



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 4**


Science and Ecosystem Support Division  
Enforcement and Investigations Branch  
980 College Station Road  
Athens, Georgia 30605-2720

January 8, 2016

**4SESD-EIB**

**MEMORANDUM**

**SUBJECT:** Grenada Manufacturing Ambient Air Study  
Grenada, Mississippi  
SESD Project No. 16-0152

**FROM:** Landon Pruitt, Environmental Engineer   
Superfund and Air Section

**THRU:** Mike Bowden, Chief   
Enforcement Section

**TO:** Brian Bastek, RCRA Project Manager  
RCRA Division

Attached is the Quality Assurance Project Plan (QAPP) for the ambient air inspection to be conducted at the Grenada Manufacturing site, in Grenada, MS. The investigation is scheduled for the week of January 12<sup>th</sup>, 2016. If you have any questions or comments please contact me at 706-355-8620 or [pruitt.landon@epa.gov](mailto:pruitt.landon@epa.gov).

Attachment





Quality Assurance Project Plan  
U.S. Environmental Protection Agency  
Science and Ecosystem Support Division  
980 College Station Road  
Athens, GA 30605

SESD Project ID No.: 16-0152  
SESD Category 2 QAPP

### SECTION A: Project Planning Elements

**A1. Title (Project Name):**

Grenada Manufacturing Ambient Air Sampling Event

**Project Location:**

Grenada Manufacturing Facility  
Hwy 332  
Grenada, Grenada County, Mississippi

**Project Requestor and Organization:**

Brian Bastek, RCRA Project Manager  
RCRA Division  
Atlanta Federal Center 61 Forsyth Street S.W.  
Atlanta, GA 30303

**Project Leader's Name, Position and Organization:**

Landon Pruitt, Environmental Engineer  
Superfund and Air Section,  
Field Services Branch, SESD

**Project Leader's Signature:**

Date: 1/8/16

**Technical Reviewer's Name and Position:**

Mike Crowe  
Superfund and Air Section,  
Field Services Branch, SESD

**Technical Reviewer's Signature:**

Date: 1/8/16

**Section Chief's Name and Position:**

Mike Bowden, Chief  
Enforcement Section,  
Field Services Branch, SESD

**Section Chief's Signature:**

Date: 1/8/16

**A2. Table of Contents**    N/A

**A3. Distribution List**

Brian Bastek, RCRA Project Manager

**A4. Project Personnel**

**Organization**

**Responsibilities**

Landon Pruitt

SESD, FSB, Superfund and Air Section

Project Leader / Sampler /  
Scribe

Tim Slagle

SESD, FSB, Superfund and Air Section

Sampler / Safety Officer

**Comments:** Personnel that have not been deemed competent and/or proficient under SESD's ISO-17025 accreditation in the areas where they will be working will be teamed with SESD personnel who are competent and proficient in conducting these air sampling and field measurement activities.





Quality Assurance Project Plan  
U.S. Environmental Protection Agency  
Science and Ecosystem Support Division  
980 College Station Road  
Athens, GA 30605

SESD Project ID No.: 16-0152  
SESD Category 2 QAPP

**A5. Problem Definition (Investigation Objectives and Background Information):**

**Site Background:**

The manufacturing facility was constructed by Lyon in 1961 and sold to Rockwell International Corporation (Rockwell) in 1966. Rockwell's Automotive Division operated a wheel cover manufacturing facility at the site from 1966 to 1985 when the plant and property were sold to Textron Automotive Company (Textron), formerly Randall Textron. The Automotive Division was spun off from Rockwell in 1997 to form Meritor. In 1999, Textron sold the operations and property to Grenada Manufacturing, LLC (Grenada Manufacturing), who continued to operate the wheel cover plant until 2008 when portions of the plant and property were leased to ICE Industries, Inc. (ICE). Throughout most of the site history, the facility was used to manufacture automobile wheel covers. Following ICE's lease of the premises, the facility was converted to a stamping plant, providing stamp-formed parts for various industries.

Since 1989 EPA has been involved with the site and there has been a number of investigations and sampling events to discover and delineate a trichloroethene (TCE) contaminated groundwater plume and possible vapor intrusion and other air quality issues. There are several areas of concern that are potential sources for the contamination including several lagoons, an above storage tank (TCE), a below ground storage tank (toluene), an on-site landfill, and a waste water treatment plant.

**A6. Project Description:**

**Task Description:**

There is thought to be a potential risk posed to the occupants of the Eastern Heights neighborhood just north of the facility (see Figure 1), more than likely coming from one of the areas of concern. EPA Region 4 Science and Ecosystem Support Division (SESD) will collect ambient air samples from five locations around the facility as well as two surface water samples from a storm water pond (see Figure 1). The data from this investigation will be used in conjunction with other sampling events to help delineate contamination coming from the site and posing a risk to the occupants of adjacent properties.

Applicable regulatory information, actions levels, etc.

The data generated by this study will be evaluated by EPA Region 4. The data will be compared to site specific screening levels calculated by the USEPA VISL Calculator Version 3.4 from EPA Regional Screening Levels (RSL) from June 2015. These values are represented in Table 2.

Decision(s) to be made based on data:

The data from this investigation will be used by the project manager in conjunction with other sampling events to help delineate contamination coming from the site and posing a risk to the occupants of adjacent properties.



Quality Assurance Project Plan  
U.S. Environmental Protection Agency  
Science and Ecosystem Support Division  
980 College Station Road  
Athens, GA 30605

SESD Project ID No.: 16-0152  
SESD Category 2 QAPP

Field Study Date:	The week of January 12, 2016
Projected Lab Completion Date:	February 18, 2016
Final Report Completion Date:	SESD field report will be provided approximately 30 days after receipt of all analytical data. Results that need immediate attention or are considered immediate action response levels will be reported to Brian Bastek immediately as “provisional data” under <i>SESD Operating Procedure for Report Preparation and Distribution</i> , SESDPROC-003-R5.

#### A7. Quality Objectives and Criteria

##### Qualitative Objectives

A sampling design has been developed (section B1) that will accomplish the objective that is identified in section A5 and A6. Based on the background information that was received, the sampling design adequately addresses study boundaries, number of samples, timing of sampling event, length of sampling event, and monitored parameters. If at any time during the project it becomes necessary to adjust the sampling design, or if technical issues require modification to the project, then those adjustments or modifications will be discussed with the project manager and noted in the field logbook and described in the final report.

##### Quantitative Objectives and Criteria for Measurement Data

##### Precision and Accuracy

These are quantitative measures that characterize the amount of variability and bias inherent in a data set. One co-located duplicate ambient air sample will be collected. The duplicate will be collected at the same time using two separate, identical canisters and flow controllers with their inlets immediately adjacent to one another.

##### Completeness

The completeness of data recovery of this study is expected to be 100%. A statement will be made in the final report concerning the completeness of all monitoring activities.

##### Comparability

This refers to the ability to compare data from different sources with a degree of confidence. For this study, standard sampling and analytical methods are being utilized to ensure data comparability.



**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 16-0152

SESD Category 2 QAPP

**A8. Special Training/Certifications**

- OSHA 40hr Personnel Protection Safety
- 8-Hr safety Refresher
- CPR/First Aid
- EPA Credentials under directive 3500.1

**A9. Documents and Records**

The final report will be prepared in accordance with the requirements of the *SESD Operating Procedure for Report Preparation and Distribution*, SESDPROC-003-R5. All field observations, measurements and sampling activities supporting the field investigation will be recorded and documented according to the *SESD Operating Procedure for Logbooks*, SESDPROC-010-R5. Project files will be maintained according to the *SESD Operating Procedure for Control of Records*, SESDPROC-002-R6.

**SECTION B: Data Generation and Acquisition**

**B1. Sampling Design**

The sampling design was chosen based on the data quality objectives of the study.

Media	Number of Samples	Analyses
Ambient Air	5	Scan, VOCs
Surface Water	2	Scan, VOCs

**B2. Sampling Methods, General Procedures**

The following SESD field measurement and sampling procedures will be followed during this field study, as applicable:

SESDPROC-303-R4	Ambient Air Sampling
SESDPROC-110-R3	Global Positioning System
SESDPROC-205-R2	Field Equipment Cleaning and Decontamination
SESDPROC-202-R3	Management of Investigation Derived Waste
SESDPROC-100-R3	Field pH Measurement
SESDPROC-101-R5	Field Specific Conductance Measurement
SESDPROC-102-R4	Field Temperature Measurement
SESDPROC-103-R3	Field Turbidity Measurement
SESDPROC-203-R3	Pump Operation
SESDPROC-201-R3	Surface Water Sampling



Quality Assurance Project Plan  
U.S. Environmental Protection Agency  
Science and Ecosystem Support Division  
980 College Station Road  
Athens, GA 30605

SESD Project ID No.: 16-0152  
SESD Category 2 QAPP

**SAMPLING PROCEDURE:**

SESD will collect five ambient air samples, 2 surface water samples, plus additional Quality Assurance/Quality Control (QA/QC) samples (Table 1). All sampling and QA/QC procedures for field activities will be conducted in accordance with the EPA Region 4 SEDS Field Branches Quality Systems and Technical Procedures. Sample custody will be maintained by SEDS for transport to the SEDS laboratory for analysis.

Analysis of the air samples will be conducted by the SEDS laboratory in accordance with *EPA Compendium Method TO-15, Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, January 1999. Laboratory QA/QC procedures will be conducted in accordance with the guidelines incorporated in the analytical methods.

The number of sampling locations are to be based on access permission and discussion between property occupants, the project manager, and SEDS sampling personnel. Access to the properties to be sampled will be obtained by the RCRA Project Manager. Figure 1 and Table 1 indicate where the sampling will be conducted.

**AMBIENT AIR SAMPLING:**

Per request from the project manager, SEDS will collect one set of 24-hour ambient air samples using six liter passivated sampling canisters and 24-hour flow controllers. The samples will be collected as close to the proposed locations as possible. No designated background sample will be collected due to project manager request. A weather station 1-2 miles from the sample locations will be used to retrieve meteorological data for the investigation.

**SURFACE WATER SAMPLING:**

SESD will collect two surface water samples from various locations, to be determined in the field, on a surface storm water retention pond on the site. The locations of the samples will be determined by access and availability around the pond. The samples will be collected with a stainless steel scoop attached to steel conduit lowered into the pond from the shore. The sample will immediately be transferred to pre-preserved 40mL VOA vials and placed on ice for transport. During sample collection field parameters for pH, specific conductance, temperature, and turbidity will be recorded for each sample location.

**SAMPLE IDENTIFICATION PROTOCOLS:**

SESD will use the following Station ID naming convention for the sampling stations (Figure 1, Table 1) used for this investigation:





**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
Science and Ecosystem Support Division  
980 College Station Road  
Athens, GA 30605

SESD Project ID No.: 16-0152

SESD Category 2 QAPP

GM, for Grenada Manufacturing, will be followed by a numerical Station ID. For the first sampling station, the entire Station ID would read GM01. The Sample ID will begin with the Station ID and be followed by matrix identifier:

- AA for Ambient Air
- SW for Surface Water
- TA for Trip Blank Air
- TW for Trip Blank Water

The matrix identifier will be followed by the numerical month-year of the sampling event. For example, an ambient air sample station GM01 sampled in January 2016 would have a Sample ID as follows: GM01AA0116.

Co-located ambient air duplicates will be identified with a "D," and a surface water split with an "S" following the station ID. For Example, a co-located ambient air duplicate sample collected at sample station GM01, sampled in January 2016 would have a Sample ID as follows: GM01DAA0116.

Table 1 showing all the sample station names and descriptions is located at the end of this plan.

### **B3. Sampling Handling and Custody**

All samples will be handled and custody maintained according to the following:

*SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual,*  
April 2015 Version.

*SESD Operating Procedure for Sample and Evidence Management, SESDPROC-005-R2.*

*SESD Operating Procedure for Packing, Labeling and Shipping of Environmental and Waste Samples, SESDPROC-209-R3.*

### **B4. Analytical Methods**

#### **SESD:**

The air samples will be analyzed using *EPA Compendium Method TO-15, Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, January 1999. The EPA Method TO-15 VOC Target Analytes are listed along with Minimum Detection Limits (MDLs) in Table 3.

For future comparisons to other sampling events, if groundwater results are also involved: Several of the VOC Target Analytes for Method TO-15 can be analyzed for in either groundwater or air, but not in both. These VOCs are noted and highlighted in yellow in Table 3 at the end of this plan. This is due to the differences in commercial blends of VOC standards used during the analyses of groundwater vs soil gas VOCs. If an analyte is found in one matrix but not analyzed/reported in the other matrix, that analyte can be reviewed in the missing matrix as a post process review if it is an analyte of concern. The results for this analyte will be reviewed again and possibly reported as a Tentatively Identified Compound (TIC).





**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 16-0152

SESD Category 2 QAPP

TICs will be flagged data for presumptive presence and estimated values.

**CLP:**

N/A

**Other:**

N/A

**B5. Quality Control**

**Field:**

Field quality control measure will be in accordance with the *SESD Operating Procedure for Field Sampling Quality Control*, SESD PROC-011-R4.

The number and type of field quality control samples proposed for this investigation are as follows:

An air canister trip blank will be transported to the field, but not exposed, to check the possibility of contamination of the samples during transport and storage.

One co-located ambient air duplicate sample will be collected.

A water trip blank will be transported alongside the surface water samples.

One split surface water sample will also be collected.

**Laboratory:**

Specific laboratory quality control measures are specified in the *SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual*, April 2015.

**B6. Instrument/Equipment Testing, Inspection and Maintenance**

All field measurement instruments and equipment will be maintained in accordance with the *SESD Operating Procedure for Equipment Inventory and Management*, SESDPROC-108-R5.

**B7. Instrument/Equipment Calibration and Frequency**

All field measurement instruments and equipment are calibrated according to the *SESD Operating Procedure for Equipment Inventory and Management*, SESDPROC-108-R5 and according to specific procedures included within the defined operating procedures for each instrument (see specific field measurement procedures in Section B2 of this QAPP).



Quality Assurance Project Plan  
U.S. Environmental Protection Agency  
Science and Ecosystem Support Division  
980 College Station Road  
Athens, GA 30605

SESD Project ID No.: 16-0152  
SESD Category 2 QAPP

**B8. Inspection/Acceptance for Supplies and Consumables**

All critical supplies and consumables for this field investigation are inspected and maintained in accordance with the following procedures:

*SESD Operating Procedure for Purchasing of Services and Supplies*, SESDPROC-015-R5.

*SESD Operating Procedure for Equipment Inventory and Management*, SESDPROC-108-R5.

*SESD Operating Procedure for Field Sampling Quality Control*, SESDPROC-011-R4.

The SESD Field Quality Manager and the Branch Quality Assurance Officers are responsible for ensuring that these requirements are met.

**B9. Non-direct Measurements:** Meteorological data will be collected from an airport one mile north of the site. This data will be downloaded from a database managed by the National Climatic Data Center (NCDC), housed in the National Oceanic and Atmospheric Administration (NOAA).

**B10. Data Management**

The field project leader will be responsible for ensuring that all requirements for data management are met. All data generated for this field investigation, whether hand-recorded or obtained using an electronic data logger will be recorded, stored and managed according to the following procedures:

*SESD Operating Procedure for Control of Records*, SESDPROC-002-R6.

*SESD Operating Procedures for Logbooks*, SESDPROC-010-R5.

**SECTION C: Assessment/Oversight**

**C1. Assessments and Response Actions**

Assessments will be conducted during the field investigation according to the *SESD Operating Procedure for Project Planning*, SESDPROC-016-R4, to ensure the QAPP is being implemented as approved. The Project Leader is responsible for all corrective actions while in the field.

**C2. Reports to Management**

The Project Leader will be responsible for notifying the Project Manager (Requestor) and appropriate SESD management if any circumstances arise during the field investigation that may adversely impact the quality of the data collected.



Quality Assurance Project Plan  
U.S. Environmental Protection Agency  
Science and Ecosystem Support Division  
980 College Station Road  
Athens, GA 30605

SESD Project ID No.: 16-0152  
SESD Category 2 QAPP

## SECTION D: Data Validation and Usability

### D1. Data Review, Verification, and Validation

All analytical data will be provided by the SESD Analytical Support Branch and reviewed, verified and validated in accordance with the *SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual*, April 2015.

All data derived from SESD field measurements will be reviewed, verified, and validated in accordance with the *SESD Operating Procedure for Report Preparation and Distribution*, SESDPROC-003-R5.

### D2. Verification and Validation Methods

All analytical data will be provided by the SESD Analytical Support Branch and reviewed, verified and validated in accordance with the *SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual*, April 2015.

All data derived from SESD field measurements will be reviewed, verified, and validated in accordance with the *SESD Operating Procedure for Report Preparation and Distribution*, SESDPROC-003-R5.

### D3. Reconciliation with User Requirements

The usability of all data derived from SESD field sampling and measurements conducted during this field investigation will be evaluated in accordance with the *SESD Operating Procedure for Report Preparation and Distribution*, SESDPROC-003-R5.

**\*\*Footnotes:** This Quality Assurance Project Plan (QAPP) has been prepared and approved according to the EPA *Requirements for Quality Assurance Project Plans (EPA QA/R5 EPA/240/B-01/003)*, U.S. Environmental Protection Agency, Office of Environmental Information, Washington, DC, March 2001(USEPA, 2001). This document will be used to ensure that the environmental data collected for this project are of the type and quality for the intended purposes. **This document is for SESD use only.**



Quality Assurance Project Plan  
U.S. Environmental Protection Agency  
Science and Ecosystem Support Division  
980 College Station Road  
Athens, GA 30605

SESD Project ID No.: 16-0152  
SESD Category 2 QAPP

**References:**

1. Arcadis, DRAFT Report. *Summary of Residential Air Sapling Analytical Results, Grenada Manufacturing Facility, Grenada, MS.* September 2015.
2. EPA Region 4 SEDS ASB. *SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual*, April 2015.
3. USEPA. *EPA Compendium Method TO-15, Determination Of Volatile Organic Compounds (VOCs) In Air Collected In Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS)*, January 1999.
4. EPA Region 4 SEDS. *Field Branches Quality System and Technical Procedures (Latest Versions)*. <http://www.epa.gov/region4/sesd/fbqstp/>. Webpage last updated December 14, 2015.





Quality Assurance Project Plan  
U.S. Environmental Protection Agency  
Science and Ecosystem Support Division  
980 College Station Road  
Athens, GA 30605

SESD Project ID No.: 16-0152  
SESD Category 2 QAPP





**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 16-0152

SESD Category 2 QAPP

**TABLE 1 Sample Station Information**

Station ID	Sample ID	Location	Matrix
GM01	GM01AA0116	Just north of old equalization pond. (duplicate location)	Ambient Air
	GM01DAA0116		
GM02	GM02AA0116	Just north of old on-site treatment plant.	
GM03	GM03AA0116	West side of neighborhood.	
GM04	GM04AA0116	Rough middle of neighborhood	
GM05	GM05AA0116	Southeast side of neighborhood	
GM06	GM06SW0116	Surface water retention pond (duplicate location)	Surface Water
GM07	GM07SW0116		
	GM07DSW0116		
#R4DART#	GMTBW0116	-	Trip Blank Water
#R4DART#	GMTBA0116	-	Trip Blank Air

\* Names and locations subject to change if more knowledge of site becomes available

**TABLE 2. Vapor Intrusion Calculated Screening Levels** (Calculated in provided by *Draft* Arcadis Report)

Constituent	Indoor Air / Ambient Air ( $\mu\text{g}/\text{m}^3$ )†
Benzene	0.36
Chloroform	0.12
Dichloroethane, 1,2-	0.11
Dichloroethene, 1,1-	210
Dichloroethene, cis-1,2-	NL
Dichloroethene, trans-1,2-	NL
Ethylbenzene	1.1
Methylene chloride	100
Tetrachloroethene	11
Toluene	5200
Trichloroethane, 1,1,2-	0.18
Trichloroethene	0.48
Trimethylbenzene, 1,2,4-	7.3
Vinyl chloride	0.17
m-Xylenes	100
o-Xylenes	100
p-Xylenes	100
Xylenes	100

† USEPA VISL Calculator Version 3.4, June 2015 RSLs used to calculate target residential screening levels for indoor air, ambient air, sub-slab vapor and exterior soil gas concentrations based on the lower of either a target cancer risk of 1E-06 or a target hazard index of 1. Screening levels assumes 26 year exposure duration, 350 days per year, 24 hours per day.



**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 16-0152  
 SESD Category 2 QAPP

**TABLE 3 - SESD VOC Target Analytes (1 of 3)**

Analyte	Groundwater			Soil Gas		
	MDL	Units	Specific Method	MDL	Units	Specific Method
(m- and/or p-)Xylene	0.21	ug/L	EPA 8260C	0.19	ug/m3	EPA TO-15
1,1,1,2-Tetrachloroethane	0.19	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
1,1,1-Trichloroethane	0.13	ug/L	EPA 8260C	0.13	ug/m3	EPA TO-15
1,1,2,2-Tetrachloroethane	0.16	ug/L	EPA 8260C	0.15	ug/m3	EPA TO-15
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.26	ug/L	EPA 8260C	0.15	ug/m3	EPA TO-15
1,1,2-Trichloroethane	0.18	ug/L	EPA 8260C	0.12	ug/m3	EPA TO-15
1,1-Dichloroethane	0.13	ug/L	EPA 8260C	0.082	ug/m3	EPA TO-15
1,1-Dichloroethene (1,1-Dichloroethylene)	0.25	ug/L	EPA 8260C	0.078	ug/m3	EPA TO-15
1,1-Dichloropropene	0.13	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
1,2,3-Trichlorobenzene	0.095	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
1,2,3-Trichloropropane	0.4	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
1,2,4-Trichlorobenzene	0.16	ug/L	EPA 8260C	0.15	ug/m3	EPA TO-15
1,2,4-Trimethylbenzene	0.095	ug/L	EPA 8260C	0.11	ug/m3	EPA TO-15
1,2-Dibromo-3-Chloropropane (DBCP)	0.31	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
1,2-Dibromoethane (EDB)	0.14	ug/L	EPA 8260C	0.17	ug/m3	EPA TO-15
1,2-Dichlorobenzene	0.11	ug/L	EPA 8260C	0.13	ug/m3	EPA TO-15
1,2-Dichloroethane	0.13	ug/L	EPA 8260C	0.11	ug/m3	EPA TO-15
1,2-Dichloropropane	0.13	ug/L	EPA 8260C	0.098	ug/m3	EPA TO-15
1,2-Dichlorotetrafluoroethane (Freon 114)	Not Analyzed for Groundwater			0.14	ug/m3	EPA TO-15
1,3,5-Trimethylbenzene	0.060	ug/L	EPA 8260C	0.10	ug/m3	EPA TO-15
1,3-Butadiene	Not Analyzed for Groundwater			0.094	ug/m3	EPA TO-15
1,3-Dichlorobenzene	0.097	ug/L	EPA 8260C	0.13	ug/m3	EPA TO-15
1,3-Dichloropropane	0.13	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
1,4-Dichlorobenzene	0.12	ug/L	EPA 8260C	0.13	ug/m3	EPA TO-15
1,4-Dioxane	Not Analyzed for Groundwater			0.076	ug/m3	EPA TO-15
2,2-Dichloropropane	0.26	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
3-Chloropropene	Not Analyzed for Groundwater			0.14	ug/m3	EPA TO-15
4-Ethyltoluene	Not Analyzed for Groundwater			0.21	ug/m3	EPA TO-15
Acetone	4.0	ug/L	EPA 8260C	0.079	ug/m3	EPA TO-15
Acrylonitrile	Not Analyzed for Groundwater			0.051	ug/m3	EPA TO-15
Benzene	0.10	ug/L	EPA 8260C	0.067	ug/m3	EPA TO-15
Benzyl chloride	Not Analyzed for Groundwater			0.11	ug/m3	EPA TO-15





**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 16-0152  
 SESD Category 2 QAPP

**TABLE 2 - SESD VOC Target Analytes (2 of 3)**

Analyte	Groundwater			Soil Gas		
	MDL	Units	Specific Method	MDL	Units	Specific Method
Bromobenzene	0.096	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
Bromochloromethane	0.13	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
Bromodichloromethane	0.11	ug/L	EPA 8260C	0.14	ug/m3	EPA TO-15
Bromoform	0.24	ug/L	EPA 8260C	0.22	ug/m3	EPA TO-15
Bromomethane	1.6	ug/L	EPA 8260C	0.082	ug/m3	EPA TO-15
Carbon disulfide	0.27	ug/L	EPA 8260C	0.065	ug/m3	EPA TO-15
Carbon Tetrachloride	0.19	ug/L	EPA 8260C	0.13	ug/m3	EPA TO-15
Chlorobenzene	0.076	ug/L	EPA 8260C	0.098	ug/m3	EPA TO-15
Chloroethane	0.32	ug/L	EPA 8260C	0.087	ug/m3	EPA TO-15
Chloroform	0.20	ug/L	EPA 8260C	0.10	ug/m3	EPA TO-15
Chloromethane	0.35	ug/L	EPA 8260C	0.048	ug/m3	EPA TO-15
cis-1,2-Dichloroethene	0.15	ug/L	EPA 8260C	0.083	ug/m3	EPA TO-15
cis-1,3-Dichloropropene	0.067	ug/L	EPA 8260C	0.094	ug/m3	EPA TO-15
Cyclohexane	0.16	ug/L	EPA 8260C	0.072	ug/m3	EPA TO-15
Dibromochloromethane	0.13	ug/L	EPA 8260C	0.18	ug/m3	EPA TO-15
Dibromomethane	0.24	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
Dichlorodifluoromethane (Freon 12)	0.16	ug/L	EPA 8260C	0.11	ug/m3	EPA TO-15
Ethyl Acetate	Not Analyzed for Groundwater			0.098	ug/m3	EPA TO-15
Ethyl Benzene	0.065	ug/L	EPA 8260C	0.092	ug/m3	EPA TO-15
Heptane	Not Analyzed for Groundwater			0.087	ug/m3	EPA TO-15
Hexachlorobutadiene	0.24	ug/L	EPA 8260C	0.21	ug/m3	EPA TO-15
Hexane	Not Analyzed for Groundwater			0.073	ug/m3	EPA TO-15
Isooctane	Not Analyzed for Groundwater			0.098	ug/m3	EPA TO-15
Isopropanol	Not Analyzed for Groundwater			0.054	ug/m3	EPA TO-15
Isopropylbenzene	0.060	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
Methyl Acetate	0.67	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
Methyl Butyl Ketone	0.32	ug/L	EPA 8260C	0.087	ug/m3	EPA TO-15
Methyl Ethyl Ketone	0.80	ug/L	EPA 8260C	0.063	ug/m3	EPA TO-15
Methyl Isobutyl Ketone	0.22	ug/L	EPA 8260C	0.087	ug/m3	EPA TO-15
Methyl T-Butyl Ether (MTBE)	0.099	ug/L	EPA 8260C	0.078	ug/m3	EPA TO-15
Methylcyclohexane	0.13	ug/L	EPA 8260C	Not Analyzed for Soil Gas		





**Quality Assurance Project Plan**  
**U.S. Environmental Protection Agency**  
 Science and Ecosystem Support Division  
 980 College Station Road  
 Athens, GA 30605

SESD Project ID No.: 16-0152  
 SESD Category 2 QAPP

**TABLE 2 - SESD VOC Target Analytes (3 of 3)**

Analyte	Groundwater			Soil Gas		
	MDL	Units	Specific Method	MDL	Units	Specific Method
Methylene Chloride	0.13	ug/L	EPA 8260C	0.077	ug/m3	EPA TO-15
Naphthalene	0.13	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
n-Butylbenzene	0.078	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
n-Propylbenzene	0.071	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
o-Chlorotoluene	0.076	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
o-Xylene	0.062	ug/L	EPA 8260C	0.093	ug/m3	EPA TO-15
p-Chlorotoluene	0.083	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
p-Isopropyltoluene	0.088	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
Propene	Not Analyzed for Groundwater			0.03	ug/m3	EPA TO-15
sec-Butylbenzene	0.071	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
Styrene	0.11	ug/L	EPA 8260C	0.089	ug/m3	EPA TO-15
tert-Butylbenzene	0.074	ug/L	EPA 8260C	Not Analyzed for Soil Gas		
Tetrachloroethene (Tetrachloroethylene)	0.15	ug/L	EPA 8260C	0.14	ug/m3	EPA TO-15
Tetrahydrofuran	Not Analyzed for Groundwater			0.061	ug/m3	EPA TO-15
Toluene	0.094	ug/L	EPA 8260C	0.080	ug/m3	EPA TO-15
trans-1,2-Dichloroethene	0.17	ug/L	EPA 8260C	0.087	ug/m3	EPA TO-15
trans-1,3-Dichloropropene	0.15	ug/L	EPA 8260C	0.10	ug/m3	EPA TO-15
Trichloroethene (Trichloroethylene)	0.18	ug/L	EPA 8260C	0.11	ug/m3	EPA TO-15
Trichlorofluoromethane (Freon 11)	0.20	ug/L	EPA 8260C	0.12	ug/m3	EPA TO-15
Vinyl acetate	Not Analyzed for Groundwater			0.083	ug/m3	EPA TO-15
Vinyl bromide	Not Analyzed for Groundwater			0.094	ug/m3	EPA TO-15
Vinyl chloride	0.36	ug/L	EPA 8260C	0.053	ug/m3	EPA TO-15