

**COMPREHENSIVE SITE ASSESSMENT
UNICON CONCRETE COMPANY
HIGH POINT, NORTH CAROLINA
S&ME PROJECT NO. 1584-93-123**

Prepared By:



**Joe Best
Project Geologist**



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**S&ME, Inc.
3718 Old Battleground Road
Greensboro, NC 27410**

November 23, 1993



November 23, 1993

Unicon Concrete Company
406 Tomlinson Street
High Point, North Carolina 27260

Attention: Mr. Gary McLamb

Reference: **COMPREHENSIVE SITE ASSESSMENT**
Unicon Concrete Company
406 Tomlinson Street
High Point, North Carolina 27313
S&ME Project No. 1584-93-123

Dear Mr. McLamb:

S&ME, Inc. is pleased to present this Comprehensive Site Assessment (CSA) for the subject site. The objective of this assessment is to provide a determination of the horizontal and vertical extent of petroleum hydrocarbons in groundwater. In an effort to accomplish this objective S&ME installed and sampled four shallow Type II groundwater monitoring wells (MW-2, MW-3, MW-4 and MW-5) and one Type III deep monitoring well (MW-1).

The groundwater sample collected from the deep monitoring well (MW-1) contained benzene, toluene, ethylbenzene, xylenes, tert-butyl methyl ether (MTBE), diisopropyl ether, and ethylene dibromide (EDB). Samples from shallow wells MW-2 and MW-3 each contained EDB in a concentration slightly above the method detection limit.

The horizontal extent of aromatic hydrocarbons has been delineated. The vertical extent of aromatic hydrocarbons is not delineated by the data acquired. The significant

reduction in concentrations of constituents detected in the deep well MW-1 relative to those detected in the nearest water table well suggest a concentration gradient which indicates that contamination may not extend deeper than 60 feet.

S&ME believes that sufficient information has been collected to meet the necessary requirements on a Comprehensive Site Assessment as described by the North Carolina Department of Environment, Health and Natural Resources (DEHNR), Groundwater Section, Guidelines for the Investigation and Remediation of Soil and Groundwater. We recommend that the attached report be submitted to the DEHNR for their review.

S&ME appreciates the opportunity to serve you on this project. If you have any questions or need additional information, please do not hesitate to contact us.

Very truly yours,

S&ME, Inc.


Joseph P. Best
Project Geologist


G.F. Rick Baker, P.G.
Branch Manager

JPB/GFB/vr

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EXECUTIVE SUMMARY

S&ME, Inc. has performed a Comprehensive Site Assessment (CSA) at the Unicon Concrete Company located at 406 Tomlinson Street in High Point, North Carolina. The objective of the assessment is to provide a determination of the horizontal and vertical extent of petroleum hydrocarbons in groundwater.

Four shallow Type II groundwater monitoring wells (MW-2, MW-3, MW-4 and MW-5) and one Type III deep monitoring well (MW-1) were installed and sampled for petroleum hydrocarbons. The results of the laboratory analyses indicate that the assessment was successful in defining the horizontal extent of benzene, toluene, ethylbenzene, total xylenes (BTEX), tert-butyl methyl ether (MTBE), and diisopropyl ether (DIPE) in groundwater. The vertical extent of these constituents was not delineated; however, the significant reduction in concentrations of constituents detected in the deep well (MW-1) relative to those detected in the nearest water table well, suggest a concentration gradient which indicates that contamination may not extend deeper than 60 feet.

The groundwater sample collected from the deep well (MW-1) contained a cumulative concentration of 176 parts per billion (ppb) for the constituents benzene, toluene, ethylbenzene and total xylenes (BTEX). The shallow monitoring wells did not contain detectable concentrations of BTEX. Concentrations of ethylene dibromide (EDB) were detected at amounts slightly higher than the method detection limit in three of the groundwater samples (MW-1, MW-2 and MW-3). MTBE and DIPE were each detected in well MW-1 at respective concentrations of 46 and 6 ppb. Extractable lead and purgeable halocarbons were not detected in any of the groundwater samples.

S&ME recommends that a groundwater monitoring program be implemented to track those constituents which exceed NCAC 2L Standards.

If future samples collected from monitoring wells MW-2 and MW-3 contain detectable concentrations of EDB, an additional monitoring well should be installed and sampled for EDB. This monitoring well should be installed approximately 60 feet southwest of monitoring well MW-3 along the property line with Prochem Chemicals, Inc.

1.0 INTRODUCTION AND BACKGROUND INFORMATION

On April 12, 1993, Piedmont Environmental Services, Inc. removed a 1,500 gallon capacity gasoline underground storage tank (UST) from the Unicon Concrete Company site located at 406 Tomlinson Street in High Point, North Carolina. An estimated 5 cubic yards of potentially petroleum contaminated soils were stockpiled onsite during the removal. Soil samples collected at the time of the removal did not contain petroleum hydrocarbons in excess of the State of North Carolina action levels. However, indications of a release in the form of a strong petroleum odor and possible phase-separated hydrocarbons were observed by Ms. Kelly Gage of the Guilford County Emergency Services at the time of removal. Ms. Gage subsequently requested that additional samples be collected and analyzed.

On June 4, 1993, S&ME, Inc. was contracted by Unicon Concrete to perform three hand-auger borings at the former location of the gasoline UST (Figure 123-2). Groundwater was encountered at a depth of 7 feet below the ground surface. Two soil samples were collected from the hand-auger borings. A composite sample was collected from the existing soil stockpile. Laboratory analyses of the soil samples collected from the hand-auger borings did not detect total petroleum hydrocarbon (TPH) concentrations above the site specific clean up level of 180 ppm as determined by the Site Sensitivity Evaluation completed by S&ME. The composite sample contained 50 parts per million (ppm) volatile TPH. A temporary monitoring well AB-1 (Figure 123-2) was installed in the hand-auger boring located at the former UST location. A groundwater sample collected from this location contained petroleum constituents, benzene and ethylbenzene, in excess of State of North Carolina standards. Benzene and ethylbenzene were detected in concentrations of 740 and 72 ppb, respectively. The results of the laboratory analyses were reported to the Guilford County Emergency Services on July 13, 1993. The North Carolina Department of Environment, Health and Natural Resources issued a Notice of Violation (NOV) on September 7, 1993.

In response to this NOV, S&ME, Inc. was contracted by the Unicon Concrete Company in October of 1993 to perform a Comprehensive Site Assessment (CSA) at the concrete plant. A site location map is presented as Figure 123-1, and a site plan is presented as Figure 123-2.

2.0 LOCAL LAND USE AND ADJOINING PROPERTIES

The land use of the area surrounding the subject site is primarily commercial and industrial. A number of vacant industrial facilities are located near the site. Adjacent businesses include: Ace Towing and Walker Bedding to the south; Prochem Chemicals to the west; General Food Service and an electrical power substation to the north; Maitland-Smith, Ltd. (furniture showroom) to the east. The ownership of the adjacent properties is shown on Figure 123-3.

3.0 POTENTIAL RECEPTORS AND MIGRATION PATHWAYS

The site is located within the High Point City limits. Potable water is supplied by the City of High Point Municipal Water System. No known water supply wells are located within 1,500 feet of the site. No surface water intakes for public water supplies are located within 0.5 miles of the contaminated zone. The City of High Point Municipal Water System obtains water from High Point City Lake and Oak Hollow Lake. Both of these reservoirs are located in separate watersheds from the subject site.

A small stream bisects the property. The stream flows from north to south and discharges into Richland Creek approximately 4,500 feet south of the subject site.

A natural gas line extends from the old conveyor in an easterly direction across the site (Figure 123-2). The gas line is located upgradient in relation to the former UST location (source of contamination) and does not appear to provide a migration pathway.

4.0 REGIONAL GEOLOGY

The site is located in the Carolina Slate Belt of the Piedmont Physiographic Province, an area underlain by mafic and felsic igneous and metamorphic rocks. The soils present in the area were formed by physical and chemical weathering of the preexisting rock. The typical residual soil profile consists of more extensively weathered clays and silts near the ground surface transitioning to sandy silts and sands with depth. Partially weathered subsurface materials are generally referred to as saprolite. Saprolite thickness varies in depth from a few feet near bedrock outcrops to over 100 feet.

5.0 REGIONAL HYDROGEOLOGY

The groundwater system in the Piedmont is recharged by precipitation in the interstream areas. A part of the precipitation infiltrates through the unsaturated zone to the water table, which normally occurs in saprolite with secondary storage in fractures within the bedrock. Groundwater moves laterally and downward through the saprolite into bedrock fractures or to streams in the adjacent valleys.

6.0 SOIL BORINGS

S&ME drilled five soil borings (MW-1, MW-2, MW-3, MW-4 and MW-5) at the approximate locations shown on Figure 123-2. These boring locations were based on data collected during the initial phase of site activities performed by S&ME, Inc. Borings MW-2, MW-3, MW-4 and MW-5 were each drilled to an approximate depth of 16 feet below the ground surface. Boring MW-1 was drilled to a depth of approximately 48 feet below the ground surface. All of the borings were drilled using an air rotary drilling rig equipped with a 6-inch air bit. A test boring record was completed for each boring location and is contained on the Well Logs in Appendix I. To prevent cross contamination, all downhole drilling equipment was steam cleaned prior to drilling at each boring location. The drill cuttings were stockpiled onsite on 3 layers of 10 ml plastic and covered with 10 ml plastic.

7.0 SUBSURFACE CONDITIONS

During the drilling activities S&ME encountered the following subsurface materials:

- concrete or crushed stone to depth of approximately 8 inches below grade;
- fill material consisting of medium to fine sandy silt to depths ranging from 1 foot to 3 feet below grade.
- alluvial material consisting of clayey fine sandy silt was encountered from 10 to 13 feet (MW-1) and from five to eight feet (MW-2). Alluvium was not encountered in the other borings.
- residual material consisting of partially weathered rock to boring termination at each location.

Two geologic cross sections were completed using data collected during the drilling. The locations of these cross sections are shown in Figure 123-2. The cross sections are presented as Figures 123-6 and 123-7.

8.0 OVA SCREENING

During drilling operations soil samples were collected at selected intervals. Penetration testing was not performed due to the density of subsurface material. Soil samples were obtained by advancing a split-spoon sampler under hydraulic pressure. A portion of each soil sample was placed into a clean ziplock bag and allowed to volatilize for approximately ten minutes. The samples were then screened with a Century Model 128 GC Organic Vapor Analyzer (OVA) to record organic vapor concentrations. The OVA detected organic vapors in the samples collected from boring MW-1 in concentrations ranging from below detection limit to 300 parts per million (ppm). Organic vapors were not detected in any soil samples collected from the other borings (MW-2, MW-3, MW-4 and MW-5). The results of the OVA screening are presented in Table 1.

9.0 SHALLOW MONITORING WELL INSTALLATION

Four borings were converted to Type II groundwater monitoring wells (MW-2, MW-3, MW-4 and MW-5) with total depths ranging from 13 to 16 feet below the ground surface. These depths were selected based on consideration of the depth to groundwater as indicated by soil moisture conditions, drill cuttings, and observations of water within the boreholes.

Each well was constructed with 2-inch I.D. Schedule 40 PVC casing and screen. The PVC screen and casing were lowered through the annulus of the boreholes to the appropriate depth. A 10-foot slotted well screen with machined 0.01-inch slot widths was installed at the bottom of each well. The screened interval was positioned to intersect the elevation of the apparent water table at the time of installation. The bottom of the slotted interval was sealed with a threaded plug. A solid section of PVC riser pipe was placed above the screened interval. The annular space around each well was filled with washed and graded sand from the bottom of the boring to one foot above the top of the screen. After placement of the sand, bentonite pellets were placed immediately above the sand pack. The bentonite pellets were hydrated by adding approximately ten gallons of tap water. After hydrating the bentonite pellets, a bentonite/neat cement mixture containing approximately four percent bentonite was pumped into the annulus of the boring from the bentonite cap to the ground surface. The wells were fitted with flush-mounted covers equipped with lockable, water-tight well caps. The construction details for each well are shown on the Well Logs found in Appendix I.

Each well was developed by evacuating at least three well volumes using a new disposable bailer. The wells were developed to achieve two objectives: 1) to remove sand, silt and other fine sediments which may have entered the well during its construction, and 2) to develop the sandpack surrounding the screened interval.

10.0 DEEP WELL INSTALLATION

One deep Type III groundwater monitoring well (MW-1) was installed at the location shown on Figure 123-2. The well was installed to determine the vertical extent of petroleum hydrocarbons in groundwater at the site. The well was constructed by drilling to a depth of approximately 43 feet below grade. A stainless steel 6-inch outer casing was installed through the annulus of the borehole. The outer casing was mounted in place by pumping a neat cement/bentonite slurry into the annulus of the borehole. The slurry was allowed to solidify overnight. The following day, a 4-inch bit was inserted through the annulus of the outer casing. The bit was used to drill through the bottom of the outer casing and into the undisturbed subsurface materials to a depth of approximately 48 feet below the ground surface (5 feet below the bottom of the outer casing). A 48-foot section (inner casing) of 2-inch I.D. schedule 40 PVC riser with a 5-foot 0.01-inch slot screen at the bottom, was lowered through the annulus of the outer casing. The inner casing was positioned so that the screened interval extended 5 feet beyond the bottom of the outer casing. Washed and graded sand was tremmied through the interior of the outer casing to form a sand pack around the screened interval. The inner casing was raised approximately 6 inches to allow sand to fall below the bottom of the screened interval. A 2-foot bentonite seal was installed immediately above the sand pack. A neat cement/bentonite slurry was used to fill the annulus between the inner and outer casings to the ground surface. The construction details are shown on the Well Log found in Appendix I. The well was developed using the same procedure described in Section 9.0.

11.0 GROUNDWATER FLOW DIRECTION

After well installations were completed, the elevation of the top of each well's inner casing was measured to the nearest 0.01 feet. The elevations were measured relative to a temporary benchmark which was assigned an arbitrary reference elevation of 100 feet. The distances between each well were also measured.

The depth to groundwater was measured in each monitoring well on October 8, 1993 (see Table 2). The measurements were converted to the elevations of static water level in the wells and the data used to construct a contoured map of the water table (123-4). These data show that groundwater flow is to the southwest.

12.0 GROUNDWATER SAMPLING

The five wells (MW-1, MW-2, MW-3, MW-4 and MW-5) were purged by removing at least three well volumes of water using disposable bailers. After purging each well, a groundwater sample was collected. Each groundwater sample was transferred from the bailer into nine 40-milliliter glass and one 250-milliliter plastic, laboratory prepared containers equipped with Teflon-lined screw caps. New disposable vinyl gloves were utilized in the sample collection and transfer for each well location. The sample containers were completely filled with sample to eliminate available headspace. Each sample container was then labeled with the project name and number, the time and date of sample collection, the analyses to be performed, and the presence or absence of preservative. The sample containers were then placed on ice in a cooler and cooled to approximately 4 degrees celsius. The chain-of-custody was initiated and the cooler was shipped to IEA Laboratories located in Research Triangle Park, North Carolina.

13.0 RESULTS OF LABORATORY ANALYSES

The samples were analyzed for purgeable aromatic hydrocarbons (EPA Method 602), purgeable halocarbons (EPA Method 601), ethylene dibromide (EPA Method 504) and extractable lead (EPA Method 239.2 with 3030C digestion). Laboratory analyses of the groundwater samples collected from monitoring wells (MW-4 and MW-5) did not detect concentrations of any target analytes. The groundwater samples collected from monitoring wells MW-1, MW-2 and MW-3 contained ethylene dibromide in concentrations slightly above the method detection limit. The groundwater sample collected from monitoring well MW-1 contained a cumulative concentration of 176 parts per billion (ppb)

for benzene, toluene, ethylbenzene and xylenes (BTEX). In addition, the groundwater sample collected from monitoring well MW-1 contained 46 ppb tert-Butyl Methyl ether (MTBE) and 6 ppb diisopropyl ether (DIPE). None of the groundwater samples contained detectable concentrations of extractable lead. Laboratory results for the detected organic constituents are summarized in Table 3 and the laboratory data sheets are contained in Appendix II.

14.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the laboratory analyses of the groundwater samples collected from the shallow monitoring wells, the horizontal extent of BTEX constituents in the groundwater has been delineated. BTEX constituents in groundwater appear to be limited to the immediate vicinity of the former UST location. However, EDB was detected in the groundwater samples collected from monitoring wells MW-1, MW-2 and MW-3 in concentrations which exceed the corresponding standard of 4.0×10^{-10} ppb for this compound. Total BTEX constituents detected in the sample collected from the deep monitoring well MW-1 (176 ppb), compared with the total BTEX concentrations previously detected in the adjacent temporary shallow monitoring well AB-1 (1,202 ppb), indicate a significant reduction in BTEX concentrations with depth. However, the constituents EDB and DIPE were detected in concentrations which exceed the NCAC 2L Standards in monitor well MW-1. Due to the lack of water supply wells or potential receptors in the vicinity of the site, and the relatively low contaminant concentrations, we do not feel that the groundwater at this site poses an immediate risk to human health. S&ME recommends that a groundwater monitoring program be implemented at the site to track those constituents which exceed the corresponding NCAC 2L standards.

If future groundwater samples collected from monitoring wells MW-2 and MW-3 contain detectable concentrations of EDB, an additional monitoring well should be installed and sampled for EDB. This monitoring well should be located approximately 60 feet southwest of monitoring well MW-3 along the property line with Prochem Chemicals, Inc.

**TABLE 1
 OVA SCREENING RESULTS
 UNICON CONCRETE
 HIGH POINT, NORTH CAROLINA
 S&ME PROJECT NO. 1584-93-123**

<u>Sample Location</u>	<u>Depth Interval (ft.)</u>	<u>OVA Reading (ppm)</u>
MW-1	8.5 - 10	300
	13.5 - 15	20
	23.5 - 25	ND
MW-2	8.5 - 10	ND
	13.5 - 15	ND
MW-3	8.5 - 10	ND
	13.5 - 15	ND
MW-4	8.5 - 10	ND
	13.5 - 15	ND
MW-5	8.5 - 10	ND
	13.5 - 15	ND

ppm - parts per million

ND - not detected

ft - feet measured from ground surface

TABLE 2
GROUNDWATER ELEVATION DATA (October 8, 1993)
UNICON CONCRETE
HIGH POINT, NORTH CAROLINA
S&ME PROJECT NO. 1584-93-123

<u>Well</u>	<u>Elevation of Top of Well Casing*</u>	<u>Depth to Groundwater**</u>	<u>Groundwater Elevation</u>
MW-1 (Deep Well)	95.38	5.00	90.38
MW-2	93.62	2.38	91.24
MW-3	95.04	4.87	90.17
MW-4	95.90	5.27	90.63
MW-5	95.95	2.53	93.42

* Elevations measured relative to a temporary benchmark assigned as arbitrary elevation of 100 feet.

**Measured from top of inner well casing.

- Notes:
- (A) MW-1 was not used to determine groundwater flow due to deeper screened interval.
 - (B) All data expressed as feet

TABLE 3
RESULTS OF LABORATORY ANALYSES FOR ORGANIC CONSTITUENTS
DETECTED IN GROUNDWATER SAMPLES
UNICON CONCRETE
HIGH POINT, NORTH CAROLINA
S&ME PROJECT NO. 1584-93-123

<u>Parameter</u>	<u>AB-1*</u>	<u>MW-1</u>	<u>MW-2</u>	<u>MW-3</u>	<u>MW-4</u>	<u>MW-5</u>	<u>NCAC 2L Standard</u>
Benzene	740	20	ND	ND	ND	ND	1
Toluene	170	13	ND	ND	ND	ND	1000
Ethylbenzene	72	33	ND	ND	ND	ND	29
Total Xylenes	220	110	ND	ND	ND	ND	400
Total BTEX	1202	176	ND	ND	ND	ND	**
MTBE	NA	46	ND	ND	ND	ND	200
DIPE	NA	6	ND	ND	ND	ND	NS
EDB	NA	.024	.021	.021	ND	ND	4.0 x 10 ⁻¹⁰

NS - No standard has been established under 15A NCAC 2L for this compound. As specified by 15A NCAC 2L, where no standard is listed, the compound is not permitted in concentrations in excess of the method detection limit.

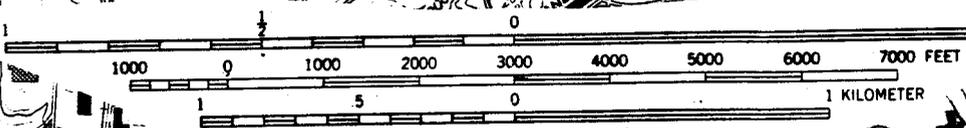
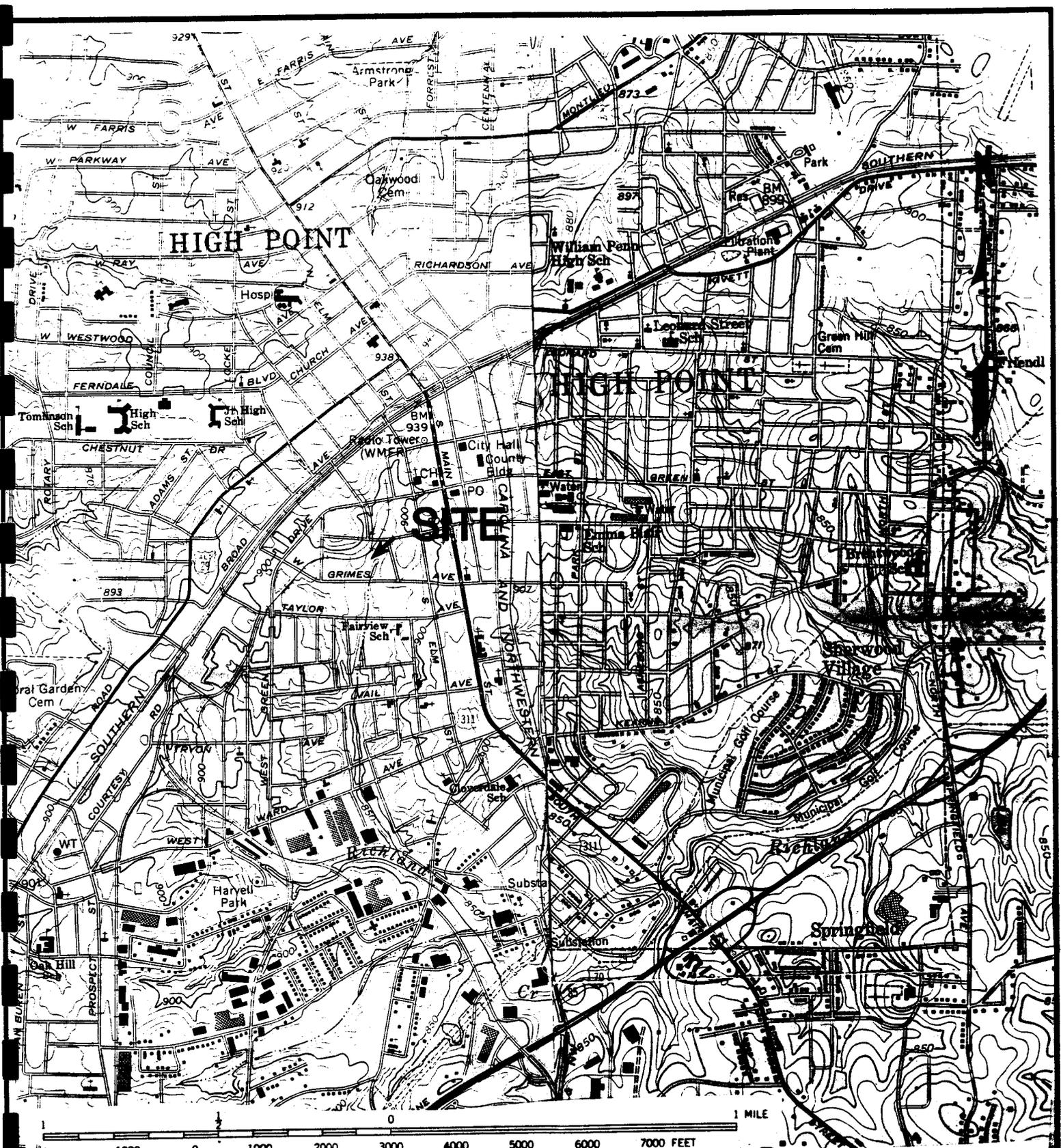
NA - Not Analyzed

ND - Not Detected

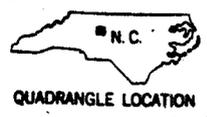
*sampled on 4/8/93

**see standards for individual constituents

All concentrations in parts per billion (ppb)



CONTOUR INTERVAL 10 FEET
 DATUM IS MEAN SEA LEVEL



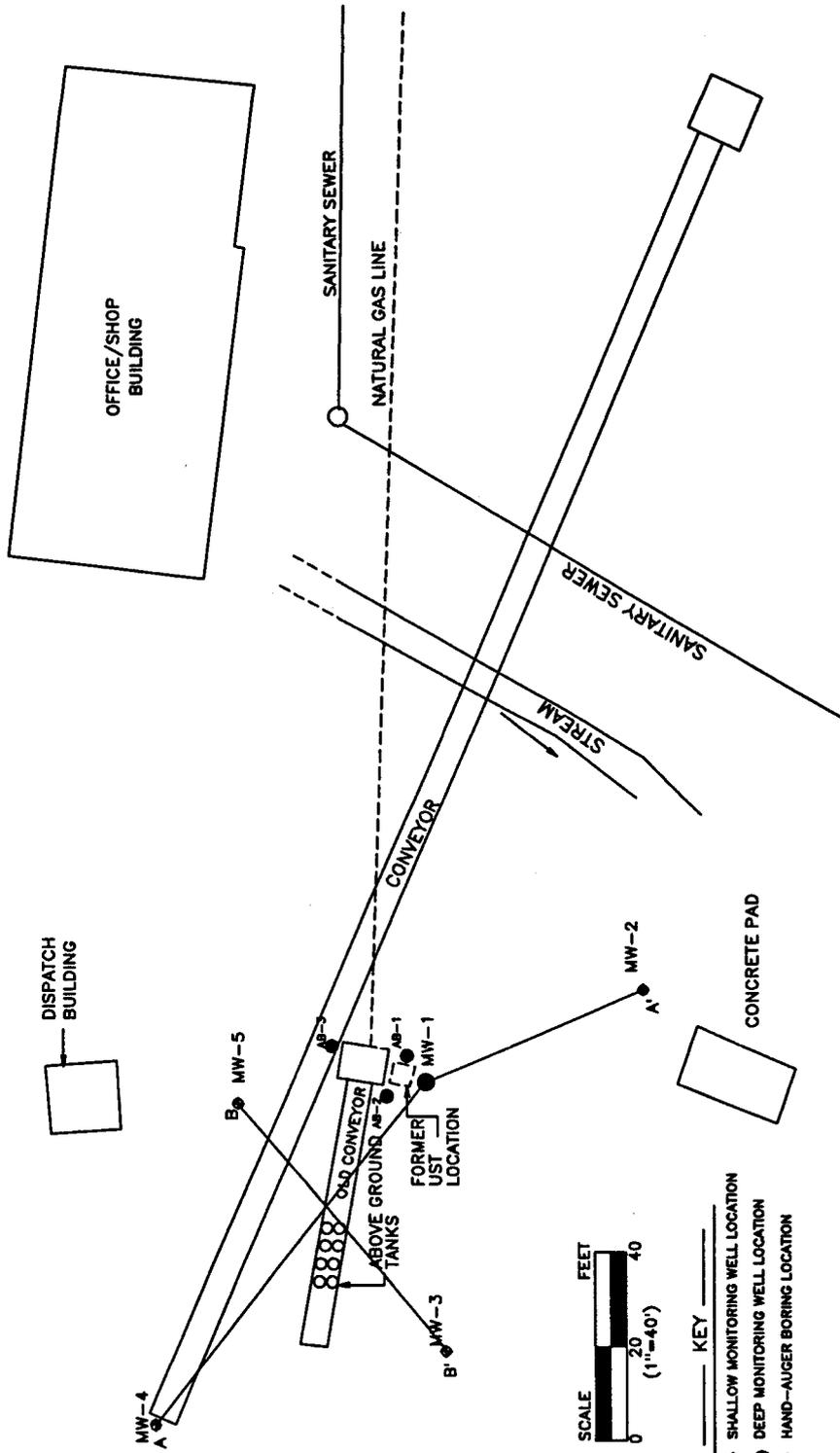
REF: USGS TOPOGRAPHIC MAPS, HIGH POINT EAST AND WEST, NC

SCALE:	AS SHOWN
CHECKED BY:	JB
DRAWN BY:	VR
DATE:	10-12-93



UNICON CONCRETE HIGH POINT, NORTH CAROLINA
SITE LOCATION MAP
JOB NO: 1584-93-123

FIGURE NO
123-1



KEY

- SHALLOW MONITORING WELL LOCATION
- DEEP MONITORING WELL LOCATION
- HAND-AUGER BORING LOCATION

SCALE: AS SHOWN

CHECKED BY: JB

DRAWN BY: VR

DATE: 10-13-93

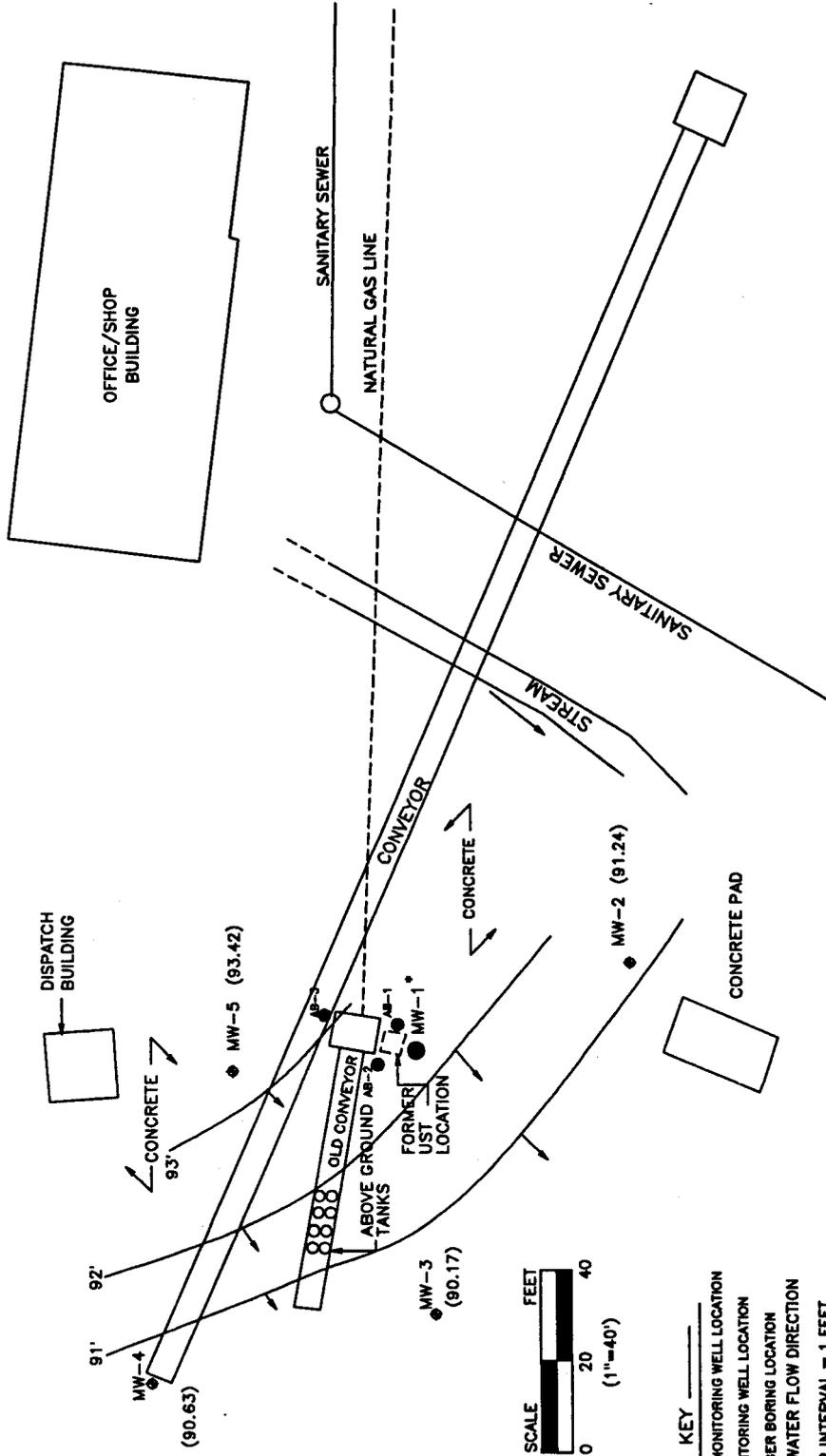


UNICON CONCRETE
HIGH POINT, NC
SITE PLAN

JOB NO. 1584-93-123

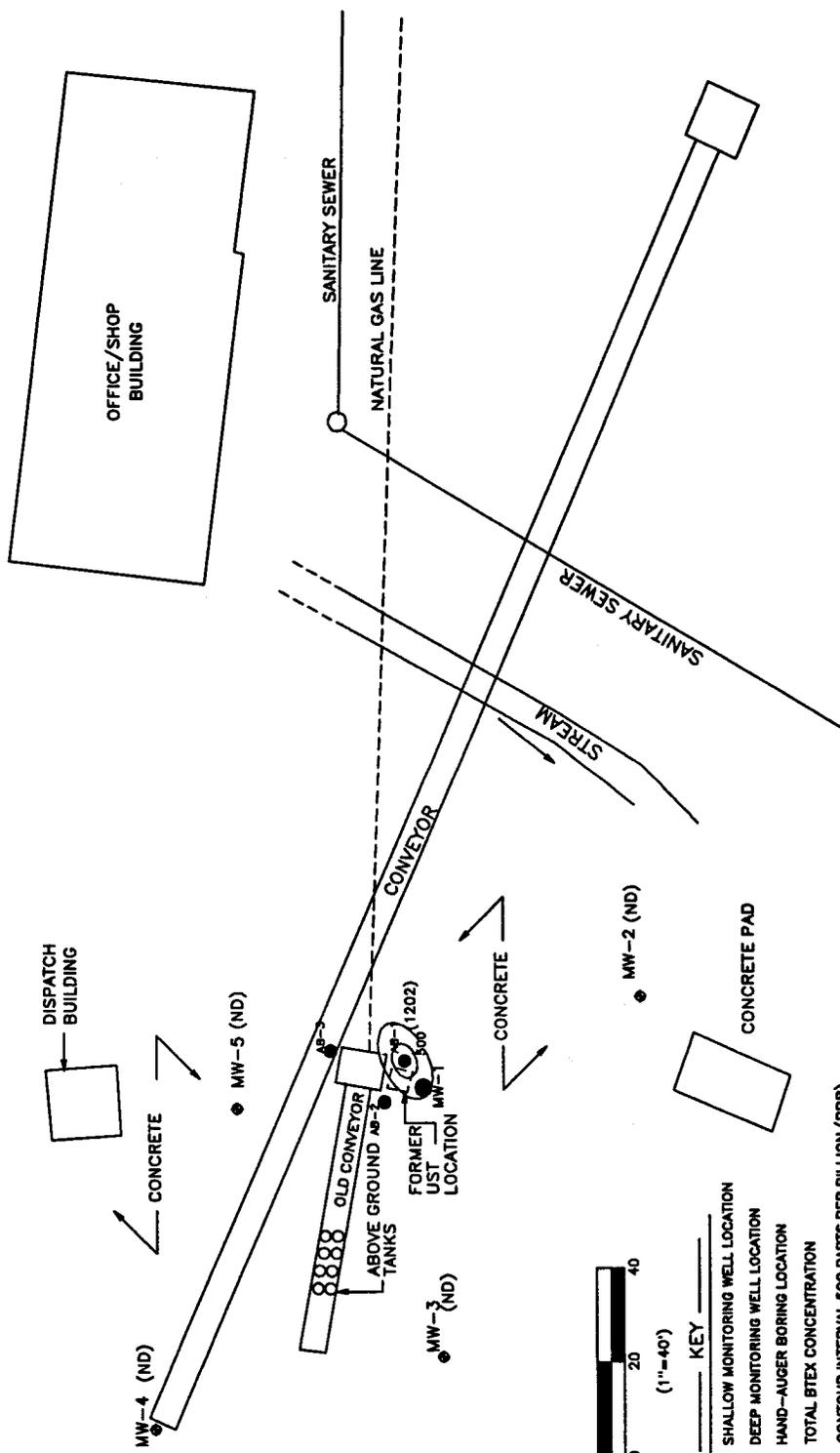
FIGURE NO

123-2



- KEY**
- SHALLOW MONITORING WELL LOCATION
 - DEEP MONITORING WELL LOCATION
 - HAND-AUGER BORING LOCATION
 - GROUNDWATER FLOW DIRECTION
- CONTOUR INTERVAL = 1 FEET
 * DATA NOT INCLUDED DUE TO DEEP SCREENED INTERVAL

SCALE: AS SHOWN	FIGURE NO
CHECKED BY: JB	123-4
DRAWN BY: VR	
DATE: 10-29-93	
	
UNICON CONCRETE COMPANY HIGH POINT, NORTH CAROLINA WATER TABLE CONTOUR MAP JOB NO. 1584-93-123	



- KEY**
- SHALLOW MONITORING WELL LOCATION
 - DEEP MONITORING WELL LOCATION
 - HAND-AUGER BORING LOCATION
 - () TOTAL BTEX CONCENTRATION

CONTOUR INTERVAL 500 PARTS PER BILLION (PPB)

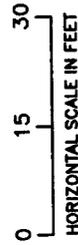
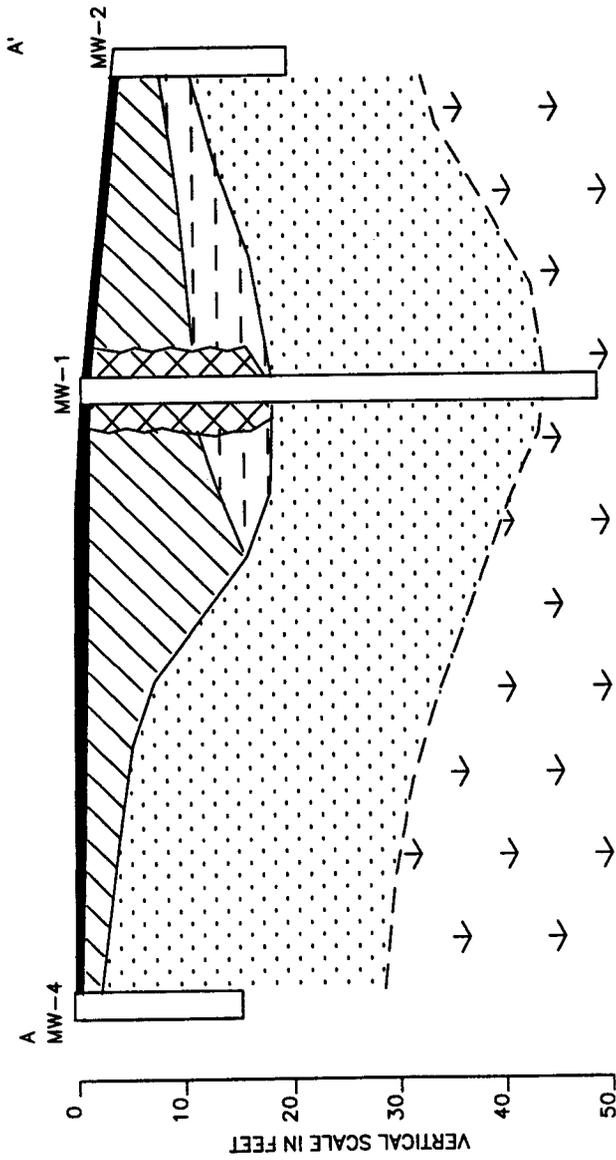
(176) TOTAL BTEX CONCENTRATION
IN PARTS PER BILLION (PPB)



SCALE:	AS SHOWN
CHECKED BY:	JB
DRAWN BY:	VR
DATE:	10-29-93

UNICON CONCRETE COMPANY HIGH POINT, NORTH CAROLINA TOTAL BTEX CONCENTRATION IN GROUNDWATER JOB NO: 1584-93-123	FIGURE NO 123-5
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CROSS-SECTION A-A'



KEY

- CONCRETE
- FILL — TANK EXCAVATION
- FILL — COARSE TO FINE SANDY SILT
- ALLUVIUM — CLAYEY FINE SANDY SILT
- RESIDUUM — PARTIALLY WEATHERED ROCK
- BEDROCK

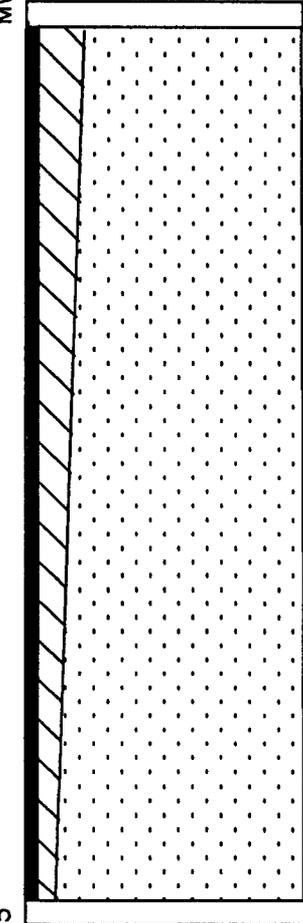
SCALE: AS SHOWN CHECKED BY: JB DRAWN BY: VR DATE: 10-29-93		S&ME ENVIRONMENTAL SERVICES ENGINEERING • TESTING	UNICON CONCRETE COMPANY HIGH POINT, NORTH CAROLINA CROSS SECTION A A'	FIGURE NO 123-6
			JOB NO. 1584-93-123	

B CROSS SECTION B-B'

B'

MW-3

MW-5



KEY

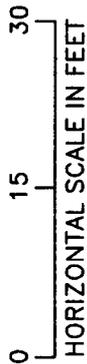
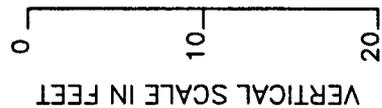
- CONCRETE



- FILL -- COARSE TO FINE SANDY SILT



- RESIDUUM -- PARTIALLY WEATHERED ROCK



SCALE: AS SHOWN

CHECKED BY: JB

DRAWN BY: VR

DATE: 10-29-93



UNICON CONCRETE COMPANY
HIGH POINT, NORTH CAROLINA
CROSS SECTION B B'

JOB NO. 1584-93-123

FIGURE NO

123-7

APPENDIX I

WELL LOGS

LEGEND TO SOIL CLASSIFICATION AND SYMBOLS

SOIL TYPES

(Shown in Graphic Log)



Asphalt/Concrete



Topsoil



Gravel



Sand



Silt



Clay



Organic



Sandy



Silty



Clayey



Silty Sand



Clayey Sand



Sandy Silt



Clayey Silt



Sandy Clay



Silty Clay



Partially Weathered Rock



Cored Rock

WATER LEVELS

(Shown in Well Diagram Area)

- ▽ = Water Level At Termination Of Boring
- ▽ = Water Level Taken After 24 Hours
- ◀ = Loss Of Drilling Water
- HC = Hole Cave

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY

Very Soft
Soft
Firm
Stiff
Very Stiff
Hard
Very Hard

STD. PENETRATION
RESISTANCE
BLOWS/FOOT

0 to 2
3 to 4
5 to 8
9 to 15
18 to 30
31 to 50
Over 50

RELATIVE DENSITY OF COHESIONLESS SOILS

RELATIVE DENSITY

Very Loose
Loose
Medium Dense
Dense
Very Dense

STD. PENETRATION
RESISTANCE
BLOWS/FOOT

0 to 4
5 to 10
11 to 30
31 to 50
Over 50

SAMPLER TYPES

(Shown in Samples Column)

- Shelby Tube
- ⊠ Split Spoon
- I Rock Core
- No Recovery

TERMS

Standard Penetration Resistance (SPR) - The Number of Blows of 140 lb. Hammer Falling 30 in. Required to Drive 1.4 in. I.D. Split Spoon Sampler 1 Foot. As Specified in ASTM D-1586

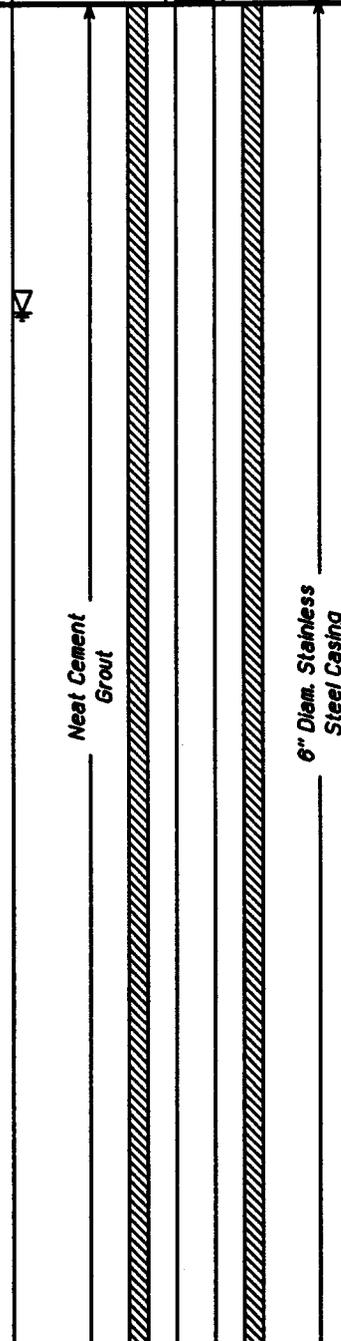
REC - Total Length of Rock Recovered in the Core Barrel Divided by the Total Length of the Core Run Times 100%.

RGD - Total Length of Sound Rock Segments Recovered that are Longer Than or Equal to 4" (mechanical breaks exluded) Divided by the Total Length of the Core Run Times 100%.

OVN - Organic Vapor Meter.

ELEVATION - Refers to Ground Surface at Location of Well



PROJECT: Unicon Concrete High Point, N.C.			WELL LOG			MW-1		
PROJECT NO.: 1584-93-123		ELEVATION: FEET B.M.		NOTES: A 6" stainless steel outer casing was installed to a depth of 43' A 2" inner casing was installed to a depth of 48'				
LOGGED BY: JB		BORING DEPTH: 48.0 FEET						
DATE DRILLED: 10-05-93 And 10/08/93		WATER LEVEL: 8' at TOB						
DRILLING METHOD: Air Rotary		DRILL RIG: Speedstar						
DEPTH (ft)	GRAPHIC LOG	Description & Remarks	SAMPLE NUMBER	SAMPLE	OVM (ppm)	SPR	ELEV.	WELL DIAGRAM
0	0	Crushed Stone						 <p style="text-align: center;">Neat Cement Grout</p> <p style="text-align: center;">6" Diam. Stainless Steel Casing</p>
5	1	Orange Coarse to Medium Sandy SILT						
10	2	ALLUVIUM: Gray to Black Clayey Medium to Fine Sandy SILT						
15	3	Partially Weathered Rock						
20								
25								
30								
35								

PROJECT: **Unicon Concrete High Point, N.C.** WELL LOG **MW-1**

PROJECT NO. : 1584-93-123	ELEVATION: FEET B.M.	NOTES: A 6" stainless steel outer casing was installed to a depth of 43' A 2" inner casing was installed to a depth of 48'
LOGGED BY: JB	BORING DEPTH: 48.0 FEET	
DATE DRILLED: 10-05-93 And 10/06/93	WATER LEVEL: 8' at TOB	
DRILLING METHOD: Air Rotary	DRILL RIG: Speedstar	

DEPTH (ft)	GRAPHIC LOG	Description & Remarks	SAMPLE NUMBER	SAMPLE	OVM (ppm)	SPR	ELEV.	WELL DIAGRAM
40		Bedrock						
48.0		Termination of Boring At 48.0'						
50								
55								
60								
65								
70								

PROJECT: Unicon Concrete High Point, N.C.		WELL LOG		MW-2				
PROJECT NO.: 1584-93-123		ELEVATION: FEET B.M.		NOTES:				
LOGGED BY: JB		BORING DEPTH: 16.0 FEET						
DATE DRILLED: 10-05-93		WATER LEVEL: 8' at TOB						
DRILLING METHOD: Air Rotary		DRILL RIG: Speedstar						
DEPTH (ft)	GRAPHIC LOG	Description & Remarks	SAMPLE NUMBER	SAMPLE	OVM (ppm)	SPR	ELEV.	WELL DIAGRAM
0		Concrete						<p>Neat Cement Grout Pelletized Bentonite Fine Filter Sand 2" Diam. PVC Casing</p>
0 - 5		FILL: Brown Coarse to Fine Sandy SILT						
5 - 10		Gray to Black Clayey Medium to Fine Sandy Silt With Organic Material						
10 - 16.0		Partially Weathered Rock						
16.0		Termination of Boring At 16.0'						
20								
25								
30								
35								

PROJECT NO. : 1584-93-123	ELEVATION: FEET B.M.	NOTES:
LOGGED BY: JB	BORING DEPTH: 16.0 FEET	
DATE DRILLED: 10-06-93	WATER LEVEL: 8' at TOB	
DRILLING METHOD: Air Rotary	DRILL RIG: Speedstar	

DEPTH (ft)	GRAPHIC LOG	Description & Remarks	SAMPLE NUMBER	SAMPLE	OVM (ppm)	SPR	ELEV.	WELL DIAGRAM
0	Concrete							Neat Cement Grout
0	FILL: Orange to Brown Medium to Fine Sandy Silt							Pelletized Bentonite
5	Partially Weathered Rock L=16.0 Termination of Boring At 16.0'							Fine Filter Sand
10								2" Diam. PVC Casing
15								
20								
25								
30								
35								



PROJECT: Unicon Concrete High Point, N.C.		WELL LOG				MW-4		
PROJECT NO. : 1584-93-123		ELEVATION: FEET B.M.		NOTES:				
LOGGED BY: JB		BORING DEPTH: 16.0 FEET						
DATE DRILLED: 10-08-93		WATER LEVEL: 8' at TOB						
DRILLING METHOD: Air Rotary		DRILL RIG: Speedstar						
DEPTH (ft)	GRAPHIC LOG	Description & Remarks	SAMPLE NUMBER	SAMPLE	QVM (ppm)	SPR	ELEV.	WELL DIAGRAM
0		Concrete						
0-16.0		FILL: Orange to Brown Medium to Fine Sandy Silt						
16.0		Partially Weathered Rock L=16.0 Termination of Boring At 16.0'						
5								
10								
15								
20								
25								
30								
35								

PROJECT NO. : 1584-93-123	ELEVATION: FEET B.M.	NOTES:
LOGGED BY: JB	BORING DEPTH: 16.0 FEET	
DATE DRILLED: 10-06-93	WATER LEVEL: 8' at TOB	
DRILLING METHOD: Air Rotary	DRILL RIG: Speedstar	

DEPTH (ft)	GRAPHIC LOG	Description & Remarks	SAMPLE NUMBER	SAMPLE	OVM (ppm)	SPR	ELEV.	WELL DIAGRAM
0	Concrete							Neat Cement Grout
0	FILL: Orange to Brown Medium to Fine Sandy Silt							Pelletized Bentonite
5	Partially Weathered Rock L=16.0							Fine Filter Sand
16.0	Termination of Boring At 16.0'							2" Diam. PVC Casing



APPENDIX II
LABORATORY RESULTS



IEA

An Aquarion Company

Post Office Box 12846
Research Triangle Park, NC 27709

Phone 919-677-0090
Fax 919-677-0427

October 27, 1993

Joe Best
S&ME Greensboro
3718 Old Battleground Road
Greensboro, NC 27410

IEA Project No.: 552390/9310266
IEA Reference No.: W9310057
Client Project I.D.: 1584-93-123

Dear Mr. Best,

Transmitted herewith are the results of analyses on five samples submitted to our laboratory.

The sample(s) were received chilled and intact.

Analyses were performed according to approved methodologies and meet the requirements of the IEA Quality Assurance Program except where noted. Please see the enclosed reports for your results and a copy of the Chain of Custody documentation.

Please do not hesitate to call your Client Account Representative should you have any questions regarding this report.

Very truly yours,

IEA, Inc.

Linda F. Mitchell
Director, Technical Support Services

State Certification:

Georgia - #816	Tennessee - #00296	Alabama - #40210
New Jersey - #67719	Virginia - #00179	South Carolina - #99021
California - #1768	West Virginia - #9908C	North Carolina - #37720/#84
Massachusetts - NC039	Kentucky - #90049	Kansas - E-158/E-1189

Monroe,
Connecticut
203-261-4458

Sunrise,
Florida
305-846-1730

Schaumburg,
Illinois
708-705-0740

N. Billerica,
Massachusetts
617-272-5212

Whippany,
New Jersey
201-428-8181

Essex Junction,
Vermont
802-878-5138



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IEA

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ABBREVIATIONS

A	=	Amenable
Alk	=	Alkalinity as CaCO ₃
Bcrb	=	Alkalinity as Bicarbonate
BOD	=	Biochemical Oxygen Demand
BQL	=	Below Quantitation Limit
c/100mL	=	Colonies per 100 mL of Sample
CEC	=	Cation Exchange Capacity
Chrom	=	Chromotropic
COD	=	Chemical Oxygen Demand
Crb	=	Alkalinity as Carbonate
D	=	Dissolved
DO	=	Dissolved Oxygen
DOC	=	Dissolved Organic Carbon
D/T	=	Distillation/Titration
E	=	Extractable
F	=	Free
Hex	=	Hexavalent
Hyd	=	Hydroxide
ISE	=	Ion Selective Electrode
mmpy	=	Millimeter per Year
MPN	=	Most Probable Number
N/A	=	Not Applicable
R	=	Reactivity
SA	=	Spike Added
SSR	=	Spike Sample Results
SR	=	Sample Results
Sp Cond	=	Specific Conductance
SM	=	Settleable Matter
SPC	=	Standard Plate Count
T	=	Total
TDS	=	Total Dissolved Solids
TKN	=	Total Kjeldahl Nitrogen
TMLSS	=	Total Mixed Liquor Suspended Solids
TOC	=	Total Organic Nitrogen
TOX	=	Total Organic Halogens
TS	=	Total Solids
TSS	=	Total Suspended Solids
TVS	=	Total Volatile Solids
VSS	=	Volatile Suspended Solids
WAD	=	Weak and Dissociable





IEA

An Aquarion Company

IEA Project #: 552-390
 IEA Sample #: 9310266-01
 Client Name: S&ME Greensboro
 Client Proj. I.D.: 1584-93-123
 Sample I.D.: MW-1

Matrix: Water
 Date Received: 10/12/93
 Date Sampled: 10/11/93

Parameter	Method	Quantitation Limits	Results	Date Prepared	Date Analyzed	Analyst
Lead	EPA 239.2	0.010 mg/L	BQL	10/20/93	10/25/93	RM

Comments:

Sample was prepped by Standard Method 3030C.
 Date prepared exceeded the protocol holding time specified by the method.





IEA

An Aquarion Company

IEA Project #: 552-390
 IEA Sample #: 9310266-02 Matrix: Water
 Client Name: S&ME Greensboro Date Received: 10/12/93
 Client Proj. I.D.: 1584-93-123 Date Sampled: 10/11/93
 Sample I.D.: MW-2

Parameter	Method	Quantitation Limits	Results	Date Prepared	Date Analyzed	Analyst
-Lead	EPA 239.2	0.010 mg/L	BQL	10/20/93	10/25/93	RM

Comments:

Sample was prepped by Standard Method 3030C.
 Date prepared exceeded the protocol holding time specified by the method.





IEA

An Aquarion Company

IEA Project #: 552-390
EA Sample #: 9310266-03
Client Name: S&ME Greensboro
Client Proj. I.D.: 1584-93-123
Sample I.D.: MW-3
Matrix: Water
Date Received: 10/12/93
Date Sampled: 10/11/93

Parameter	Method	Quantitation Limits	Results	Date Prepared	Date Analyzed	Analyst
Lead	EPA 239.2	0.010 mg/L	BQL	10/20/93	10/25/93	RM

Comments:

Sample was prepped by Standard Method 3030C.
Date prepared exceeded the protocol holding time specified by the method.





IEA

An Aquarion Company

IEA Project #: 552-390
IEA Sample #: 9310266-04 Matrix: Water
Client Name: S&ME Greensboro Date Received: 10/12/93
Client Proj. I.D.: 1584-93-123 Date Sampled: 10/11/93
Sample I.D.: MW-4

Parameter	Method	Quantitation Limits	Results	Date Prepared	Date Analyzed	Analyst
Lead	EPA 239.2	0.010 mg/L	BQL	10/20/93	10/25/93	RM

Comments:

Sample was prepped by Standard Method 3030C.
Date prepared exceeded the protocol holding time specified by the method.

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IEA

An Aquarion Company

IEA Project #: 552-390
 IEA Sample #: 9310266-05
 Client Name: S&ME Greensboro
 Client Proj. I.D.: 1584-93-123
 Sample I.D.: MW-5

Matrix: Water
 Date Received: 10/12/93
 Date Sampled: 10/11/93

Parameter	Method	Quantitation Limits	Results	Date Prepared	Date Analyzed	Analyst
Lead	EPA 239.2	0.010 mg/L	BQL	10/20/93	10/25/93	RM

Comments:

Sample was prepped by Standard Method 3030C.
 Date prepared exceeded the protocol holding time specified by the method.





IEA

An Aquarion Company

IEA Project #: 552-390
IEA Sample #: 9310266 Matrix: Water
Client Name: S&ME Greensboro Date Received: N/A
Client Proj. I.D.: 1584-93-123 Date Sampled: N/A
Sample I.D.: QC Blank

Parameter	Method	Quantitation Limits	Results	Date Prepared	Date Analyzed	Analyst
Lead	EPA 239.2	0.010 mg/L	BQL	10/20/93	10/25/93	RM

Comments:

Corresponding Samples: 9310266-01 through 05
Sample was prepped by Standard Method 3030C.

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IEA

An Aquarion Company

IEA Project #: 552-390
IEA Sample #: 9310266-01
Client Name: S&ME Greensboro
Client Project I.D.: 1584-93-123
Sample I.D.: MW-1

Matrix: Water
Date Received: 10/12/93
Date Sampled: 10/11/93
Date Prepared: 10/21/93
Dilution Factor: 1.0

Parameter	Method	Detection Limits	Results	Date Analyzed	Analyst
Ethylene Dibromide	EPA 504	0.020 ug/L	0.024 ug/L	10/21/93	Smith

Comments:

Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.





IEA

An Aquarion Company

IEA Project #: 552-390
IEA Sample #: 9310266-02
Client Name: S&ME Greensboro
Client Project I.D.: 1584-93-123
Sample I.D.: MW-2

Matrix: Water
Date Received: 10/12/93
Date Sampled: 10/11/93
Date Prepared: 10/21/93
Dilution Factor: 1.0

Parameter	Method	Detection Limits	Results	Date Analyzed	Analyst
Ethylene Dibromide	EPA 504	0.020 ug/L	0.021 ug/L	10/21/93	Smith

Comments:

Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.



IEA Project #: 552-390
 IEA Sample #: 9310266-03
 Client Name: S&ME Greensboro
 Client Project I.D.: 1584-93-123
 Sample I.D.: MW-3

Matrix: Water
 Date Received: 10/12/93
 Date Sampled: 10/11/93
 Date Prepared: 10/21/93
 Dilution Factor: 1.0

Parameter	Method	Detection Limits	Results	Date Analyzed	Analyst
Ethylene Dibromide	EPA 504	0.020 ug/L	0.021 ug/L	10/21/93	Smith

Comments:

Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.





IEA

An Aquarion Company

IEA Project #: 552-390
IEA Sample #: 9310266-04
Client Name: S&ME Greensboro
Client Project I.D.: 1584-93-123
Sample I.D.: MW-4

Matrix: Water
Date Received: 10/12/93
Date Sampled: 10/11/93
Date Prepared: 10/21/93
Dilution Factor: 1.0

Parameter	Method	Detection Limits	Results	Date Analyzed	Analyst
Ethylene Dibromide	EPA 504	0.020 ug/L	BQL	10/21/93	Smith

Comments:

BQL = Below Quantitation Limits

Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.





IEA

An Aquarion Company

IEA Project #: 552-390
IEA Sample #: 9310266-05
Client Name: S&ME Greensboro
Client Project I.D.: 1584-93-123
Sample I.D.: MW-5

Matrix: Water
Date Received: 10/12/93
Date Sampled: 10/11/93
Date Prepared: 10/21/93
Dilution Factor: 1.0

Parameter	Method	Detection Limits	Results	Date Analyzed	Analyst
Ethylene Dibromide	EPA 504	0.020 ug/L	BQL	10/21/93	Smith

Comments:

BQL = Below Quantitation Limits

Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.





IEA Project #: 552-390
IEA Sample #: 9310266
Client Name: S&ME Greensboro
Client Project I.D.: 1584-93-123
Sample I.D.: QC Blank

Matrix: Water
Date Received: N/A
Date Sampled: N/A
Date Prepared: 10/21/93
Dilution Factor: 1.0

Parameter	Method	Detection Limits	Results	Date Analyzed	Analyst
Ethylene Dibromide	EPA 504	0.020 ug/L	BQL	10/21/93	Smith

Comments:

BQL = Below Quantitation Limits

Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.

N/A = Not Applicable

Corresponding Samples: 9310266-01 through 9310266-05





IEA

An Aquarion Company

PURGEABLE HALOCARBONS EPA 601 COMPOUND LIST

IEA Project Number:	552-390	Date Received:	10/12/93
IEA Sample Number:	9310266-01	Date Sampled:	10/11/93
Client Name:	S&ME Greensboro	Date Analyzed:	10/17/93
Client Project ID:	1584-93-123	Analysis By:	Ware
Sample Identification:	MW-1	Dilution Factor:	1.0
Matrix:	Water		

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation.
 Sample specific quantitation limits may be calculated by multiplying
 the quantitation limit by the dilution factor.
 BQL = Below Quantitation Limit





IEA

An Aquarion Company

PURGEABLE HALOCARBONS EPA 601 COMPOUND LIST

IEA Project Number:	552-390	Date Received:	10/12/93
IEA Sample Number:	9310266-02	Date Sampled:	10/11/93
Client Name:	S&ME Greensboro	Date Analyzed:	10/17/93
Client Project ID:	1584-93-123	Analysis By:	Ware
Sample Identification:	MW-2	Dilution Factor:	1.0
Matrix:	Water		

Number	Compound	Quantitation	Results
		Limit (ug/L)	Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation. Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.
 BQL = Below Quantitation Limit





IEA

An Aquarion Company

PURGEABLE HALOCARBONS EPA 601 COMPOUND LIST

IEA Project Number:	552-390	Date Received:	10/12/93
IEA Sample Number:	9310266-03	Date Sampled:	10/11/93
Client Name:	S&ME Greensboro	Date Analyzed:	10/17/93
Client Project ID:	1584-93-123	Analysis By:	Ware
Sample Identification:	MW-3	Dilution Factor:	1.0
Matrix:	Water		

Number	Compound	Quantitation	Results
		Limit (ug/L)	Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation. Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.

BQL = Below Quantitation Limit





IEA

An Aquarion Company

PURGEABLE HALOCARBONS EPA 601 COMPOUND LIST

IEA Project Number:	552-390	Date Received:	10/12/93
IEA Sample Number:	9310266-04	Date Sampled:	10/11/93
Client Name:	S&ME Greensboro	Date Analyzed:	10/17/93
Client Project ID:	1584-93-123	Analysis By:	Ware
Sample Identification:	MW-4	Dilution Factor:	1.0
Matrix:	Water		

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation. Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.

BQL = Below Quantitation Limit





IEA

An Aquarion Company

PURGEABLE HALOCARBONS EPA 601 COMPOUND LIST

IEA Project Number:	552-390	Date Received:	10/12/93
IEA Sample Number:	9310266-05	Date Sampled:	10/11/93
Client Name:	S&ME Greensboro	Date Analyzed:	10/17/93
Client Project ID:	1584-93-123	Analysis By:	Ware
Sample Identification:	MW-5	Dilution Factor:	1.0
Matrix:	Water		

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation. Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.

BQL = Below Quantitation Limit





IEA

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PURGEABLE HALOCARBONS EPA 601 COMPOUND LIST

IEA Project Number:	552-390	Date Received:	N/A
IEA Sample Number:	9310266	Date Sampled:	N/A
Client Name:	S&ME Greensboro	Date Analyzed:	10/17/93
Client Project ID:	1584-93-123	Analysis By:	Ware
Sample Identification:	QC Blank	Dilution Factor:	1.0
Matrix:	Water		

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Chloromethane	1.0	BQL
2	Bromomethane	1.0	BQL
3	Vinyl Chloride	1.0	BQL
4	Dichlorodifluoromethane	1.0	BQL
5	Chloroethane	1.0	BQL
6	Methylene chloride	1.0	BQL
7	Trichlorofluoromethane	1.0	BQL
8	1,1-Dichloroethene	1.0	BQL
9	1,1-Dichloroethane	1.0	BQL
10	trans-1,2-Dichloroethene	1.0	BQL
11	Chloroform	1.0	BQL
12	1,2-Dichloroethane	1.0	BQL
13	1,1,1-Trichloroethane	1.0	BQL
14	Carbon tetrachloride	1.0	BQL
15	Bromodichloromethane	1.0	BQL
16	1,2-Dichloropropane	1.0	BQL
17	cis-1,3-Dichloropropene	1.0	BQL
18	Trichloroethene	1.0	BQL
19	trans-1,3-Dichloropropene	1.0	BQL
20	1,1,2-Trichloroethane	1.0	BQL
21	Dibromochloromethane	1.0	BQL
22	2-Chloroethylvinyl ether	1.0	BQL
23	Bromoform	1.0	BQL
24	Tetrachloroethene	1.0	BQL
25	1,1,2,2-Tetrachloroethane	1.0	BQL
26	Chlorobenzene	1.0	BQL
27	1,3-Dichlorobenzene	1.0	BQL
28	1,2-Dichlorobenzene	1.0	BQL
29	1,4-Dichlorobenzene	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation. Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.

BQL = Below Quantitation Limit

N/A = Not Applicable

Corresponding Samples: 9310266-01, 02, 03, 04, 05

FORM 601 REV. 100391



PURGEABLE AROMATICS
EPA 602 COMPOUND LIST

IEA Project Number: 552-390 Date Received: 10/12/93
 IEA Sample Number: 9310266-01 Date Sampled: 10/11/93
 Client Name: S&ME Greensboro Date Analyzed: 10/21/93
 Client Project ID: 1584-93-123 Analysis By: Eischen
 Sample Identification: MW-1 Dilution Factor: 1.0
 Matrix: Water

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Benzene	1.0	20
2	Chlorobenzene	1.0	BQL
3	1,2-Dichlorobenzene	1.0	BQL
4	1,3-Dichlorobenzene	1.0	BQL
5	1,4-Dichlorobenzene	1.0	BQL
6	Ethylbenzene	1.0	33
7	Toluene	1.0	13
8	Xylenes (Total)	1.0	110

Additional Compounds:

9	tert-Butyl methyl ether	1.0	46
10	Diisopropyl ether	1.0	6

Comments:

Qualitative identifications performed using single GC column confirmation.
 Sample specific quantitation limits may be calculated by multiplying
 the quantitation limit by the dilution factor.
 BQL = Below Quantitation Limit
 Surrogate recovery exceeds method criteria due to suspected
 sample matrix interference.





IEA

An Aquarion Company

PURGEABLE AROMATICS EPA 602 COMPOUND LIST

IEA Project Number:	552-390	Date Received:	10/12/93
IEA Sample Number:	9310266-02	Date Sampled:	10/11/93
Client Name:	S&ME Greensboro	Date Analyzed:	10/21/93
Client Project ID:	1584-93-123	Analysis By:	Eischen
Sample Identification:	MW-2	Dilution Factor:	1.0
Matrix:	Water		

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Benzene	1.0	BQL
2	Chlorobenzene	1.0	BQL
3	1,2-Dichlorobenzene	1.0	BQL
4	1,3-Dichlorobenzene	1.0	BQL
5	1,4-Dichlorobenzene	1.0	BQL
6	Ethylbenzene	1.0	BQL
7	Toluene	1.0	BQL
8	Xylenes (Total)	1.0	BQL

Additional Compounds:

9	tert-Butyl methyl ether	1.0	BQL
10	Diisopropyl ether	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation.
 Sample specific quantitation limits may be calculated by multiplying
 the quantitation limit by the dilution factor.
 BQL = Below Quantitation Limit





PURGEABLE AROMATICS
EPA 602 COMPOUND LIST

IEA Project Number: 552-390 Date Received: 10/12/93
 IEA Sample Number: 9310266-03 Date Sampled: 10/11/93
 Client Name: S&ME Greensboro Date Analyzed: 10/21/93
 Client Project ID: 1584-93-123 Analysis By: Eischen
 Sample Identification: MW-3 Dilution Factor: 1.0
 Matrix: Water

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Benzene	1.0	BQL
2	Chlorobenzene	1.0	BQL
3	1,2-Dichlorobenzene	1.0	BQL
4	1,3-Dichlorobenzene	1.0	BQL
5	1,4-Dichlorobenzene	1.0	BQL
6	Ethylbenzene	1.0	BQL
7	Toluene	1.0	BQL
8	Xylenes (Total)	1.0	BQL

Additional Compounds:

9	tert-Butyl methyl ether	1.0	BQL
10	Diisopropyl ether	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation.
 Sample specific quantitation limits may be calculated by multiplying
 the quantitation limit by the dilution factor.
 BQL = Below Quantitation Limit



PURGEABLE AROMATICS
EPA 602 COMPOUND LIST

IEA Project Number:	552-390	Date Received:	10/12/93
IEA Sample Number:	9310266-04	Date Sampled:	10/11/93
Client Name:	S&ME Greensboro	Date Analyzed:	10/21/93
Client Project ID:	1584-93-123	Analysis By:	Ware
Sample Identification:	MW-4	Dilution Factor:	1.0
Matrix:	Water		

Number	Compound	Quantitation	Results
		Limit (ug/L)	Concentration (ug/L)
1	Benzene	1.0	BQL
2	Chlorobenzene	1.0	BQL
3	1,2-Dichlorobenzene	1.0	BQL
4	1,3-Dichlorobenzene	1.0	BQL
5	1,4-Dichlorobenzene	1.0	BQL
6	Ethylbenzene	1.0	BQL
7	Toluene	1.0	BQL
8	Xylenes (Total)	1.0	BQL

Additional Compounds:

9	tert-Butyl methyl ether	1.0	BQL
10	Diisopropyl ether	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation.
Sample specific quantitation limits may be calculated by multiplying
the quantitation limit by the dilution factor.
BQL = Below Quantitation Limit



**PURGEABLE AROMATICS
EPA 602 COMPOUND LIST**

IEA Project Number: 552-390 Date Received: 10/12/93
 IEA Sample Number: 9310266-05 Date Sampled: 10/11/93
 Client Name: S&ME Greensboro Date Analyzed: 10/21/93
 Client Project ID: 1584-93-123 Analysis By: Ware
 Sample Identification: MW-5 Dilution Factor: 1.0
 Matrix: Water

Number	Compound	Quantitation	Results
		Limit (ug/L)	Concentration (ug/L)
1	Benzene	1.0	BQL
2	Chlorobenzene	1.0	BQL
3	1,2-Dichlorobenzene	1.0	BQL
4	1,3-Dichlorobenzene	1.0	BQL
5	1,4-Dichlorobenzene	1.0	BQL
6	Ethylbenzene	1.0	BQL
7	Toluene	1.0	BQL
8	Xylenes (Total)	1.0	BQL

Additional Compounds:

9	tert-Butyl methyl ether	1.0	BQL
10	Diisopropyl ether	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation.
 Sample specific quantitation limits may be calculated by multiplying
 the quantitation limit by the dilution factor.
 BQL = Below Quantitation Limit





IEA

An Aquarion Company

PURGEABLE AROMATICS EPA 602 COMPOUND LIST

IEA Project Number:	552-390	Date Received:	N/A
IEA Sample Number:	9310266	Date Sampled:	N/A
Client Name:	S&ME Greensboro	Date Analyzed:	10/20/93
Client Project ID:	1584-93-123	Analysis By:	Ware
Sample Identification:	QC Blank	Dilution Factor:	1.0
Matrix:	Water		

Number	Compound	Quantitation	Results
		Limit (ug/L)	Concentration (ug/L)
1	Benzene	1.0	BQL
2	Chlorobenzene	1.0	BQL
3	1,2-Dichlorobenzene	1.0	BQL
4	1,3-Dichlorobenzene	1.0	BQL
5	1,4-Dichlorobenzene	1.0	BQL
6	Ethylbenzene	1.0	BQL
7	Toluene	1.0	BQL
8	Xylenes (Total)	1.0	BQL

Additional Compounds:

9	tert-Butyl methyl ether	1.0	BQL
10	Diisopropyl ether	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation. Sample specific quantitation limits may be calculated by multiplying the quantitation limit by the dilution factor.

BQL = Below Quantitation Limit

N/A = Not Applicable

Corresponding Samples: 9310266-01, 02, 03





PURGEABLE AROMATICS
EPA 602 COMPOUND LIST

IEA Project Number:	552-390	Date Received:	N/A
IEA Sample Number:	9310266	Date Sampled:	N/A
Client Name:	S&ME Greensboro	Date Analyzed:	10/21/93
Client Project ID:	1584-93-123	Analysis By:	Ware
Sample Identification:	QC Blank	Dilution Factor:	1.0
Matrix:	Water		

Number	Compound	Quantitation Limit (ug/L)	Results Concentration (ug/L)
1	Benzene	1.0	BQL
2	Chlorobenzene	1.0	BQL
3	1,2-Dichlorobenzene	1.0	BQL
4	1,3-Dichlorobenzene	1.0	BQL
5	1,4-Dichlorobenzene	1.0	BQL
6	Ethylbenzene	1.0	BQL
7	Toluene	1.0	BQL
8	Xylenes (Total)	1.0	BQL

Additional Compounds:

9	tert-Butyl methyl ether	1.0	BQL
10	Diisopropyl ether	1.0	BQL

Comments:

Qualitative identifications performed using single GC column confirmation.
Sample specific quantitation limits may be calculated by multiplying
the quantitation limit by the dilution factor.

BQL = Below Quantitation Limit

N/A = Not Applicable

Corresponding Samples: 9310266-04, 05



