

APPENDIX A

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AIR QUALITY WORKSHEETS



BY: MATRIX ENVIRONMENTAL

# Douglas Park Air Quality Appendix

August 2009

**PM2.5 SENSITIVITY ANALYSIS:**

**Construction Impacts:**

Subsequent to completion of the Final EIR, the SCAQMD released guidelines in October of 2006 for calculating PM2.5 emissions and recommended significance thresholds. SCAQMD recommends accounting for PM2.5 emissions by applying an emission factor of 21 percent, 89 percent and 99 percent to PM10 emissions from fugitive dust, off-road equipment, and on-road equipment, respectively. The maximum daily PM10 construction emissions from each phase of the Final EIR were used to evaluate potential PM2.5 impacts from both the approved project and the revised project. As shown in Table 9 on page 244, Section V.B, Air Quality, of the Final EIR, site preparation from each phase resulted in the maximum PM10 emissions.

**PM10 to PM2.5 conversion:**

Maximum Daily Regional Emissions	PM10				PM2.5				Threshold	Over/	Exceed
	Fugitive Dust	Off-Road	On-Road	Total	Fugitive Dust	Off-Road	On-Road	Total	PM2.5	(Under)	Threshold?
Unmitigated											
Phase 1	236.2	4.5	1.3	242.0	49.6	4.0	1.3	54.9	55	(0.1)	No
Phase 2	230.1	3.3	1.0	234.5	48.3	3.0	1.0	52.3	55	(2.7)	No
Phase 3	178.3	2.8	1.5	182.5	37.4	2.5	1.5	41.4	55	(13.6)	No
Phase 4	307.3	2.8	0.1	310.1	64.5	2.5	0.1	67.1	55	12.1	Yes
Mitigated											
Phase 1	119.1	4.5	1.3	124.9	25.0	4.0	1.3	30.3	55	(24.7)	No
Phase 2	115.0	3.3	1.0	119.4	24.2	3.0	1.0	28.1	55	(26.9)	No
Phase 3	89.2	2.8	1.5	93.4	18.7	2.5	1.5	22.7	55	(32.3)	No
Phase 4	153.7	2.8	0.1	156.5	32.3	2.5	0.1	34.8	55	(20.2)	No

As pollutant concentrations are directly proportional to the emission rate, localized PM2.5 impacts were evaluated by applying the ratio of PM2.5 to PM10 on-site emissions to PM10 concentrations shown in Table 10 on page 246, Section V.B, Air Quality, of the Final EIR.

**PM10 Summary:**

Maximum Daily Regional Emissions	PM10			Modeled Conc. ug/m^3	PM10 Threshold ug/m^3	Over/ (Under)	Exceed Threshold?
	Fugitive Dust	Off-Road	Total				
Unmitigated							
Phase 1	236.2	4.5	240.7	36.8	10.4	26.4	Yes
Phase 2	230.1	3.3	233.5	39.3	10.4	28.9	Yes
Phase 3	178.3	2.8	181.0	7.0	10.4	(3.4)	No
Phase 4	307.3	2.8	310.1	5.0	10.4	(5.4)	No
Mitigated							
Phase 1	119.1	4.5	123.6		10.4	(10.4)	No
Phase 2	115.0	3.3	118.4		10.4	(10.4)	No
Phase 3	89.2	2.8	91.9		10.4	(10.4)	No
Phase 4	153.7	2.8	156.5		10.4	(10.4)	No

**PM10 to PM2.5 conversion:**

Maximum Daily Regional Emissions	PM10			PM2.5 Converted Conc. ug/m^3	PM2.5 Threshold ug/m^3	Over/ Under	Exceed Threshold?
	Fugitive Dust	Off-Road	Total				
Unmitigated							
Phase 1	49.6	4.0	53.6	8.2	10.4	(2.2)	No
Phase 2	48.3	3.0	51.3	8.6	10.4	(1.8)	No
Phase 3	37.4	2.5	39.9	1.5	10.4	(8.9)	No
Phase 4	64.5	2.5	67.0	1.1	10.4	(9.3)	No
Mitigated							
Phase 1	25.0	4.0	29.0		10.4	(10.4)	No
Phase 2	24.2	3.0	27.1		10.4	(10.4)	No
Phase 3	18.7	2.5	21.2		10.4	(10.4)	No
Phase 4	32.3	2.5	34.8		10.4	(10.4)	No

## PM2.5 SENSITIVITY ANALYSIS:

### Operation Impacts:

Subsequent to completion of the Final EIR, the SCAQMD released guidelines in October of 2006 for calculating PM2.5 emissions and recommended significance thresholds. SCAQMD recommends accounting for PM2.5 emissions by applying an emission factor of 21 percent, 89 percent and 99 percent to PM10 emissions from road dust, stationary source equipment, and on-road equipment, respectively. The operational emissions presented in Table 89, on page 852, Section VI.B.3., Alternatives, of the Final EIR were used to evaluate potential PM2.5 impacts from both the approved project.

### PM10 to PM2.5 conversion (Approved Project):

Maximum Daily Regional Emissions	Unmitigated	
	PM10	PM2.5
Future No Project		
Mobile Source (Exhaust)	0.8	0.7
Mobile Source (Road Dust)	14.0	2.9
Stationary Source	0.4	0.4
Area Source	1.7	1.7
Aviation -related Sources	0.0	0.0
Miscellaneous	3.4	3.3
Total	20.2	9.1
Future with Project		
Mobile Source (Exhaust)	30.0	26.7
Mobile Source (Road Dust)	521.1	109.4
Stationary Source	6.2	6.1
Area Source	2.5	2.5
Aviation -related Sources	0.0	0.0
Miscellaneous	112.0	110.8
Total	671.8	255.6
Difference	651.5	246.6
SCAQMD Significance Threshold	55	55
Over (Under)	596.5	191.6

**VEHICLE MILES TRAVELED (VMT) COMPARISON:**

**Existing from Approved FEIR**

**Summary of Land Uses:**

Unit Type	Size	Units	Daily Trips
Office Park	536	tsf	1250
<b>Total:</b>			1250

**Travel Conditions:**

	Residential			Commerical		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles):	12.7	7	9.5	13.3	7.4	8.9
% of Trips- Commerical (by land use)						
Office Park				48	24	28

**VMT by Land Use:**

	Residential			Commerical			Combined
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	VMT
Office Park				7,980	2,220	3,115	13,315
<b>TOTAL:</b>							13,315

**Approved Project (Reduced Intensity Alternative from Approved FEIR)**

**Summary of Land Uses:**

Unit Type	Size	Units	Daily Trips
Apartments	1400	du	8,500
Hotel	400	rooms	3,290
Strip Mall	200	tsf	10,210
Office Park	3100	tsf	30,950
			52,950 (less existing trips of 1,250) or 51700 total trips

**Travel Conditions:**

	Residential			Commerical		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles):	12.7	7	9.5	13.3	7.4	8.9
% of Trips- Residential	32.9	18	49.1			
% of Trips- Commerical (by land use)						
Hotel				5	2.5	92.5
Strip Mall				2	1	97
Office Park				48	24	28

**VMT by Land Use:**

	Residential			Commerical			Combined
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	VMT
Residential	35,516	10,710	39,648				85,874
Hotel				2,188	609	27,085	29,881
Strip Mall				2,716	756	88,143	91,614
Office Park				197,585	54,967	77,127	329,679
<b>TOTAL:</b>							537,049

**Revised Project**

**Summary of Land Uses:**

Unit Type	Size	Units	Daily Trips
Apartments	0	du	0
Hotel	400	rooms	3,290
Strip Mall	250	tsf	11,680
Office Park	3750	tsf	37,280
			52,250 (less existing trips of 1,250) or 51000 total trips

**Travel Conditions:**

	Residential			Commerical		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles):	11.5	4.9	6	10.3	5.5	5.5
% of Trips- Residential	20	37	43			
% of Trips- Commerical (by land use)						
Hotel				5	2.5	92.5
Strip Mall				2	1	97
Office Park				48	24	28

**VMT by Land Use:**

	Residential			Commerical			Combined
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer	VMT
Residential	0	0	0				0
Hotel				2,188	609	27,085	29,881
Strip Mall				3,107	864	100,833	104,805
Office Park				237,996	66,209	92,902	397,107
<b>TOTAL:</b>							531,793
						Difference:	-5,256
						% Change:	-0.98%

## Douglas Park-Revised Project

### Regional Emission Calculations (lbs/day)

	CO	NOx	PM10	PM2.5	VOC	SOx
<b>Revised Project</b>						
Mobile <sup>a</sup>	1806.0	203.1	545.7	134.8	176.1	3.1
Stationary	37.4	216.8	6.2	6.1	3.3	18.4
Area	56.3	45.70	2.5	2.5	6.62	0.0
Aviation-Related	9.0	3.00	0.0	0.0	0.00	0.0
Miscellaneous	380.0	93.1	110.9	109.8	37.2	4.3
<b>Total Revised Project</b>	<b>2289</b>	<b>562</b>	<b>665</b>	<b>253</b>	<b>223</b>	<b>25</b>
Existing Project	106	63	20	9	13	2
<b>Total (less Existing)</b>	<b>2182</b>	<b>498</b>	<b>645</b>	<b>244</b>	<b>210</b>	<b>23</b>
SCAQMD Significance Threshold	550	55	150	55	55	150
<b>Difference</b>	<b>1,632</b>	<b>443</b>	<b>495</b>	<b>189</b>	<b>155</b>	<b>(127)</b>
<b>Significant?</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>	<b>No</b>

#### Comparison of Approved Project

Douglas Park  
Operational Area Source Emissions

**Douglas Park-Revised Project**

**Diesel-Powered Emergency Generators**

SCAQMD Regulation XIII

Rating: 1000 hp

	Number	Emission Factors (g/hp-hr)					Emissions (lbs/day)				
		CO	ROC	NOx	PM10	SOx	CO	ROC	NOx	PM10	SOx
Diesel Generator	3	8.5	1.00	6.9	0.38	0.0	56.29	6.62	45.70	2.52	0.00

**Charbroilers**

Source: SCAQMD, 1997

Number of Restaurants	3
Lbs of meat cooked per day per restaurant <sup>b</sup>	166
Emission factors (lbs/ 1000 lbs cooked)	
ROC (assumed to be equivalent to VOC)	3.94
PM	32.67
Emissions (lbs/day)	
ROC	2.0
PM	16.2

Note: Based on information provided at [www.burgerking.com](http://www.burgerking.com)

**Electricity Usage**

Land Use	1,000 Sqft	Electricity	Total Electricity Usage		Emission Factors (lbs/MWh) <sup>b</sup>				
		Usage Rate <sup>a</sup> (kWh/sq.ft/yr)	(KWh/year)	(MWh/Day)	CO	ROC	NOx	PM10	SOx
					<u>0.2</u>	<u>0.01</u>	<u>1.15</u>	<u>0.04</u>	<u>0.12</u>
<b>Revised Project</b>					<b>Emissions from Electricity Consumption (lbs/day)</b>				
Office	3750.0	12.95	48,562,500	133.048	26.610	1.330	153.005	5.322	15.966
Retail	250.0	13.55	3,387,500	9.281	1.856	0.093	10.673	0.371	1.114
Hotel/Motel	400.0	9.95	3,980,000	10.904	2.181	0.109	12.540	0.436	1.308
Restaurant	0.0	47.45	0	0.000	0.000	0.000	0.000	0.000	0.000
Food Store	0.0	53.30	0	0.000	0.000	0.000	0.000	0.000	0.000
Warehouse	0.0	4.35	0	0.000	0.000	0.000	0.000	0.000	0.000
College/University	0.0	11.55	0	0.000	0.000	0.000	0.000	0.000	0.000
High School	0.0	10.50	0	0.000	0.000	0.000	0.000	0.000	0.000
Elementary School	0.0	5.90	0	0.000	0.000	0.000	0.000	0.000	0.000
Hospital	0.0	21.70	0	0.000	0.000	0.000	0.000	0.000	0.000
Miscellaneous	0.0	10.50	0	0.000	0.000	0.000	0.000	0.000	0.000
Residential (DU)	0.0	5,627	0	0.000	0.000	0.000	0.000	0.000	0.000
<b>Total Revised Project</b>			<b>55,930,000</b>	<b>153.233</b>	<b>30.65</b>	<b>1.53</b>	<b>176.22</b>	<b>6.13</b>	<b>18.39</b>

**Natural Gas Usage**

Land Use	1,000 Sqft	Natural Gas	Total Natural Gas Usage		Emission Factors (lbs/Mcuft) <sup>d</sup>				
		Usage Rate <sup>c</sup> (cu.ft/sq.ft/mo)	(cu.ft/mo)	(cu.ft/DAY)	CO	ROC	NOx	PM10	SOx
					<u>20</u>	<u>5.3</u>	<u>120/80</u> <sup>e</sup>	<u>0.2</u>	<u>0</u>
<b>Revised Project</b>					<b>Emissions from Natural Gas Consumption (lbs/day)</b>				
Office	3750.0	2.0	7,500,000	250,000	5.000	1.325	30.000	0.050	--
Retail	250.0	2.9	725,000	24,167	0.483	0.128	2.900	0.005	--
Hotel/Motel	400.0	4.8	1,920,000	64,000	1.280	0.339	7.680	0.013	--
Restaurant	0.0	4.8	0	0	0.000	0.000	0.000	0.000	--
Food Store	0.0	2.9	0	0	0.000	0.000	0.000	0.000	--
Warehouse	0.0	2.0	0	0	0.000	0.000	0.000	0.000	--
College/University	0.0	4.8	0	0	0.000	0.000	0.000	0.000	--
High School	0.0	2.9	0	0	0.000	0.000	0.000	0.000	--
Elementary School	0.0	2.0	0	0	0.000	0.000	0.000	0.000	--
Hospital	0.0	4.8	0	0	0.000	0.000	0.000	0.000	--
Miscellaneous	0.0	2.9	0	0	0.000	0.000	0.000	0.000	--
Residential (Single Family DU)	0.0	6,665	0	0	0.000	0.000	0.000	0.000	--
Residential (Multi-Family DU)	0.0	4,012	0	0	0.000	0.000	0.000	0.000	--
<b>Total Revised Project</b>			<b>10,145,000</b>	<b>338,167</b>	<b>6.76</b>	<b>1.79</b>	<b>40.58</b>	<b>0.07</b>	<b>--</b>

**Summary of Stationary Emissions**

	CO	ROC	NOx	PM10	SOx
<b>Total Existing Emissions (lbs/day)</b>	<b>37.41</b>	<b>3.32</b>	<b>216.80</b>	<b>6.20</b>	<b>18.39</b>

<sup>a</sup> Electricity Usage Rates from Table A9-11-A, CEQA Air Quality Handbook, SCAQMD, 1993.

<sup>b</sup> Emission Factors from Table A9-11-B, CEQA Air Quality Handbook, SCAQMD, 1993.

<sup>c</sup> Natural Gas Usage Rates from Table A9-12-A, CEQA Air Quality Handbook, SCAQMD, 1993.

<sup>d</sup> Emission Factors from Table A9-12-B, CEQA Air Quality Handbook, SCAQMD, 1993.

<sup>e</sup> The emission factors for NOx in lbs per million cuft of natural gas are 120 for nonresidential uses and 80 for residential uses



Douglas Park  
Approved Project  
Greenhouse Gas Analysis

Emission Source	CO <sub>2</sub> E <sup>c</sup> (Metric Tons)
<b>Existing</b>	
On-road Vehicles <sup>a</sup>	2,743
Electricity <sup>b</sup>	2,775
Natural gas <sup>c</sup>	317
<b>Total</b>	<b>5,835</b>
<b>Revised Project</b>	
On-road Vehicles <sup>a</sup>	109,538
Electricity <sup>b</sup>	22,325
Natural gas <sup>c</sup>	2,989
<b>Total</b>	<b>134,852</b>
<b>Net Increase/Decrease</b>	
Total	129,017
2004 Statewide Total <sup>d</sup>	479,740,000
<b>Net Increase as Percentage of 2004 Statewide Inventory</b>	<b>0.026893%</b>
<p><sup>a</sup> Mobile source values were derived using EMFAC2007 in addition to the California Climate Action Registry General Reporting Protocol; Version 3.1, January 2009.</p> <p><sup>b</sup> Electricity Usage Rates from Table A9-11-A, CEQA Air Quality Handbook, SCAQMD, 1993. Water conveyance energy rates from California Energy Commission Staff Report: California's Water - Energy Relationship. 2005</p> <p><sup>c</sup> Natural Gas Usage Rates from Table A9-12-A, CEQA Air Quality Handbook, SCAQMD, 1993.</p> <p><sup>d</sup> Statewide Greenhouse Gas Emissions Inventory: <a href="http://www.arb.ca.gov/cc/ccei/emsinv/emsinv.htm">http://www.arb.ca.gov/cc/ccei/emsinv/emsinv.htm</a></p> <p><sup>e</sup> All CO<sub>2</sub>e factors were derived using the California Climate Action Registry General Reporting Protocol; Version 3.1, January 2009</p> <p>Sources: Matrix Environmental, 2009.</p>	

Douglas Park  
Approved Project  
Greenhouse Gas Analysis

### Electricity

Land Use	Usage Rate <sup>a</sup>			
	1,000 Sqft	(kWh/sq.ft/yr)	(KWh/year)	MWh/year
<b>Existing</b>				
Office	536.9	12.95	6,952,363	6,952
<b>Total Existing</b>			<b>6,952,363</b>	<b>6,952</b>
<b>Revised Project</b>				
Office	3750.0	12.95	48,562,500	48,563
Retail	250.0	13.55	3,387,500	3,388
Hotel/Motel	400.0	9.95	3,980,000	3,980
<b>Total Revised Project</b>			<b>55,930,000</b>	<b>55,930</b>
<b>Net Change in Electricity Usage</b>			<b>48,977,637</b>	<b>48,978</b>

### Water Conveyance (Water and Wastewater)

	Usage Rate <sup>c</sup>			
	MGD	kWh/MG	(KWh/year)	MWh/year
Water Supply, Conveyance, Treatment, and Distribution	0.35	10,200	1,312,333	1,312
Wastewater Treatment	0.47	2,500	428,294	428
<b>Net Change in Water Power Usage</b>			<b>1,740,627</b>	<b>1,741</b>

GHG	lbs/MWh <sup>b</sup>	lbs	metric tons	CO <sub>2</sub> E (metric tons)
<b>Existing</b>				
CO <sub>2</sub>	878.71	6109110.804	2771.043788	2771.043788
CH <sub>4</sub>	0.0067	46.58083143	0.021128692	0.443702542
N <sub>2</sub> O	0.0037	25.72374273	0.011668084	3.617106013
<b>Revised Project</b>				
CO <sub>2</sub>	878.71	49146250.3	22292.34597	22292.34597
CH <sub>4</sub>	0.0067	374.731	0.169974984	3.569474659
N <sub>2</sub> O	0.0037	206.941	0.093866782	29.09870244
<b>Net</b>				<b>22325.01</b>
CO <sub>2</sub>	878.71	44,566,646	20,215	20,215
CH <sub>4</sub>	0.0067	340	0.15	3.24
N <sub>2</sub> O	0.0037	188	0.09	26

**20,245**

<sup>a</sup> Electricity Usage Rates from Table A9-11-A, CEQA Air Quality Handbook, SCAQMD, 1993.

<sup>b</sup> Electricity Usage Rates from California Energy Commission Staff Report: California's Water - Energy Relationship. 2005

<sup>c</sup> Emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were derived from the California Climate Action Registry General Reporting Protocol; Version 3

Douglas Park  
Approved Project  
Greenhouse Gas Analysis

**Water and Wastewater Generation Factors**

Land Use	Amount	Units	Water			Wastewater		
			AF/Year/Unit	MG/Year/Unit	MG/Year	GPD/Unit	MG/Year/Unit	MG/Year
<b>Existing</b>								
Office	536.9	KSF	0.073	0.024	12.8	100	0.037	19.6
<b>Total Existing</b>					<b>12.8</b>			<b>19.6</b>
<b>Revised Project</b>								
Office	3750.0	KSF	0.073	0.024	89.6	100	0.037	136.9
Retail	250.0	KSF	0.24	0.080	20.0	325	0.119	29.7
Hotel/Motel	400.0	KSF	0.24	0.080	31.9	167	0.061	24.4
<b>Total Revised Project</b>					<b>141.5</b>			<b>190.9</b>
<b>Net Change</b>					<b>128.7</b>			<b>171.3</b>

1 acre foot = 325851.433266421 gallon [US, liquid]

Douglas Park  
Approved Project  
Greenhouse Gas Analysis

### Natural Gas

Land Use	1,000 Sqft	Usage Rate <sup>c</sup> (cu.ft/sq.ft/mo)	Total Natural Gas Usage (cu.ft/mo)	Total Natural Gas Usage (cu.ft/year)	Total Natural Gas Usage (MMBTU/year)
<b>Existing</b>					
Office	536.9	2.0	1,073,724	12,884,688	13,142
<b>Total Existing</b>			<b>1,073,724</b>	<b>12,884,688</b>	<b>13,142</b>
<b>Revised Project</b>					
Office	3750.0	2.0	7,500,000	90,000,000	91,800
Retail	250.0	2.9	725,000	8,700,000	8,874
Hotel/Motel	400.0	4.8	1,920,000	23,040,000	23,501
<b>Total Revised Project</b>			<b>10,145,000</b>	<b>121,740,000</b>	<b>124,175</b>
<b>Net Change</b>			<b>9,071,276</b>	<b>108,855,312</b>	<b>111,032</b>

<sup>a</sup> Natural Gas Usage Rates from Table A9-12-A, CEQA Air Quality Handbook, SCAQMD, 1993.

GHG	Kg/MMBtu <sup>b</sup>	Kg	metric tons	CO <sub>2</sub> E (Metric Tons)
<b>Existing</b>				
CO <sub>2</sub>	53.06	697,334.78	316.31	316.31
CH <sub>4</sub>	0.0059	77.54	0.04	0.74
N <sub>2</sub> O	0.0001	1.31	0.00	0.18
<b>Revised Project</b>				<b>317.23</b>
CO <sub>2</sub>	53.06	6,588,714.89	2,988.59	2,988.59
CH <sub>4</sub>	0.0059	732.63	0.33	6.98
N <sub>2</sub> O	0.0001	12.42	0.01	1.75
<b>Net Change</b>				<b>2,997.31</b>
CO <sub>2</sub>	53.06	5,891,380.11	2,672.28	2,672.28
CH <sub>4</sub>	0.0059	655.09	0.30	6.24
N <sub>2</sub> O	0.0001	11.10	0.01	1.56

**2680.08 Total Annual CO<sub>2</sub>E**

<sup>b</sup> Emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were derived from the California Climate Action Registry General Reporting Protocol; Version 3.1, January 2009.

Douglas Park  
Approved Project  
Greenhouse Gas Analysis

### On Road Mobile Source

Land Use	Daily VMT	Annual VMT <sup>a</sup>
<b>Total Existing</b>	<b>13,315</b>	<b>4,859,975</b>
<b>Total Revised Project</b>	<b>531,793</b>	<b>194,104,445</b>
<b>Net Change</b>	<b>518,478</b>	<b>189,244,470</b>

<sup>a</sup> Multiplied Daily VMT by 365 to get Annual VMT

<sup>b</sup> Factors derived from URBEMIS2007

Los Angeles County CO <sub>2</sub> <b>2010</b> AVG Gram/Mile <sup>c</sup>	<b>548.0511429</b>
Los Angeles County CH <sub>4</sub> <b>2010</b> AVG Gram/Mile <sup>c</sup>	<b>0.036857143</b>
Los Angeles County N <sub>2</sub> O <b>2010</b> AVG Gram/Mile <sup>d</sup>	<b>0.05</b>

GHG	Gram/Mile	Grams	metric tons	CO <sub>2</sub> E (Metric Tons)
<b>Existing</b>				
CO <sub>2</sub>	548.0511429	2,663,514,853.01	2,663.51	2,663.5148530
CH <sub>4</sub>	0.036857143	179,124.79	0.18	3.7616207
N <sub>2</sub> O	0.05	242,998.75	0.24	75.3296125
<b>Approved Project</b>				<b>2,742.6060862</b>
CO <sub>2</sub>	548.05	106,379,162,916	106,379.16	106,379.1629159
CH <sub>4</sub>	0.04	7,154,135	7.15	150.2368404
N <sub>2</sub> O	0.05	9,705,222	9.71	3,008.6188975
<b>Net Change</b>				<b>109,538.0186538</b>
CO <sub>2</sub>	548.05	103,715,648,063	103,716	103,715.6480629
CH <sub>4</sub>	0.04	6,975,010	7	146.4752198
N <sub>2</sub> O	0.05	9,462,224	9	2,933.2892850
				<b>106,795.4</b>

<sup>c</sup> Averaged EMFAC2007 fleet values for 0-65mph

<sup>d</sup> Emission factors for CH<sub>4</sub> and N<sub>2</sub>O were derived from the California Climate Action Registry General Reporting Pr

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**EMFAC2007 Summary**

**Pollutant Name: Carbon Dioxide    Temperature: 60F    Relative Humidity: 50%**

CO2	
Speed	Grams/Mile
0	341.823
5	1199.387
10	913.689
15	722.176
20	592.927
25	508.8
30	452.079
35	415.42
40	394.465
45	386.902
50	391.989
55	410.409
60	444.405
65	498.245
<b>AVG</b>	<b>548.0511429</b>

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	941.697	5140.811	0	0	341.823
5	952.132	1182.76	1712.78	2870.592	2748.56	242.056	1199.387
10	719.611	894.25	1264.503	2392.575	2543.5	204.646	913.689
15	564.5	701.79	975.625	2023.009	2422.4	176.886	722.176
20	459.611	571.646	785.559	1763.668	2348.67	156.274	592.927
25	388.394	483.279	659.251	1662.804	2302.85	141.125	508.8
30	340.644	424.032	575.973	1583.891	2274.3	130.317	452.079
35	310.077	386.104	523.371	1523.339	2257.12	123.131	415.42
40	292.934	364.834	494.255	1479.18	2248.08	119.164	394.465
45	287.21	357.731	484.87	1450.447	2245.58	118.287	386.902
50	292.25	363.985	494.056	1436.88	2249.21	120.646	391.989
55	308.63	384.309	522.993	1438.857	2259.57	126.72	410.409
60	338.263	421.077	575.47	1457.498	2278.51	137.426	444.405
65	384.777	478.792	658.754	1495.005	2309.66	154.339	498.245

CH4	
Speed	Grams/Mile
0	0.039
5	0.088
10	0.065
15	0.05
20	0.04
25	0.033
30	0.029
35	0.026
40	0.024
45	0.023
50	0.023
55	0.023
60	0.025
65	0.028
<b>AVG</b>	<b>0.036857143</b>

**Pollutant Name: Methane    Temperature: 60F    Relative Humidity: 50%**

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	0.162	0.424	0	0	0.039
5	0.065	0.08	0.1	0.355	0.175	0.313	0.088
10	0.05	0.062	0.079	0.207	0.123	0.267	0.065
15	0.041	0.05	0.063	0.111	0.091	0.237	0.05
20	0.032	0.041	0.052	0.067	0.07	0.218	0.04
25	0.027	0.034	0.044	0.055	0.056	0.206	0.033
30	0.023	0.03	0.039	0.045	0.046	0.2	0.029
35	0.021	0.027	0.035	0.039	0.04	0.199	0.026
40	0.019	0.025	0.032	0.034	0.036	0.202	0.024
45	0.018	0.024	0.031	0.032	0.033	0.21	0.023
50	0.018	0.023	0.03	0.032	0.031	0.224	0.023
55	0.019	0.024	0.031	0.033	0.031	0.246	0.023
60	0.02	0.026	0.033	0.037	0.031	0.28	0.025
65	0.022	0.028	0.036	0.043	0.033	0.333	0.028

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Emission Source	CO <sub>2</sub> E <sup>c</sup> (Metric Tons)
<b>Existing</b>	
On-road Vehicles <sup>a</sup>	2,743
Electricity <sup>b</sup>	2,775
Natural gas <sup>c</sup>	317
<b>Total</b>	<b>5,835</b>
<b>Revised Project</b>	
On-road Vehicles <sup>a</sup>	109,538
Electricity <sup>b</sup>	22,325
Natural gas <sup>c</sup>	2,989
<b>Total</b>	<b>134,852</b>
<b>Net Increase/Decrease</b>	
Total	129,017
2004 Statewide Total <sup>d</sup>	479,740,000
<b>Net Increase as Percentage of 2004 Statewide Inventory</b>	<b>0.026893%</b>
<p><sup>a</sup> Mobile source values were derived using EMFAC2007 in addition to the California Climate Action Registry General Reporting Protocol; Version 3.1, January 2009.</p> <p><sup>b</sup> Electricity Usage Rates from Table A9-11-A, CEQA Air Quality Handbook, SCAQMD, 1993. Water conveyance energy rates from California Energy Commission Staff Report: California's Water - Energy Relationship. 2005</p> <p><sup>c</sup> Natural Gas Usage Rates from Table A9-12-A, CEQA Air Quality Handbook, SCAQMD, 1993.</p> <p><sup>d</sup> Statewide Greenhouse Gas Emissions Inventory: <a href="http://www.arb.ca.gov/cc/ccei/emsinv/emsinv.htm">http://www.arb.ca.gov/cc/ccei/emsinv/emsinv.htm</a></p> <p><sup>e</sup> All CO<sub>2</sub>e factors were derived using the California Climate Action Registry General Reporting Protocol; Version 3.1, January 2009</p> <p>Sources: Matrix Environmental, 2009.</p>	

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### Electricity

Land Use	Usage Rate <sup>a</sup>			
	1,000 Sqft	(kWh/sq.ft/yr)	(KWh/year)	MWh/year
<b>Existing</b>				
Office	536.9	12.95	6,952,363	6,952
<b>Total Existing</b>			<b>6,952,363</b>	<b>6,952</b>
<b>Revised Project</b>				
Office	3750.0	12.95	48,562,500	48,563
Retail	250.0	13.55	3,387,500	3,388
Hotel/Motel	400.0	9.95	3,980,000	3,980
<b>Total Revised Project</b>			<b>55,930,000</b>	<b>55,930</b>
<b>Net Change in Electricity Usage</b>			<b>48,977,637</b>	<b>48,978</b>

### Water Conveyance (Water and Wastewater)

	Usage Rate <sup>c</sup>			
	MGD	kWh/MG	(KWh/year)	MWh/year
Water Supply, Conveyance, Treatment, and Distribution	0.35	10,200	1,312,333	1,312
Wastewater Treatment	0.47	2,500	428,294	428
<b>Net Change in Water Power Usage</b>			<b>1,740,627</b>	<b>1,741</b>

GHG	lbs/MWh <sup>b</sup>	lbs	metric tons	CO <sub>2</sub> E (metric tons)
<b>Existing</b>				
CO <sub>2</sub>	878.71	6109110.804	2771.043788	2771.043788
CH <sub>4</sub>	0.0067	46.58083143	0.021128692	0.443702542
N <sub>2</sub> O	0.0037	25.72374273	0.011668084	3.617106013
<b>Revised Project</b>				
CO <sub>2</sub>	878.71	49146250.3	22292.34597	22292.34597
CH <sub>4</sub>	0.0067	374.731	0.169974984	3.569474659
N <sub>2</sub> O	0.0037	206.941	0.093866782	29.09870244
<b>Net</b>				<b>22325.01</b>
CO <sub>2</sub>	878.71	44,566,646	20,215	20,215
CH <sub>4</sub>	0.0067	340	0.15	3.24
N <sub>2</sub> O	0.0037	188	0.09	26

**20,245**

<sup>a</sup> Electricity Usage Rates from Table A9-11-A, CEQA Air Quality Handbook, SCAQMD, 1993.

<sup>b</sup> Electricity Usage Rates from California Energy Commission Staff Report: California's Water - Energy Relationship. 2005

<sup>c</sup> Emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were derived from the California Climate Action Registry General Reporting Protocol; Version 3



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**Water and Wastewater Generation Factors**

<u>Land Use</u>	<u>Amount</u>	<u>Units</u>	<u>Water</u>			<u>Wastewater</u>		
			<u>AF/Year/Unit</u>	<u>MG/Year/Unit</u>	<u>MG/Year</u>	<u>GPD/Unit</u>	<u>MG/Year/Unit</u>	<u>MG/Year</u>
<b>Existing</b>								
Office	536.9	KSF	0.073	0.024	12.8	100	0.037	19.6
<b>Total Existing</b>					<b>12.8</b>			<b>19.6</b>
<b>Revised Project</b>								
Office	3750.0	KSF	0.073	0.024	89.6	100	0.037	136.9
Retail	250.0	KSF	0.24	0.080	20.0	325	0.119	29.7
Hotel/Motel	400.0	KSF	0.24	0.080	31.9	167	0.061	24.4
<b>Total Revised Project</b>					<b>141.5</b>			<b>190.9</b>
<b>Net Change</b>					<b>128.7</b>			<b>171.3</b>

1 acre foot = 325851.433266421 gallon [US, liquid]

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### Natural Gas

Land Use	1,000 Sqft	Usage Rate <sup>c</sup> (cu.ft/sq.ft/mo)	Total Natural Gas Usage (cu.ft/mo)	Total Natural Gas Usage (cu.ft/year)	Total Natural Gas Usage (MMBTU/year)
<b>Existing</b>					
Office	536.9	2.0	1,073,724	12,884,688	13,142
<b>Total Existing</b>			<b>1,073,724</b>	<b>12,884,688</b>	<b>13,142</b>
<b>Revised Project</b>					
Office	3750.0	2.0	7,500,000	90,000,000	91,800
Retail	250.0	2.9	725,000	8,700,000	8,874
Hotel/Motel	400.0	4.8	1,920,000	23,040,000	23,501
<b>Total Revised Project</b>			<b>10,145,000</b>	<b>121,740,000</b>	<b>124,175</b>
<b>Net Change</b>			<b>9,071,276</b>	<b>108,855,312</b>	<b>111,032</b>

<sup>a</sup> Natural Gas Usage Rates from Table A9-12-A, CEQA Air Quality Handbook, SCAQMD, 1993.

GHG	Kg/MMBtu <sup>b</sup>	Kg	metric tons	CO <sub>2</sub> E (Metric Tons)
<b>Existing</b>				
CO <sub>2</sub>	53.06	697,334.78	316.31	316.31
CH <sub>4</sub>	0.0059	77.54	0.04	0.74
N <sub>2</sub> O	0.0001	1.31	0.00	0.18
<b>Revised Project</b>				<b>317.23</b>
CO <sub>2</sub>	53.06	6,588,714.89	2,988.59	2,988.59
CH <sub>4</sub>	0.0059	732.63	0.33	6.98
N <sub>2</sub> O	0.0001	12.42	0.01	1.75
<b>Net Change</b>				<b>2,997.31</b>
CO <sub>2</sub>	53.06	5,891,380.11	2,672.28	2,672.28
CH <sub>4</sub>	0.0059	655.09	0.30	6.24
N <sub>2</sub> O	0.0001	11.10	0.01	1.56

**2680.08 Total Annual CO<sub>2</sub>E**

<sup>b</sup> Emission factors for CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O were derived from the California Climate Action Registry General Reporting Protocol; Version 3.1, January 2009.

Douglas Park  
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Greenhouse Gas Analysis

### On Road Mobile Source

Land Use	Daily VMT	Annual VMT <sup>a</sup>
<b>Total Existing</b>	<b>13,315</b>	<b>4,859,975</b>
<b>Total Revised Project</b>	<b>531,793</b>	<b>194,104,445</b>
<b>Net Change</b>	<b>518,478</b>	<b>189,244,470</b>

<sup>a</sup> Multiplied Daily VMT by 365 to get Annual VMT

<sup>b</sup> Factors derived from URBEMIS2007

Los Angeles County CO <sub>2</sub> 2010 AVG Gram/Mile <sup>c</sup>	<b>548.0511429</b>
Los Angeles County CH <sub>4</sub> 2010 AVG Gram/Mile <sup>c</sup>	<b>0.036857143</b>
Los Angeles County N <sub>2</sub> O 2010 AVG Gram/Mile <sup>d</sup>	<b>0.05</b>

GHG	Gram/Mile	Grams	metric tons	CO <sub>2</sub> E (Metric Tons)
<b>Existing</b>				
CO <sub>2</sub>	548.0511429	2,663,514,853.01	2,663.51	2,663.5148530
CH <sub>4</sub>	0.036857143	179,124.79	0.18	3.7616207
N <sub>2</sub> O	0.05	242,998.75	0.24	75.3296125
<b>Approved Project</b>				<b>2,742.6060862</b>
CO <sub>2</sub>	548.05	106,379,162,916	106,379.16	106,379.1629159
CH <sub>4</sub>	0.04	7,154,135	7.15	150.2368404
N <sub>2</sub> O	0.05	9,705,222	9.71	3,008.6188975
<b>Net Change</b>				<b>109,538.0186538</b>
CO <sub>2</sub>	548.05	103,715,648,063	103,716	103,715.6480629
CH <sub>4</sub>	0.04	6,975,010	7	146.4752198
N <sub>2</sub> O	0.05	9,462,224	9	2,933.2892850
				<b>106,795.4</b>

<sup>c</sup> Averaged EMFAC2007 fleet values for 0-65mph

<sup>d</sup> Emission factors for CH<sub>4</sub> and N<sub>2</sub>O were derived from the California Climate Action Registry General Reporting Pr

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**EMFAC2007 Summary**

**Pollutant Name: Carbon Dioxide    Temperature: 60F    Relative Humidity: 50%**

CO2	
Speed	Grams/Mile
0	341.823
5	1199.387
10	913.689
15	722.176
20	592.927
25	508.8
30	452.079
35	415.42
40	394.465
45	386.902
50	391.989
55	410.409
60	444.405
65	498.245
<b>AVG</b>	<b>548.0511429</b>

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	941.697	5140.811	0	0	341.823
5	952.132	1182.76	1712.78	2870.592	2748.56	242.056	1199.387
10	719.611	894.25	1264.503	2392.575	2543.5	204.646	913.689
15	564.5	701.79	975.625	2023.009	2422.4	176.886	722.176
20	459.611	571.646	785.559	1763.668	2348.67	156.274	592.927
25	388.394	483.279	659.251	1662.804	2302.85	141.125	508.8
30	340.644	424.032	575.973	1583.891	2274.3	130.317	452.079
35	310.077	386.104	523.371	1523.339	2257.12	123.131	415.42
40	292.934	364.834	494.255	1479.18	2248.08	119.164	394.465
45	287.21	357.731	484.87	1450.447	2245.58	118.287	386.902
50	292.25	363.985	494.056	1436.88	2249.21	120.646	391.989
55	308.63	384.309	522.993	1438.857	2259.57	126.72	410.409
60	338.263	421.077	575.47	1457.498	2278.51	137.426	444.405
65	384.777	478.792	658.754	1495.005	2309.66	154.339	498.245

CH4	
Speed	Grams/Mile
0	0.039
5	0.088
10	0.065
15	0.05
20	0.04
25	0.033
30	0.029
35	0.026
40	0.024
45	0.023
50	0.023
55	0.023
60	0.025
65	0.028
<b>AVG</b>	<b>0.036857143</b>

**Pollutant Name: Methane    Temperature: 60F    Relative Humidity: 50%**

Speed MPH	LDA	LDT	MDT	HDT	UBUS	MCY	ALL
0	0	0	0.162	0.424	0	0	0.039
5	0.065	0.08	0.1	0.355	0.175	0.313	0.088
10	0.05	0.062	0.079	0.207	0.123	0.267	0.065
15	0.041	0.05	0.063	0.111	0.091	0.237	0.05
20	0.032	0.041	0.052	0.067	0.07	0.218	0.04
25	0.027	0.034	0.044	0.055	0.056	0.206	0.033
30	0.023	0.03	0.039	0.045	0.046	0.2	0.029
35	0.021	0.027	0.035	0.039	0.04	0.199	0.026
40	0.019	0.025	0.032	0.034	0.036	0.202	0.024
45	0.018	0.024	0.031	0.032	0.033	0.21	0.023
50	0.018	0.023	0.03	0.032	0.031	0.224	0.023
55	0.019	0.024	0.031	0.033	0.031	0.246	0.023
60	0.02	0.026	0.033	0.037	0.031	0.28	0.025
65	0.022	0.028	0.036	0.043	0.033	0.333	0.028