

**Neighborhood Air Toxics Modeling Project
For
Houston and Corpus Christi – Stage 1**

**Quarterly Report for the Period
October 1, 2009 through December 31, 2009**

Submitted to

**The Honorable Janis Graham Jack
US District Court Judge, Southern District of Texas
Corpus Christi, Texas**

Submitted by

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and
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March 31, 2010

I. Introduction

On February 1, 2008, the Court entered an Order (D.E. 981, Order (pp.1, 7-11)) regarding unclaimed settlement funds in Lease Oil Antitrust Litigation (No.11) Docket No. MDL No.1206. The Court requested a detailed project proposal from Dr. David Allen, the Gertz Regents Professor in Chemical Engineering and the Director of the Center for Energy and Environmental Resources at The University of Texas at Austin (UT Austin), regarding the use of \$9,643,134.80 in the Settlement Fund. The proposal was for a project titled “Neighborhood Air Toxics Modeling Project for Houston and Corpus Christi” (hereinafter “Air Toxics Project”). The Air Toxics Project was proposed in two stages. In Stage 1, UT Austin will develop, apply, demonstrate and make publicly available, neighborhood-scale air quality modeling tools for toxic air pollutants in the Corpus Christi, Texas and will extend the operation of the air quality monitoring network in Corpus Christi, Texas. In Stage 2, subject to the availability of funds, UT Austin will extend the modeling to the Houston, Texas ship channel region, develop a mobile monitoring station that can be deployed in Corpus Christi and in other regions of Texas and/or further extend the operating life of the existing stationary network in the same or a modified spatial configuration. If a mobile monitoring station is deployed, it will be used to map the spatial distributions of air pollutant concentrations and to inform the public. All ambient monitoring results will be used in synergy with the neighborhood-scale models to improve the understanding of emissions and the spatial distribution of air toxics in the region.

On February 21, 2008, the 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 \$4,586,014.92, plus accrued interest, to UT Austin for the purposes of implementing Stage 1 of the Air Toxics Project as described in the detailed proposal submitted to the Court by UT Austin on February 15, 2008 (D.E. 998).

Under the Order to Distribute Funds in MDL No. 1206, on March 3, 2008, at the direction of the Settlement Administrator, \$4,602,598.66 was disbursed to UT Austin for Stage 1 of the Project. This amount includes the interest accrued prior to distribution from the MDL No. 1206 Settlement Fund. Stage 2 funding has not been awarded by the US District Court.

This Stage 1 quarterly report has been prepared pursuant to the requirements of the Air Toxics Project and is being submitted to the US District Court.

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

A. Scope and Objectives

The objective of Stage I - Phase 1A of The Air Toxics Project for UT Austin and its subcontractors is to develop, apply, and make publicly available, neighborhood-scale air quality modeling tools for toxic air pollutants in the Corpus Christi area. Stage 1 – Phase 1A of the Air Toxics Project will provide significant and discernible environmental benefits to the Corpus Christi area by providing analyses of air pollutant concentrations experienced by the community, and providing post-event evaluation of pollutants emitted during releases. UT Austin is performing this work in collaboration with subcontractors at Texas A&M University and ENVIRON International Corporation.

B. Major Tasks

The major tasks for Stage I, Phase IA include:

1. *Development of a conceptual model of meteorological conditions likely to lead to high concentrations of air toxics in the Corpus Christi area.*

This task will identify meteorological conditions (seasons, temperatures, wind speeds, wind directions, frontal passages and other parameters) and air quality conditions that are most likely to lead to high concentrations of air toxics in populated regions of Corpus Christi. The conceptual model will be used to identify historical periods that can be used to develop and test air toxics modeling systems for Corpus Christi.

2. *Development of emissions inventory and land cover input information.*

These data will be developed at a spatial resolution that will allow the neighborhood scale air quality models to operate with a resolution of a few hundred meters.

3. *Application of dispersion models to estimate the neighborhood-scale concentrations of air toxics in Corpus Christi.*

Dispersion models represent the current best practice for estimating air toxics concentrations in urban areas. Using emissions, land cover, and meteorological data, a dispersion model will be used to estimate concentrations of air toxics in plumes from sources identified in the emissions inventory and during historical meteorological conditions identified during the conceptual model development

4. *Development of improved meteorological models of air pollutant dispersion in the Corpus Christi area.*

A more rigorous combined plume and gridded model able to characterize the complex coastal meteorology in the region will also be developed and applied in order to address uncertainties in predicted concentrations obtained from the dispersion model.

A state-of-the-science meteorological model will be used to simulate the three-dimensional weather conditions in the Corpus Christi area, with a focus on the replication of historical weather patterns identified in the conceptual model.

Simulation of local circulation features will be carefully assessed, and additional analyses will customize the model for best performance in the Corpus Christi area.

5. *Development of combined gridded and plume models to estimate neighborhood-scale concentrations of air toxics in Corpus Christi:*

The combined gridded and plume model will predict three-dimensional concentrations of selected air toxic pollutants throughout the Corpus Christi area using the meteorological modeling, emission inventory and land cover data described above.

An evaluation framework will be developed to compare predicted and observed concentrations during specific historical episodes and to refine the modeling approach and performance.

6. *Application of the combined dispersion and gridded modeling tools to estimate concentrations of air toxics in Corpus Christi.*

The combined dispersion and gridded modeling tools will be applied to estimate concentrations of air toxics in Corpus Christi under a variety of meteorological conditions for routine emissions and when monitoring data has indicated higher concentrations of air toxics than would be expected under routine emission conditions; spatial mappings of the estimated air toxics concentrations will be made available on a Project website.

C. Project Milestone Schedule

UT Austin and ENVIRON completed reports for the conceptual model development, point source emission inventory assessment and analysis, and preliminary dispersion modeling. The three reports, which total hundreds of pages, along with a 3 page project overview, were sent to the TCEQ and the Corpus Christi Air Monitoring and Surveillance Camera Project Advisory Board for review. Comments were received from one Advisory Board member, and UT responded.

Emission inventory development and dispersion and photochemical modeling work for the second year of the project is on-going as described below.

D. Scheduled Project Presentations and Meetings

The Corpus Christi Air Monitoring and Surveillance Camera Project Advisory Board met on October 29, 2009 on the campus of Texas A&M University in Corpus Christi Texas. Dr. McDonald-Buller reviewed goals and accomplishments, and discussed the benefits and framework of the air quality models being used for the project. Dr. Tammy Thompson repeated the presentation of the impacts of the Las Brisas project that was given to the Corpus Christi Air Quality Group on June 24, 2009. The meeting notes from that Advisory Board Meeting are found in Appendix A, pages 7 – 10.

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

A. Scope and Objectives

The initial workplan for the Stage I funding called for application of the modeling tools to the Houston Ship Channel region after their demonstration in Corpus Christi with the goal of demonstrating that the neighborhood-scale air toxics modeling framework is applicable to other urban areas. The area surrounding the Ship Channel in east Harris County, Texas was to be used for this demonstration, and the period to be modeled will be August 15-September 15, 2006, which corresponds to the period of the Second Texas Air Quality Study (TexAQS II).

The initial workplan for Stage I has been restructured and Phase 1B of the project reserves approximately 50% of Stage 1 project funds, approximately \$2.3 million, to extend the operation of the Corpus Christi ambient monitoring network. As a result the modeling of the Houston Ship Channel region will be deferred pending availability of Stage 2 funds.

B. Goals

Under Phase 1B the project team will use the air quality modeling results in synergy with the data collected from the ambient network to help develop recommendations for future changes in the geographic configuration and/or instrumentation for the network that might facilitate better characterization of the air toxics exposure patterns.

IV. Stage 1 – Phase 1A Project Progress Report

A. Meteorological Team

Mr. McGaughey and Dr. Kimura focused their attention on processing of surface and upper air meteorological data from 2005-2009 for use with the AERMOD and CALPUFF dispersion models.

Dr. Nielsen-Gammon's group at Texas A&M University is working on running meteorological simulations with the Weather Research and Forecast (WRF) model at a 1-km spatial resolution for two time periods: September 2005 - February 2006 and September 2008 – February 2009. The TAMU group is also running the WRF meteorological model at a higher spatial resolution of 500 meters. These cases will be delivered to ENVIRON for use with the CAMx air quality model.

B. Modeling Team

UT Austin compared AERMOD dispersion model predictions for benzene at Oak Park and 1,3-butadiene at Solar Estates against observations. Time series of 75th, 95th, and 99th were examined for each pollutant at the respective sites, as well as scatterplots of observed and predicted hourly concentrations paired in space (i.e., at monitoring sites) but unpaired in time for all available data, for results grouped by wind direction, and for results grouped by time of day, respectively. UT is continuing to analyze the performance of AERMOD for the Corpus Christi area and the affects of the model formulation on its performance.

ENVIRON compiled preliminary emission inventories for benzene, 1,3-butadiene, formaldehyde, and acetaldehyde from area, non-road mobile, and on-road mobile sources. Once completed, these will be used in future air quality modeling efforts.

V. Collaborative Relationships and Leveraging of the Air Toxics Project

Mr. Gary McGaughey submitted an extended abstract and made a presentation about the project at the Community Modeling & Analysis System (CMAS) Conference in Chapel Hill, North Carolina in October 2009.

VI. Financial Summary

A. Financial Report

Details of the following financial summary information are included in Appendix B, beginning on page 11.

1. Detailed List of the Actual Expenditures Paid from Air Toxics Project Funds through December 31, 2009

Expenditures of Air Toxics Project funds during this quarter totaled \$159,929.95. The breakdown of expenditures can be found in Appendix B, page 12. The activities for which these expenditures were used are detailed in this report.

2. Total Interest Earned on Air Toxics Project Funds through December 31, 2009

The interest earned during this quarter totaled \$24,581.14. A report providing detailed calculations of the interest earned on the Air Toxics Project funds is included in Appendix B, page 12.

3. Balance as of December 31, 2009, in the Air Toxics Project Account

The balance in the Air Toxics Project account, including interest earned totals \$3,540,653.47

4. Anticipated Expenditures for the Funds Remaining in the Air Toxics Project Account

The anticipated expenditures for the remaining funds will total \$3,540,653.47.

Quarterly Report Distribution List:

U.S. District Court

Ms. Marianne Serpa, Assistant Deputy-In-Charge, District Court Operations
for distribution to the Honorable Janis Graham Jack

cc: The University of Texas at Austin

Mr. Lee Smith, Associate Vice President for Legal Affairs

Dr. Elena McDonald-Buller, Center for Energy & Environmental Resources

Mr. Gary McGaughey, Center for Energy and Environmental Resources

Mr. Vincent M. Torres, Center for Energy and Environmental Resources

Dr. David Sullivan, Center for Energy and Environmental Resources

Texas Commission on Environmental Quality

Ms. Sharon Blue, Litigation Division, Headquarters

Ms. Susan Clewis, Regional Director, Region 14

Mr. David Kennebeck, Air Section Manager, Region 14

Mr. Ken Rozacky, Monitoring Operations Division, Headquarters

Mr. Keith Sheedy, Chief Engineer's Office, Headquarters

Ms. Rosario Torres, Air Section Work Leader, Region 14

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

APPENDIX A

October 29, 2009

Advisory Board Meeting Notes

ADVISORY BOARD MEETING
Corpus Christi Air Monitoring and Surveillance Camera Installation
and Operation Project
Texas A&M University - Corpus Christi
Room 1003, NRC Building
1:30 pm – 3:30 pm
October 29, 2009

Advisory Board Members Present:

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

Advisory Board Guest Member Present:

Sharon Bailey Lewis	City of Corpus Christi
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Project Personnel Present:

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

I. Call to Order and Welcome

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

II. Follow up on Old/Business/Action Items

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

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

B. Recruiting Participants for the Automated System Project

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

C. SEP Projects

Mr. Torres reported to the Advisory Board that there have been some changes from the original SEP Master Agreement that will affect the SEP proposals. In the original SEP Master Agreement UT was granted a waiver allowing salaries to be paid for personnel working on projects. Upon renewal of the SEP Master Agreement, TCEQ has now decided after a 5 year period, which ended in January 2009, that no SEP funds can be used to support UT Personnel. TCEQ suggested that UT use funds from the Corpus Christi Project to pay for UT salary and fringe, on SEP Projects. Ms. Suter asked why the SEP agreement was changed. Ms. Gretchen Arnold answered that the changes are not unique to UT. Ms. Peggy Sumner mentioned that their office has suddenly received changes from the TCEQ also. Ms. Arnold requested to see a spreadsheet of the original budget to see if she can determine whether or not the Corpus Christi Project could handle the salary and fringes from the SEP Projects. Mr. Torres will provide to the

Advisory Board a budget spreadsheet along with a summary of the SEP funds that would affect the Corpus Christi budget if it were used to pay UT salary and fringe expenses for SEP Projects. [Action item](#)

- 1) TM Corpus Christi Services, Ltd. - \$67,900 – A revised proposal was submitted to be used toward the purchase of an infrared camera.
- 2) Equistar Petro Chemicals/Millennium - \$400,000 - Mr. Torres updated the Board on the bankruptcy of Equistar. UT's legal department and TCEQ are recommending that we don't spend any of the awarded \$400,000 from Equistar until the issue of whether the funds might need to be returned is resolved.

D. [Public Utility Commission Question/Clarification](#)

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

E. [Request of the Railroad Commission to make a presentation to the Board](#)

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

III. **Project Overview and Status**

A. [Data Collection and Analyses](#)

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

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

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

IV. **Neighborhood Air Toxics Modeling Project**

A. [Update on Corpus Christi Neighborhood-Scale Air Toxics Modeling Project](#)

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

Dr. McDonald-Buller discussed a Pre-Proposal for the Mickey Leland National Urban Air Toxics Research Center (NUATRC). In September 2009, NUATRC issued a request for information to develop

proposals to “perform short-term, focused studies that will elucidate human exposure, health risk and related risk factors to residents of selected areas of Texas.” Dr. McDonald-Buller’s team responded with a pre-proposal focusing on spatial indicators of exposure to air toxics in Corpus Christi.

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

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

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

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

VI. Advisory Board

A. Replacement of Advisory Board member

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

Action item

B. Possible dates for future meeting of the Advisory Board

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

C. Recommendations for agenda items for next meeting

VII. Other Issues

VIII. Adjourn

The meeting was adjourned at 3:30 pm.

APPENDIX B

FINANCIAL REPORT
of
Expenditures
and
Interest Earned

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

Accounting Report for the Quarter 1001/2009 - 12/31/2009

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

Total Grant Amount: \$4,608,452.90
Total Interest Earned: \$208,509.70
Total Funds Received: \$4,816,962.60

B. Summary of Expenditures Paid by Air Toxics Funds

		Yr 1 and Yr 2 Budget Increment	Budget Adjustments this Quarter	Adjusted Budget	Prior Activity	Current Activity 10/01/09-09/30/09	Encumbrances	Remaining Balance 12/31/2009
Salaries-Prof	12	\$616,882.00	0.00	\$616,882.00	(\$492,256.74)	(\$71,557.43)	(\$17,700.51)	\$35,367.32
Salaries-CEER	15	\$66,780.00	0.00	\$66,780.00	(\$55,346.19)	(\$6,772.25)	(\$4,567.80)	\$93.76
Fringe	14	\$149,185.00	0.00	\$149,185.00	(\$118,397.24)	(\$17,423.68)	(\$7,212.96)	\$6,151.12
Supplies	50	\$61,991.00	0.00	\$61,991.00	(\$30,288.54)	(\$1,255.57)	\$0.00	\$30,446.89
Contingency	51	\$6,746.00	0.00	\$6,746.00	\$0.00	\$0.00	\$0.00	\$6,746.00
Consultants	60	\$22,500.00	0.00	\$22,500.00	\$0.00	\$0.00	\$0.00	\$22,500.00
Subcontracts	61-63	\$600,000.00	0.00	\$600,000.00	(\$253,744.03)	(\$40,126.04)	\$0.00	\$306,129.93
Modeling/Computer Svcs	67	\$46,500.00	0.00	\$46,500.00	\$0.00	\$0.00	\$0.00	\$46,500.00
Tuition	71	\$17,727.00	0.00	\$17,727.00	(\$13,395.00)	\$0.00	\$0.00	\$4,332.00
Travel	75	\$15,000.00	0.00	\$15,000.00	(\$91.77)	(\$1,934.56)	\$0.00	\$12,973.67
Equipment	80	\$17,500.00	0.00	\$17,500.00	(\$7,245.00)	\$0.00	\$0.00	\$10,255.00
Indirect Costs	90	\$243,122.00	0.00	\$243,122.00	(\$145,614.67)	(\$20,860.42)	\$0.00	\$76,646.91
TOTALS		\$1,863,933.00	0.00	\$1,863,933.00	(\$1,116,379.18)	(\$159,929.95)	(\$29,481.27)	\$558,142.60

C. Interest Earned by COCP Funds as of 12/31/2009

Prior Interest Earned: \$183,928.56
Interest Earned This Quarter: \$24,581.14
Total Interest Earned to Date: \$208,509.70

D. Balance of COCP Funds as of 12/31/2009

Total Grant Amount: \$4,608,452.90
Total Interest Earned: \$208,509.70
Total Expenditures: (\$1,276,309.13)
Remaining Balance: \$3,540,653.47

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


Accounting Certification