

# **APPENDIX K**

## ***Air Quality Analysis***



**TABLE 1 - Maximum Build-Out Estimated Emissions**

**Stationary Source Emissions**

Stationary Sources	Acres to be Developed	Estimated Bldg size (AC)	Estimated Bldg Size (SF)	Gas Usage - million cubic feet/Year	Emission Rates (lb/million cubic feet)							Emissions (tons/year)						
					CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CO	NOx	SO2	PM10	PM2.5	VOCs	CO2
Warehouse & Distribution	62	15.50	675,000	197	84	100	0.6	7.6	7.6	5.5	120000	8.278	9.855	0.059	0.749	0.749	0.542	11826.000
Light Industrial	72	18.00	784,000	229	84	100	0.6	7.6	7.6	5.5	120000	9.615	11.446	0.069	0.870	0.870	0.630	13735.680
R&D / Office	3	0.75	33,000	10	84	100	0.6	7.6	7.6	5.5	120000	0.405	0.482	0.003	0.037	0.037	0.026	578.160
Town Center	1	0.25	11,000	3	84	100	0.6	7.6	7.6	5.5	120000	0.135	0.161	0.001	0.012	0.012	0.009	192.720
Residential	28	7.00	305,000	89	84	100	0.6	7.6	7.6	5.5	120000	3.741	4.453	0.027	0.338	0.338	0.245	5343.600
<b>Total Stationary Source Emissions</b>												<b>22.173</b>	<b>26.397</b>	<b>0.158</b>	<b>2.006</b>	<b>2.006</b>	<b>1.452</b>	<b>31,676.160</b>

Estimated building size generally assumes that 25% of available acreage to be developed will be occupied by a building.

Assumes heating value of 60 BTU per SF, a furnace efficiency of 90%, and the conservative estimate that the combustion sources operating approximately half of the year (4,380 hours per year).

**Traffic Related Emissions**

Trip Generating Land Uses	Acres to be Developed	Daily Trips	Yearly Trips	Total Miles/Year	Emission Rates (g/mile)							Emissions (tons/year)						
					CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CO	NOx	SO2	PM10	PM2.5	VOCs	CO2
Warehouse & Distribution	62	3547	925,767	4,628,835	2.764	0.230	0.006	0.004	0.004	0.002	412.946	14.105	1.175	0.031	0.023	0.021	0.010	2107.024
Light Industrial	72	3730	973,530	4,867,650	2.764	0.230	0.006	0.004	0.004	0.002	412.946	14.833	1.236	0.033	0.024	0.022	0.011	2215.731
R&D / Office	3	239	62,379	311,895	2.764	0.230	0.006	0.004	0.004	0.002	412.946	0.950	0.079	0.002	0.002	0.001	0.001	141.973
Town Center	1	320	83,520	417,600	2.764	0.230	0.006	0.004	0.004	0.002	412.946	1.273	0.106	0.003	0.002	0.002	0.001	190.090
Residential	28	267	69,687	348,435	2.764	0.230	0.006	0.004	0.004	0.002	412.946	1.062	0.088	0.002	0.002	0.002	0.001	158.606
<b>Total</b>												<b>32.223</b>	<b>2.684</b>	<b>0.071</b>	<b>0.052</b>	<b>0.048</b>	<b>0.024</b>	<b>4,813.424</b>

Estimate included passenger vehicles associated with employee trips

Trip generation for each type of use was estimated based on the acres to be developed per parcel and the average trip generation rates provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition.

For estimation purposes, it was assumed that daily trips included trips to and from the new facilities (i.e. round trips), each one-way trip represented 1 employee, and 1 passenger vehicle

Based on a 5-day work week, 32 weeks per year, 5 miles per trip

**Mega-Site (Temporary Construction Emissions)**

Land Use	Acres to be Developed	Estimated Bldg size (AC)	Estimated Bldg Size (SF)	Emissions (tons/year)						
				CO	NOx	SO2	PM10	PM2.5	VOC	CO2
Mega Site Construction	40	10	500,000	29.185	16.614	0.084	2.476	0.953	17.836	6,204.03

Temporary emissions from construction of 500,000 SF facility, parking lot, access road and site work

Assumes maximum build-out would take place over many years; assumes 1 large facility construction per year.

Construction Emissions are estimated for the largest single construction project - Proposed Mega Site.

Assumes construction would begin and end in the same year.

Refer to Table 2 - Construction Emissions (ACEIT)

**TOTAL OPERATIONAL AND CONSTRUCTION EMISSIONS**

	Emissions (tons/year)						
	CO	NOx	SO2	PM10	PM2.5	VOC	CO2
Clean Air Act De Minimis Thresholds	100	100	100	100	100	50	
<b>Total Operational and Construction Emissions</b>	<b>84</b>	<b>46</b>	<b>0.313</b>	<b>5</b>	<b>3</b>	<b>19</b>	<b>42,694</b>

**Post-Construction Mega-Site (Stationary Source Emissions)**

Stationary Sources	Acres to be Developed	Estimated Bldg size (AC)	Estimated Bldg Size (SF)	Gas Usage - million cubic feet/Year	Emission Rates (lb/million cubic feet)							Emissions (tons/year)						
					CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CO	NOx	SO2	PM10	PM2.5	VOCs	CO2
Mega-Site	40	10.00	500,000	146	84	100	0.6	7.6	7.6	5.5	120000	6.132	7.300	0.044	0.555	0.555	0.402	8760.000
<b>Total Stationary Source Emissions - Mega-Site</b>												<b>6.132</b>	<b>7.300</b>	<b>0.044</b>	<b>0.555</b>	<b>0.555</b>	<b>0.402</b>	<b>8,760.00</b>

Assumes heating value of 60 BTU per SF, a furnace efficiency of 90%, and the conservative estimate that the combustion sources operating approximately half of the year (4,380 hours per year).

**Post-Construction Mega-Site (Traffic Related Emissions)**

Trip Generating Land Uses	Acres to be Developed	Daily Trips	Yearly Trips	Total Miles/Year	Emission Rates (g/mile)							Emissions (tons/year)						
					CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CO	NOx	SO2	PM10	PM2.5	VOCs	CO2
Mega-Site	40	3184	831,024	4,155,120	2.764	0.230	0.006	0.004	0.004	0.002	412.946	12.662	1.055	0.028	0.020	0.019	0.009	1891.391
<b>Total Traffic Related Emissions - Mega-Site</b>												<b>12.662</b>	<b>1.055</b>	<b>0.028</b>	<b>0.020</b>	<b>0.019</b>	<b>0.009</b>	<b>1,891.39</b>

Estimate included passenger vehicles associated with employee trips

Trip generation for each type of use was estimated based on the acres to be developed per parcel and the average trip generation rates provided in the Institute of Transportation Engineers (ITE) Trip Generation Manual, 9th Edition.

For estimation purposes, it was assumed that daily trips included trips to and from the new facilities (i.e. round trips), each one-way trip represented 1 employee, and 1 passenger vehicle

Based on a 5-day work week

**TOTAL MAXIMUM BUILD-OUT OPERATIONAL EMISSIONS**

	Emissions (tons/year)						
	CO	NOx	SO2	PM10	PM2.5	VOCs	CO2
Clean Air Act De Minimis Thresholds	100	100	100	100	100	50	
<b>Total Maximum Build-Out Operational Emissions</b>	<b>73</b>	<b>37</b>	<b>0.301</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>47,141</b>

**Table 2**  
**Airport Construction Emissions Inventory Tool (ACEIT)**  
**Version 1.0**  
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STUDY

Study Name

Example Mega Site

Study Description

Emissions from construction of 500,000 SF facility, parking lot, access road and site work

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EMISSIONS INVENTORY - SUMMARY

Total Emissions by Year

Units for Non-Greenhouse Gases Emission: Short Ton

Units for Greenhouse Gases (CO2, CH4, and N2O) Emission: Metric Ton

Year	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O
2016	23.80415892	12.63668	0.055684	1.467473	0.73841	2.002151	4417.584	0.366113	0.025702
2017	5.381074382	3.977538	0.028256	1.008785	0.214211	15.83354	1786.443	0.112211	0.013776

Total Emissions by Source Categories

Units for Non-Greenhouse Gases Emission: Short Ton

Units for Greenhouse Gases Emission: Metric Ton

Year	Emission Source	CO	NOx	SO2	PM10	PM2.5	VOC	CO2	CH4	N2O
2016	NonRoad	5.060329	10.79145	0.034629	0.734672	0.675899	1.17224	3104.677	--	--
2016	OnRoad	18.74383	1.845228	0.021055	0.067101	0.062511	0.829911	1312.907	0.366113	0.025702
2016	Fugitive	0	0	0	0.6657	--	0	--	--	--
2016	TOTAL	23.80416	12.63668	0.055684	1.467473	0.73841	2.002151	4417.584	0.366113	0.025702

2017	NonRoad	1.542251	3.264517	0.010852	0.204865	0.188476	0.494026	1284.757	--	--
2017	OnRoad	2.851623	0.651362	0.006082	0.026379	0.025735	0.173213	501.6863	0.112211	0.013776
2017	Fugitive	0.9872	0.061659	0.011323	0.77754	--	15.1663	--	--	--
2017	TOTAL	5.381074	3.977538	0.028256	1.008785	0.214211	15.83354	1786.443	0.112211	0.013776

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