Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project

Quarterly Report for the Period

October 1, 2008 through December 31, 2008

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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February 27, 2009

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, 2008 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 30, 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

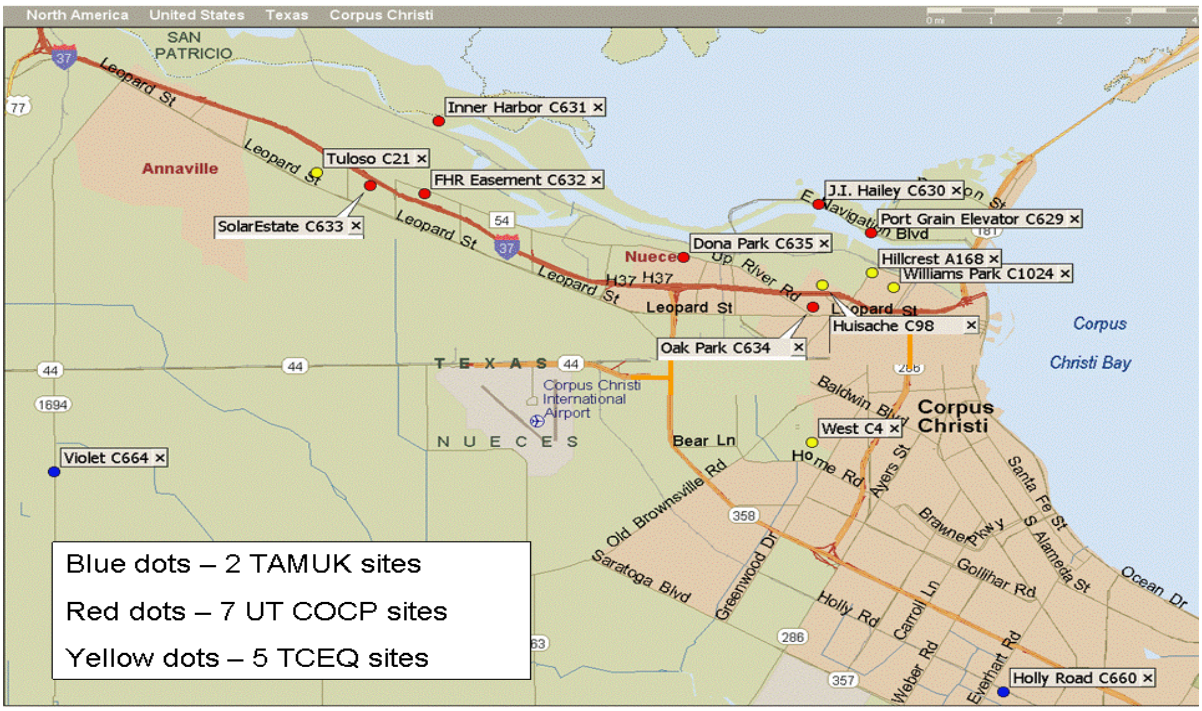

Table 1. Schedule of Air Monitoring Sites, Locations and Major Instrumentation

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 30. Specifically, the appendix contains the following elements:

- **Auto-GC Data Summary -** In examining the fourth quarter's 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 averages of all species were below the respective annual ESLs, as were the average over CY 2008. A summary appears in Appendix A, page 12.

- **Update on Benzene Trends at Auto-GC Sites:** As has been the case all year, benzene concentrations were lower this quarter than the same quarter in each of the previous three years.

- **Study of a New Pollution Source** – Beginning sometime in October or early November 2007, more elevated hydrocarbon concentrations were measured from winds that had passed over the Whites Point peninsula on the north side of Nueces Bay in San Patricio County. The TCEQ Regional Office suspects emission from

oil and gas extraction is the source. More details are discussed in Appendix A, pages 19 though 25.

- **New Findings on Relating Measured Concentrations to Sources:** Data from the TCEQ's Williams Park site and two TCEQ air toxics monitoring sites have been put to use to assess wind directions associated with the highest pollutant concentrations. See pages 25 through 29 in Appendix A.

B. Scheduled Meetings of the Volunteer Advisory Board

The Corpus Christi Project Advisory Board met on November 6, 2008. The meeting notes from that Advisory Board Meeting are found in Appendix B, pages 31 through 35.

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 System 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, and at meetings of the Project's Advisory Board.

3. **Budget Monitoring**
   Budget monitoring during the period has focused on project costs for Phase II - Sites Operation and Maintenance costs. Financial reports for the quarter are included in Appendix C, page 36.

4. **Other Contributions**
   There were two Supplemental and Environmental Projects awarded during this reporting period.

III. Financial Report

As required, the following financial summary information is provided. Details supporting this financial summary are included in Appendix C, page 36.

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

The COCP funds received through December 31, 2008 totals $7,423,560.46. This total includes interest earned through December 31, 2008.

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

Expenditures of COCP funds during this quarter totaled $264,389.47. The detailed breakdown of the actual expenditures is included in Appendix C, page 36. The activities for which these expenditures were used are detailed in Section II, beginning on page 2 of this report.

C. Total Interest Earned on COCP Funds During the Quarter

The interest earned during this quarter totaled $19,529.10. A report providing detailed calculations of the interest earned on the COCP funds during each month of the quarter is included in Appendix C, page 36.

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D. Balance as of December 31, 2008, in the COCP Account

The balance in the COCP account, including interest earned totals $3,065,205.27.

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

The projected expenditures for the funds remaining totals $3,065,205.27.

Quarterly Report Distribution List:

U.S. District Court

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Environmental Protection Agency

Ms. Kathleen Aisling, Environmental Engineer, Air Enforcement Section, Dallas Regional Office

Members of the Advisory Board

APPENDIX A

Data Analysis for Corpus Christi Quarterly Report

October 1, 2008 through December 31, 2008

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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 from October 1 through December 31, 2008. The monitoring network is shown in Figure 1, page 2, and is described in Table 1 below. This report contains the following elements:

- a summary of hourly speciated hydrocarbon concentrations measured by automated gas chromatographs (auto-GCs) in two residential areas;
- benzene trends at the two auto-GC sites;
- study of a new pollution source;
- new findings on relating measured concentration to sources.

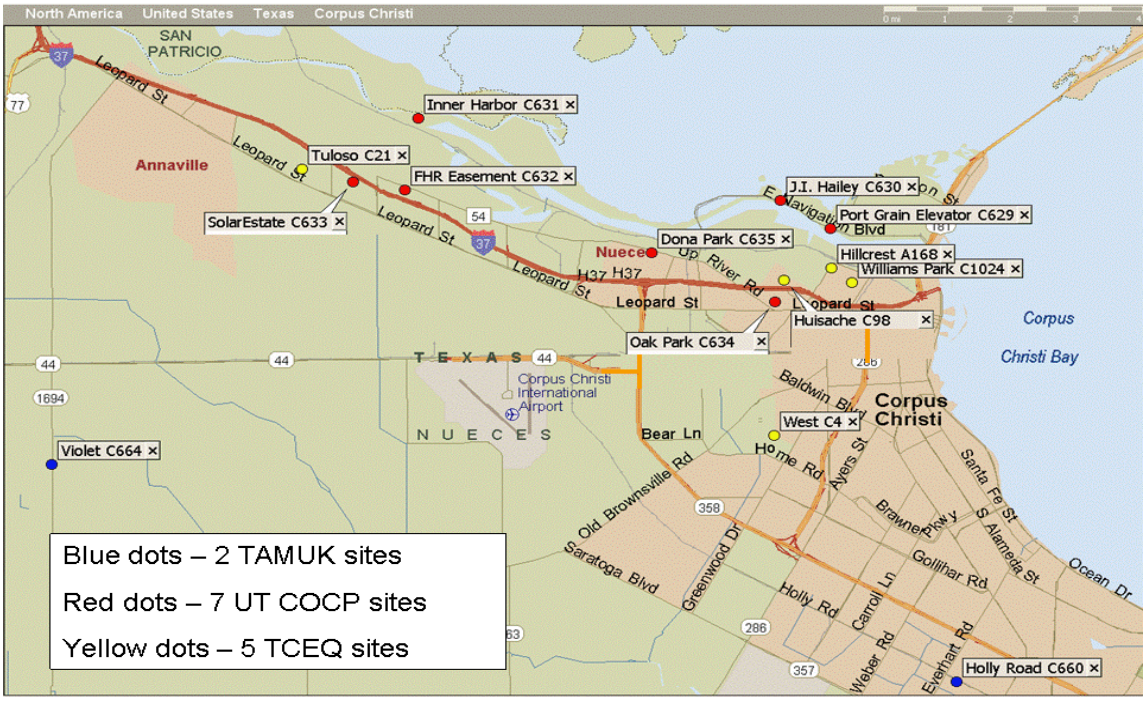
Table 1. Schedule of Air Monitoring Sites, Locations and Major Instrumentation

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**)	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

Figure 2. Corpus Christi Monitoring Sites



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 butene 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** – 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 various lengths of time (generally 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 January, 2009). Extracts from this document appear below:

> *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 utilizes 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 January 2009).

The current ESLs for benzene are 55.5 ppbV for short term and 1.4 ppbV for long term exposure. TCEQ has recommending 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 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 2 and 3, pages 13 and 14, summarize data from the fourth quarter of 2008. Similarly, Tables 4 and 5, pages 15 and 16, summarize four quarters of data from January 1, 2008 – December 31, 2008. These tables are available to TCEQ staff at http://rhone.tceq.state.tx.us/cgi-bin/agc_summary.pl (accessed January 2009). The tables show the average and maximum one-hour 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 effects screening levels or reference values during the fourth quarter of 2008 or over the most recent four-quarter period. In each table, "Total Samples Possible" is calculated from the total number of hours between the starting date/time and the ending date/time and may not represent the actual time the instrument was operational. The "Num Ambient Samples" column includes all ambient samples, including those that are not flagged as 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 "Over Annual" column is an indication of whether or not the calculated mean is over the established annual effect screening level and may not correspond to an actual annual exceedance.

The use of a short-term ESL to evaluate hourly benzene concentrations has been replaced with comparisons to a Reference Value. The current benzene Reference Value is 180 ppbV. The current short-term benzene ESL, which is only used for permitting purposes, is 55 ppbV. The annual ESL for benzene is 1.4 ppbV.

Table 2. Oak Park 4th quarter 2008 Auto-GC species of interest, ppbV units

Species	No. Samples	Mean ppbV	Peak 1hr value	Peak 24hr value
Ethane	1911	10.63	267.67	28.27
Ethylene	1911	1.02	48.63	8.96
Propane	1911	7.54	346.74	32.78
Propylene	1911	0.55	9.89	2.16
Isobutane	1911	2.99	58.04	10.23
n-Butane	1911	4.97	255.66	42.56
t-2-Butene	1911	0.11	1.83	0.36
1-Butene	1911	0.09	4.57	1.02
c-2-Butene	1911	0.08	1.49	0.27
Isopentane	1911	3.35	134.51	16.51
n-Pentane	1911	2.06	88.91	8.42
1,3-Butadiene	1911	0.05	1.36	0.22
t-2-Pentene	1911	0.06	0.88	0.19
1-Pentene	1911	0.04	2.58	0.23
c-2-Pentene	1911	0.03	0.62	0.19
n-Hexane	1910	0.75	37.80	5.15
Benzene	**1910**	**0.63**	**16.31**	**2.97**
Cyclohexane	1910	0.30	12.51	1.27
Toluene	1910	1.00	18.39	3.28
Ethyl Benzene	1910	0.08	1.75	0.25
p-Xylene + m-Xylene	1910	0.28	5.44	0.94
o-Xylene	1910	0.09	1.56	0.28
Isopropyl Benzene-Cumene	1910	0.07	54.00	2.80
1,3,5-Trimethylbenzene	1910	0.03	0.58	0.10
1,2,4-Trimethylbenzene	1910	0.07	0.97	0.20
n-Decane	1910	0.03	0.98	0.14
1,2,3-Trimethylbenzene	1910	0.03	0.42	0.10

Table 3. Solar Estates 4th quarter 2008 Auto-GC species of interest, ppbV units

Species	No. Samples	Mean ppbV	Peak 1hr value	Peak 24hr value
Ethane	1984	9.98	180.96	33.05
Ethylene	1984	0.58	32.52	3.98
Propane	1984	6.35	175.78	24.50
Propylene	1984	0.24	7.19	1.21
Isobutane	1984	2.36	64.09	8.70
n-Butane	1984	3.72	107.35	12.91
t-2-Butene	1984	0.08	3.19	0.38
1-Butene	1984	0.07	2.30	0.35
c-2-Butene	1984	0.05	2.49	0.28
Isopentane	1984	1.95	45.21	5.29
n-Pentane	1984	1.19	28.24	3.70
1,3-Butadiene	1984	0.04	2.44	0.24
t-2-Pentene	1984	0.05	2.79	0.33
1-Pentene	1984	0.03	1.38	0.17
c-2-Pentene	1984	0.02	1.38	0.16
n-Hexane	1982	0.42	15.09	1.26
Benzene	**1982**	**0.30**	**4.69**	**1.07**
Cyclohexane	1982	0.29	12.13	0.95
Toluene	1982	0.43	6.49	1.23
Ethyl Benzene	1982	0.05	0.89	0.14
p-Xylene + m-Xylene	1982	0.27	7.40	1.71
o-Xylene	1982	0.07	1.51	0.21
Isopropyl Benzene-Cumene	1982	0.01	1.08	0.12
1,3,5-Trimethylbenzene	1982	0.01	1.07	0.08
1,2,4-Trimethylbenzene	1982	0.06	1.45	0.16
n-Decane	1982	0.04	1.95	0.17
1,2,3-Trimethylbenzene	1982	0.02	0.60	0.09

Table 4. Oak Park January – December 2008 Auto-GC species of interest, ppbV units

Species	No. Samples	Mean ppbV	Peak 1hr value	Peak 24hr value
Ethane	7533	7.045	267.674	30.558
Ethylene	7533	0.691	56.343	8.961
Propane	7533	4.524	346.74	32.778
Propylene	7533	0.422	44.488	3.045
Isobutane	7533	1.911	80.501	10.234
n-Butane	7533	3.068	255.659	42.561
t-2-Butene	7533	0.126	44.582	2.869
1-Butene	7533	0.07	4.569	1.022
c-2-Butene	7533	0.079	7.881	1.613
Isopentane	7533	2.258	145.052	17.357
n-Pentane	7533	1.305	88.913	12.592
1,3-Butadiene	7533	0.042	2.502	0.222
t-2-Pentene	7533	0.064	7.685	0.406
1-Pentene	7533	0.033	2.584	0.232
c-2-Pentene	7533	0.026	4.092	0.24
n-Hexane	7532	0.418	37.801	5.146
Benzene	**7532**	**0.365**	**35.169**	**2.971**
Cyclohexane	7532	0.182	32.99	2.253
Toluene	7532	0.588	31.478	3.365
Ethyl Benzene	7532	0.054	30.414	1.988
p-Xylene + m-Xylene	7532	0.168	58.245	3.846
o-Xylene	7532	0.063	29.82	1.847
Isopropyl Benzene - Cumene	7532	0.035	53.996	2.795
1,3,5-Trimethylbenzene	7532	0.021	20.875	1.349
1,2,4-Trimethylbenzene	7532	0.061	22.289	1.456
n-Decane	7532	0.025	26.122	1.693
1,2,3-Trimethylbenzene	7532	0.019	19.525	1.262

Table 5. Solar Estates January – December 2008 Auto-GC species of interest, ppbV units

Species	No. Samples	Mean ppbV	Peak 1hr value	Peak 24hr value
Ethane	7651	6.891	180.956	33.047
Ethylene	7651	0.377	32.524	3.976
Propane	7651	4.001	175.776	24.501
Propylene	7651	0.161	7.194	1.207
Isobutane	7651	1.431	64.094	8.7
n-Butane	7651	2.195	107.345	12.909
t-2-Butene	7651	0.066	3.194	0.377
1-Butene	7651	0.039	2.297	0.348
c-2-Butene	7651	0.035	2.494	0.286
Isopentane	7651	1.236	104.743	5.701
n-Pentane	7651	0.756	80.158	4.195
1,3-Butadiene	7651	0.027	9.641	1.035
t-2-Pentene	7651	0.028	2.791	0.332
1-Pentene	7651	0.017	1.382	0.181
c-2-Pentene	7651	0.013	1.381	0.196
n-Hexane	7649	0.272	15.953	1.297
Benzene	**7649**	**0.215**	**9.419**	**1.154**
Cyclohexane	7649	0.179	12.134	0.95
Toluene	7649	0.28	8.938	1.505
Ethyl Benzene	7649	0.031	0.889	0.142
p-Xylene + m-Xylene	7649	0.185	12.721	3.003
o-Xylene	7649	0.045	6.015	0.398
Isopropyl Benzene - Cumene	7649	0.01	1.084	0.116
1,3,5-Trimethylbenzene	7649	0.011	1.067	0.089
1,2,4-Trimethylbenzene	7649	0.04	7.056	0.833
n-Decane	7648	0.028	1.953	0.25
1,2,3-Trimethylbenzene	7649	0.015	6.594	0.711

2. Benzene Trend at Auto-GC Sites

A notable finding throughout 2008 has been that benzene concentrations continue to be practically and statistically significantly lower at both auto-GC sites compared with past years. Tables 6 and 7, listed below show comparisons between fourth quarter averages for benzene at Oak Park CAMS 634 and Solar Estates CAMS 633, from 2005 to 2008. Tables 8 and 9 also listed below show the annual summaries using all available data for each year. Each shows the number of samples, the mean concentration, and the annual maximum one-hour and midnight-to-midnight 24-hour average concentrations in ppbV units for the period of interest.

Table 6. Summary of 4th Q benzene at Oak Park 2005-2008, ppbV units

Year	Num Samples	Mean ppbV	Peak 1-hour value	Peak 24-hour value
2005	1,972	1.30	48.17	5.52
2006	1,915	1.14	26.32	5.65
2007	1,900	0.68	38.15	6.41
2008	**1,910**	**0.63**	**16.31**	**2.97**

Table 7. Summary of 4th Q benzene at Solar Estates 2005-2008, ppbV units

Year	Num Samples	Mean ppbV	Peak 1-hour value	Peak 24-hour value
2005	1,727	0.41	9.63	1.24
2006	1,872	0.58	11.66	2.50
2007	1,847	0.37	6.94	1.07
2008	**1,982**	**0.30**	**4.69**	**1.07**

Table 8. Summary of annual mean benzene at Oak Park 2005-2008, ppbV units

Year	Num Samples	Mean ppbV	Peak 1-hour value	Peak 24-hour value
2005*	6,312	0.59	48.17	5.52
2006	7,394	0.70	51.15	7.78
2007	7,629	0.62	120.16	8.95
2008	**7,532**	**0.37**	**35.17**	**2.97**

* 2005 missing most of 1st Q data

Table 9. Summary of annual mean benzene at Solar Estate 2005-2008, ppbV units

Year	Num Samples	Mean ppbV	Peak 1-hour value	Peak 24-hour value
2005*	5,299	0.32	9.63	1.24
2006	6,602	0.37	11.66	2.50
2007	6,671	0.33	7.41	1.80
2008	**7,649**	**0.22**	**9.42**	**1.15**

* 2005 missing most of 1st Q data

To put these numbers into context, it may also be valuable to compare concentrations at the two auto-GCs to concentrations measured elsewhere in Texas and reported to the TCEQ. Table 10, on page 18 shows the number of samples, the mean concentration, and the annual maximum one-hour and midnight-to-midnight 24-hour average concentrations in ppbV units for 21 monitoring sites, operated by TCEQ, UT, and others, for 2008. The rows in Table 10 are rank ordered by the mean benzene concentration for the year. The two Corpus Christi sites are highlighted in bold font in the table. The areas around the

sites in Brazoria County are largely rural but for isolated large chemical plants. Some Houston-area sites are located adjacent to large industries or port activities (e.g., Channelview and Lynchburg Ferry). More information about the auto-GC sites can be found on the TCEQ Website at http://www.tceq.state.tx.us/cgi-bin/compliance/monops/site_info.pl (accessed January 2009).

Table 10. Data summaries for Benzene from Auto-GCs in Texas in 2008, ppbV units

Site	Where	Num Samples	Mean	1-hr max	24-hr max
Dancinger	Brazoria Co	6,480	0.13	7.53	0.58
Lake Jackson	Brazoria Co	7,253	0.14	32.81	1.67
Dallas Hinton	Dallas	7,334	0.17	2.05	1.66
Texas City	Texas City	7,163	0.20	8.43	0.98
Fort Worth NW	Fort Worth	7,318	0.20	2.79	0.72
Solar Estates	**Corpus Christi**	**7,649**	**0.22**	**9.42**	**1.15**
Wallisville Rd	Houston	7,365	0.24	9.85	1.70
Gonzales	Odessa	7,578	0.26	4.62	0.89
Milby Park	Houston	6,341	0.30	14.83	2.10
Mustang Bayou	Brazoria Co	7,104	0.30	12.42	2.07
Nederland HS	Beaumont	6,947	0.34	12.39	2.13
Oak Park	**Corpus Christi**	**7,532**	**0.36**	**35.17**	**2.97**
Deer Park	Houston	7,091	0.39	20.55	2.06
Clinton Dr.	Houston	6,151	0.40	8.15	1.44
HRM 3 Haden Rd	Houston	7,109	0.40	14.60	2.25
Lamar	Beaumont	7,025	0.40	14.00	2.07
Cesar Chavez	Houston	7,150	0.43	7.73	2.00
Hays	Odessa	7,377	0.45	679.02	61.73
Chamizal	El Paso	5,959	0.49	16.17	3.81
Channelview	Houston	7,235	0.63	94.04	6.72
Lynchburg Ferry	Houston	6,771	1.10	777.09	38.32

The earliest year for which the Corpus Christi sites have sufficient data to compute valid annual average is 2006. Table 11, on page 19, shows a comparison between the means from 2006 and 2008 for 19 of these sites (two have only partial data in 2006). The rows in this table are sorted on the percent difference from 2006 to 2008. Over two years, 16 out of 19 sites have measured lower mean benzene in 2008 compared with 2006.

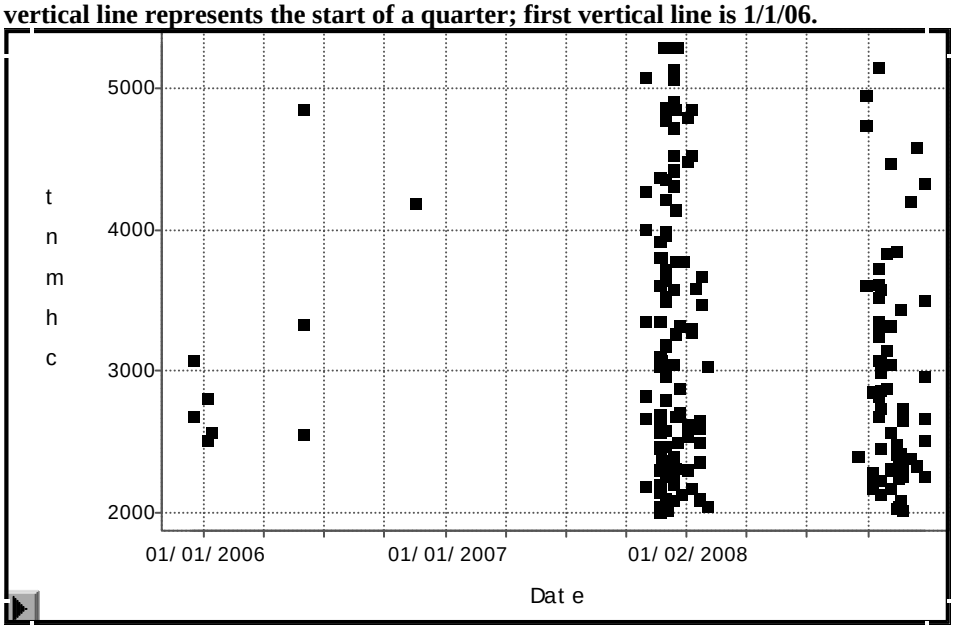
Table 11. Mean benzene in ppbV units 2006 and 2008, 19 Texas auto-GCs with sufficient data

Site	Mean 2006	Mean 2008	Difference
Lynchburg Ferry	2.38	1.10	-54%
Texas City	0.41	0.20	-51%
Oak Park	**0.70**	**0.36**	**-49%**
Solar Estates	**0.37**	**0.22**	**-41%**
HRM 3 Haden Rd	0.61	0.40	-34%
Chamizal	0.67	0.49	-27%
Clinton Dr.	0.53	0.40	-25%
Deer Park	0.51	0.39	-24%
Wallisville Rd	0.30	0.24	-20%
Danciger	0.16	0.13	-19%
Dallas Hinton	0.20	0.17	-15%
Milby Park	0.33	0.30	-9%
Mustang Bayou	0.33	0.30	-9%
Cesar Chavez	0.47	0.43	-9%
Lake Jackson	0.15	0.14	-7%
Channelview	0.67	0.63	-6%
Fort Worth NW	0.18	0.20	11%
Odessa Gonzales	0.22	0.26	18%
Odessa Hays	0.24	0.45	88%

3. New Pollution Source Found

Sometime in late 2007 the Corpus Christi automated alert system began to receive more frequent alerts under northerly winds for monitoring sites on the north side of the ship channel. There are a small number of known sources actually in the Nueces Bay and a cluster of industrial sources on the north side of the Bay, but the increased frequency suggested the presence of a new hydrocarbon emission source. Figure 3, on page 20, shows the time series of 5-minute TNMHC measurements at Dona Park CAMS 635 filtered for values over 2000 ppbC and for coincident wind directions between 340 degrees (north-northwest) and 360 degrees (due north). This range of directions from Dona Park is depicted in Figure 4, on page 21. From within this relatively narrow direction cone, only a handful of elevated concentrations were measured from 2005 when monitoring began up until sometime around November 1, 2007. From that point in time, many “hits” were recorded up until February 2008, commencing again in October 2008 and continuing in February 2009.

Figure 3. Time series of Dona Park CAMS 635 TNMHC measurements at 5-minute time resolution filtered on concentration >= 2000 ppbC and wind direction between 340 and 360 degrees. Each vertical line represents the start of a quarter; first vertical line is 1/1/06.



Several other sites in the network also recorded more elevated concentrations from directions pointing back to the same area on the north side of the Nueces Bay. This area is commonly identified as "White Point" or "Whites Point". Hereafter it is referred to as the "White Point area". An Internet search shows that oil exploration began in this area in the early 20th century. The TCEQ has learned of new activity in oil and natural gas extraction in the area, and these activities are believed to be the source of the elevated readings under northerly winds in 2007 and 2008 and the associated email alerts. As examples of the nature of the triggers, trajectories from West End Harbor, Dona Park, and J. I. Hailey are shown in Figures 5, 6, and 7 on pages 21 and 22. Figure 8, on page 23, shows the contents of the chemical canister taken at JIH on December 10, 2008 from 18:43 – 19:03 CST (6:43 – 7:03 p.m.). Note that the units used in this graph are ppbC, which allows adding the measurements together to compare with the coincident TNMHC measurements.

Figure 4. Map of direction "cone" from Dona Park CAMS 635 within which elevated concentrations arrived, 2007-2009. Land at the top of the figure within the cone is the "White Point area".

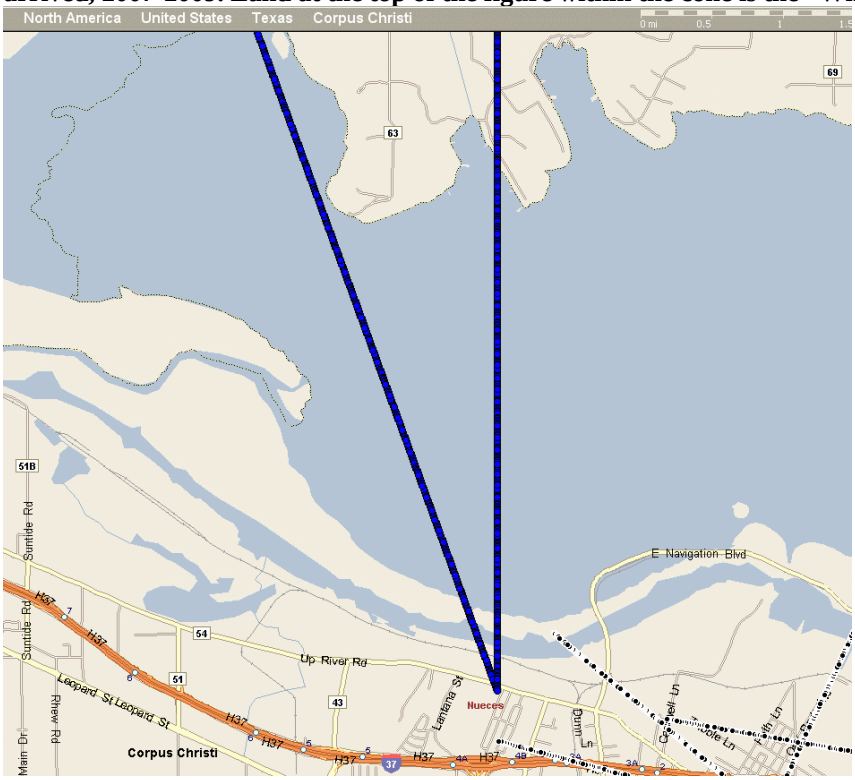
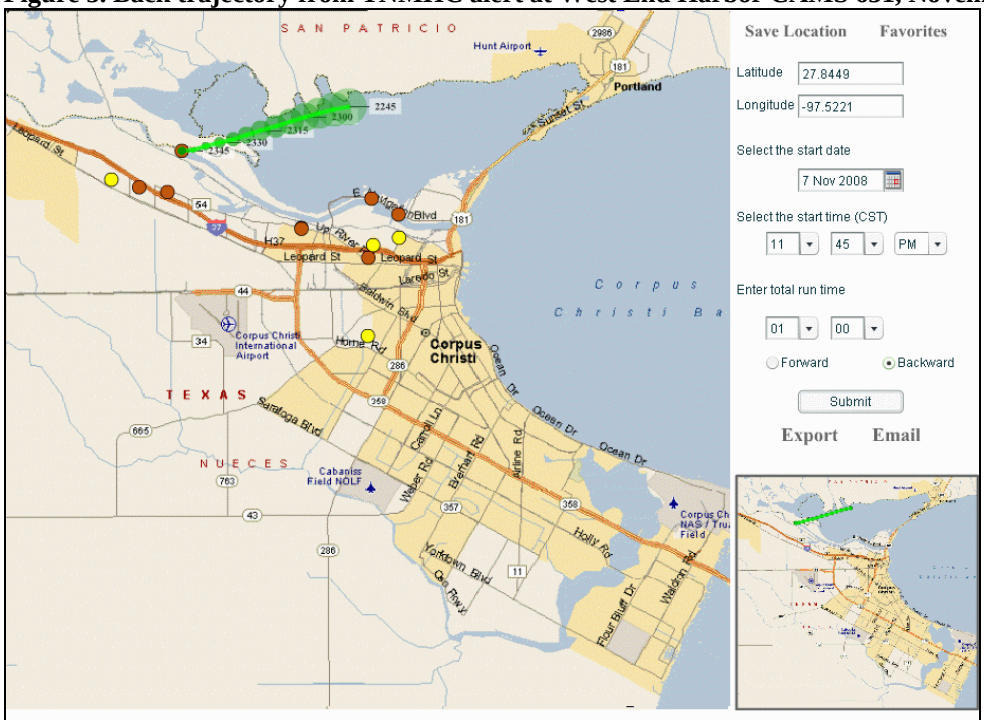


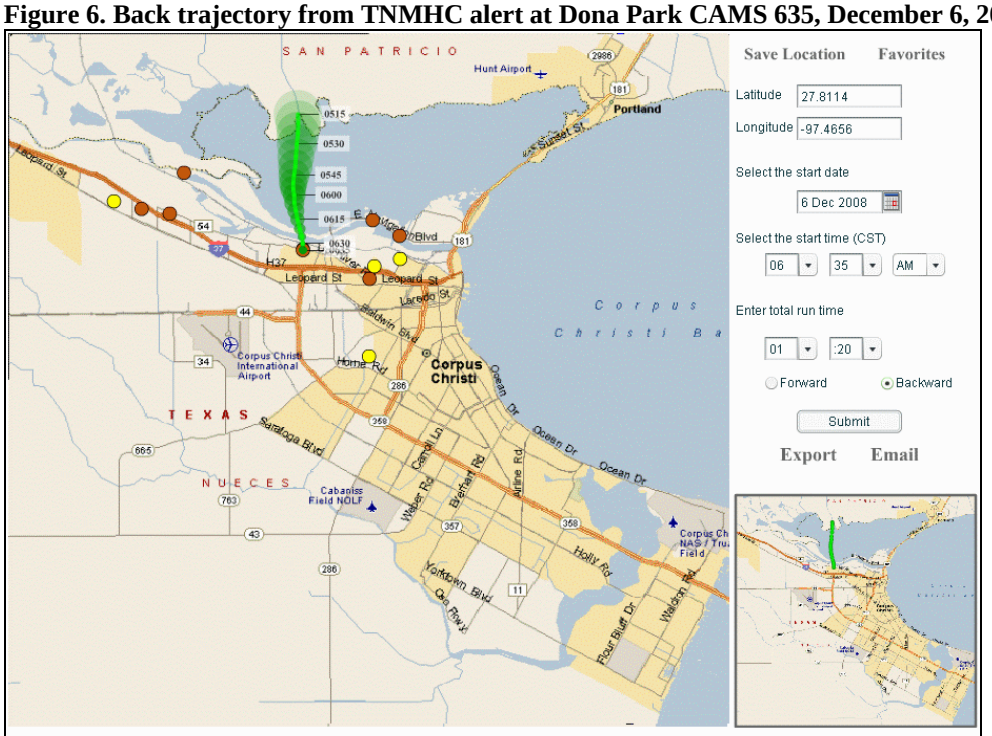
Figure 5. Back trajectory from TNMHC alert at West End Harbor CAMS 631, November 11, 2007



Alert ID: emrs_medium_alert_48355003843102_20081107_2345

TNMOC MEDIUM trigger at site Inner Harbor C631
4171.16 >= 2000.00 ppbC (no previous trigger)
WD = 78 degrees
WS = 4.0 mph
ime of trigger 23:45 (CST) 2008.11.07

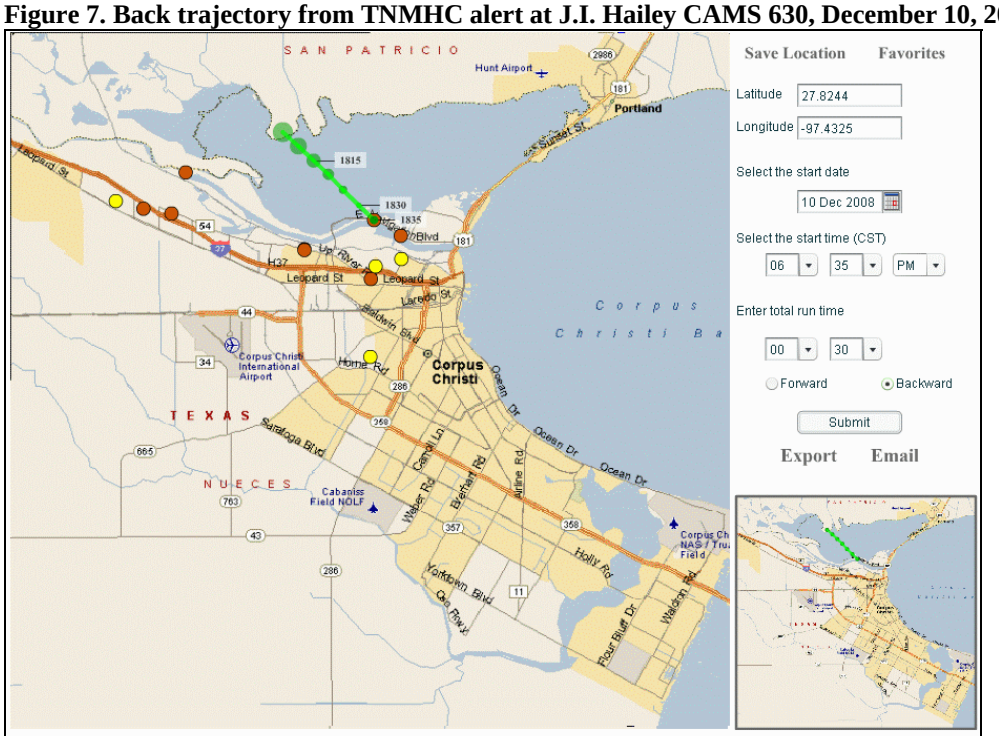
Figure 6. Back trajectory from TNMHC alert at Dona Park CAMS 635, December 6, 2008



Alert ID: emrs_medium_alert_48355003443102_20081206_0635

TNMOC MEDIUM trigger at site Dona Park C635/AF199/F299
2582.51 >= 2000.00 ppbC (no previous trigger)
WD = 355 degrees
WS = 2.2 mph
time of trigger 6:35 (CST) 2008.12.06

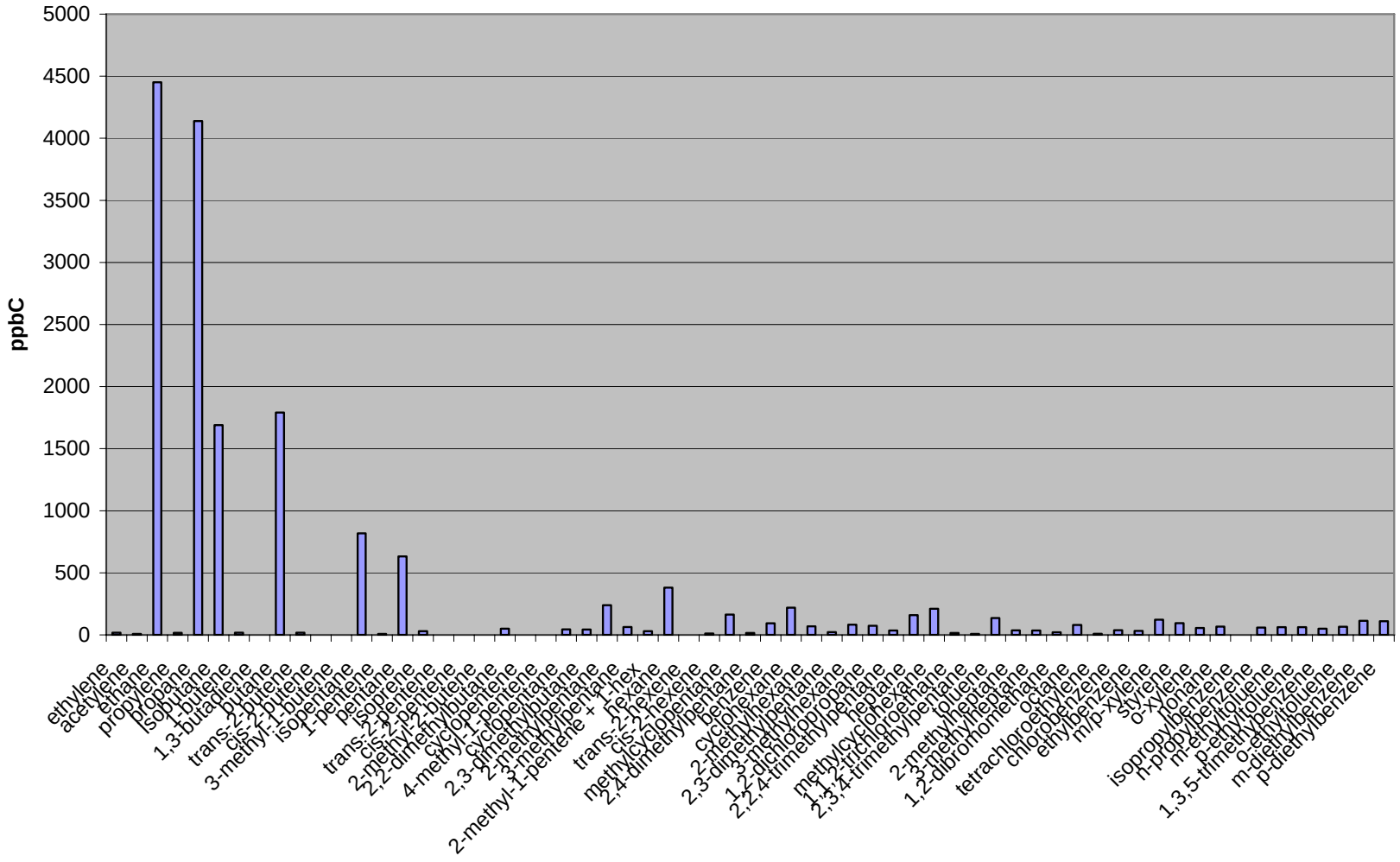
Figure 7. Back trajectory from TNMHC alert at J.I. Hailey CAMS 630, December 10, 2008



Alert ID: emrs_medium_alert_48355003743102_20081210_1835

TNMOC MEDIUM trigger at site J.I. Hailey C630
4820.92 >= 2000.00 ppbC (trigger 2 of 3)
WD = 316 degrees
WS = 8.4 mph
time of trigger 18:35 (CST) 2008.12.10

Figure 8. Canister triggered December 10, 2008 18:43 CST, J. I. Hailey, White Point Area suspected source



As has been the case with many of the canister samples and with the speciation results from the auto-GCs, the low molecular weight alkanes predominate in the sample. Ethane, propane, isobutane, n-butane, isopentane, and n-pentane comprise most of the sample mass in Figure 8, on page 23. Coincident with the sample collection, methane concentrations rose from 1900 ppb to 8000 ppb, and hydrogen sulfide (H_2S) rose from less than 1 ppb to 1.7 ppb. The five-minute resolution data for canister pressure (Ch2 Can Press, psig), canister fill rate (Ch2 MFC, mass flow rate), sulfur dioxide (SO2 ppb), H_2S (ppb), TNMHC (ppbC), methane (ppb), and resultant wind direction (WDR) and speed (WSR, miles per hour) appear in Table 12 on the next page. These measurements are consistent with oil and natural gas extraction activities.

The fact that measurable concentrations are detected some four miles away from the source is in some part explained by the fact that a narrow plume can move across water with minimal dispersion, whereas over land the surface roughness and temperature gradients cause greater dilution of concentrations into surrounding air with downwind distance. Nevertheless, TNHMC emissions in the White Point area are likely to merit attention, as concentrations in White Point area are likely to be much higher than those measured across the bay. During ozone season, these emissions may help to increase local ozone concentrations.

Table 12. Data from JIH CAMS 635 before, during, and after the canister sample on December 10, 2008 at 18:43 CST

Date	Time	Ch 2 MFC	Ch 2 Can Press	SO2	H2S	TNMOC	Methane	WSR	WDR
12/10/2008	18:00	0.060	0.273	-0.423	0.415	240	1892.	8.7	322.1
12/10/2008	18:05	0.060	0.266	-0.325	0.818	38	1832	8.9	323.5
12/10/2008	18:10	0.060	0.269	-0.716	0.818	0	1822	7.9	321.7
12/10/2008	18:15	0.060	0.274	-0.667	0.919	43	1857	7.4	319.9
12/10/2008	18:20	0.060	0.279	-0.521	1.019	702	2196	8.2	318.7
12/10/2008	18:25	0.060	0.274	-0.423	1.019	1875	3381	8.4	315.4
12/10/2008	18:30	0.060	0.275	-0.521	1.120	4821	8057	7.9	314.4
12/10/2008	18:35	0.060	0.275	-0.179	1.221	4821	6966	8.4	316.3
12/10/2008	18:40	4.950	0.458	-0.325	1.372	3192	4497	9.4	317.1
12/10/2008	18:45	15.260	3.021	-0.277	1.624	3557	7345	9.1	314.2
12/10/2008	18:50	15.260	6.312	-0.325	1.724	755	2818	10.4	317.3
12/10/2008	18:55	15.260	9.593	-0.277	1.372	548	2694	9.3	316.9
12/10/2008	19:00	10.620	12.736	-0.569	1.573	1379	4068	9.1	318.9
12/10/2008	19:05	0.060	13.553	-0.423	1.473	2447	4915	9.7	320.9
12/10/2008	19:10	0.060	13.565	-0.325	1.473	2456	3919	9.9	321.9
12/10/2008	19:15	0.060	13.547	-0.325	1.523	1355	2430	9.7	321.6
12/10/2008	19:20	0.050	13.528	-0.374	1.372	1038	2365	9.5	315.4
12/10/2008	19:25	0.050	13.520	-0.569	1.422	1629	3535	8.3	308.3
12/10/2008	19:30	0.050	13.544	-0.472	0.919	43	1932	7.3	311.1
12/10/2008	19:35	0.060	13.569	-0.472	0.868	0	1828	6.9	307.4

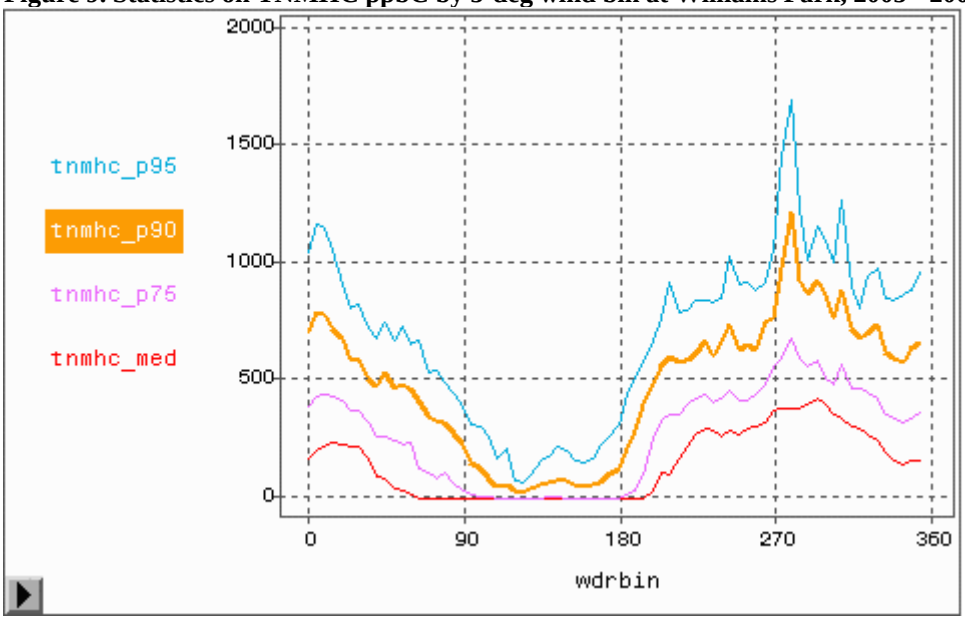
4. New Findings on Relating Measured Concentrations to Sources

Up to this point, almost all discussion in quarterly reports has involved the seven UT monitoring sites. Recent concern in the Hillcrest community east of the industrial area along the ship channel has prompted examination of the TCEQ canister monitoring data collected at the two community air toxics monitoring network (CATMN) sites at Huisache CAMS 98 and Hillcrest CAMS 168, and the TNMHC data at the Williams Park CAMS 1024 site.

Figure 9 on the following page shows a statistical summary of the results of merging the 5-minute time resolution TNMHC data with wind direction data at the Williams Park site. Each wind direction value has been rounded to the nearest 5 degree value, producing "bins" of data at 0, 5, 10, … 355 degrees. The TNMHC data were sorted by wind direction bin, after which statistics were calculated on the TNMHC data, producing the median and the 75^{th}, 90^{th}, and 95^{th} percentile TNMHC observations for each wind direction bin. In general, the various percentiles are well correlated in that the direction for the maximum median is usually close to the direction for the maximum 95^{th} percentile. In the case of William Park in Figure 9, two peak directions appear, these being 5 degrees and 280 degrees. Winds from the north (near 5 degrees) are very common, but winds from the west (near 280 degrees) are relatively infrequent. However,

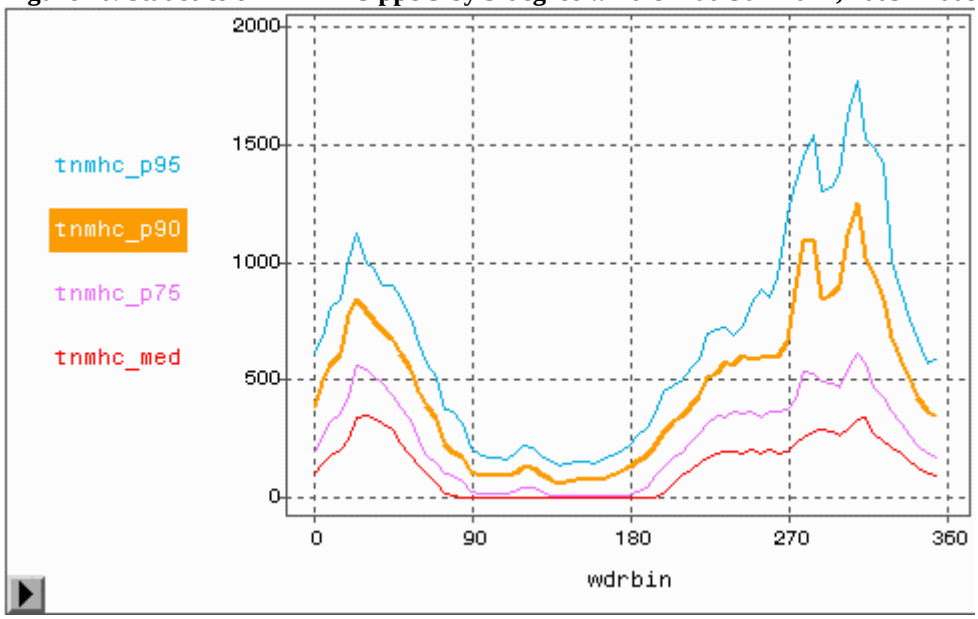
using 5-minute resolution data over a three year period provides thousands of observations for each 5-degree wind direction bin, so the results are robust.

Figure 9. Statistics on TNMHC ppbC by 5-deg wind bin at Williams Park, 2005 - 2008



Although the statistics for median and higher percentiles in Figure 9 are well correlated, the peak at 280 degrees is more pointed, in that the change in 95th percentile going from 270 to 280 to 290 degrees is more dramatic than the change in median concentrations over the same degree range. This may suggest that there are "outliers" in this direction, or that the statistical distribution of values is more spread out in this wind bin. Figure 10 shows the same form of analysis at the UT Oak Park site. Two general peak directions for TNMHC at Oak Park are northeast centered at 25 degrees and northwest centered at 310 degrees, although at higher percentiles, a sub-peak at 285 degrees emerges.

Figure 10. Statistics on TNMHC ppbC by 5-degree wind bin at Oak Park, 2005 - 2008



The TCEQ also collects data at the CAMS 98 Huisache site and the CAMS 170 Hillcrest site. At these two sites, canister samples are taken over a midnight-to-midnight 24-hour period on schedules that have varied over time from daily to every-sixth day. It is impossible to determine the upwind direction to a significant pollution source for any one 24-hour sample if the air flow has shifted over the course of a day. However, experience shows that if enough samples have been collected over time, some directionality can emerge by combining the 24 individual one-hour wind directions with the one 24-hour canister sample for each sampling day, and then evaluating the average concentration by wind direction bin over a large number of sampling days. Because the samplers at CAMS 98 and CAMS 170 have operated for several years, each has several hundred samples available for analysis. Using data from 1998 through September 2008, the graphs in Figures 11 – 14, listed below and on page 28, were created for benzene and pentane, two representative species.

Figure 11. Benzene by wind direction at Hillcrest CAMS 170, 1998 - 2008

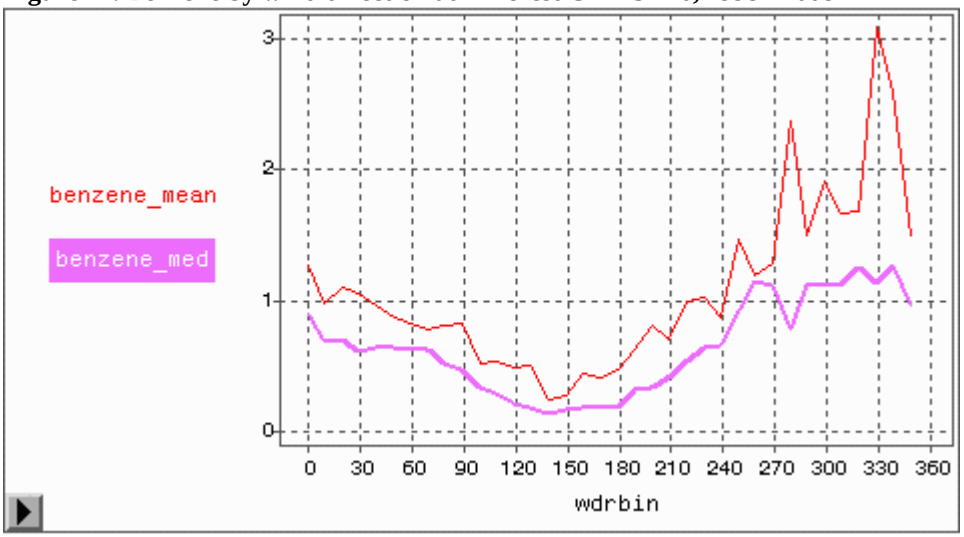


Figure 12. Pentane by wind direction at Hillcrest CAMS 170, 1998 - 2008

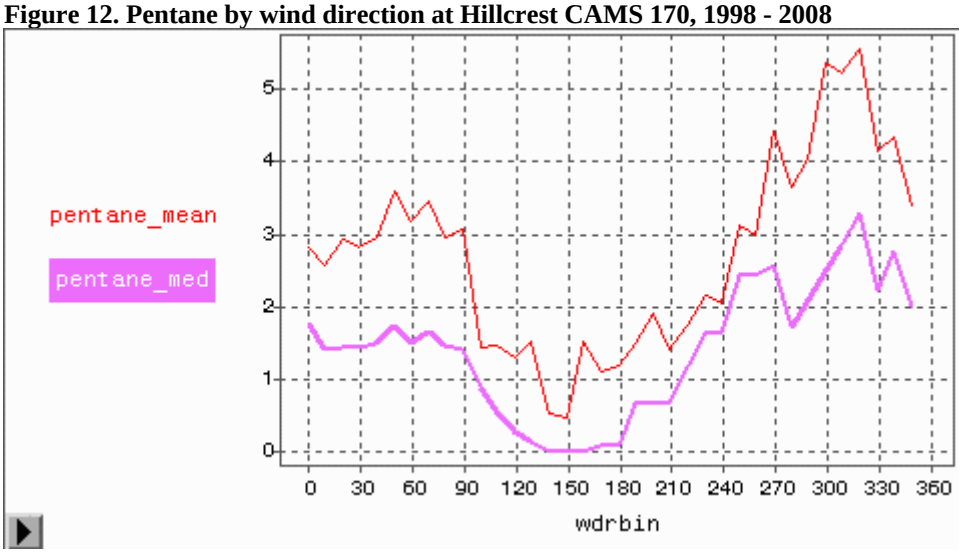


Figure 13. Benzene by wind direction at Huisache CAMS 98, 1998 - 2008

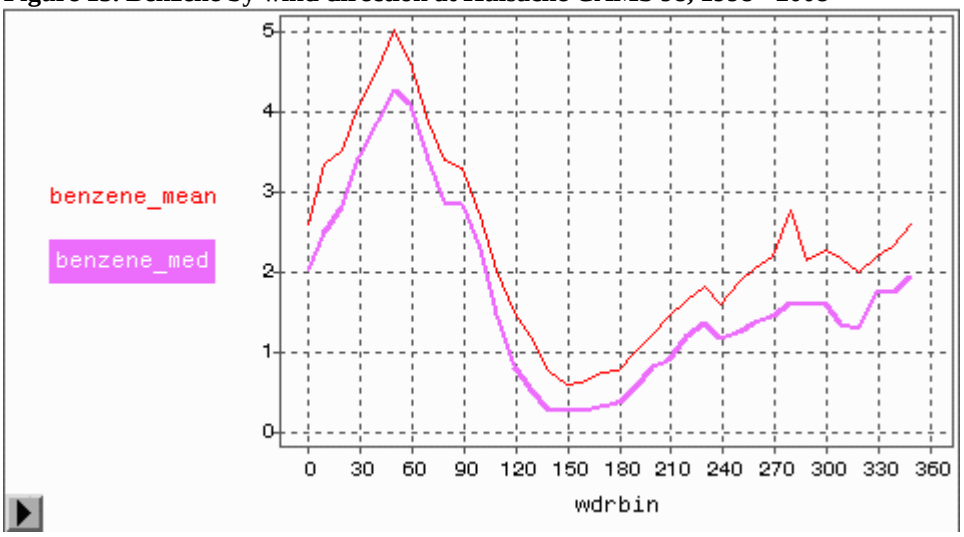
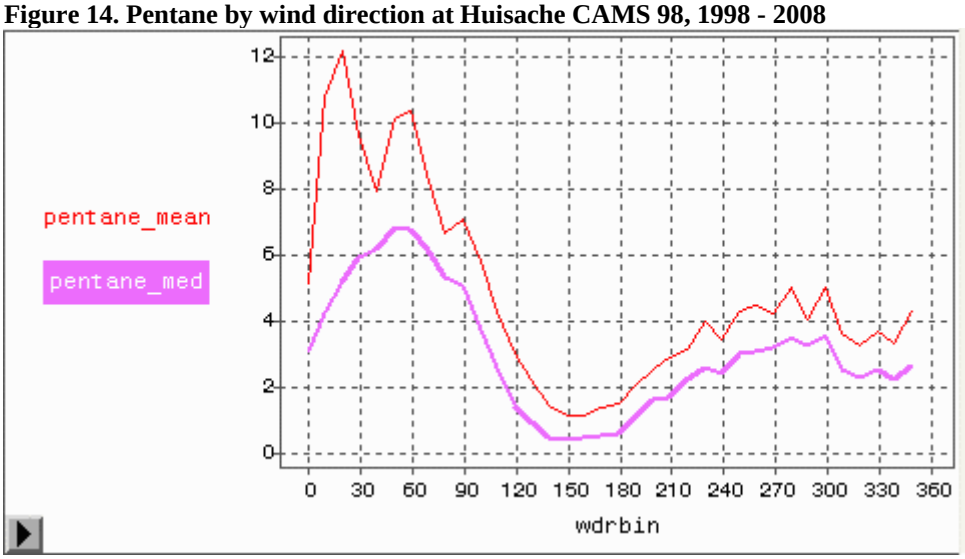
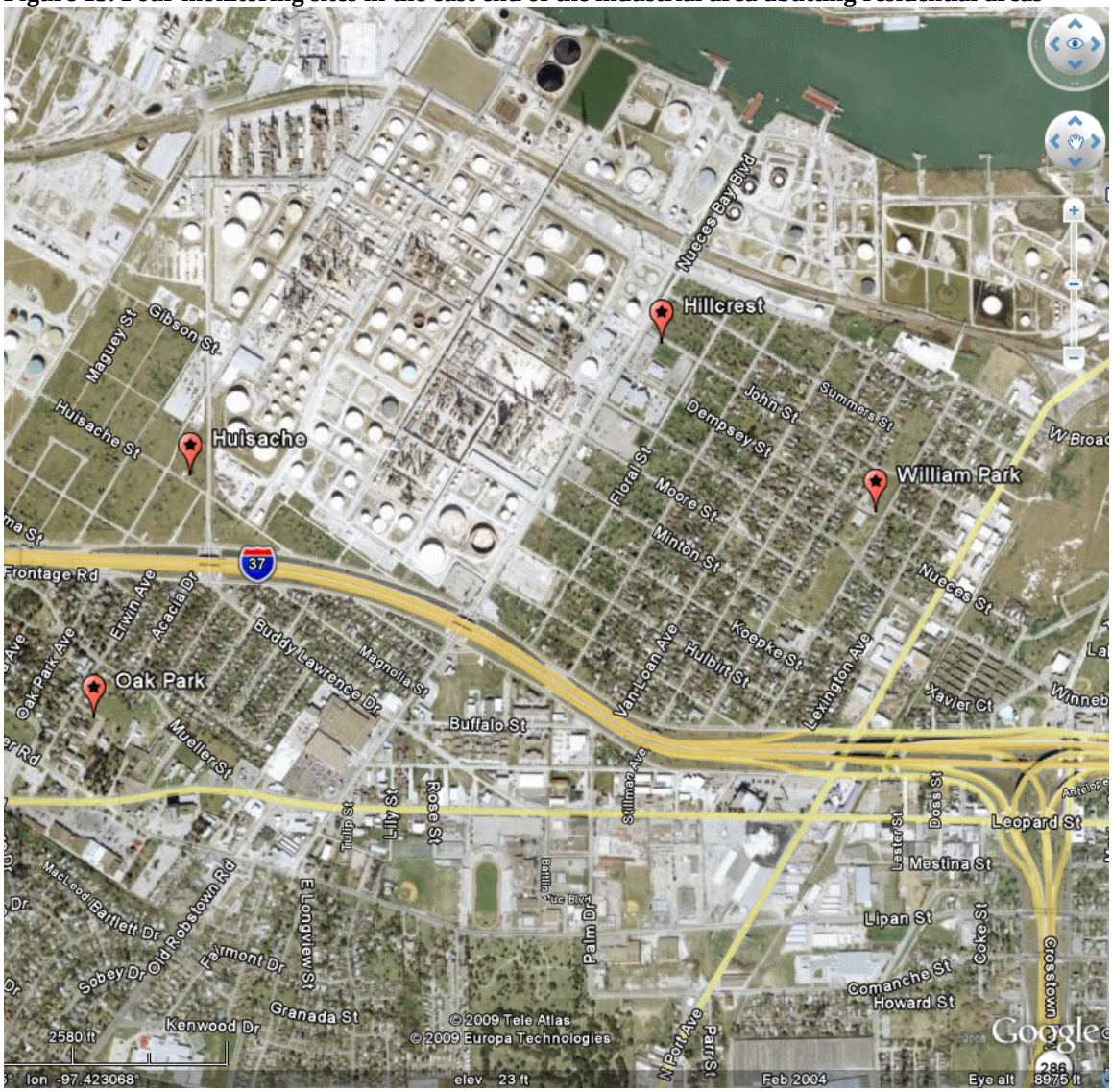


Figure 14. Pentane by wind direction at Huisache CAMS 98, 1998 - 2008



The peak directions associated with Hillcrest is west back to the refinery on the border of the neighborhood through north, where storage tanks and the ship channel lie. The peak directions at Huisache are to the northeast. A map of the locations of the four sites – Oak Park, Williams Park, Huisache, and Hillcrest – appears in Figure 15. Work will continue to use directional information to try to identify specific source facilities that may be disproportionally emitting pollution.

Figure 15. Four monitoring sites in the east end of the industrial area abutting residential areas



Conclusions from the Fourth Quarter 2008 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.
- Benzene concentrations in residential areas were statistically significantly lower this quarter compared to the same quarter in past years of monitoring. The annual average is also the lowest to date.
- Benzene concentrations have also declined at other monitoring locations in Texas, but the decreases at the Corpus Christi auto-GCs are among the largest.
- Emissions from oil and gas explorations and extraction in the White Point area began to affect the monitoring network in 2007 and continue to do so today.
- Data from UT and TCEQ monitoring sites can be combined to further identify key areas for investigation of emissions.

Further analyses will be provided upon request.

APPENDIX B

November 6, 2008
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

November 6, 2008

Advisory Board Members Present:

Ms. Gretchen Arnold	Corpus Christi Pollution Prevention Partnership TAMUCC
Mr. Ron Barnard	City of Corpus Christi
Ms. Joyce Jarmon	Corpus Christi Community Council
Dr. Glen Kost	Public Health Awareness
Ms. Pat Suter	Coastal Bend Sierra Club

Guest:

Ms. Peggy Sumner	City of Corpus Christi

Project Personnel Present:

Mr. James Martinez	Probation Office - US District Court
Mr. Vince Torres	The University of Texas at Austin
Dr. David Sullivan	The University of Texas at Austin
Mr. David Brymer	TCEQ Headquarters – Austin
Ms. Susan Clewis	TCEQ – Region 14
Mr. David Kennebeck	TCEQ – Region 14
Mr. David Turner	TCEQ – Region 14
Mr. Edward Michel	The University of Texas at Austin
Dr. Elena McDonald-Buller	The University of Texas at Austin

I. Call to Order and Welcome

Vince Torres called the meeting to order at 1:35 pm. He introduced Ms. Peggy Sumner from the City of Corpus Christi. She was here with Ron Barnard and was familiarizing herself with the project due to Ron's retirement, which is effective 1/31/09.

II. Project Overview and Status

A. Data Collection and Analyses

Dave Sullivan reviewed the location of the seven air monitoring stations, the instrumentation at the sites, and relevant air quality monitoring terms. He also identified the location of the air monitoring sites that are operated by Texas A&M University Kingsville (TAMUK) and the Texas Commission on Environmental Quality (TCEQ). A map of the Port of Corpus Christi area was used to show the areas of ship loading and unloading operations and the IR relationship to the monitoring sites

Dr. Sullivan discussed the monitoring terms and the relationship between the monitoring terms and the data generated from the monitoring network. In particular the term "elevated concentrations" does not represent a violation of a standard, which requires an enforcement action by the TCEQ, rather, this term means the concentration is higher than we normally expect given historical data.

David Turner mentioned that JI Hailey had an elevated reading on 8/22/08 and that Valero had a problem on 9/22/08. There was follow up on Saxet Fields from Dr. Kost's request from the Advisory Board meeting on 4/08/08. Dr. Sullivan provided an explanation of the Saxet Fields. There was no activity at the Saxet Fields as of this reporting. Joyce Jarmon asked what types of wells were at Saxet Fields and were they still active. Dr. Kost mentioned that Dr. John from TAMU had information on Saxet Fields but didn't have access to any maps. David Turner mentioned that the data Dr. John had

sent to Dr. Kost was in fact from TCEQ and not from the Railroad Commission. Dr. Kost requested that Dr. Sullivan see if he can locate active (wells???? – not sure of what tlm) **Action Item**

Dr. Kost went on to mention that the Railroad Commission knew more about the pipeline leaks than they let on. He asked if anyone knew how to turn on and off the different map legends on the Railroad Commission website. Dr. Allen mentioned that he was involved with another EPA project that would provide updated information on the fields, collect data, and report findings.

Mr. Torres mentioned that he would continue to follow up to bring a representative from the Railroad Commission to make a brief presentation on their responsibilities at a future meeting. **Action item**

III. Related Matters

A. Update on approval of installing surveillance cameras at Port of Corpus Christi sites

Mr. Torres updated the Board on acquiring approval to install cameras at the Port of Christi sites. He made sure the authorities were aware that if we did install the cameras, there would be no live video feeds. We would use video collected for analysis purposes only. He will continue to work on getting permission to install the cameras. **Action item**

B. Update on Enhanced Automated Alert System

Mr. Torres updated the Board on the response by industry for signing up for the Automated Alert System. David Turner mentioned that he attended three meetings as a TCEQ representative, and there were questions about participation from the industry representatives in attendance. As of today, no one has elected to participate. Pat Suter asked why there was no interest. Mr. Torres replied that industry representatives were worried about how to provide answers to the questions asked if they are in the "zone" of the alert. Ms. Sutter replied that maybe the questions asked could be modified. Mr. Torres said that he offered to work with industry's suggested modifications to the questions. As yet, no suggestions have been submitted. David Brymer asked if no questions were asked would industry be more receptive. Mr. Torres said that option was not presented. Mr. Turner was puzzled why they were not signing up. He mentioned that TCEQ has an alert system that industries can sign up for and had success with that. However, the TCEQ alert system is not connected to the trajectory tool.

C. TCEQ Infrared Camera Video

Mr. Turner showed video footage from their IR camera showing the following:

1.) Video shot from a helicopter from 8/2007 showing natural gas emissions – that wouldn't be able to be seen with the naked eye
2.) A cooling tower VOC leak
3.) Aside by side flare one with naked eye and the other view from the IR camera
4.) A ruptured pipeline

Mr. Turner explained that the IR camera enables the user to see hydrocarbon gases that are invisible to the naked eye. He further explained that you need a trained operator to use the camera. He recommended this as an excellent tool.

D. Update on the status of SEP Projects

1) TM Corpus Christi Services, Ltd. - $67,900 – The Board discussed options to possibly save and bankroll these funds until another SEP comes in versus possibly using these funds to purchase a 2nd surveillance camera for Port of Corpus Christi at Inner Harbor and/or JI Hailey sites, with the balance of funds to be used to install the camera. The Board desired that these funds be used to purchase a 2nd surveillance camera for the Port of Corpus Christi sites and for Dr. Sullivan to study video from all the surveillance cameras. A motion to approve use of the $67,900 as desired by the Board was proposed by Ms. Suter and Dr. Kost seconded the motion. The motion passed. **Action item**

2) Equistar Petro Chemicals/Millennium - $400,000 check due from Equistar by the end of Nov – discussion to purchase IR camera, training of camera for AQSI, ORSAT and UT personnel and investigation of episodes followed.

Much of the discussion related to where the camera would be housed; if kept in Austin, how soon could the camera and operator deploy to Corpus Christi; who would be the operator; what is considered immediate response time; and can someone from Corpus Christi be hired not only during emergencies but all the time long term. Dr. Sullivan and Mr. Turner had been working on correlating the data with the images on the IR camera already. Gretchen Arnold had some additional questions; including the role of the Board in SEPs. Dr. Kost had concerns with the camera housed in Austin and given the funds were from Corpus Christ. The Board asked James Martinez of the Court's Office, his understanding of the Board in regards to SEP proposals. Mr. Martinez explained that the board was to oversee operations and expenditures, to make sure they were good stewards of the money, use any additional funds to help extend the project and keep it going for as long as possible. It was decided to ask for direction of the Board from Judge Jack at the upcoming Annual Report Meeting. **Action item** The proposal for the use of the $400,000 will need to be revised and resubmitted to the Board by UT. **Action item** The Board wanted UT to come back to the Board before the Annual Report presentation before Judge Jack with a revised proposal, possibly electronically first, then followed up with a conference call as necessary. **Action item**

E. Update on Neighborhood Air Toxics Modeling Project for Houston and Corpus Christi

Elena McDonald-Buller presented a power point presentation on the Air Toxics Project. Judge Jack approved work for both the Houston and Corpus Christi areas with focus on Corpus Christi first. Dr. McDonald-Buller mentioned that Stage 1 was a 4 year effort focusing on modeling. UT was to collaborate with Environ and TAMU with project plans for year 1. She would send out reports on the update for Air Toxics to those who have asked for them – Ms. Suter and Dr. Kost requested a copy of the report. **Action item** Ms. Jarmon asked if this modeling will be mobile moving from site to site. Stage 2 will convene a group to design a mobile unit, if and when needed.

IV. Annual Report to the Court

A. Preparation for Annual Report before the Honorable Judge Jack

Mr. Torres will work with the Board Spokespersons in preparation for this year's Annual Report to the Court.

V. Advisory Board

A. Renewal of the terms of the members of the board

Mr. Torres addressed the board in regards to thinking of replacements for 2 board members whom will need to be replaced; 1. Ron Barnard is retiring and 2. Charlotte Knesek asked to be removed due to medical concerns. Mr. Torres will visit with new replacements as they become available.

B. Schedule for next meeting of the Board

Mr. Torres mentioned to the Board that they look at their calendars and start thinking about getting meeting dates for the upcoming year. Possible dates would be during the months of March and October 2009. A summer meeting can be held in July, if the Board feels it's needed.

VI. Other Issues

VI I.Adjourn

The meeting was adjourned at 3:45pm.

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
10/01/08 - 12/31/08

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

Total Grant Amount:	$6,761,718.02
Total Interest Earned:	**$670,842.44**
Total Funds Received:	**$7,432,560.46**

B. Summary of Expenditures Paid by COCP Funds

		Year 3 Budget	Year 4 Budget	Year 5 Adjustments	Year 6 Budget	Yrs 1-6 Adjusted Budget	Prior Activity	Current Activity 10/01/08-12/31/08	Encumbrances	Remaining Balance 12/31/2008
Salaries-Prof	12	$216,128.63	$160,652.00	286,279.40	299,633.00	$962,693.03	($647,065.05)	($78,021.58)	($30,952.80)	$206,653.60
Salaries-CEER	15	$19,606.37	$15,636.00	33,123.00	30,948.00	$99,313.37	($68,266.89)	($5,042.82)	($5,289.68)	$20,713.98
Fringe	14	$47,984.00	$38,783.00	58,333.00	72,728.00	$217,828.00	($142,528.19)	($16,737.03)	($9,371.03)	$49,191.75
Other/C-Analysis	47/68	$60,474.00	$73,500.00	(8,656.40)	73,500.00	$198,817.60	($32,210.00)	($2,400.00)	$0.00	$164,207.60
Supplies	50	$86,844.00	$33,500.00	68,676.00	122,682.00	$314,719.73	($195,848.17)	($43,275.68)	($7,231.82)	$68,364.06
	51		$20,300.00	8,000.00		$22,822.27	($15,620.00)	($180.00)	($44.77)	$6,977.50
Subcontract	62-64	$1,965,693.00	$314,022.00	296,734.00	346,299.00	$2,922,738.00	($2,483,164.14)	($82,019.19)	$0.00	$357,554.67
Travel	75	$2,300.00	$2,000.00	7,719.00	9,000.00	$23,479.00	($14,478.97)	($2,149.18)	($0.10)	$6,850.75
Equipment	80	$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	$714,362.00	($503,784.31)	($34,563.99)	$0.00	$176,013.70
TOTALS		**$2,758,885.00**	**757,152.00**	**862,739.00**	**1,037,501.00**	**$5,476,773.00**	**($4,102,965.72)**	**($264,389.47)**	**($52,890.20)**	**$1,056,527.61**

C. Interest Earned by COCP Funds as of 12/31/08

Prior Interest Earned:	**$651,313.34**
Interest Earned This Quarter:	$19,529.10
Total Interest Earned to Date:	**$670,842.44**

D. Balance of COCP Funds as of 12/31/08

Total Grant Amount:	$6,761,718.02
Total Interest Earned:	$670,842.44
Current Q. Expenses	($264,389.47)
Total Expenditures:	($4,102,965.72)
Remaining Balance:	**$3,065,205.27**

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

Accounting Certification