May 31, 2018

Kleinfelder File No. 20183507.001A

Mr. Gordon Box, LG
North Carolina Department of Transportation
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

Subject: **Preliminary Site Assessment Report**
Parcel 114, Edna M. Dickens
WBS Element No. 38887.1.1, TIP No. R-3830
NC 42 from US 421 to SR 1579 (Main Street) in Sanford and
along SR 1579 from NC 42 to SR 1538 (Buckhorn Avenue) in Broadway
Lee County, North Carolina

Dear Mr. Box:

Kleinfelder is pleased to provide its report detailing the activities conducted as part of the preliminary site assessment for the subject project.

Kleinfelder appreciates the opportunity to be of service to you. Should you have questions or require additional information, please do not hesitate to contact the undersigned.

Sincerely,
KLEINFELDER, INC.

Joseph C. Hollinger
Staff Professional II

Michael J Burns, LG
Program Manager

JCH/MJB:cas

3200 Gateway Centre Blvd. Suite 100, Morrisville, NC 27560 **p |** 919.755.5011 **f |** 919.755.1414

PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 114, EDNA M. DICKENS
PIN 9672-13-1884
1831 BROADWAY ROAD
SANFORD, LEE COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 38887.1.1
STATE PROJECT R-3830
NC42 FROM US 421 TO SR 1579 (MAIN STREET) IN SANFORD AND ALONG SR 1579 FROM NC 42 TO SR 1538 (BUCKHORN AVENUE) IN BROADWAY

KLEINFELDER PROJECT NO. 20183507.001A

MAY 31, 2018

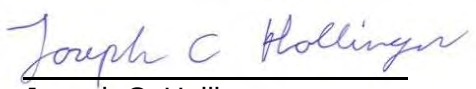
A Report Prepared for:

Gordon Box, LG
North Carolina Department of Transportation
1589 Mail Service Center
Raleigh, North Carolina 27699-1589

PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 114, EDNA M. DICKENS
PIN 9672-13-1884
1831 BROADWAY ROAD
SANFORD, LEE COUNTY, NORTH CAROLINA

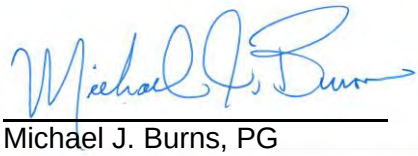
NCDOT WBS ELEMENT 38887.1.1
STATE PROJECT R-3830
NC 42 FROM US 421 TO SR 1579 (MAIN STREET) IN SANFORD AND
ALONG SR 1579 FROM NC 42 TO SR 1538 (BUCKHORN AVENUE) IN BROADWAY

Prepared by:



Joseph C. Hollinger
Environmental Scientist

Reviewed by:



Michael J. Burns, PG
Environmental Program Manager

KLEINFELDER
3200 Gateway Centre Blvd. | Suite 100
Raleigh, North Carolina 27560
P | 919.755.5011

May 31, 2018

Kleinfelder Project No. 20183507.001A

PRELIMINARY SITE ASSESSMENT

Site Name and Location:	Parcel 114 1831 Broadway Road Sanford, Lee County, North Carolina
Latitude and Longitude:	35.463827°N, -79.096863°W
County PIN	9672-13-1884
Facility ID Number:	0-02683
LUST ID Number:	14425
State Project No.:	R-3830
NCDOT Project No.:	NCDOT WBS Element 38887.1.1
Description:	NC 42 from US 421 to SR 1579 (Main Street) in Sanford and along SR 1579 from NC 42 to SR 1538 (Buckhorn Avenue) in Broadway
Date of Report:	May 31,2018
Consultant:	Kleinfelder, Inc. 3200 Gateway Center Boulevard | Suite 100 Morrisville, North Carolina 27560 Corporate Geology License No. C-521 Corporate Licensure for Engineering F-1312

SEAL AND SIGNATURE OF CERTIFYING LICENSED GEOLOGIST

I, Michael J Burns, a Licensed Geologist for Kleinfelder, Inc., do certify that the information contained in this report is correct and accurate to the best of my knowledge.

Michael J Burns, LG
NC License No. 1645

NORTH CAROLINA LICENSED SEAL 1645 GEOLOGIST MICHAEL JAMES BURNS

DocuSigned by:
7E53DC44AC794CA...

TABLE OF CONTENTS

TABLES

FIGURES

APPENDICES

A Site Photographs
B NCDEQ Reports
C Geophysical Survey Report
D Boring Logs
E Analytical Reports and Graphs

PRELIMINARY SITE ASSESSMENT REPORT
PARCEL 114, EDNA M. DICKENS
PIN 9672-13-1884
1831 BROADWAY ROAD
SANFORD, LEE COUNTY, NORTH CAROLINA

NCDOT WBS ELEMENT 38887.1.1
STATE PROJECT R-3830
NC 42 FROM US 421 TO SR 1579 (MAIN STREET) IN SANFORD AND ALONG SR 1579 FROM NC 42 TO SR 1538 (BUCKHORN AVENUE) IN BROADWAY

1 INTRODUCTION

Kleinfelder, Inc. (Kleinfelder) has prepared this Preliminary Site Assessment (PSA) report to document assessment activities performed within the proposed/existing right of way (ROW) and/or temporary construction easement on Parcel 114 (the assessment area is hereafter referred to as the "Project Study Area"). Parcel 114 is currently occupied by a vacant gasoline service station, adjoining the intersection of Broadway Road and Avents Ferry Road in Sanford, Lee County, North Carolina (Figure 1).

Based on information provided in Kleinfelder's September 2014 Hazardous Material Investigation Report and information provided by the North Carolina Department of Transportation (NCDOT), the parcel is the site of a former gasoline service station (First and Last Stop Broadway) with a former underground storage tank (UST) registration (Facility ID# 0-02683). The parcel is also the location of a leaking underground storage tank (LUST) incident with ID #14425. As such, the purpose of the PSA was to evaluate whether USTs or contaminated soil/groundwater are present in the Project Study Area that may result in increased project costs and future liability if acquired by the NCDOT.

1.1 SITE DESCRIPTION

Parcel 114 is owned by Edna M. Dickens and has a street address of 1831 Broadway Road. Parcel 114 is bounded by a pond and an automotive garage to the north; agricultural land to the west; Avents Ferry Road to the east, beyond which are residential properties; and Broadway Road to the south, beyond which is wooded land and wetlands. The parcel is currently the location of a vacant structure, formerly utilized as a gasoline service station. A piped stream appears to be present on the parcel to the west of the onsite structure, flowing from the pond in the north to the wetlands to the south. Photographs of the Project Study Area are provided in Appendix A.

1.2 SCOPE OF WORK

Kleinfelder conducted this PSA in accordance with the NCDOT's January 12, 2018, Request for Technical and Cost Proposal (RFP) and Kleinfelder's January 24, 2018, Technical and Cost Proposal. The NCDOT granted Notice to Proceed for the project on February 1, 2018.

2 HISTORY

2.1 PARCEL USAGE

The September 2014 Hazardous Materials Report included information about environmental databases searched and historical review information for Parcel 114. The parcel was indicated to be the location of a former gasoline service station denoted First and Last Stop. The structure and petroleum dispensers were present in during the 2014 reconnaissance; however, the Parcel was unused. The gasoline service station previously maintained 3 gasoline USTs (1 8,000-gallon, and 2, 4,000-gallon) and is the listed location of leaking UST (LUST) incident #14425. There were no other environmental database listings identified for Parcel 114 that would suggest the presence of contaminated soil or groundwater.

Kleinfelder conducted additional historical research to determine whether additional environmental listings were identified since 2014 for Parcel 1144. The following are the results of the additional research:

- Kleinfelder searched the registered UST database, maintained by the North Carolina Department of Environmental Quality (NCDEQ). The parcel was identified as the former Pantry #115, with facility ID #0-02683.
- Kleinfelder searched the LUST database, maintained by the NCDEQ. The parcel is identified in the LUST database as the location of incident ID #14425. Kleinfelder obtained the UST Closure Report for the incident from the NCDEQ.
- Based on a review of aerial photographs and site observations, there does not appear to have been a significant change in the use of the parcel since the hazardous materials assessment conduced in 2014.

2.2 FACILITY ID NUMBERS

Kleinfelder reviewed the NCDEQ UST database for Parcel 114. The parcel previously maintained 1 8,000-gallon gasoline USTs and 2 4,000-gallon gasoline USTs of single-walled steel construction, which were installed in 1964 and closed by removal in 1993. No active USTs appear to be listed for the Parcel.

2.3 GROUNDWATER INCIDENT NUMBERS

Parcel 114 was listed as the location of a LUST incident with ID# 14445. Kleinfelder obtained the file for this incident from the NCDEQ. Reports prepared for this incident are included in Appendix B. According to the acquired reports, soil and groundwater contamination was identified in 1993 when 1, 8,000-gallon and 2, 4,000-gallon gasoline USTs were removed from the parcel, as well as a 550-gallon heating oil UST. 181.5 tons of contaminated soil was excavated at the time of UST closure. Soil and groundwater contamination was identified primarily to the south of the onsite structure.

In 2002, approximately 340 tons of contaminated soils were removed from the Parcel in the area to the south of the structure. Soils were removed to a depth of seven to eight feet, where a clay layer was encountered. Confirmation samples indicated no soil contamination above the soil-to-water MSCCs or residential cleanup levels.

A total of nine shallow monitoring wells and one deep monitoring well previously existed on the parcel, including two located across the road to the south, just north of a wetland. Groundwater sampling events appear to have occurred periodically between 1996 and 2003. Benzene, ethylbenzene, and naphthalene in excess of the NC 2L Standards were detected. In 2003, the site was re-ranked low risk after a nearby water supply well was abandoned. The incident was closed out with a Land Use Restriction (LUR) for groundwater and the onsite monitoring wells were abandoned.

The Parcel was also listed in the LUST database as the location of incident #15977; however, a review of this listing identified it to be a duplicate listing incident #14425. There were no other database LUST or IHSB) listings identified for Parcel 114 that indicated known soil or groundwater incidents.

3 OBSERVATIONS

3.1 GROUNDWATER MONITORING WELLS

No groundwater monitoring wells were observed within the Project Study Area during the multiple site visits conducted as part of the PSA. According to NCDEQ reports, monitoring well were previously present on the parcel but have been abandoned.

3.2 ACTIVE USTS

No active USTs were observed within the Project Study Area during the multiple site visits conducted as part of the PSA.

3.3 OTHER FEATURES APPARENT BEYOND PROJECT STUDY AREA

A former dispenser island is located approximately 5 feet to the north of the Project Study Area along Broadway Road. According to NCDEQ reports, these were gasoline dispensers. A 550-gallon aboveground storage tank (AST) and dispenser is located to the west of the onsite structure, approximately 20 feet to the north of the Project Study Area. According to the NCDEQ reports, this was formerly utilized for kerosene.

No other features were observed beyond the Project Study Area that indicated evidence of potential contamination on Parcel 114.

4 METHODS

4.1 PROPERTY OWNER CONTACTS

As part of Kleinfelder's scope of work, the listed property owner was contacted about the work schedule for the field work and the type of work being performed. The owner requested that the work be performed on a Thursday. The owner did not express any other concerns or special conditions associated with the work being performed.

4.2 HEALTH AND SAFETY

Prior to commencing the field work, Kleinfelder personnel developed a Site-Specific Health and Safety Plan (HASP) covering activities to be performed. The site specific HASP was discussed with all Kleinfelder personnel involved with the project and at a daily onsite "tail gate" safety meetings with subcontractors and sub consultants. In addition to the HASP, Kleinfelder utilized its comprehensive Corporate Health and Safety Program, targeted to address those specific and critical tasks that involve Kleinfelder personnel and subcontractors. The Loss Prevention System (LPS™), a behavior-based program, is Kleinfelder's company-wide safety system implemented and embraced by all levels of the company.

4.3 GEOPHYSICAL INVESTIGATION

Pyramid Environmental & Engineering, P.C (Pyramid) conducted a geophysical investigation in the Project Study Area between February 12 through 21, 2018. Pyramid utilized electromagnetic (EM) induction technology and ground penetrating radar (GPR) to locate potential geophysical anomalies and potential USTs within the Project Study Area.

A copy of the Pyramid Geophysical Investigation Report, detailing the field methodology, is included in Appendix C. The EM and GPR surveys did not detect USTs or unknown geophysical anomalies within the Project Study Area.

4.4 SOIL ASSESSMENT

The scope of work for the soil assessment was to evaluate the presence of soil contamination within the Project Study Area. The soil borings were planned to be advanced to maximum depths of 10 feet below the ground surface unless groundwater was encountered. Field screening using a Flame ionization detector (FID) was to be conducted at 1 foot intervals beginning at 0 foot to 1

foot. The soil sample with the highest FID reading above background or the sample from the deepest proposed cut would be selected for on-site laboratory analyses.

Prior to the drilling activities, public utilities were marked by NC One Call and private utilities were marked by Pyramid.

Kleinfelder subcontracted Quantex, Inc. (Quantex) to perform the drilling onsite on March 20, 2018. Prior to the initial boring and after each subsequent boring, the sampling equipment was decontaminated. Quantex advanced a total of seven soil borings (SS1 through SS7) by hand auger to 3 feet below the ground surface (bgs) and by direct-push technology from 3 feet to boring termination (10 feet bgs) at locations specified by Kleinfelder. The soil boring locations were identified in the field using a GPS. The soil boring locations are shown on Figure 2. The borings were located within the proposed public utility easement along Broadway Road and Avents Ferry Road. Soil samples were collected by hand auger and driving Macro Core™ samplers in 5 foot intervals. Each soil core was cut open and the soil samples were classified and the soil divided into 1-foot sections. Soil observed were not consistent across the parcel, and is likely related to the removal of the USTs and contaminated soils associated with the former gasoline service station. Each 1-foot section was screened in the field using a FID. The FID readings are summarized in Table 1. Copies of the boring logs are included in Appendix D.

Soil borings SS1, SS2, SS3, SS4, and SS5 were installed in the Project Study Area along the southern parcel boundary. Soils in this area appear to have been disturbed. According to NCDEQ reports the areas where SS4 and SS5 were installed are within the limits of the 2002 soil excavation. In the disturbed areas soils were determined to be silty sand and coarse grained sand and groundwater was encountered between 5 and 6 feet below existing grade.

Soil borings SS6 and SS7 were installed to the north and east of the onsite structure. Soils were determined to be primarily coarse grained sand in the top 1 to 3 feet with an underlying sandy clay, and did not appear to be disturbed. Groundwater was not encountered in the borings installed off of Avents Ferry Road at the termination depth of 10 feet bgs.

4.5 SOIL ANALYSIS

The FID readings from the top 5 feet in soil borings SS1, SS2, SS6, and SS7 were noted to be low. Based on the FID data, samples were collected at the depth of the highest FID readings

and/or above the water table. Based on onsite laboratory results additional samples from SS6 were selected for analysis FID data and samples selected for analysis are detailed in Table 1.

The FID reading from soil boring SS3, SS4, and SS5 were noted to be slightly elevated. Based on the FID data, samples were collected at the depth of the highest FID readings and/or above the water table. Based on onsite laboratory results additional samples from SS6 were selected for analysis FID data and samples selected for analysis are detailed in Table 1.

The samples were analyzed by Kleinfelder utilizing ultraviolet fluorescence (UVF) methodology to provide real-time analytical results of Total Petroleum Hydrocarbons (TPH), Gasoline Range Organics (GRO), Diesel Range Organics (DRO), and benzene, toluene, ethylbenzene, and total xylenes (BTEX). The UVF method was selected because of the use of petroleum products on Parcel 114 in the past. The UVF analysis also provided data regarding Environmental Protection Agency 16 total Polycyclic Aromatic Hydrocarbons (PAHs), and Benzo(a)pyrene (BaP).

Based on a review of analytical data, Kleinfelder returned to the parcel on April 20, 2018 to advance an additional four soil borings to a maximum depth of 3 feet in the vicinity of SS6. Kleinfelder advanced soil borings to the north (SS8), east (SS9), south (SS10), and west (SS11). Samples were collected from 2 and 3 feet bgs, placed in laboratory prepared containers and submitted under proper chain of custody to Pace Analytical in Huntersville, North Carolina for analysis for TPH DRO.

4.6 GROUNDWATER ANALYSIS

Groundwater was encountered at between 5 and 6 feet in soil borings SS1, SS2, SS3, SS4, and, SS5. Soil from within the water table in borings SS2, SS3, SS4, and SS5 was noted to have strong petroleum odors. Soil from within the water table was screened with the FID and reading were noted to be elevated.

Based on observed conditions and a review of the NCDEQ reports of the former LUST incident on the Site, Kleinfelder converted soil boring SS2 into temporary monitoring well TMW-1. SS2 was located closest to the area of maximum cut and had the highest FID reading within the water table. Kleinfelder also converted soil boring SS4 into temporary monitoring well TMW-2, since SS4 was located in an area where groundwater contamination had historically been the highest.

Both wells were installed to a total depth of 10 feet bgs, with screen form 5 to 10 feet and a PVC riser from 5 feet to ground surface. Each well was purged and sampled using a new, disposable 1-inch polyethylene bailer. Samples were collected in laboratory prepared containers and submitted under chain of custody to Pace Analytical in Huntersville, North Carolina for analysis by EPA Method 6200B for volatile organic compounds, and EPA Method 625 for semi-volatile organic compounds (SVOCs).

Once samples were collected the wells were pulled and the soil borings filled in with bentonite chips to the ground surface.

5 RESULTS

5.1 GEOPHYSICAL INVESTIGATION

Pyramid concluded that the EM and GPR investigation did not identify any evidence of unknown metallic UST(s) or unknown geophysical anomalies within the project study area.

5.2 SOIL SAMPLING DATA

UVF analysis of soil samples indicated levels of TPH DRO in soil samples below the state action limit of 100 mg/kg in soil samples SS1-2 [1.2 milligrams per kilogram (mg/kg)], SS1-4-5 (2.1 mg/kg), SS2-3 (4.8 mg/kg), SS2-4-5 (0.73 mg/kg), SS3-3 (0.26 mg/kg), SS3-4-5 (1.6 mg/kg), SS4-1 (3.6 mg/kg), SS4-4-5 (11 mg/kg), SS5-2 (15.7 mg/kg), and SS5-4-5 (11.5 mg/kg). UVF analysis indicated levels of TPH DRO in soil samples in excess of the NCDEQ action limit of 100 mg/kg in SS6-1 (172.5 (mg/kg) and SS6-2 (104.6 mg/kg).

Soil samples collected on April 20 from 2 and 3 feet bgs in soil borings SS8, SS10, and SS11, and the soil sample from 3 feet in SS9 did not contain TPH DRO in excess of the method detection limit. A DRO of 6.7 mg/kg was reported in SS9-2.

UVF analysis of soil samples indicated levels of TPH GRO in soil samples below the state action limit of 50 mg/kg in soil samples SS1-2 (3.2 mg/kg) and SS7-9 (5.8 mg/kg).

UVF analysis of the soil samples indicated levels of total BTEX in soil samples SS1-2 (3.2 mg/kg).

UVF analysis of the soil samples indicated levels of total PAHs in soil sample SS1-1 (0.03 mg/kg), SS1-4-5 (0.06 mg/kg), SS2-3 (0.26 mg/kg), SS2-4-5 (0.04 mg/kg), SS3-4-5 (0.03 mg/kg), SS4-1 (0.06 mg/kg), SS4-4-5 (0.22 mg/kg), SS5-2 (0.86 mg/kg), SS5-4-5 (0.59 mg/kg), SS6-1 (0.75 (mg/kg), and SS6-2 (0.43 mg/kg).

UVF analysis of the soil samples did not detect BaP in any of the sample analyzed.

Based on analytical results, shallow petroleum impacted soils (1 to 2 feet) were identified on the parcel in the vicinity of SS6. The UVF analysis indicated a strong match for waste oil. The source of the potential waste oil is unknown. A summary of the analytical results are provided on Table 2 and on Figure 4. The laboratory report and graphs are included in Appendix E.

5.3 SAMPLE OBSERVATIONS

Soils were observed for any obvious evidence of contamination. Staining was noted in samples from 1 and 2 feet in SS6, but no petroleum odor was noted. No obvious evidence of soil contamination was noted in other borings on the parcel.

5.4 QUANTITY CALCULATIONS

Petroleum impacted soils that may require additional assessment or remediation were detected within the Project Study Area along Avents Ferry Road.

The impacted area appears to be approximately 8 feet wide by 10 feet long. Using a uniform depth of 2 feet (from approximately 0.5 to 2.5 feet bgs), the volume of DRO contaminated soil that may be encountered in the vicinity of SS6 is about 6 cubic yards.

5.5 GROUNDWATER ANALYTICAL RESULTS

Analytical results from TMW-1 identified benzene contamination above the NC 2L Standards. Benzene was detected at 1.4 parts per billion (ppb), above the NC 2L Standard of 1.0 ppb.

Analytical results from TMW-2 identified benzene (3.8 ppb), 1,2-Dichloroethane (0.41 ppb), and naphthalene (63.9 ppb) above the NC 2L Standard. Benzo(a)pyrene (8.8 ppb) was identified above both the NC 2L Standard and the Gross Contamination Levels (GCLs).

Complete Analytical results are included in Table 4. The Pace Analytical Laboratory Report is included in Appendix E.

6 CONCLUSIONS

Based on results of the EM/GPR survey, soil assessment and field observations, Kleinfelder has reached the following conclusions:

- The GPR and EM investigation did not identify any features determined to be potential USTs or unknown geophysical anomalies within the Project Study Area.
- Historical research indicated that the parcel previously maintained 1 8,000-gallon and 2 4,000-gallon gasoline USTs, as well as a 550-gallon heating oil UST. A release was discovered during UST removal in 1993.
- The parcel is the location of LUST incident #14425. Approximately 360 tons of contaminated soils were removed from the Parcel in 2002. The incident was closed out in 2003 with a LUR for groundwater.
- Field observations of Parcel 114, beyond the Project Study Area identified structures and features associated with the former use of the Parcel as a gasoline service station. Dispenser islands and a 550-gallon kerosene UST remain present on the Parcel beyond the Project Study Area. The Parcel is not currently utilized for a specific purpose.
- Based on laboratory analytical results, an area of DRO impacted soils was detected within the Project Study Area. Onsite laboratory analysis indicated that the contamination profile matches waste oil. Up to seven cubic yards of contaminated soils may be present between 0.5 and 2.5 feet.
- Groundwater was encountered in 5 soil borings between 5 and 6 feet bgs.
- Petroleum contamination above the NC 2L Standard was identified in 2 temporary monitoring wells installed in the Project Study Area.

7 RECOMMENDATIONS

Based on results of this Preliminary Site Assessment, Kleinfelder recommends that construction workers be made aware of the contaminated soils and groundwater within the Project Study Area on Parcel 114 in Sanford, Lee County, North Carolina. If encountered during construction, special handling of the soils and groundwater would be necessary.

8 LIMITATIONS

Kleinfelder's work will be performed in a manner consistent with that level of care and skill ordinarily exercised by other members of its profession practicing in the same locality, under similar conditions and at the date the services are provided. Kleinfelder's conclusions, opinions and recommendations will be based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of geologic and environmental conditions are a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. Although risk can never be eliminated, more-detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, Kleinfelder's clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies, including subsurface studies or field tests, should be performed to reduce uncertainties. Acceptance of this report will indicate that NCDOT has reviewed the document and determined that it does not need or want a greater level of service than provided.

During the course of the performance of Kleinfelder's services, hazardous materials may have been discovered. Kleinfelder assumes no responsibility or liability whatsoever for any claim, loss of property value, damage, or injury that results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials. Nothing contained in this report should be construed or interpreted as requiring Kleinfelder to assume the status of an owner, operator, or generator, or person who arranges for disposal, transport, storage or treatment of hazardous materials within the meaning of any governmental statute, regulation or order. NCDOT is solely responsible for directing notification of all governmental agencies, and the public at large, of the existence, release, treatment or disposal of any hazardous materials observed at the project site, either before or during performance of

Kleinfelder's services. NCDOT is responsible for directing all arrangements to lawfully store, treat, recycle, dispose, or otherwise handle hazardous materials, including cuttings and samples resulting from Kleinfelder's services.

TABLES

Table 1: Soil Sample Screening Results

Date	Sample ID	Depth (ft)	FID Reading	Notes
3/20/2018	R-3830-P114-SS1	1	1.60	Analyzed by UVF
		2	0.81	
		3	0.93	
		4	1.39	Analyzed by UVF
		5	1.72	Analyzed by UVF
		6	NA	Wet
		7		
		8		
		9		
		10		
3/20/2018	R-3830-P114-SS2	1	1.48	
		2	4.97	
		3	8.98	Analyzed by UVF
		4-5	3.07	Analyzed by UVF
		6-10	1100.00	Wet
3/20/2018	R-3830-P114-SS3	1	14.40	
		2	13.80	
		3	19.56	Analyzed by UVF
		4-5	39.08	Analyzed by UVF
		6-10	31.86	Wet
3/20/2018	R-3830-P114-SS4	1	20.78	Analyzed by UVF
		2	14.08	
		3	6.72	
		4-5	6.34	Analyzed by UVF
		6-10	514.00	Wet

Notes:
1) FID = Flame Ionization Detector
2) FID readings in parts per million (ppm)

Table 1 (continued): Soil Sample Screening Results

Date	Sample ID	Depth (ft)	FID Reading	Notes
3/20/2018	R-3830-P114-SS5	1	NA	
		2	10.92	Analyzed by UVF
		3	6.89	
		4-5	10.99	Analyzed by UVF
		6-10	94.81	Wet
3/20/2018	R-3830-P114-SS6	1	1.81	Analyzed by UVF
		2	2.57	Analyzed by UVF
		3	2.29	Analyzed by UVF
		4	2.57	
		5	1.73	
		6	2.36	
		7	2.63	
		8	1.53	
		9	2.15	
		10	3.58	Analyzed by UVF
3/20/2018	R-3830-P114-SS7	1	3.01	
		2	2.70	Analyzed by UVF
		3	2.63	
		4	2.50	
		5	2.71	Analyzed by UVF
		6	2.01	
		7	2.20	
		8	2.91	
		9	3.02	Analyzed by UVF
		10	2.39	
4/20/2018	R-3830-P114-SS8	1	0.2	
		2	1.2	Analyzed by DRO
		3	0.3	Analyzed by DRO
4/20/2018	R-3830-P114-SS9	1	0.2	
		2	1.4	Analyzed by DRO
		3	0.2	Analyzed by DRO
4/20/2018	R-3830-P114SS10	1	1.0	
		2	0.7	Analyzed by DRO
		3	0.2	Analyzed by DRO
4/20/2018	R-3830-P114-SS11	1	1.2	
		2	0.9	Analyzed by DRO
		3	0.6	Analyzed by DRO

Notes:
1) FID = Flame Ionization Detector
2) FID readings in parts per million (ppm)

TABLE 2: Soil Sample Analytical Summary

Parameter	Analytical Results																Comparison Criteria
	Soil Sample Results																
Sample ID	SS1	SS1	SS2	SS2	SS3	SS3	SS4	SS4	SS5	SS5	SS6	SS6	SS6	SS6	SS7	SS7	SS7	
FID Reading (ppm)	0.81	1.56	8.98	3.07	19.56	39.08	20.78	6.34	10.92	10.99	1.81	2.57	2.29	3.58	2.70	2.71	3.02	State Action Limit
Collection Depth (ft bgs)	2	4-5	3	4-5	3	4-5	1	4-5	2	4-5	1	2	3	10	2	5	9	
Collection Date	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	3/20/18	
UVF Method																		
Total Petroleum Hydrocarbons	**4.4**	**2.1**	**4.8**	**0.73**	**0.26**	**1.6**	**3.6**	**11**	**15.7**	**11.5**	**172.5**	**104.6**	<0.56	<0.57	<0.58	<0.63	**5.8**	--
Diesel Range Organics	**1.2**	**2.1**	**4.8**	**0.73**	**0.26**	**1.6**	**3.6**	**11**	**15.7**	**11.5**	**172.5**	**104.6**	<0.04	<0.05	<0.05	<0.05	<0.06	100
Gasoline Range Organics	**3.2**	<0.49	<0.57	<0.73	<0.72	<0.56	<0.63	<0.63	<0.61	<0.55	<0.63	<0.61	<0.56	<0.57	<0.58	<0.63	**5.8**	50
BaP	<0.012	<0.01	<0.011	<0.015	<0.014	<0.011	<0.013	<0.013	0.066	<0.014	<0.013	<0.012	<0.011	<0.011	<0.012	<0.013	<0.014	--
16 EPA PAHs	**0.03**	**0.06**	**0.26**	**0.04**	<0.03	**0.03**	**0.06**	**0.22**	**0.86**	**0.59**	**0.75**	**0.43**	<0.02	<0.02	<0.02	<0.03	<0.03	--
Total Aromatics (C10-C35)	**0.85**	**1.2**	**4.8**	**0.72**	**0.14**	**0.48**	**1.3**	**5**	**15.6**	**11.4**	**14.4**	**8.1**	<0.11	<0.11	<0.12	<0.13	<0.14	--
Total BTEX	**3.2**	<0.49	<0.57	<0.73	<0.72	<0.56	<0.63	<0.63	<0.61	<0.55	<0.63	<0.61	<0.56	<0.57	<0.58	<0.63	<0.7	--

Notes:

1) Results displayed in milligram per kilogram (mg/kg)
2) ft bgs = Feet below ground surface
3) Bold = Above Laboratory Detection Limit
4) UVF = Ultraviolet Flouresence
5) BaP = Benzo(a)pyrene
6) EPA = Environmental Protection Agency
7) PAHs = Polycyclic Aromatic Hydrocarbons
8) BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
9) Shaded values exceed the NCDEQ Action Limit
10) FID = Flame Ionization Detector

TABLE 2 (continued): Soil Sample Analytical Summary

Parameter	Analytical Results								
	Soil Sample Results								
Sample ID	SS8	SS8	SS9	SS9	SS10	SS10	SS11	SS11	State Action Limit
FID Reading (ppm)	1.2	0.3	1.4	0.2	0.7	0.2	0.9	0.6	
Collection Depth (ft bgs)	2	3	2	3	2	3	2	3	
Collection Date	4/20/18	4/20/18	4/20/18	4/20/18	4/20/18	4/20/18	4/20/18	4/20/18	
DRO									
Diesel Range Organics	<5.4	<5.8	**6.7**	<5.4	<4.8.3	<5.5	<5.0	<5.2	100

Notes:

1) Results displayed in milligram per kilogram (mg/kg)
2) ft bgs = Feet below ground surface
3) Bold = Above Laboratory Detection Limit
4) UVF = Ultraviolet Flouresence
5) BaP = Benzo(a)pyrene
6) EPA = Environmental Protection Agency
7) PAHs = Polycyclic Aromatic Hydrocarbons
8) BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes
9) Shaded values exceed the NCDEQ Action Limit
10) FID = Flame Ionization Detector

Table 3: Monitoring Well Constuction and Groundwater Elevation Data

Well No.	Date Installed	Total Depth Drilled (feet,bgs)*	Diameter (inches)	Screen Interval Depth	Groundwater Elevation (feet)	Date Abandoned
TMW-1	3/20/2018	10	1	5-10	5.5	3/20/2018
TMW-2	3/20/2018	10	1	5-10	6.5	3/20/2018

Notes:
1) Temporary Monitoring Wells were abandoned with bentonite chips
2) bgs = below ground surface

Table 4: Groundwater Analytical Results

Sample ID	TMW-1	TMW-2	NC 2L	GCLs
Collection Date	3/20/2018	3/20/2018		
6200B				
Benzene	**1.4**	**3.8**	1	5000
n-Butylbenzene	4.1	<0.25	70	6900
sec-Butylbenzene	2.4	<0.25	70	8500
tert-Butylbenzene	0.99	3	70	15000
1,2-Dichloroethane	<0.25	**0.41 J**	0.4	400
Ethylbenzene	4.0	53.4	600	84500
Isopropylbenzene	5.1	26.4	70	25000
Naphthalene	3.7	**34.6**	6	6000
n-Propylbenzene	10.6	51	70	30000
Toluene	1.9	3.3	600	260000
Methyl tert butyl ether	8.1	3.7	20	20000
1,2,4-Trimethylbenzene	<0.25	1.4	400	28500
Total Xylenes	4.22	8.7	500	85500
625				
Benzo(a)pyrene	<3.0	***8.8 J***	0.005	0.81
Naphthalene	<3.4	**63.9**	6	6000

Notes:
1) Results in parts per billion (ppb)
2) J = Estimated concentration between laboratory reporting limit and method detection limit
3) Bolded values above laboratory detection limit
4) Bolded and shaded values exceed NC 2L Standard
5) Bolded, shaded, underlined and itaclised values exceed the GCL
6) J = Estimated concentration between laboratory reporting limit and laboratory detection lmit.
7) NC 2L = NC 2L Standard
8) GCL = Gross Contamination Levels

FIGURES

04/06/15

PROJECT REFERENCE NO.	SHEET NO.

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 25
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — EWB
- Proposed Wetland Boundary — PWB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line

- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

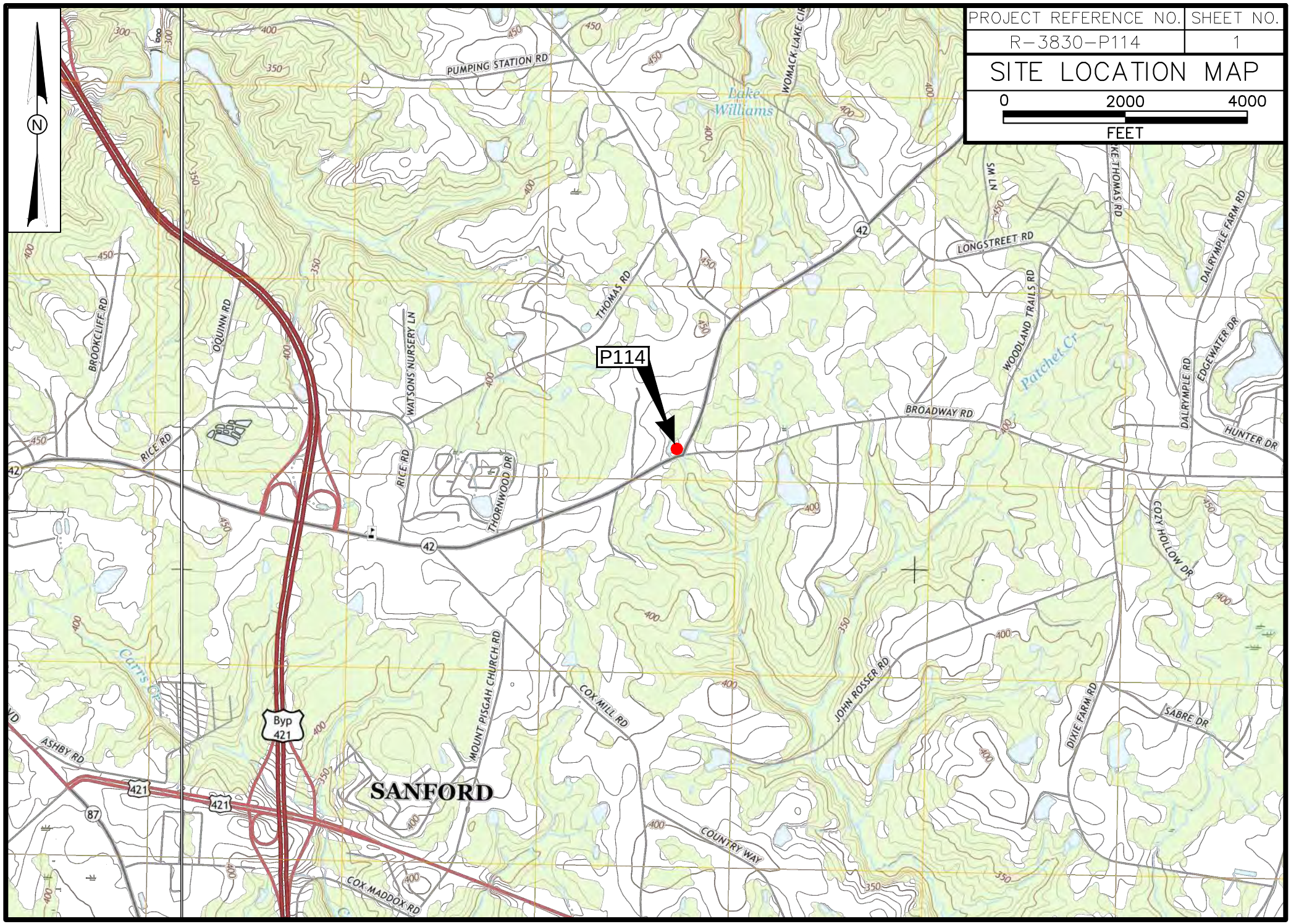
- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

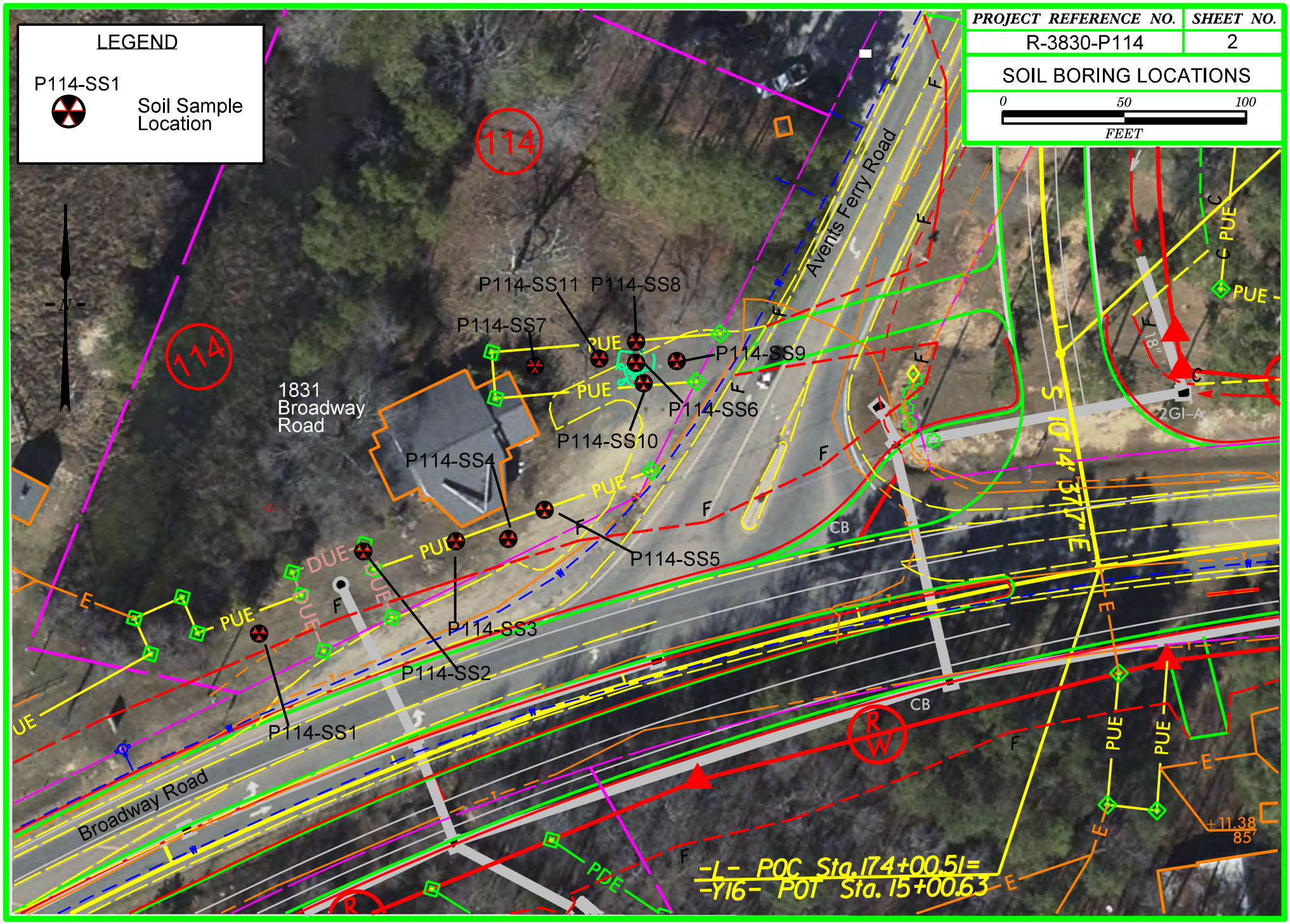
SANITARY SEWER:

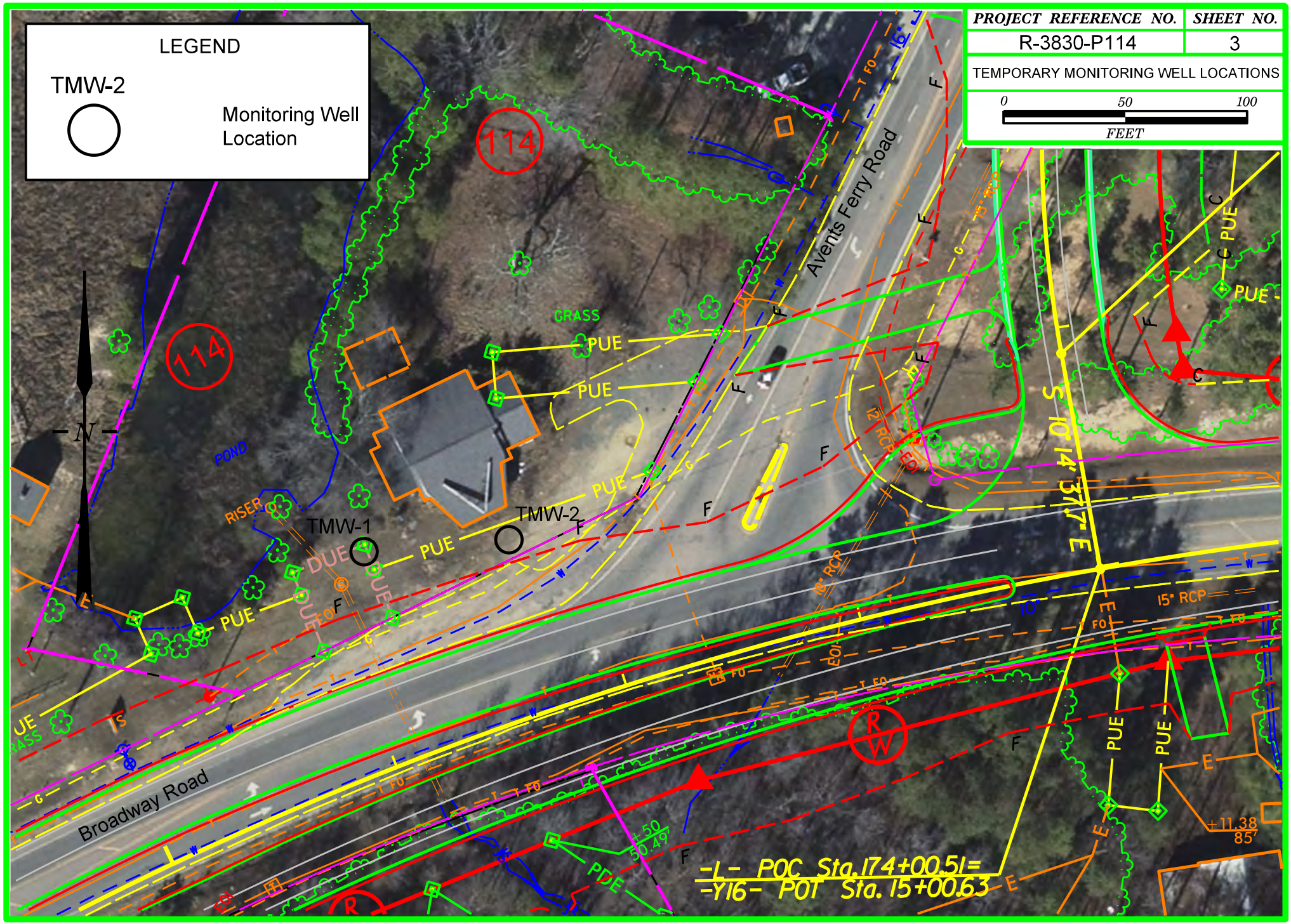
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

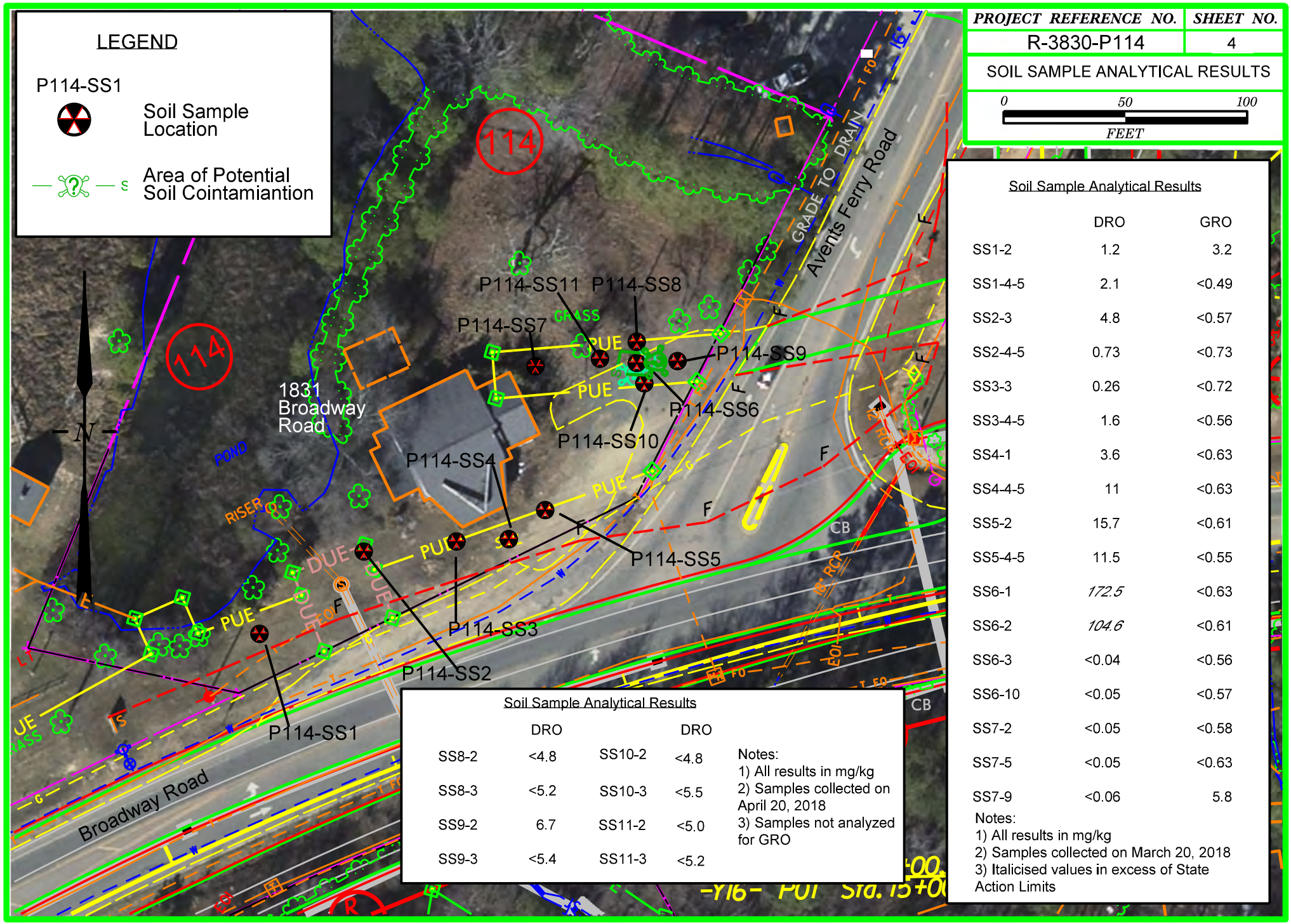
MISCELLANEOUS:

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


PROJECT REFERENCE NO.
R-3830-P114
SHEET NO.
1
SITE LOCATION MAP
0
2000
4000
FEET
N
P114
SANFORD
PUMPING STATION RD
WOMACK LAKE CIR
Lake Williams
SM LN
LAKE THOMAS RD
DALRYMPLE FARM RD
LONGSTREET RD
THOMAS RD
WOODLAND TRAILS RD
Patchet Cr
DALRYMPLE RD
EDGEWATER DR
HUNTER DR
BROOKCLIFF RD
QUINN RD
WATSONS NURSERY LN
RICE RD
THORNWOOD DR
BROADWAY RD
COZY HOLLOW DR
MOUNT PISGAH CHURCH RD
COX MILL RD
JOHN ROSSER RD
DIXIE FARM RD
SABRE DR
ASHBY RD
Byp 421
COUNTRY WAY
COX MADDOX RD
Cutts Cr
42
421
87


LEGEND
P114-SS1
Soil Sample Location
PROJECT REFERENCE NO.
SHEET NO.
R-3830-P114
2
SOIL BORING LOCATIONS
0
50
100
FEET
N
114
Avents Ferry Road
1831 Broadway Road
P114-SS11
P114-SS8
P114-SS7
P114-SS9
P114-SS6
P114-SS10
P114-SS4
P114-SS5
P114-SS3
P114-SS2
P114-SS1
Broadway Road
PUE
DUE
CB
S 10°14'27" E
2GI-A
-L- POC Sta. 174+00.51=
-Y16- POT Sta. 15+00.63


LEGEND
TMW-2
Monitoring Well Location
PROJECT REFERENCE NO.
R-3830-P114
SHEET NO.
3
TEMPORARY MONITORING WELL LOCATIONS
0
50
100
FEET
Avents Ferry Road
Broadway Road
TMW-1
TMW-2
114
GRASS
PUE
POND
RISER
12" RCP
15" RCP
18" RCP
FO
-L- POC Sta.174+00.51=
-Y16- POT Sta. 15+00.63



Soil Sample Analytical Results

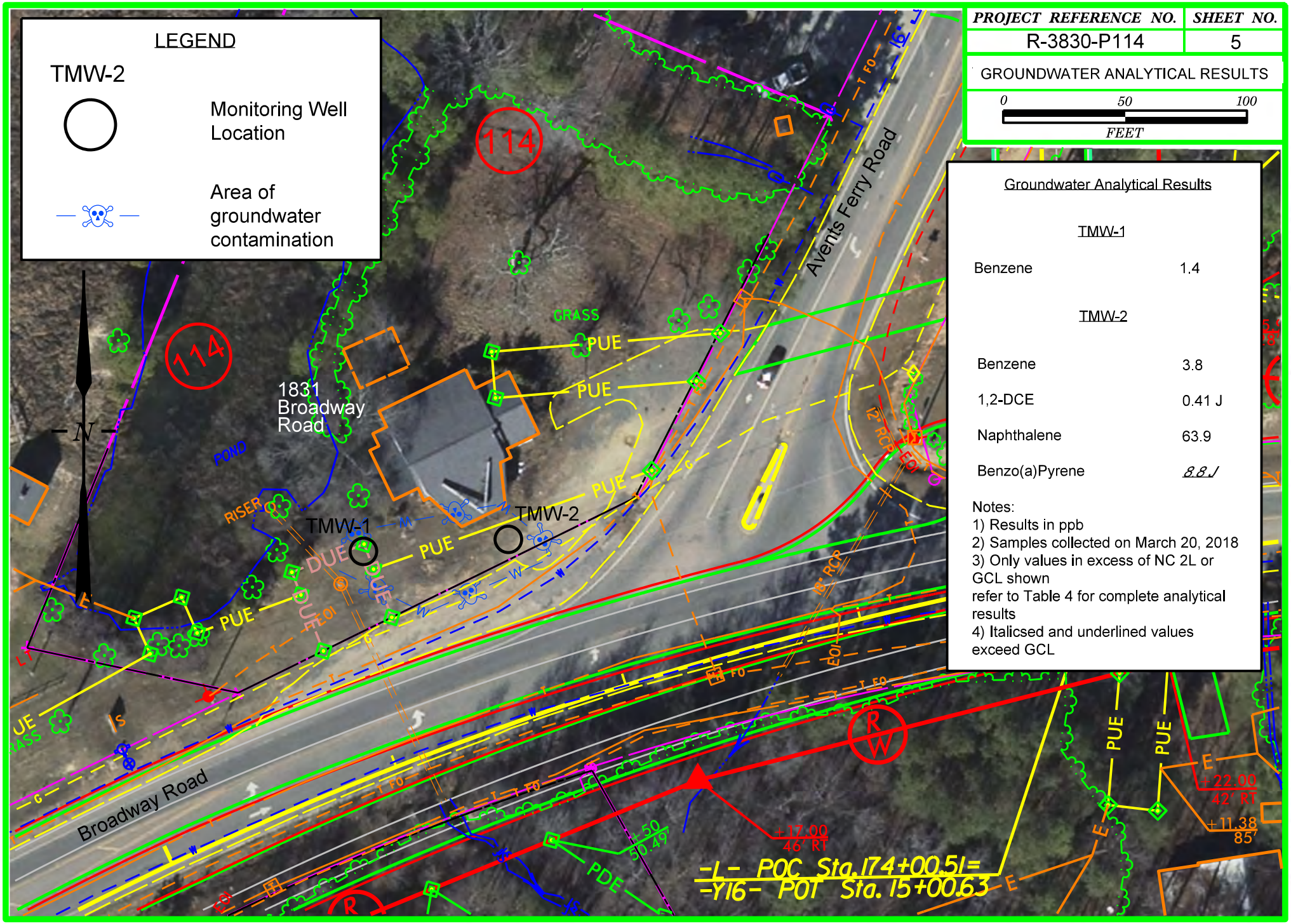
	DRO		DRO
SS8-2	<4.8	SS10-2	<4.8
SS8-3	<5.2	SS10-3	<5.5
SS9-2	6.7	SS11-2	<5.0
SS9-3	<5.4	SS11-3	<5.2

Notes:
1) All results in mg/kg
2) Samples collected on April 20, 2018
3) Samples not analyzed for GRO

Soil Sample Analytical Results

	DRO	GRO
SS1-2	1.2	3.2
SS1-4-5	2.1	<0.49
SS2-3	4.8	<0.57
SS2-4-5	0.73	<0.73
SS3-3	0.26	<0.72
SS3-4-5	1.6	<0.56
SS4-1	3.6	<0.63
SS4-4-5	11	<0.63
SS5-2	15.7	<0.61
SS5-4-5	11.5	<0.55
SS6-1	*172.5*	<0.63
SS6-2	*104.6*	<0.61
SS6-3	<0.04	<0.56
SS6-10	<0.05	<0.57
SS7-2	<0.05	<0.58
SS7-5	<0.05	<0.63
SS7-9	<0.06	5.8

Notes:
1) All results in mg/kg
2) Samples collected on March 20, 2018
3) Italicised values in excess of State Action Limits


LEGEND
TMW-2
Monitoring Well Location
Area of groundwater contamination
PROJECT REFERENCE NO.
R-3830-P114
SHEET NO.
5
GROUNDWATER ANALYTICAL RESULTS
0
50
100
FEET
Groundwater Analytical Results
TMW-1
Benzene 1.4
TMW-2
Benzene 3.8
1,2-DCE 0.41 J
Naphthalene 63.9
Benzo(a)Pyrene 8.8 J
Notes:
1) Results in ppb
2) Samples collected on March 20, 2018
3) Only values in excess of NC 2L or GCL shown
refer to Table 4 for complete analytical results
4) Italicsed and underlined values exceed GCL
Avents Ferry Road
Broadway Road
1831 Broadway Road
TMW-1
TMW-2
114
N
POND
RISER
GRASS
PUE
DUE
FO
RCP
EOI
PDE
RW
-L- POC Sta.174+00.51=
-Y16- POT Sta. 15+00.63

APPENDIX A
SITE PHOTOGRAPHS

View of Project Study Area.

View of kerosene AST and dispenser.

Original in Color

KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com	PROJECT NO.: 201835071 DRAWN: April 2018 DRAWN BY: JCH CHECKED BY: MB FILE NAME:	**SITE PHOTOGRAPHS** R-3830-P114 1831 Broadway Road Sanford Lee County, NC	Photo Page 1

View of drilling activties.

View of drilling activties.

Original in Color

KLEINFELDER Bright People. Right Solutions. www.kleinfelder.com	PROJECT NO.: 201835071 DRAWN: April 2018 DRAWN BY: JCH CHECKED BY: MB FILE NAME:	**SITE PHOTOGRAPHS** R-3830-P114 1831 Broadway Road Sanford Lee County, NC	Photo Page 2

APPENDIX B
NCDEQ REPORTS

GROUNDWATER MONITORING REPORT
First & Last Stop Convenience Store
1831 Broadway Road
Sanford, North Carolina
NCDWM Incident 14425
EAI Project 40610

Latitude: 79° 06' 00" W
Longitude: 35° 27' 40" N

Prepared by:

Amanda J. McKenney
Environmental Scientist

NORTH CAROLINA PROFESSIONAL SEAL 023186 ENGINEER W. MICHAEL JOYCE

W. Michael Joyce, M.M., P.E.
Senior Engineer

Submitted to:

Ms. Ann Zimmerman
North Carolina Department of Environment and Natural Resources
Division of Waste Management
UST Section
Raleigh Regional Office
1628 Mail Service Center
Raleigh, North Carolina 27699-1628

OCT 13 2003 RALEIGH REGIONAL OFFICE

On Behalf of:

Ms. Edna Rosser
2513 John Rosser Road
Sanford, North Carolina 27330

Submitted by:

Environmental Aspecs, Inc. of North Carolina
4805 Green Road, Suite 103
Raleigh, North Carolina 27616
Phone: (919) 850-0780
Fax: (919) 850-0015

October 7, 2003

ENVIRONMENTAL ASPECS, INC. of North Carolina
Environmental Consulting, Testing & Inspection Services
•Asbestos •Hazardous Waste •Industrial Hygiene

October 7, 2003

Ms. Ann Zimmerman
North Carolina Department of Environment and Natural Resources
Division of Waste Management
UST Section
Raleigh Regional Office
1628 Mail Service Center
Raleigh, North Carolina 27699-1628

Re: ***Groundwater Monitoring Report***
Former First and Last Stop Convenience Store
1831 Broadway Road
Sanford, Lee County, North Carolina
NCDWM Incident 14425
Site Rank: ***High Risk***
EAI Project 40610

Dear Ms. Zimmerman:

Please find the attached Groundwater Monitoring Report for the latest sampling event conducted at the above referenced site on July 23, 2003. Field activities addressed in this groundwater monitoring report include groundwater elevation data and laboratory analytical results obtained from groundwater samples. The Groundwater Monitoring Report for the above referenced property was performed in accordance with North Carolina Administrative Code Title 15A, Subchapter 2L.

On behalf of our client, we would like to thank you for your assistance in working towards closure of this incident. If you have any questions concerning this project, please contact EAI at (919) 850-0780.

Sincerely,

ENVIRONMENTAL ASPECS INC.
OF NORTH CAROLINA

Amanda J. McKenney
Environmental Scientist

W. Michael Joyce, M.M., P.E.
Senior Engineer

cc: Ms. Edna Rosser
EAI Project File

P.O. Box 28210, Raleigh, North Carolina 27611-8210
Tel: (919) 850-2200 • Fax: (919) 850-0015

EXECUTIVE SUMMARY

Environmental Aspecs, Inc. of North Carolina (EAI) was retained by Ms. Edna Rosser to provide environmental consulting services in connection with the removal of underground storage tanks (USTs) and subsequent assessment for the former First and Last Stop Convenience Store site located at 1831 Broadway Road (North Carolina Highway 42) in Sanford, Lee County, North Carolina. A UST Closure Report was submitted by Patterson Exploration Services in December 1993, and a Comprehensive Site Assessment was submitted by EAI in December 1995. A Corrective Action Plan was submitted in July 1996.

Remediation activities to date include the removal of 167 tons of contaminated soil to a depth of 6 feet from the gasoline UST area. 15 tons of contaminated soils were removed from the heating oil UST area. The receptor survey conducted for the CSA identified the on-site water supply well, which was not in use. This well was abandoned on April 6, 1999. Monitoring wells MW-8, MW-9, and MW-10 were abandoned on August 3, 2000 as part of a DOT highway-widening project. Monitoring well MW-11 was also abandoned because it was located near a septic drainfield and Ms. Rosser needed to obtain a Certificate of Occupancy from the Lee County Health Department.

On May 22, 2002, EAI supervised the abandonment of monitoring well MW-1, as it had been damaged by DOT equipment. EAI also supervised the installation of monitoring wells MW-1A, MW-8A, and MW-9A in relatively the same locations of abandoned wells MW-1, MW-8, and MW-9.

EAI supervised the excavation of approximately 340 tons of contaminated soils from the site from July 9 through 11, 2002. During excavation activities, EAI observed a clayey sand layer from 5 to 10 feet, below which a clay layer was encountered. Groundwater was perched on top of this clay layer. EAI submitted a Soil Cleanup Report on August 12, 2002 detailing excavation activities and providing recommendations for site closure. However based on the results of a groundwater sampling event conducted on July 2, 2002, benzene, ethylbenzene, and naphthalene were detected in site monitoring wells above the NCAC 2L Standards, indicating the continued presence of groundwater contamination onsite.

On April 8, 2003, EAI conducted an Updated Receptor Survey as well as mailed out water supply well questionnaires to property owners within a thousand-foot radius of the release area. EAI identified one well used for drinking purposes located approximately 800 feet southeast of the release area on the property of Mr. Wilbur Smith (1902 Broadway Road). One well, reportedly used for irrigation purposes only, is located approximately 1,000 feet north of the release area on the property of Mr. George Watson. Two additional wells, which are reportedly not used, are also located within 1,000 feet. One well, located approximately 280 feet southwest of the subject site, is on the property of Mr. William Frank Lee. The second well, located approximately 500 feet northeast of the release area, is on the property of Mr. Robert C. Thomas. Mr. Smith stated that he will **not** agree to have his well abandoned; Mr. Lee will agree to have his well abandoned if the trust fund agrees to pay all associated costs; and neither Mr. Thomas nor Mr. Watson indicated whether or not they would be willing to have their wells abandoned, but did not confirm that they are connected to and drinking off of the City of Sanford water supply.

On July 23, 2003, EAI conducted a groundwater gauging and sampling event. Based on liquid level data in the monitoring wells, the general direction of shallow groundwater flow across the site is toward the southeast. Lead was the only compound detected at concentrations above the NCAC-2L Groundwater Quality Standards in two of seven onsite monitoring wells. The highest concentration of lead detected was 43 ñg/l in the groundwater sample from monitoring well MW-2. Lead, ethylbenzene, and MTBE were detected below NCAC 2L Standards in three additional onsite monitoring wells. EAI also sampled the water supply well located on Mr. Wilbur Smith's property (WSW-1) as part of the June 2003 groundwater sampling event. No contaminants of concern were present in WSW-1 above the laboratory detection limits.

Based on the results of the July 2003 groundwater sampling event, petroleum contamination still exists in onsite monitoring wells above NCAC 2L Standards in the form of lead. EAI recommends continued sampling of the onsite monitoring wells on a semi-annual basis or until all contaminants fall below NCAC 2L Standards. EAI also recommends annual sampling of water supply well WSW-1. The next semi-annual groundwater monitoring event is tentatively scheduled for January 2004, pending DWM approval.

TABLE OF CONTENTS

TABLES

FIGURES

APPENDIX Laboratory Analytical Reports and Chain of Custody

1. INTRODUCTION AND BACKGROUND

Environmental Aspecs, Inc. of North Carolina (EAI) was retained by Ms. Edna Rosser to perform environmental consulting services for the former First and Last Stop Convenience Store site located at 1831 Broadway Road (State Road 1579) in Sanford, Lee County, North Carolina (***Figure 1***). Releases from gasoline and kerosene underground storage tanks (USTs) have previously been documented at this site. This site is currently an inactive convenience store location (***Figure 2***).

A UST Closure Report was submitted to the North Carolina Division of Environmental Management (NCDEM) in December 1993 by Patterson Exploration Services. 167 tons of contaminated soils were removed to a depth of 6 feet from the gasoline UST area and 15 tons of contaminated soils were removed from the heating oil UST area. EAI then assisted Ms. Edna Rosser with the subsequent soil and groundwater assessment for the First and Last Stop Convenience Store site. A Comprehensive Site Assessment (CSA) was submitted by EAI in December 1995. A Corrective Action Plan (CAP) was submitted in July 1996. A Soil Cleanup Plan and a Receptor Survey were submitted in June 1999 which estimated that 336 tons of contaminated soils remained onsite. Previous groundwater monitoring reports were submitted in April 1995, August 1995, September 1995, March 1996, July 1996, January 1999, and August 2000.

EAI has conducted an updated receptor survey of the area within 1000 feet of the subject site. There are six water supply wells located on properties within a 1000 foot radius of the subject site; however, groundwater has been determined to be flowing to the south-southeast, away from the identified wells. A seventh abandoned dug well was identified approximately 280 feet southwest of the subject site. The subject site is currently connected to city water. Surface water bodies in the immediate vicinity of the subject property include a pond located approximately 60 feet to the west. The pond and the drain system may be discharge points for the shallow

groundwater aquifer system. This pond drains into a small creek through a drain pipe, which surfaces approximately 60 feet south of the subject property.

Monitoring wells MW-8, MW-9, and MW-10 were abandoned on August 3, 2000 as part of a DOT highway widening project. MW-11 was also abandoned because it was located near or in the vicinity of a septic drain field as Ms. Rosser attempted to obtain a Certificate of Occupancy from the Lee County Health Department.

On May 22, 2002, EAI supervised the abandonment of monitoring well MW-1, as it had been damaged by DOT equipment. EAI also supervised the installation of monitoring wells MW-1A, MW-8A, and MW-9A in relatively the same locations of abandoned wells MW-1, MW-8, and MW-9.

A recent groundwater sampling event was conducted on July 23, 2003 to monitor the extent and migration of dissolved phase petroleum hydrocarbon compounds in shallow groundwater. This groundwater monitoring report includes groundwater elevation data, a contoured plot of groundwater elevations indicating the direction of shallow groundwater flow, an isoconcentration contour map for lead, and copies of the laboratory data.

2. SITE HYDROGEOLOGY

A total of fourteen Type II shallow groundwater monitoring wells and one Type III monitoring well have been installed in order to evaluate groundwater flow and quality on this site. Monitoring wells MW-1 and MW-8 through MW-11 were abandoned due to DOT highway widening activities. MW-1A, MW-8A, and MW-9A were re-installed to replace MW-1, MW-8, and MW-9. Eight of the nine remaining Type II wells were sampled during this event. Monitoring well MW-7 was not sampled during this sampling event because the monitoring well is buried or lost.

The depth to groundwater was measured in monitoring wells MW-1A through MW-9A, with the exception of MW-7 on July 23, 2003 using an Interface Probe. The top of casing elevation for each monitoring well was measured during a site survey performed on July 6, 1994. Elevations were assigned to the top casing of each well based on a temporary benchmark, located on the island at the intersection of Highway 42 and Broadway Road. The elevation of the benchmark was determined to be at 438.7 feet. The monitoring well elevations (with the exception of MW-7) were re-measured on July 2, 2002 to include newly installed wells MW-1A, MW-8A, and MW-9A. Groundwater elevation and monitoring well construction data are provided in ***Table 1***.

A groundwater elevation contour map, based on the depth to water in the Type II shallow groundwater monitoring wells on July 23, 2003, is provided as ***Figure 3***. The latest groundwater elevation data indicates that the direction of shallow groundwater flow across the site is toward the southeast, across Broadway Road.

3. GROUNDWATER SAMPLING RESULTS

3.1 Sampling Procedures

Activities performed during the sampling events included collecting liquid-level data and groundwater samples from onsite monitoring wells. Groundwater samples were collected from eight existing Type II monitoring wells. Each monitoring well was gauged with an Interface Probe to determine the current depth to water and the presence of liquid-phase hydrocarbons (LPH). The probe was decontaminated prior to gauging each well. Groundwater samples were also collected from the water supply well located on the property of Mr. Wilbur Smith (WSW-1). The well was allowed to run for ten minutes prior to sample collection.

Prior to sample collection, each monitoring well was purged of a minimum of three well volumes of water or purged to dryness twice utilizing a dedicated polyethylene bailer. The wells were

then allowed sufficient time to recharge prior to groundwater sample collection. Groundwater samples were collected from the monitoring wells utilizing dedicated bailers for each well. The samples were placed in labeled laboratory supplied containers, placed on ice, and delivered by overnight courier to Analytics in Richmond, Virginia, a North Carolina certified laboratory. Groundwater samples were analyzed for volatile organic compounds using EPA Methods 601 and 602, polynuclear aromatic hydrocarbons (PAHs) by EPA Method 610, and for total lead by EPA Standard Method 3030C.

3.2 Groundwater Analytical Results

LPH was not detected in any monitoring wells. Based on the latest groundwater analytical results, lead is the only compound present at concentrations above the North Carolina Administrative code Title 15A, Subchapter 2L, Groundwater Quality Standards (NCAC 2L) in 2 of the 9 wells sampled.

Lead was detected at concentrations above the NCAC-2L standard of 15 ñg/l in the groundwater samples obtained from monitoring wells MW-2 (43 ug/l) and MW-6 (28 ñg/l).

Ethylbenzene was detected below the 2L Standard of 29 ug/l in MW-3 (5.29 ug/l) and MW-4 (25.7 ug/l). Lead was detected below the Standard in the groundwater samples obtained from monitoring wells MW-3 (8 ug/l), MW-4 (9 ug/l), and MW-8A (6 ug/l). Methyl-tertiary butyl ether (MTBE) was detected in MW-4 (5.14 ug/l) at a concentration below the NCAC 2L Standard of 200 ug/l.

Groundwater analytical results are summarized in ***Table 2.*** Historical groundwater analytical results are summarized in ***Table 3.*** A copy of the laboratory analytical report and chain of custody is included in the ***Appendix*** of this report.

4. EXTENT AND DISTRIBUTION OF CONTAMINANTS

Based on the laboratory results from the July 23, 2003 sampling event, a contoured isoconcentration map was prepared for lead and is included as ***Figure 4***. The horizontal extent of the contaminant plume appears to be defined and localized onsite. The concentrations of benzene, ethylbenzene, and naphthalene have remained fairly consistent since January 1999, but have decreased significantly since sampling began in April 1995 when the benzene plume was located across Broadway Road.

5. CONCLUSIONS AND RECOMMENDATIONS

Groundwater quality at this site has been impacted by a release of petroleum constituents into the shallow groundwater. Based on the latest sampling event conducted on July 23, 2003, concentrations in excess of the NCAC-2L Groundwater Quality Standard for lead are present in two of the groundwater monitoring wells at this site.

Based on the results of the July 2003 groundwater sampling event, petroleum contamination still exists in onsite monitoring wells above NCAC 2L Standards in the form of lead. EAI recommends continued sampling of the onsite monitoring wells on a semi-annual basis or until all contaminants fall below NCAC 2L Standards. EAI also recommends annual sampling of water supply well WSW-1. The next semi-annual groundwater monitoring event is tentatively scheduled for January 2004, pending DWM approval.

TABLES

Table 1
Historical Groundwater Elevation Data
Former First and Last Stop Convenience Store
EAI Project 40610
NCDWM Incident 14425

Well ID	Date Measured	Installation Date	Total Depth (feet)	Screened Interval (feet)	Top of Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
	Abandoned						
	7/5/01					3.04	478.26
	8/1/00					4.72	476.58
MW-1	1/12/99	4/21/95	18	13 to 18	481.3	2.95	478.35
	7/1/96					3.74	477.56
	3/27/96					2.3	479
MW-1A	7/23/03					2.33	479.21
	7/2/02	5/22/02	20	5 to 20	481.54	5.2	476.34
	7/23/03					4.61	476.44
	7/2/02				481.05	6.15	474.9
	7/5/01					NM	NA
	8/1/00					5.93	474.74
MW-2	1/12/99	4/21/95	11.5	1.5 to 11.5	480.67	5.34	475.33
	7/1/96					5.2	475.47
	3/27/96					4.81	475.86
	9/28/95					4.67	476
	7/23/03					4.17	476.93
	7/2/02				481.1	5.82	475.28
	7/5/01					4.61	476.14
	8/1/00					5.58	475.17
MW-3	1/12/99	4/21/95	12	2 to 12	480.75	5.03	475.72
	7/1/96					5.05	475.7
	3/27/96					4.37	476.38
	9/28/95					4.97	475.78
	7/23/03					4.04	477.20
	7/2/02				481.24	5.9	475.34
	7/5/01					4.66	476.27
	8/1/00					5.52	475.41
MW-4	1/12/99	4/21/95	12	2 to 12	480.93	5.09	475.84
	7/1/96					5.23	475.7
	3/27/96					4.45	476.48
	9/28/95					5.09	475.84
	7/23/03					4.07	476.73
	7/2/02					5.3	475.5
	7/5/01					4.26	476.54
	8/1/00					3.87	476.93
MW-5A	1/12/99	9/27/95	15	5 to 15	480.8	4.15	476.65
	7/1/96					4.62	476.18
	3/27/96					3.83	476.97
	9/28/95					4.14	476.66
	7/23/03					6.79	474.24
	7/2/02				481.03	7.23	473.8
	7/5/01					6.95	473.68
	8/1/00					7.17	473.46
MW-6	1/12/99	8/29/95	13	3 to 13	480.63	7.04	475.54
	7/1/96					6.93	473.7
	3/27/96					6.82	473.81
	9/28/95					6.95	473.68

Table 1
Historical Groundwater Elevation Data
Former First and Last Stop Convenience Store
EAI Project 40610
NCDWM Incident 14425

Well ID	Date Measured	Installation Date	Total Depth (feet)	Screened Interval (feet)	Top of Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-7	7/23/03					NM	NM
	7/2/02					6.2	475.53
	7/5/01					4.97	476.76
	8/1/00					5.83	475.9
	1/12/99	8/29/95	13	3 to 13	481.73	5.28	476.45
	7/1/96					5.54	476.19
	3/27/96					4.75	476.98
	9/28/95					5.56	476.17
MW-8	**Abandoned**						
	8/1/00					4.46	474.25
	1/12/99					4.67	474.04
	7/1/96	8/29/95	13	3 to 13	478.71	5.24	473.47
	3/27/96					4.72	473.99
	9/28/95					4.86	473.85
MW-8A	7/23/03					1.52	472.88
	7/2/02	5/22/02	15	2.5 to 15	474.4	1.62	472.78
MW-9	**Abandoned**						
	8/1/00					3.7	474.72
	1/12/99					3.98	474.44
	7/1/96	8/29/95	13	3 to 13	478.42	4.31	474.11
	3/27/96					3.67	474.75
	9/28/95					3.69	474.73
MW-9A	7/23/03					0.4	474.31
	7/2/02	5/22/02	15	2.5 to 15	474.71	1.05	473.66
MW-10	**Abandoned**						
	8/1/00					4.35	475.76
	1/12/99					NM	NA
	7/1/96	8/29/95	17	2 to 17	480.11	4.97	475.14
	3/27/96					4.35	475.76
	9/28/95					4.44	475.67
MW-11	**Abandoned**						
	8/1/00					4.44	476.47
	1/12/99					4.21	476.7
	7/1/96	9/27/95	15	5 to 15	480.91	4.63	476.28
	3/27/96					3.84	477.07
	9/28/95					5.05	475.86
DW-1	7/23/03					2.10	478.81
	8/1/00					3.37	477.54
	1/12/99					2.58	478.33
	7/1/96	4/21/95	35	25 to 35	480.91	3.34	477.57
	3/27/96					1.9	479.01
	9/28/95					2.88	478.03
RW-1	7/5/01				NM	2.96	NA

Notes:
1. All elevations are relative to a temporary bench mark located on the island at the intersection of Highway 42 and Broadway Road with an elevation of 483.47 ft.
2. NM = Not measured.
3. NA = Not Applicable.
4. MW-2, 3, 4, & 6 were re-surveyed on July 2, 2002.

Table 2
Groundwater Analytical Results
July 23, 2003
First Last Stop Convenience Store
EAI Project 40610
NCDWM Incident 14425

Well Number	Date Sampled	Benzene (ug/l)	Ethylbenzene (ug/l)	Toluene (ug/l)	Total Xylenes (ug/l)	Naphthalene (ug/l)	Lead (ug/l)	IPE (ug/l)	MTBE (ug/l)
NCAC-2L Standard		**1**	**29**	**1000**	**530**	**21**	**15**	**70**	**200**
MW-1A	07/23/03	<1	<5	<5	<15	<20	<5	<10	<5
MW-2	07/23/03	<1	<5	<5	<15	<20	**43**	<10	<5
MW-3	07/23/03	<1	5.29	<5	<15	<20	8	<10	<5
MW-4	07/23/03	<1	25.7	<5	<15	<20	9	<10	5.14
MW-5A	07/23/03	<1	<5	<5	<15	<20	<5	<10	<5
MW-6	07/23/03	<1	<5	<5	<15	<20	**28**	<10	<5
MW-7	07/23/03	NS	NS	NS	NS	NS	NS	NS	NS
MW-8A	07/23/03	<1	<5	<5	<15	<20	6	<10	<5
MW-9A	07/23/03	<1	<5	<5	<15	<20	<5	<10	<5
DW-1	NS	NS	NS	NS	NS	NS	NS	NS	NS
RW-1	NS	NS	NS	NS	NS	NS	NS	NS	NS
WSW-1	07/23/03	<1	<5	<5	<15	<20	<5	<10	<5

Notes:
Concentrations in **bold** print exceed NCAC 2L Groundwater Quality Standards.
NS = Not Sampled (MW-10 has been destroyed or covered by construction equipment.)
NA = Not Analyzed
WSW-1 located on the property of Mr. Wilbur Thomas at 1910 Broadway Road

Table 3
Historical Summary of Groundwater Analytical Results

Former First and Last Stop Convenience Store
EAI Project 40610
NCDWM Incident 14425

Well ID	Date Sampled	Benzene (ug/l)	Ethylbenzene (ug/l)	Toluene (ug/l)	Total Xylenes (ug/l)	Naphthalene (ug/l)	MTBE (ug/l)	Lead (ug/l)
NCAC 2L Standards		**1**	**29**	**1000**	**530**	**21**	**200**	**15**
MW-1	7/5/01	<1	<5	<5	<15	<5	<5	**40**
	8/1/00	<1	<5	<5	<15	<5	<5	10
	01/12/99	<1	<5	<5	<15	<5	<5	<5
	7/1/96	<1	<1	1.04	<1	<2	<5	<10
	3/27/96	<1	<1	<1	<1	<5	<5	<3
	9/27/95	<0.5	<1	<1	<1	<10	<5	<5
	8/1/95	<0.5	<1	<1	<1	<10	<5	<5
	4/21/95	<0.5	<1	<1	<2	<10	<5	<10
MW-1A	7/23/03	<1	<5	<5	<15	<20	<5	<5
	7/2/02	<1	<5	<5	<15	<20	<5	<5
MW-2	7/23/03	<1	<5	<5	<15	<20	<5	**43**
	7/2/02	**14.4**	**106**	2.9	35.5	**82**	24.5	<5
	7/5/01	NS	NS	NS	NS	NS	NS	NS
	8/1/00	**10.1**	**124**	12	21.7	**106**	38.8	9
	01/12/99	**25**	**230**	25	35.8	10	<5	6
	7/1/96	**63.3**	**307**	57.1	65.4	<2	<5	**21**
	3/27/96	**65.9**	**352**	27.2	99.7	**60.2**	<5	**18**
	9/27/95	**71.3**	**260**	9.1	255	**55.4**	<5	**42**
	8/1/95	<0.5	**152**	21.7	96.9	**43.2**	<5	**44**
	4/21/95	**104**	**434**	89.1	**631**	**82.9**	<5	**56**
MW-3	7/23/03	<1	5.29	<5	<15	<20	<5	8
	7/2/02	<1	<5	<5	<15	<20	<5	<5
	7/5/01	<1	<5	<5	<15	<5	<5	5
	8/1/00	<1	<5	<5	<15	<5	<5	3
	01/12/99	**11**	**102**	<5	52	<5	<5	8
	7/1/96	**21.2**	**29.8**	4.33	11.6	**124**	<5	<10
	3/27/96	**19.4**	20.5	4.9	9.5	<5	<5	<3
	9/27/95	**8.3**	22.5	1.4	15.3	<10	<5	<5
	8/1/95	<0.5	9.1	1.8	11.3	<10	<5	<5
	4/21/95	**17.2**	**100**	14.8	123	**28.9**	<5	7
MW-4	7/23/03	<1	25.7	<5	<15	<20	5.14	9
	7/2/02	**6.18**	**31.4**	<5	<15	<20	36.8	6
	7/5/01	**3.28**	**75.3**	<5	13.4	<20	20.4	5
	8/1/00	**8.06**	**72.4**	<5	19.4	**31.1**	19.2	7
	1/12/99	<1	11	<5	<15	10	<5	8
	7/1/96	**13.3**	**70.3**	6.25	109	**24**	<5	<10
	3/27/96	**16.3**	**60.2**	<1	71.8	18.4	<5	**23**
	9/27/95	**193**	**127**	82.6	317	<10	<5	**39**
	8/1/95	**30.8**	79.4	15.2	92.9	**32.4**	<5	7
	4/21/95	**43.9**	67.9	8.6	126	14.8	<5	**45**
MW-5[1]	8/1/95	<0.5	<1	<1	<1	<10	<5	<5
	4/21/95	<0.5	<1	<1	<2	<10	<5	<5

Table 3
Historical Summary of Groundwater Analytical Results

Former First and Last Stop Convenience Store
EAI Project 40610
NCDWM Incident 14425

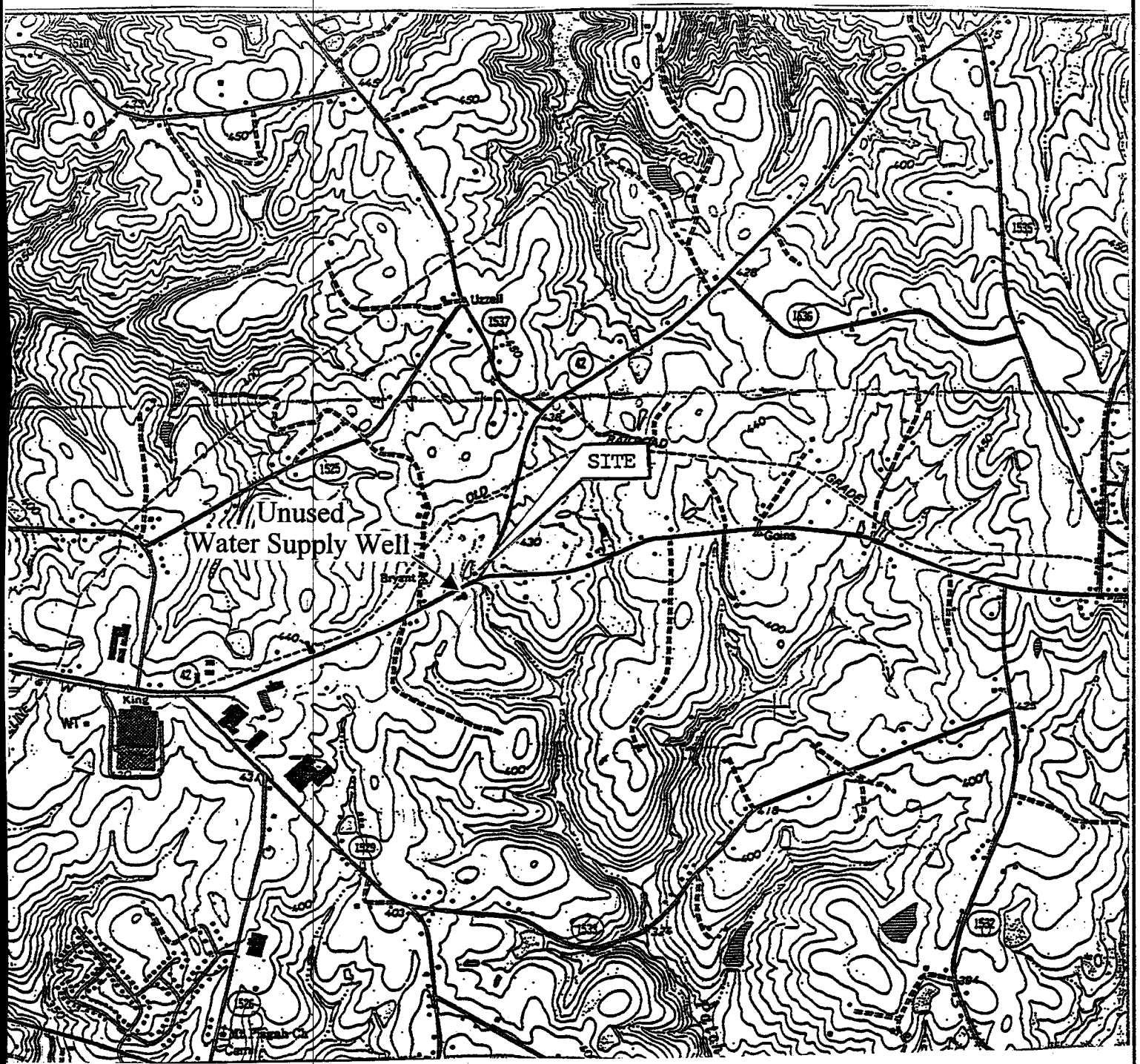
Well ID	Date Sampled	Benzene (ug/l)	Ethylbenzene (ug/l)	Toluene (ug/l)	Total Xylenes (ug/l)	Naphthalene (ug/l)	MTBE (ug/l)	Lead (ug/l)
NCAC 2L Standards		**1**	**29**	**1000**	**530**	**21**	**200**	**15**
MW-5A	7/23/03	<1	<5	<5	<15	<20	<5	<5
	7/2/02	<1	<5	<5	<15	<20	<5	<5
	7/5/01	<1	<5	<5	<15	<5	<5	<5
	8/1/00	<1	<5	<5	<15	<5	<5	7
	01/12/99	<1	<5	<5	<15	<5	<5	7
	7/1/96	<1	<1	1.04	<1	<2	<5	**27**
	3/27/96	<1	<1	<1	<1	<5	<5	14
	9/27/95	<0.5	<1	<1	<1	<10	<5	<5
MW-6	7/23/03	<1	<5	<5	<15	<20	<5	**28**
	7/2/02	<1	<5	<5	<15	<20	<5	<5
	7/5/01	<1	<5	<5	<15	<5	<5	**41**
	8/1/00	<1	<5	<5	<15	<5	<5	6
	01/12/99	<1	<5	<5	<15	<5	<5	13
	7/1/96	<1	<1	1.01	<1	<2	<5	**33**
	3/27/96	<1	<1	<1	<1	<5	<5	**46**
	9/27/95	<0.5	<1	<1	<1	<10	<5	**92**
	8/29/95	<0.5	<1	<1	<1	<10	<5	**71**
MW-7	7/23/03	NS	NS	NS	NS	NS	NS	NS
	7/2/02	<1	<5	<5	<15	<20	26.6	<5
	7/5/01	<1	<5	<5	<15	<5	9.64	**136**
	8/1/00	<1	<5	<5	<15	<5	28.9	5
	01/12/99	<1	<5	<5	<15	<5	<5	15
	7/1/96	<1	<1	<1	<1	<2	<5	12
	3/27/96	<1	<1	<1	<1	<5	<5	11
	9/27/95	<0.5	<1	<1	<1	<10	<5	**33**
	8/29/95	<0.5	<1	<1	<1	<10	<5	**24**
MW-8A	7/23/03	<1	<5	<5	<15	<20	<5	6 ~~5~~
	7/2/02	<1	<5	<5	<15	<20	<5	<5
MW-8[2]	7/5/01	NS	NS	NS	NS	NS	NS	NS
	8/1/00	<1	<5	<5	<15	<5	<5	3
	01/12/99	<1	<5	<5	<15	<5	<5	20
	7/1/96	<1	<1	1.02	<1	<2	<5	**80**
	3/27/96	<1	<1	<1	<1	<5	<5	7
	9/27/95	<0.5	<1	<1	<1	<10	<5	**71**
	8/29/95	<0.5	<1	<1	<1	<10	<5	**88**
MW-9A	7/23/03	<1	<5	<5	<15	<20	<5	<5
	7/2/02	<1	<5	<5	<15	<20	<5	<5
MW-9[2]	7/5/01	NS	NS	NS	NS	NS	NS	NS
	8/1/00	<1	<5	<5	<15	<5	<5	**49**
	01/12/99	<1	<5	<5	<15	<5	<5	**17**
	7/1/96	**10.2**	16.3	<1	8.32	4.48	<5	**46**
	3/27/96	<1	<1	<1	<1	<5	<5	**263**
	9/27/95	**1.6**	6.9	<1	<1	<10	<5	**236**
	8/29/95	**5.7**	18.7	<1	<1	<10	<5	**166**

Table 3
Historical Summary of Groundwater Analytical Results
Page 3 of 3
Former First and Last Stop Convenience Store
EAI Project 40610
NCDWM Incident 14425

Well ID	Date Sampled	Benzene (ug/l)	Ethylbenzene (ug/l)	Toluene (ug/l)	Total Xylenes (ug/l)	Naphthalene (ug/l)	MTBE (ug/l)	Lead (ug/l)
NCAC 2L Standards		**1**	**29**	**1000**	**530**	**21**	**200**	**15**
MW-10[2]	7/23/03	NS	NS	NS	NS	NS	NS	NS
	7/2/03	NS	NS	NS	NS	NS	NS	NS
	7/5/01	NS	NS	NS	NS	NS	NS	NS
	8/1/00	<1	<5	<5	<15	<5	<5	**119**
	7/1/96	<1	<1	<1	<1	<2	<5	**49**
	3/27/96	<1	<1	<1	<1	<5	<5	7
	9/27/95	<0.5	<1	<1	<1	<10	<5	**91**
	8/29/95	<0.5	<1	<1	<1	<10	<5	6
MW-11[2]	7/23/03	NS	NS	NS	NS	NS	NS	NS
	7/2/02	NS	NS	NS	NS	NS	NS	NS
	7/5/01	NS	NS	NS	NS	NS	NS	NS
	8/1/00	<1	<5	<5	<15	<5	<5	3
	01/12/99	<1	<5	<5	<15	<5	<5	14
	7/1/96	<1	<1	<1	<1	<2	<5	**17**
	3/27/96	<1	<1	<1	<1	<5	<5	**80**
	9/27/95	<0.5	<1	<1	<1	<10	<5	**238**
DW-1	7/23/03	NS	NS	NS	NS	NS	NS	NS
	7/2/02	NS	NS	NS	NS	NS	NS	NS
	7/5/01	NS	NS	NS	NS	NS	NS	NS
	8/1/00	<1	<5	<5	<15	<5	<5	6
	01/12/99	<1	<5	<5	<15	<5	<5	<5
	7/1/96	<1	<1	<1	<1	<2	<5	<10
	3/27/96	<1	<1	<1	<1	<5	<5	<3
	9/27/95	<0.5	<1	<1	<1	<10	<5	<5
	8/1/95	<0.5	<1	<1	<1	<10	<5	<5
	4/21/95	<0.5	<1	<1	<2	<10	<5	<5
RW-1	7/23/03	NS	NS	NS	NS	NS	NS	NS
	7/2/02	NS	NS	NS	NS	NS	NS	NS
	7/5/01	<1	<5	<5	<15	<5	<5	8
WSW-1	7/23/03	<1	<5	<5	<15	<20	<5	<5

Notes:
1. Concentrations in **bold** print exceed NCAC 2L Groundwater Quality Standards.
2. [1] Monitoring well MW-5 was removed on September 27, 1995 and replaced with MW-5A.
3. [2] Monitoring wells MW-8, MW-9, MW-10, and MW-11 were abandoned on 8/3/00.
4. IPE was present in monitoring well MW-2 (13.7 ug/l) during the 7/2/02 sampling event below the NCAC 2L Standard.

FIGURES



Topographic Site Map

Former First and Last Stop Convenience Store
S.R. 1579 (Broadway Road) & N.C. 42
Sanford, Lee County, North Carolina

Environmental Aspecs, Inc. of North Carolina

Environmental Consulting, Testing & Inspection Services
Asbestos Hazardous Waste Industrial Hygiene

4805 Green Road, Suite 103
Raleigh, North Carolina 27616

Tel (919) 850-2200
Fax (919) 850-0015

Scale:	SOURCE:	Checked by:	Date:	Project No:	Drawing No:
1"=2000'	Broadway, NC USGS Map	ajm	July 18, 2002	40610	1

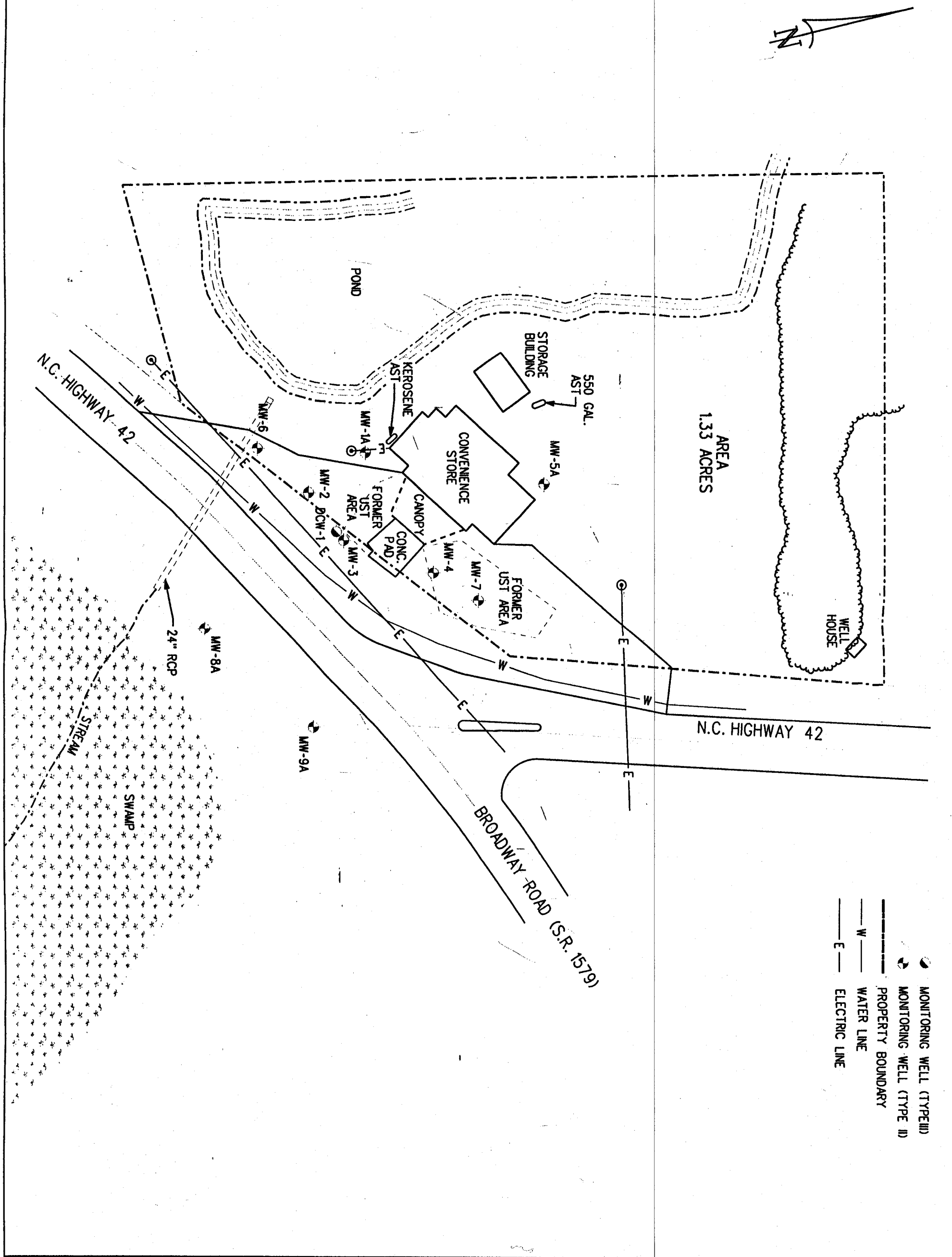


Figure No:	Figure Label	Project No:	Cad File No:
2	SITE PLAN FIRST & LAST STOP CONVENIENCE STORE S.R. 1579 (BROADWAY RD.) & N.C. HIGHWAY 42 SANFORD, NORTH CAROLINA	40610	271-050.DGN
		Scale: 1" = 40'	Drawn by:
		Date: 07-22-2002	Checked by: AM

Environmental Aspecs, Inc. of North Carolina
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
4805 Green Road, Suite 103
Raleigh, NC 27616
Tel (919) 850-2200
Fax (919) 850-0015

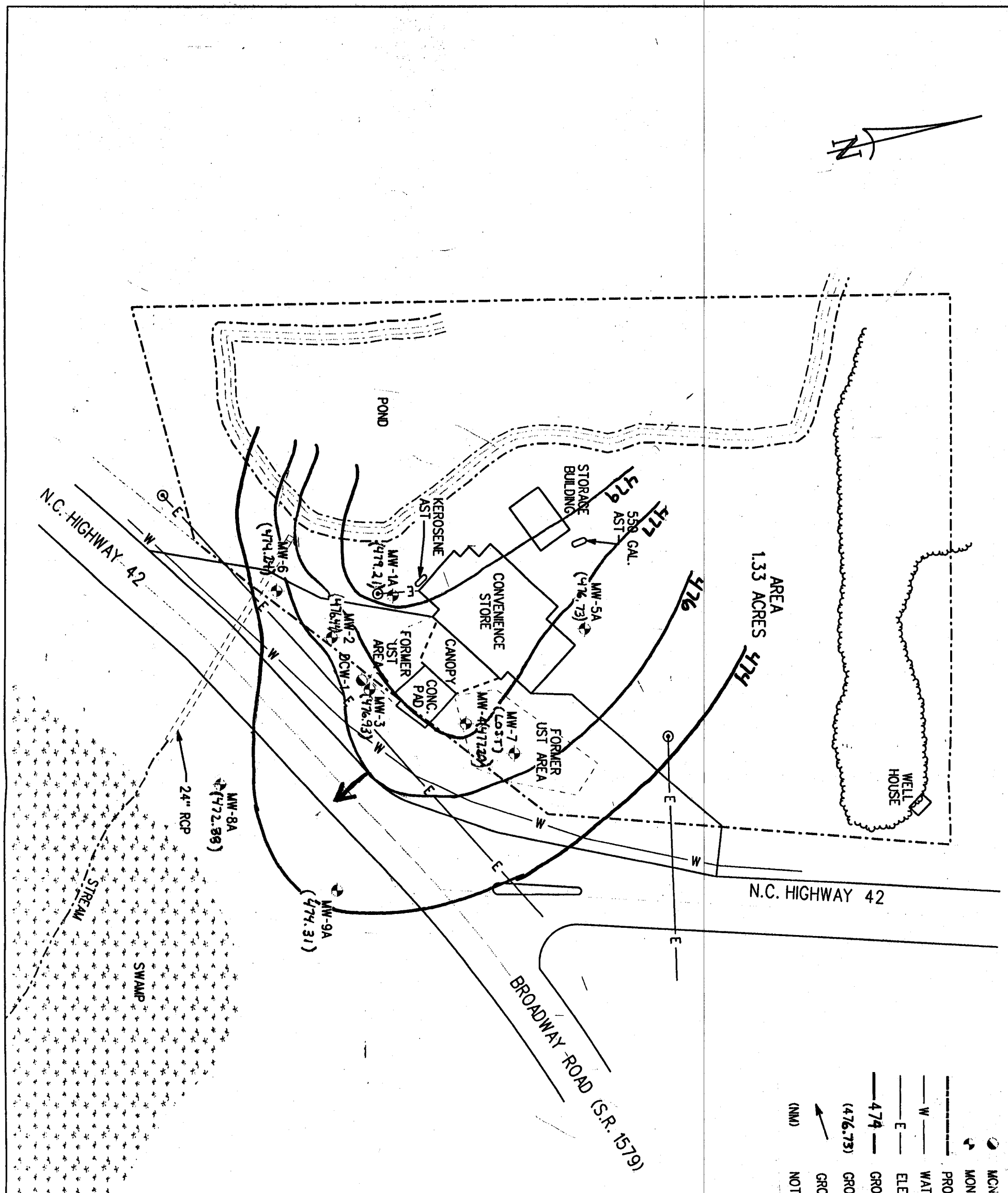


Figure No: 3	Figure Label: JULY 23, 2003 GROUNDWATER ELEVATION CONTOUR MAP FIRST & LAST STOP CONVENIENCE STORE S.R. 1579 (BROADWAY RD.) & N.C. HIGHWAY 42 SANFORD, NORTH CAROLINA	Project No: 40610 Scale: 1" = 40' Date: 10-07-2003	Cad File No: 271-050.DGN Drawn by: Checked by:

Environmental Aspecs, Inc. of North Carolina
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
4805 Green Road, Suite 103
Raleigh, NC 27616
Tel (919) 850-2200
Fax (919) 850-0015

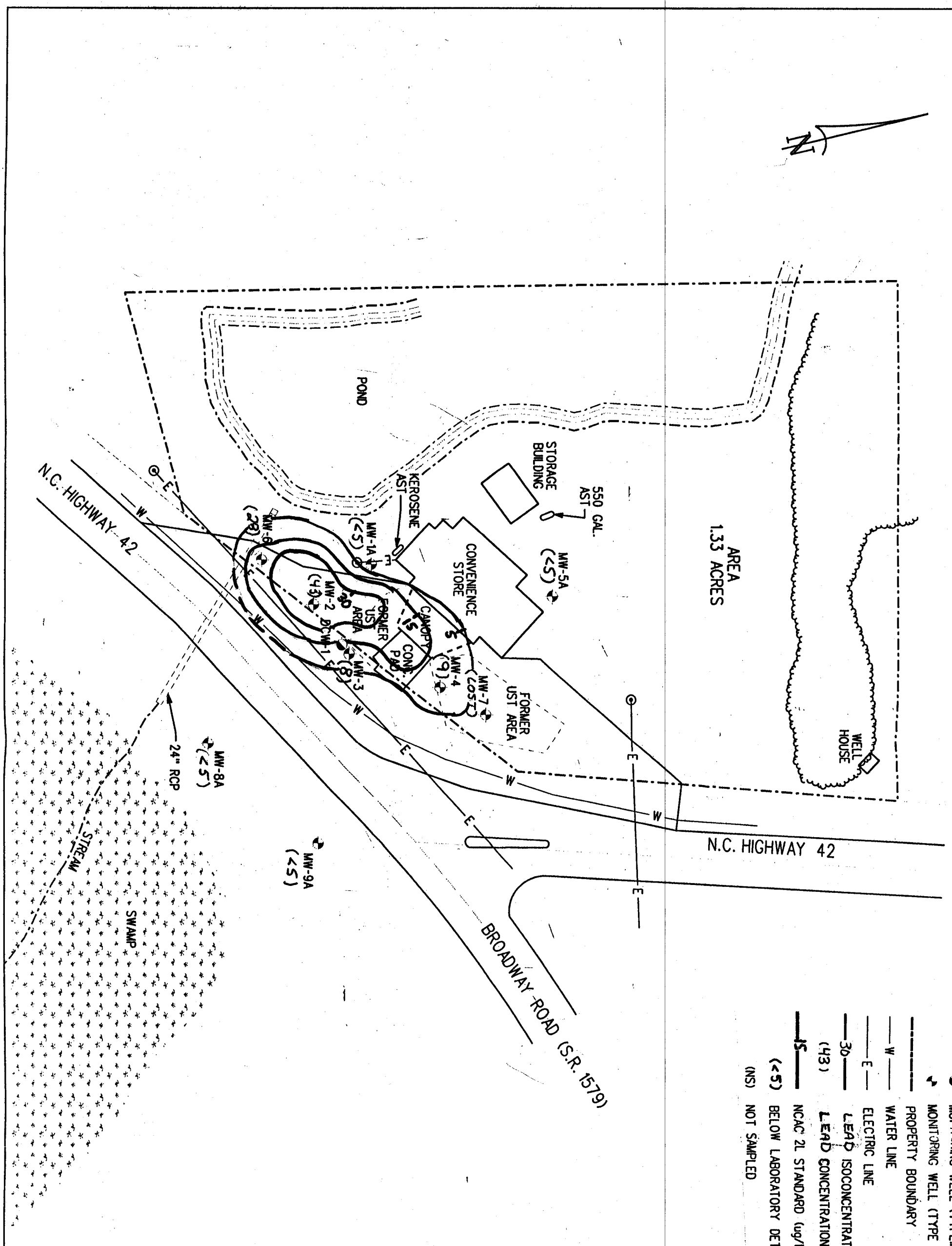


Figure No: 4	Figure Label: JULY 23, 2003 LEAD ISOCONCENTRATION CONT. MAP FIRST & LAST STOP CONVENIENCE STORE S.R. 1579 (BROADWAY RD.) & N.C. HIGHWAY 42 SANFORD, NORTH CAROLINA	Project No: 40610 Scale: 1" = 40' Date: 10-07-2003	Cad File No: 271-050.DGN Drawn by: Checked by:

Environmental Aspecs, Inc. of North Carolina
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
4805 Green Road, Suite 103
Raleigh, NC 27616
Tel (919) 850-2200
Fax (919) 850-0015

PATTERSON
EXPLORATION SERVICES

P.O. BOX 3008 - SANFORD, N.C. 27331-3008 - (919) 774-3770
FAX: (919) 774-3510

July 19, 1994

Mr. Nile Testerman
NCDEHNR
Groundwater Section
Divison of Environmental Management
3800 Barrett Drive
Raleigh, North Carolina 27609

RE: Soil Borings, Monitoring Well Installation, and Associated Sample Collection and Analyses of Soil and Water Samples After the Removal of Three Underground Storage Tanks at the First and Last Stop Located at 1831 Broadway Road in Broadway, North Carolina.
PXS Job No. 061794

Dear Mr. Testerman:

As per our telephone conversation and based on your recommendations, Patterson Exploration Services (PXS) visited the above referenced site on June 23, 1994, to conduct soil sampling and install a monitoring well in an effort to determine the extent of soil contamination and to determine if groundwater at the site had been impacted from a release from underground storage tanks removed in December of 1993.

Boring B-1 was conducted adjacent to, down gradient and west of the previous location of a 4,000 gallon gasoline tank, which was previously associated with contaminated soil (see map for location). The boring was conducted to 18 feet below ground surface and soil samples were collected at 5', 7.5', 10' and 15'. The samples were analyzed using EPA Methods 5030/8000 and 3550/8000. All soil samples from boring B-1 showed concentrations below state action levels.

Boring B-2 was conducted at the same site where soil sample SS-3 was previously collected. It was drilled to a depth of 10 feet, at which point one sample was taken. Soil sample SS-3, collected after tank removal, showed a concentration of 446 ppm using EPA Method 5030/8000 (see closure report to Nile Testerman dated December 29, 1993). Laboratory analyses results of the soil sample collected from boring B-2 at 10 feet showed concentrations of below detectable limits for EPA Methods 5030/8000 and 3550/8000.

Boring B-3 was conducted to 19 feet below ground surface and soil samples were collected from 5', 10', 14' and 19'. Soil sample B3SS#1-5' showed concentrations of 784.4 ppm for EPA 5030/8000 and 3075.8 ppm using EPA Method 3550/8000. Soil sample B3SS#2-10 showed concentrations of 17.2 ppm using EPA Method 5030/8000 and 29.8 ppm using EPA Method 3550/8000. Soil sample B3SS#3-14 showed concentrations of 13.9 ppm using EPA Method 5030/8000 and below detectable limits using EPA Method 3550/8000, while, soil sample B3SS#3-19 showed below detectable limits for both methods.

Boring B-4 was conducted to 14 feet below ground surface and soil samples were collected at 5', 10' and 14'. The soil sample collected at 5 feet below ground surface (B4SS#1-5) showed concentrations of 112.9 ppm using EPA Method 5030/8000 and 561.6 ppm using EPA Method 3550/8000. The other two soil samples collected from boring B-4 at 10 feet and 14 feet show concentrations below state action levels.

Boring B-5 was conducted west of the previous 4,000 gallon gasoline tank location to 10 feet in depth and soil samples were collected at 5 and 10 feet below ground surface. The soil sample collected from B-5 at 5 feet showed a concentration of 23.4 ppm using EPA Method 5030/8000 and 32 ppm using EPA Method 3550/8000. The soil sample collected at 10 feet from boring B-5 showed concentrations of below detectable limits for both methods.

Boring B-6 was conducted south of boring B-3 between Broadway Road and the previous 4,000 gallon gasoline tank location to a depth of 14 feet and soil samples were collected at 5', 10' and 14'. None of the soil samples collected from boring B-6 showed concentrations above state action levels for either method. Borings B-7 and B-8 were conducted east of the pump island between the pump island and the previous locations of the 4,000 gasoline and 8,000 gasoline tanks. Soil samples collected from borings B-7 and B-8 at 5', 10' and 14' showed concentrations below state action levels for EPA Methods 5030/8000 and 3550/8000.

Based on laboratory analyses results of soil samples collected from the borings conducted on June 23, 1994, soil contamination is limited to within 5 to 10 feet of the ground surface and to the area around the pump island and previous location of the 4,000 gallon gasoline tank located west of the pump island. A canopy is located directly in the front of the store, therefore, soil borings were not conducted in this area.

Soil borings B-2 through B-8 were conducted using pre-cleaned solid stem augers. The augers were cleaned and decontaminated using high pressure and steam between each boring. All soil samples were collected using disposable latex gloves into EPA approved sample jars, placed on ice and taken to the laboratory under chain of custody.

Boring B-1 was conducted using 4 1/4-inch I.D. hollow stem augers and a monitoring well was subsequently installed in the boring. The monitoring well was constructed with 2-inch I.D. flush joint, threaded, Schedule 40, PVC screen and riser casing. The PVC screen and riser casings were pre-cleaned prior to installation. Clean, new disposable latex gloves were worn when lowering the screen and riser casing into the borehole.

Washed silica sand was poured into the annulus between the boring and the screen to one foot above the top of the screen. A one foot thick bentonite seal was constructed above the sand filter pack by pouring bentonite pellets into the annular space. Distilled water was added to the borehole at ten minute intervals to aid in hydration of the bentonite seal.

The remaining annular space was tremie grouted from the bottom up with neat cement. A locking cap was installed on the well. The well head was completed with a surface mount well head protector.

The well was developed by bailing the appropriate number of well volumes as per EPA protocol (3 to 5 well volumes). New disposable, teflon, pre-cleaned bailers were used to bail the well and obtain the water sample. The groundwater sample was collected and placed into pre-cleaned 40 ml screw capped vials with teflon septa. The vials were filled so as to eliminate any air bubbles. The samples were transferred on ice to the laboratory.

A water sample was collected from the monitoring well on June 27, 1994, and was analyzed using EPA Methods 5030/601, 602 MODIFIED and 3020/7421. No constituents above state water quality standards were found in the water sample collected from the monitoring well installed on June 23, 1994.

We have enclosed a map showing the soil boring and well locations. We have also enclosed laboratory analyses results of the soil and water samples along with a well construction record and diagram of the monitoring well.

If you have questions, please don't hesitate to call.

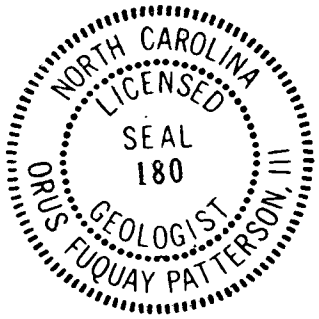
Sincerely,

R. Dennis Holder

R. Dennis Holder, Geologist
Environmental Division Manager

O. F. Patterson, III, PG, CPG
PATTERSON EXPLORATION SERVICES

rdh.061794



PXS RESEARCH LABORATORIES

ANALYTICAL RESULTS

Site: First and Last Stop	PXS#: 061794
Location: Broadway Road, Sanford, N. C.	
Client: Edna Rosser	
Collected By: Dennis Holder	Date Received: 6/23/94
Date Collected: 6/23/94	Date Extracted: 6/28/94 - 6/29/94
Matrix: Soil	Analysis Date: 7/9/94
Analysis Performed By: Dwayne Phillips	

PXS Lab ID#	Field ID#	Method #	Analysis Performed	Concentration mg/kg	Det. Limit mg/kg
603794	B1 SS#1-5'	5030/8000 3550/8000	TPHG TPHD	5.6 BDL	2.0 5.0
603894	B1 SS#2-7.5'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
603994	B1 SS#3-10'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
604094	B1 SS#4-15'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
604194	B2 SS#1-10'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
604294	B3 SS#1-5'	5030/8000 3550/8000	TPHG TPHD	784.4 3075.8	2.0 5.0
604394	B3 SS#2-10'	5030/8000 3550/8000	TPHG TPHD	17.2 29.8	2.0 5.0

BDL = Below Detection Limits ND = Not Detected

PXS Lab ID#	Field ID#	Method #	Analysis Performed	Concentration mg/kg	Det. Limit mg/kg
604494	B3 SS#3-14'	5030/8000 3550/8000	TPHG TPHD	13.9 BDL	2.0 5.0
604594	B3 SS#4-19'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
604694	B4 SS#1-5'	5030/8000 3550/8000	TPHG TPHD	112.9 561.6	2.0 5.0
604794A	B4 SS#2-10'	5030/8000 3550/8000	TPHG TPHD	BDL 5.0	2.0 5.0
604794B	B4 SS#3-14'	5030/8000 3550/8000	TPHG TPHD	1.5 32.0	2.0 5.0
604894	B5 SS#1-5'	5030/8000 3550/8000	TPHG TPHD	23.4 32.0	2.0 5.0
604994	B5 SS#2-10'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
605094	B6 SS#1-5'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
605194	B6 SS#2-10'	5030/8000 3550/8000	TPHG TPHD	BDL 12.2	2.0 5.0
605294	B6 SS#3-14'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
605394	B7 SS#1-5'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
605494	B7 SS#2-10'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
605594	B7 SS#3-14'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0
605694	B8 SS#1-5'	5030/8000 3550/8000	TPHG TPHD	5.4 6.1	2.0 5.0
605794	B8 SS#2-10'	5030/8000 3550/8000	TPHG TPHD	2.7 38.4	2.0 5.0
605894	B8 SS#3-14'	5030/8000 3550/8000	TPHG TPHD	BDL BDL	2.0 5.0

BDL = Below Detection Limits ND = Not Detected

~~25564~~ 061794

PXS RESEARCH LABORATORIES

CHAIN OF CUSTODY RECORD

Environmental Samples & Hazardous Materials

Type of Sample:	Ground Water_____	Solid Waste_____	
	Surface Water_____	Soil ✓	
	Waste Water_____	Sludge_____	
	Hazardous Waste_____	Other_____	
Site: First and Last Stop			
Location: 1831 Broadway Road, Sanford			
Client Name: Edna Rosser			
Client Address:		Telephone:	
Collector's Name: R. Dennis Holder		Telephone:	
Date Sampled: 6-23-94	Time Sampled: 9:00 - 1:30		

Field Information/Sample Description/Preservative Used:

Analyze Soil Samples using EPA Methods 3550/8000 and 5030/8000 - Gas and Diesel

Field Sample No.: (B1SS#1-5)(B1SS#2-7.5)(B1SS#3-10)(B1SS#4-15)(B2SS#1-10)(B3SS#1-5) (B3SS#2-10)(B3SS#3-14)(B3SS#4-19)(B4SS#1-5)(B4SS#2-10)(B4SS#3-14) (B5SS#1-5)(B5SS#2-10) (B6SS#1-5)(B6SS#2-10) (B6SS#3-14) (B7SS#1-5) (B7SS#2-10)(B7SS#3-14) (B8SS#1-5) (B8SS#2-10) (B8SS#3-14)

CHAIN OF POSSESSION

Signature	Title	Inclusive Dates
1. R. Dennis Holder	Geologist	6-23-94
2. Dawn Crews	Lab Tech	6/23/94
3. Monique Phillips	Chemist	6/23-7/14

Results Reported By:

Monique Phillips — Signature

Chemist — Title

7/15/94 — Date

COMPREHENSIVE SITE ASSESSMENT
and
QUARTERLY MONITORING REPORT
for
April & August 1995

First and Last Stop Convenience Store
Edna Rosser Site
SR 1579 (Broadway Rd.) NC Highway 42
Sanford, Lee County, North Carolina

EAI Job No. 50-954-4610

Prepared for:

Edna Rosser
Sanford, North Carolina

Prepared by:
Adam R. Newman
ENVIRONMENTAL ASPECS, INC.
OF NORTH CAROLINA
PO Box 20107
Raleigh, North Carolina

December 1, 1995

EXECUTIVE SUMMARY

The First and Last Stop Convenience Store is located at the northwest corner of the intersection of SR 1579 (Broadway Road) and NC Highway 42 in Sanford, North Carolina. Petroleum was dispensed from the subject site for approximately 41 years from one 8,000 gallon and one two 4,000 gallon gasoline underground storage tanks (USTs), one 550 gallon heating oil UST, and one 550 gallon kerosene aboveground storage tank (AST). The two 4,000 gallon and the 8,000 gallon USTs were removed from the above referenced site from December 13, 1993 through December 16, 1993. A Closure Assessment Report was released by Patterson Exploration Services of Sanford, North Carolina, on December 29, 1993. The 550 gallon heating oil UST was removed from the site on August 29, 1995 under the direction of Environmental Aspecs, Inc. of North Carolina. Information on the heating oil tank closure is included in this site assessment. All storage tanks removed from the property belonged to the current owner of the subject property, Edna Rosser of Sanford, North Carolina.

The release was discovered during the closure of the gasoline USTs by personnel from Patterson Exploration Services. The tank pits were excavated to a depth not recorded in the Closure Assessment Report. The soil excavated around the USTs were placed back into the tank pits. The diesel contamination present in the soil is from a surface spill some time before the closure of the USTs. Approximately 181.5 tons of contaminated soil including about 15 tons of soil from the closure of the 550 gallon heating oil UST were removed from the site on August 29 and 30, 1995.

The subject site and adjacent sites are all supplied by public water. There have been no reported groundwater incidents within a half mile of the subject site. The population of Lee County is over 37,000. The land usage in the vicinity of the site is residential, farming, and small business. There is a pond on the west side of the site that drains into a small creek south of the subject site via a drain pipe that has the potential of being a migratory pathway for petroleum contaminants.

Approximately 10 cubic yards of contaminated soils still remain in the ground. The maximum soil contamination level observed is 240 ppm of Total Petroleum Hydrocarbons as gasoline and 3,075.8 ppm as diesel. The groundwater contamination plume has an egg shape with an impacted area of approximately 2,500 square feet. The maximum contamination levels are Benzene at 104 ppb, Ethylbenzene at 434 ppb, Toluene at 89.1 ppb, Xylenes at 631 ppb, Bis (2-ethylhexyl) phthalate at 15.7 ppb, Naphthalene at 89.2 ppb, 1,2 Dichloroethane at 2.6 ppb, and Lead at 238 ppb. The concentrations of Benzene, Ethylbenzene, Xylenes, Bis (2-ethylhexyl) phthalate, Naphthalene, and Lead are above NCDEM 2L Regulatory Limits.

Based on this Comprehensive Site Assessment (CSA), quarterly groundwater monitoring will continue to determine if remediation systems would be necessary. Prior to installation of any system, a Corrective Action Plan will be completed to determine the economical and technical feasibility of the remediation systems.

Quarterly groundwater monitoring data for samples collected in April and August 1995 are included with this Comprehensive Site Assessment.

TABLE OF CONTENTS

LIST OF APPENDICES

COMPREHENSIVE SITE ASSESSMENT

First and Last Stop Convenience Store
EAI Job No. 50-954-4610

1.0 INTRODUCTION

Environmental Aspecs, Inc. of North Carolina (EAI) has conducted a Comprehensive Site Assessment at the First and Last Stop Convenience Store in Sanford, Lee County, North Carolina. This assessment was requested by Ms. Edna M. Rosser. All work was done in accordance with EAI's Proposal No. 4331064 dated July 28, 1994.

The intent of this investigation is to sufficiently characterize the cause, significance and extent of groundwater and soil contamination such that a Corrective Action Plan (CAP) can be developed. Our investigation included but was not limited to the following services:

A. We reviewed ownership history documents to establish current and past uses. This effort centered around determining when potentially hazardous materials were stored and distributed on the site.

B. We investigated the surrounding area for potential receptors and contributors of the contamination.

C. We performed monitoring well installation, soil borings and laboratory analysis to determine the extent of both the soil and groundwater contaminant plumes.

D. We performed monitoring well testing to determine the aquifer characteristics and possible contamination migration.

The subject site is at the intersection of SR 1579 (Broadway Rd.) and NC Highway 42 in Sanford, North Carolina. The site location and site base plan are located in Section 8.0, Drawings 2 and 5.

2.0 SITE HISTORY AND SOURCE CHARACTERIZATION

2.1 Record Review

The subject site containing the former USTs consists of approximately a one acre lot which is currently owned by Edna M. Rosser (formerly Edna M. Dickens). She has owned the property since June 4, 1951 with her husband Phil M. Dickens when it was granted to them

by S.S. and Annie F. Thomas. The lot was part of a 53 acre tract owned by S.S. and Annie F. Thomas since 1937. The property was mostly wooded until it was purchased by Phil and Edna M. Dickens who operated a retail gasoline facility and convenience store since the 1950's.

2.2 Release Incidents and Environmental Investigation

As recorded in the Tank Closure Report submitted to the State from Patterson Exploration Services, two 4,000 gallon and one 8,000 gallon gasoline USTs were removed from the subject site on December 13, 1993 through December 16, 1993. One UST was located near the west side of the fuel pumps and two USTs were located near the southeast corner of the store. According to the Tank Closure Report from Patterson Exploration Services, petroleum odors and staining in the soil was noted during the time of the closure. The soil excavated around the tanks during the removal was placed back into the excavation.

After further environmental investigation of the soil and the groundwater by Patterson Exploration Services, EAI was contracted by Edna M. Rosser in December of 1994. Under the supervision of EAI, a 550 gallon heating oil UST was removed from the subject site on August 29, 1995. This UST was located near the northeast corner of the store and was not used for retail. Approximately 15 tons of contaminated soil was removed from this location and sent to a facility for bioremediation. The site map with approximate locations of the USTs is in Section 8.0, Drawing 7.

2.3 Corrective Actions

Initial corrective actions include stopping the release and removing the immediate contaminant source by permanent closure of the USTs. The removal of the secondary source was by excavation of contaminated soils on August 29 and August 30, 1995. The somewhat rectangular excavation of the gasoline and diesel contaminated soil between the fuel pump islands was approximately 31 feet long and 17 feet wide and was excavated to a final depth of six feet below the surface grade which was the approximate water table depth at that time. The contaminated soil in the area of the former 550 gallon heating oil UST was excavated on the same day as the gasoline and diesel contaminated soil. This excavation was also rectangular in shape and was approximately 12 feet long, 8 feet wide, and 6 feet below the surface grade. Approximately 181.52 tons of petroleum contaminated soil was removed from the site including the 15 tons removed from around the heating oil UST.

During June of 1994, Patterson Exploration Services conducted several soil borings and installed one monitoring well. After EAI was contracted by Edna Rosser, EAI completed the

soil and groundwater investigation that was started by Patterson Exploration Services to delineate the soil and groundwater plumes.

3.0 POTENTIAL RECEPTORS AND MIGRATORY PATHWAYS

3.1 Adjacent Sites and On-Site Utilities

The subject site is located in a residential/business area. The adjacent property to the northeast is owned by Kenneth H. Cotton. The property to the west of the subject site is owned by A.K. Griffin, Jr. The subject site is bordered to the south by NC Highway 42 and properties owned by Wilbur F. Thomas and William L. Oldham. The subject site is also bordered to the east by NC Highway 42 and William K. Welch. See Drawing 4 for the adjacent property map.

There is one supply well near the northeast corner of Edna Rosser's property. It is currently not in use and Edna Rosser plans for the store to be hooked up to municipal water when it is reopened. All adjacent properties with buildings are served by municipal water and other utilities but are linked to private septic systems.

There is a drainage system that carries water from the pond on the west side of the subject site to a small tributary across NC Highway 42 to the south. There is also standing water on both sides of this tributary near the road. This drainage system for the pond is a potential migratory pathway if present contamination reaches it. Contaminant levels above the 2L Regulatory Limits are less than 25 feet from the drainage system. Recent water level data indicates groundwater flow to be moving toward this drainage system.

There are several subsurface utilities on the subject site. These are all located away from the present contamination and therefore are not presumed to be migratory pathways. The present contamination is partly in the DOT Right of Way south of Edna Rosser's property. Based on the estimates of this CSA, the contamination will reach the swamp and creek at levels greater than 2L Regulatory Limits in 3 to 5 years or less. This contamination will proceed to migrate off-site if corrective actions are not taken.

3.2 Potential Off-Site Sources

The files of the Federal and State agencies have been reviewed for potential off-site sources in Nash County within one-half mile of the First and Last Stop Convenience Store. Information reviewed did not reveal any potential off-site source contributing to the site contamination.

3.2.1 Federal: The United States Environmental Protection Agency (USEPA) Region IV, Superfund Branch.

There were no facilities listed on the Environmental Protection Agency USEPA CERCLA or the North Carolina National Priority List within one-half mile of the subject site.

3.2.2 State: North Carolina Department of Environment, Health and Natural Resources.

a. UST Registration

There are no facilities with registered USTs adjacent to the subject site.

b. Incident List

There are no incidents within ½ mile of the subject site registered with the NCDEM.

3.3 Estimated Contaminant Migration Rates

The estimated contaminant migration rate is based on the chemical properties that affect the rate of transport and degradation of the chemical compounds. The main chemical property that affects the rate of migration is the attraction of the chemical to soil particles. The KoC value shown in the following table is a measure of the tendency of the chemical to be adsorbed to the soil particles. The greater the KoC value, the stronger the chemical is adsorbed and the lower the mobility, or rate of movement. Ethylbenzene, Xylene and Toluene have a steep gradient as they migrate away from the contaminant source due to their low mobility. Laboratory results indicate that the contaminants have migrated into the DOT Right of Way to the south of the property.

TABLE 1

Fate and Transport Characteristics of Hydrocarbon Compounds

COMPOUND	SOLUBILITY AT 20° C (mg/L)	VAPOR PRESSURE[1] (Torr)	KoC[2]
Benzene	1,780	75.0	50
Toluene	515	22.0	339
Xylene-M	175	5.0	-
Xylene-O	162	6.0	255
Xylene-P	198	6.5	-
Ethylbenzene	152	7.0	565
Tetraethyl Lead	0.08	0.2	4900
Naphthalene	31.1	1.0	976

[1] at 20 degrees C.

[2] KoC is a measure of the tendency for organic chemicals to be adsorbed to the soil. The higher the KoC value for each compound, the lower the mobility and the higher the adsorption.

The degradation of hydrocarbon compounds may vary greatly according to the amount of oxygen in the environment. The ranges of half-lives of the contaminant chemicals is included in the table on the next page.

TABLE 2

Ranges of Degradation Half-lives for the Hydrocarbon Contaminants Found in the Contaminant Plume (These half-life estimates apply to degradation rates in a given environment at the outer limits of a contaminant plume)

	SOIL		GROUNDWATER	
COMPOUND	LOW AEROBIC	HIGH ANAEROBIC	LOW AEROBIC	HIGH ANAEROBIC
Benzene	5 days	16 days	10 days	720 days
Ethylbenzene	3 days	10 days	6 days	228 days
Toluene	12 hours	24 hours	12 hours	24 hours
Xylenes	7 days	28 days	7 days	1 year
Naphthalene	16.6 days	48 days	12 hours	258 days

4.0 SOILS INVESTIGATION

4.1 Geographic Setting

The subject site is located in the northeast part of Sanford in Lee County, North Carolina. It is located on the northwest corner of NC Highway 42 and SR 1579 (Broadway Rd.). The site is on nearly level rural land and partly modified by the construction of streets and building construction.

4.2 Geology

Lee County is in the Piedmont Plateau and the Upper Coastal Plain physiographic provinces. The site is located on a nearly level alluvial terraces of the Upper Little River System and thin remnants of the Middendorf formation of the Cretaceous Period.. There is a small man-made pond on the site which drains into a small tributary which eventually empties into the Upper Little River. The bedrock underlying the soil consists of phyllites and schists of Eastern Slate Belt metamorphics.

[Reference: Geologic Map of North Carolina. The North Carolina Geologic Survey]

4.3 Soils

According to the Soil Survey of Lee County, North Carolina, the soils in the area are nearly level to sloping, well drained soils that have a sandy subsurface and a loamy subsoil. Field borings indicate a brown to gray silty sand to approximately 5 feet below the surface. Beneath the sandy surface layer is a white to brown silt layer to a depth of approximately 23 feet overlying tan sand. Geologic Cross-Section maps can be found in Drawings 18, 19 and 20.

The soil at the site is classified as Durham series loamy sand (DuB) which are deep, well drained soils formed in materials weathered from Eastern Slate Belt metamorphic phyllites and schists. Permeability of Durham loamy sand is moderate (0.6 inches to 2.0 inches per hour). Runoff is high due to the paved lot and streets. The seasonal high water table is approximately at a 4 foot depth. Typically, Durham loamy sand has a yellowish-brown loamy, sand surface layer about 10 inches thick. A pale-brown loamy sand then extends to a depth of fifteen inches. The upper section of the subsoil is a brownish-yellow sandy clay loam, the middle section is a dark-brown sandy clay loam, and the lower section is a red sandy clay and a sandy clay loam. This subsoil extends to a depth of 56 inches. Beneath this soil to a depth of 70 inches is mottled yellowish-brown, white, strong brown and reddish-yellow saprolite. The soils on the subject site consist of deeper alluvial materials than typical for Durham soils.*

[Reference: Soil Survey of Lee County, North Carolina. Soil Conservation service, USDA 1989, PP.1, 13, 49, 100].

4.4 Soils Investigation

During UST removal activities monitored by Patterson Exploration Services on December 16, 1993, contamination was detected in soils collected from beneath the USTs. The contaminant level was detected in a range of below the detection limit (BDL) to 868 parts per million (ppm) of Total Petroleum Hydrocarbons (TPH) as gasoline and BDL to 2,174 ppm as diesel. The removal of the 550 gallon heating oil UST was monitored by Environmental Aspecs, Inc. on August 29, 1995 contamination was also detected in the soil sample collected beneath the UST. The contaminant level was detected at BDL for gasoline and 2563 ppm for diesel type fuels. See Table 3 in Section 9.0 for analytical data of soil samples collected beneath USTs. See Drawing 7 for sample locations.

The diesel contamination present in the soil was from a surface spill some time before the closure of the USTs.

*These soils are more like the (FuB) Fuquay loamy sand mapped on adjoining areas to the site.

Several soil samples were collected by hand augering, split spoon sampling during monitoring well sampling, and grab sampling during soil excavation. Soil samples were screened in the field utilizing an organic vapor meter. All samples were collected in accordance with the North Carolina Division of Environmental Management sampling methods utilizing clean stainless steel utensils. The samples were placed in laboratory clean jars with Teflon lined lids and placed in an insulated cooler with ice for transportation to a North Carolina licensed laboratory for analysis of TPH as gasoline and diesel. A Chain-of -Custody was maintained from the time of sampling through analysis. Sample locations can be found in Section 8.0, Drawing 7.

Several soil samples analyzed had results above SSE (Appendix D) value of 80 ppm for TPH gasoline and 320 ppm for TPH diesel. A soil isoconcentration contour map is located in Section 8.0, Drawings 8, 9, 12, 13, 14 and 15. Soil analytical results can be found in Table 4 of Section 9.0 and in Appendix E.

Approximately 181.5 tons of contaminated soil was excavated and removed from the site on August 29 and 30, 1995 including approximately 15 tons of contaminated soil removed from around the heating oil UST. There still remains a small amount of contaminated soil above the SSE level of 80 ppm for TPH as gasoline. This soil amounts to approximately 5 cubic yards in the vicinity of MW-2. EAI avoided excavating soil near the Type II monitoring well to avoid damage to it. See Section 8.0, Drawing 16 for a map of the extent of existing contaminated soils.

5.0 GROUNDWATER INVESTIGATION

5.1 Monitoring Well Placement and Design

A total of twelve monitoring wells exist on the subject site (See Section 8.0, Drawing 17). One initial monitoring well, MW-1 was installed by Patterson Exploration Services (PES) on June 24, 1994 to determine if the groundwater had been impacted. When sample results indicated that the groundwater in that location had not been impacted, PES did not proceed to further investigate the groundwater.

After EAI was contracted by Edna Rosser, it was noticed that the groundwater was impacted from the depth of contamination found from the soil borings performed by PES. It seems that PES expected groundwater to be at a 15 foot depth and flow to be into the pond to the northwest. EAI installed four more Type II shallow monitoring wells at a range of depths

from 11.5 feet to 14 feet and one Type III deep well at a depth of 35 feet. These wells were installed on April 3rd and April 4th, 1995.

Analytical results and groundwater level data of these six wells indicated petroleum groundwater contamination to be flowing toward the south/southwest. The contamination was still not defined and therefore a monitoring well permit had to be submitted to the DEM for permission to drill monitoring wells in the NCDOT Right-of-Way on the south side of NC Highway 42.

On August 21, 1995 through August 23, 1995 five Type II monitoring wells (MW-6-MW-10) at depths ranging from 13 feet to 17 feet were installed to delineate the contaminant plume. Three of these wells were installed off-site in the NCDOT Right-of Way.

On August 29,1995 monitoring well MW-5 was removed during the closure of the 550 gallon heating oil UST. Soil below the UST was contaminated, and therefore a replacement for MW-5, MW-5A, was installed in the area of the former UST to test if it had impacted the groundwater. MW-5A and another well to the northeast of MW-5A (MW-11) were installed at 15 foot depths on August 27, 1995.

All wells were constructed with Schedule 40 PVC with No. 2 sand pack around the screened section. Hydrated bentonite then cement were utilized as a seal. The monitoring wells are secured with a locked top inside a bolt down water tight cover labeled "monitoring well do not fill" set in concrete. Well construction records and diagrams are included in Appendix C.

The wells were placed in order to determine both groundwater gradient and migration of the contaminant plume. Wells MW-2, MW-3, and MW-4 are placed close to the source of the contamination near the pump islands. DW-1 was also placed close to the source but can only allow water sampling at depth from 25 to 35 feet to determine the vertical extent of contamination. MW-5A was placed in the heating oil UST location to determine an impact from the UST. Wells MW-1, MW-6, MW-7, MW-8, MW-9, MW-10 and MW-11 were placed to determine the horizontal extent. See the Existing Monitoring Wells Map in Section 8.0, Drawing 17.

5.2 Groundwater Contamination Plume

Groundwater samples from all monitoring wells collected on September 27, 1995 were analyzed for lead, purgeable halocarbons and aromatics using EPA Test Methods 3030C, 601/602, and for base and neutral components of semivolitales. The monitoring wells MW-1, MW-6, MW-7, MW-8, MW-9, MW-10, MW-11, and DW-1 appear to be unaffected by the petroleum contamination. Monitoring wells MW-2, 3, and 4 all contained contamination in the groundwater in excess of 2L Standards. MW-2 contained 71.3 ppb of Benzene, 260 ppb Ethylbenzene, 9.1 ppb Toluene, 255 ppb Xylenes, and 55.4 ppb Naphthalene. MW-3 contained 8.3 ppb Benzene, 22.5 ppb Ethylbenzene, 1.4 ppb Toluene, and 15.3 ppb Xylenes. MW-4 contained 193 ppb Benzene, 127 ppb Ethylbenzene, 82.6 ppb Toluene, and 317 ppb Xylenes. Table 5 in Section 9.0 summarizes the dissolved contaminants found in the groundwater.

Lead was also found in the groundwater above 2L Regulatory Limits in all wells except for MW-1 and MW-3. These concentrations of lead that were detected do not follow groundwater flow patterns from the site's pollution source. The lead found in the groundwater samples is believed to be due to localized geology.

Other compounds were detected in the GC/MS Library Search in monitoring wells MW-1, MW-2, MW-4, MW-7 and MW-8. The listing of the most prominent peaks and their match qualities for each well is in Appendix E.

Drawings 26 through 34 in Section 8.0 detail the contaminant isoconcentration contours for Benzene, Ethylbenzene and Naphthalene. A groundwater contour map is presented in Section 8.0, Drawing 25. These were determined by plotting the laboratory results on the well locations and interpolating. The contaminant plume extends from MW-4 past MW-2 and flows toward the southwest. The plume has an egg shape with an area of approximately 2,500 square feet (85 feet long and 30 feet wide). Analytical results indicate that the groundwater contains concentrations greater than 2L Regulatory Action Limits for Benzene, Ethylbenzene, Naphthalene, and Lead.

5.3 Aquifer Characteristics and Contaminant Migration

The shallow aquifer is in poorly sorted silty alluvial material with an estimated Hydraulic Conductivity (K) of 5 feet/day. The lower coarser aquifer is well sorted sand of either a alluvial terrace or the Middendorf formation of the Cretaceous Period. The estimated K of the lower coarser formation is 50 to 130 feet/day. The estimate of velocity of the upper aquifer is 0.89 to 1.5 feet/day with an average of 1.05 feet/day. See Table 6 for calculations for linear velocity.

Based on the laboratory analysis of the groundwater samples, only the upper silty aquifer is impacted by the release of petroleum product from the subject site. The contaminant plume flow is to the southwest across State Highway NC 42 toward the drain pipe that empties water from the pond to the creek and swamp to the south of the site. The release had entered the right of way for the highway and the area around MW-9 across the NC 42. The levels at MW-9 are below 2L Regulatory Limits, but the plume migration will likely impact the low land swamp to the south of NC 42 in 2 to 5 years or less. The outlet of groundwater along the foot of the fill back of the south side of NC 42 is the most likely surface water outlet for the shallow aquifer containing the contaminant plume. The beginning of the swamp is approximately 35 to 50 feet south of the release and 10 to 15 feet south of MW-9.

In Table 7 Contaminant Concentration Ratios (CCR) were calculated in MW-2, MW-3, MW-4, and MW-9. The CCR is an indirect estimate of the rate of change and flow of contaminant plume. The more uniform the contamination ratios from the source to the down gradient wells, the younger the contamination plume. This is due to the fact that the different chemical components of the plume have not separated significantly due to the different migration and breakdown rates. See Tables 1 and 2 for estimates of the KoC and half life of the chemicals found in this release. The CCR's of Ethylbenzene/Toluene for MW-2 and MW-3 in the area of the release are the same as MW-9 indicate the time since the main release is likely less than 5 to 10 years, indicating a rate of 3 to 10 feet/year or less. The CCR's for MW-4 are different indicating that it is associated with the main contaminant flow of the release.

Based on a history of over forty years of operation as a service station facility, it is difficult to establish a time of the release. The release estimate, based on Contaminant Concentration Ratios (CCRs), is likely recent and migrating at a rate of 3 to 5 feet/year based on a release within the past ten years.

5.4 Quarterly Monitoring Reports

Before all monitoring wells were installed on the subject site, EAI sampled the groundwater quarterly to determine the approximate location of contamination and direction of groundwater flow. The first sampling event involved wells MW-1 through MW-5 and DW-1 collected on April 21, 1995. The second sampling event involved wells MW-1 through MW-10 and DW-1 that were sampled on August 1 and August 29, 1995. The third sampling event involved all monitoring wells on the site that were sampled on September 27, 1995. Results of this sampling event are summarized in Section 5.3.

5.4.1 Quarterly Groundwater Monitoring Event No. 1 (April 21, 1995)

Monitoring wells MW-1, MW-5, and DW-1 appear to be unaffected by the petroleum contamination. Monitoring wells MW-2, MW-3 and MW-4 all contained groundwater contamination in excess of 2L Regulatory Limits. MW-2 was contaminated with 104 ppb of Benzene, 434 ppb Ethylbenzene, 89.1 ppb Toluene, 631 ppb Xylenes, and 89.2 ppb Naphthalene. MW-3 contained 17.2 ppb Benzene, 100 ppb of Ethylbenzene, 14.8 ppb Toluene, 123 ppb Xylenes, and 28.9 ppb Naphthalene. MW-4 contained 43.9 ppb of Benzene, 67.9 Ethylbenzene, 8.6 ppb Toluene, 126 ppb Xylenes, and 14.8 ppb Naphthalene. Lead was detected above the 2L Regulatory Limit in wells MW-2 and MW-4. Groundwater elevation data collected on April 21, 1995 determine groundwater flow to be towards the southwest. A Total BTEX (Benzene, Toluene, Ethylbenzene, and Xylene) Isoconcentration Map and Naphthalene Isoconcentration Map are presented in Section 8.0, Drawings 21 and 22. A summary of the laboratory results can be found in Section 9.0 Table 5.

5.4.2 Quarterly Groundwater Monitoring Event No. 2 (August 1 and August 29, 1995)

Monitoring wells MW-1, MW-5, MW-7, MW-8, MW-10, and DW-4 appear to be unaffected by petroleum contamination. MW-2 contained 152 ppb of Ethylbenzene, 21.7 ppb Toluene, 96.9 ppb Xylenes, 15.7 ppb Bis (2-ethylhexyl) phthalate, and 43.2 ppb Naphthalene. MW-3 contained 9.1 ppb of Ethylbenzene, 1.8 ppb Toluene, and 11.8 ppb Xylenes. MW-4 contained 2.6 ppb of 1,2-Dichloroethene, 30.8 ppb Benzene, 79.4 ppb Ethylbenzene, 15.2 ppb Toluene, 92.9 ppb Xylenes, and 32.4 ppb Naphthalene. MW-6 contained 3.8 ppb Xylenes. MW-8 contained 10.4 ppb Bis (2-ethylhexyl) phthalate. MW-9 contained 5.7 ppb of Toluene and 18.7 ppb of Xylenes. Lead was detected above the 2L Regulatory Limit in MW-2, MW-6, MW-7, MW-8 and MW-9. Groundwater elevation data collected on August 1, 1995 indicates groundwater flow to be toward the southwest. Total BETX and Naphthalene Isoconcentration Maps are located in Section 8.0, Drawings 23 and 24. A summary of the laboratory results can be found in Section 9.0 , Table 5.

5.5 Physical and Chemical Characteristics of Primary Contaminants

Benzene is a carcinogen and can cause central nervous system depression, skin irritation, and bone depression. It is less dense than water and floats upon the surface. Toluene affects the central nervous system, liver, kidneys, and skin. It has a specific gravity of 0.87 and therefore will float on water. Ethylbenzene is an irritant of the eyes, mucous membranes, respiratory tract and skin and can also cause central nervous system problems. It is lighter than water and will float. Xylenes may cause headache, dizziness and respiratory tract irritation. These are also lighter than water and will float. Naphthalene is an irritant of the eyes, head, stomach, and bladder. It is not very soluble in water.

Compounds of Lead affect the cardio-vascular system, the central nervous system, kidneys and eyes. Tetraethyl Lead is heavier than water but has high KoC values (see Table A). Tetraethyl Lead is also relatively insoluble in water (see Table A). Because of this, these compounds are not likely to sink or migrate away from the contaminate source.

6.0 RECOMMENDATIONS

The subject property has been estimated to contain approximately 5 cubic yards of soil contamination above SSE limits. This extends from a depth of 2 feet to a depth of 6 feet. This is a potential for contaminant migration through infiltration. The groundwater is contaminated with Benzene, Ethylbenzene, Naphthalene, and Lead above 2L Regulatory Limits. The plume is estimated to occupy an area of approximately 2,500 square feet. Quarterly monitoring will continue to determine if a Corrective Action Plan (CAP) is necessary for the site. Calculations for aeration, air sparging, and bioremediation will be analyzed to determine which would be the most effective and feasible method. Prior to the initiation of the CAP, the site should continue quarterly monitoring.

7.0 REFERENCES

1. Geologic Map of North Carolina. The North Carolina Geologic Survey, 1985.

2. Letter to Nile Testerman of NCDEHNR-DEM from Patterson Exploration Services dated December 29, 1993 regarding UST closure at First and Last Stop Convenience Store.

3. Letter to Nile Testerman of NCDEHNR-DEM regarding soil borings and monitoring well installation at First and Last Stop Convenience Store.

4. Handbook of Environment Fate and Exposure Data for Organic Chemicals. Howard, Philip H. Lewis Publishers, 1989

5. Soil Survey of Lee County, North Carolina, Soil Conservation Service, USDA, 1989.

Adam R. Newman
Environmental Scientist

Frank A. Doonan, CPSS, P.G.
Senior Geologist

NORTH CAROLINA LICENSED SEAL GEOLOGIST FRANK A. DOONAN

The work performed in the preparation of this report was done by or under the direction of a Professional Engineer and/or a Professional Geologist.

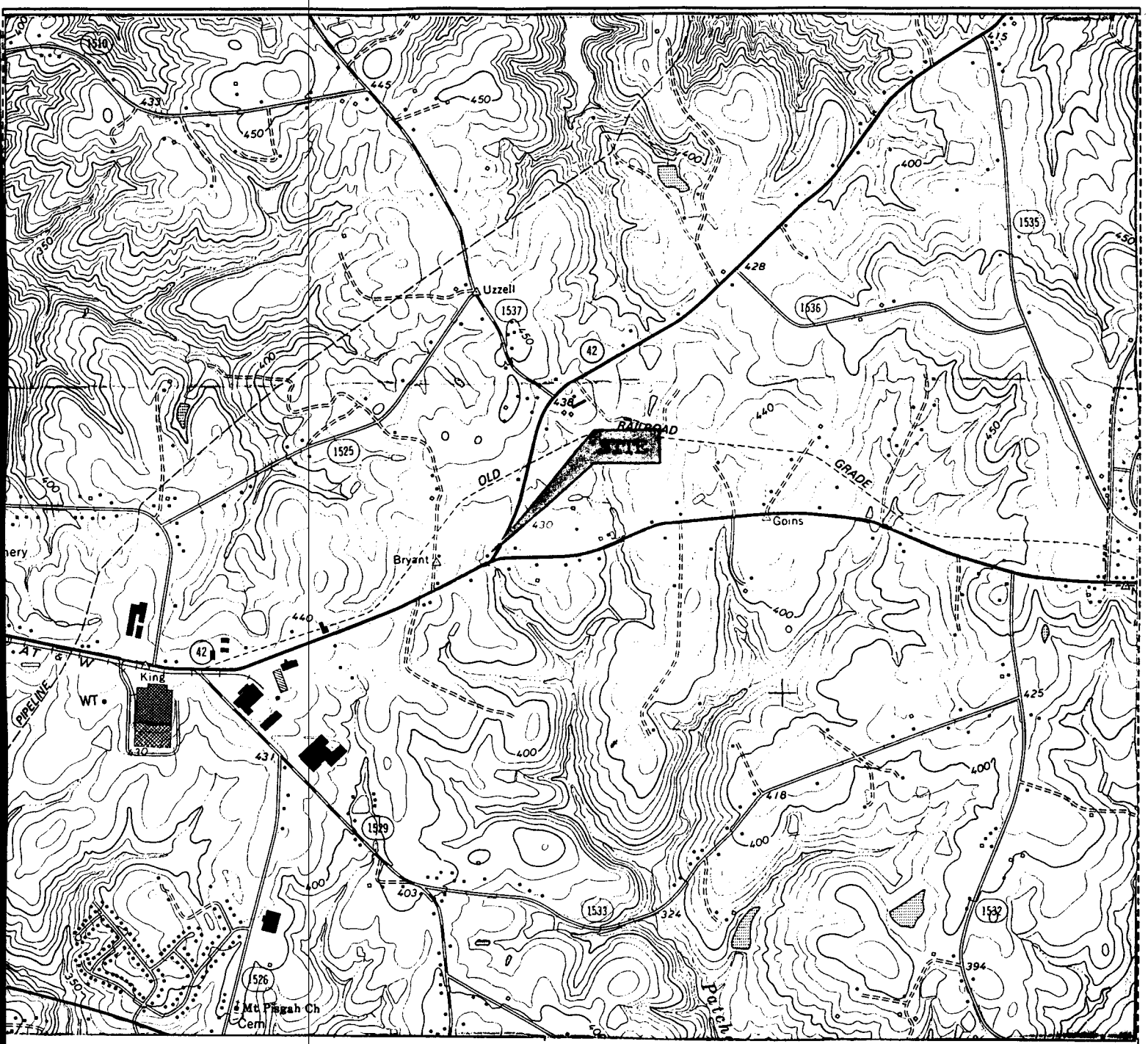
Environmental Aspecs, Inc. of North Carolina was incorporated on May 6, 1964 to practice engineering and other professional services and, as such, is exempt from the Professional Corporation Act under G.S. 55 B.

David B. Wells
Division Manager

ARN/FAD/lsa

8.0 DRAWINGS

1. USGS Topographic Map
2. Lee County Road Map
3. Soil Survey Map
4. Adjacent Property Map
5. Site Map
6. Site Utilities Map
7. Soil Boring Map
8. TPH Gasoline Isoconcentration Map
9. TPH Diesel Soil Isoconcentration Map
10. Soil Excavation Map 8/29/95 - 8/30/95
11. Excavation Cross-Section Transect Map
12. TPH Gasoline Soil Cross-Section A-B
13. TPH Gasoline Soil Cross-Section C-D
14. TPH Diesel Soil Cross-Section A-B
15. TPH Diesel Soil Cross-Section C-D
16. Existing Soil Contamination Map
17. Existing Monitoring Wells Map
18. Geological Cross-Section Transect Map
19. Geological Cross-Section A-B
20. Geological Cross-Section C-D
21. Total BTEX Isoconcentration Map 4/21/95
22. Naphthalene Isoconcentration Map 4/21/95
23. Total BTEX Isoconcentration Map 8/95
24. Naphthalene Isoconcentration Map 8/95
25. Groundwater Contour Map 9/27/95
26. Benzene Isoconcentration Map 9/27/95
27. Benzene Isoconcentration Cross-Section A-B
28. Benzene Isoconcentration Cross Section C-D
29. Ethylbenzene Isoconcentration Map 9/27/95
30. Ethylbenzene Isoconcentration Cross-Section A-B
31. Ethylbenzene Isoconcentration Cross-Section C-D
32. Napthalene Isoconcentration Map 9/27/95
33. Napthalene Isoconcentration Cross-Section A-B
34. Napthalene Isoconcentration Cross Section C-D



Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

USGS Topographic Map

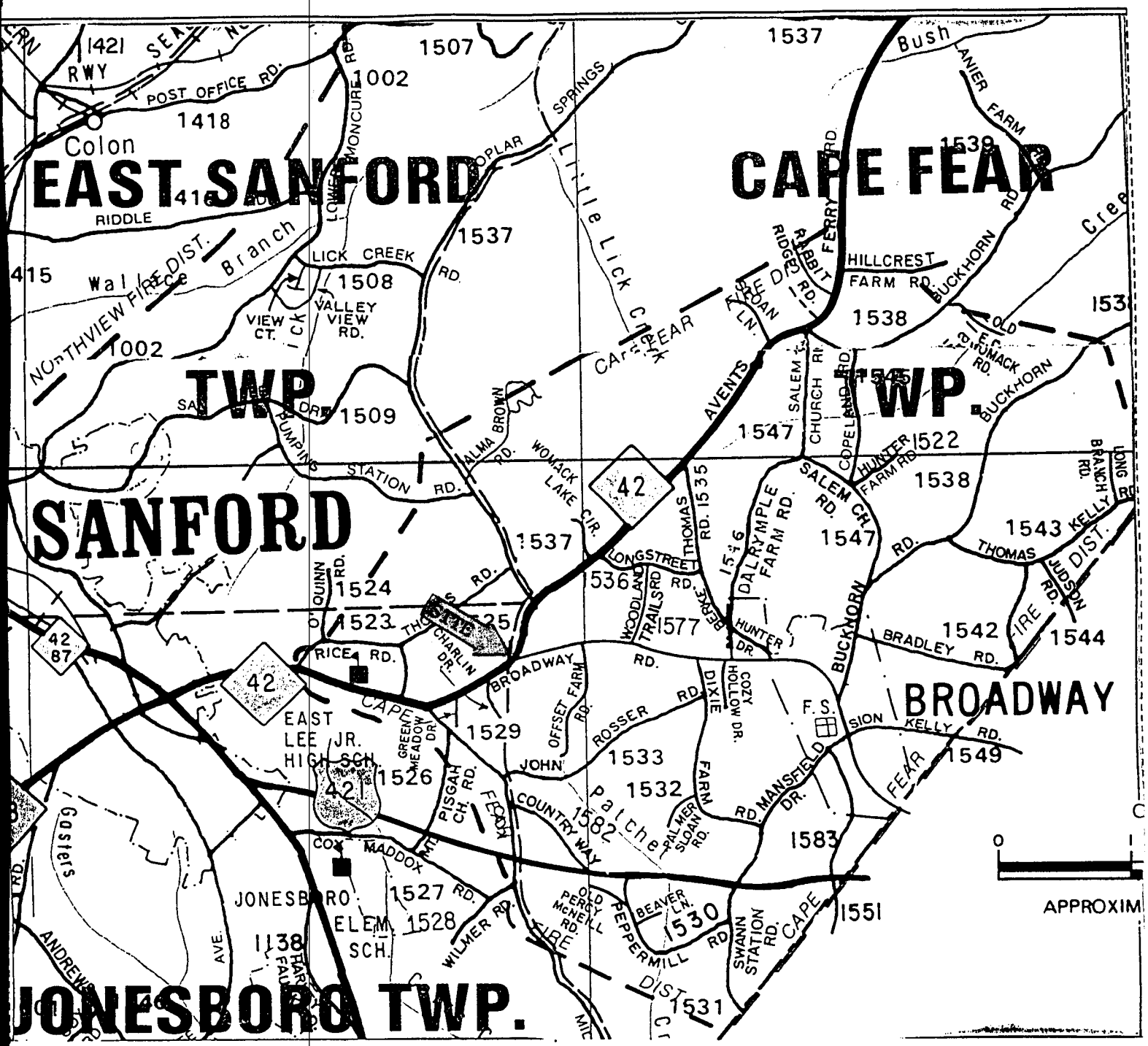
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
1:24,000	USGS	EAI	1981	4610	1



Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Rd) and NC Highway 42
Sanford, Lee County, North Carolina

Lee County Road Map

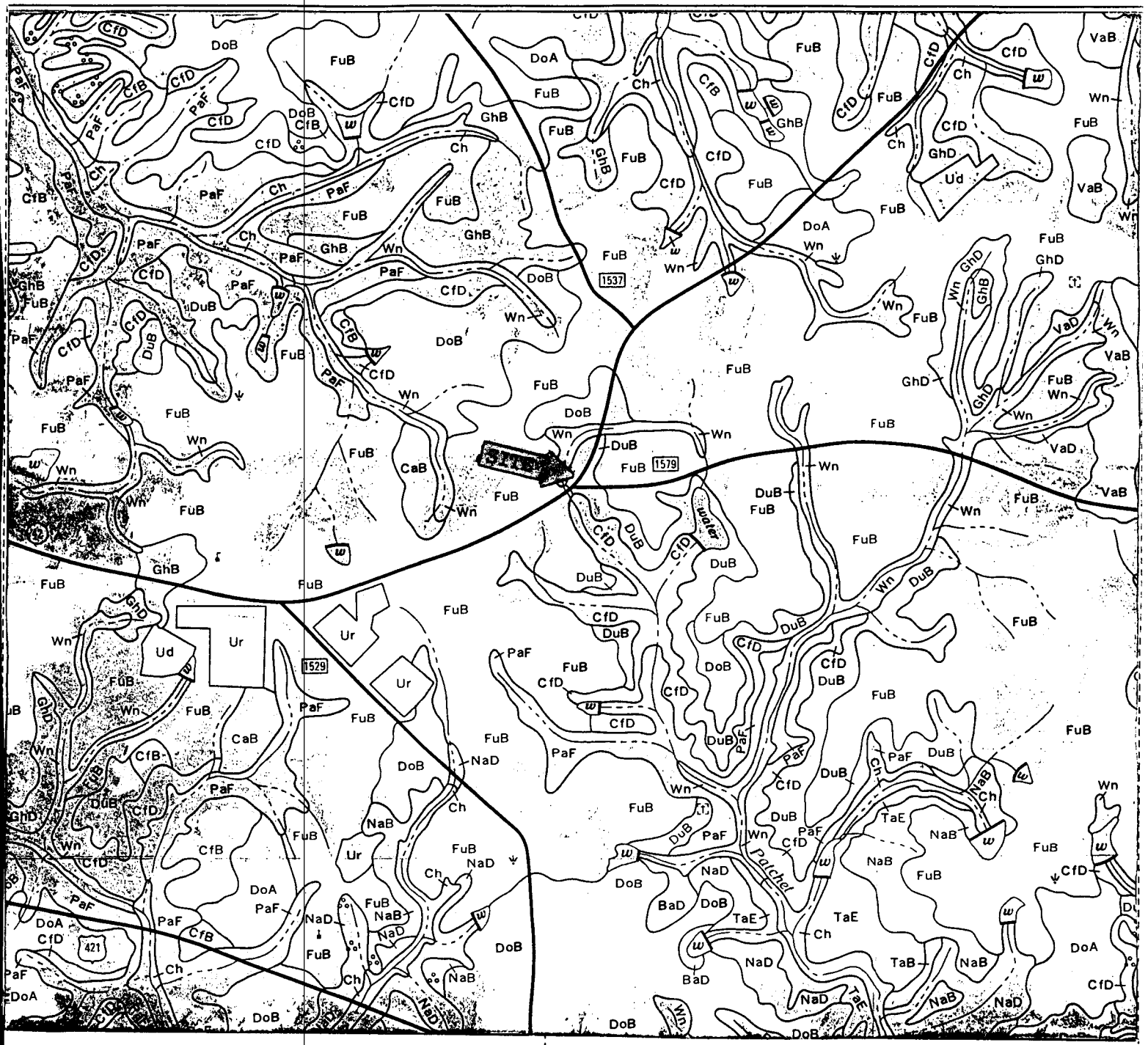
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
N/A	Champion Map Corp.	EAI	N/A	4610	2



Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Rd) and NC Highway 42
Sanford, Lee County, North Carolina

Soil Survey Map

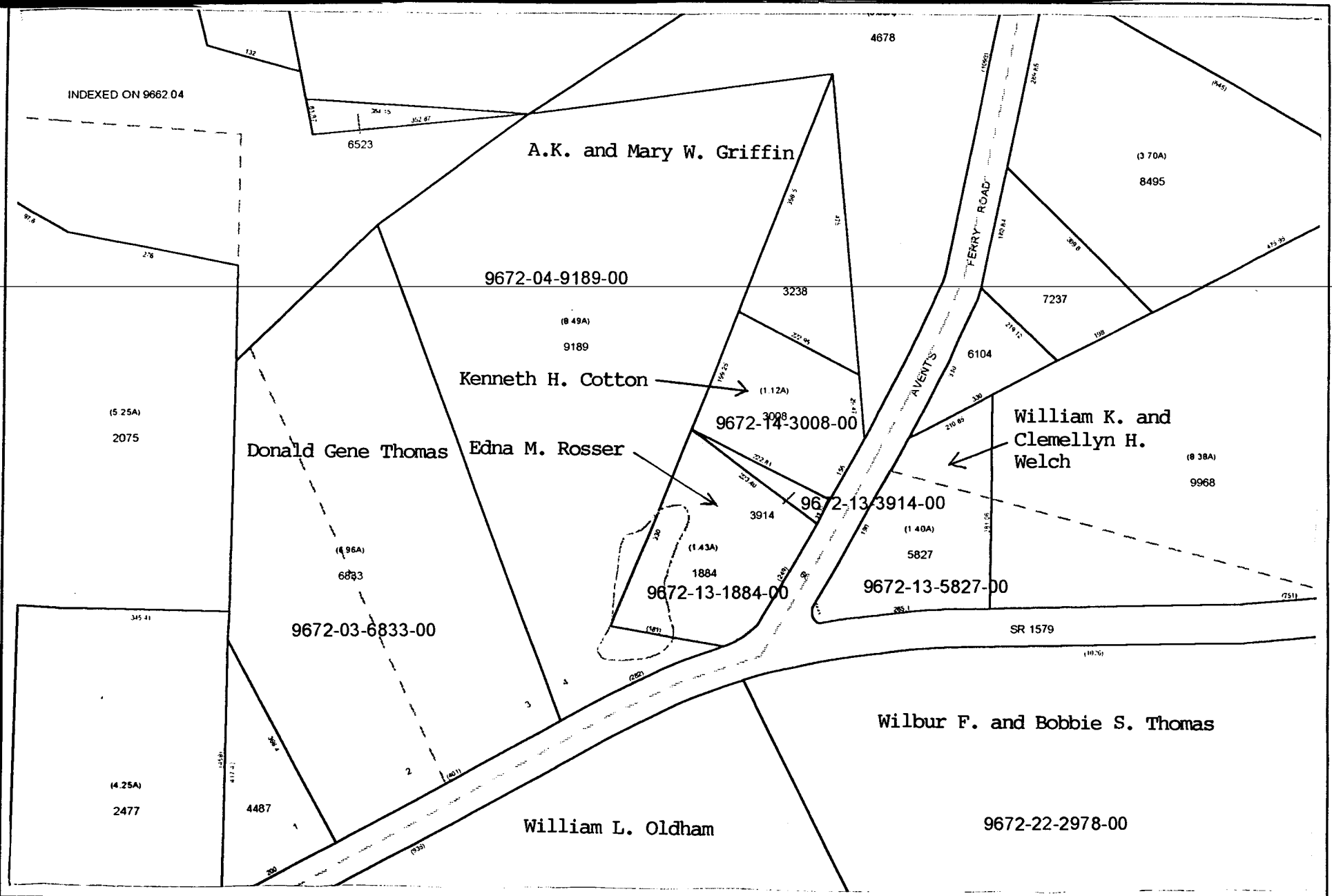
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
1:24,000	SCS	EAI	1989	4610	3



Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Adjacent Property Map

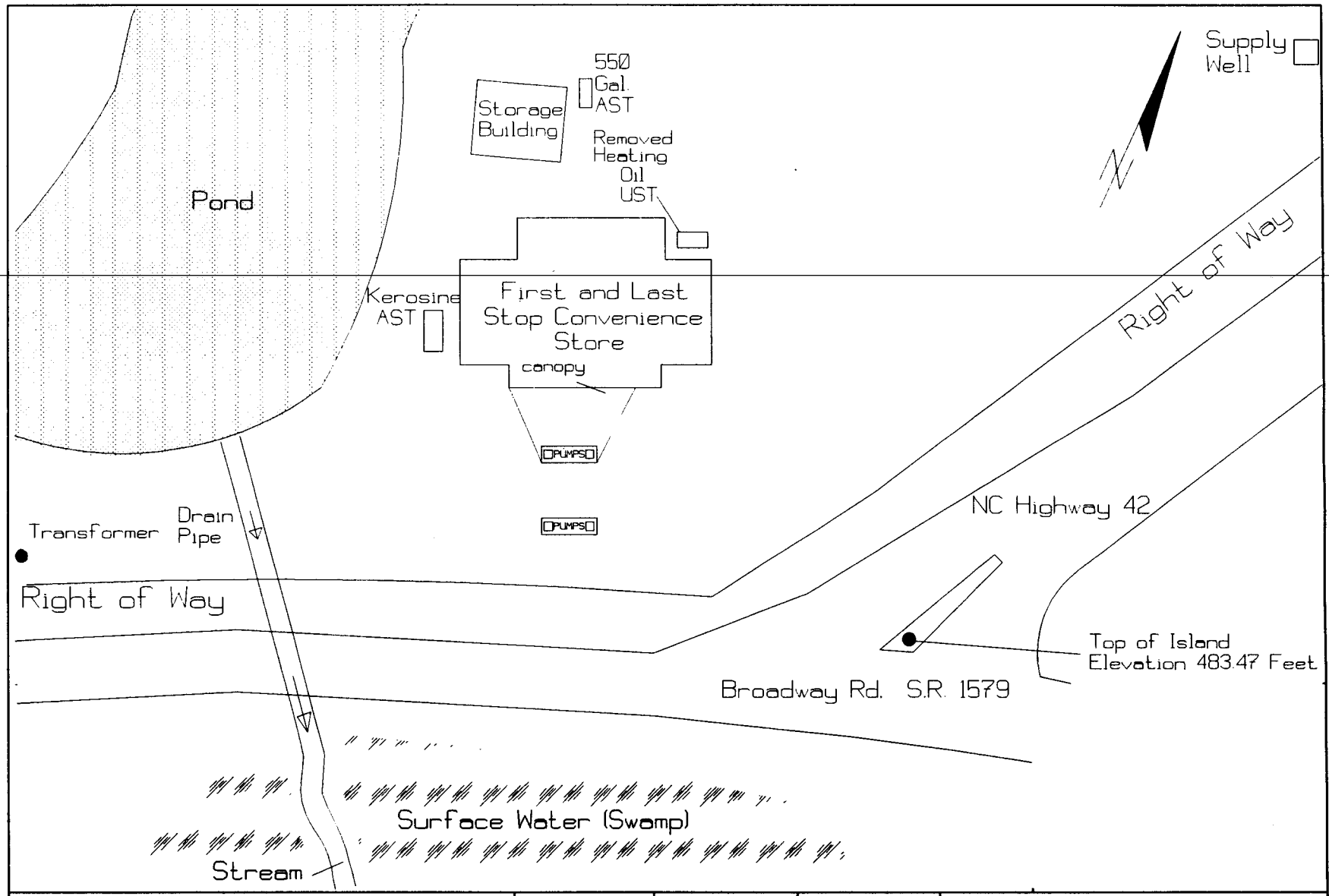
Scale:	Drawn by:	Checked by:
N/A	Lee County	EAI
Date:	**Project No:**	**Drawing No.**
N/A	4610	4

Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

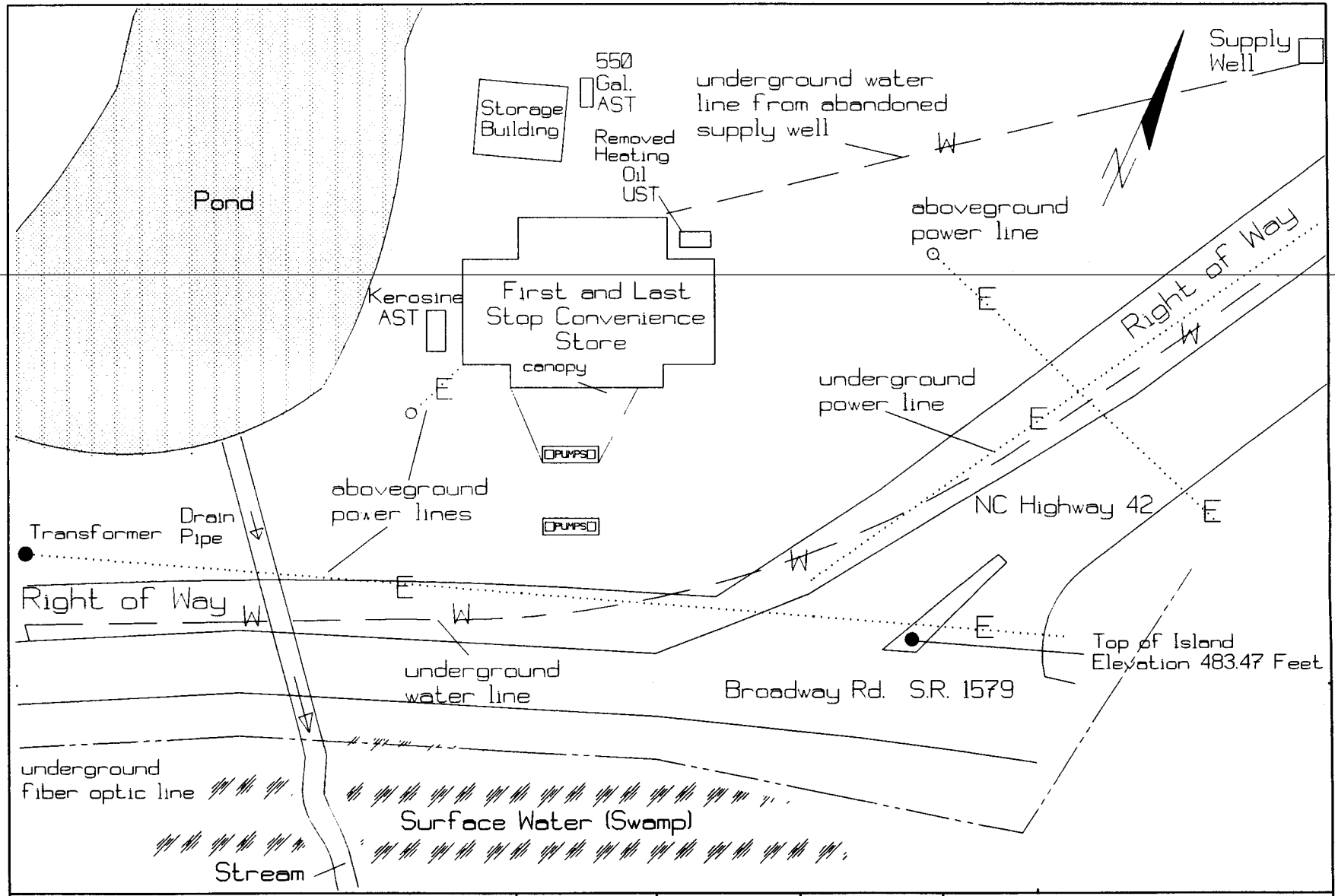
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



Drawing Label: First and Last Stop Convenience Store SR 1579 (Broadway Rd.) and NC Highway 42 Sanford, Lee County, North Carolina Site Map	**Scale:** 1"=35'	**Drawn by:** ARN	**Checked by:** FAD
	Date: 11/6/95	**Project No:** 4610	**Drawing No.** 5

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

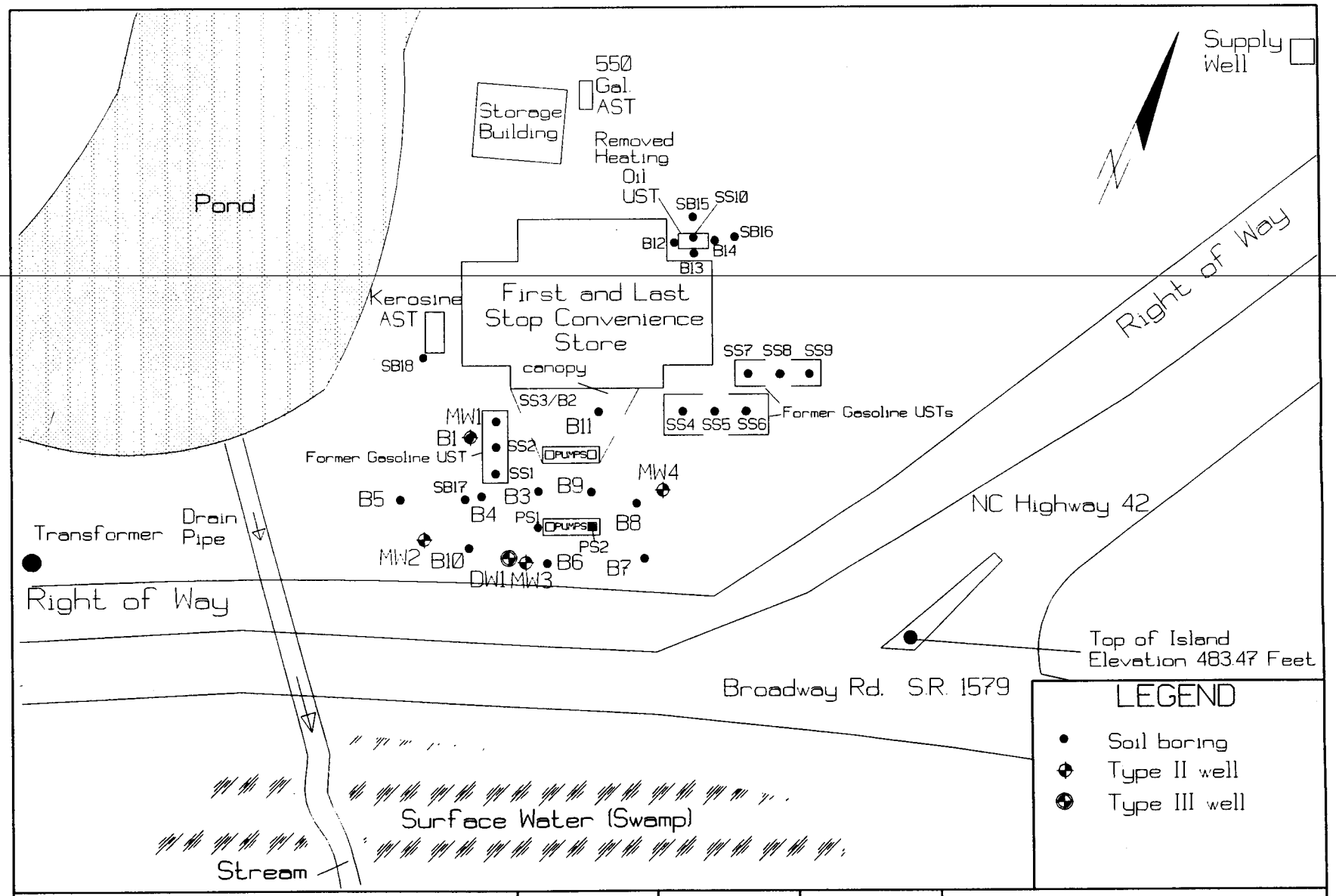


Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Site Utilities Map

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	6

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



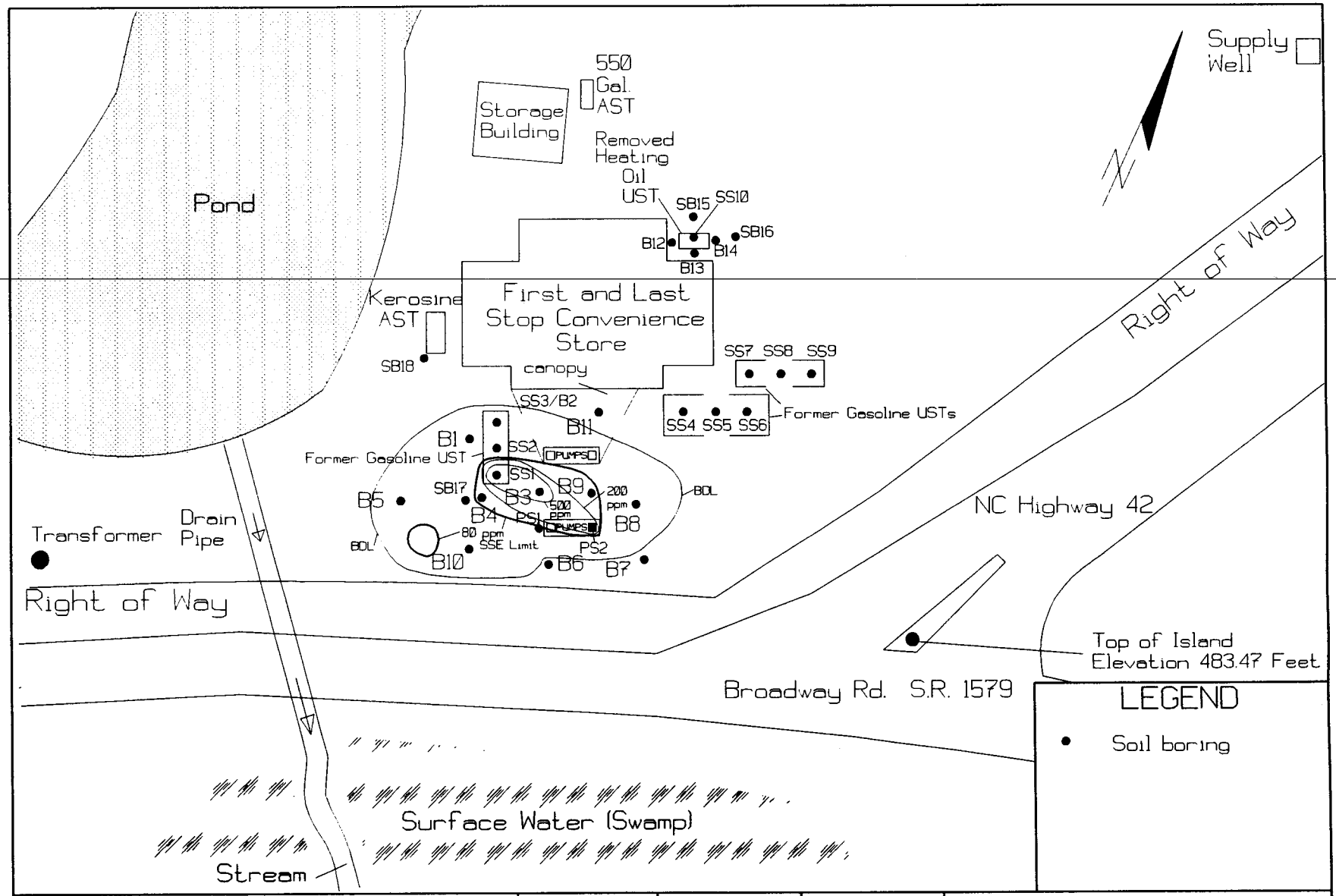
Drawing Label: First and Last Stop Convenience Store SR 1579 (Broadway Rd.) and NC Highway 42 Sanford, Lee County, North Carolina Soil Boring Map	**Scale:** 1"=35'	**Drawn by:** ARN	**Checked by:** FAD
	Date: 11/6/95	**Project No:** 4610	**Drawing No.** 7

Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

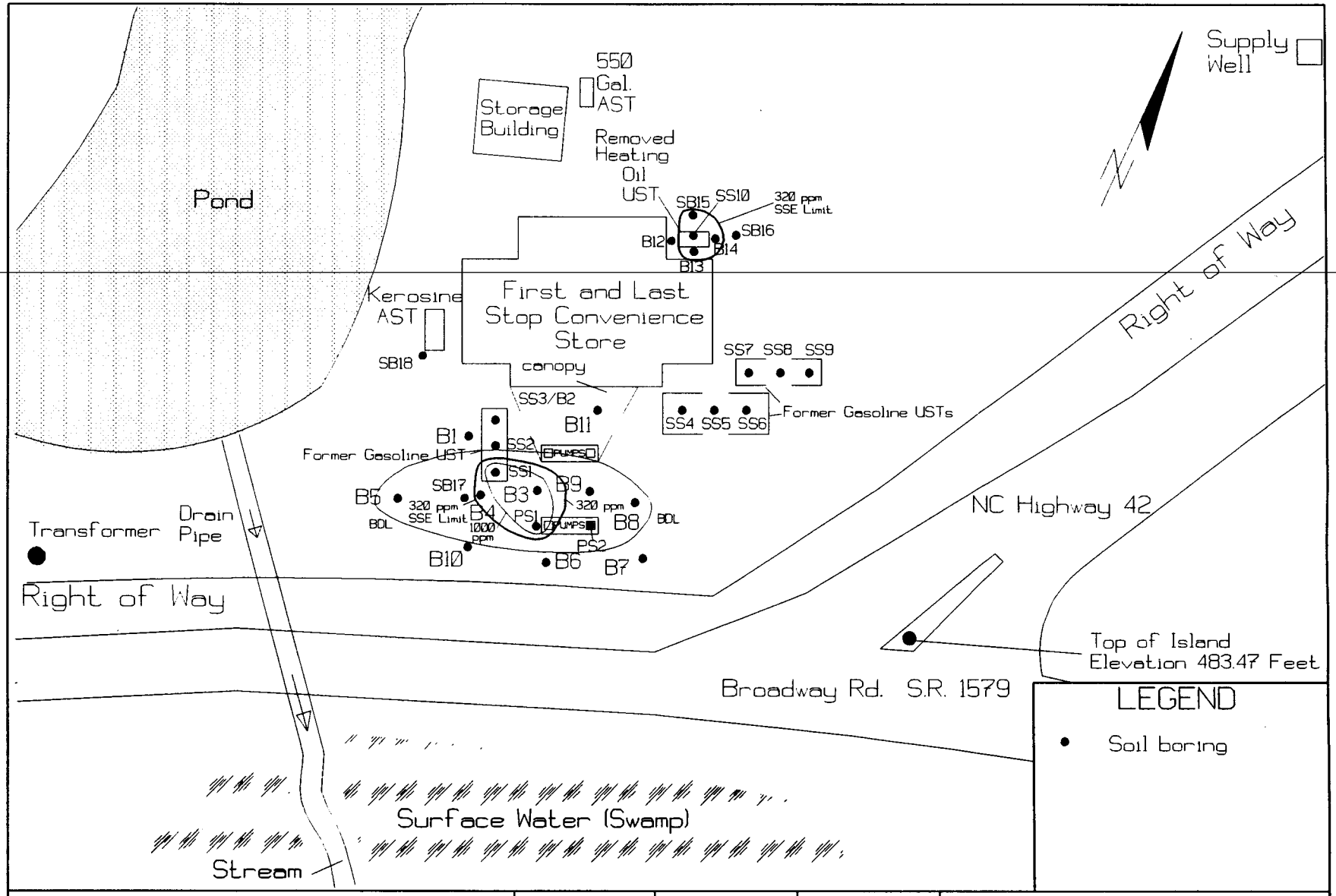


Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

TPH Gasoline Soil Isoconcentration Map

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	8

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

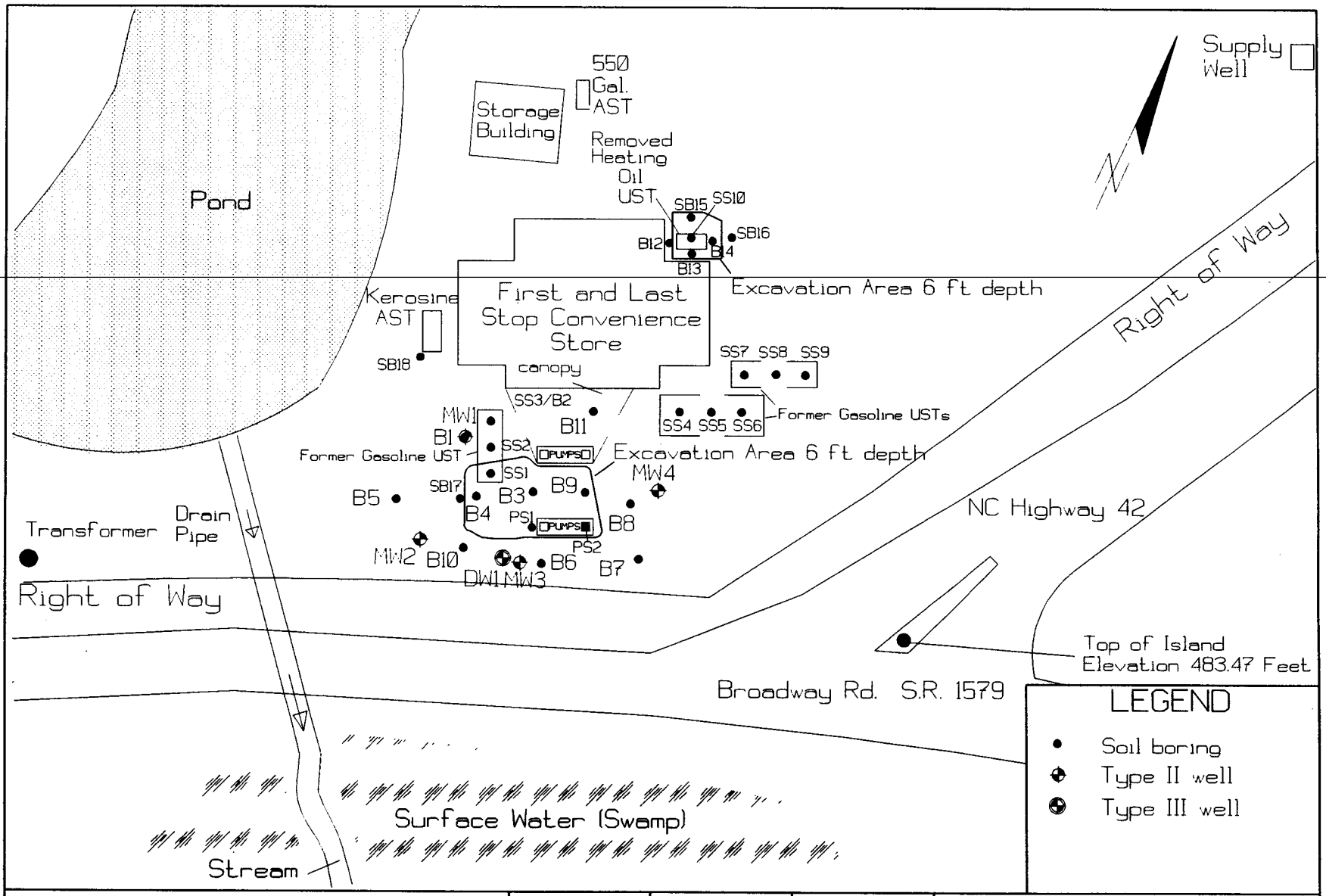


Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

TPH Diesel Soil Isoconcentration Map

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	9

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

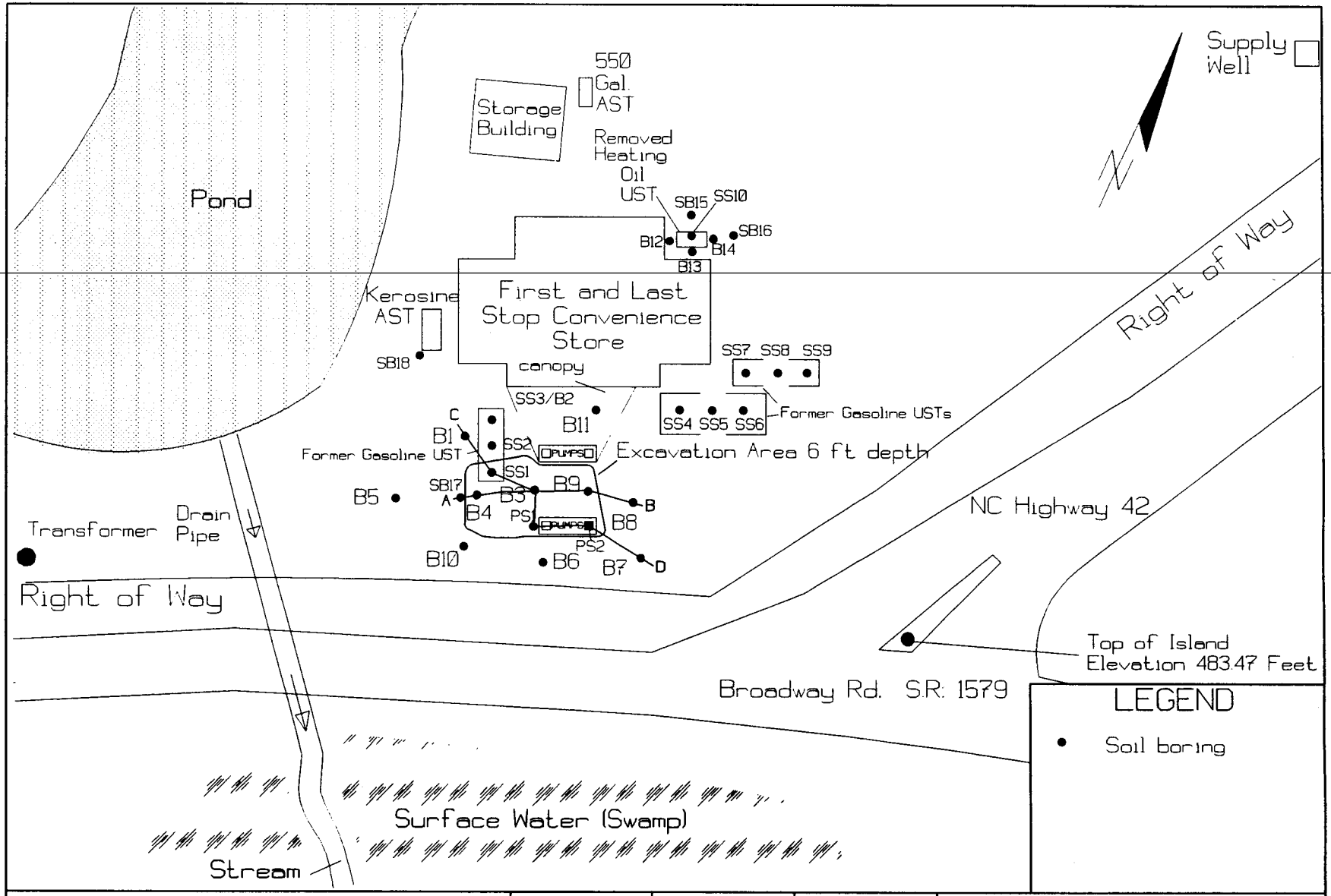


Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Soil Excavation Map 8/29/95 - 8/30/95

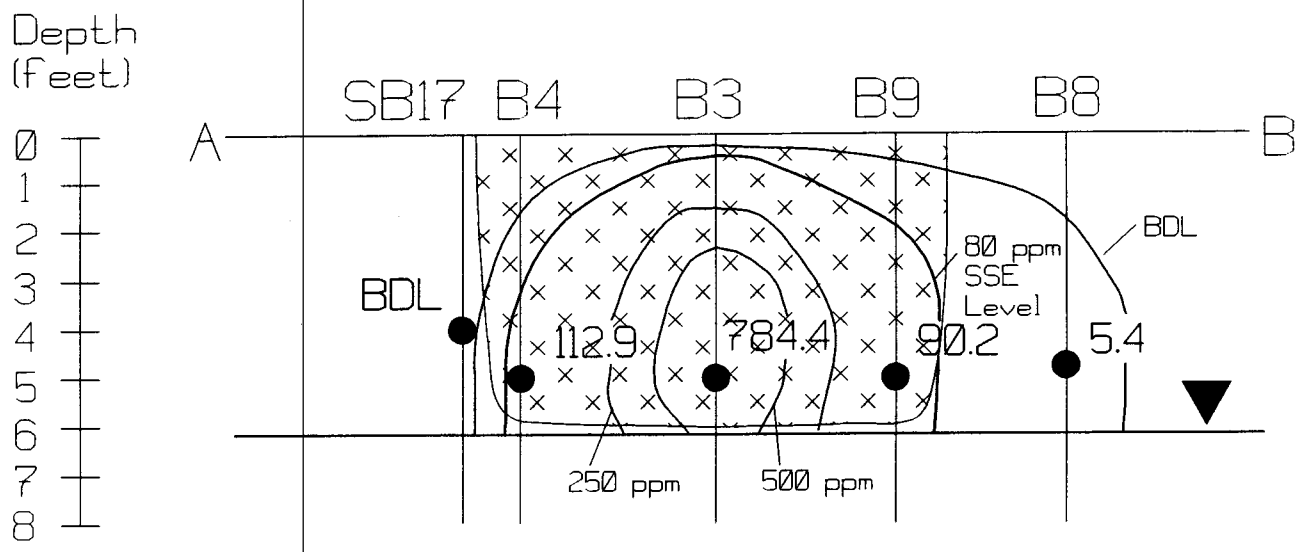
Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	10

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



Drawing Label: First and Last Stop Convenience Store SR 1579 (Broadway Rd.) and NC Highway 42 Sanford, Lee County, North Carolina Excavation Cross-section Transect Map	**Scale:** 1"=35'	**Drawn by:** ARN	**Checked by:** FAD
	Date: 11/6/95	**Project No:** 4610	**Drawing No.** 11

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



● Samples analyzed via EPA Method 5030 - TPH gasoline ppm

BDL Below Detection Limit

Excavated Material

Approximate static water level when soil was excavated August 29 & 30, 1995

Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Road) and NC Hwy. 42
Sanford, Lee County, North Carolina

TPH Gasoline Soil Cross-section A-B

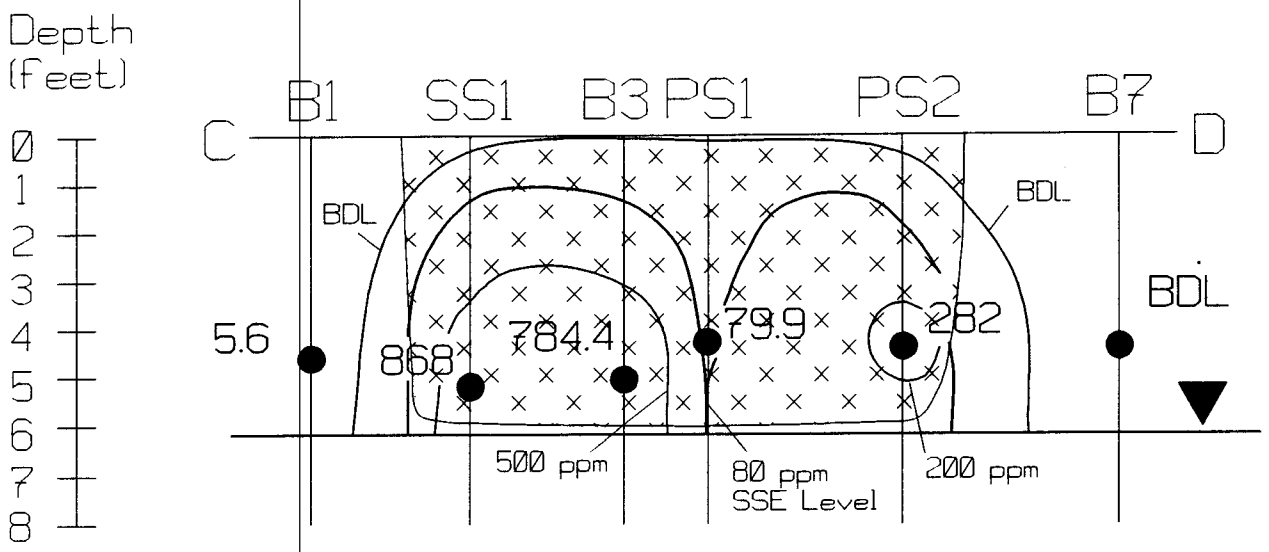
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=15' V 1"=4'	ARN	FAD	10/2/95	50-944-4610	12



● Samples analyzed via EPA Method 5030 - TPH gasoline ppm

BDL Below Detection Limit

Excavated Material

Approximate static water level when soil was excavated August 29 & 30, 1995

Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Road) and NC Hwy. 42
Sanford, Lee County, North Carolina

TPH Gasoline Soil Cross-section C-D

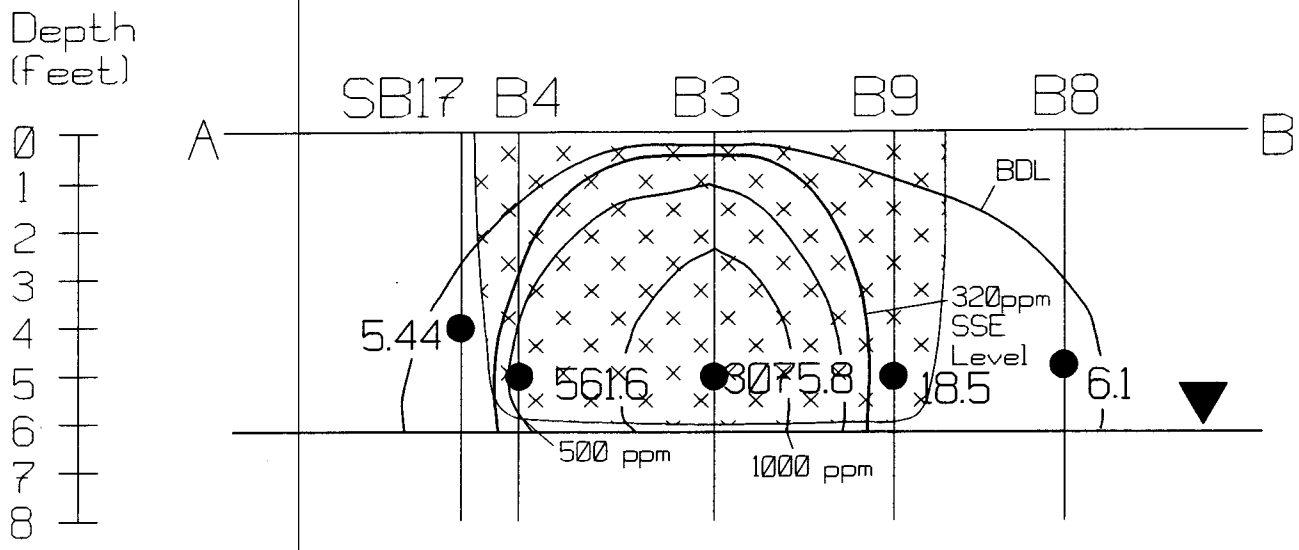
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=15' V 1"=4'	ARN	FAD	10/2/95	50-944-4610	13



● Samples analyzed via EPA Method 3550 - TPH diesel ppm

BDL Below Detection Limit

Excavated Material

Approximate static water level when soil was excavated August 29 & 30, 1995

Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Road) and NC Hwy. 42
Sanford, Lee County, North Carolina

TPH Diesel Soil Cross-section A-B

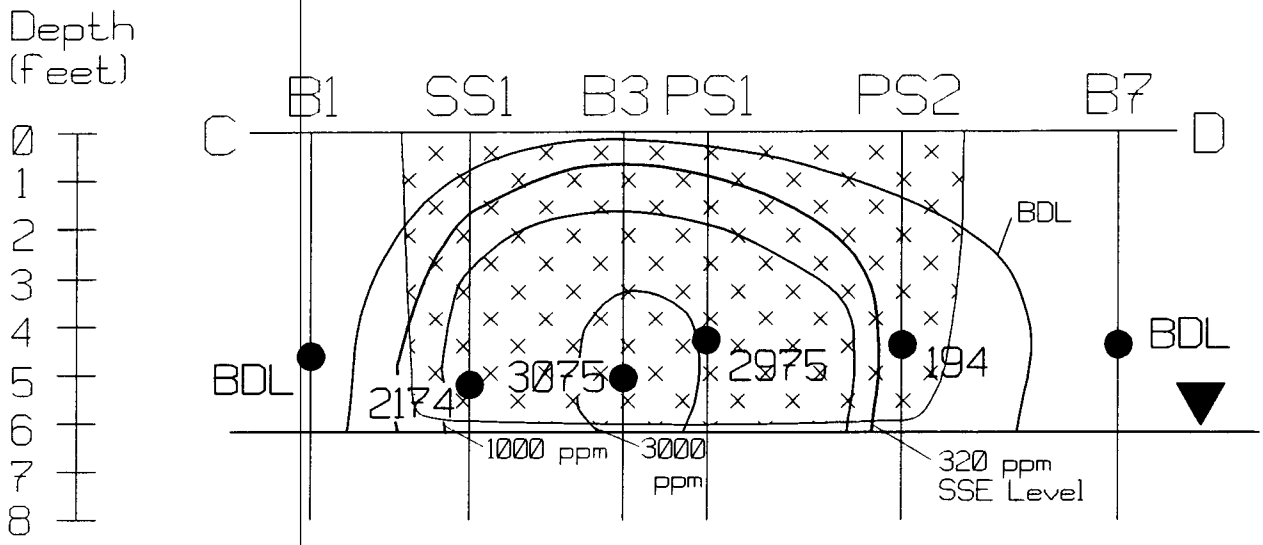
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=15' V 1"=4'	ARN	FAD	10/2/95	50-944-4610	14



● Samples analyzed via EPA Method 3550 - TPH diesel ppm

BDL Below Detection Limit

Excavated Material

Approximate static water level when soil was excavated August 29 & 30, 1995

Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Road) and NC Hwy. 42
Sanford, Lee County, North Carolina

TPH Diesel Soil Cross-section C-D

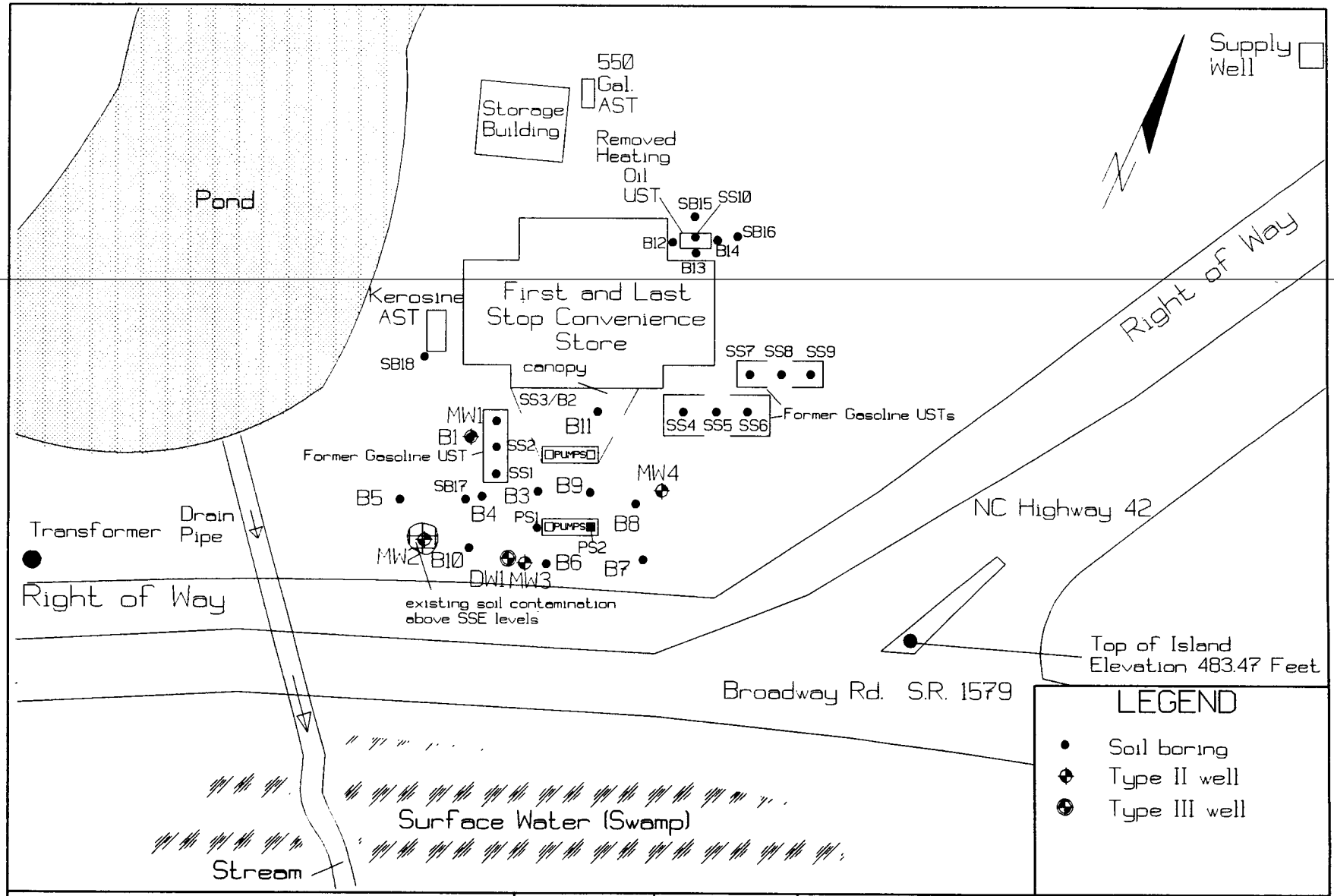
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=15' V 1"=4'	ARN	FAD	10/2/95	50-944-4610	15

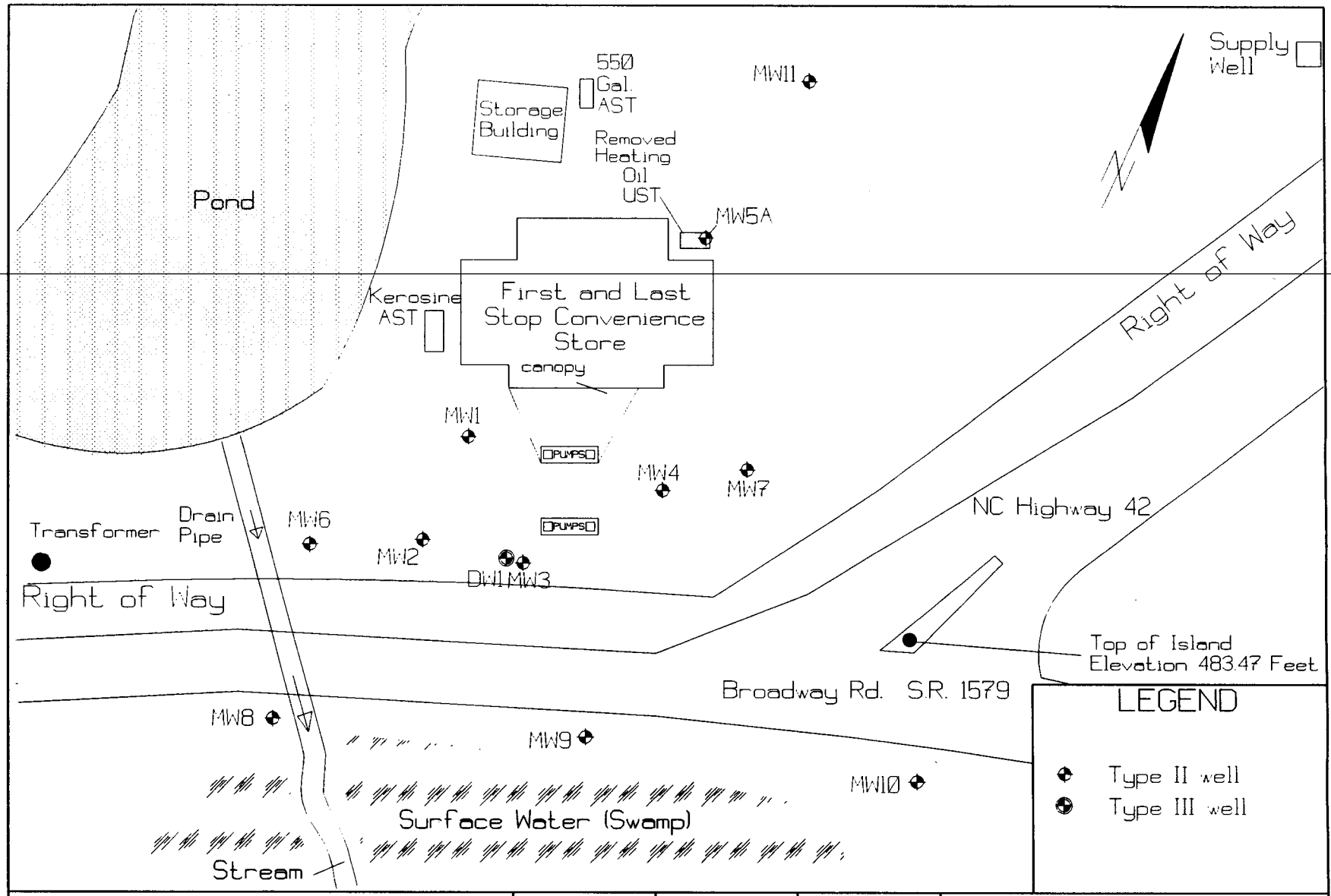


Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Existing Soil Contamination Map

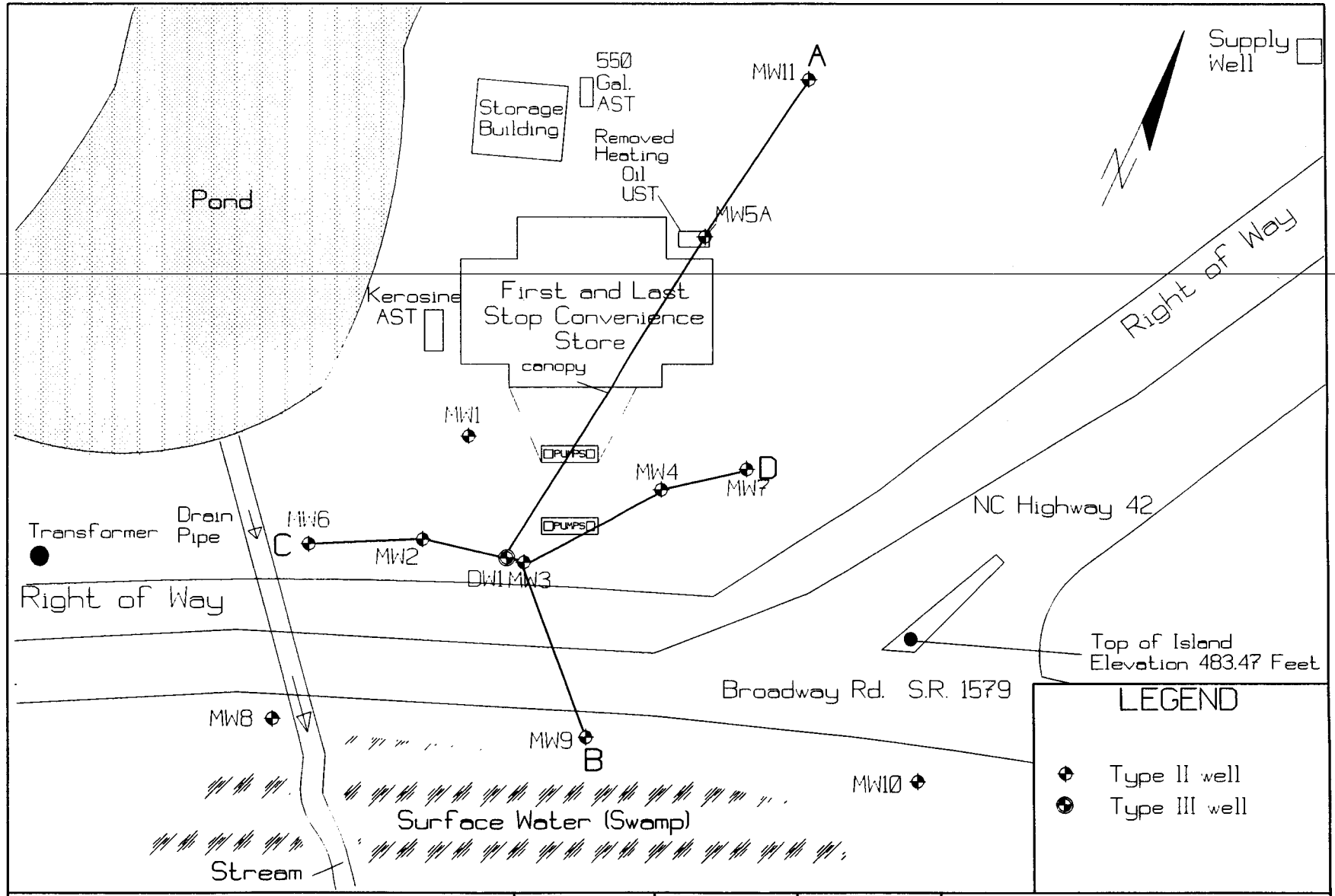
Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	16

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



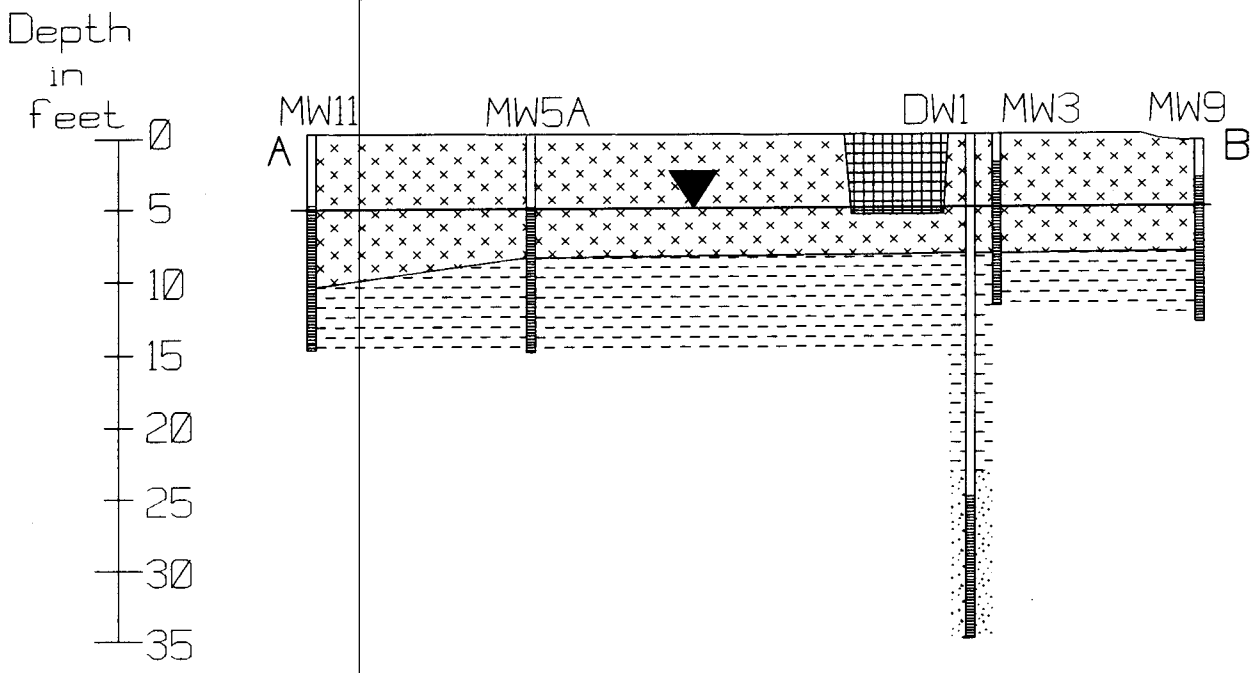
Drawing Label: First and Last Stop Convenience Store SR 1579 (Broadway Rd.) and NC Highway 42 Sanford, Lee County, North Carolina Existing Monitoring Wells Map	**Scale:** 1"=35'	**Drawn by:** ARN	**Checked by:** FAD
	Date: 11/6/95	**Project No:** 4610	**Drawing No.** 17

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



Drawing Label: First and Last Stop Convenience Store SR 1579 (Broadway Rd.) and NC Highway 42 Sanford, Lee County, North Carolina Geological Cross-section Transect Map	**Scale:** 1"=35'	**Drawn by:** ARN	**Checked by:** FAD
	Date: 11/6/95	**Project No:** 4610	**Drawing No.** 18

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



Clayey sand backfilled in excavation

Red/brown silty sand

White to tan silt

Gray to tan sand

Approximate unconfined aquifer water level

Drawing Label

First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Geological Cross-section A-B

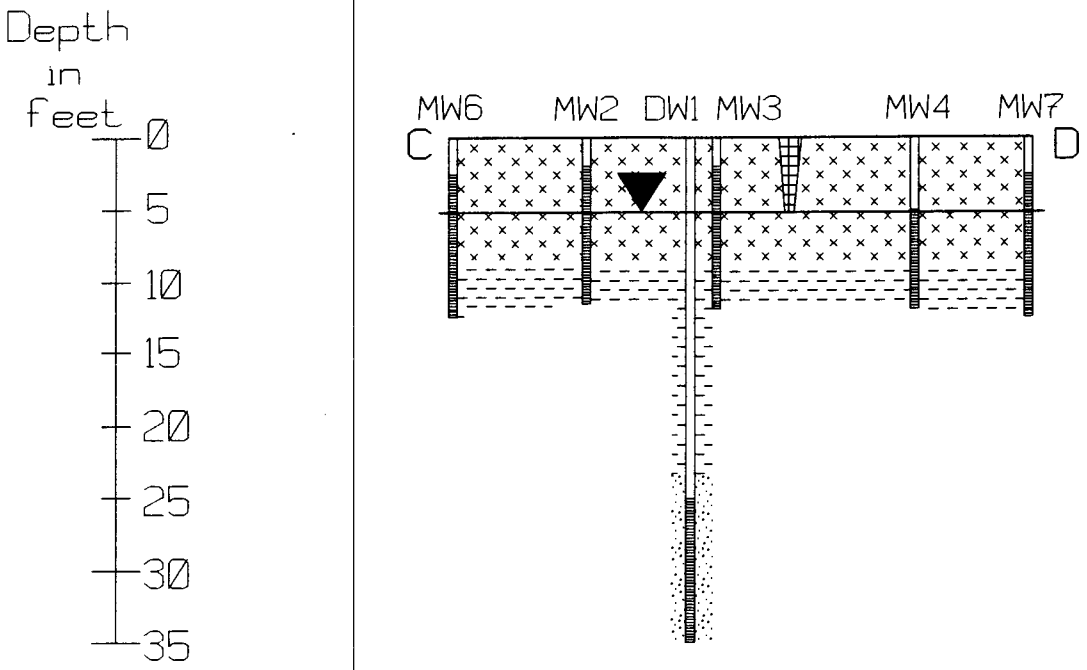
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=40'	ARN	FAD	10/9/95	4610	19



Clayey sand backfilled in excavation

Red/brown silty sand

White to tan silt

Gray to tan sand

Approximate unconfined aquifer water level

Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Geological Cross-section C-D

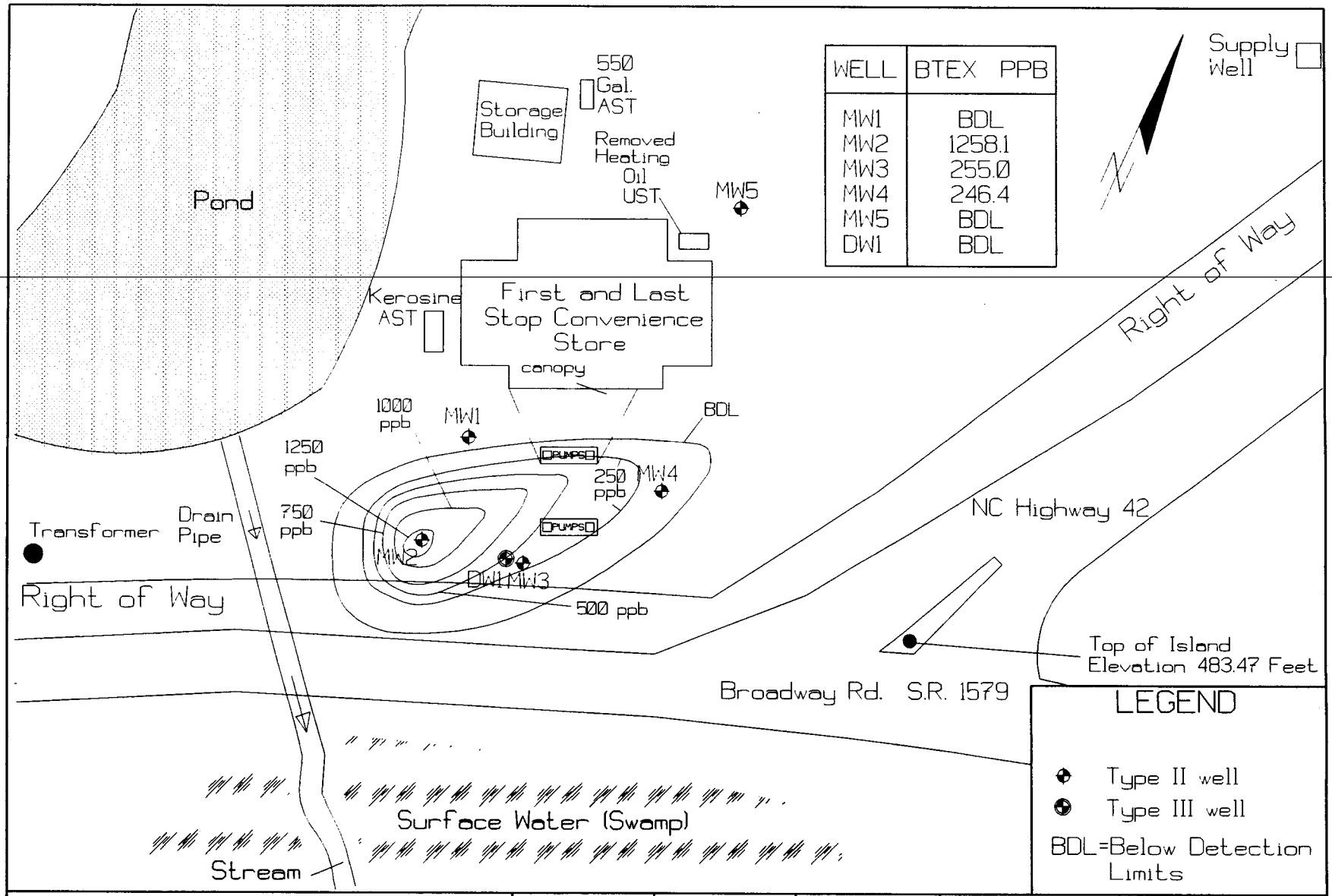
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=40'	ARN	FAD	10/9/95	4610	20



WELL	BTEX PPB
MW1	BDL
MW2	1258.1
MW3	255.0
MW4	246.4
MW5	BDL
DW1	BDL

LEGEND

- Type II well
- Type III well

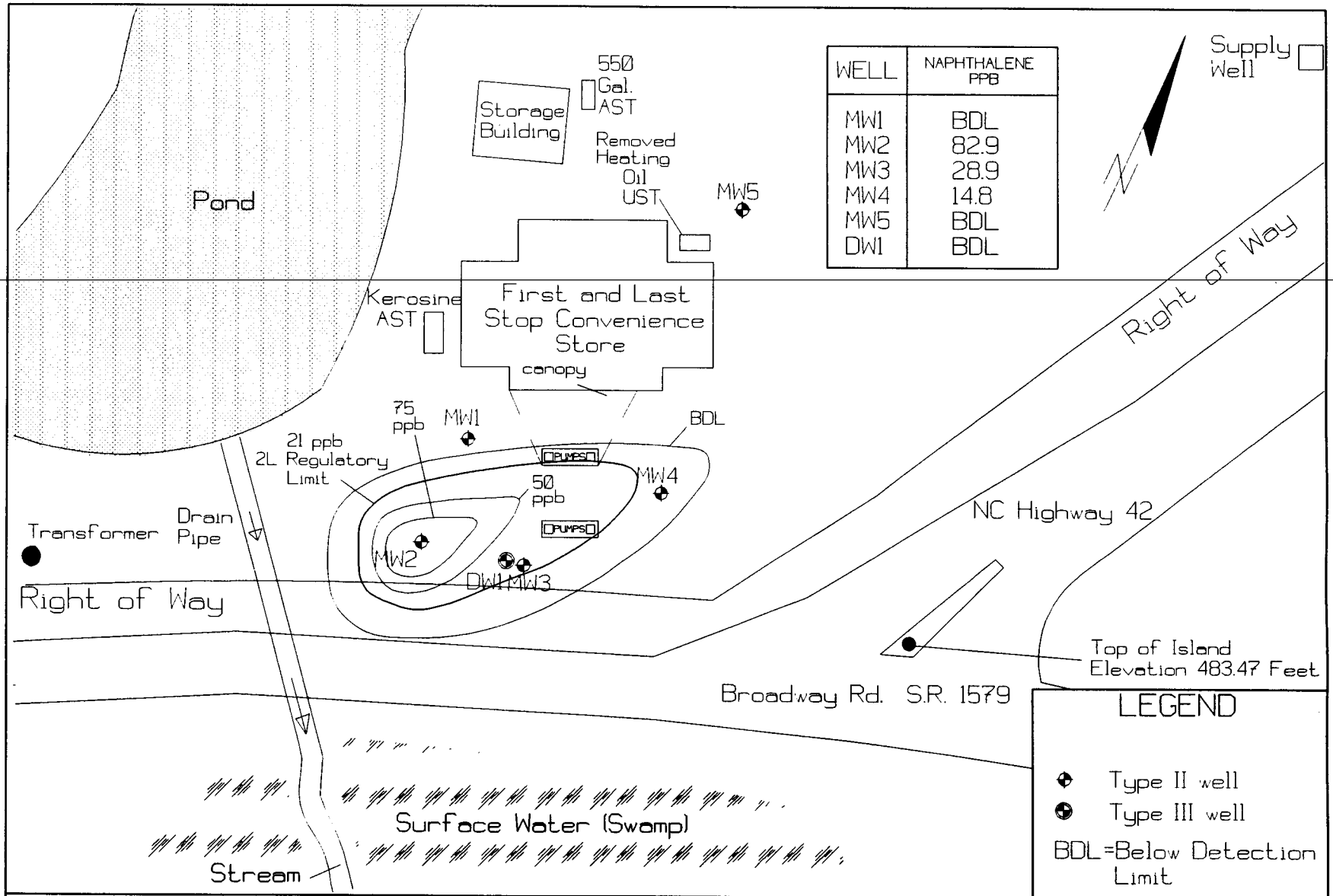
BDL=Below Detection Limits

Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Total BTEX Isoconcentration Map 4/21/95

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	21

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr. Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



WELL	NAPHTHALENE PPB
MW1	BDL
MW2	82.9
MW3	28.9
MW4	14.8
MW5	BDL
DW1	BDL

LEGEND

- Type II well
- Type III well

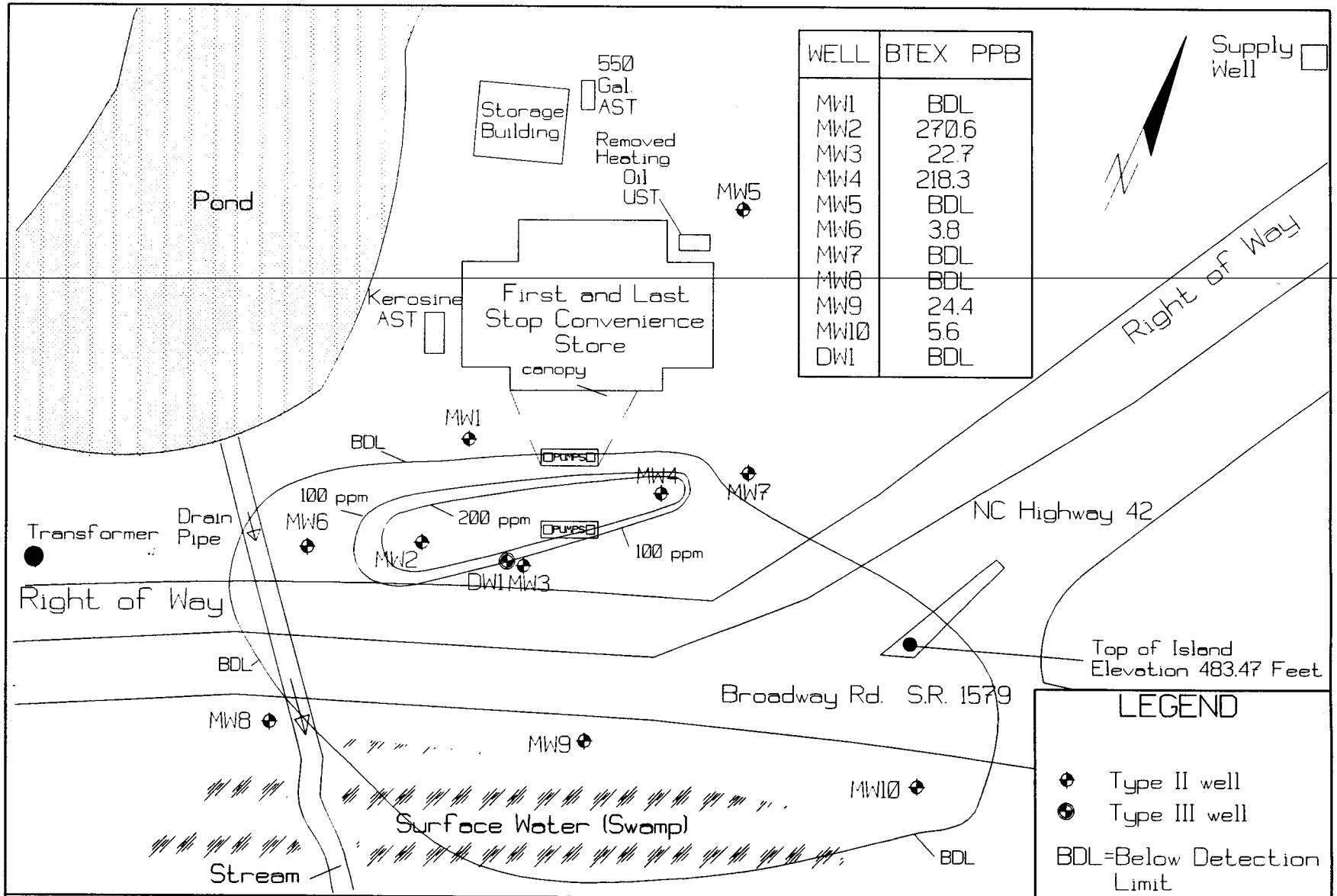
BDL=Below Detection Limit

Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Naphthalene Isoconcentration Map 4/21/95

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	22

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



WELL	BTEX PPB
MW1	BDL
MW2	270.6
MW3	22.7
MW4	218.3
MW5	BDL
MW6	3.8
MW7	BDL
MW8	BDL
MW9	24.4
MW10	5.6
DW1	BDL

LEGEND

- Type II well
- Type III well

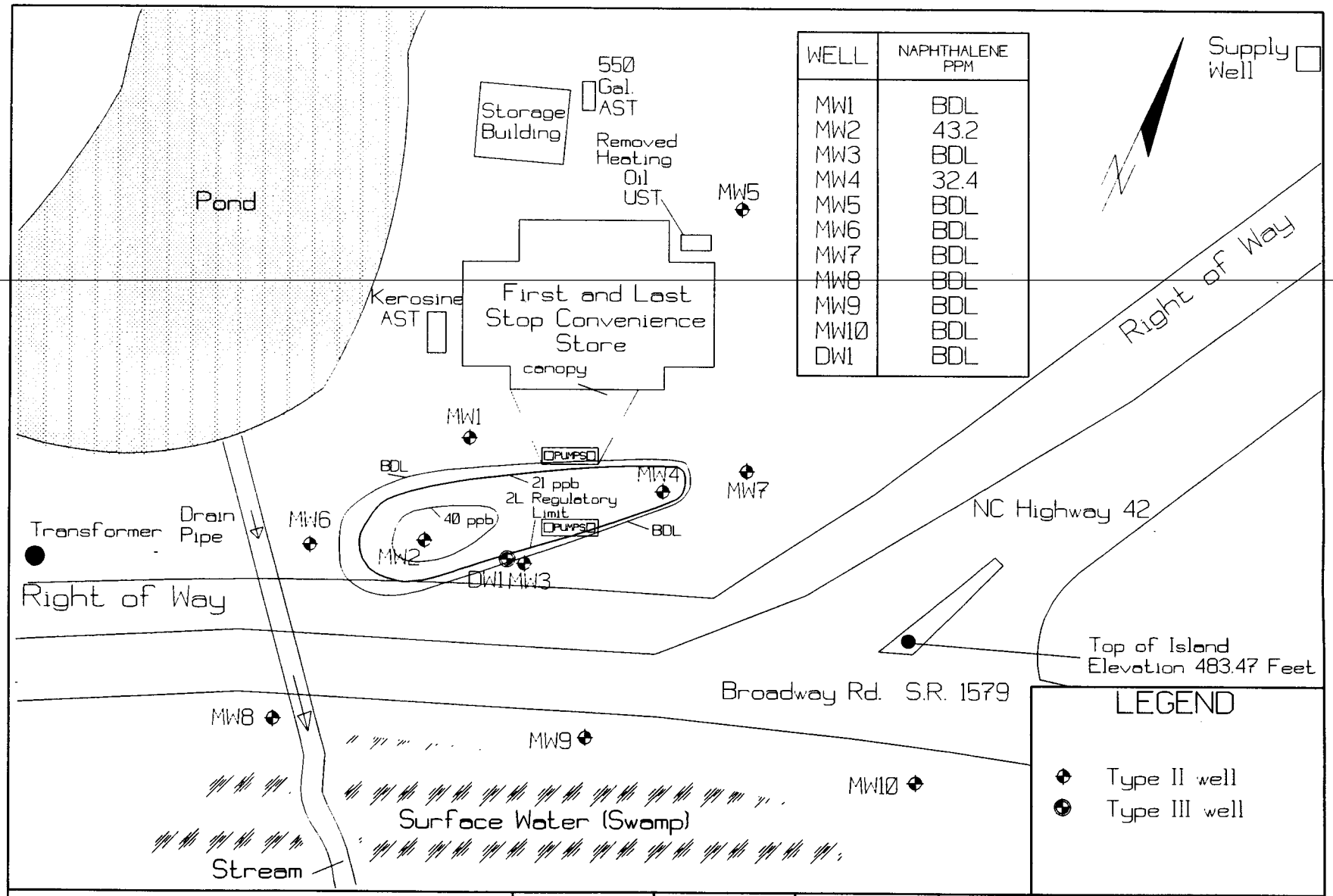
BDL=Below Detection Limit

Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Total BTEX Isoconcentration Map Aug. 1995

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	23

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



WELL	NAPHTHALENE PPM
MW1	BDL
MW2	43.2
MW3	BDL
MW4	32.4
MW5	BDL
MW6	BDL
MW7	BDL
MW8	BDL
MW9	BDL
MW10	BDL
DW1	BDL

LEGEND

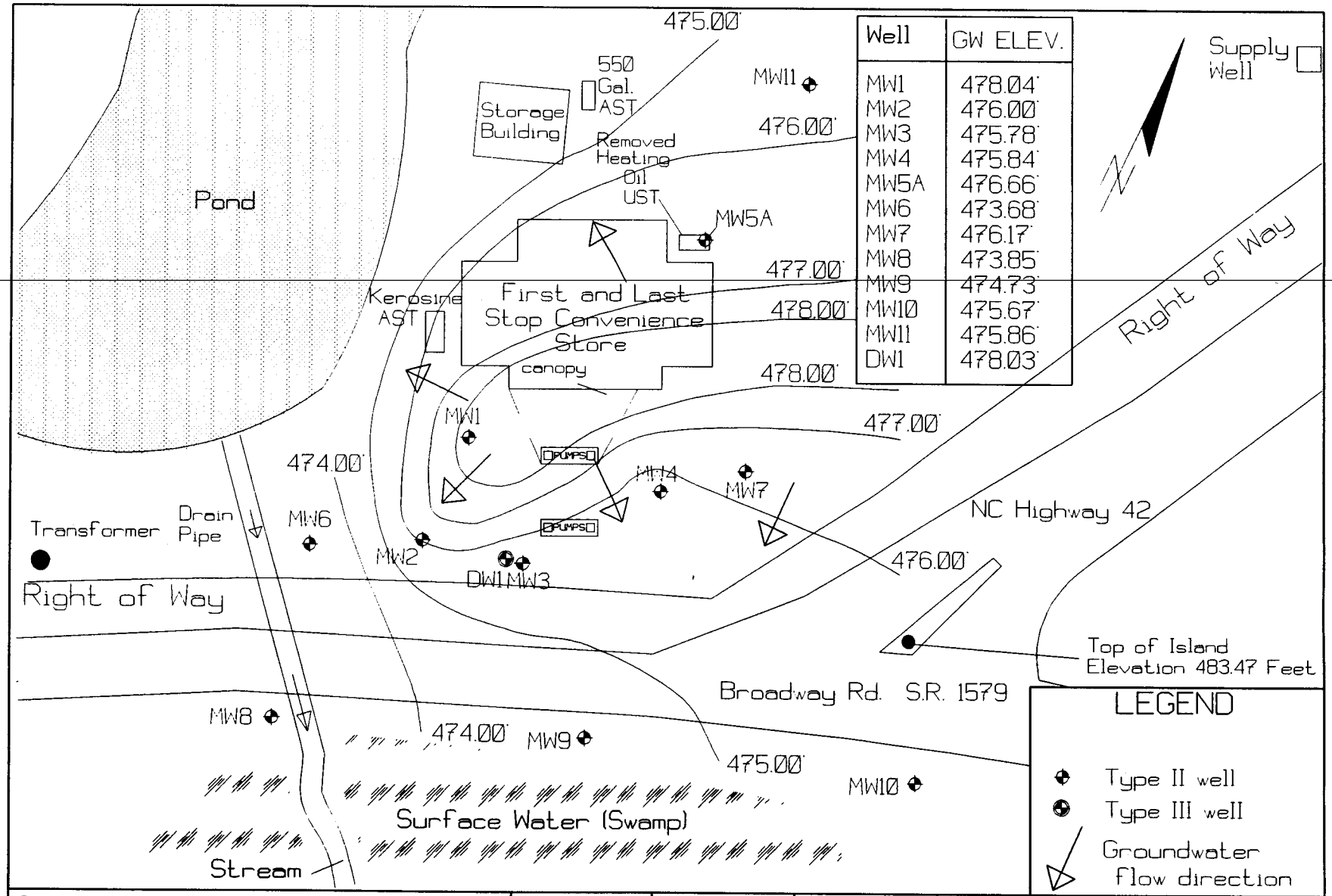
- Type II well
- Type III well

Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Naphthalene Isoconcentration Map Aug. 1995

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	24

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



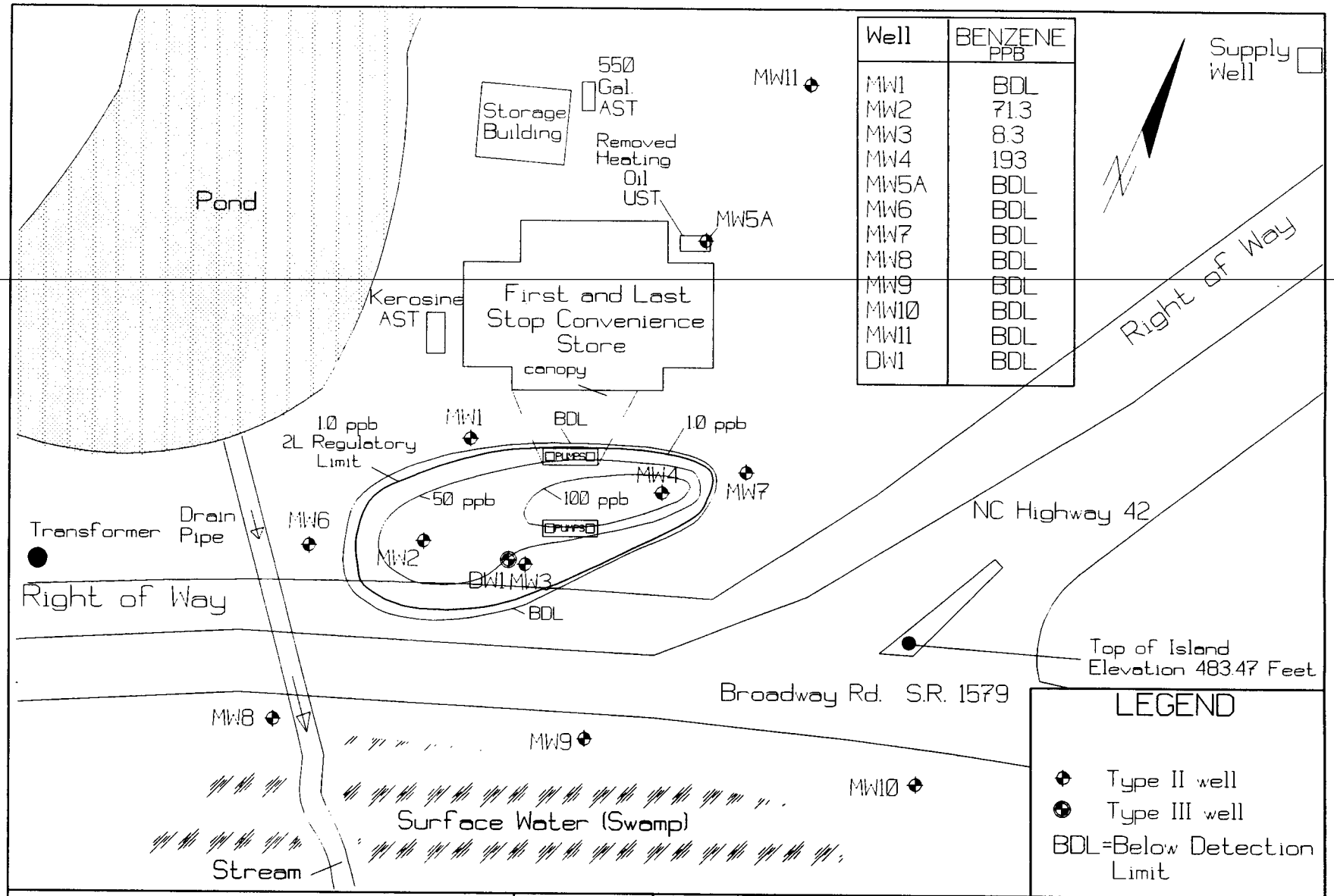
Well	GW ELEV.
MW1	478.04'
MW2	476.00'
MW3	475.78'
MW4	475.84'
MW5A	476.66'
MW6	473.68'
MW7	476.17'
MW8	473.85'
MW9	474.73'
MW10	475.67'
MW11	475.86'
DW1	478.03'

Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Groundwater Contour Map 9/27/95

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	25

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



Well	BENZENE PPB
MW1	BDL
MW2	71.3
MW3	8.3
MW4	193
MW5A	BDL
MW6	BDL
MW7	BDL
MW8	BDL
MW9	BDL
MW10	BDL
MW11	BDL
DW1	BDL

LEGEND

- Type II well
- Type III well

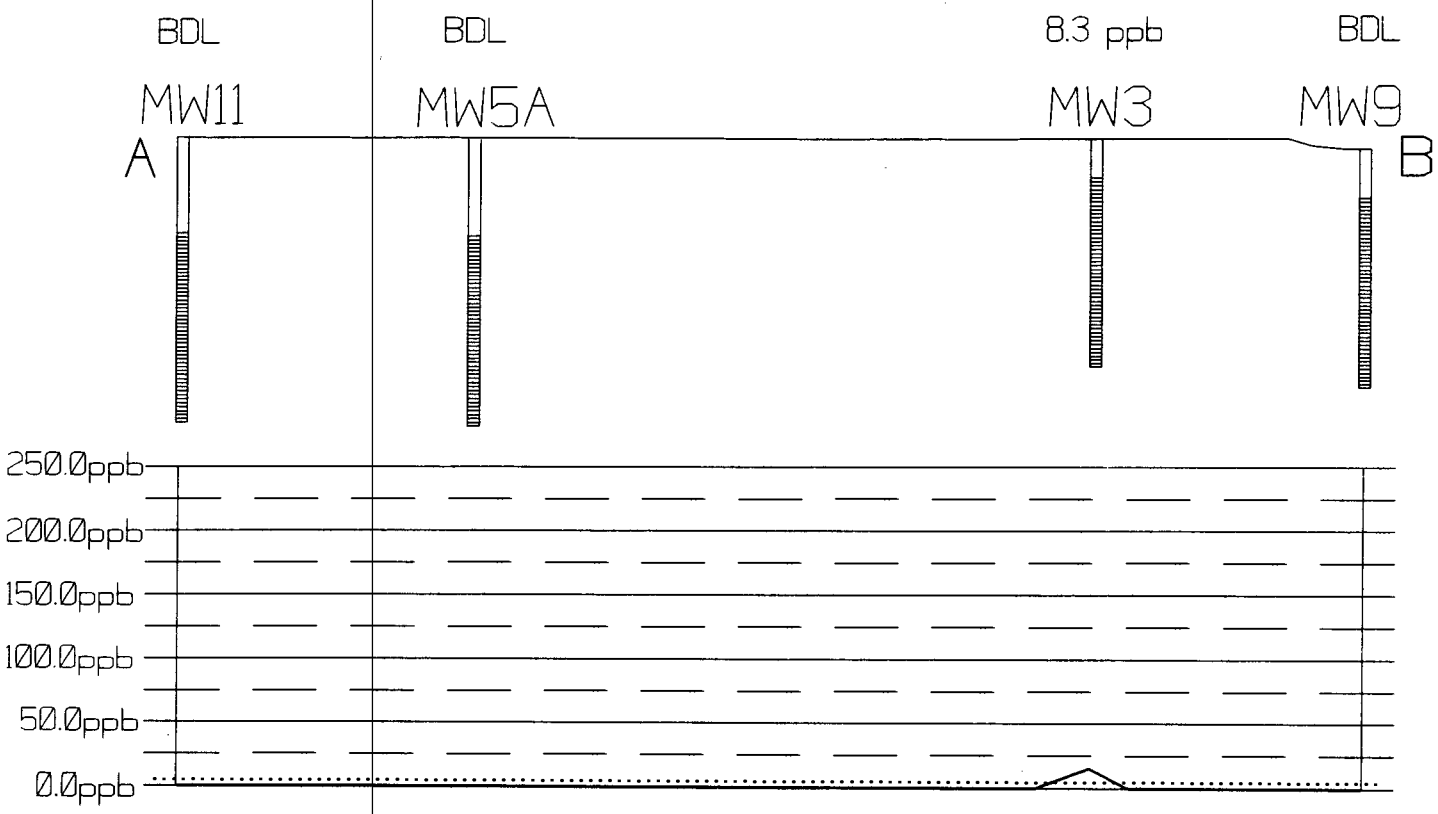
BDL=Below Detection Limit

Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Benzene Isoconcentration Map 9/27/95

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	26

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



Dotted line denotes 2L regulatory limit

Total thickness of the contaminant portrayed represents the concentration of that contaminant in each well in parts per billion (ppb).

The purpose of this diagram is to graphically represent the contaminant concentrations in each well, not to delineate the plume vertically.

Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Benzene Isoconcentration Cross-section

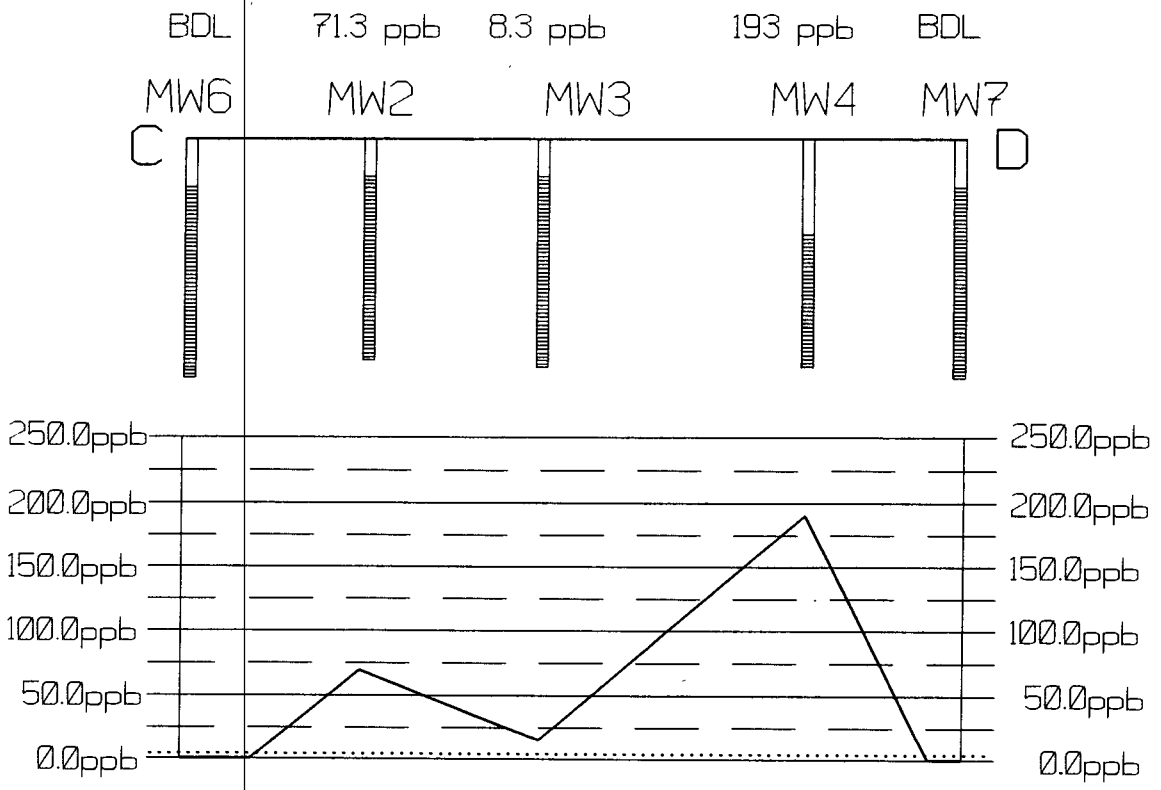
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=25' V 1"=10'	ARN	FAD	11/6/95	50-944-4610	27



Dotted line denotes 2L regulatory limit

Total thickness of the contaminant portrayed represents the concentration of that contaminant in each well in parts per billion (ppb).

The purpose of this diagram is to graphically represent the contaminant concentrations in each well, not to delineate the plume vertically.

Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Benzene Isoconcentration Cross-section

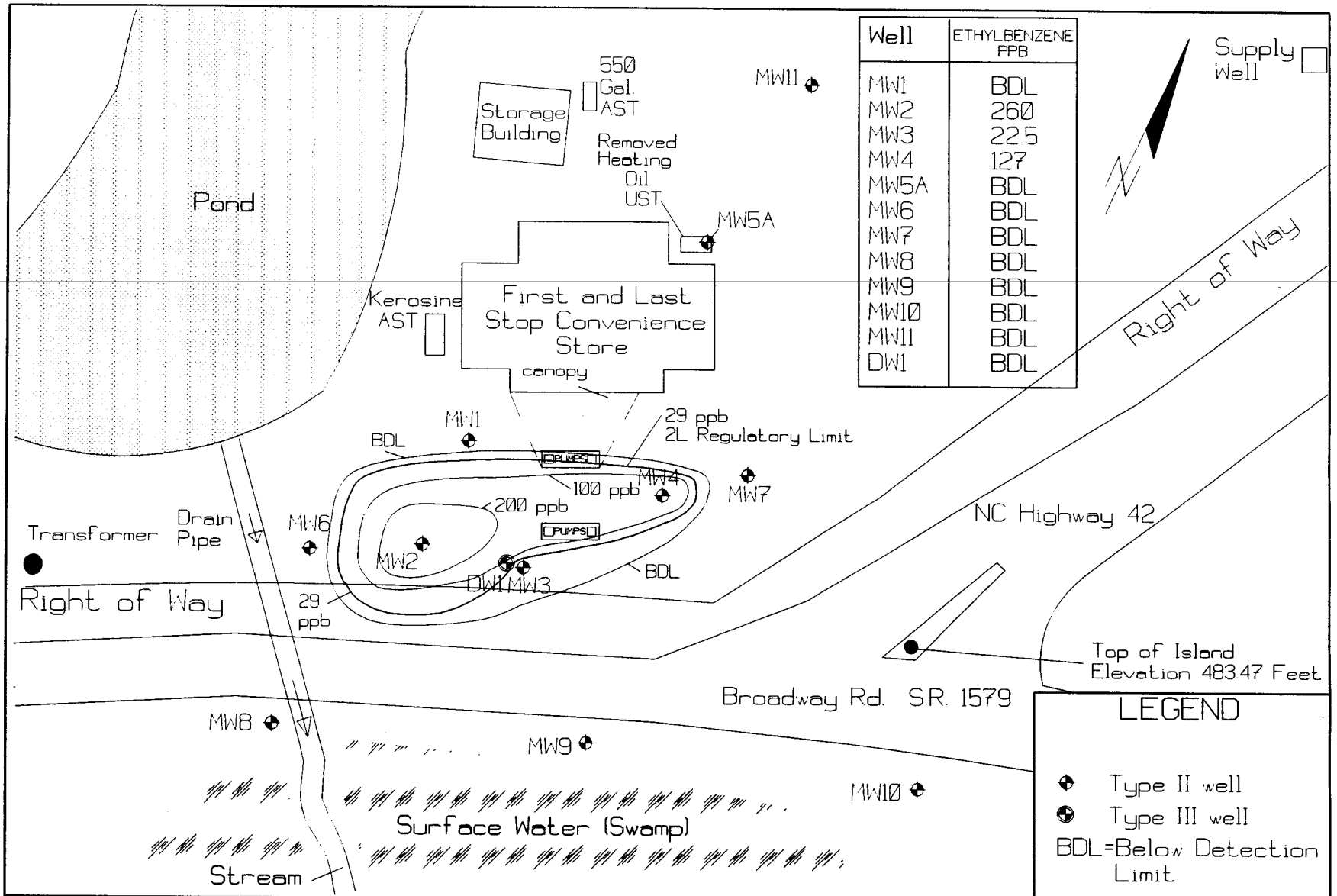
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=25' V 1"=10'	ARN	FAD	11/6/95	50-944-4610	28



Well	ETHYLBENZENE PPB
MW1	BDL
MW2	260
MW3	225
MW4	127
MW5A	BDL
MW6	BDL
MW7	BDL
MW8	BDL
MW9	BDL
MW10	BDL
MW11	BDL
DW1	BDL

LEGEND

- Type II well
- Type III well

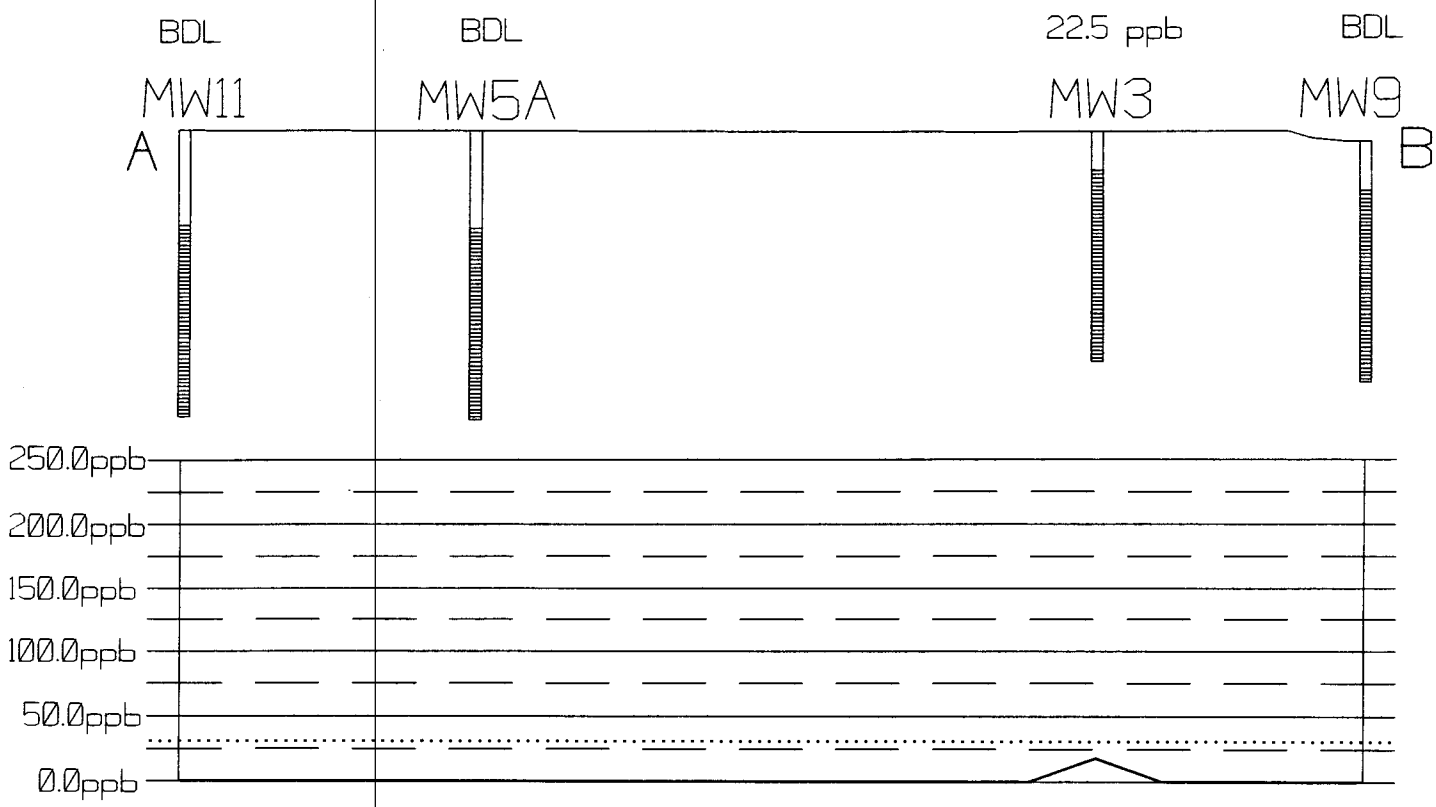
BDL=Below Detection Limit

Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Ethylbenzene Isoconcentration Map 9/27/95

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	29

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



Dotted line denotes 2L regulatory limit

Total thickness of the contaminant portrayed represents the concentration of that contaminant in each well in parts per billion (ppb).

The purpose of this diagram is to graphically represent the contaminant concentrations in each well, not to delineate the plume vertically.

Drawing Label

First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Ethylbenzene Isoconcentration
Cross-section

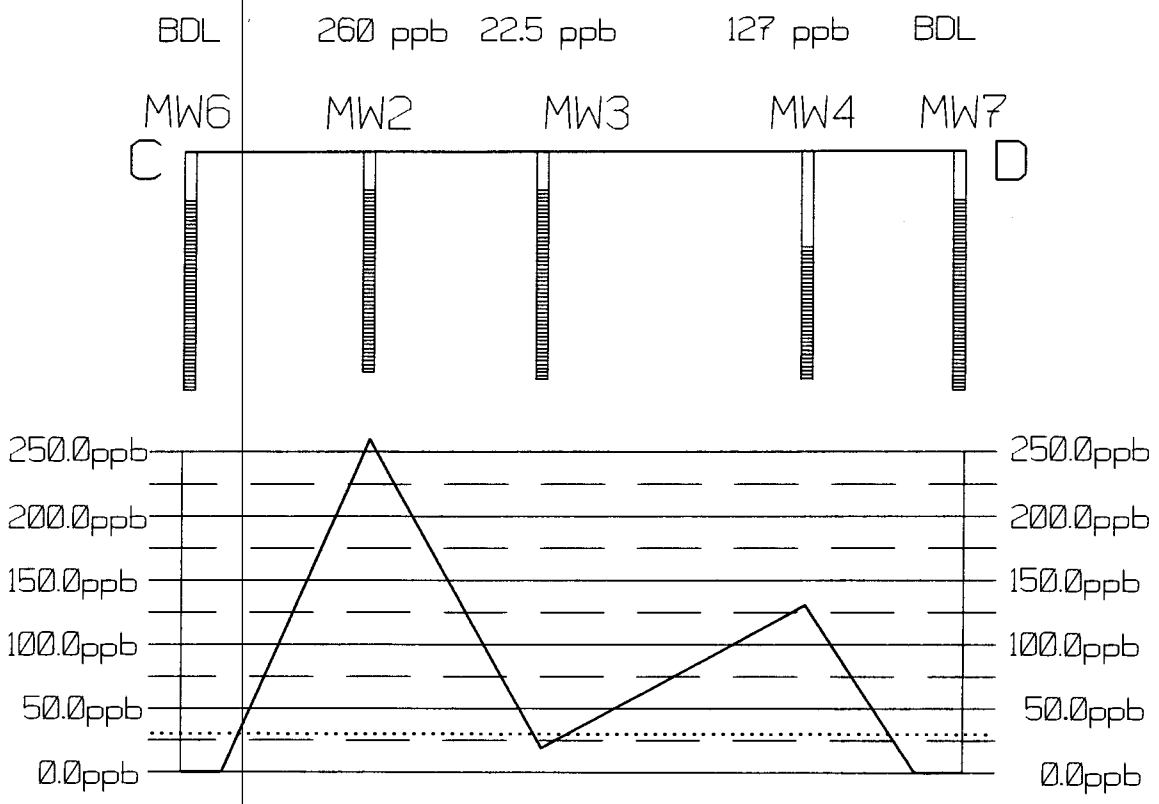
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=25' V 1"=10'	ARN	FAD	11/6/95	50-944-4610	30



Dotted line denotes 2L regulatory limit

Total thickness of the contaminant portrayed represents the concentration of that contaminant in each well in parts per billion (ppb).

The purpose of this diagram is to graphically represent the contaminant concentrations in each well, not to delineate the plume vertically.

Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Ethylbenzene Isoconcentration
Cross-section

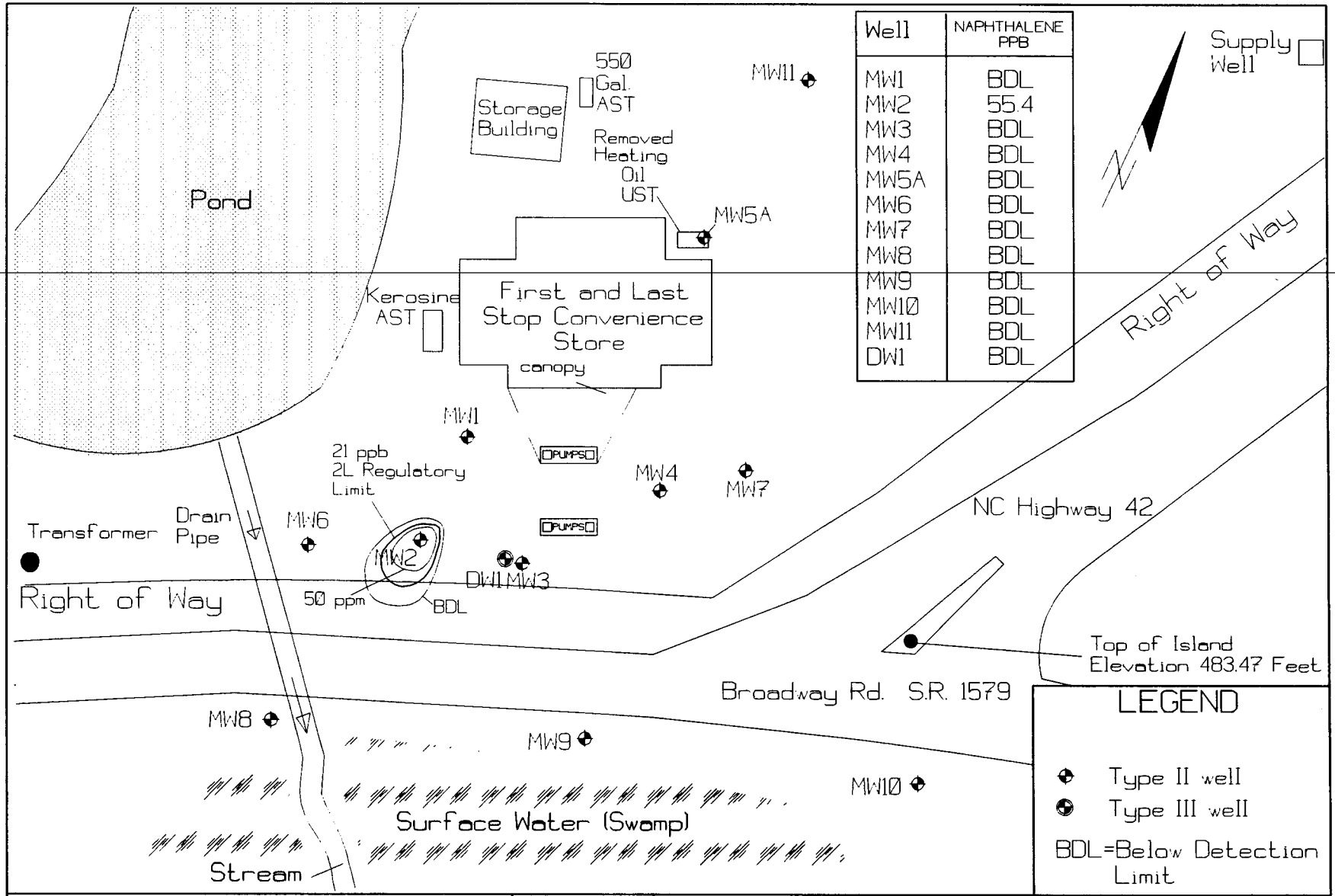
Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=25' V 1"=10'	ARN	FAD	11/6/95	50-944-4610	31



Well	NAPHTHALENE PPB
MW1	BDL
MW2	55.4
MW3	BDL
MW4	BDL
MW5A	BDL
MW6	BDL
MW7	BDL
MW8	BDL
MW9	BDL
MW10	BDL
MW11	BDL
DW1	BDL

LEGEND

- Type II well
- Type III well

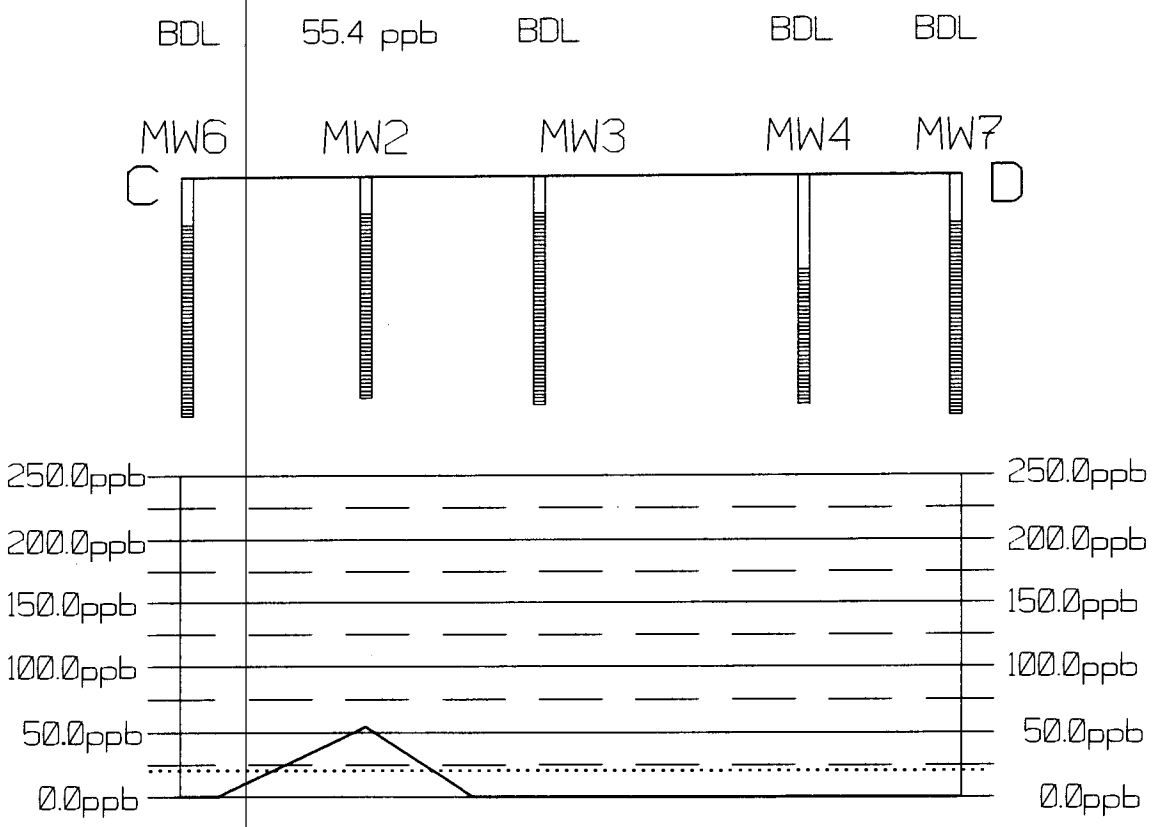
BDL=Below Detection Limit

Drawing Label:
First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Naphthalene Isoconcentration Map 9/27/95

Scale:	Drawn by:	Checked by:
1"=35'	ARN	FAD
Date:	**Project No:**	**Drawing No.**
11/6/95	4610	32

Environmental Aspecs, Inc.
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene
1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200
P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015



Dotted line denotes 2L regulatory limit

Total thickness of the contaminant portrayed represents the concentration of that contaminant in each well in parts per billion (ppb).

The purpose of this diagram is to graphically represent the contaminant concentrations in each well, not to delineate the plume vertically.

Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Naphthalene Isoconcentration
Cross-section

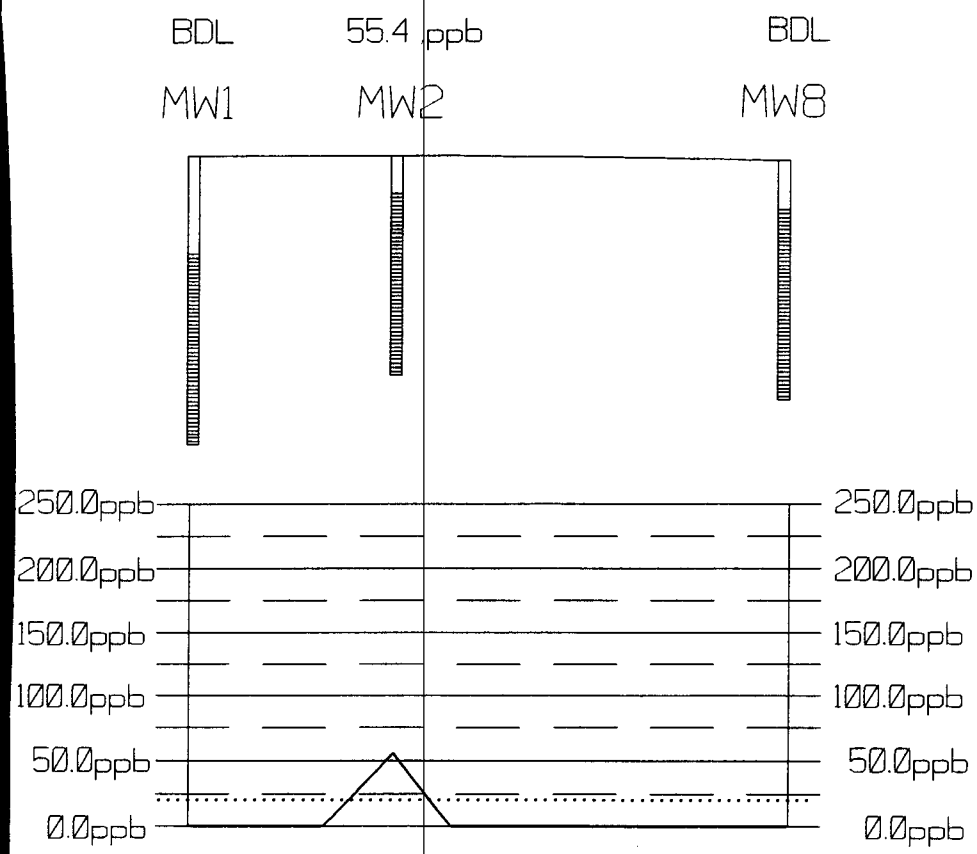
Environmental Aspecs, Inc.

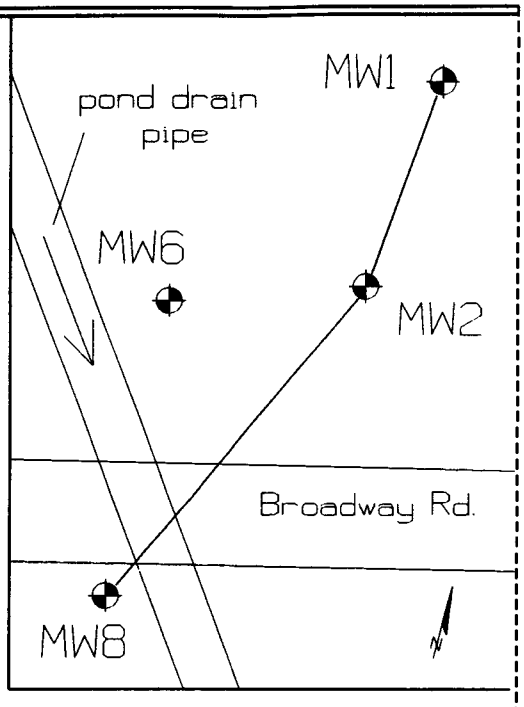
Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=25' V 1"=10'	ARN	FAD	11/6/95	50-944-4610	33





Dotted line denotes 2L regulatory limit

Total thickness of the contaminant portrayed represents the concentration of that contaminant in each well in parts per billion (ppb).

The purpose of this diagram is to graphically represent the contaminant concentrations in each well, not to delineate the plume vertically.

Drawing Label:

First and Last Stop Convenience Store
SR 1579 (Broadway Rd.) and NC Highway 42
Sanford, Lee County, North Carolina

Naphthalene Isoconcentration
Cross-section

Environmental Aspecs, Inc.

Environmental Consulting, Testing & Inspection Services
Asbestos • Hazardous Waste • Industrial Hygiene

1001 Navaho Dr., Suite GL102
Raleigh, NC 27609
Tel (919) 850-2200

P.O. Box 20107
Raleigh, NC 27619-0107
Fax (919) 850-0015

Scale:	Drawn by:	Checked by:	Date:	Project No:	Drawing No:
H 1"=25' V 1"=10'	ARN	FAD	11/6/95	50-944-4610	34

APPENDIX C

GEOPHYSICAL SURVEY REPORT

PYRAMID GEOPHYSICAL SERVICES
(PROJECT 2018-041)

GEOPHYSICAL SURVEY

METALLIC UST INVESTIGATION:
PARCEL 114
NCDOT PROJECT R-3830 (38887.1.1)

1831 BROADWAY RD., SANFORD, NC

MARCH 30, 2018

Report prepared for: **Michael Burns, P.G.**
Kleinfelder
3200 Gateway Centre Blvd., Suite 100
Morrisville, NC 27560

Prepared by: _____
Eric C. Cross, P.G.
NC License #2181

Reviewed by: _____
Douglas A. Canavello, P.G.
NC License #1066

503 INDUSTRIAL AVENUE, GREENSBORO, NC 27406
P: 336.335.3174 F: 336.691.0648
C257: GEOLOGY C1251: ENGINEERING

GEOPHYSICAL INVESTIGATION REPORT
Parcel 114 – 1831 Broadway Rd.
Sanford, Lee County, North Carolina

Table of Contents

Figures

LIST OF ACRONYMS

CADD .....Computer Assisted Drafting and Design
DF .....Dual Frequency
EM.....Electromagnetic
GPR.....Ground Penetrating Radar
GPS .....Global Positioning System
NCDOT.....North Carolina Department of Transportation
ROW .....Right-of-Way
UST .....Underground Storage Tank

EXECUTIVE SUMMARY

Project Description: Pyramid Environmental conducted a geophysical investigation for Kleinfelder at Parcel 114, located at 1831 Broadway Rd., in Sanford, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project R-3830). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from February 16-22, 2018, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

Geophysical Results: The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. A total of three EM anomalies were identified. The majority of the EM anomalies were directly attributed to visible cultural features. GPR was performed in the vicinity of a buried manhole and verified that no other buried structures were located in that area. Collectively, the geophysical data did not record any evidence of metallic USTs at Parcel 114.

INTRODUCTION

Pyramid Environmental conducted a geophysical investigation for Kleinfelder at Parcel 114, located at 1831 Broadway Rd., in Broadway, NC. The survey was part of a North Carolina Department of Transportation (NCDOT) Right-of-Way (ROW) investigation (NCDOT Project R-3830). The survey was designed to extend from the existing edge of pavement into the proposed ROW and/or easements, whichever distance was greater. Conducted from February 16-22, 2018, the geophysical investigation was performed to determine if unknown, metallic underground storage tanks (USTs) were present beneath the survey area.

The site included a vacant commercial building surrounded by dirt, gravel, and grass surfaces. An aerial photograph showing the survey area boundaries and ground-level photographs are shown in **Figure 1**.

FIELD METHODOLOGY

The geophysical investigation consisted of electromagnetic (EM) induction-metal detection and ground penetrating radar (GPR) surveys. Pyramid collected the EM data using a Geonics EM61 metal detector integrated with a Trimble AG-114 GPS antenna. The integrated GPS system allows the location of the instrument to be recorded in real-time during data collection, resulting in an EM data set that is geo-referenced and can be overlain on aerial photographs and CADD drawings. A boundary grid was established around the perimeter of the site with marks every 10 feet to maintain orientation of the instrument throughout the survey and assure complete coverage of the area.

According to the instrument specifications, the EM61 can detect a metal drum down to a maximum depth of approximately 8 feet. Smaller objects (1-foot or less in size) can be detected to a maximum depth of 4 to 5 feet. The EM61 data were digitally collected at approximately 0.8-foot intervals along north-south trending or east-west trending, generally parallel survey lines, spaced five feet apart. The data were downloaded to a

computer and reviewed in the field and office using the Geonics NAV61 and Surfer for Windows Version 15.0 software programs.

GPR data were acquired across select EM anomalies on February 22, 2018, using a Geophysical Survey Systems, Inc. (GSSI) UtilityScan DF unit equipped with a dual frequency 300/800 MHz antenna. Data were collected both in reconnaissance fashion as well as along formal transect lines across EM features. The GPR data were viewed in real-time using a vertical scan of 512 samples, at a rate of 48 scans per second. GPR data were viewed down to a maximum depth of approximately 6 feet, based on dielectric constants calculated by the DF unit in the field during the reconnaissance scans. GPR transects across specific anomalies were saved to the hard drive of the DF unit for post-processing and figure generation.

Pyramid's classifications of USTs for the purposes of this report are based directly on the geophysical UST ratings provided by the NCDOT. These ratings are as follows:

Geophysical Surveys for Underground Storage Tanks
on NCDOT Projects

High Confidence	Intermediate Confidence	Low Confidence	No Confidence
Known UST Active tank - spatial location, orientation, and approximate depth determined by geophysics.	**Probable UST** Sufficient geophysical data from both magnetic and radar surveys that is characteristic of a tank. Interpretation may be supported by physical evidence such as fill/vent pipe, metal cover plate, asphalt/concrete patch, etc.	**Possible UST** Sufficient geophysical data from either magnetic or radar surveys that is characteristic of a tank. Additional data is not sufficient enough to confirm or deny the presence of a UST.	Anomaly noted but not characteristic of a UST. Should be noted in the text and may be called out in the figures at the geophysicist's discretion.

DISCUSSION OF RESULTS

Discussion of EM Results

A contour plot of the EM61 results obtained across the survey area at the property is presented in **Figure 2**. Each EM anomaly is numbered for reference in the figure. The following table presents the list of EM anomalies and the cause of the metallic response, if known:

LIST OF METALLIC ANOMALIES IDENTIFIED BY EM SURVEY

Metallic Anomaly #	Cause of Anomaly	Investigated with GPR
1	Manhole	☑
2	Water Line/Utility	
3	Vehicle	

The majority of the EM anomalies were directly attributed to visible cultural features at the ground surface, including a vehicle, a manhole, and a known water line. GPR was performed around the manhole to verify no other structures were located in its vicinity.

Discussion of GPR Results

Figure 3 presents the locations of the formal GPR transects performed at the property, as well as the transect images. A total of two formal GPR transects were performed at the property. These transects were performed across Anomaly 1 and confirmed the presence of a manhole at that location. No other buried structures were observed.

Collectively, the geophysical data did not record any evidence of metallic USTs at Parcel 114. **Figure 4** provides an overlay of the geophysical survey onto the NCDOT MicroStation engineering plans for reference.

SUMMARY & CONCLUSIONS

Pyramid's evaluation of the EM61 and GPR data collected at Parcel 114 in Sanford, North Carolina, provides the following summary and conclusions:

- The EM61 and GPR surveys provided reliable results for the detection of metallic USTs within the accessible portions of the geophysical survey area.
- The majority of the EM features were directly attributed to visible cultural features.
- GPR was performed in the vicinity of a buried manhole and verified that no other buried structures were located in that area.

- Collectively, the geophysical data did not record any evidence of metallic USTs at Parcel 114.

LIMITATIONS

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

N

APPROXIMATE BOUNDARIES OF GEOPHYSICAL SURVEY AREA

View of Survey Area
(Facing Approximately West)

View of Survey Area
(Facing Approximately West)

TITLE
PARCEL 114 - GEOPHYSICAL SURVEY
BOUNDARIES AND SITE PHOTOGRAPHS

PROJECT
PARCEL 114
SANFORD, NORTH CAROLINA
NCDOT PROJECT R-3830

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

DATE 2/22/2018

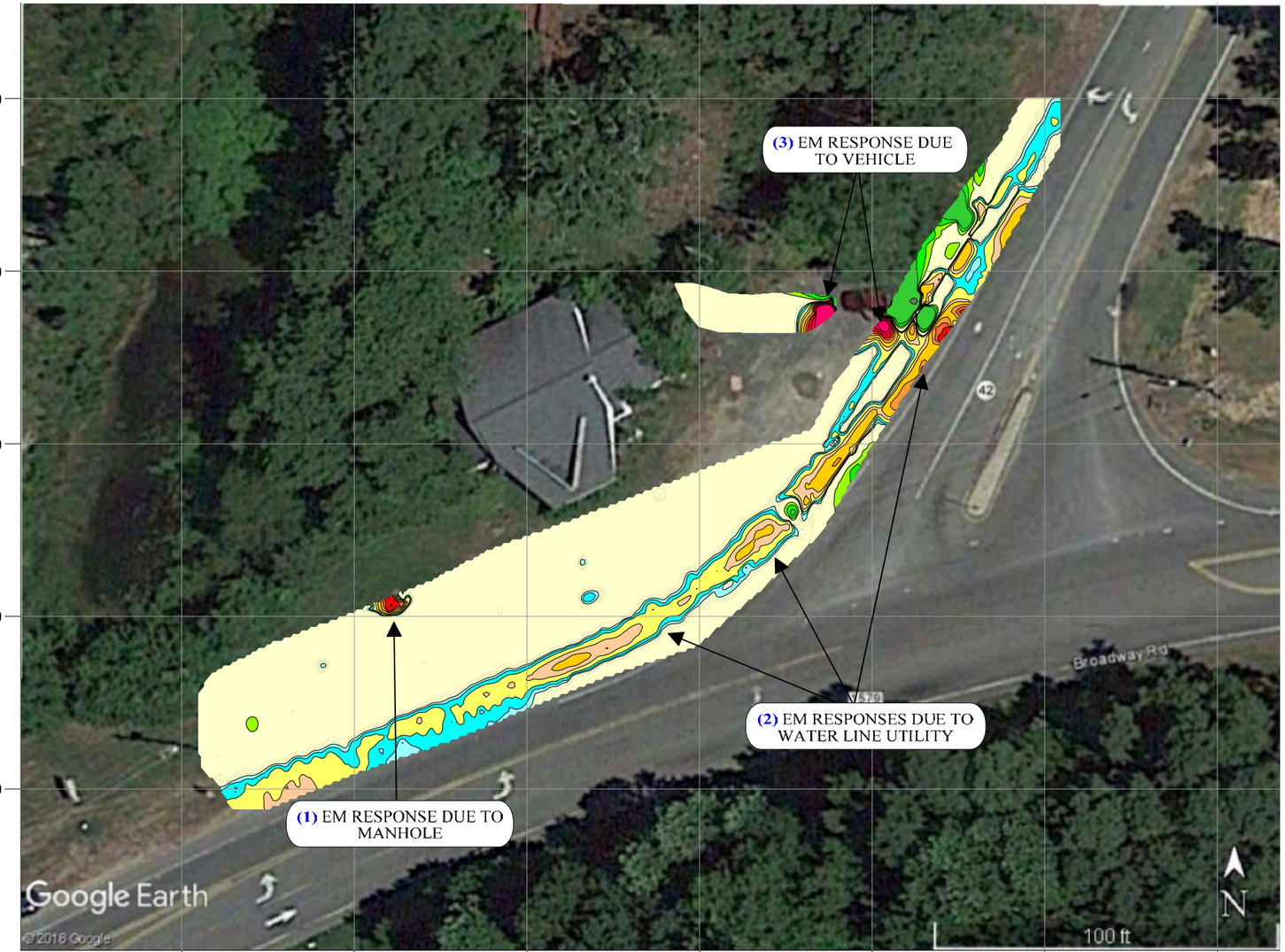
CLIENT KLEINFELDER

PYRAMID PROJECT #: 2018-041

FIGURE 1

N

EM61 METAL DETECTION RESULTS

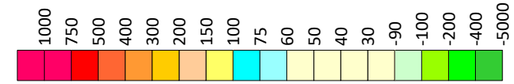


NUMBERS IN BLUE (x) CORRESPOND TO EM ANOMALY TABLE IN REPORT

NO EVIDENCE OF UNKNOWN METALLIC USTs OBSERVED.

The contour plot shows the differential results of the EM61 instrument in millivolts (mV). The differential results focus on larger metallic objects such as USTs and drums. The EM61 data were collected on February 16, 2018, using a Geonics EM61 instrument. Verification GPR data were collected using a GSSI UtilityScan DF instrument with a dual frequency 300/800 MHz antenna on February 22, 2018.

EM61 Metal Detection Response (millivolts)



TITLE
PARCEL 114 - EM61 METAL DETECTION CONTOUR MAP

PROJECT
PARCEL 114
SANFORD, NORTH CAROLINA
NCDOT PROJECT R-3830

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27460
(336) 335-3174 (p) (336) 691-0648 (f)
License # C1251 Eng. / License # C257 Geology

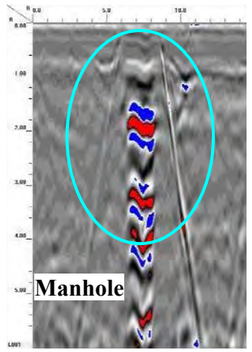
DATE 2/22/2018

CLIENT KLEINFELDER

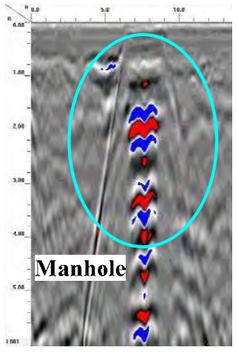
PYRAMID PROJECT #: 2018-041

FIGURE 2

LOCATIONS OF GPR TRANSECTS



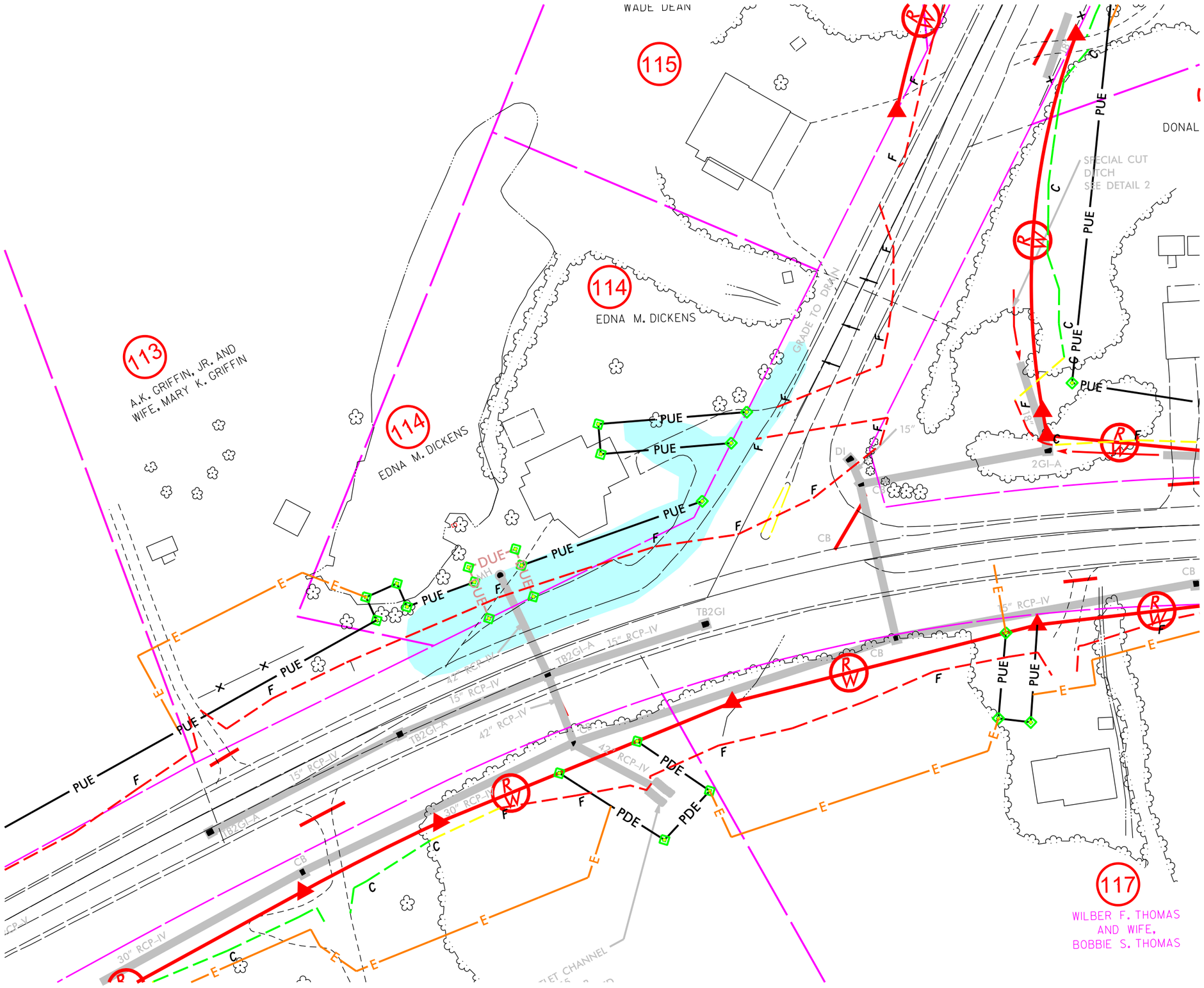
GPR TRANSECT 1 (T1)



GPR TRANSECT 2 (T2)

N

TITLE	PARCEL 114 - GPR TRANSECT LOCATIONS AND IMAGES
PROJECT	PARCEL 114 SANFORD, NORTH CAROLINA NCDOT PROJECT R-3830
PYRAMID GEOPHYSICS	503 INDUSTRIAL AVENUE GREENSBORO, NC 27460 (336) 335-3174 (p) (336) 691-0648 (f) License # C1251 Eng. / License # C257 Geology
DATE 3/7/2018	CLIENT KLEINFELDER
PYRAMID PROJECT #: 2018-041	**FIGURE 3**



LEGEND

- EXISTING ROW
- EXISTING PROPERTY BOUNDARY
- PROPOSED ROW LINE
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED PERMANENT DRAINAGE
- PROPOSED PERMANENT UTILITY
- PROPOSED SS CUT LINE
- PROPOSED SS FILL LINE
- GEOPHYSICAL SURVEY AREA

0 50 100

FEET

N

TITLE

OVERLAY OF GEOPHYSICAL SURVEY BOUNDARIES ON NCDOT ENGINEERING PLANS

PROJECT

PARCEL 114
SANFORD, NORTH CAROLINA
NCDOT PROJECT R-3830

PYRAMID GEOPHYSICS
503 INDUSTRIAL AVENUE
GREENSBORO, NC 27406
336.335.3174 (p) 336.691.0648 (f)
License # C1251 Eng. / #C257 Geology

DATE: 03-13-2018	REVISION NO. 0
PYRAMID PROJECT NO. 2018-041	FIGURE NO. 4

APPENDIX D

BORING LOGS

Date Begin - End:	3/20/2018	**Drilling Company:**	Quantex	**BORING LOG P114-SS1**	
Logged By:	J. Hollinger	**Drill Crew:**	JD Barker		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	6620DT GeoProbe		
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column		
Weather:	Cloudy	**Bore Diameter:**	2 in. O.D.		

FIELD EXPLORATION

Northing: 623684.5460
Easting: 1971078.3930
Surface Condition: Grass

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
0	Hand Auger		1 (UVF)	100%	1.60		**TOPSOIL**
							Silty SAND: tan
			2	100%	0.81		
			3	100%	0.93		
	Direct Push Sleeves		4 (UVF)	100%	1.39		
			5 (UVF)	100%	1.72		**Silty SAND**: brown
5 ▽			6	100%	NA		**Silty SAND**: brown, wet
							SAND: coarse-grained, tan, wet
10							
15							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
▽ Groundwater was observed at approximately 5.5 ft. below ground surface during drilling.
GENERAL NOTES:
The boring was backfilled with bentonite chips on March 20, 2018.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/18/2018
REVISED:	-

BORING LOG P114-SS1

R-3830
WBS 38887.1.1
Sanford, NC

Date Begin - End:	3/20/2018	**Drilling Company:**	Quantex	**BORING LOG P114-SS2**	
Logged By:	J. Hollinger	**Drill Crew:**	JD Barker		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	6620DT GeoProbe		
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column		
Weather:	Cloudy	**Bore Diameter:**	2 in. O.D.		

FIELD EXPLORATION

Northing: 623718.2720
Easting: 1971121.3540
Surface Condition: Grass

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
0	Hand Auger		1	100%	1.48		**TOPSOIL**
							Sandy CLAY: orange, moist
			2	100%	4.97		
			3 (UVF)	100%	8.98		2" SCH 40 Solid PVC Riser
	Direct Push Sleeves		4-5 (UVF)	100%	3.07		
5							**Clayey SAND**: brown, odor, wet, Hydrocarbon odor
			6-10	100%	1100.00		
							2" SCH 40 Slotted 0.010 PVC Screen
10							
15							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
▽ Groundwater was observed at approximately 5 ft. below ground surface during drilling.
▼ Groundwater was observed at approximately 6.5 ft. below ground surface after drilling completion.

GENERAL NOTES:
The boring was backfilled with bentonite chips on March 20, 2018.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/18/2018
REVISED:	-

BORING LOG P114-SS2

R-3830
WBS 38887.1.1
Sanford, NC

Date Begin - End:	3/20/2018	**Drilling Company:**	Quantex
Logged By:	J. Hollinger	**Drill Crew:**	JD Barker
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	6620DT GeoProbe
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	Cloudy	**Bore Diameter:**	2 in. O.D.

BORING LOG P114-SS3

FIELD EXPLORATION

Northing: 623722.3505
Easting: 1971159.3387
Surface Condition: Grass

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
0	Hand Auger		1	100%	14.40		**TOPSOIL**
							Clayey SILT: orange
			2	100%	13.80		
			3 (UVF)	100%	19.56		
	Direct Push Sleeves		4-5 (UVF)	100%	39.08		
5 ▽			6-10	100%	31.86		**Clayey SAND**: brown, odor, wet, Hydrocarbon odor
							Sandy CLAY: white, moist
10							
15							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
▽ Groundwater was observed at approximately 5.5 ft. below ground surface during drilling.
GENERAL NOTES:
The boring was backfilled with bentonite chips on March 20, 2018.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/18/2018
REVISED:	-

BORING LOG P114-SS3

R-3830
WBS 38887.1.1
Sanford, NC

Date Begin - End:	3/20/2018	**Drilling Company:**	Quantex	**BORING LOG P114-SS4**	
Logged By:	J. Hollinger	**Drill Crew:**	JD Barker		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	6620DT GeoProbe		
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column		
Weather:	Cloudy	**Bore Diameter:**	2 in. O.D.		

FIELD EXPLORATION

Northing: 623723.1670
Easting: 1971180.8290
Surface Condition: Grass/Gravel

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
0	Hand Auger		1 (UVF)	100%	20.78		**TOPSOIL with Gravel**
							Silty CLAY: orange
			2	100%	14.08		
			3	100%	6.72		2" SCH 40 Solid PVC Riser
	Direct Push Sleeves		4-5 (UVF)	25%	6.34		
5							**Clayey SAND**: brown, saturated
			6-10	100%	514.00		**SAND**: coarse-grained, tan, wet
							2" SCH 40 Slotted 0.010 PVC Screen
10							
15							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
▽ Groundwater was observed at approximately 5.5 ft. below ground surface during drilling.
▼ Groundwater was observed at approximately 6 ft. below ground surface at the end of drilling.

GENERAL NOTES:
The boring was backfilled with bentonite chips on March 20, 2018.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/18/2018
REVISED:	-

BORING LOG P114-SS4

R-3830
WBS 38887.1.1
Sanford, NC

Date Begin - End:	3/20/2018	**Drilling Company:**	Quantex
Logged By:	J. Hollinger	**Drill Crew:**	JD Barker
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	6620DT GeoProbe
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	Cloudy	**Bore Diameter:**	2 in. O.D.

BORING LOG P114-SS5

FIELD EXPLORATION

Northing: 623735.3860
Easting: 1971195.8120
Surface Condition: Grass

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
0	Hand Auger		1	100%	NA		**TOPSOIL** / **GRAVEL**
			2 (UVF)	100%	10.92		
			3	100%	6.89		
5	Direct Push Sleeves		4-5 (UVF)	25%	10.99		**Silty SAND**: coarse-grained, brown and tan, wet at 5.5 feet
			6-10	100%	94.81		
10							**Sandy CLAY**: gray
15							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
▽ Groundwater was observed at approximately 5.5 ft. below ground surface during drilling.
GENERAL NOTES:
The boring was backfilled with bentonite chips on March 20, 2018.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/18/2018
REVISED:	-

BORING LOG P114-SS5

R-3830
WBS 38887.1.1
Sanford, NC

Date Begin - End:	3/20/2018	**Drilling Company:**	Quantex	**BORING LOG P114-SS6**	
Logged By:	J. Hollinger	**Drill Crew:**	JD Barker		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	6620DT GeoProbe		
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column		
Weather:	Cloudy	**Bore Diameter:**	2 in. O.D.		

FIELD EXPLORATION

Northing: 623786.6960
Easting: 1971226.2140
Surface Condition: Gravel/Asphalt

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
							ASPHALT and Gravel
	Hand Auger		1 (UVF)	100%	1.81		**SAND**: coarse-grained, tan
			2 (UVF)	100%	2.57		
			3 (UVF)	100%	2.29		
	Direct Push Sleeves		4	100%	2.57		**Sandy CLAY**: red/brown and white
5			5	100%	1.73		
			6	100%	2.36		
			7	100%	2.63		
			8	100%	1.53		
			9	100%	2.15		
10			10 (UVF)	100%	3.58		
15							

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The boring was backfilled with excavated material on March 20, 2018.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/18/2018
REVISED:	-

BORING LOG P114-SS6

R-3830
WBS 38887.1.1
Sanford, NC

Date Begin - End:	3/20/2018	**Drilling Company:**	Quantex	**BORING LOG P114-SS7**	
Logged By:	J. Hollinger	**Drill Crew:**	JD Barker		
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	6620DT GeoProbe		
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column		
Weather:	Cloudy	**Bore Diameter:**	2 in. O.D.		

FIELD EXPLORATION

Northing: 623794.4320
Easting: 1971191.6580
Surface Condition: Grass

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
	Hand Auger		1	100%	3.01		**TOPSOIL**
							SAND: coarse-grained, tan, dry to moist
			2 (UVF)	100%	2.70		
			3	100%	2.63		
	Direct Push Sleeves		4	100%	2.50		**Sandy CLAY**: red/brown
5			5 (UVF)	100%	2.71		
			6	100%	2.01		
			7	100%	2.20		
			8	100%	2.91		
			9 (UVF)	100%	3.02		
10			10	100%	2.39		

The borehole was terminated at approximately 10 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The boring was backfilled with excavated material on March 20, 2018.

15

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/18/2018
REVISED:	-

BORING LOG P114-SS7

R-3830
WBS 38887.1.1
Sanford, NC

Date Begin - End:	4/20/2018	**Drilling Company:**	Kleinfelder
Logged By:	J. Hollinger	**Drill Crew:**	J. Hollinger
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Hand Auger
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	Cloudy	**Bore Diameter:**	2 in. O.D.

BORING LOG P114-SS8

FIELD EXPLORATION

Northing: 623804.4445
Easting: 1971233.2645
Surface Condition: Grass

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
	Hand Auger		1	100%	0.2		**TOPSOIL**
			2 (DRO)	100%	1.2		**SAND**: coarse-grained, tan, dry
			3 (DRO)	100%	0.3		**Clayey SAND**: red/orange, dry

The borehole was terminated at approximately 3 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The boring was backfilled with excavated material on April 20, 2018.

5

10

15

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/18/2018
REVISED:	-

BORING LOG P114-SS8

R-3830
WBS 38887.1.1
Sanford, NC

Date Begin - End:	4/20/2018	**Drilling Company:**	Kleinfelder
Logged By:	J. Hollinger	**Drill Crew:**	J. Hollinger
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Hand Auger
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	CLOUDY	**Bore Diameter:**	2 in. O.D.

BORING LOG P114-SS9

FIELD EXPLORATION

Northing: 623796.5013
Easting: 1971249.9911
Surface Condition: Gravel

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
0	Hand Auger		1	100%	0.2		**GRAVEL**
							Clayey SAND: gray, dry
			2 (DRO)	100%	1.4		
							Clayey SAND: red/orange, dry
			3 (DRO)	100%	0.2		
5							
10							
15							

The borehole was terminated at approximately 3 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The boring was backfilled with excavated material on April 20, 2018.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/23/2018
REVISED:	-

BORING LOG P114-SS9

R-3830
WBS 38887.1.1
Sanford, NC

Date Begin - End:	4/20/2018	**Drilling Company:**	Kleinfelder
Logged By:	J. Hollinger	**Drill Crew:**	J. Hollinger
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Hand Auger
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	CLOUDY	**Bore Diameter:**	2 in. O.D.

BORING LOG P114-SS10

FIELD EXPLORATION

Northing: 623787.3941
Easting: 1971236.3720
Surface Condition: Gravel

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
0	Hand Auger		1	100%	1.0		**GRAVEL**
							SAND: coarse-grained, tan, dry
			2 (DRO)	100%	0.7		
							Clayey SAND: red/orange, moist
			3 (DRO)	100%	0.2		
5							
10							
15							

The borehole was terminated at approximately 3 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The boring was backfilled with excavated material on April 20, 2018.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/23/2018
REVISED:	-

BORING LOG P114-SS10

R-3830
WBS 38887.1.1
Sanford, NC

Date Begin - End:	4/20/2018	**Drilling Company:**	Kleinfelder
Logged By:	J. Hollinger	**Drill Crew:**	J. Hollinger
Hor.-Vert. Datum:	Not Available	**Drilling Equipment:**	Hand Auger
Plunge:	-90 degrees	**Drilling Method:**	See Drilling Method Column
Weather:	CLOUDY	**Bore Diameter:**	2 in. O.D.

BORING LOG P114-SS11

FIELD EXPLORATION

Northing: 623797.4600
Easting: 1971218.1677
Surface Condition: Gravel

Depth (feet)	Drilling Method	Sample Type	Sample Number	Recovery (NR=No Recovery)	PID / FID (ppmv)	Graphical Log	Lithologic Description
0	Hand Auger		1	100%	1.2		**GRAVEL**
							SAND: coarse-grained, tan, dry
			2 (DRO)	100%	0.9		
							Clayey SAND: red/orange, dry
			3 (DRO)	100%	0.6		
5							
10							
15							

The borehole was terminated at approximately 3 ft. below ground surface.

GROUNDWATER LEVEL INFORMATION:
Groundwater was not observed during drilling or after completion.
GENERAL NOTES:
The boring was backfilled with excavated material on April 20, 2018.

KLEINFELDER
Bright People. Right Solutions.

PROJECT NO.:	20183507
DRAWN BY:	JCH
CHECKED BY:	MJB
DATE:	4/23/2018
REVISED:	-

BORING LOG P114-SS11

R-3830
WBS 38887.1.1
Sanford, NC

APPENDIX E

ANALYTICAL REPORT AND GRAPHS

QED

REDLAB RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: Kleinfelder
Address: 3200 Gateway Centre Blvd Suite 100
Morrisville, NC

Samples taken Tuesday, March 20, 2018
Samples extracted Tuesday, March 20, 2018
Samples analysed Tuesday, March 20, 2018

Contact: Michael Burns

Operator J. Joseph Hodge

Project: R3830

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	R3830-P114-SS1-1 (8:30)	23.0	3.2	3.2	1.2	4.4	0.85	0.03	<0.012	81.7	17.2	1	Deg.Light.Fuel 61.3%,(FCM),(BO),(OCR)
s	R3830-P114-SS1-4/5 (8:40)	19.5	<0.49	<0.49	2.1	2.1	1.2	0.06	<0.01	0	91.2	8.1	Deg.Fuel 79.6%,(FCM)
s	R3830-P114-SS2-3 (9:00)	22.6	<0.57	<0.57	4.8	4.8	4.8	0.26	<0.011	0	87.2	11.7	V.Deg.PHC 72.5%,(FCM)
s	R3830-P114-SS2-4/5 (9:05)	29.2	<0.73	<0.73	0.73	0.73	0.72	0.04	<0.015	0	87.3	11.4	V.Deg.PHC 58.2%,(FCM),(BO),(P)
s	R3830-P114-SS3-3 (9:10)	28.9	<0.72	<0.72	0.26	0.26	0.14	<0.03	<0.014	0	94.7	4.7	Residual HC,(BO),(P)
s	R3830-P114-SS3-4/5 (9:15)	22.4	<0.56	<0.56	1.6	1.6	0.48	0.03	<0.011	0	98.8	1.1	Deg.Fuel 76.3%,(FCM),(OCR)
s	R3830-P114-SS4-1 (9:20)	25.0	<0.63	<0.63	3.6	3.6	1.3	0.06	<0.013	0	95.5	4.2	Road Tar 83.5%,(FCM),(OCR)
s	R3830-P114-SS4-4/5 (9:25)	25.2	<0.63	<0.63	11	11	5	0.22	<0.013	0	96.1	3.7	Road Tar 92.5%,(FCM)
s	R3830-P114-SS5-2 (9:40)	24.3	<0.61	<0.61	15.7	15.7	15.6	0.86	0.066	0	85.1	13.8	V.Deg.PHC 71.2%,(FCM),(BO)
s	R3830-P114-SS5-4/5 (9:45)	21.8	<0.55	<0.55	11.5	11.5	11.4	0.59	<0.014	0	91.7	7.7	V.Deg.PHC 92%,(FCM)

Initial Calibrator QC check OK

Final FCM QC Check OK 104.5 %

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

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

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

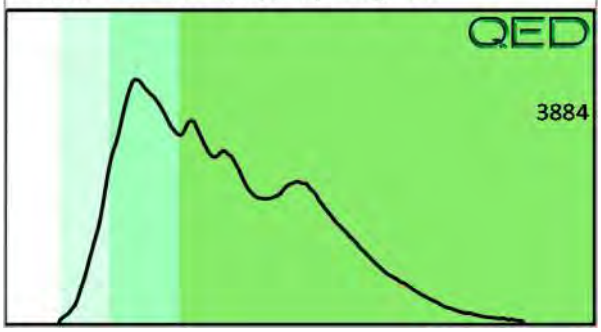
% Ratios estimated aromatic carbon number proportions : HC = Hydrocarbon : PHC = Petroleum HC : FP = Fingerprint only. **Data generated by HC-1 Analyser**

QED Hydrocarbon Fingerprints

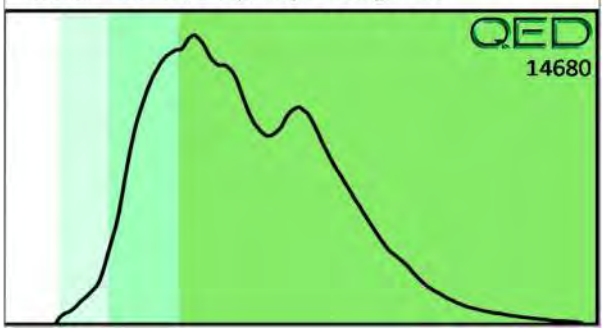
Project: R3830 Tuesday, March 20, 2018

R3830-P114-SS1-1 (8:30) : Deg.Light.Fuel

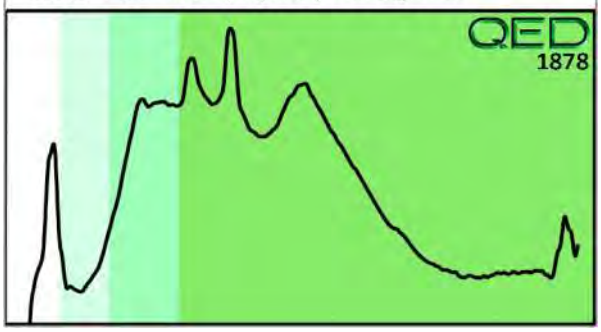
R3830-P114-SS1-4/5 (8:40) : Deg.Fuel



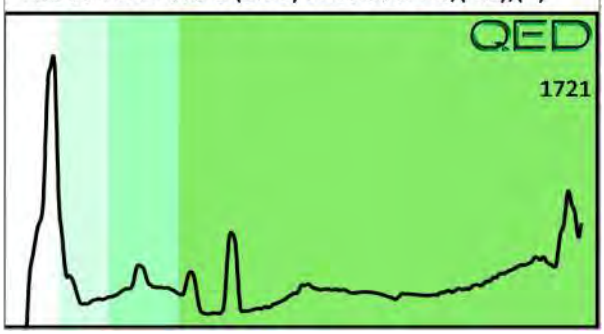
R3830-P114-SS2-3 (9:00) : V.Deg.PHC



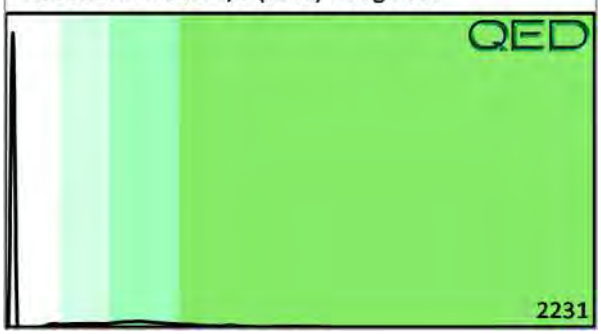
R3830-P114-SS2-4/5 (9:05) : V.Deg.PHC



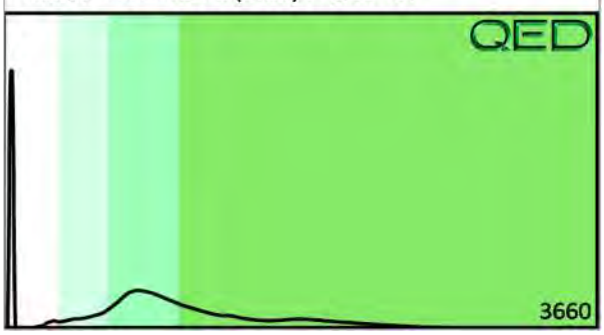
R3830-P114-SS3-3 (9:10) : Residual HC,(BO),(P)



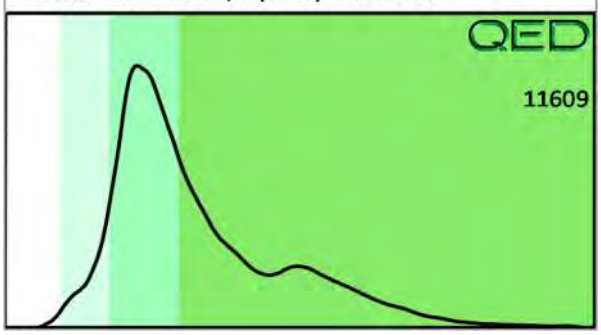
R3830-P114-SS3-4/5 (9:15) : Deg.Fuel



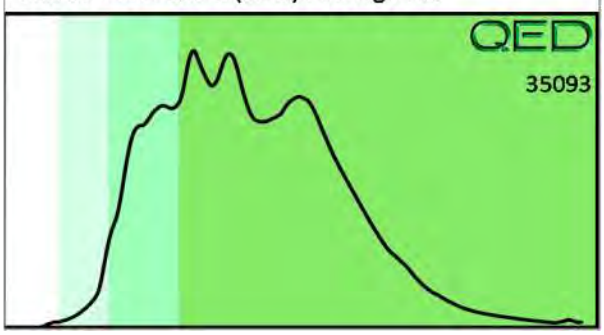
R3830-P114-SS4-1 (9:20) : Road Tar



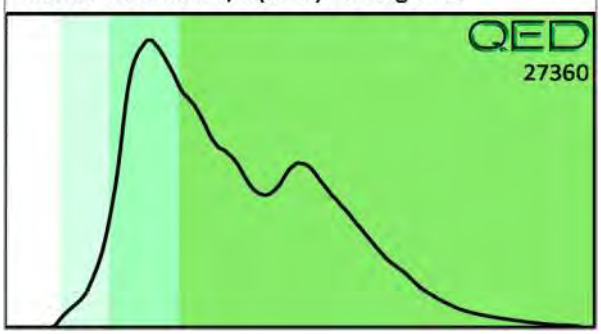
R3830-P114-SS4-4/5 (9:25) : Road Tar



R3830-P114-SS5-2 (9:40) : V.Deg.PHC



R3830-P114-SS5-4/5 (9:45) : V.Deg.PHC



QED

REDLAB™ RAPID ENVIRONMENTAL DIAGNOSTICS

QROS

Hydrocarbon Analysis Results

Client: Kleinfelder
Address: 3200 Gateway Centre Blvd Suite 100
Morrisville, NC

Samples taken Tuesday, March 20, 2018
Samples extracted Tuesday, March 20, 2018
Samples analysed Tuesday, March 20, 2018

Contact: Michael Burns

Operator J. Joseph Hodge

Project: R3830

U00902

Matrix	Sample ID	Dilution used	BTEX (C6 - C9)	GRO (C5 - C10)	DRO (C10 - C35)	TPH (C5 - C35)	Total Aromatics (C10-C35)	16 EPA PAHs	BaP	% Ratios			HC Fingerprint Match
										C5 - C10	C10 - C18	C18	
s	R3830-P114-SS6-1 (10:00)	25.2	<0.63	<0.63	172.5	172.5	14.4	0.75	<0.013	0	99.5	0.4	Waste Oil 78.8%,(FCM),(BO)
s	R3830-P114-SS6-10 (10:10)	22.8	<0.57	<0.57	<0.05	<0.57	<0.11	<0.02	<0.011	0	0	0	PHC not detected,(OCR)
s	R3830-P114-SS6-2 (10:05)	24.3	<0.61	<0.61	104.6	104.6	8.1	0.43	<0.012	0	98.8	1.1	Waste Oil 81.2%,(FCM)
s	R3830-P114-SS7-5 (10:20)	25.0	<0.63	<0.63	<0.05	<0.63	<0.13	<0.03	<0.013	0	0	0	PHC not detected,(OCR)
s	R3830-P114-SS7-9 (10:30)	28.0	<0.7	5.8	<0.06	5.8	<0.14	<0.03	<0.014	100	0	0	PHC not detected
s	R3830-P114-SS6-3 (10:10)	22.2	<0.56	<0.56	<0.04	<0.56	<0.11	<0.02	<0.011	0	0	0	PHC not detected,(P)
s	R3830-P114-SS7-2 (10:15)	23.2	<0.58	<0.58	<0.05	<0.58	<0.12	<0.02	<0.012	0	0	0	PHC not detected,(OCR)

Initial Calibrator QC check OK

Final FCM QC Check OK 99.7 %

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

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

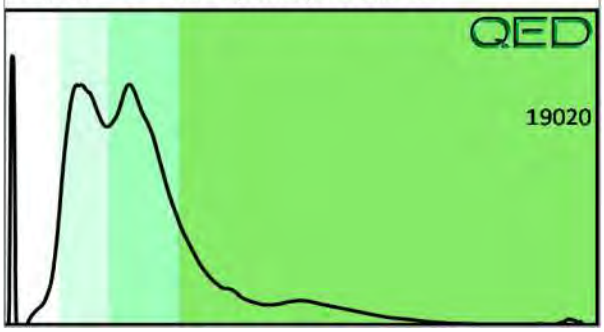
B = Blank Drift : (SBS)/(LBS) = Site Specific or Library Background Subtraction applied to result : (BO) = Background Organics detected : (OCR) = Outside cal range : (M) = Modifed Result.

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

QED Hydrocarbon Fingerprints

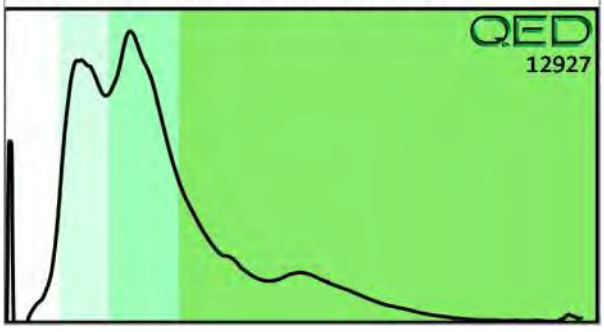
Project: R3830 Tuesday, March 20, 2018

R3830-P114-SS6-1 (10:00) : Waste Oil



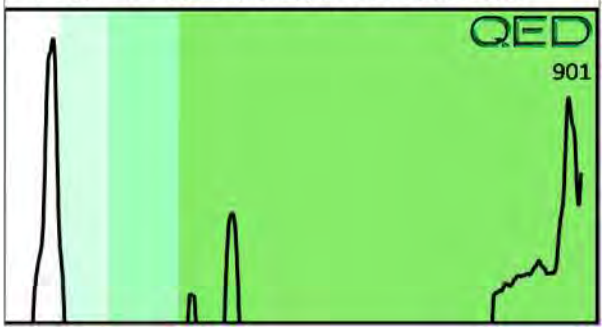
R3830-P114-SS6-10 (10:10) : PHC not

R3830-P114-SS6-2 (10:05) : Waste Oil

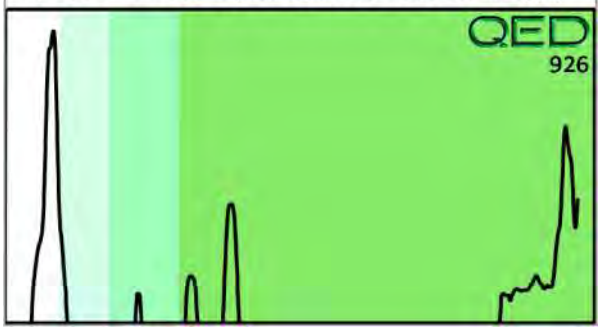


R3830-P114-SS7-5 (10:20) : PHC not

R3830-P114-SS7-9 (10:30) : PHC not detected



R3830-P114-SS6-3 (10:10) : PHC not detected,(P)



R3830-P114-SS7-2 (10:15) : PHC not

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

March 28, 2018

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

RE: Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory on March 21, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Michael Burns, Kleinfelder
Chris Hollinger, Kleinfelder

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

CERTIFICATIONS

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

REPORT OF LABORATORY ANALYSIS

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

SAMPLE SUMMARY

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92377782001	**R3830-P114-TMW-1**	Water	03/20/18 10:50	03/21/18 13:15
92377782002	**R3830-P114-TMW-2**	Water	03/20/18 11:00	03/21/18 13:15

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

SAMPLE ANALYTE COUNT

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92377782001	**R3830-P114-TMW-1**	EPA 625	BPJ	58	PASI-C
		SM 6200B	SWB	63	PASI-C
92377782002	**R3830-P114-TMW-2**	EPA 625	BPJ	58	PASI-C
		SM 6200B	SWB	63	PASI-C

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

PROJECT NARRATIVE

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Method: **EPA 625**
Description: 625 MSSV
Client: NCDOT East Central
Date: March 28, 2018

General Information:
2 samples were analyzed for EPA 625. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

QC Batch: 402940

L2: Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.

- LCSD (Lab ID: 2235064)
  - 2,4,6-Trichlorophenol
  - 2-Nitrophenol
  - Pentachlorophenol

R1: RPD value was outside control limits.

- LCSD (Lab ID: 2235064)
  - 2,4-Dichlorophenol
  - 2-Chlorophenol
  - 2-Nitrophenol
  - Phenol

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

REPORT OF LABORATORY ANALYSIS

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

PROJECT NARRATIVE

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Method: **EPA 625**
Description: 625 MSSV
Client: NCDOT East Central
Date: March 28, 2018

Additional Comments:

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

PROJECT NARRATIVE

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Method: **SM 6200B**
Description: 6200B MSV
Client: NCDOT East Central
Date: March 28, 2018

General Information:
2 samples were analyzed for SM 6200B. All samples were received in acceptable condition with any exceptions noted below or on the chain-of custody and/or the sample condition upon receipt form (SCUR) attached at the end of this report.

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

Initial Calibrations (including MS Tune as applicable):
All criteria were within method requirements with any exceptions noted below.

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

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

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

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

Laboratory Control Spike:
All laboratory control spike compounds were within QC limits with any exceptions noted below.

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

Additional Comments:

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

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

ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Sample: R3830-P114-TMW-1 **Lab ID: 92377782001** Collected: 03/20/18 10:50 Received: 03/21/18 13:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
625 MSSV	Analytical Method: EPA 625 Preparation Method: EPA 625								
Acenaphthene	ND	ug/L	50.0	2.5	1	03/21/18 14:08	03/28/18 12:08	83-32-9	
Acenaphthylene	ND	ug/L	50.0	2.1	1	03/21/18 14:08	03/28/18 12:08	208-96-8	
Anthracene	ND	ug/L	50.0	1.4	1	03/21/18 14:08	03/28/18 12:08	120-12-7	
Benzo(a)anthracene	ND	ug/L	50.0	3.3	1	03/21/18 14:08	03/28/18 12:08	56-55-3	
Benzo(a)pyrene	ND	ug/L	50.0	3.0	1	03/21/18 14:08	03/28/18 12:08	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	50.0	2.8	1	03/21/18 14:08	03/28/18 12:08	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	50.0	3.8	1	03/21/18 14:08	03/28/18 12:08	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	50.0	4.3	1	03/21/18 14:08	03/28/18 12:08	207-08-9	
4-Bromophenylphenyl ether	ND	ug/L	50.0	8.2	1	03/21/18 14:08	03/28/18 12:08	101-55-3	
Butylbenzylphthalate	ND	ug/L	50.0	7.9	1	03/21/18 14:08	03/28/18 12:08	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	50.0	37.0	1	03/21/18 14:08	03/28/18 12:08	59-50-7	
bis(2-Chloroethoxy)methane	ND	ug/L	100	9.2	1	03/21/18 14:08	03/28/18 12:08	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	50.0	10.0	1	03/21/18 14:08	03/28/18 12:08	111-44-4	
2-Chloronaphthalene	ND	ug/L	50.0	9.8	1	03/21/18 14:08	03/28/18 12:08	91-58-7	
2-Chlorophenol	ND	ug/L	50.0	13.0	1	03/21/18 14:08	03/28/18 12:08	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	50.0	8.7	1	03/21/18 14:08	03/28/18 12:08	7005-72-3	
Chrysene	ND	ug/L	50.0	2.1	1	03/21/18 14:08	03/28/18 12:08	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	50.0	5.5	1	03/21/18 14:08	03/28/18 12:08	53-70-3	
3,3'-Dichlorobenzidine	ND	ug/L	250	21.0	1	03/21/18 14:08	03/28/18 12:08	91-94-1	
2,4-Dichlorophenol	ND	ug/L	50.0	17.0	1	03/21/18 14:08	03/28/18 12:08	120-83-2	
Diethylphthalate	ND	ug/L	50.0	5.8	1	03/21/18 14:08	03/28/18 12:08	84-66-2	
2,4-Dimethylphenol	ND	ug/L	100	12.0	1	03/21/18 14:08	03/28/18 12:08	105-67-9	
Dimethylphthalate	ND	ug/L	50.0	7.6	1	03/21/18 14:08	03/28/18 12:08	131-11-3	
Di-n-butylphthalate	ND	ug/L	50.0	7.5	1	03/21/18 14:08	03/28/18 12:08	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	200	26.0	1	03/21/18 14:08	03/28/18 12:08	534-52-1	
2,4-Dinitrophenol	ND	ug/L	500	90.0	1	03/21/18 14:08	03/28/18 12:08	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	50.0	9.0	1	03/21/18 14:08	03/28/18 12:08	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	50.0	9.8	1	03/21/18 14:08	03/28/18 12:08	606-20-2	
Di-n-octylphthalate	ND	ug/L	50.0	6.6	1	03/21/18 14:08	03/28/18 12:08	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	50.0	7.9	1	03/21/18 14:08	03/27/18 18:34	117-81-7	
Fluoranthene	ND	ug/L	50.0	2.1	1	03/21/18 14:08	03/28/18 12:08	206-44-0	
Fluorene	ND	ug/L	50.0	2.1	1	03/21/18 14:08	03/28/18 12:08	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	50.0	9.4	1	03/21/18 14:08	03/28/18 12:08	87-68-3	
Hexachlorobenzene	ND	ug/L	50.0	7.2	1	03/21/18 14:08	03/28/18 12:08	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	100	8.8	1	03/21/18 14:08	03/28/18 12:08	77-47-4	
Hexachloroethane	ND	ug/L	50.0	11.0	1	03/21/18 14:08	03/28/18 12:08	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	50.0	2.9	1	03/21/18 14:08	03/28/18 12:08	193-39-5	
Isophorone	ND	ug/L	100	8.9	1	03/21/18 14:08	03/28/18 12:08	78-59-1	
Naphthalene	ND	ug/L	50.0	3.4	1	03/21/18 14:08	03/28/18 12:08	91-20-3	
Nitrobenzene	ND	ug/L	50.0	11.0	1	03/21/18 14:08	03/28/18 12:08	98-95-3	
2-Nitrophenol	ND	ug/L	50.0	9.1	1	03/21/18 14:08	03/28/18 12:08	88-75-5	L2
4-Nitrophenol	ND	ug/L	500	41.0	1	03/21/18 14:08	03/28/18 12:08	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	50.0	9.1	1	03/21/18 14:08	03/28/18 12:08	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	50.0	9.9	1	03/21/18 14:08	03/28/18 12:08	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	100	10.0	1	03/21/18 14:08	03/28/18 12:08	86-30-6	
2,2'-Oxybis(1-chloropropane)	ND	ug/L	50.0	9.5	1	03/21/18 14:08	03/28/18 12:08	108-60-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Sample: R3830-P114-TMW-1 **Lab ID: 92377782001** Collected: 03/20/18 10:50 Received: 03/21/18 13:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
625 MSSV	Analytical Method: EPA 625 Preparation Method: EPA 625								
Pentachlorophenol	ND	ug/L	100	46.0	1	03/21/18 14:08	03/28/18 12:08	87-86-5	L2
Phenanthrene	ND	ug/L	50.0	2.2	1	03/21/18 14:08	03/28/18 12:08	85-01-8	
Phenol	ND	ug/L	50.0	19.0	1	03/21/18 14:08	03/28/18 12:08	108-95-2	
Pyrene	ND	ug/L	50.0	1.9	1	03/21/18 14:08	03/28/18 12:08	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	50.0	9.8	1	03/21/18 14:08	03/28/18 12:08	120-82-1	
2,4,6-Trichlorophenol	ND	ug/L	100	13.0	1	03/21/18 14:08	03/28/18 12:08	88-06-2	L2
Surrogates									
Nitrobenzene-d5 (S)	68	%	10-120		1	03/21/18 14:08	03/28/18 12:08	4165-60-0	
2-Fluorobiphenyl (S)	70	%	15-120		1	03/21/18 14:08	03/28/18 12:08	321-60-8	
Terphenyl-d14 (S)	58	%	11-131		1	03/21/18 14:08	03/28/18 12:08	1718-51-0	
Phenol-d6 (S)	51	%	10-120		1	03/21/18 14:08	03/28/18 12:08	13127-88-3	
2-Fluorophenol (S)	56	%	10-120		1	03/21/18 14:08	03/28/18 12:08	367-12-4	
2,4,6-Tribromophenol (S)	74	%	10-137		1	03/21/18 14:08	03/28/18 12:08	118-79-6	
6200B MSV	Analytical Method: SM 6200B								
Benzene	**1.4**	ug/L	0.50	0.25	1		03/26/18 19:10	71-43-2	
Bromobenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	108-86-1	
Bromochloromethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	74-97-5	
Bromodichloromethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	75-27-4	
Bromoform	ND	ug/L	0.50	0.25	1		03/26/18 19:10	75-25-2	
Bromomethane	ND	ug/L	5.0	2.5	1		03/26/18 19:10	74-83-9	
n-Butylbenzene	**4.1**	ug/L	0.50	0.25	1		03/26/18 19:10	104-51-8	
sec-Butylbenzene	**2.4**	ug/L	0.50	0.25	1		03/26/18 19:10	135-98-8	
tert-Butylbenzene	**0.99**	ug/L	0.50	0.25	1		03/26/18 19:10	98-06-6	
Carbon tetrachloride	ND	ug/L	0.50	0.25	1		03/26/18 19:10	56-23-5	
Chlorobenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	108-90-7	
Chloroethane	ND	ug/L	1.0	0.50	1		03/26/18 19:10	75-00-3	
Chloroform	ND	ug/L	0.50	0.25	1		03/26/18 19:10	67-66-3	
Chloromethane	ND	ug/L	1.0	0.50	1		03/26/18 19:10	74-87-3	
2-Chlorotoluene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	95-49-8	
4-Chlorotoluene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.50	1		03/26/18 19:10	96-12-8	
Dibromochloromethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	0.25	1		03/26/18 19:10	106-93-4	
Dibromomethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	106-46-7	
Dichlorodifluoromethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	75-71-8	
1,1-Dichloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	75-34-3	
1,2-Dichloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	78-87-5	
1,3-Dichloropropane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	142-28-9	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Sample: R3830-P114-TMW-1 **Lab ID: 92377782001** Collected: 03/20/18 10:50 Received: 03/21/18 13:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6200B MSV	Analytical Method: SM 6200B								
2,2-Dichloropropane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	594-20-7	
1,1-Dichloropropene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	10061-02-6	
Diisopropyl ether	ND	ug/L	0.50	0.25	1		03/26/18 19:10	108-20-3	
Ethylbenzene	**4.0**	ug/L	0.50	0.25	1		03/26/18 19:10	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1.0	1		03/26/18 19:10	87-68-3	
Isopropylbenzene (Cumene)	**5.1**	ug/L	0.50	0.25	1		03/26/18 19:10	98-82-8	
Methylene Chloride	ND	ug/L	2.0	1.0	1		03/26/18 19:10	75-09-2	
Methyl-tert-butyl ether	**8.1**	ug/L	0.50	0.25	1		03/26/18 19:10	1634-04-4	
Naphthalene	**3.7**	ug/L	2.0	1.0	1		03/26/18 19:10	91-20-3	
n-Propylbenzene	**10.6**	ug/L	0.50	0.25	1		03/26/18 19:10	103-65-1	
Styrene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	127-18-4	
Toluene	**1.9**	ug/L	0.50	0.25	1		03/26/18 19:10	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	1.0	1		03/26/18 19:10	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	1.0	1		03/26/18 19:10	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	79-00-5	
Trichloroethene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.50	1		03/26/18 19:10	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	0.50	0.25	1		03/26/18 19:10	96-18-4	
1,2,4-Trimethylbenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:10	108-67-8	
Vinyl chloride	ND	ug/L	1.0	0.50	1		03/26/18 19:10	75-01-4	
m&p-Xylene	**3.6**	ug/L	1.0	0.50	1		03/26/18 19:10	179601-23-1	
o-Xylene	**0.62**	ug/L	0.50	0.25	1		03/26/18 19:10	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	98	%	70-130		1		03/26/18 19:10	17060-07-0	
4-Bromofluorobenzene (S)	99	%	70-130		1		03/26/18 19:10	460-00-4	
Toluene-d8 (S)	97	%	70-130		1		03/26/18 19:10	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Sample: R3830-P114-TMW-2 **Lab ID: 92377782002** Collected: 03/20/18 11:00 Received: 03/21/18 13:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
625 MSSV	Analytical Method: EPA 625 Preparation Method: EPA 625								
Acenaphthene	ND	ug/L	50.0	2.5	1	03/21/18 14:08	03/27/18 19:02	83-32-9	
Acenaphthylene	ND	ug/L	50.0	2.1	1	03/21/18 14:08	03/27/18 19:02	208-96-8	
Anthracene	ND	ug/L	50.0	1.4	1	03/21/18 14:08	03/27/18 19:02	120-12-7	
Benzo(a)anthracene	ND	ug/L	50.0	3.3	1	03/21/18 14:08	03/27/18 19:02	56-55-3	
Benzo(a)pyrene	**8.8J**	ug/L	50.0	3.0	1	03/21/18 14:08	03/27/18 19:02	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	50.0	2.8	1	03/21/18 14:08	03/27/18 19:02	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	50.0	3.8	1	03/21/18 14:08	03/27/18 19:02	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	50.0	4.3	1	03/21/18 14:08	03/27/18 19:02	207-08-9	
4-Bromophenylphenyl ether	ND	ug/L	50.0	8.2	1	03/21/18 14:08	03/27/18 19:02	101-55-3	
Butylbenzylphthalate	ND	ug/L	50.0	7.9	1	03/21/18 14:08	03/27/18 19:02	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	50.0	37.0	1	03/21/18 14:08	03/27/18 19:02	59-50-7	
bis(2-Chloroethoxy)methane	ND	ug/L	100	9.2	1	03/21/18 14:08	03/27/18 19:02	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	50.0	10.0	1	03/21/18 14:08	03/27/18 19:02	111-44-4	
2-Chloronaphthalene	ND	ug/L	50.0	9.8	1	03/21/18 14:08	03/27/18 19:02	91-58-7	
2-Chlorophenol	ND	ug/L	50.0	13.0	1	03/21/18 14:08	03/27/18 19:02	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	50.0	8.7	1	03/21/18 14:08	03/27/18 19:02	7005-72-3	
Chrysene	ND	ug/L	50.0	2.1	1	03/21/18 14:08	03/27/18 19:02	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	50.0	5.5	1	03/21/18 14:08	03/27/18 19:02	53-70-3	
3,3'-Dichlorobenzidine	ND	ug/L	250	21.0	1	03/21/18 14:08	03/27/18 19:02	91-94-1	
2,4-Dichlorophenol	ND	ug/L	50.0	17.0	1	03/21/18 14:08	03/27/18 19:02	120-83-2	
Diethylphthalate	ND	ug/L	50.0	5.8	1	03/21/18 14:08	03/27/18 19:02	84-66-2	
2,4-Dimethylphenol	ND	ug/L	100	12.0	1	03/21/18 14:08	03/27/18 19:02	105-67-9	
Dimethylphthalate	ND	ug/L	50.0	7.6	1	03/21/18 14:08	03/27/18 19:02	131-11-3	
Di-n-butylphthalate	ND	ug/L	50.0	7.5	1	03/21/18 14:08	03/27/18 19:02	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	200	26.0	1	03/21/18 14:08	03/27/18 19:02	534-52-1	
2,4-Dinitrophenol	ND	ug/L	500	90.0	1	03/21/18 14:08	03/27/18 19:02	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	50.0	9.0	1	03/21/18 14:08	03/27/18 19:02	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	50.0	9.8	1	03/21/18 14:08	03/27/18 19:02	606-20-2	
Di-n-octylphthalate	ND	ug/L	50.0	6.6	1	03/21/18 14:08	03/27/18 19:02	117-84-0	
bis(2-Ethylhexyl)phthalate	ND	ug/L	50.0	7.9	1	03/21/18 14:08	03/27/18 19:02	117-81-7	
Fluoranthene	ND	ug/L	50.0	2.1	1	03/21/18 14:08	03/27/18 19:02	206-44-0	
Fluorene	ND	ug/L	50.0	2.1	1	03/21/18 14:08	03/27/18 19:02	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	50.0	9.4	1	03/21/18 14:08	03/27/18 19:02	87-68-3	
Hexachlorobenzene	ND	ug/L	50.0	7.2	1	03/21/18 14:08	03/27/18 19:02	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	100	8.8	1	03/21/18 14:08	03/27/18 19:02	77-47-4	
Hexachloroethane	ND	ug/L	50.0	11.0	1	03/21/18 14:08	03/27/18 19:02	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	50.0	2.9	1	03/21/18 14:08	03/27/18 19:02	193-39-5	
Isophorone	ND	ug/L	100	8.9	1	03/21/18 14:08	03/27/18 19:02	78-59-1	
Naphthalene	**63.9**	ug/L	50.0	3.4	1	03/21/18 14:08	03/27/18 19:02	91-20-3	
Nitrobenzene	ND	ug/L	50.0	11.0	1	03/21/18 14:08	03/27/18 19:02	98-95-3	
2-Nitrophenol	ND	ug/L	50.0	9.1	1	03/21/18 14:08	03/27/18 19:02	88-75-5	L2
4-Nitrophenol	ND	ug/L	500	41.0	1	03/21/18 14:08	03/27/18 19:02	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	50.0	9.1	1	03/21/18 14:08	03/27/18 19:02	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	50.0	9.9	1	03/21/18 14:08	03/27/18 19:02	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	100	10.0	1	03/21/18 14:08	03/27/18 19:02	86-30-6	
2,2'-Oxybis(1-chloropropane)	ND	ug/L	50.0	9.5	1	03/21/18 14:08	03/27/18 19:02	108-60-1	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Sample: R3830-P114-TMW-2 **Lab ID: 92377782002** Collected: 03/20/18 11:00 Received: 03/21/18 13:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
625 MSSV	Analytical Method: EPA 625 Preparation Method: EPA 625								
Pentachlorophenol	ND	ug/L	100	46.0	1	03/21/18 14:08	03/27/18 19:02	87-86-5	L2
Phenanthrene	ND	ug/L	50.0	2.2	1	03/21/18 14:08	03/27/18 19:02	85-01-8	
Phenol	ND	ug/L	50.0	19.0	1	03/21/18 14:08	03/27/18 19:02	108-95-2	
Pyrene	ND	ug/L	50.0	1.9	1	03/21/18 14:08	03/27/18 19:02	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	50.0	9.8	1	03/21/18 14:08	03/27/18 19:02	120-82-1	
2,4,6-Trichlorophenol	ND	ug/L	100	13.0	1	03/21/18 14:08	03/27/18 19:02	88-06-2	L2
Surrogates									
Nitrobenzene-d5 (S)	74	%	10-120		1	03/21/18 14:08	03/27/18 19:02	4165-60-0	
2-Fluorobiphenyl (S)	79	%	15-120		1	03/21/18 14:08	03/27/18 19:02	321-60-8	
Terphenyl-d14 (S)	73	%	11-131		1	03/21/18 14:08	03/27/18 19:02	1718-51-0	
Phenol-d6 (S)	63	%	10-120		1	03/21/18 14:08	03/27/18 19:02	13127-88-3	
2-Fluorophenol (S)	69	%	10-120		1	03/21/18 14:08	03/27/18 19:02	367-12-4	
2,4,6-Tribromophenol (S)	86	%	10-137		1	03/21/18 14:08	03/27/18 19:02	118-79-6	
6200B MSV	Analytical Method: SM 6200B								
Benzene	**3.8**	ug/L	0.50	0.25	1		03/26/18 19:26	71-43-2	
Bromobenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	108-86-1	
Bromochloromethane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	74-97-5	
Bromodichloromethane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	75-27-4	
Bromoform	ND	ug/L	0.50	0.25	1		03/26/18 19:26	75-25-2	
Bromomethane	ND	ug/L	5.0	2.5	1		03/26/18 19:26	74-83-9	
n-Butylbenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	104-51-8	
sec-Butylbenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	135-98-8	
tert-Butylbenzene	**3.0**	ug/L	0.50	0.25	1		03/26/18 19:26	98-06-6	
Carbon tetrachloride	ND	ug/L	0.50	0.25	1		03/26/18 19:26	56-23-5	
Chlorobenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	108-90-7	
Chloroethane	ND	ug/L	1.0	0.50	1		03/26/18 19:26	75-00-3	
Chloroform	ND	ug/L	0.50	0.25	1		03/26/18 19:26	67-66-3	
Chloromethane	ND	ug/L	1.0	0.50	1		03/26/18 19:26	74-87-3	
2-Chlorotoluene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	95-49-8	
4-Chlorotoluene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	1.0	0.50	1		03/26/18 19:26	96-12-8	
Dibromochloromethane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	0.50	0.25	1		03/26/18 19:26	106-93-4	
Dibromomethane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	106-46-7	
Dichlorodifluoromethane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	75-71-8	
1,1-Dichloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	75-34-3	
1,2-Dichloroethane	**0.41J**	ug/L	0.50	0.25	1		03/26/18 19:26	107-06-2	
1,1-Dichloroethene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	156-60-5	
1,2-Dichloropropane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	78-87-5	
1,3-Dichloropropane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	142-28-9	

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Sample: R3830-P114-TMW-2 **Lab ID: 92377782002** Collected: 03/20/18 11:00 Received: 03/21/18 13:15 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6200B MSV	Analytical Method: SM 6200B								
2,2-Dichloropropane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	594-20-7	
1,1-Dichloropropene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	10061-02-6	
Diisopropyl ether	ND	ug/L	0.50	0.25	1		03/26/18 19:26	108-20-3	
Ethylbenzene	**53.4**	ug/L	0.50	0.25	1		03/26/18 19:26	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	2.0	1.0	1		03/26/18 19:26	87-68-3	
Isopropylbenzene (Cumene)	**26.4**	ug/L	0.50	0.25	1		03/26/18 19:26	98-82-8	
Methylene Chloride	ND	ug/L	2.0	1.0	1		03/26/18 19:26	75-09-2	
Methyl-tert-butyl ether	**3.7**	ug/L	0.50	0.25	1		03/26/18 19:26	1634-04-4	
Naphthalene	**34.6**	ug/L	2.0	1.0	1		03/26/18 19:26	91-20-3	
n-Propylbenzene	**51.0**	ug/L	0.50	0.25	1		03/26/18 19:26	103-65-1	
Styrene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	79-34-5	
Tetrachloroethene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	127-18-4	
Toluene	**3.3**	ug/L	0.50	0.25	1		03/26/18 19:26	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	2.0	1.0	1		03/26/18 19:26	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	2.0	1.0	1		03/26/18 19:26	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	79-00-5	
Trichloroethene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.50	1		03/26/18 19:26	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	0.50	0.25	1		03/26/18 19:26	96-18-4	
1,2,4-Trimethylbenzene	**1.4**	ug/L	0.50	0.25	1		03/26/18 19:26	95-63-6	
1,3,5-Trimethylbenzene	ND	ug/L	0.50	0.25	1		03/26/18 19:26	108-67-8	
Vinyl chloride	ND	ug/L	1.0	0.50	1		03/26/18 19:26	75-01-4	
m&p-Xylene	**7.2**	ug/L	1.0	0.50	1		03/26/18 19:26	179601-23-1	
o-Xylene	**1.5**	ug/L	0.50	0.25	1		03/26/18 19:26	95-47-6	
Surrogates									
1,2-Dichloroethane-d4 (S)	98	%	70-130		1		03/26/18 19:26	17060-07-0	
4-Bromofluorobenzene (S)	100	%	70-130		1		03/26/18 19:26	460-00-4	
Toluene-d8 (S)	101	%	70-130		1		03/26/18 19:26	2037-26-5	

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

QC Batch: 403525 Analysis Method: SM 6200B
QC Batch Method: SM 6200B Analysis Description: 6200B MSV
Associated Lab Samples: 92377782001, 92377782002

METHOD BLANK: 2238529 Matrix: Water
Associated Lab Samples: 92377782001, 92377782002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,1,1-Trichloroethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,1,2,2-Tetrachloroethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,1,2-Trichloroethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,1-Dichloroethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,1-Dichloroethene	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,1-Dichloropropene	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,2,3-Trichlorobenzene	ug/L	ND	2.0	1.0	03/26/18 15:41	
1,2,3-Trichloropropane	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,2,4-Trichlorobenzene	ug/L	ND	2.0	1.0	03/26/18 15:41	
1,2,4-Trimethylbenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,2-Dibromo-3-chloropropane	ug/L	ND	1.0	0.50	03/26/18 15:41	
1,2-Dibromoethane (EDB)	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,2-Dichlorobenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,2-Dichloroethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,2-Dichloropropane	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,3,5-Trimethylbenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,3-Dichlorobenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,3-Dichloropropane	ug/L	ND	0.50	0.25	03/26/18 15:41	
1,4-Dichlorobenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
2,2-Dichloropropane	ug/L	ND	0.50	0.25	03/26/18 15:41	
2-Chlorotoluene	ug/L	ND	0.50	0.25	03/26/18 15:41	
4-Chlorotoluene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Benzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Bromobenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Bromochloromethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
Bromodichloromethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
Bromoform	ug/L	ND	0.50	0.25	03/26/18 15:41	
Bromomethane	ug/L	ND	5.0	2.5	03/26/18 15:41	
Carbon tetrachloride	ug/L	ND	0.50	0.25	03/26/18 15:41	
Chlorobenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Chloroethane	ug/L	ND	1.0	0.50	03/26/18 15:41	
Chloroform	ug/L	ND	0.50	0.25	03/26/18 15:41	
Chloromethane	ug/L	ND	1.0	0.50	03/26/18 15:41	
cis-1,2-Dichloroethene	ug/L	ND	0.50	0.25	03/26/18 15:41	
cis-1,3-Dichloropropene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Dibromochloromethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
Dibromomethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
Dichlorodifluoromethane	ug/L	ND	0.50	0.25	03/26/18 15:41	
Diisopropyl ether	ug/L	ND	0.50	0.25	03/26/18 15:41	
Ethylbenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

METHOD BLANK: 2238529 Matrix: Water
Associated Lab Samples: 92377782001, 92377782002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	2.0	1.0	03/26/18 15:41	
Isopropylbenzene (Cumene)	ug/L	ND	0.50	0.25	03/26/18 15:41	
m&p-Xylene	ug/L	ND	1.0	0.50	03/26/18 15:41	
Methyl-tert-butyl ether	ug/L	ND	0.50	0.25	03/26/18 15:41	
Methylene Chloride	ug/L	ND	2.0	1.0	03/26/18 15:41	
n-Butylbenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
n-Propylbenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Naphthalene	ug/L	ND	2.0	1.0	03/26/18 15:41	
o-Xylene	ug/L	ND	0.50	0.25	03/26/18 15:41	
sec-Butylbenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Styrene	ug/L	ND	0.50	0.25	03/26/18 15:41	
tert-Butylbenzene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Tetrachloroethene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Toluene	ug/L	ND	0.50	0.25	03/26/18 15:41	
trans-1,2-Dichloroethene	ug/L	ND	0.50	0.25	03/26/18 15:41	
trans-1,3-Dichloropropene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Trichloroethene	ug/L	ND	0.50	0.25	03/26/18 15:41	
Trichlorofluoromethane	ug/L	ND	1.0	0.50	03/26/18 15:41	
Vinyl chloride	ug/L	ND	1.0	0.50	03/26/18 15:41	
1,2-Dichloroethane-d4 (S)	%	97	70-130		03/26/18 15:41	
4-Bromofluorobenzene (S)	%	97	70-130		03/26/18 15:41	
Toluene-d8 (S)	%	100	70-130		03/26/18 15:41	

LABORATORY CONTROL SAMPLE: 2238530

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	50.5	101	60-140	
1,1,1-Trichloroethane	ug/L	50	49.7	99	60-140	
1,1,2,2-Tetrachloroethane	ug/L	50	49.2	98	60-140	
1,1,2-Trichloroethane	ug/L	50	48.7	97	60-140	
1,1-Dichloroethane	ug/L	50	48.0	96	60-140	
1,1-Dichloroethene	ug/L	50	53.4	107	60-140	
1,1-Dichloropropene	ug/L	50	52.9	106	60-140	
1,2,3-Trichlorobenzene	ug/L	50	50.4	101	60-140	
1,2,3-Trichloropropane	ug/L	50	49.0	98	60-140	
1,2,4-Trichlorobenzene	ug/L	50	51.1	102	60-140	
1,2,4-Trimethylbenzene	ug/L	50	48.2	96	60-140	
1,2-Dibromo-3-chloropropane	ug/L	50	48.3	97	60-140	
1,2-Dibromoethane (EDB)	ug/L	50	50.1	100	60-140	
1,2-Dichlorobenzene	ug/L	50	50.1	100	60-140	
1,2-Dichloroethane	ug/L	50	47.0	94	60-140	
1,2-Dichloropropane	ug/L	50	50.6	101	60-140	
1,3,5-Trimethylbenzene	ug/L	50	48.5	97	60-140	
1,3-Dichlorobenzene	ug/L	50	50.0	100	60-140	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

LABORATORY CONTROL SAMPLE: 2238530

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,3-Dichloropropane	ug/L	50	50.6	101	60-140	
1,4-Dichlorobenzene	ug/L	50	49.2	98	60-140	
2,2-Dichloropropane	ug/L	50	49.3	99	60-140	
2-Chlorotoluene	ug/L	50	48.3	97	60-140	
4-Chlorotoluene	ug/L	50	48.5	97	60-140	
Benzene	ug/L	50	47.3	95	60-140	
Bromobenzene	ug/L	50	50.7	101	60-140	
Bromochloromethane	ug/L	50	54.6	109	60-140	
Bromodichloromethane	ug/L	50	47.2	94	60-140	
Bromoform	ug/L	50	50.7	101	60-140	
Bromomethane	ug/L	50	41.9	84	60-140	
Carbon tetrachloride	ug/L	50	50.5	101	60-140	
Chlorobenzene	ug/L	50	50.2	100	60-140	
Chloroethane	ug/L	50	39.0	78	60-140	
Chloroform	ug/L	50	50.8	102	60-140	
Chloromethane	ug/L	50	39.4	79	60-140	
cis-1,2-Dichloroethene	ug/L	50	51.7	103	60-140	
cis-1,3-Dichloropropene	ug/L	50	50.3	101	60-140	
Dibromochloromethane	ug/L	50	51.0	102	60-140	
Dibromomethane	ug/L	50	52.8	106	60-140	
Dichlorodifluoromethane	ug/L	50	48.3	97	60-140	
Diisopropyl ether	ug/L	50	47.5	95	60-140	
Ethylbenzene	ug/L	50	48.9	98	60-140	
Hexachloro-1,3-butadiene	ug/L	50	51.8	104	60-140	
Isopropylbenzene (Cumene)	ug/L	50	50.4	101	60-140	
m&p-Xylene	ug/L	100	99.4	99	60-140	
Methyl-tert-butyl ether	ug/L	50	46.5	93	60-140	
Methylene Chloride	ug/L	50	50.7	101	60-140	
n-Butylbenzene	ug/L	50	49.4	99	60-140	
n-Propylbenzene	ug/L	50	50.2	100	60-140	
Naphthalene	ug/L	50	49.1	98	60-140	
o-Xylene	ug/L	50	49.9	100	60-140	
sec-Butylbenzene	ug/L	50	49.3	99	60-140	
Styrene	ug/L	50	50.1	100	60-140	
tert-Butylbenzene	ug/L	50	43.3	87	60-140	
Tetrachloroethene	ug/L	50	45.4	91	60-140	
Toluene	ug/L	50	51.4	103	60-140	
trans-1,2-Dichloroethene	ug/L	50	51.7	103	60-140	
trans-1,3-Dichloropropene	ug/L	50	49.5	99	60-140	
Trichloroethene	ug/L	50	49.3	99	60-140	
Trichlorofluoromethane	ug/L	50	47.6	95	60-140	
Vinyl chloride	ug/L	50	52.9	106	60-140	
1,2-Dichloroethane-d4 (S)	%			99	70-130	
4-Bromofluorobenzene (S)	%			99	70-130	
Toluene-d8 (S)	%			97	70-130	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2238857 2238858

Parameter	Units	92377642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1,1,2-Tetrachloroethane	ug/L	ND	20	20	21.0	20.6	105	103	60-140	2	30	
1,1,1-Trichloroethane	ug/L	ND	20	20	21.0	20.4	105	102	60-140	3	30	
1,1,2,2-Tetrachloroethane	ug/L	ND	20	20	19.8	19.7	99	99	60-140	1	30	
1,1,2-Trichloroethane	ug/L	ND	20	20	21.1	19.6	105	98	60-140	7	30	
1,1-Dichloroethane	ug/L	ND	20	20	20.1	19.2	101	96	60-140	5	30	
1,1-Dichloroethene	ug/L	ND	20	20	22.6	21.4	113	107	60-140	5	30	
1,1-Dichloropropene	ug/L	ND	20	20	21.9	21.1	110	105	60-140	4	30	
1,2,3-Trichlorobenzene	ug/L	ND	20	20	19.2	19.1	96	95	60-140	1	30	
1,2,3-Trichloropropane	ug/L	ND	20	20	20.1	20.4	101	102	60-140	1	30	
1,2,4-Trichlorobenzene	ug/L	ND	20	20	20.5	19.5	102	98	60-140	5	30	
1,2,4-Trimethylbenzene	ug/L	ND	20	20	20.9	20.0	104	100	60-140	4	30	
1,2-Dibromo-3-chloropropane	ug/L	ND	20	20	20.2	19.7	101	98	60-140	2	30	
1,2-Dibromoethane (EDB)	ug/L	ND	20	20	20.7	20.4	104	102	60-140	2	30	
1,2-Dichlorobenzene	ug/L	ND	20	20	21.1	20.1	105	100	60-140	5	30	
1,2-Dichloroethane	ug/L	ND	20	20	18.9	18.4	95	92	60-140	3	30	
1,2-Dichloropropane	ug/L	ND	20	20	21.3	20.7	107	103	60-140	3	30	
1,3,5-Trimethylbenzene	ug/L	ND	20	20	20.7	19.3	103	97	60-140	7	30	
1,3-Dichlorobenzene	ug/L	ND	20	20	21.1	20.2	105	101	60-140	4	30	
1,3-Dichloropropane	ug/L	ND	20	20	21.8	21.1	109	106	60-140	3	30	
1,4-Dichlorobenzene	ug/L	ND	20	20	20.8	19.6	104	98	60-140	6	30	
2,2-Dichloropropane	ug/L	ND	20	20	20.3	19.7	102	98	60-140	3	30	
2-Chlorotoluene	ug/L	ND	20	20	20.5	19.8	102	99	60-140	3	30	
4-Chlorotoluene	ug/L	ND	20	20	20.6	19.9	103	99	60-140	4	30	
Benzene	ug/L	ND	20	20	20.0	19.4	100	97	60-140	3	30	
Bromobenzene	ug/L	ND	20	20	21.5	20.8	108	104	60-140	4	30	
Bromochloromethane	ug/L	ND	20	20	21.2	21.2	106	106	60-140	0	30	
Bromodichloromethane	ug/L	ND	20	20	20.0	18.7	100	94	60-140	7	30	
Bromoform	ug/L	ND	20	20	20.1	19.6	101	98	60-140	2	30	
Bromomethane	ug/L	ND	20	20	18.1	17.4	91	87	60-140	4	30	
Carbon tetrachloride	ug/L	ND	20	20	22.3	21.5	112	108	60-140	4	30	
Chlorobenzene	ug/L	ND	20	20	21.8	20.9	109	105	60-140	4	30	
Chloroethane	ug/L	ND	20	20	19.2	18.2	96	91	60-140	5	30	
Chloroform	ug/L	ND	20	20	20.7	20.5	103	102	60-140	1	30	
Chloromethane	ug/L	ND	20	20	18.9	18.7	95	94	60-140	1	30	
cis-1,2-Dichloroethene	ug/L	ND	20	20	21.3	21.1	107	105	60-140	1	30	
cis-1,3-Dichloropropene	ug/L	ND	20	20	21.2	20.6	106	103	60-140	3	30	
Dibromochloromethane	ug/L	ND	20	20	20.8	20.4	104	102	60-140	2	30	
Dibromomethane	ug/L	ND	20	20	22.0	20.5	110	102	60-140	7	30	
Dichlorodifluoromethane	ug/L	ND	20	20	19.9	19.1	100	95	60-140	4	30	
Diisopropyl ether	ug/L	ND	20	20	19.3	19.2	97	96	60-140	1	30	
Ethylbenzene	ug/L	ND	20	20	21.2	20.6	106	103	60-140	3	30	
Hexachloro-1,3-butadiene	ug/L	ND	20	20	21.5	19.8	107	99	60-140	8	30	
Isopropylbenzene (Cumene)	ug/L	ND	20	20	21.4	20.7	107	103	60-140	3	30	
m&p-Xylene	ug/L	ND	40	40	43.2	41.3	108	103	60-140	4	30	
Methyl-tert-butyl ether	ug/L	ND	20	20	19.0	18.9	95	94	60-140	0	30	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2238857 2238858

Parameter	Units	92377642001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Methylene Chloride	ug/L	ND	20	20	20.1	19.6	101	98	60-140	3	30	
n-Butylbenzene	ug/L	ND	20	20	20.5	19.3	102	97	60-140	6	30	
n-Propylbenzene	ug/L	ND	20	20	21.4	20.4	107	102	60-140	5	30	
Naphthalene	ug/L	ND	20	20	20.0	20.2	100	101	60-140	1	30	
o-Xylene	ug/L	ND	20	20	21.8	20.5	109	103	60-140	6	30	
sec-Butylbenzene	ug/L	ND	20	20	20.9	19.9	105	99	60-140	5	30	
Styrene	ug/L	ND	20	20	20.9	20.3	105	102	60-140	3	30	
tert-Butylbenzene	ug/L	ND	20	20	18.4	17.4	92	87	60-140	6	30	
Tetrachloroethene	ug/L	ND	20	20	19.3	18.9	96	95	60-140	2	30	
Toluene	ug/L	ND	20	20	22.6	21.5	113	108	60-140	5	30	
trans-1,2-Dichloroethene	ug/L	ND	20	20	21.6	20.9	108	104	60-140	3	30	
trans-1,3-Dichloropropene	ug/L	ND	20	20	20.6	20.0	103	100	60-140	3	30	
Trichloroethene	ug/L	ND	20	20	21.6	20.2	108	101	60-140	6	30	
Trichlorofluoromethane	ug/L	ND	20	20	21.0	20.0	105	100	60-140	5	30	
Vinyl chloride	ug/L	ND	20	20	22.3	21.5	112	108	60-140	4	30	
1,2-Dichloroethane-d4 (S)	%						98	99	70-130			
4-Bromofluorobenzene (S)	%						98	99	70-130			
Toluene-d8 (S)	%						99	98	70-130			

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

QC Batch: 402940 Analysis Method: EPA 625
QC Batch Method: EPA 625 Analysis Description: 625 MSS
Associated Lab Samples: 92377782001, 92377782002

METHOD BLANK: 2235062 Matrix: Water
Associated Lab Samples: 92377782001, 92377782002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	5.0	0.98	03/23/18 11:18	
2,2'-Oxybis(1-chloropropane)	ug/L	ND	5.0	0.95	03/23/18 11:18	
2,4,6-Trichlorophenol	ug/L	ND	10.0	1.3	03/23/18 11:18	
2,4-Dichlorophenol	ug/L	ND	5.0	1.7	03/23/18 11:18	
2,4-Dimethylphenol	ug/L	ND	10.0	1.2	03/23/18 11:18	
2,4-Dinitrophenol	ug/L	ND	50.0	9.0	03/23/18 11:18	
2,4-Dinitrotoluene	ug/L	ND	5.0	0.90	03/23/18 11:18	
2,6-Dinitrotoluene	ug/L	ND	5.0	0.98	03/23/18 11:18	
2-Chloronaphthalene	ug/L	ND	5.0	0.98	03/23/18 11:18	
2-Chlorophenol	ug/L	ND	5.0	1.3	03/23/18 11:18	
2-Nitrophenol	ug/L	ND	5.0	0.91	03/23/18 11:18	
3,3'-Dichlorobenzidine	ug/L	ND	25.0	2.1	03/23/18 11:18	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	2.6	03/23/18 11:18	
4-Bromophenylphenyl ether	ug/L	ND	5.0	0.82	03/23/18 11:18	
4-Chloro-3-methylphenol	ug/L	ND	5.0	3.7	03/23/18 11:18	
4-Chlorophenylphenyl ether	ug/L	ND	5.0	0.87	03/23/18 11:18	
4-Nitrophenol	ug/L	ND	50.0	4.1	03/23/18 11:18	
Acenaphthene	ug/L	ND	5.0	0.25	03/23/18 11:18	
Acenaphthylene	ug/L	ND	5.0	0.21	03/23/18 11:18	
Anthracene	ug/L	ND	5.0	0.14	03/23/18 11:18	
Benzo(a)anthracene	ug/L	ND	5.0	0.33	03/23/18 11:18	
Benzo(a)pyrene	ug/L	ND	5.0	0.30	03/23/18 11:18	
Benzo(b)fluoranthene	ug/L	ND	5.0	0.28	03/23/18 11:18	
Benzo(g,h,i)perylene	ug/L	ND	5.0	0.38	03/23/18 11:18	
Benzo(k)fluoranthene	ug/L	ND	5.0	0.43	03/23/18 11:18	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	0.92	03/23/18 11:18	
bis(2-Chloroethyl) ether	ug/L	ND	5.0	1.0	03/23/18 11:18	
bis(2-Ethylhexyl)phthalate	ug/L	ND	5.0	0.79	03/23/18 11:18	
Butylbenzylphthalate	ug/L	ND	5.0	0.79	03/23/18 11:18	
Chrysene	ug/L	ND	5.0	0.21	03/23/18 11:18	
Di-n-butylphthalate	ug/L	ND	5.0	0.75	03/23/18 11:18	
Di-n-octylphthalate	ug/L	ND	5.0	0.66	03/23/18 11:18	
Dibenz(a,h)anthracene	ug/L	ND	5.0	0.55	03/23/18 11:18	
Diethylphthalate	ug/L	ND	5.0	0.58	03/23/18 11:18	
Dimethylphthalate	ug/L	ND	5.0	0.76	03/23/18 11:18	
Fluoranthene	ug/L	ND	5.0	0.21	03/23/18 11:18	
Fluorene	ug/L	ND	5.0	0.21	03/23/18 11:18	
Hexachloro-1,3-butadiene	ug/L	ND	5.0	0.94	03/23/18 11:18	
Hexachlorobenzene	ug/L	ND	5.0	0.72	03/23/18 11:18	
Hexachlorocyclopentadiene	ug/L	ND	10.0	0.88	03/23/18 11:18	
Hexachloroethane	ug/L	ND	5.0	1.1	03/23/18 11:18	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

METHOD BLANK: 2235062 Matrix: Water
Associated Lab Samples: 92377782001, 92377782002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Indeno(1,2,3-cd)pyrene	ug/L	1.1J	5.0	0.29	03/23/18 11:18	
Isophorone	ug/L	ND	10.0	0.89	03/23/18 11:18	
N-Nitroso-di-n-propylamine	ug/L	ND	5.0	0.99	03/23/18 11:18	
N-Nitrosodimethylamine	ug/L	ND	5.0	0.91	03/23/18 11:18	
N-Nitrosodiphenylamine	ug/L	ND	10.0	1.0	03/23/18 11:18	
Naphthalene	ug/L	ND	5.0	0.34	03/23/18 11:18	
Nitrobenzene	ug/L	ND	5.0	1.1	03/23/18 11:18	
Pentachlorophenol	ug/L	ND	10.0	4.6	03/23/18 11:18	
Phenanthrene	ug/L	ND	5.0	0.22	03/23/18 11:18	
Phenol	ug/L	ND	5.0	1.9	03/23/18 11:18	
Pyrene	ug/L	ND	5.0	0.19	03/23/18 11:18	
2,4,6-Tribromophenol (S)	%	89	10-137		03/23/18 11:18	
2-Fluorobiphenyl (S)	%	79	15-120		03/23/18 11:18	
2-Fluorophenol (S)	%	42	10-120		03/23/18 11:18	
Nitrobenzene-d5 (S)	%	92	10-120		03/23/18 11:18	
Phenol-d6 (S)	%	27	10-120		03/23/18 11:18	
Terphenyl-d14 (S)	%	78	11-131		03/23/18 11:18	

LABORATORY CONTROL SAMPLE & LCSD: 2235063 2235064

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	34.0	35.3	68	71	44-142	4	30	
2,2'-Oxybis(1-chloropropane)	ug/L	50	37.0	38.2	74	76	36-166	3	30	
2,4,6-Trichlorophenol	ug/L	50	47.0	5.2J	94	10	37-144		30	L2
2,4-Dichlorophenol	ug/L	50	46.3	13.6	93	27	1-191	109	30	R1
2,4-Dimethylphenol	ug/L	50	45.3	43.9	91	88	32-119	3	30	
2,4-Dinitrophenol	ug/L	250	226	ND	90	1	1-181		30	
2,4-Dinitrotoluene	ug/L	50	49.0	47.0	98	94	39-139	4	30	
2,6-Dinitrotoluene	ug/L	50	51.9	51.9	104	104	50-158	0	30	
2-Chloronaphthalene	ug/L	50	42.3	39.7	85	79	60-118	6	30	
2-Chlorophenol	ug/L	50	41.3	16.3	83	33	23-134	87	30	R1
2-Nitrophenol	ug/L	50	57.2	14.1	114	28	29-182	121	30	L2,R1
3,3'-Dichlorobenzidine	ug/L	100	93.9	94.4	94	94	1-262	1	30	
4,6-Dinitro-2-methylphenol	ug/L	100	112	6.0J	112	6	1-181		30	
4-Bromophenylphenyl ether	ug/L	50	46.2	45.5	92	91	53-127	2	30	
4-Chloro-3-methylphenol	ug/L	100	95.7	75.6	96	76	22-147	23	30	
4-Chlorophenylphenyl ether	ug/L	50	42.6	42.4	85	85	25-158	1	30	
4-Nitrophenol	ug/L	250	89.4	9.3J	36	4	1-132		30	
Acenaphthene	ug/L	50	44.7	44.6	89	89	47-145	0	30	
Acenaphthylene	ug/L	50	44.9	44.9	90	90	33-145	0	30	
Anthracene	ug/L	50	48.1	49.1	96	98	1-166	2	30	
Benzo(a)anthracene	ug/L	50	46.6	46.6	93	93	33-143	0	30	
Benzo(a)pyrene	ug/L	50	41.7	40.9	83	82	17-163	2	30	
Benzo(b)fluoranthene	ug/L	50	40.2	38.9	80	78	24-159	3	30	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

LABORATORY CONTROL SAMPLE & LCSD: 2235063 2235064

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Benzo(g,h,i)perylene	ug/L	50	42.0	42.6	84	85	1-219	1	30	
Benzo(k)fluoranthene	ug/L	50	39.8	39.4	80	79	11-162	1	30	
bis(2-Chloroethoxy)methane	ug/L	50	47.1	47.2	94	94	33-184	0	30	
bis(2-Chloroethyl) ether	ug/L	50	41.8	41.2	84	82	12-158	1	30	
bis(2-Ethylhexyl)phthalate	ug/L	50	58.9	57.2	118	114	8-158	3	30	
Butylbenzylphthalate	ug/L	50	57.0	59.0	114	118	1-152	4	30	
Chrysene	ug/L	50	45.1	45.9	90	92	17-168	2	30	
Di-n-butylphthalate	ug/L	50	48.7	51.4	97	103	1-118	5	30	
Di-n-octylphthalate	ug/L	50	68.9	63.6	138	127	4-146	8	30	
Dibenz(a,h)anthracene	ug/L	50	41.4	43.4	83	87	1-227	5	30	
Diethylphthalate	ug/L	50	46.2	46.0	92	92	1-114	1	30	
Dimethylphthalate	ug/L	50	45.8	45.9	92	92	1-112	0	30	
Fluoranthene	ug/L	50	42.6	48.8	85	98	26-137	14	30	
Fluorene	ug/L	50	45.6	45.2	91	90	59-121	1	30	
Hexachloro-1,3-butadiene	ug/L	50	30.0	31.1	60	62	24-116	3	30	
Hexachlorobenzene	ug/L	50	44.0	44.0	88	88	1-152	0	30	
Hexachlorocyclopentadiene	ug/L	50	34.6	31.2	69	62	25-150	11	30	
Hexachloroethane	ug/L	50	30.7	29.0	61	58	40-113	6	30	
Indeno(1,2,3-cd)pyrene	ug/L	50	43.5	43.7	87	87	1-171	0	30	
Isophorone	ug/L	50	46.1	43.0	92	86	21-196	7	30	
N-Nitroso-di-n-propylamine	ug/L	50	46.8	43.0	94	86	1-230	8	30	
N-Nitrosodimethylamine	ug/L	50	28.2	27.7	56	55	25-150	2	30	
N-Nitrosodiphenylamine	ug/L	50	49.3	49.2	99	98	25-150	0	30	
Naphthalene	ug/L	50	39.7	39.7	79	79	21-133	0	30	
Nitrobenzene	ug/L	50	45.8	42.4	92	85	35-180	8	30	
Pentachlorophenol	ug/L	100	73.2	6.6J	73	7	14-176		30	L2
Phenanthrene	ug/L	50	46.4	47.1	93	94	54-120	1	30	
Phenol	ug/L	50	15.5	10.5	31	21	5-112	38	30	R1
Pyrene	ug/L	50	44.8	49.2	90	98	52-115	9	30	
2,4,6-Tribromophenol (S)	%				99	18	10-137			
2-Fluorobiphenyl (S)	%				85	80	15-120			
2-Fluorophenol (S)	%				48	10	10-120			
Nitrobenzene-d5 (S)	%				95	88	10-120			
Phenol-d6 (S)	%				33	22	10-120			
Terphenyl-d14 (S)	%				86	88	11-131			

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

L2	Analyte recovery in the laboratory control sample (LCS) was below QC limits. Results for this analyte in associated samples may be biased low.
R1	RPD value was outside control limits.

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: R3830 WBS 38887.1.1
Pace Project No.: 92377782

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92377782001	**R3830-P114-TMW-1**	EPA 625	402940	EPA 625	403134
92377782002	**R3830-P114-TMW-2**	EPA 625	402940	EPA 625	403134
92377782001	**R3830-P114-TMW-1**	SM 6200B	403525		
92377782002	**R3830-P114-TMW-2**	SM 6200B	403525		

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☑ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: Klenfelder **Project #:**

WO# : 92377782

92377782

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:____

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Date/Initials Person Examining Contents: 3/21/18

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☑ No ☐ N/A

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

Cooler Temp (°C): 3.3 **Correction Factor:** Add/Subtract (°C) +0.1

Cooler Temp Corrected (°C): 3.4

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

USDA Regulated Soil (☑ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

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

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

COMMENTS/SAMPLE DISCREPANCY **Field Data Required?** ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: _____ Date/Time: _____

Project Manager SCURF Review: TR **Date:** 3/23

Project Manager SRF Review: TR **Date:** 3/23

Pace Analytical®	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

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

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

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

Project **WO#: 92377782**

PM: PTE Due Date: 03/28/18

CLIENT: 92-NCDOTEAST

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

pH Adjustment Log for Preserved Samples

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

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.

Pace Analytical®
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company:	Kleinfelder
Address:	3200 Gateway Centre Blvd, Morrisville, NC 27560
Email To:	mburns@kleinfelder.com
Phone:	Fax:
Requested Due Date/TAT:	

Section B Required Project Information:

Report To:	Mike Burns
Copy To:	Chris Hollinger
Purchase Order No.:	
Project Name:	R3830 WBS 38887.1.1
Project Number:	R3830 P114

Section C Invoice Information:

Attention:	
Company Name:	NCDOT East Central
Address:	
Pace Quote Reference:	
Pace Project Manager:	Taylor Ezell
Pace Profile #:	6019

REGULATORY AGENCY

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

Site Location STATE: NC

Section D Required Client Information

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

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED: COMPOSITE START DATE	COMPOSITE START TIME	COMPOSITE END/GRAB DATE	COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test ↓ Y/N	6200B	625	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D. 92377782
1	R3830 - ~~P114~~ P114-Tmw-1	GW	G			3/20	10:50		5	1			4					X	X		001
2	R3830 - P114 - Tmw-2	W	G			3/20	11:00		5	1			4					X	X		002
3																						
4																						
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
		3/21	0844		3/21	0844				
		3/21	1315		3/21/18	1315	3.4	Y	Y	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Joseph C Hollinger

SIGNATURE of SAMPLER: Joseph C Hollinger DATE Signed (MM/DD/YY): 3/20/18

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

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

April 26, 2018

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

RE: Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

Dear Chemical Engineer:
Enclosed are the analytical results for sample(s) received by the laboratory on April 23, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

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

Sincerely,

Taylor Ezell
taylor.ezell@pacelabs.com
(704)875-9092
Project Manager

Enclosures

cc: Michael Burns, Kleinfelder
Chris Hollinger, Kleinfelder

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

CERTIFICATIONS

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

Charlotte Certification IDs

9800 Kincey Ave. Ste 100, Huntersville, NC 28078
Louisiana/NELAP Certification # LA170028
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
Virginia/VELAP Certification #: 460221

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

SAMPLE SUMMARY

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92381913001	**R-3830-P114-SS8-2**	Solid	04/20/18 07:00	04/23/18 09:58
92381913002	**R-3830-P114-SS8-3**	Solid	04/20/18 07:05	04/23/18 09:58
92381913003	**R-3830-P114-SS9-2**	Solid	04/20/18 07:15	04/23/18 09:58
92381913004	**R-3830-P114-SS9-3**	Solid	04/20/18 07:20	04/23/18 09:58
92381913005	**R-3830-P114-SS10-2**	Solid	04/20/18 07:30	04/23/18 09:58
92381913006	**R-3830-P114-SS10-3**	Solid	04/20/18 07:35	04/23/18 09:58
92381913007	**R-3830-P114-SS11-2**	Solid	04/20/18 07:50	04/23/18 09:58
92381913008	**R-3830-P114-SS11-3**	Solid	04/20/18 07:55	04/23/18 09:58

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

SAMPLE ANALYTE COUNT

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92381913001	**R-3830-P114-SS8-2**	EPA 8015 Modified	NU1	2	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92381913002	**R-3830-P114-SS8-3**	EPA 8015 Modified	NU1	2	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92381913003	**R-3830-P114-SS9-2**	EPA 8015 Modified	NU1	2	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92381913004	**R-3830-P114-SS9-3**	EPA 8015 Modified	NU1	2	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92381913005	**R-3830-P114-SS10-2**	EPA 8015 Modified	NU1	2	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92381913006	**R-3830-P114-SS10-3**	EPA 8015 Modified	NU1	2	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92381913007	**R-3830-P114-SS11-2**	EPA 8015 Modified	NU1	2	PASI-C
		ASTM D2974-87	KDF	1	PASI-C
92381913008	**R-3830-P114-SS11-3**	EPA 8015 Modified	NU1	2	PASI-C
		ASTM D2974-87	KDF	1	PASI-C

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

ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

Sample: R-3830-P114-SS8-2 **Lab ID: 92381913001** Collected: 04/20/18 07:00 Received: 04/23/18 09:58 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Range Organics(C10-C28)	ND	mg/kg	5.4	4.8	1	04/24/18 16:38	04/25/18 12:10		
Surrogates									
n-Pentacosane (S)	75	%	41-119		1	04/24/18 16:38	04/25/18 12:10	629-99-2	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**7.8**	%	0.10	0.10	1		04/24/18 09:53		

Sample: R-3830-P114-SS8-3 **Lab ID: 92381913002** Collected: 04/20/18 07:05 Received: 04/23/18 09:58 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Range Organics(C10-C28)	ND	mg/kg	5.8	5.2	1	04/24/18 16:38	04/25/18 16:41		
Surrogates									
n-Pentacosane (S)	76	%	41-119		1	04/24/18 16:38	04/25/18 16:41	629-99-2	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**13.7**	%	0.10	0.10	1		04/24/18 09:53		

Sample: R-3830-P114-SS9-2 **Lab ID: 92381913003** Collected: 04/20/18 07:15 Received: 04/23/18 09:58 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Range Organics(C10-C28)	**6.7**	mg/kg	5.8	5.2	1	04/24/18 16:38	04/25/18 16:41		
Surrogates									
n-Pentacosane (S)	50	%	41-119		1	04/24/18 16:38	04/25/18 16:41	629-99-2	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**13.8**	%	0.10	0.10	1		04/24/18 09:53		

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

Sample: R-3830-P114-SS9-3 **Lab ID: 92381913004** Collected: 04/20/18 07:20 Received: 04/23/18 09:58 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Range Organics(C10-C28)	ND	mg/kg	6.0	5.4	1	04/24/18 16:38	04/25/18 12:10		
Surrogates									
n-Pentacosane (S)	71	%	41-119		1	04/24/18 16:38	04/25/18 12:10	629-99-2	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**15.3**	%	0.10	0.10	1		04/25/18 10:08		

Sample: R-3830-P114-SS10-2 **Lab ID: 92381913005** Collected: 04/20/18 07:30 Received: 04/23/18 09:58 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Range Organics(C10-C28)	ND	mg/kg	5.3	4.8	1	04/24/18 16:38	04/25/18 17:05		
Surrogates									
n-Pentacosane (S)	71	%	41-119		1	04/24/18 16:38	04/25/18 17:05	629-99-2	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**6.6**	%	0.10	0.10	1		04/25/18 10:08		

Sample: R-3830-P114-SS10-3 **Lab ID: 92381913006** Collected: 04/20/18 07:35 Received: 04/23/18 09:58 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Range Organics(C10-C28)	ND	mg/kg	6.2	5.5	1	04/24/18 16:38	04/25/18 17:05		
Surrogates									
n-Pentacosane (S)	71	%	41-119		1	04/24/18 16:38	04/25/18 17:05	629-99-2	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**18.3**	%	0.10	0.10	1		04/25/18 10:08		

REPORT OF LABORATORY ANALYSIS

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

ANALYTICAL RESULTS

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

Sample: R-3830-P114-SS11-2 **Lab ID: 92381913007** Collected: 04/20/18 07:50 Received: 04/23/18 09:58 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Range Organics(C10-C28)	ND	mg/kg	5.5	5.0	1	04/24/18 16:38	04/25/18 17:29		
Surrogates									
n-Pentacosane (S)	72	%	41-119		1	04/24/18 16:38	04/25/18 17:29	629-99-2	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**8.6**	%	0.10	0.10	1		04/25/18 10:08		

Sample: R-3830-P114-SS11-3 **Lab ID: 92381913008** Collected: 04/20/18 07:55 Received: 04/23/18 09:58 Matrix: Solid

Results reported on a "dry weight" basis and are adjusted for percent moisture, sample size and any dilutions.

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8015 GCS THC-Diesel	Analytical Method: EPA 8015 Modified Preparation Method: EPA 3546								
Diesel Range Organics(C10-C28)	ND	mg/kg	5.8	5.2	1	04/24/18 16:38	04/25/18 17:29		
Surrogates									
n-Pentacosane (S)	68	%	41-119		1	04/24/18 16:38	04/25/18 17:29	629-99-2	
Percent Moisture	Analytical Method: ASTM D2974-87								
Percent Moisture	**11.8**	%	0.10	0.10	1		04/25/18 10:08		

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

QC Batch: 407717 Analysis Method: EPA 8015 Modified
QC Batch Method: EPA 3546 Analysis Description: 8015 Solid GCSV
Associated Lab Samples: 92381913001, 92381913002, 92381913003, 92381913004, 92381913005, 92381913006, 92381913007, 92381913008

METHOD BLANK: 2262319 Matrix: Solid
Associated Lab Samples: 92381913001, 92381913002, 92381913003, 92381913004, 92381913005, 92381913006, 92381913007, 92381913008

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
Diesel Range Organics(C10-C28)	mg/kg	ND	5.0	4.5	04/25/18 14:34	
n-Pentacosane (S)	%	70	41-119		04/25/18 14:34	

LABORATORY CONTROL SAMPLE: 2262320

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Diesel Range Organics(C10-C28)	mg/kg	66.4	47.7	72	49-113	
n-Pentacosane (S)	%			75	41-119	

MATRIX SPIKE SAMPLE: 2262321

Parameter	Units	92381910001 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Diesel Range Organics(C10-C28)	mg/kg	ND	72.1	38.9	54	10-146	
n-Pentacosane (S)	%				62	41-119	

SAMPLE DUPLICATE: 2262322

Parameter	Units	92381910002 Result	Dup Result	RPD	Max RPD	Qualifiers
Diesel Range Organics(C10-C28)	mg/kg	ND	ND		30	
n-Pentacosane (S)	%	70	62	11		

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

QC Batch: 407531 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92381913001, 92381913002, 92381913003

SAMPLE DUPLICATE: 2261266

Parameter	Units	92381794001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	22.0	21.0	5	25	

SAMPLE DUPLICATE: 2261267

Parameter	Units	92381913003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	13.8	12.6	10	25	

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

REPORT OF LABORATORY ANALYSIS

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

QUALITY CONTROL DATA

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

QC Batch: 407662 Analysis Method: ASTM D2974-87
QC Batch Method: ASTM D2974-87 Analysis Description: Dry Weight/Percent Moisture
Associated Lab Samples: 92381913004, 92381913005, 92381913006, 92381913007, 92381913008

SAMPLE DUPLICATE: 2261884

Parameter	Units	92381386001 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	17.3	17.2	0	25	

SAMPLE DUPLICATE: 2261885

Parameter	Units	92381795003 Result	Dup Result	RPD	Max RPD	Qualifiers
Percent Moisture	%	21.6	22.8	5	25	

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

REPORT OF LABORATORY ANALYSIS

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

QUALIFIERS

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

DEFINITIONS

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

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

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

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit.

S - Surrogate

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

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

Acid preservation may not be appropriate for 2 Chloroethylvinyl ether.

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

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

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

TNI - The NELAC Institute.

LABORATORIES

PASI-C Pace Analytical Services - Charlotte

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

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: R3038 WBS 38887.1.1
Pace Project No.: 92381913

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92381913001	**R-3830-P114-SS8-2**	EPA 3546	407717	EPA 8015 Modified	407807
92381913002	**R-3830-P114-SS8-3**	EPA 3546	407717	EPA 8015 Modified	407807
92381913003	**R-3830-P114-SS9-2**	EPA 3546	407717	EPA 8015 Modified	407807
92381913004	**R-3830-P114-SS9-3**	EPA 3546	407717	EPA 8015 Modified	407807
92381913005	**R-3830-P114-SS10-2**	EPA 3546	407717	EPA 8015 Modified	407807
92381913006	**R-3830-P114-SS10-3**	EPA 3546	407717	EPA 8015 Modified	407807
92381913007	**R-3830-P114-SS11-2**	EPA 3546	407717	EPA 8015 Modified	407807
92381913008	**R-3830-P114-SS11-3**	EPA 3546	407717	EPA 8015 Modified	407807
92381913001	**R-3830-P114-SS8-2**	ASTM D2974-87	407531		
92381913002	**R-3830-P114-SS8-3**	ASTM D2974-87	407531		
92381913003	**R-3830-P114-SS9-2**	ASTM D2974-87	407531		
92381913004	**R-3830-P114-SS9-3**	ASTM D2974-87	407662		
92381913005	**R-3830-P114-SS10-2**	ASTM D2974-87	407662		
92381913006	**R-3830-P114-SS10-3**	ASTM D2974-87	407662		
92381913007	**R-3830-P114-SS11-2**	ASTM D2974-87	407662		
92381913008	**R-3830-P114-SS11-3**	ASTM D2974-87	407662		

Pace Analytical	Document Name: Sample Condition Upon Receipt(SCUR)	Document Revised: February 7, 2018 Page 1 of 2
	Document No.: F-CAR-CS-033-Rev.06	Issuing Authority: Pace Carolinas Quality Office

Laboratory receiving samples:
Asheville ☐ Eden ☐ Greenwood ☐ Huntersville ☑ Raleigh ☐ Mechanicsville ☐

Sample Condition Upon Receipt

Client Name: Kleinfelder **Project #:**

WO# : 92381913

92381913

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace ☐ Other:

Custody Seal Present? ☐ Yes ☑ No **Seals Intact?** ☐ Yes ☑ No

Date/Initials Person Examining Contents: UD 4-23-18

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other

Biological Tissue Frozen? ☐ Yes ☐ No ☑ N/A

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

Cooler Temp (°C): 4.9 **Correction Factor:** Add/Subtract (°C) +0.1

Cooler Temp Corrected (°C): 5.0

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

USDA Regulated Soil (☑ N/A, water sample)
Did samples originate in a quarantine zone within the United States: CA, NY, or SC (check maps)? ☐ Yes ☑ No

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

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

COMMENTS/SAMPLE DISCREPANCY **Field Data Required?** ☐ Yes ☐ No

Lot ID of split containers:

CLIENT NOTIFICATION/RESOLUTION

Person contacted: Date/Time:

Project Manager SCURF Review: Date: 4/24

Project Manager SRF Review: Date: 4/24

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

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

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

Project **WO#: 92381913**

PM: PTE Due Date: 04/30/18

CLIENT: 92-Klein RA

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

pH Adjustment Log for Preserved Samples

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

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e. Out of hold, incorrect preservative, out of temp, incorrect containers.

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

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

Page: 1 of 1

Section A Required Client Information:

Company: Kleinfelder
Address: 3200 Gateway Centre
Morrisville, NC 27560
Email To: challinger@kleinfelder.com
Phone: Fax:
Requested Due Date/TAT:

Section B Required Project Information:

Report To: Mike Burns
Copy To: Chris Hollinger
Purchase Order No.:
Project Name: R-3830 - P114
Project Number: R-3830 WBS 38887.1.1

Section C Invoice Information:

Attention:
Company Name:
Address:
Pace Quote Reference:
Pace Project Manager: Kaylee Ezell
Pace Profile #:

REGULATORY AGENCY

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

Site Location STATE: NC

Section D Required Client Information

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

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

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED COMPOSITE START DATE	COLLECTED COMPOSITE START TIME	COLLECTED COMPOSITE END/GRAB DATE	COLLECTED COMPOSITE END/GRAB TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
1	R-3830-P114-SS8-2	SL	G			4/20	0700		2	1								DRO	X		92381913
2	R-3830-P114-SS8-3						0705												X		001
3	R-3830-P114-SS9-2						0715												X		002
4	R-3830-P114-SS9-3						0720												X		003
5	R-3830-P114-SS10-2						0730												X		004
6	R-3830-P114-SS10-3						0735												X		005
7	R-3830-P114-SS11-2						0750												X		006
8	R-3830-P114-SS11-3	V	V			V	0755		V	V									X		007
9																					008
10																					
11																					
12																					

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: Temp in °C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Results by 4/26	Joseph Challinger / Kleinfelder	4/20	1200		4/20/18	1200	5.1	Y	N	Y
					4/23/18	955		Y		
		4-23-18	1307		4-23-18	1307	5.0	Y	N	X

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Joseph C Hollinger

SIGNATURE of SAMPLER: Joseph C Hollinger

DATE Signed (MM/DD/YY): 04/20

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

F-ALL-Q-020rev.07, 15-May-2007