Neighborhood Air Toxics Modeling Project For Houston and Corpus Christi

Quarterly Report for the Period And Final Report – Stage 1A

April 1, 2011 through June 30, 2011

Submitted to

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

Submitted by

David Allen, Ph.D. Principal Investigator and Elena McDonald-Buller, Ph.D. (Air Quality Modeling Team Lead) Gary McGaughey, M.S. (Meteorological Modeling Team Lead) Vincent M. Torres, M.S.E. (Ambient Monitoring Team Lead) Vincent for Energy and Environmental Resources The University of Texas at Austin 10100 Burnet Road, Bldg 133 (R7100) Austin, TX 78758 512/475-7842 allen@che.utexas.edu

August 26, 2011

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. 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. Further, as described later in this report, work on the modeling portion of Stage 1 (Stage 1A) is now complete. 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 in this quarter.

B. Major Tasks

The major tasks for Stage I, Phase IA included:

- 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.
- 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 neighborhoodscale 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. An accompanying report was completed that includes descriptions of the modeling methodology, comparisons of the dispersion modeling results to ambient observations, maps of predicted spatial distribution of benzene and 1,3-butadiene concentrations, and discussions of key findings and recommendations for the region. A CD of these files has been submitted with this report.

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.

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 through June 30, 2011

Expenditures of Air Toxics Project funds during this quarter totaled \$9,657.91. The breakdown of expenditures can be found in Appendix A, page 7. The activities for which these expenditures were used are detailed in this report.

- 2. <u>Total Interest Earned on Air Toxics Project Funds through June 30, 2011</u> The interest earned during this quarter totaled \$17,840.79. A report providing detailed calculations of the interest earned on the Air Toxics Project funds is included in Appendix A, page 7.
- 3. <u>Balance as of June 30, 2011, in the Air Toxics Project Account</u> The balance in the Air Toxics Project account, including interest earned totals \$3,071,964.95.
- Anticipated Expenditures for the Funds Remaining in the Air Toxics Project Account All expenditures for the Air Toxics Project have been expended as of this report. All funds remaining after the close of Stage 1, Phase 1A will be allocated to Stage 1, Phase 1B, the extension of the operation of the Corpus Christi ambient monitoring network.

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, the funds allocated for Phase 1B, and the interest earned to date, with the Court's permission, will be transferred 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. This new account will have an original budget of \$2,745,371.68, with interest earned of \$326,593.27, plus interested earned since June 30, 2011.

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

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 04/01/2011 - 06/30/2011

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

Total Grant Amount:	\$4,608,452.90
Total Interest Earned:	\$326,593.27
Total Funds Received:	\$4,935,046,17

B. Summary of Expenditures Paid by Air Toxics Funds

	Γ	Yr 1 and Yr2	Year 3	Adjustments	Adjusted	Prior Activity	Current Activity	Encumbrances	Remaining Balance
		Budget	Budget	this Quarter	Budget		04/01/11 - 06/30/11		6/30/2011
Salaries-Prof	12	\$616,882.00	\$228,508.00	\$0.00	\$845,390.00	(\$749,486.74)	\$0.00	\$0.00	\$95,903.26
Salaries-CEER	15	\$66,780.00	\$24,045.00	\$0.00	\$90,825.00	(\$78,180.54)	(\$1,208.65)	\$0.00	\$11,435.81
Fringe	14	\$149,185.00	\$55,852.00	\$0.00	\$205,037.00	(\$182,090.16)	(\$277.74)	\$0.00	\$22,669.10
Supplies	50	\$61,991.00	-\$4,031.00	(\$1,800.00)	\$56,160.00	(\$34,526.64)	\$0.00	\$0.00	\$21,633.36
Contingency	51	\$6,746.00	\$27,805.00	\$0.00	\$34,551.00	\$0.00	\$0.00	\$0.00	\$34,551.00
Consultants	60	\$22,500.00	\$2,500.00	\$0.00	\$25,000.00	\$0.00	\$0.00	\$0.00	\$25,000.00
Subcontracts 6	61-63	\$600,000.00	\$0.00	\$0.00	\$600,000.00	(\$538,144.43)	(\$6,911.79)	\$0.00	\$54,943.78
Modeling/Computer Sv:	67	\$46,500.00	\$12,500.00	\$0.00	\$59,000.00	\$0.00	\$0.00	\$0.00	\$59,000.00
Computation Center	68	\$0.00	\$0.00	\$1,800.00	\$1,800.00	(\$1,800.00)	\$0.00	\$0.00	\$0.00
Tuition	71	\$17,727.00	\$0.00	\$0.00	\$17,727.00	(\$17,602.00)	\$0.00	\$0.00	\$125.00
Travel	75	\$15,000.00	\$5,000.00	\$0.00	\$20,000.00	(\$2,596.97)	\$0.00	\$0.00	\$17,403.03
Equipment	80	\$17,500.00	\$7,500.00	\$0.00	\$25,000.00	(\$7,245.00)	\$0.00	\$0.00	\$17,755.00
Indirect Costs	90	\$243,122.00	\$53,952.00	\$0.00	\$297,074.00	(\$241,750.83)	(\$1,259.73)	\$0.00	\$54,063.44
TOTALS		\$1,863,933.00	\$413,631.00	\$0.00	\$2,277,564.00	(\$1,853,423.31)	(\$9,657.91)	\$0.00	\$414,482.78

C. Interest Earned by COCP Funds as of 06/30/2011

.

Prior Interest Earned:	\$308,752.48
Interest Earned This Quarter:	\$17,840.79
Total Interest Earned to Date:	\$326,593.27

D. Balance of COCP Funds as of 06/30/2011

Total Grant Amount:	\$4,608,452.90
Total Interest Earned:	\$326,593.27
Total Expenditures:	(\$1,863,081.22)
Remaining Balance:	\$3,071,964.95

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

Accounting Certification

FINAL REPORT The Neighborhood Air Toxics Modeling Project for Houston and Corpus Christi

Financial Summary

As of June 30, 2011

Prepared for The Honorable Janis Graham Jack U.S. District Court, Southern District of Texas Corpus Christi, Texas

Prepared By David Allen (Principal Investigator) The University of Texas at Austin Center for Energy and Environmental Resources 10100 Burnet Road, Bldg 133 (R7100) Austin, TX 78758

June 2011

ANNUAL PROGRESS REPORT TO THE U.S. DISTRICT COURT FOR THE CORPUS CHRISTI NEIGHBORHOOD AIR TOXICS PROJECT

Final Financial Summary As of June 30, 2011

Total Settlement Fund Allocation & Interest Earned			\$4,608,452.90		
Original Allocation		\$9,66	5,572,78		
Stage 1 – Settlement Fund Alloc	ation	\$4,58	6,014.92		
Interest earned by the U.S. Distri	ict Court	\$ 1	6,583.74		
Additional interest earned by U.S.	S. District Court in May 2010)	\$	5,854.24		
Stage 1 Funds Total	11111ay 2010)	\$4,60	8,452.90		
Stage 1 Phase 1A - Modeling	7	\$2	2,277,564.00		
Stage 1 Phase 1B – Monitori	ng Extension	\$2	2,330,888.90		
Stage 2 Funds - Undistributed Less: Stage 2 Funds per results	pending appeal s of appeal	\$5,0 (\$5,0	57,119.88 57,119.88)		
Total Interest Earned at UT-Austin as	s of 6/30/2011		\$ 326,593.27		
Neighborhood Air Toxics Project Exp	enditures		\$1,863,081.22		
Stage 1, Phase 1A					
First Year Paid Expenditures	(3/3/2008 - 12/31/20)08) \$	489,853.15		
Second Year Paid Expenditures	(1/1/2009 - 12/31/20)09) \$	786,455.98		
Third Year Paid Expenditures	(1/1/2010 - 12/31/20)10) \$	516,101.84		
Final Year Paid Expenditures	(1/1/2011 - 6/30/201	1) \$	70,670.25		
Total Project Expenditures	(3/3/2008 - 12/31/20	010) \$1	,863,081.22		
Funds Remaining			\$3,071,964.95		
Stage 1 Funding					
Initial Deposit	\$4,602,598.6	6			
Additional Interest	\$ 5,854.24	4			
Interest Earned at UT-Austin	\$ 326,593,2	7			

Interest Earned at UT-A	Austin <u>\$</u>	326,593.27	_
Total Income			\$4,935,046.17
Less: Project Expendi	tures Stage 1 Ph	ase 1A	<u>\$1,863,081.22</u>
Funds Remaining - S	tage 1		\$3,071,964.95

CORPUS CHRISTI NEIGHBORHOOD AIR TOXICS PROJECT

Total Funding - Years 1 through 3 Project Expenditures through 6/30/2011	\$2,277,564.00 <u>\$1,863,081.22</u>	
Stage1 Phase 1A Funds Remaining	\$ 414,482.78	

Stage 1 Phase 1A – Modeling Funding Summary

Expenditure Summary for the Project Period March 3, 2008 through June 30, 2011

Description	Budget Allocation for Stage 1 Phase 1A Years 1 - 3	Prior Year paid Expenditures	Current Year paid Expenditures	Total Expenditures	Balance Available
Salaries and Wages	\$845,390.00	(\$745.502.74)	(\$3.984.00)	(\$749,486,74)	\$95.903.26
CEER Admin Salaries	\$205,037.00	(\$180,836.43)	(\$3,015.89)	(\$183,852.32)	\$21,184.68
Fringe Benefits	\$90,825.00	(\$76,373.30)	(\$1,531.47)	(\$77,904.77)	\$12,920.23
Supplies	\$56,160.00	(\$34,370.63)	(\$156.01)	(\$34,526.64)	\$21,633.36
Contingency	\$34,551.00	\$0.00	\$0.00	\$0.00	\$34,551.00
Consultants	\$25,000.00	\$0.00	\$0.00	\$0.00	\$25,000.00
Subcontract					
Environ Corp.	\$400,000.00	(\$319,985.42)	(\$40,980.38)	(\$360,965.80)	\$39,034.20
Texas A&M Univ.	\$195,763.00	(\$172,305.78)	(\$11,784.64)	(\$184,090.42)	\$11,672.58
Holding	\$4,237.00	\$0.00	\$0.00	\$0.00	\$4,237.00
Modeling/Computer					
Services	\$59,000.00	\$0.00	\$0.00	\$0.00	\$59,000.00
Computation Center	\$1800.00	(\$1800.00)	\$0.00	(\$1,800.00)	\$0.00
Tuition	\$17,727.00	(\$17,602.00)	\$0.00	(\$17,602)	\$125.00
Travel	\$20,000.00	(\$2,596.97)	\$0.00	(\$2,596.97)	\$17,403.03
Equipment	<u>\$25,000.00</u>	<u>(\$7,245.00)</u>	<u>\$0.00</u>	(\$7,245.00)	<u>\$17,755.00</u>
Total Direct Costs	\$1,980,490.00	(\$1,558,618.27)	(\$61,452.39)	(\$1,602,070.66)	\$360,419.34
Indirect Costs (15% TDC)	<u>\$297,074.00</u>	<u>(\$233,792.70)</u>	<u>(\$9,217.86)</u>	<u>(\$243,010.56)</u>	<u>\$54,063.44</u>
Total Expenditures	\$2,277,564.00	(\$1,792,410.97)	(\$70,670.25)	(\$1,863,081.22)	\$414,482.78
				Funds Remaining	\$414,482.78