



## 2009 Area Source Emissions Inventory Methodology

### 430 – MINERAL PROCESSES – OTHER (MISCELLANEOUS)

#### I. Purpose

This document describes the Area Source Methodology used to estimate emissions of carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), fine particulate matter less than 10 microns (PM<sub>10</sub>), volatile organic compounds (VOC), and sulfur oxides (SO<sub>x</sub>) generated from other (miscellaneous) mineral processes in the San Joaquin Valley Air Basin. An area source category is a collection of similar emission units within a geographic area (i.e., a County). An area source category collectively represent individual sources that are small and numerous, and that may not have been inventoried as specific point, mobile, or biogenic sources. The California Air Resources Board (CARB) has grouped these individual sources with other like sources into area source categories. These source categories are grouped in such a way that they can be estimated collectively using one methodology.

#### II. Applicability

The emission calculations from this Area Source Methodology apply to facilities that are identified by the following Category of Emission Source (CES) code and Reconciliation Emission Inventory Code (REIC):

**Table 1. Emission inventory codes.**

CES	REIC	Description
46987	430-995-7000-0000	Other (Miscellaneous) Mineral Processes

#### III. Point Source Reconciliation

Emissions from the area source inventory and point source inventory are reconciled against each other to prevent double counting. This is done using relationships created by the California Air Resources Board (ARB) between the area source REIC and the point sources' Standard Industry Classification (SIC) code and emissions process Source Category Code (SCC) combinations. The area source in this methodology reconciles against processes in our point source inventory with the SIC/SCC combinations listed in Appendix A.

#### **IV. Methodology Description**

The Other (Miscellaneous) Mineral Processes source category is used to estimate area source emissions from sources such as the following:

- Mining, storage and/or handling of mineral products such as asbestos, cement/concrete, bauxite, ceramics, clay, clinker, coal, coke, diatomaceous earth, fertilizers, flyash, granite, gypsum, lime, unspecified ore, potash, sand/aggregate, and stones.
- Glass manufacturing.

This source category includes both fugitive emissions (such as from mineral storage piles), and non-fugitive emissions (such as from glass melting furnaces). At this time, the District considers this category as point source only. Therefore, the area source emissions for this source categories will be set to zero.

#### **V. Activity Data**

The activity data for each facility associated with this source category is reported through the District's point source inventory.

#### **VI. Emission Factors**

The emission factors for processes associated with this source category are reported through the District's point source inventory and are derived from continuous emission monitoring (CEMS) equipment, source tests, or approved emission factors.

#### **VII. Emissions Calculations**

Not applicable.

#### **VIII. Temporal Variation**

The temporal data for the facilities associated with this source category is reported through the District's point sources inventory.

#### **IX. Spatial Variation**

The spatial data for each facility associated with this source category is reported through the District's point sources inventory.

## X. Growth Factor

Growth factors are developed by either the District's Strategies and Incentives Department or CARB for each EIC. These factors are used to estimate emissions in future years. The growth factors associated with this emissions category may be obtained from the District's Strategies and Incentives Department.

## XI. Control Level

Emission units within this area source category may be subject to the following District Rules:

**Table 2. District rules applicable to 430-995-7000-0000.**

Rule No.	Rule Description
4307	Boilers, Steam Generators, and Process Heaters - 2.0 MMBtu/hr to 5.0 MMBtu/hr
4308	Boilers, Steam Generators, and Process Heaters (0.075 MMBtu/hr to 2.0 MMBtu/hr)
4354	Glass Melting Furnaces
Reg 8	Fugitive PM10 Prohibitions

Control levels associated with this emissions category may be obtained from the District's Strategies and Incentives Department.

## XII. CARB Chemical Speciation

CARB has developed organic gas profiles in order to calculate reactive organic gasses (ROG), volatile organic compounds (VOC) or total organic gas (TOG) given any one of the three values. For each speciation profile, the fraction of TOG that is ROG and VOC is given. The organic gas profile codes can also be used to lookup associated toxics. CARB's speciation profile for Mineral Processes is presented below

**Table 3. CARB organic gas speciation profiles for 430-995-7000-0000**

Profile Description	CARB Organic Gas Profile#	Fractions	
		ROG	VOC
Species Unknown – all category composite	600	0.6986	0.6986

CARB has developed particulate matter speciation profiles in order to calculate particulate matter (PM), particulate matter with a diameter less than or equal to 10 microns (PM<sub>10</sub>) or particulate matter with a diameter less than or equal to 2.5 microns (PM<sub>2.5</sub>) given any one of the three values. For each speciation profile, the fraction of PM that is PM<sub>10</sub> and PM<sub>2.5</sub> is given. The particulate matter profile codes can also be used to lookup associated toxics. CARB's speciation profiles for Mineral Processes are presented below.

**Table 4. CARB particulate matter speciation profiles for 430-995-7000-0000**

Profile Description	CARB PM Profile#	Fractions	
		PM <sub>10</sub>	PM <sub>2.5</sub>
Mineral Process Loss	371	0.5	0.146

### XIII. Assessment Of Methodology

The District does not currently estimate area source emissions for this source category. All emissions associated with this source category are assumed to be reported through the District's point source inventory.

### XIV. Emissions

The 2009 point source emissions inventory for Other (Miscellaneous) Mineral Processes (REIC 430-995-7000-0000) is presented in the table below. The emission are reported for each county in the District

**Table 5. Point source emissions for REIC 430-995-7000-0000 (2009)**

County	Criteria Emissions (tons/year)					Toxic Emissions (lbs/year)
	NO <sub>x</sub>	CO	SO <sub>x</sub>	VOC <sup>(1)</sup>	PM <sub>10</sub>	NH <sub>3</sub>
Fresno	522.07	0.71	139.79	0.29	34.68	1,788
Kern	0.44	0.37	0.41	0.38	51.15	0.00
Kings	0.00	0.00	0.00	0.00	0.00	0.00
Madera	316.66	10.94	46.91	25.65	45.89	219,999
Merced	0.00	0.00	0.00	0.00	2.54	0.00
San Joaquin	1,084.10	38.06	331.56	4.03	132.94	0.00
Stanislaus	166.86	0.04	299.99	0.85	23.86	0.00
Tulare	0.00	0.00	0.00	0.00	3.01	0.00
<b>TOTAL</b>	<b>2,090.13</b>	<b>50.12</b>	<b>818.66</b>	<b>31.20</b>	<b>294.07</b>	<b>221,787</b>

(1) The District only reports ROG to CARB. As noted in Section XII, ROG is the same as VOC.

(2) At this time, the District does not calculate PM<sub>2.5</sub> emissions. PM<sub>2.5</sub> emissions can be estimated using the speciation profiles found in Section XII.

Following is the net change in total unreconciled emissions between this update (2009 inventory year) and the inventory year (2008) for REIC 430-995-7000-0000. The change in emissions are reported for each county in the District.

**Table 6. Net emissions change for REIC 430-995-7000-0000 (2009-2008)**

County	Criteria Emissions (tons/year)					Toxic Emissions (lbs/year)
	NO <sub>x</sub>	CO	SO <sub>x</sub>	VOC <sup>(1)</sup>	PM <sub>10</sub>	NH <sub>3</sub>
Fresno	-1,250.63	-17.72	-805.84	-6.69	-8.89	-16,259
Kern	-0.37	0.00	0.00	-1.03	-3.18	0.00
Kings	0.00	0.00	0.00	0.00	0.00	0.00
Madera	-764.05	0.55	-87.36	-30.62	-1.89	219,999
Merced	0.00	0.00	0.00	0.00	0.01	0.00
San Joaquin	-14.57	-4.84	-66.75	-0.05	-13.26	-2,373
Stanislaus	-91.96	-0.81	79.68	-0.12	-83.46	0.00
Tulare	0.00	0.00	0.00	0.00	0.58	0.00
<b>TOTAL</b>	<b>-2,121.58</b>	<b>-22.82</b>	<b>- 880.27</b>	<b>-38.51</b>	<b>-110.09</b>	<b>201,367</b>

(1) The District only reports ROG to CARB. As noted in Section XII, ROG is the same as VOC.

(2) At this time, the District does not calculate PM<sub>2.5</sub> emissions. PM<sub>2.5</sub> emissions can be estimated using the speciation profiles found in Section XII.

## XV. Revision History

2009. This is a new District methodology. It eliminates area source estimates that accounted for glass plant furnace emissions. All glass plants are now reported through the District's point source inventory, so the area source estimate has been eliminated to prevent double counting.

## XVI. Update Schedule

In an effort to provide inventory information to CARB and other District programs and maximize limited resources, the District has developed an update cycle based on emissions within the source category as shown in the following table.

**Table 7. Area source update frequency criteria.**

Total Emissions (tons/day)	Update Cycle (years)
<=1	4
>1 and <= 2.5	3
>2.5 and <=5	2
>5	1

Since the District does not estimate area source emissions for this source category (area source emissions are set to zero), this methodology will be reviewed every four years.

## **XVII. References**

1. US Census Bureau. 2007Censtats databases – county business patterns data. Database maintained by the US Census Bureau, Washington, D.C. - Web Site - <http://censtats.census.gov/>
2. Sonoma Technology, Inc. 2002. Central California Ozone Study, Attachment E: Mineral Processes. 71 pages

## Appendix A. Inventory Reconciliation Codes

Table 8. EIC, SCC and SIC codes in the District's 2009 Point Source Inventory that reconciled to REIC 430-995-7000-0000.

EIC	SCC	SCC Description	SIC
430-995-7018-0000	30501418	MINERAL PRODUCTS - GLASS MFG - PELLETIZING -	2952
	30500801	MINERAL PRODUCTS - CERAMIC CLAY MFG - DRYING -	3253
	30500802	MINERAL PRODUCTS - CERAMIC CLAY MFG - GRINDING -	1459
430-995-7020-0000	30500803	MINERAL PRODUCTS - CERAMIC CLAY MFG - STORAGE -	1459
	30500805	MINERAL PRODUCTS - CERAMIC CLAY MFG - MIXING -	2851
	30500806	MINERAL PRODUCTS - CERAMIC CLAY MFG - HNDLNG & TRANSFERRNG -	2851, 4911
	30500807	MINERAL PRODUCTS - CERAMIC CLAY MFG - GRINDING DRY -	2851
	30500899	MINERAL PRODUCTS - CERAMIC CLAY MFG - NOT CLASSIFIED - OTHER	1459
	30500903	MINERAL PRODUCTS - CLAY/FLYASH SINTR - NATURL CLAY/SHALE - SINTERING	1459
	30500905	MINERAL PRODUCTS - CLAY/FLYASH SINTR - RAW CLAY/SHALE - TRANSFRE/CONVEYNG	1459, 5032
430-995-7022-0000	30500906	MINERAL PRODUCTS - CLAY/FLYASH SINTR - RAW CLAY/SHALE - STORAGE PILES	1459
	30500999	MINERAL PRODUCTS - CLAY/FLYASH SINTR - NOT CLASSIFIED - OTHER	4953
430-995-7048-0000	30501608	MINERAL PRODUCTS - LIME MFG - RAW MATERIAL - UNLOADING	3274
430-995-7050-0000	30510205	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - LIMESTONE	2047, 4911, 4931, 5169
	30501201	MINERAL PRODUCTS - FIBERGLASS - WOOL-TYPE FIBER - REGENERATIVE FURN	3296
430-995-7058-0000	30501204	MINERAL PRODUCTS - FIBERGLASS - WOOL-TYPE FIBER - FORMING-ROTARY SP	3296
	30501214	MINERAL PRODUCTS - FIBERGLASS - TEXTILE-TYPE FIBR - FORMING PROCESS	3296
	30501221	MINERAL PRODUCTS - FIBERGLASS - RAW MATL HANDLING - UNLOAD/CONVEYING	3296
	30501223	MINERAL PRODUCTS - FIBERGLASS - RAW MATL HANDLING - MIXING/WEIGHING	1743, 2952
	30501299	MINERAL PRODUCTS - FIBERGLASS - NOT CLASSIFIED - OTHER	3296
	30501706	MINERAL PRODUCTS - MINERAL WOOL - GRANULATED PRODUCTS - PROCESSING	3296
	30501799	MINERAL PRODUCTS - MINERAL WOOL - NOT CLASSIFIED - OTHER	3296
	30502001	MINING OPERATIONS - NONMETALLIC MINRL - STONE QUARRYING - PRIMARY CRUSHING	3295
	30502004	MINING OPERATIONS - NONMETALLIC MINRL - STONE QUARRYING - RECRUSH/SCREENING	3295
	30502005	MINING OPERATIONS - NONMETALLIC MINRL - STONE QUARRYING - FINES MILL	3295
430-995-7064-0000	30502006	MINING OPERATIONS - NONMETALLIC MINRL - STONE QUARRYING - SCREEN/CONVEY	2819, 3295
	30504022	MINING OPERATIONS - UNSPECIFIED ORE - SEE COMMENT - CONVEY/HAUL WASTE	1389
430-995-7072-0000	30510598	MINERAL PRODUCTS - BULK MATERIALS - LOADING OPERATION - MINERAL OTHER	3295
	30502299	MINING OPERATIONS - NONMETALLIC MINRL - POTASH PRODUCTION - NOT CLASSIFIED	2879

430-Mineral Processes -Other (Misc)

EIC	SCC	SCC Description	SIC
430-995-7078-0000	30501106	MINERAL PRODUCTS - CONCRETE BATCHING - SAND/AGGREGATE - TRANSFER TO BINS	1771, 4011
	30501107	MINERAL PRODUCTS - CONCRETE BATCHING - CEMENT UNLOADING - ELEVATED SILOS	1771, 4011
	30501108	MINERAL PRODUCTS - CONCRETE BATCHING - WEIGHT HOPPER - LOADING	1771, 4011
	30501113	MINERAL PRODUCTS - CONCRETE BATCHING - MIXING DRY -	7353
	30502502	MINING OPERATIONS - NONMETALLIC MINRL - SAND/GRAVEL - AGGREGATE STORAGE	3295, 5032
	30502503	MINING OPERATIONS - NONMETALLIC MINRL - SAND/GRAVEL - TRANSFER STATION	5032
	30502510	MINING OPERATIONS - NONMETALLIC MINRL - SAND/GRAVEL - CRUSHING	3295
	30502511	MINING OPERATIONS - NONMETALLIC MINRL - SAND/GRAVEL - SCREENING	3295, 4953
	30502701	MINING OPERATIONS - NONMETALLIC MINRL - PRIMARY CRUSHING - RAW MATERIAL	5093
	30502705	MINING OPERATIONS - NONMETALLIC MINRL - SECONDARY CRUSHING -	1442
	30502760	MINING OPERATIONS - NONMETALLIC MINRL - SAND HANDLING - TRANSFER & STORAGE	1442
	30510209	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - SAND	4911
	460-460-7025-0000	30501413	MINERAL PRODUCTS - GLASS MFG - GROUND CULLET - CRUSHER/GRINDER
30501414		MINERAL PRODUCTS - GLASS MFG - GROUND CULLET - BEADING FURNACE	3221
460-460-7037-0000	30501402	MINERAL PRODUCTS - GLASS MFG - CONTAINER GLASS - MELTING FURNACE	3221
	30501410	MINERAL PRODUCTS - GLASS MFG - RAW MATL HANDLING - GENERAL	3211, 3221
460-460-7038-0000	30501420	MINERAL PRODUCTS - GLASS MFG - MIRROR PLATING - GENERAL	3231
	30502021	MINING OPERATIONS - NONMETALLIC MINRL - FINES SCREENING -	3295
	39999994	INDUSTRIAL PROCES - MISCELLANEOUS - NOT CLASSIFIED - OTHER	3221
460-460-7039-0000	30501403	MINERAL PRODUCTS - GLASS MFG - FLAT GLASS - MELTING FURNACE	3211
	30501407	MINERAL PRODUCTS - GLASS MFG - FLAT GLASS - FORMING/FINISHING	3211
499-995-7016-0000	30500707	MINERAL PRODUCTS - CEMENT MFG - WET PROCESS - RAW MAT UNLOADING	5093
499-995-7016-0000	30500799	MINERAL PRODUCTS - CEMENT MFG - WET PROCESS - OTHER	5093



430-Mineral Processes -Other (Misc)

EIC	SCC	SCC Description	SIC
	30500609	MINERAL PRODUCTS - CEMENT MFG - DRY PROCESS - PRIMARY CRUSHING	4953
	30500610	MINERAL PRODUCTS - CEMENT MFG - DRY PROCESS - SECOND CRUSHING	5093
	30500612	MINERAL PRODUCTS - CEMENT MFG - DRY PROCESS - RAW MAT TRANSFER	1389, 5032
	30500619	MINERAL PRODUCTS - CEMENT MFG - DRY PROCESS - CEMENT LOAD OUT	3273
---	30500699	MINERAL PRODUCTS - CEMENT MFG - DRY PROCESS - OTHER	3271
	30500899	MINERAL PRODUCTS - CERAMIC CLAY MFG - NOT CLASSIFIED - OTHER	2851
	30502002	MINING OPERATIONS - NONMETALLIC MINRL - STONE QUARRYING - SECONDRY CRUSHING	2951
	30502006	MINING OPERATIONS - NONMETALLIC MINRL - STONE QUARRYING - SCREEN/CONVEY	2951
	30502008	MINING OPERATIONS - NONMETALLIC MINRL - STONE QUARRYING - CUT STONE-GENERAL	3295
410-400-5800-0000	30510298	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - MINERAL,OTHER	2875
410-400-7000-0000	30599999	MINERAL PRODUCTS - MISCELLANEOUS - NOT CLASSIFIED - OTHER	2879
430-424-7050-0000	30510105	MINERAL PRODUCTS - BULK MATERIALS - CONVEYORS - LIMESTONE	2952
430-426-0210-0000	30510103	MINERAL PRODUCTS - BULK MATERIALS - CONVEYORS - COAL	1221
	30510102	MINERAL PRODUCTS - BULK MATERIALS - CONVEYORS - CEMENT	3272
	30500611	MINERAL PRODUCTS - CEMENT MFG - DRY PROCESS - SCREENING	3272, 4953
430-429-7016-0000	30500728	MINERAL PRODUCTS - CEMENT MFG - FINISH GRINDING MILL - WEIGHT HOPPER	3273
	30500904	MINERAL PRODUCTS - CLAY/FLYASH SINTR - RAW CLAY/SHALE - CRUSHING/SCREENNG	4911
	30515003	MINERAL PRODUCTS - NONMETALLIC MINRL - CALCINING-GENERAL - GRINDING/MILLING	1743
430-430-2008-0000	30510201	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - AMMONIUM SULFATE	2873
430-434-7048-0000	30501610	MINERAL PRODUCTS - LIME MFG - RAW MATERIAL - STORAGE PILES	1442
430-436-7078-0000	30510309	MINERAL PRODUCTS - BULK MATERIALS - STORAGE PILES - SAND	3369
	30501015	MINING OPERATIONS - COAL CLEANING - MATERIAL HANDLING - LOADING	1442
	30510103	MINERAL PRODUCTS - BULK MATERIALS - CONVEYORS - COAL	4911
430-995-0210-0000	30510203	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - COAL	4911
	30510303	MINERAL PRODUCTS - BULK MATERIALS - OPEN STOCKPILES - COAL	4911, 4931
	30510403	MINERAL PRODUCTS - BULK MATERIALS - UNLOADING OPERATN - COAL	4931
430-995-0214-0000	30510203	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - COAL	1221
430-995-0220-0000	30510204	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - COKE	4911
430-995-5800-0000	30510497	MINERAL PRODUCTS - BULK MATERIALS - UNLOADING OPERATION - FERTILIZER,OTHER	711
	30510597	MINERAL PRODUCTS - BULK MATERIALS - LOADING OPERATION - FERTILIZER,OTHER	711

430-Mineral Processes -Other (Misc)

EIC	SCC	SCC Description	SIC
430-995-7000-0000	30500144	PETROLEUM INDRY - ASPHALT ROOFING - GRANULES TRANSPORT - SCRW CONVYR&BKT ELEV	2952
	30500699	MINERAL PRODUCTS - CEMENT MFG - DRY PROCESS - OTHER	3273
	30501106	MINERAL PRODUCTS - CONCRETE BATCHING - SAND/AGGREGATE - TRANSFER TO BINS	1389
	30501107	MINERAL PRODUCTS - CONCRETE BATCHING - CEMENT UNLOADING - ELEVATED SILOS	1389, 5541
	30501109	MINERAL PRODUCTS - CONCRETE BATCHING - MIXER LOADING -	1389, 3299, 7353
	30501199	MINERAL PRODUCTS - CONCRETE BATCHING - NOT CLASSIFIED - OTHER	3295
	30502006	MINING OPERATIONS - NONMETALLIC MINRL - STONE QUARRYING - SCREEN/CONVEY	1795
	30510001	MINERAL PRODUCTS - BULK MATERIALS - ELEVATORS - UNLOADING	4789
	30510197	MINERAL PRODUCTS - BULK MATERIALS - CONVEYORS - FERTILIZER,OTHER	2874
	30510198	MINERAL PRODUCTS - BULK MATERIALS - CONVEYORS - MINERAL,OTHER	5032
	30510199	MINERAL PRODUCTS - BULK MATERIALS - CONVEYORS - MISC/NOT CLASSIFD	1499, 2951, 4953
	30510201	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - AMMONIUM SULFATE	2879
	30510206	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - PHOSPHATE ROCK	4911
	30510296	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - CHEMICAL,OTHER	4911
	30510298	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - MINERAL,OTHER	2951, 3273, 5093
	30510299	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - MISC/NOT CLASSIFD	2875, 4911
	30510498	MINERAL PRODUCTS - BULK MATERIALS - UNLOADING OPERATN - MINERAL,OTHER	2873, 2875
	30510499	MINERAL PRODUCTS - BULK MATERIALS - UNLOADING OPERATN - MISC/NOT CLASSIFD	2873, 2879
	30510596	MINERAL PRODUCTS - BULK MATERIALS - LOADING OPERATION - CHEMICAL,OTHER	1389
	30510598	MINERAL PRODUCTS - BULK MATERIALS - LOADING OPERATION - MINERAL,OTHER	2048, 2952, 4911, 4931
	30510599	MINERAL PRODUCTS - BULK MATERIALS - LOADING OPERATION - MISC/NOT CLASSIFD	723
	30590005	MINERAL PRODUCTS - FUEL-FIRED EQPMNT - LPG -	1459
	30599999	MINERAL PRODUCTS - MISCELLANEOUS - NOT CLASSIFIED - OTHER	3291, 3295, 4491, 4911, 4931, 5093
430-995-7016-0000	30500607	MINERAL PRODUCTS - CEMENT MFG - DRY PROCESS - RAW MAT UNLOADING	5032
	30500618	MINERAL PRODUCTS - CEMENT MFG - DRY PROCESS - CEMENT SILOS	1771
	30500619	MINERAL PRODUCTS - CEMENT MFG - DRY PROCESS - CEMENT LOAD OUT	3272
	30510202	MINERAL PRODUCTS - BULK MATERIALS - STORAGE BINS - CEMENT	1389
430-995-7018-0000	30501106	MINERAL PRODUCTS - CONCRETE BATCHING - SAND/AGGREGATE - TRANSFER TO BINS	7353
	30501107	MINERAL PRODUCTS - CONCRETE BATCHING - CEMENT UNLOADING - ELEVATED SILOS	3299, 7353