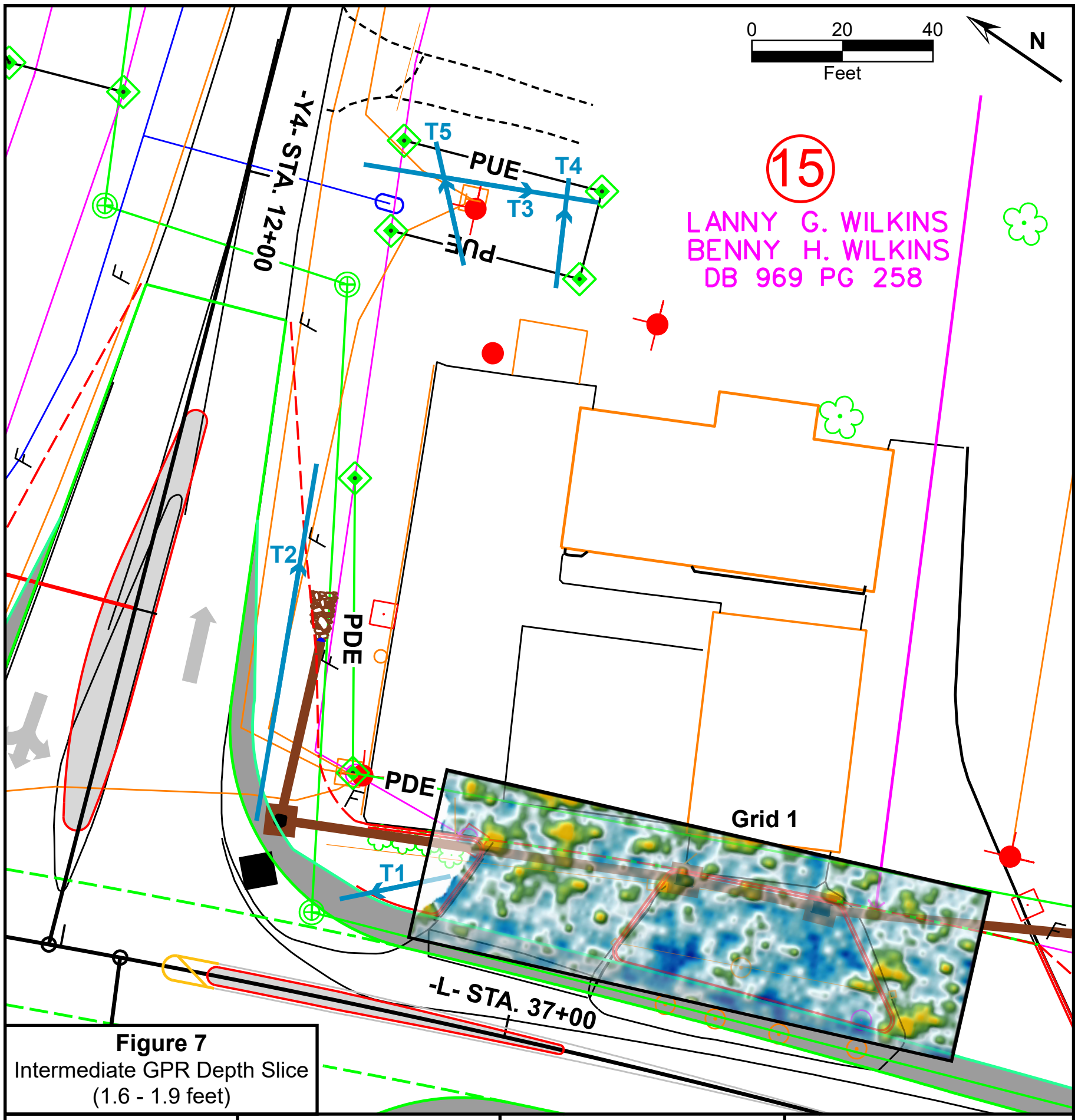


Figure 7
Intermediate GPR Depth Slice
(1.6 - 1.9 feet)

TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC	Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC

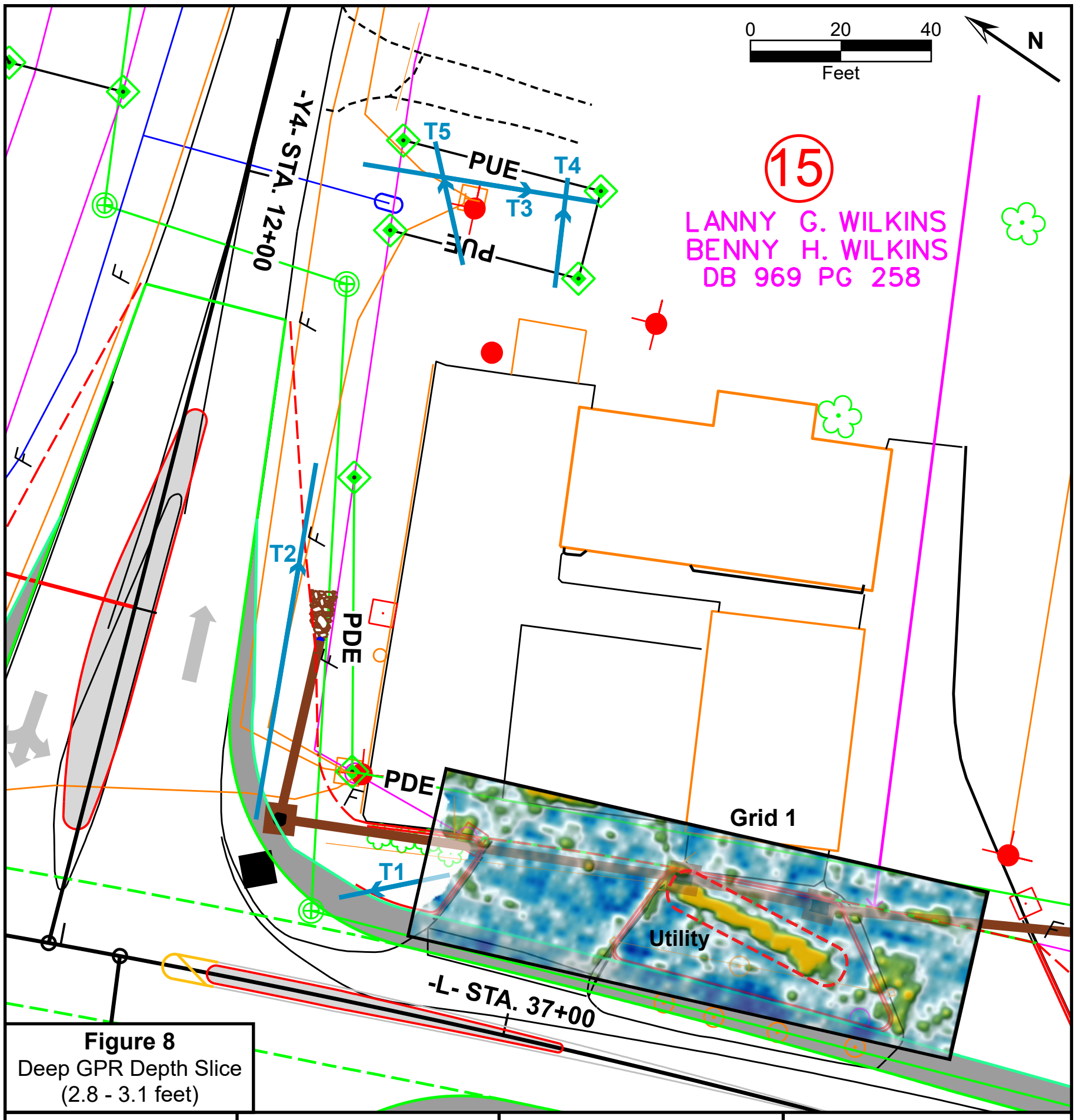
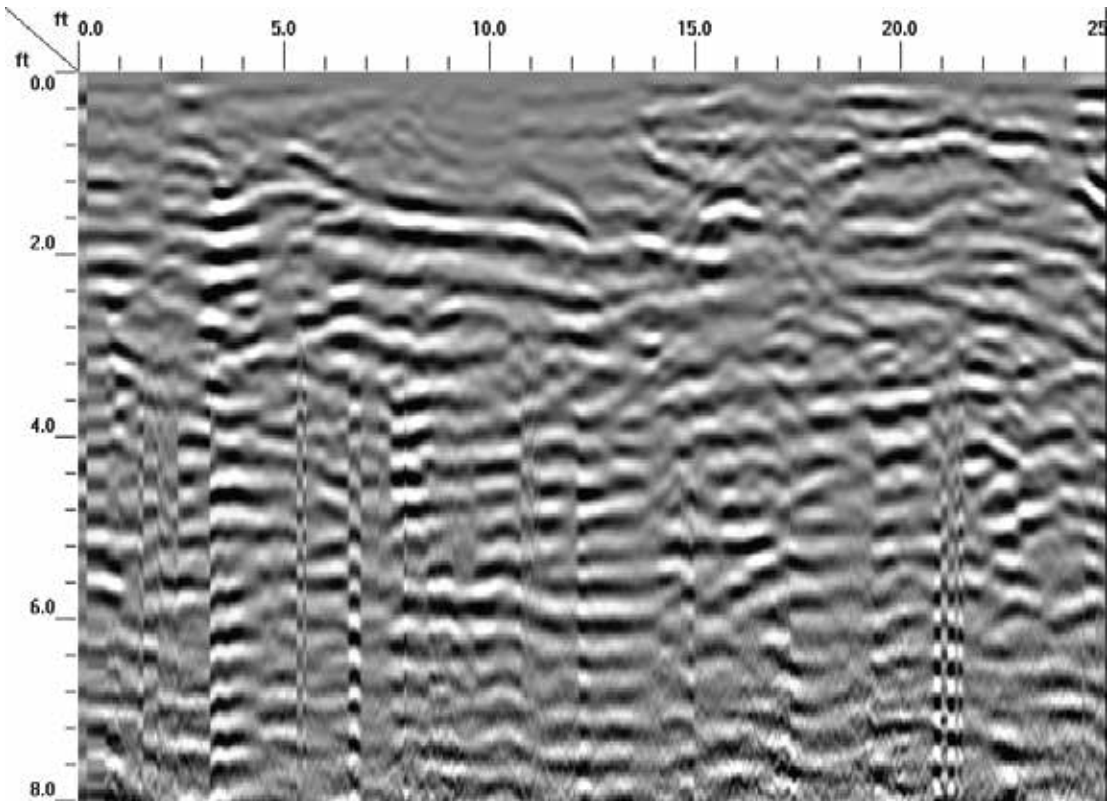
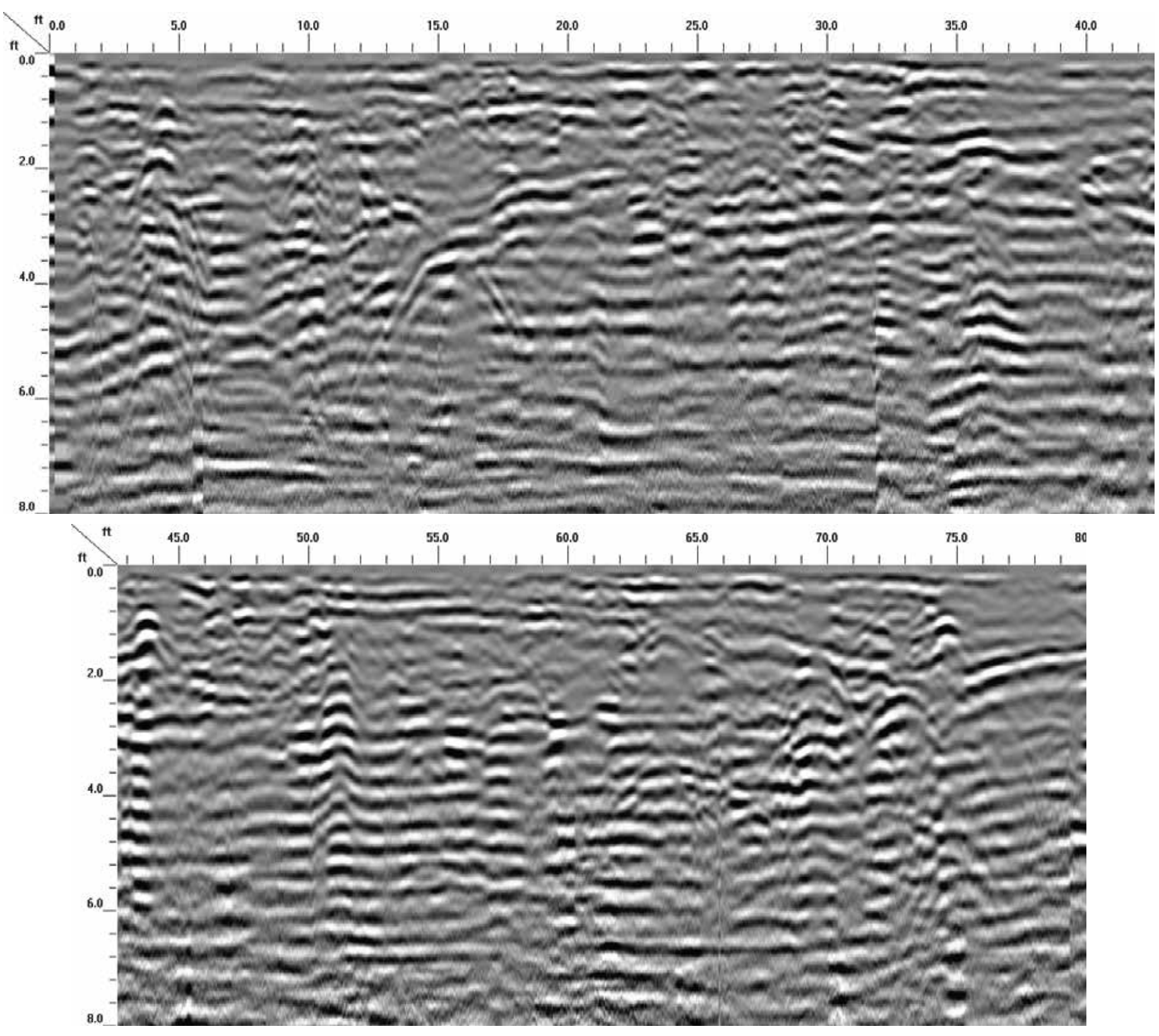


Figure 8
Deep GPR Depth Slice
(2.8 - 3.1 feet)

TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC	Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC

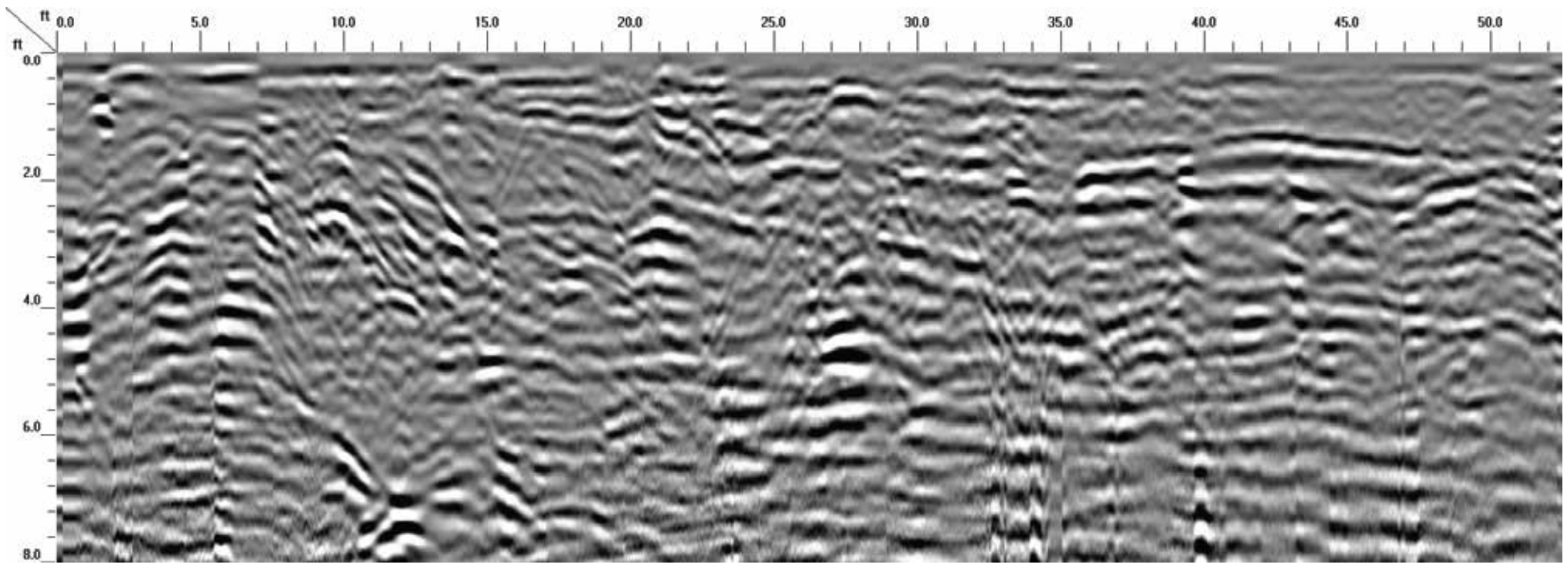


Transect 1



Transect 2

Figure 9a GPR Transects 1 and 2	TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC	Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC



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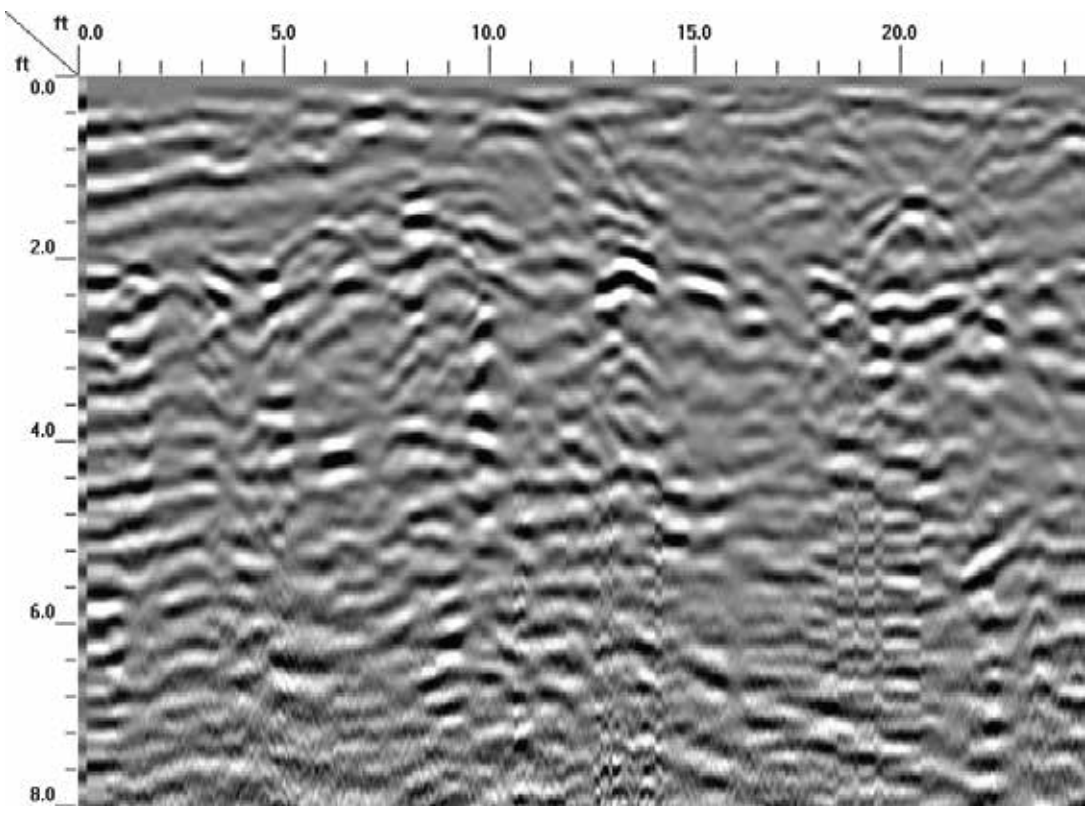
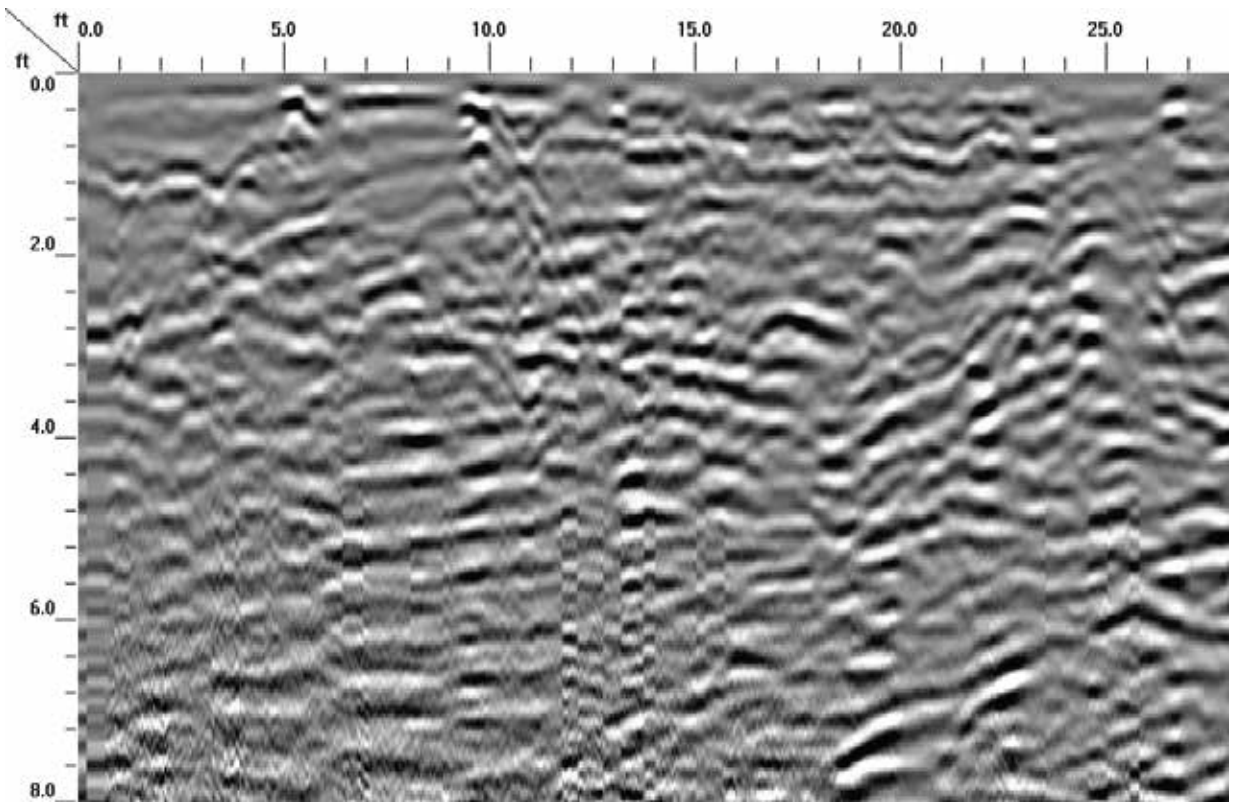


Transect 4



Transect 5

Figure 9b GPR Transects 3 through 5	TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC	Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC

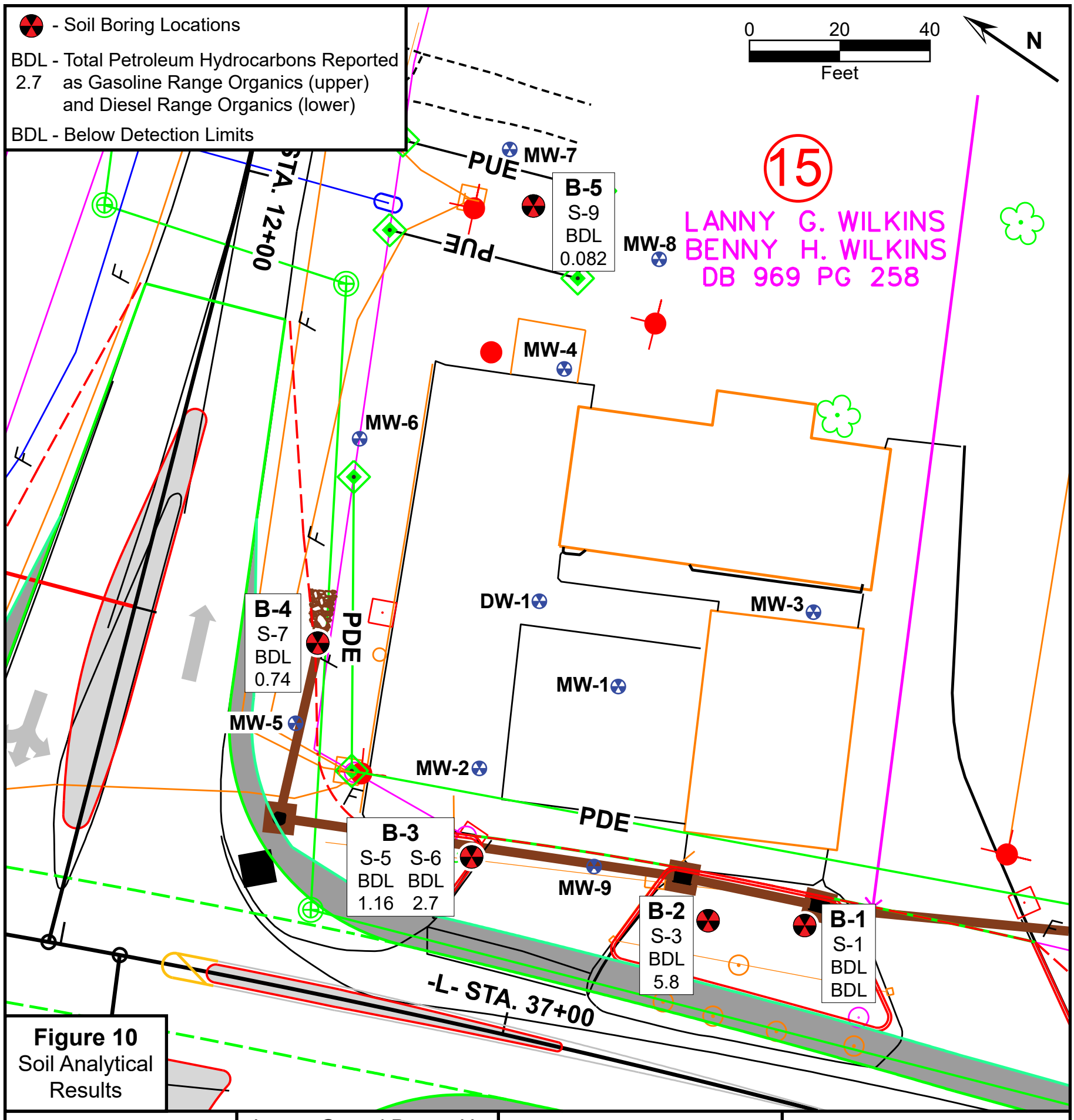


Figure 10
Soil Analytical Results

TIP Number: B-5833 Yadkin County, NC	Lanny G. and Benny H. Wilkins Property 5616 U.S. Hwy. 21 Jonesville, NC	Parcel I.D. #: 015 Facility I.D. #: 00-0-06728	Seramur & Associates, PC Boone, NC

Appendix B

Laboratory Reports

Petroleum Hydrocarbon Analysis Results

Client: SERAMUR & ASSOCIATES
Address: 165 KNOLL DRIVE
BOONE NC 28607

Contact: KEITH SERAMUR

Project: NCDOT-5833 P015

Samples Taken: Tuesday, November 9, 2021
Samples Extracted: Tuesday, November 9, 2021
Samples Analysed: Tuesday, November 9, 2021

Analyst: MAX MOYER

U00904

Matrix	Sample ID	Dilution Used	BTEX	GRO C5 - C9	DRO C10 - C40	TPH C5 - C40	Total Aromatics C10 - C35	16 EPA PAHs	BaP	Carbon Band Ratio % C5:10	Carbon Band Ratio % C10:C18	Carbon Band Ratio % C18+	HC Identification
Soil	S-1	26	<0.65	<0.65	<0.26	< 0	0.039	0.005	<0.008	0	100	0	Residual HC
Soil	S-3	21	<0.52	<0.52	5.8	5.8	3.6	0.13	<0.001	0.2	90.1	9.8	V.Deg.Fuel 85.3%,(FCM),(BO)
Soil	S-5	21	<0.52	<0.52	1.16	1.16	0.69	0.076	<0.006	0	93	7	Residual PHC
Soil	S-6	23	<0.57	<0.57	2.7	2.7	1.6	0.08	<0.003	0	80.3	20	V.Deg.PHC 88.7%,(FCM)
Soil	S-7	22	<0.55	<0.55	0.74	0.74	0.44	0.049	<0.007	0	95.4	4.6	Residual PHC
Soil	S-9	21	<0.52	<0.52	0.082	0.082	0.058	0.007	<0.006	0	71.9	28	Residual HC

Initial Calibrator QC check OK

Final FCM QC Check OK 0.6 % Drift

Results generated by QED HC-1 analyser

Concentration values : mg/kg for soil : mg/L for water. Soil values uncorrected for moisture or stone content. HC identification shows % confidence in match.

FCM = Results calculated using Fundamental Calibration Mode : (PFM) = Poor Fingerprint Match : HC = Hydrocarbon : PHC = Petroleum HC : Deg = Degraded : FP = Fingerprint only

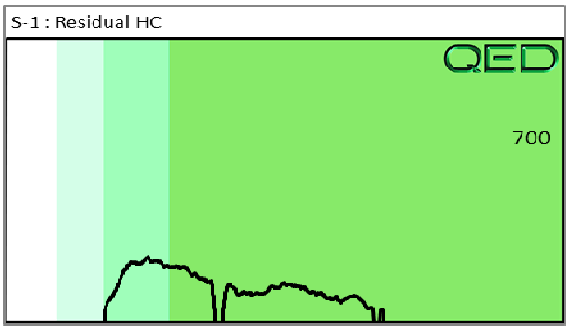
(OCR)/(Q) = Outside cal range, values and HC match estimates : ND = Not Detected : (TD) = Cal temp drift: (T) = Turbid : (P) = Particulate detected : (B) = Blank Drift : (M) = Adjusted value

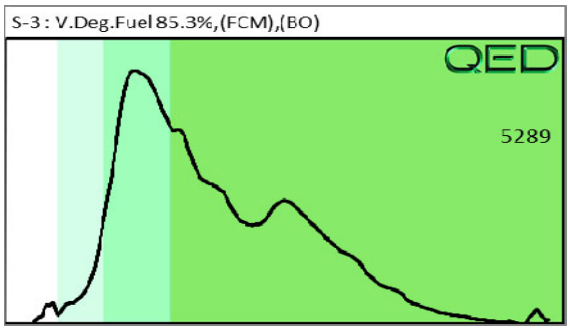
(SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : SB = sample selected as site background

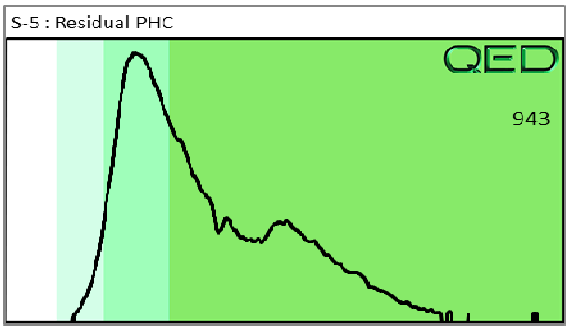
QED Hydrocarbon Fingerprints

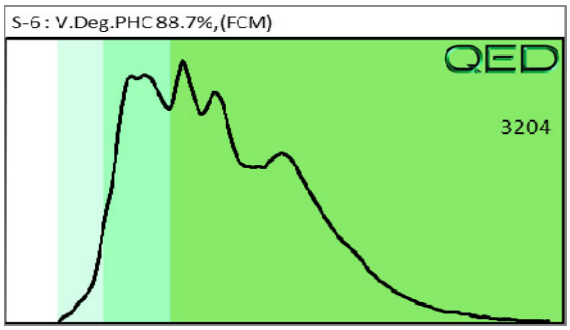
Project: NCDOT-5833 P015

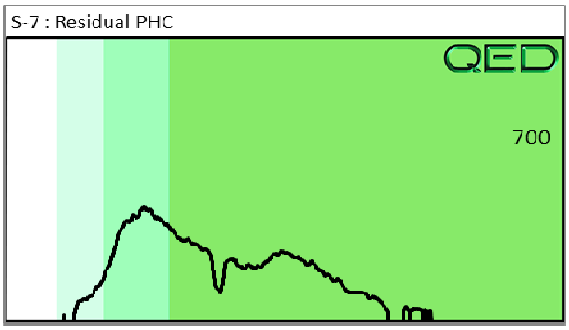
Tuesday, November 9, 2021

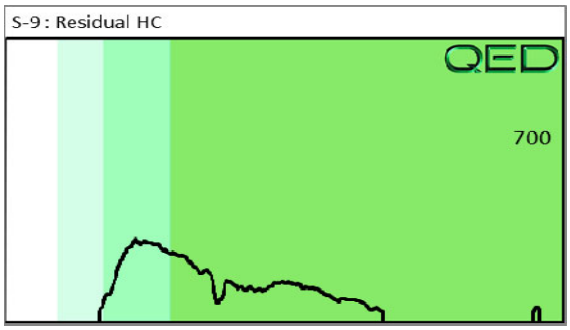












Client Name:	Seramur & Associates
Address:	165 Knoll Drive Boone, NC, 28607
Contact:	Keith Seramur
Project Ref.:	NCDOT B-5833 P015
Email:	seramur@icloud.com
Phone #:	(828)-773-0499
Collected by:	Joey Anderson Brooke Steenwyk

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 UVF sample will be analyzed for total BTEX, GRO, DRO, TPH, PAH total aromatics and BaP. Standard GC Analyses are for BTEX and Chlorinated Solvents: VC, 1,1 DCE, 1,2 cis DCE, 1,2 trans DCE, TCE, and PCE. Specify target analytes in the space provided below.

Sample Collection Date/Time	TAT Requested 24 Hour	TAT Requested 48 Hour	Analysis Type UVF	Analysis Type GC	Initials	Sample ID	Total Wt.	Tare Wt.	Sample Wt.
11/9/21 1814		X	X		BS	S-1	50.6	40.5	10.1
11/9/21 1816		X	X		BS	S-3	53.0	40.4	12.6
11/9/21 1818		X	X		BS	S-5	52.6	40.4	12.2
11/9/21 1819		X	X		BS	S-6	51.6	40.5	11.1
11/9/21 1821		X	X		BS	S-7	52.2	40.4	11.8
11/9/21 1823		X	X		BS	S-9	52.5	40.2	12.3

COMMENTS/REQUESTS:

TARGET GC/UVF ANALYTES:

Relinquished by		Accepted by	Date/Time
	11/10/21 10:30	MM 11/15/21	1250
Relinquished by		Accepted by	Date/Time

RED Lab USE ONLY

Ref. No 25

Waypoint ANALYTICAL
449 Springbrook Rd, Charlotte, NC 28217
Main 704.529.6364
www.waypointanalytical.com

11/22/2021

Keith C. Seramur PGPC
165 Knoll Dr.
Boone, NC, 28607

Ref: Analytical Testing
Lab Report Number: 21-316-0009
Client Project Description: NCDOT B-5833

Waypoint Analytical, LLC (Charlotte) received sample(s) on 11/12/2021 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) unless otherwise indicated.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Angela D Overcash
Senior Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.

449 Springbrook Rd, Charlotte, NC 28217
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Certification Summary

Laboratory ID: WP CNC: Waypoint Analytical Carolina, Inc. (C), Charlotte, NC

State	Program	Lab ID	Expiration Date
North Carolina	State Program	37735	07/31/2022
North Carolina	State Program	402	12/31/2021
South Carolina	State Program	99012	07/31/2022
South Carolina	State Program	99012	12/31/2021

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Sample Summary Table

Report Number: **21-316-0009**

Client Project Description: **NCDOT B-5833**

Lab No	Client Sample ID	Matrix	Date Collected	Date Received
99456	MW-5	Aqueous	11/10/2021 14:03	11/12/2021 12:32
99457	MW-9	Aqueous	11/10/2021 14:58	11/12/2021 12:32

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Summary of Detected Analytes

Project: NCDOT B-5833

Report Number: 21-316-0009

Client Sample ID / Method	Lab Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
MW-9	**V 99457**					
6200B	Methyl tert-butyl ether (MTBE)	0.378	µg/L	0.140	11/17/2021 16:26	J

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Client: Keith C. Seramur PGPC
Project: NCDOT B-5833
Lab Report Number: 21-316-0009
Date: 11/22/2021

CASE NARRATIVE

625.1 - Base/Neutrals and Acids by GC/MS Method 625.1
Sample 99457 (MW-9)
Analyte: 2-Fluorophenol
QC Batch No: V11909/V11658
Surrogate(s) were flagged for recoveries in the associated project sample. During the extraction step, the extraction technician noted that a significant emulsion formed. Batch QC samples (Method Blank and Laboratory Control Samples) all showed surrogate recoveries within QC limits, indicating that the biased recoveries were due to the sample matrix.

Analyte: Benzoic Acid
QC Batch No: V11909/V11658
Analyte was flagged for 0% recovery in the LCS due to the result being below the MQL. The actual result was 2.17 ug/L which calculates to a recovery of 4.3% which is below the acceptable recovery range.

Analyte: Benzoic Acid
QC Batch No: V11909/V11658
Analyte was flagged for 0% recovery in the LCSD due to the result being below the MQL. The actual result was 1.35 ug/L which calculates to a recovery of 2.68% which is below the acceptable recovery range.

Analyte: Hexachlorobutadiene
QC Batch No: V11909/V11658
Analyte was flagged for 0% recovery in the LCSD due to the result being below the MQL. The actual result was 18.9 ug/L which calculates to a recovery of 37.8% which is within the acceptable recovery range.

Analyte: Hexachlorobutadiene
QC Batch No: V11909/V11658
Analyte was flagged for 0% recovery in the LCS due to the result being below the MQL. The actual result was 14.9 ug/L which calculates to a recovery of 29.7% which is within the acceptable recovery range.

Analyte: Hexachlorocyclopentadiene
QC Batch No: V11909/V11658
Analyte was flagged for 0% recovery in the LCS due to the result being below the MQL. The actual result was 15.7 ug/L which calculates to a recovery of 31.4% which is below the acceptable recovery range.

Analyte: Hexachlorocyclopentadiene
QC Batch No: V11909/V11658
Analyte was flagged for 0% recovery in the LCSD due to the result being below the MQL. The actual result was 18.1 ug/L which calculates to a recovery of 36% which is within the acceptable recovery range.

Analyte: Pentachlorophenol
QC Batch No: V11909/V11658
Analyte was flagged for 0% recovery in the LCS due to the result being below the MQL. The actual result was 44 ug/L which calculates to a recovery of 88% which is within the acceptable recovery range.

Analyte: Pentachlorophenol

QC Batch No: V11909/V11658
Analyte was flagged for 0% recovery in the LCSD due to the result being below the MQL. The actual result was 41.3 ug/L which calculates to a recovery of 82.5% which is within the acceptable recovery range.

Sample 99457 (MW-9)
Analyte: Phenol-d5
QC Batch No: V11909/V11658
Surrogate(s) were flagged for recoveries in the associated project sample. During the extraction step, the extraction technician noted that a significant emulsion formed. Batch QC samples (Method Blank and Laboratory Control Samples) all showed surrogate recoveries within QC limits, indicating that the biased recoveries were due to the sample matrix.

Volatile Organic Compounds - GC/MS Method 6200B
Analyte: Chloromethane
QC Batch No: V11779/V11778
Relative Percent Difference (RPD) for the duplicate analysis was outside of the allowable QC limits.

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01120
Keith C. Seramur PGPC
165 Knoll Dr.

Boone , NC 28607

Project NCDOT B-5833

Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99456**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:03**

Analytical Method: 6200B **Prep Batch(es):** **V11778** 11/17/21 09:00
Prep Method: 6200 PT

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Acetone	<1.80	µg/L	1.80	10.0	1	11/17/21 16:02	JLB	V11779
Benzene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:02	JLB	V11779
Bromobenzene	<0.210	µg/L	0.210	0.500	1	11/17/21 16:02	JLB	V11779
Bromochloromethane	<0.420	µg/L	0.420	1.00	1	11/17/21 16:02	JLB	V11779
Bromodichloromethane	<0.160	µg/L	0.160	0.500	1	11/17/21 16:02	JLB	V11779
Bromoform	<1.50	µg/L	1.50	5.00	1	11/17/21 16:02	JLB	V11779
Bromomethane	<0.280	µg/L	0.280	1.00	1	11/17/21 16:02	JLB	V11779
n-Butylbenzene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:02	JLB	V11779
sec-Butyl benzene	<0.200	µg/L	0.200	0.500	1	11/17/21 16:02	JLB	V11779
tert-Butyl benzene	<0.920	µg/L	0.920	2.00	1	11/17/21 16:02	JLB	V11779
Carbon Tetrachloride	<0.180	µg/L	0.180	0.500	1	11/17/21 16:02	JLB	V11779
Chlorobenzene	<0.190	µg/L	0.190	0.500	1	11/17/21 16:02	JLB	V11779
Chlorodibromomethane	<0.190	µg/L	0.190	0.500	1	11/17/21 16:02	JLB	V11779
Chloroethane	<0.430	µg/L	0.430	1.00	1	11/17/21 16:02	JLB	V11779
Chloroform	<0.220	µg/L	0.220	0.500	1	11/17/21 16:02	JLB	V11779
Chloromethane	<0.220	µg/L	0.220	0.500	1	11/17/21 16:02	JLB	V11779
2-Chlorotoluene	<0.200	µg/L	0.200	0.500	1	11/17/21 16:02	JLB	V11779
4-Chlorotoluene	<0.200	µg/L	0.200	0.500	1	11/17/21 16:02	JLB	V11779
Di-Isopropyl Ether (DIPE)	<0.500	µg/L	0.500	0.500	1	11/17/21 16:02	JLB	V11779
1,2-Dibromo-3-Chloropropane	<1.10	µg/L	1.10	2.00	1	11/17/21 16:02	JLB	V11779
1,2-Dibromoethane	<0.200	µg/L	0.200	0.500	1	11/17/21 16:02	JLB	V11779
Dibromomethane	<0.230	µg/L	0.230	0.500	1	11/17/21 16:02	JLB	V11779

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Boone , NC 28607

Project NCDOT B-5833

Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99456**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:03**

Analytical Method: 6200B **Prep Batch(es):** **V11778** 11/17/21 09:00
Prep Method: 6200 PT

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
1,2-Dichlorobenzene	<0.220	µg/L	0.220	0.500	1	11/17/21 16:02	JLB	V11779
1,3-Dichlorobenzene	<0.190	µg/L	0.190	0.500	1	11/17/21 16:02	JLB	V11779
1,4-Dichlorobenzene	<0.210	µg/L	0.210	0.500	1	11/17/21 16:02	JLB	V11779
Dichlorodifluoromethane	<1.20	µg/L	1.20	5.00	1	11/17/21 16:02	JLB	V11779
1,1-Dichloroethane	<0.240	µg/L	0.240	0.500	1	11/17/21 16:02	JLB	V11779
1,2-Dichloroethane	<0.150	µg/L	0.150	0.500	1	11/17/21 16:02	JLB	V11779
1,1-Dichloroethene	<0.150	µg/L	0.150	0.500	1	11/17/21 16:02	JLB	V11779
cis-1,2-Dichloroethene	<0.200	µg/L	0.200	0.500	1	11/17/21 16:02	JLB	V11779
trans-1,2-Dichloroethene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:02	JLB	V11779
1,2-Dichloropropane	<0.190	µg/L	0.190	0.500	1	11/17/21 16:02	JLB	V11779
1,3-Dichloropropane	<0.130	µg/L	0.130	0.500	1	11/17/21 16:02	JLB	V11779
2,2-Dichloropropane	<0.210	µg/L	0.210	2.00	1	11/17/21 16:02	JLB	V11779
1,1-Dichloropropene	<0.200	µg/L	0.200	0.500	1	11/17/21 16:02	JLB	V11779
cis-1,3-Dichloropropene	<0.210	µg/L	0.210	0.500	1	11/17/21 16:02	JLB	V11779
trans-1,3-Dichloropropene	<0.150	µg/L	0.150	0.500	1	11/17/21 16:02	JLB	V11779
Ethanol	<42.0	µg/L	42.0	200	1	11/17/21 16:02	JLB	V11779
Ethylbenzene	<0.170	µg/L	0.170	0.500	1	11/17/21 16:02	JLB	V11779
Hexachlorobutadiene	<0.350	µg/L	0.350	3.00	1	11/17/21 16:02	JLB	V11779
2-Hexanone	<0.380	µg/L	0.380	1.00	1	11/17/21 16:02	JLB	V11779
Isopropylbenzene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:02	JLB	V11779
4-Isopropyl toluene	<0.089	µg/L	0.089	0.500	1	11/17/21 16:02	JLB	V11779
Methyl Ethyl Ketone (MEK)	<0.710	µg/L	0.710	5.00	1	11/17/21 16:02	JLB	V11779

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Boone , NC 28607

Project NCDOT B-5833

Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99456**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:03**

Analytical Method: 6200B **Prep Batch(es):** **V11778** 11/17/21 09:00
Prep Method: 6200 PT

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Methyl tert-butyl ether (MTBE)	<0.140	µg/L	0.140	1.00	1	11/17/21 16:02	JLB	V11779
4-Methyl-2-Pentanone	<0.078	µg/L	0.078	1.00	1	11/17/21 16:02	JLB	V11779
Methylene Chloride	<0.330	µg/L	0.330	2.00	1	11/17/21 16:02	JLB	V11779
Naphthalene	<0.470	µg/L	0.470	1.00	1	11/17/21 16:02	JLB	V11779
n-Propylbenzene	<0.190	µg/L	0.190	0.500	1	11/17/21 16:02	JLB	V11779
Styrene	<0.220	µg/L	0.220	0.500	1	11/17/21 16:02	JLB	V11779
1,1,1,2-Tetrachloroethane	<0.160	µg/L	0.160	0.500	1	11/17/21 16:02	JLB	V11779
1,1,2,2-Tetrachloroethane	<0.160	µg/L	0.160	0.500	1	11/17/21 16:02	JLB	V11779
Tetrachloroethene	<0.220	µg/L	0.220	0.500	1	11/17/21 16:02	JLB	V11779
Toluene	<0.220	µg/L	0.220	0.500	1	11/17/21 16:02	JLB	V11779
1,2,3-Trichlorobenzene	<0.380	µg/L	0.380	0.500	1	11/17/21 16:02	JLB	V11779
1,2,4-Trichlorobenzene	<0.310	µg/L	0.310	0.500	1	11/17/21 16:02	JLB	V11779
1,1,1-Trichloroethane	<0.160	µg/L	0.160	0.500	1	11/17/21 16:02	JLB	V11779
1,1,2-Trichloroethane	<0.096	µg/L	0.096	0.500	1	11/17/21 16:02	JLB	V11779
Trichloroethene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:02	JLB	V11779
Trichlorofluoromethane	<0.180	µg/L	0.180	0.500	1	11/17/21 16:02	JLB	V11779
1,2,3-Trichloropropane	<0.270	µg/L	0.270	0.500	1	11/17/21 16:02	JLB	V11779
1,2,4-Trimethylbenzene	<0.190	µg/L	0.190	0.500	1	11/17/21 16:02	JLB	V11779
1,3,5-Trimethylbenzene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:02	JLB	V11779
Vinyl Acetate	<1.00	µg/L	1.00	5.00	1	11/17/21 16:02	JLB	V11779
Vinyl Chloride	<0.170	µg/L	0.170	0.500	1	11/17/21 16:02	JLB	V11779
o-Xylene	<0.210	µg/L	0.210	0.500	1	11/17/21 16:02	JLB	V11779

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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01120
Keith C. Seramur PGPC
165 Knoll Dr.

Boone , NC 28607

Project NCDOT B-5833

Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99456**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:03**

Analytical Method: 6200B **Prep Batch(es):** **V11778** 11/17/21 09:00
Prep Method: 6200 PT

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
m,p-Xylene	<0.420	µg/L	0.420	1.00	1	11/17/21 16:02	JLB	V11779
Xylene (Total)	<0.21	µg/L	0.210	0.500	1	11/17/21 16:02		V11779
Surrogate: 4-Bromofluorobenzene	103		Limits: 70-130%		1	11/17/21 16:02	JLB	V11779
Surrogate: Dibromofluoromethane	93.8		Limits: 70-130%		1	11/17/21 16:02	JLB	V11779
Surrogate: 1,2-Dichloroethane - d4	87.8		Limits: 70-130%		1	11/17/21 16:02	JLB	V11779
Surrogate: Toluene-d8	96.8		Limits: 70-130%		1	11/17/21 16:02	JLB	V11779

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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165 Knoll Dr.

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Project NCDOT B-5833

Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99456**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:03**

Analytical Method: MADEP-VPH **Prep Batch(es):** **V11588** 11/15/21 08:00
Prep Method: MAVPH (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic C5-C8	<11.5	µg/L	11.5	50.0	1	11/15/21 13:19	TBL	V11589
Aliphatic C9-C12	<25.8	µg/L	25.8	50.0	1	11/15/21 13:19	TBL	V11589
Aromatic C9-C10	<4.02	µg/L	4.02	50.0	1	11/15/21 13:19	TBL	V11589
Surrogate: 2,5-Dibromotoluene (FID)	105		Limits: 70-130%		1	11/15/21 13:19	TBL	V11589
Surrogate: 2,5-Dibromotoluene (PID)	113		Limits: 70-130%		1	11/15/21 13:19	TBL	V11589

Qualifiers/ Definitions				
	*	Outside QC Limit	DF	Dilution Factor
	J	Estimated value	MQL	Method Quantitation Limit

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165 Knoll Dr.

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Project NCDOT B-5833

Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99457**
Sample ID : **MW-9**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:58**

Analytical Method: 6200B **Prep Batch(es):** **V11778** 11/17/21 09:00
Prep Method: 6200 PT

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Acetone	<1.80	µg/L	1.80	10.0	1	11/17/21 16:26	JLB	V11779
Benzene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:26	JLB	V11779
Bromobenzene	<0.210	µg/L	0.210	0.500	1	11/17/21 16:26	JLB	V11779
Bromochloromethane	<0.420	µg/L	0.420	1.00	1	11/17/21 16:26	JLB	V11779
Bromodichloromethane	<0.160	µg/L	0.160	0.500	1	11/17/21 16:26	JLB	V11779
Bromoform	<1.50	µg/L	1.50	5.00	1	11/17/21 16:26	JLB	V11779
Bromomethane	<0.280	µg/L	0.280	1.00	1	11/17/21 16:26	JLB	V11779
n-Butylbenzene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:26	JLB	V11779
sec-Butyl benzene	<0.200	µg/L	0.200	0.500	1	11/17/21 16:26	JLB	V11779
tert-Butyl benzene	<0.920	µg/L	0.920	2.00	1	11/17/21 16:26	JLB	V11779
Carbon Tetrachloride	<0.180	µg/L	0.180	0.500	1	11/17/21 16:26	JLB	V11779
Chlorobenzene	<0.190	µg/L	0.190	0.500	1	11/17/21 16:26	JLB	V11779
Chlorodibromomethane	<0.190	µg/L	0.190	0.500	1	11/17/21 16:26	JLB	V11779
Chloroethane	<0.430	µg/L	0.430	1.00	1	11/17/21 16:26	JLB	V11779
Chloroform	<0.220	µg/L	0.220	0.500	1	11/17/21 16:26	JLB	V11779
Chloromethane	<0.220	µg/L	0.220	0.500	1	11/17/21 16:26	JLB	V11779
2-Chlorotoluene	<0.200	µg/L	0.200	0.500	1	11/17/21 16:26	JLB	V11779
4-Chlorotoluene	<0.200	µg/L	0.200	0.500	1	11/17/21 16:26	JLB	V11779
Di-Isopropyl Ether (DIPE)	<0.500	µg/L	0.500	0.500	1	11/17/21 16:26	JLB	V11779
1,2-Dibromo-3-Chloropropane	<1.10	µg/L	1.10	2.00	1	11/17/21 16:26	JLB	V11779
1,2-Dibromoethane	<0.200	µg/L	0.200	0.500	1	11/17/21 16:26	JLB	V11779
Dibromomethane	<0.230	µg/L	0.230	0.500	1	11/17/21 16:26	JLB	V11779

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99457**
Sample ID : **MW-9**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:58**

Analytical Method: 6200B **Prep Batch(es):** **V11778** 11/17/21 09:00
Prep Method: 6200 PT

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
1,2-Dichlorobenzene	<0.220	µg/L	0.220	0.500	1	11/17/21 16:26	JLB	V11779
1,3-Dichlorobenzene	<0.190	µg/L	0.190	0.500	1	11/17/21 16:26	JLB	V11779
1,4-Dichlorobenzene	<0.210	µg/L	0.210	0.500	1	11/17/21 16:26	JLB	V11779
Dichlorodifluoromethane	<1.20	µg/L	1.20	5.00	1	11/17/21 16:26	JLB	V11779
1,1-Dichloroethane	<0.240	µg/L	0.240	0.500	1	11/17/21 16:26	JLB	V11779
1,2-Dichloroethane	<0.150	µg/L	0.150	0.500	1	11/17/21 16:26	JLB	V11779
1,1-Dichloroethene	<0.150	µg/L	0.150	0.500	1	11/17/21 16:26	JLB	V11779
cis-1,2-Dichloroethene	<0.200	µg/L	0.200	0.500	1	11/17/21 16:26	JLB	V11779
trans-1,2-Dichloroethene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:26	JLB	V11779
1,2-Dichloropropane	<0.190	µg/L	0.190	0.500	1	11/17/21 16:26	JLB	V11779
1,3-Dichloropropane	<0.130	µg/L	0.130	0.500	1	11/17/21 16:26	JLB	V11779
2,2-Dichloropropane	<0.210	µg/L	0.210	2.00	1	11/17/21 16:26	JLB	V11779
1,1-Dichloropropene	<0.200	µg/L	0.200	0.500	1	11/17/21 16:26	JLB	V11779
cis-1,3-Dichloropropene	<0.210	µg/L	0.210	0.500	1	11/17/21 16:26	JLB	V11779
trans-1,3-Dichloropropene	<0.150	µg/L	0.150	0.500	1	11/17/21 16:26	JLB	V11779
Ethanol	<42.0	µg/L	42.0	200	1	11/17/21 16:26	JLB	V11779
Ethylbenzene	<0.170	µg/L	0.170	0.500	1	11/17/21 16:26	JLB	V11779
Hexachlorobutadiene	<0.350	µg/L	0.350	3.00	1	11/17/21 16:26	JLB	V11779
2-Hexanone	<0.380	µg/L	0.380	1.00	1	11/17/21 16:26	JLB	V11779
Isopropylbenzene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:26	JLB	V11779
4-Isopropyl toluene	<0.089	µg/L	0.089	0.500	1	11/17/21 16:26	JLB	V11779
Methyl Ethyl Ketone (MEK)	<0.710	µg/L	0.710	5.00	1	11/17/21 16:26	JLB	V11779

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99457**
Sample ID : **MW-9**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:58**

Analytical Method: 6200B **Prep Batch(es):** **V11778** 11/17/21 09:00
Prep Method: 6200 PT

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Methyl tert-butyl ether (MTBE)	**0.378 J**	µg/L	0.140	1.00	1	11/17/21 16:26	JLB	V11779
4-Methyl-2-Pentanone	<0.078	µg/L	0.078	1.00	1	11/17/21 16:26	JLB	V11779
Methylene Chloride	<0.330	µg/L	0.330	2.00	1	11/17/21 16:26	JLB	V11779
Naphthalene	<0.470	µg/L	0.470	1.00	1	11/17/21 16:26	JLB	V11779
n-Propylbenzene	<0.190	µg/L	0.190	0.500	1	11/17/21 16:26	JLB	V11779
Styrene	<0.220	µg/L	0.220	0.500	1	11/17/21 16:26	JLB	V11779
1,1,1,2-Tetrachloroethane	<0.160	µg/L	0.160	0.500	1	11/17/21 16:26	JLB	V11779
1,1,2,2-Tetrachloroethane	<0.160	µg/L	0.160	0.500	1	11/17/21 16:26	JLB	V11779
Tetrachloroethene	<0.220	µg/L	0.220	0.500	1	11/17/21 16:26	JLB	V11779
Toluene	<0.220	µg/L	0.220	0.500	1	11/17/21 16:26	JLB	V11779
1,2,3-Trichlorobenzene	<0.380	µg/L	0.380	0.500	1	11/17/21 16:26	JLB	V11779
1,2,4-Trichlorobenzene	<0.310	µg/L	0.310	0.500	1	11/17/21 16:26	JLB	V11779
1,1,1-Trichloroethane	<0.160	µg/L	0.160	0.500	1	11/17/21 16:26	JLB	V11779
1,1,2-Trichloroethane	<0.096	µg/L	0.096	0.500	1	11/17/21 16:26	JLB	V11779
Trichloroethene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:26	JLB	V11779
Trichlorofluoromethane	<0.180	µg/L	0.180	0.500	1	11/17/21 16:26	JLB	V11779
1,2,3-Trichloropropane	<0.270	µg/L	0.270	0.500	1	11/17/21 16:26	JLB	V11779
1,2,4-Trimethylbenzene	<0.190	µg/L	0.190	0.500	1	11/17/21 16:26	JLB	V11779
1,3,5-Trimethylbenzene	<0.180	µg/L	0.180	0.500	1	11/17/21 16:26	JLB	V11779
Vinyl Acetate	<1.00	µg/L	1.00	5.00	1	11/17/21 16:26	JLB	V11779
Vinyl Chloride	<0.170	µg/L	0.170	0.500	1	11/17/21 16:26	JLB	V11779
o-Xylene	<0.210	µg/L	0.210	0.500	1	11/17/21 16:26	JLB	V11779

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99457**
Sample ID : **MW-9**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:58**

Analytical Method: 6200B **Prep Batch(es):** **V11778** 11/17/21 09:00
Prep Method: 6200 PT

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
m,p-Xylene	<0.420	µg/L	0.420	1.00	1	11/17/21 16:26	JLB	V11779
Xylene (Total)	<0.21	µg/L	0.210	0.500	1	11/17/21 16:26		V11779
Surrogate: 4-Bromofluorobenzene	95.4		Limits: 70-130%		1	11/17/21 16:26	JLB	V11779
Surrogate: Dibromofluoromethane	102		Limits: 70-130%		1	11/17/21 16:26	JLB	V11779
Surrogate: 1,2-Dichloroethane - d4	97.8		Limits: 70-130%		1	11/17/21 16:26	JLB	V11779
Surrogate: Toluene-d8	98.4		Limits: 70-130%		1	11/17/21 16:26	JLB	V11779

Analytical Method: 625.1 **Prep Batch(es):** **V11658** 11/16/21 10:46
Prep Method: 625.1 (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Acenaphthene	<7.12	µg/L	7.12	10.0	1	11/17/21 21:25	JMV	V11909
Acenaphthylene	<6.94	µg/L	6.94	20.0	1	11/17/21 21:25	JMV	V11909
Anthracene	<6.57	µg/L	6.57	10.0	1	11/17/21 21:25	JMV	V11909
Benzidine	<5.08	µg/L	5.08	10.0	1	11/17/21 21:25	JMV	V11909
Benzo(a)anthracene	<6.65	µg/L	6.65	10.0	1	11/17/21 21:25	JMV	V11909
Benzo(a)pyrene	<4.67	µg/L	4.67	10.0	1	11/17/21 21:25	JMV	V11909
Benzo(b)fluoranthene	<4.52	µg/L	4.52	10.0	1	11/17/21 21:25	JMV	V11909
Benzo(g,h,i)perylene	<4.24	µg/L	4.24	10.0	1	11/17/21 21:25	JMV	V11909
Benzo(k)fluoranthene	<4.86	µg/L	4.86	10.0	1	11/17/21 21:25	JMV	V11909
Benzoic Acid	<11.5	µg/L	11.5	50.0	1	11/17/21 21:25	JMV	V11909
Benzyl alcohol	<8.60	µg/L	8.60	10.0	1	11/17/21 21:25	JMV	V11909
Bis(2-Chloroethoxy)methane	<5.67	µg/L	5.67	10.0	1	11/17/21 21:25	JMV	V11909

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project NCDOT B-5833

Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99457**
Sample ID : **MW-9**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:58**

Analytical Method: 625.1 **Prep Batch(es):** **V11658** 11/16/21 10:46
Prep Method: 625.1 (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Bis(2-Chloroethyl)ether	<7.30	µg/L	7.30	10.0	1	11/17/21 21:25	JMV	V11909
Bis(2-Chloroisopropyl)ether	<6.59	µg/L	6.59	10.0	1	11/17/21 21:25	JMV	V11909
Bis(2-ethylhexyl)phthalate	<8.80	µg/L	8.80	10.0	1	11/17/21 21:25	JMV	V11909
4-Bromophenyl phenyl ether	<6.26	µg/L	6.26	20.0	1	11/17/21 21:25	JMV	V11909
Butyl benzyl phthalate	<4.53	µg/L	4.53	10.0	1	11/17/21 21:25	JMV	V11909
4-Chloro-3-methylphenol	<5.23	µg/L	5.23	10.0	1	11/17/21 21:25	JMV	V11909
2-Chloronaphthalene	<7.38	µg/L	7.38	20.0	1	11/17/21 21:25	JMV	V11909
2-Chlorophenol	<6.58	µg/L	6.58	10.0	1	11/17/21 21:25	JMV	V11909
4-Chlorophenyl phenyl ether	<6.99	µg/L	6.99	20.0	1	11/17/21 21:25	JMV	V11909
Chrysene	<5.38	µg/L	5.38	10.0	1	11/17/21 21:25	JMV	V11909
Dibenz(a,h)anthracene	<6.01	µg/L	6.01	20.0	1	11/17/21 21:25	JMV	V11909
Dibenzofuran	<5.08	µg/L	5.08	20.0	1	11/17/21 21:25	JMV	V11909
1,2-Dichlorobenzene	<5.91	µg/L	5.91	10.0	1	11/17/21 21:25	JMV	V11909
1,3-Dichlorobenzene	<5.83	µg/L	5.83	10.0	1	11/17/21 21:25	JMV	V11909
1,4-Dichlorobenzene	<5.91	µg/L	5.91	10.0	1	11/17/21 21:25	JMV	V11909
3,3'-Dichlorobenzidine	<6.60	µg/L	6.60	10.0	1	11/17/21 21:25	JMV	V11909
2,4-Dichlorophenol	<5.54	µg/L	5.54	10.0	1	11/17/21 21:25	JMV	V11909
Diethyl phthalate	<9.35	µg/L	9.35	20.0	1	11/17/21 21:25	JMV	V11909
Dimethyl phthalate	<7.82	µg/L	7.82	10.0	1	11/17/21 21:25	JMV	V11909
2,4-Dimethylphenol	<10.9	µg/L	10.9	20.0	1	11/17/21 21:25	JMV	V11909
Di-n-butyl phthalate	<7.35	µg/L	7.35	10.0	1	11/17/21 21:25	JMV	V11909
4,6-Dinitro-2-methylphenol	<9.92	µg/L	9.92	30.0	1	11/17/21 21:25	JMV	V11909

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project NCDOT B-5833

Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99457**
Sample ID : **MW-9**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:58**

Analytical Method: 625.1 **Prep Batch(es):** **V11658** 11/16/21 10:46
Prep Method: 625.1 (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
2,4-Dinitrophenol	<10.6	µg/L	10.6	30.0	1	11/17/21 21:25	JMV	V11909
2,4-Dinitrotoluene	<5.20	µg/L	5.20	10.0	1	11/17/21 21:25	JMV	V11909
2,6-Dinitrotoluene	<5.90	µg/L	5.90	20.0	1	11/17/21 21:25	JMV	V11909
Di-n-Octyl Phthalate	<5.01	µg/L	5.01	10.0	1	11/17/21 21:25	JMV	V11909
Fluoranthene	<6.03	µg/L	6.03	10.0	1	11/17/21 21:25	JMV	V11909
Fluorene	<7.27	µg/L	7.27	10.0	1	11/17/21 21:25	JMV	V11909
Hexachlorobenzene	<5.75	µg/L	5.75	20.0	1	11/17/21 21:25	JMV	V11909
Hexachlorobutadiene	<5.88	µg/L	5.88	20.0	1	11/17/21 21:25	JMV	V11909
Hexachlorocyclopentadiene	<5.90	µg/L	5.90	20.0	1	11/17/21 21:25	JMV	V11909
Hexachloroethane	<5.22	µg/L	5.22	10.0	1	11/17/21 21:25	JMV	V11909
Indeno(1,2,3-cd)pyrene	<6.20	µg/L	6.20	10.0	1	11/17/21 21:25	JMV	V11909
Isophorone	<6.71	µg/L	6.71	10.0	1	11/17/21 21:25	JMV	V11909
Naphthalene	<7.88	µg/L	7.88	10.0	1	11/17/21 21:25	JMV	V11909
Nitrobenzene	<7.88	µg/L	7.88	10.0	1	11/17/21 21:25	JMV	V11909
2-Nitrophenol	<5.49	µg/L	5.49	10.0	1	11/17/21 21:25	JMV	V11909
4-Nitrophenol	<2.81	µg/L	2.81	10.0	1	11/17/21 21:25	JMV	V11909
N-Nitrosodiphenylamine	<10.9	µg/L	10.9	20.0	1	11/17/21 21:25	JMV	V11909
N-Nitroso-di-n-propylamine	<8.10	µg/L	8.10	20.0	1	11/17/21 21:25	JMV	V11909
Pentachlorophenol	<9.73	µg/L	9.73	50.0	1	11/17/21 21:25	JMV	V11909
Phenanthrene	<6.34	µg/L	6.34	10.0	1	11/17/21 21:25	JMV	V11909
Phenol	<2.86	µg/L	2.86	10.0	1	11/17/21 21:25	JMV	V11909
Pyrene	<5.42	µg/L	5.42	10.0	1	11/17/21 21:25	JMV	V11909

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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01120
Keith C. Seramur PGPC
165 Knoll Dr.

Boone , NC 28607

Project NCDOT B-5833

Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99457**
Sample ID : **MW-9**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:58**

Analytical Method: 625.1 **Prep Batch(es):** **V11658** 11/16/21 10:46
Prep Method: 625.1 (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
1,2,4-Trichlorobenzene	<6.25	µg/L	6.25	10.0	1	11/17/21 21:25	JMV	V11909
2,4,6-Trichlorophenol	<6.29	µg/L	6.29	20.0	1	11/17/21 21:25	JMV	V11909
Surrogate: Phenol-d5	**1.97** *		Limits: 10-63%		1	11/17/21 21:25	JMV	V11909
Surrogate: 2-Fluorobiphenyl	81.2		Limits: 49-118%		1	11/17/21 21:25	JMV	V11909
Surrogate: 2-Fluorophenol	**5.62** *		Limits: 22-84%		1	11/17/21 21:25	JMV	V11909
Surrogate: Nitrobenzene-d5	71.4		Limits: 43-123%		1	11/17/21 21:25	JMV	V11909
Surrogate: 4-Terphenyl-d14	86.4		Limits: 49-151%		1	11/17/21 21:25	JMV	V11909
Surrogate: 2,4,6-Tribromophenol	**10.7** *		Limits: 31-144%		1	11/17/21 21:25	JMV	V11909

Qualifiers/ Definitions

*	Outside QC Limit	DF	Dilution Factor
J	Estimated value	MQL	Method Quantitation Limit

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Project NCDOT B-5833

Information :

Report Date : 11/22/2021
Received : 11/12/2021

Report Number : **21-316-0009**

REPORT OF ANALYSIS

Lab No : **99457**
Sample ID : **MW-9**

Matrix: **Aqueous**
Sampled: **11/10/2021 14:58**

Analytical Method: MADEP-VPH **Prep Batch(es):** **V11588** 11/15/21 08:00
Prep Method: MAVPH (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic C5-C8	<11.5	µg/L	11.5	50.0	1	11/15/21 13:43	TBL	V11589
Aliphatic C9-C12	<25.8	µg/L	25.8	50.0	1	11/15/21 13:43	TBL	V11589
Aromatic C9-C10	<4.02	µg/L	4.02	50.0	1	11/15/21 13:43	TBL	V11589
Surrogate: 2,5-Dibromotoluene (FID)	98.4		Limits: 70-130%		1	11/15/21 13:43	TBL	V11589
Surrogate: 2,5-Dibromotoluene (PID)	105		Limits: 70-130%		1	11/15/21 13:43	TBL	V11589

Qualifiers/ Definitions				
	*	Outside QC Limit	DF	Dilution Factor
	J	Estimated value	MQL	Method Quantitation Limit

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833
Report No: 21-316-0009

QC Prep: V11778
QC Prep Batch Method: 6200 PT
QC Analytical Batch(es): V11779
Analysis Method: 6200B
Analysis Description: Volatile Organic Compounds - GC/MS

Lab Reagent Blank LRB-V11778 Matrix: AQU
Associated Lab Samples: 99456, 99457

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
Acetone	µg/L	<1.80	1.80	10.0	11/17/21 12:21		
Benzene	µg/L	<0.180	0.180	0.500	11/17/21 12:21		
Bromobenzene	µg/L	<0.210	0.210	0.500	11/17/21 12:21		
Bromochloromethane	µg/L	<0.420	0.420	1.00	11/17/21 12:21		
Bromodichloromethane	µg/L	<0.160	0.160	0.500	11/17/21 12:21		
Bromoform	µg/L	<1.50	1.50	5.00	11/17/21 12:21		
Bromomethane	µg/L	<0.280	0.280	1.00	11/17/21 12:21		
n-Butylbenzene	µg/L	<0.180	0.180	0.500	11/17/21 12:21		
sec-Butyl benzene	µg/L	<0.200	0.200	0.500	11/17/21 12:21		
tert-Butyl benzene	µg/L	<0.920	0.920	2.00	11/17/21 12:21		
Carbon Tetrachloride	µg/L	<0.180	0.180	0.500	11/17/21 12:21		
Chlorobenzene	µg/L	<0.190	0.190	0.500	11/17/21 12:21		
Chlorodibromomethane	µg/L	<0.190	0.190	0.500	11/17/21 12:21		
Chloroethane	µg/L	<0.430	0.430	1.00	11/17/21 12:21		
Chloroform	µg/L	<0.220	0.220	0.500	11/17/21 12:21		
Chloromethane	µg/L	<0.220	0.220	0.500	11/17/21 12:21		
2-Chlorotoluene	µg/L	<0.200	0.200	0.500	11/17/21 12:21		
4-Chlorotoluene	µg/L	<0.200	0.200	0.500	11/17/21 12:21		
Di-Isopropyl Ether (DIPE)	µg/L	<0.500	0.500	0.500	11/17/21 12:21		
1,2-Dibromo-3-Chloropropane	µg/L	<1.10	1.10	2.00	11/17/21 12:21		
1,2-Dibromoethane	µg/L	<0.200	0.200	0.500	11/17/21 12:21		
Dibromomethane	µg/L	<0.230	0.230	0.500	11/17/21 12:21		
1,2-Dichlorobenzene	µg/L	<0.220	0.220	0.500	11/17/21 12:21		
1,3-Dichlorobenzene	µg/L	<0.190	0.190	0.500	11/17/21 12:21		
1,4-Dichlorobenzene	µg/L	<0.210	0.210	0.500	11/17/21 12:21		
Dichlorodifluoromethane	µg/L	<1.20	1.20	5.00	11/17/21 12:21		
1,1-Dichloroethane	µg/L	<0.240	0.240	0.500	11/17/21 12:21		

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833
Report No: 21-316-0009

QC Prep: V11778
QC Prep Batch Method: 6200 PT
QC Analytical Batch(es): V11779
Analysis Method: 6200B
Analysis Description: Volatile Organic Compounds - GC/MS

Lab Reagent Blank LRB-V11778 Matrix: AQU
Associated Lab Samples: 99456, 99457

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
1,2-Dichloroethane	µg/L	<0.150	0.150	0.500	11/17/21 12:21		
1,1-Dichloroethene	µg/L	<0.150	0.150	0.500	11/17/21 12:21		
cis-1,2-Dichloroethene	µg/L	<0.200	0.200	0.500	11/17/21 12:21		
trans-1,2-Dichloroethene	µg/L	<0.180	0.180	0.500	11/17/21 12:21		
1,2-Dichloropropane	µg/L	<0.190	0.190	0.500	11/17/21 12:21		
1,3-Dichloropropane	µg/L	<0.130	0.130	0.500	11/17/21 12:21		
2,2-Dichloropropane	µg/L	<0.210	0.210	2.00	11/17/21 12:21		
1,1-Dichloropropene	µg/L	<0.200	0.200	0.500	11/17/21 12:21		
cis-1,3-Dichloropropene	µg/L	<0.210	0.210	0.500	11/17/21 12:21		
trans-1,3-Dichloropropene	µg/L	<0.150	0.150	0.500	11/17/21 12:21		
Ethanol	µg/L	<42.0	42.0	200	11/17/21 12:21		
Ethylbenzene	µg/L	<0.170	0.170	0.500	11/17/21 12:21		
Hexachlorobutadiene	µg/L	<0.350	0.350	3.00	11/17/21 12:21		
2-Hexanone	µg/L	<0.380	0.380	1.00	11/17/21 12:21		
Isopropylbenzene	µg/L	<0.180	0.180	0.500	11/17/21 12:21		
4-Isopropyl toluene	µg/L	<0.089	0.089	0.500	11/17/21 12:21		
Methyl Ethyl Ketone (MEK)	µg/L	<0.710	0.710	5.00	11/17/21 12:21		
Methyl tert-butyl ether (MTBE)	µg/L	<0.140	0.140	1.00	11/17/21 12:21		
4-Methyl-2-Pentanone	µg/L	<0.078	0.078	1.00	11/17/21 12:21		
Methylene Chloride	µg/L	<0.330	0.330	2.00	11/17/21 12:21		
Naphthalene	µg/L	<0.470	0.470	1.00	11/17/21 12:21		
n-Propylbenzene	µg/L	<0.190	0.190	0.500	11/17/21 12:21		
Styrene	µg/L	<0.220	0.220	0.500	11/17/21 12:21		
1,1,1,2-Tetrachloroethane	µg/L	<0.160	0.160	0.500	11/17/21 12:21		
1,1,2,2-Tetrachloroethane	µg/L	<0.160	0.160	0.500	11/17/21 12:21		
Tetrachloroethene	µg/L	<0.220	0.220	0.500	11/17/21 12:21		
Toluene	µg/L	<0.220	0.220	0.500	11/17/21 12:21		

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833
Report No: 21-316-0009

QC Prep: V11778
QC Prep Batch Method: 6200 PT
QC Analytical Batch(es): V11779
Analysis Method: 6200B
Analysis Description: Volatile Organic Compounds - GC/MS

Lab Reagent Blank LRB-V11778 Matrix: AQU
Associated Lab Samples: 99456, 99457

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
1,2,3-Trichlorobenzene	µg/L	<0.380	0.380	0.500	11/17/21 12:21		
1,2,4-Trichlorobenzene	µg/L	<0.310	0.310	0.500	11/17/21 12:21		
1,1,1-Trichloroethane	µg/L	<0.160	0.160	0.500	11/17/21 12:21		
1,1,2-Trichloroethane	µg/L	<0.096	0.096	0.500	11/17/21 12:21		
Trichloroethene	µg/L	<0.180	0.180	0.500	11/17/21 12:21		
Trichlorofluoromethane	µg/L	<0.180	0.180	0.500	11/17/21 12:21		
1,2,3-Trichloropropane	µg/L	<0.270	0.270	0.500	11/17/21 12:21		
1,2,4-Trimethylbenzene	µg/L	<0.190	0.190	0.500	11/17/21 12:21		
1,3,5-Trimethylbenzene	µg/L	<0.180	0.180	0.500	11/17/21 12:21		
Vinyl Acetate	µg/L	<1.00	1.00	5.00	11/17/21 12:21		
Vinyl Chloride	µg/L	<0.170	0.170	0.500	11/17/21 12:21		
o-Xylene	µg/L	<0.210	0.210	0.500	11/17/21 12:21		
m,p-Xylene	µg/L	<0.420	0.420	1.00	11/17/21 12:21		
4-Bromofluorobenzene (S)					11/17/21 12:21	95.8	70-130
Dibromofluoromethane (S)					11/17/21 12:21	97.8	70-130
1,2-Dichloroethane - d4 (S)					11/17/21 12:21	82.2	70-130
Toluene-d8 (S)					11/17/21 12:21	99.8	70-130

Laboratory Control Sample & LCSD LCS-V11778 LCSD-V11778

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Acetone	µg/L	40.0	49.7	51.9	124	130	40-160	4.3	20.0
Benzene	µg/L	20.0	22.0	21.4	110	107	70-130	2.7	20.0
Bromobenzene	µg/L	20.0	20.4	21.5	102	108	70-130	5.2	20.0
Bromochloromethane	µg/L	20.0	22.5	23.2	113	116	70-130	3.0	20.0
Bromodichloromethane	µg/L	20.0	20.2	20.1	101	101	70-130	0.4	20.0

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833
Report No: 21-316-0009

QC Prep: V11778
QC Prep Batch Method: 6200 PT
QC Analytical Batch(es): V11779
Analysis Method: 6200B
Analysis Description: Volatile Organic Compounds - GC/MS

Laboratory Control Sample & LCSD LCS-V11778 LCSD-V11778

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Bromoform	µg/L	20.0	21.9	21.2	110	106	70-130	3.2	20.0
Bromomethane	µg/L	20.0	23.0	22.9	115	115	60-140	0.4	20.0
n-Butylbenzene	µg/L	20.0	21.3	21.3	107	107	70-130	0.0	20.0
sec-Butyl benzene	µg/L	20.0	20.9	21.1	105	106	70-130	0.9	20.0
tert-Butyl benzene	µg/L	20.0	21.1	21.0	106	105	70-130	0.4	20.0
Carbon Tetrachloride	µg/L	20.0	19.4	20.2	97.0	101	70-130	4.0	20.0
Chlorobenzene	µg/L	20.0	21.0	21.2	105	106	70-130	0.9	20.0
Chlorodibromomethane	µg/L	20.0	20.8	21.1	104	106	70-130	1.4	20.0
Chloroethane	µg/L	20.0	20.7	20.5	104	103	60-140	0.9	20.0
Chloroform	µg/L	20.0	19.6	20.6	98.0	103	70-130	4.9	20.0
Chloromethane	µg/L	20.0	16.2	20.0	81.0	100	60-140	20.9*	20.0
2-Chlorotoluene	µg/L	20.0	20.1	21.1	101	106	70-130	4.8	20.0
4-Chlorotoluene	µg/L	20.0	20.3	21.2	102	106	70-130	4.3	20.0
Di-Isopropyl Ether (DIPE)	µg/L	20.0	21.6	22.7	108	114	70-130	4.9	20.0
1,2-Dibromo-3-Chloropropane	µg/L	20.0	21.8	24.7	109	124	70-130	12.4	20.0
1,2-Dibromoethane	µg/L	20.0	21.5	21.9	108	110	70-130	1.8	20.0
Dibromomethane	µg/L	20.0	20.3	20.9	102	105	70-130	2.9	20.0
1,2-Dichlorobenzene	µg/L	20.0	20.3	21.7	102	109	70-130	6.6	20.0
1,3-Dichlorobenzene	µg/L	20.0	21.3	21.2	107	106	70-130	0.4	20.0
1,4-Dichlorobenzene	µg/L	20.0	20.9	21.2	105	106	70-130	1.4	20.0
Dichlorodifluoromethane	µg/L	20.0	21.6	21.5	108	108	60-140	0.4	20.0
1,1-Dichloroethane	µg/L	20.0	21.1	21.7	106	109	70-130	2.8	20.0
1,2-Dichloroethane	µg/L	20.0	17.7	16.9	88.5	84.5	70-130	4.6	20.0
1,1-Dichloroethene	µg/L	20.0	20.1	19.9	101	99.5	70-130	1.0	20.0
cis-1,2-Dichloroethene	µg/L	20.0	20.2	21.2	101	106	70-130	4.8	20.0
trans-1,2-Dichloroethene	µg/L	20.0	21.6	22.0	108	110	70-130	1.8	20.0

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833
Report No: 21-316-0009

QC Prep: V11778
QC Prep Batch Method: 6200 PT
QC Analytical Batch(es): V11779
Analysis Method: 6200B
Analysis Description: Volatile Organic Compounds - GC/MS

Laboratory Control Sample & LCSD LCS-V11778 LCSD-V11778

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
1,2-Dichloropropane	µg/L	20.0	22.0	21.4	110	107	70-130	2.7	20.0
1,3-Dichloropropane	µg/L	20.0	21.0	20.9	105	105	70-130	0.4	20.0
2,2-Dichloropropane	µg/L	20.0	20.5	21.2	103	106	70-130	3.3	20.0
1,1-Dichloropropene	µg/L	20.0	20.9	20.2	105	101	70-130	3.4	20.0
cis-1,3-Dichloropropene	µg/L	20.0	21.5	21.4	108	107	70-130	0.4	20.0
trans-1,3-Dichloropropene	µg/L	20.0	20.9	20.7	105	104	70-130	0.9	20.0
Ethanol	µg/L	500	582	582	116	116	60-140	0.0	20.0
Ethylbenzene	µg/L	20.0	20.2	20.8	101	104	70-130	2.9	20.0
Hexachlorobutadiene	µg/L	20.0	20.7	21.8	104	109	70-130	5.1	20.0
2-Hexanone	µg/L	20.0	22.1	22.8	111	114	60-140	3.1	20.0
Isopropylbenzene	µg/L	20.0	20.8	21.3	104	107	70-130	2.3	20.0
4-Isopropyl toluene	µg/L	20.0	21.1	21.4	106	107	70-130	1.4	20.0
Methyl Ethyl Ketone (MEK)	µg/L	20.0	23.0	22.4	115	112	60-140	2.6	20.0
Methyl tert-butyl ether (MTBE)	µg/L	20.0	21.1	22.0	106	110	70-130	4.1	20.0
4-Methyl-2-Pentanone	µg/L	20.0	21.0	21.4	105	107	60-140	1.8	20.0
Methylene Chloride	µg/L	20.0	19.7	21.3	98.5	107	70-130	7.8	20.0
Naphthalene	µg/L	20.0	21.7	23.1	109	116	70-130	6.2	20.0
n-Propylbenzene	µg/L	20.0	20.8	21.6	104	108	70-130	3.7	20.0
Styrene	µg/L	20.0	22.2	20.6	111	103	70-130	7.4	20.0
1,1,1,2-Tetrachloroethane	µg/L	20.0	21.1	21.6	106	108	70-130	2.3	20.0
1,1,2,2-Tetrachloroethane	µg/L	20.0	20.9	21.4	105	107	70-130	2.3	20.0
Tetrachloroethene	µg/L	20.0	21.8	21.2	109	106	70-130	2.7	20.0
Toluene	µg/L	20.0	21.0	20.7	105	104	70-130	1.4	20.0
1,2,3-Trichlorobenzene	µg/L	20.0	23.4	24.4	117	122	70-130	4.1	20.0
1,2,4-Trichlorobenzene	µg/L	20.0	21.6	22.7	108	114	70-130	4.9	20.0
1,1,1-Trichloroethane	µg/L	20.0	19.1	20.4	95.5	102	70-130	6.5	20.0

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Quality Control Data

Client ID: **Keith C. Seramur PGPC**
Project Description: **NCDOT B-5833**
Report No: **21-316-0009**

QC Prep: V11778
QC Prep Batch Method: 6200 PT
QC Analytical Batch(es): V11779
Analysis Method: 6200B
Analysis Description: Volatile Organic Compounds - GC/MS

Laboratory Control Sample & LCSD LCS-V11778 LCSD-V11778

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
1,1,2-Trichloroethane	µg/L	20.0	21.0	21.8	105	109	70-130	3.7	20.0
Trichloroethene	µg/L	20.0	21.5	21.6	108	108	70-130	0.4	20.0
Trichlorofluoromethane	µg/L	20.0	19.9	21.6	99.5	108	60-140	8.1	20.0
1,2,3-Trichloropropane	µg/L	20.0	21.1	22.5	106	113	70-130	6.4	20.0
1,2,4-Trimethylbenzene	µg/L	20.0	21.0	21.5	105	108	70-130	2.3	20.0
1,3,5-Trimethylbenzene	µg/L	20.0	20.8	21.4	104	107	70-130	2.8	20.0
Vinyl Acetate	µg/L	20.0	20.4	21.1	102	106	60-140	3.3	20.0
Vinyl Chloride	µg/L	20.0	20.6	21.0	103	105	60-140	1.9	20.0
o-Xylene	µg/L	20.0	20.7	20.0	104	100	70-130	3.4	20.0
m,p-Xylene	µg/L	40.0	42.1	43.5	105	109	70-130	3.2	20.0
4-Bromofluorobenzene (S)					95.8	100	70-130		
Dibromofluoromethane (S)					96.2	100	70-130		
1,2-Dichloroethane - d4 (S)					84.6	83.0	70-130		
Toluene-d8 (S)					98.0	95.4	70-130		

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833
Report No: 21-316-0009

QC Prep: V11658
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V11909
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Lab Reagent Blank LRB-V11658 Matrix: AQU
Associated Lab Samples: 99457

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
Acenaphthene	µg/L	<7.12	7.12	10.0	11/17/21 15:52		
Acenaphthylene	µg/L	<6.94	6.94	20.0	11/17/21 15:52		
Anthracene	µg/L	<6.57	6.57	10.0	11/17/21 15:52		
Benzidine	µg/L	<5.08	5.08	10.0	11/17/21 15:52		
Benzo(a)anthracene	µg/L	<6.65	6.65	10.0	11/17/21 15:52		
Benzo(a)pyrene	µg/L	<4.67	4.67	10.0	11/17/21 15:52		
Benzo(b)fluoranthene	µg/L	<4.52	4.52	10.0	11/17/21 15:52		
Benzo(g,h,i)perylene	µg/L	<4.24	4.24	10.0	11/17/21 15:52		
Benzo(k)fluoranthene	µg/L	<4.86	4.86	10.0	11/17/21 15:52		
Benzoic Acid	µg/L	<11.5	11.5	50.0	11/17/21 15:52		
Benzyl alcohol	µg/L	<8.60	8.60	10.0	11/17/21 15:52		
Bis(2-Chloroethoxy)methane	µg/L	<5.67	5.67	10.0	11/17/21 15:52		
Bis(2-Chloroethyl)ether	µg/L	<7.30	7.30	10.0	11/17/21 15:52		
Bis(2-Chloroisopropyl)ether	µg/L	<6.59	6.59	10.0	11/17/21 15:52		
Bis(2-ethylhexyl)phthalate	µg/L	<8.80	8.80	10.0	11/17/21 15:52		
4-Bromophenyl phenyl ether	µg/L	<6.26	6.26	20.0	11/17/21 15:52		
Butyl benzyl phthalate	µg/L	<4.53	4.53	10.0	11/17/21 15:52		
4-Chloro-3-methylphenol	µg/L	<5.23	5.23	10.0	11/17/21 15:52		
2-Chloronaphthalene	µg/L	<7.38	7.38	20.0	11/17/21 15:52		
2-Chlorophenol	µg/L	<6.58	6.58	10.0	11/17/21 15:52		
4-Chlorophenyl phenyl ether	µg/L	<6.99	6.99	20.0	11/17/21 15:52		
Chrysene	µg/L	<5.38	5.38	10.0	11/17/21 15:52		
Dibenz(a,h)anthracene	µg/L	<6.01	6.01	20.0	11/17/21 15:52		
Dibenzofuran	µg/L	<5.08	5.08	20.0	11/17/21 15:52		
1,2-Dichlorobenzene	µg/L	<5.91	5.91	10.0	11/17/21 15:52		
1,3-Dichlorobenzene	µg/L	<5.83	5.83	10.0	11/17/21 15:52		
1,4-Dichlorobenzene	µg/L	<5.91	5.91	10.0	11/17/21 15:52		

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833
Report No: 21-316-0009

QC Prep: V11658
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V11909
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Lab Reagent Blank LRB-V11658 Matrix: AQU
Associated Lab Samples: 99457

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
3,3'-Dichlorobenzidine	µg/L	<6.60	6.60	10.0	11/17/21 15:52		
2,4-Dichlorophenol	µg/L	<5.54	5.54	10.0	11/17/21 15:52		
Diethyl phthalate	µg/L	<9.35	9.35	20.0	11/17/21 15:52		
Dimethyl phthalate	µg/L	<7.82	7.82	10.0	11/17/21 15:52		
2,4-Dimethylphenol	µg/L	<10.9	10.9	20.0	11/17/21 15:52		
Di-n-butyl phthalate	µg/L	<7.35	7.35	10.0	11/17/21 15:52		
4,6-Dinitro-2-methylphenol	µg/L	<9.92	9.92	30.0	11/17/21 15:52		
2,4-Dinitrophenol	µg/L	<10.6	10.6	30.0	11/17/21 15:52		
2,4-Dinitrotoluene	µg/L	<5.20	5.20	10.0	11/17/21 15:52		
2,6-Dinitrotoluene	µg/L	<5.90	5.90	20.0	11/17/21 15:52		
Di-n-Octyl Phthalate	µg/L	<5.01	5.01	10.0	11/17/21 15:52		
Fluoranthene	µg/L	<6.03	6.03	10.0	11/17/21 15:52		
Fluorene	µg/L	<7.27	7.27	10.0	11/17/21 15:52		
Hexachlorobenzene	µg/L	<5.75	5.75	20.0	11/17/21 15:52		
Hexachlorobutadiene	µg/L	<5.88	5.88	20.0	11/17/21 15:52		
Hexachlorocyclopentadiene	µg/L	<5.90	5.90	20.0	11/17/21 15:52		
Hexachloroethane	µg/L	<5.22	5.22	10.0	11/17/21 15:52		
Indeno(1,2,3-cd)pyrene	µg/L	<6.20	6.20	10.0	11/17/21 15:52		
Isophorone	µg/L	<6.71	6.71	10.0	11/17/21 15:52		
Naphthalene	µg/L	<7.88	7.88	10.0	11/17/21 15:52		
Nitrobenzene	µg/L	<7.88	7.88	10.0	11/17/21 15:52		
2-Nitrophenol	µg/L	<5.49	5.49	10.0	11/17/21 15:52		
4-Nitrophenol	µg/L	<2.81	2.81	10.0	11/17/21 15:52		
N-Nitrosodiphenylamine	µg/L	<10.9	10.9	20.0	11/17/21 15:52		
N-Nitroso-di-n-propylamine	µg/L	<8.10	8.10	20.0	11/17/21 15:52		
Pentachlorophenol	µg/L	<9.73	9.73	50.0	11/17/21 15:52		
Phenanthrene	µg/L	<6.34	6.34	10.0	11/17/21 15:52		

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833
Report No: 21-316-0009

QC Prep: V11658
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V11909
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Lab Reagent Blank LRB-V11658 Matrix: AQU
Associated Lab Samples: 99457

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
Phenol	µg/L	<2.86	2.86	10.0	11/17/21 15:52		
Pyrene	µg/L	<5.42	5.42	10.0	11/17/21 15:52		
1,2,4-Trichlorobenzene	µg/L	<6.25	6.25	10.0	11/17/21 15:52		
2,4,6-Trichlorophenol	µg/L	<6.29	6.29	20.0	11/17/21 15:52		
2-Fluorobiphenyl (S)					11/17/21 15:52	61.6	49-118
2-Fluorophenol (S)					11/17/21 15:52	51.4	22-84
Nitrobenzene-d5 (S)					11/17/21 15:52	68.0	43-123
4-Terphenyl-d14 (S)					11/17/21 15:52	91.8	49-151
2,4,6-Tribromophenol (S)					11/17/21 15:52	87.7	31-144
Phenol-d5 (S)					11/17/21 15:52	34.4	10-63

Laboratory Control Sample & LCSD LCS-V11658 LCSD-V11658

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Acenaphthene	µg/L	50.0	37.8	37.9	75.6	75.8	47-145	0.2	20.0
Acenaphthylene	µg/L	50.0	41.6	41.1	83.2	82.2	33-145	1.2	20.0
Anthracene	µg/L	50.0	45.3	43.3	90.6	86.6	27-133	4.5	20.0
Benzidine	µg/L	50.0	56.8	53.3	114	107	15-150	6.3	20.0
Benzo(a)anthracene	µg/L	50.0	44.2	41.1	88.4	82.2	33-143	7.2	20.0
Benzo(a)pyrene	µg/L	50.0	50.1	47.4	100	94.8	17-163	5.5	20.0
Benzo(b)fluoranthene	µg/L	50.0	43.8	42.0	87.6	84.0	24-159	4.1	20.0
Benzo(g,h,i)perylene	µg/L	50.0	42.5	39.6	85.0	79.2	10-219	7.0	20.0
Benzo(k)fluoranthene	µg/L	50.0	42.9	40.1	85.8	80.2	11-162	6.7	20.0
Benzoic Acid	µg/L	50.0	<11.5	<11.5	0.0*	0.0*	10-125	0.0	20.0
Benzyl alcohol	µg/L	50.0	35.0	36.2	70.0	72.4	16-107	3.3	20.0
Bis(2-Chloroethoxy)methane	µg/L	50.0	38.8	40.5	77.6	81.0	33-184	4.2	20.0

* QC Fail

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833
Report No: 21-316-0009

QC Prep: V11658
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V11909
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Laboratory Control Sample & LCSD LCS-V11658 LCSD-V11658

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Bis(2-Chloroethyl)ether	µg/L	50.0	35.3	36.9	70.6	73.8	12-158	4.4	20.0
Bis(2-Chloroisopropyl)ether	µg/L	50.0	41.3	45.5	82.6	91.0	36-166	9.6	20.0
Bis(2-ethylhexyl)phthalate	µg/L	50.0	48.0	45.6	96.0	91.2	10-158	5.1	20.0
4-Bromophenyl phenyl ether	µg/L	50.0	41.9	41.2	83.8	82.4	53-127	1.6	20.0
Butyl benzyl phthalate	µg/L	50.0	41.7	39.0	83.4	78.0	10-152	6.6	20.0
4-Chloro-3-methylphenol	µg/L	50.0	37.5	38.4	75.0	76.8	22-147	2.3	20.0
2-Chloronaphthalene	µg/L	50.0	35.5	36.7	71.0	73.4	60-118	3.3	20.0
2-Chlorophenol	µg/L	50.0	33.3	37.3	66.6	74.6	23-134	11.3	20.0
4-Chlorophenyl phenyl ether	µg/L	50.0	40.6	39.1	81.2	78.2	25-158	3.7	20.0
Chrysene	µg/L	50.0	44.6	42.8	89.2	85.6	17-168	4.1	20.0
Dibenz(a,h)anthracene	µg/L	50.0	38.1	35.2	76.2	70.4	10-227	7.9	20.0
Dibenzofuran	µg/L	50.0	40.2	39.8	80.4	79.6	39-114	1.0	20.0
1,2-Dichlorobenzene	µg/L	50.0	20.8	24.7	41.6	49.4	32-129	17.1	20.0
1,3-Dichlorobenzene	µg/L	50.0	18.9	22.8	37.8	45.6	20-124	18.7	20.0
1,4-Dichlorobenzene	µg/L	50.0	19.0	22.6	38.0	45.2	20-124	17.3	20.0
3,3'-Dichlorobenzidine	µg/L	50.0	51.8	48.2	104	96.4	10-262	7.2	20.0
2,4-Dichlorophenol	µg/L	50.0	34.1	36.0	68.2	72.0	39-135	5.4	20.0
Diethyl phthalate	µg/L	50.0	34.8	33.5	69.6	67.0	10-114	3.8	20.0
Dimethyl phthalate	µg/L	50.0	21.6	21.9	43.2	43.8	10-112	1.3	20.0
2,4-Dimethylphenol	µg/L	50.0	32.6	31.2	65.2	62.4	32-119	4.3	20.0
Di-n-butyl phthalate	µg/L	50.0	47.0	44.6	94.0	89.2	10-118	5.2	20.0
4,6-Dinitro-2-methylphenol	µg/L	50.0	40.5	37.8	81.0	75.6	10-181	6.8	20.0
2,4-Dinitrophenol	µg/L	50.0	37.9	35.7	75.8	71.4	10-191	5.9	20.0
2,4-Dinitrotoluene	µg/L	50.0	47.7	44.7	95.4	89.4	39-139	6.4	20.0
2,6-Dinitrotoluene	µg/L	50.0	48.7	45.5	97.4	91.0	50-158	6.7	20.0
Di-n-Octyl Phthalate	µg/L	50.0	45.6	43.5	91.2	87.0	10-146	4.7	20.0

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833
Report No: 21-316-0009

QC Prep: V11658
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V11909
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Laboratory Control Sample & LCSD LCS-V11658 LCSD-V11658

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Fluoranthene	µg/L	50.0	43.9	42.3	87.8	84.6	26-137	3.7	20.0
Fluorene	µg/L	50.0	42.3	41.0	84.6	82.0	59-121	3.1	20.0
Hexachlorobenzene	µg/L	50.0	43.6	41.9	87.2	83.8	10-152	3.9	20.0
Hexachlorobutadiene	µg/L	50.0	14.9	18.9	0.0*	0.0*	24-116	0.0	20.0
Hexachlorocyclopentadiene	µg/L	50.0	15.7	18.1	0.0*	0.0*	32-117	0.0	20.0
Hexachloroethane	µg/L	50.0	15.3	18.9	30.6*	37.8*	40-113	21.0*	20.0
Indeno(1,2,3-cd)pyrene	µg/L	50.0	43.4	40.6	86.8	81.2	10-171	6.6	20.0
Isophorone	µg/L	50.0	34.1	33.4	68.2	66.8	21-196	2.0	20.0
Naphthalene	µg/L	50.0	25.2	27.2	50.4	54.4	21-133	7.6	20.0
Nitrobenzene	µg/L	50.0	28.7	30.2	57.4	60.4	35-180	5.0	20.0
2-Nitrophenol	µg/L	50.0	33.2	35.8	66.4	71.6	29-182	7.5	20.0
4-Nitrophenol	µg/L	50.0	17.5	14.9	35.0	29.8	10-132	16.0	20.0
N-Nitrosodiphenylamine	µg/L	50.0	54.0	51.9	108	104	69-152	3.9	20.0
N-Nitroso-di-n-propylamine	µg/L	50.0	37.0	38.2	74.0	76.4	10-230	3.1	20.0
Pentachlorophenol	µg/L	50.0	44.0	41.3	0.0*	0.0*	14-176	0.0	20.0
Phenanthrene	µg/L	50.0	44.9	42.9	89.8	85.8	54-120	4.5	20.0
Phenol	µg/L	50.0	17.7	18.9	35.4	37.8	10-112	6.5	20.0
Pyrene	µg/L	50.0	46.0	43.4	92.0	86.8	52-115	5.8	20.0
1,2,4-Trichlorobenzene	µg/L	50.0	20.0	22.3	40.0*	44.6	44-142	10.8	20.0
2,4,6-Trichlorophenol	µg/L	50.0	41.4	40.1	82.8	80.2	37-144	3.1	20.0
2-Fluorobiphenyl (S)					70.0	71.6	49-118		
2-Fluorophenol (S)					43.5	46.8	22-84		
Nitrobenzene-d5 (S)					56.6	57.0	43-123		
4-Terphenyl-d14 (S)					89.2	85.0	49-151		
2,4,6-Tribromophenol (S)					85.4	81.9	31-144		

* QC Fail

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Quality Control Data

Client ID: **Keith C. Seramur PGPC**
Project Description: **NCDOT B-5833**
Report No: **21-316-0009**

QC Prep: V11658
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V11909
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Laboratory Control Sample & LCSD LCS-V11658 LCSD-V11658

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD
Phenol-d5 (S)					29.3	31.3	10-63	

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Quality Control Data

Client ID: **Keith C. Seramur PGPC**
Project Description: **NCDOT B-5833**
Report No: **21-316-0009**

QC Prep: V11588
QC Prep Batch Method: MAVPH (Prep)
QC Analytical Batch(es): V11589
Analysis Method: MADEP-VPH
Analysis Description: Massachusetts VPH

Lab Reagent Blank LRB-V11588 Matrix: AQU
Associated Lab Samples: 99456, 99457

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic C5-C8	µg/L	<11.5	11.5	50.0	11/15/21 12:56		
Aliphatic C9-C12	µg/L	<25.8	25.8	50.0	11/15/21 12:56		
Aromatic C9-C10	µg/L	<4.02	4.02	50.0	11/15/21 12:56		
2,5-Dibromotoluene (FID) (S)					11/15/21 12:56	102	70-130
2,5-Dibromotoluene (PID) (S)					11/15/21 12:56	110	70-130

Laboratory Control Sample & LCSD LCS-V11588 LCSD-V11588

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic C5-C8	µg/L	300	319	304	106	101	70-130	4.8	50.0
Aliphatic C9-C12	µg/L	300	320	309	107	103	70-130	3.4	50.0
Aromatic C9-C10	µg/L	100	102	99.6	102	99.6	70-130	2.3	50.0
2,5-Dibromotoluene (FID) (S)					100	101	70-130		
2,5-Dibromotoluene (PID) (S)					108	110	70-130		

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Shipment Receipt Form

Customer Number: **01120**
Customer Name: **Keith C. Seramur PGPC**
Report Number: **21-316-0009**

Shipping Method

(●) Fed Ex ( ) US Postal ( ) Lab ( ) Other :
( ) UPS ( ) Client ( ) Courier Thermometer ID: IRT-15 6.2 C

Shipping container/cooler uncompromised?	(●) Yes	( ) No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	( ) Yes	( ) No	(●) Not Present
Custody seals intact on sample bottles?	( ) Yes	( ) No	(●) Not Present
Chain of Custody (COC) present?	(●) Yes	( ) No	
COC agrees with sample label(s)?	(●) Yes	( ) No	
COC properly completed	(●) Yes	( ) No	
Samples in proper containers?	(●) Yes	( ) No	
Sample containers intact?	(●) Yes	( ) No	
Sufficient sample volume for indicated test(s)?	(●) Yes	( ) No	
All samples received within holding time?	(●) Yes	( ) No	
Cooler temperature in compliance?	(●) Yes	( ) No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	(●) Yes	( ) No	
Water - Sample containers properly preserved	(●) Yes	( ) No	( ) N/A
Water - VOA vials free of headspace	(●) Yes	( ) No	( ) N/A
Trip Blanks received with VOAs	( ) Yes	(●) No	( ) N/A
Soil VOA method 5035 – compliance criteria met	( ) Yes	( ) No	(●) N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)
☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included? ( ) Yes (●) No

Comments:

Signature: Sarah J. Locklear Date & Time: 11/12/2021 12:54:45

CHAIN OF CUSTODY RECORD

Waypoint ANALYTICAL
449 Springbrook Road • Charlotte, NC 28217
Phone 704/529-6364 • Fax: 704/525-0409

PAGE 1 OF 1 QUOTE # TO ENSURE PROPER BILLING:

Client Company Name: Seramur + Associates, PC
Report To/Contact Name: Keith Seramur
Reporting Address: 165 Knoll Dr.
Boone, NC 28607
Phone: (828)-264-0289 Fax (Yes)(No): No
Email Address: seramur@icloud.com
EDD Type: PDF ✓ Excel ✓ Other
Site Location Name: NCDOT B-5833 P015
Site Location Physical Address: 5616 US Hwy 21
Jonesville, NC 28642

Project Name: NCDOT B-5833
Short Hold Analysis (Yes) (No) UST Project: (Yes) (No)
*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements
Invoice To: Keith Seramur
Address: 165 Knoll Drive
Boone, NC 28607
Purchase Order No./Billing Reference

Requested Due Date ❑ 1 Day ❑ 2 Days ❑ 3 Days ❑ 4 Days ✗ 5 Days
"Working Days" ❑ 6-9 Days ❑ Standard 10 days ❑ Rush Work Must Be Pre Approved
Samples received after 15:00 will be processed next business day.
Turnaround time is based on business days, excluding weekends and holidays.
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY WAYPOINT ANALYTICAL, LLC TO CLIENT)

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received IN ICE?	✓		
PROPER PRESERVATIVES indicated?	✓		
Received WITHIN HOLDING TIMES?	✓		
CUSTODY SEALS INTACT?	✓		
VOLATILES rec'd W/OUT HEADSPACE?	✓		
PROPER CONTAINERS used?	✓		

TEMP: Therm ID: IR1-15 Observed 6.2 °C /Corr. 6.2 °C

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL

Certification: NC ✗ SC
Other N/A
Water Chlorinated: YES NO ✗
Samples Iced Upon Collection: YES ✗ NO

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER, OR SLUDGE)	SAMPLE CONTAINER *TYPE SEE BELOW	NO.	SIZE	PRESERVATIVES	ANALYSIS REQUESTED VPH	EPH	6200	625			REMARKS	ID NO.
MW-5	11/10/21	1403	water	VOA, AG	10	1 liter, 40mL	HCl	x	x	x	x				
MW-9	11/10/21	1458	water	VOA, AG	10	1 liter, 40mL	HCl	x	x	x	x				

Keith C. Seramur PGPC
NCDOT B-5833
21-316-0009
01120
11-12-2021
12:53:49

PRESS DOWN FIRMLY - 2 COPIES

Sampler's Signature: [signature] Sampled By (Print Name): Brooke Steenwyk Affiliation: SAPC

Upon relinquishing, this Chain of Custody is your authorization for Waypoint Analytical to proceed with the analyses as requested above. Any changes must be submitted in writing to the Waypoint Analytical Project Manager. There will be charges for any changes after analyses have been initialized.

		Date	Military/Hours
Relinquished By: (Signature)	Received By: (Signature)	11/11/21	14:00
Relinquished By: (Signature)	Received By: (Signature)	Date	
Relinquished By: (Signature)	Received For Waypoint Analytical By:	11/12/21	1232

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.
COC Group No.

✗ Fed Ex ❑ UPS ❑ Hand-delivered ❑ Waypoint Analytical Field Service ❑ Other

Additional Comments:

LAB USE ONLY

Site Arrival Time:
Site Departure Time:
Field Tech Fee:
Mileage:

SEE REVERSE FOR TERMS & CONDITIONS

NPDES:	UST:	GROUNDWATER:	DRINKING WATER:	SOLID WASTE:	RCRA:	BRWNFLD	LANDFILL	OTHER:
❑ NC ❑ SC	✗ NC ❑ SC	✗ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC
❑	❑	❑	❑	❑	❑	❑	❑	❑

*CONTAINER TYPE CODES: A = Amber C = Clear G= Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)

ORIGINAL

Waypoint ANALYTICAL
449 Springbrook Rd, Charlotte, NC 28217
Main 704.529.6364
www.waypointanalytical.com

11/23/2021

Keith C. Seramur PGPC
165 Knoll Dr.
Boone, NC, 28607

Ref: Analytical Testing
Lab Report Number: 21-322-0036
Client Project Description: NCDOT B-5833 P015

Waypoint Analytical, LLC (Charlotte) received sample(s) on 11/18/2021 for the analyses presented in the following report.

The above referenced project has been analyzed per your instructions. The analyses were performed in accordance with the applicable analytical method.

The analytical data has been validated using standard quality control measures performed as required by the analytical method. Quality Assurance, method validations, instrumentation maintenance and calibration for all parameters were performed in accordance with guidelines established by the USEPA (including 40 CFR 136 Method Update Rule May 2021) unless otherwise indicated.

Certain parameters (chlorine, pH, dissolved oxygen, sulfite...) are required to be analyzed within 15 minutes of sampling. Usually, but not always, any field parameter analyzed at the laboratory is outside of this holding time. Refer to sample analysis time for confirmation of holding time compliance.

The results are shown on the attached Report of Analysis(s). Results for solid matrices are reported on an as-received basis unless otherwise indicated. This report shall not be reproduced except in full and relates only to the samples included in this report.

Please do not hesitate to contact me or client services if you have any questions or need additional information.

Sincerely,

Angela D Overcash
Senior Project Manager

Laboratory's liability in any claim relating to analyses performed shall be limited to, at laboratory's option, repeating the analysis in question at laboratory's expense, or the refund of the charges paid for performance of said analysis.

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Main 704.529.6364
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Certification Summary

Laboratory ID: WP CNC: Waypoint Analytical Carolina, Inc. (C), Charlotte, NC

State	Program	Lab ID	Expiration Date
North Carolina	State Program	37735	07/31/2022
North Carolina	State Program	402	12/31/2021
South Carolina	State Program	99012	07/31/2022
South Carolina	State Program	99012	12/31/2021

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Sample Summary Table

Report Number: **21-322-0036**

Client Project Description: **NCDOT B-5833 P015**

Lab No	Client Sample ID	Matrix	Date Collected	Date Received
99929	MW-5	Aqueous	11/18/2021 12:38	11/18/2021 14:44
99930	MW-9	Aqueous	11/18/2021 12:43	11/18/2021 14:44

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Summary of Detected Analytes

Project: NCDOT B-5833 P015

Report Number: 21-322-0036

Client Sample ID	Lab Sample ID					
Method	**Parameters**	**Result**	**Units**	**Report Limit**	**Analyzed**	**Qualifiers**

No Analytes Detected

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Client: Keith C. Seramur PGPC
Project: NCDOT B-5833 P015
Lab Report Number: 21-322-0036
Date: 11/23/2021

CASE NARRATIVE

625.1 - Base/Neutrals and Acids by GC/MS Method 625.1
Analyte: 2,4-Dinitrophenol
QC Batch No: V12011/V11931
Analyte was flagged for 0% recovery in the LCSD due to the result being below the MQL. The actual result was 25.6 ug/L which calculates to a recovery of 51.2% which is within the acceptable recovery range.

Analyte: 2,4-Dinitrophenol
QC Batch No: V12011/V11931
Analyte was flagged for 0% recovery in the LCS due to the result being below the MQL. The actual result was 28.3 ug/L which calculates to a recovery of 56.5% which is within the acceptable recovery range.

Analyte: Benzoic Acid
QC Batch No: V12011/V11931
Benzoic Acid did not recovery in LCS. Analyte is considered a poor performer.

Analyte: Benzoic Acid
QC Batch No: V12011/V11931
Analyte was flagged for 0% recovery in the LCDS due to the result being below the MQL. The actual result was 1.13 ug/L which calculates to a recovery of 2.2% which is below the acceptable recovery range. Analyte is considered a poor performer

Analyte: Hexachlorobutadiene
QC Batch No: V12011/V11931
Analyte was flagged for 0% recovery in the LCSD due to the result being below the MQL. The actual result was 15.8 ug/L which calculates to a recovery of 31.6% which is within the acceptable recovery range.

Analyte: Hexachlorobutadiene
QC Batch No: V12011/V11931
Analyte was flagged for 0% recovery in the LCS due to the result being below the MQL. The actual result was 17.6 ug/L which calculates to a recovery of 35.2% which is within the acceptable recovery range.

Analyte: Hexachlorocyclopentadiene
QC Batch No: V12011/V11931
Analyte was flagged for 0% recovery in the LCS due to the result being below the MQL. The actual result was 16.7 ug/L which calculates to a recovery of 33.3% which is within the acceptable recovery range.

Analyte: Hexachlorocyclopentadiene
QC Batch No: V12011/V11931
Analyte was flagged for 0% recovery in the LCSD due to the result being below the MQL. The actual result was 15.8 ug/L which calculates to a recovery of 31.5% which is below the acceptable recovery range.

Analyte: Pentachlorophenol
QC Batch No: V12011/V11931
Analyte was flagged for 0% recovery in the LCSD due to the result being below the MQL. The actual result was 39.0 ug/L which calculates to a recovery of 77.8% which is within the acceptable recovery range.

Analyte: Pentachlorophenol
QC Batch No: V12011/V11931
Analyte was flagged for 0% recovery in the LCS due to the result being below the MQL. The actual result was 42.9 ug/L which calculates to a recovery of 85.8% which is within the acceptable recovery range.

Massachusetts EPH Method MADEP-EPH
Analyte: Aliphatic C9-C18
QC Batch No: V11941/V11844
Analyte was flagged for 0% recovery in the LCS due to the result being below the MQL. The actual result was 173.077 ug/mL which calculates to a recovery of 57.7% which is within the acceptable recovery range.

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Keith C. Seramur PGPC
165 Knoll Dr.

Boone , NC 28607

Project NCDOT B-5833 P015

Information :

Report Date : 11/23/2021
Received : 11/18/2021

Report Number : **21-322-0036**

REPORT OF ANALYSIS

Lab No : **99929**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **11/18/2021 12:38**

Analytical Method: 625.1 **Prep Batch(es):** **V11931** 11/22/21 11:15
Prep Method: 625.1 (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Acenaphthene	<7.33	µg/L	7.33	10.3	1	11/23/21 14:40	JMV	V12011
Acenaphthylene	<7.15	µg/L	7.15	20.6	1	11/23/21 14:40	JMV	V12011
Anthracene	<6.77	µg/L	6.77	10.3	1	11/23/21 14:40	JMV	V12011
Benzidine	<5.23	µg/L	5.23	10.3	1	11/23/21 14:40	JMV	V12011
Benzo(a)anthracene	<6.85	µg/L	6.85	10.3	1	11/23/21 14:40	JMV	V12011
Benzo(a)pyrene	<4.81	µg/L	4.81	10.3	1	11/23/21 14:40	JMV	V12011
Benzo(b)fluoranthene	<4.66	µg/L	4.66	10.3	1	11/23/21 14:40	JMV	V12011
Benzo(g,h,i)perylene	<4.37	µg/L	4.37	10.3	1	11/23/21 14:40	JMV	V12011
Benzo(k)fluoranthene	<5.01	µg/L	5.01	10.3	1	11/23/21 14:40	JMV	V12011
Benzoic Acid	<11.8	µg/L	11.8	51.5	1	11/23/21 14:40	JMV	V12011
Benzyl alcohol	<8.86	µg/L	8.86	10.3	1	11/23/21 14:40	JMV	V12011
Bis(2-Chloroethoxy)methane	<5.84	µg/L	5.84	10.3	1	11/23/21 14:40	JMV	V12011
Bis(2-Chloroethyl)ether	<7.52	µg/L	7.52	10.3	1	11/23/21 14:40	JMV	V12011
Bis(2-Chloroisopropyl)ether	<6.79	µg/L	6.79	10.3	1	11/23/21 14:40	JMV	V12011
Bis(2-ethylhexyl)phthalate	<9.06	µg/L	9.06	10.3	1	11/23/21 14:40	JMV	V12011
4-Bromophenyl phenyl ether	<6.45	µg/L	6.45	20.6	1	11/23/21 14:40	JMV	V12011
Butyl benzyl phthalate	<4.67	µg/L	4.67	10.3	1	11/23/21 14:40	JMV	V12011
4-Chloro-3-methylphenol	<5.39	µg/L	5.39	10.3	1	11/23/21 14:40	JMV	V12011
2-Chloronaphthalene	<7.60	µg/L	7.60	20.6	1	11/23/21 14:40	JMV	V12011
2-Chlorophenol	<6.78	µg/L	6.78	10.3	1	11/23/21 14:40	JMV	V12011
4-Chlorophenyl phenyl ether	<7.20	µg/L	7.20	20.6	1	11/23/21 14:40	JMV	V12011
Chrysene	<5.54	µg/L	5.54	10.3	1	11/23/21 14:40	JMV	V12011

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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Main 704.529.6364
www.waypointanalytical.com

01120
Keith C. Seramur PGPC
165 Knoll Dr.

Boone , NC 28607

Project NCDOT B-5833 P015

Information :

Report Date : 11/23/2021
Received : 11/18/2021

Report Number : **21-322-0036**

REPORT OF ANALYSIS

Lab No : **99929**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **11/18/2021 12:38**

Analytical Method: 625.1 **Prep Batch(es):** **V11931** 11/22/21 11:15
Prep Method: 625.1 (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Dibenz(a,h)anthracene	<6.19	µg/L	6.19	20.6	1	11/23/21 14:40	JMV	V12011
Dibenzofuran	<5.23	µg/L	5.23	20.6	1	11/23/21 14:40	JMV	V12011
1,2-Dichlorobenzene	<6.09	µg/L	6.09	10.3	1	11/23/21 14:40	JMV	V12011
1,3-Dichlorobenzene	<6.00	µg/L	6.00	10.3	1	11/23/21 14:40	JMV	V12011
1,4-Dichlorobenzene	<6.09	µg/L	6.09	10.3	1	11/23/21 14:40	JMV	V12011
3,3'-Dichlorobenzidine	<6.80	µg/L	6.80	10.3	1	11/23/21 14:40	JMV	V12011
2,4-Dichlorophenol	<5.71	µg/L	5.71	10.3	1	11/23/21 14:40	JMV	V12011
Diethyl phthalate	<9.63	µg/L	9.63	20.6	1	11/23/21 14:40	JMV	V12011
Dimethyl phthalate	<8.05	µg/L	8.05	10.3	1	11/23/21 14:40	JMV	V12011
2,4-Dimethylphenol	<11.3	µg/L	11.3	20.6	1	11/23/21 14:40	JMV	V12011
Di-n-butyl phthalate	<7.57	µg/L	7.57	10.3	1	11/23/21 14:40	JMV	V12011
4,6-Dinitro-2-methylphenol	<10.2	µg/L	10.2	30.9	1	11/23/21 14:40	JMV	V12011
2,4-Dinitrophenol	<11.0	µg/L	11.0	30.9	1	11/23/21 14:40	JMV	V12011
2,4-Dinitrotoluene	<5.36	µg/L	5.36	10.3	1	11/23/21 14:40	JMV	V12011
2,6-Dinitrotoluene	<6.08	µg/L	6.08	20.6	1	11/23/21 14:40	JMV	V12011
Di-n-Octyl Phthalate	<5.16	µg/L	5.16	10.3	1	11/23/21 14:40	JMV	V12011
Fluoranthene	<6.21	µg/L	6.21	10.3	1	11/23/21 14:40	JMV	V12011
Fluorene	<7.49	µg/L	7.49	10.3	1	11/23/21 14:40	JMV	V12011
Hexachlorobenzene	<5.92	µg/L	5.92	20.6	1	11/23/21 14:40	JMV	V12011
Hexachlorobutadiene	<6.06	µg/L	6.06	20.6	1	11/23/21 14:40	JMV	V12011
Hexachlorocyclopentadiene	<6.08	µg/L	6.08	20.6	1	11/23/21 14:40	JMV	V12011
Hexachloroethane	<5.38	µg/L	5.38	10.3	1	11/23/21 14:40	JMV	V12011

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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01120
Keith C. Seramur PGPC
165 Knoll Dr.

Boone , NC 28607

Project NCDOT B-5833 P015

Information :

Report Date : 11/23/2021
Received : 11/18/2021

Report Number : **21-322-0036**

REPORT OF ANALYSIS

Lab No : **99929**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **11/18/2021 12:38**

Analytical Method: 625.1 **Prep Batch(es):** **V11931** 11/22/21 11:15
Prep Method: 625.1 (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Indeno(1,2,3-cd)pyrene	<6.39	µg/L	6.39	10.3	1	11/23/21 14:40	JMV	V12011
Isophorone	<6.91	µg/L	6.91	10.3	1	11/23/21 14:40	JMV	V12011
Naphthalene	<8.12	µg/L	8.12	10.3	1	11/23/21 14:40	JMV	V12011
Nitrobenzene	<8.12	µg/L	8.12	10.3	1	11/23/21 14:40	JMV	V12011
2-Nitrophenol	<5.65	µg/L	5.65	10.3	1	11/23/21 14:40	JMV	V12011
4-Nitrophenol	<2.89	µg/L	2.89	10.3	1	11/23/21 14:40	JMV	V12011
N-Nitrosodiphenylamine	<11.3	µg/L	11.3	20.6	1	11/23/21 14:40	JMV	V12011
N-Nitroso-di-n-propylamine	<8.34	µg/L	8.34	20.6	1	11/23/21 14:40	JMV	V12011
Pentachlorophenol	<10.0	µg/L	10.0	51.5	1	11/23/21 14:40	JMV	V12011
Phenanthrene	<6.53	µg/L	6.53	10.3	1	11/23/21 14:40	JMV	V12011
Phenol	<2.95	µg/L	2.95	10.3	1	11/23/21 14:40	JMV	V12011
Pyrene	<5.58	µg/L	5.58	10.3	1	11/23/21 14:40	JMV	V12011
1,2,4-Trichlorobenzene	<6.44	µg/L	6.44	10.3	1	11/23/21 14:40	JMV	V12011
2,4,6-Trichlorophenol	<6.48	µg/L	6.48	20.6	1	11/23/21 14:40	JMV	V12011
Surrogate: Phenol-d5	40.3		Limits: 10-63%		1	11/23/21 14:40	JMV	V12011
Surrogate: 2-Fluorobiphenyl	86.8		Limits: 49-118%		1	11/23/21 14:40	JMV	V12011
Surrogate: 2-Fluorophenol	54.9		Limits: 22-84%		1	11/23/21 14:40	JMV	V12011
Surrogate: Nitrobenzene-d5	94.0		Limits: 43-123%		1	11/23/21 14:40	JMV	V12011
Surrogate: 4-Terphenyl-d14	101		Limits: 49-151%		1	11/23/21 14:40	JMV	V12011
Surrogate: 2,4,6-Tribromophenol	79.3		Limits: 31-144%		1	11/23/21 14:40	JMV	V12011

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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01120
Keith C. Seramur PGPC
165 Knoll Dr.

Boone , NC 28607

Project NCDOT B-5833 P015

Information :

Report Date : 11/23/2021
Received : 11/18/2021

Report Number : **21-322-0036**

REPORT OF ANALYSIS

Lab No : **99929**
Sample ID : **MW-5**

Matrix: **Aqueous**
Sampled: **11/18/2021 12:38**

Analytical Method: MADEP-EPH **Prep Batch(es):** **V11844** 11/19/21 10:26
Prep Method: MAEPH (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic C9-C18	<28.8	µg/L	28.8	357	1	11/20/21 18:48	ZRC	V11941
Aliphatic C19-C36	<126	µg/L	126	510	1	11/20/21 18:48	ZRC	V11941
Aromatic C11-C22	<62.4	µg/L	62.4	255	1	11/20/21 18:48	ZRC	V11941
Surrogate: 2-Bromonaphthalene	67.4		Limits: 40-140%		1	11/20/21 18:48	ZRC	V11941
Surrogate: Chlorooctadecane	56.4		Limits: 40-140%		1	11/20/21 18:48	ZRC	V11941
Surrogate: OTP Surrogate	75.5		Limits: 40-140%		1	11/20/21 18:48	ZRC	V11941
Surrogate: 2-Fluorobiphenyl	82.6		Limits: 40-140%		1	11/20/21 18:48	ZRC	V11941

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

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01120
Keith C. Seramur PGPC
165 Knoll Dr.

Boone , NC 28607

Project NCDOT B-5833 P015

Information :

Report Date : 11/23/2021
Received : 11/18/2021

Report Number : **21-322-0036**

REPORT OF ANALYSIS

Lab No : **99930**
Sample ID : **MW-9**

Matrix: **Aqueous**
Sampled: **11/18/2021 12:43**

Analytical Method: MADEP-EPH **Prep Batch(es):** **V11844** 11/19/21 10:26
Prep Method: MAEPH (Prep)

Test	Results	Units	MDL	MQL	DF	Date / Time Analyzed	By	Analytical Batch
Aliphatic C9-C18	<28.2	µg/L	28.2	350	1	11/20/21 19:24	ZRC	V11941
Aliphatic C19-C36	<124	µg/L	124	500	1	11/20/21 19:24	ZRC	V11941
Aromatic C11-C22	<61.2	µg/L	61.2	250	1	11/20/21 19:24	ZRC	V11941
Surrogate: 2-Bromonaphthalene	91.0		Limits: 40-140%		1	11/20/21 19:24	ZRC	V11941
Surrogate: Chlorooctadecane	60.5		Limits: 40-140%		1	11/20/21 19:24	ZRC	V11941
Surrogate: OTP Surrogate	69.0		Limits: 40-140%		1	11/20/21 19:24	ZRC	V11941
Surrogate: 2-Fluorobiphenyl	85.5		Limits: 40-140%		1	11/20/21 19:24	ZRC	V11941

Qualifiers/ Definitions DF Dilution Factor MQL Method Quantitation Limit

Waypoint ANALYTICAL
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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833 P015
Report No: 21-322-0036

QC Prep: V11931
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V12011
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Lab Reagent Blank LRB-V11931 Matrix: AQU
Associated Lab Samples: 99929

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
Acenaphthene	µg/L	<7.12	7.12	10.0	11/23/21 13:55		
Acenaphthylene	µg/L	<6.94	6.94	20.0	11/23/21 13:55		
Anthracene	µg/L	<6.57	6.57	10.0	11/23/21 13:55		
Benzidine	µg/L	<5.08	5.08	10.0	11/23/21 13:55		
Benzo(a)anthracene	µg/L	<6.65	6.65	10.0	11/23/21 13:55		
Benzo(a)pyrene	µg/L	<4.67	4.67	10.0	11/23/21 13:55		
Benzo(b)fluoranthene	µg/L	<4.52	4.52	10.0	11/23/21 13:55		
Benzo(g,h,i)perylene	µg/L	<4.24	4.24	10.0	11/23/21 13:55		
Benzo(k)fluoranthene	µg/L	<4.86	4.86	10.0	11/23/21 13:55		
Benzoic Acid	µg/L	<11.5	11.5	50.0	11/23/21 13:55		
Benzyl alcohol	µg/L	<8.60	8.60	10.0	11/23/21 13:55		
Bis(2-Chloroethoxy)methane	µg/L	<5.67	5.67	10.0	11/23/21 13:55		
Bis(2-Chloroethyl)ether	µg/L	<7.30	7.30	10.0	11/23/21 13:55		
Bis(2-Chloroisopropyl)ether	µg/L	<6.59	6.59	10.0	11/23/21 13:55		
Bis(2-ethylhexyl)phthalate	µg/L	<8.80	8.80	10.0	11/23/21 13:55		
4-Bromophenyl phenyl ether	µg/L	<6.26	6.26	20.0	11/23/21 13:55		
Butyl benzyl phthalate	µg/L	<4.53	4.53	10.0	11/23/21 13:55		
4-Chloro-3-methylphenol	µg/L	<5.23	5.23	10.0	11/23/21 13:55		
2-Chloronaphthalene	µg/L	<7.38	7.38	20.0	11/23/21 13:55		
2-Chlorophenol	µg/L	<6.58	6.58	10.0	11/23/21 13:55		
4-Chlorophenyl phenyl ether	µg/L	<6.99	6.99	20.0	11/23/21 13:55		
Chrysene	µg/L	<5.38	5.38	10.0	11/23/21 13:55		
Dibenz(a,h)anthracene	µg/L	<6.01	6.01	20.0	11/23/21 13:55		
Dibenzofuran	µg/L	<5.08	5.08	20.0	11/23/21 13:55		
1,2-Dichlorobenzene	µg/L	<5.91	5.91	10.0	11/23/21 13:55		
1,3-Dichlorobenzene	µg/L	<5.83	5.83	10.0	11/23/21 13:55		
1,4-Dichlorobenzene	µg/L	<5.91	5.91	10.0	11/23/21 13:55		

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833 P015
Report No: 21-322-0036

QC Prep: V11931
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V12011
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Lab Reagent Blank LRB-V11931 Matrix: AQU
Associated Lab Samples: 99929

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
3,3'-Dichlorobenzidine	µg/L	<6.60	6.60	10.0	11/23/21 13:55		
2,4-Dichlorophenol	µg/L	<5.54	5.54	10.0	11/23/21 13:55		
Diethyl phthalate	µg/L	<9.35	9.35	20.0	11/23/21 13:55		
Dimethyl phthalate	µg/L	<7.82	7.82	10.0	11/23/21 13:55		
2,4-Dimethylphenol	µg/L	<10.9	10.9	20.0	11/23/21 13:55		
Di-n-butyl phthalate	µg/L	<7.35	7.35	10.0	11/23/21 13:55		
4,6-Dinitro-2-methylphenol	µg/L	<9.92	9.92	30.0	11/23/21 13:55		
2,4-Dinitrophenol	µg/L	<10.6	10.6	30.0	11/23/21 13:55		
2,4-Dinitrotoluene	µg/L	<5.20	5.20	10.0	11/23/21 13:55		
2,6-Dinitrotoluene	µg/L	<5.90	5.90	20.0	11/23/21 13:55		
Di-n-Octyl Phthalate	µg/L	<5.01	5.01	10.0	11/23/21 13:55		
Fluoranthene	µg/L	<6.03	6.03	10.0	11/23/21 13:55		
Fluorene	µg/L	<7.27	7.27	10.0	11/23/21 13:55		
Hexachlorobenzene	µg/L	<5.75	5.75	20.0	11/23/21 13:55		
Hexachlorobutadiene	µg/L	<5.88	5.88	20.0	11/23/21 13:55		
Hexachlorocyclopentadiene	µg/L	<5.90	5.90	20.0	11/23/21 13:55		
Hexachloroethane	µg/L	<5.22	5.22	10.0	11/23/21 13:55		
Indeno(1,2,3-cd)pyrene	µg/L	<6.20	6.20	10.0	11/23/21 13:55		
Isophorone	µg/L	<6.71	6.71	10.0	11/23/21 13:55		
Naphthalene	µg/L	<7.88	7.88	10.0	11/23/21 13:55		
Nitrobenzene	µg/L	<7.88	7.88	10.0	11/23/21 13:55		
2-Nitrophenol	µg/L	<5.49	5.49	10.0	11/23/21 13:55		
4-Nitrophenol	µg/L	<2.81	2.81	10.0	11/23/21 13:55		
N-Nitrosodiphenylamine	µg/L	<10.9	10.9	20.0	11/23/21 13:55		
N-Nitroso-di-n-propylamine	µg/L	<8.10	8.10	20.0	11/23/21 13:55		
Pentachlorophenol	µg/L	<9.73	9.73	50.0	11/23/21 13:55		
Phenanthrene	µg/L	<6.34	6.34	10.0	11/23/21 13:55		

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833 P015
Report No: 21-322-0036

QC Prep: V11931
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V12011
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Lab Reagent Blank LRB-V11931 Matrix: AQU
Associated Lab Samples: 99929

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
Phenol	µg/L	<2.86	2.86	10.0	11/23/21 13:55		
Pyrene	µg/L	<5.42	5.42	10.0	11/23/21 13:55		
1,2,4-Trichlorobenzene	µg/L	<6.25	6.25	10.0	11/23/21 13:55		
2,4,6-Trichlorophenol	µg/L	<6.29	6.29	20.0	11/23/21 13:55		
2-Fluorobiphenyl (S)					11/23/21 13:55	80.4	49-118
2-Fluorophenol (S)					11/23/21 13:55	49.3	22-84
Nitrobenzene-d5 (S)					11/23/21 13:55	75.2	43-123
4-Terphenyl-d14 (S)					11/23/21 13:55	103	49-151
2,4,6-Tribromophenol (S)					11/23/21 13:55	78.2	31-144
Phenol-d5 (S)					11/23/21 13:55	33.8	10-63

Laboratory Control Sample & LCSD LCS-V11931 LCSD-V11931

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Acenaphthene	µg/L	50.0	40.9	36.9	81.8	73.8	47-145	10.2	20.0
Acenaphthylene	µg/L	50.0	45.7	41.9	91.4	83.8	33-145	8.6	20.0
Anthracene	µg/L	50.0	48.7	44.2	97.4	88.4	27-133	9.6	20.0
Benzidine	µg/L	50.0	36.7	34.6	73.4	69.2	15-150	5.8	20.0
Benzo(a)anthracene	µg/L	50.0	48.5	42.1	97.0	84.2	33-143	14.1	20.0
Benzo(a)pyrene	µg/L	50.0	54.2	47.2	108	94.4	17-163	13.8	20.0
Benzo(b)fluoranthene	µg/L	50.0	47.2	40.5	94.4	81.0	24-159	15.2	20.0
Benzo(g,h,i)perylene	µg/L	50.0	45.6	40.1	91.2	80.2	10-219	12.8	20.0
Benzo(k)fluoranthene	µg/L	50.0	46.2	40.7	92.4	81.4	11-162	12.6	20.0
Benzoic Acid	µg/L	50.0	<11.5	<11.5	0.0*	0.0*	10-125	0.0	20.0
Benzyl alcohol	µg/L	50.0	38.8	35.6	77.6	71.2	16-107	8.6	20.0
Bis(2-Chloroethoxy)methane	µg/L	50.0	44.1	40.7	88.2	81.4	33-184	8.0	20.0

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833 P015
Report No: 21-322-0036

QC Prep: V11931
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V12011
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Laboratory Control Sample & LCSD LCS-V11931 LCSD-V11931

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Bis(2-Chloroethyl)ether	µg/L	50.0	40.3	41.0	80.6	82.0	12-158	1.7	20.0
Bis(2-Chloroisopropyl)ether	µg/L	50.0	50.6	49.2	101	98.4	36-166	2.8	20.0
Bis(2-ethylhexyl)phthalate	µg/L	50.0	54.3	47.5	109	95.0	10-158	13.3	20.0
4-Bromophenyl phenyl ether	µg/L	50.0	46.2	41.5	92.4	83.0	53-127	10.7	20.0
Butyl benzyl phthalate	µg/L	50.0	52.4	46.4	105	92.8	10-152	12.1	20.0
4-Chloro-3-methylphenol	µg/L	50.0	39.3	36.7	78.6	73.4	22-147	6.8	20.0
2-Chloronaphthalene	µg/L	50.0	40.7	37.0	81.4	74.0	60-118	9.5	20.0
2-Chlorophenol	µg/L	50.0	37.1	36.0	74.2	72.0	23-134	3.0	20.0
4-Chlorophenyl phenyl ether	µg/L	50.0	43.8	39.2	87.6	78.4	25-158	11.0	20.0
Chrysene	µg/L	50.0	50.4	42.9	101	85.8	17-168	16.0	20.0
Dibenz(a,h)anthracene	µg/L	50.0	43.9	38.6	87.8	77.2	10-227	12.8	20.0
Dibenzofuran	µg/L	50.0	44.6	40.1	89.2	80.2	39-114	10.6	20.0
1,2-Dichlorobenzene	µg/L	50.0	26.2	23.2	52.4	46.4	32-129	12.1	20.0
1,3-Dichlorobenzene	µg/L	50.0	23.7	20.8	47.4	41.6	20-124	13.0	20.0
1,4-Dichlorobenzene	µg/L	50.0	24.2	21.2	48.4	42.4	20-124	13.2	20.0
3,3'-Dichlorobenzidine	µg/L	50.0	48.7	43.0	97.4	86.0	10-262	12.4	20.0
2,4-Dichlorophenol	µg/L	50.0	36.9	36.2	73.8	72.4	39-135	1.9	20.0
Diethyl phthalate	µg/L	50.0	46.5	41.5	93.0	83.0	10-114	11.3	20.0
Dimethyl phthalate	µg/L	50.0	45.4	41.1	90.8	82.2	10-112	9.9	20.0
2,4-Dimethylphenol	µg/L	50.0	41.8	38.1	83.6	76.2	32-119	9.2	20.0
Di-n-butyl phthalate	µg/L	50.0	52.9	47.8	106	95.6	10-118	10.1	20.0
4,6-Dinitro-2-methylphenol	µg/L	50.0	33.5	31.9	67.0	63.8	10-181	4.8	20.0
2,4-Dinitrophenol	µg/L	50.0	28.3	25.6	0.0*	0.0*	10-191	0.0	20.0
2,4-Dinitrotoluene	µg/L	50.0	50.1	44.8	100	89.6	39-139	11.1	20.0
2,6-Dinitrotoluene	µg/L	50.0	50.8	47.2	102	94.4	50-158	7.3	20.0
Di-n-Octyl Phthalate	µg/L	50.0	50.9	45.8	102	91.6	10-146	10.5	20.0

* QC Fail

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Quality Control Data

Client ID: Keith C. Seramur PGPC
Project Description: NCDOT B-5833 P015
Report No: 21-322-0036

QC Prep: V11931
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V12011
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Laboratory Control Sample & LCSD LCS-V11931 LCSD-V11931

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Fluoranthene	µg/L	50.0	46.5	42.0	93.0	84.0	26-137	10.1	20.0
Fluorene	µg/L	50.0	45.7	41.5	91.4	83.0	59-121	9.6	20.0
Hexachlorobenzene	µg/L	50.0	46.6	41.7	93.2	83.4	10-152	11.0	20.0
Hexachlorobutadiene	µg/L	50.0	17.6	15.8	0.0*	0.0*	24-116	0.0	20.0
Hexachlorocyclopentadiene	µg/L	50.0	16.7	15.8	0.0*	0.0*	32-117	0.0	20.0
Hexachloroethane	µg/L	50.0	20.6	16.9	41.2	33.8*	40-113	19.7	20.0
Indeno(1,2,3-cd)pyrene	µg/L	50.0	44.2	38.8	88.4	77.6	10-171	13.0	20.0
Isophorone	µg/L	50.0	37.8	34.2	75.6	68.4	21-196	10.0	20.0
Naphthalene	µg/L	50.0	29.4	28.0	58.8	56.0	21-133	4.8	20.0
Nitrobenzene	µg/L	50.0	34.1	36.6	68.2	73.2	35-180	7.0	20.0
2-Nitrophenol	µg/L	50.0	36.1	36.1	72.2	72.2	29-182	0.0	20.0
4-Nitrophenol	µg/L	50.0	21.0	19.3	42.0	38.6	10-132	8.4	20.0
N-Nitrosodiphenylamine	µg/L	50.0	55.3	51.4	111	103	69-152	7.3	20.0
N-Nitroso-di-n-propylamine	µg/L	50.0	42.7	39.3	85.4	78.6	10-230	8.2	20.0
Pentachlorophenol	µg/L	50.0	42.9	39.0	0.0*	0.0*	14-176	0.0	20.0
Phenanthrene	µg/L	50.0	48.3	43.8	96.6	87.6	54-120	9.7	20.0
Phenol	µg/L	50.0	20.7	18.7	41.4	37.4	10-112	10.1	20.0
Pyrene	µg/L	50.0	52.3	45.0	105	90.0	52-115	15.0	20.0
1,2,4-Trichlorobenzene	µg/L	50.0	23.6	21.8	47.2	43.6*	44-142	7.9	20.0
2,4,6-Trichlorophenol	µg/L	50.0	44.9	42.0	89.8	84.0	37-144	6.6	20.0
2-Fluorobiphenyl (S)					75.0	68.4	49-118		
2-Fluorophenol (S)					48.9	46.4	22-84		
Nitrobenzene-d5 (S)					66.2	70.2	43-123		
4-Terphenyl-d14 (S)					102	87.8	49-151		
2,4,6-Tribromophenol (S)					87.0	78.7	31-144		

* QC Fail

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Quality Control Data

Client ID: **Keith C. Seramur PGPC**
Project Description: **NCDOT B-5833 P015**
Report No: **21-322-0036**

QC Prep: V11931
QC Prep Batch Method: 625.1 (Prep)
QC Analytical Batch(es): V12011
Analysis Method: 625.1
Analysis Description: 625.1 - Base/Neutrals and Acids by GC/MS

Laboratory Control Sample & LCSD LCS-V11931 LCSD-V11931

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD
Phenol-d5 (S)					33.4	30.6	10-63	

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Quality Control Data

Client ID: **Keith C. Seramur PGPC**
Project Description: **NCDOT B-5833 P015**
Report No: **21-322-0036**

QC Prep: V11844
QC Prep Batch Method: MAEPH (Prep)
QC Analytical Batch(es): V11941
Analysis Method: MADEP-EPH
Analysis Description: Massachusetts EPH

Lab Reagent Blank LRB-V11844 Matrix: AQU
Associated Lab Samples: 99929, 99930

Parameter	Units	Blank Result	MDL	MQL	Analyzed	% Recovery	% Rec Limits
Aliphatic C9-C18	µg/L	<28.2	28.2	350	11/20/21 12:45		
Aliphatic C19-C36	µg/L	<124	124	500	11/20/21 12:45		
Aromatic C11-C22	µg/L	<61.2	61.2	250	11/20/21 12:45		
2-Fluorobiphenyl (S)					11/20/21 12:45	84.5	40-140
2-Bromonaphthalene (S)					11/20/21 12:45	76.0	40-140
Chlorooctadecane (S)					11/20/21 12:45	75.5	40-140
OTP Surrogate (S)					11/20/21 12:45	70.5	40-140

Laboratory Control Sample & LCSD LCS-V11844 LCSD-V11844

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS %Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD
Aliphatic C9-C18	µg/L	600	346	372	0.0*	62.0	40-140	6.0	50.0
Aliphatic C19-C36	µg/L	800	658	754	82.2	94.2	40-140	13.5	50.0
Aromatic C11-C22	µg/L	1700	1470	1690	86.4	99.4	40-140	13.9	50.0
2-Fluorobiphenyl (S)					82.2	82.2	40-140		
2-Bromonaphthalene (S)					81.5	83.2	40-140		
Chlorooctadecane (S)					75.0	71.0	40-140		
OTP Surrogate (S)					74.5	84.0	40-140		

* QC Fail

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Shipment Receipt Form

Customer Number: **01120**
Customer Name: **Keith C. Seramur PGPC**
Report Number: **21-322-0036**

Shipping Method

◯ Fed Ex	◯ US Postal	◯ Lab	◯ Other :	
◯ UPS	◉ Client	◯ Courier	Thermometer ID:	IRT-15 13.9 C

Shipping container/cooler uncompromised?	◉ Yes	◯ No	
Number of coolers/boxes received	1		
Custody seals intact on shipping container/cooler?	◯ Yes	◯ No	◉ Not Present
Custody seals intact on sample bottles?	◯ Yes	◯ No	◉ Not Present
Chain of Custody (COC) present?	◉ Yes	◯ No	
COC agrees with sample label(s)?	◉ Yes	◯ No	
COC properly completed	◉ Yes	◯ No	
Samples in proper containers?	◉ Yes	◯ No	
Sample containers intact?	◉ Yes	◯ No	
Sufficient sample volume for indicated test(s)?	◉ Yes	◯ No	
All samples received within holding time?	◉ Yes	◯ No	
Cooler temperature in compliance?	◉ Yes	◯ No	
Cooler/Samples arrived at the laboratory on ice. Samples were considered acceptable as cooling process had begun.	◉ Yes	◯ No	
Water - Sample containers properly preserved	◉ Yes	◯ No	◯ N/A
Water - VOA vials free of headspace	◯ Yes	◯ No	◉ N/A
Trip Blanks received with VOAs	◯ Yes	◯ No	◉ N/A
Soil VOA method 5035 – compliance criteria met	◯ Yes	◯ No	◉ N/A

☐ High concentration container (48 hr) ☐ Low concentration EnCore samplers (48 hr)
☐ High concentration pre-weighed (methanol -14 d) ☐ Low conc pre-weighed vials (Sod Bis -14 d)

Special precautions or instructions included?	◯ Yes	◉ No

Comments:

Signature: Sarah J. Locklear Date & Time: 11/18/2021 16:26:10

CHAIN OF CUSTODY RECORD

Waypoint ANALYTICAL
449 Springbrook Road • Charlotte, NC 28217
Phone 704/529-6364 • Fax: 704/525-0409

PAGE 1 OF 1 QUOTE # TO ENSURE PROPER BILLING:

Client Company Name: Seramur & Associates, PC
Report To/Contact Name: Keith Seramur
Reporting Address: 165 Knoll Drive
Boone, NC 28607
Phone: (828) 264-0289 Fax (Yes)(No):
Email Address: seramur@icloud.com
EDD Type: PDF X Excel Other
Site Location Name: NCDOT B-5833 P015
Site Location Physical Address: 5616 US Hwy 21
Jonesville, NC 28642

Project Name: NCDOT B-5833 P015
Short Hold Analysis (Yes) (No) UST Project: (Yes) (No)
*Please ATTACH any project specific reporting (QC LEVEL I II III IV) provisions and/or QC Requirements
Invoice To: Keith Seramur
Address: 165 Knoll Drive
Boone, NC 28607

Purchase Order No./Billing Reference
Requested Due Date ❑ 1 Day ❑ 2 Days ❑ 3 Days ❑ 4 Days X 5 Days
"Working Days" ❑ 6-9 Days ❑ Standard 10 days ❑ Rush Work Must Be Pre Approved
Samples received after 15:00 will be processed next business day.
Turnaround time is based on business days, excluding weekends and holidays.
(SEE REVERSE FOR TERMS & CONDITIONS REGARDING SERVICES RENDERED BY WAYPOINT ANALYTICAL, LLC TO CLIENT)

LAB USE ONLY

	YES	NO	N/A
Samples INTACT upon arrival?	✓		
Received IN ICE?	✓		
PROPER PRESERVATIVES indicated?	✓		
Received WITHIN HOLDING TIMES?	✓		
CUSTODY SEALS INTACT?			✓
VOLATILES rec'd W/OUT HEADSPACE?			✓
PROPER CONTAINERS used?	✓		

TEMP: Therm ID: IR-15 Observed 13.9 °C /Corr. 13.9 °C

TO BE FILLED IN BY CLIENT/SAMPLING PERSONNEL
Certification: NC X SC
Other N/A
Water Chlorinated: YES NO X
Samples Iced Upon Collection: YES X NO

CLIENT SAMPLE DESCRIPTION	DATE COLLECTED	TIME COLLECTED MILITARY HOURS	MATRIX (SOIL, WATER, OR SLUDGE)	SAMPLE CONTAINER *TYPE SEE BELOW	NO.	SIZE	PRESERVATIVES	ANALYSIS REQUESTED 624	625	REMARKS	ID NO.
MW-5	11/18/21	12:38	water	AG	4	1L	HCl	X	X		
MW-9	11/18/21	12:43	water	AG	2	1L	HCl	X			

21-322-0036
01120
11-18-2021
16:25:13
Keith C. Seramur PGPC
NCDOT B-5833 P015

PRESS DOWN FIRMLY - 2 COPIES

Sampler's Signature Sampled By (Print Name) Joey Anderson Affiliation SAPC

Upon relinquishing, this Chain of Custody is your authorization for Waypoint Analytical to proceed with the analyses as requested above. Any changes must be submitted in writing to the Waypoint Analytical Project Manager. There will be charges for any changes after analyses have been initialized.

		Date	Military/Hours
Relinquished By: (Signature)	Received By: (Signature)	11/18/21	1444
Relinquished By: (Signature)	Received By: (Signature)	Date	
Relinquished By: (Signature)	Received For Waypoint Analytical By:	Date 11/18/21	1444

Method of Shipment: NOTE: ALL SAMPLE COOLERS SHOULD BE TAPED SHUT WITH CUSTODY SEALS FOR TRANSPORTATION TO THE LABORATORY. SAMPLES ARE NOT ACCEPTED AND VERIFIED AGAINST COC UNTIL RECEIVED AT THE LABORATORY.
❑ Fed Ex ❑ UPS X Hand-delivered ❑ Waypoint Analytical Field Service ❑ Other
COC Group No.

Additional Comments:

LAB USE ONLY
Site Arrival Time:
Site Departure Time:
Field Tech Fee:
Mileage:

SEE REVERSE FOR TERMS & CONDITIONS

ORIGINAL

NPDES:	UST:	GROUNDWATER:	DRINKING WATER:	SOLID WASTE:	RCRA:	BRWNFLD	LANDFILL	OTHER:
❑ NC ❑ SC	X NC ❑ SC	X NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC	❑ NC ❑ SC
❑	❑	❑	❑	❑	❑	❑	❑	❑

*CONTAINER TYPE CODES: A = Amber C = Clear G= Glass P = Plastic; TL = Teflon-Lined Cap VOA = Volatile Organics Analysis (Zero Head Space)

Appendix C

NCDEQ Incident Files

COMPREHENSIVE SITE ASSESSMENT

US HIGHWAY 21 SHELL SITE
5616 US HIGHWAY 21
JONESVILLE, YADKIN COUNTY, NORTH CAROLINA
INCIDENT NO. 45225
FACILITY ID No. 00-0-000006728

Prepared For:

Mr. Don McIver
Quality Oil Company, LLC
1540 Silas Creek Parkway
Winston-Salem, North Carolina 27102

Prepared By:

Progress Environmental Group, Inc.
P.O. Box 5884
Winston-Salem, North Carolina 27113

Progress Project No. 1020063.001

May 6, 2021

May 6, 2021

Ms. Linda Estkowski
North Carolina Department of Environment and Natural Resources
Division of Waste Management, UST Section
Winston-Salem Regional Office
450 West Hanes Mill Road, Suite 300
Winston-Salem, North Carolina 27105

Subject: **Comprehensive Site Assessment**
US Highway 21 Shell Site
5616 US Highway 21
Jonesville, Yadkin County, North Carolina
Progress Project No. 1020063.001
Incident No. 45225

Dear Ms. Estkowski:

On behalf of Quality Oil Company, LLC, Progress Environmental Group, Inc. (Progress) is submitting this *Comprehensive Site Assessment (CSA)* for the above-referenced site. Included in this report is a description of the field activities, the results obtained, and the conclusions and recommendations.

This *CSA* has been prepared in general accordance with the Underground Storage Tank Section guidelines presented in the NCDENR *Guidelines for Assessment and Corrective Action for UST Releases* dated January 19, 2021.

We appreciate your consideration and cooperation in the submission of this report. If you have any questions concerning this report please feel free to contact us at (336) 722-9999.

Sincerely,

PROGRESS ENVIRONMENTAL GROUP, INC.

Joseph S. Lawson, III
Director of Ecological Services

Jeffrey A. Ballsieper, L.G.
Director of Environmental Services
NC Licensed 1653

Attachments

cc: Mr. Don McIver, Quality Oil Company, LLC

May 6, 2021

Mr. Don McIver
Quality Oil Company, LLC
1540 Silas Creek Parkway
Winston-Salem, North Carolina 27102

Subject: **Comprehensive Site Assessment**
US Highway 21 Shell Site
5616 US Highway 21
Jonesville, Yadkin County, North Carolina
Progress Project No. 1020063.001
Incident N0. 45225

Dear Mr. McIver:

Progress Environmental Group, Inc. (Progress) is pleased to submit this *Comprehensive Site Assessment (CSA)* for the US Highway 21 Shell Site in Jonesville, North Carolina. The objective of the assessment was to install and sample additional monitoring wells, assess potential risks to human health and the environment, and recommend whether additional assessment and/or corrective action may be necessary at the site.

This *CSA* is intended for the use of Quality Oil Company, LLC, only. The contents should not be relied upon by other parties without the express written consent of Progress. The findings are relevant to the dates of our site work and should not be relied upon to represent site conditions on other dates.

Progress appreciates the opportunity to provide our environmental services. If you have any questions or if we may be of further service, please contact the undersigned at (336) 722-9999.

Sincerely,

PROGRESS ENVIRONMENTAL GROUP, INC.

Joseph S. Lawson, III
Director of Ecological Services

Jeffrey A. Ballsieper, L.G.
Director of Environmental Services
NC Licensed 1653

Attachment: Comprehensive Site Assessment and Appendices

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FIGURES

TABLES

APPENDICES

Comprehensive Site Assessment

A SITE IDENTIFICATION

Date of Report: May 6, 2021
Facility I.D.: 00-0-0000006728
UST Incident Number (if known): 45225
Site Name: US Highway 21 Shell Site
Site Location: 5616 US Highway 21, Jonesville, North Carolina 28642

Nearest City/Town: Jonesville, North Carolina County: Yadkin

UST Owner/Operator: Quality Oil Company, LLC
Address: 5616 US Highway 21, Winston-Salem, North Carolina 27295 Phone: (336) 722-3441

Property Owner: Lanny G. Wilkins/Benny H Wilkins
Address: 2408 Chappel Road, Hamptonville, North Carolina 27020 Phone: N/A

Property Occupant: Jody's Auto Repair and Lube Shop
Address: 5616 US Highway 21, Jonesville, North Carolina 28642 Phone: (336) 258-2637

Consultant/Contractor: Progress Environmental Group, Inc.
Address: P.O. Box 5884, Winston-Salem, North Carolina 27113 Phone: (336) 722-9999
Attention: Mr. Jeffrey A. Ballsieper, L.G.

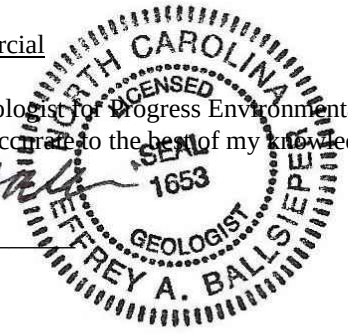
Contractor: 3D Environmental Investigations, LLC
Address: 2157 Mocksville Highway Statesville, North Carolina 28625 Phone: (704) 657-7785

Contractor: Geologic Exploration, LLC
Address: 176 Commerce Boulevard Statesville, North Carolina 28625 Phone: (704) 872-7686

Analytical Laboratory: Pace Analytical Services, LLC
Address: 9800 Kincey Avenue, Huntersville, North Carolina 28078 Phone: (704) 875-9092

Release Information
Date Discovered: May 29, 2019
Latitude: N 36.195767 Longitude: W 80.809498
Estimated Quantity of Release: Unknown
Cause of Release: Unknown
Source of Release (e.g., Piping/UST): Gasoline and Diesel USTs
Sizes and contents of UST system(s) from which the release occurred): One 8,000-gallon gasoline and two 10,000-gallon gasoline USTs (Table B-1).
Risk Classification: High
Land Use Category: Industrial/Commercial

I, Jeffrey A. Ballsieper, a Licensed Geologist for Progress Environmental Group, Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.



Jeffrey A. Ballsieper, L.G.
Director of Environmental Services

Progress Environmental Group, Inc. is licensed to practice geology in North Carolina. The certification number of the corporation is C-552.

B Site History and Source Characterization

The site is located at 5616 US Highway 21 in Jonesville, Yadkin County, North Carolina. The site consists of a former convenience store which formerly stored petroleum products in underground storage tanks (USTs) for retail sale. Four USTs were reportedly located at the site in the approximate same tank pit as the three USTs (T1-T3) that were recently removed. According to a letter prepared by Quality Oil and dated February 5, 1990 with lab results and figure attached, soil samples were collected at the time of the removal of two 10,000-gallon gasoline USTs and one 6,000-gallon gasoline UST. Eleven soil samples were collected and analyzed for total petroleum hydrocarbons as gasoline using US EPA Method 5035. The results of the laboratory testing indicated a release was not identified during the removal of the three USTs (T5-T7) that previously were located at the site. A site plan provided in the letter from Quality Oil indicates that the previous tank system was located in the same tank pit as the USTs that were removed in 2019. A letter dated July 31, 1992 from the North Carolina Department of Environment, Health and Natural Resources [predecessor of the North Carolina Department of Environmental Quality (NCDEQ)], indicated that: …*on February 5, 1990 we received the soil sample results and closure assessment for the underground storage tank closure at the subject location. As the implementing agency for the federal underground storage tank program for the State of North Carolina, we have determined from review of your assessment that the US T system has been closed in accordance with NCAC Title 15A Subchapter 2 and section .0802 and .0803 and 40 CFR 280.71 and 280.72. However, this does not absolve you of any responsibility for contamination that may not have been detected or noted during the site assessment.* Please note, neither Quality Oil Company nor the NCDEQ-UST Section has information regarding the removal of a 550-gallon waste oil tank (T4) (including assessment information) reportedly removed in 1988. The site is currently an automotive repair facility with automotive repair bays and a waiting room. The canopy which was located overtop of the dispensers is still located at the site. The site surface consists of pavement and concrete, with gravel located in the vicinity of the former UST locations. Surrounding properties to the west, north, and east consist of residential properties or are undeveloped. The surrounding properties to the south include a convenience store and a hotel.

Please note, there is an active gasoline/convenience store located adjacent and to the southwest of the site. According to the NCDEQ-UST registry there is one 20,000-gallon gasoline UST, one 5,000-gallon gasoline UST, and one 5,000-gallon diesel fuel UST (Facility ID 00-0-000036828). According to the NCDEQ a release has not been documented at this site.

Prior to the removal, the USTs T1- T3 were in compliance with the applicable NCDEQ requirements and had been in temporary closure since January 12, 2008.

Table B-2
Site History, UST Owner/Operator Information

Owner's Name	Address	Phone Number	Dates of Ownership
Quality Oil Company, LLC	P.O. Box 2736 Winston-Salem, NC 27102	(336) 722-3441	1968 - Present

PREVIOUS INVESTIGATIONS

1. UST Closure Report

The following information was obtained from the Paragon Environmental Consultants, Inc. *Initial Abatement and UST Closure Report*, dated May 29, 2019*:*

Paragon Environmental Consultants, Inc. (Paragon) and Petroserve, Inc. (Petroserve) were contracted by Quality Oil Company, LLC to conduct underground storage tank (UST) closure activities at the US Highway 21 Shell located at 5616 US Highway 21 in Jonesville, Yadkin County, North Carolina (Figure 1).

The UST closure project at Highway 21 Shell was initiated on May 7, 2019. Petroserve excavated the fill and vent pipes, cut and drained them to avoid release of product into the surrounding soils, then removed them from the tanks. The USTs were then removed from the ground. Figure 2 shows the site layout and the locations of the USTs removed during this closure project.

Petroserve and Paragon inspected the tanks for structural integrity upon removal. The tanks were in good condition with no visible damage to their surface. After removal, the tanks were transported by Petroserve to the Yadkinville Landfill for disposal.

Following removal of the USTs, the excavation was visually inspected for the presence of free product and groundwater. Groundwater was not encountered in the tank pit, and free product was not observed during any phase of this closure project. However, petroleum odors were noted in the soils beneath the east 10,000-gallon gasoline UST and two of the dispenser islands. The dimensions of the excavation created by the removal of the USTs were approximately 35 feet long by 33 feet wide by 11 feet deep.

The UST Closure and Initial Abatement Action activities for three regulated USTs have been completed at the Highway 21 Shell facility in Jonesville, NC. From a review of all information gathered during this tank removal and soil remediation project, Paragon Environmental Consultants, Inc. makes the following conclusions:

- *Two 10,000 gallon gasoline USTs and one 8,000 gallon gasoline UST have been properly closed by removal at 5616 US Highway 21 in Jonesville, NC.*
- *Analytical results for soil samples obtained beneath the tanks indicated a maximum TPH concentration of 8,120 mg/kg by EPA Method 5030 in soil sample Tank #1 —Middle (T1-M).*
- *The soil samples collected below the dispensers showed a maximum TPH level of 1,430 mg/kg by EPA Method 5030 in Dispenser #2 (D-2).*
- *The laboratory results for the soil samples collected beneath the product piping were below the laboratory detection limits by EPA Method 5030.*
- *Approximately 29.99 tons of soil were excavated from the project site on May 9 and 10, 2019. This material was transported to AES of NC, LLC in Thomasville, NC for treatment and disposal.*
- *A petroleum release of unknown quantity has occurred at this site in the location of the former UST system. Nine Method 8260 compounds and three VPH carbon fractions at concentrations in excess of the lowest MSCCs remain in place at the subject site beneath the former location of the east gasoline tank.*

Based upon a review of all information gathered during this project, Paragon recommended the following actions with regards to the associated UST system:

- *A Limited Site Assessment (LSA) should be conducted at this facility to detail site specific information and allow the site to be given a priority ranking and a land use classification by the NCDEQ.*
- *A copy of this report should be forwarded to the following address:*

Winston-Salem Regional Office - UST Section
450 W. Hanes Mill Road — Suite 300
Winston-Salem, NC 27105.

2. Limited Site Assessment

Based on the results of the soil and groundwater sampling completed during the initial abatement activities, Progress completed a *Phase II Limited Site Assessment (LSA) Report*, dated January 8, 2020. Permanent monitoring wells (MW-1 through MW-4) were installed during the LSA activities. Laboratory analysis of the groundwater samples collected from monitoring wells MW-1 through MW-4 detected targeted compounds above their respective North Carolina 2L Groundwater Quality Standards (NC2LGWQS). Seventeen water-supply wells within 1,000 feet were identified during the LSA. Of the 17 identified water-supply wells, 12 of the water supply wells were determined to be the active drinking water source for the property on which they were located.

3. Other Site Activities

Progress has not conducted additional activities at the subject site.

C RECEPTOR INFORMATION

Water-Supply Wells

Progress mailed 41 water-supply well questionnaires to the property owners within a 500-foot radius of the site. 17 of the questionnaires have been completed and returned at the time of this report. Progress also completed a visual reconnaissance within 1,500 feet of the site. Progress identified evidence of 16 water-supply wells during the vehicular reconnaissance of accessible properties within 1,000 feet of the site or based on the returned questionnaires. Of the 16 identified water-supply wells, 12 of the water supply wells were determined to be the active drinking water source for the property on which they were located. Please note, a water-supply well was previously noted on an adjacent property to the west (WSW-6 at 5552 US Highway 21, property owner is Marion G. Welborn Family Limited Partnership); however, further inquiry indicated that the suspected wellhouse building did not contain a water-supply well. WSW-6 is no longer depicted on Figure 4, and will not be used to designate a water-supply well in the future to avoid confusion. Municipal water is available from Town of Jonesville in the vicinity of the site. Specifically, public water is available to all properties located along US Highway 21, running southeast of the intersection with Little Mountain Road. Additionally, the residence located at 4537 Little Mountain Road is provided drinking water from the public system. The remaining properties along Little Mountain Road and Fox Knob Road do not have access to public drinking water. The approximate location of the existing public water distribution lines is depicted on Figure 4. Table B-5 and Figure 4 summarize the water-supply well information.

Public Water Supplies

Are public water supplies available within 1,500 feet of the source are of the release? **YES**

If yes, where is the location of the nearest public water line and the source(s) of the public water supply?

A Town of Jonesville public water line is located in the US Highway 21 right-of-way.

Surface Water

According to the USGS topographic map, an unnamed stream is located approximately 1,370 feet to the west of the source area (See Figure 1).

Zoning

The subject site and surrounding properties are zoned Highway Business (HB) (Figure 14). According to information provided by Ms. Dawn Vallieres of the Yadkin County Planning Department, HB would allow for the uses of areas of public assembly (daycares, schools, nursing homes, playgrounds, parks, recreational areas, picnic areas, and/or residences).

Wellhead Protection Areas

The source area is not located within an established wellhead protection area.

Deep Aquifers in the Coastal Plain Physiographic Region

The subject site is not located in the Coastal Plain Physiographic Province.

Subsurface Structures

Overhead electrical and phone utility lines are located at the subject site. Subsurface water and sewer lines are at the site and along the Little Mountain right-of-way. Subsurface utilities were identified in the location of the former UST system; however, the utilities were located above the zone of contaminated water.

Property Owners and Occupants

Lanny G. Wilkins and Benny H. Wilkins currently own the subject property. Adjacent properties are developed as residential or commercial properties, with undeveloped and open land located to the north. The names and mailing addresses of the surrounding property owners are included in Table B-6 and the associated property boundaries are depicted on Figure 13.

D REGIONAL GEOLOGY AND HYDROGEOLOGY

According to the Geologic Map of North Carolina (1985), the subject property is situated in the Inner Piedmont Belt of the Piedmont Physiographic Province of North Carolina. The site is located in an area underlain by metamorphosed granitic rock. In the Piedmont Physiographic Province, groundwater generally occurs under water-table conditions and is stored in the pore space between individual grains of residual soil and in the fractures within the underlying parent rock. Due to the intense shearing associated with the thrust faulting in the area, it can be expected that the fractures play a major role in the flow of groundwater in the subsurface.

Recharge to the water table is primarily by precipitation infiltrating the upper soils and percolating downward, under the influence of gravity, to the groundwater table. Typically, the water table is not a level surface, but a subdued reflection of the land surface. However, the depth to the water table is not constant, and depends on many factors, which include the amount of rainfall, the permeability of the soil, and the amount of groundwater being pumped in the area.

E SITE GEOLOGY AND HYDROGEOLOGY

Based on our review of the topographic map and on-site observation, the site is located on a ridge. Groundwater generally flows in directions sub-parallel to the ground surface slopes and under the influence of gravity toward points of discharge such as creeks, swamps, drainage swales, or pumped groundwater wells. Based on topographic inference, groundwater beneath the site most likely flows to the north-northeast. An unnamed intermittent stream is located approximately 1,370 feet to the west of the source area (Figure 1).

Determination of Groundwater Flow Direction

The depth to the groundwater surface in each of the monitoring wells was measured prior to well purging using a decontaminated electric sounder. The top of casings of each of the monitoring wells were surveyed by Progress using a relative benchmark (top of casing for monitoring well MW-1) that was arbitrarily given an elevation of 100 feet. The elevations of the monitoring wells and the groundwater surface are both relative to that benchmark. The relative groundwater elevations are shown on Table B-7.

Groundwater elevation data were collected during the CSA activities. Relative groundwater elevations are depicted on Figure 3. Based on information collected during the CSA field activities, the groundwater flow direction beneath the site appears to be generally to the north-northeast.

As presented in detail in Section I, the hydraulic conductivity was calculated as 0.70 ft/day and the groundwater flow velocity was calculated as 0.12 ft/day or 44 feet/year.

F SOIL SAMPLING RESULTS

Based on the limits of the excavation during the UST closure activities, soil samples were not collected for laboratory analysis during the *Phase II LSA* or *CSA* due to the depth to groundwater being measured at approximately 10 feet below land surface (bls). According to the *Initial Abatement and UST Closure Report* prepared by Paragon Environmental Consultants, soil contamination was identified at the time of the removal of the UST system. Specifically, soil contamination was noted beneath the middle UST and beneath the dispensers located closest to US Highway 21. Subsequently, contaminated soil was excavated from those locations and soil samples were collected to document the absence or presence of residual soil contamination. The subsequent laboratory analyses did not indicate residual soil contamination in the vicinity of the dispensers. Soil sampling in the vicinity of the middle UST indicated several petroleum hydrocarbons and each fraction of the volatile petroleum hydrocarbons at concentrations exceeding the applicable regulatory standard (lowest of the Soil-to-Groundwater Maximum Soil Contaminant Concentration or the Residential Soil Cleanup Level). However, the soil sample that was collected following the removal of the USTs was collected at a depth of 12 feet bls, which is below the approximate depth to the water table at the site (approximately 10 feet bls). The excavation of identified contaminated soil extended into the water table. Therefore, it was documented that the depth of the contaminated soil was below the unsaturated zone and that contaminated soil was not documented during the removal of the USTs.

G MONITORING WELL INSTALLATION AND GROUNDWATER SAMPLING RESULTS

Eight additional Type II permanent monitoring wells (MW-5 through MW-12, Figure 2) were installed during the CSA activities using a truck-mounted drill rig and hollow-stem augers on May 5, 2020 and December 16, 2020 by 3D Environmental Investigations, LLC. One Type III permanent monitoring well (DW-1) was installed using the air-rotary drilling method on April 27 and 28, 2020 in an effort to vertically delineate the extent of impacted groundwater. Well construction information is provided in

Table B-7. The Non-Residential Well Construction Records, which include boring logs, are included in Appendix A.

Progress was on site on December 18 and 19, 2020 to collect groundwater samples from monitoring wells MW-1 through MW-12 and DW-1. The groundwater samples were decanted into laboratory-supplied bottles and placed into a cooler packed with ice. The cooler was delivered under chain-of-custody to Pace Analytical Services, LLC (PACE) in Kernersville, North Carolina for testing. PACE analyzed groundwater samples MW-1 through MW-12 and DW-1 for volatile organic compounds (VOCs) by EPA Method 6200B, plus oxygenates. PACE analyzed groundwater samples collected from monitoring wells MW-10 through MW-12 for volatile petroleum hydrocarbons (VPH) by the Massachusetts Department of Environmental Protection (MADEP) Method, for ethylene dibromide using EPA Method 504.1, and for lead using the Standard Method. A summary of the groundwater sample analytical results is included in Table B-4. The groundwater samples were collected using the methods described in Appendix B.

Laboratory analysis of the groundwater samples collected from monitoring wells MW-2, MW-3, MW-5, MW-8, MW-9, MW-10, and DW-1 did not detect targeted compounds above their NC2LGWQS. Laboratory analysis of the groundwater samples collected from monitoring wells MW-1, MW-4, MW-6, MW-7, MW-11, and MW-12 detected targeted compounds above their respective NC2LGWQS. None of the targeted petroleum hydrocarbons exceed their applicable Gross Contamination Level (GCL). The laboratory analytical report for the groundwater samples is provided in Appendix C.

Please note, lead has been detected in the initial groundwater samples collected after installation in on-site monitoring wells MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, and MW-9 at concentrations that exceeded the NC2LGWQS of 15 µg/L. The concentrations of lead detected in the monitoring wells MW-5, MW-6, and MW-7 were determined to be significantly above the NC2LGWQS (i.e. > 200 µg/L). The presence of lead in the samples was attributed to turbid samples following installation and purging/development activities. Progress modified its sampling protocol and allowed the monitoring wells up to 24 hours to stabilize/equilibrate following purging before collecting a groundwater sample for analysis for lead. The subsequent sampling of the groundwater did not indicate elevated levels of lead in the groundwater beneath the site.

Prior to sampling, the wells were developed until the development water ran relatively clear, and the well was purged of an additional three casing volumes of water prior to sampling. The depth to the groundwater surface in each of the wells was measured prior to well purging using a decontaminated electric sounder. The wells were surveyed by Progress using a relative benchmark that was arbitrarily given an elevation of 100 feet (top of casing of monitoring well MW-1). The elevations of the monitoring wells and the groundwater surface are both relative to that benchmark. The relative groundwater elevations are shown in Table B-7. The relative groundwater elevations are depicted on Figure 3. Based on information collected during the CSA field activities, the groundwater flow direction appears to be generally to the north beneath the site.

Well construction information is provided in Table B-7. The Non-Residential Well Construction Records, which include boring logs, are included in Appendix A.

The laboratory test results are summarized in Table B-4 and on Figure 5. Maps depicting the plume of impacted groundwater and benzene, BTEX, MTBE, and naphthalene concentrations are included on Figures 6 through 9, respectively.

Water-Supply Well Sampling

Progress was requested to sample each accessible water-supply well located within 600 feet of the source area. It was determined that water-supply wells WS-3, WS-6, WS-9, WS-10, WS-12, WS-14, and WS-15 were located within a sufficient distance that would necessitate sampling. Progress sent access letters to each of the property owners requesting information to access their respective properties in an effort to collect and test a groundwater sample from the identified water-supply well. Progress did not receive a written response from the property owners of WS-9 and WS-10, or WS-12. It was determined the structure located at the property containing WS-6 was not in fact a wellhouse and a water-supply well is not located on the property. Electrical service is not located on the properties containing water-supply wells WS-3 and WS-14 which could not be properly purged before being sampled and, therefore, were not sampled. Progress collected and tested a groundwater sample from water-supply well WS-15. The laboratory analytical results of the groundwater sample did not indicate evidence of petroleum-related compounds in the groundwater sample at concentrations that exceed the laboratory detection limits.

H FREE PRODUCT INVESTIGATION/RECOVERY

Progress did not detect free product in the site monitoring wells.

I HYDROGEOLOGIC INVESTIGATION

Progress conducted single-well groundwater recovery tests (slug tests) in monitoring wells MW-2 and MW-3 to develop hydraulic conductivity estimates for the surficial aquifer. Each recovery test involved quickly removing water from the well by bailing and measuring the rate of groundwater recovery using a water level sounder. The recovery test data measures the productive capacity of each well and allows estimation of the hydraulic conductivity and transmissivity of the surrounding aquifer.

Progress conducted the recovery tests on May 5, 2020 and repeated on February 3, 2021. The recovery tests were terminated when the water-level reached at least 90 percent of the initial static water level measured prior to bailing or pumping or when sufficient time had elapsed.

Estimating Aquifer Parameters

The results of the recovery tests were used to calculate an average hydraulic conductivity for the surficial aquifer of approximately 0.905 ft/day or 330 ft/year. The Bower and Rice Slug Test Method was utilized to develop hydraulic conductivity estimates. The recovery test data and calculations are presented in Appendix D.

The average linear groundwater flow velocity was calculated based on the measured water table gradient (0.040 ft/ft, gradient presented from potentiometric map in the CSA), an average hydraulic conductivity of 0.905 ft/day, and an estimated value of 0.30 for effective porosity. The average linear groundwater flow velocity (v) was calculated according to the following equation:

$$v = (K\ dh/dl)/n_e, \text{ where}$$
$$K = \text{Hydraulic Conductivity}$$
$$dh/dl = \text{Hydraulic gradient}$$
$$n_e = \text{effective porosity}$$

Based upon this calculation, the average linear velocity of groundwater is expected to be approximately 0.12 ft/day or 44 feet/year. It is important to note that the assumed value for effective porosity is an estimate based

on predominant soil types encountered during construction of monitoring wells at the site. It should also be noted that the calculated velocity is an approximate average for the surficial aquifer in the vicinity of the former UST system.

Based on interpretation of the topographic maps and on-site observations, surface runoff at the site would be expected to flow overland following topography to the north along a stormwater feature located within the Little Mountain Road right-of-way. Based on the surface topography inferred from topographic maps, properties generally to the south would be considered upgradient of the site. Based on the groundwater flow direction calculations, groundwater beneath the site appears to flow generally to the north.

Estimated Contaminant Mass

Based on review of the groundwater data, Progress estimates that there is an approximately 7,725 square foot groundwater contamination plume emanating from the source area exceeding the NC2LGWQS for the Total BTEX compounds. Based on an estimated 20-foot saturation thickness, an assumed porosity of 30%, and average BTEX concentration in the four monitoring wells exhibiting exceedances of Total BTEX compounds of 3,120.75 µg/L, Progress estimates that there is 3.85 Kg of residual contaminant mass in the groundwater beneath the site. As discussed above, soil samples collected following the UST removals were below the measured depth to water at the site. Subsequent impacted soil removal from the below the USTs was extended into the saturated zone. Additionally, impacted soil beneath the dispensers located closest to US Highway 21 was satisfactorily addressed. Therefore, there is no remaining contaminated soil above the Soil-to-Groundwater MSCCs, Residential Soil Cleanup Levels, or the Industrial/Commercial Soil Cleanup Levels at the site.

J GROUNDWATER MODELING RESULTS

Groundwater modeling was not completed since a surface water feature is not located within 500 feet of the site.

K DISCUSSION

1. NCDEQ has classified the site as “high risk” based on the presence of 10 active water-supply wells used for drinking water within 1,000 feet of the site and three additional wells that are not being used but the residences on those properties are not connected to the public water supply. Municipal water is available from the Town of Jonesville in the vicinity of the site. Specifically, public water is available to all properties located along US Highway 21, running southeast of the intersection with Little Mountain Road. Additionally, the residence located at 4537 Little Mountain Road is provided drinking water from the public system. The remaining properties along Little Mountain Road and Fox Knob Road do not have access to public drinking water.

2. Based on review of the laboratory data from the previous assessment activities, there is no residual contaminated soil above the lowest of the Soil-to-Groundwater MSCCs or Residential Soil Cleanup Levels on the site.

3. Laboratory analysis of the groundwater samples collected from monitoring wells MW-2, MW-3, MW-5, MW-8, MW-9, MW-10, and DW-1 did not detect targeted compounds above their respective NC2LGWQS. Laboratory analysis of the groundwater samples collected from monitoring wells MW-1, MW-4, MW-6, MW-7, MW-11, and MW-12 detected targeted

compounds above their respective NC2LGWQS. Please note, none of the concentrations detected exceeded their respective GCL.

4. Free product has not been detected in any of the monitoring wells installed as part of this assessment.

5. Progress collected and tested a groundwater sample from water-supply well WS-15. The laboratory analytical results of the groundwater sample did not indicate evidence of petroleum-related compounds in the groundwater sample at concentrations that exceed the laboratory detection limits. Additional water-supply wells located proximal to the site were not sampled due to lack of access or lack of power connected to the water-supply well pumps.

L CONCLUSIONS AND RECOMMENDATIONS

Based on the findings of this CSA, Progress makes the following conclusions and recommendations:

- Groundwater flow beneath the site appears to be flowing to the north;

- Soil impacted above the Soil-to-Groundwater MSCCs appears to be located beneath the water table proximal to the former UST pit and, therefore, residual soil contamination is not present at the site;

- Groundwater contamination in excess of the NC2LGWQS persists in on-site monitoring wells MW-1, MW-4, MW-6, MW-7, MW-11, and MW-12. None of the compounds detected in the groundwater samples exceed the applicable GCL;

- Free product has not been measured in any of the monitoring wells installed as part of this assessment;

- The release related to the former USTs appears to have been adequately defined;

- Because public water is available in the vicinity of the site, groundwater remediation and/or the connection of the remaining properties still utilizing groundwater obtained from water-supply wells will be required in an effort to receive regulatory closure of the site;

- Prior to a real estate transaction occurring, a Notice of Residual Petroleum (NORP) must be filed with the Yadkin County Register of Deeds. Progress recommends that the current property owner be notified of the findings of this assessment and that a copy of this report be submitted to the NCDEQ;

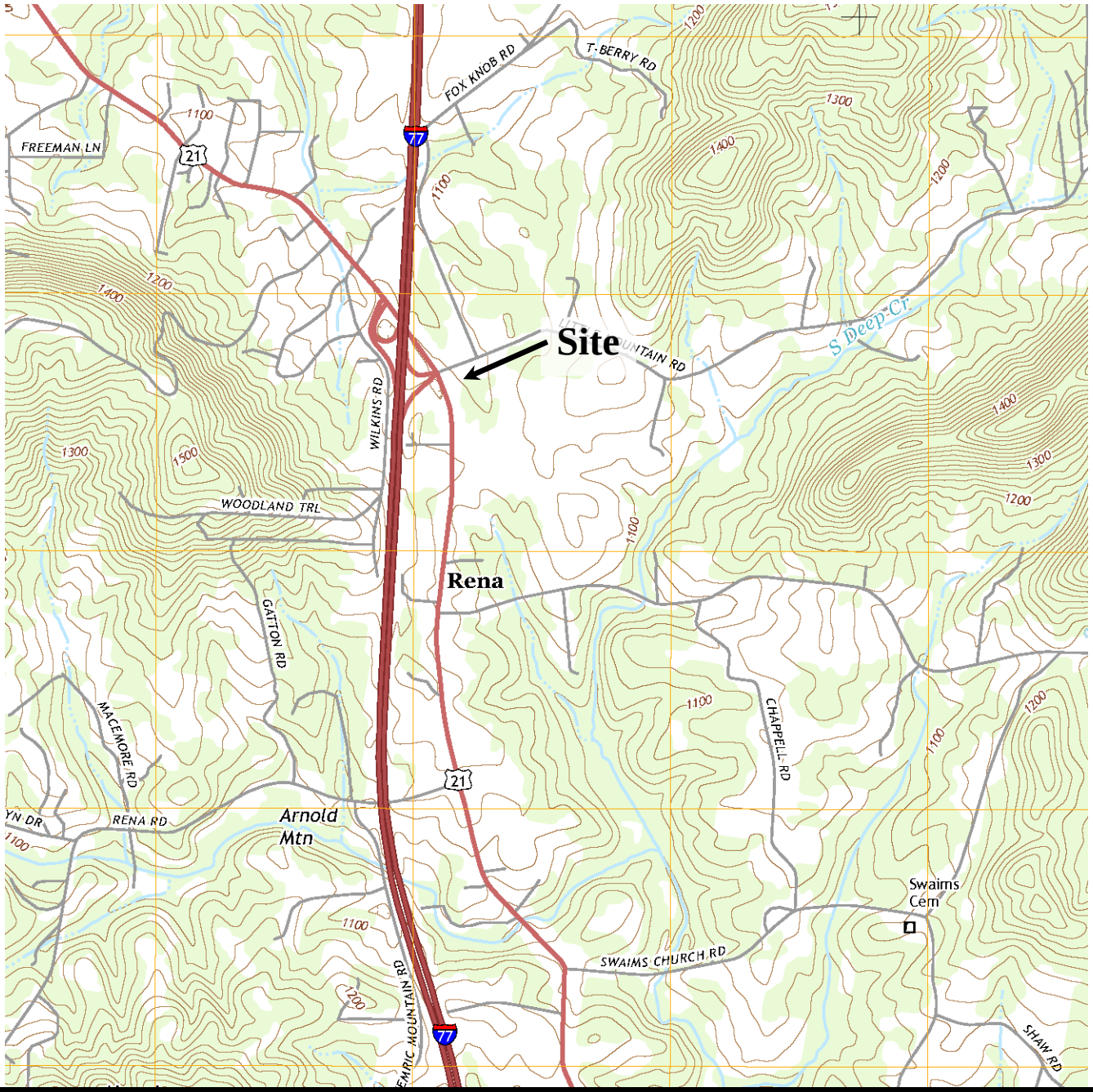
- Prepare and submit a *Corrective Action Plan* to address the continued dissolved phase petroleum groundwater contamination. Based on the absence of receptors immediately downgradient of the source area, it is anticipated that the proposed corrective action will include source area injection of a bioremedial product with long term natural attenuation. Specifically, Progress proposes to inject Enviro-BAC proximal to monitoring wells MW-1, MW-4, MW-5, and MW-6 and within the former tank pit. Progress will also perform an inquiry with the property owners of the identified water-supply wells to determine whether the connection of the remaining water-supply wells is feasible.

- Provide a copy of this report to the property owner.

M FIGURES

Figure 1
Topographic Site Map

US Highway 21 Shell Site
5616 US Highway 21
Jonesville, Yadkin County, North Carolina



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Winston-Salem, NC 27113
Telephone: (336) 722-9999
Fax: (336) 722-9998
www.progressenvironmental.com

Progress ENVIRONMENTAL

Elkin South, N.C.
Date: 1996
United States Department of the Interior
United States Geological Survey
7.5 Minute Series Topographic Map
Contour Interval: 10 feet
Approximate Scale: 1:24,000

Project: US Highway 21 Shell

Client: Quality Oil Company

Progress Job #: 1020063.001

Date: May 2021

FORMER UST LOCATION

FORMER FUEL DISTRIBUTION LINE

D FORMER FUEL DISPENSER

D-3/D3-PB APPROXIMATE LOCATION OF MONITORING WELL

APPROXIMATE LOCATION MUNICIPAL WATER LINE

APPROXIMATE SEPTIC LINE AND/OR TANK

DW-1 APPROXIMATE LOCATION OF DEEP MONITORING WELL

MW-1 APPROXIMATE LOCATION OF MONITORING WELL

APPROXIMATE EXTENT OF OVER-EXCAVATION

APPROXIMATE LOCATION OF HYDRAULIC LIFT

FIGURE 2
SITE MAP
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA

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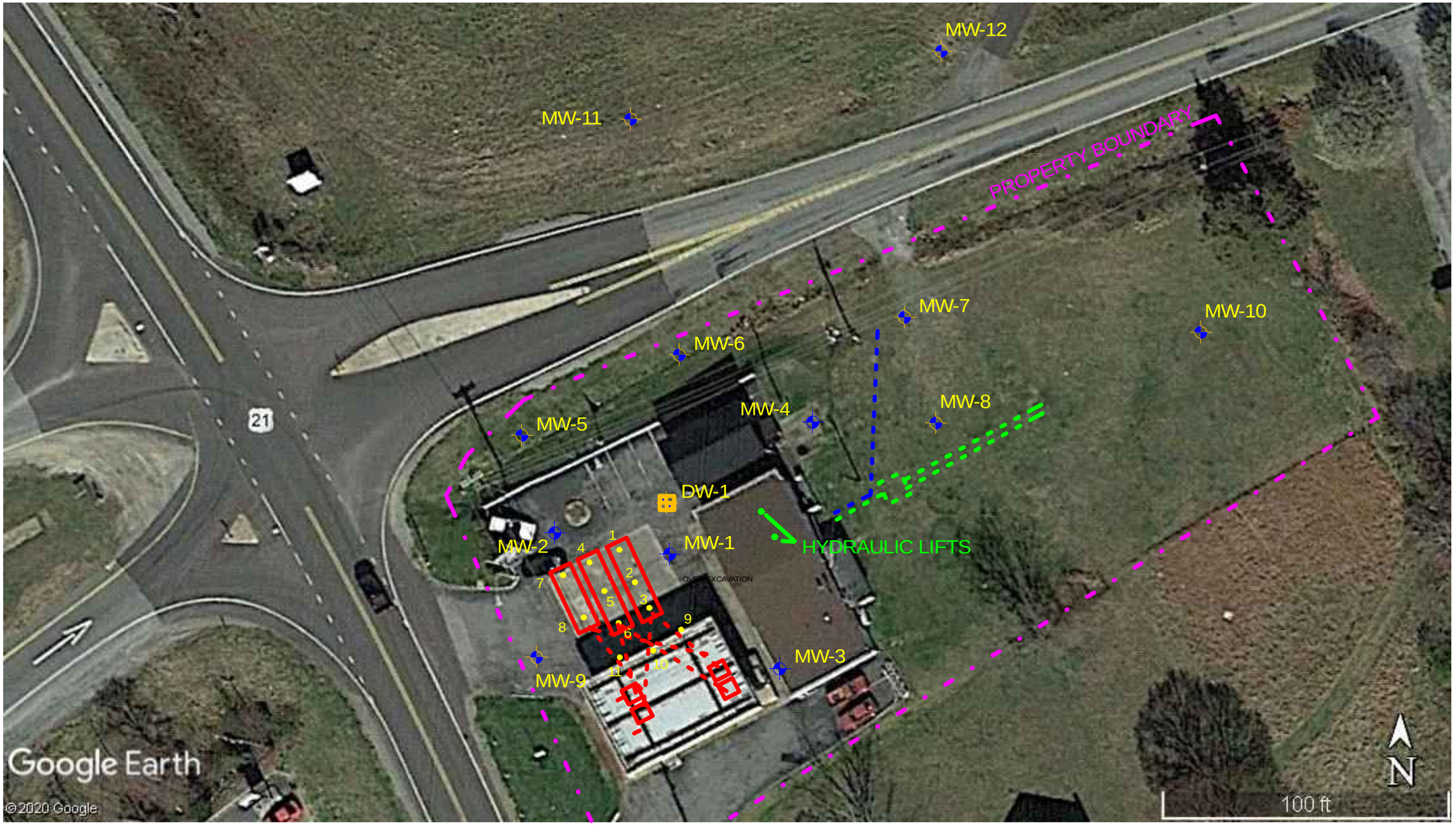
CHECKED	JSL	DATE	MAy 2021
SCALE	AS SHOWN	PROJECT	1020063.001
FILE NAME	Figure 2.SKF		



FORMER UST LOCATION

FORMER FUEL DISTRIBUTION LINE

D FORMER FUEL DISPENSER

D-3/D3-PB APPROXIMATE LOCATION OF MONITORING WELL

APPROXIMATE LOCATION MUNICIPAL WATER LINE

APPROXIMATE SEPTIC LINE AND/OR TANK

DW-1 APPROXIMATE LOCATION OF DEEP MONITORING WELL

MW-1 APPROXIMATE LOCATION OF MONITORING WELL

APPROXIMATE EXTENT OF OVER-EXCAVATION

APPROXIMATE LOCATION OF HYDRAULIC LIFT

FIGURE 2A
SITE MAP-FORMER UST SYSTEM
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA

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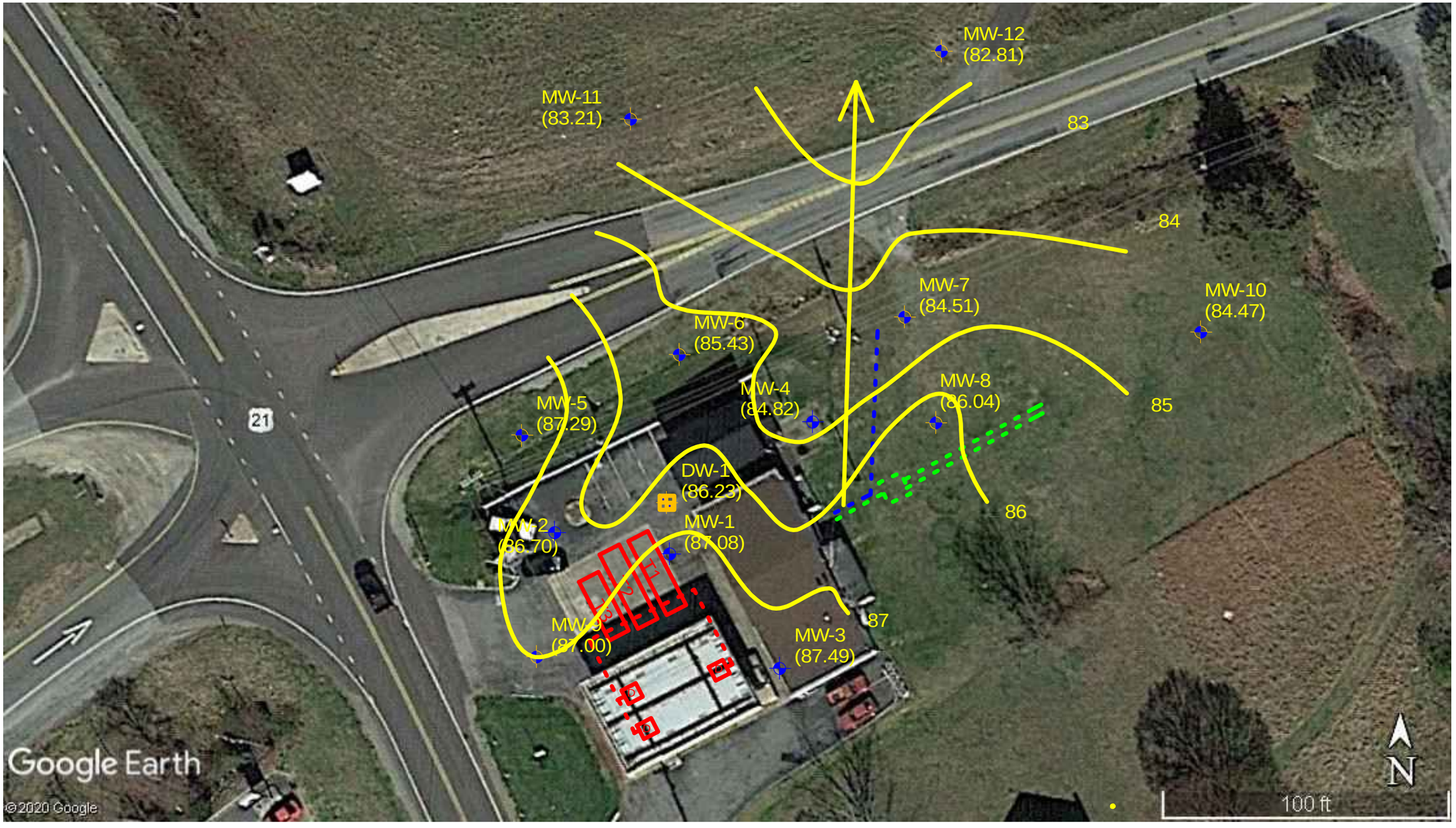
FILE NAME	Figure 2A.SKF		



FORMER UST LOCATION

FORMER FUEL DISTRIBUTION LINE

D FORMER FUEL DISPENSER

APPROXIMATE LOCATION MUNICIPAL WATER LINE

APPROXIMATE SEPTIC LINE AND/OR TANK

GROUNDWATER FLOW DIRECTION

DW-1 (86.23) APPROXIMATE LOCATION OF DEEP MONITORING WELL (NOT USED IN ISOCONTOURING)

MW-1 (87.08) APPROXIMATE LOCATION OF MONITORING WELL AND RELATIVE GROUNDWATER ELEVATION

FIGURE 3
GROUNDWATER FLOW DIRECTION MAP
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA

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FILE NAME	Figure 3.SKF		

WS-2 ● Approximate locaion of water-supply well

Approximate location of Town of Jonesville water supply line

FIGURE 4
WATER SUPPLY WELL LOCATION MAP
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA

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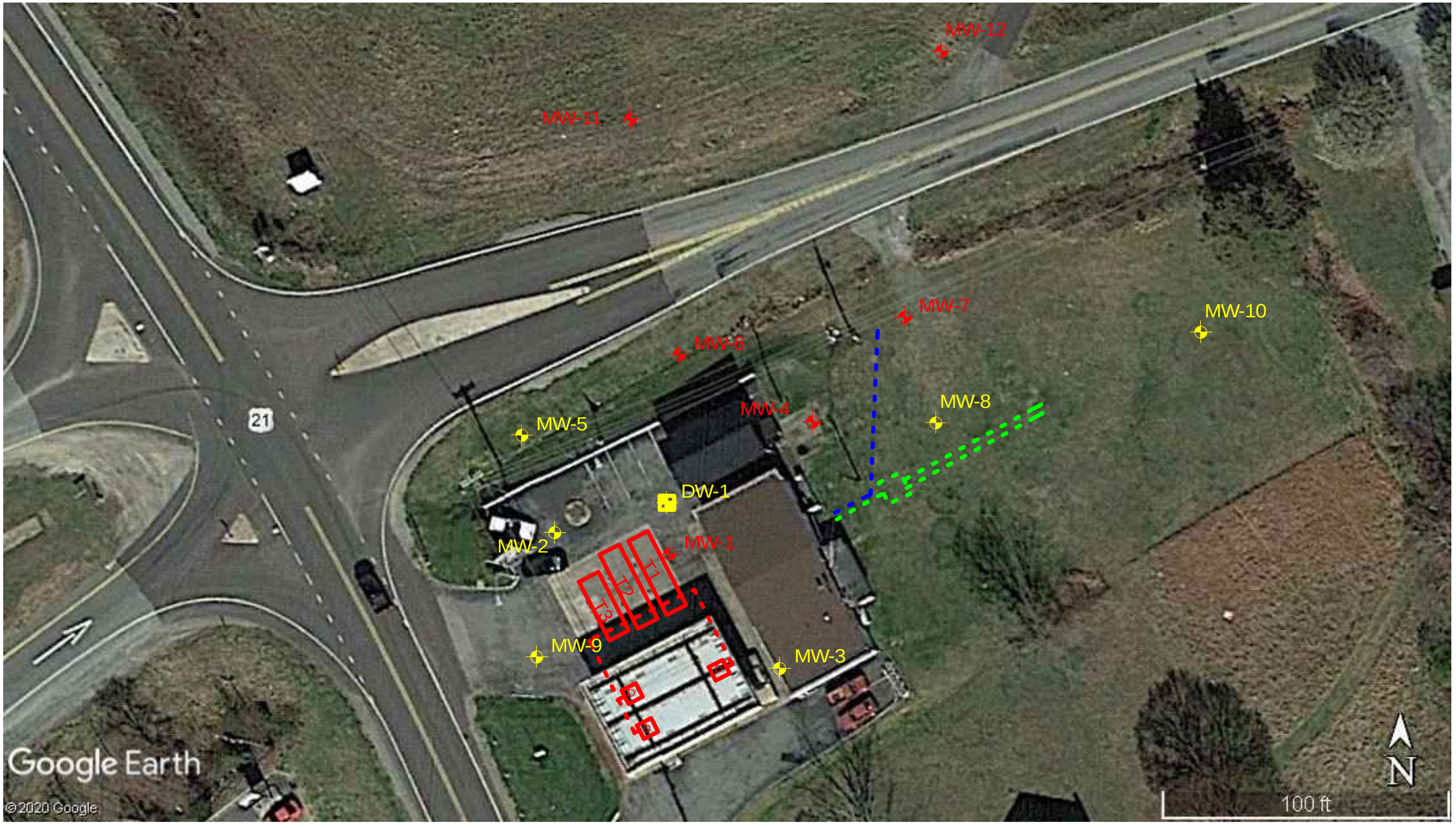
SCALE	AS SHOWN	PROJECT	1020063.001
FILE NAME	Figure 4.SKF		



FORMER UST LOCATION

FORMER FUEL DISTRIBUTION LINE

FORMER FUEL DISPENSER

APPROXIMATE LOCATION MUNICIPAL WATER LINE

APPROXIMATE SEPTIC LINE AND/OR TANK

DW-1 APPROXIMATE LOCATION OF DEEP MONITORING WELL WITH CONCENTRATION NOT EXCEEDING NC2LGWQS

MW-5 APPROXIMATE LOCATION OF MONITORING WELL WITH CONCENTRATION NOT EXCEEDING NC2LGWQS

MW-1 APPROXIMATE LOCATION OF MONITORING WELL WITH CONCENTRATION EXCEEDING NC2LGWQS

FIGURE 5
GROUNDWATER ANALYTICAL RESULTS MAP
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA

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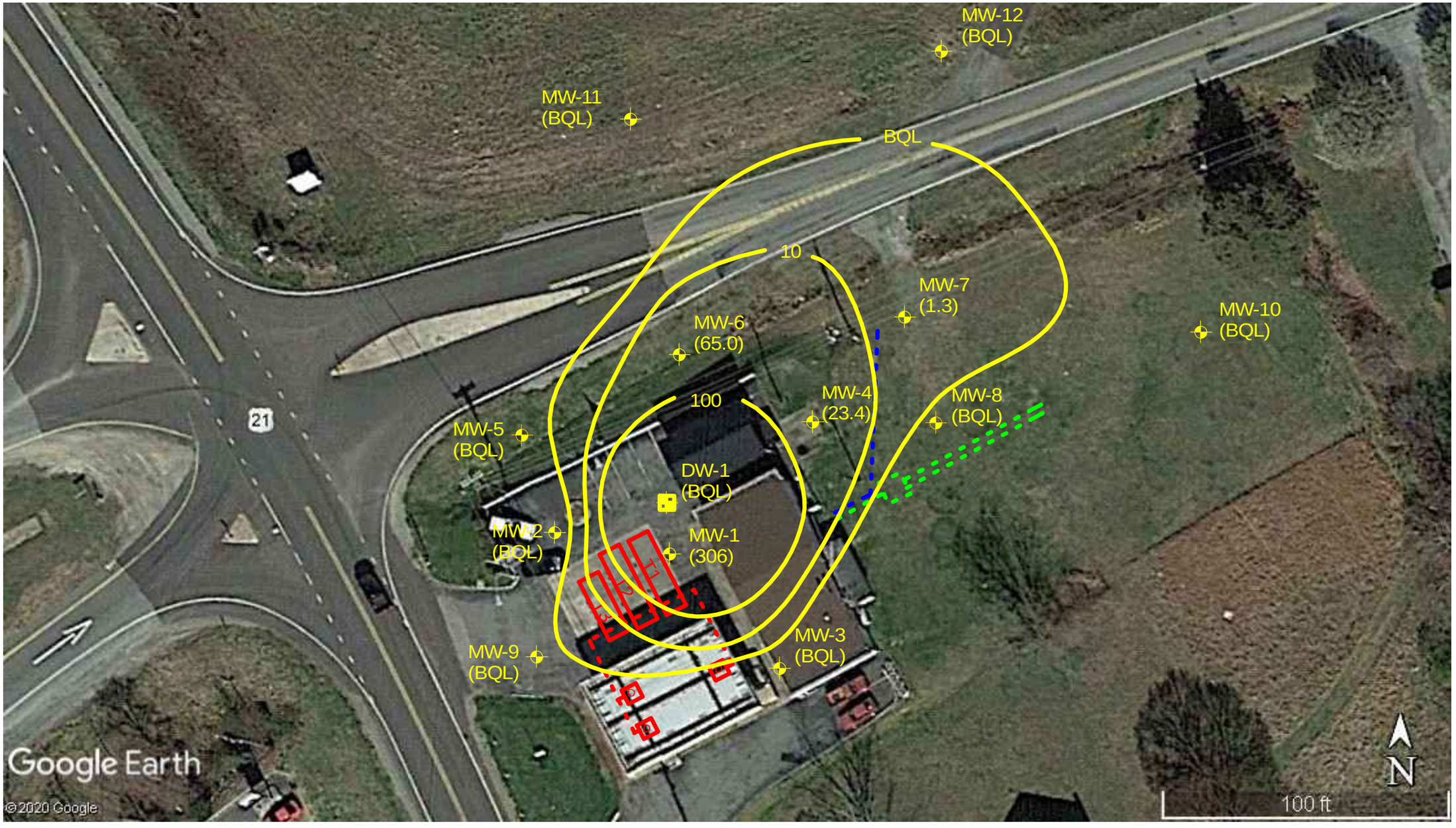
CHECKED	JSL	DATE	MAY 2021
SCALE	AS SHOWN	PROJECT	1020063.001
FILE NAME	Figure 5.SKF		



FORMER UST LOCATION

FORMER FUEL DISTRIBUTION LINE

FORMER FUEL DISPENSER

APPROXIMATE LOCATION MUNICIPAL WATER LINE

APPROXIMATE SEPTIC LINE AND/OR TANK

DW-1 BQL — APPROXIMATE LOCATION OF DEEP MONITORING WELL AND BENZENE CONCENTRATION

10 — BENZENE ISOPLETH CONTOUR

MW-5 (BQL) — APPROXIMATE LOCATION OF MONITORING WELL AND BENZENE CONCENTRATION (NOT USED IN CONTOURING)

FIGURE 6
BENZENE ISOPLETH MAP
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA

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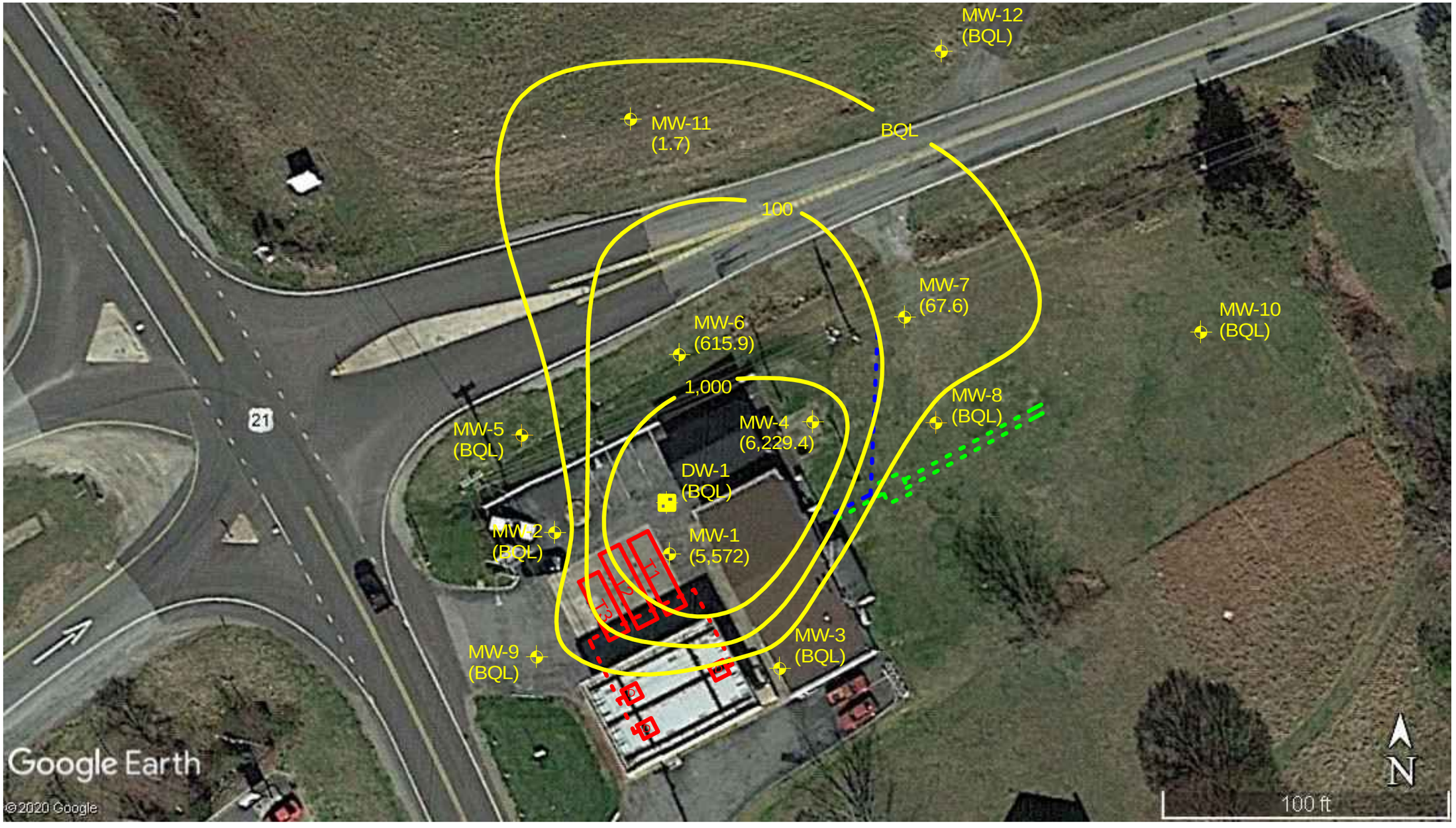
DRAWN	JAB	DATE	MAY 2021
CHECKED	JSL	DATE	MAY 2021
SCALE	AS SHOWN	PROJECT	1020063.001
FILE NAME	Figure 6.SKF		



FORMER UST LOCATION

FORMER FUEL DISTRIBUTION LINE

FORMER FUEL DISPENSER

APPROXIMATE LOCATION MUNICIPAL WATER LINE
APPROXIMATE SEPTIC LINE AND/OR TANK

DW-1 (BQL) APPROXIMATE LOCATION OF DEEP MONITORING WELL AND BTEXCONCENTRATION (NOT USED IN CONTOURING)

100 BTEX ISOPLETH CONTOUR

MW-5 (BQL) APPROXIMATE LOCATION OF MONITORING WELL AND BTEX CONCENTRATION

FIGURE 7
BTEXISOPLETH MAP
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA

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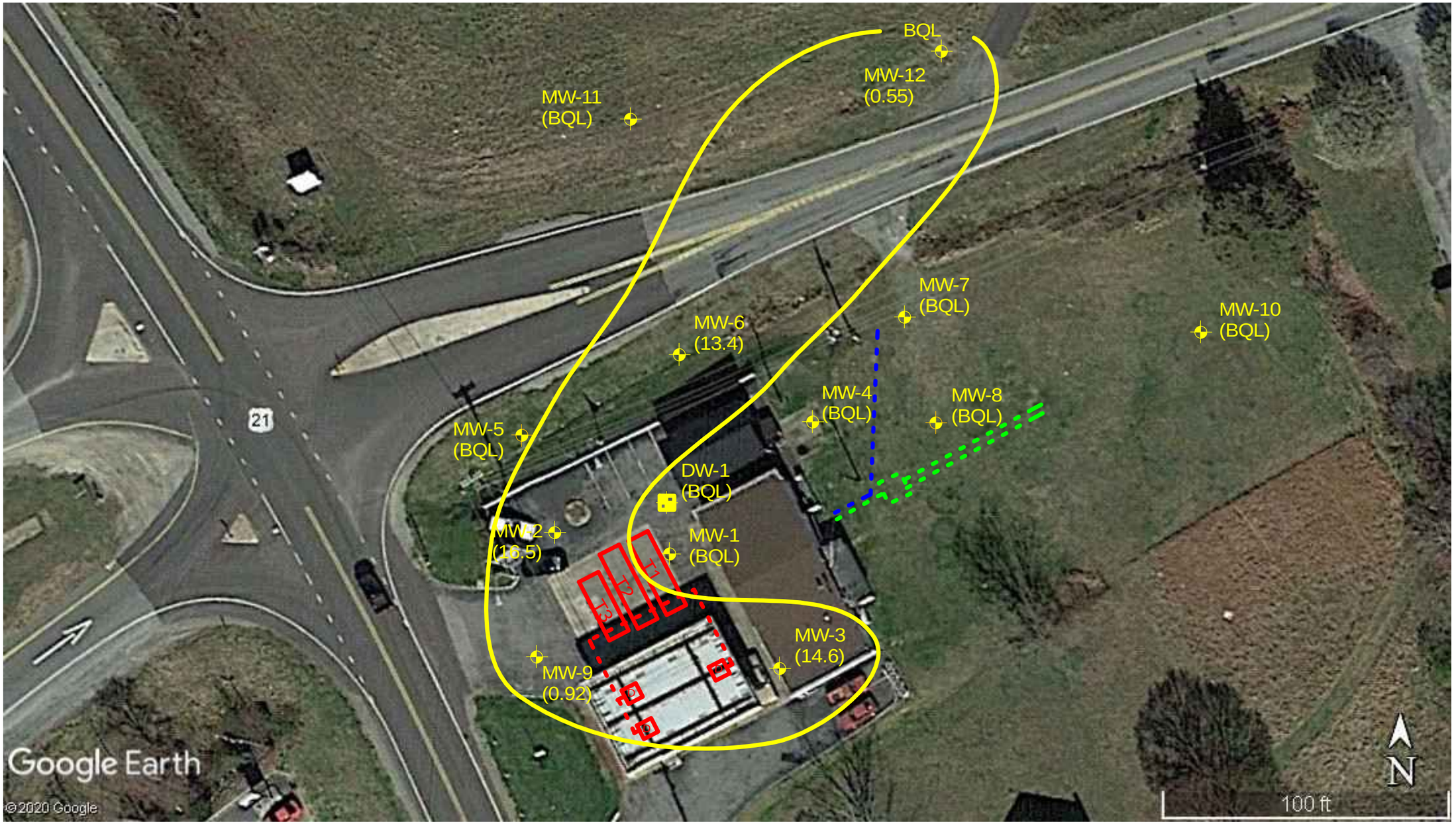
CHECKED	JSL	DATE	MAY 2021
SCALE	AS SHOWN	PROJECT	1020063.001
FILE NAME	Figure 7.SKF		



FORMER UST LOCATION

FORMER FUEL DISTRIBUTION LINE

FORMER FUEL DISPENSER

APPROXIMATE LOCATION MUNICIPAL WATER LINE
APPROXIMATE SEPTIC LINE AND/OR TANK

DW-1 BQL — APPROXIMATE LOCATION OF DEEP MONITORING WELL AND MTBE CONCENTRATION (NOT USED IN CONTOURING)

10 — MTBE ISOPLETH CONTOUR

MW-9 (0.92) — APPROXIMATE LOCATION OF MONITORING WELL AND MTBE CONCENTRATION

FIGURE 8
MTBE ISOPLETH MAP
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA

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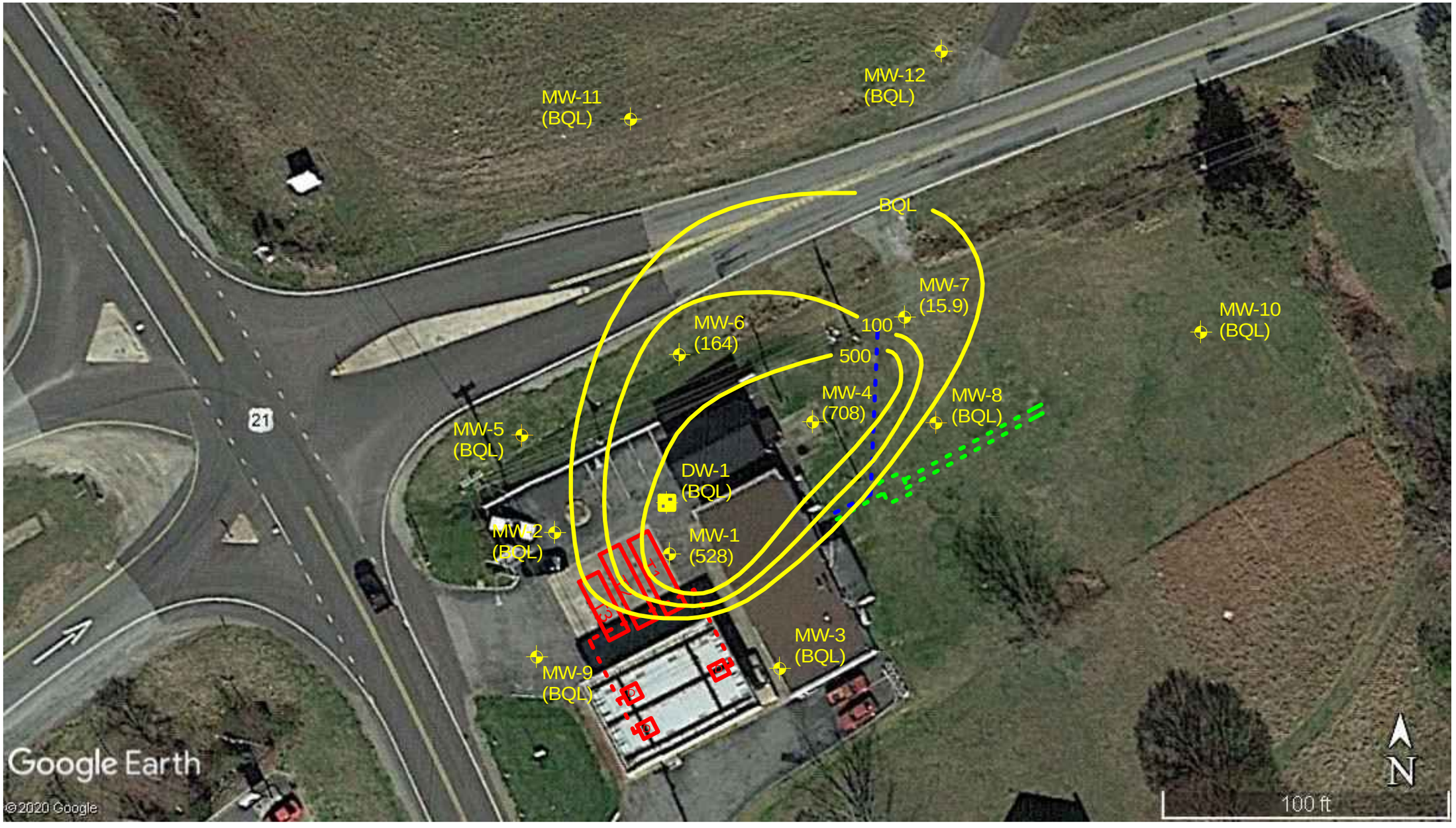
SCALE	AS SHOWN	PROJECT	1020063.001
FILE NAME	Figure 8.SKF		



FORMER UST LOCATION

FORMER FUEL DISTRIBUTION LINE

D FORMER FUEL DISPENSER

APPROXIMATE LOCATION MUNICIPAL WATER LINE

APPROXIMATE SEPTIC LINE AND/OR TANK

DW-1 BQL APPROXIMATE LOCATION OF DEEP MONITORING WELL AND NAPHTHALENE CONCENTRATION (NOT USED IN CONTOURING)

100 NAPHTHALENE ISOPLETH CONTOUR

MW-11 (6.7) APPROXIMATE LOCATION OF MONITORING WELL AND NAPHTHALENE CONCENTRATION

FIGURE 9
NAPHTHALENE ISOPLETH MAP
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA

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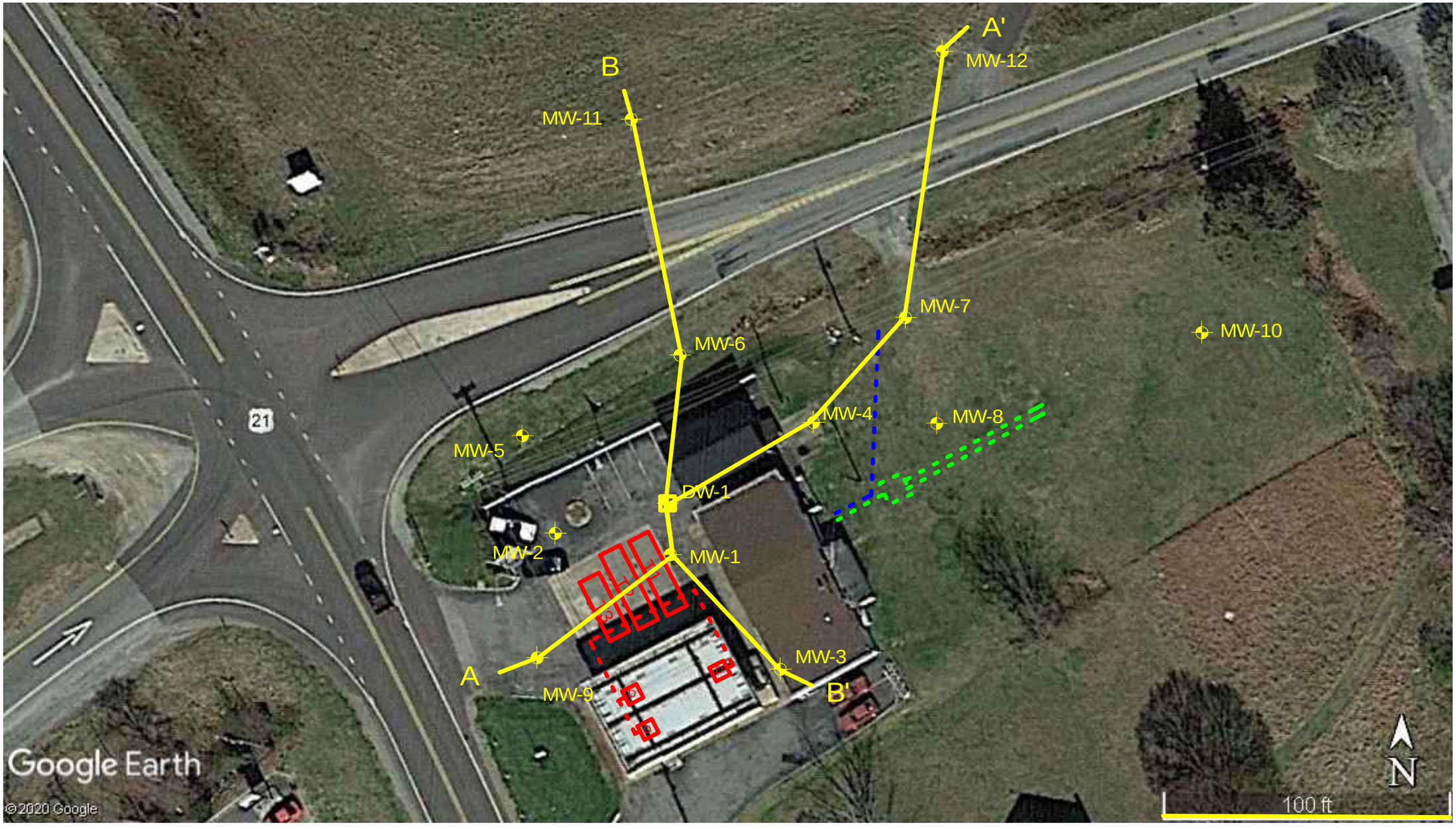
CHECKED	JSL	DATE	MAY 2021
SCALE	AS SHOWN	PROJECT	1020063.001
FILE NAME	Figure 9.SKF		



FORMER UST LOCATION

FORMER FUEL DISTRIBUTION LINE

FORMER FUEL DISPENSER

APPROXIMATE LOCATION MUNICIPAL WATER LINE

APPROXIMATE SEPTIC LINE AND/OR TANK

MW-9 APPROXIMATE LOCATION OF MONITORING WELL

DW-1 APPROXIMATE LOCATION OF DEEP MONITORING WELL

FIGURE 10
CROSS-SECTION LOCATION MAP
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA

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DRAWN	JAB	DATE	MAY 2021
CHECKED	JSL	DATE	MAY 2021
SCALE	AS SHOWN	PROJECT	1020063.001
FILE NAME	Figure 10.SKF		

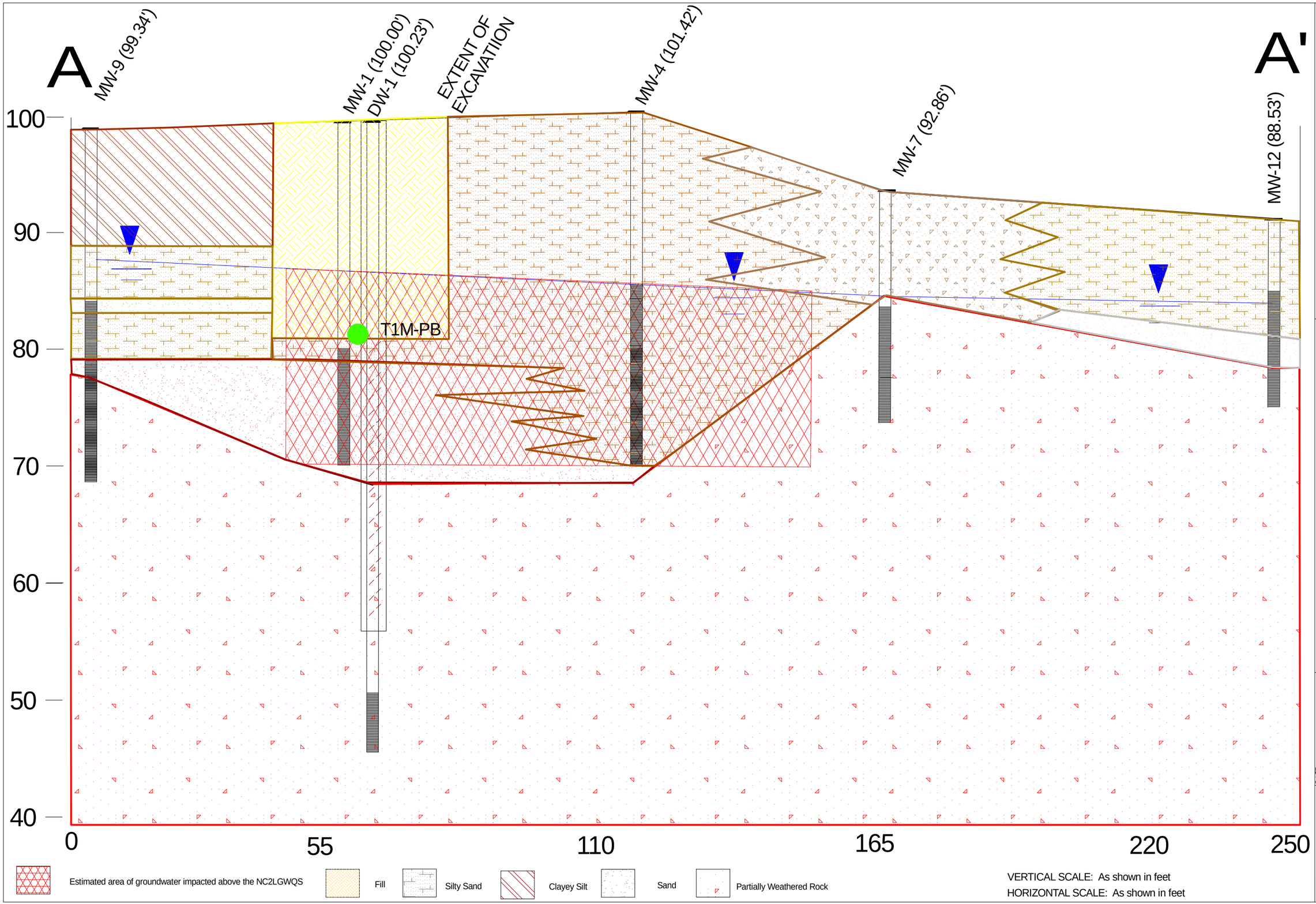

FIGURE 11
CROSS SECTION A TO A'
HIGHWAY 21 SHELL SERVICE
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA21

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DRAWN	JAB	DATE	MAY 2021
CHECKED	JSL	DATE	MAY 2021
SCALE	AS SHOWN	PROJECT	1020063.001
FILE NAME	Figure 11.SKF		

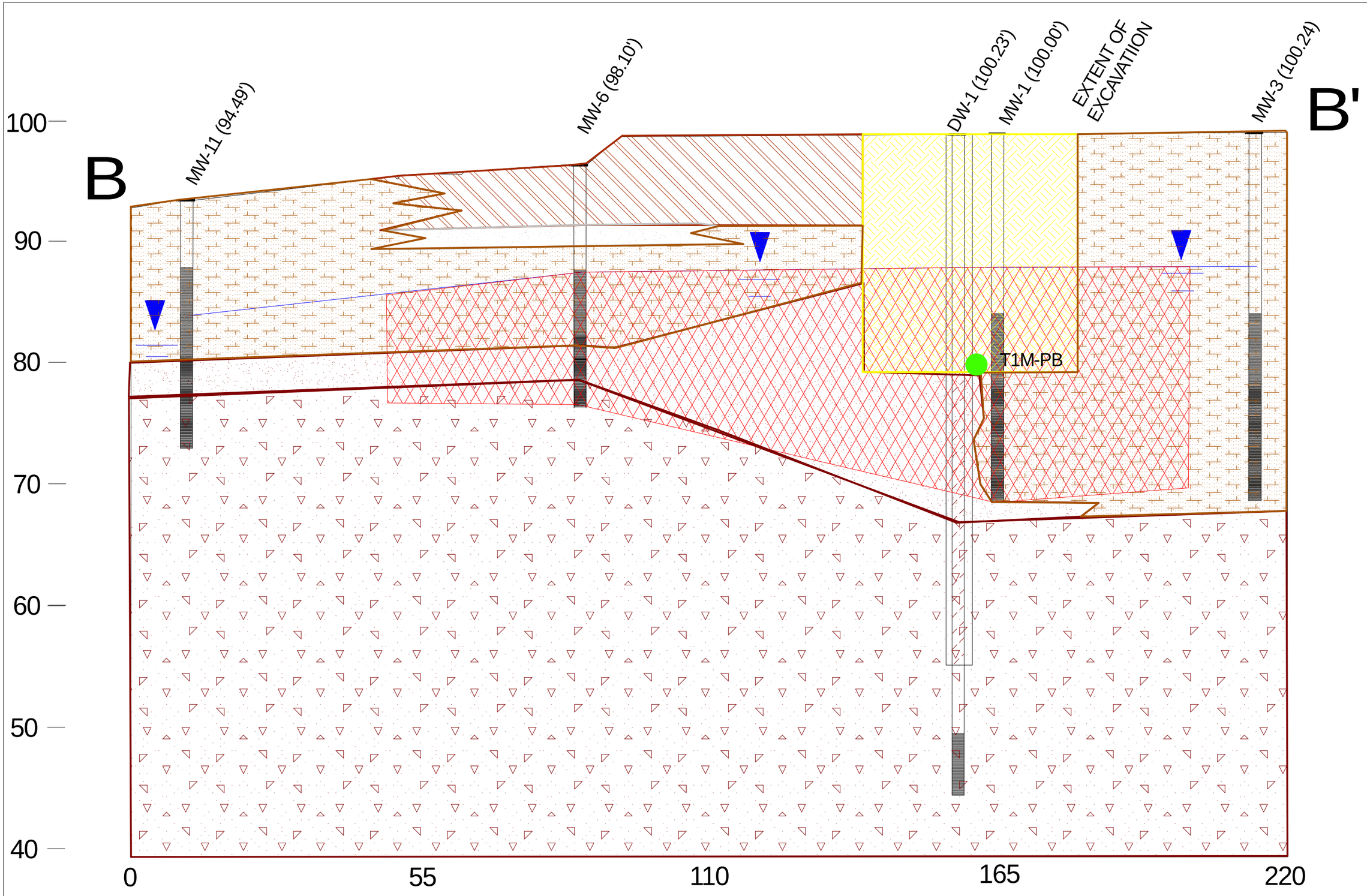

FIGURE 12
CROSS SECTION B TO B'
HIGHWAY 21 SHELL SERVICE
5616 US HIGHWAY 21
JONESVILLE, NORTH CAROLINA21

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DRAWN	JAB
CHECKED	JSL
SCALE	AS SHOWN
FILE NAME	Figure 10.SKF
DATE	MAY 2021
DATE	MAY 2021
PROJECT	1020063.001

N TABLES

Table B-1: Site History – UST/AST System and Other Release Information

Revision Date: May 6, 2021 Incident Number and Name: 45225 US Highway 21 Shell Pantry

UST ID Number	Current / Most-Recent Contents*	Previous Contents*	Capacity *(in gallons)*	Construction Details**	Tank Dimensions	Description of Piping and Pumps	Date Tank Installed	Status of UST***	Release associated with this UST System?
T1	Gasoline	Gasoline	10,000	Single Wall FRP	8’ x 29’6”	Single Wall FRP	1990	Removed (2019)	NO
T2	Gasoline	Gasoline	10,000	Single Wall FRP	8’ x 29’6”	Single Wall FRP	1990	Removed (2019)	YES
T3	Gasoline	Gasoline	8,000	Single Wall FRP	8’ x 24’6”	Single Wall FRP	1990	Removed (2019)	NO
T4	New/used oil	New/used oil	550	Single Wall Steel	46” x 6’	Single Wall Steel	1968	Removed (1988)	UNKNOWN
T5	Gasoline	Gasoline	6,000	Single Wall Steel	8’ x 16’	Single Wall	1971	Removed (1990)	NO
T6	Gasoline	Gasoline	10,000	Single Wall Steel	8’ x 29’6”	Single Wall Steel	1969	Removed (1990)	NO
T7	Gasoline	Gasoline	10,000	Single Wall Steel	8’ x 29’6”	Single Wall Steel	1969	Removed (1990)	NO
T8	Hydraulic oil	Hydraulic oil	Unknown	Unknown	Unknown	Unknown	Unknown	Removed (unknown)	UNKNOWN
T9	Hydraulic oil	Hydraulic oil	Unknown	Unknown	Unknown	Unknown	Unknown	Removed (unknown)	UNKNOWN

Incident Number	Material Released	Date of Release	Description of Release
45225	Gasoline	5/15/19	Release discovered following the removalof three gasoline USTs at the site.

* Gasoline (unleaded or leaded), diesel, used oil, waste oil, aviation fuel, etc., or pesticides, non-halogenated or halogenated solvents, etc.

** Fiberglass (single- or double-walled), steel (single- or double-walled), steel with FRP (single- or double-walled), steel with liner, other, unknown.

*** Currently operational, not in use or temporarily closed (specify date), permanently closed in place (specify date), permanently closed by removal (specify date)

Table B-3
Summary of Detected Soil Analytical Results
US Highway 21 Shell Pantry
Comprehensive Site Assessment Report
NCDEQ Incident No. 45225

Analytical Method			5035	8260											VPH		
Sample ID	Contaminant of Concern		TPH-G	Benzene	n-Butylbenzene	sec-Butylbenzene	Ethylbenzene	Isopropylbenzene	p-Isopropyltoluene	Naphthalene	n-Prpoylbenzene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	C5-C8 Aliphatics	C9-C10 Aromatics	C9-C12 Aliphatics
	Date Collected (m/dd/yy)	Sample Depth (ft BLS)																
T1-N	5/7/2019	12	BQL															
T1-M	5/7/2019	12	**8,320**	**41.7**			**110**					**63.8**			**509**	BQL	BQL	BQL
T1-S	5/7/2019	12	BQL															
T2-N	5/7/2019	12	BQL															
T2-M	5/7/2019	12	BQL															
T2-S	5/7/2019	12	BQL															
T3-N	5/7/2019	12	BQL															
T3-M	5/7/2019	12	BQL															
T3-S	5/7/2019	12	BQL															
D-1	5/7/2019	2.5	BQL															
D-2	5/7/2019	2.5	**1,430**	BQL			**13.3**					**11.3**			**110.3**			
D-3	5/7/2019	2.5	**325**															
P-1	5/7/2019	3	BQL															
P=2	5/7/2019	3	BQL															
P=-3	5/7/2019	3	BQL															
P-4	5/7/2019	3	**10.3**															
P-5	5/7/2019	3	BQL															
D2-PB	5/10/2019	6		BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL
D3-PB	5/10/2019	6		BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL
T1M-PB	5/10/2019	20		BQL	**9.9**	**1**	**8.81**	**1.84**	**2.64**	**33.3**	**8.87**	BQL	**78.5**	**19.2**	**46.6**	**502**	**149**	**12500**
NC Action Level (mg/Kg)			50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Soil-to-Groundwater MSCCs (mg/Kg)			N/A	0.0072	2.4	2.2	8	13	0.12	0.2	1.4	5.4	6.6	6.6	6	68	31	540
Residential Soil Cleanup Levels (mg/Kg)			N/A	12	782	1,560	60.3	1,560	1,560	5.5	1,560	1,250	156	156	3,120	625	469	1,500
Industrial/Commercial Soil Cleanup Levels (mg/Kg)			N/A	59.4	11,600	23,300	297	23,300	23,300	27	23,300	18,600	2,330	2,330	46,700	9,340	7,000	23,300

NOTES:
= Concentration exceeds Soil-to-Groundwater MSCC
= Concentration exceeds Residential Soil Cleanup Levels
BQL = Below Quantitation Limits
VPH = Volatile Petroleum Hydrocarbon-Massachusetts Department of Environmental Protection
MSCC = maximum soil contaminant concentration
ft. BLS = feet below land surface
mg/kg =milligrams per kilogram
NE = Not Established
N/A = Not Applicable
Not analyzed for this parameter
= Health based level > 100%

TABLE B-4
SUMMARY OF DETECTED GROUNDWATER ANALYTICAL RESULTS
COMPREHENSIVE SITE ASSESSMENT REPORT
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, YADKIN COUNTY, NORTH CAROLINA
INCIDENT NO. 45225

Analytical Method			Standard Method 6200B															Lead	USEPA Method 504.1	MADEP Method VPH		
Contaminant of Concern			Benzene	Ethylbenzene	Isopropylbenzene	Isopropylether	Methyl ethyl ketone	MTBE	Naphthalene	sec-Butylbenzene	n-Butylbenzene	N-Propylbenzene	p-Isopropyltoluene	Styrene	Toluene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	Total Xylenes	Lead	EDB	C5-C8 Aliphatics	C9-C12 Aliphatics	C9-C10 Aromatics
Well Number	**Sampling Date**	**Depth to Water**																				
MW-1	06/27/19	16.53	***673***	***1,790***	**60.0**	BQL	BQL	BQL	**689**	BQL	BQL	**206**	BQL	BQL	**1,730**	***1,660***	***422***	***7,310***	**19.7**	BQL	**4,170**	**20,500**	**8,530**
	05/05/20	13.57	***413***	***1,220***	**40.5**	BQL	BQL	BQL	**526**	BQL	BQL	**136**	BQL	BQL	**788**	***1,170***	***312***	***4,210***	NT	NT	NT	NT	NT
	06/08/20	13.00	NT	NT	NT	NT	BQL	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**5.96**	NT	NT	NT	NT
	12/18/20	12.92	***306***	***1,180***	**43.4**	BQL	**56.1**	BQL	**528**	BQL	BQL	BQL	BQL	**53.7**	**596**	***1,160***	***308***	***3,490***	NT	NT	NT	NT	NT
MW-2	10/21/19	16.81	BQL	BQL	BQL	**3.01**	**BQL**	**111**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**51.7**	BQL	BQL	BQL	BQL
	05/05/20	13.75	BQL	BQL	BQL	**0.84**	**BQL**	**21.3**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
	06/18/20	13.28	NT	NT	NT	NT	BQL	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	BQL	NT	NT	NT	NT
	12/18/20	13.01	BQL	BQL	BQL	BQL	BQL	**16.5**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
MW-3	10/21/19	16.35	BQL	BQL	BQL	BQL	BQL	**12.9**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**106.0**	BQL	BQL	BQL	BQL
	05/05/20	13.40	BQL	BQL	BQL	BQL	BQL	**20.3**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
	06/18/20	16.06	NT	NT	NT	NT	BQL	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	BQL	NT	NT	NT	NT
	12/18/20	12.75	BQL	BQL	BQL	BQL	BQL	**14.6**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
MW-4	10/21/19	19.70	**47.0**	***1,090***	**85.8**	BQL	BQL	BQL	**695**	BQL	**27.8**	**231**	**21.0**	BQL	**441**	***1,720***	***472***	***4,250***	**33.5**	BQL	**8,830**	**18,600**	**8,850**
	05/05/20	17.21	**31.2**	***752***	**59.8**	BQL	BQL	BQL	**650**	BQL	**38.8**	**180**	**30.8**		**308**	***2,200***	***412***	***4,900***	NT	NT	NT	NT	NT
	06/18/20	16.72	NT	NT	NT	NT	BQL	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**20.1**	NT	NT	NT	NT
	12/18/20	16.40	**23.4**	***1,110***	**88.0**	BQL	BQL	BQL	**708**	BQL	BQL	BQL	BQL	**15.4**	**376**	***2,210***	***638***	***4,720***	NT	NT	NT	NT	NT
MW-5	05/06/20	11.58	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**1,090**	BQL	BQL	BQL	BQL
	06/18/20	11.14	NT	NT	NT	NT	BQL	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	BQL	NT	NT	NT	NT
	12/18/20	10.81	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
MW-6	05/06/20	11.41	**37.7**	***242***	**43.6**	BQL	BQL	BQL	**243**	BQL	**113**	**158**	**60.7**	BQL	**42.9**	***698***	***319***	***756***	**891**	BQL	**16,500**	**17,700**	**11,600**
	06/18/20	10.92	NT	NT	NT	NT	BQL	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**12.6**	NT	NT	NT	NT
	12/18/20	10.61	**65.0**	***212***	**23.8**	BQL	BQL	**13.4**	**164**	BQL	BQL	BQL	BQL	BQL	**29.1**	***377***	**107**	**309.8**	NT	NT	NT	NT	NT
MW-7	05/06/20	9.22	**5.97**	**108**	**8.93**	**0.99**	**BQL**	BQL	**67.4**	BQL	BQL	**22.7**	**2.46**	BQL	**6.45**	**122**	**40.2**	**194**	**216**	BQL	**851**	**2,100**	**1,060**
	06/18/20	8.73	NT	NT	NT	NT	BQL	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**6.28**	NT	NT	NT	NT
	12/18/20	8.35	**1.3**	**28.4**	**2.9**	BQL	BQL	BQL	**15.9**	BQL	BQL	BQL	BQL	BQL	**1.4**	**28.2**	BQL	**36.5**	NT	NT	NT	NT	NT
MW-8	05/06/20	11.42	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL		BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL
	12/18/20	10.60	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
MW-9	05/06/20	12.80	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**60.2**	BQL	BQL	BQL	BQL
	06/18/20	12.50	NT	NT	NT	NT	BQL	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	BQL	NT	NT	NT	NT
	12/18/20	12.34	BQL	BQL	BQL	BQL	BQL	**0.92**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
MW-10	12/19/20	2.94	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**8.6**	BQL	BQL	BQL	BQL
MW-11	12/19/20	11.28	BQL	**1.7**	**3.3**	BQL	BQL	BQL	**6.7**	BQL	**8.4**	**11.6**	BQL	BQL	BQL	**9.4**	BQL	BQL	**7.9**	BQL	**812**	**325**	**429**
MW-12	12/19/20	5.72	BQL	BQL	**1.0**	BQL	BQL	**0.55**	BQL	**4.1**	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**5.7**	BQL	**171**	**218**	**295**
DW-1	05/05/20	15.00	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	**13.4**	BQL	BQL	BQL	BQL
	12/18/20	14.00	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
WSW-3	04/26/21	--	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
WSW-9	04/26/21	--	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
WSW-10	04/26/21	--	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
WSW-12	04/26/21	--	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
WSW-13	04/26/21	--	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
WSW-15	08/02/19	--	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
	12/19/20	--	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	BQL	NT	NT	NT	NT	NT
NC2LGWQS			1	600	70	70	4,000	20	6	70	70	70	25	70	600	400	400	500	15	0.02	400	700	200
GCLs			5,000	84,500	25,000	70,000	4,000,000	20,000	6,000	8,500	6,900	30,000	11,700	70,000	260,000	28,500	25,000	85,500	15,000	50	NS	NS	NS
IHSB Non-Residential GW Screening Levels			69	150	2,000	NE	1,900,000	20,000	4,900	NE	NE	2,000	NE	7,800	16,000	210	150	320	NE	77	NE	NE	NE

Notes:
= Exceeds North Carolina 2L Groundwater Quality Standards (NC2LGWQS)
= Exceeds Gross Contamination Levels (GCLs)
Contaminant concentrations are reported in micrograms per liter (µg/L)
NE = Not Established
BQL = Below Quantitation Limts
NT = Not Tested
NS No Standard
IHSB Non-Residential Screening Levels dated February 2018
Italics represents an exceedance of the IHSB Non-Residential Groundwater Screening Levels

Table B-5
Water-Supply Well Information - January 2021
Comprehensive Site Assessment Report
US Highway 21 Shell
Jonesville, Yadkin County, North Carolina

MAP ID	OWNER NAME	SITE ADDRESS	MAILING ADDRESS	WELL USE	CONNECTED TO PUBLIC WATER	PUBLIC WATER AVAILABLE TO PROPERTY	APPROXIMATE DISTANCE OF WELL FROM SOURCE AREA (FT.)
1	Mary W. Yarboro	5505 US Highway 21	5505 US Highway 21 Jonesville, North Carolina 28642	Drinking	No	Yes	965
2	Claude Carter	1011 Catherine Lane	1021 Catherine Lane Jonesville, North Carolina 28642	Inactive	Yes	Yes	944
3	Michael G Cheek et al	5617 US Highway 21	1820 Cheek Road Hamptonville, North Carolina 27020	Drinking (Not Active)	No	Yes	600
4	Nav Durgasu LLC	5601 US Highway 21	5601 US Highway 21 Jonesville, North Carolina 28642	Inactive	Yes	Yes	580
5	Bennie Wiles	2809 Wilkins Road	2809 Wilkins Road Jonesville, North Carolina 28642	Drinking	No	No	905
7	Norma Jean Hutchins	2820 Fox Knob Road	2820 Fox Knob Road Jonesville, North Carolina 28642	Drinking	No	No	865
8	Donald E. Kartes, Jr.	2814 Fox Knob Road	242 Timberbrook Trail State Road, North Carolina 28676	Drinking	No	No	723
9	James M. Swaim	2804 Fox Knob Road	2804 Fox Knob Road Jonesville, North Carolina 28642	Drinking	No	No	630
10	James M. Swaim	2804 Fox Knob Road	2804 Fox Knob Road Jonesville, North Carolina 28642	Drinking	No	No	655
11	Arlington Fire and Rescue, Inc.	4510 Little Mountain Road	PO Box 68 Jonesville, North Carolina 28642	Drinking	No	No	693
12	V G S Properties, Inc.	4517 Little Mountain Road	4517 Little Mountain Road Jonesville, North Carolina 28642	Drinking	No	No	588
13	Ronald F. Chapman	Little Mountain Road	128 Little John Road Statesville, North Carolina 28677	Inactive-No residence	Yes	No	450
14	Andrea Nicole Marsh	5608 US Highway 21	139 Players Park Circle Statesville, North Carolina 28677	Drinking (Not Active)	No	Yes	187
15	Sylvia Wilkins Chapman	5600 US Highway 21	128 Little John Road Statesville, North Carolina 28677	Drinking	No	Yes	400
16	Delarco, Inc.	5516 US Highway 21	2034 Walker Road Winston-Salem, North Carolina 27106	Drinking	No	Yes	700
17	Paul F. Wagoner	5512 US Highway 21	5512 US Highway 21 Jonesville, North Carolina 28642	Drinking	No	Yes	891

Receptor survey completed July 9, 2019.

TABLE B-6
SURROUNDING PROPERTY OWNERS
COMPRESHENSIVE SITE ASSESSMENT REPORT
US HIGHWAY 21 SHELL
5616 US HIGHWAY 21
JONESVILLE, YADKIN COUNTY, NORTH CAROLINA
NCDEQ INCIDENT NO. 45225

Map ID	Name	Property Address	Mailing Address
Site (116682)	Lanny G Wilkins/Benny H Wilkins	5616 US Highway 21 Jonesville, North Carolina 28642	2408 Chappell Road Hamptonville, North Carolina 27020
116282	Marion G. Welborn	5552 US Highway 21 Jonesville, North Carolina 28642	2852 Round Hill Road Boonville, North Carolina 27011
116686	Devon Weatherman	4537 Little Mountain Road Jonesville, North Carolina 28642	4537 Little Mountain Road Jonesville, North Carolina 28642
116681	Andrea Nicole Marsh	5608 US Highway 21 Jonesville, North Carolina 28642	P.O. Box 410 Statesville, North Carolina 28677
116650	Rajni Patel Et ux	5543 US Highway 21 Jonesville, North Carolina 28642	5543 US Highway 21 Jonesville, North Carolina 28642

Map ID numbers are referenced to Figure 12

TABLE B-7
WELL CONSTRUCTION INFORMATION
US HIGHWAY 21 SHELL
COMPREHENSIVE SITE ASSESSMENT
NCDEQ INCIDENT NO.: 45225

Monitoring Well ID	Installation Date	Well Diameter (inches)	Screened Interval (feet)	Total Depth (feet)	Depth to to Water (feet TOC) 12/18 & 19/20	Relative Elevation (feet TOC)**	Groundwater Elevation (feet)
MW-1	6/26/2019	2	15-30	30	12.92	100.00	87.08
MW-2	9/30/2019	2	15-30	30	13.01	99.71	86.70
MW-3	9/30/2019	2	15-30	30	12.75	100.24	87.49
MW-4	9/30/2019	2	15-30	30	16.40	101.22	84.82
MW-5	5/5/2020	2	10-20	20	10.81	98.10	87.29
MW-6	5/5/2020	2	10-20	20	10.61	96.04	85.43
MW-7	5/5/2020	2	10-20	20	8.35	92.86	84.51
MW-8	5/5/2020	2	10-20	20	10.60	96.64	86.04
MW-9	5/5/2020	2	15-30	30	12.34	99.34	87.00
MW-10	12/18/2020	2	7-17	17	2.94	87.41	84.47
MW-11	12/18/2020	2	6-21	21	11.28	94.49	83.21
MW-12	12/18/2020	2	5-15	15	5.72	88.53	82.81
DW-1	4/28/2020	2	50-55	55	14.00	100.23	86.23

375.75
x 100
318.75 337.13
94.5481
55 220
1367
341.75

TABLE B-9
CURRENT AND HISTORICAL GROUNDWATER ELEVATIONS AND NAPL THICKNESS
US HIGHWAY 21 SHELL
COMPREHENSIVE SITE ASSESSMENT REPORT
NCDEQ INCIDENT NO. 45225

Well ID	Top of Casing Elevation (AMSL)	Screened Interval (top of screen)	Date Measured mm/dd/yy	Depth to Water* (Uncorrected) (feet)	NAPL Thickness (feet)	Depth to Water* (Corrected for NAPL Thickness) (feet)	Groundwater Surface Elevation** (AMSL)
MW-1	1,126	15-30	06/27/19	16.53	N/A	16.53	1,109.47
			05/05/20	13.57	N/A	13.57	1,112.43
			06/08/20	13.00	N/A	13.00	1,113.00
			12/18/20	12.92	N/A	12.92	1,113.08
MW-2	1,126	15-30	10/21/19	16.81	N/A	16.81	1,109.19
			05/05/20	13.75	N/A	13.75	1,112.25
			06/18/20	13.28	N/A	13.28	1,112.72
			12/18/20	13.01	N/A	13.01	1,112.99
MW-3	1,127	15-30	10/21/19	16.35	N/A	16.35	1,110.65
			05/05/20	13.40	N/A	13.40	1,113.60
			06/18/20	16.06	N/A	16.06	1,110.94
			12/18/20	12.75	N/A	12.75	1,114.25
MW-4	1,127	15-30	10/21/19	19.70	N/A	19.70	1,107.30
			05/05/20	17.21	N/A	17.21	1,109.79
			06/18/20	16.72	N/A	16.72	1,110.28
			12/18/20	16.40	N/A	16.40	1,110.60
MW-5	1,124	10-20	05/06/20	11.58	N/A	11.58	1,112.42
			06/18/20	11.14	N/A	11.14	1,112.86
			12/18/20	10.81	N/A	10.81	1,113.19
MW-6	1,122	10-20	05/06/20	11.41	N/A	11.41	1,110.59
			06/18/20	10.92	N/A	10.92	1,111.08
			12/18/20	10.61	N/A	10.61	1,111.39
MW-7	1,119	10-20	05/06/20	9.22	N/A	9.22	1,109.78
			06/18/20	8.73	N/A	8.73	1,110.27
			12/18/20	8.35	N/A	8.35	1,110.65
MW-8	1,123	10-20	05/06/20	11.42	N/A	11.42	1,111.58
			12/18/20	10.60	N/A	10.60	1,112.40
MW-9	1,126	15-30	05/06/20	12.80	N/A	12.80	1,113.20
			06/18/20	12.50	N/A	12.50	1,113.50
			12/18/20	12.34	N/A	12.34	1,113.66
MW-10	1,113	7-17	12/19/20	2.94	N/A	2.94	1,110.06
MW-11	1,121	6-21	12/19/20	11.28	N/A	11.28	1,109.72
MW-12	1,114	5-15	12/19/20	5.72	N/A	5.72	1,108.28
DW-1	1,126	50-55	05/05/20	15.00	N/A	15.00	1,111.00
			12/18/20	14.00	N/A	14.00	1,112.00

Average Mean Sea Level (AMSL) elevation data gathered from GoogleEarth™ and should be assumed to be approximate