Eastern Research Group, Inc.

MINOR POINT SOURCE EMISSIONS – PHASE 2

Final Report

Prepared for:

Texas Commission on Environmental Quality
Air Quality Division
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July 15, 2009

ERG Project No: 0227.02.023.001

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July 15, 2009

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1.0 INTRODUCTION

In Texas, and for purposes of this project, a minor point source (MPS) is defined as any regulated entity which emits air contaminants into the air and is not required to report annual actual emissions to the Texas Commission on Environmental Quality (TCEQ). Although minor point sources are not required to report actual annual emissions to TCEQ, they may voluntarily report emissions or may be required to report emissions based on previous violations. These MPSs are considered to be, collectively, potentially significant sources of nitrogen oxides (NO_x), sulfur dioxide (SO_2), volatile organic compounds (VOC), carbon monoxide (CO), particulate matter (PM) with an aerodynamic diameter of 10 micrometers (μm) or less (PM_{10}), and PM with an aerodynamic diameter of 2.5 μm or less ($PM_{2.5}$).

Minor point sources can include many different types of facilities (i.e., equipment and processes) including those that obtain construction and operating permits due to their location (e.g., within a nonattainment area), those that are exempt from permitting requirements, and those that are subject to permit by rule (PBR). The fact that emissions data for these types of facilities, equipment, and processes are not compiled into a single database means they may be unaccounted for in the current statewide point sources emissions inventory. Furthermore, the extent that emissions from these sources are included in the statewide industrial point and area sources emissions inventories also is not known.

1.1 Background

In 2007, work was conducted by Eastern Research Group, Inc. (ERG) under TCEQ Work Order #3, Contract No. 582-07-84033 to identify and prioritize the categories of MPSs operating in Texas, and to develop a work plan to estimate emissions from these sources in a subsequent phase. The 2007 project, termed "MPS Phase 1," resulted in collection and assessment of existing TCEQ information leading to estimation of "order-of-magnitude" emissions for all facilities identified during the project.[1] The facility emissions were grouped by Standard Industry Classification (SIC) in order to identify the potentially most significant industry sectors comprising the overall minor point source population. This analysis showed that the highest order-of-magnitude NO_x and VOC emissions (i.e., ozone precursors) come from SICs 28xx (Chemicals and Allied Products), 29xx (Petroleum Refining and Related Industries), and 32xx (Stone, Clay, Glass, and Concrete Products). These were the focus of the Phase 2 project.

In 2008, work was conducted by ERG under TCEQ Work Order #13 (MPS Phase 2) to perform a detailed analysis of these high-priority SICs, including an extensive mail-out survey to 4,000 regulated entities thought to be minor point sources. Survey data were collected, compiled into a database, and analyzed to assess their completeness. Also, recommendations were made

[1] "Small Stationary Point Source Emissions – Phase 1, Final." Prepared for the Texas Commission on Environmental Quality by Eastern Research Group, Inc. August 31. 2007.

for further analysis and emissions inventory development procedures to be performed in a subsequent task.[2]

1.2 Project Objectives and Scope

TCEQ issued Work Order #23 to ERG to complete development of the MPS Phase 2 emissions inventory for facilities in SICs 28xx, 29xx, and 32xx, for year 2005.[3] Three tasks were conducted by ERG under this Work Order #23:

- Task 1: Work Plan (waived);
- Task 2: 2005 Emission Calculations and Quality Assurance;
- Task 3: Draft Final and Final Reports;
- Task 4: MPS Inventory, Supporting Data, and National Emissions Inventory Input Format; and
- Task 5: (Monthly) Progress Reports.

The overall objectives of this project are the development of methodologies for estimating emissions, and to estimate emissions for calendar year 2005 for MPSs in Texas for SIC groups 28xx, 29xx, and 32xx. Emissions are estimated for NO_x, SO_2, VOC, CO, PM_{10}, $PM_{2.5}$. Annual and ozone season daily (OSD) emissions are estimated for emissions that are: actual, and maximum potential.

Originally, it was intended to also estimate emissions for both controlled and uncontrolled conditions, however, this was not feasible because the underlying data used to estimate emissions (i.e., survey data including Maximum Achievable Emission Rate Table [MAERT] data) were based on controlled emissions. Also, in most cases, the control efficiency of the control devices were not provided by the facilities completing the surveys. Back calculating an uncontrolled emission rate using a controlled emission rate (as reported) and an assumed control efficiency would have introduced what is believed to be a high uncertainty in the uncontrolled emission rate. Therefore, it was decided not to estimate uncontrolled emissions, and instead focus time and resources on developing the most accurate controlled emissions estimates possible.

The remainder of this report describes the method used to estimate emissions for model plants, and how the model plant emissions were used to estimate emissions for the entire population of MPS facilities operating in Texas under SICs 28xx, 29xx, and 32xx.

[2] "Minor Point Source Emissions Inventory – Task 3 Results Pertaining to Survey, Methodology, Data Analysis, and Recommendations. Final Memorandum." Prepared for the TCEQ by ERG. August 31, 2008.

[3] A Phase 3 project is also being conducted which focuses on a different set of SICs. MPS Phase 3 is being conducted under a separate work order, and therefore will be documented in a separate report.

2.0 EMISSIONS INVENTORY METHODOLOGY

The objectives of this task were to establish a method that the TCEQ Project Manager and ERG agreed would provide a reasonable basis to be used to estimate emissions.

To begin the task, ERG reviewed the findings of the previous MPS Phase 2 project, including the following data collected or developed for each MPS facility:

- Facility Data:
  - Process type
  - Facility capacity
  - Capacity factors or estimates of actual emissions
  - Process throughput
  - Hours of operation
  - Emission limits (if permitted)
  - Controls
  - SCCs (if reported)
  - Location (county)
- Profiles of activity data previously developed for each facility type.
- Any gap-filling measures employed.

Using the survey data compiled in the previous task, a method was developed as described below. This method focused first on refining the list of SICs for which data were available to estimate model plant emissions. Next, model plant emissions were estimated, and then they were applied to the population of sources in the subject SICs.

2.1 Identify Candidate SICs for Development of Model Plant Emissions

According to the U.S. Department of Labor's SIC Manual, the SIC Major Groups 28xx (Chemicals and Allied Products), 29xx (Petroleum Refining and Related Industries), and 32xx (Stone, Clay, Glass, and Concrete Products) contain a total of 60 4-digit SICs. Next, seven steps were used to identify those candidate SICs for which a model plant could be developed.

The first two steps focused on county-level information contained in *County Business Patterns* (CBP).[4] The *County Business Patterns* is an annual database series published by the U.S. Census Bureau that provides subnational economic data by industry. The series is useful for studying the economic activity of small areas; analyzing economic changes over time; and as a benchmark for statistical series, surveys, and databases between economic censuses. The economic activity data published in the most current *County Business Patterns* database are by North American Industry Classification System (NAICS), rather than by SIC codes. NAICS-based *County Business Pattern* data were mapped to SIC codes using NAICS-to-SIC crosswalks developed in conjunction with the U.S. Census Bureau's *Economic Census*.

[4] *County Business Patterns*. U.S. Census Bureau. Internet address: http://www.census.gov/econ/cbp/index.html

Step 1 – Identify SICs not contained in *County Business Patterns* for Texas

The following SICs represent industries that do not exist in Texas, which were dropped from further analysis:

- 2816 (Inorganic pigments)
- 3262 (Vitreous china food utensils)
- 3263 (Fine earthenware food utensils)
- 3292 (Asbestos products)

Step 2 – Adjust *County Business Patterns* facility counts to account for TCEQ major point sources

Because Work Order #23 focuses on minor point sources for SIC major groups 28xx, 29xx, and 32xx, it was necessary to adjust the *County Business Patterns* facility counts to account for major point sources permitted by TCEQ. A county-level major point source facility count by SIC was developed based upon an extract provided by TCEQ. The *County Business Patterns* facility counts were adjusted by subtracting the county-level major point source facility counts.

The next four steps were based upon the survey response rates from 2008.

Step 3 – Identify SICs for which no survey data were obtained

Although a total of 4,000 surveys were mailed to a wide range of minor point sources in SIC Major Groups 28xx, 29xx, and 32xx, no survey responses were obtained from facilities in 16 4-digit SICs. These 16 SICs included the following:

- 2812 (Alkalies & chlorine)
- 2822 (Synthetic rubber)
- 2824 (Organic fibers, noncellulosic)
- 2833 (Medicinals & botanicals)
- 2836 (Biological products, except diagnostic)
- 2843 (Surface active agents)
- 2844 (Toilet preparations)
- 2895 (Carbon black)
- 2999 (Petroleum & coal products, not elsewhere classified)
- 3211 (Flat glass)
- 3221 (Glass containers)
- 3229 (Pressed & blown glass, not elsewhere classified)
- 3255 (Clay refractories)
- 3274 (Lime)
- 3291 (Abrasive products)
- 3296 (Mineral wool)

Therefore, because there were no survey data on which to base model plant emissions, these SICs were removed from further consideration.

Step 4 – Identify SICs for which survey data were collected, but no MAERT data were provided

In the WO#13 technical memorandum (August 31, 2008), the basis for development of model plants emissions was established as actual (i.e., survey) data. As the memo states: "If SCC commonalities cannot be identified for a particular SIC or group of similar SICs, then a model plant will not be developed. If maximum emission rates are not available for a particular SCC commonality, than that SCC commonality will be omitted from the model plant." Therefore, Maximum Allowable Emission Rate Tables (MAERTs) are the basis for estimating model plant emissions.

Returned surveys that did not include any MAERT data (i.e., a total of 10 SICs) included the following:

- 2813 (Industrial gases)
- 2823 (Cellulosic manmade fibers)
- 2834 (Pharmaceutical preparations)
- 2835 (Diagnostic substances)
- 2874 (Phosphatic fertilizers)
- 2911 (Petroleum refining)
- 3241 (Cement, hydraulic)
- 3261 (Vitreous plumbing fixtures)
- 3264 (Porcelain electrical supplies)
- 3297 (Nonclay refractories)

Therefore, these SICs were excluded from the list of candidate SICs for model plant development.

Step 5 – Identify SICs for which only a single survey or a single MAERT was collected

An additional 10 SICs for which only a single survey or a single MAERT was returned were excluded from the list of candidate SICs for model plant development. This exclusion was based on the inability to determine whether a single survey/MAERT is representative of all facilities under a particular SIC. Ideally, model plant emissions should be based upon multiple surveys and MAERTs. These 10 SICs include the following:

- 2861 (Gum & wood chemicals)
- 2879 (Agricultural chemicals, not elsewhere classified)
- 2892 (Explosives)
- 2893 (Printing ink)
- 2952 (Asphalt felts & coatings)
- 3253 (Ceramic wall & floor tile)

- 3259 (Structural clay products, not elsewhere classified)
- 3269 (Pottery products, not elsewhere classified)
- 3275 (Gypsum products)
- 3281 (Cut stone & stone products)

Step 6 – Identify SICs which are overly broad categories that cannot be accurately characterized

Within the SIC classification system, there are a number of 4-digit SIC codes that are broad catch-all categories that typically are assigned facilities that do not easily fit into other SIC codes (i.e., "not elsewhere classified"). An additional 3 SICs were excluded from the list of candidate SICs for model plant development. These SICs were the following:

- 2869 (Industrial organic chemicals, not elsewhere classified)
- 2899 (Chemical preparations, not elsewhere classified)
- 3299 (Nonmetallic mineral products, not elsewhere classified)

Upon completion of Step 6, a total of 17 SICs remained in the analysis, which are shown in Table 2-1. This list of 17 SICs represent those SICs for which development of a model plant is potentially feasible.

Step 7 – Determine process commonalities for each SIC

For each of the remaining 17 SICs contained in Table 2-1, the survey database was examined to identify "process commonalities" (i.e., similar processes that appear multiple times). Process commonalities would be used to characterize the appropriate processes in the SIC-specific model plants for which MAERT data exist. Analysis of the survey database for process commonalities resulted in the three different groups of SICs.

Group 1 – Dissimilar Sources. Group 1 included the following group of 7 SICs:

- 2819 (Industrial inorganic chemicals)
- 2821 (Plastics materials & resins)
- 2841 (Soap & other detergents)
- 2842 (Polishes & sanitation goods)
- 2851 (Paints & allied products)
- 2865 (Cyclic crudes & intermediates)
- 2875 (Fertilizers, mixing only)

Each of the SICs shown in Table 2-1 include a wide range of process descriptions; however, the process descriptions varied considerably from facility to facility (i.e., there were few or no process commonalities). In general, these SICs include the manufacture of a large number of different products, which likely have many different manufacturing process. For instance, SIC 2851 (Paints & Allied Products) include: "manufacturing paints (in paste and ready-mixed form); varnishes; lacquers; enamels and shellac; putties, wood fillers, and sealers;

Table 2-1. Candidate Model Plant SICs Based on Available Survey Data

SIC	SIC Description	Total Facilities[a]	Number of Facilities Returning Surveys
2819	Industrial inorganic chemicals	62	15
2821	Plastics materials & resins	52	7
2841	Soap & other detergents	61	5
2842	Polishes & sanitation goods	41	5
2851	Paints & allied products	88	15
2865	Cyclic crudes & intermediates	10	3
2873	Nitrogenous fertilizers	13	5
2875	Fertilizers, mixing only	45	9
2891	Adhesives & sealants	42	7
2951	Asphalt paving mixtures & blocks	66	82[b]
2992	Lubricating oils & greases	41	4
3231	Products of purchased glass	82	2
3251	Brick & structural clay tile	4	2
3271	Concrete brick & rock	39	14
3272	Concrete products, not elsewhere classified	198	44
3273	Ready-mixed concrete	459	249
3295	Minerals, ground or treated	18	11

[a] Total facilities are equal to state-level facility counts from *County Business Patterns* minus state-level facility counts obtained from TCEQ's major point source database.

[b] A potential explanation for why the number of facilities returning surveys exceeds the adjusted total number of facilities for SIC 2951 (Asphalt Paving Mixtures & Blocks) is that the survey may have included portable plants, while these portables were not included in *County Business Patterns*.

paint and varnish removers; paint brush cleaners; and allied paint products." These products may be in liquid, paste, or solid form. Liquid paints may be solvent-based or liquid-based.

Due to wide range of process descriptions, the development of a model plant was not feasible (i.e., no technical basis for which the results would be accurate or defensible).

Group 2 – Insufficient MAERT data. Group 2 included the following group of 4 SICs:

- 2873 (Nitrogenous fertilizers)
- 2891 (Adhesives & sealants)
- 2992 (Lubricating oils & greases)
- 3251 (Brick & structural clay tile)

Each of these four SICs included a number of process commonalities; however, closer examination of the MAERT data revealed that there were insufficient data for development of model plant emissions (i.e., MAERT data were not available for those process identified as process commonalities).

Group 3 – Model Plant Candidates. Group 3 included the following group of 6 SICs:

- 2951 (Asphalt paving mixtures & blocks)
- 3231 (Products of purchased glass)
- 3271 (Concrete brick & rock)

- 3272 (Concrete products, not elsewhere classified)
- 3273 (Ready-mixed concrete)
- 3295 (Minerals, ground or treated)

The process commonalities for these SICs are shown in Table 2-2, for each SIC. Details (e.g., specific SCC, number of processes, etc.) for each of these process commonalities were not examined closely at this point.

Further examination of the survey data indicated that data collected for SIC 3231 (Products of Purchase Glass) were limited to only two facilities. Therefore, representative emissions could not be determined for this SIC and it was dropped from further consideration.

The model plants for the remaining five SICs for which model plants could be developed are shown in Table 2-3. The model plant components represent the processes that were identified for many (but not necessarily all) of the facilities in the survey. These model plants correspond closely with the plant profiles included in the U.S. EPA's *Compilation of Air Pollutant Emission Factors, AP-42*.[5] Parenthetical numbers in the table above indicate multiple units. These model plants do not include fuel combustion, storage pile, and unpaved road dust, because the focus on the project was on process emissions. Because fuel combustion is not included the model plants, most emissions are limited to particulate matter (i.e., PM10) for the five SICs identified above. The only exception to this is NO_x and CO process emissions from rotary drum dryers in the SIC 2951 hot mix asphalt plants.

The specific method used for development of model plant emissions for these SICs is described next.

2.2 Estimate Model Plant and Statewide Emissions

For each model plant component (see Table 2-3), an hourly emission rate was obtained (NO_x, CO, and PM_{10} for SIC 2951; PM_{10} only for SIC 3271, 3272, 3273, and 3295). In general, these hourly emission rates were estimated from average MAERT emission rates. In a few instances, the highest frequency MAERT emission rates were used instead. Also, AP-42 emission rates were used for a small number of processes that typically are located at industrial facilities, but for some reason were not identified in the survey.

Average annual hours, maximum capacity (in tons per year [tpy]), and actual capacity were estimated for each of the five SICs. These data were used to calculate annual actual and maximum emissions at the facility level. Average summer temporal allocation factors were also calculated which were then used to estimate ozone season daily emissions.

[5] *Compilation of Air Pollutant Emission Factors, AP-42.* U.S. Environmental Protection Agency. Internet address: http://www.epa.gov/ttnchie1/ap42/

Table 2-2. Candidate Model Plant SICs: Based on Process Commonalities

SIC and Description	Process Commonalities
2951 (Asphalt paving mixtures & blocks)	• Dryer • Scrubber • Asphalt tank • Fuel oil tank • Diesel tank • Antistrip tank • Hot oil heater • Lime silo • Truck loading • Materials handling • Stockpile
3231 (Products of purchased glass)	• Furnace • Cullet handling • Cullet drying • Glass crushing • Wet cullet hopper • Cullet storage pile
3271 (Concrete brick & rock)	• Boiler • Silo baghouse • Mixer • Materials handling • Stockpile
3272 (Concrete products, not elsewhere classified)	• Silo baghouse • Materials handling • Stockpile
3273 (Ready-mixed concrete)	• Central baghouse • Fly ash silo baghouse • Weigh hopper baghouse • Cement silo baghouse • Truck loading • Drop points • Road dust • Materials handling • Stockpile
3295 (Minerals, ground or treated)	• Crusher • Roller mill • Silo baghouse • Materials handling • Stockpile

Table 2-3. SICs for Which Model Plants Are Developed

SIC and Description	Model Plant Component
2951 (Asphalt paving mixtures & blocks)	• Silo Filling • Truck Loading • Lime Silo • Materials Handling • Tank (Asphalt Cement) • Tank (Diesel) • Tank (Fuel Oil) • Tank (Anti-Strip) • Crushing/Screening (Reclaimed Asphalt Pavement) • Screening (Aggregate)
3271 (Concrete brick & rock)	• Silos (with baghouses) (4) • Weigh Hoppers (with baghouses) (2) • Mixers (with baghouses) (2) • Materials Handling
3272 (Concrete products, not elsewhere classified)	• Silos (with baghouses) (2) • Weigh Hopper • Mixer • Materials Handling
3273 (Ready-mixed concrete)	• Cement Silo (with baghouse) • Fly Ash Silo (with baghouse) • Central Baghouse • Weigh Hopper • Truck Mix Loading • Materials Handling
3295 (Minerals, ground or treated)	• Crusher (Primary, Secondary, and Tertiary) • Mill (Fines) • Sizing Screens (2) • Silos (3) • Bagging Station • Truck Loadout

Next, the "best fit" facility-level Source Classification Codes (SCCs) were assigned to each model plant SIC. Point source SCCs, which consist of 8 digits, are quite detailed for describing individual industrial processes; however, 10-digit area source SCCs are more general and do not easily match up with specific SICs. Based upon examination of the area source SCC descriptions from TexAER, the following three area source SCCs were thought to most accurately represent the five model plant SICs:

- SCC 2306010000 (Industrial Processes – Petroleum Refining: SIC 29 – Asphalt Paving/Roofing Materials) for SIC 2951.

- SCC 2305070000 (Industrial Processes – Mineral Processes: SIC 32 – Concrete, Gypsum, Plaster Products) for SIC 3271, 3272, and 3273.

- SCC 2325020000 (Industrial Processes – Mining and Quarrying: SIC 14 – Crushed and Broken Stone) for SIC 3295.

Although SCC 2305070000 was used to represent three SICs (i.e., 3271, 3272, and 3273), this assignment was felt to be appropriate because of similar processes for these three SICs (e.g., silos, weigh hoppers, mixers, materials handling, etc.).

Finally, the facility-level annual actual, annual maximum, and OSD emissions were then multiplied by the number of facilities operating in each county in 2005, adjusted for major point sources, according to the *County Business Patterns*.

3.0 EMISSIONS INVENTORY RESULTS

Tables 3-1 through 3-5 show the model plant emissions data for the five SICs for which accurate and defensible emissions estimates could be developed. Each of the five SIC-specific tables list the applicable model plant components, along with their associated emission rates. In general, the emission rates were derived by calculating the average of the hourly MAERT emission rates reported in the survey. However, in a few cases, a particular MAERT emission rate value was reported much frequently than other values. In this situation, this frequently reported value was used as the model plant component emission rate. In addition, hourly MAERT emission rates were not provided for weigh hoppers and mixers under SIC 3272 (Concrete Products, except Block and Brick), even though these processes are expected to be present at typical plants. Because hourly MAERT emission rates were not available, corresponding emission rates were obtained from *AP-42*.

Because the project focus was on process emissions that are not reported elsewhere in the Texas emissions inventories, emissions were not reported for fugitive dust or fuel combustion sources. These sources are listed in Tables 3-1 through 3-5 for completeness, but emission rates are not provided.

Table 3-6 shows the results of the overall MPS Phase 2 inventory for SICs 2951, 3271, 3272, 3273, and 3295, with their corresponding area source SCC. Appendix A contains tables A-1 through A-5 with the 2005 Texas statewide emissions for the five SCCs, by county. Only the counties with documented businesses are shown (i.e., a county with no operating facilities for a given SIC are not shown).

As shown in Table 3-6, actual emissions for the minor point sources estimated under Work Order #23 are 343.7 tpy VOC, 53.9 tpy CO, and 991.0 tpy PM_{10}. These emissions are comparatively minor relative to the overall Texas area source emissions inventory. As a basis of comparison, the total Texas area source emissions contained in the 2002 National Emissions Inventory are 700,664 tpy VOC, 491,193 tpy CO, and 2,309,206 tpy PM_{10}.

Table 3-1. Model Plant Emissions: SIC 2951 (Asphalt Paving Mixtures and Blocks)

Model Plant Component	VOC (lbs/hr)	CO (lbs/hr)	PM_{10} (lbs/hr)	Basis for Estimate
Silo Filling	4.22	0.42	0.18	MAERT Averages
Truck Loading	1.43	0.50	0.17	MAERT Averages
Lime Silo			0.04	MAERT Averages
Materials Handling			0.57	MAERT Averages
Tank (Asphalt Cement/AC)	0.07			MAERT Averages
Tank (Diesel)	0.03			MAERT Averages
Tank (Fuel Oil)	0.06			MAERT Averages
Tank (Anti-Strip)	0.01			MAERT Averages
Crushing/Screening (Reclaimed Asphalt Pavement/RAP)			0.14	MAERT Averages
Screening (Aggregate)			0.62	MAERT Averages
Rotary Drum Dryer				Excluded - fuel combustion
Asphalt Heater				Excluded - fuel combustion
Hot Oil Heater				Excluded - fuel combustion
Generators				Excluded - fuel combustion
Stockpiles				Excluded - fugitive dust source
Roads				Excluded - fugitive dust source
Total	5.83	0.91	1.72	

Total Model Plant Emissions	VOC (lbs/hr)	CO (lbs/hr)	PM_{10} (lbs/hr)
Maximum Emissions/facility (lbs/year)	26,168.16	4,105.92	7,731.11
Maximum Emissions/facility (tpy)	13.08	2.05	3.87
Actual Emissions/facility (lbs/year)	10,415.49	1,634.24	3,077.15
Actual Emissions/facility (tpy)	5.21	0.82	1.54
Ozone Season Day (lbs/day)	31.66	4.97	9.35

Operational Characteristics	
Average hours/yr	4,491.25
Average maximum capacity (tpy)	526,353.33
Average capacity (%)	39.80

Table 3-2. Model Plant Emissions: SIC 3271 (Concrete Block and Brick)

Model Plant Component	VOC (lbs/hr)	CO (lbs/hr)	PM_{10} (lbs/hr)	Basis for Estimate
Silo #1 (with baghouse)			0.06	MAERT Averages
Silo #2 (with baghouse)			0.06	MAERT Averages
Silo #3 (with baghouse)			0.06	MAERT Averages
Silo #4 (with baghouse)			0.06	MAERT Averages
Weigh Hopper #1 (with baghouse)			0.01	MAERT Most Frequent
Weigh Hopper #2 (with baghouse)			0.01	MAERT Most Frequent
Mixer #1 (with baghouse)			0.03	MAERT Averages
Mixer #2 (with baghouse)			0.03	MAERT Averages
Materials Handling			0.20	MAERT Averages
Boilers				Excluded - fuel combustion
Cure Ovens				Excluded - fuel combustion
Stockpiles				Excluded - fugitive dust source
Roads				Excluded - fugitive dust source
Total			0.52	

Total Model Plant Emissions	VOC (lbs/hr)	CO (lbs/hr)	PM_{10} (lbs/hr)
Maximum Emissions/facility (lbs/year)			2,420.86
Maximum Emissions/facility (tpy)			1.21
Actual Emissions/facility (lbs/year)			1,093.79
Actual Emissions/facility (tpy)			0.55
Ozone Season Day (lbs/day)			2.93

Operational Characteristics	
Average hours/yr	4,671.33
Average maximum capacity (yd^3/yr)	264,274.13
Average capacity (%)	45.18

Table 3-3. Model Plant Emissions:

SIC 3272 (Concrete Products, except Block and Brick)

Model Plant Component	VOC (lbs/hr)	CO (lbs/hr)	PM_{10} (lbs/hr)	Basis for Estimate
Silo #1 (with baghouse)			0.09	MAERT Averages
Silo #2 (with baghouse)			0.09	MAERT Averages
Weigh Hopper (uncontrolled)			0.00[a]	AP-42 (Table 11.12-2, 2 tons/yd^3)
Mixer (controlled)			0.03[a]	AP-42 (Table 11.12-2, 2 tons/yd^3)
Materials Handling			0.13	MAERT Averages
Stockpiles				Excluded - fugitive dust source
Roads				Excluded - fugitive dust source
Total				

Total Model Plant Emissions	VOC (lbs/hr)	CO (lbs/hr)	PM_{10} (lbs/hr)
Maximum Emissions/facility (lbs/year)			9,568.88
Maximum Emissions/facility (tpy)			4.78
Actual Emissions/facility (lbs/year)			4,387.70
Actual Emissions/facility (tpy)			2.19
Ozone Season Day (lbs/day)			12.17

Operational Characteristics	
Average hours/yr	3,294.23
Average maximum capacity (yd^3/yr)	217,198.16
Average capacity (%)	45.85

[a] Units are in lbs/yd^3

Table 3-4. Model Plant Emissions: SIC 3273 (Ready-Mixed Concrete)

Model Plant Component	VOC (lbs/hr)	CO (lbs/hr)	PM_{10} (lbs/hr)	Basis for Estimate
Cement Silo (with baghouse)			0.05	MAERT Averages
Fly Ash Silo (with baghouse)			0.06	MAERT Averages
Central Baghouse			0.33	MAERT Averages
Weigh Hopper			0.08	MAERT Averages
Truck Mix Loading			0.34	MAERT Most Frequent
Materials Handling			0.43	MAERT Most Frequent
Stockpiles				Excluded - fugitive dust source
Roads				Excluded - fugitive dust source
Total			1.28	

Total Model Plant Emissions	VOC (lbs/hr)	CO (lbs/hr)	PM_{10} (lbs/hr)
Maximum Emissions/facility (lbs/year)			5,077.42
Maximum Emissions/facility (tpy)			2.54
Actual Emissions/facility (lbs/year)			1,811.27
Actual Emissions/facility (tpy)			0.91
Ozone Season Day (lbs/day)			5.12

Operational Characteristics	
Average hours/yr	3,963.93
Average maximum capacity (yd^3/yr)	624,349.19
Average capacity (%)	35.67

Table 3-5. Model Plant Emissions:

SIC 3295 (Minerals and Earths, Ground or Otherwise Treated)

Model Plant Component	VOC (lbs/hr)	CO (lbs/hr)	PM_{10} (lbs/hr)	Basis for Estimate
Crusher (Primary)			0.00	MAERT Averages
Crusher (Secondary)			0.00	MAERT Averages
Crusher (Tertiary)			0.00	MAERT Averages
Mill (Fines)			0.35	MAERT Averages
Scalping Screen			0.03	MAERT Averages
Sizing Screen #1			0.03	MAERT Averages
Sizing Screen #2			0.03	MAERT Averages
Silo #1			0.13	MAERT Averages
Silo #2			0.13	MAERT Averages
Silo #3			0.13	MAERT Averages
Bagging Station			0.15	MAERT Averages
Truck Loadout			0.15	MAERT Averages
Stockpiles				Excluded - fugitive dust source
Roads				Excluded - fugitive dust source
Total			1.15	

Total Model Plant Emissions	VOC (lbs/hr)	CO (lbs/hr)	PM_{10} (lbs/hr)
Maximum Emissions/facility (lbs/year)			4,428.92
Maximum Emissions/facility (tpy)			2.21
Actual Emissions/facility (lbs/year)			2,004.69
Actual Emissions/facility (tpy)			1.00
Ozone Season Day (lbs/day)			5.61

Operational Characteristics	
Average hours/yr	3,856.67
Average maximum capacity (tpy)	141,683.33
Average capacity (%)	45.26

Table 3-6. 2005 Texas Statewide Emissions for Minor Point Sources Estimated Under WO#23

Point Source SIC Area Source SCC	No. of Facilities	VOC			CO			PM_{10}		
		Maximum (tpy)	Actual (tpy)	OSD (lbs/day)	Maximum (tpy)	Actual (tpy)	OSD (lbs/day)	Maximum (tpy)	Actual (tpy)	OSD (lbs/day)
2951 (Asphalt Paving Mixtures and Blocks) 2306010000 (Industrial Processes – Petroleum Refining: SIC 29 – Asphalt Paving/Roofing Materials)	66	863.55	343.71	2,089.6	135.50	53.93	327.9	255.13	101.55	617.3
3271 (Concrete Block & Brick) 2305070000 (Industrial Processes – Mineral Processes: SIC 32 – Concrete, Gypsum, Plaster Products)	39							47.21	21.33	114.4
3272 (Concrete Products, except Block & Brick) 2305070000 (Industrial Processes – Mineral Processes: SIC 32 – Concrete, Gypsum, Plaster Products)	198							947.32	434.38	2,409.6
3273 (Ready-Mixed Concrete) 2305070000 (Industrial Processes – Mineral Processes: SIC 32 – Concrete, Gypsum, Plaster Products)	459							1,165.27	415.69	2,348.2
3295 (Minerals and Earths, Ground or Otherwise Treated) 2325020000 (Industrial Processes – Mining and Quarrying: SIC 14 – Crushed and Broken Stone)	18							39.86	18.04	101.1
Total Inventory	**780**	**863.55**	**343.71**	**2,089.6**	**135.50**	**53.93**	**327.9**	**2,454.78**	**990.99**	**5,590.7**

The emissions estimated under this WO#23 will be included in Texas' 2005 area source emissions inventory. These are unreported emissions which have not been included previously, and represent an improvement to the inventory.

3.1 Quality Assurance

During the development of the model plant emissions, several quality assurance steps were conducted. As part of the determination of the number of county-level facilities for each SIC, facility counts from *County Business Patterns*, as well as major point source information, were checked for accuracy. In addition, at several points during the determination of candidate SICs, intermediate results were checked to ensure that methodology was being implemented correctly. As process commonalities were analyzed, survey data were checked to confirm accuracy. The model plant emission spreadsheets were also checked for potential calculation errors.

3.2 Area Source Emissions Inventory Reconciliation

After assigning the "best fit" 10-digit area source SCCs (i.e., 2306010000, 2305070000, and 2325020000) to the five SICs for which model plants were being developed, these area source SCCs were then compared against the 2002 Texas area source inventory. For purposes of this comparison, the 2002 Texas area source emissions contained in the 2002 NEI were used. Examination of the 2002 NEI revealed that two of the "best fit" 10-digit area source SCCs (i.e., 2306010000 and 2305070000) were being used. However, 2002 NEI emissions were limited to hazardous air pollutant (HAP) species (i.e., 16 for SCC 2306010000 and 6 for SCC 2305070000) and did not include VOC, CO, or PM_{10} emissions. Therefore, the process emissions developed under this Work Order #23 are not reported elsewhere in the Texas emission inventories, and no reconciliation is needed.

3.3 Data Formatting

The final 2005 statewide emissions for the three SICs (i.e., 2306010000, 2305070000, and 2325020000) at the county level were compiled by ERG and provided to TCEQ in two formats, as described below:

- Text files using National Emissions Inventory Format (NIF) 3.0 format suitable for entry into TexAER: one file contains 2005 actual tpy emissions, and 2005 OSD lbs/day emissions; a second file contains 2005 maximum annual tpy emissions.
- Data file as required for submittal to the U.S. EPA 2008 Emissions Inventory System (EIS).

These files have been provided to the TCEQ Project Manager.

APPENDIX A:

2005 TEXAS STATEWIDE EMISSIONS FOR SELECTED SCCS, BY COUNTY

Table A-1. 2005 Texas Statewide Emissions, by County:
SCC 2306010000 (Industrial Processes – Petroleum Refining)
(SIC 29 – Asphalt Paving/Roofing Materials)

County	No. of Facilities	VOC			CO			PM_{10}		
		Maximum (tpy)	Actual (tpy)	OSD (lbs/day)	Maximum (tpy)	Actual (tpy)	OSD (lbs/day)	Maximum (tpy)	Actual (tpy)	OSD (lbs/day)
Atascosa	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Bexar	8	104.67	41.66	253.3	16.42	6.54	39.7	30.92	12.31	74.8
Bowie	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Brazoria	2	26.17	10.42	63.3	4.11	1.63	9.9	7.73	3.08	18.7
Brown	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Callahan	2	26.17	10.42	63.3	4.11	1.63	9.9	7.73	3.08	18.7
Cameron	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Cooke	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Dallas	2	26.17	10.42	63.3	4.11	1.63	9.9	7.73	3.08	18.7
Eastland	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
El Paso	3	39.25	15.62	95.0	6.16	2.45	14.9	11.60	4.62	28.1
Fort Bend	2	26.17	10.42	63.3	4.11	1.63	9.9	7.73	3.08	18.7
Galveston	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Gregg	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Harris	10	130.84	52.08	316.6	20.53	8.17	49.7	38.66	15.39	93.5
Hays	2	26.17	10.42	63.3	4.11	1.63	9.9	7.73	3.08	18.7
Henderson	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Hidalgo	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Jeff Davis	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Jefferson	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Lubbock	4	52.34	20.83	126.6	8.21	3.27	19.9	15.46	6.15	37.4
McLennan	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Nueces	3	39.25	15.62	95.0	6.16	2.45	14.9	11.60	4.62	28.1
Potter	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Reeves	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Rusk	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Smith	2	26.17	10.42	63.3	4.11	1.63	9.9	7.73	3.08	18.7
Tarrant	3	39.25	15.62	95.0	6.16	2.45	14.9	11.60	4.62	28.1
Titus	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Tom Green	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Travis	2	26.17	10.42	63.3	4.11	1.63	9.9	7.73	3.08	18.7
Uvalde	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Wharton	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Williamson	1	13.08	5.21	31.7	2.05	0.82	5.0	3.87	1.54	9.4
Total	**66**	**863.6**	**343.7**	**2,089.6**	**135.50**	**53.93**	**327.9**	**255.13**	**101.55**	**617.3**

Table A-2. 2005 Texas Statewide Emissions, by County:
SCC 2305070000 (Industrial Processes – Mineral Processes)
(SIC 32 – Concrete, Gypsum, Plaster Products)

County	No. of Facilities	PM_{10}		
		Maximum (tpy)	Actual (tpy)	OSD (lbs/day)
Anderson	1	1.21	0.55	2.9
Bastrop	1	1.21	0.55	2.9
Bexar	3	3.63	1.64	8.8
Cameron	2	2.42	1.09	5.9
Colorado	3	3.63	1.64	8.8
Dallas	4	4.84	2.19	11.7
Denton	1	1.21	0.55	2.9
El Paso	3	3.63	1.64	8.8
Fort Bend	1	1.21	0.55	2.9
Guadalupe	1	1.21	0.55	2.9
Harris	4	4.84	2.19	11.7
Hays	1	1.21	0.55	2.9
Hidalgo	1	1.21	0.55	2.9
Hill	1	1.21	0.55	2.9
Jefferson	1	1.21	0.55	2.9
Lubbock	1	1.21	0.55	2.9
McLennan	1	1.21	0.55	2.9
Palo Pinto	3	3.63	1.64	8.8
Parker	1	1.21	0.55	2.9
Smith	1	1.21	0.55	2.9
Tarrant	1	1.21	0.55	2.9
Taylor	1	1.21	0.55	2.9
Travis	1	1.21	0.55	2.9
Williamson	1	1.21	0.55	2.9
Total	**39**	**47.21**	**21.33**	**114.4**

Table A-3. 2005 Texas Statewide Emissions, by County:
SCC 2305070000 (Industrial Processes – Mineral Processes)
(SIC 32 – Concrete, Gypsum, Plaster Products)

County	No. of Facilities	PM_{10}		
		Maximum (tpy)	Actual (tpy)	OSD (lbs/day)
Angelina	1	4.78	2.19	12.2
Austin	4	19.14	8.78	48.7
Bastrop	2	9.57	4.39	24.3
Bee	1	4.78	2.19	12.2
Bell	1	4.78	2.19	12.2
Bexar	12	57.41	26.33	146.0
Bowie	4	19.14	8.78	48.7
Brazoria	3	14.35	6.58	36.5
Brazos	2	9.57	4.39	24.3
Burleson	1	4.78	2.19	12.2
Caldwell	1	4.78	2.19	12.2
Cameron	4	19.14	8.78	48.7
Collin	4	19.14	8.78	48.7
Colorado	1	4.78	2.19	12.2
Comal	2	9.57	4.39	24.3
Dallas	13	62.20	28.52	158.2
Denton	6	28.71	13.16	73.0
De Witt	2	9.57	4.39	24.3
Ector	1	4.78	2.19	12.2
Ellis	4	19.14	8.78	48.7
El Paso	2	9.57	4.39	24.3
Fort Bend	4	19.14	8.78	48.7
Galveston	1	4.78	2.19	12.2
Goliad	1	4.78	2.19	12.2
Gregg	2	9.57	4.39	24.3
Guadalupe	2	9.57	4.39	24.3
Harris	22	105.26	48.26	267.7
Hays	4	19.14	8.78	48.7
Hidalgo	5	23.92	10.97	60.8
Hill	3	14.35	6.58	36.5
Hunt	4	19.14	8.78	48.7
Jasper	1	4.78	2.19	12.2
Jefferson	3	14.35	6.58	36.5
Johnson	8	38.28	17.55	97.4
Kaufman	2	9.57	4.39	24.3
Kendall	2	9.57	4.39	24.3
Lamar	3	14.35	6.58	36.5
Lavaca	1	4.78	2.19	12.2
Lee	1	4.78	2.19	12.2
Llano	1	4.78	2.19	12.2
Lubbock	3	14.35	6.58	36.5

Table A-3. Continued

County	No. of Facilities	PM_{10}		
		Maximum (tpy)	Actual (tpy)	OSD (lbs/day)
McLennan	3	14.35	6.58	36.5
Matagorda	1	4.78	2.19	12.2
Medina	1	4.78	2.19	12.2
Midland	2	9.57	4.39	24.3
Montague	1	4.78	2.19	12.2
Montgomery	1	4.78	2.19	12.2
Nueces	2	9.57	4.39	24.3
Parker	2	9.57	4.39	24.3
Potter	3	14.35	6.58	36.5
Rains	1	4.78	2.19	12.2
Rockwall	1	4.78	2.19	12.2
San Patricio	1	4.78	2.19	12.2
Smith	1	4.78	2.19	12.2
Tarrant	16	76.55	35.10	194.7
Titus	1	4.78	2.19	12.2
Tom Green	1	4.78	2.19	12.2
Travis	4	19.14	8.78	48.7
Trinity	1	4.78	2.19	12.2
Upshur	1	4.78	2.19	12.2
Van Zandt	1	4.78	2.19	12.2
Victoria	2	9.57	4.39	24.3
Walker	1	4.78	2.19	12.2
Waller	2	9.57	4.39	24.3
Williamson	2	9.57	4.39	24.3
Wilson	1	4.78	2.19	12.2
Wood	1	4.78	2.19	12.2
Total	**198**	**947.32**	**434.38**	**2,409.6**

Table A-4 . 2005 Texas Statewide Emissions, By County:
SCC 2305070000 (Industrial Processes – Mineral Processes)
(SIC 32 – Concrete, Gypsum, Plaster Products)

County	No. of Facilities	PM_{10}		
		Maximum (tpy)	Actual (tpy)	OSD (lbs/day)
Anderson	1	2.54	0.91	5.1
Andrews	1	2.54	0.91	5.1
Angelina	3	7.62	2.72	15.3
Aransas	1	2.54	0.91	5.1
Atascosa	1	2.54	0.91	5.1
Austin	3	7.62	2.72	15.3
Bandera	2	5.08	1.81	10.2
Bastrop	2	5.08	1.81	10.2
Bee	1	2.54	0.91	5.1
Bell	6	15.23	5.43	30.7
Bexar	19	48.24	17.21	97.2
Blanco	1	2.54	0.91	5.1
Bosque	1	2.54	0.91	5.1
Bowie	1	2.54	0.91	5.1
Brazoria	6	15.23	5.43	30.7
Brazos	2	5.08	1.81	10.2
Brewster	1	2.54	0.91	5.1
Brooks	1	2.54	0.91	5.1
Brown	1	2.54	0.91	5.1
Burnet	2	5.08	1.81	10.2
Caldwell	2	5.08	1.81	10.2
Calhoun	1	2.54	0.91	5.1
Cameron	7	17.77	6.34	35.8
Castro	1	2.54	0.91	5.1
Cherokee	1	2.54	0.91	5.1
Coleman	1	2.54	0.91	5.1
Collin	13	33.00	11.77	66.5
Colorado	2	5.08	1.81	10.2
Comal	3	7.62	2.72	15.3
Comanche	1	2.54	0.91	5.1
Cooke	1	2.54	0.91	5.1
Culberson	1	2.54	0.91	5.1
Dallas	22	55.85	19.92	112.6
Dawson	1	2.54	0.91	5.1
Deaf Smith	1	2.54	0.91	5.1
Denton	13	33.00	11.77	66.5
De Witt	1	2.54	0.91	5.1
Dimmit	1	2.54	0.91	5.1
Duval	1	2.54	0.91	5.1
Ector	3	7.62	2.72	15.3
Ellis	2	5.08	1.81	10.2
El Paso	12	30.46	10.87	61.4

Table A-4. Continued

County	No. of Facilities	PM_{10}		
		Maximum (tpy)	Actual (tpy)	OSD (lbs/day)
Erath	3	7.62	2.72	15.3
Fannin	1	2.54	0.91	5.1
Fayette	3	7.62	2.72	15.3
Floyd	1	2.54	0.91	5.1
Fort Bend	9	22.85	8.15	46.0
Freestone	1	2.54	0.91	5.1
Frio	1	2.54	0.91	5.1
Galveston	5	12.69	4.53	25.6
Gillespie	1	2.54	0.91	5.1
Goliad	1	2.54	0.91	5.1
Gonzales	1	2.54	0.91	5.1
Gray	2	5.08	1.81	10.2
Grayson	2	5.08	1.81	10.2
Gregg	3	7.62	2.72	15.3
Grimes	1	2.54	0.91	5.1
Guadalupe	2	5.08	1.81	10.2
Hale	1	2.54	0.91	5.1
Hamilton	1	2.54	0.91	5.1
Hardin	1	2.54	0.91	5.1
Harris	46	116.78	41.66	235.3
Harrison	3	7.62	2.72	15.3
Haskell	1	2.54	0.91	5.1
Hays	3	7.62	2.72	15.3
Hemphill	1	2.54	0.91	5.1
Henderson	5	12.69	4.53	25.6
Hidalgo	14	35.54	12.68	71.6
Hill	2	5.08	1.81	10.2
Hood	3	7.62	2.72	15.3
Hopkins	2	5.08	1.81	10.2
Houston	1	2.54	0.91	5.1
Jackson	1	2.54	0.91	5.1
Jasper	2	5.08	1.81	10.2
Jefferson	6	15.23	5.43	30.7
Jim Hogg	1	2.54	0.91	5.1
Jim Wells	1	2.54	0.91	5.1
Johnson	5	12.69	4.53	25.6
Karnes	1	2.54	0.91	5.1
Kaufman	4	10.15	3.62	20.5
Kendall	1	2.54	0.91	5.1
Kerr	2	5.08	1.81	10.2
Kleberg	2	5.08	1.81	10.2
Lamar	1	2.54	0.91	5.1
Lampasas	1	2.54	0.91	5.1
Lavaca	2	5.08	1.81	10.2
Lee	1	2.54	0.91	5.1
Leon	1	2.54	0.91	5.1

Table A-4. Continued

County	No. of Facilities	PM_{10}		
		Maximum (tpy)	Actual (tpy)	OSD (lbs/day)
Liberty	4	10.15	3.62	20.5
Limestone	1	2.54	0.91	5.1
Live Oak	1	2.54	0.91	5.1
Llano	1	2.54	0.91	5.1
Lubbock	3	7.62	2.72	15.3
McCulloch	1	2.54	0.91	5.1
McLennan	3	7.62	2.72	15.3
Matagorda	2	5.08	1.81	10.2
Maverick	2	5.08	1.81	10.2
Medina	1	2.54	0.91	5.1
Midland	4	10.15	3.62	20.5
Milam	2	5.08	1.81	10.2
Mills	1	2.54	0.91	5.1
Montgomery	7	17.77	6.34	35.8
Moore	1	2.54	0.91	5.1
Nacogdoches	1	2.54	0.91	5.1
Navarro	2	5.08	1.81	10.2
Nolan	1	2.54	0.91	5.1
Nueces	5	12.69	4.53	25.6
Ochiltree	1	2.54	0.91	5.1
Orange	3	7.62	2.72	15.3
Parker	3	7.62	2.72	15.3
Polk	1	2.54	0.91	5.1
Potter	1	2.54	0.91	5.1
Rockwall	2	5.08	1.81	10.2
Runnels	1	2.54	0.91	5.1
Rusk	1	2.54	0.91	5.1
San Patricio	4	10.15	3.62	20.5
Scurry	1	2.54	0.91	5.1
Shelby	1	2.54	0.91	5.1
Smith	5	12.69	4.53	25.6
Somervell	2	5.08	1.81	10.2
Starr	1	2.54	0.91	5.1
Stephens	1	2.54	0.91	5.1
Swisher	1	2.54	0.91	5.1
Tarrant	23	58.39	20.83	117.7
Titus	1	2.54	0.91	5.1
Travis	18	45.70	16.30	92.1
Tyler	1	2.54	0.91	5.1
Upshur	1	2.54	0.91	5.1
Uvalde	2	5.08	1.81	10.2
Val Verde	2	5.08	1.81	10.2
Van Zandt	2	5.08	1.81	10.2
Victoria	2	5.08	1.81	10.2
Walker	1	2.54	0.91	5.1
Waller	2	5.08	1.81	10.2

Table A-4. Continued

County	No. of Facilities	PM_{10}		
		Maximum (tpy)	Actual (tpy)	OSD (lbs/day)
Washington	2	5.08	1.81	10.2
Webb	3	7.62	2.72	15.3
Wharton	4	10.15	3.62	20.5
Wichita	5	12.69	4.53	25.6
Williamson	9	22.85	8.15	46.0
Wilson	2	5.08	1.81	10.2
Wise	4	10.15	3.62	20.5
Wood	1	2.54	0.91	5.1
Young	1	2.54	0.91	5.1
Zapata	1	2.54	0.91	5.1
Total	**459**	**1,165.27**	**415.69**	**2,348.2**

Table A-5. 2005 Texas Statewide Emissions, By County:
SCC 2325020000 (Industrial Processes – Mining and Quarrying)
(SIC 14 – Crushed and Broken Stone)

County	# of Facilities	PM_{10}		
		Maximum (tpy)	Actual (tpy)	OSD (lbs/day)
Bee	1	2.21	1.00	5.6
Brazoria	2	4.43	2.00	11.2
Burnet	1	2.21	1.00	5.6
Cameron	1	2.21	1.00	5.6
Culberson	1	2.21	1.00	5.6
Dallas	1	2.21	1.00	5.6
El Paso	1	2.21	1.00	5.6
Galveston	1	2.21	1.00	5.6
Harris	6	13.29	6.01	33.7
Howard	1	2.21	1.00	5.6
Maverick	1	2.21	1.00	5.6
Milam	1	2.21	1.00	5.6
Total	**18**	**39.86**	**18.04**	**101.1**