

Needles Well No. 16

Emissions

Operation		Emission Factor	Units	Equation Variables		Emissions					
				1	2	PM-10 lbs/day	ROG lbs/day	CO lbs/day	NOX lbs/day	SOX lbs/day	
Equipment Exhaust Emissions				Pieces of Equipment	Operating Hours						
PM-10	Other Construction Equipment	0.012	lbs/hr	4	8	0.4					
	Drill Rig	0.005	lbs/hr	1	8	0.0					
	Excavator	0.016	lbs/hr	1	8	0.1					
	Paver	0.033	lbs/hr	1	8	0.3					
	Generator	0.013	lbs/hr	1	8	0.1					
	Paving Equipment	0.029	lbs/hr	1	8	0.2					
ROG	Other Construction Equipment	0.053	lbs/hr	4	8		1.7				
	Drill Rig	0.046	lbs/hr	1	8		0.4				
	Excavator	0.069	lbs/hr	1	8		0.5				
	Paver	0.093	lbs/hr	1	8		0.7				
	Generator	0.036	lbs/hr	1	8		0.3				
	Paving Equipment	0.071	lbs/hr	1	8		0.6				
CO	Other Construction Equipment	0.350	lbs/hr	4	8			11.2			
	Drill Rig	0.501	lbs/hr	1	8			4.0			
	Excavator	0.511	lbs/hr	1	8			4.1			
	Paver	0.488	lbs/hr	1	8			3.9			
	Generator	0.271	lbs/hr	1	8			2.2			
	Paving Equipment	0.406	lbs/hr	1	8			3.2			
NOX	Other Construction Equipment	0.312	lbs/hr	4	8				10.0		
	Drill Rig	0.322	lbs/hr	1	8				2.6		
	Excavator	0.358	lbs/hr	1	8				2.9		
	Paver	0.509	lbs/hr	1	8				4.1		
	Generator	0.298	lbs/hr	1	8				2.4		
	Paving Equipment	0.446	lbs/hr	1	8				3.6		
SOX	Other Construction Equipment	0.001	lbs/hr	4	8					0.0	
	Drill Rig	0.002	lbs/hr	1	8					0.0	
	Excavator	0.001	lbs/hr	1	8					0.0	
	Paver	0.000	lbs/hr	1	8					0.0	
	Generator	0.001	lbs/hr	1	8					0.0	
	Paving Equipment	0.000	lbs/hr	1	8					0.0	
Total							1.2	4.2	28.6	25.4	0.1

Sources: Off-Road Mobile Source Emission Factors; SCAQMD 2021

**Needles Well No. 16
Construction GHG Emissions**

			Equation Variables		GHG Emissions			
Operation		Emission Factor	Units	1	2	CO2 lbs/day	CH4 lbs/day	N2O g/day
Excavation Equipment Exhaust Emissions				Pieces of Equipment	Operating Hours			
CO2	Other Construction Equipment	122.0	lbs/hr	4	8	3904.0		
	Drill Rig	165.0	lbs/hr	1	8	1320.0		
	Excavator	120.0	lbs/hr	1	8	960.0		
	Pavers	77.9	lbs/hr	1	8	623.2		
	Paving Equipment	68.9	lbs/hr	1	8	551.2		
CH4	Other Construction Equipment	0.005	lbs/hr	4	8		0.2	
	Drill Rig	0.004	lbs/hr	1	8		0.0	
	Excavator	0.006	lbs/hr	1	8		0.0	
	Pavers	0.008	lbs/hr	1	8		0.1	
	Paving Equipment	0.006	lbs/hr	1	8		0.1	
N2O*	Other Construction Equipment	0.246	g/mile	Pieces of Equipment	Miles Per Day			2.0
	Drill Rig	0.180	g/mile	4	2			0.4
	Excavator	0.101	g/mile	1	2			0.2
	Pavers	0.131	g/mile	1	2			0.3
	Paving Equipment	0.100	g/mile	1	2			0.2
Total lbs/g/day						7,358.40	0.36	2.99
Total lbs/year						442,213.80		
Total MTCO2e						221.10		

Sources: Off-Road Mobile Source Emission Factors; SCAQMD 2021
Source N2O: California Climate Action Registry General Reporting Protocol, 2009I;
Table A9-8-C SCAQMD Handbook; Climate Leaders EPA, Section 3, Table 2
2 Month Construction Period (60 days)