Corpus Christi Air Monitoring and Surveillance Camera Installation and Operation Project

Quarterly Report for the Period

October 1, 2007 through December 31, 2007

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, 2007 has been directed to the following activities.

A. Operations and Maintenance Phase of the Project

A detailed description of some data analyses appear in Appendix A, pages 6 through 32, 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

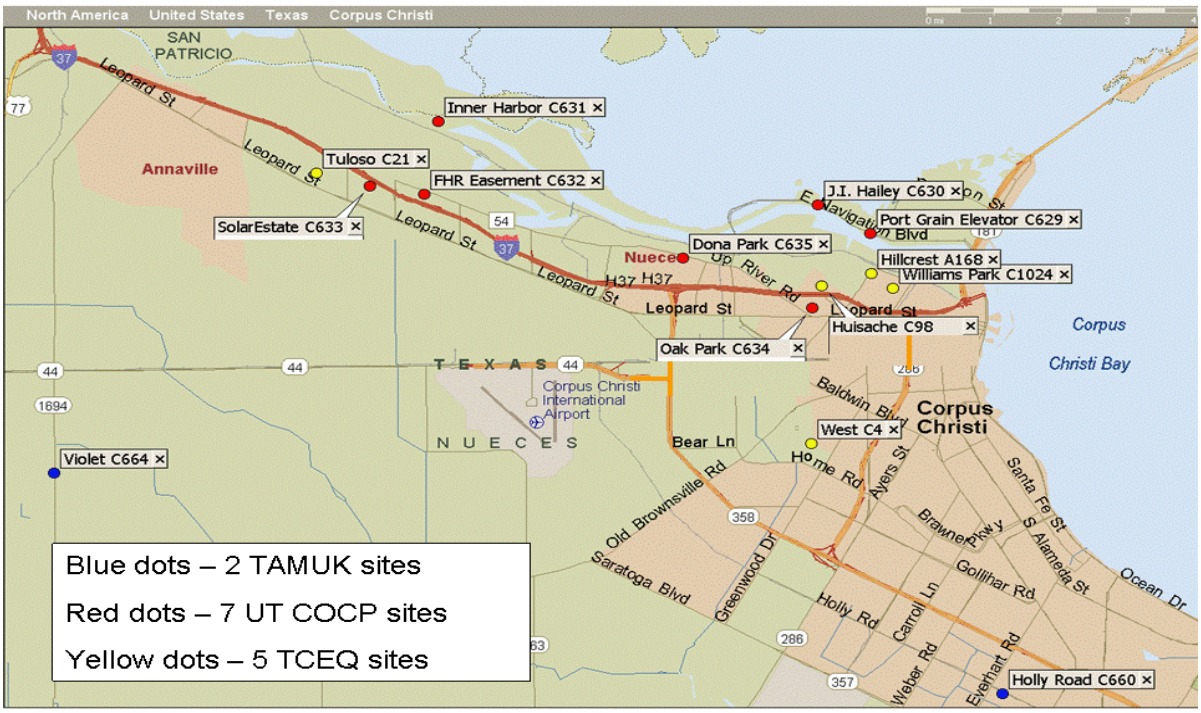

Table 1. Schedule of Air Monitoring Sites, Locations and Major Instrumentation

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 32. Specifically, the appendix contains the following elements:

- **Auto-GC Effects Screening Level 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. Also, the quarterly averages of all species were below the respective annual ESLs, as were the rolling averages over the past four quarters. Auto-GC data collected to date show little change over time, allowing the establishment of a baseline for air quality in the residential areas near industry. A summary appears in Appendix A, pages 12 through 20.

- **Canister Sampling and Analysis -** During the fourth quarter of 2007, 38 valid canister samples were triggered. One canister sample taken at JIH on October 18 stands out with higher than expected concentrations. More details about canister sampling appear in Appendix A, pages 21 through 27.

- **Analysis of H_2S/SO_2 Measurements Related to a Reported Pair of Emission Events** – The Flint Hills Refinery East facility at 1700 Nueces Bay Blvd. reported the temporary shutdown of a sulfur recovery plant December 3 and start-up on December

5, 2007. The Port Grain, JIH, and possibly other sites recorded rises and falls in SO_2 and H_2S concentrations consistent with the timing of these events. This case study is provided as an example of the use of the data to confirm reported emission events. The data are discussed further in Appendix A, pages 28 through 32.

E. Scheduled Meetings of the Volunteer Advisory Board

The Corpus Christi Project Advisory Board met on November 1, 2007. The meeting notes from that Advisory Board Meeting are found in Appendix B, pages 33 through 39.

F. 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 40.

4. **Other Contributions**
   There were no other contributions 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 40.

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

The COCP funds received through December 31, 2007 totals $7,330,369.75. This total includes interest earned through December 31, 2007.

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

Expenditures of COCP funds during this quarter totaled $254,243.22. The detailed breakdown of the actual expenditures is included in Appendix C, page 41. 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 $35,512.80. 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 41.

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D. Balance as of December 31, 2007, in the COCP Account

The balance in the COCP account, including interest earned totals $3,970,892.13.

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

The expected expenditures for the funds remaining totals $3,970,892.13.

Quarterly Report Distribution List:

U.S. District Court

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APPENDIX A

Data Analysis for Corpus Christi Quarterly Report

October 1, 2007 through December 31, 2007

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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 over the period from October 1 through December 31, 2007. The monitoring network is shown in Figure 1, page 8, 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) demonstrating a ***baseline*** for air quality in residential areas south of the industrial zone;
- an update on canister sampling and analysis of results related to specific pollution ***events***;
- a case study of the use of sulfur species data to assess a reported air emission event December 3-5, 2007.

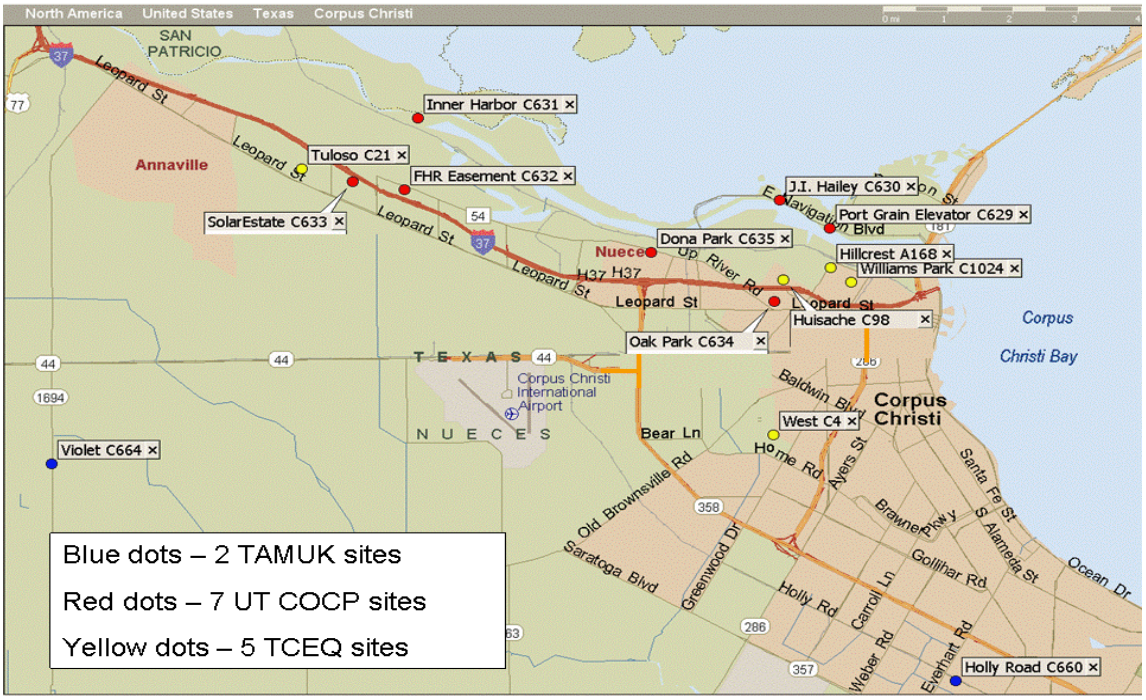
Table 1. Schedule of Air Monitoring Sites, Locations and Major Instrumentation

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 1. 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 50 – 55 hydrocarbon species. Canister samplers have operated at all seven UT/CEER sites, but this quarter 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/files/rg-442.pdf_4006501.pdf (Accessed January, 2008). 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.

This is the first report for this project in which a distinction is made between an ESL and a ReV. The URFs are not used herein. The TCEQ Toxicology Section is carrying out a 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 2008).

The new 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 in future reports.

- **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 and Baseline Air Quality 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. Also, there is very little change in the annual averages of compounds from 2006 to 2007. Furthermore, concentrations measured at the sites are lower than concentrations in residential areas in Houston and Beaumont, but higher than in Dallas, Fort Worth, and El Paso.

Tables 2 through 5, pages 13 through16, summarize both the fourth quarter of 2007 and the most recent rolling four-quarter (annual) period for each site. These tables are now available to TCEQ staff at http://rhone.tceq.state.tx.us/cgi-bin/agc_summary.pl (accessed January 2008). Quarterly summaries appear in Table 2, page 13 and Table 3, page 14, which show the average and maximum one-hour concentrations for 24 hydrocarbons of interest for the quarter, and counts of how many measurements were made above an ESL (zero in this quarter)[1]. Annual summaries appear in Table 4, page 15 and Table 5, page16, which show the results of averaging across the most recent four quarters (calendar year 2007). All rolling annual averages for all species are below respective long-term ESLs. Note that not all data have been validated and are thus subject to change. All values in the tables are in ppbV units.

As was noted on page 10, the use of a short-term ESL to evaluate hourly benzene concentrations has been replaced with comparisons to a Reference Value. Also, the short-term benzene ESL itself has changed. The current Reference Value is 180 ppbV. The current short-term ESL, which is only used for permitting purposes, is 55 ppbV.

[1] Benzene concentrations did exceed the previous ESL of 25 ppbV on Oct. 31 and Dec. 2, 2007 during the 4th quarter.

Table 2. Fourth Quarter Solar Estates Auto-GC Statistics, ppbV units

AutoGC Summary Statistics for 48_355_0041 -- Solar Estates [33] Date Range: 4th Quarter 2007 -- October 1, 2007 00:00 CST to January 1, 2008 00:00 CST Total Samples Possible: 2208 Sorted by: Elution order									
Species	**Param**	**CAS Number**	**Num Ambient Samples**	**Mean**	**Peak 1-Hour Value**	**Peak 24-Hour Value**	**Num Over 1-Hr**	**Num Over Odor**	**Over Annual**
Ethane	43202	74-84-0	1855	9.64	131.94	29.44	0		
Ethylene	43203	74-85-1	1855	0.56	17.23	6.93	0		
Propane	43204	74-98-6	1855	6.19	94.64	19.55	0		No
Propylene	43205	115-07-1	1855	0.28	19.78	1.6	0		
Isobutane	43214	75-28-5	1855	2.2	47.63	8.25	0	0	No
n-Butane	43212	106-97-8	1855	3.6	77.28	15.23	0		No
t-2-Butene	43216	624-64-6	1855	0.11	2.29	0.52	0	0	No
1-Butene	43280	106-98-9	1855	0.07	2.49	0.34	0	0	No
c-2-Butene	43217	590-18-1	1855	0.07	1.84	0.4	0	0	No
Isopentane	43221	78-78-4	1855	2.06	43.19	7.55	0		No
n-Pentane	43220	109-66-0	1855	1.25	31.63	4.59	0		No
1,3-Butadiene	43218	106-99-0	1855	0.04	11.92	0.66	0		No
t-2-Pentene	43226	646-04-8	1855	0.05	1.67	0.3	0	0	
1-Pentene	43224	109-67-1	1855	0.02	0.82	0.14	0	0	
c-2-Pentene	43227	627-20-3	1855	0.02	0.78	0.14	0	0	
n-Hexane	43231	110-54-3	1855	0.47	17.46	1.68	0	0	No
Benzene	45201	71-43-2	1855	0.35	11.48	0.98	0	0	No
Cyclohexane	43248	110-82-7	1855	0.32	14	1.2	0	0	No
Toluene	45202	108-88-3	1855	0.46	10.48	1.28	0		No
Ethyl Benzene	45203	100-41-4	1855	0.06	1.29	0.19	0	0	No
p-Xylene + m-Xylene	45109		1855	0.32	13.63	2.58	0	0	No
o-Xylene	45204	95-47-6	1855	0.08	2.9	0.41	0	0	No
Isopropyl Benzene - Cumene	45210	98-82-8	1855	0.02	3.19	0.44	0	0	No
1,3,5-Trimethylbenzene	45207	108-67-8	1855	0.03	0.72	0.26	0		No
1,2,4-Trimethylbenzene	45208	95-63-6	1855	0.1	5.67	0.45	0		No
n-Decane	43238	124-18-5	1855	0.13	3.35	3.11	0		No
1,2,3-Trimethylbenzene	45225	526-73-8	1855	0.03	0.52	0.19	0		No
Only data with a sample date/time that is greater than or equal to the starting date/time and less than the ending date/time is included in the report. The starting time is set to midnight of the first day and the ending time is set to midnight of the last day.									
"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 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 "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 "Num Over 1-Hr" and "Num Over Odor" columns record how many individual observations are larger than the established reference value and may not correspond to an actual annual exceedance.									

Table 3. Fourth Quarter Oak Park Auto-GC Statistics, ppbV units

AutoGC Summary Statistics for 48_355_0035 -- Oak Park [32] Date Range: 4th Quarter 2007 -- October 1, 2007 00:00 CST to January 1, 2008 00:00 CST Total Samples Possible: 2208 Sorted by: Elution order									
Species	**Param**	**CAS Number**	**Num Ambient Samples**	**Mean**	**Peak 1-Hour Value**	**Peak 24-Hour Value**	**Num Over 1-Hr**	**Num Over Odor**	**Over Annual**
Ethane	43202	74-84-0	1907	13.3	359.25	49.27	0		
Ethylene	43203	74-85-1	1907	1.34	40.28	6.63	0		
Propane	43204	74-98-6	1907	9.48	804.95	49.18	0		No
Propylene	43205	115-07-1	1907	0.88	43.81	6.69	0		
Isobutane	43214	75-28-5	1907	4.16	377.81	23.36	0	0	No
n-Butane	43212	106-97-8	1907	6.73	656.97	67.92	0		No
t-2-Butene	43216	624-64-6	1907	0.19	1.86	0.75	0	0	No
1-Butene	43280	106-98-9	1907	0.13	2.07	0.47	0	0	No
c-2-Butene	43217	590-18-1	1907	0.17	4.39	2.18	0	0	No
Isopentane	43221	78-78-4	1906	5.49	354.39	121.16	0		No
n-Pentane	43220	109-66-0	1906	3.58	277.81	88.42	0		No
1,3-Butadiene	43218	106-99-0	1907	0.09	1.35	0.23	0		No
t-2-Pentene	43226	646-04-8	1907	0.13	2.2	0.39	0	0	
1-Pentene	43224	109-67-1	1907	0.07	3.76	0.37	0	0	
c-2-Pentene	43227	627-20-3	1907	0.06	1.1	0.18	0	0	
n-Hexane	43231	110-54-3	1907	0.81	75.21	5.6	0	0	No
Benzene	45201	71-43-2	1907	0.66	38.15	6.41	0	0	No
Cyclohexane	43248	110-82-7	1907	0.33	31.63	1.82	0	0	No
Toluene	45202	108-88-3	1907	0.88	25.38	4.43	0		No
Ethyl Benzene	45203	100-41-4	1907	0.08	1.48	0.24	0	0	No
p-Xylene + m-Xylene	45109		1907	0.27	7.18	0.82	0	0	No
o-Xylene	45204	95-47-6	1907	0.1	1.72	0.28	0	0	No
Isopropyl Benzene - Cumene	45210	98-82-8	1907	0.04	1.82	0.31	0	0	No
1,3,5-Trimethylbenzene	45207	108-67-8	1907	0.03	0.52	0.09	0		No
1,2,4-Trimethylbenzene	45208	95-63-6	1907	0.08	1.05	0.22	0		No
n-Decane	43238	124-18-5	1907	0.03	0.85	0.15	0		No
1,2,3-Trimethylbenzene	45225	526-73-8	1907	0.03	0.59	0.11	0		No
Only data with a sample date/time that is greater than or equal to the starting date/time and less than the ending date/time is included in the report. The starting time is set to midnight of the first day and the ending time is set to midnight of the last day.									
"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 not yet validated.									
The "Mean" is calculated as a weighted average of daily averages and takes into account the number of 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 "Num Over 1-Hr" and "Num Over Odor" columns record how many individual observations are larger than the established reference value and may not correspond to an actual annual exceedance.									

Table 4. Annual 2007 Solar Estates Auto-GC Statistics, ppbV units

AutoGC Summary Statistics for 48_355_0041 -- Solar Estates [33] Date Range: January 1, 2007 00:00 CST to January 1, 2008 00:00 CST Total Samples Possible: 8760 Sorted by: Elution order									
Species	**Param**	**CAS Number**	**Num Ambient Samples**	**Mean**	**Peak 1-Hour Value**	**Peak 24-Hour Value**	**Num Over 1-Hr**	**Num Over Odor**	**Over Annual**
Ethane	43202	74-84-0	6963	8.32	170.06	29.44	0		
Ethylene	43203	74-85-1	6963	0.51	17.23	6.93	0		
Propane	43204	74-98-6	6963	5.12	122.36	19.55	0		No
Propylene	43205	115-07-1	6963	0.39	51.49	35.42	0		
Isobutane	43214	75-28-5	6963	1.82	47.63	8.25	0	0	No
n-Butane	43212	106-97-8	6963	2.75	80.81	17.83	0		No
t-2-Butene	43216	624-64-6	6962	0.07	2.66	0.52	0	0	No
1-Butene	43280	106-98-9	6962	0.05	4.63	0.36	0	0	No
c-2-Butene	43217	590-18-1	6962	0.05	7.1	0.63	0	0	No
Isopentane	43221	78-78-4	6962	1.71	61.2	7.55	0		No
n-Pentane	43220	109-66-0	6962	1.06	100.9	6.33	0		No
1,3-Butadiene	43218	106-99-0	6962	0.07	25.28	1.86	0		No
t-2-Pentene	43226	646-04-8	6962	0.05	2.81	0.3	0	0	
1-Pentene	43224	109-67-1	6962	0.03	6.25	1.92	0	0	
c-2-Pentene	43227	627-20-3	6961	0.02	1.35	0.14	0	0	
n-Hexane	43231	110-54-3	6700	0.4	47.34	2.59	0	0	No
Benzene	45201	71-43-2	6699	0.32	11.48	1.8	0	0	No
Cyclohexane	43248	110-82-7	6694	0.27	14	1.2	0	0	No
Toluene	45202	108-88-3	6700	0.42	136.32	6.96	0		No
Ethyl Benzene	45203	100-41-4	6701	0.05	2.78	0.34	0	0	No
p-Xylene + m-Xylene	45109		6701	0.32	27.48	4.35	0	0	No
o-Xylene	45204	95-47-6	6665	0.07	20.05	0.96	0	0	No
Isopropyl Benzene - Cumene	45210	98-82-8	6665	0.03	88.69	4.03	0	0	No
1,3,5-Trimethylbenzene	45207	108-67-8	6032	0.03	8.69	3.48	0		No
1,2,4-Trimethylbenzene	45208	95-63-6	6665	0.08	5.67	0.97	0		No
n-Decane	43238	124-18-5	6665	0.07	6.75	3.11	0		No
1,2,3-Trimethylbenzene	45225	526-73-8	6665	0.03	8.88	1.98	0		No
Only data with a sample date/time that is greater than or equal to the starting date/time and less than the ending date/time is included in the report. The starting time is set to midnight of the first day and the ending time is set to midnight of the last day.									
"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 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 "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 "Num Over 1-Hr" and "Num Over Odor" columns record how many individual observations are larger than the established reference value and may not correspond to an actual annual exceedance.									

Table 5. Annual 2007 Oak Park Auto-GC Statistics, ppbV units

AutoGC Summary Statistics for 48_355_0035 -- Oak Park [32] Date Range: January 1, 2007 00:00 CST to January 1, 2008 00:00 CST Total Samples Possible: 8760 Sorted by: Elution order									
Species	**Param**	**CAS Number**	**Num Ambient Samples**	**Mean**	**Peak 1-Hour Value**	**Peak 24-Hour Value**	**Num Over 1-Hr**	**Num Over Odor**	**Over Annual**
Ethane	43202	74-84-0	7650	8.95	380.08	51.4	0		
Ethylene	43203	74-85-1	7582	0.96	49.66	6.63	0		
Propane	43204	74-98-6	7582	6.11	804.95	49.18	0		No
Propylene	43205	115-07-1	7582	0.68	76.97	6.69	0		
Isobutane	43214	75-28-5	7582	2.59	377.81	23.36	0	0	No
n-Butane	43212	106-97-8	7650	3.92	656.97	67.92	0		No
t-2-Butene	43216	624-64-6	7650	0.15	6.17	1.28	0	0	No
1-Butene	43280	106-98-9	7650	0.12	15.36	2.26	0	0	No
c-2-Butene	43217	590-18-1	7650	0.12	4.53	2.18	0	0	No
Isopentane	43221	78-78-4	7648	3.41	682.38	121.16	0		No
n-Pentane	43220	109-66-0	7649	2.22	501.38	88.42	0		No
1,3-Butadiene	43218	106-99-0	7650	0.08	11.16	1.01	0		No
t-2-Pentene	43226	646-04-8	7650	0.11	21.95	2.04	0	0	
1-Pentene	43224	109-67-1	7650	0.06	3.76	0.37	0	0	
c-2-Pentene	43227	627-20-3	7650	0.05	7.72	0.74	0	0	
n-Hexane	43231	110-54-3	7650	0.59	122.55	6.93	0	0	No
Benzene	45201	71-43-2	7650	0.61	120.16	8.95	0	0	No
Cyclohexane	43248	110-82-7	7650	0.22	31.63	1.82	0	0	No
Toluene	45202	108-88-3	7650	0.76	66.44	6.99	0		No
Ethyl Benzene	45203	100-41-4	7650	0.06	2.24	0.53	0	0	No
p-Xylene + m-Xylene	45109		7649	0.21	8.58	1.77	0	0	No
o-Xylene	45204	95-47-6	7650	0.07	2.76	0.6	0	0	No
Isopropyl Benzene - Cumene	45210	98-82-8	7650	0.03	2.88	0.46	0	0	No
1,3,5-Trimethylbenzene	45207	108-67-8	7650	0.03	0.82	0.23	0		No
1,2,4-Trimethylbenzene	45208	95-63-6	7650	0.08	1.92	0.54	0		No
n-Decane	43238	124-18-5	7650	0.03	3.25	0.89	0		No
1,2,3-Trimethylbenzene	45225	526-73-8	7650	0.03	0.59	0.17	0		No
Only data with a sample date/time that is greater than or equal to the starting date/time and less than the ending date/time is included in the report. The starting time is set to midnight of the first day and the ending time is set to midnight of the last day.									
"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 not yet validated.									
The "Mean" is calculated as a weighted average of daily averages and takes into account the number of 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 "Num Over 1-Hr" and "Num Over Odor" columns record how many individual observations are larger than the established reference value and may not correspond to an actual annual exceedance.									

In the figures below, some visual displays of the data from annual summaries from 2006 and 2007 are shown. Figure 2 below and Figure 3, page 18, show the mean concentrations for the chemicals of interest for the two years side-by-side for Oak Park and for Solar Estates. The patterns are nearly identical from one year to the next, indicating either that concentrations are relatively constant or that there is not yet a long enough time series of data to assess a trend. The annual benzene ESL is shown as a line across each graph, with a label pointing to the line just above the benzene bars in the graph. Mean concentrations are about one half of the ESL at Oak Park and about a quarter of the ESL at Solar Estates.

Figure 2. Solar Estate mean concentrations 27 key species 2006 and 2007, ppbV units

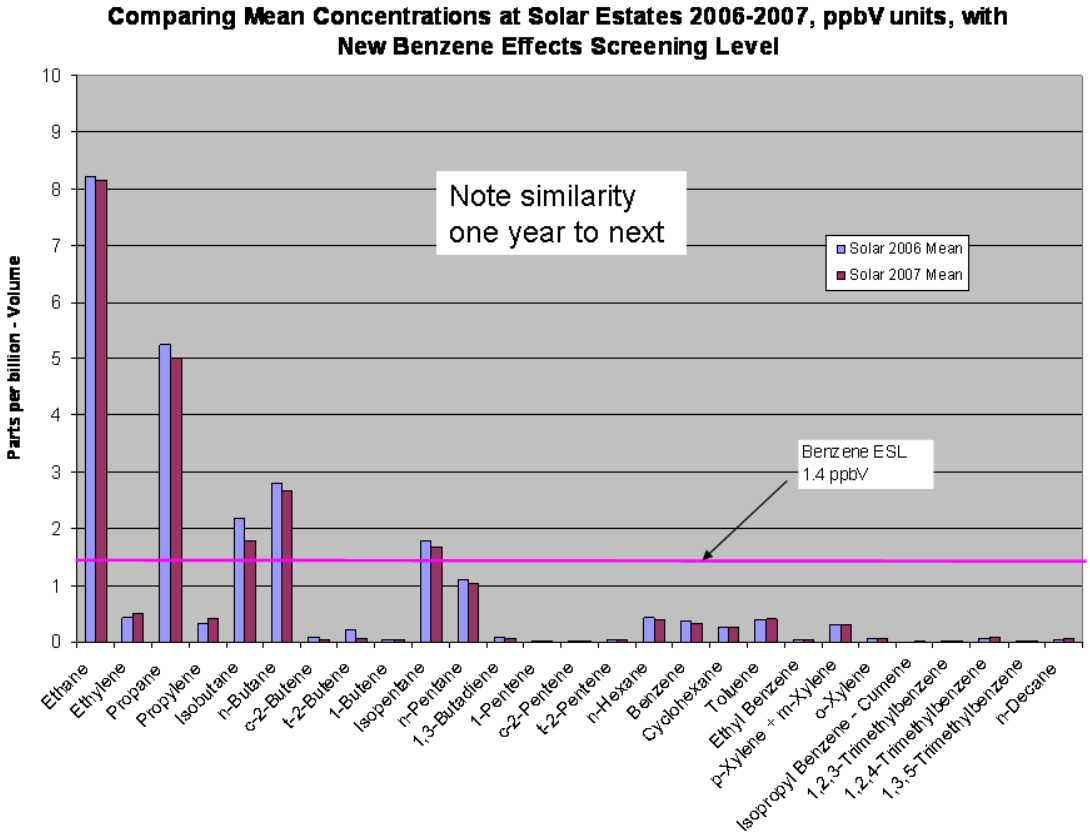


Figure 3. Oak Park mean concentrations 27 key species 2006 and 2007, ppbV units

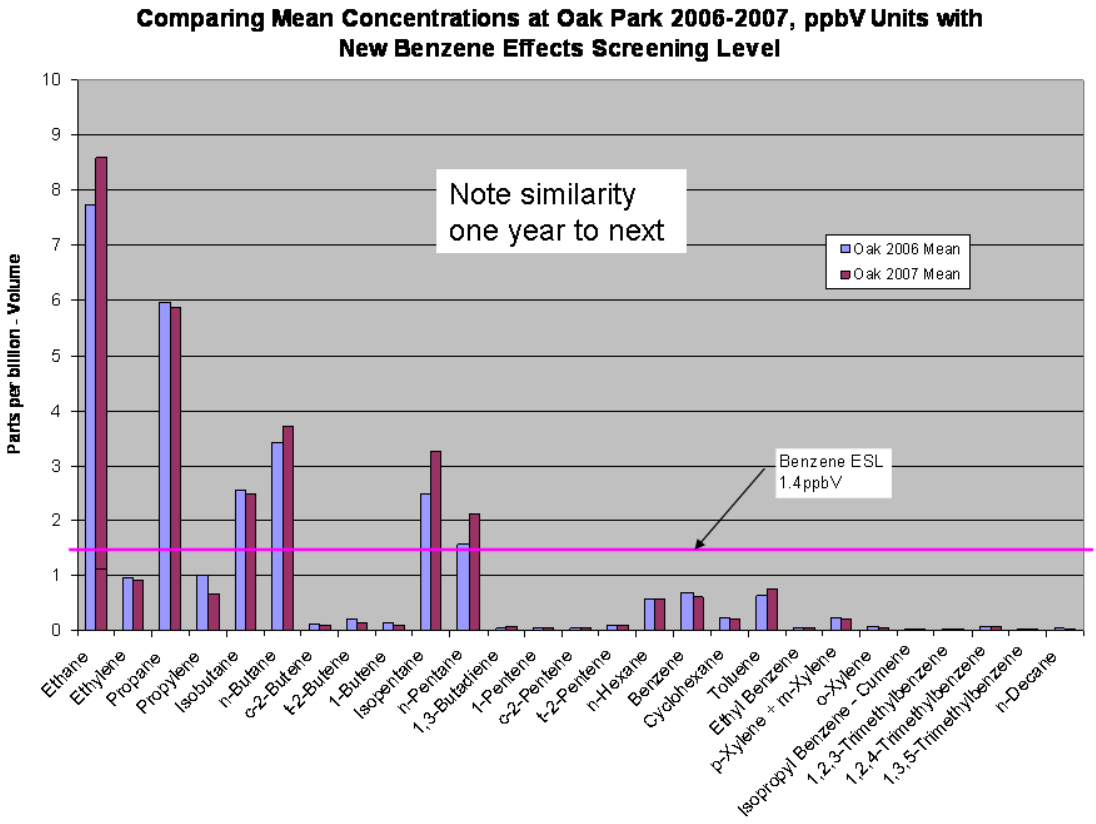


Figure 4, page 19, shows a side-by-side comparison between the 2007 mean concentrations at Oak Park and at Solar Estates. As has been noted in previous reports, the Oak Park site is closer to the urban core and has two large refineries upwind under northerly winds, whereas the Solar Estates site is more suburban and has one large refinery upwind under northerly winds.

Figure 5, page 20, shows the combined mean concentrations data from 2006 and 2007 for the auto-GC in Dallas, TX. In this figure, the scale on the Y-axis is the same as the one on the previous three graphs, so a comparison can be made with the Corpus Christi sites. The Dallas site, located on Hinton St., is specifically sited to try to capture concentrations resulting from the urban core and nearby light industries. However, the scale of industry is significantly less near the Dallas site compared to the Corpus Christi sites. A broader comparison is shown in Table 6, page 20, where the annual averages of the sum of hydrocarbon species for select auto-GCs[2] are shown for 2007. In this table, the sites are ranked by the total concentration (in ppbC units), and the Corpus Christi sites rank below the more heavily industrialized Beaumont and Deer Park sites, and above the less industrialized El Paso, Dallas, and Fort Worth sites. Also shown in this table is a comparison between the sum of identified hydrocarbon species and the sum of all (identified and unidentified) hydrocarbon species. The purpose here is to show that all auto-GCs in this comparison identify the large majority (~90 percent) of hydrocarbon mass. It is likely that some higher

[2] Auto-GCs used in this comparison are in residential areas. Instruments measuring statistically significantly and practically higher mean concentrations are sites elsewhere in the Houston area closer to industries.

carbon species associated with diesel exhaust or combustion may be contributing to the small unidentified portion.

Figure 4. Comparing Solar Estates and Oak Park mean concentrations 27 key species 2007, ppbV units

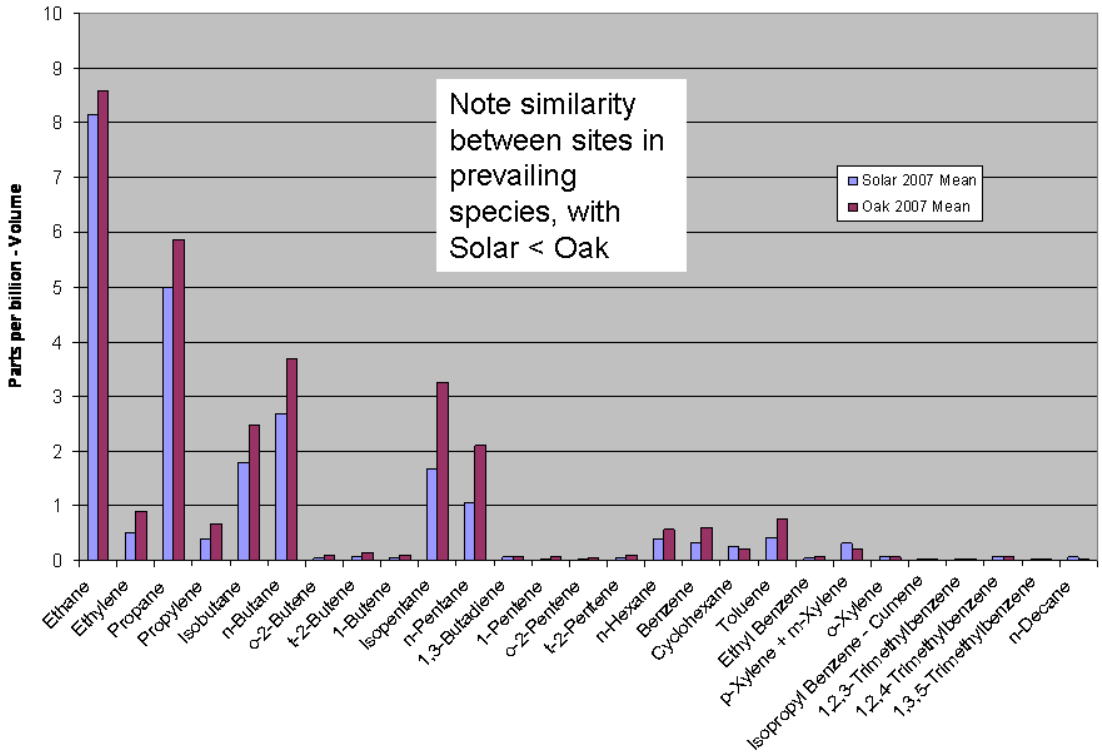


Figure 5. Dallas Hinton St. CAMS 60 Auto-GC mean concentrations 2006-2007 combined

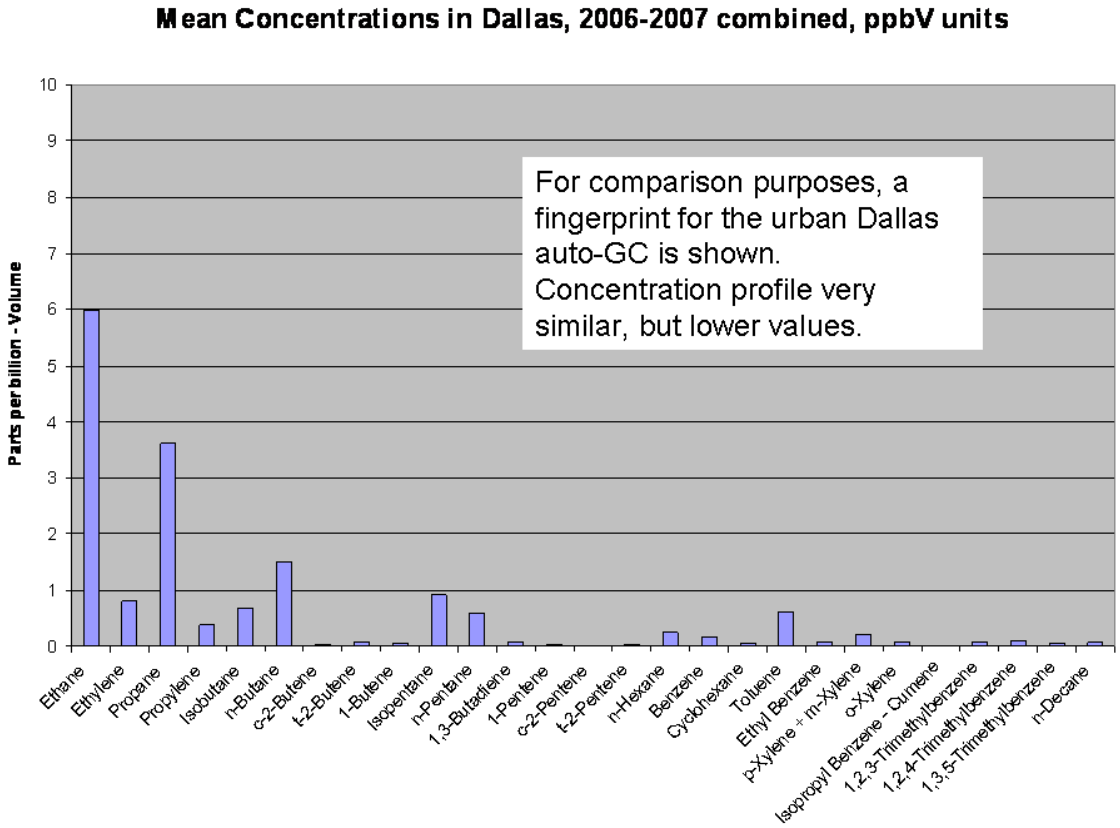


Table 6. Comparing Annual Mean Concentrations in 2007 for TNMHC from Auto-GCs in Texas in Residential Areas near Industries

ppb-C units	Target Compounds	Total Hydrocarbons	ratio target/total
Beaumont-Nederland	156.34	168.44	93%
Houston-Deer Park	125.40	143.58	87%
Oak Park	120.82	136.79	88%
Solar Estates	99.13	111.35	89%
El Paso-Chamizal	85.34	98.87	86%
Fort Worth-Meacham	83.91	94.93	88%
Dallas-Hinton	65.32	75.78	86%

The upshot of these analyses is that through the monitoring network, an approximate baseline for air quality in residential areas close to the industrial zone has been established. This will allow stakeholders to evaluate changes over time that may result from the application of emission controls or from the addition of new potential sources.

2. Canister Sampling and Analysis of Results

In this section, the focus is shifted from looking at annual summaries that related to *baseline* conditions to looking at specific air pollution *events*.

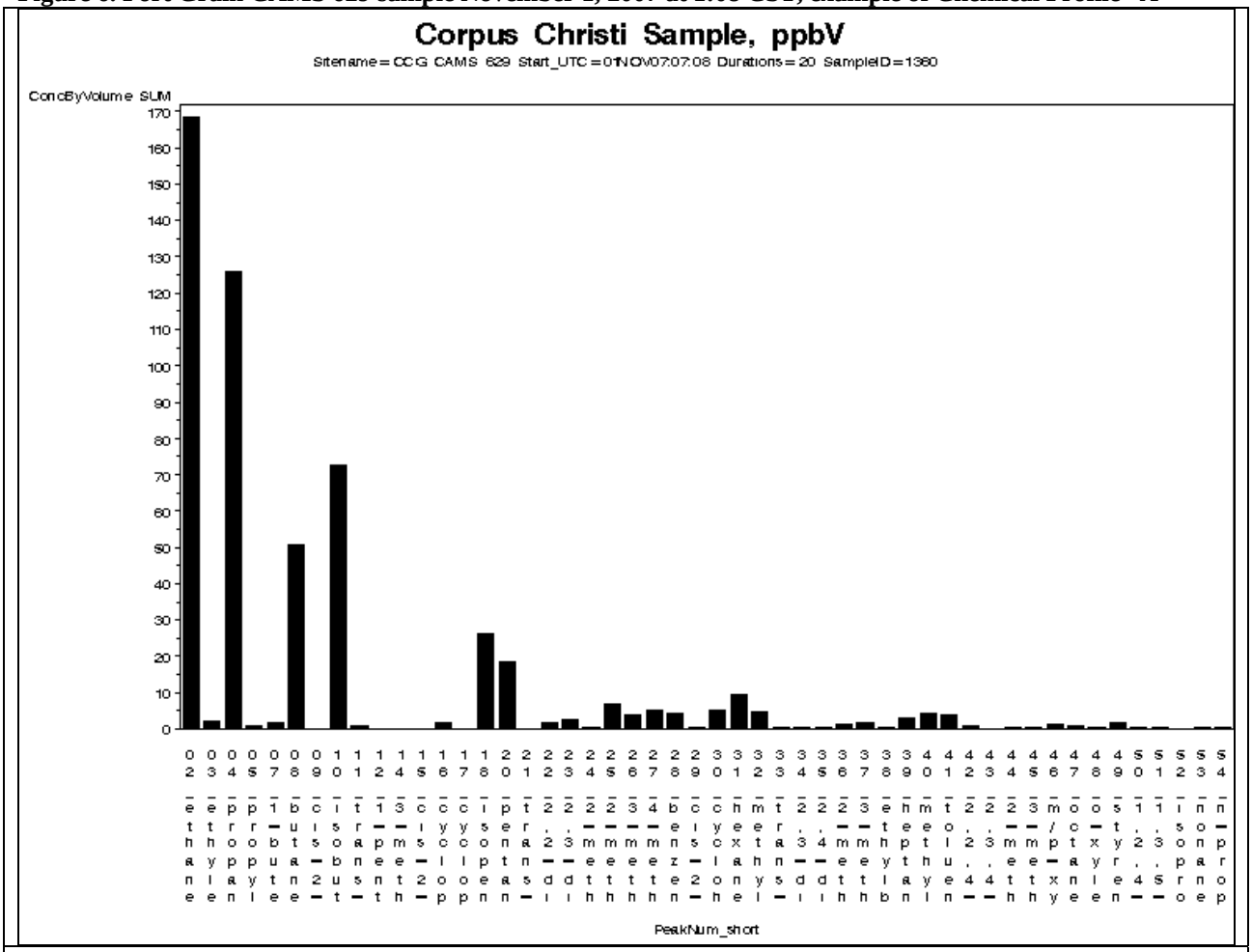
An effort was made this quarter to categorize the relative mix of compounds found in cans (i.e., the "chemical profile") as a first step toward being able to partially characterize the variety of emission source types in the area. A description of this categorization appears in Table 7 below. Temporary nicknames created for this report for the chemical profiles appear in column 1 in Table 7 below.

Table 7. Qualitative characterizations of samples from 4Q07

Chemical Profile	Number of Samples	Qualitative Assessment
A	18	Similar to Figures 2 and 3, pages 17-18
A-	6	Like A, but lower ethane fraction
A-, +toluene	1	Like A- with statistically significant toluene fraction
A=	2	Like A, but lower ethane + propane fractions
A,+ ethylene	4	Like A or A-, with small but statistically significant ethylene fraction
butanes + pentanes	2	These are the most prominent species
butanes	1	These are the most prominent species
varied	4	Contributions from several other species

One finding is that the most common chemical profile – labeled "A" in Table 7 above, is similar to the chemical profiles shown for the auto-GCs at Solar Estates and Oak Park in Figure 2, page 17 and Figure 3, page 18. Chemical profile "A" is matched to 18 out of 38 samples taken this quarter. An example of this profile is shown in Figure 6, page 22. The speciation results are shown graphically, and are provided only to show *qualitatively* the nature of the similarities and differences between samples. The labeling on the x-axis indicates which species is represented by the bar above it and the labeling on the y-axis represents the concentrations in ppbV. The species are ordered in the graphs with the lighter species (e.g., ethane, ethylene, having two carbons per molecule) to the left, with heavier species (e.g., trimethylbenzenes, nonane, having nine carbons per molecule) to the right. The most prominent species are highlighted in the list below the graph. The graph can be provided in larger scale with clearer labeling upon request.

Figure 6. Port Grain CAMS 629 sample November 1, 2007 at 1:08 CST, example of Chemical Profile "A"



Species in Figure 6 (prominent species highlighted)

02) ethane 03) ethylene **04) propane** 05) propylene 07) 1-butene **08) butane** 09) cis-2-butene
10) isobutane 11) trans-2-butene 12) 1-pentene 14) 3-methyl-1-butene 15) cis-2-pentene
16) cyclopentane 17) cyclopentene **18) isopentane** **20) pentane** 21) trans-2-pentene
22) 2,2-dimethylbutane 23) 2,3-dimethylbutane 24) 2-methyl-1-pentene 25) 2-methylpentane
26) 3-methylpentane 27) 4-methyl-1-pentene 28) benzene
29) cis-2-hexene 30) cyclohexane 31) hexane 32) methylcyclopentane 33) trans-2-hexene
34) 2,3-dimethylpentane 35) 2,4-dimethylpentane 36) 2-methylhexane 37) 3-methylhexane
38) ethylbenzene 39) heptane 40) methylcyclohexane 41) toluene 42) 2,2,4-trimethylpentane
43) 2,3,4-trimethylpentane 44) 2-methylheptane 45) 3-methylheptane 46) m/p-xylene 47) octane
48) o-xylene 49) styrene 50) 1,2,4-trimethylbenzene 51) 1,3,5-trimethybenzene 52) isopropylbenzene
53) nonane 54) n-propylbenzene

This fingerprint is similar to the "refinery" profile in the EPA Speciate 3.2 database.

In coming months, all of the data collected to date will be pooled to try to cluster like samples together and draw more statistically-based sample clustering and characterization, which should lead to more definitive conclusions about the likely source types. At this point likely sources are hypothesized to include natural gas leaks, tank loading emissions, ship loading emissions, refinery emissions, heavy-duty diesel exhaust, oil and gas extraction, storage tank emissions, and normal urban emissions including motor vehicles.

This quarter cans were triggered at all five active canister sites:

- seven at CCG**,** 11 at DPK**,** five at FHR**,** 13 at JIH, and two at WEH.

A list of samples with dates, times, locations, and categorizations appears in Table 8, page 24. The concentrations for the sum of identified species in the canister are shown in the "TNMHC ppbC" column. The benzene and 1,3-butadiene concentrations in each canister are shown in ppbV units. As was noted earlier, the new short term reference level for benzene is 180 ppbV. The short term ESL for 1,3-butadiene, which is currently undergoing a review, is 50 ppbV. No observations were above or even near these thresholds. "Start CST" is the sample start date and time in Central Standard Time. "Chemical Profile" is a qualitative label for a characterization of the distribution of chemical species in the sample – i.e., the sample "fingerprint" described in Table 7, page 21.

Each canister sample is a 20-minute sample taken following a 15 minute period of sustained TNMHC concentrations measured continuously above 2000 ppbC. Although it takes a sustained concentration of 2000 ppbC to trigger a canister sample, many canisters contain lower concentrations owing to either a wind shift or a puff of polluted air having passed the monitoring site. One canister stands out for special attention owing to an unusually high concentration. On October 18 at JIH concentrations were measured that were statistically significantly higher ($p<0.01$) than the other 37 samples measured this quarter and details on this case appear on pages 24 through 27.

Table 8. Canister Samples, 4Q07

Sitename	Start_CST	TNMHC ppbC	1,3-butadiene ppbV	benzene ppbV	Chemical Profile
CCG CAMS 629	10/3/07 3:03	6,328	1.58	18.21	varied
CCG CAMS 629	11/1/07 1:08	1,911	0.00	4.35	A
CCG CAMS 629	11/4/07 3:04	1,514	0.00	2.58	A
CCG CAMS 629	11/28/07 23:17	2,278	0.00	3.90	A
CCG CAMS 629	11/30/07 1:07	2,662	0.00	4.41	A
CCG CAMS 629	12/2/07 16:53	8,316	0.13	20.10	A-
CCG CAMS 629	12/21/07 7:39	2,076	0.23	2.77	A
DPK CAMS 635	10/16/07 19:03	3,196	0.00	0.91	varied
DPK CAMS 635	10/27/07 20:00	2,031	0.00	2.80	A
DPK CAMS 635	10/28/07 20:13	1,340	0.00	1.71	A
DPK CAMS 635	10/30/07 20:32	2,161	0.13	1.31	butanes
DPK CAMS 635	11/1/07 1:06	1,623	0.00	2.05	A-
DPK CAMS 635	11/24/07 10:12	1,602	0.19	1.10	A-
DPK CAMS 635	11/28/07 23:03	1,679	0.16	1.89	A+ethylene
DPK CAMS 635	11/29/07 23:31	880	0.00	1.04	A+ethylene
DPK CAMS 635	12/2/07 19:07	798	0.00	1.29	A+ethylene
DPK CAMS 635	12/6/07 4:02	1,037	0.07	1.96	A+ethylene
DPK CAMS 635	12/21/07 0:10	561	0.00	1.25	A
FHR CAMS 632	10/22/07 19:02	5,433	1.57	4.70	butanes+pentanes
FHR CAMS 632	10/24/07 16:36	5,299	0.15	11.07	A-
FHR CAMS 632	10/31/07 2:28	1,208	0.18	6.03	A=
FHR CAMS 632	11/3/07 4:49	1,644	0.00	3.61	A
FHR CAMS 632	11/6/07 6:41	1,730	0.00	4.12	A=
JIH CAMS 630	10/4/07 3:54	4,617	0.00	6.16	A
JIH CAMS 630	10/6/07 6:36	3,621	0.00	10.85	butanes+pentanes
JIH CAMS 630	10/18/07 1:13	26,557	3.22	35.69	varied
JIH CAMS 630	10/24/07 7:30	636	0.00	8.65	varied
JIH CAMS 630	10/31/07 2:30	2,006	0.24	4.87	A
JIH CAMS 630	11/1/07 0:46	2,059	0.00	4.08	A
JIH CAMS 630	11/2/07 0:23	5,188	0.23	12.72	A-, +toluene
JIH CAMS 630	11/3/07 2:56	2,679	0.00	4.85	A
JIH CAMS 630	11/4/07 4:08	1,567	0.00	3.28	A
JIH CAMS 630	11/28/07 22:59	6,516	1.09	9.49	A
JIH CAMS 630	12/3/07 6:16	992	0.00	2.39	A-
JIH CAMS 630	12/6/07 3:42	1,779	0.24	2.59	A
JIH CAMS 630	12/21/07 0:14	4,409	0.18	9.25	A-
WEH CAMS 631	10/27/07 18:42	1,898	0.00	1.60	A
WEH CAMS 631	12/21/07 7:31	1,588	0.17	3.86	A

Examination of an Outlier Canister Sample from Oct. 18 at JIH

The canister sampled at JIH C630 on October 18, 2007 at 1:13 CST was found to have 26,557 ppbC sum of identified hydrocarbons. The next highest sample during the quarter at any site was 8,316 ppbC and the average for all sites combined was 2,755 ppbC. Statistics on canister samples are not representative of typical air quality, but the data from this sample clearly stands out. In Table 7, page 21, this sample was categorized as “varied”. The sample fingerprint appears in Figure 7, page 25. The overall composition can be described as some refined product of alkane and alkene species with four to seven carbons. The values of several species in this sample exceed the short-term ESL, in most cases for odor concerns

(column labeled “Type”). The list of species with elevated concentrations greater than the ESL appears in Table 9, page 25.

Figure 7. Canister result: mixing ratio (ppbV) for hydrocarbons 10/18 can

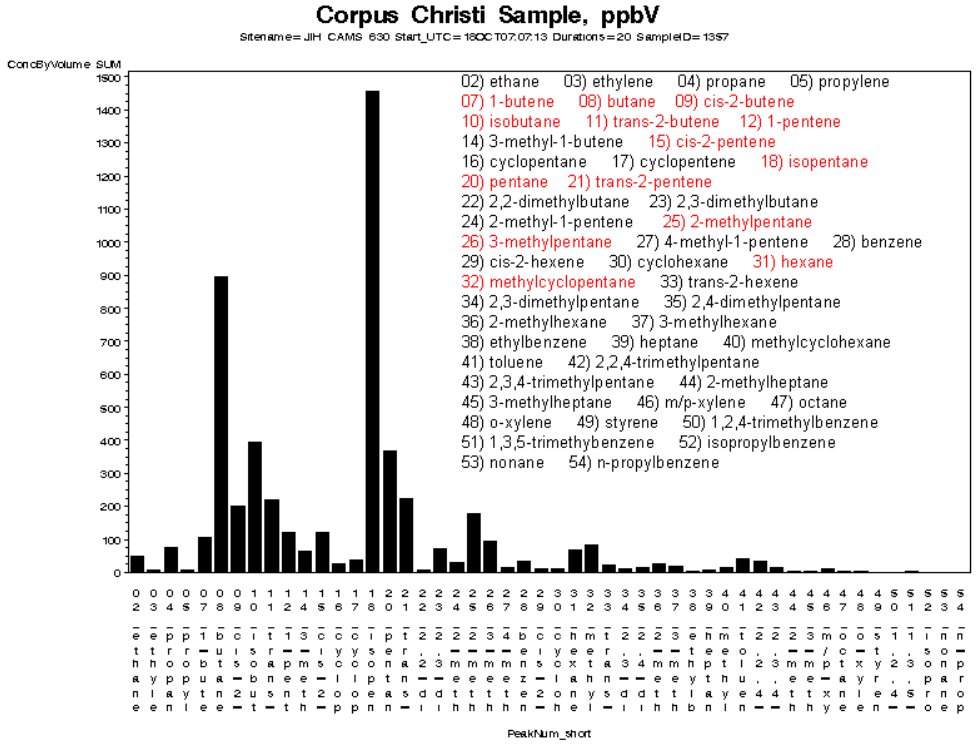


Table 9. Compounds from 10/18 can exceeding short term ESL

Compound	ppbV	S.T.ESL	Type
1-butene	107	69	odor
1-pentene	123	100	odor
cis-2-pentene	122	30	odor
isopentane	1456	1200	health
isoprene	14	5	odor
trans-2-pentene	222	30	odor
2-methyl-1-pentene	32	20	odor
2-methylpentane	178	83	odor
trans-2-hexene	23	20	odor

The corresponding TNMHC measured by the collocated continuous instrument along with coincident canister mass flow rate, sulfur species (SO_2, H_2S), methane, and wind speed (WSR) and direction (WDR) are shown in Table 10, page 26, at five-minute time resolution. The period during which the can was filling is indicated in bold font, from a little before 1:15 CST (1:13 according to the operator’s log) until a little before 1:35 (1:33). The mass-flow weighted average concentration for TNMHC was 23,415 ppbC , which compares very closely (12 percent difference) to the canister concentration. The table shows a slight rise in SO_2 during the sampling, which may or may not be significant. The table also shows that winds were steady, robust (12 mph during the sample), and from the south.

Table 10. Data before, during, after canister sample Oct. 18, 2007 at JIH C630, 5-min. resolution

Time	Canister mass flow ml/min	SO2 ppb	H2S ppb	TNMHC ppb-C	Methane ppb-C	WSR mph	WDR deg
0:00	0.1	0.1	-0.9	20.0	1,774.4	15.6	182.9
0:05	0.1	0.2	-1.3	15.0	1,774.4	17.5	182.7
0:10	0.1	0.0	-1.1	25.0	1,749.2	16.5	185.6
0:15	0.1	0.1	-1.1	20.0	1,769.4	16	185.5
0:20	0.1	0.1	-1.0	0.0	1,774.4	16	182.5
0:25	0.1	0.1	-0.9	45.1	1,784.5	16.4	182.7
0:30	0.1	0.3	-0.9	35.1	1,759.3	16.9	185.6
0:35	0.1	0.4	-1.0	20.0	1,754.2	16	184
0:40	0.1	0.6	-1.0	45.1	1,764.3	13.6	183.4
0:45	0.1	0.9	-0.9	85.2	1,784.5	13.4	184.9
0:50	0.1	0.8	-1.0	60.1	1,784.5	13.3	185.8
0:55	0.1	0.8	-0.5	2,469.7	1,819.8	13.3	186
1:00	0.1	1.3	-0.6	27,296.9	1,986.3	14.1	184.4
1:05	0.1	1.5	-0.2	19,897.9	1,900.5	12.6	185.2
1:10	**3.6**	**2.0**	**-0.1**	**24,752.1**	**1,976.2**	**11.8**	**186.8**
1:15	**14.5**	**1.9**	**0.0**	**22,152.1**	**1,946.0**	**12.3**	**187.2**
1:20	**14.5**	**2.5**	**0.1**	**23,845.4**	**1,946.0**	**12.5**	**183.8**
1:25	**14.5**	**2.9**	**-0.1**	**18,580.3**	**1,940.9**	**12**	**185.6**
1:30	**11.2**	**3.0**	**0.0**	**30,317.7**	**2,016.6**	**12.9**	**184.2**
1:35	0.2	1.8	-0.1	24,697.0	1,986.3	12.4	184.9
1:40	0.1	1.3	-0.3	23,033.8	1,986.3	13.3	183.8
1:45	0.1	1.2	-0.1	22,803.4	1,956.0	13.3	184.9
1:50	0.1	1.1	-0.3	23,244.2	1,986.3	12.3	184.1
1:55	0.1	0.9	-0.1	11,862.6	1,905.6	13.1	184.3
2:00	0.1	0.7	-0.3	7,153.6	1,865.2	12.9	184.3
2:05	0.1	0.9	-0.3	10,219.4	1,905.6	12.8	185.2

A longer time period of data appears in an hourly data table in Table 11, page 27. This table shows that the wind had been blowing in the same pattern since around 8:00 p.m. (20 CST) the previous evening, and TNMHC concentrations were close to 0 ppbC for several hours before ramping up after midnight. In the hourly data, the value calculated from the hour beginning at 1:00 a.m. is cropped by the TCEQ data system at 10,000 ppbC. Values above the canister-triggering threshold persisted until sometime after 7:00 a.m.

Table 11. Data before, during, after canister sample on Oct. 18 JIH C630, 1 hour resolution, time CST

	Parameter	SO2	TNHMC	Methane	WSR	WDR
	units	ppb	ppbC	ppbC	mph	deg
17-Oct-07	18:00	1.0	CAL	QAS	16.7	157.0
	19:00	1.0	CAL	QAS	16.0	169.0
	20:00	0.6	28	1,781	17.2	183.0
	21:00	0.1	5	1,771	15.9	182.0
	22:00	0.1	6	1,768	15.7	182.0
	23:00	0.0	23	1,774	15.7	183.0
18-Oct-07	Mid	0.4	237	1,774	15.4	184.0
	1:00	1.8	10,000	1,961	12.7	185.0
	2:00	0.8	9,250	1,875	13.1	185.0
	3:00	0.7	8,593	1,861	12.3	184.0
	4:00	0.7	7,172	1,841	10.2	185.0
	5:00	0.2	7,947	1,869	10.3	184.0
	6:00	0.1	7,363	1,884	10.3	185.0
	7:00	0.5	3,022	1,830	10.6	185.0
	8:00	2.5	108	1,773	12.8	187.0
	9:00	11.1	408	1,843	13.4	191.0

Based on the sudden rise in concentrations under a strong, steady wind, it is reasonable to assume that the source affecting the JIH monitor was relatively close to the air monitoring station, and that a sudden operation at that source commenced shortly after 1:00 a.m. A preliminary hypothesis is that loading/unloading at the docks to the south of the site may have been the source.

According to the TCEQ's emission event database, events were reported in the area on October 17 from 5:00 a.m. – 3:00 p.m. and on October 20 from 5:30 – 5:55 p.m., (http://www.tceq.state.tx.us/compliance/field_ops/eer/index.html, accessed January 2008) neither of which appears to be related to the October 18 event. A short PowerPoint set of slides showing the graphs and tables in this report along with an aerial photo, photos taken from the monitoring station, and a back-trajectory map were faxed to Mr. Jim Burns at the Port of Corpus Christi on January 30, 2008 asking his assistance in determining possible dockside activities that night. Information from the Port of Corpus Christi will be part of the next quarterly report.

3. Elevated Sulfur Compounds Case Study Early December 2007

The TCEQ Air Emission Event Reports database shows two events in Nueces County during the period December 1 – 10, 2007, both occurring at the Flint Hills East Refinery at 1700 Nueces Bay Blvd (http://www.tceq.state.tx.us/compliance/field_ops/eer/index.html, accessed January 2008). These were on December 3 from noon to 9 p.m. CST and December 5 from 5:00 a.m. to noon CST at the Flint Hills East Refinery. Reported emissions taken from the TCEQ database are summarized in the tables below:

Table 12. Flint Hills East Refinery 12/03/2007, noon – 21:00 CST, SRP No. 1 Tail Gas Incinerator, EPN number S-84

Contaminant	Authorization	Limit	Amount Released
Sulfur dioxide	TCEQ Permit 6308	39.04 LBS/HR	11.8 lbs (est.)

Table 13. Flint Hills East Refinery 12/05/2007, 5:00 – noon CST, 24" West Flare, EPN number FL-28

Contaminant	Authorization	Limit	Amount Released
Carbon Monoxide	TCEQ Permit 6308	16.97 LBS/HR	8.0 lbs (est.)
Hydrogen sulfide	TCEQ Permit 6308	0.08 LBS/HR	64.25 lbs (est.)
Oxides of Nitrogen	TCEQ Permit 6308	3.3 LBS/HR	1.57 lbs (est.)
Sulfur dioxide	TCEQ Permit 6308	7.3 LBS/HR	6024.84 lbs (est.)

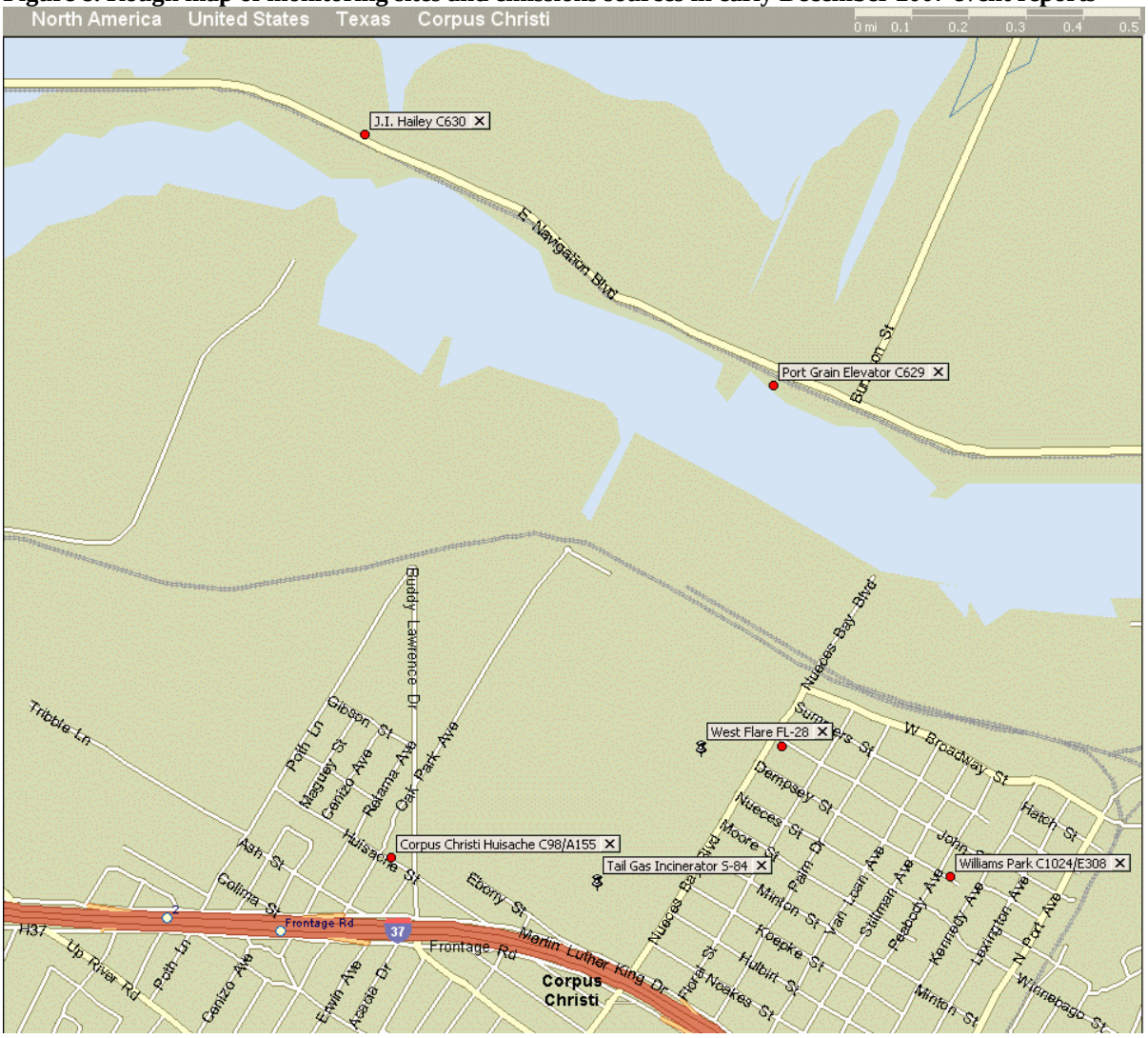
Table 14. Flint Hills East Refinery 12/05/2007, 5:00 – noon CST, SRP No. 1 Tail Gas Incinerator, EPN number S-84

Contaminant	Authorization	Limit	Amount Released
Sulfur dioxide	TCEQ Permit 6308	39.04 LBS/HR	43.2 lbs (est.)

Short term rises in SO_2 and H_2S were measured in the network during this period, resulting in e-mail alerts sent to stakeholders. In this section evidence is present to link these emission events to the e-mail alerts.

The location of the reported emission events are shown in Figure 8, page 29 at the icons labeled “West Flare FL-28” and “Tail Gas Incinerator S-84”. In the database at CEER for emission sources (from the TCEQ in 2000), the location of the West Flare EPN FL-28 is too far east into a residential area to be accurate. An approximate location has been estimated from viewing aerial photos, and this location will be confirmed with the TCEQ. The reported heights of the two sources are 30.5 m for S-84 and 53.4 m for FL-28. Heated gases leaving stack under pressure rise higher into the air before being affected by the local winds. Also winds at 30 m (~100 ft) are generally stronger and may have different directions than surface winds, especially at night. Thus, forward-trajectories from elevated sources based on surface monitors must be used with caution in predicting plume behavior, and back trajectories from monitors thought to be affected by these sources must be viewed judiciously.

Figure 8. Rough map of monitoring sites and emissions sources in early December 2007 event reports



The graphs in Figure 9, page 30 and Figure 10, page 31 show the time series for SO_2 and H_2S, respectively, during the first week in December 2007 at the JIH C630, CCG C629, and DPK C635 sites. For H_2S, the TCEQ's Huisache C98 site also provides data. The graphs are labeled for the timing of short-term peak concentrations, and these are summarized in Table 15, page 31. Using the on-line trajectory tool, which now allows one to export the latitude and longitude of five-minute time steps for trajectories, 30-minute back-trajectories were run for all the entries in Table 15, page 31. The resulting trajectories have been compiled onto one map shown in Figure 11, page 32. This is a cluttered image, and it only shows centerlines of back-trajectories, ignoring their dispersion and growth in uncertainty. Also, as was noted above, the impacts of the elevation of the sources cannot be factored in easily. However, the figure does show a clustering of the back-trajectories from these four sites in the area of the Flint Hills East Refinery. There is one outlier back-trajectory running due north from Dona Park, which corresponds to the significant H_2S spike on 12/3/07 22:10 CST. This outlier is omitted in Figure 11, page 32, as it runs due north out of the map range and was likely related to a separate source.

Additional work in dispersion modeling would be required to estimate the emission rates at the noted source locations that would explain the observed concentration. This could be a future project.

Figure 9. SO2 time series at three "east network" sites first week of December 2007, all time CST

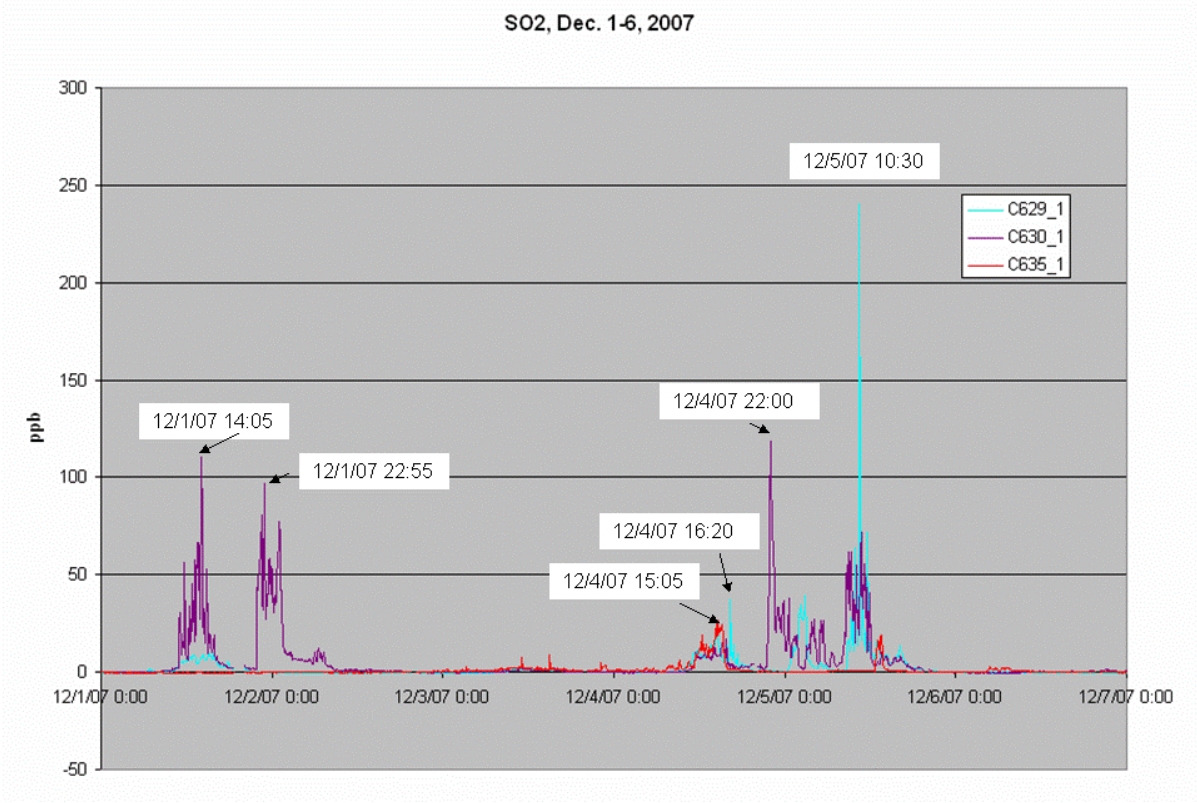


Figure 10. H2S time series at four "east network" sites first week of December 2007, all time CST

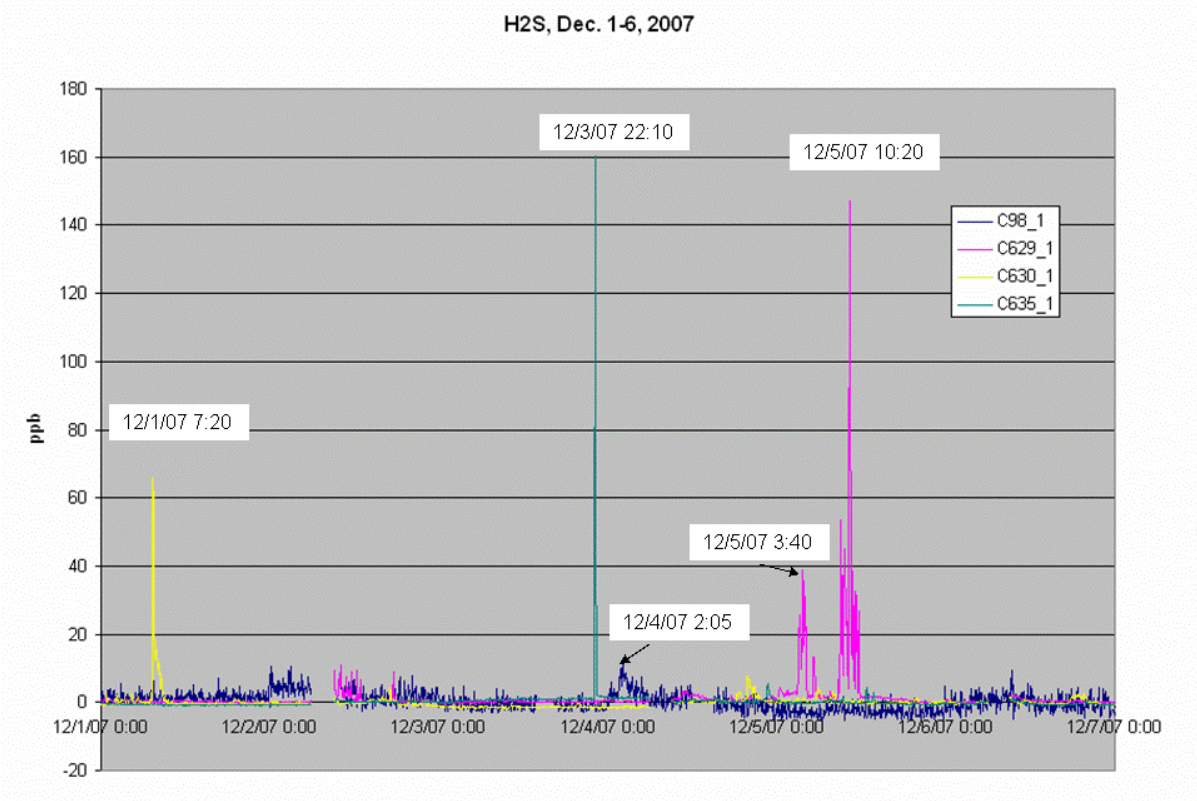


Table 15. Starting points for 30-min back-trajectories corresponding to short-term peaks in sulfur compounds

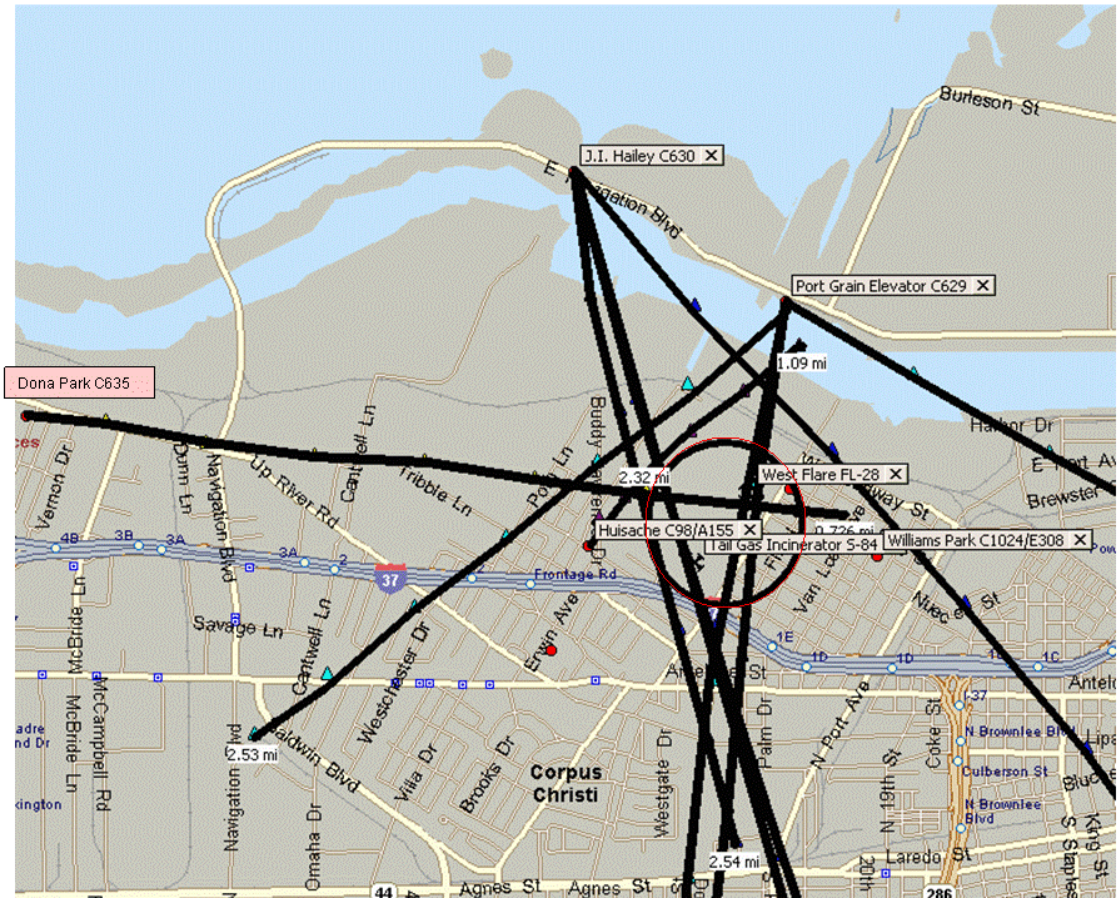
Site	Date-time	Sulfur
CCG C629	12/5/07 3:40	H2S
CCG C629	12/5/07 10:20	H2S
DPK C635	12/3/07 22:10	H2S
Huisache C98	12/4/07 2:05	H2S
JIH C630	12/1/07 7:20	H2S
CCG C629	12/4/07 16:20	SO2
CCG C629	12/5/07 10:30	SO2
DPK C635	12/4/07 15:05	SO2
JIH C630	12/1/07 14:05	SO2
JIH C630	12/1/07 22:55	SO2
JIH C630	12/4/07 22:00	SO2

Recall that the reported emissions events in Tables 12 through 14, page 28 were

- 12/03/2007, noon – 21:00 CST
- 12/05/2007, 5:00 – noon CST

A comparison of the short-term peaks and the reported timing of the emission events suggest that some short-term peaks on December 1 and December 4 may have been related to normal emissions or may have been related to the reported events outside of the reported time frames.

Figure 11. Recompiled back-trajectory center-lines from starting points in Table 15 (DPK outlier omitted)



Conclusions from the Fourth Quarter 2007 Data

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

- A baseline for hydrocarbon concentrations in residential areas has been established from which changes and trends in air quality can be assessed in the future.
- The air quality in Corpus Christi near the industrial area can be framed relative to similarly situated neighborhoods in other Texas cities.
- 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. Only one canister sample was found to have values above ESLs in the fourth quarter of 2007.
- Enough canister samples have been collected that the samples may be classified into categories.
- The improvements to the back-trajectory tool prove useful in developing ensembles of trajectories that may help to "triangulate" on sources and confirm or help improve emission event reports.

Further analyses will be provided upon request.

APPENDIX B

November 1, 2007
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 1, 2007

Advisory Board Members Present:

Ms. Gretchen Arnold	Corpus Christi Pollution Prevention Partnership – TAMUCC
Mr. Ron Barnard	City of Corpus Christi
Dr. Eugene Billiot	Texas A&M University Corpus Christi
Dr. William Burgin	Corpus Christi-Nueces County Public Health District
Dr. Glen Kost	Public Health Awareness
Ms. Pat Suter	Coastal Bend Sierra Club

Project Personnel Present:

Mr. Vince Torres	The University of Texas at Austin
Dr. David Sullivan	The University of Texas at Austin
Ms. Susan Clewis	TCEQ – Region 14
Mr. David Kennebeck	TCEQ – Region 14
Mr. David Turner	TCEQ – Region 14
Mr. Denzil Smith	The University of Texas at Austin
Mr. Steve Orwick	The University of Texas at Austin
Mr. Edward Michel	The University of Texas at Austin
Terri Mulvey	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 Mr. Denzil Smith and Mr. Steve Orwick from UT Austin's Center for Energy and Environmental Resources who assist with the technical aspects of the Project and were on hand to record the meeting as a pilot experiment. At the last minute Dr. Allen was called into another meeting which required he stay in Austin and he was not able to attend this meeting of the Board.

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 some relevant air quality monitoring terms. Dr. Sullivan also identified the location of the air monitoring sites in the area that are operated by Texas A&M University Kingsville (TAMUK) and the Texas Commission on Environmental Quality (TCEQ) given some of the meteorological data collected at these sites is used for reporting purposes. A map of the Port of Corpus Christi area was shown to depict the areas of ship loading and unloading operations and the relationship to the network of monitoring sites

Dr: Sullivan discussed the monitoring terms and the relationship between the monitoring terms and the reports generated from the monitoring network data.

Dr. Kost and David Turner questioned if the impending Effects Screen Level (ESL) changes that will occur soon will be taken into account in UT Austin's reporting on the data collected at the seven monitoring sites. Dr. Sullivan assured the Board that when the new ESLs were effective, UT Austin's reporting would reflect those new levels.

Dr. Sullivan discussed the changes in canister sampling patterns that have occurred since the 4th Quarter of 2005. Sampling patterns at the Flint Hills site consistently showed elevated levels of TNMHC. Investigations showed the sources were from two small sources to the south of the monitoring site. David Turner and David Kennebeck mentioned that TCEQ did investigate those sources to the south of Flint Hills and found they were not problematic and TCEQ continues to monitor those small sources.

Given that one or more of the small sources are under the control of the Railroad Commission, Dr. Kost asked if it would be judicious to have a representative of the Railroad Commission be part of the Board's discussions. David Turner indicated that the TCEQ has responsibility for environmental impact of sources of emissions while the Railroad Commission has responsibility for safety issues.

Dr. Kost mentioned his concern about the cumulative aspects of what is out there and, as he has mentioned in the past, he would prefer to error on the side of caution and have all possible parties, be a part of this study. It is a function of this Board to make recommendations to UT Austin, he would like to once again make that recommendation that the Railroad Commission be part of the discussions of the Board. **Action Item**

Dr. Sullivan demonstrated through the use of data generated by TAMUK from March 2007, we were able to locate several small sources of emissions throughout the Corpus Christi area.

Action Item: Dr. Sullivan will look at the TNMHC readings when the wind is blowing from the south (areas other than the refineries) to determine what are the readings at the sites that represent the urban background in the Corpus Christi area. Dave will check other urban areas, such as Dallas, to see what normal concentrations are there and then compare it to Corpus Christi.

H_2S Case Study: On May 3, 2007 H_2S and TNMHC concentrations shot up at the J. I. Hailey site. On July 27 and 28 similar situations occurred. In each instance the winds were from the south from across the ship channel. TCEQ did investigate these incidents. TCEQ found the incidents were related to loading and unloading ships. While the activities were within regulations there are situations that are of concern and the TCEQ is in dialog with the agencies with oversight of loading and unloading.

Dr. Kost asked the TCEQ how this information fit into the count of benzene concentrations in determining if Corpus Christi is in danger of

violating air quality standards. Per David Turner, the data collected by the monitoring network will be of useful should it be determined that the benzene levels were dangerously high.

III. Related Matters

A. Annual Report to the US District Court

Mr. Torres updated the Board on the process and the format for the December 2007 presentation of the 2007 Annual Project Report to the Honorable Janis Graham Jack, U.S. District Court Judge. Spokespersons for the Advisory Board will make a presentation to the Court and a representative from the Texas Commission on Environmental Quality will be available as a resource and to explain as required the uses of the data being collected and made available by the monitoring network.

As of the date of this meeting, we have not yet been able to set a date for the presentation of the Annual Report. During our meeting with Judge Jack in 2006 she indicated the possibility of conducting the presentation in Austin. Once the Court Officer can identify a time, date and location for the presentation we will inform the Board Spokesperson and the TCEQ

B. Update on the Separate Environmental Project (SEP) Activities

In July 2007 UT Austin was informed of a new SEP award in the amount of $10,244. Because of previous Board discussions UT Austin wrote a proposal for a third surveillance camera. It was intended the camera be installed at the Inner Harbor site to observe ship loading and unloading activities. TCEQ asked if UT Austin had approval from the Port of Corpus Christi to install the camera, would the camera feed be live and would it be displayed publicly on the website.

Vince reported that live feeds could not be connected to the website due to a lack of DSL/high speed connections lines in the Port area. Because of security issues, the Port of Corpus Christi would not approve the installation of a camera at the JI Haley site, the Inner Harbor site nor the Port Grain Elevator site. The Port has offered to pursue with Port Authority officials UT Austin's linking to their security cameras to obtain the information we need with regard ships docking, loading and unloading. We would not, however, be allowed to link the Port's security camera information to the Corpus Christi Air Monitoring and Surveillance Camera website. UT Austin is attempting to work with the Harbormaster to determine what information their security cameras would give us and if it will be helpful in the analysis of the data collected at the sites adjacent to the harbor.

Mr. Torres asked the Board if they would like to consider using the money to install a camera at either Oak Park or Flint Hills. Alternatively, if there is another use of the money the Board would be willing to take into consideration; Mr. Torres requested the Board submit those suggestions to him. **Action item**

David Turner felt we should continue to pursue this with the Port officials. He felt JI Haley may be a less objectionable site, with a guarantee that the data would not be broadcast on the web. If unable to get the Port's permission for a camera at JI Haley,

and it was decided to install a third camera, Mr. Turner felt Flint Hills would generate useful information.

Dr. Kost added the intent of our study was to gain information for diagnostic purposes and he felt strongly that there was not a need to broadcast the camera feeds to a website. Especially, if this in anyway would jeopardize the ability to install a camera at a Port site. He prefers we not move away from installing a camera at a Port site.

Mr. Torres will continue to pursue this matter with the Port officials. He indicated there are sufficient funds in the Project budget to move some funds allocated to canister analysis into a category that would allow for the purchase of a second camera, provided the new SEP funds are used to purchase a camera to be installed at a Port site. Mr. Torres asked the Board to comment on reallocating funds to purchase a second camera. **Action item**

Mr. Barnard asked if the information generated by the 2 installed cameras generated useful information. It was concluded that camera data from Dona Park is more useful than the camera data from Solar Estates. Comments indicated that camera data from kinetic operations (such as the Port) will be more useful than camera data from static operations.

David Turner emphasized the live camera images, during an episode are invaluable to the TCEQ in terms Agency recommendations and actions.

Pat Suter asked how long the camera images are kept. It was determined that currently they are kept forever. At some point, due to storage constraints, they may have to be purged.

Dr. Billiot indicated that should the camera images not prove to be useful then a second camera may not be the best use of the funds, rather holding onto the funds to extend the life of the project would be a better use of the funds.

Per David Turner from TCEQ's perspective, the funding would be very well spent on the installation of cameras. It is frustrating and challenging to use these data effectively. It is more difficult to go from monitoring data to causation. The cameras are a step in the right direction.

David Sullivan discussed the new Trajectory Tool enhancements and explained that the new enhancements (available for use on the website) allow one to study an episode using back trajectories and/or forward trajectories during the occurrence of an event or after the fact. He suggested to the Board that everyone should try the Trajectory Tool following the tutorial that is located on the site. Dave will send each board member a link to the Trajectory Tool. **Action Item**

David Turner stated that TCEQ just recently used the new Trajectory Tool to investigate a report of a pipeline leak. Using the tool they were able to locate the leak, and, due to favorable wind direction, the event was then captured at one of their monitoring sites. He felt this was a good indicator tool.

Per Vince Torres, if an elevated concentration is recorded the system sends out an alert to TCEQ and to UT Austin. Emails are sent out within 30 minutes, pagers are just a little longer. When the system sends out an alert the Trajectory Tool is set to run automatically. This feature of the Trajectory Tool will be tested by UT Austin for the next 2-3 months. During this testing phase Vince will be meeting with industry folks to try to solicit their participation in the alert system. **Action item**

C. Update the prospect of funding from Class Action Suit in Houston

David Turner continued that there is discussion that there is a potential source of funding from another court case. TCEQ was approached about a significant source of funds and asked whether they would have any ideas how this funding could be best used. David immediately thought of reequipping the entire network and running it for another 7 to 10 years. Mr. Turner communicated to the Board members that any potential funding sources that are brought to TCEQ's attention, Mr. Turner makes every effort to try and use those funding sources to extend the Corpus Christi Air Monitoring and Surveillance Camera project.

Vince Torres reminded everyone that during the presentation of the 2006 annual report before Judge Janis Graham Jack she mentioned a possibility of a settlement from a lawsuit involving royalties. Judge Jack put UT Austin in touch with the attorneys involved in the lawsuit and UT Austin has been working with the attorneys and Judge Jack to design a project that would encompass the Houston and Corpus Christi areas. UT Austin submitted a proposal according to the guidelines in late summer. As of this meeting date, we have not heard from the court or the attorneys. The project will design air toxics modeling based upon emissions up and down the Texas coast.

Dr. Kost commented on possible use of some of the Project data; how to pursue additional funding for additional projects. Vince maintained that the current funds are limited to the specific requirements set forth by the court. However, he is most willing to entertain Dr Kost's thoughts on opportunities for additional funding and additional projects.

Dr. Kost read from an email in regards to the annual report that will be going before Judge Jack. He expressed his concerns of possibly needing additional funds when this project runs out. He expressed that he would like UT Austin to branch out and include some of the base knowledge that we have gained. Dr. Kost is aware of some resources that have not been tapped or approached that he hoped the court would give consideration. Dr. Kost suggested the National Institutes of Health, the National Science Foundation, and the University of Texas Public School of Health be contacted to see if any additional funding is available and/or if the information that we have collected could be of use to another research group.

Vince had mentioned that the UT/CEER researchers have worked with UT Medical Branch in Galveston on other projects and would be willing to work with them in the future should the research teams recognize a viable project and funding source.

Ron Barnard offered to give Dr. Kost a CD from TAMUK with the last project report that includes the Pollution Prevention Partnership and TAMUK's research efforts.

Vince suggested that we give this some additional thought to the long term health research area with discussion on how to develop some potential projects and at the same time explore some potential sources to fund those projects once we get some more specifics. **Action item**

IV Advisory Board

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

Members of the Advisory Board signed an extension of their intent to serve on the Advisory Board for an additional 4 years, with the exception of Ron Barnard who will be retiring and Joyce Jarmon who was not present at the meeting.

B. Schedule for next meeting of the Board

Target dates for the next meeting of the Board are the weeks of March 24, July 7, and October 20. If it is the decision of the Board, and the Project has no new business, the meeting during the week of July 7th can be eliminated.

V Other Issues

Vince Torres called for additional comments or discussion items, and recommendations for agenda items for the next meeting.

VI Adjourn

No further discussions were called for and 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
10/01/07-12/31/07

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

Total Grant Amount:	$6,761,718.02
Total Interest Earned:	**$568,651.73**
Total Funds Received:	**$7,330,369.75**

B. Summary of Expenditures Paid by COCP Funds

		Year 3 Budget	Year 4 Adjustments	Year 5 Adjustments	Adjusted Budget	Prior Activity	Current Activity 10/1/07-12/31/07	Encumbrances	Remaining Balance 12/31/2007
Salaries-Prof	**12**	$216,128.63	160,652.00	281,842.00	$658,622.63	($337,654.90)	($98,898.62)	($112,534.53)	$109,534.58
Salaries-CEER	**15**	$19,606.37	15,636.00	33,123.00	$68,365.37	($35,108.76)	($4,194.08)	($6,791.52)	$22,271.01
Fringe	**14**	$47,984.00	38,783.00	58,333.00	$145,100.00	($74,007.47)	($20,121.72)	($25,081.48)	$25,889.33
Other/C-Analysis	**47/68**	$60,474.00	73,500.00		$133,974.00	($30,310.00)		$0.00	$103,664.00
Supplies	**50**	$86,844.00	33,500.00	68,676.00	$189,020.00	($111,925.89)	($35,711.76)	($4,716.97)	$36,665.38
	51		20,300.00	8,000.00	$28,300.00	($13,230.00)	($1,670.00)	($419.04)	$12,980.96
Subcontract	**62-64**	$1,965,693.00	314,022.00	296,734.00	$2,576,449.00	($2,123,513.19)	($60,317.15)	$0.00	$392,618.66
Travel	**75**	$2,300.00	2,000.00	3,500.00	$7,800.00	($4,677.39)	($1,250.68)	($0.06)	$1,871.87
Equipment	**80**	$0.00	0.00		$0.00	$0.00		$0.00	$0.00
Indirect Costs	**90**	$359,855.00	98,759.00	112,531.00	$571,145.00	($374,806.80)	($32,079.21)	$0.00	$164,258.99
TOTALS		**$2,758,885.00**	**757,152.00**	**862,739.00**	**$4,378,776.00**	**($3,105,234.40)**	**($254,243.22)**	**($149,543.60)**	**$869,754.78**

C. Interest Earned by COCP Funds as of 12/31/2007

Prior Interest Earned:	$533,138.93
Interest Earned This Quarter:	$35,512.80
Total Interest Earned to Date:	**$568,651.73**

D. Balance of COCP Funds as of 12/31/2007

Total Grant Amount:	$6,761,718.02	
Total Interest Earned:	$568,651.73	
Current Q. Expenses	($254,243.22)	
Total Expenditures:	($3,105,234.40)	
Remaining Balance:	**$3,970,892.13**	*includes interest

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

Accounting Certification