

United States Environmental Protection Agency  
Region 4

Science and Ecosystem Support Division  
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**REGION 4 AIR MONITORING  
QUALITY ASSURANCE SAMPLING PLAN  
FOR THE  
Deepwater Horizon Oil Spill**

**Revision 1  
QASP Revision Date: May 19, 2010**

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**Title and Approval Sheet**

Title: REGION 4 AIR MONITORING QUALITY ASSURANCE SAMPLING PLAN  
FOR THE DEEPWATER HORIZON OIL SPILL

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## 1. INTRODUCTION

The Deepwater Horizon, British Petroleum Oil spill source is located approximately 52 miles southeast of Venice, Louisiana, (28.73667° N, -88.38722° W). The source is a leaking production well as well as a release of diesel fuel caused by damage from the sinking of the Transocean Deepwater Horizon drill rig at BP Site Mississippi Canyon 252. Through coordination with the United States Coast Guard (USCG), British Petroleum PLC (BP), the Responsible Party, through their Oil Spill Response Organization (OSRO) contractors are planning controlled burns of the oil in sections while weather conditions are acceptable.

EPA Region 4 has prepared this Quality Assurance Sampling Plan (QASP) to describe the ambient air monitoring technical scope of work to be completed as part of this emergency response. The objective of this study is to conduct ambient air monitoring and sampling to assess the environmental and potential human health impact of the in-situ burn process and impacts from the volatilization of the crude oil. In the event of future burns and depending on where the oil comes ashore, additional air monitoring plans will need to be generated to include affected sites.

## 2. QASP DISTRIBUTION LIST

This EPA Region 4 Air Monitoring QASP will be distributed to the following people and organizations:

Organization / People	Address
Unified Command Sector Mobile Operations Section Environmental Branch Air Sampling Group Leader	Arthur R. Outlaw Convention Center 1 South Waters Street Mobile, AL
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### **3. MONITORING AND SAMPLING STRATEGIES**

EPA Region 4 SEDS will conduct monitoring at several locations using several methods to measure particulate matter (PM), volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) that are expected to be present as a result of the burn and volatilization of the crude oil. Affected Region 4 areas where impact is possible include the states of Mississippi, Alabama, and Florida.

The Gulf Coast of Region 4 presently contains a robust fixed ambient air monitoring network of sites which are operated and maintained by state and local operators from the respective states. These sites monitor for a large array of ambient pollutants including PM<sub>2.5</sub>. The state monitoring sites from the Louisiana border to Panama City operating filter based PM<sub>2.5</sub> samplers will sample on a 1 in 3 day sampling schedule. As conditions warrant, the PM<sub>2.5</sub> filter based sampling may be increased to every day sampling.

Five of these existing sites close to Venice, Louisiana will be augmented with additional monitoring equipment including continuous PM<sub>2.5</sub> samplers, VOC samplers and SVOC samplers. The sites that will be augmented include: Waveland, Mississippi; Gulfport, Mississippi; Fairhope, Alabama; Pensacola, Florida; and Panama City, Florida. A map showing these sample locations is provided in Section 3.5 of this QASP. In addition to the ambient monitoring, VOC grab samples will be conducted as requested or necessary according to meteorological patterns.

There are two National Air Toxics Trends Sites (NATTS) stations which are located in the Tampa Bay area, in the vicinity of the spill, which could be requested to provide additional monitoring data by increasing their station's sampling frequency. One is located in Pinellas County, and the other is located in Hillsborough County, monitoring on staggered a 1 in 3 day schedule. The NATTS stations in each city operate on a 1/6 day schedule but the dates that they operate are staggered 3-days apart to yield a 1/3 day sampling schedule for the Tampa Bay area. These two sites operate an array of air toxics monitors including VOCs, and SVOCs. The local air monitoring agencies have laboratory capability for analysis of these components.

#### **3.1 PROJECT TEAM**

The Region 4 SEDS project team will be divided into multiple teams based, upon site conditions and operations. As the meteorological and operational situations change, sampling and monitoring teams and operations will adapt, based upon direction from the EPA Region 4 RICT. EPA Region 4 will have responsibility for sampling and monitoring of the plume in Mississippi, Alabama and Florida as necessary. EPA ERT members will assist EPA Region 4 with sampling and data collection and analysis if needed. EPA Region SEDS will coordinate with the Unified Command through EPA OSCs located in the USCG Sector Mobile.

## 3.2 OVERVIEW OF SAMPLING ACTIVITIES

### 3.2.1 Data Quality Objectives

The objective of air monitoring and sampling will be to confirm the presence of airborne particulates (2.5 microns and smaller), VOCs and SVOCs in air resulting from the off shore in-situ burn, and from possible air quality impacts due to the oil spill coming on-shore. The EPA will also be deploying samplers to assist in assessing whether oil dispersants being used on the oil slick are being transported through the atmosphere to populated areas on the coast.

### 3.2.2 Air Sampling/Monitoring Approach

The Region 4 ambient air monitoring and sampling will be conducted in accordance to EPA Region 4 Science and Ecosystem Support Division (SESD) approved procedures, EPA guidelines EPA-ERT guidelines and procedures, and this Air Quality Assurance Sampling Plan (QASP).

### 3.2.3 Region 4 Air Monitoring Stations

Region 4 will collect air quality data from existing ambient air monitoring sites located on the Gulf Coast of Mississippi, Alabama and Florida. The sites are described below by location and monitored analytes:

<u>LOCATION</u>	<u>ANALYTE</u>
<b>MISSISSIPPI</b>	
Waveland	PM <sub>2.5</sub> , O <sub>3</sub> , VOCs, SVOCs
Gulfport	PM <sub>2.5</sub> , O <sub>3</sub> , VOCs, SVOCs
Pascagoula	NO <sub>2</sub> , SO <sub>2</sub> , O <sub>3</sub> , PM <sub>2.5</sub>
<b>ALABAMA</b>	
Fairhope	PM <sub>2.5</sub> , O <sub>3</sub> , VOCs, SVOCs
Chickasaw	PM <sub>10</sub> , PM <sub>2.5</sub> , O <sub>3</sub>
Mobile, Bay Rd.	PM <sub>2.5</sub> , O <sub>3</sub>
Mobile, Telegraph Rd.	PM <sub>10</sub>
<b>FLORIDA</b>	
Pensacola, Ellyson	NO <sub>2</sub> , SO <sub>2</sub> , PM <sub>2.5</sub> , O <sub>3</sub>
Pensacola, NAS	O <sub>3</sub> , VOCs, SVOCs
Panama City, Cherry St.	PM <sub>2.5</sub> , VOCs, SVOCs
Holmes Co., Tri County Apt.	O <sub>3</sub>
Okaloosa Co., Lovejoy Rd.	O <sub>3</sub>
Santa Rosa Co., Woodlawn	O <sub>3</sub>

As part of the National Air Toxics Trends Stations (NATTS), Pinellas and Hillsborough Counties, Florida, presently conduct monitoring for air toxics. These sites operate on a one-in-six day schedule, and collection frequency may be modified to support the spill response monitoring efforts.

Data for the gaseous pollutants, Nitrogen Dioxide (NO<sub>2</sub>), Ozone (O<sub>3</sub>) and Sulfur Dioxide (SO<sub>2</sub>) will be collected continuously at the monitoring sites specified above.

For short-term data collection, Region 4 will rely on SESD for VOC and SVOC sampling and the states for PM<sub>2.5</sub> monitoring. Sampling and monitoring support may also be supplied by the Emergency Response and Removal Branch (ERRB) OSCs with START contractors. EPA ASPECT aerial flyovers will take place during in-situ burn operations. The ASPECT sensors and monitors will collect particulate and combustion product data.

### **3.2.4 Air Sampling and Monitoring Program for Oil at Landfall**

The air sampling and monitoring program for British Petroleum Oil Spill landfall operations will be modified as necessary to adjust for wind direction and landfall location. The Region 4 SESD air sampling network will include VOC and SVOC sampling conducted by SESD and ILS personnel. PM<sub>2.5</sub> sampling will be provided by the respective state agencies. In addition to the SESD sampling network, ERT, START contractors and EPA NDT ASPECT may supplement this sampling network with real-time monitors, aerial flyovers as necessary, real-time speciated VOC sampling for BTEX compounds using the TAGA and collection of whole air samples using SUMMA<sup>®</sup> canisters and grab samples using Tedlar bags.

#### **3.2.4.1 Particulate Matter (PM<sub>2.5</sub>)**

##### **3.2.4.1.1 PM<sub>2.5</sub> Air Monitoring (Continuous PM<sub>2.5</sub>)**

**REGION 4 Air Particulate PM<sub>2.5</sub> Monitoring:** EPA will monitor PM<sub>2.5</sub> concentrations at the enhanced 5 fixed sites using continuous PM<sub>2.5</sub> monitors operated by the Region 4 state agencies (Florida, Alabama, and Mississippi). The monitors used will be MetOne E-BAM PM and the MetOne BAM 1020 which use beta attenuation technology to measure PM concentrations on a continuous basis. The five areas being used by EPA for VOC and SVOC sampling are equipped with these continuous PM<sub>2.5</sub> monitors. These areas are, Waveland, Mississippi, Gulfport, Mississippi, Fairhope, Alabama, Pensacola, Florida, and Panama City, Florida. A map showing these sample locations is provided in Section 3.5 of this QASP. These continuous PM monitors will be used for monitoring the burn events. These continuous monitors have a distinct advantage over filter based methods in that the data can be transmitted directly to a central location via telephone line or satellite link. The enhanced sites are part of the regular ambient air monitoring network and have been approved by EPA Region 4 as meeting 40 CFR Part 58, Appendix E sitting criteria for ambient air monitoring. Additional real-time portable PM<sub>2.5</sub> air monitors may be used to identify plumes in real-time to identify pollutant plumes.

#### **3.2.4.1.2 PM<sub>2.5</sub> FRM Air Sampling (24hr filter based)**

**REGION 4 Air Particulate PM<sub>2.5</sub> Sampling:** Eight of the state operated monitoring sites on the Gulf Coast currently sample for PM<sub>2.5</sub> using the filter-based method sampling for 24 hours on a 1 in 3 day schedule. As conditions warrant, the PM<sub>2.5</sub> filter based sampling may be increased to every day sampling.

#### **3.2.4.2 Sampling for Organic Compounds in the Ambient Air**

**REGION 4 VOC (TO-15) and SVOC (TO-13A) Composite Sampling:** Volatile Organic Compound (VOC) 24-hour composite sampling and Semivolatile Organic Compound (SVOC) 24-hour composite sampling will be conducted daily at the 5 enhanced sites: Waveland, Mississippi, Gulfport, Mississippi, Fairhope, Alabama, Pensacola, Florida, and Panama City, Florida. A map showing these sample locations is provided in Section 3.5 of this QASP. VOC sample collection will start with the initial field deployment. SVOC sampling will be phased in later as resources become available.

VOC samples will be collected using evacuated six-liter (L) SUMMA canisters. Once collected and analyzed by the laboratory the results from these samples will be used to evaluate VOC impacts to the ambient air as a result of the crude oil. In the beginning phase of the study, the VOC samples will be analyzed by the SESD laboratory using the SESD modified TO-15 method. The evacuated SUMMA canisters will be opened and allowed to collect ambient air over a period of 24 hours. After this initial 24 hours of sampling, the canister will be closed and shipped that evening to the analytical laboratory for analysis. This shipping time is estimated to be 1 day for most samples. After the sample is received at the laboratory, the expected analysis time of the sample is 2 days. Only cursory analytical quality control will be performed because of the need to have this data supplied to the decision makers as soon as possible. The time required for this QC is anticipated to be approximately 2 days. The overall turn around time from deploying the canister in the field, through shipment to the laboratory, and final analytical results being provided to the Unified Command is 5 to 6 days. It is expected that as the study progresses the continued analysis of these VOC samples will be conducted by a contract laboratory.

To evaluate the SVOC impacts to the ambient air as a result of the crude oil, SVOC samples will be collected using PUF high volume samplers and PUF/XAD cartridges. The duration of the sample collection will be 24hrs. Samples will be submitted to ERG (Eastern Research Group) for analytical analyses using ERG's modified EPA compendium method TO-13A. After this initial 24 hours of sampling, the PUF/XAD cartridges will be packaged and shipped that evening to the analytical laboratory for analysis. This shipping time is estimated to be 1 day for most samples. After the sample is received at the laboratory, the sample will be run through an extraction. This extraction of the sample from the UFF/XAD sample media is expected to take 24 hours. After the sample is extracted, the expected analysis time of the sample is 2 to 3 days. Only cursory analytical quality control will be performed because of the need to have this data supplied to the decision makers as soon as possible. The time required for this QC is anticipated to be approximately 2 days. The overall turn around time from deploying the PUF/XAD cartridge being deployed in the field, through shipment to the laboratory, and final analytical results being provided to the Unified Command is 6 to 7 days.



Because field personnel for this environmental investigation can not ship samples via UPS on either Saturday or Sunday, some samples will have longer than a 1 day transit time to the laboratory. Those samples deployed on Friday and Saturday will be shipped together with the Sunday samples on Monday.

**REGION 4 VOC (TO-15) Grab Sampling:** VOC grab sampling will be conducted as requested or necessary according to meteorological patterns using evacuated 6-L SUMMA canisters or Tedlar bags over a period of approximately 5 minutes without the use of a flow control device. The VOC grab samples collected in the SUMMA canisters will be analyzed by the SESD laboratory using the SESD modified TO-15 method. It is expected that as the study progresses the continued analysis of these VOC samples will be conducted by an outside laboratory.

### **3.2.5 Sampling for Oil Dispersants in the Ambient Air**

**REGION 4 VOC (TO-17) Composite Sampling:** The compounds designated by EPA to be indicators for the presence of the oil dispersants (Corexit 9500 and 9527) in the ambient air are propylene glycol and 2-Butoxyethanol. These VOC oil dispersant markers will be difficult to observe using EPAs TO-15 Compendium Method. As resources become available, EPA Region 4 will begin employing EPA Compendium Method TO-17. TO-17 will be used to search for these marker compounds that may not be easily detectable via the EPA TO-15 method. The TO-17 method utilizes sorbent tubes for collecting Volatile Organic Compound (VOC) composite samples. Again, as resources become available, this sorbent tube composite sampling will be conducted daily at the 5 enhanced sites: Waveland, Mississippi, Gulfport, Mississippi, Fairhope, Alabama, Pensacola, Florida, and Panama City, Florida. A map showing these sample locations is provided in Section 3.5 of this QASP.

## **3.3 SAMPLE 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 SESD procedure SESDPROC-002-R4, *SESD Operating Procedure for Control of Records*, and SESDPROC-010-R3 *SESD Operating Procedures for Logbooks*.

## **3.4 SAMPLE PRESERVATION, CONTAINERS, AND HOLD TIMES**

Once collected, air samples for particulate matter will be stored in antistatic plastic baggies. The PM<sub>2.5</sub> samples will also be stored at and shipped at 4 degrees centigrade. There are no holding time requirements for the sample storage for the continuous PM<sub>2.5</sub> monitors. FRM PM<sub>2.5</sub> samples stored and shipped at 4 degrees centigrade have a holding time of 30 days. FRM PM<sub>2.5</sub> samples stored and shipped at ambient temperatures have a holding time of 10 days.

VOC samples collected for TO-15 analysis have a holding time of 30 days and are not required to be chilled for sample preservation. VOC samples collected for TO-17 analysis also have a

holding time of 30 days but are required to be chilled for sample preservation. After sample collection, SVOC PUF/XAD cartridges should be shipped and stored chilled (<4°C) until receipt at the analytical laboratory, after which samples should be refrigerated at less than or equal to 4°C for up to 7 days prior to extraction; extracts should be analyzed within 40 days of extraction. The samples will be sent to the designated laboratory by a common carrier. SVOC PUF/XAD cartridges are not required to be chilled prior to sample collection.

The table following summarizes these preservation and holding time requirements. Because of the emergency response requirements of this investigation VOC and SVOC samples collected for this environmental investigation will be processed faster than the allowable maximum holding times. It is anticipated that VOC analytical analysis will be analyzed in 24 to 48 hours of receipt of samples and SVOC analysis will be analyzed in no less than 4 to 5 days of receipt of samples. Shipping of samples is anticipated to take 24 hrs for delivery from the field to the laboratory. It should be noted that sample times for the VOC and SVOC samples collected over a 24hr duration are recorded on the chain of custody with the start time and not the sample end time.

Name	Analytical Methods	Container / media	Preservation	Minimum Volume	Maximum Holding Time
Particulate Matter (FRM PM <sub>2.5</sub> )	40 CFR Part 50, Appendix L	PTFE Filter	Antistatic bags, <4°C	16.67 L/min for 24 hrs	Ambient Temp.: 10 days
					<4°C =30 days
Continuous PM <sub>2.5</sub>	40 CFR Part 50, Appendix L	NA	NA	16.67 L/min	NA
VOCs	TO-15	SUMMA <sup>®</sup> Canister	None	6 Liter @ 24hr duration	30 days
	TO-17	Sorbent Tubes	<4°C after sample collection	No less than 300mL	30 days
SVOCs	TO-13A	PUF/XAD Cartridge	<4°C after sample collection	300 m <sup>3</sup> @ 0.225 m <sup>3</sup> /min	Extraction 7 days
					Analysis 40 days

All analyzed samples will be disposed by the designated laboratory in accordance with the laboratory SOPs.

### **3.5 FIGURE OF REGION 4 AMBIENT AIR NETWORK FOR BP SPILL**

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## **4. ANALYTICAL APPROACH**

### **4.1 VOC ANALYSIS**

Air VOC samples collected by EPA Region 4 SESD will be analyzed by SESD Analytical Support Branch's (ASB) modified TO-15 compendium method (Standard Operating Procedure for the Determination of Volatile Organic Compounds in Air Collected in Specially Prepared Canisters and Analyzed by Gas Chromatography-Mass Spectrometry). Additional VOC analysis for compounds not covered via TO-15 may be contracted to an outside laboratory as resources become available.

#### **4.1.1 EPA SESD Modified Compendium Method TO-15**

A sample of air is drawn through a sampling train comprised of components that regulate the rate and duration of sampling into a pre-evacuated passivated canister. After the sample is collected, the canister valve is closed, an identification tag is attached to the canister and the canister is returned to the laboratory for analysis. Upon receipt at the laboratory, the canister tag data is recorded and the canister is stored until analysis. Storage times of up to 30 days have been demonstrated for many of the VOCs.

The canister is normally pressurized using 99.9997% (or highest available) minimum purity research grade nitrogen (RGN) gas to 30 psia, spiked with surrogate compounds and allowed to equilibrate for at least 2 hours. If required, the sample may be diluted at this point by transferring a known volume to an empty canister which is then pressurized with RGN nitrogen. (Compendium Method TO-15 uses zero-air as the balance gas. However, because our purchased standards are made up in nitrogen and connected to both the dynamic diluters, we use RGN nitrogen as our balance gas. Additionally, nitrogen is also used with our canister cleaning system.)

Then routinely, 500 cc (though less may be used) from the sample canister is directed through multi-sorbent concentrator which removes excess water vapor and concentrates the sample components. After these steps are completed, the VOCs are thermally desorbed and re-focused using liquid nitrogen for introduction to the GC column. The column is temperature-programmed to separate the compounds which are detected by a linear quadrupole mass spectrometer continuously scanning a wide range of mass to charge ratios (SCAN mode).

Mass spectra for individual peaks in the total ion chromatogram are examined with respect to the fragmentation pattern of ions corresponding to various VOCs and including the intensity of primary and secondary ions. The fragmentation pattern is compared with stored spectra taken under similar conditions, in order to identify the compound. For any given compound, the intensity of the primary fragment is compared with the system response to the primary fragment for known amounts of the compound. Based on a 5-point calibration curve, this method establishes the compound concentration that exists in the sample. The described quantitative method is based on Compendium Method TO-15 and meets or exceeds its criteria.

<b>SESD VOC Target Analytes with Associated MDLs (ug/m<sup>3</sup>)</b>					
<b>Analyte</b>	<b>MDL</b>	<b>Analyte</b>	<b>MDL</b>	<b>Analyte</b>	<b>MDL</b>
Propene	0.030	Vinyl acetate	0.050	Tetrachloroethene (Tetrachloroethylene)	0.10
Dichlorodifluoromethane (Freon 12)	0.050	Methyl Ethyl Ketone	0.040	Methyl Butyl Ketone	0.020
1,2-Dichlorotetrafluoroethane (Freon 114)	0.10	cis-1,2-Dichloroethene	0.060	Dibromochloromethane	0.10
Chloromethane	0.030	Ethyl Acetate	0.070	1,2-Dibromoethane (EDB)	0.11
Vinyl chloride	0.040	Chloroform	0.060	Chlorobenzene	0.050
1,3-Butadiene	0.070	Tetrahydrofuran	0.050	Ethyl Benzene	0.060
Bromomethane	0.080	1,1,1-Trichloroethane	0.080	(m- and/or p-)Xylene	0.11
Chloroethane	0.050	Cyclohexane	0.060	o-Xylene	0.060
Vinyl bromide	0.060	Carbon Tetrachloride	0.080	Styrene	0.050
Trichlorofluoromethane (Freon 11)	0.070	1,2-Dichloroethane	0.060	Bromoform	0.12
1,1,2-Trichloro-1,2,2-Trifluoroethane (Freon 113)	0.11	Benzene	0.050	1,1,2,2-Tetrachloroethane	0.10
1,1-Dichloroethene (1,1-Dichloroethylene)	0.050	Isooctane	0.070	4-Ethyltoluene	0.12
Acetone	0.070	Heptane	0.060	1,3,5-Trimethylbenzene	0.070
Isopropanol	0.050	Trichloroethene (Trichloroethylene)	0.11	1,2,4-Trimethylbenzene	0.070
Carbon disulfide	0.030	1,2-Dichloropropane	0.070	1,3-Dichlorobenzene	0.070
3-Chloropropene	0.13	1,4-Dioxane	0.050	1,4-Dichlorobenzene	0.090
Methylene Chloride	0.040	Bromodichloromethane	0.090	Benzyl chloride	0.070
Acrylonitrile	0.040	cis-1,3-Dichloropropene	0.060	1,2-Dichlorobenzene	0.090
Methyl T-Butyl Ether (MTBE)	0.060	Methyl Isobutyl Ketone	0.040	1,2,4-Trichlorobenzene	0.070
trans-1,2-Dichloroethene	0.050	Toluene	0.050	Hexachlorobutadiene	0.12
Hexane	0.060	trans-1,3-Dichloropropene	0.070		
1,1-Dichloroethane	0.060	1,1,2-Trichloroethane	0.080		

#### 4.1.2 Analytical Approach for Oil Dispersants Assessment

The TO-17 method utilizes sorbent tubes for collecting Volatile Organic Compound (VOC) composite samples. This method is an alternative to the canister-based TO-14 and TO-15 methods. The TO-17 method involves passing ambient air through solid sorbent tubes. Sampling rates range from 10 to 200mL/min. The required minimum volume of ambient air to be sampled through the sorbent tube is 300mL. After sample collection the sorbent tubes are shipped chilled (<4°C) to the laboratory for analysis. The analysis method is similar to TO-15 in that a GC/MS is used as the analytical system. The difference in the methods is that the TO-17 method requires a

thermal desorption sample tube to be performed prior to analysis with the GC/MS. Holding times for samples sorbent tubes are up to 30 days.

## **4.2 SVOC ANALYSIS**

Air SVOC samples collected by EPA Region 4 SEDS are currently contracted to be analyzed by Eastern Research Group (ERG) by EPA's compendium method TO-13A.

### **4.2.1 ERG's implementation of EPA Compendium Method TO-13A**

Sampling modules containing polyurethane foam (PUF), petri dishes containing filters, CoC forms and all associated documentation will be shipped to the ERG laboratory from the field. Upon receipt at the laboratory, samples will be logged into the laboratory sample tracking system and sent to the sample preparation laboratory. Sample preparation and analysis procedures are based on SW-846 Method 3540C for sample preparation and EPA Compendium Method TO-13A for analysis using Selected Ion Monitoring techniques. The hold time is two weeks (14 days) after sampling for extraction and 45 days after extraction for analysis.

Sample extracts will be analyzed for PAHs using the analytical procedures outlined in EPA Compendium Method TO-13A, using Selected Ion Monitoring. Instrument operating conditions are shown in Table 2 of EPA Compendium Method TO-13A and the laboratory SOPs ERG-MOR-044<sup>1</sup>. The mass spectrometer will be tuned and mass-calibrated as required using perfluorotributylamine (FC-43), per the manufacturer's instructions. The tune of the instrument is verified by injecting 50ng of DFTPP and checking the ion abundance criteria against the ion abundance criteria listed in Table 3 of EPA Compendium Method TO-13A. If the DFTPP mass spectrum does not meet method specifications, the DFTPP is re-analyzed or the mass spectrometer is re-tuned so that the instrument will meet the tuning criteria. The DFTPP tuning criteria must be met before analysis of samples can begin. The acceptability of the instrument tune will be verified by analysis of the DFTPP solution daily, or every 12 twelve hours if the instrument is operated for 24 hours a day. Analytical procedures for performance of the Selected Ion Monitoring analysis are presented in ERG-MOR-049<sup>1</sup> for analysis by EPA Compendium Method TO-13A.

<b>SVOC Target Analytes with ERG MDLs</b>		
<b>Analyte</b>	<b>MDL</b>	
	<b>ng/μL</b>	<b>ng/m<sup>3</sup></b>
Naphthalene	0.3373	1.124
Acenaphthylene	0.0111	0.0369
Acenaphthene	0.0167	0.0558
Fluorene	0.0122	0.0407
9-Fluorenone	0.0120	0.0401
Fluoranthene	0.0101	0.0337
Pyrene	0.0099	0.0330
Phenanthrene	0.0316	0.105
Anthracene	0.0123	0.0409
Retene	0.0302	0.1005
Benz(a)anthracene	0.0123	0.0411
Cyclopenta(c,d)pyrene	0.0134	0.045
Chrysene	0.0097	0.0323
Benzo(b)fluoranthene	0.0165	0.0550
Benzo(k)fluoranthene	0.0112	0.0373
Benzo(e)pyrene	0.0127	0.042
Benzo(a)pyrene	0.0114	0.0380
Perylene	0.0095	0.0317
Indeno(1,2,3-cd)pyrene	0.0078	0.0258
Dibenz(a,h)anthracene	0.0096	0.0319
Benzo(g,h,i)perylene	0.0082	0.027
Coronene	0.0067	0.022

NOTE: Assumes a 300 m<sup>3</sup> sample volume.

### 4.3 PM<sub>2.5</sub> GRAVIMETRIC ANALYSIS

PM<sub>2.5</sub> samples collected by EPA Region 4 State programs will be weighed by the state's laboratory or their contract laboratory in accordance with 40 CFR Part 50, Appendix L and their existing EPA Region 4 SESD approved QAPP for conducting this analysis.

### 4.4 ANALYTICAL DATA VALIDATION

Analytical data for the VOC and SVOC analysis will be validated by SESD Quality Assurance Section in accordance with the SESD Analytical Support Branch (ASB) Laboratory Operations and Quality Assurance Manual, January 11, 2010. Data validation for PM<sub>2.5</sub> samples collected by EPA Region 4 State programs will be performed by the respective state program in accordance with 40 CFR Part 50, Appendix L and their existing EPA Region 4 SESD approved QAPP.

## 5. QUALITY ASSURANCE

Field sampling activities occurring within Region 4 will follow SESD approved SOPs. The designated laboratory utilized during the investigation will be responsible for QA/QC related to the analytical work.

### 5.1 SAMPLE CUSTODY PROCEDURES

After sample collection and identification, samples will be maintained under chain-of-custody (COC) procedures. Personnel required to package and ship coolers containing potentially hazardous material will be trained accordingly. Sample handling and custody will be performed in accordance with the following SESD Procedures:

- *SESD Analytical Support Branch Laboratory Operations and Quality Assurance Manual, January 11, 2010*
- *SESDPROC-005-R1, SESD Operating Procedure for Sample and Evidence Management*
- *SESDPROC-209-R1, SESD Operating Procedure for Packing, Labelling and Shipping of Environmental and Waste Samples*

SESD and ILS personnel will prepare and complete chain-of-custody forms using FORMS II LITE or SCRIBE for all samples sent for laboratory analysis. The SESD chain-of-custody requirements are documented in SESDPROC-005-R1. A chain-of-custody record will be completed each time a sample or group of samples is prepared for shipment to the laboratory. The record will repeat the information on each sample label and will serve as documentation of handling during shipment. A copy of this record will remain with the shipped samples at all times, and another copy will be retained by the member of the sampling team who originally relinquished the samples.

### 5.2 SAMPLING AND FIELD QC PROCEDURES

Samples will be collected using equipment in accordance with SESDPROC-108-R3, *SESD Operating Procedure for Equipment Inventory and Management*. The volume of the collected sample will be sufficient to perform the analysis requested. Samples will be collected using the proper types of containers and preserved in a manner for the analysis to be performed.

Field Quality Control will be performed in accordance to SESDPROC-011-R2, *SESD Operating Procedure for Field Sampling Quality Control* and SESDPROC-303-R2, *SESD Procedure for Ambient Air Sampling*. Duplicate samples for VOCs and SVOCs will be collected at one monitoring site by placing an identical apparatus next to the primary. The Waveland, MS sampling location is the closest station in Region 4 to the Deepwater Horizon oil spill incident. It has been decided that that Waveland, MS sampling station will be the duplicate sampling location because it has the highest likelihood of having the greatest airborne pollutant concentrations. Trip blanks for VOCs and SVOCs will be shipped to the respective laboratories at 1 per 10 environmental samples collected.



Duplicate and trip blank samples for the PM<sub>2.5</sub> network are being collected and handled in accordance with 40 CFR Part 50, Appendix L and the States air monitoring program QAPPs (Florida, Alabama, and Mississippi). These state QAPPs for the PM<sub>2.5</sub> sampling have been approved by EPA Region 4 SESD.

Personnel responsible for sampling will change gloves between each sample collection/handling activity. Each sample will be assigned a unique identification number and assembled and catalogued prior to shipping to the designated laboratory. SUMMA canisters and SVOC PUF/XAD cartridges will be handled per laboratory and EPA TO Compendium methods.

Station ID's will conform to the format in the table below. Sample ID's will be created by appending the sample date to the Station IDs. Duplicate samples will be designated with the letter "D" appended to the end of the parent sample's Sample ID. Trip Blanks will begin with "TA" followed by the date and end with either a "E" designating it was a trip blank from the east sample run or "W" for the west sample run of the air monitoring network.

<b>LOCATION</b>	<b>STATION ID</b>	<b>SAMPLE ID</b>
Waveland,MS	WAMS	WAMS -051410
Gulfport, MS	GPMS	GPMS -051410
Fairhope, AL	FAAL	FAAL -051410
Pensacola,FL (NAS)	PEFL	PEFL -051410
Panama City, FL	PCFL	PCFL -051410
<b>DUPLICATE</b>	WAMS	WAMS -051410D
<b>TRIP BLK (east)</b>	#DART#	TA-051410E
<b>TRIP BLK (west)</b>	#DART#	TA-051410W

## 6. PROJECT DOCUMENTATION

Field observations will be recorded legibly and in ink and by entry into field logbooks. Chain of Custody records will be maintained and electronic chain of custody will be performed in FORMS II Lite or Scribe.

SESD will review and validate laboratory data and prepare a draft report of the field activities and analytical results. Draft deliverable documents will be provided to management and the ICS command as soon as practicable.

The following field documentation will be maintained as described below. The field project leader will be responsible for ensuring that all requirements for data management and field documentation 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 SESD procedures SESDPROC-002-R4, *SESD Operating Procedure for Control of Records*, and SESDPROC-010-R3, *SESD Operating Procedures for Logbooks*.

**Field Logbook.** The field logbook is a descriptive notebook detailing site activities and observations so that an accurate, factual account of field procedures may be reconstructed. Logbook entries will be signed by the individuals making them.

**Chain-of-Custody Record.** A chain-of-custody will be maintained from the time of sample collection until final deposition. Every transfer of custody will be noted and signed for and a copy of the record will be kept by each individual who has signed it.

**Custody Seal.** Custody seals demonstrate that a sample container has not been tampered with or opened. The individual who has custody of the samples will sign and date the seal and affix it to the container in such a manner that it cannot be opened without breaking the seal.

**Photographic Documentation.** If photographic documentation is produced to document site conditions or sample collection activities a photolog will be maintained. Each photograph will be recorded in the logbook with the camera's assigned name for the digital photograph, location of the photographer, direction the photograph was taken, the subject of the photograph, and its significance (i.e., why the picture was taken). Where appropriate, the photograph location, direction, and subject will also be shown on a site sketch.

## **7. DATA DELIVERABLES**

Analytical data from this environmental emergency response investigation will be provided to the Unified Command for entry into the ICS Scribe database. At the date of this QASP revision this data contact at the Unified Command is Randy Nattis. Adobe PDF copies of all of the analytical data will also be provided to the Unified Command, to the EPA Region 4 SESD management team (Archie Lee, Mike Bowden, and Danny France) and to Carol Kemker and Doug Neeley at EPA Region 4 APTMD. The electronic data from this investigation will ultimately reside and be archived in EPA Region 4 SESD's Laboratory Information Management System (LIMS) "Element" database and SESD's Data Archival and ReTrieval (DART) database.