APPENDIX A

AIR QUALITY CALCULATIONS

Summary of Plaza el Segundo Results By Phase

Total On-Site

	CO	NOx	PM10	PM2.5	SOx	VOC
Demolition	22.4	66.1	4.0	2.9	14.1	5.0
Crushing	21.7	68.3	8.0	3.8	12.3	5.6
Grading	36.1	111.0	7.3	4.8	21.0	8.3
Building	1.1	1.8	0.2	0.2	0.0	0.3
Arch Coating and Paving	16.4	44.5	1.8	1.7	0.0	1.7
Localized Significance Threshold*	***710***	***279***	***10.4***	***6***	***105***	***75***
Exceed Significance?	NO	NO	NO	NO	NO	NO

* This analysis is based on the most the LSTs. LSTs devrived by linear regression from App. C of the Methodology Paper for applicable LSTs.

Plaza el Segundo Phase 1B - Demolition Phase

	Construction Activity		
	Demolition of Existing	40,000	Square Foot Structure[a]
Demolition Schedule -	**45 days[a]**	**Crew Size**	10

Equipment Type[a,b]	**No. of Equipment**	**hr/day**
Excavators	4	7.2
Off-Highway Trucks	2	7.2
Tractors/Loaders/Backhoes	2	7.2

Construction Equipment Emission Factors

Equipment Type[c]	**CO** lb/hr	**NOx** lb/hr	**PM10** lb/hr	**SOx** lb/hr	**VOC** lb/hr
Excavators	0.469	1.029	0.055	0.243	0.086
Off-Highway Trucks	0.607	2.525	0.090	0.494	0.175

Building Dimensions

Description[a]	**Width of Building** ft	**Length of Building** ft	**Height of Building** ft
Total Project	200	200	50

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[d]	**Mean Wind Speed[e]** mph	**Moisture Content[f]**	**Debris Handled[g]** ton/day
0.35	10	2.0	625

Construction Vehicle (Mobile Source) Emission Factors

	CO lb/mile	**NOx** lb/mile	**PM10** lb/mile	**SOx** lb/mile	**VOC[p]** lb/mile	**PM2.5** lb/mile
Heavy-Duty Truck[h]	0.024076	0.025084	0.000910	0.00002626	0.00323145	0.000789

Construction Worker Number of Trips and Trip Length

Vehicle	**No. of One-Way Trips/Day**	**Trip Length (miles)**
Haul Truck	26	0.1
Water Truck	3	1.3

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/BHP-hr) x No. of Equipment x Work Day (hr/day) x Equipment rating (hp) x Load Factor (%/100) = Onsite Construction Emissions (lb/day

Equipment Type	**CO** lb/day	**NOx** lb/day	**PM10** lb/day	**SOx** lb/hr	**VOC** lb/hr
Excavators	13.51	29.64	1.58	7.00	2.48
Off-Highway Trucks	8.74	36.36	1.30	7.11	2.52
Total	**22.2**	**66.0**	**2.9**	**14.1**	**5.0**

Incremental Increase in Onsite Fugitive Dust Emissions from Construction Equipment

Material Handling[k]: (0.0032 x Aerodynamic Particle Size Multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x debris handled (ton/day)) x (1 - control efficiency) = PM10 Emissions (lb/day

Description	**Control Efficiency** %	**PM10 Mitigated[m]** lb/day
Material Handling (Demolition)	68	0.55
Material Handling (Debris)	68	0.55
Total		**1.10**

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day

Vehicle	**CO** lb/day	**NOx** lb/day	**PM10** lb/day	**SOx** lb/day	**VOC** lb/day
Offsite (Haul Truck)	0.13	0.13	0.00	0.00	0.02
Total	**0.13**	**0.13**	**0.00**	**0.00**	**0.02**

Total Incremental Localized Emissions from Construction Activities

Sources	**CO** lb/day	**NOx** lb/day	**PM10** lb/day	**SOx** lb/day	**VOC** lb/day
On-site Emissions (Mitigated)	**22.4**	**66.1**	**4.0**	**14.1**	**5.0**
Significance Threshold[n]	***710***	***279***	***10.4***	***105***	***75***
Exceed Significance?	**NO**	**NO**	**NO**	**NA**	**NA**

Plaza el Segundo Phase 1B - Demolition Phase

Combustion and Fugitive Summary	**PM2.5 Fraction[o]**	**PM10**	**PM2.5**	**Percentage**
		lb/day	lb/day	**Contribution**
Combustion	0.92	2.9	2.65	92.0%
Fugitive	0.21	1.10	0.23	8.0%
Total		**4.0**	**2.9**	
Significance Threshold[n]			**6**	
Exceed Significance?			**NO**	

Notes:

a) Based on builders general construction schedule.

b) Equipment Emission Factors (EFs) from "Off-Road Model EF" worksheet equipment name might be modified to match sheet to look up EFs automatically

c) SCAB values provided by the ARB, Aug 2004. Assumed all equipment is diesel fueled.

d) USEPA, AP-42, Nov 2006, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 µm

e) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.

f) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28

g) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, p 2-28. Debris weight to area ratio = 0.046 ton/sq ft (40,000 sq ft x 0.046 ton/sq ft)/45 days = 625 ton/day

h) CARB, EMFAC2007 (version 2.3) Burden Model, Peak Emissions Inventory, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr x 2,000 lb/ton)/VMT

i) Assumed 30 cubic yd truck capacity [(625 tons/day x 2,000 lb/ton x cyd/1,620 lb = 772 cyd)/30 cyd/truck = 3 one-way truck trips/day, where building debris density is assumed to be 1,620 lb/cyd] Mulitple trucks may be used.

j) Assumed trucks travel 0.1 mile through project site.

k) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, equation 2-13, p 2-28. EPA suggusts using the material handling equation for demolition emission estimates.

l) EPA suggusts using the material handling equation for demolition emission estimates.

m) Includes watering at least three times a day per Rule 403 (68% control efficiency)

n) Based on a linear regression from App. C of the Methodology Paper for applicable LSTs.

o) ARB's CEIDARS database PM2.5 fractions - contruction dust category for fugitive and diesel vehicle exhaust category for combustion.

p) VOC calculations are based on EMFAC 2007 ROG values, "VOC" must be utilized for pivot table.

Plaza el Segundo - Crusher Emissions

	Construction Activity	Crushing	
	Site Preparation	6,300	Cubic Yards[a]
Site Preparation Schedule -	**160**	**days[a]**	**Crew Size** 3

Equipment Type[a,b]	**No. of Equipment**	**hr/day**
Crushing/Proc. Equipment	1	7.2
Off-Highway Trucks	2	7.2
Rubber Tired Dozers	1	7.2

Construction Equipment Emission Factors

Equipment Type[c]	**CO** lb/hr	**NOx** lb/hr	**PM10** lb/hr	**SOx** lb/hr	**VOC** lb/hr
Crushing/Proc. Equipment	0.836	1.703	0.125	0.268	0.217
Off-Highway Trucks	0.607	2.525	0.090	0.494	0.175
Rubber Tired Dozers	0.952	2.728	0.108	0.452	0.204

Fugitive Dust Clearing Parameters

Silt Content[d]	**Moisture Content[d]**
6.9	7.9

Fugitive Dust Stockpiling Parameters

Silt Content[d]	**Precipitation Days[e]**	**Mean Wind Speed Percent[f]**	**TSP Fraction**	**Area[g] (acres)**
6.9	10	100	0.5	0.145

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[h]	**Mean Wind Speed[i]** mph	**Moisture Content[d]**	**Debris Handled[a]** cy	**Debris Handled[a]** ton/day	**Debris Handled[a]** lb/day
0.35	10	7.9	6,300	159,469	318,937,500

Construction Vehicle (Mobile Source) Emission Factors

	CO lb/mile	**NOx** lb/mile	**PM10** lb/mile	**SOx**	**VOC[t]**	**PM2.5** lb/mile
Heavy-Duty Truck[k]	0.024076	0.025084	0.000910	0.00002626	0.00323145	0.000789

Construction Worker Number of Trips and Trip Length

Vehicle	**No. of One-Way Trips/Day**	**One WayTrip Length (miles)**
Haul Truck[l]	10	0.10
Water Truck[m]	3	0.2

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/BHP-hr) x No. of Equipment x Work Day (hr/day) x Equipment rating (hp) x Load Factor (%/100) = Onsite Construction Emissions (lb/day)

Equipment Type	**CO** lb/day	**NOx** lb/day	**PM10** lb/day	**SOx** lb/hr	**VOC** lb/hr
Crushing/Proc. Equipment	6.02	12.26	0.90	1.93	1.56
Off-Highway Trucks	8.74	36.36	1.30	7.11	2.52
Rubber Tired Dozers	6.85	19.64	0.78	3.25	1.47
Total	**21.6**	**68.3**	**3.0**	**12.3**	**5.6**

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Clearing[n]: PM10 Emissions (lb/day) = 0.75 x (silt content$^{1.5}$)/(moisture content$^{1.4}$) x hours operated (hr/day) x (1 - control efficiency)

Storage Piles[o]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[p]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton) (1 - control efficiency)

Description	**Control Efficiency** %	**PM10[q]** lb/day
Clearing	0	0.00
Storage Piles	68	1.83
Material Handling	95	3.21
Total		**5.04**

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	**CO** lb/day	**NOx** lb/day	**PM10** lb/day	**SOx** lb/day	**VOC** lb/day	**PM2.5** lb/day
Haul Truck	0.05	0.05	0.00	0.00	0.01	0.00
Water Truck	0.03	0.03	0	0	0	0
Total	**0.08**	**0.08**	**0.00**	**0.00**	**0.01**	**0.00**

Plaza el Segundo - Crusher Emissions

Total Incremental Localized Emissions from Construction Activities					
	CO	**NOx**	**PM10**	**SOx**	**VOC**
Sources	lb/day	lb/day	lb/day	lb/day	lb/day
On-site Emissions	**21.7**	**68.3**	**8.0**	**12.3**	**5.6**
Significance Threshold[r]	***710***	***279***	***10.4***	***105***	***75***
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**

Combustion and Fugitive Summary	PM2.5 Fraction[s]	PM10	PM2.5
		lb/day	lb/day
Combustion	0.92	3.0	2.7
Fugitive	0.21	5.0	1.1
Total		**8.0**	**3.8**
Significance Threshold[r]			**6**
Exceed Significance?			**NO**

Notes:

a) Based on builders general construction schedule.

b) Equipment Emission Factors (EFs) from "Off-Road Model EF" worksheet equipment name might be modified to match sheet to look up EFs automatically

c) SCAB values provided by the ARB, Aug 2004. Assumed all equipment is diesel fueled.

d) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor Equations

e) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993

f) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph

g) Assumed storage piles are 0.21 acres in size

h) USEPA, AP-42, Nov 2006, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 µm

i) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.

j) Assuming 6,300 cubic yards of dirt handled [(6,300 cyd x 2,500 lb/cyd)/160 days = 318,937,500 lb/day]

k) CARB, EMFAC2007 (version 2.3) Burden Model, Winter 2008, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr x 2,000 lb/ton)/VMT

l) Assumed 30 cubic yd truck capacity 6,300 cyd of dirt and 159468.75 cyd of debris [(165,769 cyd x truck/30 cyd)/160 days = 10 one-way truck trips]. Assumed haul truck travels 0.1 miles through facility

m) Assumed six foot wide water truck traverses over 6,300 square feet of disturbed area

n) USEPA, AP-42, July 1998, Table 11.9-1, Equation for bulldozer, overburden, ≤ 10 µm

o) USEPA, AP-42, Nov 2006, Section 13.2.4 Aggretate Handling and Storage Piles, Equation 1

p) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12

q) Includes watering at least three times a day per Rule 403 (68% control efficiency). 95% control efficiency for crusher spray system.

r) Illustration purpose showing the most stringent LSTs. Please consult App. C of the Methodology Paper for applicable LSTs.

s) ARB's CEIDARS database PM2.5 fractions - construction dust category for fugitive and diesel vehicle exhaust category for combustion.

t) VOC calculations are based on EMFAC 2007 ROG values, "VOC" must be utilized for pivot table.

Five Acre Site Example - Grading Phase

Construction Activity

	Grading	196,021	Square Feet[a]
Grading Schedule -	**30**	**days[a]**	**Crew Size** 8

Equipment Type[a,b]	**No. of Equipment**	**hr/day**
Excavators	2	7.2
Rubber Tired Dozers	1	7.2
Scrapers	4	7.2

Construction Equipment Emission Factors

Equipment Type[c]	**CO** lb/hr	**NOx** lb/hr	**PM10** lb/hr	**SOx** lb/hr	**VOC** lb/hr
Excavators	0.469	1.029	0.055	0.243	0.086
Rubber Tired Dozers	0.952	2.728	0.108	0.452	0.204
Scrapers	0.748	2.625	0.105	0.496	0.190

Fugitive Dust Grading Parameters

Vehicle Speed (mph)[d]	**Vehicle Miles Traveled[e]**
3	0.11

Fugitive Dust Stockpiling Parameters

Silt Content[f]	**Precipitation Days[g]**	**Mean Wind Speed Percent[h]**	**TSP Fraction**	**Area[i] (acres)**
6.9	10	100	0.5	0.21

Fugitive Dust Material Handling

Aerodynamic Particle Size Multiplier[j]	**Mean Wind Speed[k]** mph	**Moisture Content[f]**	**Dirt Handled[a]** cy	**Dirt Handled[l]** lb/day
0.35	10	7.9	1,481	123,417

Construction Vehicle (Mobile Source) Emission Factors

	CO lb/mile	**NOx** lb/mile	**PM10** lb/mile	**SOx** lb/mile	**VOC[v]** lb/mile	**PM2.5** lb/mile
Heavy-Duty Truck[m]	0.024076	0.025084	0.000910	0.00002626	0.00323145	0.000789

Construction Worker Number of Trips and Trip Length

Vehicle	**No. of One-Way Trips/Day**	**One WayTrip Length (miles)**
Haul Truck[n]	2	0.1
Water Truck[o]	3	6.4

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/BHP-hr) x No. of Equipment x Work Day (hr/day) x Equipment rating (hp) x Load Factor (%/100) = Onsite Construction Emissions (lb/day)

Equipment Type	**CO** lb/day	**NOx** lb/day	**PM10** lb/day	**SOx** lb/day	**VOC** lb/day
Excavators	6.75	14.82	0.79	3.50	1.24
Rubber Tired Dozers	6.85	19.64	0.78	3.25	1.47
Scrapers	21.54	75.60	3.02	14.28	5.47
Total	**35.2**	**110.1**	**4.6**	**21.0**	**8.2**

Incremental Increase in Fugitive Dust Emissions from Construction Operations

Equations:

Gradingp: PM10 Emissions (lb/day) = 0.60 x 0.051 x mean vehicle speed$^{2.0}$ x VMT x (1 - control efficiency)

Storage Piles[q]: PM10 Emissions (lb/day) = 1.7 x (silt content/1.5) x ((365-precipitation days)/235) x wind speed percent/15 x TSP fraction x Area) x (1 - control efficiency)

Material Handling[r]: PM10 Emissions (lb/day) = (0.0032 x aerodynamic particle size multiplier x (wind speed (mph)/5)$^{1.3}$/(moisture content/2)$^{1.4}$ x dirt handled (lb/day)/2,000 (lb/ton) (1 - control efficiency)

Description	**Control Efficiency** %	**Unmitigated PM10[s]** lb/day
Earthmoving	68	0.01
Storage Piles	68	2.65
Material Handling	68	0.01
Total		**2.67**

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

Vehicle	**CO** lb/day	**NOx** lb/day	**PM10** lb/day	**SOx** lb/day	**VOC** lb/day
Haul Truck	0.01	0.01	0.00	0.00	0.00
Water Truck	0.92	0.96	0.03	0	0.12
Total	**0.93**	**0.97**	**0.03**	**0.00**	**0.12**

Five Acre Site Example - Grading Phase

Total Incremental Localized Emissions from Construction Activities					
	CO	**NOx**	**PM10**	**SOx**	**VOC**
Sources	lb/day	lb/day	lb/day	lb/day	lb/day
On-site Emissions	**36.1**	**111.0**	**7.3**	**21.0**	**8.3**
Significance Threshold[t]	***710***	***279***	***10.4***	***105***	***75***
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**

Combustion and Fugitive Summary	PM2.5 Fraction[u]	PM10	PM2.5	Percentage
		lb/day	lb/day	Contribution
Combustion	0.92	4.6	4.3	88.4%
Fugitive	0.21	2.7	1	11.6%
Total		**7.3**	**4.8**	
Significance Threshold[t]			**6**	
Exceed Significance?			**NO**	

Notes:

a) Based on builders general construction schedule.

b) Equipment Emission Factors (EFs) from "Off-Road Model EF" worksheet equipment name might be modified to match sheet to look up EFs automatically

c) SCAB values provided by the ARB, Aug 2004. Assumed all equipment is diesel fueled.

d) Caterpillar Performance Handbook, Edition 33, October 2003 Operating Speeds, p 2-3.

e) Assuming 1,481 cubic yards of dirt handled [(1,481 cyd x 2,500 lb/cyd)/30 days = 123,417 lb/day]

f) USEPA, AP-42, July 1998, Table 11.9-3 Typical Values for Corection Factors Applicable to the Predictive Emission Factor Equations

g) Table A9-9-E2, SCAQMD CEQA Air Quality Handbook, 1993

h) Mean wind speed percent - percent of time mean wind speed exceeds 12 mph. At least one meteorological site recorded wind speeds greater than 12 mph over a 24-hour period in 1981.

i) Assumed storage piles are 0.21 acres in size

j) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, p 13.2.4-3 Aerodynamic particle size multiplier for < 10 µm

k) Mean wind speed - maximum of daily average wind speeds reported in 1981 meteorological data.

l) Assuming 1,481 cubic yards of dirt handled [(1,481 cyd x 2,500 lb/cyd)/30 days = 123,417 lb/day]

m) CARB, EMFAC2002 (version 2.2) Burden Model, Winter 2005, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr x 2,000 lb/ton)/VMT

n) Assumed 30 cubic yd truck capacity 1,481 cyd of dirt [(1,481 cyd x truck/30 cyd)/30 days = 2 one-way truck trips/day]. Assumed haul truck travels 0.1 miles through facility

o) Assumed six foot wide water truck traverses over 196,021 square feet of disturbed area

p) USEPA, AP-42, July 1998, Table 11.9-1, Equation for Site Grading ≤ 10 µm

q) USEPA, AP-42, Jan 1995, Section 13.2.4 Aggretate Handling and Storage Piles, Equation 1

r) USEPA, Fugitive Dust Background Document and Technical Information Document for Best Available Control Measures, Sept 1992, EPA-450/2-92-004, Equation 2-12

s) Includes watering at least three times a day per Rule 403 (68% control efficiency).

t) Illustration purpose showing the most stringent LSTs. Please consult App. C of the Methodology Paper for applicable LSTs.

u) ARB's CEIDARS database PM2.5 fractions - contruction dust category for fugitive and diesel vehicle exhaust category for combustion.

v) VOC calculations are based on EMFAC 2007 ROG values, "VOC" must be utilized for pivot table.

Plaza el Segundo - Emissions from Building

	Construction Activity		
	Building	70,000	Square Foot Structure[a]
Construction Schedule		**Crew Size**	28

Equipment Type[a,b]	**No. of Equipment**	**hr/day**
Forklifts	1	4.0
Generator Sets	1	0.0
Other Construction Equipment	1	0.0

Construction Equipment Combustion Emission Factors

	CO	**NOx**	**PM10**	**SOx**	**VOC**
Equipment Type[c]	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Forklifts	0.254	0.432	0.048	0.000	0.074
Generator Sets	0.315	0.635	0.047	0.001	0.090
Other Construction Equipment	0.534	1.336	0.063	0.223	0.115

Construction Vehicle (Mobile Source) Emission Factors

	CO	**NOx**	**PM10**	**SOx**	**VOC[i]**	**PM2.5**
	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile
Heavy-Duty Truck[d]	0.024076	0.025084	0.000910	0.00002626	0.00323145	0.000789

Construction Worker Number of Trips and Trip Length

Vehicle	**No. of One-Way Trips/Day**	**Trip Length (miles)**
Haul Truck[l]	14	0.10
Flatbed Truck[a,e]	8	0.10
Water Truck[f]	0	6.4

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/BHP-hr) x No. of Equipment x Work Day (hr/day) x Equipment rating (hp) x Load Factor (%/100) = Onsite Construction Emissions (lb/day)

	CO	**NOx**	**PM10**	**SOx**	**VOC**
Equipment Type	lb/day	lb/day	lb/day	lb/day	lb/day
Forklifts	1.02	1.73	0.19	0.00	0.30
Generator Sets	0.00	0.00	0.00	0.00	0.00
Other Construction Equipment	0.00	0.00	0.00	0.00	0.00
Total	**1.0**	**1.7**	**0.2**	**0.0**	**0.3**

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

	CO	**NOx**	**PM10**	**SOx**	**VOC**	**PM2.5**
Vehicle	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Haul Truck	0.07	0.07	0.00	0.00	0.01	0.00
Flatbed Truck	0.04	0.04	0.00	0.00	0.00	0.00
Water Truck	0.00	0.00	0.00	0.00	0.00	0.00
Total	**0.04**	**0.04**	**0.00**	**0.00**	**0.00**	**0.00**

Total Incremental Combustion Emissions from Construction Activities

	CO	**NOx**	**PM10**	**SOx**	**VOC**
Sources	lb/day	lb/day	lb/day	lb/day	lb/day
On-Site Emissions	**1.1**	**1.8**	**0.2**	**0.0**	**0.3**
Significance Threshold[g]	***710***	***279***	***10.4***	***105***	***75***
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**

Combustion and Fugitive Summary	**PM2.5 Fraction[h]**	**PM10**	**PM2.5**	**Percentage**
		lb/day	lb/day	**Contribution**
Combustion	0.92	0.2	0.2	100.0%
Fugitive	0.21	0	0	0.0%
Total		**0.2**	**0.2**	
Significance Threshold[g]			**6**	
Exceed Significance?			**NO**	

Notes:

a) Based on builders general construction schedule.

b) Equipment Emission Factors (EFs) from "Off-Road Model EF" worksheet equipment name might be modified to match sheet to look up EFs automatically

c) SCAB values provided by the ARB, Aug 2004. Assumed all equipment is diesel fueled.

d) CARB, EMFAC2002 (version 2.2) Burden Model, Winter 2005, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr x 2,000 lb/ton)/VMT

e) Assumed haul truck travels 0.29 miles through facility

f) Assumed six foot wide water truck traverses over 200,000 square feet of disturbed area

g) Illustration purpose showing the most stringent LSTs. Please consult App. C of the Methodology Paper for applicable LSTs.

h) ARB's CEIDARS database PM2.5 fractions - contruction dust category for fugitive and diesel vehicle exhaust category for combustion.

i) VOC calculations are based on EMFAC 2007 ROG values, "VOC" must be utilized for pivot table.

Plaza el Segundo - Emissions Asphalt Paving

Combined Crews 10, 11		**Construction Activity**		
		Asphalt Paving		
Construction Schedule -	**30**	**days[a]**	**Crew Size**	13

Equipment Type[a,b]	**No. of Equipment**	**hr/day**
Off-Highway Trucks	1	0.0
Other Construction Equipment	1	4.0
Rollers	1	0.0
Rubber Tired Dozers	2	7.0

Construction Equipment Combustion Emission Factors

	CO	**NOx**	**PM10**	**SOx**	**VOC**
Equipment Type[c]	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
Off-Highway Trucks	0.607	2.525	0.090	0.494	0.175
Other Construction Equipment	0.534	1.336	0.063	0.223	0.115
Rollers	0.360	0.648	0.046	0.139	0.068
Rubber Tired Dozers	0.952	2.728	0.108	0.452	0.204

Construction Vehicle (Mobile Source) Emission Factors

	CO	**NOx**	**PM10**	**SOx**	**VOC[i]**	**PM2.5**
	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile	lb/mile
Heavy-Duty Truck[d]	0.024076	0.025084	0.000910	0.00002626	0.00323145	0.000789

Construction Worker Number of Trips and Trip Length

Vehicle	**No. of One-Way Trips/Day**	**Trip Length (miles)**
Delivery Truck[e]	4	0.1
Water Truck[f]	3	6.4

Incremental Increase in Onsite Combustion Emissions from Construction Equipment

Equation: Emission Factor (lb/BHP-hr) x No. of Equipment x Work Day (hr/day) x Equipment rating (hp) x Load Factor (%/100) = Onsite Construction Emissions (lb/day)

	CO	**NOx**	**PM10**	**SOx**	**VOC**
Equipment Type	lb/day	lb/day	lb/day	lb/day	lb/day
Off-Highway Trucks	0.00	0.00	0.00	0.00	0.00
Other Construction Equipment	2.14	5.34	0.25	0.89	0.46
Rollers	0.00	0.00	0.00	0.00	0.00
Rubber Tired Dozers	13.33	38.19	1.51	6.33	2.86
Total	**15.5**	**43.5**	**1.8**	**7.2**	**3.3**

Incremental Increase in Onsite Combustion Emissions from Onroad Mobile Vehicles

Equation: Emission Factor (lb/mile) x No. of One-Way Trips/Day x 2 x Trip length (mile) = Mobile Emissions (lb/day)

	CO	**NOx**	**PM10**	**SOx**	**VOC**	**PM2.5**
Vehicle	lb/day	lb/day	lb/day	lb/day	lb/day	lb/day
Delivery Truck	0.02	0.02	0.00	0.00	0.00	0.00
Water Truck	0.92	0.96	0.03	0.00	0.00	0.03
Total	**0.94**	**0.98**	**0.03**	**0.00**	**0.00**	**0.03**

Total Incremental Combustion Emissions from Construction Activities

	CO	**NOx**	**PM10**	**SOx**	**VOC**
Sources	lb/day	lb/day	lb/day	lb/day	lb/day
On-Site Emissions	**16.4**	**44.5**	**1.8**	**7.2**	**3.3**
Significance Threshold[g]	***710***	***279***	***10.4***	***105***	***75***
Exceed Significance?	**NO**	**NO**	**NO**	**NO**	**NO**

Combustion and Fugitive Summary	**PM2.5 Fraction[h]**	**PM10**	**PM2.5**
		lb/day	lb/day
Combustion	0.92	1.8	1.7
Fugitive	0.21	0	0
Total		**1.8**	**1.7**
Significance Threshold[g]			**6**
Exceed Significance?			**NO**

Notes:

a) Based on builders general construction schedule.

b) Equipment Emission Factors (EFs) from "Off-Road Model EF" worksheet equipment name might be modified to match sheet to look up EFs automatically

c) SCAB values provided by the ARB, Aug 2004. Assumed all equipment is diesel fueled.

d) CARB, EMFAC2002 (version 2.2) Burden Model, Winter 2005, 75 F, 40% RH: EF, lb/yr = (EF, ton/yr x 2,000 lb/ton)/VMT

e) Assumed haul truck travels 0.29 miles through facility

f) Assumed six foot wide water truck traverses over 200,000 square feet of disturbed area

g) Illustration purpose showing the most stringent LSTs. Please consult App. C of the Methodology Paper for applicable LSTs.

h) ARB's CEIDARS database PM2.5 fractions - contruction dust category for fugitive and diesel vehicle exhaust category for combustion.

i) VOC calculations are based on EMFAC 2007 ROG values, "VOC" must be utilized for pivot table.