APPENDIX C

AIR MONITORING AND CONTINGENCY PLAN
for Hurricane Katrina Debris Activities
Louisiana

September 2005

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

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1.1 Background

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, and tasking by the Federal Emergency Management Agency (FEMA) under Emergency Support Function (ESF) 10, *Hazardous Materials* of the National Response Plan, the U.S. Environmental Protection Agency (EPA) has prepared this Air Monitoring and Contingency Plan (AMCP) for Hurricane Katrina Debris Activities to assess decontamination and demolition activities in areas where floodwaters from Hurricane Katrina have receded.

The proposed disposal plans call for hurricane debris to be segregated by removing household hazardous waste, white goods. The remaining construction debris identified during cleanup following Hurricane Katrina will be burned in open pits and incinerators. Proposed debris burn sites are in the process of being identified at this time; however, it is anticipated they will be in the New Orleans metropolitan area and surrounding parishes in southern Louisiana. This plan summarizes the technical scope of work proposed to conduct ambient air sampling.

Controlled burns of segregated debris using air curtains technology has been approved as the disposal method for some Hurricane Katrina debris. By-products of combustion at these burn sites have a potential migrate off-site and may pose a risk to both Human Health and the Environment. A thorough investigation of the health risks requires integrated 24-hour air sampling downstream from burn sites. Due to time constraints, equipment and laboratory availability, budget, and potentially large number of burn sites, it is proposed that the evaluation be limited initially to a small number of separate burn sites that will process specific fuel types (i.e., brush, mixed brush & household, sorted construction/demolition debris, etc.). If downwind emissions from a particular fuel mix do not pose a hazard, the data may be used to determine whether or not similar fuels can be burned without intensive monitoring.

This AMCP describes the technical scope of work to be completed as part of this Emergency Response. The objective of this sampling and monitoring is to determine the nature and type of contaminants that may 1) have impacted disaster areas due to migration of hazardous materials by flood, 2) be present as a direct result of decontamination, demolition, excavation, and waste handling activities, 3) be present as a direct result of the burning of the debris. Further assessment may be warranted based on the results of this sampling and monitoring and/or if the particular area is located near an area of potential concern (such as an area of known chemical storage), and will be addressed in site specific Project Plans.

In addition, the information collected during this phase may be used to develop a plan for further detailed sampling of residential/industrial areas in the affected parishes. Specific sample locations will be determined on a site-specific basis prior to commencing decontamination/demolition activities.

1.2 Project Objectives

The purpose of this plan is to evaluate the effect of building decontamination, demolition, removal, excavation, and waste handling activities, as well as, the effect of debris burns on the surrounding community through the use of real-time air monitoring, and air sampling.

Air monitoring will be performed to measure the presence of volatile organic compounds (VOCs) and particulates in real time. Air sampling will be performed to identify airborne concentrations of asbestos, metals, particulates with an aerodynamic diameter less than or equal to a nominal 10 microns(PM_{10}) and particulates with an aerodynamic diameter less than or equal to a nominal 2.5 microns ($PM_{2.5}$), semi-volatile organics (SVOCs)/polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs) and particulate mercury, and to quantify potential emissions during the handling of all aspects of the hurricane debris. Airborne concentrations of contaminants will be monitored and sampled at upwind background location and at the Site perimeter. This AMCP shall remain in effect during all decontamination, demolition, excavation and waste handling activities.

Ambient air sampling will be conducted for the following constituents:

- PAH/SVOCs by NIOSH 5515 (analyte list may be extended)
- Volatile Organic Compounds (VOCs) by NIOSH 1500, 1501, 1003
- PM10
- PM-2.5 for particulate and metals (same filter)
- Mercury, particulate
- Asbestos fibers and mineral fragments that are the same size and shape by a modified AHERA method
- Other fixed gases as indicated by the waste stream and analytical data

Comment: Analyze for lead byAA???

Principal objective of the program is to provide information to the appropriate officials who are responsible for determining if the debris handling and burns may affect public health.

This plan is in addition to and in support of the Regional Air Sampling Plan for Hurricane Katrina (RASP) and the Concept Plan for Ambient Air Monitoring after (CPAAM)

1.3 Scope

The AMCP specifies air monitoring requirements (i.e., locations, frequencies, and parameters) for the Hurricane Katrina Decontamination/Demolition, Removal/Remedial Action. The AMCP provides for the protection of off-site areas. This AMCP will specify the minimum requirements for real-time and residential monitoring. The AMCP contains sufficient details to address sample collection, management, and analysis. However, specific sampling locations will be based on site-specific characteristics (topography, buildings, access to power, predominant wind directions, etc.).

Agencies and contractors performing various aspects of demolition work will be responsible for developing their own exposure monitoring plans and for conducting their own personal monitoring for appropriate work activities. Personal monitoring will be conducted to estimate potential exposure and quantify airborne concentrations of contaminants likely generated by their work per Occupational Safety and Health Administration (OSHA) requirements. OSHA will likely be available to partner with contractors and agencies to fulfill these requirements.

This sampling is for protection of off-site areas. Off-site or perimeter sampling will be performed by the US EPA or its contractors in cooperation with Louisiana Department of Environmental Quality and local jurisdictions. Ambient air monitoring and sampling will be conducted at the site perimeter, as well as up and down wind of site activities, including waste load out, decontamination stations and other locations of interest (potential emissions).

2.0 OVERVIEW OF DECONTAMINATION/DEMOLITION ACTION

This portion of the Hurricane Katrina project involves the decontamination, demolition, excavation, containerization, transportation and disposal, including air curtain incineration of materials potentially contaminated with asbestos (and other minerals), metals, VOCs, SVOCs/PAHs, PM_{10}, $PM_{2.5}$ and particulate mercury.

3.0 APPROACH

The AMCP portion of the project will be organized as follows:

- Real-time air monitoring on-site (as needed for emergency purposes)
- Perimeter real-time air monitoring to determine potential off-site migration
- Perimeter/rural/residential air sampling to determine potential off-site impacts

4.0 SAMPLING NETWORK

Comment: Change ou to sites

Air sampling locations will be contingent upon site specific conditions, and may vary from day to day, based on meteorological conditions and forecasts. Short term (1 to 2 months) monitoring events cannot rely on climatological data for location placement. These events will require the use of an on-site meteorological tower and/or a daily local weather forecast. Long term (>6 months) monitoring events may be able to utilize monthly, seasonal, or annual climatological data for monitor placement. Due to varying meteorological conditions, sample locations may be upwind one day and downwind the next.

The distribution of the sampling locations is dependent upon the locations of the burn sites Particular attention will be paid to the refineries and other industries that are operating under emergency conditions. Attention will also be given to rural residential burn sites that may be occurring. One or two locations may be identified to provide a reliable background

characterization for several of the target burn sites. Additionally, air monitoring data from the RAMP and information from the CPAAM after Hurricane Katrina will be employed in the decision- making process and interpretation of data.

General considerations that should be taken into account include: vertical placement above the ground, horizontal spacing from nearby obstructions, unrestricted air flow, and distance from roads. (USEPA 1990). Sampling locations should also take into account the effects of local topography on day/night wind shifts (i.e. sea/land breeze, valley/mountain breeze). Also the potential impact from upwind or background sources should be considered. (USEPA 1995).

4.1 Air Monitoring

Comment: Has army corp agree to this if not delete all reference to this section

Comment: Yes the ACOE and contractors have agreed to this.

Air monitoring for particulates near a site may be performed for comparison with established action levels to determine the need for additional suppression measures or work stoppage. This real-time particulate monitoring may be conducted at sampling locations, which will be determined on a site-specific basis.

4.2 Air Sampling

4.2.1 Perimeter/Fence Line Sampling

Perimeter/fence line sampling will be performed to gauge the effectiveness of the on-site dust control program and to estimate off-site migration of contaminants of concern. Considerations to take into account include predominant wind direction, areas near suspected high contamination, accessibility, security,representativeness, and access to electrical power.

4.2.2 Residential Sampling

As an added measure of safety, a residential sampling program may be instituted. Locations to be considered shall include the nearest resident/habitable building, and sensitive receptors. Sensitive receptors should include daycare centers, schools, parks, hospitals, as well as areas proximal to suspected elevated contamination. Site perimeter reconnaissance may reveal additional local concerns. The requirements for residential sampling will be determined once sites have been identified.

4.3.3 Air Sampling Locations

Sampling locations shall be identified for each site. It is anticipated that locations will include up to two upwind or reference sampling locations, up to four downwind decontamination/demolition/excavation perimeter samples and up to three residential locations (including sensitive receptors).

The Environmental Unit Leader or designee shall determine the number of downwind perimeter and residential sampling locations based on , operable unit dimensions, topography and best professional judgment.

5.0 FREQUENCY OF MONITORING AND SAMPLING

5.1 Frequency of Air Monitoring

Perimeter/fence line and debris burn particulate monitoring may be conducted when decontamination, demolition, and excavation activities are occurring, to determine the effectiveness of the on-site dust suppression program and effectiveness of the air curtain incinerators.

Comment: brain we only have enough equipment to monitor at two location each day and one for complaint area

Comment: I was assuming we could draw from the regions and START.

Comment: Agree 1 l /m for 24 hours

5.2 Frequency of Air Sampling

Air sampling for potential contaminants (excavation, perimeter, fence line, and residential) will be conducted at two burn sites daily during debris operations. A third set of "floater" sampling equipment will be available for deployment, as needed, in areas that may require immediate attention.

6.0 METHODOLOGIES

6.1 Air Monitoring for Particulates Methodology

Particulates will be monitored either utilizing the Thermo MIE DataRAM Real-time Aerosol Monitor or an instrument with an equivalent range and sensitivity. The DataRAM is a high sensitivity nephelometric monitor whose light-scattering sensing configuration is optimized for the measurement of the concentration of airborne dust, smoke, fumes, and mists in ambient environments. The instrument samples the air at a constant flow rate by means of a diaphragm pump and passes the sampled air through the optical sensing stage. The DataRAM covers a range of measurement from 0.1 Fg/m^3 to 400 milligrams per cubic meter (mg/m^3) with monitoring information being logged internally. The PM_{10} attachment will be used with these instruments.

6.2 Air Sampling

Ideally, all air sampling will be performed over a maximum operational period of 24 hours. However, if the site-specific activity, that is being monitored, operates for less than 24 hours, sampling may cease when on site activity ceases. Asbestos by a modified Asbestos Hazard Emergency Response Act (AHERA) and ISO 10312Air sampling for asbestos and mineral fragments (that are the same size and shape) will be conducted using ERT standard operating procedure (SOP) #2015, *Asbestos Sampling.* For all asbestos sampling locations, an asbestos sampling train consisting of 0.8 micron (Fm), 25-millimeter (mm) mixed cellulose ester (MCE) filter connected to a sampling pump will be used. The top cover from the

cowl extension on the sampling cassette shall be removed ("open-face") and the cassette oriented face. An SKC or equivalent sampling pump will be calibrated to collect approximately 1 liter per minute (L/min) of air through the filter. Over a 24 hour period, this flow rate will allow a target volume of 1440 liters (L) and provide a sensitivity limit of less than or equal to 0.01f/cc. One 24-hour sample will be collected per day. Samples will be archived for International Organization for Standardization (ISO) Method 10312, *Ambient Air- Determination of Asbestos Fibers: Direct Transfer Transmission Electron Microscopy Method* should additional information be required. It is anticipated that air samples will be analyzed by ISO 10312 at a rate of 2 percent (%) of the phase contrast microscopy (PCM) analysis.

Comment: Using low flow for 24 hrs. 1L/min for 24 hrs or as long as burn operation for day is running

Comment: Verify comfort with SL

Comment: Verify we want to do this. $$$$ $800/sample yes

PAH/SVOC Air Sampling. Ambient air samples for PAHs/SVOCs analysis will be collected using SKC (or equivalent) personal air sampling pumps and either 150-milligram (mg) or 600-mg washed XAD-2 solid sorbent tubes fitted with a 2-µm, 37- mm Teflon (PTFE) filter cassette. Sampling flow rate will be set at 1 L/min. Sampling procedures will follow guidelines established in modified NIOSH Method 5515, *Polynuclear Aromatic Hydrocarbons by GC*.

VOCs by NIOSH Methods 1500, 1501 and 1003. Ambient air samples for VOC analysis will be collected using SKC (or equivalent) personal air sampling pumps and either 150-mg or 600- mg charcoal tubes. Sampling flow rate will be set at 1 liter per minute (L/min). Sampling procedures will follow guidelines in REAC SOP #2103, Charcoal Tube Sampling in Ambient Air and in modified NIOSH Methods 1501, *Aromatic Hydrocarbons*; 1500, *Hydrocarbons BP 36°-126°C*; and 1003, *Halogenated Hydrocarbons*.

Metals by NIOSH Method 7300. Ambient air samples for metals analysis will be collected using SKC (or equivalent) personal air sampling pumps and a 0.8-µm pore size 37-mm MCE filter cassette. Sampling flow rate will be set at 1 L/min. Sampling procedures will follow the guidelines established in NIOSH Method 7300, *Elements, ICP*.

Particulate Mercury by NIOSH Method 7300. Ambient air samples for particulate Hg analysis will be collected using SKC (or equivalent) personal sampling pumps and a 0.8-µm pore size 37-mm MCE filter cassette. Sampling flow rate will be set at 1 L/min. Sampling procedures will follow the guidelines established in modified NIOSH Method 7300, *Elements.*

PM2.5 Sampling. On-site PM2.5 sampling will be conducted over a 23- to 25-hour period using a polytetrafluoroethylene (PTFE) pre-conditioned and pre-weighed filter. The mass concentration of PM2.5 in the ambient air will be computed as the total mass of collected particles in the PM2.5 size range divided by the actual volume of air sampled expressed in micrograms per cubic meter (µg/m3). This is contingent upon the availability of AC power.

PM10 Sampling. On-site PM10 sampling will be conducted over a 23- to 25-hour period using a PTFE pre-conditioned and pre-weighed filter. The mass concentration of PM10 in the ambient air will be computed as the total mass of collected particles in the PM10 size range divided by the actual volume of air sampled expressed in micrograms per cubic meter (µg/m3). This is contingent upon the availability of AC power.

7.0 METEOROLOGICAL MONITORING

To document local area wind flow (upwind, downwind, and background) conditions meteorological monitoring must be performed. A meteorological monitoring station will be set up in a location representative of the area where on-site activities will be performed. A tower will be erected to monitor wind speed, wind direction, barometric pressure, temperature, solar radiation, and rainfall. All meteorological parameters will be situated and measured in accordance with the "Quality Assurance Handbook for Air Pollution Measurement Systems" Volume IV: Meteorological Measurements (March, 1995).

For short-term duration projects, such as these (assuming each individual site takes less than 6 months), a portable 3-meter meteorological tower will be deemed acceptable. In order to maintain valid measurement data, meteorological sensors are required to be field calibrated periodically and factory calibrated annually, with the exception of the solar radiation sensor that must be calibrated every two years.

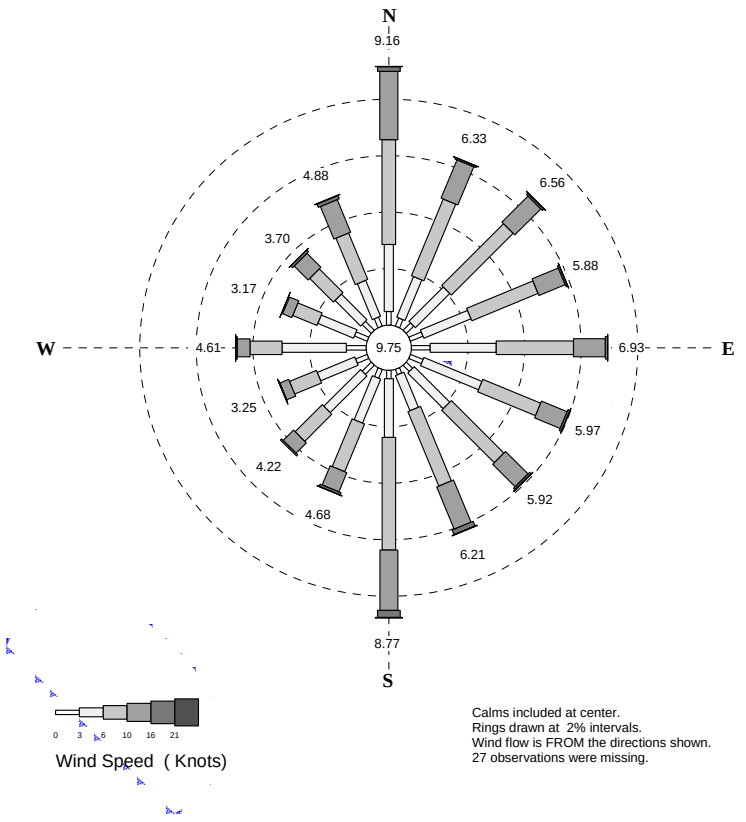
7.1 HISTORICAL METEROLOGICAL DATA

The proper selection of upwind background sampling locations is essential to the evaluation of burn site impacts separate from other emission sources. At a minimum, it is anticipated that wind rose information will be of value in defining the predominant upwind location to be used as a background location. Figure 1 depicts the annual wind rose from 1985 through 1995 for the airport in New Orleans, LA. Figure 2 displays the seasonal wind rose for the months of September through December from 1985 through 1995 for the airport in New Orleans, LA. Due to the variability of the historical meteorological data for New Orleans, the wind directions, and hence the suitability of the background locations, will be assessed on a regular basis to ensure that the background location is still appropriate. Where appropriate, short term or long term adjustments to the location of the background sample locations will be made to address wind direction variability.

Comment: Is this modeling section need or just the refernce?

Comment: The modeling should be included. At a minimum, wind roses should be generated.

Figure 1
Annual Wind Rose



PERCENT OCCURRENCE: Wind Speed (Knots)
LOWER BOUND OF CATEGORY

DIR	0	3	6	10	16	21
N	0.48	2.37	3.71	2.42	0.16	0.01
NNE	0.31	1.55	2.94	1.47	0.05	0.01
NE	0.37	1.72	3.09	1.30	0.07	0.01
ENE	0.48	1.80	2.53	1.01	0.06	0.01
E	0.66	2.33	2.73	1.12	0.08	0.01
ESE	0.48	2.22	2.21	0.98	0.08	0.01
SE	0.31	1.78	2.62	1.12	0.07	0.02
SSE	0.20	1.34	2.86	1.62	0.18	0.02

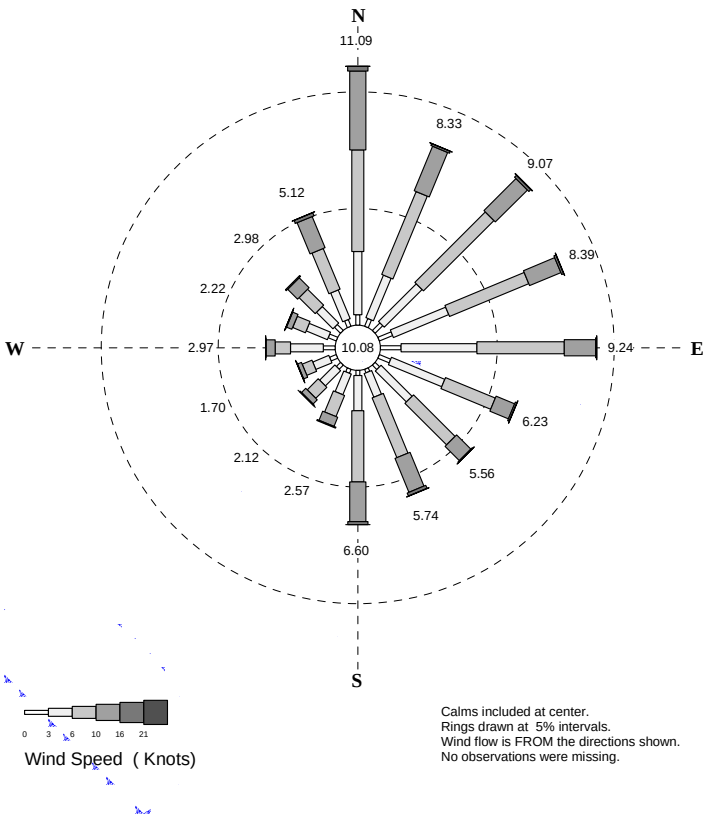
TOTAL OBS = 96380 MISSING OBS = 27

PERCENT OCCURRENCE: Wind Speed (Knots)
LOWER BOUND OF CATEGORY

DIR	0	3	6	10	16	21
S	0.29	2.08	3.99	2.13	0.25	0.03
SSW	0.34	1.68	1.83	0.74	0.09	0.01
SW	0.45	1.83	1.36	0.51	0.06	0.00
WSW	0.44	1.43	1.03	0.34	0.02	0.00
W	0.70	2.27	1.13	0.46	0.05	0.00
WNW	0.48	1.37	0.93	0.35	0.04	0.00
NW	0.45	1.28	1.19	0.70	0.09	0.00
NNW	0.35	1.37	1.78	1.24	0.12	0.02

CALM OBS = 9400 PERCENT CALM = 9.75

Figure 2
Seasonal Wind Rose



PERCENT OCCURRENCE: Wind Speed (Knots)
LOWER BOUND OF CATEGORY

DIR	0	3	6	10	16	21
N	0.45	2.71	4.35	3.37	0.20	0.01
NNE	0.36	1.97	3.84	2.06	0.09	0.01
NE	0.46	2.28	4.26	1.94	0.11	0.02
ENE	0.61	2.56	3.67	1.45	0.09	0.01
E	0.88	3.24	3.73	1.34	0.04	0.00
ESE	0.52	2.46	2.31	0.86	0.07	0.02
SE	0.27	1.87	2.51	0.87	0.03	0.01
SSE	0.16	1.09	2.77	1.57	0.14	0.01

TOTAL OBS = 32208 MISSING OBS = 0

PERCENT OCCURRENCE: Wind Speed (Knots)
LOWER BOUND OF CATEGORY

DIR	0	3	6	10	16	21
S	0.21	1.51	3.05	1.70	0.13	0.00
SSW	0.18	0.95	0.98	0.42	0.04	0.00
SW	0.25	0.92	0.67	0.25	0.03	0.00
WSW	0.30	0.75	0.45	0.18	0.02	0.00
W	0.50	1.40	0.66	0.39	0.01	0.00
WNW	0.37	0.99	0.59	0.25	0.02	0.00
NW	0.36	1.00	0.97	0.60	0.05	0.00
NNW	0.31	1.33	1.88	1.45	0.14	0.01

CALM OBS = 3245 PERCENT CALM = 10.08

8.0 DATA QUALITY OBJECTIVES AND CRITERIA FOR MEASUREMENT OF DATA

The purpose of the air sampling for contaminants is to produce data that are, as reasonably possible, an accurate representation of the current levels of airborne contaminants which may be released during site decontamination/demolition activities. These data may be used for a variety of purposes, including the development of human health risk assessment and the evaluation of the adequacy of current measures that have been implemented to protect the public from excessive exposures.

Contaminated material may have been dispersed throughout the Southern Louisiana area. Additionally, numerous properties are anticipated to contain hazardous materials ranging from asbestos to metals. Therefore, there is a need to determine whether these sites could result in an inhalation exposure that poses a health hazard for individuals in the vicinity of the site.

The detection limits (DLs) for air sampling for asbestos will be 0.005 structures per cubic centimeter (s/cc) by AHERA. Lower DLs may be achieved by adjusting the flow rates to obtain maximum loading or by increasing the number of grid openings read. In the event of less than 1400 liters of sample being collected analytical sensitivity can still be met by consulting the following table:

Volume (Liters)	Number of Grid openings to be analyzed
560	24
600	23
700	19
800	17
900	15
1000	14
1100	12
1200	11
1300	10
1400	10

Comment: these number should be changed based on 1440 liters and may be lower because of dust load delte PCM

Two of the three data categories (DCs) based on the two Superfund Data Categories described in the 1993 Office of Solid Waste and Emergency Response (OSWER) Office of Emergency and Remedial Response (OERR) Directive will be used for this WA.

Screening data (SD) is typically used to evaluate the ambient air within the breathing zone for particulates. Screening data without definitive confirmation is not considered to be “data of known quality.” The following requirements for “SD” are applicable:

- Sample documentation in the form of field logbooks and appropriate field data sheets. Chain of custody (COC) records are optional for field screening locations.

- All instrument calibration and/or performance check procedures/methods will be summarized and documented in the field/personal or instrument log notebook. The manufacturer's instructions or SOPs should specify the procedure and frequency for calibration during use.

- Detection limit(s) will be determined and documented, along with the data, where appropriate.

Definitive data is used for all data collection activities that require a high level of accuracy using EPA, NIOSH, American Society for Testing and Materials (ASTM), and other industry-recognized methods. For the data to be definitive, either total measurement error or analytical error must be determined. The following requirements for "Definitive Data" are applicable:

- Sample documentation in the form of field logbooks, the appropriate field data sheets, and chain of custody forms will be provided.

- All instrument calibration and/or performance check procedures/methods will be summarized and documented in the field/personal or instrument log notebook.

- Detection limit(s) will be determined and documented, along with the data, where appropriate.

- Sample holding times will be documented; this includes documentation of sample collection and analysis dates.

- Initial and continuing instrument calibration data will be provided.

- For air samples, field blanks will be included for each day sampling is performed for each analysis. Lot blanks will be included for each lot of sample media used for each analysis.

- Performance Evaluation (PE) samples are optional.

- Analyte identification will be confirmed on 100% of the samples by analytical methods associated with definitive data.

- Quantitation results for all samples will be provided.

- Analytical or total measurement error must be determined on 100% of the samples.

- Analytical error determination measures the precision of the analytical method.

- At a minimum, two media blanks, prepared and analyzed in accordance with the method, calculated and compared to method-specific performance criteria, as applicable.

- Total measurement error is determined from independently collected samples from the same location and analyzed by analytical methods associated with definitive data. Quality control parameters such as the mean, variance, and coefficient of variation is calculated and compared to established measurement criteria.

The number of samples to be collected for this project is presented in Table 1 site , *Field Sampling Summary - Air*, and Table 2, *Analysis and Data Categories Summary - Air*. These tables identify analytical parameters desired; type, volume and number of containers needed; preservation requirements; number of samples to be collected; and associated number and type of QC samples based on the data category.

9.0 DOCUMENTATION

Documents and records that may be generated during this project include:

- HASP
- QAPP
- Laboratory, site log books
- Site map
- Sample labels
- Chain of Custody (COC) forms
- Custody Seals
- Air Sampling Work Sheets
- Instrument printouts
- Data reduction records
- Data assessment forms
- Laboratory analytical reports
- Data Validation Records

All documentation will be recorded in accordance with standard operating procedures.

10.0 SAMPLE PACKING, SHIPPING, AND DOCUMENTATION

The samples will be sent under (COC) to the laboratory for analysis. Scribe will be used for sample management. COC records will be used to document the collection of all air samples. All COC records will receive a peer review in the field prior to shipment of the samples in accordance SOPs. At least two custody seals will be placed across the canister shipping containers to ensure sample integrity.

10.1 Cooler Preparation

In preparation for sample shipment

- Plastic coolers, or similar, will be used for each sample shipment;
- Coolers shall be inspected prior to shipment for cleanliness;
- All cooler drain plugs will be sealed with tape;
- All previous shipping labels will be removed.

10.2 Packing Samples in Coolers

Each sample will be placed in an individual container

10.3 Closing and Shipping of Coolers

Sample documentation will be enclosed in sealed plastic bags taped to the underside of the cooler lid. Coolers will be secured with packing tape and custody seals as described below:

- Cooler lids will be taped shut with strapping tape, encircling the cooler several times;
- Chain of custody seals will be placed on two sides of the lid after closing the lid (one in front and one on the side);
- "This Side Up" arrows will be placed on the sides of the cooler; and
- Coolers will then be shipped to the laboratory by overnight courier as soon as possible. Daily shipments are required to obtain 24-hour turn around required for the Hurricane Katrina site.

11.0 REFERENCES

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TABLE 1. Field Sampling Summary - Air
Hurricane Katrina Site
Southern Louisiana

Analytical Parameter	Sampling Media	Suggested Holding Times	Flow Rate	Volume Min - Max	
AHERA Asbestos	0.8 µm 25 mm MCE Filter	30 Days	1 L/min	1440 L	
$PM_{2.5}$	PTFE filter	NA	16.7 L/min	24000 L	
PM_{10}	PTFE filter	NA	16.7 L/min	24000 L	
VOCS	Charcoal Tubes	14 days	1 L/min	1440L	
PAHs/SVOCs	XAD-2 Tubes	14 days	1 L/min	1440 L	
Metals	MCE filter cassette	6 months	1 L/min	1440 L	
Particulate Hg	MCE filter cassette	21 days	1 L/min	1440L	

Comment: flow rates and sampling times will be revised based on risk assessors required detection limits.

Fm = micrometer
L = liter
L/min = liters per minute
N/A = not applicable
ISO = International Organization of Standardization
TEM = Transmission Electron Microscopy
NIOSH = National Institute of Occupational Safety and Health
mm = millimeter
MCE = mixed cellulose ester

TABLE 2. Analysis and Data Categories Summary - Air
Hurricane Katrina Response
September 2005

Analytical Parameter	Analytical Method	Estimated Limit of Detection[1]	Lot Blanks[2]	Field Blanks[3]	Collocated Samples[4]	Trip Blanks[5]	Breakthrough[6]		
Particulates	Vendor Operating Instructions	0.1 µg/m^3	NA	NA	NA	NA	NA		
Total VOCs	Vendor Operating Instructions	~0.1 ppmv	NA	NA	NA	NA	NA		
VOCs (Carbon Tubes)	Modified NIOSH Methods 1500, 1501, 1003	~2 - 8 µg/tube	1 per day	1 per 20 samples or per day	1 per 20 samples or per day	1 per 20 samples or per day	NA		
PAHs/SVOCs (XAD Tubes)	Modified NIOSH Method 5515 plus BNAs	~20 µg/tube	1 per day	1 per 20 samples or per day	1 per 20 samples or per day	NA	NA		
Metals (MCE Filter Cassettes)	Modified NIOSH Method 7300	~0.5 - 5.0 µg/filter	1 per day	1 per 20 samples or per day	1 per 20 samples or per day	NA	NA		
Mercury (MCE filter cassette)	Modified NIOSH 6009	~0.01 µg/filter	1 per day	1 per 20 samples or per day	1 per 20 samples or per day	NA	NA		
$PM_{2.5}$	40 CFR Part 50 Appendix L	TBD	1 per day	NA	TBD	NA	NA		
PM_{10}	40 CFR Part 50 Appendix J and K	TBD	1 per day	NA	TBD	NA	NA		

TABLE 2. Analysis and Data Categories Summary – Air (Cont'd)
Hurricane Katrina Response
September 2005

Analytical Parameter	Analytical Method	Estimated Limit of Detection[1]	Lot Blanks[2]	Field Blanks[3]	Collocated Samples[4]	Trip Blanks[5]	Breakthrough[6]		
Mercury (MCE filter cassette)	Modified NIOSH 6009	~0.01 µg/filter	1 per day	1 per 20 samples or per day	1 per 20 samples or per day	NA	NA		
Asbestos (TEM)	40 CFR 763 SubPart E AHERA and ISO 10312	0.005 s/cc	1 per day	1 per 20 samples or per day	1 per 20 samples or per day	NA	NA		
$PM_{2.5}$	40 CFR Part 50 Appendix L	TBD	1 per day	NA	TBD	NA	NA		
PM_{10}	40 CFR Part 50 Appendix J and K	TBD	1 per day	NA	TBD	NA	NA		

SD = Screening data, SD/DC = Screening Data with Definitive Confirmation, DD = Definitive Data, ppbv = parts per billion by volum
TAGA = trace atmospheric gas analyzer

1. To be determined by the person arranging the analysis. Should be equal to or less than the action level.
2. Required for all data categories at a minimum rate of 10 percent of the total sample or one per sampling event per lot.
3. Mandatory for Definitive Data at a minimum rate of 5 percent of the total sample or one per sampling event. Certain methods frequency.
4. Required for all data categories at a minimum rate of 5 percent of the total sample or one per sampling event.
5. Optional for SD/DC and mandatory for DD at a minimum rate of 5 percent of the total sample or one per sampling event.
6. Recommended for SD/DC and DD. Rate is method dependent. Requirement for use is based on deviations from accepted prc conditions.
7. Performance evaluation samples are optional for SD/DC and DD at one per parameter per matrix. For SD, enter "NA."
8. QA objective desired: SD, SD/DC, DD.