Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project

Quarterly Report for the Period

October 1, 2009 through December 31, 2009

Submitted to

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

Ms. Kathleen Aisling
US 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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I. Introduction

On October 1, 2003, the US 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). This quarterly report has been prepared pursuant to the requirements of the project and is being submitted to the US District Court, the US Environmental Protection Agency (EPA), and the Texas Commission on Environmental Quality (TCEQ).

II. Project Progress Report

The focus of work during the quarter ending December 31, 2009 has been directed to the following activities.

A. Operations and Maintenance Phase of the Project

A detailed description of the data analyses for this quarter appears in Appendix A, pages 6 through 28, and a summary of these analyses appear in this section.

The Project consists of a network of seven (7) air monitoring stations with air monitoring instruments and surveillance camera equipment. A map showing locations of COCP Project monitoring sites along with TCEQ sites and sites operated by Texas A&M at Kingsville (TAMUK) appears in Figure 1, below. Table 1, page 3, identifies the location and instrumentation found at each of the COCP Project sites. TCEQ and TAMUK sites provide some additional data used in analyses.

Figure 1. Corpus Christi Monitoring Sites

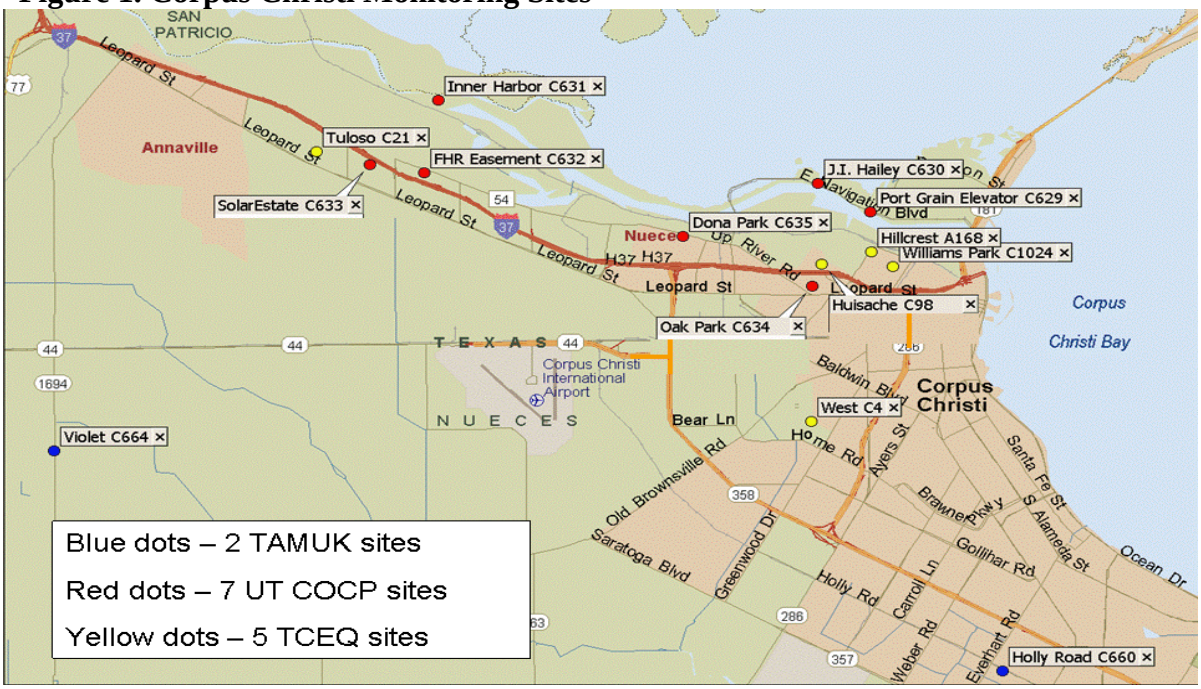

Table 1. Schedule of Air Monitoring Sites, Locations and Major Instrumentation

TCEQ CAMS Nos.	Description of Site Location	Monitoring Equipment				
		Auto GC	TNMHC(T) & Canister(C)	H2S & SO2	Met Station	Camera
634	Oak Park Recreation Center	Yes	T		Yes	
629	Grain Elevator @ Port of Corpus Christi		T&C	Yes	Yes	
630	J. I. Hailey Site @ Port of Corpus Christi		T&C	Yes	Yes	
635	TCEQ Monitoring Site C199 @ Dona Park		T&C	Yes	Yes	Yes
631	Port of Corpus Christi on West End of CC Inner Harbor		T&C	Yes	Yes	
632	Off Up River Road on Flint Hills Resources Easement		T&C	Yes	Yes	
633	Solar Estates Park at end of Sunshine Road	Yes	T	Yes	Yes	Yes

Legend

Auto GC	automated gas chromatograph
TNMHC	total non-methane hydrocarbon analyzer (all except 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 6 though 28. Specifically, the appendix contains the following elements:

- **Auto-GC Data Summary -** In examining calendar year 2009 and the fourth quarter of 2009 hourly auto-GC data from Oak Park and Solar Estates, no measurements were found to have exceeded a short-term Reference Value or ESL. Also, the quarterly and annual averages of all species were below the respective annual ESLs. A summary appears in Appendix A, pages 12 through 14.
- **Benzene Trends at Auto-GC Sites** – As has been discussed in recent reports, benzene concentrations have declined from the start of this project. By merging wind direction and benzene data, trends can be assessed by direction. Results are in Appendix A, pages 15 through 18.
- **Solar Estates and Nearby Schools –** The previous report discussed 1,3-butadiene concentrations at the Solar Estates site, the likely emission source of this pollutant, and some speculation of concentrations elsewhere around the source. A discussion of

sensitive populations in the proximity of the source is in Appendix A, pages 19 though 22.

- **Canister Analysis –** In 2009, fewer canister samples were taken than in the previous two years. This is likely associated with declining concentrations in TNMHC and decrease in the frequency of periods of sustained elevated concentrations. Some results from analysis of the ensemble of canisters from 2006 – 2009 appears in Appendix A, pages 23 and 24.
- **Case Study of a Pollution Event** – One pollution event that triggered a canister sample is discussed in Appendix A, pages 25 through 27.

B. Scheduled Meetings of the Volunteer Advisory Board

The Corpus Christi Project Advisory Board met on October 29, 2009. The meeting notes from that Advisory Board Meeting are found in Appendix B, pages 29 through 32.

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 seven 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 development, quarterly and annual reports, meetings of the Project's Advisory Board and presentations to the local community organizations.

3. **Budget Monitoring**
   Budget monitoring during the period has focused on projects costs for Phase II – Sites Operation and Maintenance costs. Financial reports for the quarter are included in Appendix C, pages 33 and 34.

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 33 and 34.

A. Total Amount of COCP Funds and Other Funds Received Under the Project

The COCP funds received through December 31, 2009 totals $7,503,866.04. This total includes interest earned through December 31, 2009.

B. Detailed List of the Actual Expenditures Paid from COCP Funds

Expenditures of COCP funds during this quarter totaled $286,181.05. The detailed breakdown of the actual expenditures is included in Appendix C, page 34. The activities for which these expenditures were used are detailed in Section II, on page 2 of this report.

C. Total Interest Earned on COCP Funds During the Quarter

The interest earned during this quarter totaled $16,022.41. A report providing detailed calculations of the interest earned on the COCP funds during each month of the quarter is included in Appendix C, pages 33 and 34.

D. Balance as of December 31, 2009, in the COCP Account

The balance in the COCP account, including interest earned totals $2,218,624.41.

E. Expected Expenditures for the Funds Remaining in the COCP Account

The projected expenditures for the funds remaining totals $2,218,624.41.

Quarterly Report Distribution List:

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Members of the Advisory Board

APPENDIX A

Data Analysis for Corpus Christi Quarterly Report

October 1, 2009 through December 31, 2009

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Data Analysis for Corpus Christi Quarterly Report

This technical report describes recent results of monitoring and analysis of data under the Corpus Christi Air Quality Project for the period October 1 through December 31, 2009. The monitoring network is shown in Figure 1, page 2, and is described in Table 2 below. This report contains the following elements:

- A summary of auto-GC data
- An assessment of benzene trends by wind direction
- A brief note on the locations of sensitive populations within three miles of a source of elevated 1,3-butadiene concentrations at Solar Estates
- Findings from canister analysis
- Case study of a pollution event.

Table 2. 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**)	Yes	T		Yes	
629	Grain Elevator @ Port of Corpus Christi (**CCG**)		T&C	Yes	Yes	
630	J. I. Hailey Site @ Port of Corpus Christi (**JIH**)		T&C	Yes	Yes	
635	TCEQ Monitoring Site C199 @ Dona Park (**DPK**)		T&C	Yes	Yes	Yes
631	Port of Corpus Christi on West End of CC Inner Harbor (**WEH**)		T&C	Yes	Yes	
632	Off Up River Road on Flint Hills Resources Easement (**FHR**)		T&C	Yes	Yes	
633	Solar Estates Park at end of Sunshine Road (**SOE**)	Yes	T	Yes	Yes	Yes

Legend

Auto GC	automated gas chromatograph
TNMHC	total non-methane hydrocarbon analyzer (all except 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 it for some 47 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.

- **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 all seven UT/CEER sites.

- **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 and12 chlorinated species. Canister samplers have operated at all seven UT/CEER sites, but currently only at five (CAMS 629, 630, 631, 632, and 635).

- **Effects Screening Levels (ESLs) and Reference Values (ReVs)** – The definitions and details about the use of ESLs and ReVs appear in the "RG-442" regulations guidance document *Guidelines to Develop Effects Screening Levels, Reference Values, and Unit Risk Factors*, found at http://www.tceq.state.tx.us/comm_exec/forms_pubs/pubs/rg/rg-442.html (Accessed December, 2009). Extracts from this document appear below:
    - *Sec. 1.1 Legal Authority and Regulatory Use:* The Texas Clean Air Act (Chapter 382 of the Texas Health and Safety Code (THSC)) authorizes the TCEQ to prevent and remedy conditions of air pollution. Section 382.003 of the THSC defines air pollution as *the presence in the atmosphere of one or more air contaminants or combination of air contaminants in such concentration and of such duration that: are or may tend to be injurious to or to adversely affect human health or welfare, animal life, vegetation, or property; or interfere with the normal use and enjoyment of animal life, vegetation, or property.*

  Sections 382.0518 and 382.085 of the THSC specifically mandate the TCEQ to conduct air permit reviews of all new and modified facilities to ensure that the operation of a proposed facility will not cause or contribute to a condition of air pollution. Air permit reviews typically involve evaluations of best available control technology and predicted air concentrations related to proposed emissions from the new or modified facility. In the review of proposed emissions, federal/state standards and chemical-specific Effects Screening Levels (ESLs) are used, respectively, for criteria and non-criteria pollutants. Because of the comprehensiveness of the language in the THSC, ESLs are developed for as many air contaminants as possible, even for chemicals with limited toxicity data.

Air contaminants may cause both direct and indirect effects. Direct effects are those that result from direct inhalation and dermal exposures to chemicals in air. Deposition of contaminants on soil and water—and subsequent uptake by plants and animals—may cause indirect effects in humans who consume those plants and animals. However, the THSC authorizes the prevention and remedy of air pollution based on effects and interference from contaminants *present in the atmosphere*, i.e., direct effects. Therefore, during the air permitting process, the TCEQ does not set air emission limits to restrict, or perform analysis to determine, the impacts emissions may have, by themselves or in combination with other contaminants or pathways, after being deposited on land or water or incorporated into the food chain. However, indirect effects are assessed during cleanup efforts under the Risk Reduction and Texas Risk Reduction Program Rules, described below.

The TCEQ also relies upon this authority to evaluate air monitoring data. Texas has the largest ambient air toxics monitoring network in the country, receiving monitoring data for up to 186 air toxics at approximately 57 different locations throughout the state. Reference Values (ReVs) and Unit Risk Factors (URFs) are used to evaluate measured air toxics concentrations for their potential to cause health and welfare effects, as well as to help the agency prioritize its resources in the areas of permitting, compliance, and enforcement.

Sec. 1.7 Use of ESLs, ReVs, and URFs in TCEQ Program Areas: The TS [Toxicology Section] develops ESLs, ReVs, and URFs to provide toxicological support to multiple program areas within the TCEQ… In the air permit review process, the TS utilize short- and long-term ESLs to evaluate proposed emissions for their potential to adversely affect human health and welfare. For evaluation of ambient air monitoring results, acute and chronic ReVs and URFs are used to assess the potential for exposure to the measured concentrations to cause human health effects. To assess potential welfare effects for monitoring results, the TS uses odor- and vegetation-based ESLs.

The TCEQ Toxicology Section is continuing long-term analysis of these thresholds and persons may subscribe to an e-mail listserv for updates at the Web site http://www.tceq.state.tx.us/implementation/tox/esl/ESLMain.html (accessed October 2009).
The current ESLs for benzene are 55.5 ppbV for short term and 1.4 ppbV for long term exposure. TCEQ has recommended using the ReV for short term assessments of benzene concentrations. This number is 180 ppbV. Thus, only when individual auto-GC one-hour values or canister 20-minute values for benzene exceed 180 ppbV will a short-term "exceedance" for benzene be noted.

- **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 or SO_2, any measured concentration greater than the level of the state residential standards, which are 80 ppb for H_2S and 400 ppb for SO_2, is considered "elevated." Note that the concentrations need not persist long enough to constitute an exceedance of the standard to be so regarded. 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 then 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).
- For benzene and other air toxics in canister samples or auto-GC measurements, any concentration above the ReV is considered "elevated." Note that 20-minute canister samples and 40-minute auto-GC measurements are both compared with the ReV or ESL, whichever is deemed appropriate by the TCEQ.
- 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 two auto-GC sites – Solar Estates C633 and Oak Park C634 – are presented. These two sites are located in residential areas generally downwind of industrial emissions under northerly winds. In examining aggregated data one observes similar patterns of hydrocarbons at the two sites, with concentrations averaging higher at Oak Park than at Solar Estates.

Tables 3 and 4, page 13, summarize data from the fourth quarter of 2009. These tables are available to TCEQ staff at http://rhone.tceq.state.tx.us/cgi-bin/agc_summary.pl (accessed January 2010). The tables show the average concentrations over the quarter, and the maximum one-hour and 24-hour average concentrations for 27 hydrocarbon species of interest for the period of interest. Note that not all data have been validated and are thus subject to change. All concentration values in the tables are in ppbV units. No concentrations or averages of concentrations were greater than ESLs or Reference Values during the fourth quarter of 2009.

In each table, the "Num Samples" column includes all ambient samples, including those not yet validated. The "Mean" is calculated as a weighted average of daily averages and takes into account the number of samples flagged ambient for each day.

The rows for ***benzene*** are bold-faced and italicized in Tables 3 and 4 owing to the concern that the values for this species tend to be closer to the reference and screening values than do other species. The current benzene Reference Value used in toxicological evaluations to screen for areas of concern is 180 ppbV. As was noted earlier, the current short-term benzene ESL, which is only used for permitting purposes, is 55 ppbV. The annual ESL for benzene, which is used for both permitting and toxicological evaluations to screen for areas of concern, is 1.4 ppbV.

Tables 5 and 6, page 14, summarize the complete four year averages of the auto-GC data from 2006 through 2009. All annual mean values are below the TCEQ long-term ESLs. With one exception, every species at both sites has lower mean concentrations in 2008 and 2009 than in 2006 and 2007. The one exception is isopropyl benzene at Oak Park, where the there is an apparent random variation of mean concentrations at a very low level over four years (varying from 0.019 – 0.032 ppbV). Comparing the two most recent years, 23 out of 27 species have a lower mean in 2009 than in 2008 at Solar Estates, and at Oak Park, 16 out of 27 species have a lower mean in 2009 than in 2008.

The increase in benzene from 2008 to 2009 at Oak Park (0.366 to 0.426 ppbV) is discussed in the next section beginning on page 15.

Table 3. Solar Estates 4th Quarter 2009 Auto-GC statistics

Species, ppbV units	Num Samples	Mean	Peak 1hr	Peak 24-hr
Ethane	1913	9.523	139.7	27.659
Ethylene	1913	0.613	8.53	2.776
Propane	1913	6.237	74.734	15.925
Propylene	1913	0.298	6.167	1.014
Isobutane	1913	2.105	24.945	5.231
n-Butane	1913	3.036	32.28	7.897
t-2-Butene	1913	0.101	1.914	0.319
1-Butene	1913	0.095	8.218	0.583
c-2-Butene	1913	0.066	1.546	0.25
Isopentane	1913	1.644	22.247	4.338
n-Pentane	1913	1.065	10.075	2.501
1,3-Butadiene	1913	0.04	4.444	0.444
t-2-Pentene	1913	0.049	1.234	0.188
1-Pentene	1913	0.033	0.675	0.119
c-2-Pentene	1913	0.022	0.61	0.093
n-Hexane	1912	0.375	5.106	0.939
Benzene	***1912***	***0.284***	***6.838***	***1.37***
Cyclohexane	1912	0.248	4.665	0.785
Toluene	1912	0.357	5.383	1.196
Ethyl Benzene	1912	0.049	1.277	0.211
p-Xylene + m-Xylene	1912	0.312	13.473	1.913
o-Xylene	1912	0.068	1.897	0.332
Isopropyl Benzene - Cumene	1912	0.023	0.765	0.142
1,3,5-Trimethylbenzene	1912	0.041	1.633	0.203
1,2,4-Trimethylbenzene	1912	0.071	1.845	0.287
n-Decane	1912	0.077	3.222	0.409
1,2,3-Trimethylbenzene	1912	0.03	0.724	0.114

Table 4. Oak Park 4th Quarter 2009 Auto-GC statistics

Species, ppbV units	Num Samples	Mean	Peak 1hr	Peak 24-hr
Ethane	1979	9.983	170.91	39.601
Ethylene	1979	0.958	23.598	4.8
Propane	1979	6.741	114.91	22.889
Propylene	1979	0.435	7.821	1.621
Isobutane	1979	2.454	38.558	7.192
n-Butane	1979	3.825	69.482	10.429
t-2-Butene	1979	0.145	3.985	0.715
1-Butene	1979	0.13	4.834	0.767
c-2-Butene	1979	0.108	2.738	0.505
Isopentane	1979	3.077	116.17	9.392
n-Pentane	1979	1.896	86.872	7.045
1,3-Butadiene	1979	0.055	7.783	0.461
t-2-Pentene	1979	0.11	1.677	0.451
1-Pentene	1979	0.057	0.921	0.243
c-2-Pentene	1979	0.048	0.822	0.214
n-Hexane	1987	0.616	11.495	2.076
Benzene	***1987***	***0.808***	***86.177***	***5.96***
Cyclohexane	1987	0.342	5.891	1.07
Toluene	1987	0.865	17.792	3.023
Ethyl Benzene	1987	0.062	1.95	0.199
p-Xylene + m-Xylene	1987	0.225	7.723	0.705
o-Xylene	1987	0.073	1.998	0.218
Isopropyl Benzene - Cumene	1987	0.041	1.198	0.256
1,3,5-Trimethylbenzene	1987	0.024	0.476	0.096
1,2,4-Trimethylbenzene	1987	0.063	0.989	0.173
n-Decane	1987	0.027	0.636	0.111
1,2,3-Trimethylbenzene	1987	0.021	0.431	0.074

Table 5. Solar Estates Annual Mean Auto-GC Concentrations 2006 - 2009

Species, ppbV units	2006	2007	2008	2009
Ethane	8.225	8.312	6.949	6.587
Ethylene	0.428	0.500	0.380	0.354
Propane	5.250	5.112	4.036	3.919
Propylene	0.316	0.304	0.164	0.200
Isobutane	2.192	1.817	1.444	1.343
n-Butane	2.795	2.743	2.212	1.934
t-2-Butene	0.195	0.073	0.067	0.055
1-Butene	0.054	0.054	0.039	0.046
c-2-Butene	0.086	0.052	0.036	0.035
Isopentane	1.793	1.698	1.260	1.101
n-Pentane	1.096	1.048	0.762	0.693
1,3-Butadiene	0.086	0.063	0.025	0.054
t-2-Pentene	0.049	0.048	0.028	0.028
1-Pentene	0.026	0.029	0.017	0.019
c-2-Pentene	0.023	0.022	0.013	0.013
n-Hexane	0.429	0.405	0.279	0.241
Benzene	**0.368**	**0.330**	**0.220**	**0.201**
Cyclohexane	0.271	0.274	0.184	0.154
Toluene	0.394	0.415	0.287	0.257
Ethyl Benzene	0.051	0.054	0.032	0.029
p-Xylene + m-Xylene	0.306	0.315	0.187	0.177
o-Xylene	0.063	0.072	0.046	0.041
Isopropyl Benzene - Cumene	0.013	0.033	0.010	0.011
1,3,5-Trimethylbenzene	0.020	0.027	0.016	0.019
1,2,4-Trimethylbenzene	0.057	0.069	0.039	0.041
n-Decane	0.041	0.048	0.030	0.037
1,2,3-Trimethylbenzene	0.016	0.028	0.014	0.014

Table 6. Oak Park Annual Mean Auto-GC Concentrations 2006 - 2009

Species	2006	2007	2008	2009
Ethane	7.741	8.944	7.004	6.447
Ethylene	0.954	0.952	0.688	0.606
Propane	5.964	6.113	4.498	4.050
Propylene	0.992	0.680	0.418	0.314
Isobutane	2.536	2.590	1.922	1.527
n-Butane	3.432	3.915	3.060	2.541
t-2-Butene	0.200	0.154	0.121	0.072
1-Butene	0.149	0.115	0.071	0.059
c-2-Butene	0.134	0.118	0.076	0.049
Isopentane	2.483	3.393	2.371	2.051
n-Pentane	1.573	2.208	1.371	1.292
1,3-Butadiene	0.050	0.080	0.043	0.034
t-2-Pentene	0.102	0.112	0.067	0.071
1-Pentene	0.056	0.063	0.034	0.038
c-2-Pentene	0.052	0.052	0.026	0.031
n-Hexane	0.582	0.608	0.417	0.402
Benzene	**0.698**	**0.617**	**0.366**	**0.426**
Cyclohexane	0.233	0.226	0.180	0.175
Toluene	0.640	0.764	0.585	0.569
Ethyl Benzene	0.070	0.063	0.051	0.040
p-Xylene + m-Xylene	0.244	0.206	0.160	0.143
o-Xylene	0.089	0.072	0.056	0.049
Isopropyl Benzene - Cumene	0.029	0.030	0.032	0.019
1,3,5-Trimethylbenzene	0.034	0.026	0.018	0.014
1,2,4-Trimethylbenzene	0.086	0.076	0.057	0.044
n-Decane	0.037	0.027	0.022	0.018
1,2,3-Trimethylbenzene	0.024	0.026	0.017	0.013

2. Benzene Trends by Wind Direction

Hourly benzene concentrations from the Solar Estates and Oak Park auto-GCs have been merged with collocated, coincident hourly wind direction data to produce the graphs on pages 16 to 18. For both sites, for relatively brief periods when benzene data were present but not wind data, the wind data from the Dona Park site was substituted. As a reminder, "wind direction" is the direction from which winds are blowing, winds around 360 degrees or around 0 degrees are northerly, around 90 degrees are easterly, around 180 degrees are southerly, and around 270 degrees are westerly.

Figure 2, on page 16, shows four graphs for the mean and median benzene concentrations by 10 degree wind bin for each of the past four calendar years at Solar Estates. Each of the four graphs has the same scales to allow intercomparison. Note that because westerly winds have the lowest frequency of occurrence, there is greater variability and uncertainty in estimating statistics between 210 and 330 degrees than other directions. The mean and median are both displayed to provide a sense of the skewness in the distribution of individual observations. In general, the closer a mean and median are to each other, the more symmetric the underlying data distribution; the greater the difference of mean minus median, the more skewed the underlying data distribution.

At Solar Estates, the highest mean and median are associated with northeast winds around 30 – 90 degrees. Mean concentrations dropped from 5.0 – 6.5 ppbC (0.8 – 1.1 ppbV) to less than 4.0 ppbC (0.7 ppbV) from the northeast from 2006 to 2008, and appear unchanged from 2008 to 2009. In comparing the mean and median, note that the difference under northeast winds was around 2 ppbC in 2006, and appears to be around 1 ppbC in 2008 and 2009. This suggests the very highest concentrations have declined.

Figure 3, on page 17, shows a similar set of four graphs for Oak Park. Note that the y-axis scale is much larger for Oak Park than for Solar Estates. The Oak Park mean concentrations varied from less than 1.0 under south winds to over 30 ppbC for northeast winds (less than 0.17 ppbV to more than 5 ppbV) at Oak Park in 2006, with another peak to the northwest with a mean of 20 ppbC (3.3 ppbV). The decline in mean concentrations from the northeast after 2006 appears to be the largest factor in the overall decline in mean concentration at Oak Park. Mean concentrations from the northwest declined from 2006 to 2007, but have remained relatively static since 2007. Because northwest winds are less frequent than northeast winds, changes in concentrations from the northwest direction have less of on effect than would the same changes in concentrations from the northeast direction.

Figure 4, on page 18, shows the Oak Park graphs for just 2008 and 2009, rescaled to allow a better comparison between these two years. It appears that the mean concentration from due north through northeast increased from around 6 – 7 ppbC (1 – 1.2 ppbV) to around 8 – 10 ppbC (1.3 – 1.7 ppbV), which is enough to explain the increase in overall mean from 0.37 to 0.43 ppbV.

Figure 2. Solar Estates benzene mean/median (ppbC) by wind direction 10 deg. bins by year; 0=north, 90=east, 180=south, 270=west, 360=north

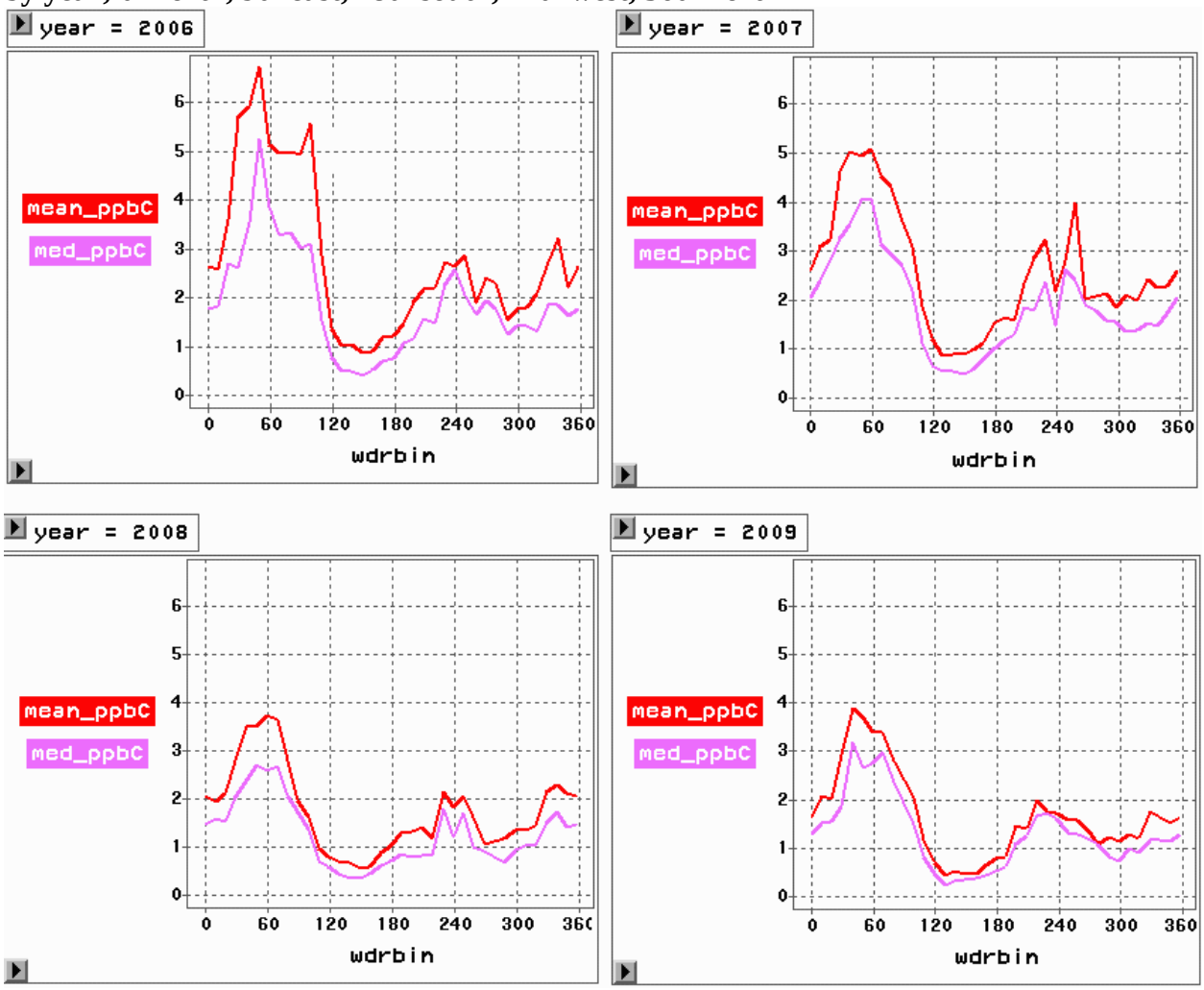


Figure 3. Oak Park benzene mean/median (ppbC) by wind direction 10 deg. bins by year. 0=north, 90=east, 180=south, 270=west, 360=north

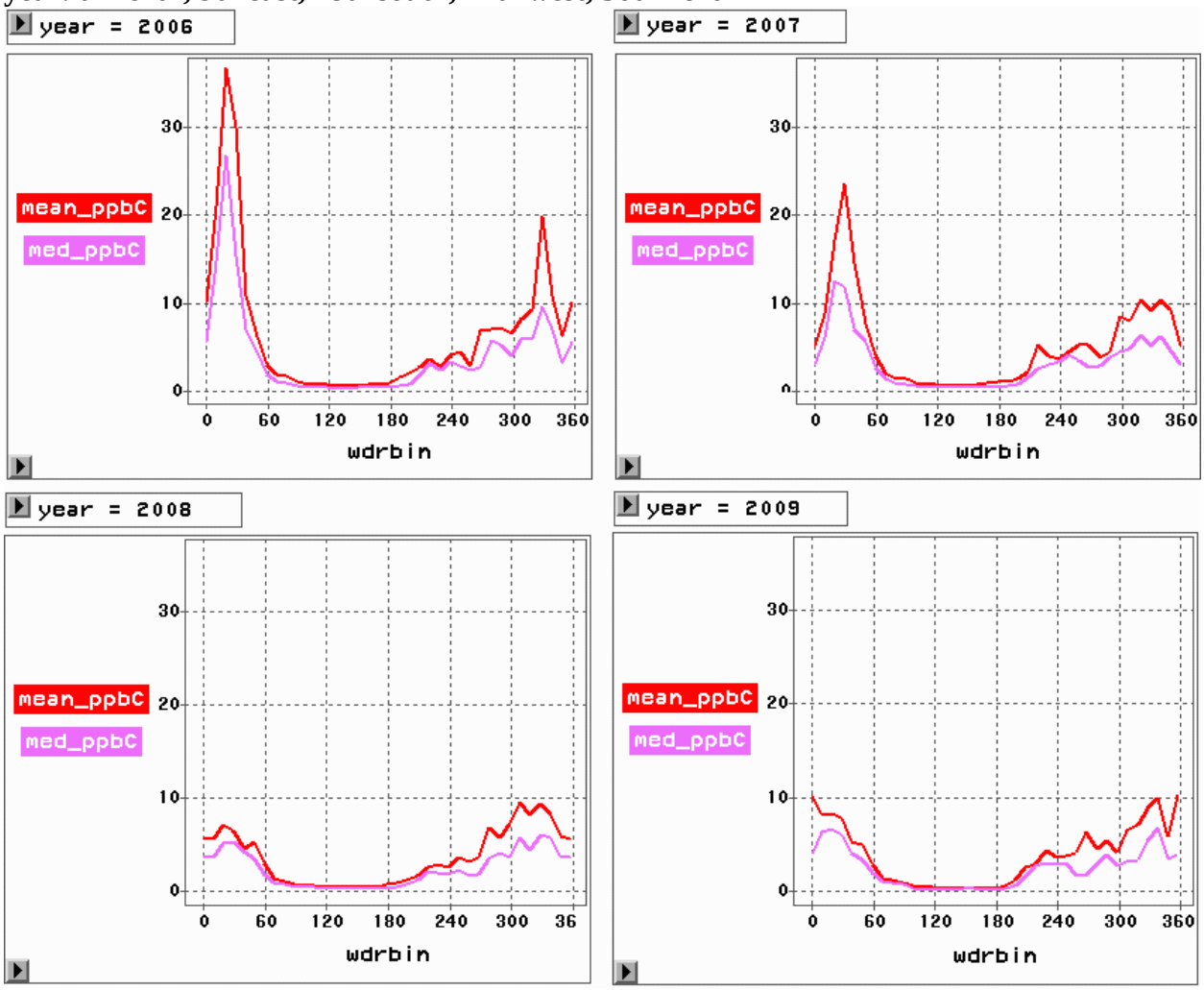
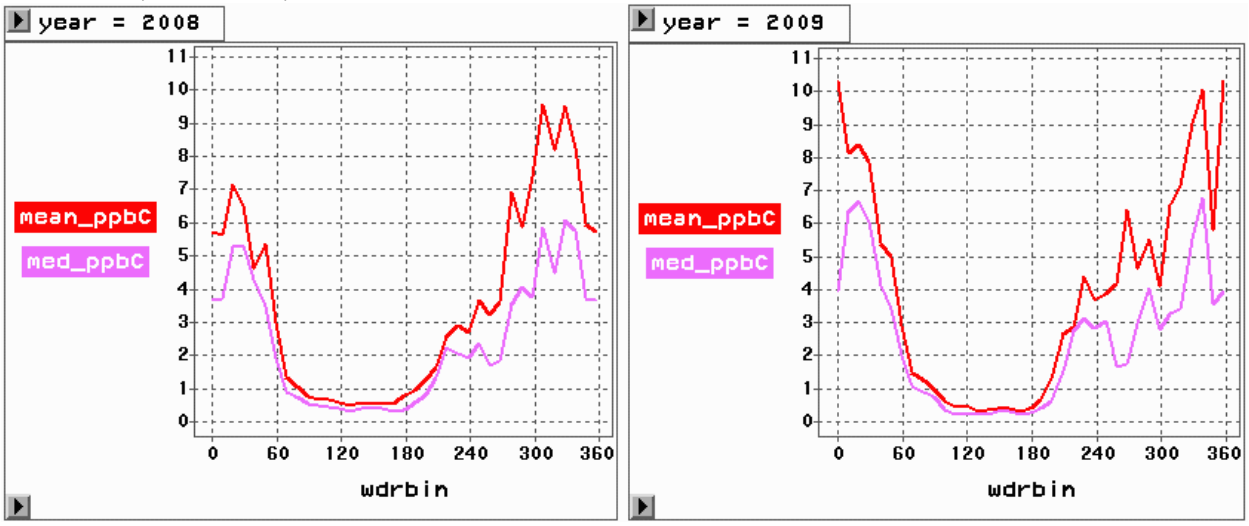


Figure 4. Oak Park benzene mean and median, ppbC units, by 10 degree wind direction bin, 2008 & 2009 – note scale change from Figure 2. 0=north, 90=east, 180=south, 270=west, 360=north



3. Sensitive Populations near Solar Estates

The previous report discussed 1,3-butadiene concentrations at the Solar Estates site, and presented a case study based on elevated concentrations that recently had been measured. The case was made that one chemical plant west-southwest of Solar Estates on McKinzie Road was responsible for the higher mean concentrations associated with west-southwesterly winds. Figure 5, on page 20, shows the results of merging hourly 1,3-butadiene concentrations with collocated, coincident wind direction using data from 2006 – 2009, with and without factoring in wind speed. Because pollutant concentrations are affected by wind speed (among other meteorological factors), it is possible to estimate what a concentration measured under wind speed of, say, 5 miles per hour, might be under a wind speed of, say 10 miles per hour, all else held equal.

In examining Figure 5, page 20, a clear peak in mean concentration appears at 240 degrees, a direction from Solar Estates that points back to the chemical plant on McKinzie Rd. Figure 5 also shows a graph for a first-order estimate of what the mean concentrations would be if the winds always blew at the overall mean wind speed. See the details about the distribution of winds at Solar Estates in Table 7, on page 20. Because westerly winds have a much lower mean wind speed (~ 4.8 mph) than average (~ 10.6 mph), the mean concentration would be lower if the winds from the west were as fast as the winds from other directions. At Solar Estates, the mean concentration when the wind blows from the west-southwest (240 degrees) is 5 ppbC (1.25 ppbV). Solar Estates is three miles from the chemical plant. The bottom line is that all else held equal, a location three miles north of the chemical plant would likely have a lower mean concentration than 5 ppbC (1.25 ppbV) associated with southerly winds, because the mean wind speed at Solar Estates is higher (~ 9.2 mph) from the south. On the other hand, because winds from the southeast through south are by far the most common, the overall mean concentration would likely be higher than Solar Estate's. The uncertainties in this type of estimation approach support the rationale for modeling with more sophisticated tools.

At the most recent Advisory Board meeting, the Board requested information as to what sensitive receptors (e.g., schools) are situated near the chemical plant. The map in Figure 6, page 21, shows the boundaries for school districts in the Corpus Christi area (see http://deleon.tea.state.tx.us/SDL/Forms/# accessed January 2010). By going to the Websites for individual school districts, the addresses of public schools were harvested. Some quality control was applied to the locations by using Streetview. The schools around the area west of the Solar Estates CAMS site are mapped in Figure 7, on page 22. Recall that Solar Estates is 3 miles from the chemical plant. The closest school is Tuloso-Midway High School, 1.6 miles away to the north-northeast. Just west of this school are a number of baseball and softball fields, a little over a mile from the plant. The closest school in the prevailing downwind direction is the Calallen East Primary School, about 2.5 miles north-northwest of the plant. These and other sensitive receptors may be considered in the modeling to be conducted under the Neighborhood Air Toxics project.

Figure 5. Solar Estates mean 1,3-butadiene ppbC by wind direction (red) and adjusted by wind speed (magenta). Divide by 4 to get ppbV units. Long-term ESL is 18 ppbC (4.5 ppbV)

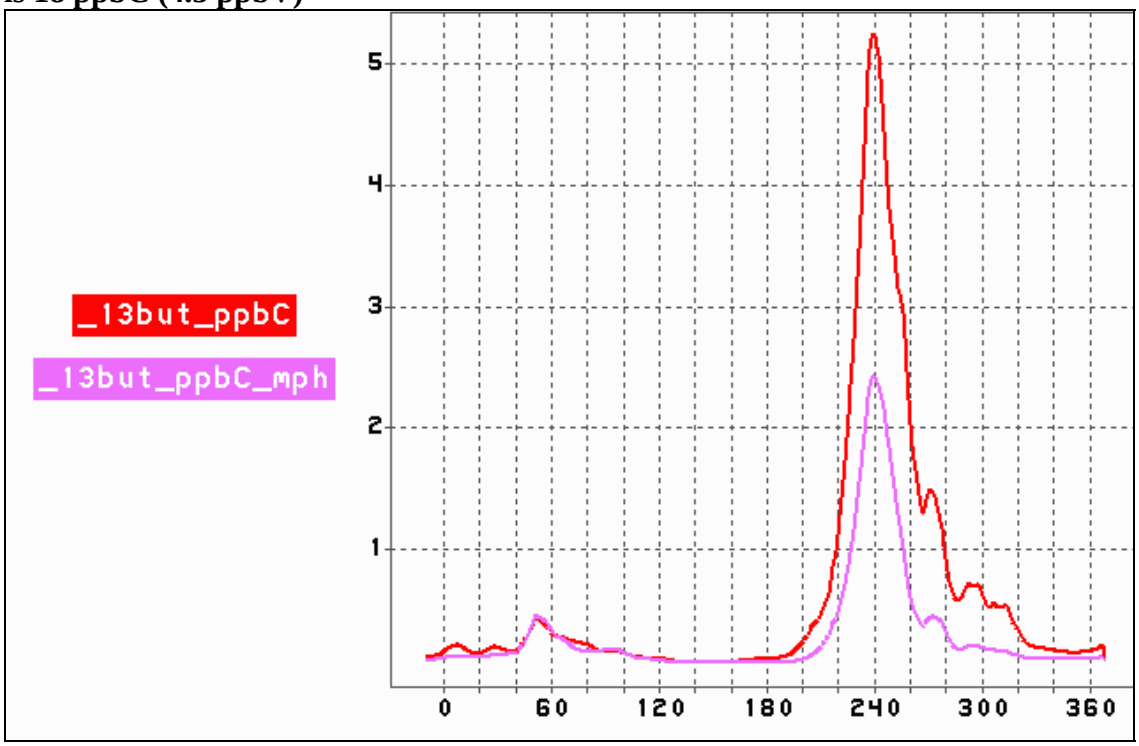


Table 7. Wind distribution at Solar Estates 2006 - 2009

Wind bin	Frequency	MPH
0	9%	9.57
30	9%	10.15
60	3%	10.08
90	6%	11.27
120	16%	11.48
150	32%	12.92
180	12%	9.18
210	3%	5.76
240	2%	4.46
270	1%	4.8
300	2%	6.1
330	6%	7.69

Figure 6. School districts in northern Nueces, southern San Patricio counties

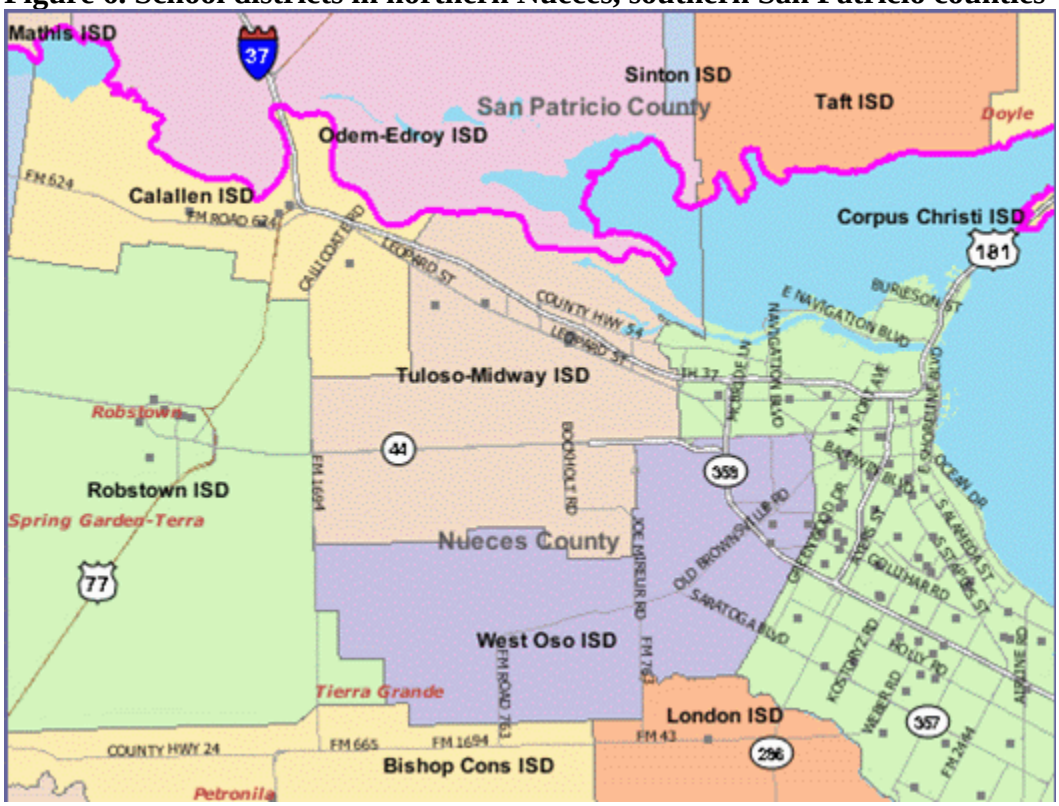
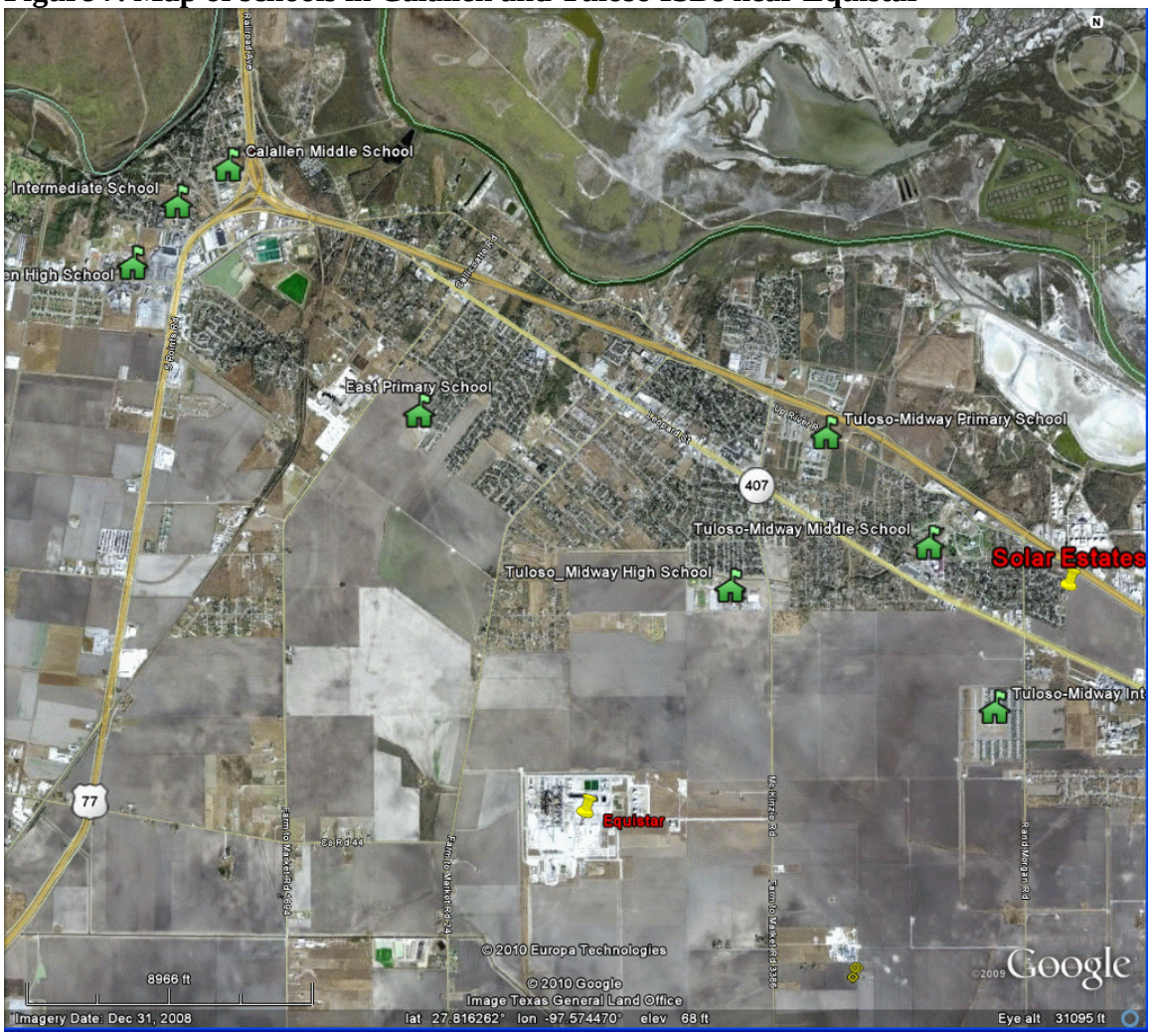


Figure 7. Map of schools in Calallen and Tuloso ISDs near Equistar



4. Canister Analysis

Twelve canister samples were taken in the fourth quarter of 2009. The rate at which canisters have been sampled has slowed down over the past three years due to a decrease in the frequency of TNMHC concentrations high enough to trigger a sample. Table 8 shows the counts for the number of canister samples since April 2006 by quarter. The table shows that the fourth quarter of each year has had the most canister-triggering activity, and the second quarter has had the least. The last row is bold-faced because it is the most recently concluded quarter. The total is the last quarter is the lowest fourth quarter over the four-year period listed in Table 8.

Table 8. Total number of canister samples at 5 sites by quarter

Quarter/year	Num of samples
2Q06	7
3Q06	4
4Q06	*23*
1Q07	10
2Q07	6
3Q07	9
4Q07	*40*
1Q08	3
2Q08	2
3Q08	6
4Q08	*22*
1Q09	15
2Q09	2
3Q09	4
4Q09	**12**

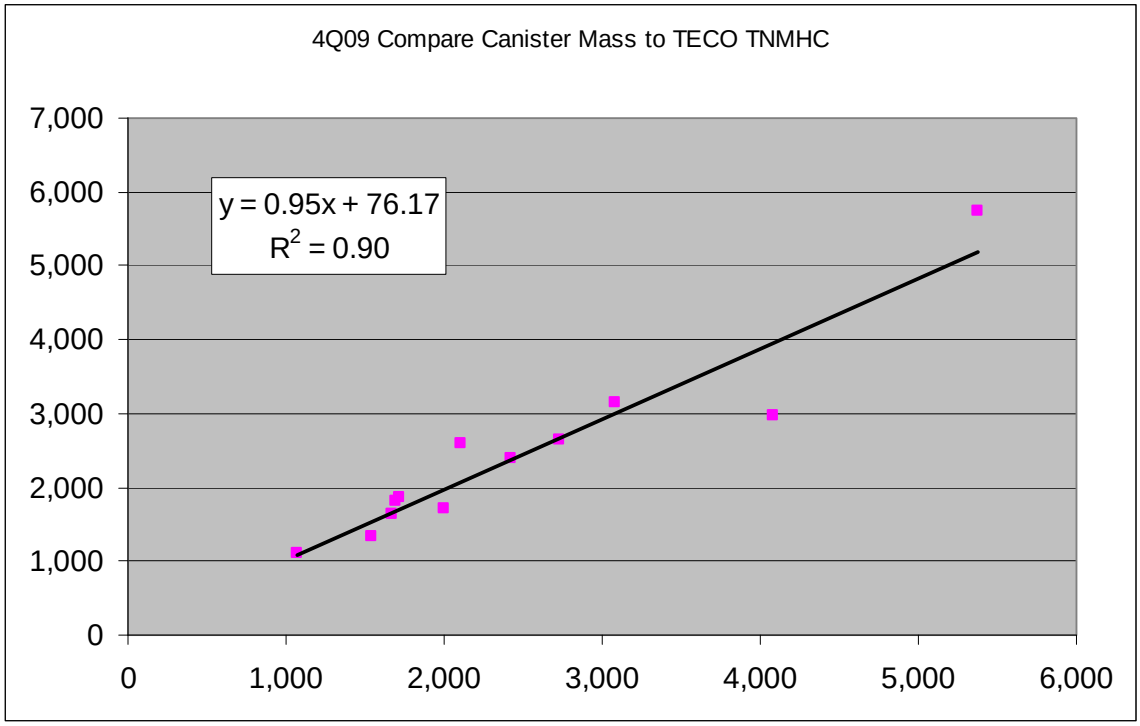
No ESL or Reference Value was exceeded by concentrations in canisters during the last quarter. A summary of the 12 canister samples appears in Table 9, on page 24. This table shows the site name, the approximate date/time start of the 20-minute sample, the approximate coincident TNMHC and methane average concentrations from the TECO 55C instrument, and the summed up mass of identified species ("SumPol"). The graph in Figure 8, on page 24, shows the scatterplot of SumPol and approximate coincident TNMHC. This "coincident" TNMHC value is only approximate, as the TNMHC data come from five-minute blocks of data, and canister samples can be initiated anytime within a five-minute block. Nevertheless, as has been shown in earlier reports, the agreement between estimated TNMHC and measured SumPol is highly statistically significant with a slope that is approximately 1.0. The one pairing with the worst agreement was at Corpus Christi Grain on November 13, and the data show that TNMHC was changing very rapidly during this time period, thus introducing high uncertainty into the accuracy of the approximated coincident TNMHC.

The methane concentrations are also shown to suggest for which samples natural gas may have been a component. Baseline measured methane is generally from 1,700 - 2,200 ppbC. Nine of the twelve samples appear to have higher levels of methane, suggesting natural gas.

Table 9. Twelve canister samples from 4Q09 compared to approximate coincident TECO 55C TNMHC and methane, ppbC units

Site name	Rounded off time CST	TNMHC	CH4	SumPol
CCG CAMS 629	10/31/09 0:45	1,691.83	3,278.93	1,817.49
CCG CAMS 629	11/13/09 14:50	4,087.14	2,039.39	2,979.70
CCG CAMS 629	11/18/2009 0:10	1,995.75	2,845.80	1,707.92
CCG CAMS 629	12/19/2009 0:00	1,542.30	4,213.65	1,342.25
DPK CAMS 635	10/12/2009 22:40	2,424.97	2,065.67	2,395.68
DPK CAMS 635	11/6/2009 4:00	2,101.75	3,199.63	2,591.19
DPK CAMS 635	12/13/2009 6:10	1,070.98	2,416.75	1,098.25
DPK CAMS 635	12/14/2009 22:45	2,723.81	2,337.42	2,635.86
DPK CAMS 635	12/18/2009 12:30	1,715.26	2,661.98	1,859.42
DPK CAMS 635	12/19/2009 8:50	1,667.25	2,932.06	1,637.22
JIH CAMS 630	12/18/09 23:15	5,382.13	9,433.67	5,742.13
WEH CAMS 631	11/15/2009 16:50	3,077.50	1,797.63	3,137.79

Figure 8. SumPol vs TNMHC for twelve samples from the 4Q09, see Table 9. above



5. Case Study of a Pollution Event

December 18, 2009

The highest canister concentration was measured in the December 18 canister at JIH CAMS 630. Triggering occurred at 11:15 p.m. CST. A few minutes later, at 12:02 a.m. CST at CCG CAMS 629 a canister triggered. The back-trajectories were nearly identical, and the trajectory from JIH appears in Figure 9, below. Several alerts had been received over the December 16 – 19 period, with elevated levels at Dona Park, Oak Park, and JIH. Only one facility reported an upset on December 18, that being the Valero East facility for a short time in the morning. The upset was related to a sulfur recovery unit with SO_2, H_2S, and carbon monoxide emissions reported from 8:00 a.m. to 8:10 a.m. on the morning of the 18th. The data and back-trajectory suggest that there may have been a release somewhere in the Valero East area that night. The time series for TNMHC, methane, H_2S, and SO_2 from the afternoon on 12/18 through the morning on 12/19 at JIH appear in Figure 10, on page 26, and similar graphs for CCG appears in Figure 11, on page 26. Both graphs show the canister triggering coincident with elevated TNMHC, methane and H_2S. Figures 12 and 13, on page 27, show the concentrations of species in the canister samples at JIH and CCG. The data appear to match the common pattern seen in other cans sampled in the area, with low molecular-weight alkanes comprising most of the sample mass.

Figure 9. One-hour back-trajectory from JIH at 23:15 CST on 12/18/09, short fetch suggesting stagnant air

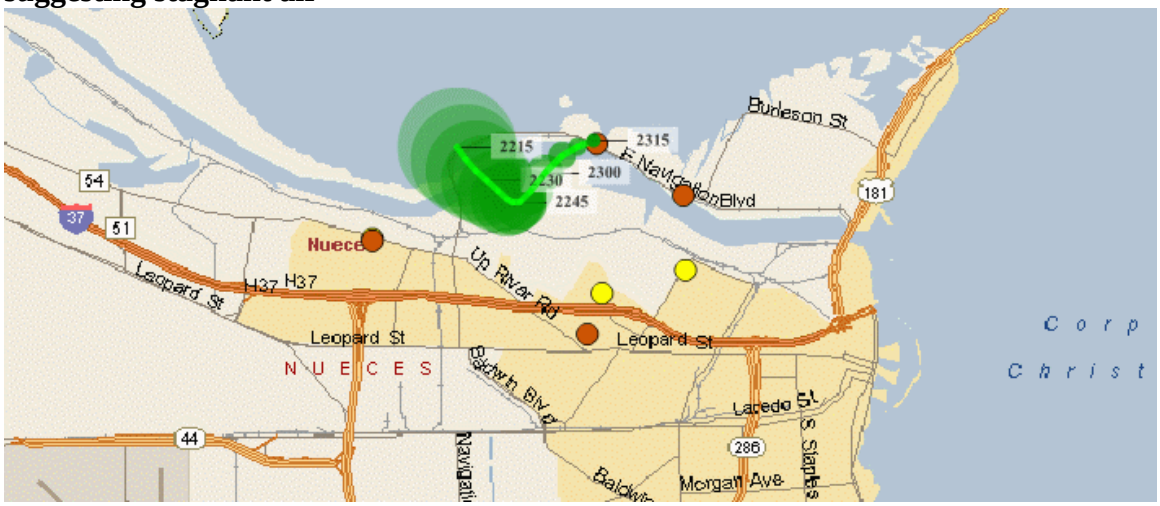


Figure 10. JIH data from noon CST 12/18 to noon CST 12/19

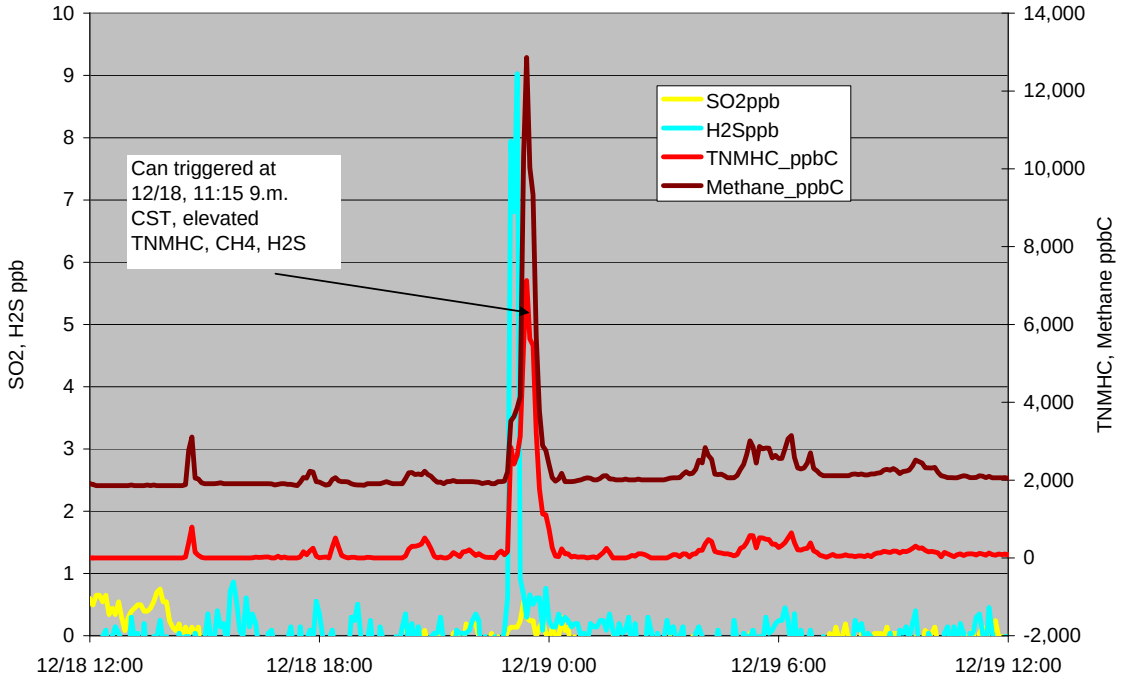


Figure 11. CCG data from noon CST 12/18 to noon CST 12/19

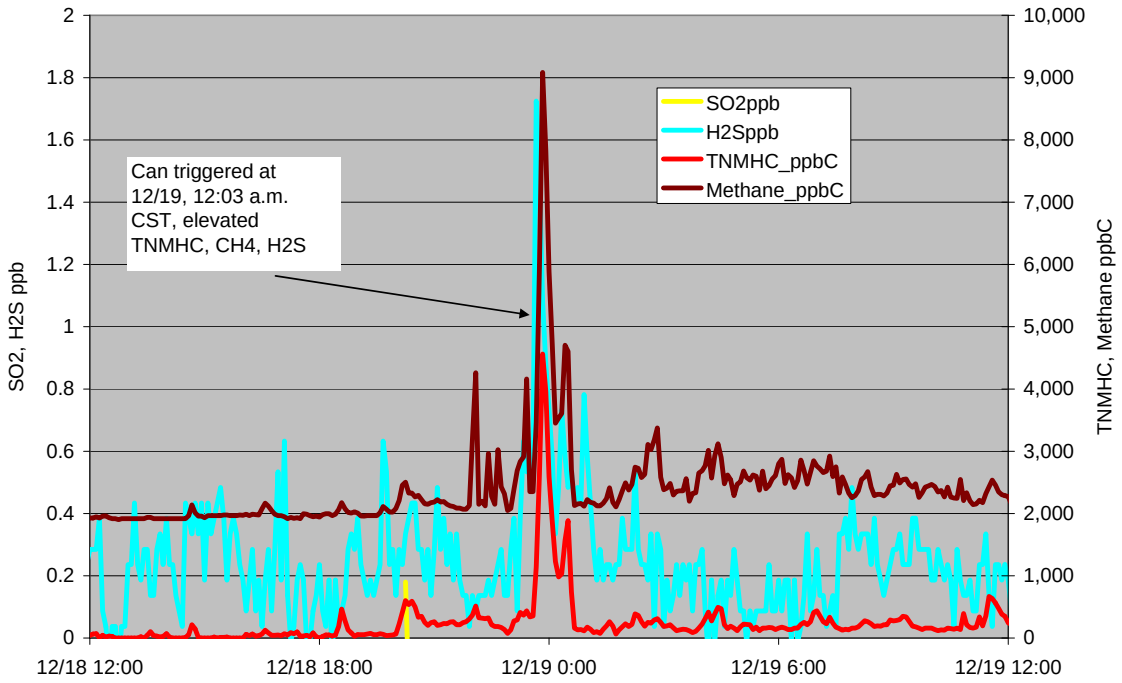


Figure 12. Canister contents at JIH, 12/18/09, 23:15

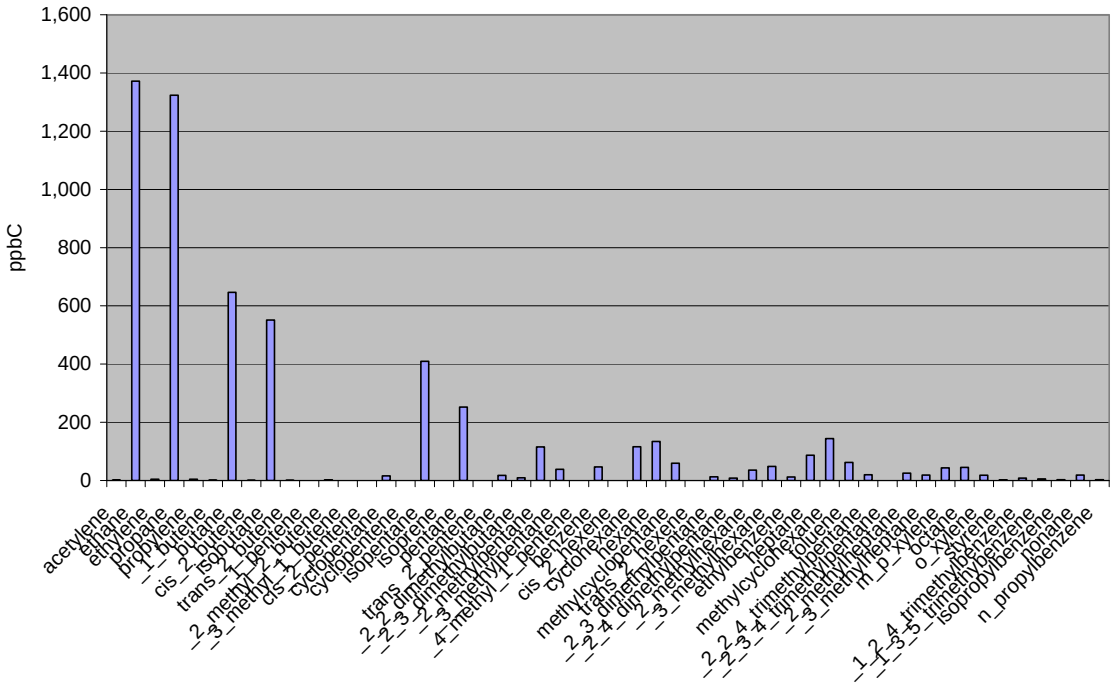
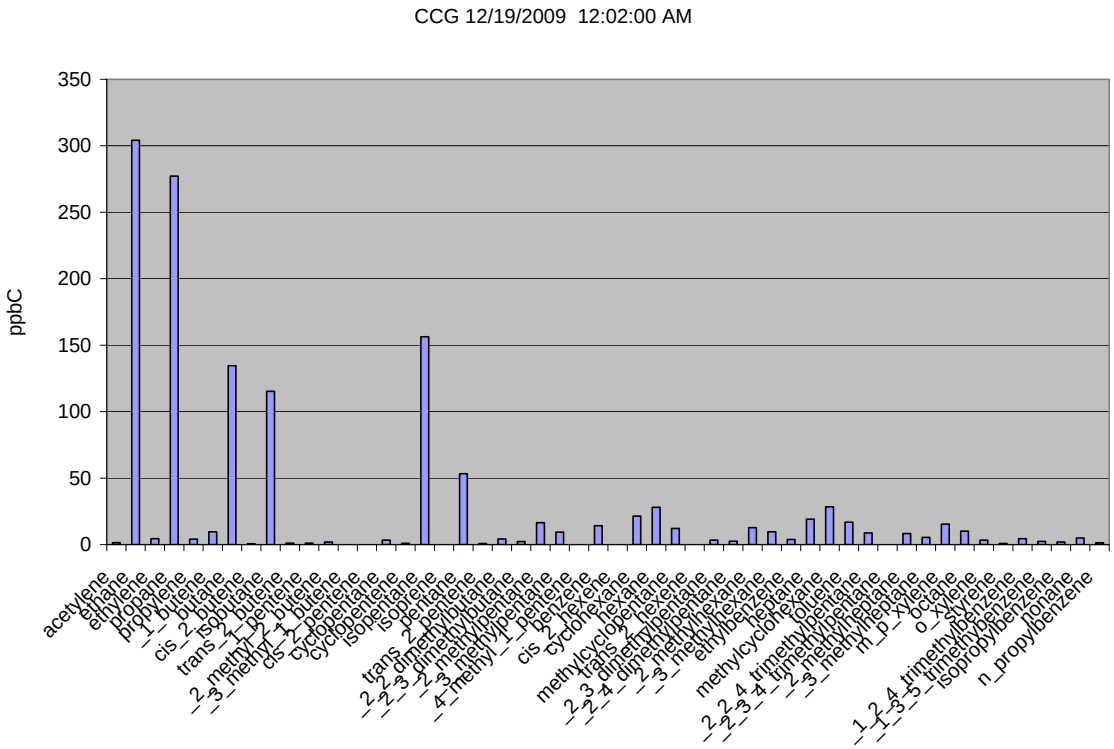


Figure 13. Canister contents at CCG, ppbC units, 12/19/09, 00:02, similar pattern but lower overall mass compared with Fig. 10



Conclusions from the Fourth Quarter 2009 Data

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

- Periodic air pollution events continue to be measured on a routine basis, but values of hydrocarbons above the reference values and effects screening levels are rarely observed. No measurements exceeded ESLs or Reference Values this quarter in the auto-GC data or canister data.
- Benzene concentrations at the auto-GCs show an overall significant downward trend since 2006, with a flattening out over the past two years, and a light uptick at Oak Park in 2009. This appears to be related to higher concentrations from the north-northeast in 2009.
- In response to questions from the Advisory Board, locations of schools that may often be downwind of a 1,3-butadiene source was presented. There is no suggestion that a problem may be present, but the effects of the chemical plant source on the community will be investigated with modeling.

Further analyses will be provided upon request.

APPENDIX B

October 29, 2009
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

1:30 pm – 3:30 pm

October 29, 2009

Advisory Board Members Present:

Ms. Gretchen Arnold	Corpus Christi Pollution Prevention Partnership TAMUCC
Ms. Joyce Jarmon	Corpus Christi Community Council
Dr. Glen Kost	Public Health Awareness
Ms. Pat Suter	Coastal Bend Sierra Club
Ms. Peggy Sumner	Interim City of Corpus Christi
Dr. Eugene Billiot	TAMUCC

Advisory Board Guest Member Present:

Sharon Bailey Lewis	City of Corpus Christi

Project Personnel Present:

Mr. Vince Torres	The University of Texas at Austin
Dr. David Sullivan	The University of Texas at Austin
Mr. David Kennebeck	TCEQ – Region 14
Mr. Keith Sheedy	TCEQ – Region 14
Mr. Ken Rozacky	TCEQ Headquarters - Austin
Dr. Elena McDonald-Buller	The University of Texas at Austin
Mr. Gary McGaughey	The University of Texas at Austin

I. Call to Order and Welcome

Vince Torres called the meeting to order at 1:35 pm.

II. Follow up on Old/Business/Action Items

A. Request for Approval of installing surveillance cameras at Port of Corpus Christi sites

Mr. Torres reported that we must abandon this effort due to time limitations on use of these funds. Ms. Pat Suter requested contact information for the Port Industrial Technical Committee. **Action item** Mr. Torres was asked to invite the Chairperson of the Port Industrial Technical Committee to attend the next Advisory Board meeting. **Action item**

B. Recruiting Participants for the Automated System Project

Mr. Torres reported that he has not received any requests to participate in this project. UT will reduce its active efforts to solicit participants for this project.

C. SEP Projects

Mr. Torres reported to the Advisory Board that there have been some changes from the original SEP Master Agreement that will affect the SEP proposals. In the original SEP Master Agreement, UT was granted a waiver allowing salaries to be paid for personnel working on projects. Upon renewal of the SEP Master Agreement, TCEQ has now decided that no SEP funds can be used to support UT Personnel. TCEQ suggested that UT use funds from the Corpus Christi Project to pay for UT salary and fringe, on SEP Projects. Ms. Suter asked why the SEP agreement was changed. Ms. Gretchen Arnold answered that the changes are not unique to UT. Ms. Peggy Sumner mentioned that their office has suddenly received changes from the TCEQ also. Ms. Arnold requested to see a spreadsheet of the original budget to see if she can determine whether or not the Corpus Christi Project could handle the salary and fringes from the SEP Projects. Mr. Torres will provide to the Advisory Board a budget

spreadsheet along with a summary of the SEP funds that would affect the Corpus Christi budget if it were used to pay UT salary and fringe expenses for SEP Projects. **Action item**

1) TM Corpus Christi Services, Ltd. - $67,900 – A revised proposal was submitted to be used toward the purchase of an infrared camera.

2) Equistar Petro Chemicals/Millennium - $400,000 - Mr. Torres updated the Board on the bankruptcy of Equistar. UT's legal department and TCEQ are recommending that we don't spend any of the awarded $400,000 from Equistar until the issue of whether the funds might need to be returned is resolved.

D. Public Utility Commission Question/Clarification

Mr. Torres reported that the Public Utility Commission (PUC) authority starts when electricity is produced. The PUC regulates the rates utilities charge their customers. They are not involved in any other areas such as construction or emissions.

E. Request of the Railroad Commission to make a presentation to the Board

Mr. Torres will contact the Railroad Commission Regional Director to invite him to attend the next meeting with the Advisory Board, once that date has been established. **Action item**

III. Project Overview and Status

A. Data Collection and Analyses

Dr. Dave Sullivan reported that during the 3rd quarter of 2009 all values were below ESL or ReV for the Auto GCs at the Solar Estates and Oak Park sites. The Benzene concentrations continue to be significantly lower at both the Oak Park and Solar Estates sites.

Dr. Sullivan reported that at the Solar Estate site, 1,3-Butadiene bears watching. Equistar, which is a rubber manufacturing plant, is approximately 3 miles from the Solar Estate site. On 9/27/09 1,3-Butadiene was reported at the highest levels monitored but not in excess of any health standards. Mr. David Kennebeck from TCEQ received an alert and called Equistar in response to the alert. Equistar responded that they were monitoring their flares and didn't find anything logged. Dr. Sullivan volunteered to locate possible school locations near the Equistar site. **Action item** He will continue to monitor 1,3-Butadiene levels at the Solar Estate site. **Action item**

Dr. Sullivan also mentioned that the TNMHC concentrations from nearby sources have dropped at the Flint Hills Resources site. Dr. Kost asked if Dr. Sullivan had any information for the flyover in September. He said he did not. Dr. Sullivan offered to do more investigating if anyone wanted additional information. They can send Dr. Sullivan an email with their request. In conclusion Dr. Sullivan will continue to use directional information to try to identify specific source facilities. **Action item**

IV. Neighborhood Air Toxics Modeling Project

A. Update on Corpus Christi Neighborhood-Scale Air Toxics Modeling Project

Dr. Elena McDonald-Buller reviewed project goals and accomplishments for the Neighborhood Air Toxics Modeling Project (NATMP). Dr. McDonald-Buller discussed how UT will retain project funds for continued operation at the ambient network, but use modeling and data analysis to investigate and, if necessary, to make appropriate revisions to the monitoring strategy. Dr. McDonald-Buller discussed the benefits of air quality modeling which include allowing pollutant concentrations to be estimated in areas without monitors, a community to ask "what if" questions, a better understanding of air quality trends and their causes, and siting of ambient monitors near predicted hotspots.

Dr. McDonald-Buller discussed a Pre-Proposal for the Mickey Leland National Urban Air Toxics Research Center (NUATRC). In September 2009, NUATRC issued a request for information to develop proposals to "perform short-term, focused studies that will elucidate human exposure, health risk and

related risk factors to residents of selected areas of Texas." Dr. McDonald-Buller's team responded with a pre-proposal focusing on spatial indicators of exposure to air toxics in Corpus Christi.

Dr. Kost inquired how would a wind farm impact modeling. **Action item**

Ms. Tammy Thompson repeated the Las Brisas presentation to the Advisory Board that she gave to the Corpus Christi Air Quality Group on June 24, 2009.

V. Preparation for the next Annual Report Presentation before the Honorable Judge Jack

Preparations for the next Annual Report Presentation before the Honorable Judge Jack has begun. The Advisory Board will be notified once a mutually agreeable date has been established for the presentation.

VI. Advisory Board

A. Replacement of Advisory Board member

Ms. Peggy Sumner will be listed as Interim Advisory Board Member for the City of Corpus Christi. We have also added one new additional replacement Advisory Board Member: Christopher Schulz who is a High School Teacher and will serve as an Outreach to the Community. An additional board member is being considered. We still need to identify a 2nd Spokesperson on the Advisory Board.
Action item

B. Possible dates for future meeting of the Advisory Board

The week of March 10, 2010 is being held for a possible future 2010 meeting date for the next Advisory Board meeting.

C. Recommendations for agenda items for next meeting

VII. Other Issues

VIII. Adjourn

The meeting was adjourned at 3:30 pm.

APPENDIX C

Financial Report of Expenditures
Financial Report of Interest Earned

Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project

Accounting Report for the Quarter
10/01/09 - 12/31/09

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

Total Grant Amount:	$6,761,718.02
Total Interest Earned:	**$742,148.02**
Total Funds Received:	**$7,503,866.04**

B. Summary of Expenditures Paid by COCP Funds

		Year 3 Budget	Year 4 Budget	Year 5 Adjustments	Year 6 Budget	Year 7 Budget	Yrs 1-7 Adjusted Budget	Prior Activity	Current Activity 10/01/09 - 12/31/09	Encumbrances	Remaining Balance 12/31/2009
Salaries-Prof	12	$216,128.63	$160,652.00	286,279.40	299,633.00	318,499.00	$1,281,192.03	($914,472.89)	($56,891.35)	($26,325.40)	$283,502.39
Salaries-CEER	15	$19,606.37	$15,636.00	33,123.00	30,948.00	29,880.00	$129,193.37	($91,119.57)	($12,391.29)	($5,998.68)	$19,683.83
Fringe	14	$47,984.00	$38,783.00	58,333.00	72,728.00	76,643.00	$305,100.00	($201,536.30)	($13,227.07)	($8,655.12)	$81,681.51
Communication	42					900.00	$900.00	$0.00	($180.00)	$0.00	$720.00
Other/C-Analysis	47/68	$60,474.00	$73,500.00	(8,656.40)	73,500.00	4,219.00	$122,949.60	($54,766.00)	$4,838.00	$0.00	$73,021.60
Supplies	50	$86,844.00	$33,500.00	68,676.00	122,682.00	65,386.00	$447,763.73	($290,917.21)	($52,646.11)	($7,889.65)	$96,310.76
	51		$20,300.00	8,000.00		7,070.00	$30,792.27	($16,595.00)	($316.78)	($597.30)	$13,283.19
Subcontract	62-64	$1,965,693.00	$314,022.00	296,734.00	346,289.00	341,523.00	$3,264,261.00	($2,788,244.10)	($117,866.61)	$0.00	$358,150.29
Travel	75	$2,300.00	$2,000.00	7,719.00	9,000.00	6,712.00	$30,191.00	($20,664.85)	($171.88)	($0.07)	$9,354.20
Equipment	80	$0.00	$0.00	0.00			$0.00	$0.00	$0.00	$0.00	$0.00
Indirect Costs	90	$359,855.00	$98,759.00	112,531.00	143,217.00	127,490.00	$841,852.00	($620,744.66)	($37,327.96)	$0.00	$183,779.38
TOTALS		**$2,758,885.00**	**757,152.00**	**862,739.00**	**1,097,997.00**	**978,322.00**	**$6,454,195.00**	**($4,999,060.58)**	**($286,181.05)**	**($49,466.22)**	**$1,119,487.15**

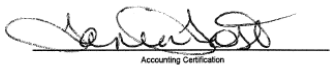
C. Interest Earned by COCP Funds as of 12/31/09

Prior Interest Earned:	**$726,125.61**
Interest Earned This Quarter:	$16,022.41
Total Interest Earned to Date:	**$742,148.02**

D. Balance of COCP Funds as of 12/31/09

Total Grant Amount:	$6,761,718.02
Total Interest Earned:	$742,148.02
Current Q. Expenses	($286,181.05)
Total Expenditures:	($4,999,060.58)
Remaining Balance:	**$2,218,624.41**

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



Accounting Certification