Neighborhood Air Toxics Modeling Project
For
Houston and Corpus Christi
Case # 2:11-MC-00044

Phase 1B
Monitoring Network Extension

Quarterly Report for the Period

October 1, 2013 through December 31, 2013

Submitted to

The Honorable Janis Graham Jack
United States District Court for the Southern District of Texas
Corpus Christi, Texas

Ms. Kathleen Aisling
United States Environmental Protection Agency, Region 6
Dallas, Texas

Ms. Susan Clewis
Texas Commission on Environmental Quality, Region 14
Corpus Christi, Texas

Submitted by

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February 28, 2014

I. Introduction

On February 1, 2008, the United States District Court entered an Order (D.E. 981, Order (pp.1, 7-11)) regarding unclaimed settlement funds in Lease Oil Antitrust Litigation (No.11) Docket No. MDL No.1206. The Court requested a detailed project proposal from Dr. David Allen, the Gertz Regents Professor in Chemical Engineering and the Director of the Center for Energy and Environmental Resources at The University of Texas at Austin (UT Austin), regarding the use of $9,643,134.80 in the Settlement Fund. The proposal was for a project titled "Neighborhood Air Toxics Modeling Project for Houston and Corpus Christi" (hereinafter "Air Toxics Project"). The Air Toxics Project was proposed in two stages. In Stage 1, UT Austin was to develop, apply, demonstrate and make publicly available, neighborhood-scale air quality modeling tools for toxic air pollutants in Corpus Christi, Texas (Phase 1A) and extend the operation of the air quality monitoring network in Corpus Christi, Texas (Phase 1B). The ambient monitoring results from Stage 1 were to be used in synergy with the neighborhood-scale models to improve the understanding of emissions and the spatial distribution of air toxics in the region.

On February 21, 2008, the United States District Court for the Southern District of Texas issued an order to the Clerk of the Court to distribute funds in the amount of $4,586,014.92, plus accrued interest, to UT Austin for the purposes of implementing Stage 1 of the Air Toxics Project as described in the detailed proposal submitted to the Court by UT Austin on February 15, 2008 (D.E. 998).

Under the Order to Distribute Funds in MDL No. 1206, on March 3, 2008, at the direction of the Settlement Administrator, $4,602,598.66 was disbursed to UT Austin for Stage 1 of the Project. This amount includes the interest accrued prior to distribution from the MDL No. 1206 Settlement Fund.

In Stage 2, subject to the availability of funds, it was planned that UT Austin would extend the modeling to the Houston, Texas ship channel region, develop a mobile monitoring station that could be deployed in Corpus Christi and in other regions of Texas and/or further extend the operating life of the existing stationary network in the same or a modified spatial configuration. Based on the decision of the U.S. Court of Appeals for the 5th Circuit on June 27, 2011, UT Austin will not be receiving the Stage 2 funding at any point in the future. Further, work on the modeling portion of Stage 1 (Phase 1A) was completed June 30, 2011. Hence, all future progress reports will describe only work on Stage 1 Phase 1B (extending the operation of the air quality monitoring network).

The air quality monitoring network was originally authorized on October 1, 2003, when the United States District Court for the Southern District of Texas issued an order to the Clerk of the Court to distribute funds in the amount of $6,700,000, plus interest accrued, to The University of Texas at Austin (UT Austin) to implement the court ordered condition of probation (COCP) project *Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation* (Project). Those funds have been expended. Funding for the air quality monitoring network originally created for the COCP Project is now provided through Stage 1 Phase 1B of the Air Toxics Project.

This Stage 1 Phase 1B quarterly report has been prepared pursuant to the requirements of the Air Toxics project and is being submitted to the United States District Court, the United States Environmental Protection Agency (EPA), and the Texas Commission on Environmental Quality (TCEQ).

II. Air Toxics Project – Stage 1 - Phase 1B Overview

A. Scope and Objectives

Phase 1B of the project reserves approximately 65% of the initial Stage 1 project funds, or approximately $3 million, to extend the operation of the Corpus Christi ambient air monitoring network.

B. Goals

Under Phase 1B, the project team will continue the operation of the monitoring network initiated under the Corpus Christi Air Monitoring and Surveillance Camera Project.

III. Air Toxics Project – Stage 1 – Phase 1B Progress Report

The focus of work during the quarter ending December 31, 2013, has been directed to the following activities funded by the Stage 1 Phase 1B extension of the Corpus Christi Air Monitoring network.

A. Operations and Maintenance Phase of the Project

A detailed description of the data analyses for this quarter appears in Appendix A, pages 8 through 26, and a summary of these analyses appears in this section.

The Project currently consists of a network of six (6) air monitoring stations with air monitoring instruments and surveillance camera equipment. A map showing locations of the COCP Project monitoring sites along with TCEQ sites appears in Figure 1, on page 4. Table 1, on pages 4 and 5, identifies the location and instrumentation found at each of the COCP Project sites. TCEQ sites and some of the sites farther from the COCP area than the TCEQ sites, operated by Texas A&M at Kingsville (TAMUK), provide additional data used in these analyses.

Figure 1. Corpus Christi Monitoring Sites, "X" marks site terminated in 2012

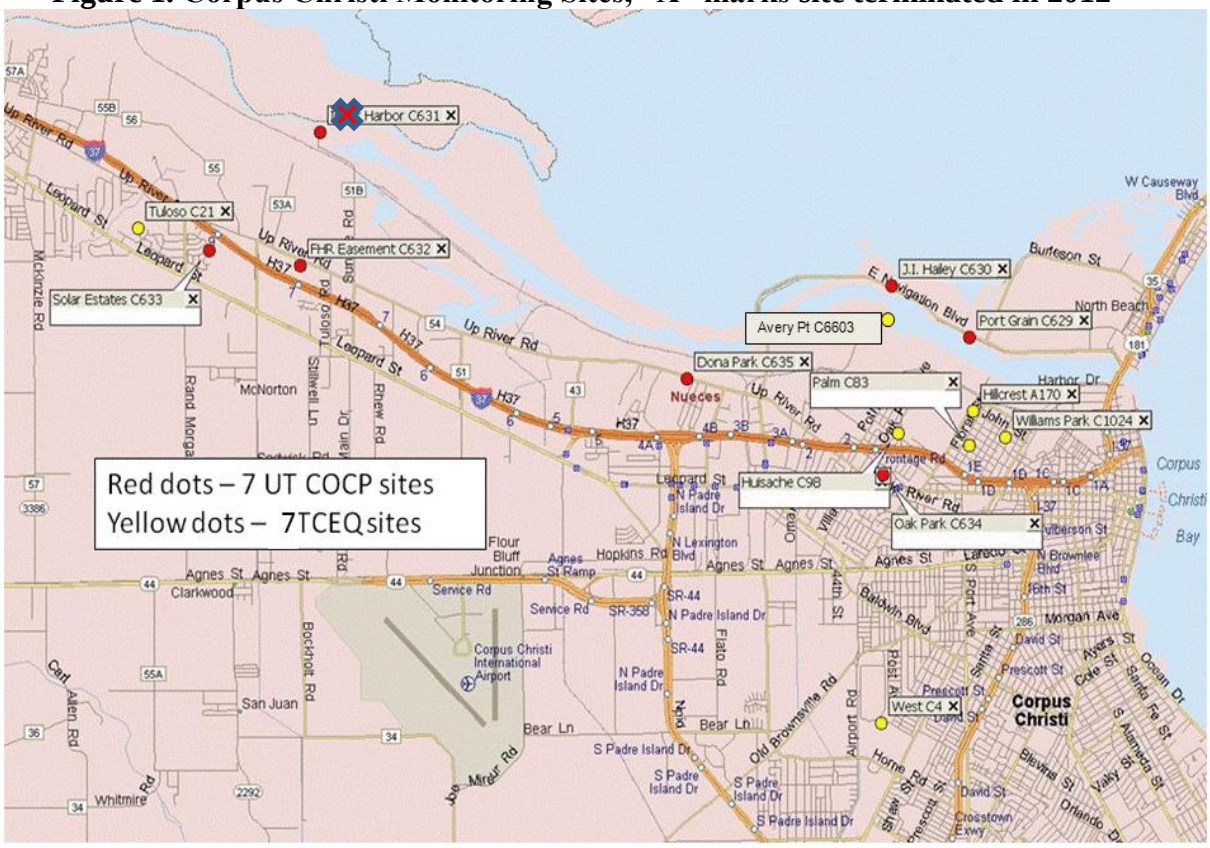

Table 1. Schedule of Air Monitoring Sites, Locations and Major Instrumentation

TCEQ CAMS#	Description of Site Location	Monitoring Equipment				
		Auto GC	TNMHC (T) / Canister (C)	H_2S & SO_2	Met Station	Camera
634	Oak Park Recreation Center (**OAK**)	Mar 2005 to date	C: Dec 2004 to Feb 2009 T: Dec 2004 to Apr 2012		Dec 2004 to date	
629	Grain Elevator @ Port of Corpus Christi (**CCG**)		T&C: Dec 2004 to date	Dec 2004 to date	Dec 2004 to date	
630	J. I. Hailey Site @ Port of Corpus Christi (**JIH**)		T&C: Dec 2004 to date	Dec 2004 to date	Dec 2004 to date	
635	TCEQ Monitoring Site C199 @ Dona Park (**DPK**)		T&C: Dec 2004 to date	Dec 2004 to date	Dec 2004 to date	Jan 2005 to date
632	Off Up River Road on Flint Hills Resources Easement (**FHR**)		T&C: Dec 2004 to date	Dec 2004 to date	Dec 2004 to date	
633	Solar Estates Park at end of Sunshine Road (**SOE**)	Mar 2005 to date	C: Dec 2004 to Feb 2009 T: Dec 2004 to Apr 2012	Dec 2004 to date	Dec 2004 to date	Jan 2005 to date
631	*Port of Corpus Christi on West End of CC Inner Harbor (**WEH**) (terminated)*		T&C: Dec 2004 to May 2012	Dec 2004 to May 2012	Dec 2004 to May 2012	

Table 1 (Continued)

Legend

CAMS	continuous ambient monitoring station
Auto GC	automated gas chromatograph
TNMHC	total non-methane hydrocarbon analyzer (all except CAMS 634 & 633 also have canister hydrocarbon samplers)
H_2S	hydrogen sulfide analyzer
SO_2	sulfur dioxide analyzer
Met Station	meteorology station consisting of measurement instruments for wind speed, wind direction, ambient air temperature and relative humidity
Camera	surveillance camera

A discussion of data findings for the quarter appears in Appendix A, pages 8 through 26. Specifically, the appendix contains the following elements:

- **Auto-GC Data Summary –** In examining the validated third quarter of 2013 hourly auto-GC data from Oak Park, Solar Estates, and TCEQ's Palm sites, no individual measurements were found to have exceeded a short-term air monitoring comparison value (AMCV). The validated third quarter average concentrations were below each compound's long-term AMCVs. For fourth quarter 2013 data, the preliminary values were also below respective AMCVs. A summary of data appears in Appendix A, pages 13 through 20. In examining all the data over the course of the project, it does appear that for several hydrocarbon species mean concentrations are higher in 2013 than in recent years.

- **Benzene Summary** – A review of the nine years of data is presented, with focus on the quarterly means from 2005 through 2013 fourth quarters, appears in Appendix A, pages 21 through 24.

- **Analysis of Sulfur Dioxide at Several Sites** – The JIH CAMS 630 site had measured concentrations high enough and often enough to violate the SO_2 annual National Ambient Air Quality Standards (NAAQS), but concentrations have recently declined. Trends from various CAMS sites are examined. These issues are expanded upon in Appendix A, pages 24 through 25.

B. Scheduled Meetings of the Volunteer Advisory Board

The Corpus Christi Project Advisory Board met on December 10, 2013. The meeting notes from that Advisory Board Meeting are found in Appendix B, pages 27 through 29.

C. Project Management and Planning

Project Management and Planning during this period has focused on the following four (4) major activities.

1. **Air Monitoring Operations**
   Operations and maintenance of the six monitoring sites reporting data via the TCEQ LEADS is on-going. The data can be accessed and reviewed at the project website (http://www.utexas.edu/research/ceer/ccaqp/).

2. **Communication and Reporting**
   The status of the Project has been communicated through the website, which is operational with portions under continual updating, quarterly and annual reports, and meetings of a Community Advisory Board.

3. **Budget Monitoring**
   Budget monitoring during the period has focused on projects costs for Stage 1 Phase IB – Sites Operation and Maintenance costs. Financial reports for the quarter are included in Appendix C, pages 30 through 32.

4. **Other Contributions**
   There were no other contributions made to the project during this quarter.

III. Financial Report

As required, the following financial summary information is provided. Details supporting this financial summary are included in Appendix C, pages 30 through 32.

A. Total Amount of Air Toxics Project Funds and Other Funds Received Under the Project
   The Air Toxics Project funds received through December 31, 2013 totals $390,685.66. This total includes interest earned through December 31, 2013, in the amount of $3,136,057.34.

B. Detailed List of the Actual Expenditures Paid from Air Toxics Project Funds Stage 1 Phase 1B through December 31, 2013
   Expenditures of Air Toxics Project funds during this quarter totaled $245,815.09. The funds remaining in the Air Toxics account (not spent for Stage 1 Phase 1A) are in a separate account so that separate financial reports can be generated.

C. Total Interest Earned on Air Toxics Project Funds through December 31, 2013
   The interest earned during this quarter totaled $393.87. The UT Office of Accounting made an adjustment of $34.99 to the actual interest earned during this quarter (10/1/13-12/31/13) to correct an overstated interest amount in the Accounting Report for the Quarter 7/01/13-9/30/13 due to Year End adjustments. The amount reported as "Interest Earned this Quarter" in Appendix C, pages 30 through 32, reflects the amount of interest earned on the Air Toxics Project funds this quarter less $34.99. An electronic file, not printed with this report due to its length, is provided to the court with this report and contains the detailed calculations of the interest earned on the Air Toxics Project funds for each month of the quarter.

D. Balance as of December 31, 2013, in the Air Toxics Project Account
   The balance in the Air Toxics Project account, including interest earned totals $2,270,249.24.

E. Anticipated Expenditures for the Funds Remaining in the Air Toxics Project Account – Stage 1 Phase 1A

There are no additional expenditures anticipated for Stage 1 Phase 1A.

F. Anticipated Expenditures for the Funds Remaining in the Air Toxics Project Account – Stage 1 Phase 1B

All funds remaining after the close of Stage 1, Phase 1A have been allocated to Stage 1, Phase 1B, and the extension of the operation of the Corpus Christi ambient monitoring network.

The Stage 1 Phase 1A Neighborhood Air Toxics Modeling Project was originally allocated a budget of $2,277,564. As of June 30, 2011, total and final expenditures on Phase 1A totaled $1,863,081.22. The remaining funds totaling $414,482.78, have been transferred, with the Court's permission, to a new account to allow for easier tracking of the expenses as they are utilized for Stage 1 Phase 1B, the extension of the Corpus Christi Air Monitoring Project.

Quarterly Report Distribution List:

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Members of the Advisory Board of the *Corpus Christi Air Monitoring and Surveillance Camera Project*

APPENDIX A

Data Analysis for Corpus Christi Quarterly Report

October 1, 2013 through December 31, 2013

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Data Analysis for Corpus Christi Quarterly Report

This technical report describes results of monitoring and analysis of data under the Air Toxics Project Stage 1 Phase 1B. The primary focus is on the period October 1 through December 31, 2013. The monitoring network is shown earlier in this report in Figure 1, on page 4, and is described in Table 2, below. This report contains the following elements:

- A summary of Oak Park, Solar Estates, and Palm (TCEQ) auto-GC data for the third and fourth quarters of 2013;
- Information on the trends for benzene concentrations at the two project auto-GCs in residential areas, now with almost nine years of data, and at the TCEQ's Palm auto-GC, with three and a half years of data (since June 2010); and
- A discussion of the sulfur dioxide (SO_2) data from UT and TCEQ sites.

Table 2. Schedule of air monitoring sites, locations and major instrumentation

TCEQ CAMS#	Description of Site Location	Monitoring Equipment showing month/year of operations				
		Auto-GC	TNMHC (T) / Canister (C)	H_2S & SO_2	Met Station	Camera
634	Oak Park Recreation Center (**OAK**)	3/05 to date	C: 12/04 to 2/09 T: 12/04 to 4/12		12/04 to date	
629	Grain Elevator @ Port of Corpus Christi (**CCG**)		T&C: 12/04 to date	12/04 to date	12/04 to date	
630	J. I. Hailey Site @ Port of Corpus Christi (**JIH**)		T&C: 12/04 to date	12/04 to date	12/04 to date	
635	TCEQ Monitoring Site C199 @ Dona Park (**DPK**)		T&C: 12/04 to date	12/04 to date	12/04 to date	1/05 to date
632	Off Up River Road on Flint Hills Resources Easement (**FHR**)		T&C: 12/04 to date	12/04 to date	12/04 to date	
633	Solar Estates Park at end of Sunshine Road (**SOE**)	3/05 to date	C: 12/04 to 2/09 T: 12/04 to 4/12	12/04 to date	12/04 to date	1/05 to date
631	*Port of Corpus Christi on West End of CC Inner Harbor (**WEH**) (terminated)*		T&C: 12/04 to 5/12	12/04 to 5/12	12/04 to 5/12	

Legend

CAMS	continuous ambient monitoring station
Auto-GC	automated gas chromatograph
TNMHC	total non-methane hydrocarbon analyzer (all except CAMS 633 & 634 also have canister hydrocarbon samplers)
H_2S	hydrogen sulfide analyzer
SO_2	sulfur dioxide analyzer
Met Station	meteorology station consisting of measurement instruments for wind speed, wind direction, ambient air temperature and relative humidity
Camera	surveillance camera

Glossary of terms

- **Pollutant concentrations** – Concentrations of most gaseous pollutants are expressed in units denoting their "mixing ratio" in air; i.e., the ratio of the number molecules of the pollutant to the total number of molecules per unit volume of air. Because concentrations for all gases other than molecular oxygen, nitrogen, and argon are very low, the mixing ratios are usually scaled to express a concentration in terms of "parts per million" (ppm) or "parts per billion" (ppb). Sometimes the units are explicitly expressed as ppm-volume (ppmV) or ppb-volume (ppbV) where 1 ppmV indicates that one molecule in one million molecules of ambient air is the compound of interest and 1 ppbV indicates that one molecule in one billion molecules of ambient air is the compound of interest. In general, air pollution standards and health effects screening levels are expressed in ppmV or ppbV units. Because hydrocarbon species may have a chemical reactivity related to the number of carbon atoms in the molecule, mixing ratios for these species are often expressed in ppb-carbon (ppbV times the number of carbon atoms in the molecule), to reflect the ratio of carbon atoms in that species to the total number of molecules in the volume. This is relevant to our measurement of auto-GC species and TNMHC, which are reported in ppbC units. For the purpose of relating hydrocarbons to health effects, this report notes hydrocarbon concentrations in converted ppbV units. However, because TNMHC is a composite of all species with different numbers of carbons, it cannot be converted to ppbV. Pollutant concentration measurements are time-stamped based on the start time of the sample, in Central Standard Time (CST), with sample duration noted.

- **Auto-GC** – The automated gas chromatograph collects a sample for 40 minutes, and then automatically analyzes the sample for a target list of 46 hydrocarbon species. These include benzene and 1,3-butadiene, which are air toxics, various species that have relatively low odor thresholds, and a range of gasoline and vehicle exhaust components. Auto-GCs operate at Solar Estates CAMS 633 and Oak Park CAMS 634. In June 2010 TCEQ began operating an auto-GC at Palm CAMS 83 at 1511 Palm Drive in the Hillcrest neighborhood.

- **Total non-methane hydrocarbons (TNMHC)** – TNMHC represent a large fraction of the total volatile organic compounds released into the air by human and natural processes. TNMHC is an unspeciated total of all hydrocarbons, and individual species must be resolved by other means, such as with canisters or auto-GCs. However, the time resolution of the TNMHC instrument is much shorter than the auto-GC, and results are available much faster than with canisters. TNMHC analyzers operate at the sites that do not take continuous hydrocarbon measurements with auto-GCs (CAMS 629, 630, 632, and 635).

- **Canister** – Electro-polished stainless steel canisters are filled with air samples when an independent sensor detects that *elevated* (see below) levels of hydrocarbons (TNMHC) are present. Samples are taken for 20 minutes to try to capture the chemical make-up of the air. In most cases, the first time on any day that the monitored TNMHC concentration exceeds 2000 ppbC at a site for a continuous period of 15 minutes or more, the system will trigger and a sample will be collected. Samples are sent to UT Austin and are

analyzed in a lab to resolve some 60 hydrocarbon and 12 chlorinated species. Canister samplers operate at the four active sites that do not take continuous hydrocarbon measurements with auto-GCs (CAMS 629, 630, 632, and 635).

- **Air Monitoring Comparison Values (AMCV) –** The TCEQ uses AMCVs in assessing ambient data. Two valuable online documents ("Fact Sheet" and "Uses of ESLs and AMCVs Document") that explain AMCVs are at http://www.tceq.texas.gov/toxicology/AirToxics.html (accessed January 2014). The following text is an excerpt from the TCEQ "Fact Sheet" document:

> Effects Screening Levels are chemical-specific air concentrations set to protect human health and welfare. Short-term ESLs are based on data concerning acute health effects, the potential for odors to be a nuisance, and effects on vegetation, while long-term ESLs are based on data concerning chronic health and vegetation effects. Health-based ESLs are set below levels where health effects would occur whereas welfare-based ESLs (odor and vegetation) are set based on effect threshold concentrations. The ESLs are screening levels, **not ambient air standards.** Originally, the same long- and short-term ESLs were used for both air permitting and air monitoring.
>
> There are significant differences between performing health effect reviews of air permits using ESLs, and the various forms of ambient air monitoring data. The Toxicology Division is using the term "air monitoring comparison values" (AMCVs) in evaluations of air monitoring data in order to make more meaningful comparisons. "AMCVs" is a collective term and refers to all odor-, vegetative-, and health-based values used in reviewing air monitoring data. Similar to ESLs, AMCVs are chemical-specific air concentrations set to protect human health and welfare. Different terminology is appropriate because air *permitting* and air *monitoring* programs are different.

- **Rationale for Differences between ESLs and AMCVs** – A very specific difference between the permitting program and monitoring program is that permits are applied to one company or facility at a time, whereas monitors may collect data on emissions from several companies or facilities or other source types (e.g., motor vehicles). Thus, the protective ESL for permitting is set lower than the AMCV in anticipation that more than one permitted emission source may contribute to monitored concentrations.

- **National Ambient Air Quality Standards (NAAQS) –** U.S. Environmental Protection Agency (EPA) has established a set of standards for several air pollutions described in the Federal Clean Air Act[1]. NAAQS are defined in terms of *levels* of concentrations and particular *forms*. For example, the NAAQS for particulate matter with size at or less than 2.5 microns ($PM_{2.5}$) has a *level* of 12 micrograms per cubic meter averaged over 24-hours, and a *form* of the annual average based on four quarterly averages, averaged over three years. Individual concentrations measured above the level of the NAAQS are called *exceedances*. The number calculated from a monitoring site's data to compare to the level of the standard is called the site's *design value*, and the highest design value in the area for a year is the regional design value used to assess overall NAAQS compliance. A monitor or a region that does not comply with a NAAQS is said to be *noncompliant*. At

[1] See http://epa.gov/air/criteria.html accessed October 2013

some point after a monitor or region has been in noncompliance, the U.S. EPA may choose to label the region as *nonattainment*. A nonattainment designation triggers requirements under the Federal Clean Air Act for the development of a plan to bring the region back into compliance.

A more detailed description of NAAQS can be found on the EPA's Website at http://www.epa.gov/air/criteria.html (accessed January 2014).

One species measured by this project and regulated by a NAAQS is sulfur dioxide (SO_2). Effective June 2, 2010, EPA modified the SO_2 NAAQS to include a level of 0.075 ppm, or 75 ppb averaged over one hour, with a form of the three-year average of the annual 99^{th} percentiles of the daily maximum one-hour averages. There is also a secondary SO_2 standard of 0.500 ppm (500 ppb) over three hours, not to be exceeded more than once in any one year.

- **Elevated Concentrations** – In the event that measured pollutant concentrations are above a set threshold they are referred to as "elevated concentrations." The values for these thresholds are summarized by pollutant below. As a precursor to reviewing the data, the reader should understand the term "*statistical significance*." In the event that a concentration is higher than one would typically measure over, say, the course of a week, then one might conclude that a specific transient assignable cause may have been the pollution source, because experience shows the probability of such a measurement occurring under normal operating conditions is small. Such an event may be labeled "statistically significant" at level 0.01, meaning the observed event is rare enough that it is not expected to happen more often than once in 100 trials. This does not necessarily imply the occurrence of a violation of a health-based standard. A discussion of "elevated concentrations" and "statistical significance" by pollutant type follows:

    - For H_2S, any measured concentration greater than the level of the state residential standards, which is 80 ppb over 30 minutes, is considered "elevated." For SO_2, any measured concentration greater than the level of the NAAQS, which is 75 ppb over one hour, is considered "elevated." Note that the concentrations of SO_2 and H_2S need not persist long enough to constitute an exceedance of the standard to be regarded as elevated. In addition, any closely spaced values that are statistically significantly (at 0.01 level) greater than the long-run average concentration for a period of one hour or more will be considered "elevated" because of their unusual appearance, as opposed to possible health consequence. The rationale for doing so is that unusually high concentrations at a monitor may suggest the existence of unmonitored concentrations closer to the source area that are potentially above the state's standards.
    - For TNMHC, any measured concentration greater than the canister triggering threshold of 2000 ppbC is considered "elevated." Note that the concentrations need not persist long enough to trigger a canister (900 seconds) to be considered elevated.
    - For benzene and other air toxics in canister samples or auto-GC measurements, any concentration above the AMCV is considered "elevated." Note that 20-

minute canister samples and 40-minute auto-GC measurements are both compared with the short-term AMCV.

- Some hydrocarbon species measured in canister samples or by the auto-GC generally appear in the air in very low concentrations close to the method detection level. Similar to the case above with H_2S and SO_2, any values that are statistically significantly (at 0.01 level) greater than the long-run average concentration at a given time or annual quarter will be considered "elevated" because of their unusual appearance, as opposed to possible health consequence. The rationale for doing so is that unusually high concentrations at a monitor may suggest an unusual emission event in the area upwind of the monitoring site.

1. Auto-GC Data Summaries in Residential Areas

In this section the results of semi-continuous sampling for hydrocarbons at the three Corpus Christi auto-GC sites – UT's Solar Estates CAMS 633, UT's Oak Park CAMS 634, and TCEQ's Palm CAMS 83 – are presented. These three sites are located in residential areas. Solar Estates and Oak Park are generally downwind of industrial emissions under northerly winds. Palm, located near the TCEQ's Hillcrest and Williams Park sites in Figure 1, on page 4, is generally downwind under northerly and westerly winds. In examining aggregated data one observes similar patterns of hydrocarbons at all three sites.

Table 3, below, lists the data completeness from the project auto-GCs from January 2011 through 2013 for months for which data validation has been completed. When data are missing the reason is generally owing to quality assurance steps or maintenance procedures. The project regularly exceeds the 75 percent data recovery goal.

Table 3. Percent data recovery by month, 2011-2013, validated data only

Date	Oak Park	Solar Est.	Date	Oak Park	Solar Est.	Date	Oak Park	Solar Est.
Jan 2011	100	96	Jan 2012	94	99	Jan 2013	100	100
Feb 2011	84	77	Feb 2012	90	98	Feb 2013	94	99
Mar 2011	100	95	Mar 2012	97	100	Mar 2013	97	100
Apr 2011	100	80*	Apr 2012	94	100	Apr 2013	100	100
May 2011	78	100	May 2012	77*	96	May 2013	99	99
Jun 2011	69*	93	Jun 2012	65	97	Jun 2013	75*	91*
Jul 2011	95	96	Jul 2012	98	93*	Jul 2013	98	99
Aug 2011	56	95	Aug 2012	99	93*	Aug 2013	87	98
Sep 2011	92	78	Sep 2012	99	100	Sep 2013	82	99
Oct 2011	99	83	Oct 2012	98	93	Oct 2013	99	99
Nov 2011	97	94	Nov 2012	99	88	Nov 2013	91	100
Dec 2011	100	100	Dec 2012	97	99	Dec 2013		
						Average 2011-13	**91**	**95**

* Months with planned preventive maintenance

Table 4, on page 15, summarizes the validated average data values from the third quarter of 2013. Data in this table are available to TCEQ staff at http://rhone3.tceq.texas.gov/cgi-bin/agc_summary.pl (accessed January 2014). Table 5, on page 16, summarizes the as-yet-unvalidated average data values from the fourth quarter of 2013.

As noted in the preceding paragraph, Tables 4 and 5 show the averages (arithmetic mean of measured values) for 27 hydrocarbon species for the periods of interest, and Table 4 also shows the maximum one-hour values and the maximum 24-hour average concentrations for the third quarter's validated data. All concentration values in the tables are in ppbV units. No concentrations or averages of concentrations from the 27 species were greater than TCEQ's air monitoring comparison values (AMCV). The average data columns in Table 4 for the validated third quarter 2013 data and Table 5 for the as-yet-unvalidated fourth quarter 2013 data are shown graphically in Figures 2 and 3, respectively, on pages 17 and 18. Figures 2 and 3 are plotted on the same y-axis scale, so they can be compared directly. Mean concentrations for species that measured consistently above their respective method detection limits are generally lower in the third quarter than in the fourth quarter of the year. More frequent maritime southerly flow in the spring and summer is a contributor to lower concentrations in the second and third quarters. Higher mean concentrations are generally measured in the cooler first and fourth quarters, when lower wind speeds and more northerly winds contribute to higher concentrations. As can be observed by comparing Figures 2 and 3, average concentrations were generally higher in the fourth quarter at all three sites compared to the third quarter.

The rows for ***benzene*** are bold-faced in Tables 4 and 5 owing to the concern that the concentrations for this species tend to be closer to the AMCV than are concentrations of other species. The benzene short-term AMCV is 180 ppbV and the benzene long-term AMCV is 1.4 ppbV.

In examining the annual means from Solar Estates and Oak Park since the beginning of data collection for the project in 2005, one finds that concentrations are higher over the last two years for ethane and propane and other alkane species than in the preceding three years (2009-2011). Total nonmethane hydrocarbon measurements from the auto-GCs December 2013 (calculated during data validation) are not available yet, so one cannot assess the 2013 means for composite total hydrocarbon mass. A preliminary hypothesis is that natural gas emissions are a possible assignable cause for the higher mean concentrations. This hypothesis will be examined through a study of wind directionality and other possibly contributing factors. Figure 4, on page 18, shows a graphical summary of the mean concentration of propane, a species found in natural gas, at the three auto-GCs for the fourth quarter of each year. Figure 5, on page 19, and Figure 6, on page 20, shows the average concentrations of 27 hydrocarbon species for each year in the project from 2006 – 2013 at Oak Park and Solar Estates, respectively. Note that 2005 is not included in the graphs because it was an "incomplete" year, and note that data from 2013 are not fully validated.

Table 4. Validated auto-GC statistics 3rd quarter 2013

Units ppbV	Oak 3Q13			Solar 3Q13			Palm 3Q13		
Species	**Peak 1hr**	**Peak 24hr**	**Mean**	**Peak 1hr**	**Peak 24hr**	**Mean**	**Peak 1hr**	**Peak 24hr**	**Mean**
Ethane	80.748	26.478	4.021	59.181	14.750	4.606	103.76	23.09	4.631
Ethylene	11.913	1.541	0.308	3.459	0.793	0.221	22.787	2.304	0.272
Propane	68.940	20.908	2.503	71.687	10.909	2.901	85.114	22.26	2.821
Propylene	4.303	0.656	0.156	9.775	0.782	0.161	8.121	1.043	0.133
Isobutane	30.854	7.493	0.967	22.971	2.872	1.053	43.05	7.636	1.277
n-Butane	34.559	11.841	1.284	46.064	5.533	1.313	117.17	34.01	2.136
t-2-Butene	0.923	0.233	0.038	0.346	0.077	0.014	1.297	0.217	0.035
1-Butene	0.705	0.157	0.024	0.279	0.063	0.012	0.646	0.176	0.061
c-2-Butene	0.848	0.245	0.033	0.288	0.061	0.010	1.334	0.192	0.024
Isopentane	31.616	9.882	1.063	18.235	2.227	0.827	85.608	13.07	1.255
n-Pentane	24.315	7.065	0.607	17.448	1.902	0.549	30.477	5.754	0.642
1,3-Butadiene	0.268	0.073	0.029	0.169	0.031	0.014	0.26	0.037	0.022
t-2-Pentene	2.060	0.500	0.049	1.481	0.109	0.013	2.31	1.032	0.058
1-Pentene	1.040	0.251	0.027	0.637	0.048	0.008	1.388	0.635	0.033
c-2-Pentene	1.030	0.245	0.023	0.786	0.058	0.005	1.237	0.549	0.03
n-Hexane	8.208	2.198	0.256	4.977	0.632	0.223	9.589	2.065	0.262
Benzene	**4.813**	**1.105**	**0.174**	**1.524**	**0.410**	**0.107**	**5.806**	**1.344**	**0.145**
Cyclohexane	16.340	1.615	0.138	1.836	0.324	0.116	2.199	0.602	0.086
Toluene	8.402	1.249	0.230	2.409	0.371	0.142	7.138	1.077	0.211
Ethyl Benzene	0.487	0.101	0.026	0.329	0.045	0.016	1.132	0.1	0.015
m&p -Xylene	1.885	0.328	0.090	1.643	0.315	0.080	4.716	0.455	0.087
o-Xylene	0.444	0.113	0.028	0.419	0.071	0.019	1.047	0.14	0.025
Isopropyl Benzene	4.320	0.475	0.013	0.457	0.053	0.003	0.14	0.028	0.002
1,3,5-Tri-methylbenzene	0.245	0.058	0.011	0.520	0.040	0.008	0.168	0.04	0.007
1,2,4-Tri-methylbenzene	0.487	0.116	0.034	0.555	0.066	0.017	0.3	0.072	0.022
n-Decane	0.411	0.108	0.021	0.758	0.090	0.022	0.342	0.062	0.013
1,2,3-Tri-methylbenzene	0.186	0.046	0.016	0.291	0.034	0.006	0.11	0.029	0.018

Table 5. Unvalidated auto-GC mean statistics 4th quarter 2013

Units ppbV	Oak 4Q13	Solar 4Q13	Palm 4Q13
Species	**Mean**	**Mean**	**Mean**
Ethane	13.718	12.153	16.947
Ethylene	0.882	0.477	0.746
Propane	9.295	7.976	9.751
Propylene	0.349	0.255	0.338
Isobutane	3.264	2.240	4.188
n-Butane	5.142	3.762	6.756
t-2-Butene	0.074	0.029	0.093
1-Butene	0.059	0.031	0.128
c-2-Butene	0.059	0.018	0.071
Isopentane	2.679	1.545	3.146
n-Pentane	1.683	1.200	1.809
1,3-Butadiene	0.043	0.051	0.031
t-2-Pentene	0.077	0.017	0.125
1-Pentene	0.042	0.012	0.091
c-2-Pentene	0.039	0.007	0.062
n-Hexane	0.580	0.424	0.628
Benzene	**0.458**	**0.166**	**0.430**
Cyclohexane	0.373	0.192	0.249
Toluene	0.553	0.214	0.433
Ethyl Benzene	0.044	0.023	0.042
m&p -Xylene	0.150	0.208	0.182
o-Xylene	0.048	0.030	0.055
Isopropyl Benzene	0.029	0.010	0.010
1,3,5-Trimethylbenzene	0.018	0.013	0.016
1,2,4-Trimethylbenzene	0.050	0.026	0.043
n-Decane	0.031	0.042	0.027
1,2,3-Trimethylbenzene	0.021	0.007	0.019

Figure 2. Mean ppbV for 27 species at three auto-GCs, 3rd quarter 2013 (validated data)

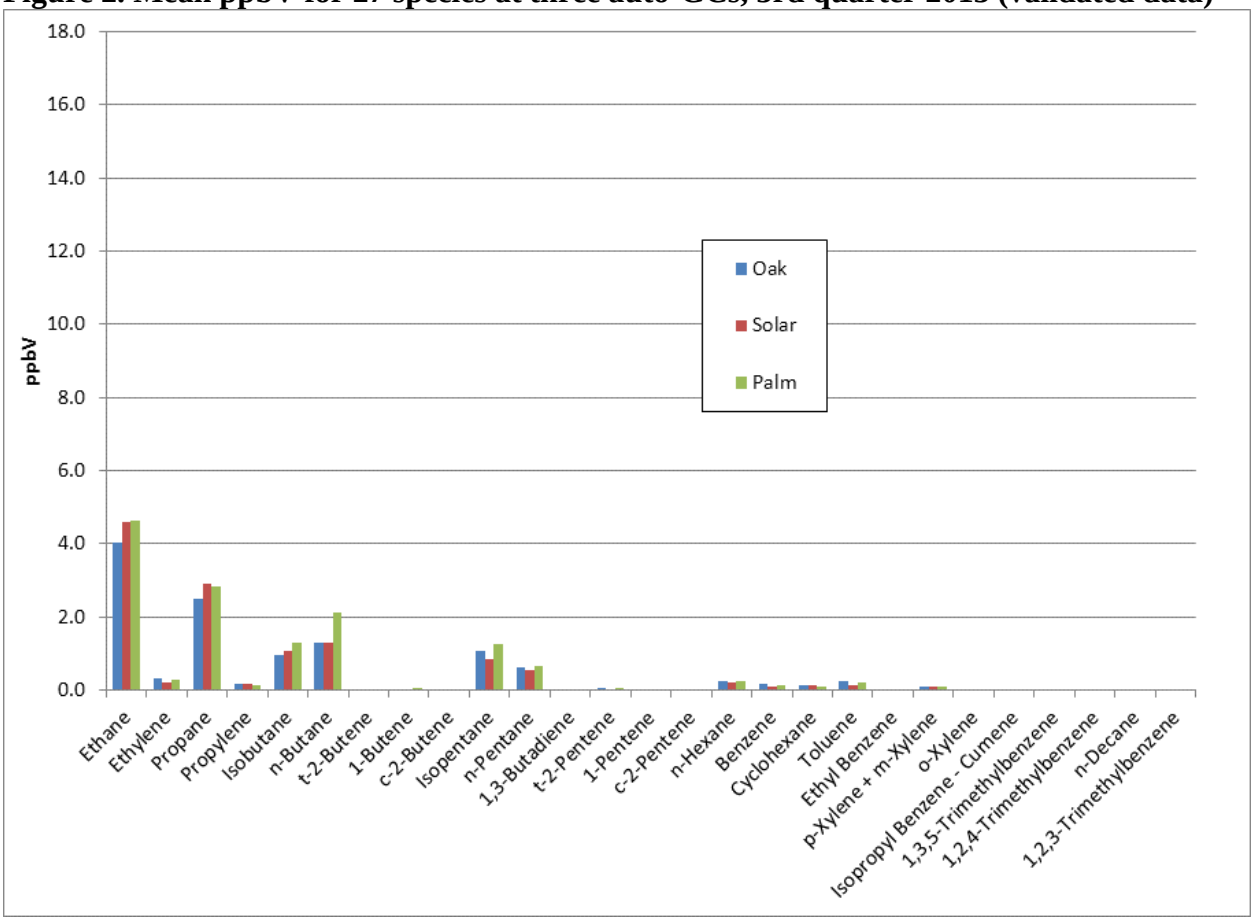


Figure 3. Mean ppbV for 27 species at three auto-GCs, 4th quarter 2013 (unvalidated data)

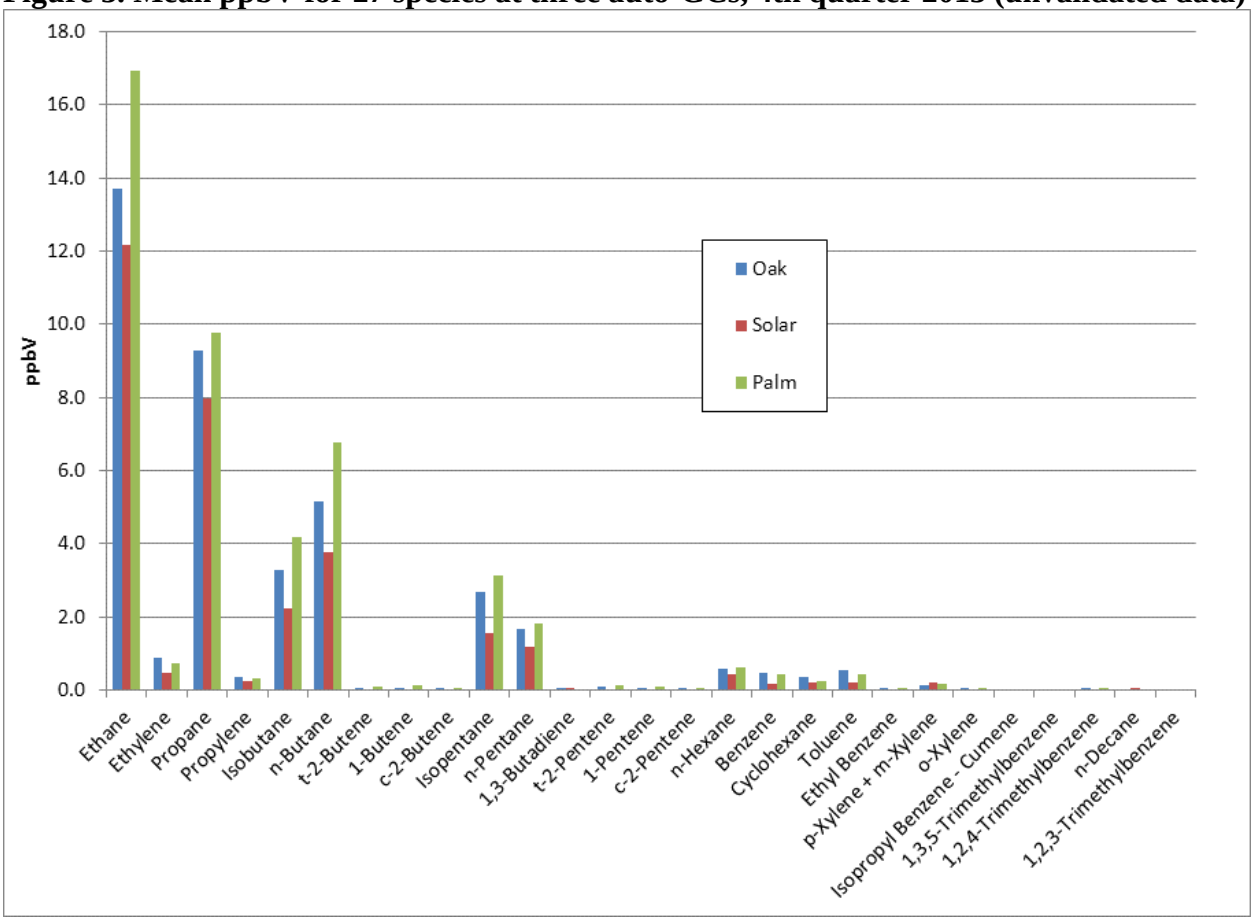


Figure 4. Mean concentrations of propane during fourth quarters of each year at Oak Park (blue) and Solar Estates (red), and Palm (green) 2010 – 2013 (2013 data unvalidated)

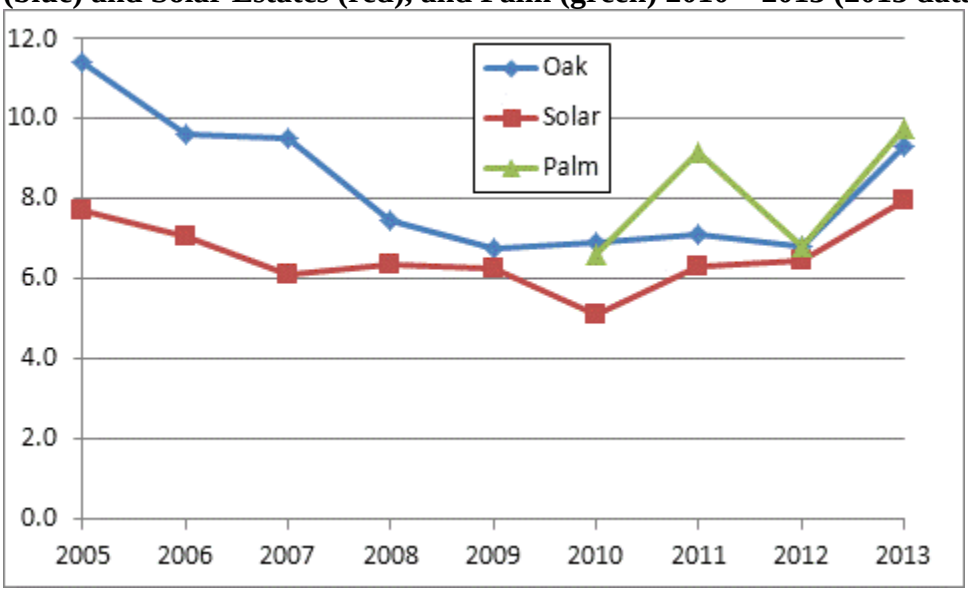


Figure 5. Mean concentrations of 27 hydrocarbon species by year at Oak Park (2013 data not fully validated)

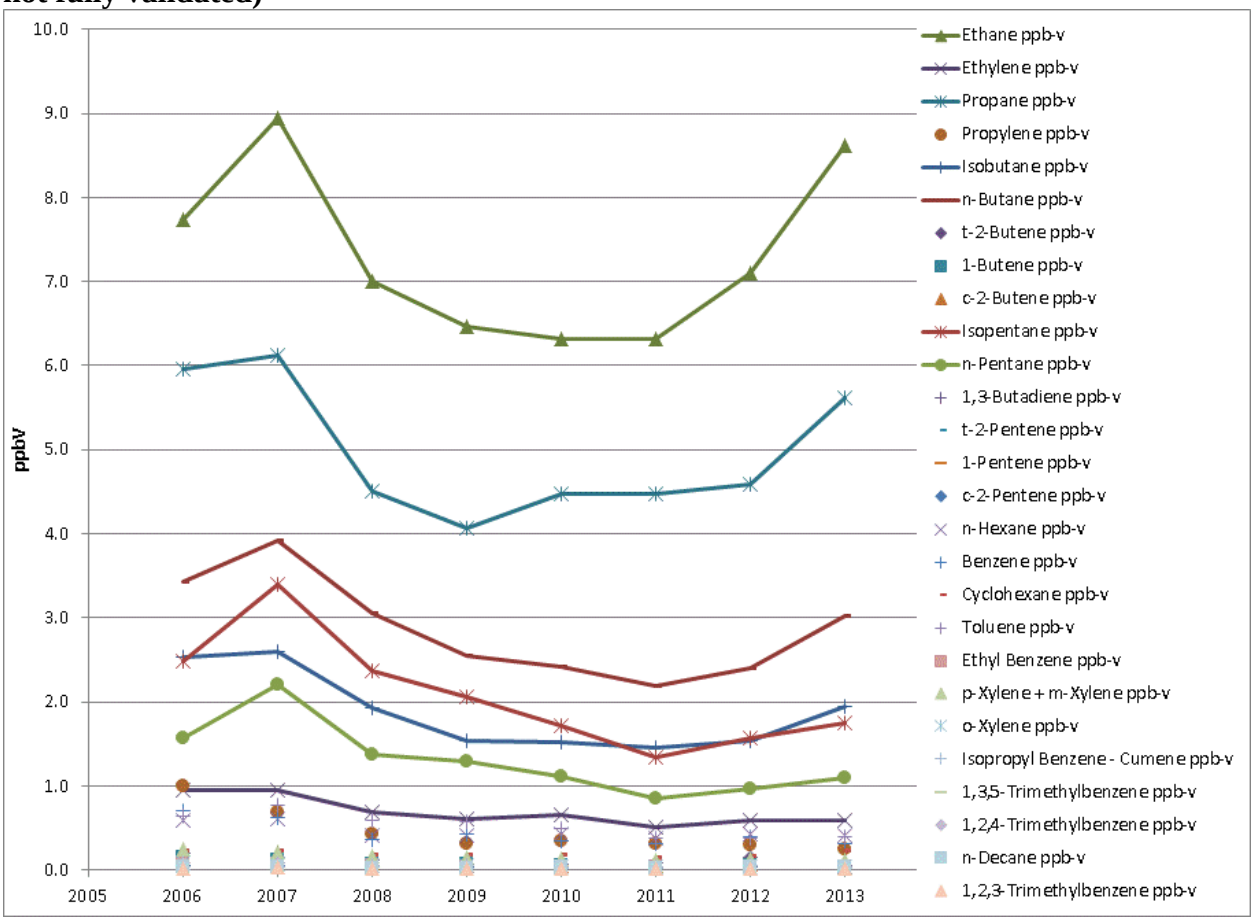
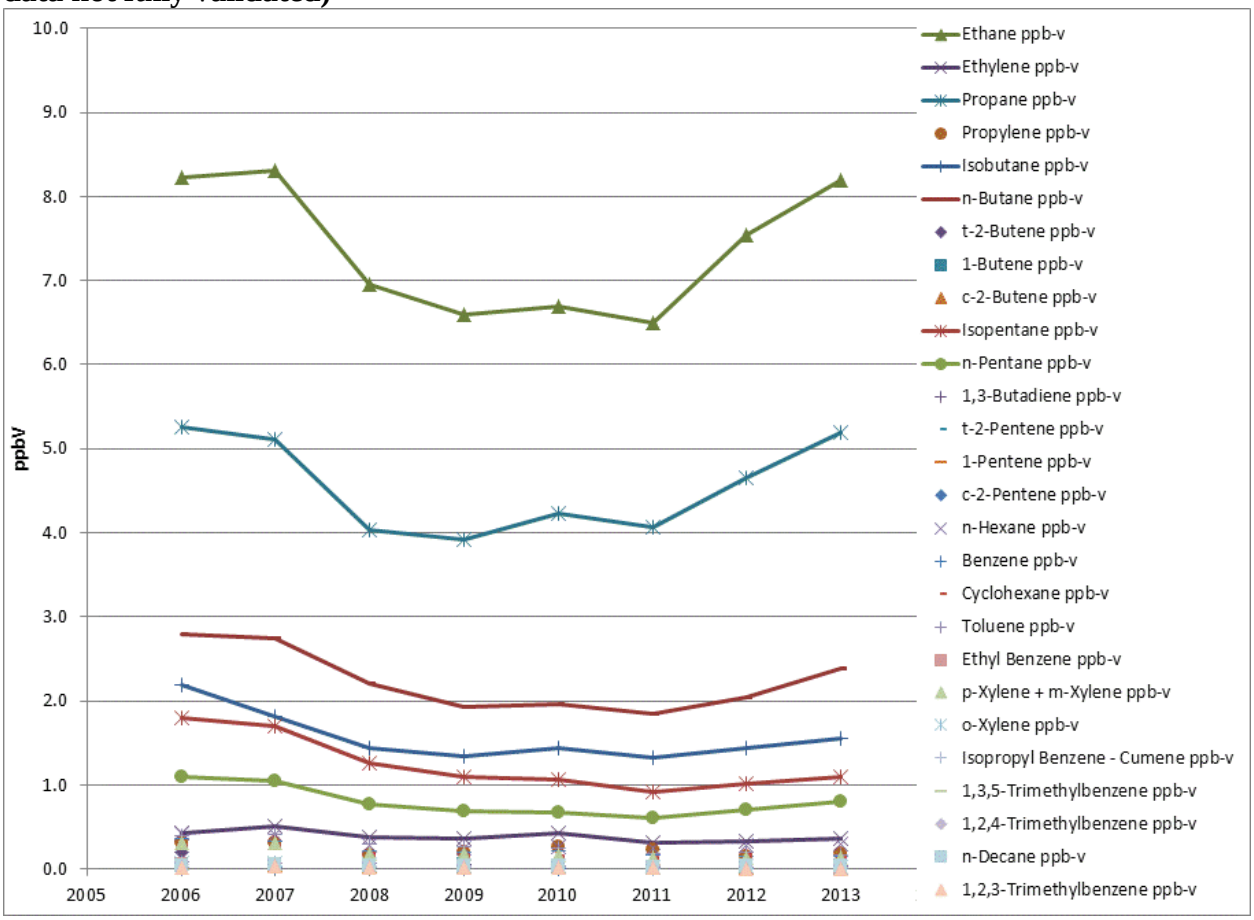


Figure 6. Mean concentrations of 27 hydrocarbon species by year at Solar Estates (2013 data not fully validated)



2. Benzene Concentrations in Residential Areas

As has been discussed in past reports, benzene concentrations in the recent years are lower than in the first three years of operation at the two auto-GCs operated at Oak Park CAMS 634 and Solar Estates CAMS 633. Also, in recent years (2008 – 2013), concentration averages have generally shown little variation. No individual one-hour benzene values have been measured above the AMCV since the beginning of monitoring. A time series for Oak Park hourly benzene in ppbV units with two points annotated by date appears in Figure 7, below. The two points from 6:00 CST Saturday January 27, 2007 and 4:00 CST Friday November 6, 2009 are identified as statistical outliers in that they are unusually high given the balance of the data. The same graph is reproduced without the two outlier points in Figure 8, on page 22. The time series for Solar Estates appears in Figure 9, on page 22. Note the different y-axis scales for the two sites, as Oak Park does tend to measure higher concentrations than Solar Estates. Figure 10, on page 23, shows the time series for the three-year old TCEQ Palm auto-GC, with an apparent outlier on January 30, 2012 indicated. Note that for all three sites, the data from the fourth quarter 2013 have not all been validated yet.

Figure 7. Oak Park hourly benzene March 2005 – December 31, 2013, ppbV units, individual elevated values noted, no observations greater than the TCEQ's AMCV

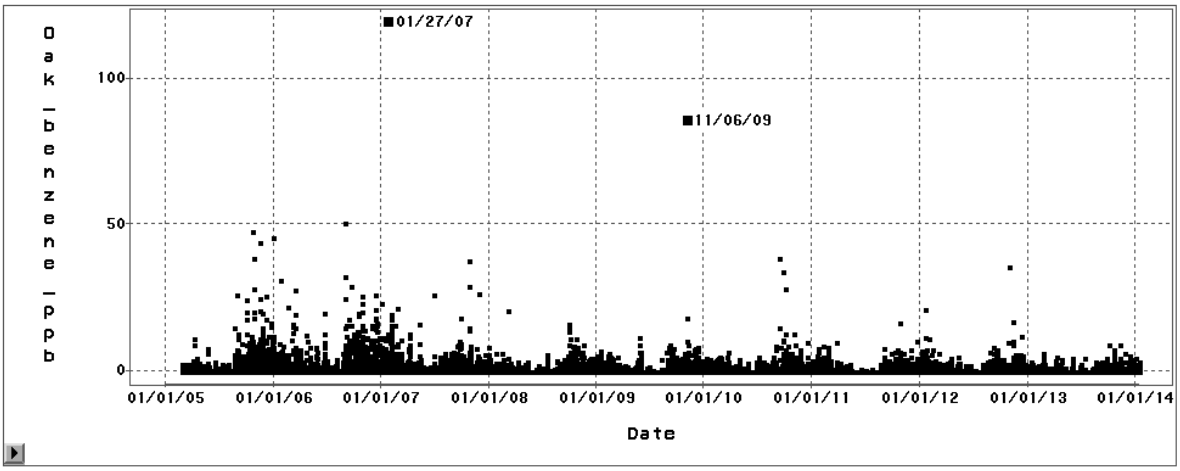


Figure 8. Oak Park hourly benzene Mar. 2005 – December 31, 2013, ppbV units, two outliers from January 27, 2007 and November 6, 2009 removed

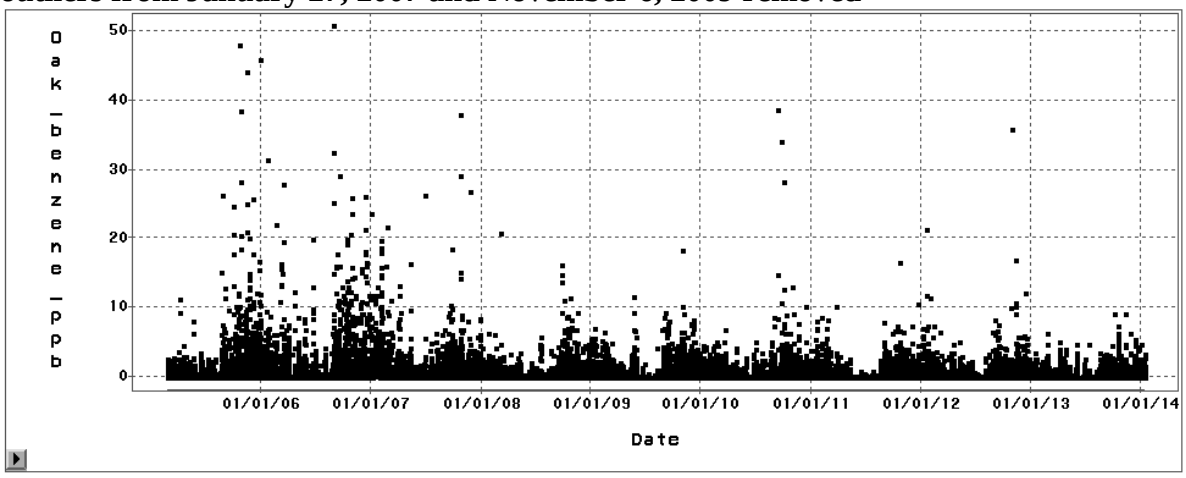


Figure 9. Solar Estates hourly benzene Mar. 2005 – December 31, 2013, ppbV units, no observations greater than the TCEQ's AMCV

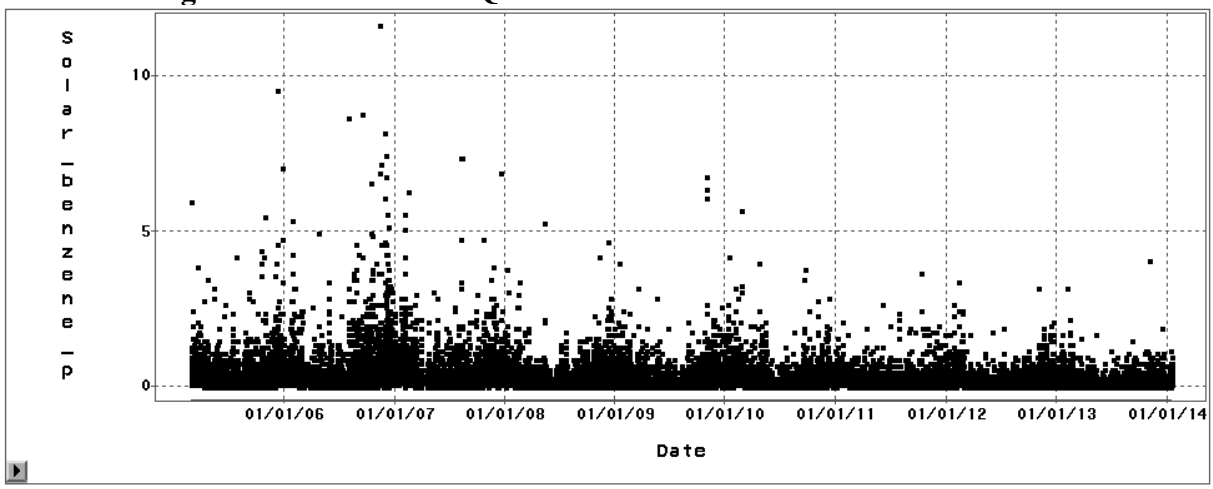


Figure 10. TCEQ Palm hourly benzene June 1, 2010 – December 31, 2013, ppbV units, individual elevated value noted, no observations greater than the TCEQ's AMCV

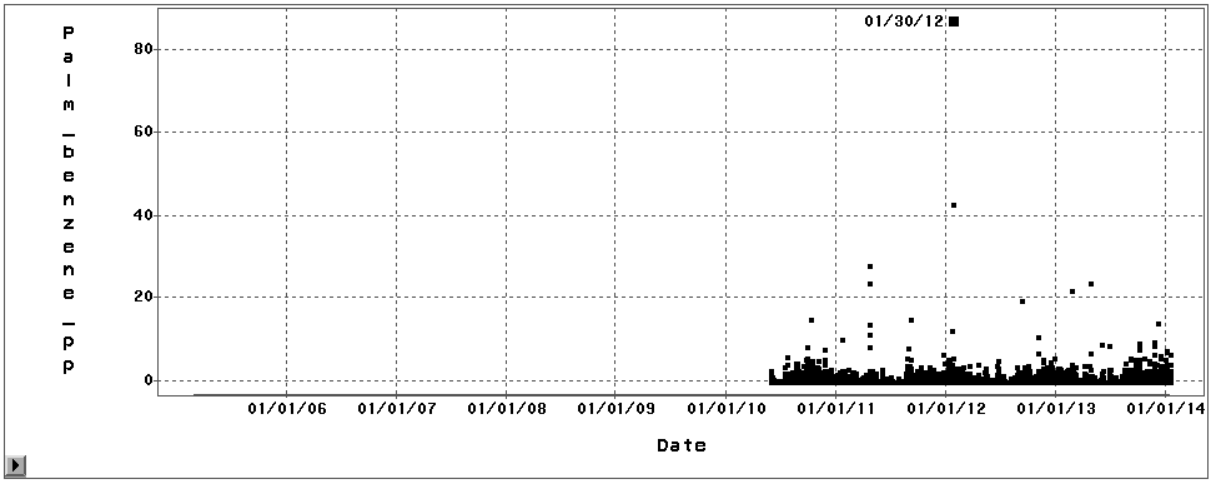
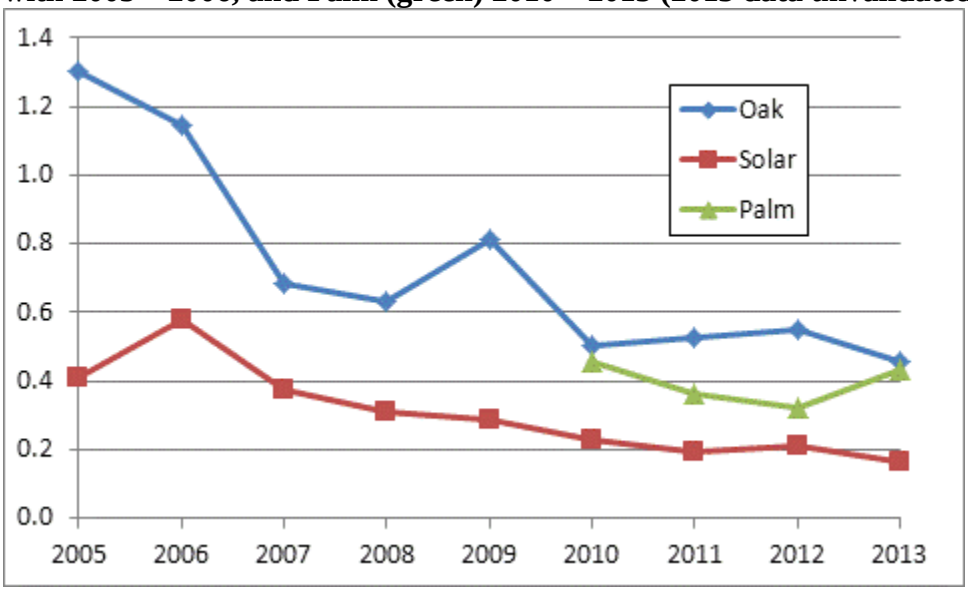


Table 6, on page 24, shows the fourth quarter average concentrations from the auto-GCs for benzene from 2005 – 2013 (2013 data unvalidated). Because monitoring began in March 2005, this is the first opportunity to look at nine years of the fourth quarter's data. The fourth quarter means are graphed in Figure 11, on page 24. The means for TCEQ's Palm site are shown for 2010 through 2013 only. The fourth quarter averages at UT sites from 2008 through 2013 are statistically significantly lower than in the fourth quarters of the project's first two years, and this finding is similar to findings for other quarters in recent reports on this project.

Table 6. Mean statistics for Benzene at Oak Park and Solar Estates, 4th quarter 2005 – 2013, Palm 2011 – 2013, ppbV units (2013 data unvalidated)

4th qtr/year	Oak	Solar	Palm
2005	1.300	0.408	
2006	1.145	0.579	
2007	0.682	0.375	
2008	0.634	0.308	
2009	0.810	0.285	
2010	0.502	0.228	0.455
2011	0.523	0.195	0.361
2012	0.548	0.211	0.321
2013	0.458	0.164	0.431

Figure 11. Mean concentrations of benzene during fourth quarters of each year at Oak Park (blue) and Solar Estates (red), 2005 – 2013 with lower values in 2007 – 2013 compared with 2005 – 2006, and Palm (green) 2010 – 2013 (2013 data unvalidated)



3. Sulfur Dioxide Measurements at Corpus Christi Monitors

Since monitoring of SO_2 began, concentrations have been high enough frequently enough that the JIH CAMS 630 site did not comply with the EPA's current SO_2 NAAQS (described earlier on page 11). However, concentrations appear to have declined over the course of 2012 and 2013 at JIH CAMS 630 and the site now appears to comply with the NAAQS. Table 7, on page 25, shows the design values (defined earlier on page 11) for SO_2 monitors in Nueces County. The bolded numbers in the column for JIH CAMS 630 represent the values above 75 ppb and thus noncompliant. The most recent 2011 – 2013 design value at CAMS 630 is 47 ppb. In addition to the decline at CAMS 630, all sites except Solar Estates CAMS 633 have their lowest design value over the study period in the most recent three year period.

Table 7. SO_2 design values for Nueces County monitors

Year	**Tuloso C21**	**West C4**	**Port Grain C629**	**FHR C630**	**Oak Park C632**	**Solar Estates C633**	**Dona Park C635**	**Huisache C98**
2005 - 2007	8	24	34	**119**	21	51	34	36
2006 - 2008	8	21	31	**131**	19	31	31	32
2007 - 2009	9	18	30	**89**	17	21	23	28
2008 - 2010	9	17	26	**103**	13	11	22	33
2009 - 2011	9	12	19	**80**	13	30	20	27
2010 - 2012	8	10	15	**76**	12	40	12	23
2011 - 2013	6	6	10	47	12	50	7	10

Research to date has concluded that emissions from ships operating in the Corpus Christi ship channel and docked along the shores had been major contributors to elevated SO_2 concentrations at JIH and to some extent at other sites. The main source of SO_2 is believed to be the result of emissions from diesel engines used in dockside ships' auxiliary engines running on high-sulfur diesel fuel. However, over the course of the last half of 2012 and throughout 2013, SO_2 concentrations at JIH have been lower than early 2012 and earlier years. On June 1, 2012 new regulations for sulfur content in diesel fuel for marine vessels went into effect. Thus, both small ships motoring in the ship channel and large ships docked in the ship channel are likely now producing lower emissions of SO_2. It is very likely that this has led directly to the lower design value at JIH CAMS 630, and perhaps may have contributed to declines at other sites in the area.

The one site for which the design value was not lower in 2013 was the Solar Estates site. Evidence has been compiled to suggest that some chemical other than SO_2 has caused elevated measurements of concentrations recorded by the monitor as SO_2, at Solar Estates and also to a lesser extent at FHR.

Conclusions from the Fourth Quarter 2013 Data

In this quarter's report, several findings have been made:

- No exceedances of the EPA SO_2 NAAQS level were measured this quarter at UT sites or at TCEQ sites, including the TCEQ's Avery Point site. Dockside ship emissions that had affected the UT JIH CAMS 630 site and the Avery Point appear to have diminished since June 2012, which is likely relatable to new federal rules on marine fuel. The JIH site now appears to have come into compliance with the SO_2 NAAQS.

- Third and fourth quarter 2013 concentrations at the auto-GCs remain well below the TCEQ's AMCVs for all species tracked for this project. Trends in quarterly average benzene concentrations remain relatively flat. Mean concentrations for several hydrocarbon species possibly associated with natural gas have increased in the past two years.
- Periodic air pollution events continue to be measured on a routine basis.

Further analyses will be provided upon request.

APPENDIX B

December 10, 2013
Advisory Board Meeting Notes

ADVISORY BOARD MEETING

Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project

Texas A&M University - Corpus Christi

Room 1003, NRC Building

12:00 pm – 2:00 pm

December 10, 2013

Advisory Board Members Present:

Ms. Gretchen Arnold	Corpus Christi Advocate
Ms. Chris Cisneros	Corpus Christi Pollution Prevention Partnership TAMUCC
D. Eugene Billiot	Community Volunteer
Dr. Glen Kost	Public Health Awareness
Ms. Sharon Lewis	City of Corpus Christi

Ex-Officio Members of the Board Present:

Mr. Chris Owen	TCEQ – Region 14
Mr. Shane McGill	TCEQ – Region 14
Mr. Jonathan Bennett	TCEQ – Region 14
Mr. Joe Montoya	TCEQ – Region 14
Ms. Neera Erraguntla	TCEQ – Region 14 via teleconference call

Project Personnel Present:

Mr. Vincent Torres	The University of Texas at Austin
Dr. Dave Sullivan	The University of Texas at Austin
Ms. MaryAnn Foran	The University of Texas at Austin

I. Call to Order and Welcome

Mr. Vincent Torres called the meeting to order at 12:10 pm. Given new members were in attendance, Mr. Torres had the attendees introduce themselves and identify their organization or affiliation to the Corpus Christi Project.

II. Project Overview and Status

A. Financial Status of Project

Mr. Torres presented an update on the financial status of the project, estimate of the months of operation of the project remaining, and proposed plans for the decommissioning of the Project. Mr. Torres stated that UT anticipates the funding will carry the project through September 2015. This projection is an approximation given the current financial status.

B. Phase II – Site Operation and Maintenance

Dr. Dave Sullivan gave an update on and analysis of monitoring data collected by the Project for the past 9 years. The Project has now collected 8.5 - 9 years of monitoring data.

Dr. Kost asked if there is anyway UT can evaluate the influence the trucking industry has on the air quality measurements currently being collected at the Project's air monitoring sites. Dr. Sullivan mentioned that trucks are getting cleaner. Mr. Chris Owen pointed out that TCEQ TERP Grant Program is available to the

trucking industry to purchase new diesel equipment. The TCEQ actively publicizes the TERP Grant Program.

Mr. Joe Montoya commented on the Trajectory Tool developed by UT under TCEQ-SEP funding. He told the attendees that the Trajectory Tool is used by TEQ every day. He wanted the group to know that the tool is very useful for back trajectory projections, and it is very useful for forward trajectory projections as well.

Dr. Kost inquired if Dr. Sullivan has been given a map of all of the new pipeline activity in the Corpus Christi area. Dr. Sullivan replied the Railroad Commission keeps a record of that activity as does private industry. The data from both entities is available to the public on-line and Dr. Sullivan accesses that information on a regular basis.

Mr. Montoya added to the discussion concerning Eagle Ford Shale by saying the refineries have adjusted for new oil exporting activities.

Mr. Owens referred to changes in the Martine Pollution Standards that have resulted in lower sulfur emissions. In 2015 revised standards on crude oil will be enforced.

III. Follow up to Old Business/Action Items

IV. Advisory Board

Mr. Torres discussed the Extension of the Advisory Board Appointments and the need to extend the appointments of the Board members through 2015. Dr. Glen Kost, Ms. Gretchen Arnold and Dr. Eugene Billiot signed the Extension Agreements.

UT will mail the Extension Agreement paperwork to the remaining Board members for signature. **Action Item**

V. Other Issues

Ms. Neera Erraguntla added comments about toxicology data. Dr. Kost asked if all particulate matter reports are available to the Corpus Christi community. Ms. Erraguntla and Dr. Sullivan indicated that information is available in the TCEQ's Annual Toxicology Report for the Corpus Christi area. Ms. Erraguntla offered to assist anyone wanting this information. Mr. Torres said UT would send Ms. Erraguntla's contact information to the Board and meeting attendees. **Action Item**

VI. Adjourn

The meeting adjourned at 1:45pm. After the meeting adjourned Dr. Sullivan spoke with Ms. Sharon Lewis and offered to assist Ms. Lewis in getting her name on the relevant list servers and the contact information necessary for Ms. Lewis to access these list servers. **Action Item**

APPENDIX C

Financial Report of Expenditures
Financial Report of Interest Earned

Neighborhood Air Toxics Modeling Project for Houston and Corpus Christi - Phase 1B

Accounting Report for the Quarter
10/01/13 - 12/31/13

A. Total Amount of Air Toxics Funds and Other Funds Received Under This Proposal

Total Grant Amount:	$2,745,371.68
Total Interest Earned:	$390,685.66
Total Funds Received:	**$3,136,057.34**

B. Summary of Expenditures Paid by Air Toxics Funds

		Yr 1 Budget	Year 2 Budget	Year 3 Budget	Adjustments Prior Quarter	Adjustments This Quarter	Adjusted Budget	Prior Activity	Current Activity 10/01/13 - 12/31/13	Encumbrances	Remaining Balance 10/01/13 - 12/31/13
Salaries-Prof	12	$111,654.00	$183,063.49	$31,566.18	($29,495.84)	$0.00	$296,787.83	($49,252.93)	($12,972.02)	$0.00	$234,562.88
Fringe	14	$24,563.88	$40,273.97	$11,051.05	$0.00	$0.00	$75,888.90	($15,069.99)	($4,018.41)	$0.00	$56,800.50
Salaries-CEER	15	$0.00	$0.00	$10,538.09	$29,495.84	$0.00	$40,033.93	($13,387.58)	($4,748.78)	$0.00	$21,897.57
Salary Holding	16	$133,401.93	$0.00	$0.00	($133,401.93)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Quality Assurance	41	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Cell Phone Allowance	42	$0.00	$300.00	$360.00	$60.00	$0.00	$720.00	($360.00)	($90.00)	$0.00	$270.00
SEP Reserve	43	$10,800.00	$0.00	$0.00	$0.00	($10,800.00)	$0.00	$0.00	$0.00	$0.00	$0.00
Contingency	47	$0.00	$0.00	$5,000.00	$0.00	$0.00	$5,000.00	$0.00	$0.00	$0.00	$5,000.00
Monthly M&O	50	$0.00	$0.00	$20,908.45	$29,657.32	$1,300.00	$51,865.77	($22,091.60)	($3,615.38)	($5,769.20)	$20,389.59
Equipment & Spare Parts	51	$0.00	$32,584.00	$17,539.29	$0.00	$0.00	$50,123.29	($24,323.29)	($183.18)	($2,881.58)	$22,735.24
Telephone SWB-DSL/RR	52	$0.00	$8,454.00	$8,707.47	$1,946.00	$0.00	$19,107.47	($8,707.47)	($1,828.72)	$0.00	$8,571.28
Electric	53	$0.00	$22,438.00	$23,086.69	$4,062.00	$0.00	$49,586.69	($23,086.69)	($4,671.34)	$0.00	$21,828.66
Gases	54	$0.00	$10,811.00	$10,676.72	$1,439.00	$0.00	$22,926.72	($10,394.66)	($1,979.31)	($1,641.50)	$8,911.25
Other Costs	55	$0.00	$0.00	$260,000.00	$0.00	$0.00	$260,000.00		$0.00		
Consultant Services - Holding	60	$80,000.00	$0.00	$0.00	($80,000.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Consultant Services - ORSAT/TMSI	61-62	$0.00	$194,750.38	$466,081.72	$163,777.00	$54,653.02	$879,262.12	($343,891.51)	($126,088.43)	$0.00	$409,282.18
Analytical	68	$0.00	$27,839.39	$6,458.00	$12,160.61	$10,800.00	$57,258.00	($27,258.00)	($9,504.00)	$0.00	$20,496.00
Travel	75	$0.00	$3,000.00	$1,000.62	$300.00	$0.00	$4,300.62	($1,300.62)	($352.68)	($0.02)	$2,647.30
Equipment	80	$0.00	$0.00	$0.00	$45,000.00	($1,300.00)	$43,700.00	$0.00	($43,700.00)	$0.00	$0.00
Indirect Costs	90	$54,062.97	$78,527.13	$130,946.14	$0.00	$14,947.95	$278,484.19	($80,868.67)	($32,062.84)	$0.00	$165,552.68
TOTALS		**$414,482.78**	**$602,041.36**	**$1,003,920.42**	**$45,000.00**	**$69,600.97**	**$2,135,045.53**	**($619,993.01)**	**($245,815.09)**	**($10,292.30)**	**$998,945.13**

C. Interest Earned by Air Toxics Funds as of 10/01/13 - 12/31/13

Prior Interest Earned:	$390,326.78
Interest Earned This Quarter:	$358.88
Total Interest Earned to Date:	**$390,685.66**

D. Balance of Air Toxics Funds as of 10/01/13 - 12/31/13

Total Grant Amount:	$2,745,371.68
Total Interest Earned:	$390,685.66
Total Expenditures:	($865,808.10)
Remaining Balance:	**$2,270,249.24**

I certify that the numbers are accurate and reflect acutal expenditures for the quarter

Accounting Certification
26-7700-99

Neighborhood Air Toxics Modeling Project for Houston and Corpus Christi - Stage 1 Phase 1A

Accounting Report for the Quarter
10/01/13 - 12/31/13

A. Total Amount of Air Toxics Funds and Other Funds Received Under This Proposal

Total Grant Amount:	$1,863,081.22
Total Interest Earned:	$344,222.10
Interest Transferred to Phase 1B	($344,222.10)
Total Funds Received:	**$1,863,081.22**

B. Summary of Expenditures Paid by Air Toxics Funds

		Yr 1 and Yr2 Budget	Year 3 Budget	Adjustments Prior Quarter	Adjustments This Quarter	Adjusted Budget	Prior Activity	Current Activity 07/01/13 - 09/30/13	Encumbrances	Remaining Balance 07/01/13 - 09/30/13
Salaries-Prof	12	$616,882.00	$228,508.00	($95,903.26)	$0.00	$749,486.74	($749,486.74)	$0.00	$0.00	$0.00
Salaries-CEER	15	$66,780.00	$24,045.00	($11,435.81)	$0.00	$79,389.19	($79,389.19)	$0.00	$0.00	$0.00
Fringe	14	$149,185.00	$55,852.00	($22,669.10)	$0.00	$182,367.90	($182,367.90)	$0.00	$0.00	$0.00
Supplies	50	$61,991.00	-$5,831.00	($21,633.36)	$0.00	$34,526.64	($34,526.64)	$0.00	$0.00	$0.00
Contingency	51	$6,746.00	$27,805.00	($34,551.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Consultants	60	$22,500.00	$2,500.00	($25,000.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Subcontracts	61-63	$600,000.00	$0.00	($54,943.78)	$0.00	$545,056.22	($545,056.22)	$0.00	$0.00	$0.00
Modeling/Computer Svs	67	$46,500.00	$12,500.00	($59,000.00)	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00
Computation Center	68	$0.00	$1,800.00	$0.00	$0.00	$1,800.00	($1,800.00)	$0.00	$0.00	$0.00
Tuition	71	$17,727.00	$0.00	($125.00)	$0.00	$17,602.00	($17,602.00)	$0.00	$0.00	$0.00
Travel	75	$15,000.00	$5,000.00	($17,403.03)	$0.00	$2,596.97	($2,596.97)	$0.00	$0.00	$0.00
Equipment	80	$17,500.00	$7,500.00	($17,755.00)	$0.00	$7,245.00	($7,245.00)	$0.00	$0.00	$0.00
Indirect Costs	90	$243,122.00	$53,952.00	($54,063.44)	$0.00	$243,010.56	($243,010.56)	$0.00	$0.00	$0.00
TOTALS		**$1,863,933.00**	**$413,631.00**	**($414,482.78)**	**$0.00**	**$1,863,081.22**	**($1,863,081.22)**	**$0.00**	**$0.00**	**$0.00**

C. Interest Earned by COCP Funds as of 09/30/13

Prior Interest Earned:	$344,222.10
Interest Earned This Quarter:	$0.00
Interest Transferred to Phase 1B	-$344,222.10
Total Interest Earned to Date:	**$0.00**

D. Balance of COCP Funds as of 09/30/13

Total Grant Amount:	$1,863,081.22
Total Interest Earned:	$0.00
Total Expenditures:	($1,863,081.22)
Remaining Balance:	**$0.00**

I certify that the numbers are accurate
and reflect acutal expenditures
for the quarter

Accounting Certification
26-7696-41

2/19/2014