Document Readers

SF-424
Application for Federal Assistance
Title: Broward County Board of County Commissio

Document Status

Document Phase: Draft
Last Modified: 05/20/2011
Current Editor: Mike Jones
Delegate: Dennis Finney

IGMS Information

Competition Close Date:
AAShip:
Approving Region: HQ
Project Officer: Mike Jones
PO Phone:
Awarding Region: HQ
Grant Coordinator:

Solicitation Information

Opportunity ID:	EPA-OAR-OAQPS-11-05	**Competition ID:**	
Opportunity Title:	Community-Scale Air Toxics Ambient Monitoring	**Competition Title:**	
Opening Date:	03/23/2011	**Closing Date:**	05/23/2011
Grants.Gov Tracking Number:	GRANT10873449		
Date Received by EAPPLY:	05/20/2011		

Submission Information

Submission:	Application	**Grant:**	Non-Construction
Date Submitted:	05/20/2011	**Time Submitted:**	02:34:23 PM
Type of Application:	New		

Applicant Information

	Grants.gov	IGMS
Applicant Type:	B: County Government	
Applicant Name:	Broward County Board of County Commissioners	
Applicant DUNS #:	066938358AIRQ	
Organizational Unit:	EPDMG (Environmental Protectio	
Sub Org Unit:	PPRAQD (Pollution Prevention,	
EIN:	596000531	
Address:	1 North University Drive	
City:	Plantation	
State:	FL: Florida	
Zip:	33324-2038	
County:		
POC Name:	Daniela Banu	
POC Phone:	954-519-1221	
POC E-Mail:		
POC FAX #:		

Project Information

Federal Agency: EPA

CFDA:	66.034
Project Title:	Broward County Air Toxics Program: Evaluation of Alternative Methods for the Quantification of Carbonyl and Polycyclic Aromatic Hydrocarbon (PAH) Concentrations in Ambient Air
Project Period Start:	10/01/2011 **Project Period End:** 09/30/2013

Congressional Districts

Applicant Cong Dist:	20 **Project Cong Dist:** 20

Estimated Funding

Federal	$287,400
Applicant	$27,002
(For all applicants including states)	
State	$0
(For state contribution to non-state applicants)	
Local	$0
Other	$0
Program Income	$0
TOTAL	**$314,402**

Is the Application subject to review by State Executive Order 12372 Process?	No - Program Not Covered By E.O. 12372
Available for Review:	
Is the Applicant delinquent on any Federal Debt?	No

Authorized Representative

Authorized Rep:	Bertha Henry
Title:	County Administrator **Phone:** 954-519-1260

Key Contacts

Authorized Rep:	
Title:	**Phone:**
Address:	
City:	
State:	**Zip:**
Fax:	**E-Mail:**
Payee:	
Title:	**Phone:**
Address:	
City:	
State:	**Zip:**
Fax:	**E-Mail:**
Administrative Contact:	
Title:	**Phone:**
Address:	
City:	
State:	**Zip:**
Fax:	**E-Mail:**
Project Manager:	
Title:	**Phone:**
Address:	
City:	
State:	**Zip:**

Fax: E-Mail:

Budget Summary

Section A - BUDGET SUMMARY

	Estimated Unobligated Funds		New or Revised Budget		
	Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	TOTALS
TOTALS	$0	$0	$287,400	$27,002	**$314,402**

Section B - BUDGET CATEGORIES

Object Class Categories	Summary of TOTALS
a. Personnel	$19,752
b. Fringe Benefits	$7,251
c. Travel	$4,000
d. Equipment	$156,629
e. Supplies	$20,354
f. Contractual	$24,041
g. Construction	$0
h. Other	$24,009
i. Total Direct Charges	**$256,036**
j. Indirect Charges	$31,364
k. TOTALS	**$287,400**
Program Income	$0

Comments:

Application Attachments

Grants.gov Application:

Notifications History

OMB Number: 4040-0004
Expiration Date: 03/31/2012

Application for Federal Assistance SF-424

* 1. Type of Submission:	* 2. Type of Application:	* If Revision, select appropriate letter(s):
☐ Preapplication	☒ New	
☒ Application	☐ Continuation	* Other (Specify):
☐ Changed/Corrected Application	☐ Revision	

* 3. Date Received:	4. Applicant Identifier:
05/20/2011	

5a. Federal Entity Identifier:	5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:	7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name:	Broward County Board of County Commissioners

* b. Employer/Taxpayer Identification Number (EIN/TIN):	* c. Organizational DUNS:
596000531	066938358AIRQ

d. Address:

* Street1:	1 North University Drive
Street2:	Suite 203
* City:	Plantation
County/Parish:	Broward
* State:	FL: Florida
Province:	
* Country:	USA: UNITED STATES
* Zip / Postal Code:	33324-2038

e. Organizational Unit:

Department Name:	Division Name:
EPDMG (Environmental Protectio	PPRAQD (Pollution Prevention,

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:		* First Name:	Daniela
Middle Name:			
* Last Name:	Banu		
Suffix:			

Title:	Air Program Administrator
Organizational Affiliation:	Broward County Board of County Commissioners, Pollution Prev

* Telephone Number:	954-519-1221	Fax Number:	954-1495
* Email:	dbanu@broward.org		

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

B: County Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

Environmental Protection Agency

11. Catalog of Federal Domestic Assistance Number:

66.034

CFDA Title:

Surveys, Studies, Research, Investigations, Demonstrations, and Special Purpose Activities Relating to the Clean Air Act

*** 12. Funding Opportunity Number:**

EPA-OAR-OAQPS-11-05

* Title:

Community-Scale Air Toxics Ambient Monitoring

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Broward County Air Toxics Program: Evaluation of Alternative Methods for the Quantification of Carbonyl and Polycyclic Aromatic Hydrocarbon (PAH) Concentrations in Ambient Air

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: 20 | b. Program/Project: 20

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 10/01/2011 | * b. End Date: 09/30/2013

18. Estimated Funding ($):

* a. Federal	287,400.00
* b. Applicant	27,002.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	314,402.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: | * First Name: Bertha

Middle Name:

* Last Name: Henry

Suffix:

* Title: County Administrator

* Telephone Number: 954-519-1260 | Fax Number: 954-519-1495

* Email: dbanu@broward.org

* Signature of Authorized Representative: Daniela Banu | * Date Signed: 05/20/2011

BUDGET INFORMATION - Non-Construction Programs

OMB Approval No. 4040-0006
Expiration Date 07/30/2010

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Community-Scale Air Toxics Ambient Monitoring	66.034	$	$	$ 287,400.00	$ 27,002.00	$ 314,402.00
2.						
3.						
4.						
5. Totals		$	$	$ 287,400.00	$ 27,002.00	$ 314,402.00

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SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY (1)	(2)	(3)	(4)	Total (5)
	Community-Scale Air Toxics Ambient Monitoring				
a. Personnel	$ 19,752.00	$	$	$	$ 19,752.00
b. Fringe Benefits	7,251.00				7,251.00
c. Travel	4,000.00				4,000.00
d. Equipment	156,629.00				156,629.00
e. Supplies	20,354.00				20,354.00
f. Contractual	24,041.00				24,041.00
g. Construction	0.00				
h. Other	24,009.00				24,009.00
i. Total Direct Charges (sum of 6a-6h)	256,036.00				$ 256,036.00
j. Indirect Charges	31,364.00				$ 31,364.00
k. TOTALS (sum of 6i and 6j)	$ 287,400.00	$	$	$	$ 287,400.00
7. Program Income	$ 0.00	$	$	$	$

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8. Community-Scale Air Toxics Ambient Monitoring (Broward County, In-Kind-Service, IKS)	$ 27,002.00	$	$	$ 27,002.00
9.				
10.				
11.				
12. TOTAL (sum of lines 8-11)	$ 27,002.00	$	$	$ 27,002.00

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$ 287,400.00	$ 287,400.00	$	$	$
14. Non-Federal	$ 27,002.00	27,002.00			
15. TOTAL (sum of lines 13 and 14)	$ 314,402.00	$ 314,402.00	$	$	$

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program	FUTURE FUNDING PERIODS (YEARS) (b)First	(c) Second	(d) Third	(e) Fourth
16.	$	$	$	$
17.				
18.				
19.				
20. TOTAL (sum of lines 16 - 19)	$	$	$	$

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges: 256,036

22. Indirect Charges: (12.25% of Direct Charges) $31,364

23. Remarks:

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U.S. EPA COMMUNITY-SCALE AIR TOXICS AMBIENT MONITORING

Project Title:	Broward County Air Toxics Program: Evaluation of Alternative Methods for the Quantification of Carbonyl and Polycyclic Aromatic Hydrocarbon (PAH) Concentrations in Ambient Air
Category:	Methods Evaluation
Applicant Information:	Broward County Board of County Commissioners, Environmental Protection and Growth Management Department, Pollution Prevention, Remediation and Air Quality Division 1 North University Drive, Suite 203 Plantation, FL 33324
Contact Person:	Ana Suarez, Ph.D. Telephone Number: 954.519.1453 Facsimile Number: 954.519.1495 Email Address: asuarez@broward.org
Enabling Legislation:	**http://www.leg.state.fl.us/statutes/index.cfm?mode=View%20Statutes&SubMenu=1&App_mode=Display_Statute&Search_String=403.182&URL=0400-0499/0403/Sections/0403.182.html**
Funding Requested:	$ 287,400
Total Project Cost:	$ 314,402
Project Period:	October 2011 – September 2013
DUNS Number:	066938358-AIRQ

A. Basis and Rationale

The U.S. EPA's National Strategic Plan entrusts the organization with protecting "human health and the environment by attaining and maintaining health-based air quality standards and reducing the risk from toxic air pollutants." To help reach this goal, every three years the U.S. EPA develops a National Air Toxics Assessment (NATA) to determine cancer and non-cancer respiratory and neurological risk in ambient air within the United States based on emissions from the multitude of air pollution sources present throughout the U.S. (including background pollution – emissions from other areas and that released in the past). While emissions from large pollution sources are for the most part, actual emissions, most of the emissions from smaller sources are calculated based on the best available emission estimate method available for the source.

The current NATA (CY 2005) identifies formaldehyde and acrolein as the national cancer risk and the non-cancer hazard drivers (http://www.epa.gov/ttn/atw/nata2005/05pdf/sum_results.pdf), respectively. Cancer risk regional drivers and national contributors include benzene, PAHs, naphthalene, 1,3-butadiene, acetaldehyde, tetrachloroethylene, 1,4-dichlorobenzene, ethyl benzene, nickel, 1,3-dichloropropene, and methylene chloride. While regional non-cancer hazard drivers include, 2,4-toluene diisocyanate, chlorine, diesel PM, hexamethylene diisocyanate, hydrochloric acid, and manganese compounds. Most of these compounds, with the exception of some of the regional hazard drivers fall into one of the four main chemical classes analyzed in ambient air by standard U.S. EPA methods (see Table 1).

Table 1. U.S. EPA's National and Regional NATA Risk Drivers with Corresponding Chemical Classes and Standard Analysis Methods.

Risk Drivers	Chemical Class	Analysis Method	Standard Method
benzene, acrolein ,1,3-butadiene, tetrachloroethylene, 1,4-dichlorobenzene, ethyl benzene, 1,3-dichloropropene, methylene chloride	volatile organic compounds (VOCs)	Gas Chromatography/ Mass Spectroscopy (GC/MS)	TO-15
formaldehyde and acetaldehyde	carbonyls	High Performance Liquid Chromatography (LCPMS)	TO-11
nickel and manganese compounds	trace metals	Inductively Coupled Plasma /Mass Spectroscopy (ICP/MS)	IO-3.5
naphthalene and polycyclic aromatic hydrocarbons (PAHs)	semi-volatile organic compounds (SVOCs)	Gas Chromatography/ Mass Spectroscopy (GC/MS)	TO-13

While the NATA is a comprehensive and complex endeavor, comparison of estimated concentrations to measured ambient concentrations can differ quite substantially. When there are few or no ambient concentration measurements to compare, the representativeness of the assessment can come into question. The current methods employed to determine concentration of certain pollutants can be cumbersome, complex, or financially impossible for local, state, and tribal programs to undertake. For example, in Region 4, volatile organic compounds (VOCs) and metal species are monitored extensively, while semi-volatile organic compounds (SVOCs), including polycyclic aromatic hydrocarbons (PAHs), and carbonyls are monitored by fewer state, local, and tribal agencies (see Figure 1).

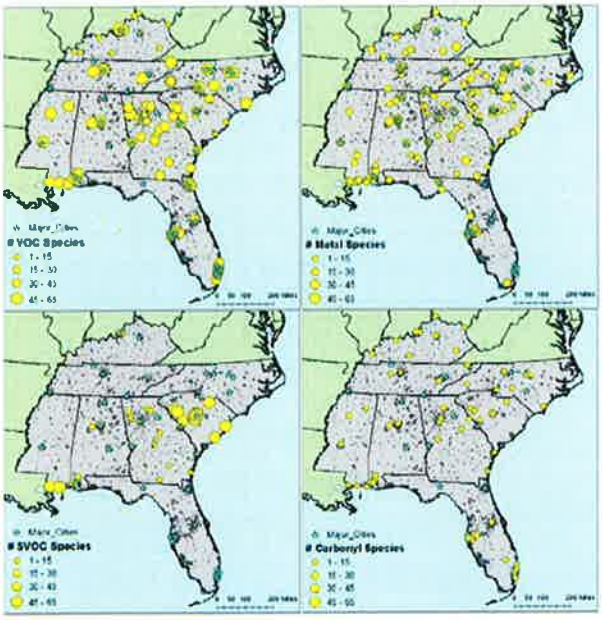

Figure 1. Maps of Rgion 4 air toxics monior locations from the ***Southeastern Air Toxics Data Analysis (2007)***. *Note carbonyl monitoring in Broward County was temporary (2002-2003, 2005-2006).*

While the standard analysis method for carbonyls (TO-11) and PAHs (TO-13) methods are adequate for determining ambient concentrations of the pollutants of interest, there are several disadvantages to them.

In U.S. EPA Method TO-11, a carefully measured volume of ozone-scrubbed ambient air is drawn through a cartridge of sorbent-coated with 2,4-Dinitrophenylhydrazine (DNPH). The highly volatile and reactive, carbonyls are converted to stable DNPH-derivatives in the cartridge are extracted with solvents and analyzed by high precision liquid chromatography coupled with ultra violet detection (HPLC/UV).

U.S. EPA Method TO-13, employs the use of a high volume ambient air collector (HiVol) to pull air through a quartz fiber filter followed by a polyurethane foam plug (PUF) and/or XAD media in order to collect particulate and gas phase PAHs, respectively. Both these samples employ a solvent extraction procedure to remove PAHs from the collection media. The PAHs in organic solvents are then evaporated to reduce volume size, after which a portion of the total remaining volume (roughly $1/10^{th}$) is injected into a GC/MS for analysis.

Both these TO Methods require complex methods to prepare the sample for analysis. Both require solvent extraction which can lead to sample losses due to the sample handling and manipulation required. Solvent extraction methods are very involved, requiring significant amounts of time to process the sample for analysis, making expedited results unlikely or impossible. These methods are also often costly, due to the amount of equipment and consumables required to perform the extractions, even outsourcing of these analysis can be quite expensive. Additionally, these methods often also create a lot of waste products (chemical solvents) as a result of extractions.

A review of the literature reveals the existence of alternative methods for the determination of ambient (or indoor) concentrations of PAHs and carbonyls. Neither of these methods requires solvent extraction nor sample derivitization for stability. Samples are directly measured from the media they are collected on/in. No sample manipulations are required to analyze the samples. The alternative methods' sample collection methodologies also differ from those of the standard methods, including the use of smaller, less involved, less costly sampling systems. These alternative methods have been developed and evaluated by the original researchers. The results of these studies suggest the possibility of performing these analyses in ambient air on a routine basis with less effort and cost than the current standard methods.

Evaluation of these methods by a local air monitoring program would test not only how well the methods work, but how feasible they would be as alternatives to standard methods TO-11 and TO-13 for ambient air monitoring programs. If the alternative methods are as easy and affordable to enact as they appear to be from the literature, they could increase the monitoring of these air toxics throughout the U.S., filling in

spatial and temporal data gaps for monitoring of air toxics ambient concentrations to test impacts of local sources, monitor effectiveness of reduction strategies, perform trends analyses, and perform model-to-monitor comparisons for model validation.

B. TECHNICAL APPROACH

This project falls under the category Methods Evaluation. The objectives of the project are to:

(1) Develop in-house expertise in performing alternative methods for the quantification of carbonyl and PAH concentrations in ambient air based on the research described in this proposal.
(2) Test these alternative methods for the quantification of carbonyl and PAH concentrations in ambient air versus U.S. EPA established methods (TO-11 and TO-13).
(3) Test these methods for feasibility of analyzing several different chemical groups, i.e., carbonyl study alluded to the feasibility of analyzing for both VOCs and carbonyls off one sample and the PAH study alluded to the possibility of collecting and analyzing an air sample on the TD tube for VOCs, PAHs, and PCBs.
(4) Prepare reports (progress and final) addressing effectiveness of methods (i.e., ease of use, feasibility, cost analysis, nuances or problems encountered, etc.)
(5) Present results of study to other agencies via U.S. EPA national or regional conference presentations or webinars and through outreach informational materials, Standard Operating Procedures (SOPs), and Quality Assurance Project Plans (QAPPs).
(6) Depending on favorable results of study, prepare the Broward County Air Toxics Program to become a central laboratory for the analysis of samples for state, local, and tribal agencies that do not have access to the equipment or expertise necessary for these analysis for a fee (much less than the current cost of TO-11 or TO-13).

Project Design
To successfully meet the objectives of this project, the Broward County Air Toxics Program will replicate the "alternative methods" for quantification of carbonyl and PAH concentrations as described in the literature below by collecting air samples at the Broward County NCORE sampling site along with co-located "standard method" samplers for TO-11 and TO-13. The alternative methods are summarized below. Detailed notes will be kept pertaining to the study (i.e., any deviations from in techniques, lessons learned, expenses, suppliers, nuances, etc) with the ultimate goal of presenting all the information necessary for other air monitoring agencies to implement these methods (with or without in-house analyses) if these methods are accepted by the U.S. EPA as alternative methods to TO-11 and TO-13.

CARBONYLS
Title Study: *Formaldehyde and VOCs in Indoor Air Quality Determinations by GCMS*
Study Authors: Dan Cardin and Tom Robinson, Entech Instruments, Inc., Simi Valley, CA 93065
Study Summary: Air samples are collected in silonite coated canisters with silonite coated tubing which prevents the wall-losses of volatile carbonyls. Samples are analyzed directly from the canisters by GC/MS with carbonyl standards using a preliminary preconcentration step to improve method sensitivity along with the silonite coated internal lines present in the Entech 7100 preconcentrator. The study was performed on indoor air, but the authors mention that it can be used for ambient air as well. The authors also mention that VOCs and carbonyls can be determined from a single collected sample.

SVOCs
Title Study: *Improved accuracy in the determination of polycyclic aromatic hydrocarbons in air using 24h sampling on a mixed bed followed by thermal desorption capillary gas chromatography – mass spectrometry*

Study Authors: Eric Wauters, Peter Van Caeter, Gilbert Desmet, Flemish Environmental Agency, Krijgslaan, 281-S2, B-9000 Gent, Belgium and Frank David, Christophe Devos, Pat Sandra, Research Institute for Chromatography, Pres. Kennedypark 26, B-8500 Kortrijk, Belgium
Citation: Journal of Chromatography A, 1190 (2008), 286-293
Study Summary: Both high and low boiling point PAHs, including naphthalene, were collected at a low flow rate (100 mL/min) using a personal air sampling pump and commercially available thermal desorption (TD) tube packed with a novel mixed bed sorbent comprised of polydimethylsiloxane (PDMS) and TENAX TA (porous polymer resin based on 2,6-disphenylene oxide) particles with PDMS foam plug. Samples were analyzed directly off the TD tubes by thermal desorption (TD)-GC/MS with no chemical extraction. This method was tested against the standard TO-13 method. Study results indicate that ambient PAH concentrations (both particle and gas phase) recovered by the TD tube were generally greater than those determined by the TO-13 Method. This was especially true for the low boiling point PAHs (i.e., naphthalene and acenaphtene). However, for most of the other PAHs measured, the ratio of the two methods was ~2.

Alternative method analyses for both carbonyls and PAHs will be conducted by the Broward County Air Toxics Program. Standard method analysis will be performed by Eastern Research Group (ERG) for carbonyls and the Broward County Environmental Monitoring Laboratory (EMD) for PAHs.

Once this project is established and data from the alternative methods prove to be equivalent to those of the standard methods, other experiments will be run (i.e., testing to determine if several chemical classes can be determined from one sample and the collection of alternative method carbonyl and PAH samples at other Broward County ambient air sampling sites to provide more spatial coverage with reporting to the AQS once the methods have been approved as official alternatives to TO-11 and TO-13).

Broward County will prepare detailed reports discussing the feasibility, ease, and cost of using the alternative method to go along with reports on the comparability of the data collected on a quarterly basis (progress reports) and at the completion of the project (final report). With the successful outcome of this project, Broward County plans on preparing outreach materials for other agencies detailing the method including standard operating procedures (SOPs). Broward County will also present the results of the study at one or more national or regional conferences. The possibility of presenting the information via a Webinar should also be explored, as it would reach a greater audience without incurring travel expenses, Successfully accomplishing the objectives set forth for this study will be beneficial not only Broward County, but other agencies, as well.

All progress reports and QAPPs will be written and submitted to the U.S. EPA project officer by the project contact person (Ana Suarez, Ph.D., NRS II). The progress reports will cover any conference calls, workshops/trainings, information requests, audits, project activities, data recovery information, samples lost, data reporting, problems/concerns, lessons learned, problems experienced, and percentage of funds expended to date for each of the monitoring projects for each of the sampling quarters.

Although this proposal is for a Methods Evaluation project, the quality assured ambient monitoring data for air toxics collected in the course of the project will be entered into the AQS because it will be valid data for compounds that are rarely (if ever) monitored in the area – and air toxics data is needed for a multitude of purposes within federal, state, and local levels of environmental protection. Thus, all standard method ambient monitoring data will be entered into the AQS no later than 90 days from the end of the sampling quarters (January to March, April to June, July to September, and October to December) by the designee for this project, Eastern Research Group, Inc. (ERG) for carbonyls and by the Broward County Air Quality Program (AQP) for PAHs. Alternative method ambient monitoring data will be entered into the AQS within 90 days, pending approval of the alternative methods by the U.S. EPA.

Table 2. Project Deliverables and Timeline

Task	Deliverables	Timeline
Procure equipment and initial supplies for project	Initial progress report to U.S. EPA project manager.	October 1, 2011 – January 1, 2012
Set-up laboratory and field equipment for standard and alternative methods for PAHs and alternative method for carbonyls.		January 1, 2012 – March 1, 2012
Carbonyl base site set-up and support		January 1, 2012 – March 1, 2012
Perform carbonyl and PAH 1-in-6 day sampling and analysis by alternative methods and standard methods (TO-11 and TO-13)	Reports to the U.S. EPA project manager. Quarterly progress reports within 30 days of each monitoring period. An interim final report 6 months prior to the overall project period of performance. A final progress report within 90 days of the end of the budget/project period.	March 1, 2012 – March 1, 2013
Report concentration data to the AQS	Data submitted to the U.S. EPA Air Quality System (AQS) within 90 days of end of calendar quarter for standard method samples. (Alternate method values will be uploaded within 90 days acceptance of the alternative methods by U.S. EPA).	June 1, 2012 – June 1, 2013 for Standard Methods
Report findings to U.S. EPA	Submit technical final report within six months of completion of methods evaluation project.	Circa September 1, 2013
Report findings at U.S. EPA conference	Present data at a U.S. EPA national or regional conference, workshop, or webinar within one year of completion of program and submittal of final report to the U.S. EPA	Prior to September 1, 2014
Create informational and instructional outreach materials, including QAPPs and SOPs, detailing the alternative methods for other agencies or entities	Follow U.S. EPA guidance to submit QAPPs, SOPs, and outreach materials within one year of completion to the U.S. EPA (refer to http://www.epa.gov/quality/qa_docs.html)	Prior to September 1, 2014

D. Environmental Justice Impacts

Agencies or groups in impoverished areas that may be considered "Environmental Justice" cases would benefit greatly from an alternative method for the analysis of carbonyls and PAHs, as the current analysis methods are involved and expensive. Methods that are easy to enact, perform, and analyze at a low cost would allow these areas to be able to monitor problem pollutants that may have previously been out of reach of the financial and technical means of the area. This would enable not only establishing an "Environmental Justice" concern, but would allow for the monitoring of mitigation efforts.

E. Community Collaboration / Outreach

Because this is a method evaluation proposal, the community is other air monitoring agencies, from national to regional to local to tribal scales. One of the aspects of this study is relaying information on the availability of these alternative methods (once they have been accepted as such by the U.S. EPA), this includes providing detailed instructions that would allow for these alternative methods to be implemented by other air monitoring agencies and interested entities (i.e., laboratories, universities, communities, etc). Successful completion of this study would further the U.S. EPA's Strategic Plan in terms of allowing for widespread monitoring of ambient air toxic concentrations, including allowing for the monitoring of strategies to reduce air toxics emissions. It would help fill data gaps (both spatially and temporally) for PAH and carbonyl concentration data, providing, data for monitor-to-model comparisons for NATA and other models. In terms of state, local, and tribal agencies, as well as other entities, agencies with limited monetary resources will have a viable, alternative method for the determination of ambient PAH and carbonyl concentrations which can help address local or regional air toxics problems and solutions.

F. Environmental Results: Outputs, Outcomes, and Performance Measures

Based on the need to support the U.S. EPA's National Strategic Plan in reducing the risk from air toxic pollutants by effectively and comprehensively monitoring and verifying the ambient concentrations of national and regional risk and hazard drivers and contributors, Broward County would like to request funding from the U.S. EPA to evaluate alternative carbonyl and PAH monitoring methods for feasibility, ease of implementation, cost analysis, and comparability to established TO methods.

Table 3. Project-Specific Outputs

Project-Specific Outputs
Progress Reports for the project (initial and quarterly)
Final and interim final report detailing project implementation, data comparison of alternative and standard methods, analysis of feasibility of alternative methods (i.e., ease of establishment, cost analysis, nuances, notes, providers of equipment or supplies that are not common, etc)
Presentation of study results at U.S. EPA national or regional conference(s)
Presentation of study results on Webinar
Publicly available air toxics data in central repository (U.S. EPA AQS) – carbonyls by TO-11
Publicly available air toxics data in central repository (U.S. EPA AQS) – PAHs by TO-13
Contingent upon acceptance of Alternative Methods by the U.S. EPA
An SOP and a QAPP for each of the alternative methods
Outreach material informing air agencies of the availability of alternative methods for PAHs and carbonyls with a brief discussion of the methods
Analysis services for alternative methods provided by the Broward County Air Toxics Laboratory for a fee much less than current TO-13 and To-11 costs
Publicly available air toxics data in central repository (U.S. EPA AQS) – carbonyls by alternative method
Publicly available air toxics data in central repository (U.S. EPA AQS) – PAHs by alternative method

Project-Specific Outcomes

Short-Term

- Successful implementation of alternative carbonyl and PAH methods based on research
- Successful implementation of standard TO-11 and TO-13 methods
- Successful verification of alternative methods
- Report method financial and scientific results in progress reports
- Final report on study outcomes, comparing alternative methods to standard methods

Mid-Term: Dependent on validity of Alternative Methods

- Creation of outreach materials, including presentations and webinars, designed to inform air monitoring agencies and other entities about the alternative methods
- SOPs and QAPPs detailing alternative methods designed to make these methods simple to implement correctly in any given area of any given scale regardless of ability to perform analyses in-house

Long-Term

- Improved coverage of PAH and carbonyl monitors, and thus data throughout the U.S. that are available for a multitude of studies and uses
- Establishment of Broward County Air Toxics Program as a laboratory equipped with the experience, resources, and capabilities to provide alternative PAH and carbonyl analysis for air quality agencies at costs much less than the current cost of TO-11 and/or TO-13

The short-, mid-, and long-term outcomes of the project are interrelated. In order for later-term outputs to occur, earlier-term outcomes need to be completed. The short-term goals are to perform both alternative and standard methods properly to validate whether alternative methods are, at least, as good as standard methods in determining ambient concentrations of the air toxics in question while collecting data that will enable a comprehensive evaluation of the methods for viability, repeatability, and cost of instilling these alternative methods. Mid-term outcomes are dependent on the success of the alternative methods and focus on reporting and informing the ambient monitoring agency community of these alternative monitoring methods. Long-term outcomes focus on establishing ambient monitoring sites for PAHs and carbonyls throughout the U.S. which would enable greater data availability to monitor concentrations and the reduction of the concentrations of these pollutants. With the equipment required and expertise in these alternative methods, the Broward County Air Toxics Program could offer its services in performing these analyses for agencies that do not have the means of performing these analyses in-house, including Environmental Justice areas for a fee much less than the current costs associated with TO-11 or TO-13.

Submittal (electronically) of the progress reports to the U.S. EPA project officer and the concentration data reported to the AQS by ERG and Broward County will ensure that the short-term outputs are met. The mid-term outputs are dependent on the success of the program, but are ensured by QAPPs, the interim final report, the final report, presentations, and outreach materials. The long-term goals will be met as a result of the short- and mid-term goals. Successfully publicized, readily replicated, financially feasible methods that provide data for previously difficult and cumbersome important (risk and hazard driver) air toxics are likely to be widely implemented. The alternative methods that this project tests and verifies, if proven to be viable and accurate, are simple and can be easily employed by different agencies.

G. Programmatic Capabilities and Past Performance

Broward County Air Quality Program (AQP) has vast experience in administering U.S. EPA grants to implement air quality programs aimed at managing and improving air quality in Broward County. The program is the recipient of the following grants:

- U.S. EPA 105 Grant, Air Pollution Control Program Support
  - Continuous recipient prior to 1990.
- U.S. EPA 103 Grant, Fine Particulate Matter Monitoring
  - Continuous recipient since 1990.
- U.S. DHS BioWatch Grant
  – Continuous recipient since 2003
- U.S. EPA Air Toxics Competitive Grants: National Air Toxics Community Based Program (2004) and Enhancing the Existing Air Toxics and Risk Evaluating Capabilities in Broward County (2006, "unofficially awarded" but funding redirected to other causes).

Grant performance measures are established through annual planning agreements and work plans which provide clear linkages to US EPA's Strategic Plan, long and short-term goals, and requirements for regular performance reporting. On a monthly basis, AQP reports, validates, and certifies timely quality-assured ambient monitoring, permitting and compliance data into U.S. EPA Air Quality System. In addition, AQP submits a variety of complete and timely quarterly and annual programmatic reports and Financial Status Reports, as required by the reporting requirements. Adequacy, completeness and timeliness of AQP grant performance is established through programmatic and financial audits performed by U.S. EPA and by annual U.S. EPA grant closure reports. Short term grants received by the AQP have included initial, quarterly, and final progress reports, as well as Quality Assurance Project Plans (QAPPs) and submission of monitoring data to the EPA's AQS database.

Table 4. Personnel involved in the program.

PERSONNEL	POSITION	ROLES/RESPONSIBILITIES	QUALIFICATIONS
Daniela Banu	Air Quality Program Administrator	▪Oversees project and funding.	▪Bachelors degree in Chemical Engineering ▪25 years experience in air pollution related fields
Ana Suarez, Ph.D.	Project Coordinator	▪ Establishes project, laboratory and field aspects ▪Procures materials, keeps track of costs for cost analysis ▪Communicates with the U.S. EPA and ERG regarding project ▪Analyzes data and prepares reports and deliverables ▪Ensures sample collection/submission to ERG	▪Bachelors and Doctoral degrees in Chemistry ▪14 years experience coordinating research projects ▪19 years experience monitoring for air pollutants ▪19 years experience performing data analysis and reporting findings
Ileana Suarez-Hale	Air Toxics Chemist	▪Establishes project, laboratory and field aspects ▪Performs GC-MS analysis of carbonyls and PAHs ▪Provides analysis data to project coordinator for project reports ▪ Provides information on experience for project reports	▪Bachelors degree in Criminal Justice and Chemistry ▪Masters degree in Forensic Science ▪2.5 yrs performing air toxics ambient field work ▪2.5 yrs performing air toxics analysis by TO-15 ▪15 yrs performing GC-MS analysis
Broward County Environmental Monitoring Laboratory Nancy Holsing & Reginald Page	TO-13 sample prep chemist Laboratory Facility Manager & TO-13 analyst	▪Prepares materials for TO-13 field deployment. ▪Performs analysis of gas and particle phase PAHs via TO-13. ▪Provides analysis data to project coordinator for inclusion in project reports. ▪Provides information on experience of performing standard analysis for inclusion in project reports, including insights into problems encountered or nuances discovered.	▪Masters degree in Marine Science ▪16 years experience performing SVOC sample preparation in soil and water. ▪Bachelors degree in Biology ▪7 years Laboratory Manager experience ▪5 years ambient air toxics program experience ▪25 years performing GC-MS analysis of SVOCs in water and soil by EPA 8270
Eastern Research Group, Ltd.	Project Designee	▪Analysis of samples and data submittal to U.S. EPA AQS and Broward County	▪U.S. EPA FY 2004-2011 national program contractor for SNMOC, NMOC, UATMP, PAMS and selected HAPs categories

H. DETAILED BUDGET NARRATIVE (SEE PAGE 10)

I. LEVERAGING

The Broward County Air Quality Program will contribute personnel and time in support of this project as described in the ***Environmental Project-Specific Outcomes and Outputs*** sections. Additionally, the program will also cover the costs of any additional consumable materials required for the program, contracts with Entech for the preconcentrator and canister cleaning system, and, if the methods are accepted as official alternative PAH and carbonyl methods by the U.S. EPA and other agencies require analysis of samples by our laboratory (for a fee), the materials necessary to perform these analysis on a large scale, including a thermal desorption tube conditioning oven. The agency will also partly cover the cost of the alternative carbonyl analyses since it uses the same analysis equipment, timer, and some of the consumables used by the TO-15 method already in use.

Table 5. Detailed Budget Narrative

Item	U.S. EPA Grant Funding Oct 2011 – Sep 2013	Broward County PPRAQD In-Kind-Service Oct 2011 – Sep 2013
Personnel		
(1) Project Manager @ $28.23/hr x 6 hrs/week x 104 weeks (averaged workload for study period)*	$8,781	$8,781
(1) Air Toxics Chemist @ $23.95/hr x 9 hrs/week x 104 weeks (averaged workload for study period)*	$10,971	$10,971
TOTAL PERSONNEL	**$19,752**	**$19,752**
Fringe Benefits		
-FICA (7.65%)	$1,511	$1,511
-Retirement (10.77%)	$2,127	$2,127
-Health Insurance ($9,770/FTE)	$3,612	$3,612
TOTAL FRINGE BENEFITS	**$7,251**	**$7,250**
Travel		
Travel – Must include travel to a national or regional U.S. EPA conference or workshop to present results (TBD by the U.S. EPA Program Office in consultation with the appropriate U.S. EPA Regional Office)	$4,000	
TOTAL TRAVEL	**$4,000**	
Equipment		
Markes Unity Thermal Desorption System with UltraA autosampler (100 samples) , Agilent 7890 Gas Chromatograph, Agilent 5975 Mass Spectrometer, computer, with high performance turbo pump and transfer lines	$145,000	
Permeation Oven/Gas Dilution Calibrator	$11,629	
TOTAL EQUIPMENT	**$156,629**	
Supplies		
Field Supplies	$13,868	
Laboratory Supplies/Chemicals	$2,924	
Standards	$3,561	
TOTAL SUPPLIES	**$20,354**	
Support Services Contracts		
ERG Support Contract, TO-11 site support	$9,006	
EEG Support Contract, TO-11 analysis	15,035	
TOTAL CONTRACTUAL	**$24,041**	
Other		
EMD Support Contract, TO-13 analysis	$17,009	
Rewiring and Data Communications (estimate)	$5,000	
Shipping costs and price increases (estimate)	$2,000	
TOTAL Other	**$24,009**	
Indirect Charges		
Federal Negotiated Indirect Cost Rate= 12.25% of Direct Cost	$31,364	
TOTAL INDIRECT CHAGES	**$31,364**	
TOTAL FUNDING	**(fed) $287,400**	**(non-fed) $27,002**
TOTAL PROJECT COST		**$ 314,402**

* Actual hours dependent on project timeline, i.e., set-up of lab or field work, performing routine analyses, writing reports, etc.