

Vulcan Materials Company (Marana Plant)
Air Quality Operating Permit # 6066

Technical Support Document (TSD)

October 27, 2015

I. General Comments

A. Company Information

1. Source Name: Vulcan Materials Co. – Marana Plant
2. Source Address: 10100 W. Avra Valley Road, Marana, AZ 85743

B. Background

This individual air quality operating permit is issued to Vulcan Materials Co. – Marana Plant, for their Nonmetallic Mineral Mining/Gravel and Crushed Stone and Hot Mix Asphalt (HMA) facility and operations located at 10100 W. Avra Valley Road, Marana, AZ to produce various concrete, aggregate, or decorative landscaping rock products. The facility previously operated under an Authorization to Operate (ATO) issued by PDEQ for coverage under ADEQ's General Air Quality Control Permit For Hot Mix Asphalt Plants. The Permittee applied for a significant permit revision on June 5, 2013 due to changes in the General Permit and to increase the allowable throughput for the facility.

The facility is a Class II, synthetic minor source for Carbon Monoxide emissions and a true minor source of all other criteria pollutants. The facility is an area source of HAP.

The facility operates under the following industrial classifications:

- Crushed and Broken Stone Mining and Quarrying SIC Code: 1499 (NAICS: 212319)
- Crushing & Screening & Wash Plants SIC Code: 1442 (NAICS: 212321)
- Hot Mix Asphalt SIC Code: 2951 (NAICS: 324121)

Aggregate materials are excavated from a pit area using loaders and placed on a series of conveyor belts that are used to transport the material to the crushing and screening plant. The material is crushed, screened, and sorted stacked into stockpiles. Stockpiled materials may be transported to be further processed in the wash plant, HMA plant or directly loaded into trucks for delivery to other customers.

Some of the mineral aggregate materials are transported to the HMA plant where they are conveyed and dried in a large heated drum dryer, and then mixed with liquid asphalt cement and lime to produce asphalt paving materials. The drum and aggregate is heated using waste oil and the liquid asphalt cement is maintained by a propane heater. HMA may be stored in silos until loaded into trucks for delivery to customers. The throughput of the HMA plant is limited by the amount of material that can be processed by the drum dryer.

B. Attainment Classification

The facility is located in an area that is designated as non-attainment for PM₁₀ (Rillito PM₁₀ Nonattainment Area). In June 2008, the Arizona Department of Environmental Quality submitted a state implementation plan (SIP) revision to the Environmental Protection Agency EPA requesting redesignation of the area to attainment (*Rillito Moderate Area PM₁₀ Maintenance Plan and Request for Redesignation to Attainment*). The action to redesignate the area as attainment is still pending as of the date of this writing.

II. Source Description

A. Process Description

The air pollutant emitting equipment and operations at Vulcan Materials, Co. – Marana Plant consists of the following:

- Crushing and Screening Plant including various crushers, screens, and conveyors used to process, sort, and store rock and aggregate products.
- Hot Mix Asphalt Plant including a waste oil fueled drum dryer, propane fired asphalt heater, and baghouse APC.
- Materials Handling and Fugitive Dust

B. Operating Capacity and Schedule

The Potential to Emit (PTE) of the plant is based on operations 24 hours/day 365 days per year. The Permittee has declared the following maximum processing capacities for each plant:

- Crushing & Screening Plant Capacity: 450 tons/hr – 3,942,000 tons per year
- Wash Plant Capacity: 450 tons/hr – 3,942,000 tons per year
- HMA Plant Capacity: 350 tons/hr – 3,066,000 tons per year

Emissions from typical operations are based on 14 hours of operation per day, 6 days a week and 48 weeks per year. Nevertheless, the Permittee’s operating schedule is not restricted and the facility can operate 24 hours/day 365 day/year subject to the voluntary plant throughput limitations.

The Permittee has voluntarily restricted the throughput of the crushing and screening and wash plants to 1, 814,400 tons/year (46% capacity) and the HMA plant (23% capacity) below maintain emissions below major source thresholds.

C. Air Pollution Control Equipment

The facility has the potential to generate particulate matter emissions through baghouse air pollution control (APC) system stacks, or vents; from process fugitive emissions generated by crushers, screens, and conveyor belt drop points; and from other fugitive sources including the dumping and loading of aggregates in feed hoppers, and non-point fugitive dust emissions from stockpiles, roadways, and open areas. Particulate matter control is achieved with wet suppression techniques and the operation and use of baghouse APC equipment on pneumatically loaded silos and the HMA drum dryer.

III. Emission Estimates

Detailed calculations of particulate matter from the operations were completed in support of the permit renewal application for the determination of Potential to Emit (PTE) and are provided in Attachment 1. The submitted calculations have been reviewed and verified by PDEQ.

Table 1 - Potential to Emit (Tons/yr)

Source	Emissions (tons/yr)						
	PM	PM ₁₀	CO	NO _x	SO _x	VOC	HAPs (Total)
All Facility Operations (Potential to Emit) ¹	85.1	52.5	203.1	84.7	88.9	73.8	15.2
All Facility Operations (Controlled Emissions) ²	25.2	14.8	46.7	19.5	20.5	17.0	3.5

¹ Potential to Emit (PTE) calculations are based on maximum possible operation, 24 hours per day, 365 day per year.

² Controlled Emissions based on restricting Crushing and Screening throughput at 46% and Hot Mix Asphalt throughput by at 23%. Typical operation is based on 14 hours per day, 6 days per week, 48 weeks per year (46% of PTE).

IV. Applicable Requirements

Code of Federal Regulations

Chapter 40 Part 60:

Subpart A	General Provisions
Subpart I	Standards of Performance for Hot Mix Asphalt Facilities.
Subpart OOO	Standards of Performance for Nonmetallic Mineral Processing Plants

Chapter 40 Part 279:

Subpart B	Standards for the Management of Used Oil
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Pima County Code Title 17, Chapter 17.12:

17.12.010	Statutory authority
17.12.020	Planning, Constructing, or operating without a permit
17.12.040	Reporting requirements
17.12.045	Test methods and procedures
17.12.050	Performance tests
17.12.165	Permit application processing procedures for Class II and Class III permits
17.12.185	Permit contents for Class II and Class III permits
17.12.190	Permits containing synthetic emission limitations and standards
17.12.235	Facility changes that require a revision
17.12.240	Procedures for certain changes that do not require a permit revision Class II or Class III
17.12.255	Minor permit revisions
17.12.260	Significant permit revisions
17.12.520	Fees related to Class II and Class III permits

Pima County Code Title 17, Chapter 17.16:

17.16.010	Local rules and standards; Applicability of more than one standard
17.16.020	Noncompliance with applicable standards
17.16.030	Odor limiting standard
17.16.050	Visibility limiting standard
17.16.060	Fugitive dust producing activities
17.16.100	Particulate materials
17.16.110	Storage piles
17.16.130	Applicability
17.16.150	Hazardous waste, hazardous waste fuel, used oil, and used oil fuel burning
17.16.370	Standards of Performance for Gravel or Crushed Stone Processing Plants

Pima County Code Title 17, Chapter 17.20:

17.20.010	Source sampling, monitoring and testing
17.20.040	Concealment of emissions

Pima County Code Title 17, Chapter 17.24:

17.24.020	Recordkeeping for compliance determination
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V. Permit Sections and Applicability Determinations

A. Permit and Permit Summary

The facility previously operated under an Authorization to Operate (ATO) issued by PDEQ for coverage under ADEQ's General Air Quality Control Permit For Hot Mix Asphalt Plants. Changes to the General Permit require sources within non-attainment areas to obtain an individual air quality operating permit. In addition the facility wanted to increase the allowable throughput for the facility above the restriction in the general permit.

B. Applicability

Section I. of the permit, Attachment 1, and the equipment list in Attachment 2 of the permit provide references to the applicability of NSPS standards to affected sources operating at the facility.

C. Spray Bar Pollution Control Requirement

Section II.B.2.a.iii requires use of spray bar pollution controls in accordance with "EPA Control of Air Emissions From Process Operations In The Rock Crushing Industry" ([EPA 340/1-79-002](#)), ["Wet Suppression System" \(pages 15-34\), amended as of February, 1979](#), as incorporated herein by reference to control fugitive dust emissions from non-NSPS facilities.

Section III.A.1.b adds the NSPS monthly periodic water spray nozzle inspection requirement for affected facilities that use water suppression systems that commenced construction after April 22, 2008 which is applicable to a number of conveyors at the facility.

D. Testing Requirements

Section VI.A of the permit has been streamlined to only reference opacity testing requirements in 40 CFR §60.11 and not performance testing requirements in 40 CFR §60.8 because none of the affected facilities subject to Subpart OOO located and used at the facility are controlled by a capture system. Should a capture system subject to subpart OOO be installed at the facility in the future, a significant revision will be required to revise the permit and incorporate the additional standard and monitoring requirements.

Section III.a.1.b and VI.A.1.b of the permit provides additional NSPS subpart OOO repeat testing and exemption criteria for affected facilities that commence construction after April 22, 2008 that do not use water sprays.

VI. Periodic Monitoring

This is a Class II permit and as such does not require the source to submit a semiannual summary report of required monitoring or annual compliance certifications. The permit requires the facility maintain the required monitoring records on site in order to demonstrate compliance with the emission limitations and standards.

The permit requires daily monitoring of point, non-point, and fugitive sources for compliance with the opacity standards and fugitive dust control requirements, monthly inspections of water spray nozzles for Subpart OOO affected facilities that commenced construction after April 22, 2008 that use wet suppression systems, daily monitoring of the plant production totals to produce monthly and rolling 12 month total production tonages for compliance with the voluntary throughput limitations, waste oil fuel monitoring for the HMAP, and APC baghouse maintenance for units in operation at the facility.

VII. Insignificant Activities

Attachment 3 provides a list of the standard Pima County list of insignificant and trivial activities and operations in accordance with PCC 17.04.340.A. No additional insignificant activity determinations have been made by the Control Officer.

VIII. Impacts to Ambient Air Quality

Not a major source so no impact studies are required.

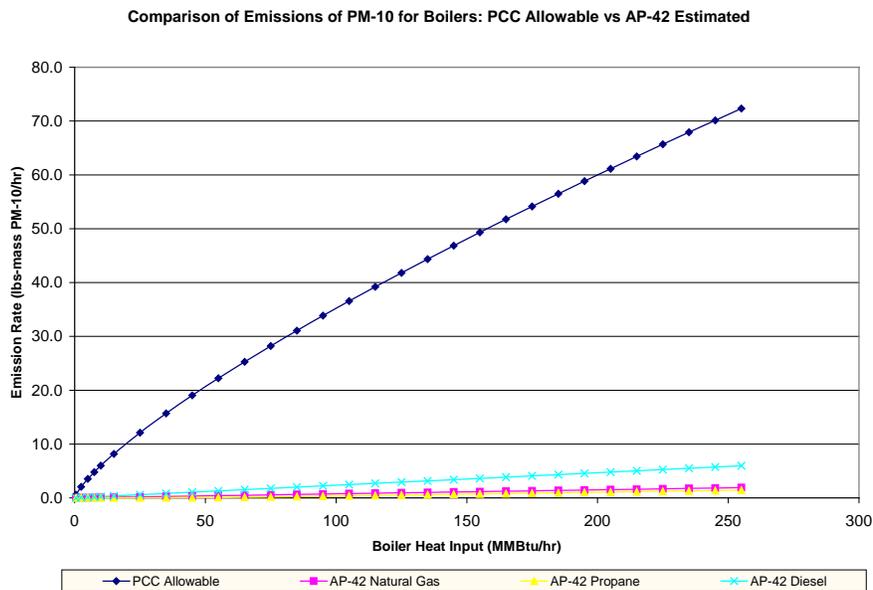
IX. Control Technology Determination

No control technologies needed to be determined; the source is not subject to RACT, BACT or LAER.

X. Exclusion of PCC Particulate Matter Discharge Rate Standards

The applicable PCC rules for the maximum particulate discharge rates are not normally included for Class II and III area source permits as explained below.

- For particulate matter sources, the calculated maximum particulate matter discharge rate, as provided in Title 17, yields maximum rates that far exceed the emissions expected from most typical area sources. For example a 200 ton/hour process source, which is typical for an average construction aggregate screening operation, would be limited to a maximum discharge rate of 40.4 lbs/hour or 177 tons/year. This limit far exceeds estimated emissions from typical sources and the source is far more likely to exceed opacity and visibility limiting standards well before reaching this limit.
- With regard to fuel burning equipment, PCC 17.16.165.C limits the emissions of particulate matter from commercial and industrial fossil-fuel fired equipment (including but not limited to boilers). This limit is not normally included in permits because allowable emissions are consistently over an entire order of magnitude higher than EPA AP-42 estimated potential emissions. The chart below, illustrates the point.



Comparative Chart of Allowable Particulate Emissions Under Pima County Code, Title 17, and Estimated Potential Emissions based on EPA AP-42 Estimates for External Combustion Sources. Allowable emissions are consistently over ten times estimated potential emissions. Therefore, it is not necessary to include the standard in the permit explicitly, but by reference in Attachment 1 of the permit.

Attachment 1

Potential to Emit Estimates
As supplied in application dated August 21, 2013
and updated March 10, 2015

Table 2. Estimated Emissions from Crushing and Screening Plant

2a. Estimated Throughput

	ton/hr	hrs/day	ton/day	days/yr	ton/yr
Rock Products - PTE ¹	450	24	10,800	365	3,942,000
Rock Products - Typical Operation ²	450	14	6,300	288	1,814,400
Ratio Of Typical Operation to PTE					46%

¹ = Potential to Emit (PTE) Calculations are based on maximum possible operation, 24 hours per day, 365 days per year.

² = Typical Operation is based on 14 hours per day, 6 days per week, 48 weeks per year.

2b. Emission Estimates for Operations with Federally Required Controls

Source	Amount Processed (tons/yr)	PTE with Controls			
		PM Emission Factor (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)
Primary Screening	3,942,000	0.0022 ✓	8,672	0.00074	2,917
Crushing	3,942,000	0.0012 ✓	4,730	0.00054	2,129
Fine Screening	3,942,000	0.0036	14,191	0.0022	8,672
Stacking	3,942,000	0.00067	2,641	0.00048	1,892
Conveyor Transfer Points (15)	59,130,000	0.00014 ✓	8,278	0.000046	2,720
		Total PM	38,513	Total PM10	18,330

2c. Emission Estimates for Operations Where Controls are Not Federally Required

Source	Amount Processed (tons/yr)	PTE Without Controls				PTE with Controls			
		PM Emission Factor ³ (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor ³ (lb/ton)	PM10 Emissions (lbs/yr)	PM Emission Factor (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)
Batch Drop Operations	3,942,000	0.0022	8,804	0.0016	6,307	0.00067	2,641	0.00048	1,892
Feed Hopper Loading	3,942,000	0.0022	8,804	0.0016	6,307	0.00067	2,641	0.00048	1,892
		Total PM	17,608	Total PM10	12,614	Total PM	5,282	Total PM10	3,784

2d. Emission Estimates for Fugitive Sources⁴ (No Federally Required Controls)

Source	Amount ⁵	PTE Without Controls				PTE with Controls			
		PM Emission Factor ³ (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor ³ (lb/ton)	PM10 Emissions (lbs/yr)	PM Emission Factor (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)
Vehicle Traffic - Loaders (miles)	31,000	2.4333	75,433	0.6333	19,633	0.73	22,630	0.19	5,890
Vehicle Traffic - Haul Trucks (miles)	109,000	2.1850	238,165	0.5570	60,713	0.6555	71,450	0.1671	18,214
Storage Piles (piles)	43	1.4098	61	1.4098	61	0.423	18.19	0.423	18
		Total PM	313,659	Total PM10	80,407	Total PM	94,098	Total PM10	24,122

Emission Factors are based on AP-42 Chapter 11.19.2 and ADEQs 2012 Annual Emission Inventory Forms for Crushing and Screening.

³ = Uncontrolled Emission Factors are calculated from Controlled Emission Factors, which are assumed to include a 100% Capture Efficiency and 70% Control Efficiency.

⁴ = Includes Vehicle Traffic and Storage Piles associated with both the Crushing and Screening Plant and the Hot-Mix Asphalt Plant.

⁵ = Mileage for Loaders and Haul Trucks is based on the facility throughput, typical vehical capacities, and typical travel distances. The number of Storage Piles is based on an average number of piles at the facility.

Table 3. Estimated Emissions from Hot-Mix Asphalt Plant

3a. Estimated Throughput

	ton/hr	hrs/day	ton/day	hrs/yr	ton/yr
Asphalt Produced - PTE ¹	350	24	8,400	8,760	3,066,000
Lime (1% of Asphalt Produced) - PTE	4	24	84	8,760	30,660
Asphalt Produced - Typical Operation ²	350	14	4,900	2,000	700,000
Lime (1% of Asphalt Produced) - Typical	4	14	49	2,000	7,000
Ratio Of Typical Operation to PTE					23%
	gal/hr		gal/day		gal/yr
Propane Usage - PTE	6	24	144	8,760	52,560
Propane Usage - Typical Operation	6	14	84	2,000	12,000
Ratio Of Typical Operation to PTE					23%

¹ = PTE Calculations are based on maximum possible operation, 24 hours per day, 365 days per year.

² = Typical Operation is based on 14 hours per day, 2,000 hours per year.

3b. Asphalt Material Handling - Emission Estimates for Operations with Federally Required Controls

Source	Amount Processed (tons/yr)	PTE with Controls			
		PM Emission Factor (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)
Conveyors (7)	21,462,000	0.00014	3,005	0.000046	987
Scalping Screen	3,066,000	0.0022	6,745	0.00074	2,269
Lime to Silo ³	30,660	0.0089	273	0.0049	150
		Total PM	10,023	Total PM10	3,406

3c. Asphalt Material Handling - Emission Estimates for Operations Where Controls are Not Federally Required

Source	Amount Processed (tons/yr)	PTE without Controls				PTE with Controls			
		PM Emission Factor ⁴ (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor ⁴ (lb/ton)	PM10 Emissions (lbs/yr)	PM Emission Factor (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)
Material handling	3,066,000	0.0022	6,847	0.0016	4,906	0.00067	2,054	0.00048	1,472
		Total PM	6,847	Total PM10	4,906	Total PM	2,054	Total PM10	1,472

Emission Factors are based on AP-42 Chapter 11.19.2 and ADEQs 2012 Annual Emission Inventory Forms for Hot-Mix Asphalt Plants.

³ = Emission Factor for Lime to Silo based on AP-42 Chapter 11.12 Emission Factor for Cement Supplement to Silo

⁴ = Uncontrolled Emission Factors are based on Controlled Emission Factors excluding 100% Capture Efficiency and 70% Control Efficiency.

Table 3. Estimated Emissions from Hot-Mix Asphalt Plant

3d. Emission Estimates - Asphalt Production, Drum Mix

Pollutant	Asphalt Produced tons/yr	Drum Dryer - PTE ^b (Waste Oil, Non-Crumb Rubber) (Federally Required Control - Fabric Filter)		Plant Load Out - PTE (No Additional Controls Available)		Silo Filling - PTE (No Additional Controls Available)		Asphalt Cement Storage Heater (Propane) - PTE (No Additional Controls Available)			Totals lbs/yr
		Emission Factor lb/ton	Emissions lbs/yr	Emission Factor lbs/ton	Emissions lbs/yr	Emission Factor lbs/ton	Emissions lbs/yr	Fuel Used gallons/yr	Emission Factor lb/gal	Emissions lbs/yr	
		PM	3,066,000	0.0104	31,930	0.00052	1,594	0.00059	1,809	52,560	
PM10	3,066,000	0.0031	9,579	0.00052	1,594	0.00059	1,809	52,560	0.0005	26	14,480
CO	3,066,000	0.130	398,580	0.00135	4,139	0.0011	3,373	52,560	0.002	105	406,197
NOx	3,066,000	0.055	168,630	NA	0	NA	0	52,560	0.0145	762	169,392
SO2	3,066,000	0.058	177,828	NA	0	NA	0	52,560	0.000026	0	177,828
VOCs	3,066,000	0.032	98,112	0.0039	11,957	0.0122	37,405	52,560	0.0006	32	147,506
HAPs											
Acenaphthene	3,066,000	1.40E-06	4.29	8.86E-07	2.72	1.19E-06	3.65	52,560	NA	0	10.7
Acenaphylene	3,066,000	2.20E-05	67.45	9.55E-08	0.29	3.55E-08	0.11	52,560	NA	0	67.9
Acetaldehyde	3,066,000	1.30E-03	3985.8	NA	0	NA	0	52,560	NA	0	3,985.8
Acrolein	3,066,000	2.60E-05	79.72	NA	0	NA	0	52,560	NA	0	79.7
Anthracene	3,066,000	3.10E-06	9.50	2.39E-07	0.73	0.00000033	1.01	52,560	NA	0	11.2
Benzene	3,066,000	3.90E-04	1195.7	2.16E-06	6.62	0.0000039	11.96	52,560	NA	0	1,214.3
Benzo(a)anthracene	3,066,000	2.10E-07	0.64	6.48E-08	0.20	0.00000142	0.44	52,560	NA	0	1.3
Benzo(a)pyrene	3,066,000	9.80E-09	0.03	7.84E-09	0.02	2.41E-08	0.07	52,560	NA	0	0.1
Benzo(b)fluoranthene	3,066,000	1.00E-07	0.31	2.59E-08	0.08	NA	0	52,560	NA	0	0.4
Benzo(e)pyrene	3,066,000	1.10E-07	0.34	2.66E-08	0.08	2.41E-08	0.07	52,560	NA	0	0.5
Benzo(g,h,i)perylene	3,066,000	NA	0	6.48E-09	0.02	NA	0	52,560	NA	0	0.0
Benzo(k)fluoranthene	3,066,000	4.10E-08	0.13	7.50E-09	0.02	0.00000256	7.85	52,560	NA	0	8.0
Bromomethane	3,066,000	NA	0	3.99E-07	1.22	0.00000597	1.83	52,560	NA	0	3.1
2-Butanone	3,066,000	NA	0	2.04E-06	6.25	0.00000475	14.56	52,560	NA	0	20.8
Carbon Disulfide	3,066,000	NA	0	5.41E-07	1.66	0.00000195	5.98	52,560	NA	0	7.6
Chloroethane	3,066,000	NA	0	8.73E-09	0.03	0.000000487	1.49	52,560	NA	0	1.5
Chloromethane	3,066,000	NA	0	6.24E-07	1.91	0.0000028	8.58	52,560	NA	0	10.5
Chrysene	3,066,000	NA	0	3.51E-07	1.08	0.00000533	1.63	52,560	NA	0	2.7
Cumene	3,066,000	1.80E-07	0.55	4.57E-06	14.01	NA	0	52,560	NA	0	14.6
Dibenzo(a,h)anthracene	3,066,000	NA	0	1.26E-09	0.00	NA	0	52,560	NA	0	0.0
Dibenz(g,h,i)perylene	3,066,000	4.00E-08	0.12	NA	0	NA	0	52,560	NA	0	0.1
Dichlorobenzene	3,066,000	NA	0	NA	0	NA	0	52,560	NA	0	0.0
Ethylbenzene	3,066,000	2.40E-04	735.8	1.16E-05	0	0.00000463	14.20	52,560	NA	0	750.0
Fluoranthene	3,066,000	6.10E-07	1.87	1.70E-07	0.52	0.00000381	1.17	52,560	NA	0	3.6
Fluorene	3,066,000	1.10E-05	33.73	2.63E-06	8.06	0.0000134	41.08	52,560	NA	0	82.9
Formaldehyde	3,066,000	3.10E-03	9504.6	3.66E-06	11.22	0.0000841	257.85	52,560	NA	0	9,773.7
Hexane	3,066,000	NA	0	6.24E-06	19.13	0.0000122	37.41	52,560	NA	0	56.5
Indeno(1,2,3-cd)pyrene	3,066,000	7.00E-09	0.02	1.60E-09	0.00	NA	0	52,560	NA	0	0.0
Isooctane	3,066,000	NA	0	7.49E-08	0.23	3.78E-08	0.12	52,560	NA	0	0.3
Methyl Chloroform	3,066,000	4.80E-05	147.2	NA	0	NA	0	52,560	NA	0	147.2

Table 3. Estimated Emissions from Hot-Mix Asphalt Plant

Pollutant	Asphalt Produced tons/yr	Drum Dryer - PTE ⁵ (Waste Oil, Non-Crumb Rubber) (Federally Limited Control - Fabric Filter)		Plant Load Out - PTE (No Additional Controls Available)		Silo Filling - PTE (No Additional Controls Available)		Cement Storage Heater (Propane) - PTE (No Additional Controls Available)			Totals lbs/yr	
		Emission Factor lb/ton	Emissions lbs/yr	Emission Factor lbs/ton	Emissions lbs/yr	Emission Factor lbs/ton	Emissions lbs/yr	Fuel Used gallons/yr	Emission Factor lb/gal	Emissions lbs/yr		
Methylene Chloride	3,066,000	NA	0	NA	0	3.29E-08	0.10	52,560	NA	0	0.1	
Methyl Ethyl Ketone	3,066,000	2.00E-05	0	NA	0	NA	0	52,560	NA	0	0.0	
2-Methylnaphthalene	3,066,000	1.70E-04	521.2	8.11E-06	24.87	0.00000462	14.16	52,560	NA	0	560.3	
3-Methylchloranthrene	3,066,000	NA	0	NA	0	NA	0	52,560	NA	0	0.0	
Naphthalene	3,066,000	6.50E-04	1992.9	4.26E-06	13.06	7.62E-08	0.23	52,560	NA	0	2,006.2	
Perylene	3,066,000	8.80E-09	0.03	7.50E-08	0.23	0.00000695	21.31	52,560	NA	0	21.6	
Phenanthrene	3,066,000	2.30E-05	70.52	2.76E-06	8.46	0.00000457	14.01	52,560	NA	0	93.0	
Propylene	3,066,000	NA	0	5.11E-07	1.57	0.00000066	2.02	52,560	NA	0	3.6	
Pyrene	3,066,000	3.00E-06	9.20	2.59E-08	0.08	0.00000112	3.43	52,560	NA	0	12.7	
Phenol	3,066,000	NA	0	4.02E-06	12.33	NA	0	52,560	NA	0	12.3	
Quinone	3,066,000	1.60E-04	0	NA	0	NA	0	52,560	NA	0	0.0	
Styrene	3,066,000	NA	0	3.04E-07	0.93	0.000000658	2.02	52,560	NA	0	2.9	
2,3,7,8-TCDD Equivalents	3,066,000	3.06E-12	0.00	NA	0	NA	0	52,560	NA	0	0.0	
Tetrachloroethene	3,066,000	NA	0	3.20E-07	0.98	NA	0	52,560	NA	0	1.0	
Toluene	3,066,000	2.90E-03	8891.4	8.73E-06	26.77	0.00000756	23.18	52,560	NA	0	8,941.3	
Total Dioxins	3,066,000	7.90E-11	0.00	NA	0	NA	0	52,560	NA	0	0.0	
Total Furans	3,066,000	4.00E-11	0.00	NA	0	NA	0	52,560	NA	0	0.0	
Trichlorofluoromethane	3,066,000	NA	0	5.41E-08	0.17	NA	0	52,560	NA	0	0.2	
m/p-Xylene	3,066,000	NA	0	1.71E-05	52.43	0.0000244	74.81	52,560	NA	0	127.2	
o-Xylene	3,066,000	2.00E-04	613.2	3.33E-06	10.21	NA	0	52,560	NA	0	623.4	
Antimony	3,066,000	1.80E-07	0.55	NA	0	NA	0	52,560	NA	0	0.6	
Arsenic	3,066,000	5.60E-07	1.72	NA	0	NA	0	52,560	NA	0	1.7	
Beryllium	3,066,000	NA	0	NA	0	NA	0	52,560	NA	0	0.0	
Cadmium	3,066,000	4.10E-07	1.26	NA	0	NA	0	52,560	NA	0	1.3	
Chromium	3,066,000	5.50E-06	16.86	NA	0	NA	0	52,560	NA	0	16.9	
Chromium VI	3,066,000	4.50E-07	1.38	NA	0	NA	0	52,560	NA	0	1.4	
Cobalt	3,066,000	2.60E-08	0.08	NA	0	NA	0	52,560	NA	0	0.1	
Lead	3,066,000	1.50E-05	45.99	NA	0	NA	0	52,560	NA	0	46.0	
Manganese	3,066,000	7.70E-06	23.61	NA	0	NA	0	52,560	NA	0	23.6	
Mercury	3,066,000	2.60E-06	7.97	NA	0	NA	0	52,560	NA	0	8.0	
Nickel	3,066,000	6.30E-05	193.2	NA	0	NA	0	52,560	NA	0	193.2	
Phosphorous	3,066,000	NA	0	NA	0	NA	0	52,560	NA	0	0.0	
Selenium	3,066,000	3.50E-07	1.07	NA	0	NA	0	52,560	NA	0	1.1	
											HAPs Total	28,955

⁵ = Drum Dryer Emission Factors for PM and PM10 are based on a 2007 stack test conducted by Vulcan at the HMA plant. PM10 is assumed to be 30% of PM.
All Other Emission Factors are based on AP-42 Chapter 11.1 and ADEQs 2012 Annual Emission Inventory Forms for Hot-Mix Asphalt Plants.

Table 4. Total Facility Estimated Emissions

Pollutant	PTE (Excluding Fugitives) ¹				Typical Operation (Excluding Fugitives) ²				Major Source Thresholds ton/yr
	Emissions		With Additional Controls		Emissions		With Additional Controls		
	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	
CO	406,197	203.1	406,197	203.1	93,425	46.7	93,425	46.7	100
NOX	169,392	84.7	169,392	84.7	38,960	19.5	38,960	19.5	100
SOX	177,828	88.9	177,828	88.9	40,900	20.5	40,900	20.5	100
PM	110,405	55.2	93,287	46.6	38,301	19.2	31,529	15.8	100
PM10	53,737	26.9	41,473	20.7	17,602	8.8	14,625	7.3	100
VOC	147,506	73.8	147,506	73.8	33,926	17.0	33,926	17.0	100
HAPS	28,955	14.5	28,955	14.5	6,660	3.3	6,660	3.3	25

Fugitive Emissions

Pollutant	PTE ³				Typical Operation ⁴			
	Emissions		With Additional Controls		Emissions		With Additional Controls	
	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr
PM	313,659	156.8	94,098	47.0	144,283	72.1	43,285	21.6
PM10	80,407	40.2	24,122	12.1	36,987	18.5	11,096	5.5

¹ = Sum of Tables 2b, 2c, 3b, 3c, and 3d.

² = Based on reducing Crushing and Screening throughput 46%, and Hot-Mix Asphalt throughput by 23%.

³ = Sum of Table 3d.

⁴ = Based on reducing Crushing and Screening throughput 46%, and Hot-Mix Asphalt throughput by 23%.



March 10, 2015

Janice Easley, P.E.
Civil Engineering Assistant
Pima County Department of Environmental Quality
33 N. Stone Avenue, Suite 700
Tucson, AZ 85701

Dear Ms. Easley:

Following the February 27th site inspection and equipment review by your department at our Marana facility, we are providing an updated equipment list to clarify items and/or correct typos.

Based on our on-site discussions we are also submitting revised calculation tables to increase the number of estimated conveyor belts in use to 25 for the crushing and screening operations, and 12 for the hot-mix asphalt operations.

These changes increase our estimated PM and PM¹⁰ emissions. The new PTE estimated emissions without controls remain below the major source thresholds for PM and PM¹⁰.

We appreciate your assistance with our application. Please let us know if there are any questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Gregg Monger", written over a horizontal line.

Gregg Monger
Manager, Environmental & Permitting AZ-NM
Vulcan Materials Company
2526 E. University Drive
Phoenix, AZ 85034
office: 602-528-8661
cell: 602-397-3961

WEST REGION

Table 1. Equipment List							
Equipment ID#	Description	Manufacturer	Model	Serial Number	Max Rated Capacity	Manufacture Date	NSPS
Hot Mix Asphalt Plant							
13233	Conveyor	Reuter	30xC	3030-0500-1	350 TPH	2010	NSPS
71509	Scalping Screen	Simco	Not Available	22092	350 TPH	1997	NSPS
73762	Conveyor	CMI	Not Available	Not Available-190	350 TPH	1997	NSPS
73763	Conveyor	CMI	Not Available	Not Available 2BCF001	350 TPH	1997	NSPS
73785-73788	4-Bin Feeder	CMI	Not Available	190	Not Available	1997	N/A
73789-73790	2-Bin Feeder	Morse	Not Available	2-BCF-001-190	Not Available	1997	N/A
73938	RAP Feeder	Shopmade	Not Available	88/110	Not Available	2000	N/A
73939	RAP Feeder	Shopmade	Not Available	88/110	Not Available	2000	N/A
74087	Baghouse	CMI	RA 4-48	125	67000 CFM	1997	NSPS
75234 78234	Drum Dryer	CMI	Not Available	121	350 TPH	1997	NSPS
78235	Asphalt Heater	Gencor	Not Available	H121197 4121197	2 MBTU	1997-2002	NSPS
78237	Lime Silo w/ baghouse	CMI	MFS-700	116	50 Tons	1997	NSPS
78242	Pug Mill	Saguaro	Not Available	Not Available	350 TPH	1997	NSPS
78432	Asphalt Silo	Gencor	Not Available	Not Available 200TD-150-1772-0	200 Tons	2003	NSPS
78433	Asphalt Silo	Gencor	Not Available	Not Available 200TD-150-1772-0	200 Tons	2003	NSPS
78435	Drag Slat Conveyor	Gencor	FAAB-0063-44761	400 TPHSC-01-1708-03-NA	350 400 TPH	2003	NSPS
79204	Conveyor	Shopmade	24xT	145-24T88	350 TPH	1988	NSPS
79631	Conveyer	CMI	Not Available	Not Available 3030-0597-1	350 TPH	1997	NSPS
79632	Conveyer	CMI	Not Available	Not Available 235	350 TPH	1997	NSPS
79763	2-Bin Feeder	Morse	Not Available	2 BFC 001	Not Available	1997	NSPS
79901	Transverse Conveyor	Gencor	VAAB-0044-45139	400 TPHSC-16 -1707-03-NA	350 400 TPH	2003	NSPS
82186	Rap Collector	Shopmade	24xT	88/110	300 TPH	2000	NSPS
13225	A C Oil Tank	Heatec	Not Available	H89-215	25000 Gal.	1987	N/A
49352	A C Oil Tank	CMI	Not Available	Not Available 310	20000 Gal	1997-1987	N/A
49352	Bumer Fuel Tank	CMI	Not Available	310	10000 Gal.	1997-1987	N/A
Crushing and Screening Plant							
70114	Crusher	Symmons	4-1/4" Std.	40927 4119	350 TPH	2010-1966	NSPS
70227	Cone Crusher	JCI	Not Available 1400LS	Not Available 01R01C54S	350 TPH	2000	NSPS
70229	Crusher Cone	JCI-Kodiak	300	00C 01 IK300	350 TPH	2000	NSPS

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Table 1. Equipment List							
Equipment ID#	Description	Manufacturer	Model	Serial Number	Max Rated Capacity	Manufacture Date	NSPS
71005	Screen	Hewitt Robbins	6x16 TD-V-14	C70589201	350 TPH	1999	NSPS
71510	MA Screen	JCI	6x20 TD	01FS10C32	500 TPH	2001	NSPS
71551 71548	Primary Screen	JCI	Not Available	Not Available	700 TPH	2001	NSPS
71590	Screen	THU	6x20 TD	10046-1	700 TPH	1997	NSPS
73700	Feeder	Shopmade	Not Available	Not Available	Not Available	2000	N/A
73820	Conveyor/Stacker	Kohlberg	36x30 36xT	403493	700 TPH	2000	NSPS
73940	Feeder	Shopmade	Not Available	Not Available	Not Available	2000	N/A
75836	Conveyor	Reuter	30x30	Not Available	Not Available	2000	NSPS
78241	Lime Silo w baghouse	CMI	MFS-700	Not Available	50 Tons	1997	NSPS
78482	Pug Mill	Pugmill Syst.	750	1565-750-B2	750 TPH	2010	NSPS
79013	Conveyor	Shopmade	30"x103" 30xT	79013 10-30T-98-2350	250 TPH	2010-2000	NSPS
79609	Conveyor	Reuter	30x50	107SE	500 TPH	2001	NSPS
79627	Conveyor/Stacker	Power Ind.	36x100	100-05	300 TPH	2000	NSPS
79633	Conveyor	Reuter	30x60 30xC	3060-0403	100 TPH	2000-2003	NSPS
79634	Conveyor	Shopmade	36xT	N23213	850 TPH	2000	NSPS
79638	Conveyor/Stacker	Reuter	30x60 30xC	30-60-0800-3	100 TPH	2000	NSPS
79668	Conveyor	Reuter	36x60	366-0899-4	700 TPH	1999	NSPS
79749	Conveyor	Shopmade	36x100 36xC	Not Available	700 TPH	2005	NSPS
79782	Conveyor	Shopmade	30xC	Not Available	500 TPH	2005	NSPS
79821	Conveyor	Reuter	30x60-30xC	1201-7	100 TPH	2000-2010	NSPS
79826	Conveyor	Reuter	30x60-30xC	3060-0599-4	500 TPH	2000-2001	NSPS
79830	Conveyor	Reuter	36x60 36xC	3660-0901-10	700 TPH	2000-2002	NSPS
79837	Conveyor	Reuter	36x60	3660-0800-1	700 TPH	2000-2008	NSPS
79838	Conveyor	Reuter	30x60-30xC	3060-0701-7	300 TPH	1999	NSPS
79857	Conveyor	Shopmade	36xC	36-225-2282-6071	700 TPH	2010	NSPS
79890	Conveyor	Reuter	30x60-30xC	3060-0505-1	300 TPH	2005-2010	NSPS
79947	Conveyor	Western	36x60 36xT	STK303624	700 TPH	2000-2008	NSPS
79948	Conveyor	Reuter	36x60 36xC	STK5603624	450 TPH	2000-2008	NSPS
79949	Stacker	Western	36x60 36xT	RAD8026300	700 TPH	2007-2008	NSPS
82026	Stacker	Spalding	30xT	Not Available	250 TPH	2003	NSPS
82043	Conveyor	Reuter	30x60	Not Available	250 TPH	2010	NSPS



Table 1. Equipment List

Equipment ID#	Description	Manufacturer	Model	Serial Number	Max Rated Capacity	Manufacture Date	NSPS
82045	Conveyor	Shopmade	24"x107' 24xC	82045 Not Available	500 TPH	2010	NSPS
82047	Conveyor	Shopmade	48XC	Not Available	700 TPH	2010	NSPS
82049	Conveyor	Shopmade	48XC	Not Available	700 TPH	2010	NSPS
82050	Conveyor	Reuter	36xC	3660-0406-1	600 TPH	2010	NSPS
82053	Feeder	Shopmade	24xC	Not Available	450 TPH	2010	NSPS
82054	Conveyor	Shopmade	30xC	Not Available	600TPH	2010	NSPS
82055	Conveyor	Shopmade	24xC	Not Available	450 TPH	2010	NSPS
82056	Conveyor	Shopmade	48xC	3660-0605-3	450 TPH	2010	NSPS
82057	Conveyor	Shopmade	48xC	Not Available	450 TPH	2010	NSPS
82058	Conveyor	Shopmade	48xC	Not Available	450 TPH	2010	NSPS
82059	Conveyor	Shopmade	36xC	Not Available	700 TPH	2010	NSPS
82062	Conveyor	Reuter	30xC	3060-1201-2	300 TPH	2010	NSPS
82065	Conveyor	Shopmade	30xC	3060-1201-4	300 TPH	2010	NSPS
82073	Conveyor	Reuter	30XC	3030-0805-5	300 TPH	2010	NSPS
82251	Conveyor	Shopmade	36x1100	Not Available	700 TPH	2012	NSPS
85093	Conveyor	Reuter	30xC	3060-0805-3	300 TPH	2010	NSPS
Wash Plant							
70651	Blade Mill	Mclannahan	24x44	20003065	600 TPH	1995	N/A
70711	Sand Screw	Eagle Iron	44x32 DSF	402602-16509	300 TPH	2002-2010	N/A
70712	Blade Mill	Eagle Iron	Not Available	16214	400 TPH	2003	N/A
70732	Dewatering Screen	LPT	6x12	V0302006	250 TPH	2007	N/A
71116	Screen	Svedala	8x16 DD	26A170	400 TPH	1996-1968	N/A
71550	Screen	JCI	6x20 TD	02L-P07-D-32	350 TPH	2001-2002	N/A
72995	Conveyor-F-3 Feeder	Shopmade	42x25 42xT	Not Available	400 TPH	2007	N/A
73819	Conveyor-TBF Feeder	Reuter	Not Available	3612-0102	400 TPH	2002	N/A
79726	Conveyor	Reuter	30x60 30xC	3080-0402-2	400 TPH	2000	N/A
79822	Conveyor	KPI	30x80 30xC	Not Available	250 TPH	2002 2010	N/A
79905	Conveyor	Shopmade	36x180 36xT	Not Available	400 TPH	2007 2003	N/A
79911	Conveyor	Shopmade	24x85 30xC	Not Available	250 TPH	2007 2010	N/A
82061	Conveyor	Reuter	30xC	3060-0402-1	60 TPH	2010	N/A
82063	Conveyor	Superior	36xC	U8035 2007	100 TPH	2010	N/A
Insignificant Activity							
	Gasoline Tank				400 Gal		

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Table 1. Equipment List							
Equipment ID#	Description	Manufacturer	Model	Serial Number	Max Rated Capacity	Manufacture Date	NSPS
Inactive Equipment (Could be Exchanged with Other Pieces of Equipment)							
70228	Jaw Crusher	Pioneer-Kohlberg	30x42	402998	850TPH	2000	NSPS
70677	Sand Screw	Kohlberg	44x32 SSF	402592	300 TPH	2010	N/A
71512	Screen	JCI	7x20 TD	00LP01J38	850 TPH	2001	NSPS
75887	Jaw Crusher	Pioneer	Not Available	Not Available	700 TPH	2000	NSPS
79612	Conveyor	Shopmade	30x100	100-02	850 TPH	1999	NSPS
79614	Conveyor	Shopmade	30x100	100-04	850 TPH	1999	NSPS
79629	Conveyor	Shopmade	30x150	N23298	850 TPH	2002-2000	NSPS
79635	Conveyor	Shopmade	36x104 36xT	9-36-7817-AA	850 TPH	2000	NSPS
79636	Conveyor	SLS	36x104 36xT	9-36-7818-AA	850 TPH	2000	NSPS
79637	Conveyor	Shopmade	Not Available	9-36-7811-AA	850 TPH	2000	NSPS
79639	Conveyor	Shopmade	36x2500	N23311	850 TPH	2004	NSPS
79656	Conveyor	Shopmade	36xT	36-7851-AA	850 TPH	2005	NSPS
79657	Conveyor	Shopmade	36x104	9-36-7809-AA	850 TPH	2001	NSPS
79659	Conveyor	THR	36x136	1541	850 TPH	2005	NSPS
79729	Conveyor	Reuter	30x60 30xC	3030-0102-1	850TPH	2005	NSPS
79727	Conveyor	Reuter	30x245	3660-0406-1	450 TPH	2000	NSPS
79728	Conveyor	Shopmade	36x80	Not Available	450 TPH	2000	NSPS
79730	Conveyor B-7	JCI	42x25	Not Available	700 TPH	2000	NSPS
79731	Conveyor B-9	Reuter	30x60	Not Available	300 TPH	2000	NSPS
79732	Conveyor B-14	Reuter	30x60	Not Available	100 TPH	2000	NSPS
79733	Stacker B-37	Reuter	30x60	Not Available	100 TPH	2000	N/A
79734	Stacker B-35	Reuter	30x60	Not Available	60 TPH	2000	N/A
79735	Conveyor B-38A	Reuter	30x30	Not Available	250 TPH	2000	N/A
79748	Conveyor	Shopmade	36x100-36XC	Not Available	700 TPH	2005	NSPS
79824	Stacker B-32	Reuter	30x60	Not Available	40 TPH	2000	N/A
79825	Stacker B-36	Superior	36x60	Not Available	100 TPH	2006	N/A
79827	Conveyor	Reuter	30x60	Not Available	500 TPH	2000	NSPS
79829	Conveyor	Reuter	30x60	Not Available	250 TPH	2002	NSPS
79856	Conveyor	Shopmade	36xC	36-225-2281-6071	700 TPH	2010	NSPS

Table 1. Equipment List							
Equipment ID#	Description	Manufacturer	Model	Serial Number	Max Rated Capacity	Manufacture Date	NSPS
79870	Stacker B-33	Reuter	30x60	Not Available	100 TPH	2000	N/A
79885	Conveyor	JCI	48x16	Not Available	100 TPH	2000	NSPS
82060	Conveyor	Shopmade	30xC	Not Available	300 TPH	2010	NSPS
85088	Feeder	Kohlberg	42x-20	403303	Not Available	Not Available	N/A
85089	Conveyor	Shopmade	Not Available	Not Available	300 TPH	2010	NSPS
Decommissioned Equipment (to be removed from permit)							
70222	VSI Crusher	Cemco	Available	ADEV 0700196 VR	250 TPH	1990	NSPS
70730	Blade Mill BM2	Trio	Not Available	TCW 3618-080-(20)	300 TPH	2003	N/A
71548 71551	Primary Screen	JCI	Available	Not Available	700 TPH	2001	NSPS
73480	Screen	Hewitt Robbins	6x16 TD-V-14	C70589201	250 TPH	2001	N/A

Equipment such as Conveyor Belts may be moved from Listing under Crushing and Screening and may also be used in Wash Plant under Alternate Operating Scenario.

CFM = Cubic Feet per Minute

TPH = Tons per Hour

Strikethrough indicates change from previous application.

Table 2. Estimated Emissions from Crushing and Screening Plant

2a. Estimated Throughput

	ton/hr	hrs/day	ton/day	days/yr	ton/yr
Rock Products - PTE ¹	450	24	10,800	365	3,942,000
Rock Products - Typical Operation ²	450	14	6,300	288	1,814,400
Ratio Of Typical Operation to PTE					46%

¹ = Potential to Emit (PTE) Calculations are based on maximum possible operation, 24 hours per day, 365 days per year.

² = Typical Operation is based on 14 hours per day, 6 days per week, 48 weeks per year.

2b. Emission Estimates for Operations with Federally Required Controls

Source	Amount Processed (tons/yr)	PTE with Controls			
		PM Emission Factor (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)
Primary Screening	3,942,000	0.0022	8,672	0.00074	2,917
Crushing	3,942,000	0.0012	4,730	0.00054	2,129
Fine Screening	3,942,000	0.0036	14,191	0.0022	8,672
Stacking	3,942,000	0.00067	2,641	0.00048	1,892
Conveyor Transfer Points (25)	98,550,000	0.00014	13,797	0.000046	4,533
		Total PM	44,032	Total PM10	20,144

2c. Emission Estimates for Operations Where Controls are Not Federally Required

Source	Amount Processed (tons/yr)	PTE Without Controls				PTE with Controls			
		PM Emission Factor ³ (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor ³ (lb/ton)	PM10 Emissions (lbs/yr)	PM Emission Factor (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)
Batch Drop Operations	3,942,000	0.0022	8,804	0.0016	6,307	0.00067	2,641	0.00048	1,892
Feed Hopper Loading	3,942,000	0.0022	8,804	0.0016	6,307	0.00067	2,641	0.00048	1,892
		Total PM	17,608	Total PM10	12,614	Total PM	5,282	Total PM10	3,784

2d. Emission Estimates for Fugitive Sources⁴ (No Federally Required Controls)

Source	Amount ⁵	PTE Without Controls				PTE with Controls			
		PM Emission Factor ³ (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor ³ (lb/ton)	PM10 Emissions (lbs/yr)	PM Emission Factor (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)
Vehicle Traffic - Loaders (miles)	31,000	2.4333	75,433	0.6333	19,633	0.73	22,630	0.19	5,890
Vehicle Traffic - Haul Trucks (miles)	109,000	2.1850	238,165	0.5570	60,713	0.6555	71,450	0.1671	18,214
Storage Piles (piles)	43	1.4098	61	1.4098	61	0.423	18.19	0.423	18
		Total PM	313,659	Total PM10	80,407	Total PM	94,098	Total PM10	24,122

Emission Factors are based on AP-42 Chapter 11.19.2 and ADEQs 2012 Annual Emission Inventory Forms for Crushing and Screening.

³ = Uncontrolled Emission Factors are calculated from Controlled Emission Factors, which are assumed to include a 100% Capture Efficiency and 70% Control Efficiency.

⁴ = Includes Vehicle Traffic and Storage Piles associated with both the Crushing and Screening Plant and the Hot-Mix Asphalt Plant.

⁵ = Mileage for Loaders and Haul Trucks is based on the facility throughput, typical vehical capacities, and typical travel distances. The number of Storage Piles is based on an average number of piles at the facility.

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Table 3. Estimated Emissions from Hot-Mix Asphalt Plant

3a. Estimated Throughput

	ton/hr	hrs/day	ton/day	hrs/yr	ton/yr
Asphalt Produced - PTE ¹	350	24	8,400	8,760	3,066,000
Lime (1% of Asphalt Produced) - PTE	4	24	84	8,760	30,660
Asphalt Produced - Typical Operation ²	350	14	4,900	2,000	700,000
Lime (1% of Asphalt Produced) - Typical	4	14	49	2,000	7,000
Ratio Of Typical Operation to PTE					23%
Cement Heater					
	gal/hr		gal/day		gal/yr
Natural Gas Usage - PTE	4	24	96	8,760	35,040
Natural Gas Usage - Typical Operation	4	14	56	2,000	8,000
Ratio Of Typical Operation to PTE					23%
Propane Usage					
	gal/hr		gal/day		gal/yr
Propane Usage - PTE	6	24	144	8,760	52,560
Propane Usage - Typical Operation	6	14	84	2,000	12,000
Ratio Of Typical Operation to PTE					23%

¹ - PTE Calculations are based on maximum possible operation, 24 hours per day, 365 days per year.

² - Typical Operation is based on 14 hours per day, 2,000 hours per year.

3b. Asphalt Material Handling - Emission Estimates for Operations with Federally Required Controls

Source	Amount Processed (tons/yr)	PTE with Controls			
		PM Emission Factor (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)
Conveyors (12)	36,792,000	0.00014	5,151	0.000046	1,682
Scalping Screen	3,066,000	0.0022	6,745	0.00074	2,269
Lime to Silo ³	30,660	0.0089	273	0.0049	150
		Total PM	12,169	Total PM10	4,112

3c. Asphalt Material Handling - Emission Estimates for Operations Where Controls are Not Federally Required

Source	Amount Processed (tons/yr)	PTE without Controls			PTE with Controls				
		PM Emission Factor ⁴ (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)	PM Emission Factor (lb/ton)	PM Emissions (lbs/yr)	PM10 Emission Factor (lb/ton)	PM10 Emissions (lbs/yr)
Material Handling	3,066,000	0.0022	6,847	0.0016	4,906	0.0067	2,054	0.0048	1,472
		Total PM	6,847	Total PM10	4,906	Total PM	2,054	Total PM10	1,472

Emission Factors are based on AP-42 Chapter 11.19.2 and ADEQ's 2012 Annual Emission Inventory Forms for Hot-Mix Asphalt Plants.

³ - Emission Factor for Lime to Silo based on AP-42 Chapter 11.12. Emission Factor for Cement Supplement to Silo

⁴ - Uncontrolled Emission Factors are based on Controlled Emission Factors excluding 100% Capture Efficiency and 70% Control Efficiency.

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Table 4. Total Facility Estimated Emissions

Pollutant	PTE (Excluding Fugitives) ¹				Typical Operation (Excluding Fugitives) ²				Major Source Thresholds ton/yr
	Emissions		With Additional Controls		Emissions		With Additional Controls		
	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	
CO	406,197	203.1	406,197	203.1	93,425	46.7	93,425	46.7	100
NOX	169,392	84.7	169,392	84.7	38,960	19.5	38,960	19.5	100
SOX	177,828	88.9	177,828	88.9	40,900	20.5	40,900	20.5	100
PM	187,318	93.7	170,199	85.1	57,260	28.6	50,488	25.2	100
PM10	117,194	58.6	104,930	52.5	46,375	23.2	29,637	14.8	100
VOC	147,506	73.8	147,506	73.8	33,926	17.0	33,926	17.0	100
HAPS	30,458	15.2	30,458	15.2	7,005	3.5	7,005	3.5	25

Fugitive Emissions									
Pollutant	PTE ³				Typical Operation ⁴				
	Emissions		With Additional Controls		Emissions		With Additional Controls		
	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	Emissions lbs/yr	Emissions ton/yr	
PM	313,659	156.8	94,098	47.0	144,283	72.1	43,285	21.6	
PM10	80,407	40.2	24,122	12.1	36,987	18.5	11,096	5.5	

¹ = Sum of Tables 2b, 2c, 3b, 3c, and 3d.

² = Based on reducing Crushing and Screening throughput 46%, and Hot-Mix Asphalt throughput by 23%.

³ = Sum of Table 3d.

⁴ = Based on reducing Crushing and Screening throughput 46%, and Hot-Mix Asphalt throughput by 23%.

