

Off-Road Emission Factors for Access Road Construction and Site Preparation Phases

Equipment Type	Engine hp	Load Factor	Average Operating Hours per Work day	Number of Equipment Type used	Adjusted Emission Factors (g/hp-hr)				
					CO	NO _x	PM ₁₀	SO ₂	HC
Dozer	175	0.59	10	4	1.5263	2.6208	0.4764	0.0049	0.1980
Loader (rubber tire)	175	0.59	10	4	1.5263	2.6208	0.4764	0.0049	0.1980
Grader	175	0.59	10	2	1.5263	2.6208	0.4764	0.0049	0.1980
Compactor/roller	120	0.59	10	2	1.5263	2.6208	0.4764	0.0049	0.1980
Excavator	175	0.59	10	1	1.5263	2.6208	0.4764	0.0049	0.1980
Water truck	175	0.59	5	1	1.5263	2.6208	0.4764	0.0049	0.1980
Paver	120	0.59	10	1	1.5263	2.6208	0.4764	0.0049	0.1980

Equipment Type	Engine hp	Load Factor	Average Operating Hours per Work day	Number of Equipment Type used	Daily Emissions (lb per work day)				
					CO	NO _x	PM ₁₀	SO ₂	VOC
Dozer	175	0.59	10	4	13.88	1.89	1.10	0.00	0.00
Loader	175	0.59	10	4	13.88	1.89	1.10	0.00	0.45
Grader	175	0.59	10	2	6.94	0.47	0.07	0.00	0.45
Compactor/roller	120	0.59	10	2	4.76	0.32	0.03	0.00	0.31
Excavator	175	0.59	10	1	3.47	0.12	0.00	0.00	0.45
Water truck	175	0.59	5	1	1.74	0.03	0.00	0.00	0.23
Paver	120	0.59	10	1	2.38	0.08	0.00	0.00	0.31
Total Daily Emissions					47.1	4.8	2.3	0.01	2.2
					23.53	2.40	1.16	0.01	1.10

Equipment Type	Engine hp	Average Operating Hours per Work day	Number of Equipment Type used	Work Days per Year	Annual Emissions (ton per year)				
					CO	NO _x	PM ₁₀	SO ₂	VOC
Dozer	175	10	4	65	0.45	0.06	0.04	0.0000	0.00
Loader	175	10	4	65	0.45	0.06	0.04	0.0001	0.01
Grader	175	10	2	65	0.23	0.02	0.00	0.0001	0.01
Compactor/roller	120	10	2	65	0.15	0.01	0.00	0.0000	0.01
Excavator	175	10	1	65	0.11	0.00	0.00	0.0000	0.01
Water truck	175	10	1	65	0.06	0.00	0.00	0.0000	0.01
Paver	120	10	1	10	0.01	0.00	0.00	0.0000	0.00
Total Annual Emissions					1.46	0.15	0.08	0.0004	0.06

Equipment Type	Engine hp				GLE Site-Specific Emission Factors (lb per ft ² per work day)				
					CO	NO _x	PM ₁₀	SO ₂	VOC
Dozer	175				3.19E-06	4.34E-07	2.53E-07	2.88E-10	3.64E-12
Loader	175				3.19E-06	4.34E-07	2.53E-07	1.03E-09	1.03E-07
Grader	175				1.59E-06	1.09E-07	1.58E-08	5.14E-10	1.03E-07
Compactor/roller	120				1.09E-06	7.44E-08	7.44E-09	3.53E-10	7.09E-08
Excavator	175				7.97E-07	2.71E-08	9.88E-10	2.57E-10	1.03E-07
Water truck	175				3.98E-07	6.79E-09	6.18E-11	2.57E-10	5.17E-08
Paver	120				5.46E-07	1.86E-08	4.65E-10	1.76E-10	7.09E-08
Off-Road Equipment Diesel Engine Emission Factor					1.08E-05	1.10E-06	5.31E-07	2.87E-09	5.04E-07

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Tier 3 Steady-state Emission Factor (Efss) [g/hp-hr]					
CO	NO _x	PM ₁₀	SO ₂	HC	BSFC
0.8667	2.5	0.22	N.A.	0.1836	0.367
0.8667	2.5	0.22	N.A.	0.1836	0.367
0.8667	2.5	0.22	N.A.	0.1836	0.367
0.8667	2.5	0.22	N.A.	0.1836	0.367
0.8667	2.5	0.22	N.A.	0.1836	0.367
0.8667	2.5	0.22	N.A.	0.1836	0.367
0.8667	2.5	0.22	N.A.	0.1836	0.367

Transient Adjustment Factor (TAF) [unitless]					
CO	NO _x	PM ₁₀	SO ₂	HC	BSFC
1.53	1.04	1.47	N.A.	1.05	1.01
1.53	1.04	1.47	N.A.	1.05	1.01
1.53	1.04	1.47	N.A.	1.05	1.01
1.53	1.04	1.47	N.A.	1.05	1.01
1.53	1.04	1.47	N.A.	1.05	1.01
1.53	1.04	1.47	N.A.	1.05	1.01
1.53	1.04	1.47	N.A.	1.05	1.01

Tier 3 Deterioration Factor (DF) [unitless]				
CO	NO _x	PM ₁₀	SO ₂	HC
1.151	1.008	1.473	N.A.	1.027
1.151	1.008	1.473	N.A.	1.027
1.151	1.008	1.473	N.A.	1.027
1.151	1.008	1.473	N.A.	1.027
1.151	1.008	1.473	N.A.	1.027
1.151	1.008	1.473	N.A.	1.027
1.151	1.008	1.473	N.A.	1.027

soxcnv = 0.02247

soxdsl = 0.0015 (0.0015 or 15 ppm) for nonroad diesel fuel beginning 2010