Version 120310

Plantwide Emissions

EU Description	PM tons/yr	PM_{10} tons/yr	$PM_{2.5}$ tons/yr	SO_2 tons/yr	NO_X tons/yr	CO tons/yr	VOC tons/yr	Pb tons/yr	Fluorides tons/yr	Hg tons/yr	HCl tons/yr	Total HAPs tons/yr
Point Sources												
Kiln System	103.51	103.51	103.51	438.00	1642.50	3066.00	175.20	0.082	0.99	0.023	9.50	18.983
Raw Mill & Kiln Feed	20.90	17.56	9.41	0.00	0.00	0.00	0.00	0.002	0.00	0.00	0.00	0.009
Coal/Coke System	12.58	10.57	5.66	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.001
Clinker Transfer & Storage	2.91	2.45	1.31	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.001
Finish Mills	57.79	48.55	26.01	0.00	0.00	0.00	0.00	0.001	0.00	0.00	0.00	0.021
Cement Transfer & Storage	19.03	15.99	8.57	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.008
Existing Terminal	1.69	1.42	0.76	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.001
Emergency Generator	0.09	0.07	0.07	0.00	2.78	1.54	0.04	0.000	0.00	0.00	0.00	0.003
Subtotal Point Sources	218.51	200.10	155.29	438.00	1645.28	3067.54	175.24	0.085	0.99	0.023	9.50	19.027
Fugitive Sources												
Quarry Equipment	6.99	3.20	0.55	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.002
Plant Process Equipment	4.62	2.18	0.33	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.002
Wind Erosion - Storage Piles	8.40	4.20	0.63	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.004
Mining Operations	15.53	7.78	1.05	0.00	0.00	0.00	0.00	0.000	0.00	0.00	0.00	0.004
Plant Roads	9.31	1.81	0.44	NA	NA	NA	NA	NA	NA	NA	NA	NA
Quarry Roads	69.57	19.78	1.98	NA	NA	NA	NA	NA	NA	NA	NA	NA
Subtotal Fugitive Sources	114.41	38.96	4.99	0.00	0.00	0.00	0.00	0.001	0.00	0.00	0.00	0.012
Total Emissions	**332.92**	**239.06**	**160.27**	**438.00**	**1,645.28**	**3,067.54**	**175.24**	**0.086**	**0.99**	**0.023**	**9.50**	**19.038**

Notes

Kiln system includes the preheater/precalciner kiln with in-line raw mill, clinker cooler, alkali bypass, and coal mill venting through the main stack.

Kiln PM emissions include an estimate of condensible particulate matter. See "Kiln System" sheet for details.

HAP & TAP EMISSIONS (Ton/Year))

CAS No.	Pollutant	TAP	HAP	Kiln System	Raw Mill & Kiln Feed	Solid Fuel System	Clinker Transfer & Storage	Finish Mills	Cement Transfer & Storage	Existing Terminal	Emergency Generator	Quarry Equip.	Process Fugitive	Storage Piles	Mining Operation	Total (ton/yr)	Total (lbs/yr)
83329	Acenaphthene (Component of POM)		X								9.17E-06					9.17E-06	0.018
208968	Acenaphthylene (Component of POM)		X	1.31E-01							1.81E-05					1.31E-01	262.836
75070	Acetaldehyde	X	X								4.94E-05					4.94E-05	0.099
107028	Acrolein	X	X								1.54E-05					1.54E-05	0.031
7664417	Ammonia	X		1.10E+01												1.10E+01	21900.000
120127	Anthracene (Component of POM)		X								2.41E-06					2.41E-06	0.005
SBC	Antimony & Compounds		X	7.12E-03	5.39E-05	3.61E-05	6.46E-06	3.01E-05	6.38E-06	5.66E-07		1.80E-05	1.32E-05	5.43E-05	1.21E-04	7.46E-03	14.916
ASC	Arsenic & Compounds	X	X	1.31E-02	1.06E-04	2.39E-06	2.24E-06	9.92E-04	3.60E-04	3.19E-05		1.40E-05	2.42E-05	8.16E-05	3.11E-05	1.48E-02	29.571
56553	Benz(a)anthracene (Component of POM & PAH)		X	4.71E-05							1.22E-06					4.83E-05	0.097
71432	Benzene	X	X	3.39E+00							1.52E-03					3.40E+00	6792.041
50328	Benzo(a)pyrene (Component of POMT & PAH)	X	X	1.42E-04							5.03E-07					1.43E-04	0.286
205992	Benzo(b)fluoranthene (Component of POM & PAH)		X	6.13E-04							2.17E-06					6.15E-04	1.231
191242	Benzo(ghi)perylene (Component of POM)		X	8.54E-05							1.09E-06					8.65E-05	0.173
207089	Benzo(k)fluoranthene (Component of POM & PAH)		X	1.64E-04							4.27E-07					1.65E-04	0.329
BEC	Beryllium & Compounds	X	X	7.23E-04	3.93E-05	4.40E-06	4.37E-07	6.06E-05	2.19E-05	1.94E-06		1.40E-05	7.67E-06	1.28E-05	3.11E-05	9.17E-04	1.834
92524	Biphenyl (Component of POM)		X	6.68E-03												6.68E-03	13.359
CDC	Cadmium & Compounds	X	X	2.41E-03	6.16E-05	5.28E-06	1.28E-06	1.22E-05	3.48E-06	3.09E-07		1.33E-05	9.63E-06	2.00E-05	3.03E-05	2.57E-03	5.133
75150	Carbon disulfide	X	X	1.20E-01												1.20E-01	240.900
108907	Chlorobenzene	X	X	1.75E-02												1.75E-02	35.040
CRC	Chromium & Compounds (Total Cr)		X	1.53E-01	1.01E-03	6.29E-05	2.07E-04	3.39E-03	1.23E-03	1.09E-04		1.31E-04	2.72E-04	7.32E-04	3.62E-04	1.61E-01	321.596
NA	Chromium (VI) Compounds, as Cr(VI)	X	X	1.69E-02	7.50E-06	6.29E-07	3.32E-05	5.39E-04	1.96E-04	1.74E-05		6.99E-07	2.06E-06	4.70E-06	1.55E-06	1.77E-02	35.332
NA	Bioavailable Chromate Pigments	X	X	0.00E+00	6.90E-06	5.79E-07	3.05E-05	4.96E-04	1.80E-04	1.60E-05		6.43E-07	1.89E-06	4.33E-06	1.43E-06	7.39E-04	1.478
NA	Soluble Chromate Compounds	X	X	1.69E-02	6.00E-07	5.03E-08	2.66E-06	4.31E-05	1.57E-05	1.39E-06		5.59E-08	1.65E-07	3.76E-07	1.24E-07	1.69E-02	33.854
218019	Chrysene (Component of POM & PAH)		X	1.75E-04							3.00E-06					1.78E-04	0.356
COC	Cobalt Compounds		X	1.75E-02	3.62E-04	2.23E-05	5.56E-06	2.94E-04	1.06E-04	9.41E-06		7.89E-05	8.97E-05	2.78E-04	2.16E-04	1.90E-02	37.964
117817	Di(2-ethylhexyl)phthalate (DEHP)	X		1.04E-01												1.04E-01	208.050
53703	Dibenzo(a,h)anthracene (Component of POM & PAH)		X	6.90E-04							6.78E-07					6.91E-04	1.381
84742	Dibutylphthalate		X	4.49E-02												4.49E-02	89.790
D/F	Dioxin/Furan		X	2.41E-07												2.41E-07	0.000
100414	Ethyl benzene		X	2.08E-02												2.08E-02	41.610
206440	Fluoranthene (Component of POM)		X	9.64E-03							7.90E-06					9.64E-03	19.288
86737	Fluorene (Component of POM)		X	2.08E-02							2.51E-05					2.08E-02	41.660
16984488	Fluorides (sum of all fluoride compounds)	X		9.86E-01												9.86E-01	1971.000
50000	Formaldehyde	X	X	5.04E-01							1.55E-04					5.04E-01	1007.709
7647010	Hydrogen chloride	X	X	9.50E+00												9.50E+00	19000.000
193395	Indeno(1,2,3-cd)pyrene (Component of POM & PAH)		X	9.53E-05							8.11E-07					9.61E-05	0.192
PBC	Lead & Compounds		X	8.21E-02	1.76E-03	1.27E-05	2.33E-07	6.65E-04	2.36E-04	2.09E-05		2.10E-04	1.81E-04	4.13E-04	4.66E-04	8.61E-02	172.182
MNC	Manganese Compounds	X	X	9.42E-01	4.77E-03	7.30E-06	3.00E-04	1.33E-02	4.80E-03	4.26E-04		1.32E-03	1.02E-03	1.99E-03	2.22E-03	9.72E-01	1943.804
HGC	Mercury & Compounds	X	X	2.30E-02	1.37E-06	1.26E-06	2.62E-07	3.41E-06	7.23E-07	6.42E-08		7.69E-08	3.05E-07	9.71E-07	2.01E-07	2.30E-02	46.007
74873	Methyl chloride		X	4.16E-01												4.16E-01	832.200
78933	Methyl ethyl ketone	X		3.29E-02												3.29E-02	65.700
74873	Methylene chloride	X	X	5.37E-01												5.37E-01	1073.100
91203	Naphthalene (Component of POM)		X	1.86E+00							2.55E-04					1.86E+00	3723.509
NIC	Nickel & Compounds	X	X	1.53E-02	6.31E-04	7.89E-04	1.83E-05	1.78E-03	6.43E-04	5.71E-05		2.13E-04	1.43E-04	2.17E-04	3.08E-04	2.01E-02	40.253
85018	Phenanthrene (Component of POM)		X	4.27E-01							7.99E-05					4.27E-01	854.260
108952	Phenol	X	X	1.20E-01												1.20E-01	240.900
POM	Polycyclic Organic Matter (Total Inc PAH)		X	2.46E+00							4.15E-04					2.46E+00	4928.633
129000	Pyrene (Component of POM)		X	4.82E-03							7.27E-06					4.83E-03	9.651
SEC	Selenium Compounds		X	2.19E-01	3.24E-04	8.18E-06	4.95E-07	2.08E-04	6.47E-05	5.74E-06		1.07E-04	5.60E-05	6.35E-05	1.94E-04	2.20E-01	440.063
100425	Styrene	X	X	1.64E-03												1.64E-03	3.285
108883	Toluene	X	X	2.08E-01							5.51E-04					2.09E-01	417.201
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2- (CFC-113)	X		5.48E-02												5.48E-02	109.500
1330207	Xylene	X	X	1.42E-01							3.78E-04					1.43E-01	285.456
	Total HAPs Only			1.90E+01	9.13E-03	9.52E-04	5.76E-04	2.13E-02	7.66E-03	6.80E-04	3.08E-03	2.12E-03	1.82E-03	3.87E-03	3.98E-03	1.90E+01	38076.647

HAP & TAP EMISSIONS (Lbs/Hr))

CAS No.	Pollutant	TAP	HAP	Kiln System	Raw Mill & Kiln Feed	Solid Fuel System	Clinker Transfer & Storage	Finish Mills	Cement Transfer & Storage	Existing Terminal	Emergency Generator	Quarry Equip.	Process Fugitive	Storage Piles	Mining Operation	Total (lbs/hr)	Total (lbs/hr)
83329	Acenaphthene (Component of POM)		X								3.67E-05					3.67E-05	0.000
208968	Acenaphthylene (Component of POM)		X	3.00E-02							7.23E-05					3.01E-02	0.030
75070	Acetaldehyde	X	X								1.97E-04					1.97E-04	0.000
107028	Acrolein	X	X								6.18E-05					6.18E-05	0.000
7664417	Ammonia	X		2.50E+00												2.50E+00	2.500
120127	Anthracene (Component of POM)		X								9.64E-06					9.64E-06	0.000
SBC	Antimony & Compounds		X	1.63E-03	1.23E-05	8.24E-06	1.48E-06	6.88E-06	1.46E-06	1.29E-07		4.12E-06	3.00E-06	1.24E-05	2.77E-05	1.70E-03	0.002
ASC	Arsenic & Compounds	X	X	3.00E-03	2.42E-05	5.46E-07	5.12E-07	2.27E-04	8.21E-05	7.29E-06		3.19E-06	5.53E-06	1.86E-05	7.09E-06	3.38E-03	0.003
56553	Benz(a)anthracene (Component of POM & PAH)		X	1.08E-05							4.87E-06					1.56E-05	0.000
71432	Benzene	X	X	7.75E-01							6.08E-03					7.81E-01	0.781
50328	Benzo(a)pyrene (Component of POMT & PAH)	X	X	3.25E-05							2.01E-06					3.45E-05	0.000
205992	Benzo(b)fluoranthene (Component of POM & PAH)		X	1.40E-04							8.70E-06					1.49E-04	0.000
191242	Benzo(ghi)perylene (Component of POM)		X	1.95E-05							4.36E-06					2.39E-05	0.000
207089	Benzo(k)fluoranthene (Component of POM & PAH)		X	3.75E-05							1.71E-06					3.92E-05	0.000
BEC	Beryllium & Compounds	X	X	1.65E-04	8.98E-06	1.01E-06	9.97E-08	1.38E-05	5.00E-06	4.44E-07		3.19E-06	1.75E-06	2.93E-06	7.09E-06	2.09E-04	0.000
92524	Biphenyl (Component of POM)		X	1.53E-03												1.53E-03	0.002
CDC	Cadmium & Compounds	X	X	5.50E-04	1.41E-05	1.21E-06	2.93E-07	2.78E-06	7.95E-07	7.06E-08		3.04E-06	2.20E-06	4.56E-06	6.91E-06	5.86E-04	0.001
75150	Carbon disulfide	X	X	2.75E-02												2.75E-02	0.028
108907	Chlorobenzene	X	X	4.00E-03												4.00E-03	0.004
CRC	Chromium Compounds (Total Cr)		X	3.50E-02	2.31E-04	1.44E-05	4.74E-05	7.73E-04	2.80E-04	2.48E-05		2.98E-05	6.22E-05	1.67E-04	8.27E-05	3.67E-02	0.037
NA	Chromium (VI) Compounds, as Cr(VI)	X	X	3.85E-03	1.71E-06	1.44E-07	7.58E-06	1.23E-04	4.48E-05	3.97E-06		1.60E-07	4.70E-07	1.07E-06	3.54E-07	4.03E-03	0.004
NA	Bioavailable Chromium Compounds	X	X	0.00E+00	1.58E-06	1.32E-07	6.97E-06	1.13E-04	4.12E-05	3.66E-06		1.47E-07	4.32E-07	9.88E-07	3.26E-07	1.69E-04	0.000
NA	Soluble Chromium Compounds	X	X	3.85E-03	1.37E-07	1.15E-08	6.06E-07	9.85E-06	3.58E-06	3.18E-07		1.28E-08	3.76E-08	8.59E-08	2.84E-08	3.86E-03	0.004
218019	Chrysene (Component of POM & PAH)		X	4.00E-05							1.20E-05					5.20E-05	0.000
COC	Cobalt Compounds		X	4.00E-03	8.26E-05	5.08E-06	1.27E-06	6.72E-05	2.42E-05	2.15E-06		1.80E-05	2.05E-05	6.34E-05	4.93E-05	4.33E-03	0.004
117817	Di(2-ethylhexyl)phthalate (DEHP)	X		2.38E-02												2.38E-02	0.024
53703	Dibenzo(a,h)anthracene (Component of POM & PAH)		X	1.58E-04							2.71E-06					1.60E-04	0.000
84742	Dibutylphthalate		X	1.03E-02												1.03E-02	0.010
D/F	Dioxin/Furan		X	5.50E-08												5.50E-08	0.000
100414	Ethyl benzene		X	4.75E-03												4.75E-03	0.005
206440	Fluoranthene (Component of POM)		X	2.20E-03							3.16E-05					2.23E-03	0.002
86737	Fluorene (Component of POM)		X	4.75E-03							1.00E-04					4.85E-03	0.005
16984488	Fluorides (sum of all fluoride compounds)	X		2.25E-01												2.25E-01	0.225
50000	Formaldehyde	X	X	1.15E-01							6.18E-04					1.16E-01	0.116
7647010	Hydrogen chloride	X	X	2.17E+00												2.17E+00	2.169
193395	Indeno(1,2,3-cd)pyrene (Component of POM & PAH)		X	2.18E-05							3.24E-06					2.50E-05	0.000
PBC	Lead & Compounds		X	1.88E-02	4.02E-04	2.90E-06	5.32E-08	1.52E-04	5.39E-05	4.78E-06		4.79E-05	4.14E-05	9.42E-05	1.06E-04	1.97E-02	0.020
MNC	Manganese Compounds	X	X	2.15E-01	1.09E-03	1.67E-06	6.85E-05	3.05E-03	1.10E-03	9.72E-05		3.02E-04	2.34E-04	4.54E-04	5.06E-04	2.22E-01	0.222
HGC	Mercury & Compounds	X	X	5.25E-03	3.14E-07	2.87E-07	5.98E-08	7.78E-07	1.65E-07	1.47E-08		1.76E-08	6.97E-08	2.22E-07	4.60E-08	5.25E-03	0.005
74873	Methyl chloride		X	9.50E-02												9.50E-02	0.095
78933	Methyl ethyl ketone	X		7.50E-03												7.50E-03	0.008
74873	Methylene chloride	X	X	1.23E-01												1.23E-01	0.123
91203	Naphthalene		X	4.25E-01							1.02E-03					4.26E-01	0.426
NIC	Nickel & Compounds	X	X	3.50E-03	1.44E-04	1.80E-04	4.18E-06	4.06E-04	1.47E-04	1.30E-05		4.87E-05	3.27E-05	4.95E-05	7.03E-05	4.60E-03	0.005
85018	Phenanthrene (Component of POM)		X	9.75E-02							3.20E-04					9.78E-02	0.098
108952	Phenol	X	X	2.75E-02												2.75E-02	0.028
POM	Polycyclic Organic Matter (Total Inc PAH)		X	5.63E-01							1.66E-03					5.64E-01	0.564
129000	Pyrene (Component of POM)		X	1.10E-03							2.91E-05					1.13E-03	0.001
SEC	Selenium Compounds		X	5.00E-02	7.40E-05	1.87E-06	1.13E-07	4.75E-05	1.48E-05	1.31E-06		2.45E-05	1.28E-05	1.45E-05	4.43E-05	5.02E-02	0.050
100425	Styrene	X	X	3.75E-04												3.75E-04	0.000
108883	Toluene	X	X	4.75E-02							2.20E-03					4.97E-02	0.050
76131	Trichloro-1,2,2-trifluoroethane, 1,1,2- (CFC-113)	X		1.25E-02												1.25E-02	0.013
1330207	Xylene	X	X	3.25E-02							1.51E-03					3.40E-02	0.034
	Total HAPs Only			4.33E+00	2.08E-03	2.17E-04	1.31E-04	4.87E-03	1.75E-03	1.55E-04	1.23E-02	4.85E-04	4.17E-04	8.83E-04	9.09E-04	4.36E+00	4.358

NC Toxic Air Pollutants Evaluation

	Pollutant (CAS No.)	Emission Rates Requiring A Permit[1]				Plantwide Emissions			Modeling Required?
		Carcinogens lb/yr	Chronic Toxicants lb/day	Acute Systemic Toxicants lb/hr	Acute Irritants lb/hr	Annual PTE lb/yr	Max Daily lb/day	Max Hourly lb/hr	
	acetaldehyde (75-07-0)				6.8	0.10	0.005	0.0002	No
	acrolein (107-02-8)				0.02	0.03	0.001	0.0001	No
*	ammonia (7664-41-7)				0.68	21900.00	60.000	2.5000	Yes
*	arsenic and compounds	0.016				29.57	0.081	0.0034	Yes
*	benzene (71-43-2)	8.1				6792.04	18.746	0.7811	Yes
	benzo(a)pyrene (50-32-8)	2.2				0.29	0.001	0.0000	No
*	beryllium and compounds	0.28				1.83	0.005	0.0002	Yes
*	cadmium and compounds	0.37				5.13	0.014	0.0006	Yes
	carbon disulfide (75-15-0)		3.9			240.90	0.660	0.0275	No
	chlorobenzene (108-90-7)		46			35.04	0.096	0.0040	No
	chromium (VI) compounds [total Cr (VI)] (see categories below)	na	na			na	na	na	No
*	bioavailable chromate pigments, as Cr (VI)	0.0056				1.48	0.004	0.00017	Yes
*	soluble chromate compounds, as Cr (VI)		0.013			33.85	0.093	0.00386	Yes
	di(2-ethylhexyl)phthalate (DEHP) (117-81-7)		0.63			208.05	0.570	0.0238	No
*	fluorides		0.34	0.064		1971.00	5.400	0.2250	Yes
*	formaldehyde (50-00-0)				0.04	1007.71	2.775	0.1156	Yes
*	hydrogen chloride (7647-01-0)				0.18	19000.00	86.880	3.6200	Yes
*	manganese and compounds		0.63			1943.80	5.325	0.2219	Yes
*	mercury, aryl and inorganic compounds		0.013			46.01	0.450	0.0188	Yes
	methyl ethyl ketone (78-93-3)		78		22.4	65.70	0.180	0.0075	No
	methylene chloride (75-09-2)	1600		0.39		1073.10	2.940	0.1225	No
	nickel and compounds		0.13			40.25	0.110	0.0046	No
	phenol (108-95-2)			0.24		240.90	0.660	0.0275	No
	styrene (100-42-5)			2.7		3.29	0.009	0.0004	No
	toluene (108-88-3)		98		14.4	417.20	1.193	0.0497	No

NC Toxic Air Pollutants Evaluation

Pollutant (CAS No.)	Emission Rates Requiring A Permit[1]				Plantwide Emissions			Modeling Required?
	Carcinogens lb/yr	Chronic Toxicants lb/day	Acute Systemic Toxicants lb/hr	Acute Irritants lb/hr	Annual PTE lb/yr	Max Daily lb/day	Max Hourly lb/hr	
1,1,2-trichloro-1,2,2-trifluoroethane (76-13-1)				240	109.50	0.300	0.0125	No
xylene (1330-02-07)		57		16.4	285.46	0.816	0.0340	No

[1] From 15A NCAC 2Q Section .0711 Toxic Air Pollutant Guidelines
* Compound requires modeling

Material	Throughput Capacity				Material Status
	tons/hr	tons/yr	hrs/yr	%	
Clinker Produced (Kiln/Cooler)					
Raw Mill on		1,752,000	7,008	80.00	
Raw Mill off		438,000	1,752	20.00	
Kiln total	250	2,190,000	8,760	100.00	Produced (6000 tons/day)
Raw Mill Feed (Dry)	485	3,398,880	7,008		Produced
Virgin Kiln Feed @ 1.542	386	3,376,980			Produced
Kiln Feed w/recycle @ 1.679	420	3,677,010	8,760		Produced
Kiln Fuels Used					
Coal/Coke (as fired)	30	262,800	8,760		As fired
Alternative fuels					Up to 50% heat input
Raw Material Throughput (Dry Basis)*					
Limestone (62.9-64.4%)	1500	2,149,448	8,760	63.65	Mined onsite
Upper Marl (18.3-24.1%)		715,920		21.20	Mined onsite
Other Onsite Materials** (2.9-7.9%)		182,357		5.40	Mined onsite
Subtotal (Quarry Max.)		3,047,724			
Mill Scale (0.9-1.0%)		32,081		0.95	Received by truck
Fly Ash/Bottom Ash (9.3-10.4%)		332,633		9.85	Received by truck
Bauxite (0%)		0		0.00	May be substituted
Subtotal (Purchased Max.)		364,714			
Total (Dry)		3,412,438		101.05	
Raw Mix Required		3,376,980		100.00	
Raw Material Throughput (Wet Basis)*					
Limestone @ 16% M	1500	2,558,866	8,760	63.13	Mined onsite
Upper Marl @ 16% M		852,285		21.03	Mined onsite
Other Onsite Materials** @ 16% M		217,092		5.36	Mined onsite
Subtotal (Quarry Max.)		3,628,243			
Mill Scale @ 5% M		33,770		0.83	Received by truck
Fly Ash/Bottom Ash @ 15% M		391,332		9.65	Received by truck
Bauxite (0%)		0		0.00	May be substituted
Subtotal (Purchased Max.)		425,102			
Total (Wet)		4,053,346		100.00	
Average moisture content				15.81	
Quarry Overburden removed		3,177,255			Mined onsite
Quarry Spoils to Stacker Pile		217,092			Mined onsite
Cement Production					
Clinker Cooler	250	2,190,000	8,760		Produced
Clinker transfer to silos		2,190,000	8,760		Transferred
Clinker Silos (2)		2,190,000	8,760		Stored
Fringe Clinker Silo @ 1.0%		21,900			Stored
Gypsum required (5% of cement)	15	120,330			
Gypsum @ 6% M		127,549			Received by truck
Limestone required (4% of cement)		96,264			
Limestone @ 6% M		102,040			Onsite material
Finish Mills (Cement)					

Material	Throughput Capacity				
	tons/hr	tons/yr	hrs/yr	%	Material Status
Finish Mill #1	150	1,203,297	8,760		Produced
Finish Mill #2	150	1,203,297	8,760		Produced
Total cement	300	2,406,593			
Cement Silos	300	2,406,593	8,760	100.00	Stored
Cement Packhouse	170	481,319	8,760	20.00	Packaged
Bulk Cement		1,925,275	8,760	80.00	Loaded, bulk
Cement shipped by truck					
Packaged cement		481,319		20.00	Shipped by truck (0-20%)
Bulk cement	350	433,187		18.00	Shipped by truck (18-30%)
Subtotal		914,505		38.00	Total trucked (30-38%)
Cement shipped by rail	350	1,492,088		62.00	Shipped by rail (42-70%)
Cement shipped by barge (N/A)		0		0.00	
Total cement shipped		2,406,593		100.00	
Fuel Unloading					
Coal/coke @ 8% M		283,824	8,760	100.00	Received by rail (60-100%)
		113,530		40.00	Received by truck (0-40%)
Mining Operation					
No. of holes drilled		15,200			
Ave depth (ft)		5			
Total feet of holes drilled		76,000			
No. of blasts		76			
Ave area of blast (sq ft)		20,000			

* Individual quantities of the raw material components will vary.

** Other onsite materials may include spoils, lower marl, brown clay, or green clay.

Kiln System (Main Stack) - Potential Emissions

Process Throughput				Emission Factor				tons/yr		Total		Max.	Average
	Annual Throughput (tons clinker)	Hourly Rate (ton/hr clinker)	Pollutant	RM On	RM Off	lb/T basis	EF Source	RM On	RM Off	tons/yr[7]	lbs/yr	lbs/hr[8]	lbs/hr[9]
			PM (filterable)	0.0151	0.0121	clinker	Note 1	13.26	2.65	15.91		3.78	3.63
			PM10 (filterable)	0.0151	0.0121	clinker	Note 2	13.26	2.65	15.91		3.78	3.63
			PM2.5 (filterable)	0.0151	0.0121	clinker	Note 2	13.26	2.65	15.91		3.78	3.63
RM On:	1,752,000		Condensible PM	0.08	0.08	clinker	Note 3	70.08	17.52	87.60		20.00	20.00
RM Off:	438,000	250	Total PM	NA	NA	NA	Note 4	83.34	20.17	103.51		23.78	23.63
Total	2,190,000		Total PM10	NA	NA	NA	Note 4	83.34	20.17	103.51		23.78	23.63
	Annual Throughput (tons kiln feed)	Hourly Rate (ton/hr kiln feed)	Total PM2.5	NA	NA	NA	Note 4	83.34	20.17	103.51		23.78	23.63
			SO2	0.40	0.40	clinker	Note 1	350.40	87.60	438.00		100.00	100.00
			NOx	1.50	1.50	clinker	Note 1	1314.00	328.50	1642.50		375.00	375.00
RM On:	2,941,608		CO	2.80	2.80	clinker	Note 1	2452.80	613.20	3066.00		700.00	700.00
RM Off:	735,402	420	VOC	0.16	0.16	clinker	Note 1	140.16	35.04	175.20		40.00	40.00
Total	3,677,010		Lead	7.5E-05	7.5E-05	clinker	Note 6	0.0657	0.0164	0.0821	164	0.0188	0.0188
			Fluorides	9.0E-04	9.0E-04	clinker	Note 6	0.7884	0.1971	0.9855	1,971	0.2250	0.2250
	SO2 Ave =	0.40	HAPs/TAPs										
		lb/T clkr	Ammonia	0.010	0.010	clinker	Note 6	8.7600	2.1900	10.9500	21,900	2.5000	2.5000
			Antimony	6.5E-06	6.5E-06	clinker	Note 12	0.0057	0.0014	0.0071	14	0.0016	0.0016
			Arsenic	1.2E-05	1.2E-05	clinker	Note 6	0.0105	0.0026	0.0131	26	0.0030	0.0030
			Benzene	3.1E-03	3.1E-03	clinker	Note 6	2.7156	0.6789	3.3945	6,789	0.7750	0.7750
			Beryllium	6.6E-07	6.6E-07	clinker	Note 6	0.0006	0.0001	0.0007	1.4	0.0002	0.0002
			Cadmium	2.2E-06	2.2E-06	clinker	Note 6	0.0019	0.0005	0.0024	4.8	0.0006	0.0006
			Carbon disulfide	1.1E-04	1.1E-04	clinker	Note 6	0.0964	0.0241	0.1205	240.9	0.0275	0.0275
			Chlorobenzene	1.6E-05	1.6E-05	clinker	Note 6	0.0140	0.0035	0.0175	35.0	0.0040	0.0040
			Chromium (Total)	1.4E-04	1.4E-04	clinker	Note 6	0.1226	0.0307	0.1533	306.6	0.0350	0.0350
			Chromium (VI)(Total)	1.5E-05	1.5E-05	clinker	Note 11	0.0135	0.0034	0.0169	33.73	0.0039	0.0039
			Bioavailable Chrom.	0.0E+00	0.0E+00	clinker	Note 11a	0.0000	0.0000	0.0000	0.00	0.0000	0.0000
			Soluble Chromate	1.5E-05	1.5E-05	clinker	Note 11b	0.0135	0.0034	0.0169	33.73	0.0039	0.0039
			Cobalt	1.6E-05	1.6E-05	clinker	Note 12	0.0140	0.0035	0.0175	35	0.0040	0.0040
			Dibutylphthalate	4.1E-05	4.1E-05	clinker	Note 6	0.0359	0.0090	0.0449	89.8	0.0103	0.0103
			Di(2-ethylhexyl) phthalate (DEHP)	9.5E-05	9.5E-05	clinker	Note 6	0.0832	0.0208	0.1040	208	0.0238	0.0238
			Dioxin/Furan	2.2E-10	2.2E-10	clinker	Note 6, 13	1.93E-07	4.82E-08	2.41E-07	4.82E-04	5.50E-08	5.50E-08

Kiln System (Main Stack) - Potential Emissions

Process Throughput	Pollutant	Emission Factor RM On	Emission Factor RM Off	lb/T basis	EF Source	tons/yr RM On	tons/yr RM Off	Total tons/yr[7]	Total lbs/yr	Max. lbs/hr[8]	Average lbs/hr[9]
	Ethylbenzene	1.9E-05	1.9E-05	clinker	Note 6	1.66E-02	4.16E-03	2.08E-02	42	0.0048	0.0048
	Formaldehyde	4.6E-04	4.6E-04	clinker	Note 6	4.03E-01	1.01E-01	5.04E-01	1007	0.1150	0.1150
	HCl	8.7E-03	8.7E-03	clinker	Note 5	7.60	1.90	9.50	19,000	2.1689	2.1689
	Manganese	8.6E-04	8.6E-04	clinker	Note 6	0.7534	0.1883	0.9417	1,883	0.2150	0.2150
	Mercury	2.1E-05	2.1E-05	clinker	Note 14	0.0184	0.0046	0.0230	46	0.0053	0.0053
	Methyl chloride	3.8E-04	3.8E-04	clinker	Note 6	0.3329	0.0832	0.4161	832	0.0950	0.0950
	Methyl ethyl ketone	3.0E-05	3.0E-05	clinker	Note 6	0.0263	0.0066	0.0329	66	0.0075	0.0075
	Methylene chloride	4.9E-04	4.9E-04	clinker	Note 6	0.4292	0.1073	0.5366	1,073	0.1225	0.1225
	Nickel	1.4E-05	1.4E-05	clinker	Note 12	0.0123	0.0031	0.0153	31	0.0035	0.0035
	Phenol	1.1E-04	1.1E-04	clinker	Note 6	0.0964	0.0241	0.1205	241	0.0275	0.0275
	Selenium	2.0E-04	2.0E-04	clinker	Note 6	0.1752	0.0438	0.2190	438	0.0500	0.0500
	Styrene	1.5E-06	1.5E-06	clinker	Note 6	0.0013	0.0003	0.0016	3	0.0004	0.0004
	Toluene	1.9E-04	1.9E-04	clinker	Note 6	0.1664	0.0416	0.2081	416	0.0475	0.0475
	1,1,2-trichloro-1,2,2-trifluoroethane	5.0E-05	5.0E-05	clinker	Note 6	0.0438	0.0110	0.0548	110	0.0125	0.0125
	Xylenes	1.3E-04	1.3E-04	clinker	Note 6	0.1139	0.0285	0.1424	285	0.0325	0.0325
	POM										
	Acenaphthylene	1.2E-04	1.2E-04	clinker	Note 6	0.1051	0.0263	0.1314	262.8	0.0300	0.0300
	Benz(a)anthracene	4.3E-08	4.3E-08	clinker	Note 6	0.0000	0.0000	0.0000	0.1	0.0000	0.0000
	Benzo(a)pyrene	1.3E-07	1.3E-07	clinker	Note 6	0.0001	0.0000	0.0001	0.3	0.0000	0.0000
	Benzo(b)fluoranthene	5.6E-07	5.6E-07	clinker	Note 6	0.0005	0.0001	0.0006	1.2	0.0001	0.0001
	Benzo(g,h,l)perylene	7.8E-08	7.8E-08	clinker	Note 6	0.0001	0.0000	0.0001	0.2	0.0000	0.0000
	Benzo(k)fluoranthene	1.5E-07	1.5E-07	clinker	Note 6	0.0001	0.0000	0.0002	0.3	0.0000	0.0000
	Biphenyl	6.1E-06	6.1E-06	clinker	Note 6	0.0053	0.0013	0.0067	13.4	0.0015	0.0015
	Chrysene	1.6E-07	1.6E-07	clinker	Note 6	0.0001	0.0000	0.0002	0.4	0.0000	0.0000
	Dibenz(a,h)anthracene	6.3E-07	6.3E-07	clinker	Note 6	0.0006	0.0001	0.0007	1.4	0.0002	0.0002
	Fluoranthene	8.8E-06	8.8E-06	clinker	Note 6	0.0077	0.0019	0.0096	19.3	0.0022	0.0022
	Fluorene	1.9E-05	1.9E-05	clinker	Note 6	0.0166	0.0042	0.0208	41.6	0.0048	0.0048
	Indeno(1,2,3-cd)pyrene	8.7E-08	8.7E-08	clinker	Note 6	0.0001	0.0000	0.0001	0.2	0.0000	0.0000
	Naphthalene	1.7E-03	1.7E-03	clinker	Note 6	1.4892	0.3723	1.8615	3,723.0	0.4250	0.4250

Kiln System (Main Stack) - Potential Emissions

Process Throughput	Pollutant	Emission Factor RM On	Emission Factor RM Off	lb/T basis	EF Source	tons/yr RM On	tons/yr RM Off	Total tons/yr[7]	Total lbs/yr	Max. lbs/hr[8]	Average lbs/hr[9]
	Phenanthrene	3.9E-04	3.9E-04	clinker	Note 6	0.3416	0.0854	0.4271	854.1	0.0975	0.0975
	Pyrene	4.4E-06	4.4E-06	clinker	Note 6	0.0039	0.0010	0.0048	9.6	0.0011	0.0011
	Total POM					1.9711	0.4928	2.4639	4,927.8	0.5625	0.5625

Notes

1 NSPS/NESHAP limits and/or proposed BACT emission limits based on site-specific kiln design and materials.
2 PM10 and PM2.5 estimated at 100% of PM emissions for the kiln stack under the extremely low NSPS/NESHAP limit
3 Emission factor for condensible PM from AP-42 Table 11.6-2 (0.16 lb/ton clinker) and assumes 50% reduction in condensibles due to wet scrubber.
4 Total PM is the sum of filterable and condensible PM.
5 HCl emissions will be controlled by wet scrubber; proposed limit is 9.5 tons/yr. See Kiln HCl tab for worst-case hourly emissions
6 Emission factors from EPA's AP-42 Table 11.6-9
7 Total tons/yr = annual throughput x emission factor / 2000 (sum of raw mill on & raw mill off)
8 Max lbs/yr = hourly throughput (see Throughput Data sheet) x max emission factor
9 Average lbs/yr = Total tons/yr x 2000 / 8760 hrs
11 Cr (VI) emissions are 11 percent of total Cr (AP-42 emission factor) for coal-fired combustion processes, per DENR guidance memo dated 7/7/99
11a & 11b All Cr (VI) emissions from combustion are assumed to be chromic acid, a soluble chromate compound, per DENR guidance memo dated 7/7/99
12 Emission factor for nickel from November 1999 stack test, Roanoke Cement Company, Cloverdale, Virginia
13 Emissions for dioxin/furan estimated using emission factor for 1,2,3,4,6,7,8-HpCDD. Actual emissions will be limited under the Portland Cement NESHAP.
14 Mercury emissions based on NESHAP limit (21 lb/MMton clinker)

Calculation of PM Emissions Limit under NESHAP rules

40 CFR 63.1343(b)(2) (Eq. 2)

PMalt = 0.0008 x 1.65 x (Qk + Qc) / 7000 (lb/ton clinker)

Qk = kiln exhaust flow rate (dscf/ton raw feed)
Qc = clinker cooler exhaust flow rate (dscf/ton raw feed)

Raw feed (virgin kiln feed) = 250 tph clinker x 1.542 (feed/clinker ratio)
= 385.50 ton/hr

Combined stack gases*

Raw Mill	Value	Units		Raw Mill	Value	Units	
On	515,677	DSCFM		Off	411,876	DSCFM	
Qk + Qc =	515,677	x 60 /	385.50	Qk + Qc =	411,876	x 60 /	385.50
=	80,261	dscf/ton raw feed		=	64,105	dscf/ton raw feed	
PMalt =	0.0151	lb/ton clinker		PMalt =	0.0121	lb/ton clinker	
ER =	3.7837	lb/hr		ER =	3.0221	lb/hr	

PMalt (ave) = 0.0145 lb/ton clinker (30-day average assuming 80% mill-on & 20% mill-off)
ER (ave) = 3.6314 lb/hr

* Gas flow at the main stack includes total gases from the kiln, clinker cooler, alkali bypass (part of the kiln system), and coal mill (uses kiln gases for drying). The gas flow varies depending on whether the raw mill (also part of the kiln system) is operating or not.

Mercury Limits

Maximum Hg

Limit =	**21**	lb/MM tons clinker	(NESHAP)	4	ug/dscm	(startup/shutdown)

ER =	45.99	lb/yr Hg	
	0.0053	lb/hr Hg	(average hourly)
	0.126	lb/day Hg	(average daily)

Hg Concentration (Information Only)

Gas Conditions

Raw Mill	Value	Units		Raw Mill	Value	Units
On	688,771	ACFM		Off	585,103	ACFM
	131	deg F			139	deg F
	615,348	WSCFM			515,750	WSCFM
	16.20	%M			20.14	%M
	515,677	DSCFM			411,876	DSCFM
	11.97	%O2 (wet)			10.60	%O2 (wet)
	14.29	%O2 (dry)			13.27	%O2 (dry)
	245,369	DSCFM @ 7% O2			226,028	DSCFM @ 7% O2
	416,884	DSCM/H @7% O2			384,025	DSCM/H @7% O2
ER =	0.0053	lb/hr HCl		ER =	0.0053	lb/hr HCl
	2.38	g/hr Hg	(Assuming constant Hg)		2.38	g/hr Hg
Conc =	5.7	ug/dscm @ 7% O2		Conc =	6.2	ug/dscm @ 7% O2
	2.7	ug/dscm @ actual O2			3.4	ug/dscm @ actual O2
		HCl MW =	36.46			

Worst Case Hg Assuming 10 X Emissions During Mill-Off for 24 Hours (For Air Toxics Evaluation)

ER (on) =	0.045	lb/day Hg	ER (off) =	**0.450**	lb/day Hg
	0.001875	lb/hr Hg		0.01875	lb/hr Hg

Ave HCl 0.126 lb/day Hg (30-day average assuming 80% mill-on & 20% mill-off)

HCl Limits (as Area Source)

Maximum HCl

Limit =	**9.5**	tons/yr	(maintain emissions below major source threshold)
ER =	2.17	lb/hr HCl	(average hourly)
	0.0087	lb HCl/ton clinker	

HCl Concentration (Information Only)

Gas Conditions

Raw Mill	Value	Units		Raw Mill	Value	Units
On	688,771	ACFM		Off	585,103	ACFM
	131	deg F			139	deg F
	615,348	WSCFM			515,750	WSCFM
	16.20	%M			20.14	%M
	515,677	DSCFM			411,876	DSCFM
	11.97	%O2 (wet)			10.60	%O2 (wet)
	14.29	%O2 (dry)			13.27	%O2 (dry)
	245,369	DSCFM @ 7% O2			226,028	DSCFM @ 7% O2
	416,884	DSCM/H @7% O2			384,025	DSCM/H @7% O2
ER =	2.17	lb/hr HCl		ER =	2.17	lb/hr HCl
Conc =	1.56	ppmdv @ 7% O2		Conc =	1.69	ppmdv @ 7% O2
		HCl MW =	36.46			

Ave Conc =	1.58	ppmdv @ 7% O2	(30-day average assuming 80% mill-on & 20% mill-off)

Worst Case HCl Assuming 2 X Emissions During Mill-Off (For Air Toxics Evaluation)

ER (on) =	1.81	lb/hr HCl	ER (off) =	**3.62**	lb/hr HCl
Ave HCl	2.17	lb/hr HCl	(30-day average assuming 80% mill-on & 20% mill-off)		

NESHAP THC Limit

Gas Conditions

Raw Mill	Value	Units
On	688,771	ACFM
	131	deg F
	615,348	WSCFM
	16.20	%M
	515,677	DSCFM
	11.97	%O2 (wet)
	14.29	%O2 (dry)
	245,369	DSCFM @ 7% O2
	416,884	DSCM/H @7% O2

Raw Mill	Value	Units
Off	585,103	ACFM
	139	deg F
	515,750	WSCFM
	20.14	%M
	411,876	DSCFM
	10.60	%O2 (wet)
	13.27	%O2 (dry)
	226,028	DSCFM @ 7% O2
	384,025	DSCM/H @7% O2

Maximum THC Emissions (NESHAP)

Limit =	24	ppmdv @ 7% O2	as propane
		propane MW =	44.1
Alternate Limit	9	ppmdv Total Organic HAPs	

Maximum VOC Emissions (BACT)

Limit =	0.16	lb/ton clinker (30 days)
	40.00	lb/hr VOC (average)
	175.20	ton/yr VOC

Predicted THC Equivalent with Maximum VOC Emissions

ER =	40.00	lb/hr VOC	
	18,144	g/hr VOC	
Conc =	43,522	ug/dscm @ 7% O2	Raw Mill On
	23.7	ppmv @ 7% O2	
Conc =	47,246	ug/dscm @ 7% O2	Raw Mill Off
	25.8	ppmv @ 7% O2	*

Predicted VOC Emissions at THC Limit

0.162	lb/ton clinker	Raw Mill On
0.149	lb/ton clinker	Raw Mill Off
0.159	lb/ton clinker	30-day average

Note

*THC emissions may not exceed 24 ppmv as measured by CEM (30-day rolling average). Therefore the actual VOC emissions may be lower than the proposed maximum. We note that these calculations are sensitive to many variables including the theoretically predicted gas flow, temperature, moisture, and oxygen content of the gas stream which are not constant in reality and may change from the above design values. Both the THC (or alternate TOH) limit and the VOC limit must be complied with.

Point Sources (Controlled by Baghouses)

Equipment Group	Emission Point No.	Process Unit	Baghouse ID	Control Device ID	Flow Rate	Temp	Flow Rate	Grain Loading	Operating Hours	PM Emissions	PM Emissions	PM10 Fraction	PM10 Emissions	PM10 Emissions	PM2.5 Fraction	PM2.5 Emissions
					acfm	deg F	scfm	gr/scf	hrs/yr	lb/hr	TPY		lb/hr	TPY		lb/hr
Raw Mill & KF	**E5**	Raw mill feed bin	143.BF650	CD5	8,500	77	8,358	0.01	8760	0.72	3.14	0.84	0.60	2.64	0.45	0.32
Raw Mill & KF	**E6**	Raw mill feed transport	311.BF750	CD6	7,750	77	7,620	0.01	8760	0.65	2.86	0.84	0.55	2.40	0.45	0.29
Raw Mill & KF	**E7**	Raw mill feed	321.BF470	CD7	10,800	77	10,619	0.01	8760	0.91	3.99	0.84	0.76	3.35	0.45	0.41
Raw Mill & KF	**E8**	Raw mill reject	321.BF950	CD8	11,700	90	11,232	0.01	8760	0.96	4.22	0.84	0.81	3.54	0.45	0.43
Raw Mill & KF	**E9**	Kiln dust bin	331.BF400	CD9	4,200	302	2,910	0.01	8760	0.25	1.09	0.84	0.21	0.92	0.45	0.11
Raw Mill & KF	**E10**	Raw meal transport to silo	341.BF410	CD10	4,000	150	3,462	0.01	8760	0.30	1.30	0.84	0.25	1.09	0.45	0.13
Raw Mill & KF	**E11**	Raw meal silo	341.BF350	CD11	4,200	150	3,635	0.01	8760	0.31	1.36	0.84	0.26	1.15	0.45	0.14
Raw Mill & KF	**E12**	Raw meal silo extraction	351.BF440	CD12	4,760	150	4,120	0.01	8760	0.35	1.55	0.84	0.30	1.30	0.45	0.16
Raw Mill & KF	**E13**	Kiln feed	351.BF470	CD13	4,300	150	3,722	0.01	8760	0.32	1.40	0.84	0.27	1.17	0.45	0.14
RMKF		Subtotal								4.77	20.90		4.01	17.56		2.15
Kiln System	**E44**	Main stack - Raw mill On			688,771	131	515,677	0.0009	8760	3.78	15.91	1.00	3.78	15.91	1.00	3.78
Kiln System	**E44**	Main stack - Raw mill Off			585,103	139	411,876									
Kiln System		Kiln/raw mill/cooler baghouse	331.BF200	CD44A												
Kiln System		Coal mill baghouse	461.BF500	CD44B												
Kiln System		Preheater bypass baghouse	451.BF200	CD44C												
Kiln System		ACI filter	331.BF300	CD44D												
KS		Subtotal								3.78	15.91		3.78	15.91		3.78
Coal System	**E1**	Coal rail unloading	211.BF320	CD1	5,535	77	5,442	0.01	8760	0.47	2.04	0.84	0.39	1.72	0.45	0.21
Coal System	**E2**	Coal unloading by truck	231.BF310	CD2	5,535	77	5,442	0.01	8760	0.47	2.04	0.84	0.39	1.72	0.45	0.21
Coal System	**E3**	Coal transport to storage	231.BF330	CD3	6,868	77	6,753	0.01	8760	0.58	2.54	0.84	0.49	2.13	0.45	0.26
Coal System	**E4**	Coal transport from storage	241.BF120	CD4	6,868	77	6,753	0.01	8760	0.58	2.54	0.84	0.49	2.13	0.45	0.26
Coal System	**E14**	Coal mill feed bin	461.BF130	CD14	1,540	90	1,478	0.01	8760	0.13	0.56	0.84	0.11	0.47	0.45	0.06
Coal System	**E15**	Coal mill feed bin	461.BF230	CD15	1,540	90	1,478	0.01	8760	0.13	0.56	0.84	0.11	0.47	0.45	0.06
Coal System	**E16**	Coal mill feed transport	461.BF350	CD16	6,100	90	5,856	0.01	8760	0.50	2.20	0.84	0.42	1.85	0.45	0.23
Coal System	**E17**	Fine coal bin	461.BF650	CD17	175	140	154	0.01	8760	0.01	0.06	0.84	0.01	0.05	0.45	0.01
Coal System	**E18**	Fine coal bin	461.BF750	CD18	175	140	154	0.01	8760	0.01	0.06	0.84	0.01	0.05	0.45	0.01
COAL		Subtotal								2.87	12.58		2.41	10.57		1.29
Clinker	**E19**	Clinker discharge from cooler	441.BF540	CD19	4,600	257	3,387	0.01	8760	0.29	1.27	0.84	0.24	1.07	0.45	0.13
Clinker	**E20**	Clinker dome	471.BF150	CD20	3,672	257	2,704	0.01	8760	0.23	1.02	0.84	0.19	0.85	0.45	0.10
Clinker	**E21**	Off-spec bin	471.BF240	CD21	2,260	257	1,664	0.01	8760	0.14	0.62	0.84	0.12	0.52	0.45	0.06
CHS		Subtotal								0.66	2.91		0.56	2.45		0.30
Finish Mills	**E22**	Cement mill feed bin	511.BF090	CD22	9,820	156	8,417	0.01	8760	0.72	3.16	0.84	0.61	2.65	0.45	0.32
Finish Mills	**E23**	Cement mill feed bin	512.BF050	CD23	8,830	156	7,569	0.01	8760	0.65	2.84	0.84	0.54	2.39	0.45	0.29
Finish Mills	**E46**	Cement additive bin	511.BF300	CD46	4,810	156	4,123	0.01	8760	0.35	1.55	0.84	0.30	1.30	0.45	0.16
Finish Mills	**E47**	Cement additve intake	232.BF150	CD47	10,587	77	10,410	0.01	8760	0.89	3.91	0.84	0.75	3.28	0.45	0.40
Finish Mills	**E24**	Cement mill feed	531.BF290	CD24	4,697	156	4,026	0.01	8760	0.35	1.51	0.84	0.29	1.27	0.45	0.16
Finish Mills	**E25**	Cement mill recirculation bin	531.BF020	CD25	2,719	212	2,136	0.01	8760	0.18	0.80	0.84	0.15	0.67	0.45	0.08
Finish Mills	**E26**	Cement mill reject	531.BF215	CD26	5,262	212	4,134	0.01	8760	0.35	1.55	0.84	0.30	1.30	0.45	0.16
Finish Mills	**E27**	Cement transport	531.BF615	CD27	2,154	212	1,692	0.01	8760	0.15	0.64	0.84	0.12	0.53	0.45	0.07
Finish Mills	**E28**	Cement mill feed	532.BF290	CD28	5,580	178	4,618	0.01	8760	0.40	1.73	0.84	0.33	1.46	0.45	0.18
Finish Mills	**E29**	Cement mill recirculation bin	532.BF020	CD29	2,719	212	2,136	0.01	8760	0.18	0.80	0.84	0.15	0.67	0.45	0.08
Finish Mills	**E30**	Cement mill reject	532.BF215	CD30	5,262	212	4,134	0.01	8760	0.35	1.55	0.84	0.30	1.30	0.45	0.16
Finish Mills	**E31**	Cement transport	532.BF615	CD31	2,154	212	1,692	0.01	8760	0.15	0.64	0.84	0.12	0.53	0.45	0.07

Point Sources (Controlled by Baghouses)

Equipment Group	Emission Point No.	Process Unit	Baghouse ID	Control Device ID	Flow Rate	Temp	Flow Rate	Grain Loading	Operating Hours	PM Emissions	PM Emissions	PM10 Fraction	PM10 Emissions	PM10 Emissions	PM2.5 Fraction	PM2.5 Emissions
					acfm	deg F	scfm	gr/scf	hrs/yr	lb/hr	TPY		lb/hr	TPY		lb/hr
Finish Mills		Cement mill 1 baghouse	531.BF500	CD45A												
Finish Mills		Cement mill 2 baghouse	532.BF500	CD45B												
Finish Mills	**E45**	Cement mill stack			125,438	210	98,853	0.01	8760	8.47	37.11	0.84	7.12	31.17	0.45	3.81
FM		Subtotal								13.19	57.79		11.08	48.55		5.94
Cement	**E32**	Cement dome	611.BF600	CD32	26,910	212	21,144	0.01	8760	1.81	7.94	0.84	1.52	6.67	0.45	0.82
Cement	**E33**	Cement dome extraction rail	621.BF305	CD33	1,800	212	1,414	0.01	8760	0.12	0.53	0.84	0.10	0.45	0.45	0.05
Cement	**E34**	Cement dome extraction truck	621.BF315	CD34	1,800	212	1,414	0.01	8760	0.12	0.53	0.84	0.10	0.45	0.45	0.05
Cement	**E40**	Cement silo	612.BF600	CD40	22,750	212	17,875	0.01	8760	1.53	6.71	0.84	1.29	5.64	0.45	0.69
Cement	**E41**	Cement silo extration	612.BF620	CD41	1,271	212	999	0.01	8760	0.09	0.37	0.84	0.07	0.31	0.45	0.04
Cement	**E42**	Cement transport	622.BF410	CD42	2,578	212	2,026	0.01	8760	0.17	0.76	0.84	0.15	0.64	0.45	0.08
Cement	**E43**	Packing plant	641.BF150	CD43	7,416	212	5,827	0.01	8760	0.50	2.19	0.84	0.42	1.84	0.45	0.22
CHSL		Subtotal								4.35	19.03		3.65	15.99		1.96
		Grand Total								29.63	129.13		25.50	111.01		15.42

Notes
PM10 and PM2.5 fractions for Kiln and other baghouse emissions derived from AP-42 Table 11.6-5
Kiln PM emissions shown above are filterable only
Average ground elevation at plant site = 7 m (23 ft).

Point Sources (Controlled by Baghouses)

Equipment Group	Emission Point No.	Process Unit	Baghouse ID	PM2.5 Emissions	Stack Height	Stack Height	Exit Diameter	Exit Velocity
				TPY	m	ft	ft	ft/s
Raw Mill & KF	**E5**	Raw mill feed bin	143.BF650	1.41	35.0	114.8		
Raw Mill & KF	**E6**	Raw mill feed transport	311.BF750	1.29	35.0	114.8		
Raw Mill & KF	**E7**	Raw mill feed	321.BF470	1.79	35.0	114.8	2.0	57.30
Raw Mill & KF	**E8**	Raw mill reject	321.BF950	1.90	41.1	135.0	2.0	62.07
Raw Mill & KF	**E9**	Kiln dust bin	331.BF400	0.49	38.0	124.7		
Raw Mill & KF	**E10**	Raw meal transport to silo	341.BF410	0.58	18.0	59.1		
Raw Mill & KF	**E11**	Raw meal silo	341.BF350	0.61	74.0	242.8		
Raw Mill & KF	**E12**	Raw meal silo extraction	351.BF440	0.70	15.0	49.2		
Raw Mill & KF	**E13**	Kiln feed	351.BF470	0.63	115.0	377.3		
RMKF		Subtotal		9.41				
Kiln System	**E44**	Main stack - Raw mill On		15.91	150.0	492.1	13.94	75.22
Kiln System	**E44**	Main stack - Raw mill Off						
Kiln System		Kiln/raw mill/cooler baghouse	331.BF200					
Kiln System		Coal mill baghouse	461.BF500					
Kiln System		Preheater bypass baghouse	451.BF200					
Kiln System		ACI filter	331.BF300					
KS		Subtotal		15.91				
Coal System	**E1**	Coal rail unloading	211.BF320	0.92	7.5	24.6	1.50	52.20
Coal System	**E2**	Coal unloading by truck	231.BF310	0.92	9.7	31.8	1.50	52.20
Coal System	**E3**	Coal transport to storage	231.BF330	1.14	8.5	27.9	1.67	52.26
Coal System	**E4**	Coal transport from storage	241.BF120	1.14	9.5	31.2	1.67	52.26
Coal System	**E14**	Coal mill feed bin	461.BF130	0.25	41.0	134.5		
Coal System	**E15**	Coal mill feed bin	461.BF230	0.25	41.0	134.5		
Coal System	**E16**	Coal mill feed transport	461.BF350	0.99	41.0	134.5	1.60	50.56
Coal System	**E17**	Fine coal bin	461.BF650	0.03	20.0	65.6		
Coal System	**E18**	Fine coal bin	461.BF750	0.03	20.0	65.6		
COAL		Subtotal		5.66				
Clinker	**E19**	Clinker discharge from cooler	441.BF540	0.57	16.0	52.5	1.25	62.47
Clinker	**E20**	Clinker dome	471.BF150	0.46	56.0	183.7		
Clinker	**E21**	Off-spec bin	471.BF240	0.28	51.0	167.3		
CHS		Subtotal		1.31				
Finish Mills	**E22**	Cement mill feed bin	511.BF090	1.42	27.4	90.0	2.00	52.10
Finish Mills	**E23**	Cement mill feed bin	512.BF050	1.28	27.4	90.0	2.00	46.84
Finish Mills	**E46**	Cement additive bin	511.BF300	0.70	27.4	90.0	1.50	45.37
Finish Mills	**E47**	Cement additve intake	232.BF150	1.76	24.4	80.0	2.00	56.17
Finish Mills	**E24**	Cement mill feed	531.BF290	0.68	39.6	130.0	1.50	44.30
Finish Mills	**E25**	Cement mill recirculation bin	531.BF020	0.36	20.0	65.6	1.00	57.70
Finish Mills	**E26**	Cement mill reject	531.BF215	0.70	32.0	105.0	1.50	49.63
Finish Mills	**E27**	Cement transport	531.BF615	0.29	14.0	45.9	1.00	45.71
Finish Mills	**E28**	Cement mill feed	532.BF290	0.78	32.0	105.0	1.50	52.63
Finish Mills	**E29**	Cement mill recirculation bin	532.BF020	0.36	20.0	65.6	1.00	57.70
Finish Mills	**E30**	Cement mill reject	532.BF215	0.70	32.0	105.0	1.50	49.63
Finish Mills	**E31**	Cement transport	532.BF615	0.29	14.0	45.9	1.00	45.71

Point Sources (Controlled by Baghouses)

Equipment Group	Emission Point No.	Process Unit	Baghouse ID	PM2.5 Emissions	Stack Height	Stack Height	Exit Diameter	Exit Velocity
				TPY	m	ft	ft	ft/s
Finish Mills		Cement mill 1 baghouse	531.BF500					
Finish Mills		Cement mill 2 baghouse	532.BF500					
Finish Mills	**E45**	Cement mill stack		16.70	45.7	150.0	6.56	61.83
FM		Subtotal		26.01				
Cement	**E32**	Cement dome	611.BF600	3.57	44.0	144.4	3.00	63.45
Cement	**E33**	Cement dome extraction rail	621.BF305	0.24	8.5	27.9	0.75	67.91
Cement	**E34**	Cement dome extraction truck	621.BF315	0.24	8.5	27.9	0.75	67.91
Cement	**E40**	Cement silo	612.BF600	3.02	68.0	223.0		
Cement	**E41**	Cement silo extration	612.BF620	0.17	63.1	207.0	0.75	47.95
Cement	**E42**	Cement transport	622.BF410	0.34	12.2	40.0	1.00	54.71
Cement	**E43**	Packing plant	641.BF150	0.98	17.0	55.8	1.75	51.39
CHSL		Subtotal		8.57				
		Grand Total		66.86				

Point Sources (Controlled by Baghouses)

Equipment Group	Emission Point No.	Process Unit	Control Device ID	Flow Rate acfm	Temp deg F	Flow Rate scfm	Grain Loading gr/scf	Operating Hours hrs/yr	PM Emissions lb/hr	PM Emissions TPY	PM10 Fraction	PM10 Emissions lb/hr	PM10 Emissions TPY	PM2.5 Fraction	PM2.5 Emissions lb/hr	PM2.5 Emissions TPY
Cement	**ES-4**	Cement silo	CD-P43	1,500	68	1,500	0.02	8,760	0.26	1.13	0.84	0.22	0.95	0.45	0.12	0.51
Cement	**ES-R33**	Screw conv/truck loadout	CD-P30	1,500	68	1,500	0.01	8,760	0.13	0.56	0.84	0.11	0.47	0.45	0.06	0.25
ECT		Subtotal							0.39	1.69		0.32	1.42		0.17	0.76
		Grand Total							0.39	1.69		0.32	1.42		0.17	0.76

Notes
PM10 and PM2.5 fractions for baghouse emissions derived from AP-42 Table 11.6-5
The baghouse for ES-R33 will be upgraded to comply with the 0.01 gr/scf emission limit

Point Sources (Controlled by Baghouses)

Equipment Group	Emission Point No.	Process Unit	Control Device ID	Stack Height ft	Exit Diameter ft	Exit Velocity ft/s	Orientation
Cement	**ES-4**	Cement silo	CD-P43	80	1.25		Horizontal
Cement	**ES-R33**	Screw conv/truck loadout	CD-P30	24	1.0	31.83	Vertical
ECT		Subtotal					
		Grand Total					

Metals Concentration Data

Material	Sb	As	Be	Cd	Cr	Cr(VI)	Co	Pb	Mn	Hg	Ni	Se
	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Additives	5.4	24.1	1.3	4.1	309	2.5	72	116	540	0.22	40	3.6
Bauxite	0.2	16.6	0.4	1	112	1.12	35	24	46	0.10	3	6
Bottom ash	4.44	24.5	1.41	4	113	0.5	72	77	413	0.24	10.8	3.98
Cement	0.335	18.9	1.15	0.183	64.4	10.3	5.57	12.4	252	0.038	33.8	3.4
CKD	0.658	16.4	0.794	16.49	56.8	0.57	4.80	899	180	0.628	21.9	34.48
Clinker	2.22	0.77	0.15	0.44	71.3	11.4	1.91	0.08	103	0.09	6.29	0.17
Coal/Coke	2.87	0.19	0.35	0.42	5.0	0.05	1.77	1.01	0.58	0.10	62.7	0.65
Gypsum	2.31	0.56	0.08	0.48	3.3	0.033	0.53	2.92	28.0	0.26	1.42	5.51
Limestone/Marl	2	2	2	2	16	0.1	11	30	196	0.011	28	16
Mill Scale	14.0	20.6	0.09	5	2,073	20.7	75	462	1,680	0.08	304	0.15
Overburden	16	2	2	2	31	0.1	18	30	70	0.016	4	8
Quarry Blend	2.36	2	2	1.94	18	0.1	11.2	30	192	0.011	30	15.6
Raw Meal	2.68	4.46	1.94	2.20	47.8	0.35	18.0	39.3	231	0.035	30.6	14.4
Sand	2.46	0.43	0.08	0.41	50	0.5	5.24	22.0	199	0.029	5.26	0.14
Spoils/Other	8	2	2	1	44	0.1	14	30	127	0.011	54	9
Coal	2.5	0.19	0.35	0.42	5	0.05	0.98	1.01	0.48	0.06	1.25	0.65
Coke	2.87	0.16	0.08	0.39	0.79	0.0079	1.77	0.08	0.58	0.10	62.7	0.17

References

Material	Sb	As	Be	Cd	Cr	Cr(VI)	Co	Pb	Mn	Hg	Ni	Se
Additives	8	8	8	8	8	8	8	8	8	8	8	8
Bauxite	1	1	1	12	12	9	12	12	12	12	1	1
Bottom ash	3	14	3	12	12	11	12	12	12	2A	3	3
Cement	4	4	4	4	13	13	3	4	3	4	4	4
CKD	4	4	4	4	4	9	3	4	3	4	4	4
Clinker	3	3	3	3	13	13	3	3	3	3	3	3
Coal/Coke	6	6	6	6	6	9	6	6	6	6	6	6
Gypsum	3	7	3	7	11	9	7	7	3	7	7	7
Limestone/Marl	10	10	10	10	10	10	10	10	10	10	10	10
Mill Scale	3	3	3	12	12	9	12	12	12	12	3	3
Overburden	10	10	10	10	10	10	10	10	10	10	10	10
Quarry Blend	8	8	8	8	8	8	8	8	8	8	8	8
Raw Meal	8	8	8	8	8	8	8	8	8	8	8	8
Sand	3	3	3	3	11	9	3	3	3	2	3	3
Spoils/Other	10	10	10	10	10	10	10	10	10	10	10	10
Coal	3	3	3	3	11	9	3	3	3	5	3	3
Coke	3	3	3	3	3	9	3	3	3	3	3	3

Metals Concentration References

1 *Emission Estimation Technique Manual for Alumina Refining* , Environment Australia, March 1999.

2 *Mercury and Lead Content in Raw Materials* , Portland Cement Association, R&D Serial No. 2888, 2006.

2A Estimated mercury concentration in ash consistent with NESHAP emission limit.

3 Laboratory Analyses for Roanoke Cement Co., ETS Analytical Services, Inc., December 9, 1992 and June 11, 1993.
4 *Trace Metals in Cement and Kiln Dust From North American Cement Plants,* Construction Technology Laboratories, Inc., 1991.
5 Typical Analysis, West Virginia Coal, January 25, 2006.
6 Highest concentration for either coal or coke.
7 *Gypsum for Agricultural Use in Ohio - Sources and Quality of Available Products,* Ohio State University Extension Fact Sheet, 2005.
8 Calculated concentrations using a typical mixture of component materials.
9 Assumes hexavalent chromium content is no more than 1 percent of total chromium for these materials.
10 Chemical analysis of Starfish quarry raw materials, September 2007.
11 *Hexavalent Chromium in Cement Manufacturing: Literature Review* , Portland Cement Association, R&D Serial No. 2983, 2007.
12 Typical metals content for site-specific raw materials, January 2008.
13 Predicted chromium content for site-specific products, January 2008.
14 Data from Progress Energy

Point Sources - HAP & TAP Emissions

Equipment Group	Emission Point No.	Process Unit	Material Processed	PM Emissions	PM Emissions	Sb	As	Be	Cd	Cr	Cr(VI)*	Cr(VI) Bio-available	Cr(VI) Soluble	Co	Pb	Mn	Hg
				lb/hr	TPY	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Raw Mill & KF	**E5**	Raw mill feed bin	Raw meal	0.7164	3.14	1.92E-06	3.19E-06	1.39E-06	1.58E-06	3.43E-05	2.49E-07	2.29E-07	1.99E-08	1.29E-05	2.82E-05	1.66E-04	2.49E-08
Raw Mill & KF	**E6**	Raw mill feed transport	Raw meal	0.6532	2.86	1.75E-06	2.91E-06	1.27E-06	1.44E-06	3.12E-05	2.27E-07	2.09E-07	1.81E-08	1.18E-05	2.57E-05	1.51E-04	2.27E-08
Raw Mill & KF	**E7**	Raw mill feed	Raw meal	0.9102	3.99	2.44E-06	4.06E-06	1.77E-06	2.00E-06	4.35E-05	3.16E-07	2.91E-07	2.53E-08	1.64E-05	3.58E-05	2.10E-04	3.16E-08
Raw Mill & KF	**E8**	Raw mill reject	Raw meal	0.9627	4.22	2.58E-06	4.29E-06	1.87E-06	2.12E-06	4.60E-05	3.34E-07	3.08E-07	2.67E-08	1.73E-05	3.79E-05	2.22E-04	3.34E-08
Raw Mill & KF	**E9**	Kiln dust bin	CKD	0.2494	1.09	1.64E-07	4.09E-06	1.98E-07	4.11E-06	1.42E-05	1.42E-07	1.30E-07	1.13E-08	1.20E-06	2.24E-04	4.49E-05	1.57E-07
Raw Mill & KF	**E10**	Raw meal transport to silo	Raw meal	0.2968	1.30	7.97E-07	1.32E-06	5.76E-07	6.53E-07	1.42E-05	1.03E-07	9.48E-08	8.25E-09	5.34E-06	1.17E-05	6.86E-05	1.03E-08
Raw Mill & KF	**E11**	Raw meal silo	Raw meal	0.3116	1.36	8.36E-07	1.39E-06	6.05E-07	6.86E-07	1.49E-05	1.08E-07	9.96E-08	8.66E-09	5.61E-06	1.23E-05	7.20E-05	1.08E-08
Raw Mill & KF	**E12**	Raw meal silo extraction	Raw meal	0.3532	1.55	9.48E-07	1.57E-06	6.86E-07	7.77E-07	1.69E-05	1.23E-07	1.13E-07	9.81E-09	6.36E-06	1.39E-05	8.16E-05	1.23E-08
Raw Mill & KF	**E13**	Kiln feed	Raw meal	0.3190	1.40	8.56E-07	1.42E-06	6.20E-07	7.02E-07	1.53E-05	1.11E-07	1.02E-07	8.86E-09	5.74E-06	1.25E-05	7.37E-05	1.11E-08
RMKF		Subtotal		4.7725	20.90	1.23E-05	2.42E-05	8.98E-06	1.41E-05	2.31E-04	1.71E-06	1.58E-06	1.37E-07	8.26E-05	4.02E-04	1.09E-03	3.14E-07
Coal System	**E1**	Coal rail unloading	Coal/Coke	0.4665	2.04	1.34E-06	8.86E-08	1.63E-07	1.96E-07	2.33E-06	2.33E-08	2.15E-08	1.87E-09	8.26E-07	4.71E-07	2.71E-07	4.66E-08
Coal System	**E2**	Coal unloading by truck	Coal/Coke	0.4665	2.04	1.34E-06	8.86E-08	1.63E-07	1.96E-07	2.33E-06	2.33E-08	2.15E-08	1.87E-09	8.26E-07	4.71E-07	2.71E-07	4.66E-08
Coal System	**E3**	Coal transport to storage	Coal/Coke	0.5788	2.54	1.66E-06	1.10E-07	2.03E-07	2.43E-07	2.89E-06	2.89E-08	2.66E-08	2.32E-09	1.02E-06	5.85E-07	3.36E-07	5.79E-08
Coal System	**E4**	Coal transport from storage	Coal/Coke	0.5788	2.54	1.66E-06	1.10E-07	2.03E-07	2.43E-07	2.89E-06	2.89E-08	2.66E-08	2.32E-09	1.02E-06	5.85E-07	3.36E-07	5.79E-08
Coal System	**E14**	Coal mill feed bin	Coal/Coke	0.1267	0.56	3.64E-07	2.41E-08	4.44E-08	5.32E-08	6.34E-07	6.34E-09	5.83E-09	5.07E-10	2.24E-07	1.28E-07	7.35E-08	1.27E-08
Coal System	**E15**	Coal mill feed bin	Coal/Coke	0.1267	0.56	3.64E-07	2.41E-08	4.44E-08	5.32E-08	6.34E-07	6.34E-09	5.83E-09	5.07E-10	2.24E-07	1.28E-07	7.35E-08	1.27E-08
Coal System	**E16**	Coal mill feed transport	Coal/Coke	0.5019	2.20	1.44E-06	9.54E-08	1.76E-07	2.11E-07	2.51E-06	2.51E-08	2.31E-08	2.01E-09	8.88E-07	5.07E-07	2.91E-07	5.02E-08
Coal System	**E17**	Fine coal bin	Coal/Coke	0.0132	0.06	3.79E-08	2.51E-09	4.62E-09	5.54E-09	6.60E-08	6.60E-10	6.07E-10	5.28E-11	2.34E-08	1.33E-08	7.66E-09	1.32E-09
Coal System	**E18**	Fine coal bin	Coal/Coke	0.0132	0.06	3.79E-08	2.51E-09	4.62E-09	5.54E-09	6.60E-08	6.60E-10	6.07E-10	5.28E-11	2.34E-08	1.33E-08	7.66E-09	1.32E-09
COAL		Subtotal		2.8724	12.58	8.24E-06	5.46E-07	1.01E-06	1.21E-06	1.44E-05	1.44E-07	1.32E-07	1.15E-08	5.08E-06	2.90E-06	1.67E-06	2.87E-07
Clinker	**E19**	Clinker discharge from cooler	Clinker	0.2904	1.27	6.45E-07	2.24E-07	4.36E-08	1.28E-07	2.07E-05	3.31E-06	3.05E-06	2.65E-07	5.55E-07	2.32E-08	2.99E-05	2.61E-08
Clinker	**E20**	Clinker dome	Clinker	0.2318	1.02	5.15E-07	1.78E-07	3.48E-08	1.02E-07	1.65E-05	2.64E-06	2.43E-06	2.11E-07	4.43E-07	1.85E-08	2.39E-05	2.09E-08
Clinker	**E21**	Off-Spec	Clinker	0.1427	0.62	3.17E-07	1.10E-07	2.14E-08	6.28E-08	1.02E-05	1.63E-06	1.50E-06	1.30E-07	2.72E-07	1.14E-08	1.47E-05	1.28E-08
CHS		Subtotal		0.6648	2.91	1.48E-06	5.12E-07	9.97E-08	2.93E-07	4.74E-05	7.58E-06	6.97E-06	6.06E-07	1.27E-06	5.32E-08	6.85E-05	5.98E-08
Finish Mills	**E22**	Cement mill feed bin	Cement	0.7215	3.16	2.42E-07	1.36E-05	8.30E-07	1.32E-07	4.64E-05	7.43E-06	6.84E-06	5.94E-07	4.02E-06	8.95E-06	1.82E-04	2.74E-08
Finish Mills	**E23**	Cement mill feed bin	Cement	0.6487	2.84	2.17E-07	1.23E-05	7.46E-07	1.19E-07	4.18E-05	6.68E-06	6.15E-06	5.35E-07	3.61E-06	8.04E-06	1.63E-04	2.47E-08
Finish Mills	**E46**	Cement additive bin	Limestone	0.3534	1.55	8.16E-07	1.98E-07	2.83E-08	1.70E-07	1.17E-06	1.17E-08	1.07E-08	9.33E-10	1.87E-07	1.03E-06	9.89E-06	9.19E-08
Finish Mills	**E47**	Cement additve intake	Limestone	0.8922	3.91	2.06E-06	5.00E-07	7.14E-08	4.28E-07	2.94E-06	2.94E-08	2.71E-08	2.36E-09	4.73E-07	2.61E-06	2.50E-05	2.32E-07
Finish Mills	**E24**	Cement mill feed	Cement	0.3451	1.51	1.16E-07	6.52E-06	3.97E-07	6.32E-08	2.22E-05	3.55E-06	3.27E-06	2.84E-07	1.92E-06	4.28E-06	8.70E-05	1.31E-08
Finish Mills	**E25**	Cement mill recirculation bin	Cement	0.1831	0.80	6.13E-08	3.46E-06	2.11E-07	3.35E-08	1.18E-05	1.89E-06	1.74E-06	1.51E-07	1.02E-06	2.27E-06	4.61E-05	6.96E-09
Finish Mills	**E26**	Cement mill reject	Cement	0.3544	1.55	1.19E-07	6.70E-06	4.08E-07	6.49E-08	2.28E-05	3.65E-06	3.36E-06	2.92E-07	1.97E-06	4.39E-06	8.93E-05	1.35E-08
Finish Mills	**E27**	Cement transport	Cement	0.1451	0.64	4.86E-08	2.74E-06	1.67E-07	2.65E-08	9.34E-06	1.49E-06	1.37E-06	1.20E-07	8.08E-07	1.80E-06	3.66E-05	5.51E-09
Finish Mills	**E28**	Cement mill feed	Cement	0.3958	1.73	1.33E-07	7.48E-06	4.55E-07	7.24E-08	2.55E-05	4.08E-06	3.75E-06	3.26E-07	2.20E-06	4.91E-06	9.97E-05	1.50E-08
Finish Mills	**E29**	Cement mill recirculation bin	Cement	0.1831	0.80	6.13E-08	3.46E-06	2.11E-07	3.35E-08	1.18E-05	1.89E-06	1.74E-06	1.51E-07	1.02E-06	2.27E-06	4.61E-05	6.96E-09
Finish Mills	**E30**	Cement mill reject	Cement	0.3544	1.55	1.19E-07	6.70E-06	4.08E-07	6.49E-08	2.28E-05	3.65E-06	3.36E-06	2.92E-07	1.97E-06	4.39E-06	8.93E-05	1.35E-08
Finish Mills	**E31**	Cement transport	Cement	0.1451	0.64	4.86E-08	2.74E-06	1.67E-07	2.65E-08	9.34E-06	1.49E-06	1.37E-06	1.20E-07	8.08E-07	1.80E-06	3.66E-05	5.51E-09
Finish Mills	**E45**	Cement mill stack	Cement	8.4731	37.11	2.84E-06	1.60E-04	9.74E-06	1.55E-06	5.45E-04	8.73E-05	8.03E-05	6.98E-06	4.72E-05	1.05E-04	2.14E-03	3.22E-07
FM		Subtotal		13.1950	57.79	6.88E-06	2.27E-04	1.38E-05	2.78E-06	7.73E-04	1.23E-04	1.13E-04	9.85E-06	6.72E-05	1.52E-04	3.05E-03	7.78E-07
Cement	**E32**	Cement dome	Cement	1.8123	7.94	6.07E-07	3.43E-05	2.08E-06	3.32E-07	1.17E-04	1.87E-05	1.72E-05	1.49E-06	1.01E-05	2.25E-05	4.57E-04	6.89E-08
Cement	**E33**	Cement dome extraction rail	Cement	0.1212	0.53	4.06E-08	2.29E-06	1.39E-07	2.22E-08	7.80E-06	1.25E-06	1.15E-06	9.99E-08	6.75E-07	1.50E-06	3.05E-05	4.61E-09
Cement	**E34**	Cement dome extraction truck	Cement	0.1212	0.53	4.06E-08	2.29E-06	1.39E-07	2.22E-08	7.80E-06	1.25E-06	1.15E-06	9.99E-08	6.75E-07	1.50E-06	3.05E-05	4.61E-09
Cement	**E40**	Cement silo	Cement	1.5321	6.71	5.13E-07	2.90E-05	1.76E-06	2.80E-07	9.86E-05	1.58E-05	1.45E-05	1.26E-06	8.53E-06	1.90E-05	3.86E-04	5.82E-08
Cement	**E41**	Cement silo extration	Cement	0.0856	0.37	2.87E-08	1.62E-06	9.84E-08	1.57E-08	5.51E-06	8.82E-07	8.11E-07	7.05E-08	4.77E-07	1.06E-06	2.16E-05	3.25E-09

Point Sources - HAP & TAP Emissions

Equipment Group	Emission Point No.	Process Unit	Material Processed	PM Emissions	PM Emissions	Sb	As	Be	Cd	Cr	Cr(VI)*	Cr(VI) Bio-available	Cr(VI) Soluble	Co	Pb	Mn	Hg
				lb/hr	TPY	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Cement	**E42**	Cement transport	Cement	0.1736	0.76	5.82E-08	3.28E-06	2.00E-07	3.18E-08	1.12E-05	1.79E-06	1.65E-06	1.43E-07	9.67E-07	2.15E-06	4.38E-05	6.60E-09
Cement	**E43**	Packing plant	Cement	0.4994	2.19	1.67E-07	9.44E-06	5.74E-07	9.14E-08	3.22E-05	5.14E-06	4.73E-06	4.12E-07	2.78E-06	6.19E-06	1.26E-04	1.90E-08
CHSL		Subtotal		4.3456	19.03	1.46E-06	8.21E-05	5.00E-06	7.95E-07	2.80E-04	4.48E-05	4.12E-05	3.58E-06	2.42E-05	5.39E-05	1.10E-03	1.65E-07
		Grand Total, New Baghouses		25.8501	113.22	3.04E-05	3.34E-04	2.89E-05	1.91E-05	1.35E-03	1.77E-04	1.63E-04	1.42E-05	1.80E-04	6.11E-04	5.30E-03	1.60E-06
Cement	**ES-4**	Cement silo	Cement	0.2571	1.13	8.61E-08	4.86E-06	2.96E-07	4.71E-08	1.66E-05	2.65E-06	2.44E-06	2.12E-07	1.43E-06	3.19E-06	6.48E-05	9.77E-09
Cement	**ES-R33**	Screw conv/truck loadout	Cement	0.1286	0.56	4.31E-08	2.43E-06	1.48E-07	2.35E-08	8.28E-06	1.32E-06	1.22E-06	1.06E-07	7.16E-07	1.59E-06	3.24E-05	4.89E-09
Cement		Total, Existing Baghouses		0.3857	1.69	1.29E-07	7.29E-06	4.44E-07	7.06E-08	2.48E-05	3.97E-06	3.66E-06	3.18E-07	2.15E-06	4.78E-06	9.72E-05	1.47E-08

Note

* Chromium VI emissions for these sources are assumed to consist of 92% bioavailable chromate and 8% soluble chromate as a worst case

Point Sources - HAP & TAP Emissions

Equipment Group	Emission Point No.	Process Unit	Material Processed	Ni	Se	Sb	As	Be	Cd	Cr	Cr(VI)	Cr(VI) Bio-available	Cr(VI) Soluble	Co	Pb	Mn	Hg
				lb/hr	lb/hr	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY
Raw Mill & KF	**E5**	Raw mill feed bin	Raw meal	2.19E-05	1.04E-05	8.42E-06	1.40E-05	6.09E-06	6.90E-06	1.50E-04	1.09E-06	1.00E-06	8.72E-08	5.65E-05	1.23E-04	7.25E-04	1.09E-07
Raw Mill & KF	**E6**	Raw mill feed transport	Raw meal	2.00E-05	9.44E-06	7.68E-06	1.27E-05	5.56E-06	6.29E-06	1.37E-04	9.94E-07	9.14E-07	7.95E-08	5.15E-05	1.12E-04	6.61E-04	9.93E-08
Raw Mill & KF	**E7**	Raw mill feed	Raw meal	2.79E-05	1.32E-05	1.07E-05	1.78E-05	7.74E-06	8.77E-06	1.91E-04	1.38E-06	1.27E-06	1.11E-07	7.18E-05	1.57E-04	9.21E-04	1.38E-07
Raw Mill & KF	**E8**	Raw mill reject	Raw meal	2.95E-05	1.39E-05	1.13E-05	1.88E-05	8.19E-06	9.28E-06	2.02E-04	1.46E-06	1.35E-06	1.17E-07	7.59E-05	1.66E-04	9.74E-04	1.46E-07
Raw Mill & KF	**E9**	Kiln dust bin	CKD	5.46E-06	8.60E-06	7.19E-07	1.79E-05	8.68E-07	1.80E-05	6.21E-05	6.21E-07	5.71E-07	4.96E-08	5.24E-06	9.82E-04	1.97E-04	6.86E-07
Raw Mill & KF	**E10**	Raw meal transport to silo	Raw meal	9.09E-06	4.29E-06	3.49E-06	5.79E-06	2.52E-06	2.86E-06	6.22E-05	4.51E-07	4.15E-07	3.61E-08	2.34E-05	5.11E-05	3.00E-04	4.51E-08
Raw Mill & KF	**E11**	Raw meal silo	Raw meal	9.54E-06	4.50E-06	3.66E-06	6.08E-06	2.65E-06	3.00E-06	6.53E-05	4.74E-07	4.36E-07	3.79E-08	2.46E-05	5.37E-05	3.15E-04	4.74E-08
Raw Mill & KF	**E12**	Raw meal silo extraction	Raw meal	1.08E-05	5.10E-06	4.15E-06	6.89E-06	3.00E-06	3.40E-06	7.40E-05	5.37E-07	4.94E-07	4.30E-08	2.78E-05	6.08E-05	3.57E-04	5.37E-08
Raw Mill & KF	**E13**	Kiln feed	Raw meal	9.77E-06	4.61E-06	3.75E-06	6.23E-06	2.71E-06	3.07E-06	6.68E-05	4.85E-07	4.46E-07	3.88E-08	2.52E-05	5.49E-05	3.23E-04	4.85E-08
RMKF		Subtotal		1.44E-04	7.40E-05	5.39E-05	1.06E-04	3.93E-05	6.16E-05	1.01E-03	7.50E-06	6.90E-06	6.00E-07	3.62E-04	1.76E-03	4.77E-03	1.37E-06
Coal System	**E1**	Coal rail unloading	Coal/Coke	2.92E-05	3.03E-07	5.86E-06	3.88E-07	7.15E-07	8.58E-07	1.02E-05	1.02E-07	9.40E-08	8.17E-09	3.62E-06	2.06E-06	1.19E-06	2.04E-07
Coal System	**E2**	Coal unloading by truck	Coal/Coke	2.92E-05	3.03E-07	5.86E-06	3.88E-07	7.15E-07	8.58E-07	1.02E-05	1.02E-07	9.40E-08	8.17E-09	3.62E-06	2.06E-06	1.19E-06	2.04E-07
Coal System	**E3**	Coal transport to storage	Coal/Coke	3.63E-05	3.76E-07	7.28E-06	4.82E-07	8.87E-07	1.06E-06	1.27E-05	1.27E-07	1.17E-07	1.01E-08	4.49E-06	2.56E-06	1.47E-06	2.54E-07
Coal System	**E4**	Coal transport from storage	Coal/Coke	3.63E-05	3.76E-07	7.28E-06	4.82E-07	8.87E-07	1.06E-06	1.27E-05	1.27E-07	1.17E-07	1.01E-08	4.49E-06	2.56E-06	1.47E-06	2.54E-07
Coal System	**E14**	Coal mill feed bin	Coal/Coke	7.95E-06	8.24E-08	1.59E-06	1.05E-07	1.94E-07	2.33E-07	2.78E-06	2.78E-08	2.55E-08	2.22E-09	9.82E-07	5.61E-07	3.22E-07	5.55E-08
Coal System	**E15**	Coal mill feed bin	Coal/Coke	7.95E-06	8.24E-08	1.59E-06	1.05E-07	1.94E-07	2.33E-07	2.78E-06	2.78E-08	2.55E-08	2.22E-09	9.82E-07	5.61E-07	3.22E-07	5.55E-08
Coal System	**E16**	Coal mill feed transport	Coal/Coke	3.15E-05	3.26E-07	6.31E-06	4.18E-07	7.69E-07	9.23E-07	1.10E-05	1.10E-07	1.01E-07	8.79E-09	3.89E-06	2.22E-06	1.28E-06	2.20E-07
Coal System	**E17**	Fine coal bin	Coal/Coke	8.28E-07	8.58E-09	1.66E-07	1.10E-08	2.02E-08	2.43E-08	2.89E-07	2.89E-09	2.66E-09	2.31E-10	1.02E-07	5.84E-08	3.35E-08	5.78E-09
Coal System	**E18**	Fine coal bin	Coal/Coke	8.28E-07	8.58E-09	1.66E-07	1.10E-08	2.02E-08	2.43E-08	2.89E-07	2.89E-09	2.66E-09	2.31E-10	1.02E-07	5.84E-08	3.35E-08	5.78E-09
COAL		Subtotal		1.80E-04	1.87E-06	3.61E-05	2.39E-06	4.40E-06	5.28E-06	6.29E-05	6.29E-07	5.79E-07	5.03E-08	2.23E-05	1.27E-05	7.30E-06	1.26E-06
Clinker	**E19**	Clinker discharge from cooler	Clinker	1.83E-06	4.94E-08	2.82E-06	9.79E-07	1.91E-07	5.60E-07	9.06E-05	1.45E-05	1.33E-05	1.16E-06	2.43E-06	1.02E-07	1.31E-04	1.14E-07
Clinker	**E20**	Clinker dome	Clinker	1.46E-06	3.94E-08	2.25E-06	7.82E-07	1.52E-07	4.47E-07	7.23E-05	1.16E-05	1.06E-05	9.26E-07	1.94E-06	8.12E-08	1.05E-04	9.14E-08
Clinker	**E21**	Off-Spec	Clinker	8.97E-07	2.43E-08	1.39E-06	4.81E-07	9.37E-08	2.75E-07	4.45E-05	7.12E-06	6.55E-06	5.70E-07	1.19E-06	5.00E-08	6.44E-05	5.62E-08
CHS		Subtotal		4.18E-06	1.13E-07	6.46E-06	2.24E-06	4.37E-07	1.28E-06	2.07E-04	3.32E-05	3.05E-05	2.66E-06	5.56E-06	2.33E-07	3.00E-04	2.62E-07
Finish Mills	**E22**	Cement mill feed bin	Cement	2.44E-05	2.45E-06	1.06E-06	5.97E-05	3.63E-06	5.78E-07	2.03E-04	3.25E-05	2.99E-05	2.60E-06	1.76E-05	3.92E-05	7.96E-04	1.20E-07
Finish Mills	**E23**	Cement mill feed bin	Cement	2.19E-05	2.21E-06	9.52E-07	5.37E-05	3.27E-06	5.20E-07	1.83E-04	2.93E-05	2.69E-05	2.34E-06	1.58E-05	3.52E-05	7.16E-04	1.08E-07
Finish Mills	**E46**	Cement additive bin	Limestone	5.02E-07	1.95E-06	3.58E-06	8.67E-07	1.24E-07	7.43E-07	5.11E-06	5.11E-08	4.70E-08	4.09E-09	8.20E-07	4.52E-06	4.33E-05	4.02E-07
Finish Mills	**E47**	Cement additve intake	Limestone	1.27E-06	4.92E-06	9.03E-06	2.19E-06	3.13E-07	1.88E-06	1.29E-05	1.29E-07	1.19E-07	1.03E-08	2.07E-06	1.14E-05	1.09E-04	1.02E-06
Finish Mills	**E24**	Cement mill feed	Cement	1.17E-05	1.17E-06	5.06E-07	2.86E-05	1.74E-06	2.77E-07	9.73E-05	1.56E-05	1.43E-05	1.25E-06	8.42E-06	1.87E-05	3.81E-04	5.74E-08
Finish Mills	**E25**	Cement mill recirculation bin	Cement	6.19E-06	6.23E-07	2.69E-07	1.52E-05	9.22E-07	1.47E-07	5.16E-05	8.26E-06	7.60E-06	6.61E-07	4.47E-06	9.95E-06	2.02E-04	3.05E-08
Finish Mills	**E26**	Cement mill reject	Cement	1.20E-05	1.20E-06	5.20E-07	2.93E-05	1.79E-06	2.84E-07	9.99E-05	1.60E-05	1.47E-05	1.28E-06	8.65E-06	1.92E-05	3.91E-04	5.90E-08
Finish Mills	**E27**	Cement transport	Cement	4.90E-06	4.93E-07	2.13E-07	1.20E-05	7.31E-07	1.16E-07	4.09E-05	6.54E-06	6.02E-06	5.24E-07	3.54E-06	7.88E-06	1.60E-04	2.41E-08
Finish Mills	**E28**	Cement mill feed	Cement	1.34E-05	1.35E-06	5.81E-07	3.28E-05	1.99E-06	3.17E-07	1.12E-04	1.79E-05	1.64E-05	1.43E-06	9.66E-06	2.15E-05	4.37E-04	6.59E-08
Finish Mills	**E29**	Cement mill recirculation bin	Cement	6.19E-06	6.23E-07	2.69E-07	1.52E-05	9.22E-07	1.47E-07	5.16E-05	8.26E-06	7.60E-06	6.61E-07	4.47E-06	9.95E-06	2.02E-04	3.05E-08
Finish Mills	**E30**	Cement mill reject	Cement	1.20E-05	1.20E-06	5.20E-07	2.93E-05	1.79E-06	2.84E-07	9.99E-05	1.60E-05	1.47E-05	1.28E-06	8.65E-06	1.92E-05	3.91E-04	5.90E-08
Finish Mills	**E31**	Cement transport	Cement	4.90E-06	4.93E-07	2.13E-07	1.20E-05	7.31E-07	1.16E-07	4.09E-05	6.54E-06	6.02E-06	5.24E-07	3.54E-06	7.88E-06	1.60E-04	2.41E-08
Finish Mills	**E45**	Cement mill stack	Cement	2.86E-04	2.88E-05	1.24E-05	7.01E-04	4.27E-05	6.79E-06	2.39E-03	3.82E-04	3.52E-04	3.06E-05	2.07E-04	4.60E-04	9.35E-03	1.41E-06
FM		Subtotal		4.06E-04	4.75E-05	3.01E-05	9.92E-04	6.06E-05	1.22E-05	3.39E-03	5.39E-04	4.96E-04	4.31E-05	2.94E-04	6.65E-04	1.33E-02	3.41E-06
Cement	**E32**	Cement dome	Cement	6.13E-05	6.16E-06	2.66E-06	1.50E-04	9.13E-06	1.45E-06	5.11E-04	8.18E-05	7.52E-05	6.54E-06	4.42E-05	9.84E-05	2.00E-03	3.02E-07
Cement	**E33**	Cement dome extraction rail	Cement	4.10E-06	4.12E-07	1.78E-07	1.00E-05	6.11E-07	9.72E-08	3.42E-05	5.47E-06	5.03E-06	4.38E-07	2.96E-06	6.58E-06	1.34E-04	2.02E-08
Cement	**E34**	Cement dome extraction truck	Cement	4.10E-06	4.12E-07	1.78E-07	1.00E-05	6.11E-07	9.72E-08	3.42E-05	5.47E-06	5.03E-06	4.38E-07	2.96E-06	6.58E-06	1.34E-04	2.02E-08
Cement	**E40**	Cement silo	Cement	5.18E-05	5.21E-06	2.25E-06	1.27E-04	7.72E-06	1.23E-06	4.32E-04	6.91E-05	6.36E-05	5.53E-06	3.74E-05	8.32E-05	1.69E-03	2.55E-07
Cement	**E41**	Cement silo extration	Cement	2.89E-06	2.91E-07	1.26E-07	7.09E-06	4.31E-07	6.86E-08	2.41E-05	3.86E-06	3.55E-06	3.09E-07	2.09E-06	4.65E-06	9.45E-05	1.42E-08

Point Sources - HAP & TAP Emissions

Equipment Group	Emission Point No.	Process Unit	Material Processed	Ni	Se	Sb	As	Be	Cd	Cr	Cr(VI)	Cr(VI) Bio-available	Cr(VI) Soluble	Co	Pb	Mn	Hg
				lb/hr	lb/hr	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY
Cement	**E42**	Cement transport	Cement	5.87E-06	5.90E-07	2.55E-07	1.44E-05	8.75E-07	1.39E-07	4.90E-05	7.83E-06	7.21E-06	6.27E-07	4.24E-06	9.43E-06	1.92E-04	2.89E-08
Cement	**E43**	Packing plant	Cement	1.69E-05	1.70E-06	7.33E-07	4.13E-05	2.52E-06	4.00E-07	1.41E-04	2.25E-05	2.07E-05	1.80E-06	1.22E-05	2.71E-05	5.51E-04	8.31E-08
CHSL		Subtotal		1.47E-04	1.48E-05	6.38E-06	3.60E-04	2.19E-05	3.48E-06	1.23E-03	1.96E-04	1.80E-04	1.57E-05	1.06E-04	2.36E-04	4.80E-03	7.23E-07
		Grand Total, New Baghouses		8.81E-04	1.38E-04	1.33E-04	1.46E-03	1.27E-04	8.38E-05	5.89E-03	7.77E-04	7.15E-04	6.21E-05	7.90E-04	2.68E-03	2.32E-02	7.02E-06
Cement	**ES-4**	Cement silo	Cement	8.69E-06	8.74E-07	3.77E-07	2.13E-05	1.30E-06	2.06E-07	7.25E-05	1.16E-05	1.07E-05	9.28E-07	6.27E-06	1.40E-05	2.84E-04	4.28E-08
Cement	**ES-R33**	Screw conv/truck loadout	Cement	4.35E-06	4.37E-07	1.89E-07	1.06E-05	6.48E-07	1.03E-07	3.63E-05	5.80E-06	5.34E-06	4.64E-07	3.14E-06	6.98E-06	1.42E-04	2.14E-08
Cement		Total, Existing Baghouses		1.30E-05	1.31E-06	5.66E-07	3.19E-05	1.94E-06	3.09E-07	1.09E-04	1.74E-05	1.60E-05	1.39E-06	9.41E-06	2.09E-05	4.26E-04	6.42E-08

Point Sources - HAP & TAP Emissions

Equipment Group	Emission Point No.	Process Unit	Material Processed	Ni	Se
				TPY	TPY
Raw Mill & KF	**E5**	Raw mill feed bin	Raw meal	9.61E-05	4.53E-05
Raw Mill & KF	**E6**	Raw mill feed transport	Raw meal	8.76E-05	4.13E-05
Raw Mill & KF	**E7**	Raw mill feed	Raw meal	1.22E-04	5.76E-05
Raw Mill & KF	**E8**	Raw mill reject	Raw meal	1.29E-04	6.09E-05
Raw Mill & KF	**E9**	Kiln dust bin	CKD	2.39E-05	3.77E-05
Raw Mill & KF	**E10**	Raw meal transport to silo	Raw meal	3.98E-05	1.88E-05
Raw Mill & KF	**E11**	Raw meal silo	Raw meal	4.18E-05	1.97E-05
Raw Mill & KF	**E12**	Raw meal silo extraction	Raw meal	4.74E-05	2.24E-05
Raw Mill & KF	**E13**	Kiln feed	Raw meal	4.28E-05	2.02E-05
RMKF		Subtotal		6.31E-04	3.24E-04
Coal System	**E1**	Coal rail unloading	Coal/Coke	1.28E-04	1.33E-06
Coal System	**E2**	Coal unloading by truck	Coal/Coke	1.28E-04	1.33E-06
Coal System	**E3**	Coal transport to storage	Coal/Coke	1.59E-04	1.65E-06
Coal System	**E4**	Coal transport from storage	Coal/Coke	1.59E-04	1.65E-06
Coal System	**E14**	Coal mill feed bin	Coal/Coke	3.48E-05	3.61E-07
Coal System	**E15**	Coal mill feed bin	Coal/Coke	3.48E-05	3.61E-07
Coal System	**E16**	Coal mill feed transport	Coal/Coke	1.38E-04	1.43E-06
Coal System	**E17**	Fine coal bin	Coal/Coke	3.63E-06	3.76E-08
Coal System	**E18**	Fine coal bin	Coal/Coke	3.63E-06	3.76E-08
COAL		Subtotal		7.89E-04	8.18E-06
Clinker	**E19**	Clinker discharge from cooler	Clinker	8.00E-06	2.16E-07
Clinker	**E20**	Clinker dome	Clinker	6.39E-06	1.73E-07
Clinker	**E21**	Off-Spec	Clinker	3.93E-06	1.06E-07
CHS		Subtotal		1.83E-05	4.95E-07
Finish Mills	**E22**	Cement mill feed bin	Cement	1.07E-04	1.07E-05
Finish Mills	**E23**	Cement mill feed bin	Cement	9.60E-05	9.66E-06
Finish Mills	**E46**	Cement additive bin	Limestone	2.20E-06	8.53E-06
Finish Mills	**E47**	Cement additve intake	Limestone	5.55E-06	2.15E-05
Finish Mills	**E24**	Cement mill feed	Cement	5.11E-05	5.14E-06
Finish Mills	**E25**	Cement mill recirculation bin	Cement	2.71E-05	2.73E-06
Finish Mills	**E26**	Cement mill reject	Cement	5.25E-05	5.28E-06
Finish Mills	**E27**	Cement transport	Cement	2.15E-05	2.16E-06
Finish Mills	**E28**	Cement mill feed	Cement	5.86E-05	5.89E-06
Finish Mills	**E29**	Cement mill recirculation bin	Cement	2.71E-05	2.73E-06
Finish Mills	**E30**	Cement mill reject	Cement	5.25E-05	5.28E-06
Finish Mills	**E31**	Cement transport	Cement	2.15E-05	2.16E-06
Finish Mills	**E45**	Cement mill stack	Cement	1.25E-03	1.26E-04
FM		Subtotal		1.78E-03	2.08E-04
Cement	**E32**	Cement dome	Cement	2.68E-04	2.70E-05
Cement	**E33**	Cement dome extraction rail	Cement	1.79E-05	1.81E-06
Cement	**E34**	Cement dome extraction truck	Cement	1.79E-05	1.81E-06
Cement	**E40**	Cement silo	Cement	2.27E-04	2.28E-05
Cement	**E41**	Cement silo extration	Cement	1.27E-05	1.27E-06

Point Sources - HAP & TAP Emissions

Equipment Group	Emission Point No.	Process Unit	Material Processed	Ni	Se
				TPY	TPY
Cement	**E42**	Cement transport	Cement	2.57E-05	2.59E-06
Cement	**E43**	Packing plant	Cement	7.39E-05	7.44E-06
CHSL		Subtotal		6.43E-04	6.47E-05
		Grand Total, New Baghouses		3.86E-03	6.05E-04
Cement	**ES-4**	Cement silo	Cement	3.81E-05	3.83E-06
Cement	**ES-R33**	Screw conv/truck loadout	Cement	1.90E-05	1.91E-06
Cement		Total, Existing Baghouses		5.71E-05	5.74E-06

Emergency Generator Emissions

Maximum Hourly Emissions:

Unit ID	EU Description	Size	Fuel Rate gal/hr	Heat Input MMBtu/hr	Output kW-hr	PM lbs/hr	PM_{10} lbs/hr	$PM_{2.5}$ lbs/hr	SO2 lbs/hr	NO_X lbs/hr	CO lbs/hr	VOC lbs/hr
GEN	Generator	800 kW	57.2	7.84	800	0.3527	0.2892	0.2822	0.0119	11.1111	6.1728	0.1764

Annual Average Hourly Emissions:

Unit ID	EU Description	Size	Fuel Rate gal/hr	Heat Input MMBtu/hr	Output kW-hr	PM lbs/hr	PM_{10} lbs/hr	$PM_{2.5}$ lbs/hr	SO2 lbs/hr	NO_X lbs/hr	CO lbs/hr	VOC lbs/hr
GEN	Generator	800 kW	NA	NA	NA	0.0201	0.0165	0.0161	0.0007	0.6342	0.3523	0.0101

Annual Emissions:

Unit ID	EU Description	Operating Hours	Fuel Rate gal/yr	Heat Input MMBtu/yr	Output kW-hr/yr	PM tons/yr	PM_{10} tons/yr	$PM_{2.5}$ tons/yr	SO2 tons/yr	NO_X tons/yr	CO tons/yr	VOC tons/yr
GEN	Generator	500	28,600	3,918	400,000	0.09	0.07	0.07	0.00	2.78	1.54	0.04

Notes: The emergency generator operates during testing and power outages. Potential emissions based on maximum of 500 hrs/yr of operation. Generator is diesel fuel-fired. Assume 137,000 Btu/gal heat value of fuel. Fuel sulfur limit (after October 1, 2010) is 0.0015 percent. Emission factors from NSPS Subpart IIII Standards of Performance for Stationary Compression Ignition Internal Combustion Engines and AP-42 Chapter 3.4.

Emissions Basis:

Pollutant	Emission Factor	EF Units	Source of EF
PM	0.20	g/kW-hr	NSPS Limit
PM_{10}	0.164	g/kW-hr	82% of PM: Table 3.4-2
$PM_{2.5}$	0.16	g/kW-hr	80% of PM: Table 3.4-2
SO_2	0.001515	lb/MMBtu	AP-42 Table 3.4-1
NO_X	6.3	g/kW-hr	Limit: NOx + HC = 6.4
CO	3.5	g/kW-hr	Emission Limit
VOC	0.1	g/kW-hr	Limit: NOx + HC = 6.4

Exhaust flow rate	6046	acfm
Exhaust temperature	955	deg F
Exhaust vent diameter	8	in.

Generator HAP & TAP Emissions

Pollutant	TAP	HAP	EF (lb/ MMBtu)	AP-42 Table	lbs/hr	tons/yr
Acetaldehyde	X	X	2.52E-05	3.4-3	1.97E-04	4.94E-05
Acrolein	X	X	7.88E-06	3.4-3	6.18E-05	1.54E-05
Benzene	X	X	7.76E-04	3.4-3	6.08E-03	1.52E-03
Formaldehyde	X	X	7.89E-05	3.4-3	6.18E-04	1.55E-04
Toluene	X	X	2.81E-04	3.4-3	2.20E-03	5.51E-04
Xylenes	X	X	1.93E-04	3.4-3	1.51E-03	3.78E-04
PAH's						
Acenaphthene		X	4.68E-06	3.4-4	3.67E-05	9.17E-06
Acenaphthylene		X	9.23E-06	3.4-4	7.23E-05	1.81E-05
Anthracene		X	1.23E-06	3.4-4	9.64E-06	2.41E-06
Benz(a)anthracene		X	6.22E-07	3.4-4	4.87E-06	1.22E-06
Benzo(a)pyrene	X	X	2.57E-07	3.4-4	2.01E-06	5.03E-07
Benzo(b)fluoranthene		X	1.11E-06	3.4-4	8.70E-06	2.17E-06
Benzo(g,h,l)perylene		X	5.56E-07	3.4-4	4.36E-06	1.09E-06
Benzo(k)fluoranthene		X	2.18E-07	3.4-4	1.71E-06	4.27E-07
Chrysene		X	1.53E-06	3.4-4	1.20E-05	3.00E-06
Dibenz(a,h)anthracene		X	3.46E-07	3.4-4	2.71E-06	6.78E-07
Fluoranthene		X	4.03E-06	3.4-4	3.16E-05	7.90E-06
Fluorene		X	1.28E-05	3.4-4	1.00E-04	2.51E-05
Indeno(1,2,3-cd)pyrene		X	4.14E-07	3.4-4	3.24E-06	8.11E-07
Naphthalene		X	1.30E-04	3.4-4	1.02E-03	2.55E-04
Phenanthrene		X	4.08E-05	3.4-4	3.20E-04	7.99E-05
Pyrene		X	3.71E-06	3.4-4	2.91E-05	7.27E-06
POM (Total PAH)		X	2.12E-04	3.4-4	1.66E-03	4.15E-04

Emission Factor Calculation Sheet (Fugitives)

Material Transfer Operations		**PM**	**PM-10**	**PM-2.5**
k (particle size multiplier)		0.74	0.35	0.053
Mean Wind Speed (mph) Wilmington, NC	8.6	**PM EF**	**PM-10 EF**	**PM-2.5 EF**
(Source: EPA TANKS2 MET DATA)		**(lb/ton handled)**	**(lb/ton handled)**	**(lb/ton handled)**
Marl Average Moisture Content (%)	16	2.61E-04	1.23E-04	1.87E-05
Bauxite Average Moisture Content (%)	5	1.33E-03	6.28E-04	9.52E-05
Coal/Coke Average Moisture Content (%)	8	6.88E-04	3.25E-04	4.93E-05
Dried Material Avg. Moisture Content (%)	1	1.26E-02	5.98E-03	9.06E-04
Sand Average Moisture Content (%)	5	1.33E-03	6.28E-04	9.52E-05
Ash Average Moisture Content (%)	15	2.85E-04	1.35E-04	2.04E-05
Gypsum Average Moisture Content (%)	6	1.03E-03	4.87E-04	7.37E-05
Mill Scale Average Moisture Content (%)	5	1.33E-03	6.28E-04	9.52E-05
Clinker Average Moisture Content (%)	0.1	3.18E-01	1.50E-01	2.28E-02
Additives Average Moisture Content (%)	12	3.90E-04	1.84E-04	2.79E-05
Raw Mix Average Moisture Content (%)	15.81	2.65E-04	1.25E-04	1.90E-05

Material transfer factors from AP-42 Section 13.2.4.3 (Aggregate Handling and Storage Piles, 11/06)

E = k * 0.0032 * (U/5)^1.3 / (M/2)^1.4

E = transfer emission factor (lb/ton)
k = particle size multiplier
U = mean wind speed (mph)
M = material moisture content (%)

Miscellaneous Operations	**Reference**	**PM EF**	**PM-10 EF**	**PM-2.5 EF**
		(lb/ton)	**(lb/ton)**	**(lb/ton)**
Primary & secondary crushers	1	0.0012	0.00054	0.00010
Cement transfer (uncontrolled)	2	0.72	0.46	0.11

1) AP-42 Table 11.19.2-2 (Crushed Stone Processing, 8/04) (wet crushing = controlled)
2) AP-42 Table 11.12.2-2 (PM & PM10). Assume PM2.5 = 15% of PM.

Fugitive Emissions From Material Transfer Points

Area	Equipment Description	Material	Location	Control Device ID	Operating Hours	Annual Throughput (tons)	Control Efficiency %	TSP Factor lbs/ton	TSP tons/yr	PM_{10} Factor lbs/ton	PM_{10} tons/yr	$PM_{2.5}$ Factor lbs/ton	$PM_{2.5}$ tons/yr	Hourly Emission Rates TSP lbs/hr	Hourly Emission Rates PM_{10} lbs/hr	Hourly Emission Rates $PM_{2.5}$ lbs/hr
Quarry	Hopper/Feeder 1	Limestone/Marl	FQ1	None	8,760	3,411,152	NA	2.61E-04	0.44	1.23E-04	0.21	1.87E-05	0.03	0.1015	0.0480	0.0073
Quarry	Primary Crusher 1	Limestone/Marl	FQ1	None	8,760	3,411,152	NA	0.0012	2.05	0.00054	0.92	0.0001	0.17	0.4673	0.2103	0.0389
Quarry	Mining Conveyor 2 Transfer	Limestone/Marl	FQ1	None	8,760	3,411,152	NA	2.61E-04	0.44	1.23E-04	0.21	1.87E-05	0.03	0.1015	0.0480	0.0073
	Subtotal		FQ1						2.94		1.34		0.23	0.6704	0.3063	0.0535
Quarry	Mining Conveyor 1 Transfer	Limestone/Marl	FQ2	None	8,760	3,411,152	NA	2.61E-04	0.44	1.23E-04	0.21	1.87E-05	0.03	0.1015	0.0480	0.0073
Quarry	Hopper/Feeder 2	Spoils/Other	FQ3	None	8,760	434,183	NA	2.61E-04	0.06	1.23E-04	0.03	1.87E-05	0.00	0.0129	0.0061	0.0009
Quarry	Primary Crusher 2	Spoils/Other	FQ3	None	8,760	434,183	NA	0.0012	0.26	0.00054	0.12	0.0001	0.02	0.0595	0.0268	0.0050
Quarry	Spoils Conveyor 2 Transfer	Spoils/Other	FQ3	None	8,760	434,183	NA	2.61E-04	0.06	1.23E-04	0.03	1.87E-05	0.00	0.0129	0.0061	0.0009
	Subtotal		FQ3						0.37		0.17		0.03	0.0853	0.0390	0.0068
Quarry	Spoils Conveyor 3 Transfer	Spoils/Other	FQ4	None	8,760	217,092	NA	2.61E-04	0.03	1.23E-04	0.01	1.87E-05	0.00	0.0065	0.0031	0.0005
Quarry	Radial Stacker Transfer	Spoils/Other	FQ5	None	8,760	217,092	NA	2.61E-04	0.03	1.23E-04	0.01	1.87E-05	0.00	0.0065	0.0031	0.0005
Quarry	Stacker to Pile	Spoils/Other	FQ6	None	8,760	217,092	NA	2.61E-04	0.03	1.23E-04	0.01	1.87E-05	0.00	0.0065	0.0031	0.0005
Quarry	Spoils Conveyor 1 Transfer	Spoils/Other	FQ7	None	8,760	217,092	NA	2.61E-04	0.03	1.23E-04	0.01	1.87E-05	0.00	0.0065	0.0031	0.0005
Quarry/Plant	Secondary Crusher Feeder	Quarry Blend	FQ8	None	8,760	3,628,243	NA	2.61E-04	0.47	1.23E-04	0.22	1.87E-05	0.03	0.1080	0.0511	0.0077
Quarry/Plant	Secondary Crusher	Quarry Blend	FQ8	None	8,760	3,628,243	NA	0.0012	2.18	0.00054	0.98	0.0001	0.18	0.4970	0.2237	0.0414
Quarry/Plant	Belt Conveyor Transfer	Quarry Blend	FQ8	None	8,760	3,628,243	NA	2.61E-04	0.47	1.23E-04	0.22	1.87E-05	0.03	0.1080	0.0511	0.0077
	Subtotal		FQ8						3.12		1.43		0.25	0.7130	0.3258	0.0569
Quarry	Total		FQ						6.99		3.20		0.55	1.5961	0.7314	0.1263
Plant-Unloading Hopper	Hopper/Feeder 1	Additives	F1	None	8,760	425,102	NA	3.90E-04	0.08	1.84E-04	0.04	2.79E-05	0.01	0.0189	0.0090	0.0014
Plant-Unloading Hopper	Belt Conveyor Transfer	Additives	F1	None	8,760	425,102	NA	3.90E-04	0.08	1.84E-04	0.04	2.79E-05	0.01	0.0189	0.0090	0.0014
Plant-Unloading Hopper	Hopper/Feeder 2	Coal/Coke	F1	None	8,760	113,530	NA	6.88E-04	0.04	3.25E-04	0.02	4.93E-05	0.00	0.0089	0.0042	0.0006
Plant-Unloading Hopper	Belt Conveyor Transfer	Coal/Coke	F1	None	8,760	113,530	NA	6.88E-04	0.04	3.25E-04	0.02	4.93E-05	0.00	0.0089	0.0042	0.0006
	Subtotal		F1						0.24		0.12		0.02	0.0557	0.0263	0.0040
Plant-Rail Unloading	Enclosed Hopper w/Dust Suppression	Coal/Coke	F2	None	8,760	283,824	50	6.88E-04	0.05	3.25E-04	0.02	4.93E-05	0.00	0.0111	0.0053	0.0008
Plant-Raw Storage Bldg	Belt to Tripper Belt	Quarry Blend	F3	None	8,760	3,628,243	NA	2.61E-04	0.47	1.23E-04	0.22	1.87E-05	0.03	0.1080	0.0511	0.0077
Plant-Raw Storage Bldg	Tripper Belt to Piles	Quarry Blend	F3	None	8,760	3,628,243	NA	2.61E-04	0.47	1.23E-04	0.22	1.87E-05	0.03	0.1080	0.0511	0.0077
Plant-Raw Storage Bldg	Pile Reclaimer	Quarry Blend	F3	None	8,760	3,628,243	NA	2.61E-04	0.47	1.23E-04	0.22	1.87E-05	0.03	0.1080	0.0511	0.0077
Plant-Raw Storage Bldg	Reclaimer to Belt	Quarry Blend	F3	None	8,760	3,628,243	NA	2.61E-04	0.47	1.23E-04	0.22	1.87E-05	0.03	0.1080	0.0511	0.0077
Plant-Raw Storage Bldg	Belt to Tripper Belt	Additives	F3	None	8,760	425,102	NA	3.90E-04	0.08	1.84E-04	0.04	2.79E-05	0.01	0.0189	0.0090	0.0014
Plant-Raw Storage Bldg	Tripper Belt to Piles	Additives	F3	None	8,760	425,102	NA	3.90E-04	0.08	1.84E-04	0.04	2.79E-05	0.01	0.0189	0.0090	0.0014
Plant-Raw Storage Bldg	Pile Reclaimer	Additives	F3	None	8,760	425,102	NA	3.90E-04	0.08	1.84E-04	0.04	2.79E-05	0.01	0.0189	0.0090	0.0014
Plant-Raw Storage Bldg	Reclaimer to Belt	Additives	F3	None	8,760	425,102	NA	3.90E-04	0.08	1.84E-04	0.04	2.79E-05	0.01	0.0189	0.0090	0.0014
Plant-Raw Storage Bldg	Belt to Tripper Belt	Coal/Coke	F3	None	8,760	113,530	NA	6.88E-04	0.04	3.25E-04	0.02	4.93E-05	0.00	0.0089	0.0042	0.0006
Plant-Raw Storage Bldg	Tripper Belt to Piles	Coal/Coke	F3	None	8,760	113,530	NA	6.88E-04	0.04	3.25E-04	0.02	4.93E-05	0.00	0.0089	0.0042	0.0006
Plant-Raw Storage Bldg	Pile Reclaimer	Coal/Coke	F3	None	8,760	113,530	NA	6.88E-04	0.04	3.25E-04	0.02	4.93E-05	0.00	0.0089	0.0042	0.0006
Plant-Raw Storage Bldg	Reclaimer to Belt	Coal/Coke	F3	None	8,760	113,530	NA	6.88E-04	0.04	3.25E-04	0.02	4.93E-05	0.00	0.0089	0.0042	0.0006

Fugitive Emissions From Material Transfer Points

Area	Equipment Description	Material	Location	Control Device ID	Operating Hours	Annual Throughput (tons)	Control Efficiency %	TSP Factor lbs/ton	TSP tons/yr	PM_{10} Factor lbs/ton	PM_{10} tons/yr	$PM_{2.5}$ Factor lbs/ton	$PM_{2.5}$ tons/yr	Hourly Emission Rates TSP lbs/hr	Hourly Emission Rates PM_{10} lbs/hr	Hourly Emission Rates $PM_{2.5}$ lbs/hr
	Subtotal		F3						2.38		1.13		0.17	0.5434	0.2570	0.0389
Plant-Marl Transfer	Belt Conveyor Transfer	Quarry Blend	F4	None	8,760	3,628,243	NA	2.61E-04	0.47	1.23E-04	0.22	1.87E-05	0.03	0.1080	0.0511	0.0077
Plant-Additives Transfer	Belt Conveyor Transfer	Additives	F5	None	8,760	425,102	NA	3.90E-04	0.08	1.84E-04	0.04	2.79E-05	0.01	0.0189	0.0090	0.0014
Plant-Marl Transfer	Belt Conveyor Transfer	Quarry Blend	F6	None	8,760	3,628,243	NA	2.61E-04	0.47	1.23E-04	0.22	1.87E-05	0.03	0.1080	0.0511	0.0077
Plant-Additives Transfer	Belt Conveyor Transfer	Additives	F7	None	8,760	425,102	NA	3.90E-04	0.08	1.84E-04	0.04	2.79E-05	0.01	0.0189	0.0090	0.0014
	Subtotal								0.56		0.26		0.04	0.1269	0.0600	0.0091
Plant-Marl Transfer	Conveyor to Silo	Quarry Blend	F7A	None	8,760	3,628,243	50	2.61E-04	0.24	1.23E-04	0.11	1.87E-05	0.02	0.0540	0.0255	0.0039
Plant-Marl Transfer	Silo to Enclosed Belt	Quarry Blend	F7B	None	8,760	3,628,243	50	2.61E-04	0.24	1.23E-04	0.11	1.87E-05	0.02	0.0540	0.0255	0.0039
Plant-Additives Transfer	Conveyor to Silo	Bottom Ash	F7C	None	8,760	391,332	50	2.85E-04	0.03	1.35E-04	0.01	2.04E-05	0.00	0.0064	0.0030	0.0005
Plant-Additives Transfer	Silo to Enclosed Belt	Bottom Ash	F7D	None	8,760	391,332	50	2.85E-04	0.03	1.35E-04	0.01	2.04E-05	0.00	0.0064	0.0030	0.0005
	Subtotal								0.53		0.25		0.04	0.1208	0.0571	0.0086
Plant-Cement Additives	Truck Unloading	Gypsum	F8	None	8,760	127,549	NA	1.03E-03	0.07	4.87E-04	0.03	7.37E-05	0.00	0.0150	0.0071	0.0011
Plant-Cement Additives	Hopper/Feeder	Gypsum	F8	None	8,760	127,549	NA	1.03E-03	0.07	4.87E-04	0.03	7.37E-05	0.00	0.0150	0.0071	0.0011
Plant-Cement Additives	Belt Conveyor Transfer	Gypsum	F8	None	8,760	127,549	NA	1.03E-03	0.07	4.87E-04	0.03	7.37E-05	0.00	0.0150	0.0071	0.0011
Plant-Cement Additives	Truck Unloading	Limestone	F8	None	8,760	102,040	NA	1.03E-03	0.05	4.87E-04	0.02	7.37E-05	0.00	0.0120	0.0057	0.0009
Plant-Cement Additives	Hopper/Feeder	Limestone	F8	None	8,760	102,040	NA	1.03E-03	0.05	4.87E-04	0.02	7.37E-05	0.00	0.0120	0.0057	0.0009
	Subtotal		F8						0.30		0.14		0.02	0.0689	0.0326	0.0049
Plant	Subtotal		RMHS						4.62		2.18		0.33	1.0538	0.4984	0.0755

Notes:

Fugitive HAP & TAP Emissions

Area	Equipment Description	Material	Location	PM Emissions	PM Emissions	Sb	As	Be	Cd	Cr	Cr(VI)*	Cr(VI) Bio-available	Cr(VI) Soluble	Co	Pb	Mn	Hg
				lb/hr	TPY	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Quarry	Primary Crusher 1 & Equip.	Limestone/Marl	FQ1	0.6704	2.94	1.34E-06	1.34E-06	1.34E-06	1.34E-06	1.07E-05	6.70E-08	6.17E-08	5.36E-09	7.37E-06	2.01E-05	1.31E-04	7.37E-09
Quarry	Mining Conveyor 1 Transfer	Limestone/Marl	FQ2	0.1015	0.44	2.03E-07	2.03E-07	2.03E-07	2.03E-07	1.62E-06	1.02E-08	9.34E-09	8.12E-10	1.12E-06	3.05E-06	1.99E-05	1.12E-09
Quarry	Primary Crusher 2 & Equip.	Spoils/Other	FQ3	0.0853	0.37	6.83E-07	1.71E-07	1.71E-07	8.53E-08	3.75E-06	8.53E-09	7.85E-09	6.83E-10	1.19E-06	2.56E-06	1.08E-05	9.39E-10
Quarry	Spoils Conveyor 3 Transfer	Spoils/Other	FQ4	0.0065	0.03	5.17E-08	1.29E-08	1.29E-08	6.46E-09	2.84E-07	6.46E-10	5.95E-10	5.17E-11	9.05E-08	1.94E-07	8.21E-07	7.11E-11
Quarry	Radial Stacker Transfer	Spoils/Other	FQ5	0.0065	0.03	5.17E-08	1.29E-08	1.29E-08	6.46E-09	2.84E-07	6.46E-10	5.95E-10	5.17E-11	9.05E-08	1.94E-07	8.21E-07	7.11E-11
Quarry	Stacker to Pile	Spoils/Other	FQ6	0.0065	0.03	5.17E-08	1.29E-08	1.29E-08	6.46E-09	2.84E-07	6.46E-10	5.95E-10	5.17E-11	9.05E-08	1.94E-07	8.21E-07	7.11E-11
Quarry	Spoils Conveyor 1 Transfer	Spoils/Other	FQ7	0.0065	0.03	5.17E-08	1.29E-08	1.29E-08	6.46E-09	2.84E-07	6.46E-10	5.95E-10	5.17E-11	9.05E-08	1.94E-07	8.21E-07	7.11E-11
Quarry/Plant	Secondary Crusher & Equip.	Quarry Blend	FQ8	0.7130	3.12	1.68E-06	1.43E-06	1.43E-06	1.38E-06	1.26E-05	7.13E-08	6.56E-08	5.70E-09	7.97E-06	2.14E-05	1.37E-04	7.84E-09
Quarry	Subtotal		FQ	1.5961	6.99	4.12E-06	3.19E-06	3.19E-06	3.04E-06	2.98E-05	1.60E-07	1.47E-07	1.28E-08	1.80E-05	4.79E-05	3.02E-04	1.76E-08
Plant-Unloading Hopper	Hopper/Feeder 1	Additives	F1a	0.0379	0.17	2.04E-07	9.13E-07	4.84E-08	1.55E-07	1.17E-05	9.55E-08	8.79E-08	7.64E-09	2.74E-06	4.37E-06	2.04E-05	8.48E-09
Plant-Unloading Hopper	Hopper/Feeder 2	Coal/Coke	F1b	0.0178	0.08	5.12E-08	3.39E-09	6.24E-09	7.49E-09	8.92E-08	8.92E-10	8.20E-10	7.13E-11	3.16E-08	1.80E-08	1.03E-08	1.78E-09
Plant-Rail Unloading	Enclosed Hopper	Coal/Coke	F2	0.0111	0.05	3.20E-08	2.12E-09	3.90E-09	4.68E-09	5.57E-08	5.57E-10	5.13E-10	4.46E-11	1.97E-08	1.13E-08	6.47E-09	1.11E-09
Plant-Raw Storage Bldg	Raw Storage Bldg	Quarry Blend	F3a	0.4320	1.89	1.02E-06	8.64E-07	8.64E-07	8.38E-07	7.64E-06	4.32E-08	3.97E-08	3.46E-09	4.83E-06	1.30E-05	8.29E-05	4.75E-09
Plant-Raw Storage Bldg	Raw Storage Bldg	Additives	F3b	0.0757	0.33	4.09E-07	1.83E-06	9.68E-08	3.10E-07	2.34E-05	1.91E-07	1.76E-07	1.53E-08	5.47E-06	8.75E-06	4.09E-05	1.70E-08
Plant-Raw Storage Bldg	Raw Storage Bldg	Coal/Coke	F3c	0.0357	0.16	1.02E-07	6.78E-09	1.25E-08	1.50E-08	1.78E-07	1.78E-09	1.64E-09	1.43E-10	6.31E-08	3.60E-08	2.07E-08	3.57E-09
Plant-Marl Transfer	Belt Conveyor Transfer	Quarry Blend	F4	0.1080	0.47	2.55E-07	2.16E-07	2.16E-07	2.10E-07	1.91E-06	1.08E-08	9.94E-09	8.64E-10	1.21E-06	3.24E-06	2.07E-05	1.19E-09
Plant-Additives Transfer	Belt Conveyor Transfer	Additives	F5	0.0189	0.08	1.02E-07	4.56E-07	2.42E-08	7.76E-08	5.85E-06	4.78E-08	4.39E-08	3.82E-09	1.37E-06	2.19E-06	1.02E-05	4.24E-09
Plant-Marl Transfer	Belt Conveyor Transfer	Quarry Blend	F6	0.1080	0.47	2.55E-07	2.16E-07	2.16E-07	2.10E-07	1.91E-06	1.08E-08	9.94E-09	8.64E-10	1.21E-06	3.24E-06	2.07E-05	1.19E-09
Plant-Additives Transfer	Belt Conveyor Transfer	Additives	F7	0.0189	0.08	1.02E-07	4.56E-07	2.42E-08	7.76E-08	5.85E-06	4.78E-08	4.39E-08	3.82E-09	1.37E-06	2.19E-06	1.02E-05	4.24E-09
Plant-Marl Transfer	Conveyor to Silo	Quarry Blend	F7A	0.0540	0.24	1.27E-07	1.08E-07	1.08E-07	1.05E-07	9.55E-07	5.40E-09	4.97E-09	4.32E-10	6.04E-07	1.62E-06	1.04E-05	5.94E-10
Plant-Marl Transfer	Silo to Enclosed Belt	Quarry Blend	F7B	0.0540	0.24	1.27E-07	1.08E-07	1.08E-07	1.05E-07	9.55E-07	5.40E-09	4.97E-09	4.32E-10	6.04E-07	1.62E-06	1.04E-05	5.94E-10
Plant-Additives Transfer	Conveyor to Silo	Bottom Ash	F7C	0.0064	0.03	2.83E-08	1.56E-07	8.99E-09	2.55E-08	7.20E-07	3.19E-09	2.93E-09	2.55E-10	4.59E-07	4.91E-07	2.63E-06	1.53E-09
Plant-Additives Transfer	Silo to Enclosed Belt	Bottom Ash	F7D	0.0064	0.03	2.83E-08	1.56E-07	8.99E-09	2.55E-08	7.20E-07	3.19E-09	2.93E-09	2.55E-10	4.59E-07	4.91E-07	2.63E-06	1.53E-09
Plant-Cement Additives	Gypsum/LS Handling	Gypsum/LS	F8	0.0689	0.30	1.59E-07	3.86E-08	5.52E-09	3.31E-08	2.28E-07	2.28E-09	2.09E-09	1.82E-10	3.65E-08	2.01E-07	1.93E-06	1.79E-08
Plant	Subtotal		RMHS	1.0538	4.62	3.00E-06	5.53E-06	1.75E-06	2.20E-06	6.22E-05	4.70E-07	4.32E-07	3.76E-08	2.05E-05	4.14E-05	2.34E-04	6.97E-08
Quarry-Storage Piles	Limestone/Marl	Limestone/Marl	PQ1	0.0858	0.38	1.72E-07	1.72E-07	1.72E-07	1.72E-07	1.37E-06	8.58E-09	7.90E-09	6.87E-10	9.44E-07	2.57E-06	1.68E-05	9.44E-10
Quarry-Storage Piles	Spoils/Other	Spoils/Other	PQ2	0.0858	0.38	6.87E-07	1.72E-07	1.72E-07	8.58E-08	3.78E-06	8.58E-09	7.90E-09	6.87E-10	1.20E-06	2.57E-06	1.09E-05	9.44E-10
Quarry-Storage Piles	Spoils	Spoils/Other	PQ3	0.1716	0.75	1.37E-06	3.43E-07	3.43E-07	1.72E-07	7.55E-06	1.72E-08	1.58E-08	1.37E-09	2.40E-06	5.15E-06	2.18E-05	1.89E-09
Quarry-Storage Piles	Overburden	Overburden	PQ4	0.3433	1.50	5.49E-06	6.87E-07	6.87E-07	6.87E-07	1.06E-05	3.43E-08	3.16E-08	2.75E-09	6.18E-06	1.03E-05	2.40E-05	5.49E-09
Plant-Storage Piles	Raw Storage Bldg	Quarry Blend	PB1	0.2917	1.28	6.88E-07	5.83E-07	5.83E-07	5.66E-07	5.16E-06	2.92E-08	2.68E-08	2.33E-09	3.26E-06	8.75E-06	5.60E-05	3.21E-09
Plant-Storage Piles	Raw Storage Bldg	Bauxite	PB1	0.0000	0.00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Plant-Storage Piles	Raw Storage Bldg	Mill Scale	PB1	0.0309	0.14	4.32E-07	6.36E-07	2.78E-09	1.54E-07	6.40E-05	6.40E-07	5.89E-07	5.12E-08	2.32E-06	1.43E-05	5.19E-05	2.47E-09
Plant-Storage Piles	Raw Storage Bldg	Bottom Ash	PB1	0.6503	2.85	2.89E-06	1.59E-05	9.17E-07	2.60E-06	7.35E-05	3.25E-07	2.99E-07	2.60E-08	4.68E-05	5.01E-05	2.69E-04	1.56E-07
Plant-Storage Piles	Raw Storage Bldg	Coal/Coke	PB1	0.1047	0.46	3.00E-07	1.99E-08	3.66E-08	4.40E-08	5.24E-07	5.24E-09	4.82E-09	4.19E-10	1.85E-07	1.06E-07	6.07E-08	1.05E-08
Plant-Storage Piles	Gypsum	Gypsum	PB2	0.0858	0.38	1.98E-07	4.81E-08	6.87E-09	4.12E-08	2.83E-07	2.83E-09	2.61E-09	2.27E-10	4.55E-08	2.51E-07	2.40E-06	2.23E-08
Plant-Storage Piles	Limestone	Limestone	PB3	0.0687	0.30	1.59E-07	3.84E-08	5.49E-09	3.30E-08	2.27E-07	2.27E-09	2.08E-09	1.81E-10	3.64E-08	2.00E-07	1.92E-06	1.78E-08
Storage Piles	Subtotal		SP	1.9186	8.40	1.24E-05	1.86E-05	2.93E-06	4.56E-06	1.67E-04	1.07E-06	9.88E-07	8.59E-08	6.34E-05	9.42E-05	4.54E-04	2.22E-07
Mining Operation	Drilling	Limestone/Marl	M1a	0.2256	0.99	4.51E-07	4.51E-07	4.51E-07	4.51E-07	3.61E-06	2.26E-08	2.08E-08	1.80E-09	2.48E-06	6.77E-06	4.42E-05	2.48E-09
Mining Operation	Blasting	Limestone/Marl	M1a	0.3435	1.50	6.87E-07	6.87E-07	6.87E-07	6.87E-07	5.50E-06	3.44E-08	3.16E-08	2.75E-09	3.78E-06	1.03E-05	6.73E-05	3.78E-09
Mining Operation	LS/Marl Ripping/Loading	Limestone/Marl	M1b	1.3995	6.13	2.80E-06	2.80E-06	2.80E-06	2.80E-06	2.24E-05	1.40E-07	1.29E-07	1.12E-08	1.54E-05	4.20E-05	2.74E-04	1.54E-08
Mining Operation	Spoils Removal/Loading	Spoils/Other	M2	0.1781	0.78	1.43E-06	3.56E-07	3.56E-07	1.78E-07	7.84E-06	1.78E-08	1.64E-08	1.43E-09	2.49E-06	5.34E-06	2.26E-05	1.96E-09
Mining Operation	Overburden Removal/Loading	Overburden	M3	1.3036	5.71	2.09E-05	2.61E-06	2.61E-06	2.61E-06	4.04E-05	1.30E-07	1.20E-07	1.04E-08	2.35E-05	3.91E-05	9.13E-05	2.09E-08
Mining Operation	Overburden Unoading	Overburden	M4	0.0946	0.41	1.51E-06	1.89E-07	1.89E-07	1.89E-07	2.93E-06	9.46E-09	8.70E-09	7.57E-10	1.70E-06	2.84E-06	6.62E-06	1.51E-09
Mining Operation	Subtotal		MINE	3.5450	15.53	2.77E-05	7.09E-06	7.09E-06	6.91E-06	8.27E-05	3.54E-07	3.26E-07	2.84E-08	4.93E-05	1.06E-04	5.06E-04	4.60E-08
	Grand Total			8.1135	35.54	4.72E-05	3.44E-05	1.50E-05	1.67E-05	3.42E-04	2.06E-06	1.89E-06	1.65E-07	1.51E-04	2.90E-04	1.50E-03	3.55E-07

Note

* Chromium VI emissions for these sources are assumed to consist of 92% bioavailable chromate and 8% soluble chromate as a worst case

Fugitive HAP & TAP Emissions

Area	Equipment Description	Material	Location	Ni	Se	Sb	As	Be	Cd	Cr	Cr(VI)*	Cr(VI) Bio-available	Cr(VI) Soluble	Co	Pb	Mn	Hg
				lb/hr	lb/hr	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY
Quarry	Primary Crusher 1 & Equip.	Limestone/Marl	FQ1	1.88E-05	1.07E-05	5.87E-06	5.87E-06	5.87E-06	5.87E-06	4.70E-05	2.94E-07	2.70E-07	2.35E-08	3.23E-05	8.81E-05	5.75E-04	3.23E-08
Quarry	Mining Conveyor 1 Transfer	Limestone/Marl	FQ2	2.84E-06	1.62E-06	8.89E-07	8.89E-07	8.89E-07	8.89E-07	7.12E-06	4.45E-08	4.09E-08	3.56E-09	4.89E-06	1.33E-05	8.72E-05	4.89E-09
Quarry	Primary Crusher 2 & Equip.	Spoils/Other	FQ3	4.61E-06	7.68E-07	2.99E-06	7.47E-07	7.47E-07	3.74E-07	1.64E-05	3.74E-08	3.44E-08	2.99E-09	5.23E-06	1.12E-05	4.75E-05	4.11E-09
Quarry	Spoils Conveyor 3 Transfer	Spoils/Other	FQ4	3.49E-07	5.82E-08	2.26E-07	5.66E-08	5.66E-08	2.83E-08	1.25E-06	2.83E-09	2.60E-09	2.26E-10	3.96E-07	8.49E-07	3.59E-06	3.11E-10
Quarry	Radial Stacker Transfer	Spoils/Other	FQ5	3.49E-07	5.82E-08	2.26E-07	5.66E-08	5.66E-08	2.83E-08	1.25E-06	2.83E-09	2.60E-09	2.26E-10	3.96E-07	8.49E-07	3.59E-06	3.11E-10
Quarry	Stacker to Pile	Spoils/Other	FQ6	3.49E-07	5.82E-08	2.26E-07	5.66E-08	5.66E-08	2.83E-08	1.25E-06	2.83E-09	2.60E-09	2.26E-10	3.96E-07	8.49E-07	3.59E-06	3.11E-10
Quarry	Spoils Conveyor 1 Transfer	Spoils/Other	FQ7	3.49E-07	5.82E-08	2.26E-07	5.66E-08	5.66E-08	2.83E-08	1.25E-06	2.83E-09	2.60E-09	2.26E-10	3.96E-07	8.49E-07	3.59E-06	3.11E-10
Quarry/Plant	Secondary Crusher & Equip.	Quarry Blend	FQ8	2.11E-05	1.11E-05	7.37E-06	6.25E-06	6.25E-06	6.06E-06	5.52E-05	3.12E-07	2.87E-07	2.50E-08	3.49E-05	9.37E-05	5.99E-04	3.44E-08
Quarry	Subtotal		FQ	4.87E-05	2.45E-05	1.80E-05	1.40E-05	1.40E-05	1.33E-05	1.31E-04	6.99E-07	6.43E-07	5.59E-08	7.89E-05	2.10E-04	1.32E-03	7.69E-08
Plant-Unloading Hopper	Hopper/Feeder 1	Additives	F1a	1.52E-06	1.36E-07	8.95E-07	4.00E-06	2.12E-07	6.80E-07	5.12E-05	4.18E-07	3.85E-07	3.35E-08	1.20E-05	1.92E-05	8.95E-05	3.71E-08
Plant-Unloading Hopper	Hopper/Feeder 2	Coal/Coke	F1b	1.12E-06	1.16E-08	2.24E-07	1.48E-08	2.73E-08	3.28E-08	3.91E-07	3.91E-09	3.59E-09	3.13E-10	1.38E-07	7.89E-08	4.53E-08	7.81E-09
Plant-Rail Unloading	Enclosed Hopper	Coal/Coke	F2	6.99E-07	7.25E-09	1.40E-07	9.28E-09	1.71E-08	2.05E-08	2.44E-07	2.44E-09	2.25E-09	1.95E-10	8.64E-08	4.93E-08	2.83E-08	4.88E-09
Plant-Raw Storage Bldg	Raw Storage Bldg	Quarry Blend	F3a	1.28E-05	6.73E-06	4.47E-06	3.78E-06	3.78E-06	3.67E-06	3.35E-05	1.89E-07	1.74E-07	1.51E-08	2.12E-05	5.68E-05	3.63E-04	2.08E-08
Plant-Raw Storage Bldg	Raw Storage Bldg	Additives	F3b	3.04E-06	2.72E-07	1.79E-06	8.00E-06	4.24E-07	1.36E-06	1.02E-04	8.37E-07	7.70E-07	6.69E-08	2.40E-05	3.83E-05	1.79E-04	7.43E-08
Plant-Raw Storage Bldg	Raw Storage Bldg	Coal/Coke	F3c	2.24E-06	2.32E-08	4.48E-07	2.97E-08	5.47E-08	6.56E-08	7.81E-07	7.81E-09	7.19E-09	6.25E-10	2.77E-07	1.58E-07	9.06E-08	1.56E-08
Plant-Marl Transfer	Belt Conveyor Transfer	Quarry Blend	F4	3.19E-06	1.68E-06	1.12E-06	9.46E-07	9.46E-07	9.18E-07	8.36E-06	4.73E-08	4.35E-08	3.78E-09	5.29E-06	1.42E-05	9.08E-05	5.20E-09
Plant-Additives Transfer	Belt Conveyor Transfer	Additives	F5	7.59E-07	6.81E-08	4.47E-07	2.00E-06	1.06E-07	3.40E-07	2.56E-05	2.09E-07	1.92E-07	1.67E-08	5.99E-06	9.58E-06	4.47E-05	1.86E-08
Plant-Marl Transfer	Belt Conveyor Transfer	Quarry Blend	F6	3.19E-06	1.68E-06	1.12E-06	9.46E-07	9.46E-07	9.18E-07	8.36E-06	4.73E-08	4.35E-08	3.78E-09	5.29E-06	1.42E-05	9.08E-05	5.20E-09
Plant-Additives Transfer	Belt Conveyor Transfer	Additives	F7	7.59E-07	6.81E-08	4.47E-07	2.00E-06	1.06E-07	3.40E-07	2.56E-05	2.09E-07	1.92E-07	1.67E-08	5.99E-06	9.58E-06	4.47E-05	1.86E-08
Plant-Marl Transfer	Conveyor to Silo	Quarry Blend	F7A	1.60E-06	8.41E-07	5.58E-07	4.73E-07	4.73E-07	4.59E-07	4.18E-06	2.37E-08	2.18E-08	1.89E-09	2.64E-06	7.10E-06	4.54E-05	2.60E-09
Plant-Marl Transfer	Silo to Enclosed Belt	Quarry Blend	F7B	1.60E-06	8.41E-07	5.58E-07	4.73E-07	4.73E-07	4.59E-07	4.18E-06	2.37E-08	2.18E-08	1.89E-09	2.64E-06	7.10E-06	4.54E-05	2.60E-09
Plant-Additives Transfer	Conveyor to Silo	Bottom Ash	F7C	6.89E-08	2.54E-08	1.24E-07	6.84E-07	3.94E-08	1.12E-07	3.16E-06	1.40E-08	1.28E-08	1.12E-09	2.01E-06	2.15E-06	1.15E-05	6.70E-09
Plant-Additives Transfer	Silo to Enclosed Belt	Bottom Ash	F7D	6.89E-08	2.54E-08	1.24E-07	6.84E-07	3.94E-08	1.12E-07	3.16E-06	1.40E-08	1.28E-08	1.12E-09	2.01E-06	2.15E-06	1.15E-05	6.70E-09
Plant-Cement Additives	Gypsum/LS Handling	Gypsum/LS	F8	9.79E-08	3.80E-07	6.98E-07	1.69E-07	2.42E-08	1.45E-07	9.97E-07	9.97E-09	9.17E-09	7.97E-10	1.60E-07	8.82E-07	8.46E-06	7.85E-08
Plant	Subtotal		RMHS	3.27E-05	1.28E-05	1.32E-05	2.42E-05	7.67E-06	9.63E-06	2.72E-04	2.06E-06	1.89E-06	1.65E-07	8.97E-05	1.81E-04	1.02E-03	3.05E-07
Quarry-Storage Piles	Limestone/Marl	Limestone/Marl	PQ1	2.40E-06	1.37E-06	7.52E-07	7.52E-07	7.52E-07	7.52E-07	6.01E-06	3.76E-08	3.46E-08	3.01E-09	4.13E-06	1.13E-05	7.37E-05	4.13E-09
Quarry-Storage Piles	Spoils/Other	Spoils/Other	PQ2	4.63E-06	7.72E-07	3.01E-06	7.52E-07	7.52E-07	3.76E-07	1.65E-05	3.76E-08	3.46E-08	3.01E-09	5.26E-06	1.13E-05	4.77E-05	4.13E-09
Quarry-Storage Piles	Spoils	Spoils/Other	PQ3	9.27E-06	1.54E-06	6.01E-06	1.50E-06	1.50E-06	7.52E-07	3.31E-05	7.52E-08	6.92E-08	6.01E-09	1.05E-05	2.26E-05	9.55E-05	8.27E-09
Quarry-Storage Piles	Overburden	Overburden	PQ4	1.37E-06	2.75E-06	2.41E-05	3.01E-06	3.01E-06	3.01E-06	4.66E-05	1.50E-07	1.38E-07	1.20E-08	2.71E-05	4.51E-05	1.05E-04	2.41E-08
Plant-Storage Piles	Raw Storage Bldg	Quarry Blend	PB1	8.62E-06	4.54E-06	3.01E-06	2.56E-06	2.56E-06	2.48E-06	2.26E-05	1.28E-07	1.18E-07	1.02E-08	1.43E-05	3.83E-05	2.45E-04	1.41E-08
Plant-Storage Piles	Raw Storage Bldg	Bauxite	PB1	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Plant-Storage Piles	Raw Storage Bldg	Mill Scale	PB1	9.39E-06	4.63E-09	1.89E-06	2.79E-06	1.22E-08	6.77E-07	2.80E-04	2.80E-06	2.58E-06	2.24E-07	1.01E-05	6.25E-05	2.27E-04	1.08E-08
Plant-Storage Piles	Raw Storage Bldg	Bottom Ash	PB1	7.02E-06	2.59E-06	1.26E-05	6.98E-05	4.02E-06	1.14E-05	3.22E-04	1.42E-06	1.31E-06	1.14E-07	2.05E-04	2.19E-04	1.18E-03	6.84E-07
Plant-Storage Piles	Raw Storage Bldg	Coal/Coke	PB1	6.56E-06	6.81E-08	1.32E-06	8.71E-08	1.61E-07	1.93E-07	2.29E-06	2.29E-08	2.11E-08	1.83E-09	8.12E-07	4.63E-07	2.66E-07	4.59E-08
Plant-Storage Piles	Gypsum	Gypsum	PB2	1.22E-07	4.73E-07	8.68E-07	2.10E-07	3.01E-08	1.80E-07	1.24E-06	1.24E-08	1.14E-08	9.92E-10	1.99E-07	1.10E-06	1.05E-05	9.77E-08
Plant-Storage Piles	Limestone	Limestone	PB3	9.75E-08	3.78E-07	6.95E-07	1.68E-07	2.41E-08	1.44E-07	9.92E-07	9.92E-09	9.13E-09	7.94E-10	1.59E-07	8.78E-07	8.42E-06	7.82E-08
Storage Piles	Subtotal		SP	4.95E-05	1.45E-05	5.43E-05	8.16E-05	1.28E-05	2.00E-05	7.32E-04	4.70E-06	4.33E-06	3.76E-07	2.78E-04	4.13E-04	1.99E-03	9.71E-07
Mining Operation	Drilling	Limestone/Marl	M1a	6.32E-06	3.61E-06	1.98E-06	1.98E-06	1.98E-06	1.98E-06	1.58E-05	9.88E-08	9.09E-08	7.90E-09	1.09E-05	2.96E-05	1.94E-04	1.09E-08
Mining Operation	Blasting	Limestone/Marl	M1a	9.62E-06	5.50E-06	3.01E-06	3.01E-06	3.01E-06	3.01E-06	2.41E-05	1.50E-07	1.38E-07	1.20E-08	1.66E-05	4.51E-05	2.95E-04	1.66E-08
Mining Operation	LS/Marl Ripping/Loading	Limestone/Marl	M1b	3.92E-05	2.24E-05	1.23E-05	1.23E-05	1.23E-05	1.23E-05	9.81E-05	6.13E-07	5.64E-07	4.90E-08	6.74E-05	1.84E-04	1.20E-03	6.74E-08
Mining Operation	Spoils Removal/Loading	Spoils/Other	M2	9.62E-06	1.60E-06	6.24E-06	1.56E-06	1.56E-06	7.80E-07	3.43E-05	7.80E-08	7.18E-08	6.24E-09	1.09E-05	2.34E-05	9.91E-05	8.58E-09
Mining Operation	Overburden Removal/Loading	Overburden	M3	5.21E-06	1.04E-05	9.14E-05	1.14E-05	1.14E-05	1.14E-05	1.77E-04	5.71E-07	5.25E-07	4.57E-08	1.03E-04	1.71E-04	4.00E-04	9.14E-08
Mining Operation	Overburden Unoading	Overburden	M4	3.78E-07	7.57E-07	6.63E-06	8.29E-07	8.29E-07	8.29E-07	1.28E-05	4.14E-08	3.81E-08	3.31E-09	7.46E-06	1.24E-05	2.90E-05	6.63E-09
Mining Operation	Subtotal		MINE	7.03E-05	4.43E-05	1.21E-04	3.11E-05	3.11E-05	3.03E-05	3.62E-04	1.55E-06	1.43E-06	1.24E-07	2.16E-04	4.66E-04	2.22E-03	2.01E-07
	Grand Total			2.01E-04	9.60E-05	2.07E-04	1.51E-04	6.55E-05	7.32E-05	1.50E-03	9.01E-06	8.29E-06	7.21E-07	6.62E-04	1.27E-03	6.56E-03	1.55E-06

Fugitive HAP & TAP Emissions

Area	Equipment Description	Material	Location	Ni	Se
				TPY	TPY
Quarry	Primary Crusher 1 & Equip.	Limestone/Marl	FQ1	8.22E-05	4.70E-05
Quarry	Mining Conveyor 1 Transfer	Limestone/Marl	FQ2	1.25E-05	7.12E-06
Quarry	Primary Crusher 2 & Equip.	Spoils/Other	FQ3	2.02E-05	3.36E-06
Quarry	Spoils Conveyor 3 Transfer	Spoils/Other	FQ4	1.53E-06	2.55E-07
Quarry	Radial Stacker Transfer	Spoils/Other	FQ5	1.53E-06	2.55E-07
Quarry	Stacker to Pile	Spoils/Other	FQ6	1.53E-06	2.55E-07
Quarry	Spoils Conveyor 1 Transfer	Spoils/Other	FQ7	1.53E-06	2.55E-07
Quarry/Plant	Secondary Crusher & Equip.	Quarry Blend	FQ8	9.23E-05	4.87E-05
Quarry	Subtotal		FQ	2.13E-04	1.07E-04
Plant-Unloading Hopper	Hopper/Feeder 1	Additives	F1a	6.65E-06	5.96E-07
Plant-Unloading Hopper	Hopper/Feeder 2	Coal/Coke	F1b	4.90E-06	5.08E-08
Plant-Rail Unloading	Enclosed Hopper	Coal/Coke	F2	3.06E-06	3.17E-08
Plant-Raw Storage Bldg	Raw Storage Bldg	Quarry Blend	F3a	5.59E-05	2.95E-05
Plant-Raw Storage Bldg	Raw Storage Bldg	Additives	F3b	1.33E-05	1.19E-06
Plant-Raw Storage Bldg	Raw Storage Bldg	Coal/Coke	F3c	9.80E-06	1.02E-07
Plant-Marl Transfer	Belt Conveyor Transfer	Quarry Blend	F4	1.40E-05	7.37E-06
Plant-Additives Transfer	Belt Conveyor Transfer	Additives	F5	3.33E-06	2.98E-07
Plant-Marl Transfer	Belt Conveyor Transfer	Quarry Blend	F6	1.40E-05	7.37E-06
Plant-Additives Transfer	Belt Conveyor Transfer	Additives	F7	3.33E-06	2.98E-07
Plant-Marl Transfer	Conveyor to Silo	Quarry Blend	F7A	6.99E-06	3.69E-06
Plant-Marl Transfer	Silo to Enclosed Belt	Quarry Blend	F7B	6.99E-06	3.69E-06
Plant-Additives Transfer	Conveyor to Silo	Bottom Ash	F7C	3.02E-07	1.11E-07
Plant-Additives Transfer	Silo to Enclosed Belt	Bottom Ash	F7D	3.02E-07	1.11E-07
Plant-Cement Additives	Gypsum/LS Handling	Gypsum/LS	F8	4.29E-07	1.66E-06
Plant	Subtotal		RMHS	1.43E-04	5.60E-05
Quarry-Storage Piles	Limestone/Marl	Limestone/Marl	PQ1	1.05E-05	6.01E-06
Quarry-Storage Piles	Spoils/Other	Spoils/Other	PQ2	2.03E-05	3.38E-06
Quarry-Storage Piles	Spoils	Spoils/Other	PQ3	4.06E-05	6.77E-06
Quarry-Storage Piles	Overburden	Overburden	PQ4	6.01E-06	1.20E-05
Plant-Storage Piles	Raw Storage Bldg	Quarry Blend	PB1	3.78E-05	1.99E-05
Plant-Storage Piles	Raw Storage Bldg	Bauxite	PB1	0.00E+00	0.00E+00
Plant-Storage Piles	Raw Storage Bldg	Mill Scale	PB1	4.11E-05	2.03E-08
Plant-Storage Piles	Raw Storage Bldg	Bottom Ash	PB1	3.08E-05	1.13E-05
Plant-Storage Piles	Raw Storage Bldg	Coal/Coke	PB1	2.88E-05	2.98E-07
Plant-Storage Piles	Gypsum	Gypsum	PB2	5.34E-07	2.07E-06
Plant-Storage Piles	Limestone	Limestone	PB3	4.27E-07	1.66E-06
Storage Piles	Subtotal		SP	2.17E-04	6.35E-05
Mining Operation	Drilling	Limestone/Marl	M1a	2.77E-05	1.58E-05
Mining Operation	Blasting	Limestone/Marl	M1a	4.21E-05	2.41E-05
Mining Operation	LS/Marl Ripping/Loading	Limestone/Marl	M1b	1.72E-04	9.81E-05
Mining Operation	Spoils Removal/Loading	Spoils/Other	M2	4.21E-05	7.02E-06
Mining Operation	Overburden Removal/Loading	Overburden	M3	2.28E-05	4.57E-05
Mining Operation	Overburden Unoading	Overburden	M4	1.66E-06	3.31E-06
Mining Operation	Subtotal		MINE	3.08E-04	1.94E-04
	Grand Total			8.81E-04	4.21E-04

AREA	PILE MATERIAL	PILE AREA (Acres)	ID No.	Active Days (n) (days/yr)	Silt Content (s) percent	Material Throughput (T/yr)	AVG WIND SPEED (mph)	Wind Speed > 12 mph (f) percent	Rain Days (p) (days/yr)	Control Efficiency (%)	TSP Wind Emissions (T/yr)	PM10 Wind Emissions (T/yr)	PM2.5 Wind Emissions (T/yr)	TSP Hourly Emissions (lb/hr)	PM10 Hourly Emissions (lb/hr)	PM2.5 Hourly Emissions (lb/hr)
Quarry	Limestone/Marl (Crusher Feed)	0.5	PQ1	365	3.9	3,411,152	8.6	13.3	118	0	0.38	0.19	0.03	0.0858	0.0429	0.0064
Quarry	Spoils/other (Crusher Feed)	0.5	PQ2	365	3.9	434,183	8.6	13.3	118	0	0.38	0.19	0.03	0.0858	0.0429	0.0064
Quarry	Spoils (Stacker Pile)	1.0	PQ3	365	3.9	217,092	8.6	13.3	118	0	0.75	0.38	0.06	0.1716	0.0858	0.0129
Quarry	Overburden (Active Pile)	2.0	PQ4	365	3.9	3,177,255	8.6	13.3	118	0	1.50	0.75	0.11	0.3433	0.1716	0.0257
Plant	Limestone/Marl/Spoils (Bldg)	2.3	PB1	365	3.9	3,628,243	8.6	13.3	0	50	1.28	0.64	0.10	0.2917	0.1458	0.0219
Plant	Bauxite	0.0	PB1	365	6.0	0	8.6	13.3	0	50	0.00	0.00	0.00	0.0000	0.0000	0.0000
Plant	Mill Scale	0.10	PB1	365	9.5	33,770	8.6	13.3	0	50	0.14	0.07	0.01	0.0309	0.0154	0.0023
Plant	Bottom Ash	0.25	PB1	365	80	391,332	8.6	13.3	0	50	2.85	1.42	0.21	0.6503	0.3252	0.0488
Plant	Coal/Coke	0.7	PB1	365	4.6	283,824	8.6	13.3	0	50	0.46	0.23	0.03	0.1047	0.0524	0.0079
	Subtotal (Raw Storage Bldg)										4.72	2.36	0.35	1.0776	0.5388	0.0808
Plant	Gypsum	0.5	PB2	365	3.9	127,549	8.6	13.3	118	0	0.38	0.19	0.03	0.0858	0.0429	0.0064
Plant	Limestone	0.4	PB3	365	3.9	102,040	8.6	13.3	118	0	0.30	0.15	0.02	0.0687	0.0343	0.0051
SP	Total All Piles										8.40	4.20	0.63	1.9186	0.9593	0.1439

Equation for Wind Erosion:

References: Control of Open Fugitive Dust Sources, EPA-450/3-88-008, p. 4-17

Ef = 1.7*(s/1.5)*(f/15)*((365-p)/235)*(1-(C/100)) TSP (lbs/acre/day) PM10 fraction = 0.5

E = A*n*Ef/2000 TSP (tons/yr) PM2.5 fraction (AP-42 0.075

s = Silt content of the aggregate (%) Typical silt contents of materials from AP-42 Table 13.2.4-1

f = Percent of time that the unobstructed wind speed exceeds 12 mph at the mean pile height

p = Number of days with >= 0.01 in. of precipitation per year

C = Overall control efficiency (%) Estimated 50% control efficiency for piles in raw material storage building due to wind reduction

A = Size of the pile (acres)

n = Number of days per year the pile is continuously active

Quarry Drilling

Source Location	AREA	Drill Footage (ft/yr)	Average Depth (ft/hole)	Number of Holes (holes/yr)	TSP Emission Factor (lb/hole)	PM10 Fraction	PM10 Factor (lb/hole)	PM2.5 Fraction	PM2.5 Factor (lb/hole)	Control Efficiency (%)	TSP Emissions (T/yr)	PM10 Emissions (T/yr)	PM2.5 Emissions (T/yr)	TSP Hourly Emissions (lb/hr)	PM10 Hourly Emissions (lb/hr)	PM2.5 Hourly Emissions (lb/hr)
M1a	Quarry	76,000	5	15,200	1.3	0.52	0.68	0.03	0.04	90	0.99	0.51	0.03	0.2256	0.1173	0.0068

Notes
TSP emission factor from AP-42 Table 11.9-4
Assume PM10 and PM2.5 fractions are similar to blasting, from Table 11.9-1
Control efficiency based on drill rigs using either fabric filters or wet suppression

Quarry Blasting

Source Location	AREA	Number of Blasts (blasts/yr)	Average Blast Area, A (sq ft)	TSP Emission Factor (lb/blast)	PM10 Fraction	PM10 Factor (lb/hole)	PM2.5 Fraction	PM2.5 Factor (lb/hole)	Control Efficiency (%)	TSP Emissions (T/yr)	PM10 Emissions (T/yr)	PM2.5 Emissions (T/yr)	TSP Hourly Emissions (lb/hr)	PM10 Hourly Emissions (lb/hr)	PM2.5 Hourly Emissions (lb/hr)
M1a	Quarry	76	20,000	39.60	0.52	20.59	0.03	1.19	0	1.50	0.78	0.05	0.3435	0.1786	0.0103

Notes
TSP emission factor (lb/blast) from AP-42 Table 11.9-1
0.000014 x (A)^1.5
PM10 and PM2.5 fractions from AP-42 Table 11.9-1

Quarry Ripping/Loading/Unloading

Source Location	AREA	OPERATION	MATERIAL Throughput (T/yr)	Volume Basis (CY/yr)	TSP Factor (lb/Unit)	PM10 Fraction	PM10 Factor (lb/Unit)	Units	PM2.5 Fraction	PM2.5 Factor (lb/Unit)	Note	Control Efficiency (%)	TSP Emissions (T/yr)	PM10 Emissions (T/yr)	PM2.5 Emissions (T/yr)	TSP Hourly Emissions (lb/hr)	PM10 Hourly Emissions (lb/hr)	PM2.5 Hourly Emissions (lb/hr)
M1b	Quarry	LS/Marl Ripping	3,411,152	2,526,779	1.80E-02	0.50	9.00E-03	CY	0.075	1.35E-03	1	75%	5.69	2.84	0.43	1.2980	0.6490	0.0974
M1b	Quarry	LS/Marl Loading	3,411,152		2.61E-04	0.47	1.23E-04	ton	0.072	1.87E-05	2		0.44	0.21	0.03	0.1015	0.0480	0.0073
										Subtotal			6.13	3.05	0.46	1.3995	0.6970	0.1046
M2	Quarry	Spoils/Other Removal	434,183	321,617	1.80E-02	0.50	9.00E-03	CY	0.075	1.35E-03	1	75%	0.72	0.36	0.05	0.1652	0.0826	0.0124
M2	Quarry	Spoils/Other Loading	434,183		2.61E-04	0.47	1.23E-04	ton	0.072	1.87E-05	2		0.06	0.03	0.00	0.0129	0.0061	0.0009
										Subtotal			0.78	0.39	0.06	0.1781	0.0887	0.0133
M3	Quarry	Overburden Removal	3,177,255	2,353,522	1.80E-02	0.50	9.00E-03	CY	0.075	1.35E-03	1	75%	5.30	2.65	0.40	1.2090	0.6045	0.0907
M3	Quarry	Overburden Loading	3,177,255		2.61E-04	0.47	1.23E-04	ton	0.072	1.87E-05	2		0.41	0.20	0.03	0.0946	0.0447	0.0068
										Subtotal			5.71	2.84	0.43	1.3036	0.6492	0.0974
M4	Quarry	Overburden Unloading	3,177,255		2.61E-04	0.47	1.23E-04	ton	0.072	1.87E-05	2		0.41	0.20	0.03	0.0946	0.0447	0.0068
										Subtotal Group			13.03	6.48	0.97	2.9758	1.4797	0.2222

MINE	(All Operations)	**GRAND TOTAL**	**15.53**	**7.78**	**1.05**	3.5450	1.7757	0.2392

Notes

1 PM-10 emission factor for ripping/removal from FIRE database SCC 30501036
1 cubic yard marl or overburden = 1.35 tons as excavated
Assume TSP = 2 x PM-10 (PM-10 fraction = 0.5)
Assume PM2.5 fraction of TSP = 0.075
Control efficiency for material mining operations estimated at a minimum of 75% due to high moisture content.

2 Controlled emission factors are used for material loading operations (include moisture).

Material	Location	Quantity Transported		Vehicle Type	Vehicle Weight (Empty)		Load Capacity		Total Trips
Bauxite	Plant	0	tons/year	Truck	15	tons	25	tons	0
Bottom Ash	Plant	391,332	tons/year	Truck	15	tons	25	tons	15,653
Mill Scale	Plant	33,770	tons/year	Truck	15	tons	25	tons	1,351
Coal/Coke/Fuels	Plant	113,530	tons/year	Truck	15	tons	25	tons	4,541
Gypsum	Plant	127,549	tons/year	Truck	15	tons	25	tons	5,102
Cement bulk	Plant	433,187	tons/year	Truck	15	tons	25	tons	17,327
Cement bags	Plant	481,319	tons/year	Truck	15	tons	25	tons	19,253
Limestone	Plant	102,040	tons/year	Truck	15	tons	25	tons	4,082
Employees	Plant	100	employees/day	Auto/Pickup	1.75	tons	1	employee	36,500
Marl/Limestone	Quarry	3,411,152	tons/year	Truck	77.9	tons	100	tons	34,112
Spoils/Other	Quarry	434,183	tons/year	Truck	77.9	tons	100	tons	4,342
Overburden	Quarry	3,177,255	tons/year	Truck	77.9	tons	100	tons	31,773

All Roads Emission Summary

Unit ID	Road Type	Vehicle Type	Total Length (mi)	Total Mileage (Mi/yr)	Annual Emissions TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PLTRD	Paved	Trucks/Autos	1.06	43,533	9.31	1.81	0.44
QURD	Unpaved	Trucks	1.45	40,141	69.57	19.78	1.98
Total					78.87	21.59	2.42

Paved Road Emission Summary

Segment No.	Segment Length (ft)	Segment Length (mi)	Description	Direction -Way	Silt Loading (g/m2)	Material Trips (#/yr)	Total Mileage (Mi/yr)	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	Annual Emissions TSP Emissions (Ton/yr)	Annual Emissions PM10 Emissions (Ton/yr)	Annual Emissions PM2.5 Emissions (Ton/yr)	Hourly Emissions TSP Emissions (lb/hr)	Hourly Emissions PM10 Emissions (lb/hr)	Hourly Emissions PM2.5 Emissions (lb/hr)
PR1	635	0.120	South entrance	1	0.20	43,975	5,289	0.54	0.10	0.03	1.420	0.276	0.068	0.3243	0.0631	0.0156
PR2	2127	0.403	Additives truck route	2	0.20	25,627	20,647	0.47	0.09	0.02	4.830	0.939	0.231	1.1028	0.2144	0.0528
PR3	114	0.022	Entrance connector	1	0.20	30,729	752	0.33	0.06	0.02	0.122	0.024	0.006	0.0279	0.0054	0.0013
PR4	603	0.114	Gyp truck route	2	0.20	9,184	2,098	0.47	0.09	0.02	0.491	0.095	0.024	0.1120	0.0218	0.0054
PR5	305	0.058	Internal connector	1	0.20	26,647	1,539	0.19	0.04	0.01	0.145	0.028	0.007	0.0331	0.0064	0.0015
PR6	95	0.018	Exit connector	1	0.20	26,647	479	0.19	0.04	0.01	0.045	0.009	0.002	0.0103	0.0020	0.0005
PR7	95	0.018	Cement silo entrance	1	0.20	17,327	312	0.19	0.04	0.01	0.029	0.006	0.001	0.0067	0.0013	0.0003
PR8	76	0.014	Cement silo exit	1	0.20	17,327	249	0.82	0.16	0.04	0.102	0.020	0.005	0.0234	0.0046	0.0011
PR9	502	0.095	South exit	1	0.20	43,975	4,181	0.40	0.08	0.02	0.840	0.163	0.040	0.1918	0.0373	0.0092
PR10	225	0.043	Employee parking	2	0.20	36,500	3,111	0.01	0.00	0.00	0.011	0.002	0.000	0.0025	0.0004	0.0000
PR11	420	0.080	Packing entrance	1	0.20	17,327	1,378	0.82	0.16	0.04	0.566	0.110	0.027	0.1292	0.0252	0.0062
PR12	420	0.080	Packing exit	1	0.20	43,975	3,498	0.40	0.08	0.02	0.703	0.137	0.034	0.1605	0.0312	0.0077
TOTAL		1.064					43,533				9.305	1.808	0.445	2.1244	0.4128	0.1016

Paved Roads

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR1	0.120	Raw Additives	0.20	15	25	40	27.5		X	40.0	25	425,102	17,004	0	2,045	2,045	81,800
PR1	0.120	Coal/coke	0.20	15	25	40	27.5		X	40.0	25	113,530	4,541	0	546	546	21,846
PR1	0.120	Gypsum	0.20	15	25	40	27.5		X	40.0	25	127,549	5,102	0	614	614	24,544
PR1	0.120	Cement bulk	0.20	15	25	40	27.5	X		15.0	25	433,187	17,327	2,084	0	2,084	31,258
PR1	0.120	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR1	0.120	Limestone	0.20	15	25	40	27.5					102,040	0	0	0	0	
PR1	0.120	Employees	0.20	1.75	0	1.75	1.75					100	0	0	0	0	
PR1	0.120	SUBTOTAL	0.20							30.1			43,975	2,084	3,205	5,289	159,448

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR2	0.403	Raw Additives	0.20	15	25	40	27.5	X	X	27.5	25	425,102	17,004	6,850	6,850	13,700	376,747
PR2	0.403	Coal/coke	0.20	15	25	40	27.5	X	X	27.5	25	113,530	4,541	1,829	1,829	3,659	100,616
PR2	0.403	Gypsum	0.20	15	25	40	27.5					127,549	0	0	0	0	
PR2	0.403	Cement bulk	0.20	15	25	40	27.5					433,187	0	0	0	0	
PR2	0.403	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR2	0.403	Limestone	0.20	15	25	40	27.5	X	X	27.5	25	102,040	4,082	1,644	1,644	3,288	90,433
PR2	0.403	Employees	0.20	1.75	0	1.75	1.75					100	0	0	0	0	
PR2	0.403	SUBTOTAL	0.20							27.5			25,627	10,324	10,324	20,647	567,795

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR3	0.022	Raw Additives	0.20	15	25	40	27.5	X		15.0	25	425,102	17,004	367	0	367	5,507
PR3	0.022	Coal/coke	0.20	15	25	40	27.5	X		15.0	25	113,530	4,541	98	0	98	1,471
PR3	0.022	Gypsum	0.20	15	25	40	27.5		X	40.0	25	127,549	5,102	0	110	110	4,406
PR3	0.022	Cement bulk	0.20	15	25	40	27.5					433,187	0	0	0	0	
PR3	0.022	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR3	0.022	Limestone	0.20	15	25	40	27.5	X	X	27.5	25	102,040	4,082	88	88	176	4,847
PR3	0.022	Employees	0.20	1.75	0	1.75	1.75					100	0	0	0	0	
PR3	0.022	SUBTOTAL	0.20							21.6			30,729	553	198	752	16,231

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR4	0.114	Raw Additives	0.20	15	25	40	27.5					425,102	0	0	0	0	
PR4	0.114	Coal/coke	0.20	15	25	40	27.5					113,530	0	0	0	0	
PR4	0.114	Gypsum	0.20	15	25	40	27.5	X	X	27.5	25	127,549	5,102	583	583	1,165	32,047
PR4	0.114	Cement bulk	0.20	15	25	40	27.5					433,187	0	0	0	0	
PR4	0.114	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR4	0.114	Limestone	0.20	15	25	40	27.5	X	X	27.5	25	102,040	4,082	466	466	932	25,637
PR4	0.114	Employees	0.20	1.75	0	1.75	1.75					100	0	0	0	0	
PR4	0.114	SUBTOTAL	0.20							27.5			9,184	1,049	1,049	2,098	57,684

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR5	0.058	Raw Additives	0.20	15	25	40	27.5	X		15.0	25	425,102	17,004	982	0	982	14,734
PR5	0.058	Coal/coke	0.20	15	25	40	27.5	X		15.0	25	113,530	4,541	262	0	262	3,935
PR5	0.058	Gypsum	0.20	15	25	40	27.5	X		15.0	25	127,549	5,102	295	0	295	4,421
PR5	0.058	Cement bulk	0.20	15	25	40	27.5					433,187	0	0	0	0	
PR5	0.058	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR5	0.058	Limestone	0.20	15	25	40	27.5					102,040	0	0	0	0	
PR5	0.058	Employees	0.20	1.75	0	1.75	1.75					100	0	0	0	0	
PR5	0.058	SUBTOTAL	0.20							15.0			26,647	1,539	0	1,539	23,089

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR6	0.018	Raw Additives	0.20	15	25	40	27.5	X		15.0	25	425,102	17,004	306	0	306	4,589
PR6	0.018	Coal/coke	0.20	15	25	40	27.5	X		15.0	25	113,530	4,541	82	0	82	1,226
PR6	0.018	Gypsum	0.20	15	25	40	27.5	X		15.0	25	127,549	5,102	92	0	92	1,377
PR6	0.018	Cement bulk	0.20	15	25	40	27.5					433,187	0	0	0	0	
PR6	0.018	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR6	0.018	Limestone	0.20	15	25	40	27.5					102,040	0	0	0	0	
PR6	0.018	Employees	0.20	1.75	0	1.75	1.75					100	0	0	0	0	

PR6	0.018	SUBTOTAL	0.20							15.0			26,647	479	0	479	7,192

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR7	0.018	Raw Additives	0.20	15	25	40	27.5					425,102	0	0	0	0	
PR7	0.018	Coal/coke	0.20	15	25	40	27.5					113,530	0	0	0	0	
PR7	0.018	Gypsum	0.20	15	25	40	27.5					127,549	0	0	0	0	
PR7	0.018	Cement bulk	0.20	15	25	40	27.5	X		15.0	25	433,187	17,327	312	0	312	4,676
PR7	0.018	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR7	0.018	Limestone	0.20	15	25	40	27.5					102,040	0	0	0	0	
PR7	0.018	Employees	0.20	1.75	0	1.75	1.75					100	0	0	0	0	
PR7	0.018	SUBTOTAL	0.20							15.0			17,327	312	0	312	4,676

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR8	0.014	Raw Additives	0.20	15	25	40	27.5					425,102	0	0	0	0	
PR8	0.014	Coal/coke	0.20	15	25	40	27.5					113,530	0	0	0	0	
PR8	0.014	Gypsum	0.20	15	25	40	27.5					127,549	0	0	0	0	
PR8	0.014	Cement bulk	0.20	15	25	40	27.5		X	40.0	25	433,187	17,327	0	249	249	9,976
PR8	0.014	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR8	0.014	Limestone	0.20	15	25	40	27.5					102,040	0	0	0	0	
PR8	0.014	Employees	0.20	1.75	0	1.75	1.75					100	0	0	0	0	
PR8	0.014	SUBTOTAL	0.20							40.0			17,327	0	249	249	9,976

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR9	0.095	Raw Additives	0.20	15	25	40	27.5	X		15.0	25	425,102	17,004	1,617	0	1,617	24,250
PR9	0.095	Coal/coke	0.20	15	25	40	27.5	X		15.0	25	113,530	4,541	432	0	432	6,476
PR9	0.095	Gypsum	0.20	15	25	40	27.5	X		15.0	25	127,549	5,102	485	0	485	7,276
PR9	0.095	Cement bulk	0.20	15	25	40	27.5		X	40.0	25	433,187	17,327	0	1,647	1,647	65,897
PR9	0.095	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR9	0.095	Limestone	0.20	15	25	40	27.5					102,040	0	0	0	0	

PR9	0.095	Employees	0.20	1.75	0	1.75	1.75					100	0	0	0	0	
PR9	0.095	SUBTOTAL	0.20							24.9			43,975	2,534	1,647	4,181	103,900

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR10	0.043	Raw Additives	0.20	15	25	40	27.5					425,102	0	0	0	0	
PR10	0.043	Coal/coke	0.20	15	25	40	27.5					113,530	0	0	0	0	
PR10	0.043	Gypsum	0.20	15	25	40	27.5					127,549	0	0	0	0	
PR10	0.043	Cement bulk	0.20	15	25	40	27.5					433,187	0	0	0	0	
PR10	0.043	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR10	0.043	Limestone	0.20	15	25	40	27.5					102,040	0	0	0	0	
PR10	0.043	Employees	0.20	1.75	0	1.75	1.75	X	X	1.8	0	100	36,500	1,555	1,555	3,111	5,444
PR10	0.043	SUBTOTAL	0.20							1.8			36,500	1,555	1,555	3,111	5,444

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR11	0.080	Raw Additives	0.20	15	25	40	27.5					425,102	0	0	0	0	
PR11	0.080	Coal/coke	0.20	15	25	40	27.5					113,530	0	0	0	0	
PR11	0.080	Gypsum	0.20	15	25	40	27.5					127,549	0	0	0	0	
PR11	0.080	Cement bulk	0.20	15	25	40	27.5		X	40.0	25	433,187	17,327	0	1,378	1,378	55,133
PR11	0.080	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	
PR11	0.080	Limestone	0.20	15	25	40	27.5					102,040	0	0	0	0	
PR11	0.080	Employees	0.20	1.75	0	1.75	1.75					100	0	0	0	0	
PR11	0.080	SUBTOTAL	0.20							40.0			17,327	0	1,378	1,378	55,133

Segment No.	Segment Length (mi)	Material	Silt Loading (g/m2)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
PR12	0.080	Raw Additives	0.20	15	25	40	27.5	X		15.0	25	425,102	17,004	1,353	0	1,353	20,289
PR12	0.080	Coal/coke	0.20	15	25	40	27.5	X		15.0	25	113,530	4,541	361	0	361	5,418
PR12	0.080	Gypsum	0.20	15	25	40	27.5	X		15.0	25	127,549	5,102	406	0	406	6,088
PR12	0.080	Cement bulk	0.20	15	25	40	27.5		X	40.0	25	433,187	17,327	0	1,378	1,378	55,133
PR12	0.080	Cement bags	0.20	15	25	40	27.5					481,319	0	0	0	0	

PR12	0.080	Limestone	0.20	15	25	40	27.5			102,040	0	0	0	0	
PR12	0.080	Employees	0.20	1.75	0	1.75	1.75			100	0	0	0	0	
PR12	0.080	SUBTOTAL	0.20						24.9		43,975	2,120	1,378	3,498	86,928
		GRAND TOTAL												43,533	

Notes: Emissions based on AP-42 Section 13.2.1 (11/06), Equation (2).

E = [k * (sL/2)^0.65 * (W/3)^1.5 - C] * (1 - P/4N)

where	E = emission factor, lb/VMT	k (PM-30) =	0.082	lb/VMT	
	k = particle size multiplier	k (PM-10) =	0.016	lb/VMT	
	sL = road surface silt loading, g/m^2	k (PM-2.5) =	0.0024	lb/VMT	
	W = average vehicle weight, tons	C (PM-30) =	0.00047	lb/VMT	
	C = 1980's vehicle exhaust, brake & tire wear, lb/VMT	C (PM-10) =	0.00047	lb/VMT	
	P = number of days with >= 0.01 in precipitation	C (PM-2.5) =	0.00036	lb/VMT	
	N = number of days in the averaging period (365)	P =	118	days (Wilmington average)	

Silt loading will be minimized by use of vacuum sweeping and/or water flushing

Paved Roads

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR1	0.120	Raw Additives						
PR1	0.120	Coal/coke						
PR1	0.120	Gypsum						
PR1	0.120	Cement bulk						
PR1	0.120	Cement bags						
PR1	0.120	Limestone						
PR1	0.120	Employees						
PR1	0.120	SUBTOTAL	0.54	0.10	0.03	1.420	0.276	0.068

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR2	0.403	Raw Additives						
PR2	0.403	Coal/coke						
PR2	0.403	Gypsum						
PR2	0.403	Cement bulk						
PR2	0.403	Cement bags						
PR2	0.403	Limestone						
PR2	0.403	Employees						
PR2	0.403	SUBTOTAL	0.47	0.09	0.02	4.830	0.939	0.231

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR3	0.022	Raw Additives						
PR3	0.022	Coal/coke						
PR3	0.022	Gypsum						
PR3	0.022	Cement bulk						
PR3	0.022	Cement bags						
PR3	0.022	Limestone						
PR3	0.022	Employees						
PR3	0.022	SUBTOTAL	0.33	0.06	0.02	0.122	0.024	0.006

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR4	0.114	Raw Additives						
PR4	0.114	Coal/coke						
PR4	0.114	Gypsum						
PR4	0.114	Cement bulk						
PR4	0.114	Cement bags						
PR4	0.114	Limestone						
PR4	0.114	Employees						
PR4	0.114	SUBTOTAL	0.47	0.09	0.02	0.491	0.095	0.024

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR5	0.058	Raw Additives						
PR5	0.058	Coal/coke						
PR5	0.058	Gypsum						
PR5	0.058	Cement bulk						
PR5	0.058	Cement bags						
PR5	0.058	Limestone						
PR5	0.058	Employees						
PR5	0.058	SUBTOTAL	0.19	0.04	0.01	0.145	0.028	0.007

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR6	0.018	Raw Additives						
PR6	0.018	Coal/coke						
PR6	0.018	Gypsum						
PR6	0.018	Cement bulk						
PR6	0.018	Cement bags						
PR6	0.018	Limestone						
PR6	0.018	Employees						

PR6	0.018	SUBTOTAL	0.19	0.04	0.01	0.045	0.009	0.002

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR7	0.018	Raw Additives						
PR7	0.018	Coal/coke						
PR7	0.018	Gypsum						
PR7	0.018	Cement bulk						
PR7	0.018	Cement bags						
PR7	0.018	Limestone						
PR7	0.018	Employees						
PR7	0.018	SUBTOTAL	0.19	0.04	0.01	0.029	0.006	0.001

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR8	0.014	Raw Additives						
PR8	0.014	Coal/coke						
PR8	0.014	Gypsum						
PR8	0.014	Cement bulk						
PR8	0.014	Cement bags						
PR8	0.014	Limestone						
PR8	0.014	Employees						
PR8	0.014	SUBTOTAL	0.82	0.16	0.04	0.102	0.020	0.005

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR9	0.095	Raw Additives						
PR9	0.095	Coal/coke						
PR9	0.095	Gypsum						
PR9	0.095	Cement bulk						
PR9	0.095	Cement bags						
PR9	0.095	Limestone						

PR9	0.095	Employees						
PR9	0.095	SUBTOTAL	0.40	0.08	0.02	0.840	0.163	0.040

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR10	0.043	Raw Additives						
PR10	0.043	Coal/coke						
PR10	0.043	Gypsum						
PR10	0.043	Cement bulk						
PR10	0.043	Cement bags						
PR10	0.043	Limestone						
PR10	0.043	Employees						
PR10	0.043	SUBTOTAL	0.01	0.00	0.00	0.011	0.002	0.000

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR11	0.080	Raw Additives						
PR11	0.080	Coal/coke						
PR11	0.080	Gypsum						
PR11	0.080	Cement bulk						
PR11	0.080	Cement bags						
PR11	0.080	Limestone						
PR11	0.080	Employees						
PR11	0.080	SUBTOTAL	0.82	0.16	0.04	0.566	0.110	0.027

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
PR12	0.080	Raw Additives						
PR12	0.080	Coal/coke						
PR12	0.080	Gypsum						
PR12	0.080	Cement bulk						
PR12	0.080	Cement bags						

PR12	0.080	Limestone						
PR12	0.080	Employees						
PR12	0.080	SUBTOTAL	0.40	0.08	0.02	0.703	0.137	0.034
		GRAND TOTAL				**9.305**	**1.808**	**0.445**

Notes:

Unpaved Road Emission Summary

Segment No.	Segment Length (ft)	Segment Length (mi)	Description	Direction -Way	Silt Content (%)	Material Trips (#/yr)	Total Mileage (Mi/yr)	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	Annual Emissions TSP Emissions (Ton/yr)	Annual Emissions PM10 Emissions (Ton/yr)	Annual Emissions PM2.5 Emissions (Ton/yr)	Hourly Emissions TSP Emissions (lb/hr)	Hourly Emissions PM10 Emissions (lb/hr)	Hourly Emissions PM2.5 Emissions (lb/hr)
UR1	1500	0.284	Limestone/Marl haul	2	8.3	34,112	19,382	13.86	3.94	0.39	33.589	9.552	0.955	7.6688	2.1807	0.2181
UR2	3750	0.710	Spoils/Other haul	2	8.3	4,342	6,167	13.86	3.94	0.39	10.688	3.039	0.304	2.4403	0.6939	0.0694
UR3	2425	0.459	Overburden loop	1	8.3	31,773	14,593	13.86	3.94	0.39	25.290	7.191	0.719	5.7739	1.6419	0.1642
TOTAL		1.454					40,141				69.568	19.782	1.978	15.883	4.517	0.452

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Segment No.	Segment Length (mi)	Material	Surface Silt Content (%)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
UR1	0.284	Marl/limestone	8.3	78	100	178	127.893	X	X	127.9	100	3,411,152	34,112	9,691	9,691	19,382	2,478,754
UR1	0.284	Spoils	8.3	78	100	178	127.893					434,183	0	0	0	0	
UR1	0.284	Overburden	8.3	78	100	178	127.893					3,177,255	0	0	0	0	
UR1	0.284	SUBTOTAL	8.3							127.9			34,112	9,691	9,691	19,382	2,478,754

Segment No.	Segment Length (mi)	Material	Surface Silt Content (%)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
UR2	0.710	Marl/limestone	8.3	78	100	178	127.893					3,411,152	0	0	0	0	
UR2	0.710	Spoils	8.3	78	100	178	127.893	X	X	127.9	100	434,183	4,342	3,084	3,084	6,167	788,761
UR2	0.710	Overburden	8.3	78	100	178	127.893					3,177,255	0	0	0	0	
UR2	0.710	SUBTOTAL	8.3							127.9			4,342	3,084	3,084	6,167	788,761

Segment No.	Segment Length (mi)	Material	Surface Silt Content (%)	Truck Weights Empty (Tons)	Capacity	Loaded (Tons)	Avg (Tons)	Truck Trips Empty	Loaded	Truck Weight	Material Net (Tons)	Material Thruput (T/yr)	Material Trips (#/yr)	Empty Mileage (Mi/yr)	Loaded Mileage (Mi/yr)	Total Mileage (Mi/yr)	Weight x Mileage
UR3	0.459	Marl/limestone	8.3	78	100	178	127.893					3,411,152	0	0	0	0	
UR3	0.459	Spoils	8.3	78	100	178	127.893					434,183	0	0	0	0	
UR3	0.459	Overburden	8.3	78	100	178	127.893	X	X	127.9	100	3,177,255	31,773	7,296	7,296	14,593	1,866,272
UR3	0.459	SUBTOTAL	8.3							127.9			31,773	7,296	7,296	14,593	1,866,272
		GRAND TOTAL														40,141	

Notes: E = k * (s/12)^a * (W/3)^b * (365 - P)/365 for industrial unpaved roads

where

E = emission factor, lb/VMT
k = particle size multiplier
s = surface material silt content, %
W = average vehicle weight, tons
P = number of days with >= 0.01 in precipitation
a, b = constants for specific partical size

Constant	PM-30	PM-10	PM-2.5
k	4.9	1.5	0.15
a	0.7	0.9	0.9
b	0.45	0.45	0.45

P = 118 days (Wilmington average)

Emission factors from AP-42 Section 13.2.2 (11/06), Equations (1a) & (2). Silt content based on stone quarrying haul road (Table 13.2.2-1). A control efficiency of 75% was used to account for natural surface moisure or watering as needed at an equivalent surface moisture ratio of 2 (Figure 13.2.2-2).

Unpaved Roads

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	Control Efficiency (%)	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
UR1	0.284	Marl/limestone							
UR1	0.284	Spoils							
UR1	0.284	Overburden							
UR1	0.284	SUBTOTAL	13.86	3.94	0.39	75%	33.589	9.552	0.955

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	Control Efficiency (%)	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
UR2	0.710	Marl/limestone							
UR2	0.710	Spoils							
UR2	0.710	Overburden							
UR2	0.710	SUBTOTAL	13.86	3.94	0.39	75%	10.688	3.039	0.304

Segment No.	Segment Length (mi)	Material	TSP E Factor lb/VMT	PM10 E Factor lb/VMT	PM2.5 E Factor lb/VMT	Control Efficiency (%)	TSP Emissions (Ton/yr)	PM10 Emissions (Ton/yr)	PM2.5 Emissions (Ton/yr)
UR3	0.459	Marl/limestone							
UR3	0.459	Spoils							
UR3	0.459	Overburden							
UR3	0.459	SUBTOTAL	13.86	3.94	0.39	75%	25.290	7.191	0.719
		GRAND TOTAL					**69.57**	**19.78**	**1.98**

Notes:

where