

Appendix 4.1 Calculation of Dust Emission Factor						
Sites	Emission Factors	Mitigated	Parameters			
Stock Pile	Material handling (g/s)	3.62E-05	TSP emission factor (kg/Mg)	$k \cdot 0.0016 \cdot (U/2.2)^{1.3} / (M/2)^{1.4}$		
					0.74	from AP-42, 5th ed., S13.2.4
	(g/s/m ²)	Area = 1199m ²	3.02E-08	Particle size multiplier, k	0.74	from AP-42, 5th ed., S13.2.4, particle size < 30 um
				Material moisture content, M (%)	25	from engineer
				Average wind speed, U (m/s)	3.1	
				E (g/Mg)	0.0539	calculated
				Density (kg/m ³)	2000	assumed
				Capacity (m ³ /day)	29	from engineer
				No. of working hours per day	12	assumed
				% mitigation	50	
Zone A	Material handling (g/s)	1.37E-05	TSP emission factor (kg/Mg)	$k \cdot 0.0016 \cdot (U/2.2)^{1.3} / (M/2)^{1.4}$		
					0.74	from AP-42, 5th ed., S13.2.4
	(g/s/m)	Assume length = 50m	2.74E-07	Particle size multiplier, k	0.74	from AP-42, 5th ed., S13.2.4, particle size < 30 um
				Material moisture content, M (%)	25	from engineer
				Average wind speed, U (m/s)	3.1	
				E (g/Mg)	0.0539	calculated
				Density (kg/m ³)	2000	assumed
				Capacity (m ³ /day)	11	from engineer
				No. of working hours per day	12	assumed
				% mitigation	50	
Zone B	Material handling (g/s)	1.87E-05	TSP emission factor (kg/Mg)	$k \cdot 0.0016 \cdot (U/2.2)^{1.3} / (M/2)^{1.4}$		
					0.74	from AP-42, 5th ed., S13.2.4
	(g/s/m)	Assume length = 50m	3.74E-07	Particle size multiplier, k	0.74	from AP-42, 5th ed., S13.2.4, particle size < 30 um
				Material moisture content, M (%)	25	from engineer
				Average wind speed, U (m/s)	3.1	
				E (g/Mg)	0.0539	calculated
				Density (kg/m ³)	2000	assumed
				Capacity (m ³ /day)	15	from engineer
				No. of working hours per day	12	assumed
				% mitigation	50	
Zone C	Material handling (g/s)	3.74E-08	TSP emission factor (kg/Mg)	$k \cdot 0.0016 \cdot (U/2.2)^{1.3} / (M/2)^{1.4}$		
					0.74	from AP-42, 5th ed., S13.2.4
	(g/s/m)	Assume length = 50m	7.48E-08	Particle size multiplier, k	0.74	from AP-42, 5th ed., S13.2.4, particle size < 30 um
				Material moisture content, M (%)	25	from engineer
				Average wind speed, U (m/s)	3.1	
				E (g/Mg)	0.0539	calculated
				Density (kg/m ³)	2000	assumed
				Capacity (m ³ /day)	3	from engineer
				No. of working hours per day	12	assumed
				% mitigation	50	
Zone A	Wet Drilling ⁽¹⁾ (g/s)	4.28E-05	PM-10 emission factor (kg/Mg)	0.00004	from AP-42, 5th ed., S11.19.2	
					0.000084	TSP emission factor is estimated by multiplying PM10 by 2.1 (AP-42, 5th ed., S11.19.2)
	(g/s/m)	Assume length = 50m	8.56E-07	Density (kg/m ³)	2000	assumed
				Capacity (m ³ /day)	11	from engineer
				No. of working hours per day	12	assumed
				% mitigation	0	
Zone B	Wet Drilling ⁽¹⁾ (g/s)	5.83E-05	PM-10 emission factor (kg/Mg)	0.00004	from AP-42, 5th ed., S11.19.2	
					0.000084	TSP emission factor is estimated by multiplying PM10 by 2.1 (AP-42, 5th ed., S11.19.2)
	(g/s/m)	Assume length = 50m	1.17E-06	Density (kg/m ³)	2000	assumed
				Capacity (m ³ /day)	15	from engineer
				No. of working hours per day	12	assumed
				% mitigation	0	
Zone C	Wet Drilling ⁽¹⁾ (g/s)	1.17E-05	PM-10 emission factor (kg/Mg)	0.00004	from AP-42, 5th ed., S11.19.2	
					0.000084	TSP emission factor is estimated by multiplying PM10 by 2.1 (AP-42, 5th ed., S11.19.2)
	(g/s/m)	Assume length = 50m	2.39E-07	Density (kg/m ³)	2000	assumed
				Capacity (m ³ /day)	3	from engineer
				No. of working hours per day	12	assumed
				% mitigation	0	
Note: (1) emission rate from wet drilling = TSP emission factor * Density * Capacity / Number of working hour						
All Work Site	Wind erosion (g/m ² /s)	1.35E-06	TSP emission factor (Mg/hectare/yr)	0.85	from AP-42, 5th ed., Table 11.9.4	
					50	