

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

**Phase 1A
Modeling Project**

and

**Phase 1B
Monitoring Network Extension**

Quarterly Report for the Period

October 1, 2011 through December 31, 2011

Submitted to

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

Submitted by

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Principal Investigator
and**

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February 29, 2012

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. The ambient monitoring results from Stage 1 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.

In Stage 2, subject to the availability of funds, it was planned that UT Austin would extend the modeling to the Houston, Texas ship channel region, develop a mobile monitoring station that could be deployed in Corpus Christi and in other regions of Texas and/or further extend the operating life of the existing stationary network in the same or a modified spatial configuration. Based on recent legal decisions, UT Austin does not anticipate receiving the Stage 2 funding at any point in the future. Therefore, this and all future reports will focus exclusively on Stage 1 projects.

Work on the modeling portion of Stage 1 (Stage 1A) is now complete. This and all future progress reports will describe only work on Stage 1B (extending the operation of the air quality monitoring network).

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 was 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 provided 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 has performed this work in collaboration with subcontractors at Texas A&M University and ENVIRON International Corporation. The work on Stage 1A was completed June 30, 2011.

B. Major Tasks

The major tasks for Stage I, Phase IA included:

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 identified 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 was used to identify historical periods that were used to develop and test air toxics modeling systems for Corpus Christi.
2. *Development of emissions inventory and land cover input information.*
These data were developed at a spatial resolution that 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 was 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 was developed and applied in order to address uncertainties in predicted concentrations obtained from the dispersion model. A state-of-the-science meteorological model was 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.
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 predicted three-dimensional concentrations of selected air toxic pollutants throughout the Corpus Christi area. An evaluation framework was 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 were 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 have been made available on a Project website.

C. Project Milestone Schedule

The work on Phase 1A is complete.

D. Scheduled Project Presentations and Meetings

The Corpus Christi Air Monitoring and Surveillance Camera Project Advisory Board did not meet during this reporting period.

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

A. Scope and Objectives

Phase 1B of the project reserves approximately 65% of Stage 1 project funds, approximately \$3 million, to extend the operation of the Corpus Christi ambient monitoring network. Currently, the network is operating utilizing the remaining Corpus Christi Air Monitoring funds. It is expected that these funds will be fully expended during the current project year. Phase 1B will begin operation at that time.

B. Goals

Under Phase 1B the project team will use the air quality modeling results (Stage 1A, now complete) 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 air toxics exposure patterns.

IV. Collaborative Relationships and Leveraging of the Air Toxics Project

None during this reporting period.

V. Financial Summary

A. Financial Report

Details of the following financial summary information are included in Appendix A, beginning on page 6.

1. Detailed List of the Actual Expenditures Paid from Air Toxics Project Funds Phase 1B through December 31, 2011

Expenditures of Air Toxics Project funds during this quarter totaled \$0.00. The funds remaining in the Air Toxics account (not spent for Phase 1A) were transferred to a new account so that separate financial reports can be generated.

2. Total Interest Earned on Air Toxics Project Funds through December 31, 2011

The interest earned during this quarter totaled \$16,381.45. A report providing detailed calculations of the interest earned on the Air Toxics Project funds is

included in Appendix A, pages 7 and 8. All interest generated from these funds have been transferred to the new account for Phase 1B, and are accounted for in the report for that account.

3. Balance as of September 30, 2011, in the Air Toxics Project Account
The balance in the Air Toxics Project account, including interest earned totals \$3,094,294.80.
4. Anticipated Expenditures for the Funds Remaining in the Air Toxics Project Account – Phase 1A
There are no additional expenditures anticipated for Phase 1A.
5. Anticipated Expenditures for the Funds Remaining in the Air Toxics Project Account – Phase 1B
All funds remaining after the close of Stage 1, Phase 1A have been allocated to Stage 1, Phase 1B, the extension of the operation of the Corpus Christi ambient monitoring network. No expenditures occurred this quarter.

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

Quarterly Report Distribution List:

U.S. District Court

Ms. Sondra Scotch, 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
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Ms. Sharon Blue, Litigation Division, Headquarters
Ms. Becky Combs, Litigation Division, Headquarters
Ms. Susan Clewis, Regional Director, Region 14
Mr. Ken Rozacky, Monitoring Operations Division, Headquarters
Mr. Chris Owen, 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

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 10/01/2011 - 12/31/2011

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

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

B. Summary of Expenditures Paid by Air Toxics Funds

		Yr 1 and Yr2 Budget	Year 3 Budget	Adjustments this Quarter	Adjusted Budget	Prior Activity	Current Activity 10/01/11 - 12/31/11	Encumbrances	Remaining Balance 12/31/2011
Salaries-Prof	12	\$616,882.00	\$228,508.00	(\$95,903.26)	\$749,486.74	(\$749,486.74)	\$0.00	\$0.00	\$0.00
Salaries-CEER	15	\$66,780.00	\$24,045.00	(\$11,435.81)	\$79,389.19	(\$79,389.19)	\$0.00	\$0.00	\$0.00
Fringe	14	\$149,185.00	\$55,852.00	(\$22,669.10)	\$182,367.90	(\$182,367.90)	\$0.00	\$0.00	\$0.00
Supplies	50	\$61,991.00	\$5,831.00	(\$21,633.36)	\$34,526.64	(\$34,526.64)	\$0.00	\$0.00	\$0.00
Contingency	51	\$6,746.00	\$27,805.00	(\$34,551.00)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Consultants	60	\$22,500.00	\$2,500.00	(\$25,000.00)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Subcontracts	61-63	\$600,000.00	\$0.00	(\$54,943.78)	\$545,056.22	(\$545,056.22)	\$0.00	\$0.00	\$0.00
Modeling/Computer Sv:	67	\$46,500.00	\$12,500.00	(\$59,000.00)	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Computation Center	68	\$0.00	\$1,800.00	\$0.00	\$1,800.00	(\$1,800.00)	\$0.00	\$0.00	\$0.00
Tuition	71	\$17,727.00	\$0.00	(\$125.00)	\$17,602.00	(\$17,602.00)	\$0.00	\$0.00	\$0.00
Travel	75	\$15,000.00	\$5,000.00	(\$17,403.03)	\$2,596.97	(\$2,596.97)	\$0.00	\$0.00	\$0.00
Equipment	80	\$17,500.00	\$7,500.00	(\$17,755.00)	\$7,245.00	(\$7,245.00)	\$0.00	\$0.00	\$0.00
Indirect Costs	90	\$243,122.00	\$53,952.00	(\$54,063.44)	\$243,010.56	(\$243,010.56)	\$0.00	\$0.00	\$0.00
TOTALS		\$1,863,933.00	\$413,631.00	(\$414,482.78)	\$1,863,081.22	(\$1,863,081.22)	\$0.00	\$0.00	\$0.00

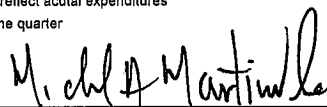
C. Interest Earned by COCP Funds as of 12/31/2011

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

D. Balance of COCP Funds as of 12/31/2011

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

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



Accounting Certification

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

Accounting Report for the Quarter 10/01/2011 - 12/31/2011

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

Total Grant Amount:	\$2,745,371.68
Total Interest Earned:	<u>\$348,923.12</u>
Total Funds Received:	\$3,094,294.80

B. Summary of Expenditures Paid by Air Toxics Funds

		Yr 1 Budget	Year 2 Budget	Adjustments this Quarter	Adjusted Budget	Prior Activity	Current Activity 10/01/11 - 12/31/11	Encumbrances	Remaining Balance 12/31/2011
Salaries-Prof	12	\$111,654.00	\$0.00	\$0.00	\$111,654.00	\$0.00	\$0.00	\$0.00	\$111,654.00
Fringe	14	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Salaries-CEER	15	\$24,563.88	\$0.00	\$0.00	\$24,563.88	\$0.00	\$0.00	\$0.00	\$24,563.88
Salary Holding	16	\$133,401.93	\$0.00	\$0.00	\$133,401.93	\$0.00	\$0.00	\$0.00	\$133,401.93
Quality Assurance	41	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Cell Phone Allowance	42	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
SEP Reserve	43	\$10,800.00	\$0.00	\$0.00	\$10,800.00	\$0.00	\$0.00	\$0.00	\$10,800.00
Contingency	47	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Monthly M&O	50	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment & Spare Parts	51	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Telephone SWB-DSL/RR	52	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Electric	53	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Gases	54	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Consultant Services - Holding	60	\$80,000.00	\$0.00	\$0.00	\$80,000.00	\$0.00	\$0.00	\$0.00	\$80,000.00
Consultant Services - ORSAT/TMSI	61-62	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Analytical	68	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Travel	75	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Equipment	80	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00
Indirect Costs	90	\$54,062.97	\$0.00	\$0.00	\$54,062.97	\$0.00	\$0.00	\$0.00	\$54,062.97
TOTALS		\$414,482.78	\$0.00	\$0.00	\$414,482.78	\$0.00	\$0.00	\$0.00	\$414,482.78

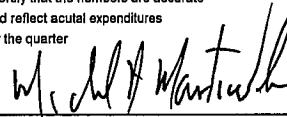
C. Interest Earned by COCP Funds as of 12/31/2011

Prior Interest Earned:	\$332,541.67 (transferred from Phase 1A)
Interest Earned This Quarter:	<u>\$16,381.45</u>
Total Interest Earned to Date:	\$348,923.12

D. Balance of COCP Funds as of 12/31/2011

Total Grant Amount:	\$2,745,371.68
Total Interest Earned:	\$348,923.12
Total Expenditures:	<u>\$0.00</u>
Remaining Balance:	\$3,094,294.80

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



Accounting Certification