Appendix O

Air Quality Summary of Potential-To-Emit (PTE) Calculations

Table 1. Stationary Source PTE[1]

No. of Units	Description	Fuel Type	Total Rating [4]	Maximum Heating Rate	NOx EF	NOx Emissions (TPY)	CO EF	CO Emissions (TPY)	PM EF	PM-10 Emissions (TPY)	PM-2.5 Emissions (TPY)	VOC EF	VOC[8] Emissions (TPY)	SO_2 EF	SO_2 Emissions (TPY)	HAPs Emissions (TPY)	CO2-e Emissions[5] (TPY)
Gas Conditioning Facility[2, 3]																	
10	Compressors	NG	57645 Hp	576.45 MMBtu/hr	0.32 lb/MMBtu	**807.95**	0.082 lb/MMBtu	**207.04**	0.0066 lb/MMBtu	**16.66**	**16.66**	0.0021 lb/MMBtu	**5.30**	0.675 lb/MMscf	**1.6709**	**2.59**	**295416.64**
7	Regenerators	NG	270.87 MMBtu/hr	2326.30 MMscf/yr	100 lb/MMscf	**116.31**	84 lb/MMscf	**97.70**	7.6 lb/MMscf	**8.84**	**8.84**	5.5 lb/MMscf	**6.40**	0.675 lb/MMscf	**0.7851**	**4.63**	**138814.30**
2	Electric Generators	NG	37562 KW	193.33 MMBtu/hr	4.08 lb/MMBtu	**3454.95**	0.082 lb/MMBtu	**268.44**	7.71E-05 lb/MMBtu	**0.07**	**0.07**	0.1180 lb/MMBtu	**99.92**	0.675 lb/MMscf	**0.5604**	**60.59**	**99078.89**
1	Emergency Flare[9] Pilot/Purge/ Sweep/Assist	NG	2.0 MMscf/ day	744600 MMBtu/yr	0.068 lb/MMBtu	**25.32**	0.37 lb/MMBtu	**137.57**	26.47 lb/MMscf	**9.66**	**9.66**	0.063 lb/MMBtu	**23.45**	0.675 lb/MMscf	**0.2464**	**0.0005**	**TBD**
	Emergency Flare[9] Full-plant blowdowns	NG	535 MMscf/ day	1,091,400 MMBtu/yr	0.068 lb/MMBtu	**37.11**	0.37 lb/MMBtu	**201.91**	26.47 lb/MMscf	**14.16**	**14.16**	0.063 lb/MMBtu	**34.38**	0.675 lb/MMscf	**0.3611**	**0.0005**	**TBD**
					Total NOx	**4441.64 TPY**	**Total CO**	**912.84 TPY**	**Total PM**	**49.39 TPY**	**49.39 TPY**	**Total VOC**	**169.46 TPY**	**Total SO_2**	**3.624 TPY**	**Total HAPs =67.81 TPY**	**Total CO2-e = 519694.6 TPY**
Compressor Station[2, 3]																	
2	Compressors	NG	15691 Hp	156.91 MMBtu/hr	0.32 lb/MMBtu	**219.93**	0.082 lb/MMBtu	**56.35**	0.0066 lb/MMBtu	**4.54**	**4.54**	0.0021lb/MMBtu	**1.44**	0.675 lb/MMscf	**0.4548**	**0.71**	**80412.57**
1	Primary Electric Generator	NG	663 KW	3.41 MMBtu/hr	4.08 lb/MMBtu	**60.98**	0.317 lb/MMBtu	**4.74**	7.71E-05 lb/MMBtu	**0.00**	**0.00**	0.118 lb/MMBtu	**1.76**	0.675 lb/MMscf	**0.0099**	**1.07**	**1748.82**
1	Emergency Flare[9] Pilot/Purge/ Sweep/Assist	NG	0.275 MMscf/ day	102382.5 MMBtu/yr	0.068 lb/MMBtu	**3.48**	0.37 lb/MMBtu	**18.94**	26.47 lb/MMscf	**1.33**	**1.33**	0.063 lb/MMBtu	**3.23**	0.675 lb/MMscf	**0.0339**	**0.0001**	**TBD**
	Emergency Flare Full-plant	NG	500 MMscf/ day	1020000 MMBtu/yr	0.068 lb/MMBtu	**34.68**	0.37 lb/MMBt	**188.70**	26.47 lb/MMscf	**13.24**	**13.24**	0.063 lb/MMBtu	**32.13**	0.675 lb/MMscf	**0.3375**	**0.0005**	**TBD**

Table 1. Stationary Source PTE[1]

No. of Units	Description	Fuel Type	Total Rating [4]	Maximum Heating Rate	NOx EF	NOx Emissions (TPY)	CO EF	CO Emissions (TPY)	PM EF	PM-10 Emissions (TPY)	PM-2.5 Emissions (TPY)	VOC EF	VOC[8] Emissions (TPY)	SO_2 EF	SO_2 Emissions (TPY)	HAPs Emissions (TPY)	CO2-e Emissions[5] (TPY)
	blowdowns						u										
					Total NOx	319.07 TPY	Total CO	268.73 TPY	Total PM	19.11 TPY	19.11 TPY	Total VOC	38.56 TPY	Total SO_2	0.836 TPY	Total HAPs =1.78 TPY	Total CO2-e = 82161.39 TPY
Straddle and Off-Take Facility[2, 3]																	
3	Compressors	NG	14840 Hp	148.40 MMBtu/hr	0.32 lb/MM Btu	**208.00**	0.082 lb/MM Btu	**53.30**	0.0066 lb/MM Btu	**1.82 TPY**	**1.82**	0.0021 lb/MM Btu	**1.36**	0.675 lb/M Mscf	**0.4301**	**0.28**	**76051.42**
3	Primary Electric Generator	NG	1517 KW	7.81 MMBtu/hr	4.08 lb/MM Btu	**139.53**	0.317 lb/MM Btu	**10.84**	7.71E-05 lb/MM Btu	**0.00 TPY**	**0.00**	0.118 lb/M MBtu	**4.04**	0.675 lb/M Mscf	**0.0226**	**2.45**	**4001.55**
2	Reboiler & Regenerator	NG	10.9 MMBtu /hr	93.61 MMscf/yr	100 lb/MM scf	**4.68**	84 lb/M Mscf	**3.93**	7.6 lb/MM scf	**0.36 TPY**	**0.36**	5.5 lb/M Mscf	**0.26**	0.675 lb/M Mscf	**0.0316**	**0.19**	**5585.99**
1	Emergency Flare[9] Pilot/Purge/ Sweep/Assist	NG	0.75 MMscf/ day	279225 MMBtu/yr	0.068 lb/MM Btu	**9.49**	0.37 lb/M MBtu	**51.66**	26.47 lb/MM scf	**3.62**	**3.62**	0.063 lb/M MBtu	**8.80**	0.675 lb/M Mscf	**0.0924**	**0.0001**	**TBD**
	Emergency Flare[9] Full-plant blowdowns	NG	71.8 MMscf/ day	146,472 MMBtu/yr	0.068 lb/MM Btu	**4.98**	0.37 lb/M MBtu	**27.10**	26.47 lb/MM scf	**1.90**	**1.90**	0.063 lb/M MBtu	**4.61**	0.675 lb/M Mscf	**0.0485**	**0.0001**	**TBD**
					Total NOx	366.68 TPY	Total CO	146.83 TPY	Total PM	10.17 TPY	10.17 TPY	Total VOC	19.07 TPY	Total SO_2	0.625 TPY	Total HAPs =3.30 TPY	Total CO2-e = 85638.84 TPY
Cook Inlet NGL Extraction Plant Facility[2, 3]																	
3	Compressors	NG	37268 Hp	372.68 MMBtu/hr	0.32 lb/MM Btu	**522.35**	0.082 lb/MM Btu	**133.85**	0.0066 lb/MM Btu	**10.77**	**10.77 TPY**	0.0021 lb/M MBtu	**3.43**	0.675 lb/M Mscf	**1.0802**	**1.68**	**190989.46**
1	Main Facility Generator	NG	1223 KW	6.29 MMBtu/hr	4.08 lb/MM Btu	**112.49**	0.317 lb/M MBtu	**8.74**	7.71E-05 lb/MM Btu	**0.00**	**0.00**	0.118 lb/M MBtu	**3.25**	0.675 lb/M Mscf	**0.0182**	**1.97**	**3225.96**
3	Reboiler and Regenerator	NG	103.71 MMBtu /hr	890.69 MMscf/yr	100 lb/MM scf	**44.53**	84 lb/M Mscf	**37.41**	7.6 lb/MM scf	**3.38**	**3.38**	5.5 lb/M Mscf	**2.45**	0.675 lb/M Mscf	**0.3006**	**1.77**	**53148.86**

Table 1. Stationary Source PTE[1]

No. of Units	Description	Fuel Type	Total Rating [4]	Maximum Heating Rate	NOx EF	NOx Emissions (TPY)	CO EF	CO Emissions (TPY)	PM EF	PM-10 Emissions (TPY)	PM-2.5 Emissions (TPY)	VOC EF	VOC[8] Emissions (TPY)	SO_2 EF	SO_2 Emissions (TPY)	HAPs Emissions (TPY)	CO2-e Emissions[5] (TPY)
1	Emergency Flare[9] Pilot/Purge/ Sweep/Assist	NG	2 MMscf/ day	744600 MMBtu/yr	0.068 lb/MM Btu	**25.32**	0.37 lb/M MBt u	**137.75**	26.47 lb/MM scf	**9.66**	**9.66**	0.063 lb/M MBtu	**23.45**	0.675 lb/M Mscf	**0.2464**	**0.0005**	**TBD**
	Emergency Flare[9] Full-plant blowdowns	NG	113.1 MMscf/ day	1020000 MMBtu/yr	0.068 lb/MM Btu	**7.84**	0.37 lb/M MBt u	**42.68**	26.47 lb/MM scf	**2.99**	**2.99**	0.063 lb/M MBtu	**7.27**	0.675 lb/M Mscf	**0.0763**	**0.0005**	**TBD**
					Total NOx	**712.53 TPY**	**Tota l CO**	**360.43TPY**	**Total PM**	**26.80 TPY**	**26.80 TPY**	**Total VOC**	**39.85 TPY**	**Total SO_2**	**1.722 TPY**	**Total HAPs = 5.42 TPY**	**Total CO2-e = 247364.28 TPY**
Stationary Camps[1, 6, 7]																	
14	500-man Construction Camp Stations	Diesel	1850 KW/uni t	1,110,164 gal/yr	9.2 g/KW-hr	**2301**	11.4 g/K W-hr	**2851**	0.2 g/KW-hr	**50**	**50**	1.3 g/KW -hr	**325**	0.000 2 lb/gal	**1.66**	**4.56**	**174216**
					Total NOx	**2301 TPY**	**Tota l CO**	**2851 TPY**	**Total PM**	**50 TPY**	**50 TPY**	**Total VOC**	**325 TPY**	**Total SO2**	**1.66 TPY**	**Total HAPs = 4.56 TPY**	**Total CO2-e = 174216 TPY**

Notes:

1. All emissions calculations used conservative assumptions of 8,760 hours per year of operation; 7,000 Btu per Hp-hr maximum fuel rating for generator engines; and 10,000 Btu per Hp-hr maximum fuel ratings for gas compressors.
2. EPA's AP-42 Tables 3.1-1, 3.1-2a, 3.1-3, & 3.2-2, and Tables 1.4-1 & 1.4-2 emission factors were used for calculations of NOx, CO, VOC, PM, PM-10, PM-2.5, and HAPs for natural gas-fired combustion units.
3. For all natural gas-fired combustion units:
   SO_2 emission factor was determined by Mass Balance assuming 4 ppm H_2S in Natural Gas (NG)
   Gas Fuel: (4 ppmv H2S)/(1,000,000)] * (1 lbmole/379.4 scf) * (64 lb SO2/lbmole) * (1,000,000 scf/MMscf) = 0.675 lb/MMscf
   Calculations used conversions of 1020 Btu/scf.
   The most conservative AP-42 emission factor was used for internal combustion engines (i.e., uncontrolled 4 stroke lean burn engines) in AP-42 Table 3.2-2.
4. Conversion Factors: KW to BTU/hr; hp to Btu/hr
   Assumed generator maximum rated fuel usage = 7,000 Btu/hp-hr
   Assumed compressor maximum rated fuel usage = 10,000 Btu/hp-hr
   1 hp = 0.735294118 KW
   1 KW = 1.341 hp
5. GHG emissions (CO2-e) are based on emission factors in 40 CFR 98 Tables A-1, C-1, and C-2:
   For diesel-fired units: CO2-e EF = CO2 + 21(CH4) + 310(N2O) = 74.209 kg/MMBtu; CO2 = 73.96; CH4 = 0.003; N2O = 0.0006
   For natural gas-fired units: CO2-e EF = CO2 + 21(CH4) + 310(N2O) = 53.072 kg/MMBtu; CO2 = 53.02; CH4 = 0.001; N2O = 0.0001
   Used conversion factor of 1.10231 short (US) ton to 1 long ton.
6. All emissions calculations used conservative assumptions of 8,760 hours per year of operation during the construction phase.
   Construction camps would no longer be used during the operations phase of the proposed Project.
   The camp engines would be considered nonroad engines if they are at a location for less than 12 consecutive months.

7. Diesel fuel is assumed to have a sulfur content of 15 ppmw (0.0015 weight percent, ULSD); heat rate of 7,000 Btu/hp-hr; and density of 7.1 lb/gal.
   SO_2 emissions for diesel fuel-fired units (camp generators) were calculated based on mass balance.
   EPA's NSPS Subpart IIII Tier 2 emission factors (EF) were used for calculations of NOx, CO, VOC, PM, PM-10, and PM-2.5 for diesel fuel-fired units (camp generators).
   EPA's AP-42 Table 3.4-3 and Table 3.4-4 emission factors (EF) were used for calculations of HAPs for diesel fuel-fired units (camp generators).
8. VOC fugitive emissions for the 37 mainline valves is estimated at 3.37 TPY, based on average emission factor of 0.00945 kg/hr per unit at 8,760 hours/year operation. (Reference: Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017, November, 1995, Table B-3-1. Emission Factors Calculated From Revised Synthetic Organic Chemical Manufacturing Industry (SOCMI) Correlation Equations).
9. For the emergency flares, the following conservative assumptions were used:
   For total pilot/purge/sweep/assist operation: 2.0 MMscf/day for Gas Conditioning Facility and Cook Inlet NGL Extraction Plant, 0.275 MMscf/day for Compressor Station and 0.75 MMscf/day for Straddle and Off-take Facility
   48 hours per year worst case total time with major flaring for full-plant blowdowns
   Used a lightly smoking emission factor for the PM-10 of 40 ug/L, converted as follows using an assumption that input gas to exhaust gas is 1:10.6: (40 µg/L)(lb/ 453.6 * 10^6 µg)(28.32 L exhaust/scf exhaust)(10.6 scf exhaust/scf gas)(10^6 scf/MMscf) = 26.47 lb/MMscf
   VOC is 45% of exhaust (AP-42 Table 13.5-1 THC factor = 0.14 lb/MMBtu): 0.45*0.14 = 0.063 lb/MMBtu
   TBD means “to be determined”

Table 2. Construction Mobile Vehicle PTE[1, 2]

No. of Units	Description	Ave. daily hours/ day/ unit	Total Days of operation (days/yr)	Total miles run (hrs/yr)	NOx EF[1] (lb/mile)	NOx PTE (TPY)	CO EF[1] (lb/mile)	CO PTE (TPY)	PM-10 EF (lb/mile)	PM-10 PTE (TPY)	PM-2.5 EF (lb/mile)	PM-2.5 PTE (TPY)	SO_2 EF (lb/mile)	SO_2 PTE (TPY)	VOC EF (lb/mile)	VOC PTE (TPY)	CO2-e EF (lb/mile)	CO2-e PTE (TPY)
1	4 Wheel Vehicle	10	300	90000	0.0008	**0.0349**	0.0077	**0.3445**	0.000090	**0.0040**	0.000057	**0.0026**	0.000011	**0.0005**	0.000796	**0.0358**	1.1120	**50.04**
22	Bus, 26 Passenger	8	300	1584000	0.0008	**0.6145**	0.0077	**6.0626**	0.000090	**0.0711**	0.000057	**0.0455**	0.000011	**0.0085**	0.000796	**0.6307**	1.1120	**880.70**
8	Bus, 45 Passenger	8	300	576000	0.0008	**0.2234**	0.0077	**2.2046**	0.000090	**0.0259**	0.000057	**0.0166**	0.000011	**0.0031**	0.000796	**0.2293**	1.1120	**320.26**
8	Carryall, 4x4	10	300	720000	0.0008	**0.2793**	0.0077	**2.7557**	0.000090	**0.0323**	0.000057	**0.0207**	0.000011	**0.0039**	0.000796	**0.2867**	1.1120	**400.32**
90	Pick-Up/ Crewcab, 4x4	10	300	8100000	0.0008	**3.1421**	0.0077	**31.0017**	0.000090	**0.3637**	0.000057	**0.2329**	0.000011	**0.0434**	0.000796	**3.2249**	1.1120	**4503.60**
3	Snow Machine	6	180	97200	0.0008	**0.0377**	0.0077	**0.3720**	0.000090	**0.0044**	0.000057	**0.0028**	0.000011	**0.0005**	0.000796	**0.0387**	1.1120	**54.04**
1	Foam Truck	10	300	90000	0.0173	**0.7796**	0.0155	**0.6956**	0.000650	**0.0292**	0.000550	**0.0247**	0.000027	**0.0012**	0.002238	**0.1007**	2.8200	**126.90**
2	Fuel Truck, 4,000 Gal	10	300	180000	0.0173	**1.5592**	0.0077	**1.3912**	0.000650	**0.0585**	0.000550	**0.0495**	0.000027	**0.0024**	0.002238	**0.2014**	2.8200	**253.80**
3	Lube Truck	10	300	270000	0.0173	**2.3388**	0.0077	**2.0868**	0.000650	**0.0877**	0.000550	**0.0742**	0.000027	**0.0036**	0.002238	**0.3021**	2.8200	**380.70**
13	Mechanic Truck	10	300	1170000	0.0173	**10.1347**	0.0077	**9.0426**	0.000650	**0.3801**	0.000550	**0.3215**	0.000027	**0.0156**	0.002238	**1.3091**	2.8200	**1649.70**
2	Pre-Heat Truck	10	300	180000	0.0173	**1.5592**	0.0077	**1.3912**	0.000650	**0.0585**	0.000550	**0.0495**	0.000027	**0.0024**	0.002238	**0.2014**	2.8200	**253.80**
3	Skid Truck	10	300	270000	0.0173	**2.3388**	0.0077	**2.0868**	0.000650	**0.0877**	0.000550	**0.0742**	0.000027	**0.0036**	0.002238	**0.3021**	2.8200	**380.70**
2	Tire Truck	10	300	180000	0.0173	**1.5592**	0.0077	**1.3912**	0.000650	**0.0585**	0.000550	**0.0495**	0.000027	**0.0024**	0.002238	**0.2014**	2.8200	**253.80**
4	Powder Truck	10	300	360000	0.0173	**3.1184**	0.0155	**2.7823**	0.000090	**0.1170**	0.000550	**0.0989**	0.000027	**0.0048**	0.002238	**0.4028**	**2.820**	**507.60**
2	Flatbed, 2 Ton	10	300	180000	0.0173	**1.5592**	0.0155	**1.3912**	0.000650	**0.0585**	0.000550	**0.0495**	0.000027	**0.0024**	0.002238	**0.2014**	1.1120	**100.08**
2	Flatbed, 4 Ton	10	300	180000	0.0173	**1.5592**	0.0155	**1.3912**	0.000650	**0.0585**	0.000550	**0.0495**	0.000027	**0.0024**	0.002238	**0.2014**	1.1120	**100.08**
1	Water Truck, 4,000 Gal	6	300	54000	0.0309	**0.8349**	0.0102	**0.2758**	0.001355	**0.0366**	0.001248	**0.0337**	0.000040	**0.0011**	0.002528	**0.0682**	1.1120	**30.02**
8	Water Truck, 6,000 Gal	6	300	432000	0.0309	**6.6795**	0.0102	**2.2065**	0.001355	**0.2928**	0.001248	**0.2696**	0.000040	**0.0087**	0.002528	**0.5460**	1.1120	**240.19**
14	Welding Truck w/ 1 Mach	6	300	756000	0.0173	**6.5486**	0.0155	**5.8429**	0.000650	**0.2456**	0.000550	**0.2077**	0.000027	**0.0101**	0.002238	**0.8459**	1.1120	**420.34**
1	Tanker - Fuel 10,000 Gal	4	300	36000	0.0309	**0.5566**	0.0102	**0.1839**	0.001355	**0.0244**	0.001248	**0.0225**	0.000040	**0.0007**	0.002528	**0.0455**	1.1120	**20.02**

Table 2. Construction Mobile Vehicle PTE[1, 2]

No. of Units	Description	Ave. daily hours/ day/ unit	Total Days of operation (days/yr)	Total miles run (hrs/yr)	NOx EF[1] (lb/mile)	NOx PTE (TPY)	CO EF[1] (lb/mile)	CO PTE (TPY)	PM-10 EF (lb/mile)	PM-10 PTE (TPY)	PM-2.5 EF (lb/mile)	PM-2.5 PTE (TPY)	SO_2 EF (lb/mile)	SO_2 PTE (TPY)	VOC EF (lb/mile)	VOC PTE (TPY)	CO2-e EF (lb/mile)	CO2-e PTE (TPY)
6	Tanker - Water 12,000 Gal	4	300	216000	0.0309	**3.3398**	0.0102	**1.1032**	0.001355	**0.1464**	0.001248	**0.1348**	0.000040	**0.0044**	0.002528	**0.2730**	**2.8200**	**304.56**
					Total NOx	**48.7974 TPY**	**Total CO**	**76.0032 TPY**	**Total PM-10**	**2.2412 TPY**	**Total PM-2.5**	**1.8302 TPY**	**Total SO2**	**0.1257 TPY**	**Total VOC[3]**	**9.6484 TPY**	**Total CO2-e**	**13,158.62 TPY**

Notes:

1. Emission factors from EMFAC 2007 (ver 2.3), based on highest (most conservative) emission factors for on-road passenger vehicles & delivery trucks for Year 2012 scenario.
2. Assumed average of 30 mph speed per vehicle, construction duration of 1,440 hours (4 months, 30 days/month, 12 hours/day) during summer and 4,320 hours (6 months, 30 days/month, 24 hours/day) during winter.
3. VOC emissions are less than 10 TPY; HAPs are assumed insignificant.

Table 3. Construction Mobile Heavy Equipment PTE[1, 2]

No. of Units	Description	Max. Rating (Hp/unit)	Total Power output (hp-hr/yr)	NOx EF[2] (g/hp-hr)	NOx PTE (TPY)	CO EF[2] (g/hp-hr)	CO PTE (TPY)	PM-10 EF[2] (g/hp-hr)	PM-10 PTE (TPY)	PM-2.5[2] EF (g/hp-hr)	PM-2.5 PTE (TPY)	SO_2 EF[2,4] (g/hp-hr)	SO_2 PTE (TPY)	VOC EF[2,3] (g/hp-hr)	VOC PTE (TPY)	CO2-e EF[5] (Kg/MMBtu)	CO2-e PTE (TPY)
1	Backhoe/ Loader	300	1,728,000	11.00	**20.95**	2.71	**5.16**	0.7776	**1.48**	0.7776	**1.48**	0.0258	**0.05**	1.17	**2.23**	74.2090	**989.47**
3	Nodwell Tracked Vehicle	240	4,147,200	11.00	**50.29**	2.71	**12.39**	0.7776	**3.55**	0.7776	**3.55**	0.0258	**0.12**	1.17	**5.35**	74.2090	**2374.73**
2	Towed Drum Compactor	60	691,200	11.00	**8.38**	4.60	**3.50**	0.8640	**0.66**	0.8640	**0.66**	0.0279	**0.02**	1.21	**0.92**	74.2090	**395.79**
2	Gravel Conveyor, 24" x	300	3,456,000	11.00	**41.90**	2.28	**8.69**	0.4800	**1.83**	0.4800	**1.83**	0.0258	**0.10**	0.59	**2.25**	74.2090	**1978.94**
1	Crushing Plant, 300 HP	300	1,728,000	14.00	**26.67**	3.03	**5.77**	0.9600	**1.83**	0.9600	**1.83**	0.0279	**0.05**	1.33	**2.53**	74.2090	**989.47**
1	Gravel Screening	300	1,728,000	14.00	**26.67**	3.03	**5.77**	0.9600	**1.83**	0.9600	**1.83**	0.0279	**0.05**	1.33	**2.53**	74.2090	**989.47**
2	Hydraulic Crane, 50 Ton	600	6,912,000	11.00	**83.81**	4.60	**35.05**	0.8640	**6.58**	0.8640	**6.58**	0.0279	**0.21**	1.21	**9.22**	74.2090	**3957.88**
2	Dozer Tractor, D4	48	552,960	11.00	**6.70**	2.15	**1.31**	0.6624	**0.40**	0.6624	**0.40**	0.0255	**0.02**	0.92	**0.56**	74.2090	**316.63**
6	Dozer Tractor, D6 LGP	185	6,393,600	11.00	**77.52**	2.15	**15.15**	0.6624	**4.67**	0.6624	**4.67**	0.0255	**0.18**	0.92	**6.48**	74.2090	**3661.03**
11	Dozer Tractor, D7 w/ Winch	200	12,672,000	11.00	**153.65**	2.15	**30.03**	0.6624	**9.25**	0.6624	**9.25**	0.0255	**0.36**	0.92	**12.85**	74.2090	**7256.10**
8	Dozer Tractor, D8	177	8,156,160	11.00	**98.90**	2.15	**19.33**	0.6624	**5.96**	0.6624	**5.96**	0.0255	**0.23**	0.92	**8.27**	74.2090	**4670.29**
7	Dozer Tractor, D8 w/ Ripper	177	7,136,640	11.00	**86.53**	2.15	**16.91**	0.6624	**5.21**	0.6624	**5.21**	0.0255	**0.20**	0.92	**7.24**	74.2090	**4086.51**
7	Dozer Tractor, D8 w/ Winch	177	7,136,640	11.00	**86.53**	2.15	**16.91**	0.6624	**5.21**	0.6624	**5.21**	0.0255	**0.20**	0.92	**7.24**	74.2090	**4086.51**
5	Dozer Tractor, D9 w/ Ripper	474	13,651,200	11.00	**165.52**	2.15	**32.35**	0.6624	**9.97**	0.6624	**9.97**	0.0255	**0.38**	0.92	**13.84**	74.2090	**7816.80**
6	Excavator, 320 (1.5 CY)	140	4,838,400	11.00	**58.67**	4.60	**24.53**	0.8640	**4.61**	0.8640	**4.61**	0.0279	**0.15**	1.21	**6.45**	74.2090	**2770.51**
10	Excavator, 325 (1.5 CY)	188	10,828,800	11.00	**131.30**	4.60	**54.91**	0.8640	**10.31**	0.8640	**10.31**	0.0279	**0.33**	1.21	**14.44**	74.2090	**6200.67**
14	Excavator, 330 (2.0 CY)	247	19,918,080	11.00	**241.51**	4.60	**101.00**	0.8640	**18.97**	0.8640	**18.97**	0.0279	**0.61**	1.21	**26.57**	74.2090	**11405.28**
2	Snow Blower - Self Propelled	250	720,000	11.00	**8.73**	4.60	**3.65**	0.8640	**0.69**	0.8640	**0.69**	0.0279	**0.02**	1.21	**0.96**	74.2090	**412.28**
7	Motor Grader, 16G	250	10,080,000	11.00	**122.22**	1.54	**17.11**	0.6048	**6.72**	0.6048	**6.72**	0.0258	**0.29**	0.48	**5.33**	74.2090	**5771.90**
3	Excavator, 325 w/ Hammer	188	3,248,640	11.00	**39.39**	4.60	**16.47**	0.8640	**3.09**	0.8640	**3.09**	0.0279	**0.10**	1.21	**4.33**	74.2090	**1860.20**

Table 3. Construction Mobile Heavy Equipment PTE[1, 2]

No. of Units	Description	Max. Rating (Hp/unit)	Total Power output (hp-hr/yr)	NOx EF[2] (g/hp-hr)	NOx PTE (TPY)	CO EF[2] (g/hp-hr)	CO PTE (TPY)	PM-10 EF[2] (g/hp-hr)	PM-10 PTE (TPY)	PM-2.5[2] EF (g/hp-hr)	PM-2.5 PTE (TPY)	SO_2 EF[2,4] (g/hp-hr)	SO_2 PTE (TPY)	VOC EF[2,3] (g/hp-hr)	VOC PTE (TPY)	CO2-e EF[5] (Kg/MMBtu)	CO2-e PTE (TPY)
14	Wheel Loader, 966	235	18,950,400	11.00	**229.78**	2.71	**56.61**	0.7776	**16.24**	0.7776	**16.24**	0.0258	**0.54**	1.17	**24.44**	74.2090	**10851.17**
1	Wheel Loader, 980	393	2,263,680	11.00	**27.45**	2.71	**6.76**	0.7776	**1.94**	0.7776	**1.94**	0.0258	**0.06**	1.17	**2.92**	74.2090	**1296.20**
2	Wheel Loader, 988	430	4,953,600	11.00	**60.06**	2.71	**14.80**	0.7776	**4.25**	0.7776	**4.25**	0.0258	**0.14**	1.17	**6.39**	74.2090	**2836.48**
2	Farm Tractor w/ Spreader	600	6,912,000	11.00	**83.81**	7.34	**55.92**	1.2192	**9.29**	1.2192	**9.29**	0.0255	**0.19**	2.04	**15.54**	74.2090	**3957.88**
2	Tack Rig w/ Air & Power	600	6,912,000	11.00	**83.81**	4.60	**35.05**	0.8640	**6.58**	0.8640	**6.58**	0.0279	**0.21**	1.21	**9.22**	74.2090	**3957.88**
10	5th Wheel Tractor-Lowboy	600	34,560,000	11.00	**419.05**	7.34	**279.62**	1.2192	**46.45**	1.2192	**46.45**	0.0255	**0.97**	2.04	**77.71**	74.2090	**19789.38**
4	5th Wheel Tractor - String	600	13,824,000	11.00	**167.62**	7.34	**111.85**	1.2192	**18.58**	1.2192	**18.58**	0.0255	**0.39**	2.04	**31.09**	74.2090	**7915.75**
1	LGP Tractor Unit	600	3,456,000	11.00	**41.90**	7.34	**27.96**	1.2192	**4.64**	1.2192	**4.64**	0.0255	**0.10**	2.04	**7.77**	74.2090	**1978.94**
1	Boom Truck, 8 Ton	250	1,440,000	11.00	**17.46**	2.28	**3.62**	0.4800	**0.76**	0.4800	**0.76**	0.0261	**0.04**	0.59	**0.94**	74.2090	**824.56**
4	End Dump, 25 Ton	300	6,912,000	11.00	**83.81**	2.28	**17.37**	0.4800	**3.66**	0.4800	**3.66**	0.0261	**0.20**	0.59	**4.50**	74.2090	**3957.88**
15	End Dump, 35 Ton	330	28,512,000	11.00	**345.71**	2.28	**71.66**	0.4800	**15.09**	0.4800	**15.09**	0.0261	**0.82**	0.59	**18.54**	74.2090	**16326.24**
3	End Dump, 50 Ton	400	6,912,000	11.00	**83.81**	2.28	**17.37**	0.4800	**3.66**	0.4800	**3.66**	0.0261	**0.20**	0.59	**4.50**	74.2090	**3957.88**
2	Farm Tractor w/ Harrow	600	6,912,000	11.00	**83.81**	7.34	**55.92**	1.2192	**9.29**	1.2192	**9.29**	0.0255	**0.19**	2.04	**15.54**	74.2090	**3957.88**
3	Lowboy Trailer, 60	600	10,368,000	11.00	**125.71**	2.28	**26.06**	0.4800	**5.49**	0.4800	**5.49**	0.0261	**0.30**	0.59	**6.74**	74.2090	**5936.81**
1	Lowboy Trailer, 100	600	3,456,000	11.00	**41.90**	2.28	**8.69**	0.4800	**1.83**	0.4800	**1.83**	0.0261	**0.10**	0.59	**2.25**	74.2090	**1978.94**
4	High Deck Trailer, 40'	600	13,824,000	11.00	**167.62**	2.28	**34.74**	0.4800	**7.31**	0.4800	**7.31**	0.0261	**0.40**	0.59	**8.99**	74.2090	**7915.75**
1	Tracked Trailer - LGP	600	3,456,000	11.00	**41.90**	2.26	**8.61**	0.6336	**2.41**	0.6336	**2.41**	0.0255	**0.10**	1.21	**4.61**	74.2090	**1978.94**
1	Dragline w/ Clam Bucket, 4	100	576,000	11.00	**6.98**	4.60	**2.92**	0.8640	**0.55**	0.8640	**0.55**	0.0279	**0.02**	1.21	**0.77**	74.2090	**329.82**
9	Drill - John Henry	400	20,736,000	11.00	**251.43**	4.60	**105.14**	0.8640	**19.75**	0.8640	**19.75**	0.0279	**0.64**	1.21	**27.66**	74.2090	**11873.63**
8	Sideboom, 572	200	9,216,000	11.00	**111.75**	4.60	**46.73**	0.8640	**8.78**	0.8640	**8.78**	0.0279	**0.28**	1.21	**12.29**	74.2090	**5277.17**

Table 3. Construction Mobile Heavy Equipment PTE[1, 2]

No. of Units	Description	Max. Rating (Hp/unit)	Total Power output (hp-hr/yr)	NOx EF[2] (g/hp-hr)	NOx PTE (TPY)	CO EF[2] (g/hp-hr)	CO PTE (TPY)	PM-10 EF[2] (g/hp-hr)	PM-10 PTE (TPY)	PM-2.5[2] EF (g/hp-hr)	PM-2.5 PTE (TPY)	SO_2 EF[2,4] (g/hp-hr)	SO_2 PTE (TPY)	VOC EF[2,3] (g/hp-hr)	VOC PTE (TPY)	CO2-e EF[5] (Kg/MMBtu)	CO2-e PTE (TPY)
20	Sideboom, 583	300	34,560,000	11.00	**419.05**	4.60	**175.24**	0.8640	**32.91**	0.8640	**32.91**	0.0279	**1.06**	1.21	**46.10**	74.2090	**19789.38**
2	Sideboom, 594	410	4,723,200	11.00	**57.27**	4.60	**23.95**	0.8640	**4.50**	0.8640	**4.50**	0.0279	**0.15**	1.21	**6.30**	74.2090	**2704.55**
8	Sideboom, 572 w/ Auto	200	9,216,000	11.00	**111.75**	4.60	**46.73**	0.8640	**8.78**	0.8640	**8.78**	0.0279	**0.28**	1.21	**12.29**	74.2090	**5277.17**
1	Heavy Duty Wrecker	400	2,304,000	11.00	**27.94**	4.60	**11.68**	0.8640	**2.19**	0.8640	**2.19**	0.0279	**0.07**	1.21	**3.07**	74.2090	**1319.29**
3	Chain Trencher -	1000	17,280,000	11.00	**209.52**	4.60	**87.62**	0.8640	**16.46**	0.8640	**16.46**	0.0279	**0.53**	1.21	**23.05**	74.2090	**9894.69**
1	Ditch Witch 3500	40	230,400	11.00	**2.79**	4.60	**1.17**	0.8640	**0.22**	0.8640	**0.22**	0.0279	**0.01**	1.21	**0.31**	74.2090	**131.93**
1	Winch, 60 Ton	430	2,476,800	11.00	**30.03**	4.60	**12.56**	0.8640	**2.36**	0.8640	**2.36**	0.0279	**0.08**	1.21	**3.30**	74.2090	**1418.24**
1	Ice Trimmer	250	360,000	11.00	**4.37**	4.60	**1.83**	0.8640	**0.34**	0.8640	**0.34**	0.0279	**0.01**	1.21	**0.48**	74.2090	**206.14**
				Total NOx	**4875.28 TPY**	**Total CO**	**1774.53 TPY**	**Total PM-10**	**357.25 TPY**	**Total PM-2.5**	**357.25 TPY**	**Total SO_2**	**11.76 TPY**	**Total VOC**	**516.94 TPY**	**Total CO2-e**	**229,693.64 TPY**

Notes:

1. Assumed construction duration of 1,440 hours (4 months, 30 days/month, 12 hours/day) during summer and 4,320 hours (6 months, 30 days/month, 24 hours/day) during winter.
2. Emission rates from Santa Barbara County Air Pollution Control District (SBCAPCD) Table 1 - Construction Emission Factors.
3. ROC (same as VOC) equals uncontrolled exhaust THC plus aldehydes.
4. SO_2 emission factors for diesel combustion were modified to reflect use of fuel having 0.0015 pct. sulfur.
5. Emission factors from Tables C-1a, C-2, & Table A-1 40 CFR 98: CO2-e emission factor = CO2 + 21(CH4) + 310(N2O) = 74.209 kg/MMBtu; CO2 = 73.96; CH4 = 0.003; N2O = 0.0006. Used conversion factor of 1.10231 short (US) ton to 1 long ton.
6. HAPs emissions to be determined.

Table 4. Construction Miscellaneous Mobile Equipment (Compressors, Engines, Support Utilities) PTE[1, 2]

No. of Units	Description	Max. Rating (Hp/unit)	Total Annual hours per year (hrs/yr)	NOx EF (lb/hr)	NOx PTE (TPY)	CO EF (lb/hr)	CO PTE (TPY)	PM-10 EF (lb/hr)	PM-10 PTE (TPY)	PM-2.5 EF (lb/hr)	PM-2.5 PTE (TPY)	SO2 EF (lb/gal)	SO2 PTE (TPY)	VOC EF2,3 (lb/hr)	VOC PTE (TPY)	HAPs EF (lb/MMBtu)	HAPs PTE (TPY)	CO2-e EF (Kg/MMBtu)	CO2-e PTE (TPY)
50	Light Plant, 4 Lights[3]	21 Hp	288,000 hrs/yr	0.27 lb/hr	**38.88 TPY**	0.35	**50.40 TPY**	0.05	**7.2 TPY**	0.05	**7.2 TPY**	0.00021	**0.0324 TPY**	0.08	**11.52**	-	**TBD**	74.2090	**3463.14 TPY**
No. of Units	**Description**	**Total Annual Fuel Usage (gal/yr)**	**Total Annual Heating Rate (MMBTu/yr)**	**NOx EF (lb/MMBtu)**	**NOx PTE (TPY)**	**CO EF (lb/MMBtu)**	**CO PTE (TPY)**	**PM-10 EF (lb/MMBtu)**	**PM-10 PTE (TPY)**	**PM-2.5 EF (lb/MMBtu)**	**PM-2.5 PTE (TPY)**	**SO2 EF (lb/gal)**	**SO2 PTE (TPY)**	**VOC EF (lb/MMBtu)**	**VOC PTE (TPY)**	**HAPs EF (lb/MMBtu)**	**HAPs PTE (TPY)**	**CO2-e EF (Kg/MMBtu)**	**CO2-e PTE (TPY)**
4	Air Compressor, 1600 CFM	460,000	64,051	4.41	**141.23**	0.95	**30.42**	0.31	**9.93**	0.31	**9.93**	0.00021	**0.0491**	0.35	**11.21**	0.00428	**0.1371**	74.2090	**5239.47**
2	Air Compressor, 185 CFM	34,560	4,804	4.41	**10.59**	0.95	**2.28**	0.31	**0.74**	0.31	**0.74**	0.00021	**0.0037**	0.35	**0.84**	0.00428	**0.0103**	74.2090	**392.96**
8	Air Compressor, 375 CFM	329,551	45,808	4.41	**101.01**	0.95	**21.76**	0.31	**7.10**	0.31	**7.10**	0.00021	**0.0351**	0.35	**8.02**	0.00428	**0.0981**	74.2090	**3747.12**
4	Generator, 15 KW	34,560	4,804	4.41	**10.59**	0.95 lu	**2.28**	0.31	**0.74**	0.31	**0.74**	0.00021	**0.0037**	0.35	**0.84**	0.00428	**0.0103**	74.2090	**392.96**
4	Generator, 40 KW	69,120	9,608	4.41	**21.18**	0.95	**4.56**	0.31	**1.49**	0.31	**1.49**	0.00021	**0.0074**	0.35	**1.68**	0.00428	**0.0206**	74.2090	**785.92**
4	Dewatering Pump, 4"	11,770	1,636	4.41	**3.61**	0.95	**0.78**	0.31	**0.25**	0.31	**0.25**	0.00021	**0.0013**	0.35	**0.29**	0.00428	**0.0035**	74.2090	**133.83**
18	Dewatering Pump, 6"	228,096	31,705	4.41	**69.91**	0.95	**15.06**	0.31	**4.91**	0.31	**4.91**	0.00021	**0.0243**	0.35	**5.55**	0.00428	**0.0679**	74.2090	**2593.54**
6	Hydrotest Fill Pump, 6"	69,120	9,608	4.41	**21.18**	0.95	**4.56**	0.31	**1.49**	0.31	**1.49**	0.00021	**0.0074**	0.35	**1.68**	0.00428	**0.0206**	74.2090	**785.92**
8	Envirovac unit 8' x 30'	17,280	2,402	4.41	**5.30**	0.95	**1.14**	0.31	**0.37**	0.31	**0.37**	0.00021	**0.0018**	0.35	**0.42**	0.00428	**0.0051**	74.2090	**196.48**
12	Painting Shelter	46,080	6,405	4.41	**14.12**	0.95	**3.04**	0.31	**0.99**	0.31	**0.99**	0.00021	**0.0049**	0.35	**1.12**	0.00428	**0.0137**	74.2090	**523.95**
4	Pump Shelter	69,120	9,608	4.41	**21.18**	0.95	**4.56**	0.31	**1.49**	0.31	**1.49**	0.0002	**0.0074**	0.35	**1.68**	0.00428	**0.0206**	74.2090	**785.92**
1	Soft Sided Bldg, 55' x 60'	5,760	801	4.41	**1.77**	0.95	**0.380**	0.31	**0.12**	0.31	**0.12**	0.00021	**0.0006**	0.35	**0.14**	0.00428	**0.0017**	74.2090	**65.49**
1	Portable Building, 40' x	5,760	801	4.41	**1.77**	0.95	**0.380**	0.31	**0.12**	0.31	**0.12**	0.00021	**0.0006**	0.35	**0.14**	0.00428	**0.0017**	74.2090	**65.49**
1	Office Trailer, 10' x 50'	5,760	801	4.41	**1.77**	0.95	**0.380**	0.31	**0.12**	0.31	**0.12**	0.00021	**0.0006**	0.35	**0.14**	0.00428	**0.0017**	74.2090	**65.49**
4	Pipe Trailer, 40' to 60'	23,040	3,203	4.41	**7.06**	0.95	**1.52**	0.31	**0.50**	0.31	**0.50**	0.00021	**0.0025**	0.35	**0.56**	0.00428	**0.0069**	74.2090	**261.97**
2	Hydrotest Instrument	11,520	1,601	4.41	**3.53**	0.95	**0.76**	0.31	**0.25**	0.31	**0.25**	0.00021	**0.0012**	0.35	**0.28**	0.00428	**0.0034**	74.2090	**130.99**
2	Hydrotest Pump Trailer	11,520	1,601	4.41	**3.53**	0.95	**0.76**	0.31	**0.25**	0.31	**0.25**	0.00021l	**0.0012**	0.35	**0.28**	0.00428	**0.0034**	74.2090	**130.99**

Table 4. Construction Miscellaneous Mobile Equipment (Compressors, Engines, Support Utilities) PTE[1, 2]

No. of Units	Description	Total Annual Fuel Usage (gal/yr)	Total Annual Heating Rate (MMBTu/yr)	NOx EF (lb/MMBtu)	NOx PTE (TPY)	CO EF (lb/MMBtu)	CO PTE (TPY)	PM-10 EF (lb/MMBtu)	PM-10 PTE (TPY)	PM-2.5 EF (lb/MMBtu)	PM-2.5 PTE (TPY)	SO2 EF (lb/gal)	SO2 PTE (TPY)	VOC EF (lb/MMBtu)	VOC PTE (TPY)	HAPs EF (lb/MMBtu)	HAPs PTE (TPY)	CO2-e EF (Kg/MMBtu)	CO2-e PTE (TPY)
13	Welding Shelter	74,880	10,408	4.41	**22.95**	0.95	**4.94**	0.31	**1.61**	0.31	**1.61**	0.00021	**0.0080**	0.35	**1.82**	0.00428	**0.0223**	74.2090	**851.41**
2	Van Trailer - Auto Welding	11,520	1,601	4.41	**3.53**	0.95	**0.76**	0.31	**0.25**	0.31	**0.25**	0.00021	**0.0012**	0.35	**0.28**	0.00428	**0.0034**	74.2090	**130.99**
				Total NOx	**504.7 TPY**	**Total CO**	**150.75 TPY**	**Total PM-10**	**39.94 TPY**	**Total PM-2.5**	**39.94 TPY**	**Total SO_2**	**0.1943 TPY**	**Total VOC**	**48.49**	**Total HAPs**	**0.45 TPY**	**Total CO2-e**	**20744.04 TPY**

Notes:

1. Assumed construction duration of 1,440 hours (4 months, 30 days/month, 12 hours/day) during summer and 4,320 hours (6 months, 30 days/month, 24 hours/day) during winter.
2. Emission factors are from AP-42 Tables 3.3-1 for NOx, CO, PM, VOC, and HAPs, and mass balance for SO_2 (except for the Light Plants, see Note 3). Diesel fuel is assumed to have a heat content of 139,000 Btu/gal, heat rate of 7,000 Btu/hp-hr, density of 7.1 lbs/gal, and 0.0015% sulfur content (ULSD).
3. Emission rates from Worley Parsons Air Emissions Summary June 2010.
4. Emission factors from Tables C-1a, C-2, & Table A-1 40 CFR 98: CO2-e emission factor = CO2 + 21(CH4) + 310(N2O) = 74.209 kg/MMBtu; CO2 = 73.96; CH4 = 0.003; N2O = 0.0006. Used conversion factor of 1.10231 short (US) ton to 1 long ton.

Table 5. Construction Non-Mobile Source PTE[1, 2]

No. of Units	Description	Total Annual Fuel Usage (gal/yr)	NOx EF	NOx PTE (TPY)	CO EF	CO PTE (TPY)	PM-10 EF	PM-10 PTE (TPY)	PM-2.5 EF	PM-2.5 PTE (TPY)	SO_2 EF (lb/gal)	SO_2 PTE (TPY)	VOC EF (g/hp-hr)	VOC PTE (TPY)	HAPs EF[3] (lb/MMBtu)	HAPs PTE (TPY)	CO2-e EF[4] (Kg/MMBtu)	CO2-e PTE (TPY)
3	Indirect Heater,	17,280	18 lb/10^3 gal	**0.16**	5 lb/10^3	**0.04**	1.08 lb/10^3 gal	**0.01**	0.83 lb/10^3 gal	**0.01**	0.00021	**0.0018**	2.493 lb/10^3	**0.02**	No Data	**Assumed insignifica**	74.2090	**196.48**
12	Indirect Heater, 500K	69,120	18 lb/10^3 gal	**0.62**	5 lb/10^3	**0.17**	1.08 lb/10^3 gal	**0.04**	0.83 lb/10^3 gal	**0.03**	0.00021	**0.0074**	2.493 lb/10^3	**0.09**	No Data	**Assumed insignifica**	74.2090	**785.92**
1	Base Radio Unit	5,760	4.41 lb/MMBtu	**1.77**	0.95 lb/MMB	**0.38**	0.31 lb/MMBtu	**0.12**	0.31 lb/MMBtu	**0.12**	0.00021	**0.0006**	0.35 lb/MMB	**0.14**	0.00428	**0.0017**	74.2090	**65.49**
2	Warehouse Facility	11,520	4.41 lb/MMBtu	**3.53**	0.95 lb/MMB	**0.76**	0.31 lb/MMBtu	**0.25**	0.31 lb/MMBtu	**0.25**	0.00021	**0.0012**	0.35 lb/MMB	**0.28**	0.00428	**0.0034**	74.2090	**130.99**
			Total NOx	**6.07 TPY**	**Total CO**	**1.36 TPY**	**Total PM-10**	**0.42 TPY**	**Total PM-2.5**	**0.41 TPY**	**Total SO_2**	**0.0110 TPY**	**Total VOC**	**0.53 TPY**	**Total HAPs**	**0.0051 TPY**	**Total CO2-e**	**1178.88 TPY**

Notes:

1. Assumed construction duration of 1,440 hours (4 months, 30 days/month, 12 hours/day) during summer and 4,320 hours (6 months, 30 days/month, 24 hours/day) during winter.
2. Emission factors are from AP-42 Tables 3.3-1, 1.3-1, 1.3-3 and 1.3-6 for NOx, CO, PM, and VOC and mass balance for SO_2. Diesel fuel is assumed to have a heat content of 139,000 Btu/gal, heat rate of 7,000 Btu/hp-hr; density of 7.1 lbs/gal and 0.0015% sulfur content (ULSD).
3. HAPs emission factors from AP-42 Table 3.4-3 & 4.
4. Emission Factors from Tables C-1a, C-2, & Table A-1 40 CFR 98: CO2-e emission factor = CO2 + 21(CH4) + 310(N2O) = 74.209 kg/MMBtu; CO2 = 73.96; CH4 = 0.003; N2O = 0.0006. Used conversion factor of 1.10231 short (US) ton to 1 long ton.

Table 6. Construction Fugitive Emissions

Project Component	Mainline Construction (Acres)[1]	Total Hours per Year (hrs/year)[2]	PM-10 Fugitive EF[3, 4] (lb/acre-hr)	PM-10 Fugitive PTE During Construction (TPY)	PM-2.5 Fugitive PTE During Construction[6] (TPY)	Fairbanks Lateral (Acres)[1]	Total Hours per Year (hrs/year)[5]	PM-10 Fugitive EF[3, 4] (lb/acre-hr)	PM-10 Fugitive PTE During Construction (TPY)	PM-2.5 Fugitive PTE During Construction[6] (TPY)	Denali National Park Route Variation (Acre)	Total Hours per Year (hrs/year)[5]	PM-10 Fugitive EF[3,4] (lb/acre-hr)	PM-10 Fugitive PTE During Construction (TPY)	PM-2.5 Fugitive PTE During Construction[6] (TPY)
Pipeline ROW	9,508	2,200	3.49	36,501.21	3,650.12	417.2	880	3.49	640.65	64.07	185.5	880	3.49	284.85	28.48
Temporary Extra Work Spaces	982	2,200	3.49	3,769.90	376.99	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Compressor Stations	1.4	2,200	3.49	5.37	0.54	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Gas Conditioning	68.7	2,200	3.49	263.74	26.37	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Cook Inlet NGLEP Facility	5.2	2,200	3.49	19.96	2.00	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Straddle and Off-Take	3.3	2,200	3.49	12.67	1.27	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mainline valves (MLVs)	0.8	2,200	3.49	3.07	0.31	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pipe storage, rail, and contractor	182.7	2,200	3.49	701.39	70.14	N/A	N/A	N/A	N/A	N/A	NA	NA	NA	NA	N/A
Construction Camps	126.5	2,200	3.49	485.63	48.56	TBD	TBD	TBD	TBD	TBD	NA	NA	NA	NA	N/A
Access roads	514.3	2,200	3.49	1,974.40	197.44	120.7	880	3.49	185.35	18.53	0	NA	NA	0.00	0.00
Total	**11,393 acres**			**43,737 TPY**	**4,374 TPY**	**538 acres**			**826 TPY**	**82.60 TPY**	**185.5 acres**			**285 TPY**	**28 TPY**

Notes:

1. See Table 2.1-3 notes for detailed information on construction footprint acreage.
2. Total construction hours per year assumed to be 220 hours per month for 10 months for Mainline.
3. Emission rates from Santa Barbara County Air Pollution Control District (SBCAPCD) Table 1 - Construction Emission Factors.
4. Fugitive dusts are PM-10. Assumed controlled emission factor equals uncontrolled PM (10.91 lb/acre-hr, ref. EPA AP-42, Vol. 1, 1993, Section 13.2.3.3) times 0.5 (50% credit for watering) times 0.64 (Ref. California ARB, 1988; Profile 391 - Road and Building Construction Dust).
5. Total construction hours per year assumed to be 220 hours per month for 4 months for Fairbanks Lateral.
6. Total PM fugitive dust is assumed equal to PM-10 fugitive dust. PM-2.5 fugitive dust is estimated at 10 percent of PM-10, based on the study conducted by Midwest Research Institute in 2006 (*Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors*) for the Western Governors Association to better characterize the PM-2.5/PM-10 ratio in fugitive dust. This report has been accepted by the EPA as an approved adjustment to the emission factors in EPA AP-42, Section 13.2.

Table 7. Open Burning Emissions

Project Component	NOx (tons)	CO (tons)	VOC (tons)	SO_2 (tons)	PM (tons)	PM-10 (tons)	PM-2.5 (tons)	HAPs (tons)	CO_2 (tons)
Mainline Construction	251	8,942	476	84-	1,471	1,471--	1,086	560	131,120[h]
Fairbanks Lateral	19	660	35	6	109	109--	80	41	9,678
Denali National Park Route Variation	7	238	13	2	39	39--	29	15	3,497

Notes:

1. Worst-case emissions from open burning were provided by AGDC (see response to Request for Information [RFI] 186), using emission factors from Andrae, M.O. and P. Merlet, Emission of Trace Gases and Aerosols from Biomass Burning (2001). Open burning activities would occur during the first year only.