

**San Joaquin Valley Unified  
Air Pollution Control District**

**Assessment of Area Source Emissions from Unpaved Traffic Areas**

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Final file location of Part I: G:\PIn\AQA\EI\Methods\Working\Final\Unpaved Traffic  
Areas\Methodology.doc

Final file location of Part II: G:\PIn\AQA\EI\Methods\Working\Final\Unpaved Traffic Areas/  
Appendices.xls

**PART I**

**I. Purpose**

This methodology estimates area source PM10 emissions from unpaved traffic areas, excluding roads.

**II. Applicability**

This methodology applies to the following categories of area source emissions:

<b>CES</b>	<b>EIC</b>	<b>Description</b>
89698	64564554000000	Agriculture
89706	64564754000000	Private
89714	64564954000000	Public

**III. Description of Methodology**

Unpaved vehicle/equipment traffic areas are areas, excluding roads, where employee vehicles (both highway and off-highway), company vehicles, and industry-specific and/or general equipment, are driven on and/or parked. These areas may be used seasonally or throughout the year, and may be designated or non-designated.

In order to estimate PM10 emissions from unpaved traffic areas in the San Joaquin Valley Air Basin (SJVAB), data was obtained for the following industries: farms, cotton processing, landfills, mining, oil drilling and construction.

Emissions from each industry were determined separately, by multiplying vehicle miles traveled (VMT) with an emission factor to determine the emissions for the SJVAB. While these industries do not represent the entirety of emissions from

unpaved traffic areas, it is understood that these industries would be among the more significant contributors.

#### **IV. Collection of Data**

Data was collected from various sources depending upon the industry. The total number of farms within specified acreage categories was obtained from the U.S. Census Bureau.

For the cotton processing industry, the number of gins was obtained from the California Cotton Ginners and Growers Association Cotton Industry Map (1998). The gins no longer in operation were omitted based on discussions with the industry representative. The industry representative also provided average parking area sizes. A website discussing module trucks (<http://www.moduletruck.com/what.htm>) provided the number of bales per module truck.

For the landfill industry, the emissions from an average site was provided by the Kern County Waste Management Department. The number and location of sites was obtained from the state of California's Solid Waste Information System (SWIS).

For the mining industry, the total number of mines within the SJVAB was obtained from the California Department of Conservation, Office of Reclamation website. An industry representative from Construction Materials Association of California (CMAC) provided the average number of acres devoted to traffic areas for mining operations.

For the oil drilling industry, an industry representative from Western Drilling, Inc., gave information regarding the number and size of oil drilling sites. This does not include the oil production industry.

For the construction industry, the number of housing units and the number of commercial/industrial units built were obtained from the 1999 county profiles published by the California Department of Finance.

## **V. Summary of Assumptions**

1. Unpaved traffic areas emit PM10 at the rate as specified for unpaved roads by ARB<sup>1</sup>.
2. The calculations used accurately reflect real-world conditions.

## **VI. Emission Factors**

The following emission factor was taken from Table VI-15 of ARB<sup>1</sup>:

<b>PM10</b>	2.27 lbs. PM10/VMT
<b>TSP</b>	PM10 x 1.64 <sup>5</sup>
<b>VOC</b>	N/A
<b>CO</b>	N/A
<b>NOx</b>	N/A
<b>SOx</b>	N/A

## **VII. Speciation**

The recommended speciation profile for unpaved traffic areas is PM Profile ID #415, "Unpaved Road Dust" from the ARB Speciation Manual<sup>3</sup>.

## **VIII. Temporal Variation**

Each industry has its own temporal distribution. The distribution for farms was determined by combining the temporal profile for land preparation and harvesting. The distribution for cotton processing was based on cotton harvesting. Since the landfill industry has relatively uniform activity throughout the year, emissions were distributed evenly over the twelve months. Based on discussion with industry representatives, emissions from mining operations and the oil drilling industry were distributed as listed in Appendix F and H respectively. Emissions distribution for the construction industry was based on District staff knowledge and can be found in Appendix J. Please see Appendix H for a seasonal distribution of emissions from all industries.

## **IX. Spatial Variations**

Emissions should be distributed by county. Please see the appendices for each industry and Appendix H for a summary of all industries.

#### **X. Growth Factor**

Ideally, the growth factor for each corresponding industry should be used. However, since the industry specific emissions will be lumped into private unpaved areas, the growth factor for unpaved roads should be used, which reflects the decline in unpaved areas in general.

#### **XI. Control Factor**

This methodology calculates uncontrolled emissions from various industries. A control profile for this category will be developed to take into account controls used by each industry.

#### **XII. Sample Calculations**

The following general equation was used to estimate emissions from unpaved traffic areas:

Emissions = Emission Factor X Vehicle Miles Traveled

Vehicle Miles Traveled = number of passes X [ $\sqrt{(\text{acreage} \times 43,560 \text{ sq ft/acre})}$ ]/5280 ft/mile.

Total square feet = Acreage X 43,560 sq ft/acre

Calculations conducted for each industry can be found in their respective appendices: Farms-B, Cotton Processing-D, Landfills-E, Mining Operations-F, Oil Drilling Industry-H, and Construction-I. A summary of PM10 emissions from all industries can be found in Appendix A.

#### **XIII. Assessment of Methodology**

This methodology estimates PM10 emissions from unpaved traffic areas in the SJVAB.

It was necessary to calculate emissions from the base size, because the equations calculate exponentially. For example, emissions from 10 acres is 0.52 tons per year. Emissions from a 45 acre lot is 1.1. If you add the emissions from those two sites, the emissions total 1.62 tons per year. However, if you calculate emissions for the combined acreage of 55, the emissions total 1.21 tons per

year.

This methodology currently does not include unpaved traffic areas from public sources. Also, other potentially significant contributors to unpaved traffic area emissions may include trucking firms, truck stops, oilfields, older industrial areas and other unidentified areas. These sources are not quantified in this methodology at this time, but are anticipated to be added in the near future.

While industry-specific information was obtained, this methodology could be improved by obtaining better and more detailed industry-specific information such as vehicle types, traffic area size, activity data, control data, and length of trips. An effort to better quantify agricultural VMT has been conducted, however results were not completed in time to incorporate in this version of the methodology. Because the emissions from unpaved traffic areas need to be included in emissions inventory for the PM10 Plan, several changes to this version of the methodology are anticipated.

#### **XIV. References**

1. ARB Emission Inventory Procedural Manual, Methods for Assessing Area Source Emissions, Unpaved Road Dust – Farm Roads, Section 7.11, Volume III, (10/97)

## **PART II**

### **Appendices**

Appendix A	Estimated PM10 Emissions from All Unpaved Traffic Areas in the SJVAB
Appendix B	Estimated PM10 Emissions from Unpaved Traffic Areas on Farms
Appendix C	Temporal Distribution Determination for Unpaved Traffic Areas on Farms
Appendix D	Estimated PM10 Emissions from Unpaved Traffic Areas in the Cotton Processing Industry
Appendix E	Estimated PM10 Emissions from Unpaved Traffic Areas at Landfills

Appendix F	Estimated PM10 Emissions from Unpaved Traffic Areas at Mining Operations
Appendix G	Mining Operations in the SJVAB
Appendix H	Estimated PM10 Emissions from Unpaved Traffic Areas in the Oil Drilling Industry
Appendix I	Estimated PM10 Emissions from Unpaved Traffic Areas in the Construction Industry
Appendix J	Estimated Spatial Distribution of Unpaved Traffic Area PM10 Emissions from Construction Activities
Appendix K	Distribution of Estimated PM10 Emissions from Unpaved Traffic Areas in the SJVAB

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Appendix A - Estimated PM10 Emissions from All Unpaved Traffic Areas  
in the SJVAB

PM10 Emissions (tpy)							Total
	Farms	Cotton Processing	Landfills	Mining	Oil Drilling	Construction	
Total	2,283.00	34.98	240.00	40.92	15.80	36	2,650.70
Percentage	86.13%	1.32%	9.05%	1.54%	0.60%	1.36%	

Source:

Totals for each industry can be found in their respective appendices: Farms (B), Cotton Processing (D), Landfills (E), Mining (F), Oil Drilling (H), Construction (I).

Note:

Totals may differ slightly due to rounding.

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## Appendix B - Estimated PM10 Emissions from Unpaved Traffic Areas on Farms

### Notes:

- Emissions were determined by (VMT x 2.27 lbs/mile)/2000 lbs. per ton
- VMT was determined by:

(To convert acres to square feet, multiply number of acres by 43,560 sq ft/acre.  
To convert acres to parking area (sq ft), multiply number of acres by 43,560 sq ft/acre.

- It is assumed that there are an average of **10 trips per day, 240 days a year.**
- 2.27 lbs/mile is an ARB default
- The term "farm" includes crops, livestock, nurseries and greenhouses.
- Traffic Area determined by multiplying average acres of farm by 1.08%.
- The Total Area of a 2000+ farm was assumed to be 2000 acres.

- Traffic Area is estimated as follows: small farm (1-99 acres) traffic area is 1%, medium farm (100-499 acres) traffic area is .5%, large farm (500+ acres) is .25%

### References:

1. US Census Bureau, 1997, <http://govinfo.library.orst.edu/cgi-bin/ag-state?California>.

Farm Size (Acres) <sup>1</sup>	Traffic Area (acres)	Vehicle Miles Travelled per Trip	Average Number of Trips Per Day	PM10 Emissions Per Farm (tpy)
1-9	0.05	0.01	10	0.024
10-49	0.32	0.02	10	0.061
50-69	0.65	0.03	10	0.087
70-99	0.92	0.04	10	0.103
100-139	0.60	0.03	10	0.083
140-179	0.80	0.04	10	0.096
180-219	1.00	0.04	10	0.108
220-259	1.20	0.04	10	0.118
260-499	1.90	0.05	10	0.148
500-999	1.88	0.05	10	0.147
1000-1999	3.75	0.08	10	0.209
2000+	5.00	0.09	10	0.241

### Uncontrolled PM10 Emissions by Farm Size

PM10 Emissions per Farm		1-9	10-49	50-69	70-99	100-139	140-179	180-219	220-259	260-499	500-999	1000-1999	2000+	Total
		0.024	0.061	0.087	0.103	0.083	0.096	0.108	0.118	0.148	0.147	0.209	0.241	
Fresno	No. of Farms	1065	2800	440	458	333	231	126	76	324	356	229	154	6592
	Emissions	26	172	38	47	28	22	14	9	48	52	48	37	541
Kern	No. of Farms	314	387	67	123	76	115	60	49	200	213	152	241	1997
	Emissions	8	24	6	13	6	11	6	6	30	31	32	58	230
Kings	No. of Farms	203	343	42	65	52	45	33	21	71	100	56	48	1079
	Emissions	5	21	4	7	4	4	4	2	11	15	12	12	99
Madera	No. of Farms	170	576	102	144	101	89	53	51	156	100	60	71	1673
	Emissions	4	35	9	15	8	9	6	6	23	15	13	17	159
Merced	No. of Farms	411	1074	187	198	173	119	81	64	217	135	88	84	2831
	Emissions	10	66	16	20	14	11	9	8	32	20	18	20	245
San Joaquin	No. of Farms	862	1554	232	202	174	145	99	61	214	143	105	71	3862
	Emissions	21	95	20	21	15	14	11	7	32	21	22	17	295
Stanislaus	No. of Farms	962	1662	228	221	202	135	91	71	178	126	59	74	4009
	Emissions	23	102	20	23	17	13	10	8	26	19	12	18	291
Tulare	No. of Farms	1180	2070	366	317	289	209	130	112	326	223	131	93	5446
	Emissions	28	127	32	33	24	20	14	13	48	33	27	22	422
Total PM10 Emissions (tpy)		124	641	144	178	117	105	72	60	250	206	183	201	2,283



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## Appendix C - Temporal Distribution Determination for Unpaved Traffic Areas on Farms

seasonal profile for ag land preparation - ARB Section 7.4

	<b>Fresno</b>	<b>Kern</b>	<b>Kings</b>	<b>Madera</b>	<b>Merced</b>	<b>San Joaquin</b>	<b>Stanislaus</b>	<b>Tulare</b>	<b>Overall</b>
January	0.023	0.008	0.028	0.027	0.046	0.092	0.059	0.047	0.041
February	0.042	0.038	0.050	0.024	0.037	0.052	0.031	0.032	0.038
March	0.059	0.058	0.083	0.049	0.083	0.113	0.098	0.082	0.078
April	0.017	0.015	0.001	0.002	0.039	0.053	0.126	0.001	0.032
May	0.040	0.019	0.002	0.047	0.041	0.050	0.108	0.019	0.041
June	0.040	0.027	0.002	0.047	0.029	0.029	0.020	0.019	0.027
July	0.058	0.040	0.013	0.083	0.017	0.038	0.028	0.042	0.040
August	0.063	0.035	0.003	0.104	0.010	0.044	0.029	0.043	0.041
September	0.043	0.042	0.006	0.053	0.034	0.023	0.043	0.030	0.034
October	0.128	0.110	0.049	0.140	0.121	0.130	0.140	0.091	0.114
November	0.281	0.349	0.436	0.243	0.311	0.212	0.183	0.341	0.295
December	0.206	0.259	0.327	0.180	0.233	0.163	0.136	0.253	0.220
<b>Total</b>	<b>1.000</b>	<b>1.000</b>	<b>1.000</b>	<b>0.999</b>	<b>1.001</b>	<b>0.999</b>	<b>1.001</b>	<b>1.000</b>	<b>1.000</b>

seasonal profile for ag harvest, obtained from ARB

	<b>Overall</b>
January	0.012
February	0.012
March	0.032
April	0.032
May	0.019
June	0.102
July	0.136
August	0.085
September	0.152
October	0.162
November	0.243
December	0.012
<b>Total</b>	<b>1.000</b>

### Combined

	<b>Distribution</b>	<b>Emissions</b>
January	0.027	61
February	0.025	57
March	0.055	125
April	0.032	73
May	0.030	68
June	0.064	147
July	0.088	200
August	0.063	145
September	0.093	213
October	0.138	315
November	0.269	614
December	0.116	265
<b>Total</b>	<b>1.000</b>	<b>2283</b>

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## Appendix D - Estimated PM10 Emissions from Unpaved Traffic Areas in the Cotton Processing Industry

	Fresno	Kern	Kings	Madera	Merced	San Joaquin	Stanislaus	Tulare	Total Sites
Cotton Gins	25	13	12	3	5	0	0	8	66
Emissions per Site	0.53	0.53	0.53	0.53	0.53	0.53	0.53	0.53	
PM10 Emissions (tpy)	13.25	6.89	6.36	1.59	2.65	0	0	4.24	<b>34.98</b>

### Temporal and Spatial Distribution

	Fresno	Kern	Kings	Madera	Merced	San Joaquin	Stanislaus	Tulare	Total Sites
<b>October</b>	6.625	3.445	3.18	0.795	1.325	0	0	2.12	17.49
<b>November</b>	6.625	3.445	3.18	0.795	1.325	0	0	2.12	17.49

### Assumptions:

- 2 acres of unpaved parking areas per site, which emit .323 tons per year.
- 60 acres of unpaved parking areas per cotton gin site, 10% of which is actually travelled = ~6 acres.  
 Trip length (.25 miles) x # of trips = VMT for cotton gins  
 # of trips (50 bales/hr / 13 bales/module truck = 3.8 module trucks/hr) x 8 hrs = **30.8 trips/day**  
 Emissions per day = (0.25 miles x 30.8 trips = 7.7 VMT)(2.27) = 17.48 lbs.  
 Annuals emissions = **61 days** x 17.48 lbs = 1066.28 lbs = 0.533 tons/yr/site
- ARB emission factor is representative of emissions from unpaved parking areas.
- Emissions were determined by (VMT x 2.27 lbs/mile)/2000 lbs. per ton.
- VMT was determined by:  
 (square root of the total parking area (sq ft) / 5280) X number of trips.
- To convert acres to square feet, multiply number of acres by 43,560 sq ft/acre.

### Source:

1994 Dunn & Bradstreet  
 Roger Isom, 2001

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Appendix E - Estimated PM10 Emissions from Unpaved Traffic Areas at Landfills

Counties	Total Sites <sup>1</sup>	PM10 Emissions Per Traffic Area (tpy)	PM10 Emissions (tpy)	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
				0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083	0.083
Fresno	4	10	40	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32	3.32
Kern	7	10	70	5.81	5.81	5.81	5.81	5.81	5.81	5.81	5.81	5.81	5.81	5.81	5.81
Kings	2	10	20	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
Madera	1	10	10	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83	0.83
Merced	2	10	20	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
San Joaquin	3	10	30	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49
Stanislaus	2	10	20	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66	1.66
Tulare	3	10	30	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49	2.49
<b>Total</b>	<b>24</b>		<b>240</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>	<b>20</b>

Assumptions:

The Arvin Site is representative of the landfill industry.

Emissions:

-Emissions were obtained from Kern County Waste Department

They estimated 10 tpy

The equipment area is currently uncontrolled at the Arvin site.

1. Data obtained from California Integrated Waste Board, SWIS.

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## Appendix F - Estimated PM10 Emissions from Unpaved Traffic Areas at Mining Operations

	Total Number of Mines <sup>1</sup>	PM10 Emissions Per Mine	PM10 Emissions (tpy)
Fresno	15	0.341	5.115
Kern	31	0.341	10.571
Kings	1	0.341	0.341
Madera	7	0.341	2.387
Merced	18	0.341	6.138
San Joaquin	14	0.341	4.774
Stanislaus	14	0.341	4.774
Tulare	20	0.341	6.82
<b>Total</b>	<b>120</b>		<b>40.92</b>

### Assumptions:

- 1.5 acres of Parking Area was an average obtained from Linda Filasco. Only 1-2 acres are usually devoted to parking.
- Emissions were determined by (VMT x 2.27 lbs/mile)/2000 lbs. per ton.
- VMT was determined by:  
(square root of the total parking area (sq ft) / 5280) X number of trips.
- To convert acres to square feet, multiply number of acres by 43,560 sq ft/acre.
- Each mine parking area receives an 6210 trips per year. (**207 days x 30 trips/day**)
- 1.5 acres emit .341 tons per year.

### References:

1. California Dept of Conservation, Special Publication 103, Mines and Mineral Producers Active in California
2. Conversation with Linda Falasco w/CMAC on 3-2-01.  
The average permitted acreage of a mining site is between 600-1200 acres.  
1-2 acres are devoted to parking areas.  
5-20 acres are devoted to active mining operations.  
The remaining acres have natural vegetation.

### Temporal Distribution

	%	Emissions (tpy)
Jan	0%	0
Feb	0%	0
Mar	6%	2.6
Apr	13%	5.1
May	13%	5.1
Jun	13%	5.1
Jul	13%	5.1
Aug	13%	5.1
Sep	13%	5.1
Oct	13%	5.1
Nov	6%	2.6
Dec	0%	0
	100%	

# Appendix G - Mining Operations in the SJVAB

MINE_NAME	MINE_OPERA	STREET	CITY	STATE	ZIP	COUNTY	ARETELEPHO	LATITUDE	LONGITUDE	COMMODITY
ACADEMY QUARRY	RAYMOND GRANITE COMPANY	202 SOUTH 3rd AVENUE	COLD SPRING	MN	56320	FRESNO	320 685-4838	36.89000	119.52190	Dimension stone
ACME ROCK	ACME PAVING COMPANY, INC.	45315 LOST HILLS ROAD	COALINGA	CA	93210	FRESNO	559 935-2086	36.06610	120.22810	Sand and gravel
AL'S CONCRETE	AL'S CONCRETE	11000 NORTH LANES ROAD	FRESNO	CA	93720	FRESNO	559 434-3300	36.93000	119.78610	Sand and gravel
VULCAN/CALMAT - FRESNO	VULCAN MATERIALS CO./CALMAT DIV.	11599 OLD FRIANT ROAD	FRESNO	CA	93720	FRESNO	559 434-1202	36.89920	119.77280	Sand and gravel
CENTRAL VALLEY READY MIX, INC.	CENTRAL VALLEY READY MIX, INC.	2601 SOUTH RIVERBEND AVENUE	SANGER	CA	93657	FRESNO	559 875-3601	36.70310	119.50390	Sand and gravel
COALINGA PIT #1	GRANITE CONSTRUCTION CO.	11280 10 1/2 AVENUE	HANFORD	CA	93230	FRESNO	559 584-2989	36.17310	120.36670	Sand and gravel
COALINGA PIT #2	GRANITE CONSTRUCTION CO.	11280 10 1/2 AVENUE	HANFORD	CA	93230	FRESNO	559 935-1504	36.16110	120.36110	Sand and gravel
GALE SAND PRODUCTS	HARRY WILMOTH	3387 SOUTH MINNIEWAWA	FRESNO	CA	93725	FRESNO	559 486-7571	36.93670	120.56140	Sand and gravel
MAIORINO FARMS	MAIORINO FARMS	10626 NORTH LYON	FIREBAUGH	CA	93622	FRESNO	209 659-2734	36.90000	120.46610	Sand and gravel
MONT LA SALLE MATERIALS SITE	FRESNO COUNTY DEPT. PUBLIC WORKS	2220 TULARE STREET, 6TH FLOOR	FRESNO	CA	93721	FRESNO	559 262-4240	36.61310	119.47190	Sand and gravel
ROCKFIELD	RMC LONESTAR	13475 NORTH FRIANT ROAD	FRIANT	CA	93626	FRESNO	559 434-1641	36.93000	119.73810	Sand and gravel
ROCKFIELD - ROUILLARD	RMC LONESTAR	13475 NORTH FRIANT ROAD	FRIANT	CA	93626	FRESNO	559 434-1641	36.96390	119.73190	Sand and gravel
SANGER	CALMAT OF CENTRAL CALIFORNIA	11599 OLD FRIANT ROAD	FRESNO	CA	93720	FRESNO	559 787-2534	36.72000	119.49500	Sand and gravel
TIVY VALLEY GRANITE	CHARLES RAPER	1999 PIEDRA ROAD	TIVI VALLEY	CA	93657	FRESNO	209 875-3756	36.76610	119.41890	Decomposed granite
TULARE VALLEY ROCK/ZAPATO	ARTESIA READY MIX CONCRETE	P.O. BOX 1436	TULARE	CA	93275	FRESNO	209 935-1560	36.06310	120.23190	Sand and gravel
104 SILICA QUARRY/LEBEC	NATIONAL CEMENT COMPANY	P.O. BOX 1247	LEBEC	CA	93243	KERN	805 248-6733	34.84030	118.78440	Shale
109 LIMESTONE QUARRY/LEBEC	NATIONAL CEMENT COMPANY	P.O. BOX 1247	LEBEC	CA	93243	KERN	805 248-6733	34.85000	118.77500	Limestone
A&M PRODUCTS QUARRY	A&M PRODUCTS, INCORPORATED	P.O. BOX 1277	TAFT	CA	93268	KERN	805 765-7194	35.11310	119.52500	Silica
ARVIN PIT	GRANITE CONSTRUCTION CO.	P.O. BOX 5127	BAKERSFIELD	CA	93388	KERN	805 399-3361	35.19690	118.76000	Sand and gravel
BOWMAN MINE	EAST KERN AGGREGATES, INC.	7311 EAST AVENUE T	LITTLEROCK	CA	93543	KERN	805 533-2115	35.60810	117.75110	Sand and gravel
CACTUS QUEEN	CALIFORNIA PORTLAND CEMENT CO.	2025 EAST FINANCIAL WAY	GLENDORA	CA	91741	KERN	626 852-6258	34.95610	118.29310	Silica
CALIENTE SAND & MINERAL CO.	CALIENTE SAND & MINERAL CO.	3434 TRUXTUN AVENUE, STE. 180	BAKERSFIELD	CA	93301	KERN	805 325-9076	35.29190	118.80310	Fill
CALMAT - SAN EMIGDIO	VULCAN MATERIALS CO./CALMAT DIV.	P.O. BOX 22800	BAKERSFIELD	CA	93390	KERN	805 835-4800	35.04190	119.17500	Sand and gravel
CITY OF BAKERSFIELD WATER DEPT.	CITY OF BAKERSFIELD WATER DEPT.	1000 BUENA VISTA ROAD	BAKERSFIELD	CA	93311	KERN	805 326-3715	35.36670	119.06670	Sand and gravel
COOPER PIT #1	STANLEY COOPER	7260 REWARD ROAD	MCKITTRICK	CA	93251	KERN	805 762-7491	35.32190	119.70810	Shale
CUDDY MINE	LEBEC SAND & GRAVEL	P.O. BOX 846	LEBEC	CA	93243	KERN	805 248-6259	34.82190	118.90530	Sand and gravel
EDISON SAND COMPANY, INC.	EDISON SAND COMPANY, INC.	P.O. BOX 6366	BAKERSFIELD	CA	93386-6366	KERN	805 366-7897	35.31390	118.78310	Sand and gravel
FRAZIER PARK SAND & GRAVEL	FRAZIER PARK SAND & GRAVEL	2500 FRAZIER PARK MTN ROAD	FRAZIER PARK	CA	93225	KERN	805 245-1652	34.82110	118.92000	Sand and gravel
GARLOCK MINE	ASPHALT CONSTRUCTION COMPANY	P.O. BOX 1187	LANCASTER	CA	93534	KERN	805 533-2181	35.43110	117.69310	Sand and gravel
GILLIAM & SONS MINING OPERATION	GILLIAM & SONS, INC.	9831 ROSEDALE HIGHWAY	BAKERSFIELD	CA	93312	KERN	805 589-0913	35.74190	118.90000	Decomposed granite
GOLDEN CAT CORPORATION	GOLDEN CAT CORPORATION	P.O. BOX 515	MARICOPA	CA	93252	KERN	805 769-8261	35.05690	119.44190	Shale
GRIFFITH COMPANY	GRIFFITH COMPANY	39439 EDMONSTON PUMPG PLANT RD.	LEBEC	CA	93243	KERN	805 858-7701	34.95000	118.85000	Sand and gravel
HY DESERT RUSTIC STONE	SANFORD STONE COMPANY	P.O. BOX 1161	ATASCADERO	CA	93423	KERN	805 466-0650	35.31390	117.67810	Decorative rock
HY DESERT RUSTIC STONE WEST	SANFORD STONE COMPANY	P.O. BOX 1161	ATASCADERO	CA	93423	KERN	805 466-0650	35.23060	117.80830	Decorative rock
JAMES ROAD	GRANITE CONSTRUCTION CO.	P.O. BOX 5127	BAKERSFIELD	CA	93312	KERN	805 399-3361	35.46000	119.05190	Sand and gravel
KERN COUNTY PUBLIC WORKS SAND	KERN COUNTY ROAD DEPT.	2700 M STREET, STE. 400	BAKERSFIELD	CA	93301	KERN	805 862-8850	35.28810	118.80390	Sand and gravel
LOST HILLS MINE	H.M. HOLLOWAY, INC.	714 SIXTH STREET	WASCO	CA	93280	KERN	805 797-2320	35.65500	119.77310	Gypsum
MICROWAVE QUARRY/LEBEC PLANT	NATIONAL CEMENT COMPANY	P.O. BOX 1247	LEBEC	CA	93243	KERN	805 248-6733	34.84610	118.76810	Limestone
OLD DUTCH CLEANSER MINE	MATCON CORPORATION	1807 TOYON LANE	NEWPORT BEACH	CA	92660	KERN	949 722-0378	35.39110	117.92690	Clay
P.V. CLAY	PROTECH MINERALS, INC.	17092 D STREET	VICTORVILLE	CA	92392	KERN	760 245-3441	35.29170	118.09920	Clay
QUARRY SITE B - LEBEC PLANT	NATIONAL CEMENT COMPANY	P.O. BOX 1247	LEBEC	CA	93243	KERN	805 248-6733	34.83670	118.76830	Limestone
SAND CANYON PIT	CHELSEA INVESTMENT COMPANY	3200 21ST STREET, STE. 401	BAKERSFIELD	CA	93301	KERN	805 322-4027	35.19440	118.35780	Decomposed granite
TAFT PLANT - G.P.S.I.	GENERAL PRODUCTION SERVICE, INC.	P.O. BOX 344	TAFT	CA	93268	KERN	805 768-4327	35.12500	119.44190	Sand and gravel
TWISSELMAN CLAY PIT	MADONNA CONSTRUCTION CO.	P.O. BOX 3910	SAN LUIS OBISPO	CA	93403	KERN	805 475-2239	35.37110	119.80810	Clay
WEBSTER SAND, INC.	WEBSTER SAND, INC.	P.O. BOX 271	BAKERSFIELD	CA	93302-0271	KERN	805 399-3131	35.43190	118.95110	Sand and gravel
WHEELER RIDGE PIT	VULCAN MATERIALS CO./CALMAT DIV.	P.O. BOX 22800	BAKERSFIELD	CA	93390	KERN	805 835-4800	35.00890	118.96190	Sand and gravel
WOOD BROS.	WOOD BROS., INCORPORATED	P.O. BOX 216	LEMOORE	CA	93245	KINGS	209 924-7715	36.25830	119.79170	Sand and gravel
COBB PIT	SAN JOAQUIN SAND & GRAVEL	12325 ROAD 29	MADERA	CA	93638	MADERA	209 432-1321	36.86890	119.80390	Sand and gravel
LEE DA SILVA	LEE'S CONCRETE MATERIALS CO.	P.O. BOX 509	MADERA	CA	93639	MADERA	209 673-9189	36.99610	120.01000	Sand and gravel
MOEN PIT	CALAVERAS MATERIALS, INC.	3451 WEST SHAW AVENUE	FRESNO	CA	93711-3204	MADERA	559 277-7060	36.85390	119.81890	Sand and gravel
SIERRA WHITE QUARRY	RAYMOND GRANITE COMPANY	202 SOUTH 3rd AVENUE	COLD SPRING	MN	56320	MADERA	320 685-4838	37.21810	119.87310	Dimension stone
TAYLOR'S PIT	CALIFORNIA INDUSTRIAL MINERALS	P.O. BOX 268	FRIANT	CA	93626	MADERA	209 822-2394	37.01190	119.73310	Pumice
TRIANGLE ROCK PRODUCTS	TRIANGLE ROCK PRODUCTS	11599 OLD FRIANT ROAD	FRESNO	CA	93720	MADERA	559 434-1202	37.07720	119.79190	Decorative rock
WELDON PIT	RICHARD J. WELDON, SR.	21192 TOLLHOUSE ROAD	CLOVIS	CA	93611	MADERA	209 297-1536	36.91670	119.97500	Fill
ANDRIAN RANCH	RANCHWOOD CONTRACTORS, INC.	923 PACHECO BLVD., STE. C	LOS BANOS	CA	93635	MERCED	209 826-6200	36.96250	120.86830	Fill
BMD EXCAVATION	BETTENCOURT & MARSON DAIRY	18128 AMERICAN AVENUE	HILMAR	CA	95324	MERCED	209 669-7960	37.41670	120.81250	Fill
CANYON ROCK PIT	CANYON ROCK PIT	P.O. BOX 2191	LOS BANOS	CA	93635	MERCED	209 826-2541	37.00610	120.91610	Sand and gravel
CARSON #2 PIT	CALAVERAS MATERIALS, INC.	3451 WEST SHAW AVENUE	FRESNO	CA	93711-3204	MERCED	559 277-7060	37.49580	120.47080	Sand and gravel
CENTRAL PIT	G.R. CLARK, INCORPORATED	500 COMMERCE AVENUE	ATWATER	CA	95301	MERCED	209 358-7117	37.33310	120.64780	Fill
CRAVEN PIT	JAXON ENTERPRISES	P.O. BOX 994248	REDDING	CA	96099-4248	MERCED	530 241-2112	37.26000	120.19500	Sand and gravel
FOSTER POULTRY FARMS	FOSTER POULTRY FARMS	14519 WEST COLLIER ROAD	DELHI	CA	95315	MERCED	209 667-1111	37.40470	120.74330	Fill
J. BLASINGAME & SONS, INC.	BLASINGAME & SONS, INC.	15324 NORTH HIGHWAY 59	MERCED	CA	95348	MERCED	209 722-9545	37.51000	120.46610	Sand and gravel
JOHN MANCEBO MINE	JOHN MANCEBO MINE	MERCY SPRINGS ROAD I-5	LOS BANOS	CA	93635	MERCED	209 392-3434	36.91810	120.84310	Gypsum
LA GRANGE PIT	CALAVERAS MATERIALS, INC.	3451 WEST SHAW AVENUE	FRESNO	CA	93711-3204	MERCED	559 277-7060	37.51190	120.49110	Sand and gravel

TRIANGLE ROCK PRODUCTS	TRIANGLE ROCK PRODUCTS, INC.	P.O. BOX 1111	LOS BANOS	CA	93635	MERCED	209 826-5066	37.02390	120.89390	Sand and gravel
MERCED RIVER MINING	MERCED RIVER MINING & RECLAMATION CORP.	7400 MERCED FALLS ROAD	SNELLING	CA	95369	MERCED	209 563-6573	37.51970	120.35360	Sand and gravel
PANOCHÉ PIT	CENTRAL VALLEY RESOURCES, L.L.C.	P.O. BOX 158	DOS PALOS	CA	93620	MERCED	209 364-1995	36.85190	120.78190	Sand and gravel
SNELLING	CALAVERAS MATERIALS, INC.	3451 WEST SHAW AVENUE	FRESNO	CA	93711-3204	MERCED	559 277-7060	37.50810	120.47500	Sand and gravel
SUNSET PIT	COUNTY OF MERCED	715 MARTIN LUTHER KING JR. WAY	MERCED	CA	95340-6041	MERCED	209 385-7601	37.34220	120.63940	Sand and gravel
VALLEY SAND & GRAVEL	VALLEY SAND & GRAVEL	1743 EAST PACHECO	LOS BANOSS	CA	93635	MERCED	209 826-3717	37.03330	120.84440	Sand and gravel
WCR MINE	WHITE CRANE RANCH, INC.	22197 SOUTH WARREN AVENUE	RIPON	CA	95366	MERCED	209 397-7071	37.31440	120.69780	Fill
WINTON PLANT	SANTA FE AGGREGATES, INC.	P.O. BOX 3042	MODESTO	CA	95353	MERCED	209 524-7321	37.47110	120.58890	Sand and gravel
CHRISTENSEN RANCH	GEORGE REED, INC.	P.O. BOX 548	SONORA	CA	95370	SAN JOAQUIN	209 984-5202	37.74170	120.92500	Sand and gravel
KERLINGER-HUCK	RMC LONESTAR	30350 S. TRACY BOULEVARD	TRACY	CA	95376	SAN JOAQUIN	209 835-1454	37.68110	121.44690	Sand and gravel
KERLINGER/RHODES	RMC LONESTAR	30350 S. TRACY BOULEVARD	TRACY	CA	95376	SAN JOAQUIN	209 835-1454	37.67500	121.42110	Sand and gravel
KRC AGGREGATE, INC.	KRC AGGREGATE, INC.	P.O. BOX 746	CLEMENTS	CA	95227	SAN JOAQUIN	209 727-3785	38.20000	121.02500	Sand and gravel
MAIN RIVERBANK PIT	GEORGE REED, INC.	P.O. BOX 548	SONORA	CA	95370	SAN JOAQUIN	209 984-5202	37.75810	120.96610	Sand and gravel
MOSSDALE RANCH	BROWN SAND, INCORPORATED	P.O. BOX 1429	LATHROP	CA	95330	SAN JOAQUIN	209 234-1500	37.78330	121.30000	Sand and gravel
OAKWOOD LAKE PIT	BROWN SAND, INCORPORATED	874 EAST WOODWARD AVE.	MANTECA	CA	95337	SAN JOAQUIN	209 234-1500	37.77810	121.28810	Sand and gravel
RME PIT	GRANITE CONSTRUCTION CO.	P.O. BOX 151	STOCKTON	CA	95201	SAN JOAQUIN	209 982-4750	37.69500	121.43810	Sand and gravel
ROSE	TEICHERT AGGREGATES	P.O. BOX 247	TRACY	CA	95376	SAN JOAQUIN	209 832-4150	37.69170	121.41250	Sand and gravel
SOLARI PIT	GEORGE REED, INC.	P.O. BOX 548	SONORA	CA	95370	SAN JOAQUIN	209 984-5202	38.19500	121.09390	Sand and gravel
TEICHERT - TRAINA	TEICHERT AGGREGATES	P.O. BOX 247	TRACY	CA	95376	SAN JOAQUIN	209 832-4150	37.68470	121.41080	Sand and gravel
TRACY PIT	GRANITE CONSTRUCTION CO.	P.O. BOX 151	STOCKTON	CA	95201	SAN JOAQUIN	209 982-4750	37.67500	121.43810	Sand and gravel
TRACY ROCK PLANT	TEICHERT AGGREGATES	P.O. BOX 247	TRACY	CA	95376	SAN JOAQUIN	209 832-4150	37.69190	121.41690	Sand and gravel
VERNALIS	TEICHERT AGGREGATES	P.O. BOX 247	TRACY	CA	95376	SAN JOAQUIN	209 832-4150	37.63330	121.35830	Sand and gravel
7-11 MATERIALS PIT	7-11 MATERIALS, INCORPORATED	P.O. BOX 4770	MODESTO	CA	95352	STANISLAUS	209 874-2142	37.63750	120.63060	Sand and gravel
ARDIS PIT	GEORGE REED, INC.	P.O. BOX 548	SONORA	CA	95370	STANISLAUS	209 984-5202	37.79190	120.71890	Sand and gravel
CREE RANCH PIT	CALAVERAS MATERIALS, INC.	3451 W SHAW AVENUE	FRESNO	CA	93711-3204	STANISLAUS	559 277-7060	37.63310	120.57690	Sand and gravel
DE MARTINI	JIM DE MARTINI	5013 JENNINGS ROAD	MODESTO	CA	95358	STANISLAUS	209 538-3162	37.58670	121.08420	Specialty sand
FRANK B. MARKS & SON, INC.	FRANK B. MARKS & SON, INC.	P.O. BOX 668	NEWMAN	CA	95360	STANISLAUS	209 862-2900	37.36690	121.09000	Sand and gravel
LA GRANGE PLANT	SANTA FE AGGREGATES, INC.	P.O. BOX 3042	MODESTO	CA	95353	STANISLAUS	209 524-7321	37.63890	120.50500	Sand and gravel
LA GRANGE PIT	GEORGE REED, INC.	P.O. BOX 548	SONORA	CA	95370	STANISLAUS	209 984-5202	37.67000	120.46690	Sand and gravel
LANDMARK PIT	CALAVERAS MATERIALS, INC.	3451 W SHAW AVENUE	FRESNO	CA	93711-3204	STANISLAUS	559 277-7060	37.61810	120.83310	Sand and gravel
OHE SAND & GRAVEL	OHE SAND & GRAVEL	16643 HIGHWAY #120	OAKDALE	CA	95361	STANISLAUS	209 881-3337	37.80690	120.68470	Sand and gravel
ROBERTS FERRY PIT	7-11 MATERIALS	P.O. BOX 4770	MODESTO	CA	95352	STANISLAUS	209 874-2142	37.63500	120.60810	Sand and gravel
SCHMIDT PIT	CALAVERAS MATERIALS, INC.	3451 WEST SHAW AVENUE	FRESNO	CA	93711-3204	STANISLAUS	559 277-7060	37.61940	120.83330	Sand and gravel
WARNER	CALAVERAS MATERIALS, INC.	3451 W SHAW AVENUE	FRESNO	CA	97311-3204	STANISLAUS	559 277-7060	37.63310	120.67310	Sand and gravel
WATERFORD PIT	7-11 MATERIALS, INCORPORATED	P.O. BOX 4770	MODESTO	CA	95352	STANISLAUS	209 874-2142	37.63310	120.63310	Sand and gravel
WATERFORD PLANT	SANTA FE AGGREGATES, INC.	P.O. BOX 3042	MODESTO	CA	95353	STANISLAUS	209 524-7321	37.63310	120.67310	Sand and gravel
BRITTEN GRANITE PIT	L.E. BRITTEN CONSTRUCTION	P.O. BOX 566	THREE RIVERS	CA	93271	TULARE	209 561-4633	36.42500	118.90610	Decomposed granite
CHRISMAN PIT	TULARE CO. PUBLIC WORKS DEPT.	5961 SOUTH MOONEY BLVD.	VISALIA	CA	93277	TULARE	559 733-6291	36.45830	119.30830	Sand and gravel
DAI-TERRA BELLA	DESERT AGGREGATES, INC.	P.O. BOX 592	HANFORD	CA	93232	TULARE	209 534-2760	35.93310	118.95190	Stone/Rock
DEER CREEK RANCH	SHAN KING	P.O. BOX 51	PORTERVILLE	CA	93258	TULARE	209 539-3232	35.98190	119.08190	Sand and gravel
DESERT AGGREGATES-BLUESTONE QUARRY	DESERT AGGREGATES, INC.	P.O. BOX 592	HANFORD	CA	93232	TULARE	209 534-2760	35.90690	118.91110	Stone/Rock
GALASSO PIT	TULARE CO. PUBLIC WORKS DEPT.	5961 SOUTH MOONEY BLVD.	VISALIA	CA	93277	TULARE	559 733-6291	36.00330	119.05830	Sand and gravel
HERSHEY PIT	TULARE CO. PUBLIC WORKS DEPT.	5961 SOUTH MOONEY BLVD.	VISALIA	CA	93277	TULARE	559 733-6291	36.03670	119.29440	Sand and gravel
HUNSAKER GRANITE	WILLIAM HUNSAKER GRANITE	24096 AVENUE 92	TERRA BELLA	CA	93270	TULARE	209 535-4065	35.89310	118.93810	Decomposed granite
KAWEAH RIVER ROCK	KAWEAH RIVER ROCK CO., INC.	P.O. BOX 515	WOODLAKE	CA	93286	TULARE	209 564-3302	36.58140	119.22080	Sand and gravel
LEDBETTER BORROW PIT	E.B. HUNSAKER	P.O. BOX 194	OROSI	CA	93647	TULARE	209 528-3103	36.56810	119.22810	Decomposed granite
LEE GILL GRANITE PIT	MITCHELL BROWN GEN. ENG., INC.	14200 ROAD 284	PORTERVILLE	CA	93257	TULARE	209 781-9352	36.11310	118.94610	Decomposed granite
LEMON COVE	RMC LONESTAR	24325 LOMITAS DRIVE	LEMON COVE	CA	93244	TULARE	209 597-2397	36.40000	119.05810	Sand and gravel
LEMON COVE GRANITE PIT	LEMON COVE GRANITE PIT	P.O. BOX 44009	LEMON COVE	CA	93244	TULARE	209 597-2308	36.37500	119.00390	Decomposed granite
MULLER GRANITE	MULLER GRANITE	28122 AVENUE 56	PORTERVILLE	CA	93257	TULARE	209 534-2350	35.89310	118.93220	Decomposed granite
PORTERVILLE READY MIX SAND CO.	PRM SAND COMPANY	AVENUE 152 & TULE RIVER	PORTERVILLE	CA	93257	TULARE	209 784-6724	36.07000	119.08390	Sand and gravel
RODGER PATTERSON	RODGER PATTERSON	28114 WORTH DRIVE	PORTERVILLE	CA	93257	TULARE	209 784-3789	36.01610	118.90390	Decomposed granite
TESCON	HALOPOFF & SONS, INC.	140 EAST MORTON AVENUE	PORTERVILLE	CA	93257	TULARE	209 781-7676	35.98810	118.91690	Decomposed granite
TRAVOILI GRANITE	TRAVOILI GRANITE	14228 AVENUE 364	VISALIA	CA	93292	TULARE	559 636-3062	36.56890	119.22220	Decomposed granite
TULARE VALLEY ROCK/DRY CREEK	ARTESIA READY MIX	P.O. BOX 1436	TULARE	CA	93275	TULARE	209 597-2601	36.43110	119.02310	Sand and gravel
TULE RIVER/SUCCESS DAM	MITCHELL BROWN GEN. ENG., INC.	14200 ROAD 284	PORTERVILLE	CA	93257	TULARE	209 781-6389	36.04940	118.93250	Sand and gravel

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## Appendix H - Estimated PM10 Emissions from Unpaved Traffic Areas in the Oil Drilling Industry

Number of Companies	Emissions per Site	PM10 Emissions per Field (tpy)
<b>10</b>	<b>1.58</b>	<b>15.8</b>

### Assumptions:

- Each parking lot receives **60 trips per day, 207 days per year.**
- Each unpaved traffic area is 8 acres.
- There are no controls used.
- The emission factor used by ARB is representative of actual emissions.

### Calculations:

- Emissions were determined by (VMT x 2.27 lbs/mile)/2000 lbs. per ton
- VMT was determined by:  
(square root of the total parking area (sq ft) / 5280) X number of trips.
- To convert acres to square feet, multiply number of acres by 43,560 sq ft/acre.

	Temporal Distribution %	Emissions (tpy)
Jan	0%	0
Feb	0%	0
Mar	6%	0.99
Apr	13%	1.98
May	13%	1.98
Jun	13%	1.98
Jul	13%	1.98
Aug	13%	1.98
Sep	13%	1.98
Oct	13%	1.98
Nov	6%	0.99
Dec	0%	0
	100%	15.80

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## Appendix I - Estimated PM10 Emissions from Unpaved Traffic Areas in Construction Industry

	Number of Sites	PM10 Emissions per Site (tpy)	PM10 Emissions per Year (tpy)
Fresno	69	0.114	7.82
Kern	27	0.114	3.12
Kings	10	0.114	1.13
Madera	11	0.114	1.21
Merced	25	0.114	2.82
San Joaquin	96	0.114	10.94
Stanislaus	56	0.114	6.33
Tulare	26	0.114	2.97
	<b>319</b>	<b>0.114</b>	<b>36.34</b>

Number of Sites was determined by dividing total housing units built by 75 (number of homes on example site) and adding 82 commercial/industrial units.

Assume area is .5 acres

Assume activities occur on site for **120 days**

Assume **30 trips per day**

'- Emissions were determined by (VMT x 2.27 lbs/mile)/2000 lbs. per ton

'- VMT was determined by:

(square root of the total parking area (sq ft) / 5280) X number of trips.

'- To convert acres to square feet, multiply number of acres by 43,560 sq ft/acre.



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Appendix J - Estimated Spatial Distribution of Unpaved Traffic Area Emissions from Construction Activities

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	1.000
		0.025	0.025	0.025	0.050	0.188	0.188	0.188	0.188	0.050	0.025	0.025	0.025	
	Emissions	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Fresno	7.8	0.20	0.20	0.20	0.39	1.47	1.47	1.47	1.47	0.39	0.20	0.20	0.20	
Kern	3.1	0.08	0.08	0.08	0.16	0.59	0.59	0.59	0.59	0.16	0.08	0.08	0.08	
Kings	1.1	0.03	0.03	0.03	0.06	0.21	0.21	0.21	0.21	0.06	0.03	0.03	0.03	
Madera	1.2	0.03	0.03	0.03	0.06	0.23	0.23	0.23	0.23	0.06	0.03	0.03	0.03	
Merced	2.8	0.07	0.07	0.07	0.14	0.53	0.53	0.53	0.53	0.14	0.07	0.07	0.07	
San Joaquin	10.9	0.27	0.27	0.27	0.55	2.05	2.05	2.05	2.05	0.55	0.27	0.27	0.27	
Stanislaus	6.3	0.16	0.16	0.16	0.32	1.19	1.19	1.19	1.19	0.32	0.16	0.16	0.16	
Tulare	3.0	0.07	0.07	0.07	0.15	0.56	0.56	0.56	0.56	0.15	0.07	0.07	0.07	
	<b>36.3</b>	<b>0.91</b>	<b>0.91</b>	<b>0.91</b>	<b>1.82</b>	<b>6.81</b>	<b>6.81</b>	<b>6.81</b>	<b>6.81</b>	<b>1.82</b>	<b>0.91</b>	<b>0.91</b>	<b>0.91</b>	<b>36</b>

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## Appendix K - Temporal and Spatial Distribution of Estimated PM10 Emissions from Private Unpaved Traffic Areas in the SJVAB

### Temporal Distribution

	PM10 Emissions (tpy)					Total	%
	Cotton Processing	Landfills	Mining	Oil Drilling	Construction		
January		20.0	0	0.0	0.9	20.9	5.7%
February		20.0	0	0.0	0.9	20.9	5.7%
March		20.0	2.6	1.0	0.9	24.5	6.7%
April		20.0	5.1	2.0	1.8	28.9	7.9%
May		20.0	5.1	2.0	6.8	33.9	9.2%
June		20.0	5.1	2.0	6.8	33.9	9.2%
July		20.0	5.1	2.0	6.8	33.9	9.2%
August		20.0	5.1	2.0	6.8	33.9	9.2%
September		20.0	5.1	2.0	1.8	28.9	7.9%
October	17.5	20.0	5.1	2.0	0.9	45.5	12.4%
November	17.5	20.0	2.6	1.0	0.9	42.0	11.4%
December		20.0	0	0.0	0.9	20.9	5.7%
<b>Total</b>	<b>35.0</b>	<b>240.0</b>	<b>40.9</b>	<b>15.8</b>	<b>36.3</b>	<b>368.1</b>	<b>100.0%</b>

### Spatial Distribution

County	PM10 Emissions (tpy)					Total	%
	Cotton Processing	Landfills	Mining	Oil Drilling	Construction		
Fresno	13.3	40.0	5.1		7.8	66.2	18.0%
Kern	6.9	70.0	10.6		3.1	90.6	24.6%
Kings	6.4	20.0	0.3		1.1	27.8	7.6%
Madera	1.6	10.0	2.4		1.2	15.2	4.1%
Merced	2.7	20.0	6.1		2.8	31.6	8.6%
San Joaquin	0.0	30.0	4.8		10.9	45.7	12.4%
Stanislaus	0.0	20.0	4.8		6.3	31.1	8.5%
Tulare	4.2	30.0	6.8	15.8	3.0	59.8	16.3%
<b>Total</b>	<b>35.0</b>	<b>240.0</b>	<b>40.9</b>	<b>15.8</b>	<b>36.3</b>	<b>368.0</b>	<b>100.0%</b>

Note: Totals may differ slightly due to rounding.