SECTION 7.9

ENTRAINED PAVED ROAD DUST
PAVED ROAD TRAVEL

(Updated July 1997)

EMISSION INVENTORY SOURCE CATEGORY
Miscellaneous Processes / Road Dust

EMISSION INVENTORY CODES (CES CODES) AND DESCRIPTION

640-635-5400-0000 (83618) Paved Entrained Road Dust - Freeways

640-637-5400-0000 (83626) Paved Entrained Road Dust - Major Streets

640-639-5400-0000 (83634) Paved Entrained Road Dust - Collector Streets

640-641-5400-0000 (83642) Paved Entrained Road Dust - Local Streets

640-636-5400-0000 (47456) Paved Entrained Road Dust - Paved Roads (obsolete)

METHODS AND SOURCES

The paved road dust category includes emissions of fugitive dust particulate matter entrained by vehicular travel on paved roads. Road dust emissions are estimated for four classes of roads. The four classifications are: 1) freeways/expressways, 2) major streets/highways, 3) collector streets, and 4) local streets. The estimated particulate matter emissions for paved road dust for each California county are listed in Table 1. Table 2 shows the portion of travel on each of the four major road types in each county.

OVERVIEW OF ESTIMATION METHODOLOGY

Dust emissions from vehicle travel on paved roads are computed using the emission factor equation provided in the Fifth Edition of U.S. EPA's AP-42 document.[1] Inputs to the paved road dust equation were developed from California specific roadway silt loading and average vehicle weight data measured by Midwest Research Institute (MRI) in 1995.[2] Data from the Air Resources Board and air districts were used to estimate county specific VMT (vehicle miles traveled) data.[3,4] Caltrans HPMS (Highway Performance Monitoring System)[5] data were used to estimate the fraction of travel on each of the four road types in each county. The paved road dust category does not include directly emitted brake and tire wear, nor TOG, CO, NO_x, SO_x, or PM exhaust emissions. These directly emitted motor vehicle emissions are included in the motor vehicle emission inventory.

EMISSIONS ESTIMATION METHODOLOGY

The emission factor provided by the EPA for estimating entrained dust emissions from vehicles traveling on paved roads is:

$$E = k \left(\frac{sL}{2} \right)^{0.65} \left(\frac{W}{3} \right)^{1.5}$$

where E is the particulate emission factor in units of pounds of particulate matter per VMT, k is the particle size multiplier (used to compute PM_{10}, $PM_{2.5}$, etc.), sL is the roadway silt loading in grams/square meter, and W is the average weight (in tons) of vehicles traveling the road.

The statewide average vehicle weight is assumed to be 2.4 tons. This estimate is based on an informal traffic count estimated by MRI while they were performing California silt loading measurements. Table 3 shows the roadway silt loadings and emission factors used in each California county. The silt loading values are the averages of silt loadings measured by MRI in the South Coast AQMD and the San Joaquin Valley Unified AQMD.[2] (Note: The South Coast Air Quality Management District (SCAQMD) computed county specific average vehicle weight estimates by using average fleet weights with estimates of the amount of VMT traveled by each vehicle class. The weights used are shown in Table 3.)

The county roadway emission factors, combined with ARB and air district VMT data[3,4] for each roadway type, are linked with the Caltrans HPMS data[5] to estimate emissions for each road type in each county. Further detail on the derivation of the paved road dust emission factors, silt loadings, and roadway travel fractions are available in the ARB background document for entrained paved road dust.[6]

TEMPORAL ACTIVITY AND GROWTH

Temporal activity is assumed to be the same as on-road vehicle travel: uniform in spring and fall, increasing slightly in summer, and decreasing slightly in winter. The monthly temporal profile below shows this trend. The weekly and daily activities are estimated to have higher activities on weekdays and during daylight hours.

CES	Hours	Days	Weeks
ALL	24	7	52

CES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ALL	7.7	7.7	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	8.5	7.7

ASSUMPTIONS AND LIMITATIONS

1. The current AP-42 emission factor assumes that road dust emissions are proportional to VMT, roadway silt loading, and average vehicle weight.

2. Virtually the same silt loading values are used throughout the state. These silt loadings are based on a total of eight silt loading measurements each in the South Coast Area, Coachella Valley, and Bakersfield. This does not fully represent the variability in California silt loading.

3. The methodology assumes that roadway silt loading, and therefore the emission factor, varies by the type of road.

4. It is assumed that the EPA particle size multiplier (i.e., the 'k' factor in the AP-42 equation) reasonably represents the size distribution of California paved road dust.

5. The average vehicle fleet weight is assumed to be 2.4 tons, statewide (except for the SCAQMD).

6. For freeway and major roads, emissions growth is assumed to be proportional to changes in roadway centerline mileage. For collector and local roads, emissions growth is assumed proportional to changes in VMT.

CHANGES IN THE METHODOLOGY

There were substantial changes in the paved road dust emission estimates for this update. These include:

- Incorporation of the new EPA paved road emission factor from the Fifth Edition of EPA's AP-42 document (January 1995, Section 13.2.1).
- Update of the Vehicle Miles Traveled (VMT) data to 1993 levels based on ARB and Air District supplied values.
- Update of the fractions of vehicle miles traveled on each of the four major roadway categories (i.e., freeways, major roads, collectors, and local roads) to reflect 1993 data.
- Incorporation of California specific roadway silt loading values.
- Emissions growth was changed so that freeways and major roads are grown based on increases in roadway centerline mileage, and local and collector roads are grown based on increases in VMT. Previously, all roads were grown based on VMT.

The changes reduced the paved road dust emission estimates by about 70% from the previous 1993 published emission inventory estimates.

COMMENTS AND RECOMMENDATIONS

Studies are ongoing by the University of California, Riverside, and the University of California, Davis, to better understand and quantify paved road dust emissions. These studies are not showing clear correlations between roadway silt loading and dust production, or VMT and dust production in urban areas. The results of these studies will be incorporated into this methodology when they are available. Also, effort is needed to better account for the variability in dust emissions based on population density, adjacent land uses, and geographic location.

SAMPLE CALCULATIONS

The table below summarizes the data computations necessary to estimate the paved road dust emissions in Santa Cruz county. The following steps are performed:

Step 1: Silt Loadings. Use the ARB default silt loadings, or local silt loadings if better data are available. Detailed information on the derivation of the ARB default values is included in reference 6.

Step 2: Emission Factor. Using the silt loadings shown and the AP-42 emission factor equation shown previously, compute the emission factor for each road type. In this case, a default average vehicle weight of 2.4 tons is used. Also, because PM_{10}, emissions are being computed, a 'k' factor of 0.016 is used from AP-42. For reference, the 'k' factor for $PM_{2.5}$ is 0.0073 (for units of lb/VMT).

Step 3: Using the data in Table 2, fill in the county specific travel fraction data. These data are derived from Caltrans HPMS data.[5] See reference 6 for additional information on how the traffic splits were derived.

Step 4: Using the county total VMT values provided in Table 1, and the travel fraction values from Step 3, compute the VMT traveled on each roadway type.
Total VMT x Travel Fraction = Road VMT.

Step 5: Multiply the emission factors in Step 2 by the VMT data in Step 4 to compute the PM_{10} emissions for each road type. *Road EF x Road VMT = Road Emissions*. Divide the computed values by 2000 lbs/ton to get the annual tons of PM_{10}/year from paved road dust.

Step 6: The ARB's database system maintains particulate emissions as Total Suspended Particulates (TSP). Therefore, the PM_{10} emissions must be converted to TSP emissions. For California paved road dust, it is estimated that 46% of TSP is PM_{10}, therefore, dividing the PM_{10} value by 0.46 produces the correct TSP emissions.[7]

Estimating Paved Road Dust Emissions In Santa Cruz County

		Road Type				
		Freeway	Major	Collector	Local	
Step 1	Silt Loading *(g/m^2)*	0.02	0.035	0.32	0.32	
Step 2	Emission Factor *(lbs PM_{10}/1e6 VMT)*	574	825	825	3479	Totals
Step 3	Travel Fraction	0.285	0.465	0.181	0.069	1
Step 4	VMT *(1993, million/yr)*	519	847	330	125	1821
Step 5	PM_{10} Emissions *(tons /yr)*	149	349	136	219	853
Step 6	TSP Emissions *(tons/yr)*	324	759	296	476	1855

ADDITIONAL CODES

SOURCE CATEGORY GROWTH AND CONTROL CODES

Various

SOURCE CATEGORY CODE POLLUTANT SPECIATION PROFILES

For All: PM = 393, VOC = not applicable

SOURCE CATEGORY CODE REACTIVITY FACTORS

Not Applicable

REFERENCES

1. U.S. Environmental Protection Agency. Compilation of Air Pollutant Emission Factors, AP-42, Section 13.2.1, Fifth Edition. January 1995.

2. Muleski, Greg. Improvement of Specific Emission Factors (BACM Project No. 1), Final Report. Midwest Research Institute, March 29, 1996.

3. California Air Resources Board, Technical Support Division. 1993 Vehicle Miles Traveled by County from 1993 Ozone SIP EMFAC/BURDEN7F runs. Contact: Ed Yotter.

4. County VMT data for 1993 for the San Joaquin Valley Unified Air Pollution Control District and South Coast Air Quality Management District were obtained from district staff (who collected the information from local transportation agencies).

5. California Department of Transportation. California 1993 Daily Vehicle Miles of Travel for Public Maintained Paved Roads based on Highway Performance Monitoring System (HPMS) Data from 'TRAV93'. Barry Chrissinger; May 1995.

6. Gaffney, Patrick. Entrained Dust from Paved Road Travel, Emission Estimation Methodology, Background Document. California Air Resources Board. July 1997.

7. Houck, J.E., Chow, J.C., Watson, J.G., et al. Determination of Particle Size Distribution and Chemical Composition of Particulate Matter from Selected Sources in California, Final Report. Desert Research Institute & OMNI Environmental. Prepared for California Air Resources Board. Agreement No. A6-175-32. June 30, 1989.

UPDATED BY

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TABLE 1

1993 Reentrained Paved Road Dust Emissions for PM_{10} and TSP

EIC: Various; Activity: On Road Travel; Process: Paved Road

AIR BASIN	COUNTY	1993 VMT (million VMT per year)	Paved Road Dust PM10 Emissions (tons/yr)				1993 PM_{10} Emissions (tons/year)	1993 TSP Emissions (tons/year)
			Freeway	Major	Collector	Local		
GBV	ALPINE	52	0.0	16.4	2.6	9.9	29	63
	INYO	460	0.0	140.8	25.1	100.8	267	580
	MONO	311	0.0	99.7	10.2	78.4	188	409
LC	LAKE	420	0.0	110.9	28.5	144.0	283	616
LT	EL DORADO	343	0.0	111.8	7.1	95.3	214	466
	PLACER	158	19.4	21.9	6.3	38.6	86	187
MC	AMADOR	304	0.0	90.1	20.7	62.0	173	376
	CALAVERAS	320	0.0	90.2	26.5	64.3	181	393
	EL DORADO	1479	0.0	482.4	30.4	411.2	924	2009
	MARIPOSA	226	0.0	67.0	10.9	65.2	143	311
	NEVADA	948	88.4	143.9	53.8	279.4	565	1229
	PLACER	262	32.1	36.3	10.5	64.0	143	311
	PLUMAS	278	0.0	66.5	24.2	101.2	192	417
	SIERRA	92	3.4	17.8	4.9	43.3	69	151
	TUOLUMNE	511	0.0	130.5	47.4	138.5	316	688
NC	DEL NORTE	223	0.0	62.3	19.3	44.5	126	274
	HUMBOLDT	1114	0.0	329.6	55.1	315.8	701	1523
	MENDOCINO	997	0.0	258.2	87.3	278.3	624	1356
	TRINITY	142	0.0	40.2	4.9	57.5	103	223
	SONOMA	514	29.9	109.2	37.3	95.9	272	592
NCC	MONTEREY	3223	119.9	784.5	219.5	647.1	1771	3850
	SAN BENITO	375	0.0	123.5	10.1	89.7	223	485
	SANTA CRUZ	1821	149.1	349.3	136.1	218.6	853	1855
NEP	LASSEN	492	0.0	118.0	44.4	171.9	334	727
	MODOC	149	0.0	28.4	11.7	89.6	130	282
	SISKIYOU	812	101.1	73.2	30.0	365.3	570	1238
SC	LOS ANGELES	65793	9858.7	15402.2	1802.2	5814.7	32878	71474
	ORANGE	22026	3386.3	5105.9	420.7	2153.7	11067	24058
	RIVERSIDE	11278	2291.0	2564.7	828.0	2450.7	8134	17683
	SAN BERNARDINO	10853	2356.7	3042.6	645.5	2324.3	8369	18194
SCC	SAN LUIS OBISPO	2351	28.9	740.9	64.0	521.8	1356	2947
	SANTA BARBARA	3105	269.8	653.6	158.5	343.5	1425	3098
	VENTURA	5858	576.8	1215.3	160.4	895.0	2848	6191
SD	SAN DIEGO	23094	3478.3	3105.1	757.4	2804.8	10146	22056
SED	IMPERIAL	1341	94.0	223.3	417.3	404.3	1139	2476
	KERN	817	54.9	197.8	33.8	111.1	398	864
	LOS ANGELES	1409	203.4	306.5	35.9	144.6	690	1501
	RIVERSIDE	4780	877.0	947.0	305.7	1131.1	3261	7089
	SAN BERNARDINO	5173	661.0	823.1	174.6	786.0	2445	5315
SF	ALAMEDA	9867	1556.1	1306.5	293.6	986.5	4143	9006
	CONTRA COSTA	6259	884.5	913.0	164.3	984.1	2946	6404
	MARIN	1947	271.0	241.0	115.1	242.8	870	1891
	NAPA	717	36.6	163.0	42.6	159.2	401	873
	SAN FRANCISCO	3167	348.6	662.7	80.7	262.4	1354	2944
	SAN MATEO	4923	813.1	627.0	114.7	508.0	2063	4484
	SANTA CLARA	10674	1443.8	1792.2	240.5	1246.9	4723	10268
	SOLANO	2314	422.2	228.9	55.9	265.8	973	2115
	SONOMA	1922	111.7	408.2	139.3	358.5	1018	2212
SJV	FRESNO	6112	343.4	1262.7	379.8	2829.8	4816	10469
	KERN	5011	337.2	1214.0	149.4	1386.3	3087	6711
	KINGS	967	62.1	209.3	48.2	319.6	639	1389
	MADERA	1010	0.0	312.1	35.3	571.0	918	1997
	MERCED	2377	127.0	563.3	138.5	830.3	1659	3607
	SAN JOAQUIN	4776	480.3	830.3	232.4	1353.6	2897	6297
	STANISLAUS	3455	211.7	628.1	305.6	1051.4	2197	4776
	TULARE	2984	47.7	744.3	202.1	1775.1	2769	6020
SV	BUTTE	1532	25.7	362.8	123.6	458.4	971	2110
	COLUSA	495	81.2	34.9	17.9	146.8	281	610
	GLENN	404	61.0	36.3	17.8	105.9	221	480
	PLACER	2373	290.8	328.3	95.1	579.3	1294	2812
	SACRAMENTO	9056	1046.5	1598.0	328.5	1288.3	4261	9264
	SHASTA	1722	208.3	272.4	69.9	290.4	841	1828
	SOLANO	1030	187.9	101.9	24.9	118.3	433	941
	SUTTER	634	14.2	165.7	36.1	166.2	382	831
	TEHAMA	773	104.5	88.7	35.7	186.3	415	903
	YOLO	1456	227.4	157.7	42.1	312.8	740	1609
	YUBA	502	20.5	106.1	39.6	135.6	302	656
	Totals	262363	34445	53590	10329	42874	141238	307062

Fraction of PM10 = 0.46 (PM10 Emissions = TSP x 0.46)

TABLE 2

1993 Roadway Travel Fractions and VMT Estimates for California Entrained Paved Road Dust Estimates

AIR BASIN	COUNTY	1993 VMT 1993 O_3 SIP* (million VMT)	1993 HPMS Travel Fractions			
			Freeway	Major	Collector	Local
GBV	ALPINE	52	0.000	0.767	0.123	0.110
	INYO	460	0.000	0.742	0.132	0.126
	MONO	311	0.000	0.776	0.079	0.145
LC	LAKE	420	0.000	0.639	0.164	0.197
LT	EL DORADO	343	0.000	0.790	0.050	0.160
	PLACER	158	0.427	0.335	0.097	0.140
MC	AMADOR	304	0.000	0.718	0.165	0.117
	CALAVERAS	320	0.000	0.684	0.201	0.116
	EL DORADO	1479	0.000	0.790	0.050	0.160
	MARIPOSA	226	0.000	0.718	0.117	0.166
	NEVADA	948	0.325	0.368	0.138	0.170
	PLACER	262	0.427	0.335	0.097	0.140
	PLUMAS	278	0.000	0.580	0.211	0.209
	SIERRA	92	0.129	0.470	0.129	0.272
	TUOLUMNE	511	0.000	0.619	0.225	0.156
NC	DEL NORTE	223	0.000	0.676	0.210	0.114
	HUMBOLDT	1114	0.000	0.717	0.120	0.163
	MENDOCINO	997	0.000	0.627	0.212	0.160
	TRINITY	142	0.000	0.685	0.083	0.232
	SONOMA	514	0.203	0.515	0.176	0.107
NCC	MONTEREY	3223	0.130	0.590	0.165	0.115
	SAN BENITO	375	0.000	0.798	0.065	0.137
	SANTA CRUZ	1821	0.285	0.465	0.181	0.069
NEP	LASSEN	492	0.000	0.581	0.219	0.201
	MODOC	149	0.000	0.463	0.190	0.347
	SISKIYOU	812	0.434	0.218	0.089	0.258
SC	LOS ANGELES	65793	0.437	0.458	0.054	0.051
	ORANGE	22026	0.450	0.455	0.038	0.057
	RIVERSIDE	11278	0.453	0.340	0.110	0.096
	SAN BERNARDINO	10853	0.445	0.385	0.082	0.087
SCC	SAN LUIS OBISPO	2351	0.043	0.764	0.066	0.128
	SANTA BARBARA	3105	0.303	0.510	0.124	0.064
	VENTURA	5858	0.343	0.503	0.066	0.088
SD	SAN DIEGO	23094	0.525	0.326	0.079	0.070
SED	IMPERIAL	1341	0.244	0.403	0.179	0.173
	KERN	817	0.235	0.587	0.100	0.078
	LOS ANGELES	1409	0.437	0.458	0.054	0.051
	RIVERSIDE	4780	0.453	0.340	0.110	0.096
	SAN BERNARDINO	5173	0.445	0.385	0.082	0.087
SF	ALAMEDA	9867	0.550	0.321	0.072	0.057
	CONTRA COSTA	6259	0.493	0.353	0.064	0.090
	MARIN	1947	0.485	0.300	0.143	0.072
	NAPA	717	0.178	0.551	0.144	0.128
	SAN FRANCISCO	3167	0.384	0.507	0.062	0.048
	SAN MATEO	4923	0.576	0.309	0.056	0.059
	SANTA CLARA	10674	0.471	0.407	0.055	0.067
	SOLANO	2314	0.636	0.240	0.059	0.066
	SONOMA	1922	0.203	0.515	0.176	0.107
SJV	FRESNO	6112	0.196	0.501	0.151	0.153
	KERN	5011	0.235	0.587	0.072	0.106
	KINGS	967	0.224	0.525	0.121	0.131
	MADERA	1010	0.000	0.749	0.085	0.167
	MERCED	2377	0.186	0.574	0.141	0.099
	SAN JOAQUIN	4776	0.351	0.421	0.118	0.110
	STANISLAUS	3455	0.214	0.440	0.214	0.132
	TULARE	2984	0.056	0.604	0.164	0.176
SV	BUTTE	1532	0.058	0.574	0.196	0.172
	COLUSA	495	0.572	0.170	0.088	0.170
	GLENN	404	0.526	0.217	0.106	0.151
	PLACER	2373	0.427	0.335	0.097	0.140
	SACRAMENTO	9056	0.403	0.428	0.088	0.082
	SHASTA	1722	0.422	0.383	0.098	0.097
	SOLANO	1030	0.636	0.240	0.059	0.066
	SUTTER	634	0.078	0.633	0.138	0.151
	TEHAMA	773	0.471	0.278	0.112	0.139
	YOLO	1456	0.544	0.262	0.070	0.123
	YUBA	502	0.142	0.512	0.191	0.155
			State Averages			
All	Statewide Total	262363	0.252	0.500	0.119	0.123

* The VMT for most counties is from the ARB's EMFAC/BURDEN 7F runs performed for the 1993 ozone SIPs. The VMT for the SCAQMD and SJVUAPCD was provided by each district from their local transportation agencies.

TABLE 3
Silt Loadings and Emission Factors for
California Entrained Paved Road Dust Estimates

		Silt Loadings and PM_{10} Emission Factors										
		Freeway		Major		Collector		Local		Local Rural (1)		
AIR BASIN	COUNTY	Silt Load (g/m^2)	EF (lbs PM_{10} per 10^6 VMT)	Silt Load (g/m^2)	EF (lbs PM_{10} per 10^6 VMT)	Silt Load (g/m^2)	EF (lbs PM_{10} per 10^6 VMT)	Silt Load (g/m^2)	EF (lbs PM_{10} per 10^6 VMT)	Silt Load (g/m^2)	EF (lbs PM_{10} per 10^6 VMT)	Average Vehicle Weight (tons)
GBV	ALPINE	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	INYO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	MONO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
LC	LAKE	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
LT	EL DORADO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	PLACER	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
MC	AMADOR	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	CALAVERAS	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	EL DORADO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	MARIPOSA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	NEVADA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	PLACER	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	PLUMAS	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SIERRA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	TUOLUMNE	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
NC	DEL NORTE	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	HUMBOLDT	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	MENDOCINO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	TRINITY	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SONOMA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
NCC	MONTEREY	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SAN BENITO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SANTA CRUZ	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
NEP	LASSEN	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	MODOC	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SISKIYOU	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
SC (2,3)	LOS ANGELES	0.020	685.5	0.037	1022.4	0.037	1022.4	0.240	3447			2.7
	ORANGE	0.020	682.8	0.037	1018.5	0.037	1018.5	0.240	3434			2.7
	RIVERSIDE	0.020	896.0	0.037	1336.6	0.037	1336.6	0.240	4506			3.2
	SAN BERNARDINO	0.020	975.1	0.037	1454.5	0.037	1454.5	0.240	4904			3.4
SCC	SAN LUIS OBISPO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SANTA BARBARA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	VENTURA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
SD	SAN DIEGO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
SED	IMPERIAL (4)	0.020	573.8	0.035	825.5	0.320	3478.8	0.320	3479			2.4
	KERN	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	LOS ANGELES (2,3)	0.020	660.5	0.035	950.3	0.035	950.3	0.320	4004			2.6
	RIVERSIDE (2,3)	0.020	809.3	0.035	1164.3	0.035	1164.3	0.320	4907			3.0
	SAN BERNARDINO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
SF	ALAMEDA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	CONTRA COSTA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	MARIN	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	NAPA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SAN FRANCISCO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SAN MATEO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SANTA CLARA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SOLANO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SONOMA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
SJV (5)	FRESNO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479	1.6	9903	2.4
	KERN	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479	1.6	9903	2.4
	KINGS	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479	1.6	9903	2.4
	MADERA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479	1.6	9903	2.4
	MERCED	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479	1.6	9903	2.4
	SAN JOAQUIN	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479	1.6	9903	2.4
	STANISLAUS	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479	1.6	9903	2.4
	TULARE	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479	1.6	9903	2.4
SV	BUTTE	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	COLUSA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	GLENN	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	PLACER	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SACRAMENTO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SHASTA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SOLANO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	SUTTER	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	TEHAMA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	YOLO	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4
	YUBA	0.020	573.8	0.035	825.5	0.035	825.5	0.320	3479			2.4

Notes for Table 3.

(1) The SJVUAPCD splits local roads into urban and rural classes, and uses separate silt loading values.
(2) The SCAQMD uses the median, rather than the average value of the BACM silt loading values.
(3) The SCAQMD computed county specific vehicle weight averages. Los Angeles and Orange Counties have an average vehicle weight value of 2.7 tons. Riverside has a value of 3.2 tons, and San Bernardino is set to 3.4 tons.
(4) In Imperial county, a silt loading value of 0.32 is used for collector roads to account for the large portion of developed areas.
(5) The SJV district splits their local roads into urban and rural roads. A higher silt loading value derived from AP-42 data is used in computing emissions for rural local roads due to anticipated higher loading levels.