APPENDIX H

AIR QUALITY & GHG DATA AND HEALTH RISK ASSESSMENT

APPENDIX H1:
AIR QUALITY AND GREENHOUSE GAS EMISSIONS DATA

Terraces of Lafayette - Project Description

Location: 3233 Deer Hill Road, Lafayette, Ca

Contra Costa County
Climate Zone 4
Buildout year 2014

		Procurement status	15.9%	33%
PG&E:			2010	2020
		CO2	641.3450594	531.6751
		CH4	0.029	0.029
		N2O	0.011	0.011

Note: 2020 CO2 intensity based on PG&E's Current Renewable Procurement Status: http://www.cpuc.ca.gov/PUC/energy/Renewables/index.htm

Land Use

	Site Acreage		22.7	14.1 unit/acre	
Project:	Land Use Category	Units	Acreage	Building Sqft	Population
	Apartments:	315	18.85	346,645	658

	Weekday	Weekday	Weekend	Average Trip Length
				All trip
	Trips	Trip Rate	Trip Rate	purposes
	2,032	6.45	Default	10.1

Asphalt Surfaces	Units	Acreage	Building Sqft
Carports	63,902	1.47	
Driveways	104,000	2.39	(estimate from site plan)
Total		3.85	

Note: Gas fireplaces assumed in accordance with BAAQMD Regulation 6, Rule 3, Woodburning Devices

Existing:	Units	Acreage	Building Sqft
Single-Family/Office			5,000
Paved Surfaces	27,000	0.6198	

Construction

Construction: 15 months

See Phasing Assumptions
demo volumes : see asphalt weight + 5,000 sqft

Haul volumes

300,000 cubic yards export 10 CY trucks
30,000 trucks
152 trucks/day 303 truck trips
13 miles one-way
Adjusted export volume to account for smaller trucks (10 CY v. 16 CY)
480,000 cy

Note: Bug in CalEEMod calculates PM10 Fugitive dust for hauling over entire Site Preparation phase as if it occurs in 1 day.

Correction PM10 Haul FD:	1654.81	8.36	lbs/day	Exhaust	20.3
	Total PM10	28.66	lbs/day		

Construction Equipment: Default List

Worksheet - CalEEMOD Maximum to Average Daily Construction Emissions

ANNUAL	ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Year	tons/yr									
2013	3.57	32.91	19.87	0.05	1.99	1.33	3.32	1.39	1.33	2.72
2014	6.11	3.77	4.02	0.01	0.29	0.26	0.55	0.01	0.26	0.27
Total	9.68	36.68	23.89	0.06	2.28	1.59	3.87	1.4	1.59	2.99

Total Construction Days 437.8

Bug in CalEEmod calculates PM10 fugitive dust from haul as if all trucks occurred on 1 day.

* For reporting purposes Fugitive PM10 is corrected for hauling error.

Average Daily Construction Emissions (lbs/day)

	ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total	44.22	167.57	109.14	0.27	10.41	7.26	17.67	6.40	7.26	13.66
Threshold	54	54	NA	NA	BCM	82	NA	BCM	54	NA

Fugitive Dust Excluded from BAAQMD's daily thresholds. BAAQMD's Basic Control Measures (BCM) required.

Worksheet - CalEEMOD Maximum to Average Daily Construction Emissions - Mitigated

ANNUAL	ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Year	tons/yr									
2013	2.99	26.68	19.75	0.05	1.99	1.14	3.13	0.66	1.14	1.81
2014	5.92	2.36	4.03	0.01	0.26	0.19	0.45	0.01	0.19	0.2
Total	8.91	29.04	23.78	0.06	2.25	1.33	3.58	0.67	1.33	2.01

Total Construction Days 0

Bug in CalEEmod calculates PM10 fugitive dust from haul as if all trucks occurred on 1 day.

* For reporting purposes Fugitive PM10 is corrected for hauling error.

Average Daily Construction Emissions (lbs/day)

	ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total	40.70	132.66	108.63	0.27	10.27	6.08	16.35	3.06	6.08	9.18
Threshold	54	54	NA	NA	BCM	82	NA	BCM	54	NA

Worksheet - CalEEMOD Maximum to Average Daily Construction Emissions (ONSITE EMISSIONS)

ONSITE

ANNUAL		ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Year		tons/yr	Mitigated w/ Tier 3 equipment								
2013											
Onsite Demolition	1	0.02	0.12	0.14	0	0	0.01	0.01	0	0.01	0.01
Onsite Demolition	2	0.02	0.12	0.14	0	0	0.01	0.01	0	0.01	0.01
Onsite Site Preparation		0.4	2.53	2.66	0	0.78	0.17	0.95	0.42	0.17	0.59
OnsiteGrading		0.4	2.59	2.92	0.01	0.29	0.18	0.47	0.12	0.18	0.3
Onsite Building		0.18	1.05	1.27	0		0.09	0.09		0.09	0.09
total Onsite 2013		*1.02*	*6.41*	*7.13*	*0.01*	*1.07*	*0.46*	*1.53*	*0.54*	*0.46*	*1*
2013											
Onsite Building		0.19	1.07	1.3	0		0.09	0.09		0.09	0.09
Onsite Paving		0.12	0.69	0.85	0		0.07	0.07		0.07	0.07
Onsite Coating		5.43	0.07	0.08	0		0.01	0.01		0.01	0.01
Total Onsite 2014		*5.74*	*1.83*	*2.23*	*0*	*0*	*0.17*	*0.17*	*0*	*0.17*	*0.17*
Total		6.76	8.24	9.36	0.01	1.07	0.63	1.7	0.54	0.63	1.17

	approximation of days in 2013 v. 2014		
Total Construction Days	437.8	2013	264
		2014	173.8

Average Daily Construction Emissions (lbs/day)

	ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total	30.88	37.64	42.76	0.05	4.89	2.88	7.77	2.47	2.88	5.34
Threshold	54	54	NA	NA	BCM	82	NA	BCM	54	NA

Fugitive Dust Excluded from BAAQMD's daily thresholds. BAAQMD's Basic Control Measures (BCM) required.

OFFSITE

ANNUAL		ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Year		tons/yr	Mitigated w/ Tier 3 equipment								
2013											
Offsite Demolition	1	0	0.01	0.01	0	0.00	0	0.00	0	0	0
Offsite Demolition	2	0	0.01	0.01	0	0.00	0	0.00	0	0	0
Offsite Site Preparation		1.79	19.7	10.86	0.03	0.67	0.67	1.34	0.11	0.67	0.78
Offsite Grading		0.01	0.01	0.12	0	0.02	0	0.02	0	0	0
Offsite Building		0.17	0.54	1.63	0	0.21	0.02	0.23	0.01	0.02	0.03
total Offsite 2013		1.97	20.27	12.63	0.03	0.90	0.69	1.59	0.12	0.69	0.81
2013											
Offsite Building		0.16	0.51	1.52	0	0.22	0.02	0.24	0.01	0.02	0.03
Offsite Paving		0.01	0.01	0.07	0	0.01	0	0.01	0	0	0
Offsite Coating		0.02	0.02	0.21	0	0.03	0	0.03	0	0	0
Total Offsite 2014		0.19	0.54	1.8	0	0.26	0.02	0.28	0.01	0.02	0.03
Total		2.16	20.81	14.43	0.03	1.16	0.71	1.87	0.13	0.71	0.84

Bug in CalEEmod calculates PM10 fugitive dust from haul as if all trucks occurred on 1 day.

* For reporting purposes Fugitive PM10 is corrected for hauling error.

Average Daily Construction Emissions (lbs/day)

	ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Total	9.87	95.07	65.92	0.14	5.29	3.24	8.54	0.59	3.24	3.84
Threshold	54	54	NA	NA	BCM	82	NA	BCM	54	NA

Energy

	Title 24 Electricity KWhr/size/year	Non-Title 24 Electricity KWhr/size/year	Lighting Energy KWh/size/year	Title 24 Natural Gas KBTU/size/year	Non-Title 24 Natural Gas KBTU/size/year
Apartments	357.95	2,399.07	876.36	12,816.59	2,764
315	112,754	755,707	276,053	4,037,226	870,660

	Unmitigated	Mitigated
Electricity	1,144,515	1,031,760
Natural Gas	4,907,886	870,660

Changes to the CalEEMod Defaults - Fleet Mix 2014

Countywide fleet mix not applicable at a project level:

Default	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH	
FleetMix	0.51383	0.13697	0.20549	0.08032	0.01291	0.00618	0.01016	0.01588	0.00065	0.0019	0.00882	0.00423	0.00267	1
	0.865107			0.080323				0.05457						1
Calibrated	0.576131	0.153574	0.230405	0.020000	0.002365	0.001132	0.001861	0.002911	0.000119	0.000349	0.009889	0.000774	0.000488	1.0
	97%			2%				1%						
Check	1171	312	468	41	5	2	4	6	0	1	20	2	1	2,032
	97%			2%				1%						
Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.														
Default mix:	1044	278	418	163	26	13	21	32	1	4	18	9	5	
	87%			8%				5%						

Changes to the CalEEMod Defaults - Fleet Mix 2020

Countywide fleet mix not applicable at a project level:

Default	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH	
FleetMix	0.515693	0.138637	0.205039	0.078824	0.011917	0.006214	0.010318	0.015033	0.000683	0.001900	0.008828	0.004215	0.002699	1
	0.868197			0.078824				0.052979						1
Calibrated	0.578220	0.155447	0.229900	0.019627	0.002184	0.001139	0.001891	0.002755	0.000125	0.000348	0.009898	0.000772	0.000495	1.0
	97%			2%				1%						
Check	1175	316	467	40	4	2	4	6	0	1	20	2	1	2,032
	97%			2%				1%						
Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.														
Default mix:	1048	282	417	160	24	13	21	31	1	4	18	9	5	
	87%			8%				5%						

CalEEMod Modifications to Construction Defaults

Defaults	Note: 22 work days per month	Days Original	Days Modified	Months
Demolition	No change. Provided by applicant	20	20	1
Site Preparation (Haul)	Haul Length provided by applicant	10	198	9
Grading (phased) - start 4 months after haul	Grading Length provided by applicant (overlap w/ site prep)	35	154	7
Building Construction (phased) - overlap start 4 months after haul	Provided by the applicant (overlap w/grading + paving)	370	308	14
Paving (Phased)	Doubled to account for overlap of paving and construction	20	132	6
Architectural Coating (Phased)	Adjusted to account for overlap between building & coating	20	132	6
Project Construction Schedule: ~19.9 months		CalEEMod	438	days

Phased Schedule Provided By Applicant

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Demo	XYZ																			
Grading + Site Prep		XYZ	XYZ	XYZ	XYZ	YZ	YZ	Z	Z	Z										
Building						X	X	XY	XY	XY	XYZ	XYZ	XYZ	XYZ	YZ	YZ	Z	Z	Z	
Paving														X	X	Y	Y	Z	Z	
Coating														X	X	Y	Y	Z	Z	

X = Phase 1, Y = Phase 2, Z = Phase 3

Pavement Volume to Weight Conversion

Location	Total SF of Parking Lot	Assumed Thickness (inch)[1]	Parking Debris Volume (cu. ft)	Weight of Crushed Asphalt (lbs/cf)[2]	AC Mass (lbs)	AC Mass (tons)
Surface Lot	27,000	0.3	8100	45	364,500	182.25

[1] *Pavements and Surface Materials* . Nonpoint Education for Municipal Officials, Technical Paper Number 8. University of Conneticut Cooperative Extension System, 1999.

[2]http://www.reade.com/Particle_Briefings/spec_gra2.html

CalEEMod Modifications to Construction Defaults - Load Factors

Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module. Where data is not yet available in OFFROAD2011, load factors are reduced by 33 percent in accordance with CARB recommendations (California Air Resources Board [CARB]. 2010, September. Workshops on Information Regarding the Off-Road, Truck and Bus, Drayage Truck Regulations).

Default Equipment Mix

PhaseName	OffRoadEquipmentType	OffRoadEquipmentUnitAmount	UsageHours	HorsePower	LoadFactor	Modified Load Factor
Demolition_building	Concrete/Industrial Saws	1	8	81	0.73	0.49
Demolition_building	Excavators	3	8	157	0.57	0.38
Demolition_building	Rubber Tired Dozers	2	8	358	0.59	0.40
Demolition_asphalt	Concrete/Industrial Saws	1	8	81	0.73	0.49
Demolition_asphalt	Excavators	3	8	157	0.57	0.38
Demolition_asphalt	Rubber Tired Dozers	2	8	358	0.59	0.40
Site Preparation	Rubber Tired Dozers	3	8	358	0.59	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8	75	0.55	0.37
Grading	Excavators	2	8	157	0.57	0.38
Grading	Graders	1	8	162	0.61	0.41
Grading	Rubber Tired Dozers	1	8	358	0.59	0.40
Grading	Scrapers	2	8	356	0.72	0.48
Grading	Tractors/Loaders/Backhoes	2	8	75	0.55	0.37
Building Construction	Cranes	1	7	208	0.43	0.29
Building Construction	Forklifts	3	8	149	0.3	0.20
Building Construction	Generator Sets	1	8	84	0.74	0.50
Building Construction	Tractors/Loaders/Backhoes	3	7	75	0.55	0.37
Building Construction	Welders	1	8	46	0.45	0.30
Paving	Pavers	2	8	89	0.62	0.42
Paving	Paving Equipment	2	8	82	0.53	0.36
Paving	Rollers	2	8	84	0.56	0.38
Architectural Coating	Air Compressors	1	6	78	0.48	0.32

EquipmentTypeID	OFFROAD2011 Adj ARB LF	COMPARE TO CalEEMod Default	Percent Change
Aerial Lifts	0.3082	0.46	-33%
Air Compressors	NA	0.48	
Bore/Drill Rigs	0.5025	0.75	-33%
Cement and Mortar Mixers	NA	0.56	
Concrete/Industrial Saws	NA	0.73	
Cranes	0.2881	0.43	-33%
Crawler Tractors	0.4288	0.64	-33%
Crushing/Proc. Equipment	NA	0.78	
Dumpers/Tenders	NA	0.38	
Excavators	0.3819	0.57	-33%
Forklift (GSE)	0.201	0.30	-33%
Forklifts	0.201	0.30	-33%
Generator Sets	NA	0.74	
Graders	0.4087	0.61	-33%
Off-Highway Tractors	0.4355	0.65	-33%
Off-Highway Trucks	0.3819	0.57	-33%
Other Construction Equipment	0.4154	0.62	-33%
Other General Industrial Equipment	0.3417	0.51	-33%
Other Material Handling Equipment	0.3953	0.59	-33%
Pavers	0.4154	0.62	-33%
Paving Equipment	0.3551	0.53	-33%
Plate Compactors	NA	0.43	
Pressure Washers	NA	0.30	
Pumps	NA	0.74	
Rollers	0.3752	0.56	-33%
Rough Terrain Forklifts	0.402	0.60	-33%
Rubber Tired Dozers	0.3953	0.59	-33%
Rubber Tired Loaders	0.3618	0.54	-33%
Scrapers	0.4824	0.72	-33%
Signal Boards	NA	0.82	
Skid Steer Loaders	0.3685	0.55	-33%
Surfacing Equipment	0.3015	0.45	-33%
Sweepers/Scrubbers	0.4556	0.68	-33%
Tractors/Loaders/Backhoes	0.3685	0.55	-33%
Trenchers	0.5025	0.75	-33%
Welders		0.45	

Source: OFFROAD2011 and CalEEMod

California Renewables Portfolio Standard (RPS)

Established in 2002 under Senate Bill 1078, accelerated in 2006 under Senate Bill 107 and expanded in 2011 under Senate Bill 2, California's Renewables Portfolio Standard (RPS) is one of the most ambitious renewable energy standards in the country. The RPS program requires investor-owned utilities, electric service providers, and community choice aggregators to increase procurement from eligible renewable energy resources to 33% of total procurement by 2020. **See the Program Overview page for more information**.

Recent Updates, Documents

- RPS Consulting Opportunities
  - **RFP 11PS5946 - Thirty-Three Percent Renewables Portfolio Standard (RPS) Cost Containment**
- **Q3 2011 RPS Report to the Legislature**
- **August Compliance Reports**
- **RPS_Project_Status_Table_2012_Jan_Update**
- **33% RPS Implementation**

Quick Links

- **California Energy Commission RPS Website**
- **R.11-05-005**
- **Subscribe to the RPS E-mail List** - the e-mail list provides updates on reports and other matters outside of the RPS proceedings. For RPS proceeding items (decisions, resolutions, compliance reports), please **sign up for the RPS service list** (R.11-05-005).
- **Follow the CPUC on Twitter**
- **Office of Governmental Affairs**

RPS Progress Reports

The CPUC is required to report quarterly to the state legislature on IOU progress toward their RPS goals and substantitive actions taken to achieve those goals.

Q3 2011 RPS Report to the Legislature

Download past reports

Current Renewable Procurement Status

California's three large IOUs collectively served 17% of their 2010 retail electricity sales with renewable power.

- Pacific Gas and Electric (PG&E) - 15.9%
- Southern California Edison (SCE) - 19.3%
- San Diego Gas & Electric (SDG&E) - 11.9%

Large IOU RPS Procurement Data 2003-2010

Additional data and charts can be found on the **Program Update** page.

Status of RPS Projects

RPS_Project_Status_Table_2012_Jan_Update (updated 1/19/2012) that are online, under development, and pending CPUC approval. Withdrawn and cancelled projects are also included. Project names link to Commission resolutions approving or rejecting the project. The project list is updated monthly.

Projects Online	Status	IOU	Min MW	Min Expected GWh/yr	Technology	Vintage
AES Delano	Operational	SDG&E	49	286	biomass	existing
City of San Diego (Point Loma STP)	Operational	SDG&E	5	24	biogas	existing
Geysers #12	Operational	PG&E	70	462	geothermal	existing
Geysers #20	Operational	PG&E	40	276	geothermal	existing
Metropolitan Water District	Operational	SCE	12	148	small hydro	existing
Woodland Biomass No. 4	Operational	PG&E	3	25	biomass	existing
Geysers #s 3, 5/6, 7/8, 11, 13, 17, 18	Operational	SCE	200	1750	geothermal	existing
WTE Acquisitions: Green Power Wind	Operational	SDG&E	17	40	wind	existing
MM Fresno Peshecha Energy	Operational	SDG&E	5	28	biogas	existing
MM Miramar	Operational	SDG&E	3	22	biogas	existing
MM San Diego North City	Operational	SDG&E	1	7	biogas	existing
Madera Power	Operational	PG&E	25	160	biomass	existing

System-Side Distributed Generation

- **Renewable Auction Mechanism**

TerracesofLafayette - 2014 (mit w/BCM)

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Asphalt Surfaces	3.85	Acre
Apartments Low Rise	315	Dwelling Unit

1.2 Other Project Characteristics

Urbanization Urban

Climate Zone 4

Wind Speed (m/s) 2.2

Precipitation Freq (Days) 58

Utility Company Pacific Gas & Electric Company

1.3 User Entered Comments

Project Characteristics - 33% RPS not included. Biogenic CO2 not included per BAAQMD.

Land Use - See Project Description

Construction Phase - See phasing assumptions

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Trips and VMT - Haul trip increased to 26 to account for 13-mile one-way distance to nearest landfill.

Demolition -

Grading - Adjusted export volumes to account for smaller trucks: 300,000 x (16 CY/ 10 CY) = 480,000

Architectural Coating - Mitigation AQ-3

Vehicle Trips - Weekday trip adjusted to match traffic =6.45. Average trip length 10 miles for all trip purposes.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Woodstoves - Gas fireplaces assumed in accordance with BAAQMD Regulation 6, Rule 3, Woodburning Devices

Energy Use -

Water And Wastewater - Wastewater is connected to City sewer (treated).

Construction Off-road Equipment Mitigation - Mitigation: compy w/BAAQMD Basic Control Measures

Mobile Land Use Mitigation -

Water Mitigation - Low Flow Fixtures and Irrigation required under California Green Building Code (CALGreen).

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr											MT/yr				
2013	3.57	32.91	19.87	0.05	148.29	1.33	149.61	1.39	1.33	2.72		4,351.56	4,351.56	0.23	0.00	4,356.30
2014	6.11	3.77	4.02	0.01	0.29	0.26	0.55	0.01	0.26	0.27		603.18	603.18	0.06	0.00	604.36
Total	**9.68**	**36.68**	**23.89**	**0.06**	**148.58**	**1.59**	**150.16**	**1.40**	**1.59**	**2.99**		**4,954.74**	**4,954.74**	**0.29**	**0.00**	**4,960.66**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr											MT/yr				
2013	3.57	32.91	19.87	0.05	133.75	1.33	135.08	0.66	1.33	1.99		4,351.56	4,351.56	0.23	0.00	4,356.30
2014	6.11	3.77	4.02	0.01	0.26	0.26	0.52	0.01	0.26	0.27		603.18	603.18	0.06	0.00	604.36
Total	**9.68**	**36.68**	**23.89**	**0.06**	**134.01**	**1.59**	**135.60**	**0.67**	**1.59**	**2.26**		**4,954.74**	**4,954.74**	**0.29**	**0.00**	**4,960.66**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Area	2.00	0.03	2.42	0.00		0.00	0.03		0.00	0.03		208.60	208.60	0.01	0.00	209.94
Energy	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		594.86	594.86	0.02	0.01	598.54
Mobile	2.30	2.65	23.48	0.04	3.69	0.12	3.82	0.15	0.12	0.27		3,027.91	3,027.91	0.14	0.00	3,030.77
Waste						0.00	0.00		0.00	0.00		0.00	29.41	1.74	0.00	65.92
Water						0.00	0.00		0.00	0.00		45.48	45.48	0.00	0.02	50.58
Total	**4.33**	**2.91**	**26.00**	**0.04**	**3.69**	**0.12**	**3.87**	**0.15**	**0.12**	**0.32**		**3,876.85**	**3,906.26**	**1.91**	**0.03**	**3,955.75**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Area	2.00	0.03	2.42	0.00		0.00	0.03		0.00	0.03		208.60	208.60	0.01	0.00	209.94
Energy	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		594.86	594.86	0.02	0.01	598.54
Mobile	2.30	2.65	23.48	0.04	3.69	0.12	3.82	0.15	0.12	0.27		3,027.91	3,027.91	0.14	0.00	3,030.77
Waste						0.00	0.00		0.00	0.00		0.00	29.41	1.74	0.00	65.92
Water						0.00	0.00		0.00	0.00		38.22	38.22	0.00	0.01	42.31
Total	**4.33**	**2.91**	**26.00**	**0.04**	**3.69**	**0.12**	**3.87**	**0.15**	**0.12**	**0.32**		**3,869.59**	**3,899.00**	**1.91**	**0.02**	**3,947.48**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

3.0 Construction Detail

3.1 Mitigation Measures Construction

Replace Ground Cover
Water Exposed Area
Reduce Vehicle Speed on Unpaved Roads
Clean Paved Roads

3.2 Demolition_building - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.14	0.00		0.01	0.01		0.01	0.01		22.94	22.94	0.00	0.00	22.99
Total	**0.03**	**0.24**	**0.14**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**		**22.94**	**22.94**	**0.00**	**0.00**	**22.99**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.09	1.09	0.00	0.00	1.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.77	0.77	0.00	0.00	0.77
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**1.86**	**1.86**	**0.00**	**0.00**	**1.86**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.14	0.00		0.01	0.01		0.01	0.01		22.94	22.94	0.00	0.00	22.99
Total	**0.03**	**0.24**	**0.14**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**		**22.94**	**22.94**	**0.00**	**0.00**	**22.99**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.09	1.09	0.00	0.00	1.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.77	0.77	0.00	0.00	0.77
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**1.86**	**1.86**	**0.00**	**0.00**	**1.86**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

3.3 Demolition_asphalt - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.14	0.00		0.01	0.01		0.01	0.01		22.94	22.94	0.00	0.00	22.99
Total	**0.03**	**0.24**	**0.14**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**		**22.94**	**22.94**	**0.00**	**0.00**	**22.99**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85	0.85	0.00	0.00	0.85
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.77	0.77	0.00	0.00	0.77
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**1.62**	**1.62**	**0.00**	**0.00**	**1.62**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.14	0.00		0.01	0.01		0.01	0.01		22.94	22.94	0.00	0.00	22.99
Total	**0.03**	**0.24**	**0.14**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**		**22.94**	**22.94**	**0.00**	**0.00**	**22.99**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85	0.85	0.00	0.00	0.85
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.77	0.77	0.00	0.00	0.77
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**1.62**	**1.62**	**0.00**	**0.00**	**1.62**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

3.4 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Fugitive Dust					1.82	0.00	1.82	0.99	0.00	0.99		0.00	0.00	0.00	0.00	0.00
Off-Road	0.66	5.36	3.04	0.00		0.26	0.26		0.26	0.26		486.06	486.06	0.05	0.00	487.20
Total	**0.66**	**5.36**	**3.04**	**0.00**	**1.82**	**0.26**	**2.08**	**0.99**	**0.26**	**1.25**		**486.06**	**486.06**	**0.05**	**0.00**	**487.20**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	1.78	19.69	10.72	0.03	145.52	0.67	146.19	0.11	0.67	0.78		2,848.10	2,848.10	0.08	0.00	2,849.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.14	0.00	0.02	0.00	0.02	0.00	0.00	0.00		18.26	18.26	0.00	0.00	18.29
Total	**1.79**	**19.70**	**10.86**	**0.03**	**145.54**	**0.67**	**146.21**	**0.11**	**0.67**	**0.78**		**2,866.36**	**2,866.36**	**0.08**	**0.00**	**2,868.06**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Fugitive Dust					0.78	0.00	0.78	0.42	0.00	0.42		0.00	0.00	0.00	0.00	0.00
Off-Road	0.66	5.36	3.04	0.00		0.26	0.26		0.26	0.26		486.06	486.06	0.05	0.00	487.20
Total	**0.66**	**5.36**	**3.04**	**0.00**	**0.78**	**0.26**	**1.04**	**0.42**	**0.26**	**0.68**		**486.06**	**486.06**	**0.05**	**0.00**	**487.20**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	1.78	19.69	10.72	0.03	132.43	0.67	133.10	0.11	0.67	0.78		2,848.10	2,848.10	0.08	0.00	2,849.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.14	0.00	0.02	0.00	0.02	0.00	0.00	0.00		18.26	18.26	0.00	0.00	18.29
Total	**1.79**	**19.70**	**10.86**	**0.03**	**132.45**	**0.67**	**133.12**	**0.11**	**0.67**	**0.78**		**2,866.36**	**2,866.36**	**0.08**	**0.00**	**2,868.06**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

3.5 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Fugitive Dust					0.67	0.00	0.67	0.28	0.00	0.28		0.00	0.00	0.00	0.00	0.00
Off-Road	0.61	5.03	2.73	0.01		0.24	0.24		0.24	0.24		507.84	507.84	0.05	0.00	508.88
Total	**0.61**	**5.03**	**2.73**	**0.01**	**0.67**	**0.24**	**0.91**	**0.28**	**0.24**	**0.52**		**507.84**	**507.84**	**0.05**	**0.00**	**508.88**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.02	0.00	0.02	0.00	0.00	0.00		15.78	15.78	0.00	0.00	15.81
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**		**15.78**	**15.78**	**0.00**	**0.00**	**15.81**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Fugitive Dust					0.29	0.00	0.29	0.12	0.00	0.12		0.00	0.00	0.00	0.00	0.00
Off-Road	0.61	5.03	2.73	0.01		0.24	0.24		0.24	0.24		507.84	507.84	0.05	0.00	508.88
Total	**0.61**	**5.03**	**2.73**	**0.01**	**0.29**	**0.24**	**0.53**	**0.12**	**0.24**	**0.36**		**507.84**	**507.84**	**0.05**	**0.00**	**508.88**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.02	0.00	0.02	0.00	0.00	0.00		15.78	15.78	0.00	0.00	15.81
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**		**15.78**	**15.78**	**0.00**	**0.00**	**15.81**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

3.6 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.26	1.77	1.20	0.00		0.12	0.12		0.12	0.12		186.93	186.93	0.02	0.00	187.38
Total	**0.26**	**1.77**	**1.20**	**0.00**		**0.12**	**0.12**		**0.12**	**0.12**		**186.93**	**186.93**	**0.02**	**0.00**	**187.38**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.40	0.30	0.00	0.02	0.01	0.03	0.00	0.01	0.01		62.41	62.41	0.00	0.00	62.45
Worker	0.13	0.14	1.33	0.00	0.21	0.01	0.22	0.01	0.01	0.02		176.82	176.82	0.01	0.00	177.06
Total	**0.17**	**0.54**	**1.63**	**0.00**	**0.23**	**0.02**	**0.25**	**0.01**	**0.02**	**0.03**		**239.23**	**239.23**	**0.01**	**0.00**	**239.51**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.26	1.77	1.20	0.00		0.12	0.12		0.12	0.12		186.93	186.93	0.02	0.00	187.38
Total	**0.26**	**1.77**	**1.20**	**0.00**		**0.12**	**0.12**		**0.12**	**0.12**		**186.93**	**186.93**	**0.02**	**0.00**	**187.38**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.40	0.30	0.00	0.02	0.01	0.03	0.00	0.01	0.01		62.41	62.41	0.00	0.00	62.45
Worker	0.13	0.14	1.33	0.00	0.19	0.01	0.20	0.01	0.01	0.02		176.82	176.82	0.01	0.00	177.06
Total	**0.17**	**0.54**	**1.63**	**0.00**	**0.21**	**0.02**	**0.23**	**0.01**	**0.02**	**0.03**		**239.23**	**239.23**	**0.01**	**0.00**	**239.51**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

3.6 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Off-Road	0.25	1.68	1.21	0.00		0.11	0.11		0.11	0.11		191.85	191.85	0.02	0.00	192.27
Total	**0.25**	**1.68**	**1.21**	**0.00**		**0.11**	**0.11**		**0.11**	**0.11**		**191.85**	**191.85**	**0.02**	**0.00**	**192.27**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.38	0.28	0.00	0.02	0.01	0.03	0.00	0.01	0.01		64.22	64.22	0.00	0.00	64.26
Worker	0.12	0.13	1.24	0.00	0.22	0.01	0.22	0.01	0.01	0.02		177.68	177.68	0.01	0.00	177.91
Total	**0.16**	**0.51**	**1.52**	**0.00**	**0.24**	**0.02**	**0.25**	**0.01**	**0.02**	**0.03**		**241.90**	**241.90**	**0.01**	**0.00**	**242.17**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Off-Road	0.25	1.68	1.21	0.00		0.11	0.11		0.11	0.11		191.85	191.85	0.02	0.00	192.27
Total	**0.25**	**1.68**	**1.21**	**0.00**		**0.11**	**0.11**		**0.11**	**0.11**		**191.85**	**191.85**	**0.02**	**0.00**	**192.27**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.38	0.28	0.00	0.02	0.01	0.03	0.00	0.01	0.01		64.22	64.22	0.00	0.00	64.26
Worker	0.12	0.13	1.24	0.00	0.20	0.01	0.21	0.01	0.01	0.02		177.68	177.68	0.01	0.00	177.91
Total	**0.16**	**0.51**	**1.52**	**0.00**	**0.22**	**0.02**	**0.24**	**0.01**	**0.02**	**0.03**		**241.90**	**241.90**	**0.01**	**0.00**	**242.17**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

3.7 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Off-Road	0.23	1.44	0.93	0.00		0.12	0.12		0.12	0.12		118.47	118.47	0.02	0.00	118.87
Paving	0.01					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Total	**0.24**	**1.44**	**0.93**	**0.00**		**0.12**	**0.12**		**0.12**	**0.12**		**118.47**	**118.47**	**0.02**	**0.00**	**118.87**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00		9.93	9.93	0.00	0.00	9.95
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**		**9.93**	**9.93**	**0.00**	**0.00**	**9.95**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Off-Road	0.23	1.44	0.93	0.00		0.12	0.12		0.12	0.12		118.47	118.47	0.02	0.00	118.87
Paving	0.01					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Total	**0.24**	**1.44**	**0.93**	**0.00**		**0.12**	**0.12**		**0.12**	**0.12**		**118.47**	**118.47**	**0.02**	**0.00**	**118.87**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00		9.93	9.93	0.00	0.00	9.95
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**		**9.93**	**9.93**	**0.00**	**0.00**	**9.95**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

3.8 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Archit. Coating	5.42					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.12	0.08	0.00		0.01	0.01		0.01	0.01		11.22	11.22	0.00	0.00	11.25
Total	**5.44**	**0.12**	**0.08**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**		**11.22**	**11.22**	**0.00**	**0.00**	**11.25**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.21	0.00	0.04	0.00	0.04	0.00	0.00	0.00		29.80	29.80	0.00	0.00	29.84
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**		**29.80**	**29.80**	**0.00**	**0.00**	**29.84**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Archit. Coating	5.42					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.12	0.08	0.00		0.01	0.01		0.01	0.01		11.22	11.22	0.00	0.00	11.25
Total	**5.44**	**0.12**	**0.08**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**		**11.22**	**11.22**	**0.00**	**0.00**	**11.25**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.21	0.00	0.03	0.00	0.03	0.00	0.00	0.00		29.80	29.80	0.00	0.00	29.84
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**		**29.80**	**29.80**	**0.00**	**0.00**	**29.84**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.30	2.65	23.48	0.04	3.69	0.12	3.82	0.15	0.12	0.27		3,027.91	3,027.91	0.14	0.00	3,030.77
Unmitigated	2.30	2.65	23.48	0.04	3.69	0.12	3.82	0.15	0.12	0.27		3,027.91	3,027.91	0.14	0.00	3,030.77
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,031.75	2,255.40	1912.05	7,524,120	7,524,120
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	2,031.75	2,255.40	1,912.05	7,524,120	7,524,120

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.10	10.10	10.10	26.10	29.10	44.80
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00		332.95	332.95	0.02	0.01	335.04
Electricity Unmitigated						0.00	0.00		0.00	0.00		332.95	332.95	0.02	0.01	335.04
NaturalGas Mitigated	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		261.90	261.90	0.01	0.00	263.50
NaturalGas Unmitigated	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		261.90	261.90	0.01	0.00	263.50
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	4.90789e+006	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		261.90	261.90	0.01	0.00	263.50
Other Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Total		**0.03**	**0.23**	**0.10**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**261.90**	**261.90**	**0.01**	**0.00**	**263.50**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	4.90789e+006	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		261.90	261.90	0.01	0.00	263.50
Other Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Total		**0.03**	**0.23**	**0.10**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**261.90**	**261.90**	**0.01**	**0.00**	**263.50**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.14451e+006					332.95	0.02	0.01	335.04
Other Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						**332.95**	**0.02**	**0.01**	**335.04**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.14451e+006					332.95	0.02	0.01	335.04
Other Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						**332.95**	**0.02**	**0.01**	**335.04**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	2.00	0.03	2.42	0.00		0.00	0.03		0.00	0.03		208.60	208.60	0.01	0.00	209.94
Unmitigated	2.00	0.03	2.42	0.00		0.00	0.03		0.00	0.03		208.60	208.60	0.01	0.00	209.94
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.54					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Consumer Products	1.35					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Hearth	0.02	0.00	0.00	0.00		0.00	0.01		0.00	0.01		204.74	204.74	0.00	0.00	205.99
Landscaping	0.08	0.03	2.42	0.00		0.00	0.01		0.00	0.01		3.86	3.86	0.00	0.00	3.95
Total	**1.99**	**0.03**	**2.42**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**208.60**	**208.60**	**0.00**	**0.00**	**209.94**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.54					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Consumer Products	1.35					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Hearth	0.02	0.00	0.00	0.00		0.00	0.01		0.00	0.01		204.74	204.74	0.00	0.00	205.99
Landscaping	0.08	0.03	2.42	0.00		0.00	0.01		0.00	0.01		3.86	3.86	0.00	0.00	3.95
Total	**1.99**	**0.03**	**2.42**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**208.60**	**208.60**	**0.00**	**0.00**	**209.94**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet
Install Low Flow Kitchen Faucet
Install Low Flow Toilet
Install Low Flow Shower
Use Water Efficient Irrigation System

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					38.22	0.00	0.01	42.31
Unmitigated					45.48	0.00	0.02	50.58
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	20.5235 / 12.9387					45.48	0.00	0.02	50.58
Other Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
Total						**45.48**	**0.00**	**0.02**	**50.58**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	16.4188 / 12.1495					38.22	0.00	0.01	42.31
Other Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
Total						**38.22**	**0.00**	**0.01**	**42.31**

TerracesofLafayette - 2014 (mit w/BCM)
Contra Costa County, Annual

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					29.41	1.74	0.00	65.92
Unmitigated					29.41	1.74	0.00	65.92
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	144.9					29.41	1.74	0.00	65.92
Other Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						**29.41**	**1.74**	**0.00**	**65.92**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	144.9					29.41	1.74	0.00	65.92
Other Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						**29.41**	**1.74**	**0.00**	**65.92**

9.0 Vegetation

TerracesofLafayette - Tier 3

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Asphalt Surfaces	3.85	Acre
Apartments Low Rise	315	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	58		

1.3 User Entered Comments

Project Characteristics - 33% RPS not included. Biogenic CO2 not included per BAAQMD.

Land Use - See Project Description

Construction Phase - See phasing assumptions

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Trips and VMT - Haul trip increased to 26 to account for 13-mile one-way distance to nearest landfill.

Demolition -

Grading - Adjusted export volumes to account for smaller trucks: 300,000 x (16 CY/ 10 CY) = 480,000

Architectural Coating - Mitigation AQ-3

Vehicle Trips - Weekday trip adjusted to match traffic =6.45. Average trip length 10 miles for all trip purposes.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Woodstoves - Gas fireplaces assumed in accordance with BAAQMD Regulation 6, Rule 3, Woodburning Devices

Energy Use -

Water And Wastewater - Wastewater is connected to City sewer (treated).

Construction Off-road Equipment Mitigation - Mitigation: compy w/BAAQMD Basic Control Measures

Mobile Land Use Mitigation -

Water Mitigation - Low Flow Fixtures and Irrigation required under California Green Building Code (CALGreen).

TerracesofLafayette - Tier 3
Contra Costa County, Annual

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr											MT/yr				
2013	3.57	32.91	19.87	0.05	148.29	1.33	149.61	1.39	1.33	2.72		4,351.56	4,351.56	0.23	0.00	4,356.30
2014	6.11	3.77	4.02	0.01	0.29	0.26	0.55	0.01	0.26	0.27		603.18	603.18	0.06	0.00	604.36
Total	**9.68**	**36.68**	**23.89**	**0.06**	**148.58**	**1.59**	**150.16**	**1.40**	**1.59**	**2.99**		**4,954.74**	**4,954.74**	**0.29**	**0.00**	**4,960.66**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr											MT/yr				
2013	2.99	26.68	19.75	0.05	133.75	1.14	134.89	0.66	1.14	1.81		4,351.56	4,351.56	0.23	0.00	4,356.30
2014	5.92	2.36	4.03	0.01	0.26	0.19	0.45	0.01	0.19	0.20		603.18	603.18	0.06	0.00	604.36
Total	**8.91**	**29.04**	**23.78**	**0.06**	**134.01**	**1.33**	**135.34**	**0.67**	**1.33**	**2.01**		**4,954.74**	**4,954.74**	**0.29**	**0.00**	**4,960.66**

TerracesofLafayette - Tier 3
Contra Costa County, Annual

3.0 Construction Detail

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment
Use DPF for Construction Equipment
Replace Ground Cover
Water Exposed Area
Reduce Vehicle Speed on Unpaved Roads
Clean Paved Roads

3.2 Demolition_building - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.14	0.00		0.01	0.01		0.01	0.01		22.94	22.94	0.00	0.00	22.99
Total	**0.03**	**0.24**	**0.14**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**		**22.94**	**22.94**	**0.00**	**0.00**	**22.99**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.09	1.09	0.00	0.00	1.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.77	0.77	0.00	0.00	0.77
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**1.86**	**1.86**	**0.00**	**0.00**	**1.86**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.12	0.14	0.00		0.01	0.01		0.01	0.01		22.94	22.94	0.00	0.00	22.99
Total	**0.02**	**0.12**	**0.14**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**		**22.94**	**22.94**	**0.00**	**0.00**	**22.99**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		1.09	1.09	0.00	0.00	1.09
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.77	0.77	0.00	0.00	0.77
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**1.86**	**1.86**	**0.00**	**0.00**	**1.86**

TerracesofLafayette - Tier 3
Contra Costa County, Annual

3.3 Demolition_asphalt - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.03	0.24	0.14	0.00		0.01	0.01		0.01	0.01		22.94	22.94	0.00	0.00	22.99
Total	**0.03**	**0.24**	**0.14**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**		**22.94**	**22.94**	**0.00**	**0.00**	**22.99**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85	0.85	0.00	0.00	0.85
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.77	0.77	0.00	0.00	0.77
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**1.62**	**1.62**	**0.00**	**0.00**	**1.62**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.12	0.14	0.00		0.01	0.01		0.01	0.01		22.94	22.94	0.00	0.00	22.99
Total	**0.02**	**0.12**	**0.14**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**0.01**	**0.01**		**22.94**	**22.94**	**0.00**	**0.00**	**22.99**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.85	0.85	0.00	0.00	0.85
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.77	0.77	0.00	0.00	0.77
Total	**0.00**	**0.01**	**0.01**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**		**1.62**	**1.62**	**0.00**	**0.00**	**1.62**

TerracesofLafayette - Tier 3
Contra Costa County, Annual

3.4 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Fugitive Dust					1.82	0.00	1.82	0.99	0.00	0.99		0.00	0.00	0.00	0.00	0.00
Off-Road	0.66	5.36	3.04	0.00		0.26	0.26		0.26	0.26		486.06	486.06	0.05	0.00	487.20
Total	**0.66**	**5.36**	**3.04**	**0.00**	**1.82**	**0.26**	**2.08**	**0.99**	**0.26**	**1.25**		**486.06**	**486.06**	**0.05**	**0.00**	**487.20**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	1.78	19.69	10.72	0.03	145.52	0.67	146.19	0.11	0.67	0.78		2,848.10	2,848.10	0.08	0.00	2,849.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.14	0.00	0.02	0.00	0.02	0.00	0.00	0.00		18.26	18.26	0.00	0.00	18.29
Total	**1.79**	**19.70**	**10.86**	**0.03**	**145.54**	**0.67**	**146.21**	**0.11**	**0.67**	**0.78**		**2,866.36**	**2,866.36**	**0.08**	**0.00**	**2,868.06**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Fugitive Dust					0.78	0.00	0.78	0.42	0.00	0.42		0.00	0.00	0.00	0.00	0.00
Off-Road	0.40	2.53	2.66	0.00		0.17	0.17		0.17	0.17		486.06	486.06	0.05	0.00	487.20
Total	**0.40**	**2.53**	**2.66**	**0.00**	**0.78**	**0.17**	**0.95**	**0.42**	**0.17**	**0.59**		**486.06**	**486.06**	**0.05**	**0.00**	**487.20**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	1.78	19.69	10.72	0.03	132.43	0.67	133.10	0.11	0.67	0.78		2,848.10	2,848.10	0.08	0.00	2,849.77
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.14	0.00	0.02	0.00	0.02	0.00	0.00	0.00		18.26	18.26	0.00	0.00	18.29
Total	**1.79**	**19.70**	**10.86**	**0.03**	**132.45**	**0.67**	**133.12**	**0.11**	**0.67**	**0.78**		**2,866.36**	**2,866.36**	**0.08**	**0.00**	**2,868.06**

TerracesofLafayette - Tier 3
Contra Costa County, Annual

3.5 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Fugitive Dust					0.67	0.00	0.67	0.28	0.00	0.28		0.00	0.00	0.00	0.00	0.00
Off-Road	0.61	5.03	2.73	0.01		0.24	0.24		0.24	0.24		507.84	507.84	0.05	0.00	508.88
Total	**0.61**	**5.03**	**2.73**	**0.01**	**0.67**	**0.24**	**0.91**	**0.28**	**0.24**	**0.52**		**507.84**	**507.84**	**0.05**	**0.00**	**508.88**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.02	0.00	0.02	0.00	0.00	0.00		15.78	15.78	0.00	0.00	15.81
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**		**15.78**	**15.78**	**0.00**	**0.00**	**15.81**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Fugitive Dust					0.29	0.00	0.29	0.12	0.00	0.12		0.00	0.00	0.00	0.00	0.00
Off-Road	0.40	2.59	2.92	0.01		0.18	0.18		0.18	0.18		507.84	507.84	0.05	0.00	508.88
Total	**0.40**	**2.59**	**2.92**	**0.01**	**0.29**	**0.18**	**0.47**	**0.12**	**0.18**	**0.30**		**507.84**	**507.84**	**0.05**	**0.00**	**508.88**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.12	0.00	0.02	0.00	0.02	0.00	0.00	0.00		15.78	15.78	0.00	0.00	15.81
Total	**0.01**	**0.01**	**0.12**	**0.00**	**0.02**	**0.00**	**0.02**	**0.00**	**0.00**	**0.00**		**15.78**	**15.78**	**0.00**	**0.00**	**15.81**

TerracesofLafayette - Tier 3
Contra Costa County, Annual

3.6 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Off-Road	0.26	1.77	1.20	0.00		0.12	0.12		0.12	0.12		186.93	186.93	0.02	0.00	187.38
Total	**0.26**	**1.77**	**1.20**	**0.00**		**0.12**	**0.12**		**0.12**	**0.12**		**186.93**	**186.93**	**0.02**	**0.00**	**187.38**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.40	0.30	0.00	0.02	0.01	0.03	0.00	0.01	0.01		62.41	62.41	0.00	0.00	62.45
Worker	0.13	0.14	1.33	0.00	0.21	0.01	0.22	0.01	0.01	0.02		176.82	176.82	0.01	0.00	177.06
Total	**0.17**	**0.54**	**1.63**	**0.00**	**0.23**	**0.02**	**0.25**	**0.01**	**0.02**	**0.03**		**239.23**	**239.23**	**0.01**	**0.00**	**239.51**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Off-Road	0.18	1.05	1.27	0.00		0.09	0.09		0.09	0.09		186.93	186.93	0.02	0.00	187.38
Total	**0.18**	**1.05**	**1.27**	**0.00**		**0.09**	**0.09**		**0.09**	**0.09**		**186.93**	**186.93**	**0.02**	**0.00**	**187.38**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.40	0.30	0.00	0.02	0.01	0.03	0.00	0.01	0.01		62.41	62.41	0.00	0.00	62.45
Worker	0.13	0.14	1.33	0.00	0.19	0.01	0.20	0.01	0.01	0.02		176.82	176.82	0.01	0.00	177.06
Total	**0.17**	**0.54**	**1.63**	**0.00**	**0.21**	**0.02**	**0.23**	**0.01**	**0.02**	**0.03**		**239.23**	**239.23**	**0.01**	**0.00**	**239.51**

TerracesofLafayette - Tier 3
Contra Costa County, Annual

3.6 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Off-Road	0.25	1.68	1.21	0.00		0.11	0.11		0.11	0.11		191.85	191.85	0.02	0.00	192.27
Total	**0.25**	**1.68**	**1.21**	**0.00**		**0.11**	**0.11**		**0.11**	**0.11**		**191.85**	**191.85**	**0.02**	**0.00**	**192.27**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.38	0.28	0.00	0.02	0.01	0.03	0.00	0.01	0.01		64.22	64.22	0.00	0.00	64.26
Worker	0.12	0.13	1.24	0.00	0.22	0.01	0.22	0.01	0.01	0.02		177.68	177.68	0.01	0.00	177.91
Total	**0.16**	**0.51**	**1.52**	**0.00**	**0.24**	**0.02**	**0.25**	**0.01**	**0.02**	**0.03**		**241.90**	**241.90**	**0.01**	**0.00**	**242.17**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Off-Road	0.19	1.07	1.30	0.00		0.09	0.09		0.09	0.09		191.85	191.85	0.02	0.00	192.27
Total	**0.19**	**1.07**	**1.30**	**0.00**		**0.09**	**0.09**		**0.09**	**0.09**		**191.85**	**191.85**	**0.02**	**0.00**	**192.27**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.04	0.38	0.28	0.00	0.02	0.01	0.03	0.00	0.01	0.01		64.22	64.22	0.00	0.00	64.26
Worker	0.12	0.13	1.24	0.00	0.20	0.01	0.21	0.01	0.01	0.02		177.68	177.68	0.01	0.00	177.91
Total	**0.16**	**0.51**	**1.52**	**0.00**	**0.22**	**0.02**	**0.24**	**0.01**	**0.02**	**0.03**		**241.90**	**241.90**	**0.01**	**0.00**	**242.17**

TerracesofLafayette - Tier 3
Contra Costa County, Annual

3.7 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Off-Road	0.23	1.44	0.93	0.00		0.12	0.12		0.12	0.12		118.47	118.47	0.02	0.00	118.87
Paving	0.01					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Total	**0.24**	**1.44**	**0.93**	**0.00**		**0.12**	**0.12**		**0.12**	**0.12**		**118.47**	**118.47**	**0.02**	**0.00**	**118.87**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00		9.93	9.93	0.00	0.00	9.95
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**		**9.93**	**9.93**	**0.00**	**0.00**	**9.95**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Off-Road	0.11	0.69	0.85	0.00		0.07	0.07		0.07	0.07		118.47	118.47	0.02	0.00	118.87
Paving	0.01					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Total	**0.12**	**0.69**	**0.85**	**0.00**		**0.07**	**0.07**		**0.07**	**0.07**		**118.47**	**118.47**	**0.02**	**0.00**	**118.87**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.01	0.01	0.07	0.00	0.01	0.00	0.01	0.00	0.00	0.00		9.93	9.93	0.00	0.00	9.95
Total	**0.01**	**0.01**	**0.07**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**		**9.93**	**9.93**	**0.00**	**0.00**	**9.95**

TerracesofLafayette - Tier 3
Contra Costa County, Annual

3.8 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Archit. Coating	5.42					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.02	0.12	0.08	0.00		0.01	0.01		0.01	0.01		11.22	11.22	0.00	0.00	11.25
Total	**5.44**	**0.12**	**0.08**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**		**11.22**	**11.22**	**0.00**	**0.00**	**11.25**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.21	0.00	0.04	0.00	0.04	0.00	0.00	0.00		29.80	29.80	0.00	0.00	29.84
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.04**	**0.00**	**0.04**	**0.00**	**0.00**	**0.00**		**29.80**	**29.80**	**0.00**	**0.00**	**29.84**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Archit. Coating	5.42					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Off-Road	0.01	0.07	0.08	0.00		0.01	0.01		0.01	0.01		11.22	11.22	0.00	0.00	11.25
Total	**5.43**	**0.07**	**0.08**	**0.00**		**0.01**	**0.01**		**0.01**	**0.01**		**11.22**	**11.22**	**0.00**	**0.00**	**11.25**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr											MT/yr				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00
Worker	0.02	0.02	0.21	0.00	0.03	0.00	0.03	0.00	0.00	0.00		29.80	29.80	0.00	0.00	29.84
Total	**0.02**	**0.02**	**0.21**	**0.00**	**0.03**	**0.00**	**0.03**	**0.00**	**0.00**	**0.00**		**29.80**	**29.80**	**0.00**	**0.00**	**29.84**

TerracesofLafayette2020

Contra Costa County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Asphalt Surfaces	3.85	Acre
Apartments Low Rise	315	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	58		

1.3 User Entered Comments

Project Characteristics - RPS included. Biogenic CO2 not included per BAAQMD.

Land Use - See Project Description

Construction Phase - See phasing assumptions

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Trips and VMT - Haul trip increased to 26 to account for 13-mile one-way distance to nearest landfill.

Demolition -

Grading - Adjusted export volumes to account for smaller trucks: 300,000 x (16 CY/ 10 CY) = 480,000

Vehicle Trips - Weekday trip adjusted to match traffic =6.45. Average trip length 10 miles for all trip purposes.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Woodstoves - Gas fireplaces assumed in accordance with BAAQMD Regulation 6, Rule 3, Woodburning Devices

Energy Use - 2008 building and energy efficiency standards

Water And Wastewater - Wastewater is connected to City sewer (treated).

Construction Off-road Equipment Mitigation - Mitigation: compy w/BAAQMD Basic Control Measures

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation - Low Flow Fixtures and Irrigation required under California Green Building Code (CALGreen).

Area Mitigation -

TerracesofLafayette2020
Contra Costa County, Annual

2.0 Emissions Summary

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.99	0.03	2.37	0.00		0.00	0.03		0.00	0.03		208.60	208.60	0.01	0.00	209.93
Energy	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		537.92	537.92	0.02	0.01	541.60
Mobile	1.64	1.58	14.95	0.04	3.69	0.14	3.83	0.06	0.12	0.18		2,488.54	2,488.54	0.12	0.00	2,491.03
Waste						0.00	0.00		0.00	0.00		0.00	29.41	1.74	0.00	65.92
Water						0.00	0.00		0.00	0.00		37.70	37.70	0.00	0.02	42.80
Total	**3.66**	**1.84**	**17.42**	**0.04**	**3.69**	**0.14**	**3.88**	**0.06**	**0.12**	**0.23**		**3,272.76**	**3,302.17**	**1.89**	**0.03**	**3,351.28**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	1.97	0.03	2.37	0.00		0.00	0.01		0.00	0.01		3.86	3.86	0.00	0.00	3.94
Energy	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		537.92	537.92	0.02	0.01	541.60
Mobile	1.57	1.50	14.21	0.03	3.47	0.13	3.60	0.06	0.11	0.17		2,343.28	2,343.28	0.11	0.00	2,345.63
Waste						0.00	0.00		0.00	0.00		0.00	29.41	1.74	0.00	65.92
Water						0.00	0.00		0.00	0.00		31.68	31.68	0.00	0.01	35.77
Total	**3.57**	**1.76**	**16.68**	**0.03**	**3.47**	**0.13**	**3.63**	**0.06**	**0.11**	**0.20**		**2,916.74**	**2,946.15**	**1.87**	**0.02**	**2,992.86**

TerracesofLafayette2020
Contra Costa County, Annual

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

Increase Density
Increase Transit Accessibility
Improve Pedestrian Network

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.57	1.50	14.21	0.03	3.47	0.13	3.60	0.06	0.11	0.17		2,343.28	2,343.28	0.11	0.00	2,345.63
Unmitigated	1.64	1.58	14.95	0.04	3.69	0.14	3.83	0.06	0.12	0.18		2,488.54	2,488.54	0.12	0.00	2,491.03
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,031.75	2,255.40	1912.05	7,524,120	7,076,435
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	2,031.75	2,255.40	1,912.05	7,524,120	7,076,435

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.10	10.10	10.10	26.10	29.10	44.80
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00

TerracesofLafayette2020
Contra Costa County, Annual

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.00	0.00		0.00	0.00		276.02	276.02	0.02	0.01	278.10
Electricity Unmitigated						0.00	0.00		0.00	0.00		276.02	276.02	0.02	0.01	278.10
NaturalGas Mitigated	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		261.90	261.90	0.01	0.00	263.50
NaturalGas Unmitigated	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		261.90	261.90	0.01	0.00	263.50
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	4.90789e+006	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		261.90	261.90	0.01	0.00	263.50
Other Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Total		**0.03**	**0.23**	**0.10**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**261.90**	**261.90**	**0.01**	**0.00**	**263.50**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	tons/yr										MT/yr					
Apartments Low Rise	4.90789e+006	0.03	0.23	0.10	0.00		0.00	0.02		0.00	0.02		261.90	261.90	0.01	0.00	263.50
Other Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Total		**0.03**	**0.23**	**0.10**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**261.90**	**261.90**	**0.01**	**0.00**	**263.50**

TerracesofLafayette2020
Contra Costa County, Annual

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.14451e+006					276.02	0.02	0.01	278.10
Other Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						**276.02**	**0.02**	**0.01**	**278.10**

Mitigated

	Electricity Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	kWh	tons/yr				MT/yr			
Apartments Low Rise	1.14451e+006					276.02	0.02	0.01	278.10
Other Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						**276.02**	**0.02**	**0.01**	**278.10**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	1.97	0.03	2.37	0.00		0.00	0.01		0.00	0.01		3.86	3.86	0.00	0.00	3.94
Unmitigated	1.99	0.03	2.37	0.00		0.00	0.03		0.00	0.03		208.60	208.60	0.01	0.00	209.93
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.54					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Consumer Products	1.35					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Hearth	0.02	0.00	0.00	0.00		0.00	0.01		0.00	0.01		204.74	204.74	0.00	0.00	205.99
Landscaping	0.07	0.03	2.37	0.00		0.00	0.01		0.00	0.01		3.86	3.86	0.00	0.00	3.94
Total	**1.98**	**0.03**	**2.37**	**0.00**		**0.00**	**0.02**		**0.00**	**0.02**		**208.60**	**208.60**	**0.00**	**0.00**	**209.93**

TerracesofLafayette2020
Contra Costa County, Annual

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.54					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Consumer Products	1.35					0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00	0.00	0.00	0.00	0.00
Landscaping	0.07	0.03	2.37	0.00		0.00	0.01		0.00	0.01		3.86	3.86	0.00	0.00	3.94
Total	**1.96**	**0.03**	**2.37**	**0.00**		**0.00**	**0.01**		**0.00**	**0.01**		**3.86**	**3.86**	**0.00**	**0.00**	**3.94**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet
Install Low Flow Kitchen Faucet
Install Low Flow Toilet
Install Low Flow Shower
Use Water Efficient Irrigation System

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr				MT/yr			
Mitigated					31.68	0.00	0.01	35.77
Unmitigated					37.70	0.00	0.02	42.80
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	20.5235 / 12.9387					37.70	0.00	0.02	42.80
Other Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
Total						**37.70**	**0.00**	**0.02**	**42.80**

Mitigated

	Indoor/Outdoor Use	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	tons/yr				MT/yr			
Apartments Low Rise	16.4188 / 12.1495					31.68	0.00	0.01	35.77
Other Asphalt Surfaces	0 / 0					0.00	0.00	0.00	0.00
Total						**31.68**	**0.00**	**0.01**	**35.77**

TerracesofLafayette2020
Contra Costa County, Annual

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
	tons/yr				MT/yr			
Mitigated					29.41	1.74	0.00	65.92
Unmitigated					29.41	1.74	0.00	65.92
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	144.9					29.41	1.74	0.00	65.92
Other Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						**29.41**	**1.74**	**0.00**	**65.92**

Mitigated

	Waste Disposed	ROG	NOx	CO	SO2	Total CO2	CH4	N2O	CO2e
Land Use	tons	tons/yr				MT/yr			
Apartments Low Rise	144.9					29.41	1.74	0.00	65.92
Other Asphalt Surfaces	0					0.00	0.00	0.00	0.00
Total						**29.41**	**1.74**	**0.00**	**65.92**

9.0 Vegetation

TerracesofLafayette

Contra Costa County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Asphalt Surfaces	3.85	Acre
Apartments Low Rise	315	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	58		

1.3 User Entered Comments

Project Characteristics - 33% RPS not included. Biogenic CO2 not included per BAAQMD.

Land Use - See Project Description

Construction Phase - See phasing assumptions

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Trips and VMT - Haul trip increased to 26 to account for 13-mile one-way distance to nearest landfill.

Demolition -

Grading - Adjusted export volumes to account for smaller trucks: 300,000 x (16 CY/ 10 CY) = 480,000

Architectural Coating - Mitigation AQ-3

Vehicle Trips - Weekday trip adjusted to match traffic =6.45. Average trip length 10 miles for all trip purposes.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Woodstoves - Gas fireplaces assumed in accordance with BAAQMD Regulation 6, Rule 3, Woodburning Devices

Energy Use -

Water And Wastewater - Wastewater is connected to City sewer (treated).

Construction Off-road Equipment Mitigation - Mitigation: compy w/BAAQMD Basic Control Measures

Mobile Land Use Mitigation -

Water Mitigation - Low Flow Fixtures and Irrigation required under California Green Building Code (CALGreen).

TerracesofLafayette
Contra Costa County, Summer

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day											lb/day				
2013	38.31	351.14	209.08	0.49	1,847.25	14.26	1,861.51	14.55	14.26	28.81		51,383.07	0.00	2.72	0.00	51,440.25
2014	91.71	52.04	55.86	0.10	4.61	3.66	8.27	0.18	3.66	3.84		9,302.35	0.00	0.86	0.00	9,320.40
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day											lb/day				
2013	38.31	351.14	209.08	0.49	1,668.08	14.26	1,682.34	6.95	14.26	21.21		51,383.07	0.00	2.72	0.00	51,440.25
2014	91.71	52.04	55.86	0.10	4.21	3.66	7.87	0.18	3.66	3.84		9,302.35	0.00	0.86	0.00	9,320.40
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Area	11.98	0.32	26.99	0.00		0.00	0.64		0.00	0.63		7,829.72		0.20	0.14	7,878.14
Energy	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
Mobile	15.08	15.33	150.54	0.23	27.41	0.75	28.15	0.90	0.75	1.65		22,301.52		1.25		22,327.72
Total	**27.21**	**16.89**	**178.06**	**0.24**	**27.41**	**0.75**	**28.89**	**0.90**	**0.75**	**2.38**		**31,713.15**		**1.48**	**0.17**	**31,797.40**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Area	11.98	0.32	26.99	0.00		0.00	0.64		0.00	0.63		7,829.72		0.20	0.14	7,878.14
Energy	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
Mobile	15.08	15.33	150.54	0.23	27.41	0.75	28.15	0.90	0.75	1.65		22,301.52		1.25		22,327.72
Total	**27.21**	**16.89**	**178.06**	**0.24**	**27.41**	**0.75**	**28.89**	**0.90**	**0.75**	**2.38**		**31,713.15**		**1.48**	**0.17**	**31,797.40**

TerracesofLafayette
Contra Costa County, Summer

3.0 Construction Detail

3.1 Mitigation Measures Construction

Replace Ground Cover
Water Exposed Area
Reduce Vehicle Speed on Unpaved Roads
Clean Paved Roads

3.2 Demolition_building - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.49	0.00	0.49	0.00	0.00	0.00						0.00
Off-Road	5.97	47.66	28.64	0.05		2.36	2.36		2.36	2.36		5,057.71		0.54		5,069.00
Total	**5.97**	**47.66**	**28.64**	**0.05**	**0.49**	**2.36**	**2.85**	**0.00**	**2.36**	**2.36**		**5,057.71**		**0.54**		**5,069.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.13	1.53	0.77	0.00	0.70	0.05	0.75	0.01	0.05	0.06		241.10		0.01		241.24
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.26	0.00	0.22	0.01	0.23	0.01	0.01	0.02		187.46		0.01		187.71
Total	**0.25**	**1.64**	**2.03**	**0.00**	**0.92**	**0.06**	**0.98**	**0.02**	**0.06**	**0.08**		**428.56**		**0.02**		**428.95**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.21	0.00	0.21	0.00	0.00	0.00						0.00
Off-Road	5.97	47.66	28.64	0.05		2.36	2.36		2.36	2.36		5,057.71		0.54		5,069.00
Total	**5.97**	**47.66**	**28.64**	**0.05**	**0.21**	**2.36**	**2.57**	**0.00**	**2.36**	**2.36**		**5,057.71**		**0.54**		**5,069.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.13	1.53	0.77	0.00	0.64	0.05	0.69	0.01	0.05	0.06		241.10		0.01		241.24
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.26	0.00	0.21	0.01	0.21	0.01	0.01	0.02		187.46		0.01		187.71
Total	**0.25**	**1.64**	**2.03**	**0.00**	**0.85**	**0.06**	**0.90**	**0.02**	**0.06**	**0.08**		**428.56**		**0.02**		**428.95**

TerracesofLafayette
Contra Costa County, Summer

3.3 Demolition_asphalt - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.39	0.00	0.39	0.00	0.00	0.00						0.00
Off-Road	5.97	47.66	28.64	0.05		2.36	2.36		2.36	2.36		5,057.71		0.54		5,069.00
Total	**5.97**	**47.66**	**28.64**	**0.05**	**0.39**	**2.36**	**2.75**	**0.00**	**2.36**	**2.36**		**5,057.71**		**0.54**		**5,069.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.10	1.19	0.60	0.00	0.55	0.04	0.59	0.01	0.04	0.05		188.69		0.01		188.80
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.26	0.00	0.22	0.01	0.23	0.01	0.01	0.02		187.46		0.01		187.71
Total	**0.22**	**1.30**	**1.86**	**0.00**	**0.77**	**0.05**	**0.82**	**0.02**	**0.05**	**0.07**		**376.15**		**0.02**		**376.51**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.17	0.00	0.17	0.00	0.00	0.00						0.00
Off-Road	5.97	47.66	28.64	0.05		2.36	2.36		2.36	2.36		5,057.71		0.54		5,069.00
Total	**5.97**	**47.66**	**28.64**	**0.05**	**0.17**	**2.36**	**2.53**	**0.00**	**2.36**	**2.36**		**5,057.71**		**0.54**		**5,069.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.10	1.19	0.60	0.00	0.50	0.04	0.54	0.01	0.04	0.05		188.69		0.01		188.80
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.11	1.26	0.00	0.21	0.01	0.21	0.01	0.01	0.02		187.46		0.01		187.71
Total	**0.22**	**1.30**	**1.86**	**0.00**	**0.71**	**0.05**	**0.75**	**0.02**	**0.05**	**0.07**		**376.15**		**0.02**		**376.51**

TerracesofLafayette
Contra Costa County, Summer

3.4 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.34	0.00	18.34	9.97	0.00	9.97						0.00
Off-Road	6.70	54.15	30.68	0.05		2.66	2.66		2.66	2.66		5,413.51		0.60		5,426.15
Total	**6.70**	**54.15**	**30.68**	**0.05**	**18.34**	**2.66**	**21.00**	**9.97**	**2.66**	**12.63**		**5,413.51**		**0.60**		**5,426.15**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	17.61	201.00	101.62	0.30	1,815.96	6.71	1,822.67	1.10	6.71	7.81		31,765.45		0.87		31,783.67
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.14	0.14	1.51	0.00	0.27	0.01	0.28	0.01	0.01	0.02		224.95		0.01		225.25
Total	**17.75**	**201.14**	**103.13**	**0.30**	**1,816.23**	**6.72**	**1,822.95**	**1.11**	**6.72**	**7.83**		**31,990.40**		**0.88**		**32,008.92**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.84	0.00	7.84	4.26	0.00	4.26						0.00
Off-Road	6.70	54.15	30.68	0.05		2.66	2.66		2.66	2.66		5,413.51		0.60		5,426.15
Total	**6.70**	**54.15**	**30.68**	**0.05**	**7.84**	**2.66**	**10.50**	**4.26**	**2.66**	**6.92**		**5,413.51**		**0.60**		**5,426.15**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	17.61	201.00	101.62	0.30	1,652.62	6.71	1,659.33	1.10	6.71	7.81		31,765.45		0.87		31,783.67
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.14	0.14	1.51	0.00	0.25	0.01	0.25	0.01	0.01	0.02		224.95		0.01		225.25
Total	**17.75**	**201.14**	**103.13**	**0.30**	**1,652.87**	**6.72**	**1,659.58**	**1.11**	**6.72**	**7.83**		**31,990.40**		**0.88**		**32,008.92**

TerracesofLafayette
Contra Costa County, Summer

3.5 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					8.67	0.00	8.67	3.31	0.00	3.31						0.00
Off-Road	7.94	65.32	35.42	0.07		3.07	3.07		3.07	3.07		7,272.09		0.71		7,287.00
Total	**7.94**	**65.32**	**35.42**	**0.07**	**8.67**	**3.07**	**11.74**	**3.31**	**3.07**	**6.38**		**7,272.09**		**0.71**		**7,287.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.16	0.15	1.68	0.00	0.30	0.01	0.31	0.01	0.01	0.02		249.95		0.02		250.28
Total	**0.16**	**0.15**	**1.68**	**0.00**	**0.30**	**0.01**	**0.31**	**0.01**	**0.01**	**0.02**		**249.95**		**0.02**		**250.28**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.71	0.00	3.71	1.42	0.00	1.42						0.00
Off-Road	7.94	65.32	35.42	0.07		3.07	3.07		3.07	3.07		7,272.09		0.71		7,287.00
Total	**7.94**	**65.32**	**35.42**	**0.07**	**3.71**	**3.07**	**6.78**	**1.42**	**3.07**	**4.49**		**7,272.09**		**0.71**		**7,287.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.16	0.15	1.68	0.00	0.27	0.01	0.28	0.01	0.01	0.02		249.95		0.02		250.28
Total	**0.16**	**0.15**	**1.68**	**0.00**	**0.27**	**0.01**	**0.28**	**0.01**	**0.01**	**0.02**		**249.95**		**0.02**		**250.28**

TerracesofLafayette
Contra Costa County, Summer

3.6 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.47	23.27	15.73	0.03		1.53	1.53		1.53	1.53		2,712.00		0.31		2,718.50
Total	**3.47**	**23.27**	**15.73**	**0.03**		**1.53**	**1.53**		**1.53**	**1.53**		**2,712.00**		**0.31**		**2,718.50**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.50	5.38	3.42	0.01	0.31	0.16	0.47	0.02	0.16	0.18		908.24		0.02		908.75
Worker	1.79	1.73	19.01	0.03	3.40	0.11	3.51	0.13	0.11	0.23		2,836.89		0.18		2,840.64
Total	**2.29**	**7.11**	**22.43**	**0.04**	**3.71**	**0.27**	**3.98**	**0.15**	**0.27**	**0.41**		**3,745.13**		**0.20**		**3,749.39**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.47	23.27	15.73	0.03		1.53	1.53		1.53	1.53		2,712.00		0.31		2,718.50
Total	**3.47**	**23.27**	**15.73**	**0.03**		**1.53**	**1.53**		**1.53**	**1.53**		**2,712.00**		**0.31**		**2,718.50**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.50	5.38	3.42	0.01	0.29	0.16	0.45	0.02	0.16	0.18		908.24		0.02		908.75
Worker	1.79	1.73	19.01	0.03	3.11	0.11	3.21	0.13	0.11	0.23		2,836.89		0.18		2,840.64
Total	**2.29**	**7.11**	**22.43**	**0.04**	**3.40**	**0.27**	**3.66**	**0.15**	**0.27**	**0.41**		**3,745.13**		**0.20**		**3,749.39**

TerracesofLafayette
Contra Costa County, Summer

3.6 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.18	21.53	15.56	0.03		1.36	1.36		1.36	1.36		2,712.00		0.28		2,717.97
Total	**3.18**	**21.53**	**15.56**	**0.03**		**1.36**	**1.36**		**1.36**	**1.36**		**2,712.00**		**0.28**		**2,717.97**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.46	4.91	3.15	0.01	0.31	0.14	0.46	0.02	0.14	0.17		910.68		0.02		911.15
Worker	1.64	1.56	17.26	0.03	3.40	0.11	3.51	0.13	0.11	0.23		2,778.62		0.16		2,782.09
Total	**2.10**	**6.47**	**20.41**	**0.04**	**3.71**	**0.25**	**3.97**	**0.15**	**0.25**	**0.40**		**3,689.30**		**0.18**		**3,693.24**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.18	21.53	15.56	0.03		1.36	1.36		1.36	1.36		2,712.00		0.28		2,717.97
Total	**3.18**	**21.53**	**15.56**	**0.03**		**1.36**	**1.36**		**1.36**	**1.36**		**2,712.00**		**0.28**		**2,717.97**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.46	4.91	3.15	0.01	0.29	0.14	0.43	0.02	0.14	0.17		910.68		0.02		911.15
Worker	1.64	1.56	17.26	0.03	3.11	0.11	3.21	0.13	0.11	0.23		2,778.62		0.16		2,782.09
Total	**2.10**	**6.47**	**20.41**	**0.04**	**3.40**	**0.25**	**3.64**	**0.15**	**0.25**	**0.40**		**3,689.30**		**0.18**		**3,693.24**

TerracesofLafayette
Contra Costa County, Summer

3.7 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.53	21.77	14.04	0.02		1.86	1.86		1.86	1.86		1,979.15		0.32		1,985.82
Paving	0.08					0.00	0.00		0.00	0.00						0.00
Total	**3.61**	**21.77**	**14.04**	**0.02**		**1.86**	**1.86**		**1.86**	**1.86**		**1,979.15**		**0.32**		**1,985.82**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	1.14	0.00	0.22	0.01	0.23	0.01	0.01	0.02		183.61		0.01		183.84
Total	**0.11**	**0.10**	**1.14**	**0.00**	**0.22**	**0.01**	**0.23**	**0.01**	**0.01**	**0.02**		**183.61**		**0.01**		**183.84**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.53	21.77	14.04	0.02		1.86	1.86		1.86	1.86		1,979.15		0.32		1,985.82
Paving	0.08					0.00	0.00		0.00	0.00						0.00
Total	**3.61**	**21.77**	**14.04**	**0.02**		**1.86**	**1.86**		**1.86**	**1.86**		**1,979.15**		**0.32**		**1,985.82**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.10	1.14	0.00	0.21	0.01	0.21	0.01	0.01	0.02		183.61		0.01		183.84
Total	**0.11**	**0.10**	**1.14**	**0.00**	**0.21**	**0.01**	**0.21**	**0.01**	**0.01**	**0.02**		**183.61**		**0.01**		**183.84**

TerracesofLafayette
Contra Costa County, Summer

3.8 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.09					0.00	0.00		0.00	0.00						0.00
Off-Road	0.30	1.85	1.28	0.00		0.16	0.16		0.16	0.16		187.46		0.03		188.02
Total	**82.39**	**1.85**	**1.28**	**0.00**		**0.16**	**0.16**		**0.16**	**0.16**		**187.46**		**0.03**		**188.02**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.33	0.31	3.42	0.01	0.67	0.02	0.70	0.03	0.02	0.05		550.83		0.03		551.52
Total	**0.33**	**0.31**	**3.42**	**0.01**	**0.67**	**0.02**	**0.70**	**0.03**	**0.02**	**0.05**		**550.83**		**0.03**		**551.52**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.09					0.00	0.00		0.00	0.00						0.00
Off-Road	0.30	1.85	1.28	0.00		0.16	0.16		0.16	0.16		187.46		0.03		188.02
Total	**82.39**	**1.85**	**1.28**	**0.00**		**0.16**	**0.16**		**0.16**	**0.16**		**187.46**		**0.03**		**188.02**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.33	0.31	3.42	0.01	0.62	0.02	0.64	0.03	0.02	0.05		550.83		0.03		551.52
Total	**0.33**	**0.31**	**3.42**	**0.01**	**0.62**	**0.02**	**0.64**	**0.03**	**0.02**	**0.05**		**550.83**		**0.03**		**551.52**

TerracesofLafayette
Contra Costa County, Summer

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	15.08	15.33	150.54	0.23	27.41	0.75	28.15	0.90	0.75	1.65		22,301.52		1.25		22,327.72
Unmitigated	15.08	15.33	150.54	0.23	27.41	0.75	28.15	0.90	0.75	1.65		22,301.52		1.25		22,327.72
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,031.75	2,255.40	1912.05	7,524,120	7,524,120
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	2,031.75	2,255.40	1,912.05	7,524,120	7,524,120

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.10	10.10	10.10	26.10	29.10	44.80
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00

TerracesofLafayette
Contra Costa County, Summer

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
NaturalGas Unmitigated	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	13446.3	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
Other Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.15**	**1.24**	**0.53**	**0.01**		**0.00**	**0.10**		**0.00**	**0.10**		**1,581.91**		**0.03**	**0.03**	**1,591.54**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	13.4463	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
Other Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.15**	**1.24**	**0.53**	**0.01**		**0.00**	**0.10**		**0.00**	**0.10**		**1,581.91**		**0.03**	**0.03**	**1,591.54**

TerracesofLafayette
Contra Costa County, Summer

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	11.98	0.32	26.99	0.00		0.00	0.64		0.00	0.63		7,829.72		0.20	0.14	7,878.14
Unmitigated	11.98	0.32	26.99	0.00		0.00	0.64		0.00	0.63		7,829.72		0.20	0.14	7,878.14
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.97					0.00	0.00		0.00	0.00						0.00
Consumer Products	7.42					0.00	0.00		0.00	0.00						0.00
Hearth	0.71	0.00	0.04	0.00		0.00	0.49		0.00	0.49		7,782.35		0.15	0.14	7,829.72
Landscaping	0.88	0.32	26.95	0.00		0.00	0.14		0.00	0.14		47.36		0.05		48.42
Total	**11.98**	**0.32**	**26.99**	**0.00**		**0.00**	**0.63**		**0.00**	**0.63**		**7,829.71**		**0.20**	**0.14**	**7,878.14**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.97					0.00	0.00		0.00	0.00						0.00
Consumer Products	7.42					0.00	0.00		0.00	0.00						0.00
Hearth	0.71	0.00	0.04	0.00		0.00	0.49		0.00	0.49		7,782.35		0.15	0.14	7,829.72
Landscaping	0.88	0.32	26.95	0.00		0.00	0.14		0.00	0.14		47.36		0.05		48.42
Total	**11.98**	**0.32**	**26.99**	**0.00**		**0.00**	**0.63**		**0.00**	**0.63**		**7,829.71**		**0.20**	**0.14**	**7,878.14**

TerracesofLafayette
Contra Costa County, Summer

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet
Install Low Flow Kitchen Faucet
Install Low Flow Toilet
Install Low Flow Shower
Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

TerracesofLafayette

Contra Costa County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric
Other Asphalt Surfaces	3.85	Acre
Apartments Low Rise	315	Dwelling Unit

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Utility Company**	Pacific Gas & Electric Company
Climate Zone	4	**Precipitation Freq (Days)**	58		

1.3 User Entered Comments

Project Characteristics - 33% RPS not included. Biogenic CO2 not included per BAAQMD.

Land Use - See Project Description

Construction Phase - See phasing assumptions

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Off-road Equipment - Load factors based on OFFROAD2011 In-Use Off-Road Equipment (Construction, Industrial, Ground Support and Oil Drilling) module.

Trips and VMT - Haul trip increased to 26 to account for 13-mile one-way distance to nearest landfill.

Demolition -

Grading - Adjusted export volumes to account for smaller trucks: 300,000 x (16 CY/ 10 CY) = 480,000

Architectural Coating - Mitigation AQ-3

Vehicle Trips - Weekday trip adjusted to match traffic =6.45. Average trip length 10 miles for all trip purposes.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Vechicle Emission Factors - Assumes a passenger vehicle fleet mix. Typical residential fleet mix is 97% passenger vehicles, 2% MDT, and 1% HDT.

Woodstoves - Gas fireplaces assumed in accordance with BAAQMD Regulation 6, Rule 3, Woodburning Devices

Energy Use -

Water And Wastewater - Wastewater is connected to City sewer (treated).

Construction Off-road Equipment Mitigation - Mitigation: compy w/BAAQMD Basic Control Measures

Mobile Land Use Mitigation -

Water Mitigation - Low Flow Fixtures and Irrigation required under California Green Building Code (CALGreen).

TerracesofLafayette
Contra Costa County, Winter

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day											lb/day				
2013	39.06	354.26	219.94	0.49	1,847.25	14.32	1,861.57	14.55	14.32	28.87		50,888.60	0.00	2.75	0.00	50,946.26
2014	91.85	52.32	55.08	0.09	4.61	3.66	8.27	0.18	3.66	3.84		8,890.09	0.00	0.85	0.00	8,907.90
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day											lb/day				
2013	39.06	354.26	219.94	0.49	1,668.08	14.32	1,682.40	6.95	14.32	21.27		50,888.60	0.00	2.75	0.00	50,946.26
2014	91.85	52.32	55.08	0.09	4.21	3.66	7.88	0.18	3.66	3.84		8,890.09	0.00	0.85	0.00	8,907.90
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Area	11.98	0.32	26.99	0.00		0.00	0.64		0.00	0.63		7,829.72		0.20	0.14	7,878.14
Energy	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
Mobile	15.27	17.02	144.97	0.21	27.41	0.75	28.16	0.90	0.75	1.65		19,796.27		0.94		19,815.98
Total	**27.40**	**18.58**	**172.49**	**0.22**	**27.41**	**0.75**	**28.90**	**0.90**	**0.75**	**2.38**		**29,207.90**		**1.17**	**0.17**	**29,285.66**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Area	11.98	0.32	26.99	0.00		0.00	0.64		0.00	0.63		7,829.72		0.20	0.14	7,878.14
Energy	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
Mobile	15.27	17.02	144.97	0.21	27.41	0.75	28.16	0.90	0.75	1.65		19,796.27		0.94		19,815.98
Total	**27.40**	**18.58**	**172.49**	**0.22**	**27.41**	**0.75**	**28.90**	**0.90**	**0.75**	**2.38**		**29,207.90**		**1.17**	**0.17**	**29,285.66**

TerracesofLafayette
Contra Costa County, Winter

3.0 Construction Detail

3.1 Mitigation Measures Construction

Replace Ground Cover
Water Exposed Area
Reduce Vehicle Speed on Unpaved Roads
Clean Paved Roads

3.2 Demolition_building - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.49	0.00	0.49	0.00	0.00	0.00						0.00
Off-Road	5.97	47.66	28.64	0.05		2.36	2.36		2.36	2.36		5,057.71		0.54		5,069.00
Total	**5.97**	**47.66**	**28.64**	**0.05**	**0.49**	**2.36**	**2.85**	**0.00**	**2.36**	**2.36**		**5,057.71**		**0.54**		**5,069.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.14	1.55	0.86	0.00	0.70	0.05	0.76	0.01	0.05	0.06		240.29		0.01		240.43
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.13	1.17	0.00	0.22	0.01	0.23	0.01	0.01	0.02		165.86		0.01		166.09
Total	**0.26**	**1.68**	**2.03**	**0.00**	**0.92**	**0.06**	**0.99**	**0.02**	**0.06**	**0.08**		**406.15**		**0.02**		**406.52**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.21	0.00	0.21	0.00	0.00	0.00						0.00
Off-Road	5.97	47.66	28.64	0.05		2.36	2.36		2.36	2.36		5,057.71		0.54		5,069.00
Total	**5.97**	**47.66**	**28.64**	**0.05**	**0.21**	**2.36**	**2.57**	**0.00**	**2.36**	**2.36**		**5,057.71**		**0.54**		**5,069.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.14	1.55	0.86	0.00	0.64	0.05	0.69	0.01	0.05	0.06		240.29		0.01		240.43
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.13	1.17	0.00	0.21	0.01	0.21	0.01	0.01	0.02		165.86		0.01		166.09
Total	**0.26**	**1.68**	**2.03**	**0.00**	**0.85**	**0.06**	**0.90**	**0.02**	**0.06**	**0.08**		**406.15**		**0.02**		**406.52**

TerracesofLafayette
Contra Costa County, Winter

3.3 Demolition_asphalt - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.39	0.00	0.39	0.00	0.00	0.00						0.00
Off-Road	5.97	47.66	28.64	0.05		2.36	2.36		2.36	2.36		5,057.71		0.54		5,069.00
Total	**5.97**	**47.66**	**28.64**	**0.05**	**0.39**	**2.36**	**2.75**	**0.00**	**2.36**	**2.36**		**5,057.71**		**0.54**		**5,069.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.11	1.21	0.67	0.00	0.55	0.04	0.59	0.01	0.04	0.05		188.05		0.01		188.16
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.13	1.17	0.00	0.22	0.01	0.23	0.01	0.01	0.02		165.86		0.01		166.09
Total	**0.23**	**1.34**	**1.84**	**0.00**	**0.77**	**0.05**	**0.82**	**0.02**	**0.05**	**0.07**		**353.91**		**0.02**		**354.25**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.17	0.00	0.17	0.00	0.00	0.00						0.00
Off-Road	5.97	47.66	28.64	0.05		2.36	2.36		2.36	2.36		5,057.71		0.54		5,069.00
Total	**5.97**	**47.66**	**28.64**	**0.05**	**0.17**	**2.36**	**2.53**	**0.00**	**2.36**	**2.36**		**5,057.71**		**0.54**		**5,069.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.11	1.21	0.67	0.00	0.50	0.04	0.54	0.01	0.04	0.05		188.05		0.01		188.16
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.12	0.13	1.17	0.00	0.21	0.01	0.21	0.01	0.01	0.02		165.86		0.01		166.09
Total	**0.23**	**1.34**	**1.84**	**0.00**	**0.71**	**0.05**	**0.75**	**0.02**	**0.05**	**0.07**		**353.91**		**0.02**		**354.25**

TerracesofLafayette
Contra Costa County, Winter

3.4 Site Preparation - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.34	0.00	18.34	9.97	0.00	9.97						0.00
Off-Road	6.70	54.15	30.68	0.05		2.66	2.66		2.66	2.66		5,413.51		0.60		5,426.15
Total	**6.70**	**54.15**	**30.68**	**0.05**	**18.34**	**2.66**	**21.00**	**9.97**	**2.66**	**12.63**		**5,413.51**		**0.60**		**5,426.15**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	18.21	203.82	113.19	0.30	1,815.96	6.77	1,822.72	1.10	6.77	7.86		31,658.57		0.90		31,677.49
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.15	0.15	1.40	0.00	0.27	0.01	0.28	0.01	0.01	0.02		199.03		0.01		199.31
Total	**18.36**	**203.97**	**114.59**	**0.30**	**1,816.23**	**6.78**	**1,823.00**	**1.11**	**6.78**	**7.88**		**31,857.60**		**0.91**		**31,876.80**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.84	0.00	7.84	4.26	0.00	4.26						0.00
Off-Road	6.70	54.15	30.68	0.05		2.66	2.66		2.66	2.66		5,413.51		0.60		5,426.15
Total	**6.70**	**54.15**	**30.68**	**0.05**	**7.84**	**2.66**	**10.50**	**4.26**	**2.66**	**6.92**		**5,413.51**		**0.60**		**5,426.15**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	18.21	203.82	113.19	0.30	1,652.62	6.77	1,659.39	1.10	6.77	7.86		31,658.57		0.90		31,677.49
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.15	0.15	1.40	0.00	0.25	0.01	0.25	0.01	0.01	0.02		199.03		0.01		199.31
Total	**18.36**	**203.97**	**114.59**	**0.30**	**1,652.87**	**6.78**	**1,659.64**	**1.11**	**6.78**	**7.88**		**31,857.60**		**0.91**		**31,876.80**

TerracesofLafayette
Contra Costa County, Winter

3.5 Grading - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Fugitive Dust					8.67	0.00	8.67	3.31	0.00	3.31						0.00
Off-Road	7.94	65.32	35.42	0.07		3.07	3.07		3.07	3.07		7,272.09		0.71		7,287.00
Total	**7.94**	**65.32**	**35.42**	**0.07**	**8.67**	**3.07**	**11.74**	**3.31**	**3.07**	**6.38**		**7,272.09**		**0.71**		**7,287.00**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.16	0.17	1.56	0.00	0.30	0.01	0.31	0.01	0.01	0.02		221.15		0.01		221.46
Total	**0.16**	**0.17**	**1.56**	**0.00**	**0.30**	**0.01**	**0.31**	**0.01**	**0.01**	**0.02**		**221.15**		**0.01**		**221.46**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Fugitive Dust					3.71	0.00	3.71	1.42	0.00	1.42						0.00
Off-Road	7.94	65.32	35.42	0.07		3.07	3.07		3.07	3.07		7,272.09		0.71		7,287.00
Total	**7.94**	**65.32**	**35.42**	**0.07**	**3.71**	**3.07**	**6.78**	**1.42**	**3.07**	**4.49**		**7,272.09**		**0.71**		**7,287.00**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.16	0.17	1.56	0.00	0.27	0.01	0.28	0.01	0.01	0.02		221.15		0.01		221.46
Total	**0.16**	**0.17**	**1.56**	**0.00**	**0.27**	**0.01**	**0.28**	**0.01**	**0.01**	**0.02**		**221.15**		**0.01**		**221.46**

TerracesofLafayette
Contra Costa County, Winter

3.6 Building Construction - 2013

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Off-Road	3.47	23.27	15.73	0.03		1.53	1.53		1.53	1.53		2,712.00		0.31		2,718.50
Total	**3.47**	**23.27**	**15.73**	**0.03**		**1.53**	**1.53**		**1.53**	**1.53**		**2,712.00**		**0.31**		**2,718.50**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.55	5.43	4.24	0.01	0.31	0.16	0.48	0.02	0.16	0.19		902.25		0.03		902.81
Worker	1.87	1.94	17.71	0.03	3.40	0.11	3.51	0.13	0.11	0.23		2,510.02		0.17		2,513.54
Total	**2.42**	**7.37**	**21.95**	**0.04**	**3.71**	**0.27**	**3.99**	**0.15**	**0.27**	**0.42**		**3,412.27**		**0.20**		**3,416.35**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Off-Road	3.47	23.27	15.73	0.03		1.53	1.53		1.53	1.53		2,712.00		0.31		2,718.50
Total	**3.47**	**23.27**	**15.73**	**0.03**		**1.53**	**1.53**		**1.53**	**1.53**		**2,712.00**		**0.31**		**2,718.50**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day											lb/day				
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.55	5.43	4.24	0.01	0.29	0.16	0.45	0.02	0.16	0.19		902.25		0.03		902.81
Worker	1.87	1.94	17.71	0.03	3.11	0.11	3.21	0.13	0.11	0.23		2,510.02		0.17		2,513.54
Total	**2.42**	**7.37**	**21.95**	**0.04**	**3.40**	**0.27**	**3.66**	**0.15**	**0.27**	**0.42**		**3,412.27**		**0.20**		**3,416.35**

TerracesofLafayette
Contra Costa County, Winter

3.6 Building Construction - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.18	21.53	15.56	0.03		1.36	1.36		1.36	1.36		2,712.00		0.28		2,717.97
Total	**3.18**	**21.53**	**15.56**	**0.03**		**1.36**	**1.36**		**1.36**	**1.36**		**2,712.00**		**0.28**		**2,717.97**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.51	4.94	3.95	0.01	0.31	0.15	0.46	0.02	0.15	0.17		904.53		0.02		905.05
Worker	1.72	1.76	16.01	0.03	3.40	0.11	3.51	0.13	0.11	0.23		2,457.42		0.15		2,460.65
Total	**2.23**	**6.70**	**19.96**	**0.04**	**3.71**	**0.26**	**3.97**	**0.15**	**0.26**	**0.40**		**3,361.95**		**0.17**		**3,365.70**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.18	21.53	15.56	0.03		1.36	1.36		1.36	1.36		2,712.00		0.28		2,717.97
Total	**3.18**	**21.53**	**15.56**	**0.03**		**1.36**	**1.36**		**1.36**	**1.36**		**2,712.00**		**0.28**		**2,717.97**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.51	4.94	3.95	0.01	0.29	0.15	0.43	0.02	0.15	0.17		904.53		0.02		905.05
Worker	1.72	1.76	16.01	0.03	3.11	0.11	3.21	0.13	0.11	0.23		2,457.42		0.15		2,460.65
Total	**2.23**	**6.70**	**19.96**	**0.04**	**3.40**	**0.26**	**3.64**	**0.15**	**0.26**	**0.40**		**3,361.95**		**0.17**		**3,365.70**

TerracesofLafayette
Contra Costa County, Winter

3.7 Paving - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.53	21.77	14.04	0.02		1.86	1.86		1.86	1.86		1,979.15		0.32		1,985.82
Paving	0.08					0.00	0.00		0.00	0.00						0.00
Total	**3.61**	**21.77**	**14.04**	**0.02**		**1.86**	**1.86**		**1.86**	**1.86**		**1,979.15**		**0.32**		**1,985.82**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.12	1.06	0.00	0.22	0.01	0.23	0.01	0.01	0.02		162.38		0.01		162.60
Total	**0.11**	**0.12**	**1.06**	**0.00**	**0.22**	**0.01**	**0.23**	**0.01**	**0.01**	**0.02**		**162.38**		**0.01**		**162.60**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.53	21.77	14.04	0.02		1.86	1.86		1.86	1.86		1,979.15		0.32		1,985.82
Paving	0.08					0.00	0.00		0.00	0.00						0.00
Total	**3.61**	**21.77**	**14.04**	**0.02**		**1.86**	**1.86**		**1.86**	**1.86**		**1,979.15**		**0.32**		**1,985.82**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.11	0.12	1.06	0.00	0.21	0.01	0.21	0.01	0.01	0.02		162.38		0.01		162.60
Total	**0.11**	**0.12**	**1.06**	**0.00**	**0.21**	**0.01**	**0.21**	**0.01**	**0.01**	**0.02**		**162.38**		**0.01**		**162.60**

TerracesofLafayette
Contra Costa County, Winter

3.8 Architectural Coating - 2014

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.09					0.00	0.00		0.00	0.00						0.00
Off-Road	0.30	1.85	1.28	0.00		0.16	0.16		0.16	0.16		187.46		0.03		188.02
Total	**82.39**	**1.85**	**1.28**	**0.00**		**0.16**	**0.16**		**0.16**	**0.16**		**187.46**		**0.03**		**188.02**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.34	0.35	3.17	0.01	0.67	0.02	0.70	0.03	0.02	0.05		487.15		0.03		487.79
Total	**0.34**	**0.35**	**3.17**	**0.01**	**0.67**	**0.02**	**0.70**	**0.03**	**0.02**	**0.05**		**487.15**		**0.03**		**487.79**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	82.09					0.00	0.00		0.00	0.00						0.00
Off-Road	0.30	1.85	1.28	0.00		0.16	0.16		0.16	0.16		187.46		0.03		188.02
Total	**82.39**	**1.85**	**1.28**	**0.00**		**0.16**	**0.16**		**0.16**	**0.16**		**187.46**		**0.03**		**188.02**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00		0.00		0.00
Worker	0.34	0.35	3.17	0.01	0.62	0.02	0.64	0.03	0.02	0.05		487.15		0.03		487.79
Total	**0.34**	**0.35**	**3.17**	**0.01**	**0.62**	**0.02**	**0.64**	**0.03**	**0.02**	**0.05**		**487.15**		**0.03**		**487.79**

TerracesofLafayette
Contra Costa County, Winter

4.0 Mobile Detail

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	15.27	17.02	144.97	0.21	27.41	0.75	28.16	0.90	0.75	1.65		19,796.27		0.94		19,815.98
Unmitigated	15.27	17.02	144.97	0.21	27.41	0.75	28.16	0.90	0.75	1.65		19,796.27		0.94		19,815.98
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Low Rise	2,031.75	2,255.40	1912.05	7,524,120	7,524,120
Other Asphalt Surfaces	0.00	0.00	0.00		
Total	2,031.75	2,255.40	1,912.05	7,524,120	7,524,120

4.3 Trip Type Information

	Miles			Trip %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW
Apartments Low Rise	10.10	10.10	10.10	26.10	29.10	44.80
Other Asphalt Surfaces	9.50	7.30	7.30	0.00	0.00	0.00

TerracesofLafayette
Contra Costa County, Winter

5.0 Energy Detail

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
NaturalGas Unmitigated	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	13446.3	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
Other Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.15**	**1.24**	**0.53**	**0.01**		**0.00**	**0.10**		**0.00**	**0.10**		**1,581.91**		**0.03**	**0.03**	**1,591.54**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU	lb/day										lb/day					
Apartments Low Rise	13.4463	0.15	1.24	0.53	0.01		0.00	0.10		0.00	0.10		1,581.91		0.03	0.03	1,591.54
Other Asphalt Surfaces	0	0.00	0.00	0.00	0.00		0.00	0.00		0.00	0.00		0.00		0.00	0.00	0.00
Total		**0.15**	**1.24**	**0.53**	**0.01**		**0.00**	**0.10**		**0.00**	**0.10**		**1,581.91**		**0.03**	**0.03**	**1,591.54**

TerracesofLafayette
Contra Costa County, Winter

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	11.98	0.32	26.99	0.00		0.00	0.64		0.00	0.63		7,829.72		0.20	0.14	7,878.14
Unmitigated	11.98	0.32	26.99	0.00		0.00	0.64		0.00	0.63		7,829.72		0.20	0.14	7,878.14
Total	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**	**NA**

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.97					0.00	0.00		0.00	0.00						0.00
Consumer Products	7.42					0.00	0.00		0.00	0.00						0.00
Hearth	0.71	0.00	0.04	0.00		0.00	0.49		0.00	0.49		7,782.35		0.15	0.14	7,829.72
Landscaping	0.88	0.32	26.95	0.00		0.00	0.14		0.00	0.14		47.36		0.05		48.42
Total	**11.98**	**0.32**	**26.99**	**0.00**		**0.00**	**0.63**		**0.00**	**0.63**		**7,829.71**		**0.20**	**0.14**	**7,878.14**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.97					0.00	0.00		0.00	0.00						0.00
Consumer Products	7.42					0.00	0.00		0.00	0.00						0.00
Hearth	0.71	0.00	0.04	0.00		0.00	0.49		0.00	0.49		7,782.35		0.15	0.14	7,829.72
Landscaping	0.88	0.32	26.95	0.00		0.00	0.14		0.00	0.14		47.36		0.05		48.42
Total	**11.98**	**0.32**	**26.99**	**0.00**		**0.00**	**0.63**		**0.00**	**0.63**		**7,829.71**		**0.20**	**0.14**	**7,878.14**

TerracesofLafayette
Contra Costa County, Winter

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet
Install Low Flow Kitchen Faucet
Install Low Flow Toilet
Install Low Flow Shower
Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Vegetation

REGULATION 11
HAZARDOUS POLLUTANTS
RULE 2
ASBESTOS DEMOLITION, RENOVATION AND MANUFACTURING

INDEX

REGULATION 11
HAZARDOUS POLLUTANTS
RULE 2
ASBESTOS DEMOLITION, RENOVATION AND MANUFACTURING

(Adopted December 15, 1976)

11-2-100 GENERAL

11-2-101 Description: The purpose of this Rule is to control emissions of asbestos to the atmosphere during demolition, renovation, milling and manufacturing and establish appropriate waste disposal procedures.
(Amended September 5, 1990; October 7, 1998)

11-2-110 Exemption, Visible Emission Standard: Those operations that primarily install asbestos friction products in motor vehicles are exempt from the visible emission requirements of Section 11-2-302.

11-2-111 Exemption, Prohibited Operations: Cold process cutback asphalt roof coatings and exterior and interior coatings and laminating resins containing encapsulated asbestos fibers bound within the finished product from manufacture through application are exempt from the limitations of subsection 11-2-301.3.
(Amended October 7, 1998)

11-2-112 Exemption, Maintenance and Decontamination: Maintenance and decontamination operations where no RACM is being disturbed or removed are exempt from the provisions of Section 11-2-303.
(Adopted Sept. 5, 1990; Amended Dec. 4, 1991; Oct. 7, 1998)

11-2-113 Exemption, Renovation Notification: Except for dry removals, notification is not required for renovations where the amount of RACM is less than 30.8m. (100 ft.) linear, 9.4m^2 (100 $ft.^2$) and 1 m^3 (35 $ft.^3$). (Adopted October 7, 1998)

11-2-200 DEFINITIONS

11-2-201 Active Waste Disposal Sites: Any disposal site or portion thereof which currently accepts regulated asbestos-containing waste material or has accepted regulated asbestos-containing waste material within the past year.
(Adopted September 5, 1990; Amended October 7, 1998)

11-2-202 Adequately Wetted: Sufficiently mixed or penetrated with liquid to prevent the release of asbestos-containing particles. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted; however, the absence of visible emissions is not sufficient evidence of being adequately wetted. Material that is removed in units or parts of units shall be wet at all the exposed surfaces. If broken up, the material shall be wetted at all the exposed fracture surfaces. (Adopted December 4, 1991; Amended October 7, 1998)

11-2-203 Asbestos: Actinolite, amosite (cummingtonite, grunerite), anthophyllite, chrysotile, crocidolite (riebecktite), tremolite. (Amended September 5, 1990)

11-2-204 Asbestos-Containing Material: Any building material which contains commercial asbestos in an amount greater than 1% by weight, area, or count as determined by the methods specified in Section 11-2-603.
(Adopted Sept. 5, 1990; Amended Dec. 4, 1991)

11-2-205 Asbestos-Containing Waste Material: Any waste that contains or has been contaminated by commercial asbestos and is generated by a plant, source, or operation subject to the provisions of this Rule, including, but not limited to, asbestos mill tailings, control device asbestos waste, RACM demolition and renovation waste material, disposable equipment and clothing, and bags or containers that previously contained commercial asbestos.
(Amended Sept. 5, 1990; Dec. 4, 1991; Oct. 7, 1998)

11-2-206 Asbestos Mill: Any plant engaged in the conversion or any intermediate step in the conversion of asbestos ore into commercial asbestos. Indoor and outdoor storage,

handling, conveying and loading of asbestos materials is considered a part of such a plant. (Amended September 5, 1990)

11-2-207 **Asbestos Tailing:** Any solid waste product of asbestos mining or milling operation which contains asbestos. (Adopted October 7, 1998)

11-2-208 **Category I Nonfriable Asbestos-Containing Material:** Asbestos-containing packings, gaskets, resilient floor coverings, mastics and asphalt roofing products. (Adopted December 4, 1991; Amended October 7, 1998)

11-2-209 **Category II Nonfriable Asbestos-Containing Material:** Asbestos-containing material, excluding Category I nonfriable asbestos-containing material, that, when dry, and in its present form, cannot be crumbled, pulverized, or reduced to powder by hand pressure. For the purposes of this Regulation, these products include transite board, pipe and asbestos cement products, plaster, stucco, and paint. (Adopted December 4, 1991; Amended October 7, 1998)

11-2-210 **Commercial Asbestos:** Any variety of asbestos which is produced by extracting asbestos from asbestos ore.

11-2-211 **Completion Date**: The date on which containment is removed or the demolition of the structure is completed. (Adopted 9/5/90; Amended 10/7/98)

11-2-212 **Containment:** The isolation of an asbestos removal area from the outside air by use of physical barriers, usually plastic sheeting. Such barriers shall include transparent viewing ports which allow observation of stripping and removal of RACM from outside the barrier. (Adopted Sept. 5, 1990; Amended Dec. 4, 1991)

11-2-213 **Control Device Asbestos Waste:** Any asbestos-containing waste material that is collected in an air pollution control device. (Amended September 5, 1990)

11-2-214 **Conversion Operation:** A process by which asbestos material and/or asbestos-containing waste material is converted to nonasbestos (asbestos-free) material. (Adopted December 4, 1991)

11-2-215 **Cumulative Renovations:** A series of small (less than 30.8 m [100 ft] linear, 9.4 m^2 [100 ft^2] or 1 m^3 [35 ft^3]) renovations or removals of RACM performed during a calendar year at a single plant or facility which, taken together, would add up to a reportable amount under the provisions of this Rule. (Adopted September 5, 1990; Amended December 4, 1991)

11-2-216 **Demolition:** Wrecking, intentional burning, moving or dismantling of any load-supporting structural member, or portion thereof, of a building, facility or ship. This includes, but is not limited to, any related cutting, disjointing, stripping or removal of structural elements. (Amended Sept. 5, 1990; Dec. 4, 1991; Oct. 7, 1998)

11-2-217 **Element:** Any boiler, pipe, furnace, duct, tank, reactor, column, turbine, bridge or structural member. (Amended October 7, 1998)

11-2-218 **Emergency Demolition:** A demolition carried out pursuant to an order of a federal, state or local government agency issued because the building is structurally unsound and in danger of imminent collapse or has been declared a public nuisance. (Amended December 4,1991; October 7, 1998)

11-2-219 **Emergency Renovation:** Renovation that is not planned but results from a sudden, unexpected event. This includes:

219.1 Operations necessitated by equipment failures;

219.2 Unanticipated findings of RACM during demolition, renovation or construction activity;

219.3 The conversion of previously nonfriable asbestos-containing material to friable material during the course of a renovation;

219.4 Renovations due to fire, water, or earthquake damage;

219.5 Renovations where imminent danger to the public health may exist;

219.6 Renovations in public buildings and schools; or

219.7 Owner-occupied single family dwellings (SFDs) during or within ten days of the close of escrow, which may be included at the discretion of the APCO.

(Amended Sept. 5, 1990; Dec. 4, 1991; Oct. 7, 1998)

11-2-220 **Encapsulant:** A sealant material such as latex paint which, when applied, coats or penetrates the asbestos-containing material. (Adopted December 4, 1991; Amended October 7, 1998)

11-2-221 **Fabricating:** Any processing of a manufactured product containing commercial asbestos with the exception of processing at temporary sites for the construction or restoration of buildings, structures, plants or installations.

11-2-222 **Friable Asbestos-Containing Material:** Any material that contains more than one percent asbestos as determined by the methods specified in Section 11-2-603 and that falls into one or more of the following categories:

222.1 Materials that can be crumbled, pulverized, or reduced to powder, when dry, by hand pressure. These include, but are not limited to, sprayed-on or troweled-on fireproofing, acoustic ceiling material and ceiling tiles, resilient floor covering backing, thermal systems insulation, nonasphalt-saturated roofing felts, asbestos-containing paper and joint compound.

222.2 Materials that have been rendered to a crumbled, pulverized, or powdered state, when dry, by crushing, sanding, sawing or shot-blasting or other demolition or renovation techniques. These include, but are not limited to, U.S. E.P.A. Category I nonfriable asbestos-containing material as defined in 40 CFR Part 61.141 and in Section 11-2-208.

222.3 Materials in which the asbestos fibers are bound into a matrix, if such materials have been rendered to a powdered state, when dry, by crushing, sanding, sawing or shot-blasting or other demolition or renovation techniques, or by severe weathering. These include, but are not limited to, U.S. E.P.A. Category ll nonfriable asbestos-containing material as defined in 40 CFR Part 61.141 and in Section 11-2-209.

(Amended Sept. 5, 1990; Dec. 4, 1991; Oct. 7, 1998)

11-2-223 **Glove Bag Method:** A method of stripping or removing RACM in which the wetted material is totally isolated inside a transparent plastic, leak-tight bag and then manually removed using gloves which are an integral part of the bag.

(Adopted Sept. 5, 1990; Amended Dec. 4, 1991; Oct. 7, 1998)

11-2-224 **HEPA Filter:** A high efficiency particulate air filter capable of filtering 0.3 micron particles with 99.97 percent efficiency as determined by ASTM Method D-2988-71.

(Adopted September 5, 1990)

11-2-225 **Inactive Waste Disposal Site:** Any disposal site or portion thereof, where additional asbestos-containing waste material will not be deposited and where the surface is not disturbed by vehicular traffic.

11-2-226 **Leak-Tight:** Any method of containerization that prevents solids, liquids, or particles from escaping or spilling out. (Adopted December 4, 1991)

11-2-227 **Manufacturing:** The combining of commercial asbestos, or in the case of woven friction products, the combining of textiles containing commercial asbestos, with any other material(s), including commercial asbestos, and the processing of this combination into a product.

11-2-228 **Ordered Demolition:** The demolition of a stationary structure pursuant to an order of an authorized representative of a federal, state or local governmental agency, issued because that structure is structurally unsound and in danger of imminent collapse.

(Adopted October 7, 1998)

11-2-229 **Outside Air:** The air outside buildings and structures.

11-2-230 **Owner or Operator of a Demolition or Renovation:** Any person who owns, leases, operates, controls or supervises the stationary structure being demolished or renovated, or any person who owns, leases, operates, controls or supervises demolition or renovation, or both. (Adopted December 4, 1991)

11-2-231 **Particulate Asbestos Material:** Finely divided particles of asbestos material.

11-2-232 **Planned Renovation:** A renovation, or a number of such operations, in which the amount of RACM that will be removed or stripped at an installation within a maximum time of one year can be predicted. Operations that are individually nonscheduled are included, provided a number of such operations can be predicted to occur during a given period of time based on operating experience. The minimum period of time shall be 30 days. (Amended September 5, 1990; December 4, 1991)

11-2-233 **Regulated Asbestos-Containing Material (RACM):**

233.1 Friable asbestos-containing material, as defined in Section 11-2-222 or,

233.2 Category I nonfriable asbestos-containing material that has or will become friable, or that has been subjected to sanding, drilling, grinding, cutting, or abrading, or,

233.3 Category II nonfriable asbestos-containing material that may become or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation.

(Adopted December 4, 1991; Amended October 7, 1998)

11-2-234 **Removing:** The taking out, cutting, drilling or similarly disturbing of RACM used on any element from any building, structure, plant or installation.

(Amended 5/20/81; 9/5/90; 12/4/91; 10/7/98)

11-2-235 **Renovation:** An operation other than demolition in which RACM is removed or stripped from any element of a building, structure, plant, ship, installation or portion thereof. (Amended 9/5/90; 12/4/91; 10/7/98)

11-2-236 **Resilient Floor Covering:** Asbestos-containing material comprised of floor tile, including asphalt or vinyl floor tile, or sheet vinyl floor covering; but not including linoleum, sheet linoleum, or the backing of linoleum, which are considered friable for the purposes of this Rule. (Adopted December 4, 1991)

11-2-237 **Roadways:** Surfaces on which motor vehicles operate and any shoulder which extends up to 3 m (10 feet) from the edge of the traveled way. This includes, but is not limited to, highways, roads, streets, parking areas, driveways, and haul roads.

(Amended September 5, 1990)

11-2-238 **Set Up**: Preparation of a structure for stripping or removing of RACM, including but not limited to placement of physical barriers, installation of viewports, installation of local exhaust ventilation and collection systems, removal of nonasbestos containing structural components for the primary purpose of gaining access to RACM.

(Adopted October 7, 1998)

11-2-239 **Starting Date**: The date on which actual disturbance, active removal or stripping of any RACM begins, or the demolition of the structure begins.

(Adopted September 5, 1990; Amended October 7, 1998)

11-2-240 **Stripping:** Taking off, cutting, drilling, or similarly disturbing RACM used on any pipe, duct, boiler, tank, reactor, turbine, furnace, or structural member.

(Amended 5/20/81; 9/5/90; 12/4/91; 10/7/98)

11-2-241 **Structural Member:** Any load supporting member, such as beams and load-supporting walls, or any nonload-supporting member, such as ceilings and nonload-supporting walls. (Adopted October 7, 1998)

11-2-242 **Visible Emissions:** Any emissions, evidence of emissions, including, but not limited to, dust, debris, particles, or fibers, or releases from any point or area source containing particulate asbestos material that are visually detectable without the aid of instruments, and which contain asbestos. This includes, but is not limited to, asbestos debris found outside of containment at a job site.

(Adopted September 5, 1990; Amended October 7, 1998)

11-2-243 **Waste Generator:** Any owner or operator of a source subject to this Rule whose act or process produces asbestos-containing waste material.

(Adopted December 4, 1991)

11-2-244 **Waste Shipment Record:** The shipping document, required by the APCO to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material. (Adopted December 4, 1991)

11-2-245 **Working Day:** Monday through Friday, including holidays that fall on any of the days Monday through Friday. (Adopted December 4, 1991)

11-2-300 **STANDARDS**

11-2-301 **Prohibited Operations:** The following operations are prohibited:

301.1 The surfacing of roadways with asbestos tailings or asbestos-containing wastes except for temporary roadways on an area of asbestos deposits. The deposition of asbestos tailings on roadways covered with snow or ice is considered "surfacing."

301.2 Molded insulating materials which are friable, and wet-applied insulating materials which are friable after drying, installed after the effective date of this Regulation, shall contain no commercial asbestos.

301.3 The spraying of any substance containing any amount of asbestos in or upon a building or other structure during its construction, alteration or repair.

(Amended September 5, 1990)

11-2-302 Visible Emissions: There shall be no visible emissions to the outside air from any asbestos mill or from any operation involving the demolition, renovation, removal, manufacture or fabrication of any product containing asbestos.

302.1 For asbestos milling, or manufacturing or fabrication of products containing asbestos only, rather than meet the no visible emission requirements as specified by Section 11-2-302, a person may elect to use air-cleaning to clean emissions containing particulate asbestos material before such emissions escape to, or are vented to, the outside air. Each owner or operator must meet the following requirements:

1.1 Monitor each potential source of asbestos emissions from any part of the mill, manufacturing, or fabricating facility, including air cleaning devices, process equipment and buildings that house equipment for material processing and handling, at least once each day, during daylight hours, for visible emissions to the outside air during periods of operation.

1.2 Inspect each air cleaning device at least once each week for proper operation and maintenance, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected weekly, submit a written maintenance plan to the APCO as specified in Section 11-2-404. If the use of fabric filters creates a fire or explosion hazard, the APCO may authorize the use of wet collectors designed to operate with a unit contacting energy of at least 9963 pa (40 in.) water gauge pressure. All air cleaning equipment authorized by this Regulation must be properly permitted, installed, used, operated and maintained. By-pass devices may be used only during emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

(Amended Sept. 5, 1990; Dec. 4, 1991; Oct. 7, 1998)

11-2-303 Demolition, Renovation, and Removal: To prevent emissions from asbestos-containing material, a person responsible for scheduled, nonscheduled, or emergency demolition, renovation, or removal of any building elements containing any amount of RACM shall use the procedures specified in subsections 303.1 through 303.13. This shall not apply to maintenance or decontamination procedures where no removal takes place.

303.1 **Wetting Method:** All exposed RACM shall be adequately wetted and kept wet during cutting, stripping, demolition, renovation, removal and handling operations both inside and outside of a building, except when the methods specified in subsections 11-2-303.2 and 303.4 are used. Wetting requirements are suspended when the temperature at the point of wetting is below 0^{o}C (32^{o}F) in which case elements of RACM shall be removed in units or in sections to the maximum extent possible.

303.2 **Exhaust and Collection Method:** In lieu of wetting, a local HEPA exhaust, ventilation, and collection system designed and operated to capture the emissions from RACM and prevent any visible emissions to the outside air may be used during 1) stripping of any element that has been removed as a unit or in sections, in accordance with subsection 11-2-303.4; 2) to prevent emissions of particulate asbestos-containing material to the outside air when damage to equipment resulting from wetting would be unavoidable; 3) shotblasting of mastic. Approval for dry removal of RACM must be received

from the APCO; requests for approval of dry removal must be in writing and meet the notification provisions of Section 11-2-401.

303.3 **Scheduling of Demolition Activities:** RACM shall be removed prior to demolition, or other operations that would either break up, or preclude access to the RACM for subsequent removal. Removal of RACM which is encased in concrete or other similar structural material is not required prior to demolition, but such material shall be adequately wetted whenever exposed during demolition or renovation and disposed of as RACM as required in Section 304.

303.4 **Removal in Units:** Elements that have RACM may be removed at any time in units or sections so long as the exposed RACM during cutting or disjointing is adequately wetted or encapsulated to prevent emissions of particulate asbestos material. Such sections if elevated shall be carefully lowered to ground level, where they are to be abated in accordance with subsection 11-2-303.1 and/or 303.2.

303.5 **Removal By Chute or Container:** All RACM not removed in units or sections shall be adequately wetted and kept wet in accordance with subsection 11-2-303.1, and transported to the ground in leak-tight chutes or containers, utilizing negative air and HEPA equipment.

303.6 **Containment Requirement:** Any building, structure, room, facility or installation from which RACM is being stripped or removed shall be isolated by physical barriers from the outside air to the extent feasible as determined by the APCO. Such barriers shall include transparent viewing ports which shall be in place prior to the commencement of the removal of the RACM and which allow observation, to the extent feasible as determined by the APCO, of all stripping and removal of RACM from outside the barrier. The negative air pressure inside the isolated work area shall be maintained at a pressure differential relative to adjacent, nonisolated areas to the extent feasible. The negative air pressure ventilation equipment shall be operated continuously from the establishment of isolation barriers through final clean-up of the work area following stripping or removal of RACM. Any such local exhaust ventilation system shall filter the air from the isolated area with a HEPA filter, or equivalent, prior to exhausting. The provisions of this subsection shall not apply to a removal done entirely by the glovebag method, provided the bag is evacuated with a HEPA filter vacuum prior to removal from the element being stripped; a removal using a mini-enclosure designed and operated according to current OSHA standards; a removal of one square foot or less done in accordance with subsection 11-2-303.1 and using a local HEPA exhaust, ventilation and collection system; or a removal using any other engineering control technique approved by the APCO. The requirement to maintain negative air pressure shall not apply to outdoor pipeways at industrial facilities; however, these jobs shall be contained by plastic barriers to the extent feasible to prevent visible emissions of RACM.

303.7 **Clean Work Site Requirement:** All friable asbestos-containing waste material related to a specific demolition, renovation or removal, including pre-existing debris, shall be handled in accordance with the provisions of Sections 11-2-303 and 11-2-304.

303.8 **Surveys**: Except for ordered demolitions, prior to commencement of any demolition or renovation, the owner or operator shall thoroughly survey the affected structure or portion thereof for the presence of asbestos-containing material, including Category I and Category II nonfriable asbestos-containing material. The survey shall be performed by a person who is certified by the Division of Occupational Safety and Health, and who has taken and passed an EPA-approved Building Inspector course and who conforms to the procedures outlined in the course. The survey shall include sampling and the results of laboratory analysis of the asbestos content of all suspected asbestos-containing materials. This survey shall be made available, upon request by the APCO, prior to the commencement of any RACM removal or any demolition. This subsection shall not apply if the owner or operator

asserts that the material to be renovated is RACM and will be handled in accordance with the provisions of Sections 11-2-303, 304 and 401. The requirement for certification by the Division of Occupational Safety and Health shall not apply to in-house health professionals within a specific nonasbestos related company who perform occasional surveys only for that company as part of their regular job responsibilities

8.1 When a structure, or portion thereof, is demolished under an ordered demolition, the survey must be done prior to, during, or after the demolition but prior to loading or removal of any demolition debris. If the debris contains regulated asbestos-containing material, all of the debris shall be treated as asbestos-containing waste material pursuant to Section 11-2-304.

8.2 For renovation or demolition of residential buildings having four or fewer dwelling units, a survey is not required. A sample and test of the material will be required only when any of the following will be removed or disturbed: heating, ventilation, air conditioning ducting and systems; acoustic ceiling material or acoustic plaster; textured or skim coated wall surfaces, cement siding or stucco, or resilient flooring. Where the material is found to contain greater than 1 percent asbestos and is friable, the material must be handled in accordance with Section 11-2-303.

303.9 **On-Site Representative:** No RACM shall be stripped or removed unless at least one on-site representative, such as a foreman or management-level person or other authorized representative, certifies that he or she is familiar with the provisions of this rule as it pertains to demolition and renovation and the means of compliance therewith, and is present during all stripping and removing of RACM. The required training shall include: applicability of the regulation, notifications, procedures, material identification, and control procedures for removals, including: adequate wetting, local exhaust ventilation and HEPA filtration, negative pressure enclosures , glove-bag procedures, waste disposal work practices, and reporting and record keeping requirements. Evidence that the required training has been completed shall be posted on-site and made available for inspection by the APCO. This subsection shall not apply to RACM stripped or removed from an owner-occupied single-family dwelling by the owner.

303.10 **RACM Discovered After Demolition:** If RACM is not discovered until after demolition begins and as a result of the demolition cannot be safely removed, the asbestos-contaminated debris shall be treated as asbestos-containing waste material and kept adequately wet at all times until disposed of according to the provisions of Section 11-2-304. Immediately after the RACM is discovered the owner or operator shall comply with the provisions of subsections 11-2-303.1, 303.6 and 401.3.

303.11 **Ordered Demolition:** The owner or operator of any demolition of any building or other stationary structure pursuant to an order of an authorized representative of a state or local governmental agency, issued because that building is structurally unsound and in danger of imminent collapse, or has been declared a public nuisance, shall comply with the survey requirements of subsection 11-2-303.8, the wetting requirements of subsection 11-2-303.1 and the disposal requirements of Section 11-2-304. Fire training is not exempted from this Section.

303.12 **Intentional Burning:** If demolition is accomplished by intentional burning, all RACM, including Category I and Category II nonfriable asbestos-containing material shall be removed in accordance with Section 11-2-303, before burning.

303.13 **Emergency Renovation:** An emergency renovation shall be approved by the APCO prior to the initiation of work and shall apply only to the abatement of the immediate hazard. (Amended December 4, 1991; October 7, 1998)

11-2-304 Waste Disposal: To prevent emissions from asbestos-containing material, a person responsible for the collection, processing (including incineration and conversion),

packaging, transporting, or disposition of any asbestos-containing waste material which is generated by manufacturing; fabricating; scheduled, nonscheduled, or emergency demolition or renovation, whether notified or not; spraying operations; or asbestos milling, shall use the following procedures:

304.1 The person responsible for any demolition, renovation or removal of RACM, or for any source other than an asbestos mill may elect to use either of the following disposal methods or an alternative disposal method which has received prior approval by the APCO:

1.1 Treatment of asbestos-containing waste material with water. Control device asbestos waste shall be thoroughly mixed with water into a slurry and other asbestos-containing waste material shall be adequately wetted and kept wet. There shall be no visible emissions to the outside air from the collection, mixing and wetting operations, except as permitted in Sections 11-2-110 and 11-2-302.1. After wetting, and while still wet, all asbestos-containing waste material shall be sealed into leak-tight containers prior to being removed from containment as specified in subsection 11-2-303.6. Such containers shall remain leak-tight and be deposited at waste disposal sites which are operated in accordance with the provisions of Section 11-2-304. The containers shall be labeled with the name of the waste generator and the location (address) from which the waste was generated prior to being removed from containment. Unless they are located within a contained area, glovebags are considered to be removed from containment when they are removed from the OSHA regulated area. Containers shall also include an asbestos warning label, as specified in–Section 11-2-601. These labels must be printed in letters of sufficient size and contrast to be readily visible and legible.

1.2 Processing of asbestos-containing waste material into nonfriable forms. All asbestos-containing waste material shall be formed into nonfriable pellets or other shapes and deposited at waste disposal sites which are operated in accordance with this regulation. There shall be no visible emissions to the outside air from this collection and processing of asbestos-containing waste material except as permitted in Sections 11-2-110 and 11-2-302.1. For the purposes of this subsection, the term "all asbestos-containing waste material" as applied to demolition and renovation operations covered by Section 11-2-303 includes only friable asbestos waste and control device asbestos waste.

1.3 Conversion of RACM and asbestos-containing waste material into nonasbestos (asbestos-free) material: Each owner or operator of a conversion operation shall comply with Sections 11-2-402 and 11-2-504 of this Regulation.

304.2 Rather than meet the requirements of Section 11-2-304, the person responsible for an asbestos mill may elect to meet the following requirements or use an alternative disposal method which has received prior approval by the APCO:

2.1 There shall be no visible emissions to the outside air from the transfer of control-device asbestos waste to the tailings conveyor, except as permitted in Sections 11-2-110 and 11-2-301.1. Such waste shall be subsequently processed in accordance with this Regulation.

2.2 All asbestos-containing waste material shall be adequately mixed with a wetting agent prior to disposition at a waste disposal site. Such wetting agent shall be used as recommended for the particular dust by the manufacturer of the agent. There shall be no visible emissions to the outside air from the wetting operation except as permitted in Sections 11-2-110 and 11-2-302.1. Wetting may be suspended when the ambient air temperature at the waste disposal site is less than -9.5^{o}C (15^{o}F). The ambient air temperature shall be determined by an appropriate measurement method with an accuracy of +1^{o}C or +2^{o}F

and recorded at least at hourly intervals during the period that the operation of the wetting system is suspended.

304.3 All asbestos-containing waste material shall be deposited at waste disposal sites operated in accordance with this Rule.

304.4 For demolitions where the RACM is not removed prior to demolition pursuant to subsection 11-2-303.11, the asbestos-containing waste material shall be kept adequately wetted at all times after demolition, during handling and loading and shall be sealed in leak-tight containers for transport to a disposal site.

304.5 All vehicles used to transport asbestos-containing waste material shall be marked as specified in Section 11-2-608 during the loading and unloading of waste. The signs shall be visible and shall be displayed in such a manner that a person can easily read the legend.

304.6 The owner or operator of all asbestos-containing waste material, generated as a result of demolition or renovation activities, which is transported off the facility site shall meet all of the following requirements:

6.1 Maintain a waste shipment record as specified in Section 11-2-502.

6.2 Provide a copy of the waste shipment record referenced in subsection 11-2-304.6.1 to the disposal site owner or operator at the same time the asbestos-containing waste material is delivered to the disposal site.

6.3 Contact the transporter and/or the owner or operator of the disposal site to determine the status of the waste shipment, if the waste shipment record referenced in subsection 11-2-304.6.1, signed by the owner or operator of the designated disposal site, is not received by the waste generator within 35 days of the date the waste was accepted by the initial transporter.

6.4 Provide a written report to the APCO if a copy of the waste shipment record referenced in subsection 11-2-304.6.1, signed by the owner or operator of the disposal site, is not received by the waste generator within 45 days of the date the waste was accepted by the initial transporter. The following information shall by included: A copy of the waste shipment record referenced in subsection 11-2-304.6.1 for which a confirmation of delivery was not received, and a letter signed by the waste generator explaining the efforts taken to locate the asbestos waste shipment and the results of those efforts.

(Amended Sept. 5, 1990; Dec. 4, 1991; Oct. 7, 1998)

11-2-305 Waste Disposal Sites: There shall be no visible emissions to the outside air from a waste disposal site where asbestos-containing waste material has been or is being deposited.

305.1 Warning signs meeting the requirements of Section 11-2-602 shall be displayed at all entrances, and along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited, at intervals of 100 m (330 ft) or less. Warning signs and fencing are not required where the requirements of subsections 11-2-305.3.1 and 11-2-305.3.2 are met, or where a natural barrier adequately deters access by the general public. Upon request and supply of appropriate information, the APCO will determine whether a fence or a natural barrier adequately deters access to the general public; and

305.2 The perimeter of the site shall be fenced in a manner adequate to deter access by the general public, except as specified in subsection 11-2-305.1.

305.3 Rather than meet the requirements of subsection 11-2-305.1 and 11-2-305.2, a person may elect to meet the following requirements or may use an alternative control method for emissions from a waste disposal site which has received prior approval by the APCO.

3.1 For an inactive site, the asbestos-containing waste material shall be covered with at least 15 cm (6 in) of compacted nonasbestos-containing material and a cover of vegetation shall be grown and maintained on the area adequate to prevent exposure of the asbestos-

containing waste material; or the asbestos-containing waste material shall be covered with at least 61 cm (2 ft) of compacted nonasbestos-containing material and maintained to prevent exposure of the asbestos-containing waste.

3.2 For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion shall be applied. Such agent shall be used as recommended for the particular asbestos tailings by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the APCO. For purposes of this subsection waste crankcase oil is not considered a dust suppression agent.

3.3 For an active waste disposal site, at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material which was deposited at the site during the operating day or previous 24-hour period shall be covered with at least 15 cm (6 in) of compacted nonasbestos-containing material. Alternately, a resinous or petroleum-based dust suppression agent which effectively binds dust and controls wind erosion may be used. Such dust suppression agent shall be used as recommended for the particular dust by the dust suppression agent manufacturer. Other equally effective dust suppression agents may be used upon prior approval by the APCO. For purposes of this subsection, waste crankcase oil is not considered a dust suppression agent.

305.4 For an active waste disposal site, the owner or operator shall:

4.1 Maintain waste shipment records as specified in Section 11-2-503 for all asbestos-containing waste material received.

4.2 Send a copy of the signed waste shipment record to the waste generator, as soon as possible, and in no case longer than 30 days after the receipt of the waste:

4.3 Upon discovering a discrepancy between the quantity of asbestos-containing waste material noted in the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, immediately report in writing to the APCO. Describe the discrepancy and attempts to resolve it, and include a copy of the waste shipment record.

(Amended Sept. 5, 1990; Dec. 4, 1991; Oct. 7, 1998)

11-2-400 ADMINISTRATIVE REQUIREMENTS

11-2-401 Reporting Demolition and Renovation: The person responsible for any existing source to which this Rule is applicable shall provide to the APCO a description of the emission control equipment used for each process and the following information:

401.1 For active waste disposal operations a brief description of each process that generates asbestos-containing waste material; the average weight of asbestos-containing waste material disposed of, measured in kg/day; the emission control methods used in all stages of waste disposal; and the type of disposal site or incineration site used for ultimate disposal, including the name of the site operator and the name and location of the disposal site.

401.2 For inactive waste disposal sites a brief description of the site and the method or methods used to comply with the standard, or alternative procedures to be used.

401.3 For every demolition even where no RACM is present, for each renovation operation where the amount of RACM is greater than or equal to 30.8m (100 ft.) linear, 9.4m^2 (100 $ft.^2$) or 1 m^3 (35 ft^3), and for all dry removals, a written plan or notification of intent to demolish or renovate shall be provided to the APCO at least ten (10) working days prior to commencement of

demolition or renovation. The 10 working day period shall not apply if applicable fees for_single family dwellings or multiple family dwellings with four or fewer units are paid to allow a start date of 72 hours rather than 10 working days. Notification shall be as early as possible prior to commencement of emergency demolition or renovation. Such notification shall include the following information. Failure to provide such information shall constitute failure to notify.

3.1 Indicate whether the notification is the original or a revision.

3.2 The name, address and telephone numbers of both the owner(s) of the structure and the operator of the demolition or renovation.

3.3 A description of the structure being renovated, including the size, number of floors, age of the oldest portion, and the present and prior use of the structure.

3.4 An estimate of the approximate amount of RACM to be removed from the structure or portion thereof, in terms of length of pipe in linear feet, surface area in square feet, or volume in cubic feet.

3.5 The name, address and telephone number of the person who completed the asbestos survey including the CAL-OSHA certification number as applicable as specified in Section 11-2-303.8

3.6 The procedures used, including the analytical laboratory method employed, to locate and identify the presence of RACM and Category l and Category ll nonfriable asbestos-containing material.

3.7 The address and location (including building number or name and floor or room number, as applicable) of each structure where demolition or renovation will occur.

3.8 Accurate starting and completion dates of demolition or renovation.

3.9 A description of planned demolition or renovation and method(s) to be employed.

3.10 A description of work practices and engineering controls to be used including emission control procedures for asbestos removal and waste handling.

3.11 The name, address and location of the waste disposal site where the asbestos-containing waste material will be deposited.

3.12 A copy of the order to demolish including the name, title, and authority of the state or local governmental representative who has ordered a demolition pursuant to Section 11-2-303.11.

3.13 Effective November 20, 1991, certification that at least one person, trained as required by Section 11-2-303.9, will supervise the asbestos removal described in this plan.

3.14 Description of the procedures to be followed in the event that unexpected RACM is found or Category II nonfriable asbestos-containing material becomes friable.

3.15 The name, address and telephone number of the waste transporter. Such notification shall be typewritten or computer printed and submitted on a District-approved form or facsimile thereof.

401.4 Deleted September 5, 1990

401.5 Schedule Changes and Up-dates: Any changes to any aspect of a notification submitted in accordance with Section 11-2-401.3 must be reported to the APCO. These changes shall include, but are not limited to, changes in the notified starting or completion dates, changes of amounts of RACM to be removed, and changes of contractor or waste disposal site. It shall be the responsibility of the person making the initial notification of intent to remove asbestos or perform demolition activity to ensure that the APCO is notified of any such changes. If a job starts prior to the reported starting date or continues past the completion date as shown in the notification of intent to remove asbestos or to demolish, this shall constitute a failure to notify. Failure to notify the APCO of a job cancellation or postponement will result in the imposition of such asbestos operations fees as would have been due had the job not been cancelled or postponed.

(Amended 5/20/81; 3/5/86; 7/6/88; 9/5/90; 12/4/91; 10/7/98)

11-2-402 Approval of Conversion Operation: To obtain approval for a conversion operation pursuant to Section 11-2-304.1.3, the owner or operator shall provide the APCO with the following:

402.1 An application for Authority to Construct including the following: descriptions of waste feed handling and temporary storage, process operating conditions, handling and temporary storage of the end product, and a description of the protocol to be followed when analyzing output materials by Transmission Electron Microscopy (TEM) as described in Section 11-2-605; a demonstration of the conversion process upon request of the APCO, and a protocol for the start-up performance test as described in Sections 11-2-504 and 11-2-607.

402.2 A report for each analysis of product composite samples performed during the initial 90 days of operation.

402.3 A quarterly report, including the following information concerning activities during each consecutive three (3) month period: results of analyses of monthly product composite samples; a description of any deviation from the operating parameters, including its duration, and any corrective action taken; disposition of any products produced during a period when the operating parameters were outside the range indicative of asbestos-free; and information on waste disposal activities as required in Section 11-2-305.

(Adopted December 4, 1991)

11-2-403 Excavating or Disturbing Asbestos-Containing Waste: The owner or operator of a waste disposal site referenced in Section 11-2-305 shall notify the APCO in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one stated in the original notice, notice of the new start date shall be provided to the APCO at least 14 days before excavating begins. In no event shall excavation begin earlier than the date specified in the original notification. The notice shall include: scheduled starting and completion dates; reasons for disturbing the wastes; procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material; and location of any temporary storage site and the final disposal site.

(Adopted December 4, 1991; Amended October 7, 1998)

11-2-404 Maintenance Plan: Asbestos Milling, Manufacturing and Fabrication Facilities: Asbestos milling, manufacturing and fabrication facilities subject to Section 11-2-302.1.1 shall submit a written maintenance plan to the APCO. This plan shall include the following information: maintenance schedule; recordkeeping plan; and maintenance records of the results of visible emissions monitoring and air cleaning device inspections including the following: date and time of each inspection; presence or absence of visible emissions; condition of fabric filters, including presence of tears, holes and abrasions; presence of dust deposits on clean side of filter; brief description of corrective actions taken, including date and time; and daily hours of operation for each air cleaning device. On a quarterly basis, submit a copy of visible emissions monitoring records if visible emissions occurred during the reporting period. Quarterly reports shall be postmarked by the 30th day following the end of the calendar quarter. (Adopted December 4, 1991)

11-2-405 Fees: Notification as required by the provisions contained in this rule will be subject to the fees contained in Regulation 3, Schedule L. (Adopted October 7, 1998)

11-2-500 MONITORING AND RECORDS

11-2-501 Temperature Records: During periods when wetting operations are suspended due to freezing temperatures, the owner or operator must record the temperature in the work area at the beginning, middle, and end of each workday and keep daily temperature records available for inspection by the APCO during normal business hours at the demolition or renovation site. Records of temperature measurements

as required by Section 11-2-304.2.2 shall be retained by the operator for a minimum of two (2) years. (Amended Dec. 4, 1991; Oct. 7, 1998)

11-2-502 Waste Shipment Records: Waste shipment records as required by Section 11-2-304.6 shall include the following information:

502.1 The name, address, and telephone number of the waste generator and the site from which the waste was generated.

502.2 The name and address of the local Air Quality Management District in which the waste was generated.

502.3 The approximate amount of waste in cubic yards.

502.4 The name and telephone number of the disposal site operator.

502.5 The name and physical location of the disposal site.

502.6 The name, address, and telephone number of the transporter(s).

502.7 A certification that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway. Records shall be retained by the waste generator for a minimum of two (2) years and made available for inspection by the APCO.

(Adopted December 4, 1991; Amended October 7, 1998)

11-2-503 Active Waste Disposal Site Records:

503.1 Waste Shipment Records: Waste shipment records as required by Section 11-2-305.4 shall include the following information:

1.1 The name, address and telephone number of the waste generator and the site from which the waste was generated.

1.2 The name, address and telephone number of the transporter(s).

1.3 The quantity of the asbestos-containing waste material in cubic yards.

1.4 The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. If this condition exists, report in writing to the APCO by the following working day. Submit a copy of the waste shipment records along with the report.

1.5 The date of receipt.

Records shall be retained by the waste disposal site operator for a minimum of two (2) years and made available for inspection by the APCO.

503.2 Asbestos Waste Location Records: Maintain, until closure, records of the location, depth and area, and the quantity in cubic yards of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area. Upon closure of the facility, submit a copy of records of asbestos waste disposal locations and quantities to the appropriate Local Enforcement Agency. (Adopted Dec. 4, 1998; Amended Oct. 7, 1998)

11-2-504 Conversion Operations: The owner or operator of a conversion operation shall maintain the following records: results of the start-up performance testing and all subsequent performance testing, including operating parameters, feed characteristics and analyses of output materials; results of the composite analyses, continuous monitoring and logs of process operating parameters required in Section 11-2-607; the waste shipment records including the information required in Section 11-2-503 for all asbestos-containing waste received; and the name and location of the purchaser or disposal site and the date of sale or deposit for output materials. A person subject to this rule shall maintain records for two (2) years and make the records available for inspection by the APCO upon request.(Adopted December 4, 1991)

11-2-505 Recordkeeping: Surveys shall be kept for two years following the completion of removal of asbestos containing material. (Adopted October 7, 1998)

11-2-600 MANUAL OF PROCEDURES

11-2-601 Waste Disposal Warning Labels: Warning labels required by Section 11-2-304.1.1 must be as specified in the Manual of Procedures, Volume 1, Part 3 or by the Occupational Safety and Health Administration. (Amended October 7, 1998)

11-2-602 Warning Signs for Waste Disposal Sites: Warning signs required by Section 11-2-305.1 must be as specified in the Manual of Procedures, Volume I, Part 4.

(Amended October 7, 1998)

11-2-603 **Bulk Sampling Analysis:** Asbestos bulk samples as specified in Section 11-2-209 shall be analyzed as specified in Appendix A, Subpart F, 40 CFR Part 763, Section 1.7.2.4, Polarized Light Microscopy, Quantification of Asbestos Content.

(Adopted Sept. 5, 1990; Amended Dec. 4, 1991; Oct. 7, 1998)

11-2-604 Deleted October 7, 1998

11-2-605 **Asbestos Content-TEM**: For conversion operations, asbestos content shall be determined using the National Institute of Standards and Technology (NIST) approved Transmission Electron Microscopy (TEM) method.

(Adopted December 4, 1991; Amended October 7, 1998)

11-2-606 **Fabric Filters:** The airflow permeability of fabric filters shall be as specified by ASTM Method D737-69. (Adopted December 4, 1991)

11-2-607 **Conversion Facility Performance Test:** Prior to start up of an asbestos conversion facility subject to Sections 11-2-402 and 11-2-504, an owner or operator must conduct a start-up performance test as specified in 40 CFR Part 61.155(b). Operations tests shall be performed as specified in 40 CFR Part 61.155(c) and (d).

(Adopted December 4, 1991)

11-2-608 **Warning Signs for Transport Vehicles:** Warning signs required by subsection 11-2-304.5 must be as specified below:

DANGER
ASBESTOS DUST HAZARD
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY

(Amended October 7, 1998)

REGULATION 8
ORGANIC COMPOUNDS
RULE 3
ARCHITECTURAL COATINGS

INDEX

REGULATION 8
ORGANIC COMPOUNDS
RULE 3
ARCHITECTURAL COATINGS

(Adopted March 1, 1978)

8-3-100 GENERAL

8-3-101 Description: The purpose of this Rule is to limit the quantity of volatile organic compounds in architectural coatings supplied, sold, offered for sale, applied, solicited for application, or manufactured for use within the District.

(Amended November 21, 2001)

8-3-102 Applicability: Except as provided in Section 8-3-110, this Rule is applicable to any person who supplies, sells, offers for sale, or manufacturers any architectural coating for use within the District, as well as any person who applies or solicits the application of any architectural coating within the District.

(Adopted November 21, 2001)

8-3-103 Severability: If a court of competent jurisdiction issues an order that any provision of this rule is invalid, it is the intent of the Board of Directors of the District that other provisions of this rule remain in full force and affect, to the extent allowed by law.

(Adopted November 21, 2001)

8-3-110 Exemptions: This rule does not apply to:

110.1 Any architectural coating that is sold or manufactured for use outside of the District or for shipment to other manufacturers for reformulation or repackaging;

110.2 Any aerosol coating product.

(Amended, Renumbered 11/21/01; Amended 7/1/09)

8-3-111 Deleted November 21, 2001

8-3-112 Deleted January 8, 1986

8-3-113 Deleted November 21, 2001

8-3-114 Deleted November 21, 2001

8-3-115 Limited Exemption, Liter Containers: Except as provided in Section 8-3-502, the provisions of this Rule shall not apply to any architectural coating that is sold in a container with a volume of one (1.0) liter (1.057 quart) or less.

(Adopted July 1, 2009)

8-3-116 Limited Exemption, Early Compliance: Prior to January 1, 2011, any coating that meets the definition in Section 8-3-200 for a coating category listed in Section 8-3-301, Table 2 and complies with the applicable VOC limit in Section 8-3-301, Table 2 and with Sections 8-3-302.2 and 401 (including those provisions of Section 8-3-401 otherwise effective on January 1, 2011) shall be considered in compliance with this rule.

(Adopted July 1, 2009)

8-3-200 DEFINITIONS

8-3-201 Adhesive: Any chemical substance that is applied for the purpose of bonding two surfaces together other than by mechanical means.

(Adopted November 21, 2001)

8-3-202 Aerosol Coating Product: A pressurized coating product containing pigments or resins that dispense product ingredients by means of a propellant, and is packaged in a disposable can for hand-held application, or for use in specialized equipment for ground traffic/marking applications. Aerosol coating products are subject to District Regulation 8, Rule 49 or the provisions of 17 California Code of Regulations 94520 *et. seq.*

(Adopted November 21, 2001)

8-3-203 Aluminum Roof Coating: A coating labeled and formulated exclusively for application to roofs and containing at least 84 grams of elemental aluminum pigment per liter of coating (at least 0.7 pounds per gallon). Pigment content shall be

determined in accordance with SCAQMD Method 318-95, incorporated by reference in Section 8-3-605.4.

(Adopted July 1, 2009)

8-3-204 Appurtenances: Any accessory to a stationary structure coated at the site of installation, whether installed or detached, including but not limited to: bathroom and kitchen fixtures; cabinets; concrete forms; doors; elevators; fences; hand railings; heating equipment, air conditioning equipment, and other fixed mechanical equipment or stationary tools; lampposts; partitions; pipes and piping systems; raingutters and downspouts; stairways, fixed ladders, catwalks, and fire escapes; and window screens.

(Adopted 11/21/01; Renumbered 7/9/09)

8-3-205 Architectural Coating: A coating to be applied to stationary structures and their appurtenances at the site of installation, to portable buildings at the site of installation, to pavements, or to curbs. Coatings applied in shop applications or to non-stationary structures such as airplanes, ships, boats, railcars, and automobiles, and adhesives are not considered architectural coatings for the purpose of this rule.

(Amended, Renumbered 11/21/01; Renumbered 7/1/09)

8-3-206 Basement Specialty Coating: A clear or opaque coating that is labeled and formulated for application to concrete and masonry surfaces to provide a hydrostatic seal for basements and other below-grade surfaces. Basement Specialty Coatings must meet the following criteria:

206.1 Coating must be capable of withstanding at least 10 psi of hydrostatic pressure, as determined in accordance with ASTM D7088-04, which is incorporated by reference in Section 8-3-605.11; and

206.2 Coating must be resistant to mold and mildew growth and must achieve a microbial growth rating of 8 or more, as determined in accordance with ASTM D3274-95, incorporated by reference in Section 8-3-605.18.

(Adopted July 1, 2009)

8-3-207 Bitumens: Black or brown materials including, but not limited to, asphalt, tar, pitch and asphaltite that are soluble in carbon disulfide, consist mainly of hydrocarbons and are obtained from natural deposits or as residues from the distillation of crude petroleum or coal.

(Renumbered 5/18/83; Amended, Renumbered 11/21/01)

8-3-208 Bituminous Roof Coating: A coating which incorporates bitumens that is labeled and formulated exclusively for roofing.

(Amended November 21, 2001)

8-3-209 Bituminous Roof Primer: A primer which incorporates bitumens that is labeled and formulated exclusively for roofing and intended for the purpose of preparing a weathered or aged surface or improving the adhesion of subsequent surfacing compounds.

(Amended 11/21/01; 7/1/09)

8-3-210 Bond Breaker: A coating labeled and formulated for application between layers of concrete to prevent a freshly poured top layer of concrete from bonding to the layer over which it is poured.

(Adopted 5/18/83; Amended, Renumbered 11/21/01; Amended 7/1/09)

8-3-211 Coating: A material applied onto or impregnated into a substrate for protective, decorative, or functional purposes. Such materials include, but are not limited to, paints, varnishes, sealers, and stains.

(Adopted 11/21/01; Renumbered 7/1/09)

8-3-212 Colorant: A concentrated pigment dispersion in water, solvent, and/or binder that is added to an architectural coating after packaging in sale units to produce the desired color.

(Adopted 11/21/01; Renumbered 7/1/09)

8-3-213 Concrete Curing Compound: A coating labeled and formulated for application to freshly poured concrete to perform one or more of the following functions:

213.1 Retard the evaporation of water; or

213.2 Harden or dustproof the surface of freshly poured concrete.

(Adopted 5/18/83; Amended, Renumbered 11/21/01; Amended, Renumbered 7/1/09)

8-3-214 Concrete/Masonry Sealer: A clear or opaque coating that is labeled and formulated primarily for application to concrete and masonry surfaces to perform one or more of the following functions:

214.1 Prevent penetration of water; or
214.2 Provide resistance against abrasion, alkalis, acids, mildew, staining, or ultraviolet light; or
214.3 Harden or dustproof the surface of aged or cured concrete.

(Adopted July 1, 2009)

8-3-215 Driveway Sealer: A coating labeled and formulated for application to worn asphalt driveway surfaces to perform one or more of the following functions:
215.1 Fill cracks; or
215.2 Seal the surface to provide protection; or
215.3 Restore or preserve the appearance of the driveway.

(Adopted July 1, 2009)

8-3-216 Dry Fog Coating: A coating labeled and formulated only for spray application such that overspray droplets dry before subsequent contact with incidental surfaces in the vicinity of the surface coating activity.

(Adopted November 21, 2001)

8-3-217 Enamel: A coating that is characterized by its ability to form a smooth surface. Enamel was originally associated with high gloss, but may also include lower degrees of gloss, i.e., flat enamels.

(Adopted July 1, 2009)

8-3-218 Exempt Compound: For purposes of this rule, a compound that has been identified by the US EPA as having negligible photochemical reactivity and is listed in Section 8-3-264.1.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-219 Faux Finishing Coating: A coating labeled and formulated to meet one or more of the following criteria:
219.1 A glaze or textured coating used to create artistic effects including, but not limited to: dirt, suede, old age, smoke damage, and simulated marble and wood grain; or
219.2 A decorative coating used to create a metallic, iridescent, or pearlescent appearance that contains at least 48 grams of pearlescent mica pigment or other iridescent pigment per liter of coating as applied (at least 0.4 pounds per gallon); or
219.3 A decorative coating used to create a metallic appearance that contains less than 48 grams of elemental metallic pigment per liter (less than 0.4 pounds per gallon) of coating as applied, when tested in accordance with SCAQMD Method 318-95, incorporated by reference in Section 8-3-605.4; or
219.4 A decorative coating used to create a metallic appearance that contains greater than 48 grams or elemental metallic pigment per liter (greater than 0.4 pounds per gallon) of coating as applied and that requires a clear topcoat to prevent the degradation of the finish under normal use conditions. The metallic pigment content shall be determined in accordance with SCAQMD Method 318-95, incorporated by reference in Section 8-3-605.4; or
219.5 A clear topcoat to seal and protect a Faux Finishing coating that meets the requirements of Sections 6-3-219.1 through 219.4. These clear topcoats must be sold and used solely as part of a Faux Finishing coating system and must be labeled in accordance with Section 8-3-401.10.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-220 Fire-Resistive Coating: A coating labeled and formulated to protect the structural integrity by increasing the fire endurance of interior or exterior steel and other structural materials. The fire resistive category includes sprayed fire resistive materials and intumescent fire-resistive coating that are used to bring structural materials into compliance with federal, state, and local building code requirements. The fire-resistive coating and the testing agency must be approved by building code officials. The fire-resistive coating shall be tested in accordance with ASTM Designation E 119-07, incorporated by reference in Section 8-3-605.2. Fire resistive coatings and testing agencies must be approved by building code officials.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-221 Flat Coating: A coating that is not defined under any other definition in this rule and that registers gloss less than 15 on an 85-degree meter or less than 5 on a 60-

degree meter according to ASTM Designation D 523-89 (1999), incorporated by reference in Section 8-3-605.3.

(Adopted11/21/01; Amended 7/1/09)

8-3-222 **Floor Coating:** An opaque coating that is labeled and formulated for application to flooring, including, but not limited to, decks, porches, steps, garage floors, and other horizontal surfaces which may be subject to foot traffic.

(Adopted 11/21/01; Amended 7/1/09)

8-3-223 **Form-Release Compound:** A coating labeled and formulated for application to a concrete form to prevent the freshly poured concrete from bonding to the form. The form may consist of wood, metal, or some other material other than concrete.

(Adopted 11/21/01; Renumbered 7/1/09)

8-3-224 **Graphic Arts Coating or Sign Paint:** A coating labeled and formulated for hand application by artists using brush, airbrush, or roller techniques to indoor and outdoor signs (excluding structural components) and murals, including lettering enamels, poster colors, copy blockers, and bulletin enamels.

(Amended, Renumbered 5/18/83; 11/21/01; 7/1/09)

8-3-225 **High-Temperature Coating:** A high performance coating labeled and formulated for application to substrates exposed continuously or intermittently to temperatures above 204°C (400°F).

(Adopted11/21/01; Renumbered 7/1/09)

8-3-226 **Industrial Maintenance Coating:** A high performance architectural coating, including primers, sealers, undercoaters, intermediate coats, and topcoats, formulated for application to substrates, including floors, exposed to one or more of the following extreme environmental conditions listed in Sections 8-3-226.1 through 226.5, and labeled as specified in Section 8-3-401.4:

226.1 Immersion in water, wastewater, or chemical solutions (aqueous and non-aqueous solutions), or chronic exposure of interior surfaces to moisture condensation;

226.2 Acute or chronic exposure to corrosive, caustic, or acidic agents, or to chemicals, chemical fumes, or chemical mixtures or solutions;

226.3 Frequent exposure to temperatures above 121°C (250°F);

226.4 Frequent heavy abrasion, including mechanical wear and frequent scrubbing with industrial solvents, cleansers, or scouring agents; or

226.5 Exterior exposure of metal structures and structural components.

(Amended, Renumbered 5/18/83; Amended 1/8/86; Amended, Renumbered 11/21/01; 7/1/09)

8-3-227 **Low-Solids Coating:** A coating containing 0.12 kilogram or less of solids per liter (one pound or less of solids per gallon) of coating material as recommended for application by the manufacturer. The VOC content for Low Solids Coatings shall be calculated in accordance with Section 8-3-608.

(Adopted 11/4/98; Amended, Renumbered 11/21/01; 7/1/09)

8-3-2328 **Magnesite Cement Coating:** A coating labeled and formulated for application to magnesite cement decking to protect the magnesite cement substrate from erosion by water.

(Adopted 11/21/01; Renumbered 7/1/09)

8-3-229 **Manufacturer's Maximum Thinning Recommendation:** The maximum recommendation for thinning that is indicated on the label or lid of the coating container.

(Adopted July 1, 2009)

8-3-230 **Mastic Texture Coating:** A coating labeled and formulated to cover holes and minor cracks, and to conceal surface irregularities, and applied in a single coat of at least 10 mils (at least 0.010 inch) dry film thickness.

(Adopted 5/18/83; Amended, Renumbered 11/21/01; 7/1/09)

8-3-231 **Medium Density Fiberboard (MDF)**: A composite wood product, panel, molding, or other building material composed of cellulosic fibers (usually wood) made by dry forming and pressing of a resinated fiber mat.

(Adopted July 1, 2009)

8-3-232 **Metallic Pigmented Coating:** A coating that is labeled and formulated to provide a metallic appearance. Metallic Pigmented Coatings must contain at least 48 grams of elemental metallic pigment (excluding zinc) per liter of coating as applied (at least 0.4 pounds per gallon), when tested in accordance with South Coast Air Quality Management District Method 318-95, incorporated by reference in Section 8-3-605.4.

The Metallic Pigmented Coating category does not include coatings applied to roofs or Zinc-Rich Primers.

(Renumbered 5/18/83; Amended, Renumbered 11/21/01; 7/1/09)

8-3-233 **Multi-Color Coating:** A coating that is packaged in a single container and that is labeled and formulated to exhibit more than one color when applied in a single coat.

(Renumbered 5/18/83; Amended, Renumbered 11/21/01; 7/1/09)

8-3-234 **Nonflat Coating:** A coating that is not defined under any other definition in this rule and that registers a gloss of 15 or greater on an 85-degree meter and 5 or greater on a 60-degree meter according to ASTM Designation D 523-89 (1999), incorporated by reference in Section 8-3-605.3.

(Adopted 9/1/82; Amended, Renumbered 11/21/01; 7/1/09)

8-3-235 **Nonflat – High Gloss Coating:** A nonflat coating that registers a gloss of 70 or greater on a 60 degree meter according to ASTM Designation D 523-89 (1999), incorporated by reference in Section 8-3-605.3. Nonflat – High Gloss Coatings must be labeled in accordance with Section 8-3-401.9.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-236 **Non-Industrial Use:** Non-industrial use means any use of architectural coatings except in the construction or maintenance of any of the following: facilities used in the manufacturing of goods and commodities; transportation infrastructure, including highways, bridges, airports and railroads; facilities used in mining activities, including petroleum extraction; and utilities infrastructure, including power generation and distribution, and water treatment and distribution systems.

(Adopted 11/21/09; Renumbered 7/1/09)

8-3-237 **Particleboard:** A composite wood product panel, molding, or other building material composed of cellulosic material (usually wood) in the form of discrete particles, as distinguished from fibers, flakes, or strands, which are pressed together with resin.

(Adopted July 1, 2009)

8-3-238 **Pearlescent:** Exhibiting various colors depending on the angles of illumination and viewing, as observed in mother-of-pearl.

(Adopted July 1, 2009)

8-3-239 **Plywood:** A panel product consisting of layers of wood veneers or composite core pressed together with resin. Plywood includes panel products made by either hot or cold pressing (with resin) veneer to a platform.

(Adopted July 1, 2009)

8-3-240 **Post-Consumer Coating:** Finished coatings generated by a business or consumer that have served their intended end uses, and are recovered from or otherwise diverted from the waste stream for the purpose of recycling.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-241 **Pre-Treatment Wash Primer:** A primer that contains a minimum of 0.5 percent by acid, by weight, when tested in accordance with ASTM Designation D 1613-06, incorporated by reference in Section 8-3-605.5, that is labeled and formulated for application directly to bare metal surfaces to provide corrosion resistance and to promote adhesion of subsequent topcoats.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-242 **Primer, Sealer, and Undercoater:** A coating labeled and formulated for application for one of more of the following purposes:

242.1 To provide a firm bond between the substrate and subsequent coats;
242.2 To prevent subsequent coatings from being absorbed by the substrate;
242.3 To prevent harm to subsequent coatings by materials in the substrate;
242.4 To provide a smooth surface for the subsequent application of coatings;
242.5 To provide a clear finish coat to seal the substrate; or
242.6 To block materials from penetrating into or leaching out of a substrate.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-243 **Reactive Penetrating Sealer:** A clear or pigmented coating that is labeled and formulated for application to above-grade concrete and masonry substrates to provide protection from water and waterborne contaminants, including, but not limited to, alkalis, acids, and salts. Reactive Penetrating Sealers must penetrate into concrete and masonry substrates and chemically react to form covalent bonds with naturally occurring minerals in the substrate. Reactive Penetrating Sealers line the pores of concrete and masonry substrates with a hydrophobic coating, but do not

form a surface film. Reactive Penetrating Sealers must meet all of the following criteria:

243.1 The Reactive Penetrating Sealers must improve water repellency at least 80 percent after application on a concrete or masonry substrate. This performance must be verified on standardized test specimens, in accordance with one or more of the following standards, incorporated by reference in Section 8-3-605.19: ASTM C67-07, or ASTM C97-02, or ASTM C140-06; and

243.2 The Reactive Penetrating Sealer must not reduce the water vapor transmission rate by more than 2 percent after application on a concrete or masonry substrate. This performance must be verified on standardized test specimens, in accordance with ASTM E96/E96M-05, incorporated by reference in Section 8-3-605.20; and

243.3 Products labeled and formulated for vehicular traffic surface chloride screening applications must meet the performance criteria listed in the National Cooperative Highway Research Report 244 (1981), incorporated by reference in Section 8-3-605.21.

The Reactive Penetrating Sealers must be labeled in accordance with Section 8-3-401.11.

(Adopted July 1, 2009)

8-3-244 Recycled Coating: An architectural coating formulated such that it contains a minimum of 50 percent by volume post-consumer coating with a maximum of 50 percent by volume secondary industrial materials or virgin materials.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-245 Residential: Areas where people reside or lodge, including, but not limited to, single and multiple family dwellings, condominiums, mobile homes, apartment complexes, motels, and hotels.

(Adopted 11/21/01; Amended 7/1/09)

8-3-246 Roof Coating: A non-bituminous coating labeled and formulated for application to roofs for the primary purpose of preventing water penetration, reflecting ultraviolet light, or reflecting solar radiation.

(Adopted 5/18/83; Amended, Renumbered 7/1/09)

8-3-247 Rust Preventative Coating: A coating formulated for non-industrial use to prevent the corrosion of metal surfaces for one or more of the following applications:

247.1 Direct-to-metal coating; or

247.2 Coating intended for application over rusty, previously coated surfaces.

The Rust Preventative Coating category does not include the following:

247.3 Coatings that are required to be applied as a topcoat over a primer; or

247.4 Coatings that are intended for use on wood or any other non-metallic surface.

Rust Preventive Coatings are for metal substrates only and must be labeled as such, in accordance with the labeling requirements of Section 8-3-401.6.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-248 Secondary Industrial Materials: Products or by-products of the paint manufacturing process that are of known composition and have economic value but can no longer be used for their intended purpose.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-249 Semitransparent Coating: A coating that contains binders and colored pigments and is formulated to change the color of the surface, but not conceal the grain pattern or texture.

(Adopted July 1, 2009)

8-3-250 Shellac: A clear or opaque coating formulated solely with the resinous secretions of the lac beetle (Laccifer lacca) and formulated to dry by evaporation without a chemical reaction.

(Amended, Renumbered 5/18/83; 11/21/01; 7/1/09)

8-3-251 Shop Application: Application of a coating to a product or a component of a product in or on the premises of a factory or a shop as part of a manufacturing, production, or repairing process (e.g., original equipment manufacturing coatings).

(Adopted 11/21/01; Renumbered 7/1/09)

8-3-252 Solicit: To require for use or to specify, by written or oral contract.

(Adopted 11/21/01; Renumbered 7/1/09)

8-3-253 **Solvent**: Any VOC-containing fluid used to perform cleaning operations or as a reducer.

(Adopted July 1, 2009)

8-3-254 **Specialty Primer, Sealer and Undercoater:** A coating that is formulated for application to a substrate to block water-soluble stains resulting from: fire damage, smoke damage, or water damage. Specialty Primers, Sealers, and Undercoaters must be labeled in accordance with Section 8-3-401.7. Until January 1, 2011, the Specialty Primer, Sealer, and Undercoating category includes coatings formulated to seal excessively chalky surfaces. An excessively chalky surface is one that is defined as having a chalk rating of four or less as determined by ASTM Designation D 4214-98, incorporated by reference in Section 8-3-605.7.

(Adopted 5/18/83; Amended, Renumbered 11/21/01; 7/1/09)

8-3-255 **Stain:** A transparent, semitransparent, or opaque coating labeled and formulated to change the color of a surface but not conceal the grain pattern or texture.

(Renumbered 5/18/83; Amended, Renumbered 11/21/01; 7/1/09)

8-3-256 **Stone Consolidant:** A coating that is labeled and formulated for application to stone substrates to repair historic structures that have been damaged by weathering or other decay mechanisms. Stone Consolidants must penetrate into stone substrates to create bonds between particles and consolidate deteriorated material. Stone Consolidants must be specified and used in accordance with ASTM E2167-01, incorporated by reference in Section 8-3-605.22. Stone Consolidants are for professional use only and must be labeled as such, in accordance with the labeling requirements in Section 8-3-401.12.

(Adopted July 1, 2009)

8-3-257 **Swimming Pool Coating:** A coating labeled and formulated to coat the interior of swimming pools and to resist swimming pool chemicals. Swimming pool coatings include coatings used for swimming pool repair and maintenance.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-258 **Tint Base:** An architectural coating to which colorant is added after packaging in sale units to produce a desired color.

(Adopted 11/21/01; Renumbered 7/1/09)

8-3-259 **Traffic Marking Coating:** A coating labeled and formulated for marking and striping streets, highways, or other traffic surfaces including, but not limited to curbs, berms, driveways, parking lots, sidewalks, and airport runways.

(Adopted 5/18/83; Amended, Renumbered 11/21/01; Renumbered 7/1/09)

8-3-260 **Tub and Tile Refinish Coating:** A clear or opaque coating that is labeled and formulated exclusively for refinishing the surface of a bathtub, shower, sink, or countertop. Tub and Tile Refinish Coatings must meet all of the following criteria:

260.1 The coating must have a scratch hardness of 3H or harder and a gouge hardness of 4H or harder. This must be determined on bonderite 1000, in accordance with ASTM D3363-05, incorporated by reference in Section 8-3-605.14.

260.2 The coating must have a weight loss of 20 milligrams or less after 1000 cycles. This must be determined with CS-17 wheels on bonderite 1000, in accordance with ASTM D4060-07, incorporated by reference in Section 8-3-605.15;

260.3 The coating must withstand 1000 hours or more of exposure with few or no #8 blisters. This must be determined on unscribed bonderite, in accordance with ASTM D4585-99 and ASTM D714-02e1, incorporated by reference in Section 8-3-605.16; and

260.4 The coating must have an adhesion rating of 4B or better after 24 hours of recovery. This must be determined on unscribed bonderite, in accordance with ASTM D4585-99 and ASTM D3359-02, incorporated by reference in Section 8-3-607.13.

(Adopted July 1, 2009)

8-3-261 **Undercoater:** A coating labeled and formulated to provide a smooth surface for subsequent coats.

(Adopted11/21/01; Renumbered 7/1/09)

8-3-262 **Veneer:** Thin sheets of wood peeled or sliced from logs for use in the manufacture of wood products such as plywood, laminated veneer lumber, or other products.

(Adopted July 1, 2009)

8-3-263 **Virgin Materials:** Material that contain no post-consumer coatings or secondary industrial materials.

(Adopted July 1, 2009)

8-3-264 **Volatile Organic Compound (VOC):** Any organic compound (excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate) which would be emitted during use, application, curing or drying of an architectural coating.

264.1 Except as provided in Section 8-3-264.2, for the purpose of calculating VOC content of a coating, any water or the following non-precursor organic compounds:

acetone
methyl acetate
parachlorobenzotrifluoride (PCBTF)
cyclic, branched or linear, completely methylated siloxanes (VMS)

shall not be considered to be part of the coating.

264.2 For the purposes of calculating VOC content of a low solids coating, any water or non-precursor organic compound listed in Section 8-3-264.1 shall be considered part of the coating, but shall not be considered part of the VOC content of the coating.

(Adopted 12/20/95; Amended 11/4/98; Amended, Renumbered 11/21/01; 7/1/09)

8-3-265 **VOC Content:** The VOC content of a coating as calculated pursuant to Section 8-3-607.

(Adopted 11/21/01; Amended, Renumbered 11/21/01; 7/1/09)

8-3-266: **Waterproofing Membrane:** A clear or opaque coating that is labeled and formulated for application to concrete and masonry surfaces to provide a seamless waterproofing membrane that prevents any penetration of liquid water into the substrate. Waterproofing Membranes are intended for the following waterproofing applications: below-grade surfaces, between concrete slabs, inside tunnels, inside concrete planters, and under flooring materials. Waterproofing Membranes must meet the following criteria:

266.1 Coating must be applied in a single coat of at least 25 mils (at least 0.025 inch) dry film thickness; and

266.2 Coatings must meet or exceed the requirements contained in ASTM C836-06, incorporated by reference in Section 8-3-605.17.

The Waterproofing Membranes category does not include topcoats that are included in the Concrete/Masonry Sealer category (e.g., parking deck topcoats, pedestrian deck topcoats, etc.).

(Adopted July 1, 2009)

8-3-267 **Wood Coatings:** Coatings labeled and formulated for application exclusively to wood substrates only. The Wood Coatings category includes the following clear and semitransparent coatings: lacquers, varnishes, sanding sealers, penetrating oils; clear stains; wood conditioners used as undercoats, and wood sealers used as topcoats. The Wood Coatings category also includes the following opaque wood coatings: opaque lacquers, opaque sanding sealers, and opaque lacquer undercoaters. The Wood Coatings category does not include the following: clear sealers that are labeled and formulated for use on concrete/masonry surfaces, or coatings intended for substrates other than wood. Wood Coatings must be labeled "For Wood Substrates Only," in accordance with Section 8-3-401.13.

(Adopted July 1, 2009)

8-3-268 **Wood Preservative:** A coating labeled and formulated to protect exposed wood from decay or insect attack, that is registered with both the U.S. Environmental Protection Agency under the Federal Insecticide, Fungicide, and Rodenticide Act (7 United States Code (U.S.C.) Section 136, *et seq.*) and with the California Department of Pesticide Regulation.

(Adopted 5/18/83; Amended, Renumbered 11/21/01; Renumbered 7/1/09)

8-3-269 **Wood Substrate:** A substrate made of wood, particleboard, plywood, medium density fiberboard, rattan, wicker, bamboo, or composite products with exposed wood grain. Wood Substrate does not include any item comprised of simulated wood.

(Adopted July 1, 2009)

8-3-270 **Zinc-Rich Primer:** A coating that meets all of the following specifications:

270.1 Contains at least 65 percent metallic zinc powder or zinc dust by weight of total solids; and

270.2 Formulated for application to metal substrates to provide a firm bond between the substrate and subsequent applications of coatings; and

270.3 Intended for professional use only and is labeled as such, in accordance with the labeling requirements in Section 8-3-401.14.

(Adopted July 1, 2009)

8-3-271 **Antenna Coating:** A coating labeled and formulated exclusively for application to equipment and associated structural appurtenances that are used to receive or transmit electromagnetic signals. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-272 **Antifouling Coating:** A coating labeled and formulated for application to submerged stationary structures and their appurtenances to prevent or reduce the attachment of marine or freshwater biological organisms. To qualify as an antifouling coating, the coating must be registered with both the U.S. Environmental Protection Agency under the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. Section 136, *et seq*.) and with the California Department of Pesticide Regulation. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-273 **Clear Brushing Lacquers:** Clear wood finishes, excluding clear lacquer sanding sealers, formulated with nitrocellulose or synthetic resins to dry by solvent evaporation without chemical reaction and to provide a solid, protective film, which are intended exclusively for application by brush, and which are labeled as specified in Section 8-3-401.5. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-274 **Clear Wood Coatings:** Clear and semi-transparent coatings, including lacquers and varnishes, applied to wood substrates to provide a transparent or translucent solid film. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-275 **Fire-Retardant Coating:** A coating labeled and formulated to retard ignition and flame spread, that has been fire tested and rated by a testing agency approved by building code officials for use in bringing building and construction materials into compliance with federal, state, and local building code requirements. The fire-retardant coating and the testing agency must be approved by building code officials. The fire-retardant coating shall be tested in accordance with ASTM Designation E 84-07, incorporated by reference in Section 8-3-605.1. Effective January 1, 2011, coatings with fire retardant properties will be subject to the VOC limit of their primary category, (e.g., Flat, Nonflat, etc.). Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Renumbered 5/18/81; Amended, Renumbered 7/1/09)

8-3-276 **Flow Coating:** A coating labeled and formulated exclusively for use by electric power companies or their subcontractors to maintain the protective coating systems present on utility transformer units. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-277 **Lacquer:** A clear or opaque wood coating, including clear lacquer sanding sealers, formulated with cellulosic or synthetic resins to dry by evaporation without chemical reaction and to provide a solid, protective film. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Amended, Renumbered 5/18/83; 11/21/01; 7/1/09)

8-3-278 Quick-Dry Enamel: A nonflat coating that is labeled as specified in Section 8-3-401.8 and that is formulated to have the following characteristics:

278.1 Is capable of being applied directly from the container under normal conditions with ambient temperatures between 16°C and 27°C (60°F and 80°F);

278.2 When tested in accordance with ASTM Designation D 1640-95, incorporated by reference in Section 8-3-605.6, sets to touch in 2 hours or less, is tack free in 4 hours or less, and dries hard in 8 hours or less by the mechanical method test; and

278.3 Has a dried film gloss of 70 or above on a 60-degree meter.

Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 9/1/82; Amended, Renumbered 5/18/83; 11/21/01; 7/1/09)

8-3-279 Quick Dry Primer, Sealer, and Undercoater: A primer, sealer, or undercoater that is dry to touch in 30 minutes and can be recoated in 2 hours when tested in accordance with ATSM D 1640-95, incorporated by reference in Section 8-3-607.6. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 5/18/83; Amended, Renumbered 11/21/01; 7/1/09)

8-3-280 Sanding Sealer: A clear or semi-transparent wood coating labeled and formulated for application to bare wood to seal the wood and to provide a coat that can be abraded to create a smooth surface for subsequent applications of coatings. A sanding sealer that also meets the definition of a lacquer is not included in this category, but is included in the lacquer category. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-281 Sealer: A coating labeled and formulated for application to a substrate for one or more of the following purposes: to prevent subsequent coatings from being absorbed by the substrate, or to prevent harm to subsequent coatings by materials in the substrate. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-282 Swimming Pool Repair and Maintenance Coating: A rubber based coating labeled and formulated to be used over existing rubber based coatings for the repair and maintenance of swimming pools. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-283 Temperature-Indicator Safety Coating: A coating labeled and formulated as a color-changing indicator coating for the purpose of monitoring the temperature and safety of the substrate, underlying piping, or underlying equipment, and for application to substrates exposed continuously or intermittently to temperatures above 204°C (400°F). Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

((Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-284 Varnish: A clear or semi-transparent wood coating, excluding lacquers and shellacs, formulated to dry by chemical reaction on exposure to air. Varnishes may contain small amounts of pigment to color a surface, or to control the final sheen or gloss of the finish. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Amended, Renumbered 5/18/83; Amended 1/8/86; Amended, Renumbered 11/21/01, 7/1/09)

8-3-285 Waterproofing Concrete/Masonry Sealer: A clear or pigmented film-forming coating that is labeled and formulated for sealing concrete and masonry to provide

resistance against water, alkalis, acids, ultraviolet light, and staining. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Adopted 11/21/01; Amended, Renumbered 7/1/09)

8-3-286 Waterproofing Sealer: A coating labeled and formulated for application to a porous substrate for the primary purpose of preventing the penetration of water. Effective January 1, 2011, a coating meeting this definition will be subject to the VOC limit for the applicable category in 8-3-301, Table 2, except as provided in Section 8-3-302.

(Amended, Renumbered 5/18/83; 11/21/01; 7/1/09)

8-3-300 STANDARDS

8-3-301 VOC Content Limits: Except as provided in Sections 8-3-302, 303, 307, and 309, no person shall: (i) manufacture, blend, or repackage for sale within the District; (ii) supply, sell, or offer for sale within the District; or (iii) solicit for application or apply within the District, any architectural coating with a VOC content, as calculated pursuant to Section 8-3-607, in excess of the corresponding limit specified in the following tables. Limits are expressed in grams of VOC per liter of coating as thinned to the manufacturer's maximum recommendation, excluding the volume of any water, exempt compounds, or colorant added to the tint bases, except that, for low solids coatings, the volume of water and exempt compounds is not excluded.

Table 1 shall be effective until January 1, 2011:

TABLE 1

Coating Category	Limit
Flat Coatings	100
Nonflat Coatings	150
Nonflat – High Gloss Coatings	250
Specialty Coatings:	
Antenna Coatings	530
Antifouling Coatings	400
Bituminous Roof Coatings	300
Bituminous Roof Primers	350
Bond Breakers	350
Clear Wood Coatings:	
Clear Brushing Lacquer	680
Lacquer (including lacquer sanding sealer)	550(1)
Sanding sealer	350
Varnish	350
Concrete Curing Compounds	350
Dry Fog Coatings	400
Faux Finishing Coatings	350
Fire Resistive Coatings	350
Fire Retardant Coatings:	
Clear	650
Opaque	350
Floor Coatings	250
Flow Coatings	420
Form-Release Compounds	250
Graphic Arts Coatings (Sign Paints)	500
High Temperature Coatings	420
Industrial Maintenance Coatings	250
Low Solids Coatings	120
Magnesite Cement Coatings	450
Mastic Texture Coatings	300
Metallic Pigmented Coatings	500

Coating Category	Limit
Multi-Color Coatings	250
Pre-Treatment Wash Primers	420
Primers, Sealers, and Undercoaters	200
Quick-Dry Enamels	250
Quick-Dry Primers, Sealers, Undercoaters	200
Recycled Coatings	250
Roof Coatings	250
Rust Preventative Coatings	400
Shellacs:	
Clear	730
Opaque	550
Specialty Primers, Sealers and Undercoaters	350
Stains	250
Swimming Pool Coatings	340
Swimming Pool Repair and Maintenance Coatings	340
Temperature-Indicator Safety Coatings	550
Traffic Marking Coatings	150
Waterproofing Concrete/Masonry Sealers	400
Waterproofing Sealers	250
Wood Preservatives:	
Above ground	350
Below ground	350

(1) A person may add up to 10 percent by volume of VOC to a lacquer to avoid blushing of the finish provided that, (i) the relative humidity at the time of coating application is greater than 70%, (ii) the temperature at the time of coating application is below 18°C (65°F), (iii) the lacquer contains acetone, and (iv) the lacquer contains no more than 550 grams of VOC per liter of coating, less water and exempt compounds, prior to the addition.

Table 2 shall be effective on and after January 1, 2011:

TABLE 2

Coating Category:	VOC Limit (g/l)	
	Effective Dates	
	1/1/2011	1/1/2012
Flat Coatings	50	
Nonflat Coatings	100	
Nonflat – High Gloss Coatings	150	
Specialty Coatings		
Aluminum Roof	400	
Basement Specialty Coatings	400	
Bituminous Roof Coatings	50	
Bituminous Roof Primers	350	
Bond Breakers	350	
Concrete Curing Compounds	350	
Concrete/Masonry Sealers	100	
Driveway Sealer	50	
Dry Fog Coatings	150	
Faux Finishing Coatings	350	
Fire Restive Coatings	350	
Floor Coatings	100	
Form-Release Compounds	250	

Coating Category:	VOC Limit (g/l)	
	Effective Dates	
	1/1/2011	1/1/2012
Graphic Arts Coatings (Sign Paints)	500	
High Temperature Coatings	420	
Industrial Maintenance Coatings	250	
Low Solids Coatings	120	
Magnesite Cement Coatings	450	
Mastic Texture Coatings	100	
Metallic Pigmented Coatings	500	
Multi-Color Coatings	250	
Pre-Treatment Wash Primers	420	
Primers, Sealers, and Undercoaters	100	
Reactive Penetrating Sealer	350	
Recycled Coatings	250	
Roof Coatings	50	
Rust Preventative Coatings	400	250
Shellacs: Clear Shellacs: Opaque	730 550	
Specialty Primers, Sealers and Undercoaters	350	100
Stains	250	
Stone Consolidants	450	
Swimming Pool Coatings	340	
Traffic Marking Coatings	100	
Tub and Tile Refinish Coatings	420	
Waterproofing Membranes	250	
Wood Coatings	275	
Wood Preservatives	350	
Zinc-Rich Primer	340	

(Amended 9/1/82; 5/18/83; 1/8/86; 9/3/86; 11/4/98; Amended 11/21/01; 7/1/09)

8-3-302 Most Restrictive VOC Limits:

302.1 Effective until January 1, 2011, if anywhere on the container of any architectural coating or any label or sticker affixed to the container, or in any sales, advertising or technical literature supplied by a manufacturer or anyone acting on their behalf, any representation is made that indicates that the coating meets the definition of or is recommended for use for more than one of the coating categories listed in the table in Section 8-3-301, then the most restrictive VOC limit shall apply. This Section does not apply to the following coating categories:

1.1 Antenna coatings,
1.2 Antifouling coatings,
1.3 Bituminous roof coatings,
1.4 Fire-retardant coatings,
1.5 Flow coatings,
1.6 High temperature coatings,
1.7 Industrial maintenance coatings,
1.8 Lacquer coatings (including lacquer sanding sealers),
1.9 Low-solids coatings,
1.10 Metallic pigmented coatings,
1.11 Pretreatment wash primers,
1.12 Shellacs,
1.13 Specialty primers, sealers and undercoaters,

1.14 Temperature-indicator safety coatings, and
1.15 Wood preservatives.

302.2 Effective January 1, 2011, if a coating meets a definition listed in Section 8-3-200 for one or more specialty coating categories that are listed in Section 8-3-301, Table 2, then that coating is not required to meet the VOC limits for Flat, Nonflat, or Nonflat – High Gloss coatings, but is required to meet the VOC limits for the applicable specialty coating listed in Section 8-3-301, Table 2. With the exception of the specialty coating categories specified in Sections 8-3-302.2.1 through 302.2.12, if a coating is recommended for use in more than one of the specialty coating categories, then the most restrictive limit shall apply. This requirement applies to usage recommendations that appear anywhere on the coating container, any label or sticker affixed to the container, or in any sales, advertising, or technical literature supplied by a manufacturer or anyone acting on their behalf:

2.1 Aluminum roof coatings,
2.2 Bituminous roof primers,
2.3 High temperature coatings,
2.4 Industrial maintenance coatings,
2.5 Low-solids coatings,
2.6 Metallic pigmented coating,
2.7 Pretreatment wash primers,
2.8 Shellacs,
2.9 Specialty primers, sealers, and undercoaters,
2.10 Wood coatings,
2.11 Wood preservatives,
2.12 Zinc-rich primers

(Adopted 4/17/86; Amended 1/8/86; Amended, Renumbered 11/21/01; Amended 7/1/09)

8-3-303 Sell-Through of Coatings: Any coating manufactured prior to the effective date specified for that coating in Section 8-3-301, Table 2 may be supplied, offered for sale, or sold for up to three years after the effective dates provided that (i) the coating was in compliance with the VOC limits in effect at the time of manufacture, and (ii) the date or date-code is displayed on the coating container as required by Section 8-3-401.1. Any coating subject to this Section may be applied at any time both before and after the specified effective dates.

(Adopted 11/21/01; Amended 7/1/09)

8-3-304 Painting Practices and Solvent Usage and Storage: Any person using organic solvent for surface preparation and cleanup or mixing, using or disposing of coating or stripper containing organic solvent:

304.1 Shall close containers used for the storage or disposal of cloth or paper used for solvent surface preparation and cleanup when not in use;

304.2 Shall close containers of fresh or spent solvent, coating, catalyst, thinner reducer, or solvent when not in use; and

304.3 Shall not use organic compounds for the cleanup of spray equipment, including paint lines, unless equipment for collecting the organic compounds and minimizing their evaporation to the atmosphere is used.

"In use" is the active application of contents to a surface by pouring, siphoning, brushing, rolling, padding, ragging or other means. Architectural coating containers include but are not limited to, drums, buckets, cans, pails, trays and any other application containers.

(Adopted 11/21/01; Amended 7/1/09)

8-3-305 Prohibition of Excess Thinning: No person who applies or solicits the application of any architectural coating shall apply a coating that is thinned to exceed the applicable VOC limit specified in Section 8-3-301.

(Adopted November 21, 2001)

8-3-306 Rust Preventative Coatings: Effective until January 1, 2012, no person shall apply or solicit the application of any rust preventative coating for other than non-industrial use, unless such coating complies with the VOC limit for industrial maintenance coating as specified in Section 8-3-301.

(Adopted 11/21/01; Amended 7/1/09)

8-3-307 Coatings Not Listed in Section 8-3-301: Any coating that does not meet any of the definitions for a specialty coating listed in Section 8-3-301, Table 1 or 2 shall be classified as a flat, nonflat or nonflat high gloss coating, based on its gloss, as defined in Section 8-3-221, 234 or 235, and the corresponding VOC limit in Section 8-3-301, Table 1 or 2 shall apply.

(Adopted 11/21/01; Amended 7/1/09)

8-3-308 Deleted July 1, 2009

8-3-309 Limited Allowance, Industrial Maintenance Coatings: Effective January 1, 2004, industrial maintenance coatings with a VOC content of greater than 250 grams VOC per liter but no greater than 340 grams VOC per liter may be manufactured, sold, offered for sale, solicited, and applied in the District provided the user of the coating, or manufacturer or seller on behalf of the user, has petitioned the APCO for use of the coating as per Section 8-3-402 and has received written approval. The APCO shall not approve any petition if the approval, when combined with approvals granted previously during the calendar year, would result in excess emissions of greater than 10 tons per year. Excess emissions are emissions greater than those that would result from an equal volume of coating at the VOC limit of 250 grams per liter. This Section shall not apply to industrial maintenance coatings offered for sale to the general public.

(Adopted November 21, 2001)

8-3-400 ADMINISTRATIVE REQUIREMENTS

8-3-401 Container Labeling Requirements: Each container for any coating subject to this Rule shall display all the information in Section 8-3-401.1 through 401.3, and, as applicable, the information in Section 8-3-401.4 through 401.9:

401.1 Date Code: The date the coating was manufactured, or a date code representing the date shall be indicated on the label, lid or bottom of the container. If the manufacturer uses a date code, an explanation of each code must be filed with the Executive Officer of the Air Resources Board and be made available to the Air Pollution Control Officer on request.

401.2 Thinning Recommendation: A statement of the manufacturer's recommendation regarding thinning of the coating so as not to exceed the VOC limit listed in Section 8-3-301 shall be indicated on the label or lid of the container. This requirement does not apply to the thinning of coatings with water. If thinning prior to use is not necessary, the recommendation must specify that the coating is to be applied without thinning.

401.3 VOC Content: Each container of any coating subject to this rule shall display one of the following values in grams of VOC per liter of coating:

- 3.1 Maximum VOC content as determined from all potential product formulations; or
- 3.2 VOC content as determined from actual formulation data: or
- 3.3 VOC content as determined using the applicable test methods in Sections 8-3-601 through 605.
- 3.4 If the manufacturer does not recommend thinning, the container must display the VOC content, as supplied.
- 3.5 If the manufacturer recommends thinning, the container must display the VOC content including the maximum amount of thinning solvent recommended by the manufacturer.
- 3.6 Effective January 1, 2011, if the coating is a multi-component product, the container must display the VOC content as mixed or catalyzed.
- 3.7 Effective January 1, 2011, if the coating contains silanes, siloxanes, or other ingredients that generate ethanol or other VOCs during the curing process, the VOC content must include the VOCs emitted during curing.

401.4 Industrial Maintenance Coatings: Until January 1, 2011, on the label or lid; one or more of the following: (i) "For Industrial Use Only," (ii) "For Professional Use Only," (iii) "Not For Residential Use," or (iv) "Not Intended For Residential Use" shall be prominently displayed. Effective January 1,

2011, the labels of all industrial maintenance coatings shall prominently display the statement "For industrial use only" or "For professional use only."

401.5 For Clear Brushing Lacquers: Until January 1, 2011, "For Brush Application Only," and "This Product Must Not Be Thinned Or Sprayed" shall be prominently displayed on the label.

401.6 For Rust Preventative Coatings: "For Metal Substrates Only" shall be prominently displayed on the label.

401.7 For Specialty Primers, Sealers, and Undercoaters: Until January 1, 2011, one of the following: (i) For Blocking Stains, (ii) For Fire-Damaged Substrates, (iii) For Smoke-Damaged Substrates, (iv) For Water-Damaged Substrates, or, (v) For Excessively Chalky Surfaces shall be prominently displayed on the label.

401.8 For Quick Dry Enamels: Until January 1, 2011, "Quick Dry" and the dry hard time shall be prominently displayed on the label.

401.9 For Nonflat – High Gloss Coatings: "High Gloss" shall be prominently displayed on the label.

401.10 For Faux Finishing Coatings: Effective January 1, 2011, the labels of all clear topcoat sold as part of a Faux Finishing Coating system shall prominently display the statement "This product can only be sold or used as part of a Faux Finishing coating system."

401.11 For Reactive Penetrating Sealers: Effective January 1, 2011, the labels of all Reactive Penetrating Sealers shall prominently display the statement "Reactive Penetrating Sealer."

401.12 For Stone Consolidants: Effective January 1, 2011, the labels of all Stone Consolidants shall prominently display the statement "Stone Consolidant – For Professional Use Only."

401.13 For Wood Coatings: Effective January 1, 2011, the labels of all Wood Coatings shall prominently display the statement "For Wood Substrates Only."

401.14 For Zinc Rich Primers: Effective January 1, 2011, the labels of all Zinc Rich Primers shall prominently display the statement "For Industrial Use Only" or "For Professional Use Only."

(Amended 3/17/82; 12/1/82; 5/18/83; 1/8/86; Amended, Renumbered 11/21/01; Amended 7/1/09)

8-3-402 Petition, Limited Allowance for Industrial Maintenance Coatings: A person seeking to use the limited allowance for industrial maintenance coatings as per Section 8-3-309 shall comply with the following requirements:

402.1 The petitioner shall certify that complying coatings able to meet the job performance requirements are not available.

402.2 The petition shall contain the following information, as applicable: (i) job requirements, and job and site description, (ii) volume of coating required, and, (iii) maximum VOC content of coating to be applied.

402.3 If the APCO grants written approval, the approval shall contain volume and allowable VOC content conditions. Until written approval is granted and received by the petitioner, all provisions of this Rule shall apply.

(Adopted November 21, 2001)

8-3-500 MONITORING AND RECORDS

8-3-501 Deleted July 1, 2009

8-3-502 Sales Data: A responsible official from each manufacturer shall, upon request of the Executive Officer of the ARB, or his or her delegate, provide data concerning the distribution and sales of architectural coatings. The responsible official shall within 180 days provide information including, but not limited to:

502.1 The name and mailing address of the manufacturer;

502.2 The name, address and telephone number of a contact person;

502.3 The name of the coating products as it appears on the label and the applicable coating category;

502.4 Whether the product is marketed for interior or exterior use or both;

502.5 The number of gallons sold in California in containers greater than one liter (1.057 quarts) and equal to or less than one liter (1.057 quart);

502.6 The VOC Actual content and VOC Regulatory content in grams per liter. VOC Actual is calculated according to the equation in Section 8-3-608 for all coatings. VOC Regulatory is calculated according to the equation in Section 8-3-609, except for low-solids coatings, which is also determined according to Section 8-3-608. If thinning is recommended, list the VOC Actual content and VOC regulatory content after maximum recommended thinning. If containers less than one liter have a different VOC content than containers greater than one liter, list separately. If the coating is a multi-component product, provide the VOC content as mixed or catalyzed;

502.7 The names and CAS numbers of the VOC constituents in the product;

502.8 The names and CAS numbers of any compounds in the product specifically exempted from the VOC definition, as listed in Section 8-3-264;

502.9 Whether the product is marketed as solventborne, waterborne, or 100 percent solids;

502.10 Description of resin or binder in the product;

502.11 Whether the coating is a single-component or multi-component product;

502.12 The density of the product in pounds per gallon;

502.13 The percent by weight of solids, all volatile materials, water, and any compound in the product specifically exempted from the VOC definition, as listed in Section 8-3-264;

502.14 The percent by volume of solids, all volatile materials, water, and any compound in the product specifically exempted from the VOC definition, as listed in Section 8-3-264;

All sales data listed in Section 8-3-502.1 through 502.14 shall be maintained by the responsible official for a minimum of three years. Sales data submitted by the responsible official to the Executive Officer of the ARB may be claimed as confidential, and such information shall be handled in accordance with the procedures specified in Title 17, California Code of Regulations, Sections 91000-91022.

(Adopted July 1, 2009)

8-3-600 MANUAL OF PROCEDURES

8-3-601 Determination of Compliance, Air-Dried Water Reducible Coatings: The means by which compliance of air-dried, water reducible coatings is determined are found in the Manual of Procedures, Volume III, Method 21.

(Amended 3/17/82; 5/18/83)

8-3-602 Determination of Compliance, Air-Dried Solvent Based Coatings: The means by which compliance of air-dried, solvent based coatings is determined are found in the Manual of Procedures, Volume III Method 22.

(Amended 3/17/82; 5/18/83)

8-3-603 Deleted November 21, 2001

8-3-604 Determination of Compliance, Low Solids Architectural Coatings: The means by which compliance of low solids architectural coatings is determined are found in the Manual of Procedures, Volume III, Method 31.

(Adopted November 4, 1998)

8-3-605 Incorporated Test Methods: The following test methods are incorporated by reference herein, and shall be used to test coatings subject to provisions of this Rule:

605.1 Flame Spread Index: The flame spread index of a fire-retardant coating shall be determined by ASTM Designation E 84-07, "Standard Test Method for Surface Burning Characteristics of Building Materials," (see Section 8-3-275, Fire-Retardant Coating).

605.2 Fire Resistance Rating: The fire resistance rating of a fire-resistive coating shall be determined by ASTM Designation E 119-07, "Standard Test Methods for Fire Tests of Building Construction Materials," (see Section 8-3-220, Fire-Resistive Coating).

605.3 Gloss Determination: The gloss of a coating shall be determined by ASTM Designation D 523-89 (1999), "Standard Test Method for Specular Gloss,"

(see Sections 8-3-221, 234, 235, and 278, Flat Coating, Nonflat Coating, Nonflat High Gloss Coating, and Quick-Dry Enamels).

605.4 Metal Content of Coatings: The metallic content of a coating shall be determined by South Coast Air Quality Management District Method 318-95, "Determination of Weight Percent Elemental Metal in Coatings by X-Ray Diffraction," South Coast Air Quality Management District "Laboratory Methods of Analysis for Enforcement Samples," (see Section 8-3-219, Faux Finishing Coating or Section 8-3-232, Metallic Pigmented Coating).

605.5 Acid Content of Coatings: Measurement of acid content of Pre-Treatment Wash Primers shall be determined by ASTM Designation D 1613-06, "Standard Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products," (see Section 8-3-241, Pre-Treatment Wash Primers).

605.6 Drying Times: The set-to-touch, dry-hard, dry-to-touch, and dry-to-recoat times of a coating shall be determined by ASTM Designation D 1640-95, "Standard Test Methods for Drying, Curing, or Film Formation of Organic Coatings at Room Temperature, " (see Sections 8-3-278 and 279, Quick-Dry Enamel and Quick-Dry Primer, Sealer, and Undercoater). The tack-free time of a quick-dry enamel coating shall be determined by the Mechanical Test Method of ASTM Designation D 1640-95.

605.7 Surface Chalkiness: The chalkiness of a surface shall be determined using ASTM Designation D 4214-98, "Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films," (see Section 8-3-254, Specialty Primer, Sealer, and Undercoater).

605.8 Exempt Compounds – Siloxanes: The quantity of cyclic, branched, or linear completely methylated siloxanes shall be analyzed by the Manual of Procedures, Volume III, Laboratory Method 43: "Determination of Volatile Methylsiloxanes in Solvent-Based Coatings, Inks, and Related Materials," (see Section 8-3-264, Volatile Organic Compound).

605.9 Exempt Compounds – Parachlorobenzotrifluoride (PCBTF): The quantity of parachlorobenzotrifluoride shall be analyzed by the Manual of Procedures, Volume III, Laboratory Method 41, "Determination of Volatile Organic Compounds in Solvent-Based Coatings and Related Materials Containing Parachlorobenzotrifluoride (see Section 8-3-264, Volatile Organic Compound).

605.10 Exempt Compounds – Methyl Acetate: The quantity of methyl acetate shall be determined by ASTM Method D-6133-00: "Standard Test Method for Acetone, PCBTF, Methyl Acetate or t-Butyl Acetate Content of Solvent-Reducible and Water Reducible Paints, Coatings, Resins, and Raw Materials by Direct Injection Into a Gas Chromatograph." (see Section 8-3-264, Volatile Organic Compound).

605.11 Hydrostatic Pressure for Basement Specialty Coatings: The hydrostatic pressure for a basement specialty coating shall be determined by ASTM D7088-04, "Standard Practice for Resistance to Hydrostatic Pressure for Coatings Used in Below Grade Applications Applied to Masonry." (See section 8-3-206, Basement Specialty Coating.)

605.12 Methacrylate Traffic Marking Coatings: The VOC content of methacrylate multicomponent coatings used as traffic marking coatings shall be analyzed by the procedures in 40 CFR part 59, subpart D, appendix A, "Determination of Volatile Matter Content of Methacrylate Multicomponent Coatings Used as Traffic Marking Coatings."

605.13 Tub and Tile Refinish Coating Adhesion: The adhesion of a tub and tile refinish coating shall be determined by ASTM D 4585-99 "Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation" and ASTM D3359-02, "Standard Test Methods for Measuring Adhesion by Tape Test." (See Section 8-3-260, Tub and Tile Refinishing Coating.)

605.14 Tub and Tile Refinish Coating Hardness: The hardness of a tub and tile refinish coating shall be determined by ASTM D3363-05, "Standard Test

Method for Film Hardness by Pencil Test." (See Section 8-3-260, Tub and Tile Refinishing Coating.)

605.15 Tub and Tile Refinish Coating Abrasion Resistance: The abrasion resistance of a tub and tile refinishing coating shall be determined by ASTM D 4060-07, "Standard Test Methods for Abrasion Resistance of Organic Coatings by the Taber Abraser." (See Section 8-3-260, Tub and Tile Refinishing Coating.)

605.16 Tub and Tile Refinish Coating Water Resistance: The water resistance of a tub and tile refinish coating shall be determined by ASTM D4585-99, "Standard Practice for Testing Water Resistance of Coatings Using Controlled Condensation" and ASTM D714-02e1, "Standard Test Method for Evaluating Degree of Blistering of Paint." (See Section 8-3-260, Tub and Tile Refinish Coating.)

605.17 Waterproofing Membrane: The water resistance of a waterproofing membrane shall be determined by ASTM C836-06, "Standard Specification for High Solids Content, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course." (See Section 8-3-266, Waterproofing Membrane.)

605.18 Mold and Mildew Growth Resistance for Basement Specialty Coatings: The mildew growth resistance of a basement specialty coating shall be determined by ASTM D3273-00, "Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber" and ASTM D3274-95, "Standard Test Method for Evaluating Degree of Surface Disfigurement of Paint Films by Microbial (Fungal or Algal) Growth or Soil and Dirt Accumulation." (See Section 8-3-206, Basement Specialty Coating.)

605.19 Reactive Penetrating Sealer Water Repellency: The water repellency of a reactive penetrating sealer shall be determined by ASTM C67-07, "Standard Test Method for Sampling and Testing Brick and Structural Clay Tile"; or ASTM C97-02, "Standard Test Method for Absorption and Bulk Specific Gravity of Dimension Stone"; or ASTM C140-06, "Standard Test Method for Sampling and Testing Concrete Masonry Units and Related Units." (See Section 8-3-243, Reactive Penetrating Sealer.)

605.20 Reactive Penetrating Sealer Water Vapor Transmission: The water vapor transmission of a reactive penetrating sealer shall be determined by ASTM E96/E96M-05, Standard Test Method for Water Vapor Transmission of Materials." (See Section 8-3-243, Reactive Penetrating Sealer.)

605.21 Reactive Penetrating Sealer – Chloride Screening Applications: The performance criteria of reactive penetrating sealers shall be determined by National Cooperative Highway Research Report 244 (1981), "Concrete Sealers for the Protection of Bridge Structures." (See Section 8-3-243, Reactive Penetrating Sealer.)

605.22 Stone Consolidants: The specification criteria of a stone Consolidant shall be determined by ASTM E2167-01, "Standard Guide for Selection and Use of Stone Consolidants." (See Section 8-3-256, Stone Consolidant.)

(Adopted 11/21/01; Amended 7/1/09)

8-3-606 Alternative Test Methods: As an alternative to Sections 8-3-601 and 602, the following test methods may be used:

606.1 U.S. EPA Method 24, incorporated by reference as it exists in appendix A of 40 Code of Federal Regulations (CFR) part 60, "Determination of Volatile Matter Content, Water Content, Density, Volume Solids and Weight Solids of Surface Coating." or

606.2 SCAQMD Method 304-91 (Revised 1996), "Determination of Volatile Organic Compounds (VOC) in Various Materials," incorporated by reference. The exempt compounds content shall be determined by SCAQMD Method 303-91 (Revised 1993),

606.3 An alternative method provided the method has been reviewed and approved in writing by the APCO, ARB, and the US EPA; or

606.4 Formulation data or any other reasonable means for predicting that the coating has been formulated as intended (e.g., quality assurance checks, record keeping) may be used to determine the VOC content of a coating,

Any inconsistencies between the results of tests and any other means for determining VOC content shall be governed by the District Manual of Procedure or the US EPA Method 24.

(Adopted July 1, 2009)

8-3-607 Calculation of VOC Content: For the purpose of determining compliance with the VOC content limits in Section 8-3-301, the VOC content of a coating shall be determined as prescribed in Section 8-3-608 for low solids coatings or Section 8-3-609 for all other architectural coatings, with exempt compounds defined by Section 8-3-218. The VOC content of a tint base shall be determined without colorant that is added after the tint base is manufactured. If the manufacturer does not recommend thinning, the VOC Content must be calculated for the product as supplied. If the manufacturer recommends thinning, the VOC content must be calculated including the maximum amount of thinning solvent recommended by the manufacturer. If the coating is a multi-component product, the VOC content must be calculated as mixed or catalyzed. If the coating contains silanes, siloxanes, or other ingredients that generate ethanol or other VOCs during the curing process, the VOC content must include the VOCs emitted during curing.

(Adopted July 1, 2009)

8-3-608: Calculation of the Grams of VOC per liter for Low Solids Coatings: Calculate the VOC content by using the following equation:

$$VOC = \frac{W_s - W_w - W_{es}}{V_m}$$

Where:

W_s = Weight of volatile compounds in grams.
W_w = Weight of water in grams.
W_{es} = Weight of exempt compounds in grams.
V_m = Volume of material in liters.

(Adopted July 1, 2009)

8-3-609: Calculation of the Grams of VOC per liter for All Other Architectural Coatings: Calculate the VOC content by using the following equation:

$$VOC = \frac{W_s - W_w - W_{es}}{V_m - V_w - V_{es}}$$

Where:

W_s = Weight of volatile compounds in grams.
W_w = Weight of water in grams.
W_{es} = Weight of exempt compounds in grams.
V_m = Volume of material in liters.
V_w = Volume of water in liters.
V_{es} = Volume of exempt compounds in liters.

(Adopted July 1, 2009)

D. THRESHOLDS OF SIGNIFICANCE JUSTIFICATION

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

California Environmental Quality Act Guidelines Update

Thresholds of Significance

June 2, 2010

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Table of Contents

Section **Page**

List of Tables

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

Bay Area Air Quality Management District

Air Quality CEQA Thresholds of Significance

1. INTRODUCTION

Bay Area Air Quality Management District (BAAQMD or Air District) staff analyzed various options for California Environmental Quality Act (CEQA) air quality thresholds of significance for use within BAAQMD's jurisdiction. The analysis and evaluation undertaken by Air District staff is documented in the *Revised Draft Options and Justification Report – California Environmental Quality Act Thresholds of Significance* (Draft Options Report) (BAAQMD October 2009).

Air District staff hosted public workshops in February, April, September and October 2009, and April 2010 at several locations around the Bay Area. Air District staff also hosted additional workshops in each of the nine Bay Area counties specifically designed for, and to solicit input from, local agency staff. In addition, Air District staff met with regional stakeholder groups to discuss and receive input on the threshold options being evaluated. Throughout the course of the public workshops and stakeholder meetings Air District staff received many comments on the various options under consideration. Based on comments received and additional staff analysis, the threshold options and staff-recommended thresholds were further refined. The culmination of this nearly year and a half-long effort was presented in the Proposed Thresholds of Significance Report published on November 2, 2009 as the Air District staff's proposed air quality thresholds of significance.

The Air District Board of Directors (Board) held public hearings on November 18 and December 2, 2009 and January 6, 2010, to receive comments on staff's Proposed Thresholds of Significance (November 2, 2009; revised December 7, 2009). After public testimony and Board deliberations, the Board requested staff to present additional options for risk and hazard thresholds for Board consideration. This Report includes risks and hazards threshold options, as requested by the Board, in addition to staff's previously recommended thresholds of significance. The thresholds presented herein, adopted by the Air District Board of Directors, are intended to replace all of the Air District's currently recommended thresholds. The air quality thresholds of significance, and Board-requested risk and hazard threshold options, are provided in Table 1 at the end of this introduction.

1.1. BAAQMD/CEQA REGULATORY AUTHORITY

The BAAQMD has direct and indirect regulatory authority over sources of air pollution in the San Francisco Bay Area Air Basin (SFBAAB). CEQA requires that public agencies consider the potential adverse environmental impacts of any project that a public agency proposes to carry out, fund or approve. CEQA requires that a lead agency prepare an Environmental Impact Report (EIR) whenever it can be fairly argued (the "fair argument" standard), based on substantial evidence,[3] that a project may have a significant effect[4] on the environment, even if there is

[3] "Substantial evidence" includes facts, reasonable assumptions predicated upon facts, or expert opinions supported by facts, but does not include argument, speculation, unsubstantiated opinion or narrative, evidence that is clearly inaccurate

substantial evidence to the contrary (CEQA Guidelines §15064). CEQA requires that the lead agency review not only a project's direct effects on the environment, but also the cumulative impacts of a project and other projects causing related impacts. When the incremental effect of a project is cumulatively considerable, the lead agency must discuss the cumulative impacts in an EIR. (CEQA Guidelines §15064).

The "fair argument" standard refers to whether a fair argument can be made that a project may have a significant effect on the environment (*No Oil, Inc. v. City of Los Angeles* (1974) 13 Cal.3d 68, 84). The fair argument standard is generally considered a low threshold requirement for preparation of an EIR. The legal standards reflect a preference for requiring preparation of an EIR and for "resolving doubts in favor of environmental review." *Meija v. City of Los Angeles* (2005) 130 Cal. App. 4th 322, 332. "The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data." (CEQA Guidelines §15064(b).

In determining whether a project may have a significant effect on the environment, CEQA Guidelines Section 15064.7 provides that lead agencies may adopt and/or apply "thresholds of significance." A threshold of significance is "an identifiable quantitative, qualitative or performance level of a particular environmental effect, non-compliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant" (CEQA Guidelines §15064.7).

While thresholds of significance give rise to a presumption of insignificance, thresholds are not conclusive, and do not excuse a public agency of the duty to consider evidence that a significant effect may occur under the fair argument standard. *Meija*, 130 Cal. App. 4th at 342. "A public agency cannot apply a threshold of significance or regulatory standard 'in a way that forecloses the consideration of any other substantial evidence showing there may be a significant effect.'" *Id.* This means that if a public agency is presented with factual information or other substantial evidence establishing a fair argument that a project may have a significant effect on the environment, the agency must prepare an EIR to study those impacts even if the project's impacts fall below the applicable threshold of significance.

Thresholds of significance must be supported by substantial evidence. This Report provides the substantial evidence in support of the thresholds of significance developed by the BAAQMD. If adopted by the BAAQMD Board of Directors, the Air District will recommend that lead agencies within the nine counties of the BAAQMD's jurisdiction use the thresholds of significance in this Report when considering the air quality impacts of projects under their consideration.

1.2. JUSTIFICATION FOR UPDATING CEQA THRESHOLDS

Any analysis of environmental impacts under CEQA includes an assessment of the nature and extent of each impact expected to result from the project to determine whether the impact will be treated as significant or less than significant. CEQA gives lead agencies discretion whether to classify a particular environmental impact as significant. Ultimately, formulation of a standard of significance requires the lead agency to make a policy judgment about where the line should be drawn distinguishing adverse impacts it considers significant from those that are not deemed significant. This judgment must, however, be based on scientific information and other factual data to the extent possible (CEQA Guidelines §15064(b)).

or erroneous, or evidence of social or economic impacts that do not contribute to, or are not caused by, physical impacts on the environment. Cal. Pub. Res. C. §21080(c); *see also* CEQA Guidelines §15384.

[4] A "significant effect" on the environment is defined as a "substantial, or potentially substantial, adverse change in the environment." Cal. Pub. Res. C. §21068; *see also* CEQA Guidelines §15382.

In the sense that advances in science provide new or refined factual data, combined with advances in technology and the gradual improvement or degradation of an environmental resource, the point where an environmental effect is considered significant is fluid over time. Other factors influencing this fluidity include new or revised regulations and standards, and emerging, new areas of concern.

In the ten years since BAAQMD last reviewed its recommended CEQA thresholds of significance for air quality, there have been tremendous changes that affect the quality and management of the air resources in the Bay Area. Traditional criteria air pollutant ambient air quality standards, at both the state and federal levels, have become increasingly more stringent. A new criteria air pollutant standard for fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) has been added to federal and state ambient air quality standards. We have found, through technical advances in impact assessment, that toxic air contaminants are not only worse than previously thought from a health perspective, but that certain communities experience high levels of toxic air contaminants, giving rise to new regulations and programs to reduce the significantly elevated levels of ambient toxic air contaminant concentrations in the Bay Area.

In response to the elevated levels of toxic air contaminants in some Bay Area communities, the Air District created the Community Air Risk Evaluation (CARE) Program. Phase 1 of the BAAQMD's CARE program compiled and analyzed a regional emissions inventory of toxic air contaminants (TACs), including emissions from stationary sources, area sources, and on-road and off-road mobile sources. Phase 2 of the CARE Program conducted regional computer modeling of selected TAC species, species which collectively posed the greatest risk to Bay Area residents. In both Phases 1 and 2, demographic data were combined with estimates of TAC emissions or concentrations to identify communities that are disproportionally impacted from high concentrations of TACs. Bay Area Public Health Officers, in discussions with Air District staff and in comments to the Air District's Advisory Council (February 11, 2009, Advisory Council Meeting on Air Quality and Public Health), have recommended that $PM_{2.5}$, in addition to TACs, be considered in assessments of community-scale impacts of air pollution.

Another significant issue that affects the quality of life for Bay Area residents is the growing concern with global climate change. In just the past few years, estimates of the global atmospheric temperature and greenhouse gas concentration limits needed to stabilize climate change have been adjusted downward and the impacts of greenhouse gas emissions considered more dire. Previous scientific assessments assumed that limiting global temperature rise to 2-3°C above pre-industrial levels would stabilize greenhouse gas concentrations in the range of 450-550 parts per million (ppm) of carbon dioxide-equivalent (CO_2e). Now the science indicates that a temperature rise of 2°C would not prevent dangerous interference with the climate system. Recent scientific assessments suggest that global temperature rise should be kept below 2°C by stabilizing greenhouse gas concentrations below 350 ppm CO_2e, a significant reduction from the current level of 385 ppm CO_2e.

For the reasons stated above, and to further the goals of other District programs such as encouraging transit-oriented and infill development, BAAQMD has undertaken an effort to review all of its currently-recommended CEQA thresholds, revise them as appropriate, and develop new thresholds where appropriate. The overall goal of this effort is to develop CEQA significance criteria that ensure new development implements appropriate and feasible emission reduction measures to mitigate significant air quality impacts. The Air District's recommended CEQA significance thresholds have been vetted through a public review process and will be presented to the BAAQMD Board of Directors for adoption.

Table 1 – Air Quality CEQA Thresholds of Significance			
Pollutant	**Construction-Related**	**Operational-Related**	
Project-Level			
Criteria Air Pollutants and Precursors (Regional)	**Average Daily Emissions (lb/day)**	**Average Daily Emissions (lb/day)**	**Maximum Annual Emissions (tpy)**
ROG	54	54	10
NO_X	54	54	10
PM_{10}	82 (exhaust only)	82	15
$PM_{2.5}$	54 (exhaust only)	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Management Practices	None	
Local CO	None	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
GHGs **Projects other than Stationary Sources**	None	Compliance with Qualified Greenhouse Gas Reduction Strategy OR 1,100 MT of CO_2e/yr OR 4.6 MT CO_2e/SP/yr (residents + employees)	
GHGs **Stationary Sources**	None	10,000 MT/yr	
Risks and Hazards – New Source (All Areas) (Individual Project) **Staff Proposal**	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor	

Table 1 – Air Quality CEQA Thresholds of Significance		
Pollutant	**Construction-Related**	**Operational-Related**
Risks and Hazards – New Receptor (All Areas) (Individual Project) **Staff Proposal**	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor
Risks and Hazards (Individual Project) **Tiered Thresholds Option**	Same as Operational Thresholds*	**Impacted Communities:** Siting a New Source Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >5.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.2 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor
Risks and Hazards (Individual Project) **Tiered Thresholds Option** (Continued)	Same as Operational Thresholds*	**Impacted Communities:** Siting a New Receptor **All Other Areas:** Siting a New Source or Receptor Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor

Table 1 – Air Quality CEQA Thresholds of Significance		
Pollutant	**Construction-Related**	**Operational-Related**
Risks and Hazards – New Source (All Areas) (Cumulative Thresholds)	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$: > 0.8 µg/m^3 annual average (from all local sources) Zone of Influence: 1,000-foot radius from fence line of source or receptor
Risks and Hazards – New Receptor (All Areas) (Cumulative Thresholds)	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$: > 0.8 µg/m^3 annual average (from all local sources) Zone of Influence: 1,000-foot radius from fence line of source or receptor
Accidental Release of Acutely Hazardous Air Pollutants	None	Storage or use of acutely hazardous materials locating near receptors or receptors locating near stored or used acutely hazardous materials considered significant
Odors	None	Complaint History—Five confirmed complaints per year averaged over three years
Plan-Level		
Criteria Air Pollutants and Precursors	None	1. Consistency with Current Air Quality Plan control measures 2. Projected VMT or vehicle trip increase is less than or equal to projected population increase

Table 1 – Air Quality CEQA Thresholds of Significance		
Pollutant	**Construction-Related**	**Operational-Related**
GHGs	None	Compliance with Qualified Greenhouse Gas Reduction Strategy (or similar criteria included in a General Plan) OR 6.6 MT CO2e/ SP/yr (residents + employees)
Risks and Hazards	None	1. Overlay zones around existing and planned sources of TACs (including adopted Risk Reduction Plan areas) 2. Overlay zones of at least 500 feet (or Air District-approved modeled distance) from all freeways and high volume roadways
Odors	None	Identify the location of existing and planned sources of odors
Accidental Release of Acutely Hazardous Air Pollutants	None	None
Regional Plans (Transportation and Air Quality Plans)		
GHGs, Criteria Air Pollutants and Precursors, and Toxic Air Contaminants	None	No net increase in emissions

Notes: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; GHGs = greenhouse gases; lb/day = pounds per day; MT = metric tons; NO_X = oxides of nitrogen; $PM_{2.5}$= fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ppm = parts per million; ROG = reactive organic gases; SO_2 = sulfur dioxide; SP = service population; TACs = toxic air contaminants; TBP = toxic best practices; tons/day = tons per day; tpy = tons per year; yr= year.

* Note: The Air District recommends that for construction projects that are less than one year duration, Lead Agencies should annualize impacts over the scope of actual days that peak impacts are to occur, rather than the full year.

2. GREENHOUSE GAS THRESHOLDS

BAAQMD does not currently have an adopted threshold of significance for GHG emissions. BAAQMD currently recommends that lead agencies quantify GHG emissions resulting from new development and apply all feasible mitigation measures to lessen the potentially significant adverse impacts. One of the primary objectives in updating the current CEQA Guidelines is to identify a GHG significance threshold, analytical methodologies, and mitigation measures to ensure new land use development meets its fair share of the emission reductions needed to address the cumulative environmental impact from GHG emissions. GHG emissions contribute, on a cumulative basis, to the significant adverse environmental impacts of global climate change. As reviewed herein, climate change impacts include an increase in extreme heat days, higher ambient concentrations of air pollutants, sea level rise, impacts to water supply and water quality, public health impacts, impacts to ecosystems, impacts to agriculture, and other environmental

impacts. No single land use project could generate enough GHG emissions to noticeably change the global average temperature. The combination of GHG emissions from past, present, and future projects contribute substantially to the phenomenon of global climate change and its associated environmental impacts.

2.1. THRESHOLDS OF SIGNIFICANCE

Project Type	Thresholds
Projects other than Stationary Sources	Compliance with Qualified Greenhouse Gas Reduction Strategy OR 1,100 MT of CO_2e/yr OR 4.6 MT CO_2e/SP/yr (residents + employees)
Stationary Sources	10,000 MT of CO_2e/yr
Plans	Compliance with Qualified Greenhouse Gas Reduction Strategy (or similar criteria included in a General Plan) OR 6.6 MT CO_2e/SP/yr (residents + employees)
Regional Plans (Transportation and Air Quality Plans)	No net increase in GHG emissions

2.2. JUSTIFICATION AND SUBSTANTIAL EVIDENCE SUPPORTING THRESHOLDS

BAAQMD's approach to developing a threshold of significance for GHG emissions is to identify the emissions level for which a project would not be expected to substantially conflict with existing California legislation adopted to reduce statewide GHG emissions. If a project would generate GHG emissions above the threshold level, it would be considered to contribute substantially to a cumulative impact, and would be considered significant. If mitigation can be applied to lessen the emissions such that the project meets its share of emission reductions needed to address the cumulative impact, the project would normally be considered less than significant.

As explained in the District's *Revised Draft Options and Justifications Report* (BAAQMD 2009), there are several types of thresholds that may be supported by substantial evidence and be consistent with existing California legislation and policy to reduce statewide GHG emissions. In determining which thresholds to recommend, Staff studied numerous options, relying on reasonable, environmentally conservative assumptions on growth in the land use sector, predicted emissions reductions from statewide regulatory measures and resulting emissions inventories, and the efficacies of GHG mitigation measures. The thresholds recommended herein were chosen based on the substantial evidence that such thresholds represent quantitative and/or qualitative levels of GHG emissions, compliance with which means that the environmental impact of the GHG emissions will normally not be cumulatively considerable under CEQA. Compliance with such thresholds will be part of the solution to the cumulative GHG emissions problem, rather than hinder the state's ability to meet its goals of reduced statewide GHG emissions. Staff notes that it does not believe there is only one threshold for GHG emissions that can be supported by substantial evidence.

GHG CEQA significance thresholds recommended herein are intended to serve as interim levels during the implementation of the AB 32 Scoping Plan and SB 375, which will occur over time. Until AB 32 has been fully implemented in terms of adopted regulations, incentives, and programs and until SB 375 required plans have been fully adopted, or the California Air Resources Board (ARB) adopts a recommended threshold, the BAAQMD recommends that local agencies in the Bay Area apply the GHG thresholds recommended herein.

If left unchecked, GHG emissions from new land use development in California will result in a cumulatively considerable amount of GHG emissions and a substantial conflict with the State's ability to meet the goals within AB 32. Thus, BAAQMD proposes to adopt interim GHG thresholds for CEQA analysis, which can be used by lead agencies within the Bay Area. This would help lead agencies navigate this dynamic regulatory and technological environment where the field of analysis has remained wide open and inconsistent. BAAQMD's framework for developing a GHG threshold for land development projects that is based on policy and substantial evidence follows.

2.2.1. Scientific and Regulatory Justification

Climate Science Overview

Prominent GHGs contributing to the greenhouse effect are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons, chlorofluorocarbons, and sulfur hexafluoride. Human-caused emissions of these GHGs in excess of natural ambient concentrations are responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth's climate, known as global climate change or global warming. It is *extremely unlikely* that global climate change of the past 50 years can be explained without the contribution from human activities (IPCC 2007a).

According to Article 2 of the United Nations Framework Convention on Climate Change (UNFCCC), "Avoiding Dangerous Climate Change" means: *"stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."* Dangerous climate change defined in the UNFCCC is based on several key indicators including the potential for severe degradation of coral reef systems, disintegration of the West Antarctic Ice Sheet, and shut down of the large-scale, salinity- and thermally-driven circulation of the oceans. (UNFCCC 2009). The global atmospheric concentration of carbon dioxide has increased from a pre-industrial value of about 280 ppm to 379 ppm in 2005 (IPCC 2007a). "Avoiding dangerous climate change" is generally understood to be achieved by stabilizing global average temperatures between 2 and 2.4°C above pre-industrial levels. In order to limit temperature increases to this level, ambient global CO_2 concentrations must stabilize between 350 and 400 ppm (IPCC 2007b).

Executive Order S-3-05

Executive Order S-3-05, which was signed by Governor Schwarzenegger in 2005, proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order established total GHG emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050.

Assembly Bill 32, the California Global Warming Solutions Act of 2006

In September 2006, Governor Arnold Schwarzenegger signed Assembly Bill 32, the California Global Warming Solutions Act of 2006, which set the 2020 greenhouse gas emissions reduction goal into law. AB 32 finds and declares that "Global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020, and establishes

regulatory, reporting, voluntary, and market mechanisms to achieve quantifiable reductions in GHG emissions to meet the statewide goal.

In December of 2008, ARB adopted its *Climate Change Scoping Plan* (*Scoping Plan*), which is the State's plan to achieve GHG reductions in California, as required by AB 32 (ARB 2008). The Scoping Plan contains strategies California will implement to achieve a reduction of 169 MMT CO_2e emissions, or approximately 28 percent from the state's projected 2020 emission level of 596 MMT of CO_2e under a business-as-usual scenario (this is a reduction of 42 MMT of CO_2e, or almost 10 percent, from 2002-2004 average emissions), so that the state can return to 1990 emission levels, as required by AB 32.

While the Scoping Plan establishes the policy intent to control numerous GHG sources through regulatory, incentive, and market means, given the early phase of implementation and the level of control that local CEQA lead agencies have over numerous GHG sources, CEQA is an important and supporting tool in achieving GHG reductions overall in compliance with AB 32. In this spirit, BAAQMD is considering the adoption of thresholds of significance for GHG emissions for stationary source and land use development projects.

Senate Bill 375

Senate Bill (SB) 375, signed in September 2008, aligns regional transportation planning efforts, regional GHG reduction targets, and land use and housing allocation. SB 375 requires Metropolitan Planning Organizations (MPOs) to adopt a Sustainable Communities Strategy (SCS) or Alternative Planning Strategy (APS), which will prescribe land use allocation in that MPO's Regional Transportation Plan (RTP). ARB, in consultation with MPOs, will provide each affected region with reduction targets for GHGs emitted by passenger cars and light trucks in the region for the years 2020 and 2035. These reduction targets will be updated every eight years, but can be updated every four years if advancements in emission technologies affect the reduction strategies to achieve the targets. ARB is also charged with reviewing each MPO's SCS or APS for consistency with its assigned targets. If MPOs do not meet the GHG reduction targets, transportation projects would not be eligible for State funding programmed after January 1, 2012. New provisions of CEQA incentivize qualified projects that are consistent with an approved SCS or APS, categorized as "transit priority projects."

The revised District CEQA Guidelines includes methodology consistent with the recently updated State CEQA Guidelines, which provides that certain residential and mixed use projects, and transit priority projects consistent with an applicable SCS or APS need not analyze GHG impacts from cars and light duty trucks (CEQA Guidelines §15183.5(c)).

2.2.2. Project-Level GHG Thresholds

Staff recommends setting GHG significance thresholds based on AB 32 GHG emission reduction goals while taking into consideration emission reduction strategies outlined in ARB's Scoping Plan. Staff proposes two quantitative thresholds for land use projects: a bright line threshold based on a "gap" analysis and an efficiency threshold based on emission levels required to be met in order to achieve AB 32 goals.

Staff also proposes one qualitative threshold for land use projects: if a project complies with a Qualified Greenhouse Gas Reduction Strategy (as defined in Section 2.3.4 below) that addresses the project it would be considered less than significant. As explained in detail in Section 2.3.4 below, compliance with a Qualified Greenhouse Gas Reduction Strategy (or similar adopted policies, ordinances and programs), would provide the evidentiary basis for making CEQA findings that development consistent with the plan would result in feasible, measureable, and verifiable GHG reductions consistent with broad state goals such that projects approved under

qualified Greenhouse Gas Reduction Strategies or equivalent demonstrations would achieve their fair share of GHG emission reductions.

Land Use Projects "Gap-Based" Threshold

Staff took eight steps in developing this threshold approach, which are summarized here and detailed in the sections that follow. It should be noted that the "gap-based approach" used for threshold development is a conservative approach that focuses on a limited set of state mandates that appear to have the greatest potential to reduce land use development-related GHG emissions at the time of this writing. It is also important to note that over time, as the effectiveness of the State's implementation of AB 32 (and SB 375) progresses, BAAQMD will need to reconsider the extent of GHG reductions needed over and above those from the implementation thereof for the discretionary approval of land use development projects. Although there is an inherent amount of uncertainty in the estimated capture rates (i.e., frequency at which project-generated emissions would exceed a threshold and would be subject to mitigation under CEQA) and the aggregate emission reductions used in the gap analysis, they are based on BAAQMD's expertise, the best available data, and use conservative assumptions for the amount of emission reductions from legislation in derivation of the gap (e.g., only adopted legislation was relied upon). This approach is intended to attribute an appropriate share of GHG emission reductions necessary to reach AB 32 goals to new land use development projects in BAAQMD's jurisdiction that are evaluated pursuant to CEQA.

Step 1 Estimate from ARB's statewide GHG emissions inventory the growth in emissions between 1990 and 2020 attributable to "land use-driven" sectors of the emission inventory as defined by OPR's guidance document (*CEQA and Climate Change*). Land use-driven emission sectors include Transportation (On-Road Passenger Vehicles; On-Road Heavy Duty), Electric Power (Electricity; Cogeneration), Commercial and Residential (Residential Fuel Use; Commercial Fuel Use) and Recycling and Waste (Domestic Waste Water Treatment).

Result:1990 GHG emissions were 295.53 MMT CO_2e/yr and projected 2020 business-as-usual GHG emissions would be 400.22 MMT CO_2e/yr; thus a 26.2 percent reduction from statewide land use-driven GHG emissions would be necessary to meet the AB 32 goal of returning to 1990 emission levels by 2020. (See Table 2)

Step 2 Estimate the anticipated GHG emission reductions affecting the same land use-driven emissions inventory sectors associated with adopted statewide regulations identified in the AB 32 Scoping Plan.

Result: Estimated a 23.9 percent reduction can be expected in the land use-driven GHG emissions inventory from adopted Scoping Plan regulations, including AB 1493 (Pavley), LCFS, Heavy/Medium Duty Efficiency, Passenger Vehicle Efficiency, Energy-Efficiency Measures, Renewable Portfolio Standard, and Solar Roofs. (See Table 3)

Step 3 Determine any short fall or "gap" between the 2020 statewide emission inventory estimates and the anticipated emission reductions from adopted Scoping Plan regulations. This "gap" represents additional GHG emission reductions needed statewide from the land use-driven emissions inventory sectors, which represents new land use development's share of the emission reductions needed to meet statewide GHG emission reduction goals.

Result: With the 23.9 percent reductions from AB 32 Scoping Measures, there is a "gap" of 2.3 percent in necessary additional GHG emissions reductions to meet AB 32

goals of a 26.2 percent reduction from statewide land use-driven GHG emissions to return to 1990 levels in 2020. (See Table 2)

Step 4 Determine the percent reduction this "gap" represents in the "land use-driven" emissions inventory sectors from BAAQMD's 2020 GHG emissions inventory. Identify the mass of emission reductions needed in the SFBAAB from land use-driven emissions inventory sectors.

Result: Estimated that a 2.3 percent reduction in BAAQMD's projected 2020 emissions projections requires emissions reductions of 1.6 MMT CO_2e/yr from the land use-driven sectors. (See Table 4)

Step 5 Assess BAAQMD's historical CEQA database (2001-2008) to determine the frequency distribution trend of project sizes and types that have been subject to CEQA over the past several years.

Result: Determined historical patterns of residential, commercial and industrial development by ranges of average sizes of each development type. Results were used in Step 6 below to distribute anticipated Bay Area growth among different future project types and sizes.

Step 6 Forecast new land use development for the Bay Area using DOF/EDD population and employment projections and distribute the anticipated growth into appropriate land use types and sizes needed to accommodate the anticipated growth (based on the trend analysis in Step 5 above). Translate the land use development projections into land use categories consistent with those contained in the Urban Emissions Model (URBEMIS).

Result: Based on population and employment projections and the trend analysis from Step 5 above, forecasted approximately 4,000 new development projects, averaging about 400 projects per year through 2020 in the Bay Area.

Step 7 Estimate the amount of GHG emissions from each land use development project type and size using URBEMIS and post-model manual calculation methods (for emissions not included in URBEMIS). Determine the amount of GHG emissions that can reasonably and feasibly be reduced through currently available mitigation measures ("mitigation effectiveness") for future land use development projects subject to CEQA (based on land use development projections and frequency distribution from Step 6 above).

Result: Based on the information available and on sample URBEMIS calculations, found that mitigation effectiveness of between 25 and 30 percent is feasible.

Step 8 Conduct a sensitivity analysis of the numeric GHG mass emissions threshold needed to achieve the desired emissions reduction (i.e., "gap") determined in Step 4. This mass emission GHG threshold is that which would be needed to achieve the emission reductions necessary by 2020 to meet the Bay Area's share of the statewide "gap" needed from the land use-driven emissions inventory sectors.

Result: The results of the sensitivity analysis conducted in Step 8 found that reductions between about 125,000 MT/yr (an aggregate of 1.3 MMT in 2020) and over 200,000 MT/yr (an aggregate of over 2.0 MMT in 2020) were achievable and feasible. A mass emissions threshold of 1,100 MT of CO_2e/yr would result in approximately 59 percent of all projects being above the significance threshold (e.g., this is approximately the operational GHG emissions that would be associated with a 60 residential unit

subdivision) and must implement feasible mitigation measures to meet CEQA requirements. With an estimated 26 percent mitigation effectiveness, the 1,100 MT threshold would achieve 1.6 MMT CO_2e/yr in GHG emissions reductions.

Detailed Basis and Analysis

Derivation of Greenhouse Gas Reduction Goal

To meet the target emissions limit established in AB 32 (equivalent to levels in 1990), total GHG emissions would need to be reduced by approximately 28 percent from projected 2020 forecasts (ARB 2009a). The AB 32 Scoping Plan is ARB's plan for meeting this mandate (ARB 2008). While the Scoping Plan does not specifically identify GHG emission reductions from the CEQA process for meeting AB 32 derived emission limits, the scoping plan acknowledges that "other strategies to mitigate climate change . . . should also be explored." The Scoping Plan also acknowledges that "Some of the measures in the plan may deliver more emission reductions than we expect; others less . . . and new ideas and strategies will emerge." In addition, climate change is considered a significant environmental issue and warrants consideration under CEQA. SB 97 represents the State Legislature's confirmation of this fact, and it directed the Governor's Office of Planning and Research (OPR) to develop CEQA Guidelines for evaluation of GHG emissions impacts and recommend mitigation strategies. In response, OPR released the *Technical Advisory: CEQA and Climate Change* (OPR 2008), and proposed revisions to the State CEQA guidelines (April 14, 2009) for consideration of GHG emissions. The California Natural Resources Agency adopted the proposed State CEQA Guidelines revisions on December 30, 2009 and the revisions were effective beginning March 18, 2010. It is known that new land use development must also do its fair share toward achieving AB 32 goals (or, at a minimum, should not hinder the State's progress toward the mandated emission reductions).

Foreseeable Scoping Plan Measures Emission Reductions and Remaining "Gap"

Step 1 of the Gap Analysis entailed estimating from ARB's statewide GHG inventory the growth in emissions between 1990 and 2020 attributable to land use driven sectors of the emissions inventory. As stated above, to meet the requirements set forth in AB 32 (i.e., achieve California's 1990-equivalent GHG emissions levels by 2020) California would need to achieve an approximate 28 percent reduction in emissions across all sectors of the GHG emissions inventory compared with 2020 projections. However, to meet the AB 32 reduction goals in the emissions sectors that are related to land use development (e.g., on-road passenger and heavy-duty motor vehicles, commercial and residential area sources [i.e., natural gas], electricity generation/consumption, wastewater treatment, and water distribution/consumption), staff determined that California would need to achieve an approximate 26 percent reduction in GHG emissions from these land use-driven sectors (ARB 2009a) by 2020 to return to 1990 land use emission levels.

Next, in Step 2 of the Gap Analysis, Staff determined the GHG emission reductions within the land use-driven sectors that are anticipated to occur from implementation of the Scoping Plan measures statewide, which are summarized in Table 2 and described below. Since the GHG emission reductions anticipated with the Scoping Plan were not accounted for in ARB's or BAAQMD's 2020 GHG emissions inventory forecasts (i.e., business as usual), an adjustment was made to include (i.e., give credit for) GHG emission reductions associated with key Scoping Plans measures, such as the Renewable Portfolio Standard, improvements in energy efficiency through periodic updates to Title 24, AB 1493 (Pavley) (which recently received a federal waiver to allow it to be enacted in law), the Low Carbon Fuel Standard (LCFS), and other measures. With reductions from these State regulations (Scoping Plan measures) taken into consideration and accounting for an estimated 23.9 percent reduction in GHG emissions, in Step 3 of the Gap Analysis Staff determined that the Bay Area would still need to achieve an additional 2.3 percent reduction from projected 2020 GHG emissions to meet the 1990 GHG emissions goal from the

land-use driven sectors. This necessary 2.3 percent reduction in projected GHG emissions from the land use sector is the "gap" the Bay Area needs to fill to do its share to meet the AB 32 goals. Refer to the following explanation and Tables 2 through 4 for data used in this analysis.

Because the transportation sector is the largest emissions sector of the state's GHG emissions inventory, it is aggressively targeted in early actions and other priority actions in the Scoping Plan including measures concerning gas mileage (Pavley), fuel carbon intensity (LCFS) and vehicle efficiency measures.

Table 2 – California 1990, 2002-2004, and 2020 Land Use Sector GHG[1] (MMT CO_2e/yr)

Sector	1990 Emissions	2002-2004 Average	2020 BAU Emissions Projections	% of 2020 Total
Transportation	**137.98**	**168.66**	**209.06**	**52%**
On-Road Passenger Vehicles	108.95	133.95	160.78	40%
On-Road Heavy Duty	29.03	34.69	48.28	12%
Electric Power	**110.63**	**110.04**	**140.24**	**35%**
Electricity	95.39	88.97	107.40	27%
Cogeneration[2]	15.24	21.07	32.84	8%
Commercial and Residential	**44.09**	**40.96**	**46.79**	**12%**
Residential Fuel Use	29.66	28.52	32.10	8%
Commercial Fuel Use	14.43	12.45	14.63	4%
Recycling and Waste[1]	**2.83**	**3.39**	**4.19**	**1%**
Domestic Wastewater Treatment	2.83	3.39	4.19	1%
TOTAL GROSS EMISSIONS	**295.53**	**323.05**	**400.22**	
% Reduction Goal from Statewide land use driven sectors (from 2020 levels to reach 1990 levels in these emission inventory sectors)			26.2%	
% Reduction from AB32 Scoping Plan measures applied to land use sectors (see Table 3)			-23.9%	
% Reduction needed statewide beyond Scoping Plan measures (Gap)			2.3%	

Notes: MMT CO_2e /yr = million metric tons of carbon dioxide equivalent emissions per year.

[1] Landfills not included. See text.

[2] Cogeneration included due to many different applications for electricity, in some cases provides substantial power for grid use, and because electricity use served by cogeneration is often amenable to efficiency requirements of local land use authorities.

Sources: Data compiled by EDAW and ICF Jones & Stokes from ARB data.

Pavley Regulations. The AB 32 Scoping Plan assigns an approximate 20 percent reduction in emissions from passenger vehicles associated with the implementation of AB 1493. The AB 32 Scoping Plan also notes that "AB 32 specifically states that if the Pavley regulations do not remain in effect, ARB shall implement alternative regulations to control mobile sources to achieve

equivalent or greater reductions of greenhouse gas emissions (HSC §38590)." Thus, it is reasonable to assume full implementation of AB 1493 standards, or equivalent programs that would be implemented by ARB. Furthermore, on April 1, 2010, U.S. EPA and the Department of Transportation's National Highway Safety Administration (NHTSA) announced a joint final rule establishing a national program that will dramatically reduce greenhouse gas emissions and improve fuel economy for new cars and trucks sold in the United States after 2011. Under this national program, automobile manufacturers will be able to build a single light-duty national fleet that satisfies all requirements under both the national program and the standards of California and other states. Nonetheless, BAAQMD may need to revisit this methodology as the federal standards come on line to ensure that vehicle standards are as aggressive as contemplated in development of this threshold.

Table 3 – 2020 Land Use Sector GHG Emission Reductions from State Regulations and AB 32 Measures

Affected Emissions Source	California Legislation	% Reduction from 2020 GHG inventory	End Use Sector (% of Bay Area LU Inventory)	Scaled % Emissions Reduction (credit)
Mobile	AB 1493 (Pavley)	19.7%	On road passenger/light truck transportation (45%)	8.9%
	LCFS	7.2%	On road passenger/light truck transportation (45%)	3.2%
	LCFS	7.2%	On road Heavy/Medium Duty Transportation (5%)	0.4%
	Heavy/Medium Duty Efficiency	2.9%	On road Heavy/Medium Duty Transportation (5%)	0.2%
	Passenger Vehicle Efficiency	2.8%	On road passenger/light truck transportation (45%)	1.3%
Area	Energy-Efficiency Measures	9.5%	Natural gas (Residential, 10%)	1.0%
			Natural gas (Non-residential, 13%)	1.2%
Indirect	Renewable Portfolio Standard	21.0%	Electricity (excluding cogen) (17%)	3.5%
	Energy-Efficiency Measures	15.7%	Electricity (26%)	4.0%
	Solar Roofs	1.5%	Electricity (excluding cogen) (17%)	0.2%
Total credits given to land use-driven emission inventory sectors from Scoping Plan measures				**23.9%**

Notes: AB = Assembly Bill; LCFS = Low Carbon Fuel Standard; SB = Senate Bill; RPS = Renewable Portfolio Standard
Sources: Data compiled by ICF Jones & Stokes.

LCFS. According to the adopted LCFS rule (CARB, April 2009), the LCFS is expected to result in approximately 10 percent reduction in the carbon intensity of transportation fuels. However, a

portion of the emission reductions required from the LCFS would be achieved over the life cycle of transportation fuel production rather than from mobile-source emission factors. Based on CARB's estimate of nearly 16 MMT reductions in on-road emissions from implementation of the LCFS and comparison to the statewide on-road emissions sector, the LCFS is assumed to result in a 7.2 percent reduction compared to 2020 BAU conditions (CARB 2009e).

Table 4 – SFBAAB 1990, 2007, and 2020 Land Use Sector GHG Emissions Inventories and Projections (MMT CO_2e/yr)

Sector	1990 Emissions	2007 Emissions	2020 Emissions Projections	% of 2020 Total[2]
Transportation	**26.1**	**30.8**	**35.7**	**50%**
On-Road Passenger Vehicles	23.0	27.5	32.0	
On-Road Heavy Duty	3.1	3.3	3.7	
Electric Power	**25.1**	**15.2**	**18.2**	**26%**
Electricity	16.5	9.9	11.8	
Cogeneration	8.6	5.3	6.4	
Commercial and Residential	**8.9**	**15.0**	**16.8**	**24%**
Residential Fuel Use	5.8	7.0	7.5	
Commercial Fuel Use	3.1	8.0	9.3	
Recycling and Waste[1]	**0.2**	**0.4**	**0.4**	**1%**
Domestic Waste Water Treatment	0.2	0.4	0.4	
TOTAL GROSS EMISSIONS	**60.3**	**61.4**	**71.1**	
SFBAAB's "Fair Share" % Reduction (from 2020 levels to reach 1990 levels) with AB-32 Reductions (from Table 3)			2.3%	
SFBAAB's Equivalent Mass Emissions Land Use Reduction Target at 2020 (MMT CO2e/yr)			1.6	

Notes: MMT CO_2e /yr = million metric tons of carbon dioxide equivalent emissions per year; SFBAAB = San Francisco Bay Area Air Basin.

[1] Landfills not included.

[2] Percentages do not sum exactly to 100% in table due to rounding.

Sources: Data compiled by EDAW 2009, ICF Jones & Stokes 2009, BAAQMD 2008.

Renewable Portfolio Standard, Energy Efficiency and Solar Roofs. Energy efficiency and renewable energy measures from the Scoping Plan were also included in the gap analysis. The Renewable Portfolio Standard (rules) will require the renewable energy portion of the retail electricity portfolio to be 33 percent in 2020. For PG&E, the dominant electricity provider in the Basin, approximately 12 percent of their current portfolio qualifies under the RPS rules and thus the gain by 2020 would be approximately 21 percent. The Scoping Plan also estimates that energy efficiency gains with periodic improvement in building and appliance energy standards and incentives will reach 10 to 15 percent for natural gas and electricity respectively. The final state measure included in this gap analysis is the solar roof initiative, which is estimated to result in reduction of the overall electricity inventory of 1.5 percent.

Landfill emissions are excluded from this analysis. While land use development does generate waste related to both construction and operations, the California Integrated Waste Management Board (CIWMB) has mandatory diversion requirements that will, in all probability, increase over time to promote waste reductions, reuse, and recycle. The Bay Area has relatively high levels of waste diversion and extensive recycling efforts. Further, ARB has established and proposes to increase methane capture requirements for all major landfills. Thus, at this time, landfill emissions associated with land use development waste generation is not included in the land use sector inventory used to develop this threshold approach.

Industrial stationary sources thresholds were developed separately from the land use threshold development using a market capture approach as described below. However, mobile source and area source emissions, as well as indirect electricity emissions that derive from industrial use are included in the land use inventory above as these particular activities fall within the influence of local land use authorities in terms of the affect on trip generation and energy efficiency.

AB 32 mandates reduction to 1990-equivalent GHG levels by 2020, with foreseeable emission reductions from State regulations and key Scoping Plan measures taken into account, were applied to the land use-driven emission sectors within the SFBAAB (i.e., those that are included in the quantification of emissions from a land use project pursuant to a CEQA analysis [on-road passenger vehicles, commercial and residential natural gas, commercial and residential electricity consumption, and domestic waste water treatment], as directed by OPR in the Technical Advisory: *Climate Change and CEQA* [OPR 2008]). This translates to a 2.3 percent gap in necessary GHG emission reductions by 2020 from these sectors.

Land Use Projects Bright Line Threshold

In Steps 4 and 5 of the gap analysis, Staff determined that applying a 2.3 percent reduction to these land use emissions sectors in the SFBAAB's GHG emissions inventory would result in an equivalent fair share of 1.6 million metric tons per year (MMT/yr) reductions in GHG emissions from new land use development. As additional regulations and legislation aimed at reducing GHG emissions from land use-related sectors become available in the future, the 1.6 MMT GHG emissions reduction goal may be revisited and recalculated by BAAQMD.

In order to derive the 1.6 MMT "gap," a projected development inventory for the next ten years in the SFBAAB was calculated (see Table 4 and *Revised Draft Options and Justifications Report* (BAAQMD 2009)). CO_2e emissions were modeled for projected development in the SFBAAB and compiled to estimate the associated GHG emissions inventory. The GHG (i.e., CO_2e) CEQA threshold level was adjusted for projected land use development that would occur within BAAQMD's jurisdiction over the period from 2010 through 2020.

Projects with emissions greater than the threshold would be required to mitigate to the threshold level or reduce project emissions by a percentage (mitigation effectiveness) deemed feasible by the lead agency under CEQA compared to a base year condition. The base year condition is defined by an equivalent size and character of project with annual emissions using the defaults in URBEMIS and the California Climate Action Registry's General Reporting Protocol for 2008. By this method, land use project mitigation subject to CEQA would help close the "gap" remaining after application of the key regulations and measures noted above supporting overall AB 32 goals.

This threshold takes into account Steps 1-8 of the gap analysis described above to arrive at a numerical mass emissions threshold. Various mass emissions significance threshold levels (i.e., bright lines) could be chosen based on the mitigation effectiveness and performance anticipated to be achieved per project to meet the aggregate emission reductions of 1.6 MMT needed in the

SFBAAB by 2020(see Table 5 and *Revised Draft Options and Justifications Report* (BAAQMD 2009)). Staff recommends a 1,100 MT CO_2e per year threshold. Choosing a 1,100 MT mass emissions significance threshold level (equivalent to approximately 60 single-family units), would result in about 59 percent of all projects being above the significance threshold and having to implement feasible mitigation measures to meet their CEQA obligations. These projects account for approximately 92 percent of all GHG emissions anticipated to occur between now and 2020 from new land use development in the SFBAAB.

Project applicants and lead agencies could use readily available computer models to estimate a project's GHG emissions, based on project specific attributes, to determine if they are above or below the bright line numeric threshold. With this threshold, projects that are above the threshold level, after consideration of emission-reducing characteristics of the project as proposed, would have to reduce their emissions to below the threshold to be considered less than significant.

Table 5 – Operational GHG Threshold Sensitivity Analysis

Option	Mitigation Effectiveness Assumptions		Mass Emission Threshold Level (MT CO_2e/yr)	% of Projects Captured (>threshold)	% of Emissions Captured (> threshold)	Emissions Reduction per year (MT/yr)	Aggregate Emissions Reduction (MMT) at 2020	Threshold Project Size Equivalent (single family dwelling units)
	Performance Standards Applied to All Projects with Emissions < Threshold Level	Mitigation Effectiveness Applied to Emissions > Threshold Level						
1A	N/A	30%	975	60%	93%	201,664	2.0	53
1A	N/A	25%	110	96%	100%	200,108	2.0	66
1A	N/A	30%	1,225	21%	67%	159,276	1.6	67
1A	N/A	26%	1,100	59%	92%	159,877	1.6	60
1A	N/A	30%	2,000	14%	61%	143,418	1.4	109
1A	N/A	25%	1,200	58%	92%	136,907	1.4	66
1A	N/A	30%	3,000	10%	56%	127,427	1.3	164
1A	N/A	25%	1,500	20%	67%	127,303	1.3	82
1B	26%	N/A	N/A	100%	100%	208,594	2.1	N/A[1]
1C	5%	30%	1,900	15%	62%	160,073	1.6	104
1C	10%	25%	1,250	21%	67%	159,555	1.6	68
1C	5%	30%	3,000	10%	56%	145,261	1.5	164
1C	10%	25%	2,000	4%	61%	151,410	1.5	109
1C	10%	30%	10,000	2%	33%	125,271	1.3	547

MMT = million metric tons per year; MT CO_2e/yr = metric tons of carbon dioxide equivalent emissions per year; MT/yr = metric tons per year; N/A = not applicable.

[1] Any project subject to CEQA would trigger this threshold.

Source: Data modeled by ICF Jones& Stokes

Source: Data modeled by ICF Jones & Stokes.

Establishing a "bright line" to determine the significance of a project's GHG emissions impact provides a level of certainty to lead agencies in determining if a project needs to reduce its GHG emissions through mitigation measures and when an EIR is required.

Land Use Projects Efficiency-Based Threshold

GHG efficiency metrics can also be utilized as thresholds to assess the GHG efficiency of a project on a per capita basis (residential only projects) or on a "service population" basis (the sum of the number of jobs and the number of residents provided by a project) such that the project will allow for consistency with the goals of AB 32 (i.e., 1990 GHG emissions levels by 2020). GHG efficiency thresholds can be determined by dividing the GHG emissions inventory goal (allowable emissions), by the estimated 2020 population and employment. This method allows highly efficient projects with higher mass emissions to meet the overall reduction goals of AB 32. Staff believes it is more appropriate to base the land use efficiency threshold on the service population metric for the land use-driven emission inventory. This approach is appropriate because the threshold can be applied evenly to all project types (residential or commercial/retail only and mixed use) and uses only the land use emissions inventory that is comprised of all land use projects. Staff will provide the methodology to calculate a project's GHG emissions in the revised CEQA Guidelines, such as allowing infill projects up to a 50 percent or more reduction in daily vehicle trips if the reduction can be supported by close proximity to transit and support services, or a traffic study prepared for the project.

Table 6 – California 2020 GHG Emissions, Population Projections and GHG Efficiency Thresholds - Land Use Inventory Sectors

Land Use Sectors Greenhouse Gas Emissions Target	295,530,000
Population	44,135,923
Employment	20,194,661
California Service Population (Population + Employment)	64,330,584
AB 32 Goal GHG emissions (metric tons CO_2e)/SP[1]	**4.6**

Notes: AB = Assembly Bill; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas; SP = service population.
[1] Greenhouse gas efficiency levels were calculated using only the "land use-related" sectors of ARB's emissions inventory.
Sources: Data compiled by EDAW 2009, ARB 2009a, DOF 2009, EDD 2009, ICF Jones & Stokes 2009.

Staff proposes a project-level efficiency threshold of 4.6 MT CO_2e/SP, the derivation of which is shown Table 6. This efficiency-based threshold reflects very GHG-efficient projects. As stated previously and below, staff anticipates that significance thresholds (rebuttable presumptions of significance at the project level) will function on an interim basis only until adequate programmatic approaches are in place at the city, county, and regional level that will allow the CEQA streamlining of individual projects. (See State CEQA Guidelines §15183.5 ["Tiering and Streamlining the Analysis of Greenhouse Gas Emissions"]).

2.2.3. Plan-Level GHG Thresholds

Staff proposes using a two step process for determining the significance of proposed plans and plan amendments for GHG. As a first step in assessing plan-level impacts, Staff is proposing that agencies that have adopted a qualified Greenhouse Gas Reduction Strategy (or have incorporated similar criteria in their general plan) and the general plan is consistent with the Greenhouse Gas Reduction Strategy, the general plan would be considered less than significant. In addition, as discussed above for project-level GHG impacts, Staff is proposing an efficiency

threshold to assess plan-level impacts. Staff believes a programmatic approach to limiting GHG emissions is appropriate at the plan-level. Thus, as projects consistent with the Greenhouse Gas Reduction Strategy are proposed, they may be able to tier off the plan and its environmental analysis.

GHG Efficiency Metrics for Plans

For local land use plans, a GHG-efficiency metric (e.g., GHG emissions per unit) would enable comparison of a proposed general plan to its alternatives and to determine if the proposed general plan meets AB 32 emission reduction goals.

AB 32 identifies local governments as essential partners in achieving California's goal to reduce GHG emissions. Local governments have primary authority to plan, zone, approve, and permit how and where land is developed to accommodate population growth and the changing needs of their jurisdiction. ARB has developed the Local Government Operations Protocol and is developing a protocol to estimate community-wide GHG emissions. ARB encourages local governments to use these protocols to track progress in reducing GHG emissions. ARB encourages local governments to institutionalize the community's strategy for reducing its carbon footprint in its general plan. SB 375 creates a process for regional integration of land development patterns and transportation infrastructure planning with the primary goal of reducing GHG emissions from the largest sector of the GHG emission inventory, light duty vehicles.

If the statewide AB 32 GHG emissions reduction context is established, GHG efficiency can be viewed independently from the jurisdiction in which the plan is located. Expressing projected 2020 mass of emissions from land use-related emissions sectors by comparison to a demographic unit (e.g., population and employment) provides evaluation of the GHG efficiency of a project in terms of what emissions are allowable while meeting AB 32 targets.

Two approaches were considered for efficiency metrics. The "service population" (SP) approach would consider efficiency in terms of the GHG emissions compared to the sum of the number of jobs and the number of residents at a point in time. The per capita option would consider efficiency in terms of GHG emissions per resident only. Staff recommends that the efficiency threshold for plans be based on all emission inventory sectors because, unlike land use projects, general plans comprise more than just land use related emissions (e.g. industrial). Further, Staff recommends that the plan threshold be based on the service population metric as general plans include a mix of residents and employees. The Service Population metric would allow decision makers to compare GHG efficiency of general plan alternatives that vary residential and non-residential development totals, encouraging GHG efficiency through improving jobs/housing balance. This approach would not give preference to communities that accommodate more residential (population-driven) land uses than non-residential (employment driven) land uses which could occur with the per capita approach.

A SP-based GHG efficiency metric (see Table 7) was derived from the emission rates at the State level that would accommodate projected population and employment growth under trend forecast conditions, and the emission rates needed to accommodate growth while allowing for consistency with the goals of AB 32 (i.e., 1990 GHG emissions levels by 2020).

Table 7 – California 2020 GHG Emissions, Population Projections and GHG Efficiency Thresholds - All Inventory Sectors	
All Inventory Sectors Greenhouse Gas Emissions Target	426,500,000
Population	44,135,923
Employment	20,194,661
California Service Population (Population + Employment)	64,330,584
AB 32 Goal GHG emissions (metric tons CO_2e)/SP[1]	**6.6**

Notes: AB = Assembly Bill; CO_2e = carbon dioxide equivalent; GHG = greenhouse gas; SP = service population.
[1] Greenhouse gas efficiency levels were calculated using only the "land use-related" sectors of ARB's emissions inventory.
Sources: Data compiled by EDAW 2009, ARB 2009a, DOF 2009, EDD 2009, ICF Jones & Stokes 2009.

If a general plan demonstrates, through dividing the emissions inventory projections (MT CO_2e) by the amount of growth that would be accommodated in 2020, that it could meet the GHG efficiency metrics in this section (6.6 MT CO_2e/SP from all emission sectors, as noted in Table 7), then the amount of GHG emissions associated with the general plan would be considered less than significant, regardless of its size (and magnitude of GHG emissions). In other words, the general plan would accommodate growth in a manner that would not hinder the State's ability to achieve AB 32 goals, and thus, would be less than significant for GHG emissions and their contribution to climate change. The efficiency metric would not penalize well-planned communities that propose a large amount of development. Instead, the SP-based GHG efficiency metric acts to encourage the types of development that BAAQMD and OPR support (i.e., infill and transit-oriented development) because it tends to reduce GHG and other air pollutant emissions overall, rather than discourage large developments for being accompanied by a large mass of GHG emissions. Plans that are more GHG efficient would have no or limited mitigation requirements to help them complete the CEQA process more readily than plans that promote GHG inefficiencies, which will require detailed design of mitigation during the CEQA process and could subject a plan to potential challenge as to whether all feasible mitigation was identified and adopted. This type of threshold can shed light on a well-planned general plan that accommodates a large amount of growth in a GHG-efficient way.

When analyzing long-range plans, such as general plans, it is important to note that the planning horizon will often surpass the 2020 timeframe for implementation of AB 32. Executive Order S-3-05 establishes a more aggressive emissions reduction goal for the year 2050 of 80 percent below 1990 emissions levels. The year 2020 should be viewed as a milestone year, and the general plan should not preclude the community from a trajectory toward the 2050 goal. However, the 2020 timeframe is examined in this threshold evaluation because doing so for the 2050 timeframe (with respect to population, employment, and GHG emissions projections) would be too speculative. Advances in technology and policy decisions at the state level will be needed to meet the aggressive 2050 goals. It is beyond the scope of the analysis tools available at this time to examine reasonable emissions reductions that can be achieved through CEQA analysis in the year 2050. As the 2020 timeframe draws nearer, BAAQMD will need to reevaluate the threshold to better represent progress toward 2050 goals.

2.2.4. Greenhouse Gas Reduction Strategies

Finally, many local agencies have already undergone or plan to undergo efforts to create general or other plans that are consistent with AB 32 goals. The Air District encourages such planning efforts and recognizes that careful upfront planning by local agencies is invaluable to achieving

the state's GHG reduction goals. If a project is consistent with an adopted Qualified Greenhouse Gas Reduction Strategy that addresses the project's GHG emissions, it can be presumed that the project will not have significant GHG emission impacts. This approach is consistent with CEQA Guidelines Sections 15064(h)(3) and 15183.5(b), which provides that a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem."

A qualified Greenhouse Gas Reduction Strategy (or similar adopted policies, ordinances and programs) is one that is consistent with all of the AB 32 Scoping Plan measures and goals. The Greenhouse Gas Reduction Strategy should identify a land use design, transportation network, goals, policies and implementation measures that would achieve AB 32 goals. Strategies with horizon years beyond 2020 should consider continuing the downward reduction path set by AB 32 and move toward climate stabilization goals established in Executive Order S-3-05.

Qualified Greenhouse Gas Reduction Strategy

A qualified Greenhouse Gas Reduction Strategy adopted by a local jurisdiction should include the following elements as described in the State CEQA Guidelines Section 15183.5. BAAQMD's revised CEQA Guidelines provides the methodology to determine if a Greenhouse Gas Reduction Strategy meets these requirements.

(A) Quantify greenhouse gas emissions, both existing and projected over a specified time period, resulting from activities within a defined geographic area;

(B) Establish a level, based on substantial evidence, below which the contribution to greenhouse gas emissions from activities covered by the plan would not be cumulatively considerable;

(C) Identify and analyze the greenhouse gas emissions resulting from specific actions or categories of actions anticipated within the geographic area;

(D) Specify measures or a group of measures, including performance standards, that substantial evidence demonstrates, if implemented on a project-by-project basis, would collectively achieve the specified emissions level;

(E) Establish a mechanism to monitor the plan's progress toward achieving the level and to require amendment if the plan is not achieving specified levels;

(F) Be adopted in a public process following environmental review.

Local Climate Action Policies, Ordinances and Programs

Air District staff recognizes that many communities in the Bay Area have been proactive in planning for climate change but have not yet developed a stand-alone Greenhouse Gas Reduction Strategy that meets the above criteria. Many cities and counties have adopted climate action policies, ordinances and program that may in fact achieve the goals of AB 32 and a qualified Greenhouse Gas Reduction Strategy. Staff recommends that if a local jurisdiction can demonstrate that its collective set of climate action policies, ordinances and other programs is consistent with AB 32 and State CEQA Guidelines Section 15183.5, includes requirements or feasible measures to reduce GHG emissions and achieves one of the following GHG emission reduction goals,[5] the AB 32 consistency demonstration should be considered equivalent to a qualified Greenhouse Gas Reduction Strategy:

[5] Lead agencies using consistency with their jurisdiction's climate action policies, ordinances and programs as a measure of significance under CEQA Guidelines section 15064(h)(3) and

- 1990 GHG emission levels,
- 15 percent below 2008 emission levels, or
- Meet the plan efficiency threshold of 6.6 MT CO_2e/service population/year.

Qualified Greenhouse Gas Reduction Strategies that are tied to the AB 32 reduction goals would promote reductions on a plan level without impeding the implementation of GHG-efficient development, and would recognize the initiative of many Bay Area communities who have already developed or are in the process of developing a GHG reduction plan. The details required above for a qualified Greenhouse Gas Reduction Strategy (or similar adopted policies, ordinances and programs) would provide the evidentiary basis for making CEQA findings that development consistent with the plan would result in feasible, measureable, and verifiable GHG reductions consistent with broad state goals such that projects approved under qualified Greenhouse Gas Reduction Strategies or equivalent demonstrations would achieve their fair share of GHG emission reductions.

GHG Thresholds for Regional Plans

Regional plans include the Regional Transportation Plan prepared by the Metropolitan Transportation Commission (MTC) and air quality plans prepared by the Air District.

The Regional Transportation Plan (RTP), also called a Metropolitan Transportation Plan (MTP) or Long-Range Transportation Plan is the mechanism used in California by both Metropolitan Planning Organizations (MPOs) and Regional Transportation Planning Agencies (RTPAs) to conduct long-range (minimum of 20 years) planning in their regions. MTC functions as both the regional transportation planning agency, a state designation, and, for federal purposes, as the region's metropolitan planning organization (MPO). As such, it is responsible for regularly updating the Regional Transportation Plan, a comprehensive blueprint for the development of the Bay Area's transportation system that includes mass transit, highway, airport, seaport, railroad, bicycle and pedestrian facilities. The performance of this system affects such public policy concerns as air quality, environmental resource consumption, social equity, "smart growth," economic development, safety, and security. Transportation planning recognizes the critical links between transportation and other societal goals. The planning process requires developing strategies for operating, managing, maintaining, and financing the area's transportation system in such a way as to advance the area's long-term goals.

The Air District periodically prepares and updates plans to achieve the goal of healthy air. Typically, a plan will analyze emissions inventories (estimates of current and future emissions from industry, motor vehicles, and other sources) and combine that information with air monitoring data (used to assess progress in improving air quality) and computer modeling simulations to test future strategies to reduce emissions in order to achieve air quality standards. Air quality plans usually include measures to reduce air pollutant emissions from industrial facilities, commercial processes, motor vehicles, and other sources. Bay Area air quality plans are prepared with the cooperation of MTC, the Association of Bay Area Governments (ABAG) and the Bay Conservation and Development Commission (BCDC).

The threshold of significance for regional plans is no net increase in emissions including greenhouse gas emissions. This threshold serves to answer the State CEQA Guidelines

15183.5(b) should ensure that the policies, ordinances and programs satisfy all of the requirements of that subsection before relying on them in a CEQA analysis.

Appendix G sample question: "Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?"

2.2.5. Stationary Source GHG Threshold

Staff's recommended threshold for stationary source GHG emissions is based on estimating the GHG emissions from combustion sources for all permit applications submitted to the Air District in 2005, 2006 and 2007. The analysis is based only on CO_2 emissions from stationary sources, as that would cover the vast majority of the GHG emissions due to stationary combustion sources in the SFBAAB. The estimated CO_2 emissions were calculated for the maximum permitted amount, i.e. emissions that would be emitted if the sources applying for a permit application operate at maximum permitted load and for the total permitted hours. All fuel types are included in the estimates. For boilers burning natural gas, diesel fuel is excluded since it is backup fuel and is used only if natural gas is not available. Emission values are estimated before any offsets (i.e., Emission Reduction Credits) are applied. GHG emissions from mobile sources, electricity use and water delivery associated with the operation of the permitted sources are not included in the estimates.

It is projected that a threshold level of 10,000 metric tons of CO_2e per year would capture approximately 95 percent of all GHG emissions from new permit applications from stationary sources in the SFBAAB. That threshold level was calculated as an average of the combined CO_2 emissions from all stationary source permit applications submitted to the Air District during the three year analysis period.

Staff recommends this 10,000 MT of CO_2/yr as it would address a broad range of combustion sources and thus provide for a greater amount of GHG reductions to be captured and mitigated through the CEQA process. As documented in the Scoping Plan, in order to achieve statewide reduction targets, emissions reductions need to be obtained through a broad range of sources throughout the California economy and this threshold would achieve this purpose. While this threshold would capture 95 percent of the GHG emissions from new permit applications, the threshold would do so by capturing only the large, significant projects. Permit applications with emissions above the 10,000 MT of CO_2/yr threshold account for less than 10 percent of stationary source permit applications which represent 95 percent of GHG emissions from new permits analyzed during the three year analysis period.

This threshold would be considered an interim threshold and Air District staff will reevaluate the threshold as AB 32 Scoping Plan measures such as cap and trade are more fully developed and implemented at the state level.

2.2.6. Summary of Justification for GHG Thresholds

The bright-line numeric threshold of 1,100 MT CO_2e/yr is a numeric emissions level below which a project's contribution to global climate change would be less than "cumulatively considerable." This emissions rate is equivalent to a project size of approximately 60 single-family dwelling units, and approximately 59 percent of all future projects and 92 percent of all emissions from future projects would exceed this level. For projects that are above this bright-line cutoff level, emissions from these projects would still be less than cumulatively significant if the project as a whole would result in an efficiency of 4.6 MT CO_2e per service population or better for mixed-use projects. Projects with emissions above 1,100 MT CO_2e/yr would still be less than significant if they achieved project efficiencies below these levels. If projects as proposed exceed these levels, they would be required to implement mitigation measures to bring them back below the 1,100 MT CO_2e/yr bright-line cutoff or within the 4.6 MT CO_2e Service Population efficiency threshold. If mitigation did not bring a project back within the threshold requirements, the project would be cumulatively significant and could be approved only with a Statement of Overriding

Considerations and a showing that all feasible mitigation measures have been implemented. Projects' GHG emissions would also be less than significant if they comply with a Qualified Greenhouse Gas Reduction Strategy.

As explained in the preceding analyses of these thresholds, the greenhouse gas emissions from land use projects expected between now and 2020 built in compliance with these thresholds would be approximately 26 percent below BAU 2020 conditions and thus would be consistent with achieving an AB 32 equivalent reduction. The 26 percent reduction from BAU 2020 from new projects built in conformance with these thresholds would achieve an aggregate reduction of approximately 1.6 MMT CO_2e/yr, which is the level of emission reductions from new Bay Area land use sources needed to meet the AB 32 goals, per ARB's Scoping Plan as discussed above.

Projects with greenhouse gas emissions in conformance with these thresholds would not be considered significant for purposes of CEQA. Although the emissions from such projects would add an incremental amount to the overall greenhouse gas emissions that cause global climate change impacts, emissions from projects consistent with these thresholds would not be a "cumulatively considerable" contribution under CEQA. Such projects would not be "cumulatively considerable" because they would be helping to solve the cumulative problem as a part of the AB 32 process.

California's response to the problem of global climate change is to reduce greenhouse gas emissions to 1990 levels by 2020 under AB 32 as a near-term measure and ultimately to 80 percent below 1990 levels by 2050 as the long-term solution to stabilizing greenhouse gas concentrations in the atmosphere at a level that will not cause unacceptable climate change impacts. To implement this solution, the Air Resources Board has adopted a Scoping Plan and budgeted emissions reductions that will be needed from all sectors of society in order to reach the interim 2020 target.

The land-use sector in the Bay Area needs to achieve aggregate emission reductions of approximately 1.6 MMT CO_2e/yr from new projects between now and 2020 to achieve this goal, as noted above, and each individual new project will need to achieve its own respective portion of this amount in order for the Bay Area land use sector as a whole to achieve its allocated emissions target. Building all of the new projects expected in the Bay Area between now and 2020 in accordance with the thresholds that District staff are proposing will achieve the overall appropriate share for the land use sector, and building each individual project in accordance with the thresholds will achieve that individual project's respective portion of the emission reductions needed to implement the AB 32 solution. For these reasons, projects built in conformance with the thresholds will be part of the solution to the cumulative problem, and not part of the continuing problem. They will allow the Bay Area's land use sector to achieve the emission reductions necessary from that sector for California to implement its solution to the cumulative problem of global climate change. As such, even though such projects will add an incremental amount of greenhouse gas emissions, their incremental contribution will be less than "cumulatively considerable" because they are helping to achieve the cumulative solution, not hindering it. Such projects will not be "significant" for purposes of CEQA (see CEQA Guidelines §15064(h)(1)).

The conclusion that land use projects that comply with these thresholds is also supported by CEQA Guidelines Section 15030(a)(3), which provides that a project's contribution to a cumulative problem can be less that cumulatively considerable "if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact." In the case of greenhouse gas emissions associated with land use projects, achieving the amount of emission reductions below BAU that will be required to achieve the AB 32 goals is the project's "fair share" of the overall emission reductions needed under ARB's scoping plan to reach the overall statewide AB 32 emissions levels for 2020. If a project is

designed to implement greenhouse gas mitigation measures that achieve a level of reductions consistent with what is required from all new land use projects to achieve the land use sector "budget" – *i.e.*, keeping overall project emissions below 1,100 MT CO_2e/yr or ensuring that project efficiency is better than 4.6 MT CO_2e/service population – then it will be implementing its share of the mitigation measures necessary to alleviate the cumulative impact, as shown in the analyses set forth above.

It is also worth noting that this "fair share" approach is flexible and will allow a project's significance to be determined by how well it is designed from a greenhouse gas efficiency standpoint, and not just by the project's size. For example, a large high-density infill project located in an urban core nearby to public transit and other alternative transportation options, and built using state-of-the-art energy efficiency methods and improvements such as solar panels, as well as all other feasible mitigation measures, would not become significant for greenhouse gas purposes (and thus require a Statement of Overriding Considerations in order to be approved) simply because it happened to be a large project. Projects such as this hypothetical development with low greenhouse gas emissions per service population are what California will need in the future in order to do its part in achieving a solution to the problem of global climate change. The determination of significance under CEQA should take these factors into account, and the significance thresholds would achieve this important policy goal. In all, land use sector projects that comply with the GHG thresholds would not be "cumulatively considerable" because they would be helping to solve the cumulative problem as a part of the AB 32 process.

Likewise, new Air District permit applications for stationary sources that comply with the quantitative threshold of 10,000 MT CO_2e/yr would not be "cumulatively considerable" because they also would not hinder the state's ability to solve the cumulative greenhouse gas emissions problem pursuant to AB 32. Unlike the land use sector, the AB 32 Scoping Plan measures, including the cap-and-trade program, provide for necessary emissions reductions from the stationary source sector to achieve AB 32 2020 goals.

While stationary source projects will need to comply with the cap-and-trade program once it is enacted and reduce their emissions accordingly, the program will be phased in over time starting in 2012 and at first will only apply to the very largest sources of GHG emissions. In the mean time, certain stationary source projects, particularly those with large GHG emissions, still will have a cumulatively considerable impact on climate change. The 10,000 MT CO_2e/yr threshold will capture 95 percent of the stationary source sector GHG emissions in the Bay Area. The five percent of emissions that are from stationary source projects below the 10,000 MT CO_2e/yr threshold account for a small portion of the Bay Area's total GHG emissions from stationary sources and these emissions come from very small projects. Such small stationary source projects will not significantly add to the global problem of climate change, and they will not hinder the Bay Area's ability to reach the AB 32 goal in any significant way, even when considered cumulatively. In Air District's staff's judgment, the potential environmental benefits from requiring EIRs and mitigation for these projects would be insignificant. In all, based on staff's expertise, stationary source projects with emissions below 10,000 MT CO_2e/yr will not provide a cumulatively considerable contribution to the cumulative impact of climate change.

3. COMMUNITY RISK AND HAZARD THRESHOLDS

To address community risk from air toxics, the Air District initiated the Community Air Risk Evaluation (CARE) program in 2004 to identify locations with high levels of risk from ambient toxic air contaminants (TAC) co-located with sensitive populations and use the information to help focus mitigation measures. Through the CARE program, the Air District developed an inventory of

TAC emissions for 2005 and compiled demographic and health indicator data. According to the findings of the CARE Program, diesel PM—mostly from on and off-road mobile sources—accounts for over 80 percent of the inhalation cancer risk from TACs in the Bay Area (BAAQMD 2006).

The Air District applied a regional air quality model using the 2005 emission inventory data to estimate excess cancer risk from ambient concentrations of important TAC species, including diesel PM, 1,3-butadiene, benzene, formaldehyde and acetaldehyde. The highest cancer risk levels from ambient TAC in the Bay Area tend to occur in the core urban areas, along major roadways and adjacent to freeways and port activity. Cancer risks in areas along these major freeways are estimated to range from 200 to over 500 excess cases in a million for a lifetime of exposure. Priority communities within the Bay Area – defined as having higher emitting sources, highest air concentrations, and nearby low income and sensitive populations – include the urban core areas of Concord, eastern San Francisco, western Alameda County, Redwood City/East Palo Alto, Richmond/San Pablo, and San Jose.

Fifty percent of BAAQMD's population was estimated to have an ambient background inhalation cancer risk of less than 500 cases in one million, based on emission levels in 2005. Table 8 presents a summary of percentages of the population exposed to varying levels of cancer risk from ambient TACs. Approximately two percent of the SFBAAB population is exposed to background risk levels of less than 200 excess cases in one million. This is in contrast to the upper percentile ranges where eight percent of the SFBAAB population is exposed to background risk levels of greater than 1,000 excess cases per one million. To identify and reduce risks from TAC, this chapter presents thresholds of significance for both cancer risk and non-cancer health hazards.

Table 8 – Statistical Summary of Estimated Population-Weighted Ambient Cancer Risk in 2005

Percentage of Population (Percent below level of ambient risk)	Ambient Cancer Risk (inhalation cancer cases in one million)
92	1,000
90	900
83	800
77	700
63	600
50	500
32	400
13	300
2	200
<1	100

Source: Data compiled by EDAW 2009.

Many scientific studies have linked fine particulate matter and traffic-related air pollution to respiratory illness (Hiltermann et al. 1997, Schikowski et al 2005, Vineis et al. 2007) and premature mortality (Dockery 1993, Pope et al. 1995, Jerrett et al. 2005). Traffic-related air pollution is a complex mix of chemical compounds (Schauer et al. 2006), often spatially correlated

with other stressors, such as noise and poverty (Wheeler and Ben-Shlomo 2005). While such correlations can be difficult to disentangle, strong evidence for adverse health effects of fine particulate matter ($PM_{2.5}$) has been developed for regulatory applications in a study by the U.S, EPA. This study found that a 10 percent increase in $PM_{2.5}$ concentrations increased the non-injury death rate by 10 percent (U.S. EPA 2006).

Public Health Officers for four counties in the San Francisco Bay Area in 2009 provided testimony to the Air District's Advisory Council (February 11, 2009, Advisory Council Meeting on Air Quality and Public Health). Among the recommendations made, was that $PM_{2.5}$, in addition to TACs, be considered in assessments of community-scale impacts of air pollution. In consideration of the scientific studies and recommendations by the Bay Area Health Directors, it is apparent that, in addition to the significance thresholds for local-scale TAC, thresholds of significance are required for near-source, local-scale concentrations of $PM_{2.5}$.

3.1. THRESHOLDS OF SIGNIFICANCE

The thresholds of significance and Board-requested options are presented in this section:

- The **Staff Proposal** includes thresholds for cancer risk, non-cancer health hazards, and fine particulate matter.
- **Tiered Thresholds Option** includes tiered thresholds for new sources in impacted communities. Thresholds for receptors and cumulative impacts are the same as the Staff Proposal.

Proposal/Option	Construction-Related	Operational-Related
Project-Level – Individual Project		
Risks and Hazards – New Source (All Areas) (Individual Project) **Staff Proposal**	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor

Proposal/Option	Construction-Related	Operational-Related
Risks and Hazards – New Receptor (All Areas) (Individual Project) **Staff Proposal**	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor
Risks and Hazards (Individual Project) **Tiered Thresholds Option**	Same as Operational Thresholds*	**Impacted Communities:** Siting a New Source Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >5.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.2 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor
	Same as Operational Thresholds*	**Impacted Communities:** Siting a New Receptor **All Other Areas:** Siting a New Source or Receptor Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 µg/m^3 annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor
Accidental Release of Acutely Hazardous Air Pollutants	None	Storage or use of acutely hazardous materials locating near receptors or receptors locating near stored or used acutely hazardous materials considered significant
Project-Level – Cumulative		

Proposal/Option	Construction-Related	Operational-Related
Risks and Hazards – New Source (All Areas) (Cumulative Thresholds)	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$: > 0.8 µg/m^3 annual average (from all local sources) Zone of Influence: 1,000-foot radius from fence line of source or receptor
Risks and Hazards – New Receptor (All Areas) (Cumulative Thresholds)	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$: > 0.8 µg/m^3 annual average (from all local sources) Zone of Influence: 1,000-foot radius from fence line of source or receptor
Plan-Level		
Risks and Hazards	None	1. Overlay zones around existing and planned sources of TACs (including adopted Risk Reduction Plan areas). 2. Overlay zones of at least 500 feet (or Air District-approved modeled distance) from all freeways and high volume roadways.
Accidental Release of Acutely Hazardous Air Pollutants	None	None
Regional Plans (Transportation and Air Quality Plans)		
Risks and Hazards	None	No net increase in toxic air contaminants

* Note: The Air District recommends that for construction projects that are less than one year duration, Lead Agencies should annualize impacts over the scope of actual days that peak impacts are to occur, rather than the full year.

3.2. JUSTIFICATION AND SUBSTANTIAL EVIDENCE SUPPORTING THRESHOLDS

The goal of the thresholds is to ensure that no source creates, or receptor endures, a significant adverse impact from any individual project, and that the total of all nearby directly emitted risk and hazard emissions is also not significantly adverse. The thresholds for local risks and hazards from TAC and $PM_{2.5}$ are intended to apply to all sources of emissions, including both permitted stationary sources and on- and off-road mobile sources, such as sources related to construction, busy roadways, or freight movement.

Thresholds for an individual new source are designed to ensure that the source does not contribute to a cumulatively significant impact. Cumulative thresholds for sources recognize that some areas are already near or at levels of significant impact. If within such an area there are receptors, or it can reasonably be foreseen that there will be receptors, then a cumulative significance threshold sets a level beyond which any additional risk is significant.

For new receptors – sensitive populations or the general public – thresholds of significance are designed to identify levels of contributed risk or hazards from existing local sources that pose a significant risk to the receptors. Single-source thresholds for receptors are provided to recognize that within the area defined there can be variations in risk levels that may be significant. Single-source thresholds assist in the identification of significant risks, hazards, or concentrations in a subarea, within the area defined by the selected radius. Cumulative thresholds for receptors are designed to account for the effects of all sources within the defined area.

Cumulative thresholds, for both sources and receptors, must consider the size of the source area, defined by a radius from the proposed project. To determine cumulative impacts from a prescribed zone of influence requires the use of modeling. The larger the radius, the greater the number of sources considered that may contribute to the modeled risk and, until the radius approaches a regional length scale, the greater the expected modeled risk increment. If the area of impact considered were grown to the scale of a city, the modeled risk increment would approach the risk level present in the ambient air.

3.2.1. Scientific and Regulatory Justification

Regulatory Framework for TACs

Prior to 1990, the Clean Air Act required EPA to list air toxics it deemed hazardous and to establish control standards which would restrict concentrations of hazardous air pollutants (HAP) to a level that would prevent any adverse effects “with an ample margin of safety.” By 1990, EPA had regulated only seven such pollutants and it was widely acknowledged by that time that the original Clean Air Act had failed to address toxic air emissions in any meaningful way. As a result, Congress changed the focus of regulation in 1990 from a risk-based approach to technology-based standards. Title III, Section 112(b) of the 1990 Clean Air Act Amendment established this new regulatory approach. Under this framework, prescribed pollution control technologies based upon maximum achievable control technology (MACT) were installed without the a priori estimation of the health or environmental risk associated with each individual source. The law listed 188 HAPs that would be subject to the MACT standards. EPA issued 53 standards for 89 different types of major industrial sources of air toxics and eight categories of smaller sources such as dry cleaners. These requirements took effect between 1996 and 2002. Under the federal Title V Air Operating Permit Program, a facility with the potential to emit 10 tons of any toxic air pollutant, or 25 tons per year of any combination of toxic air pollutants, is defined as a major source HAPs. Title V permits include requirements for these facilities to limit toxic air pollutant emissions.

Several state and local agencies adopted programs to address gaps in EPA's program prior to the overhaul of the national program in 1990. California's program to reduce exposure to air toxics was established in 1983 by the Toxic Air Contaminant Identification and Control Act (AB 1807, Tanner 1983) and the Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, Connelly 1987). Under AB 1807, ARB and the Office of Environmental Health Hazard Assessment (OEHHA) determines if a substance should be formally identified as a toxic air contaminant (TAC) in California. OEHHA also establishes associated risk factors and safe concentrations of exposure.

AB 1807 was amended in 1993 by AB 2728, which required ARB to identify the 189 federal hazardous air pollutants as TACs. AB 2588 (Connelly, 1987) supplements the AB 1807 program, by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks. In September 1992, the "Hot Spots" Act was amended by Senate Bill 1731 which required facilities that pose a significant health risk to the community to reduce their risk through a risk management plan.

Cancer Risk

Cancer risk from TACs is typically expressed in numbers of excess cancer cases per million persons exposed over a defined period of exposure, for example, over an assumed 70 year lifetime. The Air District is not aware of any agency that has established an acceptable level of cancer risk for TACs. However, a range of what constitutes a significant increment of cancer risk from any compound has been established by the U.S. EPA. EPA's guidance for conducting air toxics analyses and making risk management decisions at the facility- and community-scale level considers a range of acceptable cancer risks from one in a million to one in ten thousand (100 in a million). The guidance considers an acceptable range of cancer risk increments to be from one in a million to one in ten thousand. In protecting public health with an ample margin of safety, EPA strives to provide maximum feasible protection against risks to health from HAPs by limiting additional risk to a level no higher than the one in ten thousand estimated risk that a person living near a source would be exposed to at the maximum pollutant concentrations for 70 years. This goal is described in the preamble to the benzene National Emissions Standards for Hazardous Air Pollutants (NESHAP) rulemaking (54 Federal Register 38044, September 14, 1989) and is incorporated by Congress for EPA's residual risk program under Clean Air Act section 112(f).

Regulation 2, Rule 5 of the Air District specifies permit requirements for new and modified stationary sources of TAC. The Project Risk Requirement (2-5-302.1) states that the Air Pollution Control Officer shall deny an Authority to Construct or Permit to Operate for any new or modified source of TACs if the project cancer risk exceeds 10.0 in one million.

Hazard Index for Non-cancer Health Effects

Non-cancer health hazards for chronic and acute diseases are expressed in terms of a hazard index (HI), a ratio of TAC concentration to a reference exposure level (REL), below which no adverse health effects are expected, even for sensitive individuals. As such, OEHHA has defined acceptable concentration levels, and also significant concentration increments, for compounds that pose non-cancer health hazards. If the HI for a compound is less than one, non-cancer chronic and acute health impacts have been determined to be less than significant.

State and Federal Ambient Air Quality Standards for $PM_{2.5}$

The Children's Environmental Health Protection Act (Senate Bill 25), passed by the California state legislature in 1999, requires ARB, in consultation with OEHHA, to "review all existing health-based ambient air quality standards to determine whether, based on public health, scientific literature and exposure pattern data, these standards adequately protect the public, including infants and children, with an adequate margin of safety." As a result of the review requirement, in 2002 ARB adopted an annual average California Ambient Air Quality Standard (CAAQS) for

$PM_{2.5}$ of 12 ug/m^3 that is not to be exceeded (California Code of Regulations, Title 17 § 70200, Table of Standards). The National Ambient Air Quality Standard (NAAQS) established an annual standard for $PM_{2.5}$ (15 ug/m^3) that is less stringent that the CAAQS, but also set a 24-hour average standard (35 ug/m^3), which is not included in the CAAQS (Code of Federal Regulations, Title 40, Part 50.7).

Significant Impact Levels for $PM_{2.5}$

EPA recently proposed and documented alternative options for $PM_{2.5}$ Significant Impact Levels (SILs) (Federal Register 40 CFR Parts 51 and 52, September 21, 2007). The EPA is proposing to facilitate implementation of a $PM_{2.5}$ Prevention of Significant Deterioration (PSD) program in areas attaining the $PM_{2.5}$ NAAQS by developing $PM_{2.5}$ increments, or SILs. These "increments" are maximum increases in ambient $PM_{2.5}$ concentrations ($PM_{2.5}$ increments) allowed in an area above the baseline concentration.

The SIL is a threshold that would be applied to individual facilities that apply for a permit to emit a regulated pollutant in an area that meets the NAAQS. The State and EPA must determine if emissions from that facility will cause the air quality to worsen. If an individual facility projects an increase in emissions that result in ambient impacts greater than the established SIL, the permit applicant would be required to perform additional analyses to determine if those impacts will be more than the amount of the PSD increment. This analysis would combine the impact of the proposed facility when added to all other sources in the area.

The EPA is proposing such values for $PM_{2.5}$ that will be used as screening tools by a major source subject to PSD to determine the subsequent level of analysis and data gathering required for a PSD permit application for emissions of $PM_{2.5}$. The SIL is one element of the EPA program to prevent deterioration in regional air quality and is utilized in the new source review (NSR) process. New source review is required under Section 165 of the Clean Air Act, whereby a permit applicant must demonstrate that emissions from the proposed construction and operation of a facility "will not cause, or contribute to, air pollution in excess of any maximum allowable increase or maximum allowable concentration for any pollutant." The purpose of the SIL is to provide a screening level that triggers further analysis in the permit application process.

For the purpose of NSR, SILs are set for three types of areas: Class I areas where especially clean air is most desirable, including national parks and wilderness areas; Class II areas where there is not expected to be substantial industrial growth; and Class III areas where the highest relative level of industrial development is expected. In Class II and Class III areas, a $PM_{2.5}$ concentration of 0.3, 0.8, and 1 µg/m^3 has been proposed as a SIL. To arrive at the SIL $PM_{2.5}$ option of 0.8 µg/m^3 , EPA scaled an established PM_{10} SILs of 1.0 µg/m^3 by the ratio of emissions of $PM_{2.5}$ to PM_{10} using the EPA's 1999 National Emissions Inventory. To arrive at the SIL option of 0.3 µg/m^3, EPA scaled the PM_{10} SIL of 1.0 µg/m^3 by the ratio of the current Federal ambient air quality standards for $PM_{2.5}$ and PM_{10} (15/50). These options represent what EPA currently considers as a range of appropriate SIL values.

EPA interprets the SIL to be the level of $PM_{2.5}$ increment that represents a "significant contribution" to regional non-attainment. While SIL options were not designed to be thresholds for assessing community risk and hazards, they are being considered to protect public health at a regional level by helping an area maintain the NAAQS. Furthermore, since it is the goal of the Air District to achieve and maintain the NAAQS and CAAQS at both regional and local scales, the SILs may be reasonably be considered as thresholds of significance under CEQA for local-scale increments of $PM_{2.5}$.

Roadway Proximity Health Studies

Several medical research studies have linked near-road pollution exposure to a variety of adverse health outcomes impacting children and adults. Kleinman et al. (2007) studied the potential of roadway particles to aggravate allergic and immune responses in mice. Using mice that were not inherently susceptible, the researchers placed these mice at various distances downwind of State Road 60 and Interstate 5 freeways in Los Angeles to test the effect these roadway particles have on their immune system. They found that within five meters of the roadway, there was a significant allergic response and elevated production of specific antibodies. At 150 meters (492 feet) and 500 meters (1,640 feet) downwind of the roadway, these effects were not statistically significant.

Another significant study (Ven Hee et al. 2009) conducted a survey involving 3,827 participants that aimed to determine the effect of residential traffic exposure on two preclinical indicators of heart failure; left ventricular mass index (LVMI), measured by the cardiac magnetic resonance imaging (MRI), and ejection fraction. The studies classified participants based on the distance between their residence and the nearest interstate highway, state or local highway, or major arterial road. Four distance groups were defined: less than 50 meters (165 feet), 50-100 meters, 101-150 meters, and greater than 150 meters. After adjusting for demographics, behavioral, and clinical covariates, the study found that living within 50 meters of a major roadway was associated with a 1.4 g/m^2 higher LVMI than living more than 150 meters from one. This suggests an association between traffic-related air pollution and increased prevalence of a preclinical predictor of heart failure among people living near roadways.

To quantify the roadway concentrations of $PM_{2.5}$ that contributed to the health impacts reported by Kleinman et al (2007), the Air District modeled the emissions and associated particulate matter concentrations for the roadways studied. To perform the modeling, emissions were estimated for Los Angeles using the EMFAC model and annual average vehicle traffic data taken from Caltrans was used in the roadway model (CAL3QHCR) to estimate the downwind $PM_{2.5}$ concentrations at 50 meters and 150 meters. Additionally, emissions were assumed to occur from 10:00 a.m. to 2:00 p.m. corresponding to the time in which the mice were exposed during the study. The results of the modeling indicate that at 150 meters, where no significant health effects were found, the downwind concentration of $PM_{2.5}$ was 0.78 $\mu g/m^3$, consistent with the proposed EPA SIL option of 0.8 $\mu g/m^3$.

Concentration-Response Function for $PM_{2.5}$

The U.S. EPA reevaluated the relative risk of premature death associated with $PM_{2.5}$ exposure and developed a new relative risk factor (U.S. EPA 2006). This expert elicitation was prepared in support of the characterization of uncertainty in EPA's benefits analyses associated with reductions in exposure to particulate matter pollution. As recommended by the National Academy of Sciences, EPA used expert judgment to better describe the uncertainties inherent in their benefits analysis. Twelve experts participated in the study and provided not just a point estimate of the health effects of PM2.5, but a probability distribution representing the range where they expected the true effect would be. Among the experts who directly incorporated their views on the likelihood of a causal relationship into their distributions, the central (median) estimates of the percent change in all-cause mortality in the adult U.S. population that would result from a permanent 1 µg/m3 drop in annual average PM2.5 concentrations ranged from 0.7 to 1.6 percent. The median of their estimates was 1.0 (% increase per 1 µg/m3 increase in PM2.5), with a 90% confidence interval of 0.3 to 2.0 (medians of their 5^{th} and 95^{th} percentiles, respectively) (BAAQMD 2010).Subsequent to the EPA elicitation, Schwartz et al. (2008) examined the linearity of the concentration-response function of $PM_{2.5}$-mortality and showed that the response function was linear, with health effects clearly continuing below the current U.S. standard of 15 $\mu g/m^3$, and that the effects of changes in exposure on mortality were seen within two years.

San Francisco Ordinance on Roadway Proximity Health Effects

In 2008, the City and County of San Francisco adopted an ordinance (San Francisco Health Code, Article 38 - Air Quality Assessment and Ventilation Requirement for Urban Infill Residential Development, Ord. 281-08, File No. 080934, December 5, 2008) requiring that public agencies in San Francisco take regulatory action to prevent future air quality health impacts from new sensitive uses proposed near busy roadways (SFDPH 2008). The regulation requires that developers screen sensitive use projects for proximity to traffic and calculate the concentration of $PM_{2.5}$ from traffic sources where traffic volumes suggest a potential hazard. If modeled levels of traffic-attributable $PM_{2.5}$ at a project site exceed an action level (currently set at 0.2 $\mu g/m^3$) developers would be required to incorporate ventilation systems to remove 80 percent of $PM_{2.5}$ from outdoor air. The regulation does not place any requirements on proposed sensitive uses if modeled air pollutant levels fall below the action threshold. This ordinance only considers impacts from on-road motor vehicles, not impacts related to construction equipment or stationary sources.

A report with supporting documentation for the ordinance (SFPHD 2008) provided a threshold to trigger action or mitigation of 0.2 $\mu g/m^3$ of $PM_{2.5}$ annual average exposure from roadway vehicles within a 150 meter (492 feet) maximum radius of a sensitive receptor. The report applied the concentration-response function from Jerrett et al. (2005) that attributed 14 percent increase in mortality to a 10 $\mu g/m^3$ increase in $PM_{2.5}$ to estimate an increase in non-injury mortality in San Francisco of about 21 excess deaths per million population per year from a 0.2 $\mu g/m^3$ increment of annual average $PM_{2.5}$.

Distance for Significant Impact

The distance used for the radius around the project boundary should reflect the zone or area over which sources may have a significant influence. For cumulative thresholds, for both sources and receptors, this distance also determines the size of the source area, defined. To determine cumulative impacts from a prescribed zone of influence requires the use of modeling. The larger the radius, the greater the number of sources considered that may contribute to the risk and the greater the expected modeled risk increment. If the area of impact considered were grown to approach the scale of a city, the modeled risk increment would approach the risk level present in the ambient air.

A summary of research findings in ARB's Land Use Compatibility Handbook (ARB 2005) indicates that traffic-related pollutants were higher than regional levels within approximately 1,000 feet downwind and that differences in health-related effects (such as asthma, bronchitis, reduced lung function, and increased medical visits) could be attributed in part to the proximity to heavy vehicle and truck traffic within 300 to 1,000 feet of receptors. In the same summary report, ARB recommended avoiding siting sensitive land uses within 1,000 feet of a distribution center and major rail yard, which supports the use of a 1,000 feet evaluation distance in case such sources may be relevant to a particular project setting. A 1,000 foot zone of influence is also supported by Health & Safety Code §42301.6 (Notice for Possible Source Near School).

Some studies have shown that the concentrations of particulate matter tend to be reduced substantially or can even be indistinguishable from upwind background concentrations at a distance 1,000 feet downwind from sources such as freeways or large distribution centers. Zhu et al. (2002) conducted a systematic ultrafine particle study near Interstate 710, one of the busiest freeways in the Los Angeles Basin. Particle number concentration and size distribution were measured as a function of distances upwind and downwind of the I-710 freeway. Approximately 25 percent of the 12,180 vehicles per hour are heavy duty diesel trucks based on video counts conducted as part of the research. Measurements were taken at 13 feet, 23 feet, 55 feet, 252 feet, 449 feet, and 941 feet downwind and 613 feet upwind from the edge of the freeway. The particle number and supporting measurements of carbon monoxide and black carbon decreased

exponentially and all constituents simultaneously tracked with each other as one moves away from the freeway. Ultrafine particle size distribution changed markedly and its number concentrations dropped dramatically with increasing distance. The study found that ultrafine particle concentrations measured 941 feet downwind of I-710 were indistinguishable from the upwind background concentration.

Impacted Communities

Starting in 2006, the Air District's CARE program developed gridded TAC emissions inventories and compiled demographic information that were used to identify communities that were particularly impacted by toxic air pollution for the purposes of distributing grant and incentive funding. In 2009, the District completed regional modeling of TAC on a one kilometer by one kilometer grid system. This modeling was used to estimate cancer risk and TAC population exposures for the entire District. The information derived from the modeling was then used to update and refine the identification of impacted communities. One kilometer modeling yielded estimates of annual concentrations of five key compounds – diesel particulate matter, benzene, 1,3-butadiene, formaldehyde, and acetaldehyde – for year 2005. These concentrations were multiplied by their respective unit cancer risk factors, as established by OEHHA, to estimate the expected excess cancer risk per million people from these compounds.

Sensitive populations from the 2000 U.S. Census database were identified as youth (under 18) and seniors (over 64) and mapped to the same one kilometer grid used for the toxics modeling. Excess cancers from TAC exposure were determined by multiplying these sensitive populations by the model-estimated excess risk to establish a data set representing sensitive populations with high TAC exposures. TAC emissions (year 2005) were mapped to the one kilometer grid and also scaled by their unit cancer risk factor to provide a data set representing source regions for TAC emissions. Block-group level household income data from the U.S. Census database were used to identify block groups with family incomes where more than 40 percent of the population was below 185 percent of the federal poverty level (FPL). Poverty-level polygons that intersect high (top 50 percent) exposure cells and are within one grid cell of a high emissions cell (top 25 percent) were used to identify impacted areas. Boundaries were constructed along major roads or highways that encompass nearby high emission cells and low income areas. This method identified the following six areas as priority communities: (1) portions of the City of Concord; (2) Western Contra Costa County (including portions of the Cities of Richmond and San Pablo); (3) Western Alameda County along the Interstate-880 corridor (including portions of the Cities of Berkeley, Oakland, San Leandro, San Lorenzo, Hayward; (4) Portions of the City of San Jose. (5) Eastern San Mateo County (including portions of the Cities of Redwood City and East Palo Alto); and (6) Eastern portions of the City of San Francisco.

3.2.2. Construction, Land Use and Stationary Source Risk and Hazard Thresholds

The options for local risk and hazards thresholds of significance are based on U.S. EPA guidance for conducting air toxics analyses and making risk management decisions at the facility and community-scale level. The thresholds consider reviews of recent health effects studies that link increased concentrations of fine particulate matter to increased mortality. The thresholds would apply to both siting new sources and siting new receptors.

For new sources of TACs, thresholds of significance for a single source are designed to ensure that emissions do not raise the risk of cancer or non-cancer health impacts to cumulatively significant levels. For new sources of $PM_{2.5}$, thresholds are designed to ensure that $PM_{2.5}$ concentrations are maintained below state and federal standards in all areas where sensitive receptors or members of the general public live or may foreseeably live, even if at the local- or community-scale where sources of TACs and PM may be nearby.

Project Radius for Assessing Impacts

For a project proposing a new source or receptor it is recommended to assess impacts within 1,000 feet, taking into account both its individual and nearby cumulative sources (i.e. proposed project plus existing and foreseeable future projects). Cumulative sources are the combined total risk values of each individual source within the 1,000-foot evaluation zone. A lead agency should enlarge the 1,000-foot radius on a case-by-case basis if an unusually large source or sources of risk or hazard emissions that may affect a proposed project is beyond the recommended radius.

The 1,000 foot radius is consistent with findings in ARB's Land Use Compatibility Handbook (ARB 2005), the Health & Safety Code §42301.6 (Notice for Possible Source Near School), and studies such as that of Zhu et al (2002) which found that concentrations of particulate matter tend to be reduced substantially at a distance 1,000 feet downwind from sources such as freeways or large distribution centers.

Qualified Community Risk Reduction Plan

Within the framework of these thresholds, proposed projects would be considered to be less than significant if they are consistent with a qualified Community Risk Reduction Plan (CRRP) adopted by the local jurisdiction with enforceable measures to reduce the community risk.

Project proposed in areas where a CRRP has been adopted that are not consistent with the CRRP would be considered to have a significant impact.

Projects proposed in areas where a CRRP has not been adopted and that have the potential to expose sensitive receptors or the general public to emissions-related risk in excess of the thresholds below from any source would be considered to have a significant air quality impact.

The conclusion that land use projects that comply with qualified Community Risk Reduction Plans are less than significant is supported by CEQA Guidelines Sections 15030(a)(3) and 15064(h)(3), which provides that a project's contribution to a cumulative problem can be less that cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

Increased Cancer Risk to Maximally Exposed Individual (MEI)

Emissions from a new source or emissions affecting a new receptor would be considered significant where ground-level concentrations of carcinogenic TACs from any source result in an increased cancer risk greater than 10.0 in one million, assuming a 70 year lifetime exposure. Under Board Option 1, within Impacted Communities as defined through the CARE program, the significance level for cancer would be reduced to 5.0 in one million for new sources.

The 10.0 in one million cancer risk threshold for a single source is supported by EPA's guidance for conducting air toxics analyses and making risk management decisions at the facility and community-scale level. It is also the level set by the Project Risk Requirement in the Air District's Regulation 2, Rule 5 new and modified stationary sources of TAC, which states that the Air Pollution Control Officer shall deny an Authority to Construct or Permit to Operate for any new or modified source of TACs if the project risk exceeds a cancer risk of 10.0 in one million.

This threshold for an individual new source is designed to ensure that the source does not contribute a cumulatively significant impact. The justification for the Tiered Thresholds Option threshold of 5.0 in one million for new sources in an impacted community is that in these areas the cancer risk burden is higher than in other parts of the Bay Area; the threshold at which an individual source becomes significant is lower for an area that is already at or near unhealthy levels. However, even without a tiered approach, the recommended thresholds already address the burden of impacted communities via the cumulative thresholds: specifically, if an area has

many existing TAC sources near receptors, then the cumulative threshold will be reached sooner than it would in another area with fewer TAC sources.

The single-source threshold for receptors is provided to address the possibility that within the area defined by the 1,000 foot radius there can be variations in risk levels that may be significant, below the corresponding cumulative threshold. Single-source thresholds assist in the identification of significant risks, hazards, or concentrations in a subarea, within the 1,000 foot radius.

Increased Non-Cancer Risk to MEI

Emissions from a new source or emissions affecting a new receptor would be considered significant where ground-level concentrations of non-carcinogenic TACs result in an increased chronic or acute Hazard Index (HI) from any source greater than 1.0. This threshold is unchanged under Tiered Thresholds Option.

A HI less than 1.0 represents a TAC concentration, as determined by OEHHA that is at a health protective level. While some TACs pose non-carcinogenic, chronic and acute health hazards, if the TAC concentrations result in a HI less than one, those concentrations have been determined to be less than significant.

Increased Ambient Concentration of $PM_{2.5}$

Emissions from a new source or emissions affecting a new receptor would be considered significant where ground-level concentrations of $PM_{2.5}$ from any source would result in an average annual increase greater than 0.3 $\mu g/m^3$. Under Tiered Thresholds Option, within Impacted Communities as defined through the CARE program, the significance level for a $PM_{2.5}$ increment is 0.2 $\mu g/m^3$.

If one applies the concentration-response of the median of the EPA consensus review (EPA 2005, BAAQMD 2010) and attributes a 1 percent increase in mortality to a 1 $\mu g/m^3$ increase in $PM_{2.5}$, one finds an increase in non-injury mortality in the Bay Area of about 20 excess deaths per million per year from a 0.3 $\mu g/m^3$ increment of $PM_{2.5}$. This is consistent with the impacts reported and considered significant by SFDPH (2008) using an earlier study (Jerrett et al. 2005) to estimate the increase in mortality from a 0.2 $\mu g/m^3$ $PM_{2.5}$ increment.

The SFDPH recommended a lower threshold of significance for multiple sources but only considered roadway emissions within a 492 foot radius. This recommendation applies to a single source but considers all types of emissions within 1,000 feet. On balance, the Air District estimates that the SFDPH threshold and this one, in combination with the cumulative threshold for $PM_{2.5}$, will afford similar levels of health protection.

The $PM_{2.5}$ threshold represents the lower range of an EPA proposed Significant Impact Level (SIL). EPA interprets the SIL to be the level of ambient impact that is considered to represent a "significant contribution" to regional non-attainment. While this threshold was not designed to be a threshold for assessing community risk and hazards, it was designed to protect public health at a regional level by helping an area maintain the NAAQS. Since achieving and maintaining state and federal AAQS is a reasonable goal at the local scale, the SIL provides a useful reference for comparison.

This threshold for an individual new source is designed to ensure that the source does not contribute a cumulatively significant impact. The justification for the Tiered Thresholds Option threshold of 0.2 $\mu g/m^3$ for new sources in an impacted community is that these areas have higher levels of diesel particulate matter than do other parts of the Bay Area; the threshold at which an individual source becomes significant is lower for an area that is already at or near unhealthy

levels. However, even without a tiered approach, the recommended thresholds already address the burden of impacted communities via the cumulative thresholds: specifically, if an area has many existing $PM_{2.5}$ sources near receptors, then the cumulative threshold will be reached sooner than it would in another area with fewer $PM_{2.5}$ sources.

The single-source threshold for receptors is provided to address the possibility that within the area defined by the 1,000 foot radius there can be variations in risk levels that may be significant, below the corresponding cumulative threshold. Single-source thresholds assist in the identification of significant risks, hazards, or concentrations in a subarea, within the 1,000 foot radius.

Accidental Release of Acutely Hazardous Air Emissions

The BAAQMD currently recommends, at a minimum, that the lead agency, in consultation with the administering agency of the Risk Management Prevention Program (RMPP), find that any project resulting in receptors being within the Emergency Response Planning Guidelines (ERPG) exposure level 2 for a facility has a significant air quality impact. ERPG exposure level 2 is defined as "the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms which could impair an individual's ability to take protective action."

Staff proposes continuing with the current threshold for the accidental release of hazardous air pollutants. Staff recommends that agencies consult with the California Emergency Management Agency for the most recent guidelines and regulations for the storage of hazardous materials. Staff proposes that projects using or storing acutely hazardous materials locating near existing receptors, and projects resulting in receptors locating near facilities using or storing acutely hazardous materials be considered significant.

The current Accidental Release/Hazardous Air Emissions threshold of significance could affect all projects, regardless of size, and require mitigation for Accidental Release/Hazardous Air Emissions impacts.

3.2.3. Cumulative Risk and Hazard Thresholds

Qualified Community Risk Reduction Plan
Proposed projects would be considered to be less than significant if they are consistent with a qualified Community Risk Reduction Plan (CRRP) adopted by the local jurisdiction with enforceable measures to reduce the community risk.

Project proposed in areas where a CRRP has been adopted that are not consistent with the CRRP would be considered to have a significant impact.

Projects proposed in areas where a CRRP has not been adopted and that have the potential to expose sensitive receptors or the general public to emissions-related risk in excess of the following thresholds from the aggregate of cumulative sources would be considered to have a significant air quality impact.

The conclusion that land use projects that comply with qualified Community Risk Reduction Plans are less than significant is supported by CEQA Guidelines Sections 15030(a)(3) and 15064(h)(3), which provides that a project's contribution to a cumulative problem can be less that cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

Increased Cancer Risk to Maximally Exposed Individual (MEI)
Emissions from a new source or emissions affecting a new receptor would be considered significant where ground-level concentrations of carcinogenic TACs from any source result in an increased cancer risk greater than 100.0 in one million.

The significance threshold of 100 in a million increased excess cancer risk would be applied to the cumulative emissions. The 100 in a million threshold is based on EPA guidance for conducting air toxics analyses and making risk management decisions at the facility and community-scale level. In protecting public health with an ample margin of safety, EPA strives to provide maximum feasible protection against risks to health from hazardous air pollutants (HAPs) by limiting risk to a level no higher than the one in ten thousand (100 in a million) estimated risk that a person living near a source would be exposed to at the maximum pollutant concentrations for 70 years (NESHAP 54 Federal Register 38044, September 14, 1989; CAA section 112(f)). One hundred in a million excess cancer cases is also consistent with the ambient cancer risk in the most pristine portions of the Bay Area based on the District's recent regional modeling analysis.

Increased Non-Cancer Risk to MEI
Emissions from a new source or emissions affecting a new receptor would be considered significant where ground-level concentrations of non-carcinogenic TACs result in an increased chronic Hazard Index from any source greater than 10.0.

The Air District has developed an Air Toxics Hot Spots (ATHS) program that provides guidance for implementing the Air Toxics "Hot Spots" Information and Assessment Act (AB 2588, Connelly, 1987: chaptered in the California Health and Safety Code § 44300, et. al.). The ATHS provides that if the health risks resulting from the facility's emissions exceed significance levels established by the air district, the facility is required to conduct an airborne toxic risk reduction audit and develop a plan to implement measures that will reduce emissions from the facility to a level below the significance level. The Air District has established a non-cancer Hazard Index of ten (10.0) as ATHS mandatory risk reduction levels. The cumulative chronic non-cancer Hazard Index threshold is consistent with the Air District's ATHS program.

Increased Ambient Concentration of $PM_{2.5}$
Emissions from a new source or emissions affecting a new receptor would be considered significant where ground-level concentrations of $PM_{2.5}$ from any source would result in an average annual increase greater than 0.8 $\mu g/m^3$.

If one applies the concentration-response function from the U.S, EPA assessment (U.S. EPA 2006) and attributes a 10 percent increase in mortality to a 10 $\mu g/m^3$ increase in $PM_{2.5}$, one finds an increase in non-injury mortality in the Bay Area of about 50 excess deaths per year from a 0.8 $\mu g/m^3$ increment of $PM_{2.5}$. This is greater than the impacts reported and considered significant by SFDPH (2008) using an earlier study (Jerrett et al. 2005) to estimate the increase in mortality from a 0.2 $\mu g/m^3$ $PM_{2.5}$ increment (SFDPH reported 21 excess deaths per year). However, SFDPH only considered roadway emissions within a 492 foot radius. This threshold applies to all types of emissions within 1,000 feet. In modeling applications for proposed projects, a larger radius results in a greater number of sources considered and higher modeled concentrations. On balance, the Air District estimates that the SFDPH threshold and this one, in combination with the individual source threshold for $PM_{2.5}$, will afford similar levels of health protection.

The cumulative $PM_{2.5}$ threshold represents the middle range of an EPA proposed Significant Impact Level (SIL). EPA interprets the SIL to be the level of ambient impact that is considered to represent a "significant contribution" to regional non-attainment. While this threshold was not designed to be a threshold for assessing community risk and hazards, it was designed to protect public health at a regional level by helping an area maintain the NAAQS. Since achieving and

maintaining state and federal AAQS is a reasonable goal at the local scale, the SIL provides a useful reference for comparison. Furthermore, the 0.8 $\mu g/m^3$ threshold is consistent with studies (Kleinman et al 2007) that examined the potential health impacts of roadway particles.

3.2.4. Plan-Level Risk and Hazard Thresholds

Staff proposes plan-level thresholds that will encourage a programmatic approach to addressing the overall adverse conditions resulting from risks and hazards that many Bay Area communities experience. By designating overlay zones in land use plans, local land use jurisdictions can take preemptive action before project-level review to reduce the potential for significant exposures to risk and hazard emissions. While this will require more up-front work at the general plan level, in the long-run this approach is a more feasible approach consistent with Air District and CARB guidance about siting sources and sensitive receptors that is more effective than project by project consideration of effects that often has more limited mitigation opportunities. This approach would also promote more robust cumulative consideration of effects of both existing and future development for the plan-level CEQA analysis as well as subsequent project-level analysis.

For local plans to have a less-than-significant impact with respect to potential risks and hazards, overlay zones would have to be established around existing and proposed land uses that would emit these air pollutants. Overlay zones to avoid risk impacts should be reflected in local plan policies, land use map(s), and implementing ordinances (e.g., zoning ordinance). The overlay zones around existing and future risk sources would be delineated using the quantitative approaches described above for project-level review and the resultant risk buffers would be included in the General Plan (or the EIR for the General Plan) to assist in site planning. BAAQMD will provide guidance as to the methods used to establish the TAC buffers and what standards to be applied for acceptable exposure level in the updated CEQA Guidelines document. Special overlay zones of at least 500 feet (or an appropriate distance determined by modeling and approved by the Air District) on each side of all freeways and high volume roadways would be included in this threshold.

The threshold of significance for plan impacts could affect all plan adoptions and amendments and require mitigation for a plan's air quality impacts. Where sensitive receptors would be exposed above the acceptable exposure level, the plan impacts would be considered significant and mitigation would be required to be imposed either at the plan level (through policy) or at the project level (through project level requirements).

3.2.5. Community Risk Reduction Plans

The goal of a Community Risk Reduction Plan would be to bring TAC and $PM_{2.5}$ concentrations for the entire community covered by the Plan down to acceptable levels as identified by the local jurisdiction and approved by the Air District. This approach provides local agencies a proactive alternative to addressing communities with high levels of risk on a project-by-project approach. This approach is supported by CEQA Guidelines Section 15030(a)(3), which provides that a project's contribution to a cumulative problem can be less than cumulatively considerable "if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact." This approach is also further supported by CEQA Guidelines Section 15064(h)(3), which provides that a project's contribution to a cumulative effect is not considerable "if the project will comply with the requirements in a previously approved plan or mitigation program which provides specific requirements that will avoid or substantially lessen the cumulative problem."

Qualified Community Risk Reduction Plans

(A) A qualified Community Risk Reduction Plan adopted by a local jurisdiction should include, at a minimum, the following elements. BAAQMD's revised CEQA Guidelines provides the methodology to determine if a Community Risk Reduction Plan meets these requirements. Define a planning area;

(B) Include base year and future year emissions inventories of TACs and PM2.5;

(C) Include Air District–approved risk modeling of current and future risks;

(D) Establish risk and exposure reduction goals and targets for the community in consultation with Air District staff;

(E) Identify feasible, quantifiable, and verifiable measures to reduce emissions and exposures;

(F) Include procedures for monitoring and updating the inventory, modeling and reduction measures in coordination with Air District staff;

(G) Be adopted in a public process following environmental review.

4. CRITERIA POLLUTANT THRESHOLDS

4.1. THRESHOLDS OF SIGNIFICANCE

Project Construction	
Pollutant	**Average Daily (pounds/day)**
ROG (reactive organic gases)	54
NO_X (nitrogen oxides)	54
PM_{10} (exhaust) (particulate matter-10 microns)	82
$PM_{2.5}$ (exhaust) (particulate matter-2.5 microns)	54
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Management Practices
Local CO (carbon monoxide)	None

Project Operations		
Pollutant	**Average Daily (pounds/day)**	**Maximum Annual (tons/year)**
ROG	54	10
NO_X	54	10
PM_{10}	82	15
$PM_{2.5}$	54	10
Local CO	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	

Plans
1. Consistency with Current Air Quality Plan control measures 2. Projected VMT or vehicle trip increase is less than or equal to projected population increase

Regional Plans (Transportation and Air Quality Plans)
No net increase in emissions of criteria air pollutants and precursors

4.2. JUSTIFICATION AND SUBSTANTIAL EVIDENCE SUPPORTING THRESHOLDS

4.2.1. Project Construction Criteria Pollutant Thresholds

Staff proposes criteria pollutant construction thresholds that add significance criteria for exhaust emissions to the existing fugitive dust criteria employed by the Air District. While our current Guidelines considered construction exhaust emissions controlled by the overall air quality plan, the implementation of new and more stringent state and federal standards over the past ten years now warrants additional control of this source of emissions.

The average daily criteria air pollutant and precursor emission levels shown above are recommended as the thresholds of significance for construction activity for exhaust emissions. These thresholds represent the levels above which a project's individual emissions would result in a considerable contribution (i.e., significant) to the SFBAAB's existing non-attainment air quality

conditions and thus establish a nexus to regional air quality impacts that satisfies CEQA requirements for evidence-based determinations of significant impacts.

For fugitive dust emissions, staff recommends following the current best management practices approach which has been a pragmatic and effective approach to the control of fugitive dust emissions. Studies have demonstrated (Western Regional Air Partnership, U.S.EPA) that the application of best management practices at construction sites have significantly controlled fugitive dust emissions. Individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to more than 90 percent. In the aggregate best management practices will substantially reduce fugitive dust emissions from construction sites. These studies support staff's recommendation that projects implementing construction best management practices will reduce fugitive dust emissions to a less than significant level.

4.2.2. Project Operation Criteria Pollutant Thresholds

The thresholds for project operations are the average daily and maximum annual criteria air pollutant and precursor levels shown above. These thresholds are based on the federal BAAQMD Offset Requirements to ozone precursors for which the SFBAAB is designated as a non-attainment area which is an appropriate approach to prevent further deterioration of ambient air quality and thus has nexus and proportionality to prevention of a regionally cumulative significant impact (e.g. worsened status of non-attainment). Despite non-attainment area for state PM_{10} and pending nonattainment for federal $PM_{2.5}$, the federal NSR Significant Emission Rate annual limits of 15 and 10 tons per year, respectively, are the thresholds as BAAQMD has not established an Offset Requirement limit for $PM_{2.5}$ and the existing limit of 100 tons per year is much less stringent and would not be appropriate in light of our pending nonattainment designation for the federal 24-hour $PM_{2.5}$ standard. These thresholds represent the emission levels above which a project's individual emissions would result in a cumulatively considerable contribution to the SFBAAB's existing air quality conditions. The thresholds would be an evaluation of the incremental contribution of a project to a significant cumulative impact. These threshold levels are well-established in terms of existing regulations as promoting review of emissions sources to prevent cumulative deterioration of air quality. Using existing environmental standards in this way to establish CEQA thresholds of significance under Guidelines section 15067.4 is an appropriate and effective means of promoting consistency in significance determinations and integrating CEQA environmental review activities with other areas of environmental regulation. (*See Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal. App. 4th 98, 111.[6])

4.2.3. Local Carbon Monoxide Thresholds

The carbon monoxide thresholds are based solely on ambient concentration limits set by the California Clean Air Act for Carbon Monoxide and Appendix G of the State of California CEQA Guidelines.

Since the ambient air quality standards are health-based (i.e., protective of public health), there is substantial evidence (i.e., health studies that the standards are based on) in support of their use

[6] The Court of Appeal in the *Communities for a Better Environment* case held that existing regulatory standards could not be used as a definitive determination of whether a project would be significant under CEQA where there is substantial evidence to the contrary. Staff's thresholds would not do that. The thresholds are levels at which a project's emissions would normally be significant, but would not be binding on a lead agency if there is contrary evidence in the record.

as CEQA significance thresholds. The use of the ambient standard would relate directly to the CEQA checklist question. By not using a proxy standard, there would be a definitive bright line about what is or is not a significant impact and that line would be set using a health-based level.

The CAAQS of 20.0 ppm and 9 ppm for 1-hour and 8-hour CO, respectively, would be used as the thresholds of significance for localized concentrations of CO. Carbon monoxide is a directly emitted pollutant with primarily localized adverse effects when concentrations exceed the health based standards established by the California Air Resources Board (ARB).

In addition, Appendix G of the State of California CEQA Guidelines includes the checklist question: Would the project violate any air quality standard or contribute substantially to an existing or projected air quality violation? Answering yes to this question would indicate that the project would result in a significant impact under CEQA. The use of the ambient standard would relate directly to this checklist question.

4.2.4. Plan-Level Criteria Pollutant Thresholds

This threshold achieves the same goals as the Air District's current approach while alleviating the existing analytical difficulties and the inconsistency of comparing a plan update with AQP growth projections that may be up to several years old. Eliminating the analytical inconsistency provides better nexus and proportionality for evaluating air quality impacts for plans.

Over the years staff has received comments on the difficulties inherent in the current approach regarding the consistency tests for population and VMT growth. First, the population growth estimates used in the most recent AQP can be up to several years older than growth estimates used in a recent plan update, creating an inconsistency in this analysis. Staff recommends that this test of consistency be eliminated because the Air District and local jurisdictions all use regional population growth estimates that are disaggregated to local cities and counties. In addition, the impact to air quality is not necessarily growth but where that growth is located. The second test, rate of increase in vehicle use compared to growth rate, will determine if planned growth will impact air quality. Compact infill development inherently has less vehicle travel and more transit opportunities than suburban sprawl.

Second, the consistency test of comparing the rate of increase in VMT to the rate of increase in population has been problematic at times for practitioners because VMT is not always available with the project analysis. Staff recommends that either the rate of increase in VMT or vehicle trips be compared to the rate of increase in population. Staff also recommends that the growth estimates used in this analysis be for the years covered by the plan. Staff also recommends that the growth estimates be obtained from the Association of Bay Area Governments since the Air District uses ABAG growth estimates for air quality planning purposes.

4.2.5. Criteria Pollutant Thresholds for Regional Plans

Regional plans include the Regional Transportation Plan prepared by the Metropolitan Transportation Commission (MTC) and air quality plans prepared by the Air District.

The Regional Transportation Plan (RTP), also called a Metropolitan Transportation Plan (MTP) or Long-Range Transportation Plan is the mechanism used in California by both Metropolitan Planning Organizations (MPOs) and Regional Transportation Planning Agencies (RTPAs) to conduct long-range (minimum of 20 years) planning in their regions. MTC functions as both the regional transportation planning agency, a state designation, and, for federal purposes, as the region's metropolitan planning organization (MPO). As such, it is responsible for regularly updating the Regional Transportation Plan, a comprehensive blueprint for the development of

comprehensive transportation system that includes mass transit, highway, airport, seaport, railroad, bicycle and pedestrian facilities. The performance of this system affects such public policy concerns as air quality, environmental resource consumption, social equity, "smart growth," economic development, safety, and security. Transportation planning recognizes the critical links between transportation and other societal goals. The planning process requires developing strategies for operating, managing, maintaining, and financing the area's transportation system in such a way as to advance the area's long-term goals.

The Air District periodically prepares and updates plans to achieve the goal of healthy air. Typically, a plan will analyze emissions inventories (estimates of current and future emissions from industry, motor vehicles, and other sources) and combine that information with air monitoring data (used to assess progress in improving air quality) and computer modeling simulations to test future strategies to reduce emissions in order to achieve air quality standards. Air quality plans usually include measures to reduce air pollutant emissions from industrial facilities, commercial processes, motor vehicles, and other sources. Bay Area air quality plans are prepared with the cooperation of MTC and the Association of Bay Area Governments (ABAG).

The threshold of significance for regional plans is no net increase in emissions including criteria pollutant emissions. This threshold serves to answer the State CEQA Guidelines Appendix G sample question: "Would the project Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?"

5. ODOR THRESHOLDS

5.1. THRESHOLDS OF SIGNIFICANCE

Project Operations – Source or Receptor	Plans
Five confirmed complaints per year averaged over three years	Identify the location, and include policies to reduce the impacts, of existing or planned sources of odors

5.2. JUSTIFICATION AND SUBSTANTIAL EVIDENCE SUPPORTING THRESHOLDS

Staff proposes revising the current CEQA significance threshold for odors to be consistent with the Air District's regulation governing odor nuisances (Regulation 7—Odorous Substances). The current approach includes assessing the number of unconfirmed complaints which are not considered indicative of actual odor impacts. Basing the threshold on an average of five confirmed complaints per year over a three year period reflects the most stringent standards derived from the Air District rule and is considered an appropriate approach to a CEQA evaluation of odor impacts.

Odors are generally considered a nuisance, but can result in a public health concern. Some land uses that are needed to provide services to the population of an area can result in offensive odors, such as filling portable propane tanks or recycling center operations. When a proposed project includes the siting of sensitive receptors in proximity to an existing odor source, or when siting a new source of potential odors, the following qualitative evaluation should be performed.

When determining whether potential for odor impacts exists, it is recommended that Lead Agencies consider the following factors and make a determination based on evidence in each qualitative analysis category:

Distance: Use the screening-level distances in Table 9.

Wind Direction: Consider whether sensitive receptors are located upwind or downwind from the source for the most of the year. If odor occurrences associated with the source are seasonal in nature, consider whether sensitive receptors are located downwind during the season in which odor emissions occur.

Complaint History: Consider whether there is a history of complaints associated with the source. If there is no complaint history associated with a particular source (perhaps because sensitive receptors do not already exist in proximity to the source), consider complaint-history associated with other similar sources in BAAQMD's jurisdiction with potential to emit the same or similar types of odorous chemicals or compounds, or that accommodate similar types of processes.

Character of Source: Consider the character of the odor source, for example, the type of odor events according to duration of exposure or averaging time (e.g., continuous release, frequent release events, or infrequent events).

Exposure: Consider whether the project would result in the exposure of a substantial number of people to odorous emissions.

Table 9 – Screening Distances for Potential Odor Sources

Type of Operation Project Screening	Distance
Wastewater Treatment Plant	2 miles
Wastewater Pumping Facilities	1 mile
Sanitary Landfill	2 miles
Transfer Station	1 mile
Composting Facility	1 mile
Petroleum Refinery	2 miles
Asphalt Batch Plant	2 miles
Chemical Manufacturing	2 miles
Fiberglass Manufacturing	1 mile
Painting/Coating Operations	1 mile
Rendering Plant	2 miles
Food Processing Facility	1 mile
Confined Animal Facility/Feed Lot/Dairy	1 mile
Green Waste and Recycling Operations	1 mile
Coffee Roaster	1 mile

California Integrated Waste Management Board (CIWMB). Facilities that are regulated by the CIWMB (e.g. landfill, composting, etc.) are required to have Odor Impact Minimization Plans (OIMP) in place and have procedures that establish fence line odor detection thresholds. The Air District recognizes a lead agency's discretion under CEQA to use established odor detection thresholds as thresholds of significance for CEQA review for CIWMB regulated facilities with an adopted OIMP.

REFERENCES

ARB. *See* California Air Resources Board.

BAAQMD. *See* Bay Area Air Quality Management District.

Bay Area Air Quality Management District. 1999 (December). *BAAQMD CEQA Guidelines*. San Francisco, CA.

_____. 2005. Regulation 2, Rule 2. New Source Review. Available: <http://www.baaqmd.gov/dst/regulations/rg0202.pdf>. Accessed February 2009.

_____. 2006. CARE Phase 1 Findings and Policy Recommendations. Available: <http://baaqmd.gov/CARE/documents/care_p1_findings_recommendations_v2.pdf>. Accessed March 2009.

_____. 2008. Source Inventory of Bay Area Greenhouse Gas Emissions. San Francisco, CA.

_____. 2009. *Revised Draft Options and Justifications Report – California Environmental Quality Act Thresholds of Significance* (http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Revised%20Draft%20CEQA%20Thresholds%20%20Justification%20Report%20Oct%202009.ashx)

_____. 2010. *Draft 2010 CAP Appendix A – Bay Area Air Pollution Burden: Past & Present* San Francisco, CA

California Air Pollution Control Officers Association. 2008 (January). *CEQA and Climate Change*. Sacramento, CA. Available: <http://www.capcoa.org/CEQA/CAPCOA%20White%20Paper.pdf>. Accessed April 10, 2009.

California Air Resources Board. 2000. Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. Stationary Source Division. Mobile Source Control Division. October.

_____. 2002. Staff Report: Public Hearing to Consider Amendments to the Ambient Air Quality Standards for Particulate Matter and Sulfates. Available: http://www.arb.ca.gov/research/aaqs/std-rs/pm-final/pm-final.htm.

_____. 2005. *Land Use Compatibility Handbook. A Community Health Perspective.* Sacramento, CA.

_____. 2008a. *Climate Change Proposed Scoping Plan*. Sacramento, CA. Adopted in December 2008Available: <http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>. Accessed March 2009.

_____. *Climate Change Proposed Scoping Plan*. Sacramento, CA. Adopted in December 2008 Available:

<http://www.arb.ca.gov/cc/scopingplan/document/scopingplandocument.htm>. Accessed March 2009.

_____. 2009a. Greenhouse Gas Inventory and Forecast. Available: <http://www.arb.ca.gov/cc/inventory/data/tables/arb_ghg_inventory_forecast_2008_06_26.xls>. Accessed March 2009.

_____. 2009b. *Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act*. Available: <http://www.arb.ca.gov/cc/localgov/ceqa/meetings/10270prelimdraftproposal102408.pdf> . Accessed March 2009.

_____. 2009c. *Area Designations and Maps*. Available: <http://www.arb.ca.gov/desig/desig.htm>, Accessed April 10.

_____. 2009d. Proposed Regulation to Implement the Low Carbon Fuel Standard, Staff Report Initial Statement Reasons. March 5. Available: http://www.arb.ca.gov/fuels/lcfs/lcfs.htm. Accessed, August 20, 2009.

CEC. *See* California Energy Commission.

CEC. 2007. Impact Analysis 2008 Update to the California Energy Efficiency Standards for Residential and Nonresidential Buildings. Available: <http://www.energy.ca.gov/title22008standards/rulemaking/documents/2007-11-07_IMPACT_ANALYSIS.PDF>. Accessed March 2009.

California Department of Finance. 2009. Residential Development Data: E5 – City and County Population Estimates. 2000-2050 - Race and Ethnic Populations Totals. Available: <http://www.labormarketinfo.edd.ca.gov/?pageid=145 >. Accessed February 2009.

California Economic Development Department. 2009. Commercial/Industrial Employment Data: Projections of Employment by Industry and Occupation. Available: <http://www.labormarketinfo.edd.ca.gov/?pageid=145>. Accessed February 2009.

City and County of San Francisco Department of Public Health. 2008. Assessment and Mitigation of Air Pollutant Health Effects from Intra-urban Roadways: Guidance for Land Use Planning and Environmental Review. Program on Health, Equity, & Sustainability. Occupational & Environmental Health Section. Prepared by Rajiv Bhatia and Thomas Rivard. May 6.

Dockery D. 1993. An association between air pollution and mortality in six U.S. cities. N Engl J Med 329:1753–1759.

EPA. *See* U.S. Environmental Protection Agency.

Governor's Office of Planning and Research. 2008 (June 19). *Technical Advisory: CEQA and Climate Change: Addressing Climate Change Through California Environmental Quality Act (CEQA) Review.* Sacramento, CA. Available: <http://opr.ca.gov/ceqa/pdfs/june08-ceqa.pdf>. Accessed February 2009.

Hiltermann T, Bruijne Cd, Stolk J, Zwinderman A, Spieksma F, Roemer W, et al. 1997. Effects of photochemical air pollution and allergen exposure on upper respiratory tract inflammation in asthmatics. Am J Respir Crit Care Med 156(6):1765–1772.

Intergovernmental Panel on Climate Change. 2007a (February). *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the IPCC.* Geneva, Switzerland.

_____. 2007a (February). *Climate Change 2007: Climate Change 2007:Synthesis Report*
Summary for Policymakers. Geneva, Switzerland.

IPCC. *See* Intergovernmental Panel on Climate Change.

Jerrett M et al. 2005. Spatial Analysis of Air Pollution and Mortality in Los Angeles. Epidemiology. 16: 727-736

Kleinman, M.T., Sioutas, C., Froines, J.R., Fanning, E., Hamade, A., Mendez, L., Meacher, D., Oldham, M. Inhalation of Concentrated Ambient Particulate Matter Near a Heavily Trafficked Road Simulates Antigen-Induced Airway Responses in Mice; Inhal. Toxicol. 2007, 19 (Supp. 1), 117-126.

Laden, F.; Schwartz, J.; Speizer, F.E.; Dockery, D.W. Reduction in Fine Particulate Air Pollution and Mortality: Extended Follow-Up of the Harvard Six Cities Study. *Am. J. Respir. Crit. Care Med.* (2006), *173,* 667-672.

OPR. *See* Governor's Office of Planning and Research.

Pope C III, Thun M, Namboordiri M, Dockery D, Evans J, Speizer F. 1995. Particulate air pollution as a predictor of mortality in a prospective study of U.S. adults. Am J Respir Crit Care Med 151(3):669–6

Rimpo and Associates. 2009. BAAQMD CEQA Projects Database. Orangevale, CA.

Schauer JJ, Lough GC, Schafer MM, Christensen WF, Arndt MF, DeMinter JT, et al. 2006. Characterization of metals emitted from motor vehicles. Res Rep Health Eff Inst 133:1–7.

Schikowski T, Sugiri D, Ranft U, Gehring U, Heinrich J, Wichmann E, et al. 2005. Long-term air pollution exposure and living close to busy roads are associated with COPD in women. Respir Res 6(1):152.

Schwartz, J.; Coull, B.; Laden, F.; Ryan, L. The Effect of Dose and Timing of Dose on the Association between Airborne Particles and Survival. Env Health Persp (2008) 116, 1: 64-69.

SFDPH. See City and County of San Francisco Department of Public Health.

UNFCCC. *See* United Nations Framework Convention on Climate Change.

United Nations Framework Convention on Climate Change. 2009. *Article 1 of the UNFCCC.* Available: http://unfccc.int/essential_background/convention/background/items/2536.php. Accessed April 8, 2009.

U.S. Environmental Protection Agency. 2008. Federal Register: Implementation of the New Source Review (NSR) Program for Particulate Matter ($PM_{2.5}$) less than 2.5 Micrometers.

Available: <http://www.epa.gov/fedrgstr/EPA-AIR/200May/Day-1a10768.pdf>. Accessed February 2009.

_____. 2009. Monitor Values Report Data. Available: <http://www.epa.gov/air/data/index.html>. Accessed April 8, 2009.

_____. 2006. *Expanded Expert Judgment Assessment of the Concentration-Response Relationship between $PM_{2.5}$ Exposure and Mortality*, prepared for OAQPS-EPA by Industrial Economics Inc., September 21, 2006. A summary of this study is provided in Roman, HA et al., *Environ. Sci. Tech.* 2008, 42, 2268-2274.

_____. 1988. C. Cowherd, et al., *Control of Open Fugitive Dust Sources*, EPA-450/3-88-008, U. S. Environmental Protection Agency, Research Triangle Park, NC, September 1988.

Van Hee, V.C., Adar, S.D., Szpiro, A.A., Barr, R.G., Bluemke, D.A., Diez Roux, A.V., Gill, E.A., Sheppard, L., Kaufman, J.D. Exposure to Traffic and Left Ventricular Mass and Function; Am. J. Respir. Crit. Care Med. 2009, 179 (9), 827-834.

Vineis P, Hoek G, Krzyzanowski M, Vigna-Taglianti F, Veglia F, Airoldi L, et al. 2007. Lung cancers attributable to environmental tobacco smoke and air pollution in non-smokers in different European countries: a prospective study. Environ Health 6:7; doi:10.1186/1476-069X-6-7 [Online 15 February 2007]

Western Regional Air Partnership. 2006. *WRAP Fugitive Dust Handbook.* September 7, 2006. Available: http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf. Accessed September 2009.

Zhu, Y. Hinds, W.C., Kim S, and Sioutas, C. 2002. Concentration and size distribution of ultrafine particles near a major highway. Journal of Air and Waste Management Association. 2002 Sep; 52 (9): 1032-42.

BAY AREA AIR QUALITY MANAGEMENT DISTRICT

RESOLUTION No. 2010-06

A Resolution of the Board of Directors of the Bay Area Air Quality Management District Adopting Thresholds For Use In Determining the Significance of Projects' Environmental Effects Under the California Environmental Quality Act

WHEREAS, pursuant to Title 14, Chapter 3, Article 5, Section 15064.7 of the California Code of Regulations ("Section 15064.7"), the California Resources Agency encourages public agencies to adopt "Thresholds of Significance" under the California Environmental Quality Act ("CEQA");

WHEREAS, pursuant to Section 15064.7, CEQA Thresholds of Significance are identifiable quantitative, qualitative or performance levels of a particular environmental effect, non-compliance with which means the effect will normally be determined to be "significant" under CEQA, and compliance with which means the effect normally will be determined to be less than significant under CEQA;

WHEREAS, the Board of Directors ("Board") of the Bay Area Air Quality Management District ("District") finds it necessary and appropriate to adopt CEQA Thresholds of Significance as set forth in Attachment A hereto for use by District staff and by other appropriate agencies in determining whether projects may have significant effects on the environment for purposes of CEQA environmental analyses;

WHEREAS, the CEQA Thresholds of Significance as set forth in Attachment A hereto do not alter the existing procedural and substantive requirements of CEQA under California law, but simply clarify the level at which, in the District's considered opinion, an environmental effect should normally be considered "significant" for purposes of existing CEQA law;

WHEREAS, the CEQA Thresholds of Significance set forth in Attachment A hereto were developed through an extensive public review process, which included public workshops, Board meetings and meetings with local government agency and non-government organization staff, including the cities of Berkeley, Colma, Daly City, Dublin, Fremont, Livermore, Oakland, Pleasanton, Richmond, San Leandro, San Mateo, San Francisco and Santa Rosa; the counties of Alameda, Contra Costa, Napa, Santa Clara, and Sonoma; and the CARE Task Force, the Alameda County Planning for Healthy Communities Network and the Governor's Office of Planning and Research Local Government Roundtable;

WHEREAS, District staff held ten public workshops throughout the Bay Area on February 26, 2009, April 27, 29 and 30, 2009, September 8, 9, and 10, 2009, October 2, 2009, and April 15 and 26, 2010; solicited Thresholds of Significance options for consideration; and published for public review and comment the Threshold Options Report on April 24, 2009, the CEQA Thresholds Options and Justification Report on October 8, 2009, and the Proposed Thresholds of Significance Report on November 2, 2009, December 7, 2009 and May 3, 2010;

meetings were held on November 18, 2009, December 2, 2009, January 6, 2010, May 5, 2010 and June 2, 2010;

WHEREAS, at the November 18, 2009, December 2, 2009, January 6, 2010, May 5, 2010 and June 2, 2010 public meetings, the subject matter of the Thresholds of Significance was discussed with interested persons in accordance with all provisions of law;

WHEREAS, the November 18, 2009, December 2, 2009, January 6, 2010, May 5, 2010 and June 2, 2010 public meetings and the other public review opportunities that the District has provided regarding the Thresholds of Significance, constitute a public review process as required by Section 15064.7;

WHEREAS, District staff has prepared and presented to this Board the May 3, 2010, Proposed Thresholds of Significance report, which has been considered by this Board and is incorporated herein by reference;

WHEREAS, the documents and other materials that constitute the record of the public review process under Section 15064.7 on which this Resolution is based are located at the Bay Area Air Quality Management District, 939 Ellis Street, San Francisco, 94109, and the custodian for these documents is Ms. Lisa Harper, Clerk of the Boards;

WHEREAS, District staff recommends adoption of the CEQA Thresholds of Significance set forth in Attachment A hereto;

WHEREAS, the Board of Directors concurs with District staff's recommendations and desires to adopt the CEQA Thresholds of Significance set forth in Attachment A hereto;

NOW, THEREFORE, BE IT RESOLVED that that the Board of Directors of the Bay Area Air Quality Management District does hereby adopt the CEQA Thresholds of Significance, pursuant to the authority granted by law, as set forth in Attachment A hereto, and discussed in the Proposed Thresholds of Significance report dated May 3, 2010, with instructions to staff to correct any typographical or formatting errors before final publication of the CEQA Thresholds of Significance.

BE IT FURTHER RESOLVED that it is the policy of the Bay Area Air Quality Management District that projects that do not comply with the CEQA Thresholds of Significance will normally be determined to have a significant effect on the environment for purposes of CEQA, and projects that comply with the CEQA Thresholds of Significance normally will be determined to have a less-than-significant effect on the environment for purposes of CEQA.

BE IT FURTHER RESOLVED that it is the policy of the Bay Area Air Quality Management District that Lead Agencies in the Bay Area apply the CEQA Thresholds of Significance, except for the Risk and Hazard thresholds for Receptor Projects, for Notices of Preparation issued, and environmental analyses begun, on or after the date of adoption of this Resolution.

BE IT FURTHER RESOLVED that it is the policy of the Bay Area Air Quality Management District that Lead Agencies in the Bay Area apply the CEQA Thresholds of Significance for the

Risk and Hazard thresholds for Receptor Projects for Notices of Preparation issued, and environmental analyses begun, after January 1, 2011.

The foregoing Resolution was duly and regularly introduced, passed and adopted at a regular meeting of the Board of Directors of the Bay Area Air Quality Management District on the Motion of Director KALRA, seconded by Director UILKEMA, on the 2nd day of JUNE, 2010, by the following vote of the Board:

AYES: BATES, GARNER, GIOIA, GROOM, HOSTERMAN, HUDSON, KALRA, MAR, ROSS, SPERING, TORLIATT, UILKEMA, YEAGER, WAGENKNECHT

NOES: NONE

RECUSED: HAGGERTY

ABSENT: BROWN, DALY, DUNNIGAN, KLATT, KNISS, MILEY, ZANE

Brad Wagenknecht
Chairperson of the Board of Directors

ATTEST:

John Gioia
Secretary of the Board of Directors

4

ATTACHMENT A

Proposed Air Quality CEQA Thresholds of Significance (May 3, 2010)			
Pollutant	**Construction-Related**	**Operational-Related**	
Project-Level			
Criteria Air Pollutants and Precursors (Regional)	**Average Daily Emissions (lb/day)**	**Average Daily Emissions (lb/day)**	**Maximum Annual Emissions (tpy)**
ROG	54	54	10
NO_X	54	54	10
PM_{10} (exhaust)	82	82	15
$PM_{2.5}$ (exhaust)	54	54	10
$PM_{10}/PM_{2.5}$ (fugitive dust)	Best Management Practices	None	
Local CO	None	9.0 ppm (8-hour average), 20.0 ppm (1-hour average)	
GHGs **Projects other than Stationary Sources**	None	Compliance with Qualified Greenhouse Gas Reduction Strategy OR 1,100 MT of CO_2e/yr OR 4.6 MT CO_2e/SP/yr (residents + employees)	
GHGs **Stationary Sources**	None	10,000 MT/yr	
Risks and Hazards – New Source (Individual Project)	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 $\mu g/m^3$ annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor	
Risks and Hazards – New Receptor (Individual Project)	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Increased cancer risk of >10.0 in a million Increased non-cancer risk of > 1.0 Hazard Index (Chronic or Acute) Ambient $PM_{2.5}$ increase: > 0.3 $\mu g/m^3$ annual average Zone of Influence: 1,000-foot radius from fence line of source or receptor	
Risks and Hazards – New Source (Cumulative Thresholds)	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$: > 0.8 $\mu g/m^3$ annual average (from all local sources) Zone of Influence: 1,000-foot radius from fence line of source or receptor	

Proposed Air Quality CEQA Thresholds of Significance (May 3, 2010)		
Pollutant	**Construction-Related**	**Operational-Related**
Risks and Hazards – New Receptor (Cumulative Thresholds)	Same as Operational Thresholds*	Compliance with Qualified Community Risk Reduction Plan OR Cancer: > 100 in a million (from all local sources) Non-cancer: > 10.0 Hazard Index (from all local sources) (Chronic) $PM_{2.5}$: > 0.8 $\mu g/m^3$ annual average (from all local sources) Zone of Influence: 1,000-foot radius from fence line of source or receptor
Accidental Release of Acutely Hazardous Air Pollutants	None	Storage or use of acutely hazardous materials locating near receptors or receptors locating near stored or used acutely hazardous materials considered significant
Odors	None	Complaint History—5 confirmed complaints per year averaged over three years
Plan-Level		
Criteria Air Pollutants and Precursors	None	1. Consistency with Current Air Quality Plan control measures 2. Projected VMT or vehicle trip increase is less than or equal to projected population increase
GHGs	None	Compliance with Qualified Greenhouse Gas Reduction Strategy (or similar criteria included in a General Plan) OR 6.6 MT CO2e/ SP/yr (residents + employees)
Risks and Hazards	None	1. Overlay zones around existing and planned sources of TACs (including adopted Risk Reduction Plan areas) 2. Overlay zones of at least 500 feet (or Air District-approved modeled distance) from all freeways and high volume roadways
Odors	None	Identify locations of odor sources in general plan
Accidental Release of Acutely Hazardous Air Pollutants	None	None
Regional Plans (Transportation and Air Quality Plans)		
GHGs, Criteria Air Pollutants and Precursors, and Toxic Air Contaminants	None	No net increase in emissions

Notes: CO = carbon monoxide; CO_2e = carbon dioxide equivalent; GHGs = greenhouse gases; lb/day = pounds per day; MT = metric tons; NO_X = oxides of nitrogen; $PM_{2.5}$= fine particulate matter with an aerodynamic resistance diameter of 2.5 micrometers or less; PM_{10} = respirable particulate matter with an aerodynamic resistance diameter of 10 micrometers or less; ppm = parts per million; ROG = reactive organic gases; SP = service population; tpy = tons per year; yr= year.

* Note: The Air District recommends that for construction projects that are less than one year duration, Lead Agencies should annualize impacts over the scope of actual days that peak impacts are to occur, rather than the full year.

APPENDIX H2:
HEALTH RISK ASSESSMENT

CONSTRUCTION AND OPERATIONAL HEALTH RISK ASSESSMENT FOR:

TERRACES AT

LAFAYETTE

prepared for:

CITY OF LAFAYETTE

Contact:
Ann Merideth
Special Projects Manager

prepared by:

THE PLANNING CENTER|DC&E

Contact:
Cathleen Fitzgerald
Senior Engineer

FEBRUARY 2012

CONSTRUCTION AND OPERATIONAL HEALTH RISK ASSESSMENT FOR:

TERRACES AT

LAFAYETTE

Cathleen M. Fitzgerald, P.E.
Senior Engineer

prepared for:

CITY OF LAFAYETTE

3675 Mount Diablo Boulevard, Suite 210
Lafayette, CA 94549
Tel: 925.284.1968

Contact:
Ann Merideth
Special Projects Manager

prepared by:

THE PLANNING CENTER|DC&E

9841 Airport Boulevard, Suite 1010
Los Angeles, CA 90045
Tel: 310.670.9221 • Fax: 310.670.9512
Website: www.planningcenter.com

Contact:
Cathleen Fitzgerald
Senior Engineer

CLAF-02

FEBRUARY 2012

Table of Contents

APPENDICES

Table of Contents

List of Figures

List of Tables

1. Introduction

This report presents the results of a construction and operational risk assessment for a proposed 315-unit multi-family apartment development on a 22.27-acre site in the City of Lafayette, California. The project site is located at the northwest corner of the Pleasant Hill Road/State Highway 24 intersection (see Figure 1).

The latest version of the Bay Area Air Quality Management District (BAAQMD) CEQA Air Quality Guidelines requires projects to evaluate the impacts of construction and operation on sensitive receptors (BAAQMD, 2010a). Construction of the project would involve demolition, site preparation, mass grading, and building construction. The construction phase is estimated to take place over a 20-month period beginning in early 2013 and ending in 2014. Sensitive receptors that could be potentially impacted from these construction activities include single-family residences to the east across Pleasant Hill Road, ranch with outdoor classes/summer camp northwest of the project site, as well as schools and day care centers within a 1,000-foot radius of the site.

The BAAQMD has developed *Screening Tables for Air Toxics Evaluation During Construction* (2010b) that evaluate construction-related health risks associated with residential, commercial, and industrial projects. According to the screening tables, the residences are closer than the distance of 158 meters (520 feet) that would screen out potential health risks. Therefore, a site-specific construction health risk assessment (HRA) was prepared for this project.

BAAQMD also has developed significance thresholds for siting new receptors that could be exposed to toxic air contaminants (TACs) or particulate matter ($PM_{2.5}$). For assessing community risk and hazards, sources within a 1,000-foot radius are considered, including freeways, high volume roadways, and permitted sources. There are two permitted stationary sources within 1,000 feet of the site: a Shell gasoline station at 3255 Stanley Boulevard and Svensson Automotive at 3297 Diablo Boulevard. In addition, the proposed project is within 1,000 feet of a major arterial roadway (State Highway 24) and two roadways (Deer Hill Road and Pleasant Hill Road) with traffic volumes of over 10,000 vehicles/day. Therefore, a site-specific operational health risk assessment was also conducted for this project.

This community health risk assessment evaluates the impact of traffic emissions from State Highway 24, adjacent roadways, and the two stationary sources on future occupants of the project site and also evaluates the impact of emissions from project construction on nearby sensitive receptors. The emissions that were evaluated include diesel particulate matter (DPM), TACs, $PM_{2.5}$, and acrolein concentrations.

2. Project Description

The proposed project is a 315-unit multi-family apartment development located on a 22.27-acre hillside property at 3233 Deer Hill Road in the City of Lafayette, Contra Costa County, California. The project would include 14 residential buildings comprised of two and three stories, a two-story clubhouse, a one-story leasing office, as well as parking in carports and garages. The site is bounded by Pleasant Hill Road to the east, Highway 24, to the south, and Deer Hill Road to the west and north. Land uses to the east across Pleasant Hill Road include a gas station, single-family residences, and Acalanes High School. West and north of the project site across Deer Hill Road are two residences and a Sienna Ranch which features outdoor classes and summer camp for children. To the south across State Highway 24 are multi-family residences, office and commercial land uses. Briones Regional Park is located approximately 500 feet north of the Deer Hill Road/Pleasant Hills Road intersection and north of the park is Springhill Elementary School. The project site and vicinity are depicted in Figure 1.

Site Location/Vicinity Aerial Photograph

Site Boundary

0 800
Scale (Feet)

Source: Google Earth Pro 2011

3. Methodology and Significance Thresholds

The purpose of the community HRA is to evaluate the potential health impacts associated with diesel particulate matter (DPM), toxic air contaminants (TACs), particulate matter less than 2.5 microns ($PM_{2.5}$), and acrolein from construction activities associated with the Terraces at Lafayette project. Construction sources evaluated in this HRA include off-road construction equipment (excavators, graders, scrapers, dozers, dump trucks, loaders, rollers, and pavers). In addition, on-road haul trucks, support vehicles (pickups), and workers commuting to the project were included in the evaluation.

The community HRA also evaluates the impact of all stationary and mobile sources within a 1,000-foot radius of the project on future occupants of the site. Identified sources from the BAAQMD database include traffic emissions from State Highway 24, Deer Hill Road, Pleasant Hill Road, and two stationary sources (Shell gasoline station and Svensson Automotive). The chemicals of concern include DPM, TACs, and $PM_{2.5}$ from vehicle emissions on the roadway and organic TACs from the stationary sources.

The BAAQMD has adopted "Thresholds of Significance" for project level impacts as follows:

- Non-compliance with a qualified risk reduction plan
- Excess cancer risk of more than 10 in a million
- Non-cancer hazard index (chronic or acute) greater than 1.0
- Incremental increase in average annual $PM_{2.5}$ concentration of greater than 0.3 $\mu g/m^3$

In addition, BAAQMD has also adopted thresholds of significance for cumulative impacts defined as the aggregate total of all past, present, and foreseeable future sources within a 1,000-foot radius of a source or receptor, plus the contribution from the project, exceeds the following:

- Non-compliance with a qualified risk reduction plan
- Excess cancer risk of more than 100 in a million
- Non-cancer hazard index (chronic or acute) greater than 10
- Average annual $PM_{2.5}$ concentration of greater than 0.8 $\mu g/m^3$

Since Contra Costa County does not have a qualified risk reduction plan, a site-specific analysis of DPM, TACs, $PM_{2.5}$, and acrolein impacts on sensitive receptors was conducted.

The methodology used in this HRA is consistent with the following BAAQMD and the Office of Environmental Health Hazard Assessment (OEHHA) guidance documents:

- BAAQMD, 2010. *California Environmental Quality Act Air Quality Guidelines.* June 2010.
- BAAQMD, 2010. *Screening Tables for Air Toxics Evaluation During Construction.* May 2010.
- BAAQMD, 2011. *Recommended Methods for Screening and Modeling Local Risks and Hazards.* Version 2.0. May 2011
- OEHHA, 2003. *Air Toxics Hot Spots Program Risk Assessment Guidelines.* August 2003.

Potential exposures to DPM, $PM_{2.5}$, and acrolein from proposed project construction activities were evaluated for off-site sensitive receptors in the vicinity of the site, including the nearest residential occupants. Also, mobile and stationary sources within a 1,000-foot radius of the site were evaluated to determine the risk and hazard associated with exposure to TACs and $PM_{2.5}$ for on-site occupants of the project site. Using air dispersion models, receptor concentrations were estimated and excess lifetime cancer risks and chronic non-cancer hazard indexes were calculated. These risks were then compared to the significance thresholds identified in the BAAQMD CEQA guidelines.

4. Construction Emissions

Construction emissions were calculated, using the California Emissions Estimation Model (CalEEMod) and the proposed construction schedule (SCAQMD, 2011). The CalEEMod construction information, schedule, and output are provided in Appendix A.

The project was assumed to take place over a 20-month period between 2013 and 2014. Approximately 438 days of construction activity will occur over this period. The project will include the use of Tier 3 off-road equipment to achieve emission reductions. Therefore, the CalEEMod model runs for mitigated construction and average daily construction emissions (lb/day) were used for this analysis. On-site construction sources evaluated in this HRA include excavators, graders, scrapers, dozers, dump trucks, loaders, rollers, and pavers. In addition, on-road haul trucks, support vehicles, and workers commuting to the project were included in the analysis. The construction schedule and modeled emission rates are summarized in Table 1.

Table 1
Construction Activity

Year	Construction Phase	Days of Operation	Average DPM (lb/day)	Average $PM_{2.5}$ (lb/day)	Average ROG (lb/day)
2013 - Onsite	Demolition Site Preparation Grading Building Construction	264	3.48	3.48	7.73
2014 - Onsite	Building Construction Paving Architectural Coatings	174	1.96	1.96	66.05
2013 - Offsite	On-road haul trucks Support vehicles Commuting workers	264	5.23	5.23	14.92
2014 – Offsite	Delivery trucks Support vehicles Commuting workers	174	0.23	0.23	2.19
TOTAL		**438 days**			

To determine the acrolein concentrations, the ROG value was converted to TOG, using the conversion factor of 1.195157 from ARB's OFFROAD2007 model. The acrolein concentration in diesel exhaust was estimated to be 0.365% of the TOG value, based on USEPA's *Speciate* database for California reformulated diesel #2 (USEPA, 2011).

5. Operational Emissions

BAAQMD recommends a tiered approach for evaluating the community risk for a proposed residential project that may be impacted by existing sources. If there are roadways with greater than 10,000 vehicles per day or existing stationary sources within 1,000 feet of the project site, the BAAQMD *Freeway/State Highway Screening Analysis Tool* and *Stationary Source Risk and Hazard Screening Analysis Tool* are used to determine project-specific risk and cumulative risk levels. If these risks are below the BAAQMD significance thresholds, then further analysis is not required. If the risks exceed the BAAQMD significance thresholds, then more refined modeling using site-specific information can be conducted.

A review of the BAAQMD database and Google Earth screening tools indicate the following sources within 1,000 feet of the proposed project site:

- State Highway 24 (200 feet south from the nearest travel lane to the closest housing unit)
- Pleasant Hill Road (adjacent to the east)
- Deer Hill Road (adjacent to the west)
- Shell Gasoline Station (3255 Stanley Blvd – 235 feet northeast from nearest dispenser to site)
- Svensson Automotive (3297 Mt. Diablo Blvd – 480 feet south from the project site)

BAAQMD screening tools provide initial estimates of community risk from roadways (BAAQMD, 2012). The Google Earth tool was used to find the closest link to the project site (Link 1075) and the risks and hazards for housing units closest to the nearest through travel lane (a distance of 200 feet) were determined. The results are provided in Table 2. Risk and hazard levels for Svensson Automotive were determined using the BAAQMD Stationary Screening Tool; the risk and hazard levels for the Shell gasoline station were obtained from BAAQMD.

Table 2
Risk and Hazard Levels – BAAQMD Screening Analysis

Source	Cancer Risk	Chronic Hazard Index	Acute Hazard Index	PM2.5 Concentration (ug/m^3)
State Highway 24	51.4	0.05	0.031	0.48
Pleasant Hill Road	3.56	<1.0	<1.0	0.133
Deer Hill Road	2.34	<1.0	<1.0	0.085
Svennson Automotive	0	0	0	0
Shell Gasoline Station[1]	3.08	0.004	<1.0	NSR[1]
BAAQMD Significance Threshold	**10**	**1.0**	**1.0**	**0.3**
Individually Significant?	**Yes**	**No**	**No**	**Yes**
Cumulative Sources	60.4	0.05	NA	0.70
BAAQMD Significance Threshold	**100**	**10**	**--**	**0.8**
Cumulatively Significant?	**No**	**No**	**--**	**No**

[1]Risk values obtained from BAAQMD and adjusted using distance multiplier for gas dispensing facilities: NSR – No significant risk

As shown in Table 2, the results indicate that the cancer risk and $PM_{2.5}$ concentrations exceed the BAAQMD significance level for Highway 24. The screening analysis indicates that the cumulative impact is below BAAQMD significance thresholds for all categories. Therefore, a refined analysis using site-specific air dispersion modeling was performed to determine the project TAC and $PM_{2.5}$ risks and hazards for on-site occupants from exposure to emissions from Highway 24.

6. Dispersion Modeling

To assess the impact of emitted compounds on sensitive on-site and off-site receptors, air quality modeling using the ISCST3 model was performed. The model is a steady state Gaussian plume model and is an approved model by BAAQMD for estimating ground level impacts from stationary and mobile sources in simple and complex terrain. The model requires additional input parameters, including chemical emission data and local meteorology. Meteorological data obtained from the BAAQMD for the nearest met station (Concord) and the latest available year of data (2005) were used to represent local weather conditions and prevailing winds. Because the site is located in a hillside area, digital elevation model (DEM) data for the 7.5-minute Walnut Creek topographic area were obtained and included in the model runs to account for complex terrain.

6.1 CONSTRUCTION PHASE

The construction emissions within the 22.27-acre site were modeled as an area source and the emissions from haul trucks and vehicles traveling within one mile of the site were modeled as a series of volume sources. Inputs for the construction phase emission rates are those described in Section 4.

An emission release height of 4.15 meters was used as representative of the stack exhaust height for off-road construction equipment and on-road haul trucks and an initial vertical dispersion parameter of 1.93 m was used, per CARB guidance (2000). To determine contaminant impacts during construction hours, the model's scalar option was invoked to predict receptor concentrations for emissions generated during weekdays between the hours of 7:00 AM and 3:00 PM.

The sensitive receptors were modeled as a Cartesian grid with a spacing of approximately 20 meters for the residences to the east and as discrete receptors for the nearby ranch, high school, elementary school, and day care centers. The nearest sensitive receptors and approximate distances from the project property boundary are provided in Table 3.

Table 3
Construction HRA - Sensitive Receptors

Name	Description	Street Address	Distance	Direction
Residences	Single Family Residential	East of Pleasant Hill Road	180 feet	East
Sienna Ranch	Outdoor classes and summer camp for children	3232 Deer Hill Road	130 feet	Adjacent and northwest
Acalanes High School	High School	1200 Pleasant Hill Road	700 feet	Northeast
Springhill Elementary School	Elementary School	3301 Springhill Road	2,260 feet	North
Diablo Valley Montessori School	Infant to Kindergarten	3390 Deer Hill Road	1,750 feet	West
Happy Days Learning Center	Day care/after school child care	3205 Stanley Boulevard	1,120 feet	Northeast

The configuration of the on-site and off-site sources and the receptor locations are presented in Figure 2. The ISCST3 model output data are presented in Appendix B.

Construction HRA Sources and Receptors

Site Boundary

0 1,000
Scale (Feet)

Source: Google Earth Pro 2011

6.2 OPERATIONAL PHASE

Because the BAAQMD screening tables for Highway 24 resulted in a significant individual risk for TACs and $PM_{2.5}$ for potential occupants of the Terraces at Lafayette project, a site-specific air modeling analysis was conducted for this source.

According to the Caltrans website (2012), State Highway 24 has 178,000 vehicles per day (average annual daily traffic – AADT) with 2.5% of those vehicles being trucks. To produce a representative vehicle fleet distribution, the assessment utilized the methodology recommended by the Institute of Transportation, University of California, Davis (Caltrans, 1996). This approach provides an estimate of vehicle mix based on annual truck traffic reports and a time-of-day adjustment factor appropriate for the project being evaluated. Table 4 lists the identified fleet mix considered in the assessment.

Table 4
Vehicle Fleet Mix Profile

Vehicle Class	*%*
Light Duty Auto (LDA)	77.63
Light Duty Truck (LDT)	13.59
Medium Duty Truck (MDT)	4.85
Heavy Duty Truck/Gas (HDTG)	1.04
Heavy Duty Truck/Diesel (HDTD)	1.92
Motorcycle (MCY)	0.97

To account for the emission standards imposed on the California fleet, the Air Resources Board has developed the EMFAC2007 emission factor model. EMFAC2007 was utilized to identify pollutant emission rates for total organic gases (TOG), diesel particulate matter (DPM), and $PM_{2.5}$. This analysis accounted for future decreases in DPM or $PM_{2.5}$ emissions as a result of new CARB regulations that require on-road diesel trucks to be replaced to meet new engine standards or retrofitted with particulate filters, as quantified on Table 3 of the BAAQMD *Recommended Methods for Screening and Modeling Local Risks and Hazards* (BAAQMD, 2011). To quantify the generation of hazardous emissions, the TOG emission rate was multiplied by available exhaust fractions for identified compounds promulgated by the USEPA (1993). A list of emitted compounds for the mobile-source category is presented in Table 5.

Table 5
Compounds Emitted from Mobile-Source Activity

Source	*Contaminant*
Highway 24	Benzene, Formaldehyde 1,3-Butadiene Acetaldehyde Diesel Particulate Particulate Matter ($PM_{2.5}$)

Emission factors for the year 2014 (the first year of occupancy) were developed using the mix of cars and trucks traveling along Highway 24 and for every subsequent year up to 2040. Since EMFAC2007 does not extend beyond 2040, the emission factor for 2040 was used for years up to 2084 (a 70-year period).

Dispersion modeling of TACs (obtained from TOG emission rates), DPM, and $PM_{2.5}$ was conducted using the computer model ISCST3. Inputs to the model are provided in Appendix C. Meteorological data from the BAAQMD Concord monitoring station, which is located approximately 4.6 miles northeast from the site, and the latest year of data (2005), were used to represent local weather conditions and prevailing winds. The model also accounted for elevated terrain for the sources and receptors by importing the digital elevation model (DEM) map for Walnut Creek. On-site receptors were modeled as boundary receptors around the perimeter of the site and as discrete receptors where dwelling units would be located.

$PM_{2.5}$ impacts were evaluated by running EMFAC2007 for all vehicle types (both gasoline and diesel vehicles) and comparing the result to the BAQQMD significance threshold of 0.3 $\mu g/m^3$

7. Risk Characterizations

7.1 CARCINOGENIC CHEMICAL RISK

Carcinogenic compounds are not considered to have threshold levels (i.e., dose levels below which there are no risks). Any exposure, therefore, will have some associated risk. As a result, the BAAQMD has established a threshold of ten in a million (10E–06) as a level posing no significant risk for exposures to carcinogens.

Health risks associated with exposure to carcinogenic compounds can be defined in terms of the probability of developing cancer as a result of exposure to a chemical at a given concentration. The cancer risk probability is determined by multiplying the chemical's annual concentration by its cancer potency factor (CPF), a measure of the carcinogenic potential of a chemical when a dose is received through the inhalation pathway. It is an upper-limit estimate of the probability of contracting cancer as a result of continuous exposure to an ambient concentration of one microgram per cubic meter ($\mu g/m^3$) over a lifetime of 70 years.

Cancer risks were calculated using BAAQMD recommended methods for a residential receptor. For the inhalation pathway, contaminant dose is multiplied by the cancer potency factor in units of inverse dose expressed in milligrams per kilogram per day $(mg/kg/day)^{-1}$ to derive the cancer risk estimate. To calculate the contaminant dose, the following equation was used:

$$Dose = (C_{air} \times IR \times EF \times ED \times CF) / (AT)$$

where:

Dose	=	dose through inhalation pathway (mg/kg/day)
C_{air}	=	concentration of contaminant in air ($\mu g/m^3$)
IR	=	inhalation rate (302 L/kg body weight for adult)
EF	=	exposure frequency (typically 350 days/year for residential receptor)
ED	=	exposure duration (70 years for residential receptor)
CF	=	conversion factor (10^{-6} [mg/ug * m3/L])
AT	=	averaging time (25,550 days or 70 years)

The CPFs used in the assessment were obtained from OEHHA guidance. For DPM, a CPF of 1.1 $mg/kg\text{-}day^{-1}$ was used.

OEHHA and BAAQMD procedures require the incorporation of age sensitivity factors into the evaluation. For estimating cancer risk for residential receptors that include exposure to infants, children, and adolescents, a cancer risk adjustment factor (CRAF) of 1.7 is applied. The CRAF is used in the following equation to obtain the cancer risk:

$$Cancer\ Risk = (Dose \times Cancer\ Potency\ Factor \times CRAF)$$

where:

Cancer Risk = risk (potential chances per million)
Dose = dose through inhalation (mg/kg-day)
Cancer Potency Factor = toxicity factor (mg/kg-day^{-1})
CRAF = cancer risk adjustment factor (1.7 for residential receptor)

The excess lifetime cancer risk to the maximally exposed individual (MEI) was calculated, based on the factors provided above for the on-site exposure. However, the typical exposure period of 350 days/year for an off-site residential receptor was adjusted to account for the number of construction activity days during the two year construction period (264 days in 2013 and 174 days in 2014). The calculated results are provided in Appendix C.

7.2 NONCARCINOGENIC HAZARDS

An evaluation of the potential noncancer effects of chronic chemical exposures was also conducted. Adverse health effects are evaluated by comparing the annual ground level concentration of each chemical compound with the appropriate reference exposure limit (REL). Available RELs promulgated by OEHHA were considered in the assessment.

To quantify noncarcinogenic impacts, the hazard index approach was used. The hazard index assumes that chronic subthreshold exposures adversely affect a specific organ or organ system (toxicological endpoint). For each discrete chemical exposure, target organs presented in regulatory guidance were used. To calculate the hazard index, each chemical concentration or dose is divided by the appropriate toxicity value. For compounds affecting the same toxicological endpoint, this ratio is summed. Where the total equals or exceeds one, a health hazard is presumed to exist. In a manner consistent with the assessment of carcinogenic exposures, REL/RfC (reference concentration) values were converted to units expressed in mg/kg/day to accommodate the above intake algorithm.

The chronic hazard analyses for both the construction and on-site risk assessments are provided in Appendix C. The calculations contain the relevant exposure concentrations and corresponding reference dose values used in the evaluation of noncarcinogenic exposures.

7.3 $PM_{2.5}$ AND ACROLEIN CONCENTRATIONS

The BAAQMD has recently incorporated $PM_{2.5}$ into the District's CEQA significance thresholds due to recent studies that show adverse health impacts from exposure to this pollutant. An incremental increase of greater than 0.3 ug/m^3 for the annual average $PM_{2.5}$ concentration is considered to be a significant impact. The acute health impact of acrolein was also evaluated for the construction risk assessment since it is one of the most toxic air contaminants associated with diesel exhaust, based on its non-cancer toxicity value. The acute hazard index for acrolein was calculated, based on the following equation:

Acute Hazard Index = (One Hour Concentration (ug/m^3)/Acute REL (ug/m^3)

8. Results

8.1 CONSTRUCTION RISK ASSESSMENT

Results of the construction health risk assessment indicate that the incremental cancer risk for a resident next to the project site during the construction period, based on the maximum ground-level concentration for a 70-year, 24-hour outdoor exposure duration, is 4.0 x 10^{-6} (roughly 4 in a million), which is less than the significance threshold of 10 in a million. For non-carcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one. Therefore, chronic non-carcinogenic hazards are within acceptable limits. In addition, $PM_{2.5}$ annual concentrations and acrolein one-hour concentrations are below the BAAQMD significance thresholds. The results are summarized in Table 6; the calculations are provided in Appendix C.

Table 6
Risk Summary

Period	Cancer Risk	Chronic Hazard	$PM_{2.5}$	Acrolein - Acute Hazard
Construction - 2013-2014	4.0E-06	0.14	0.23 ug/m^3	0.47
BAAQMD Significance Threshold	10E-06	1.0	0.3 ug/m^3	1.0
Exceeds Significance Threshold?	No	No	No	No

For $PM_{2.5}$, the maximum annual concentration was calculated to be 0.23 ug/m^3, which is less than the significance threshold of 0.3 ug/m^3. For acrolein, the maximum one-hour concentration was estimated to be 1.165 ug/m^3. The acute REL for acrolein is 2.5 ug/m^3. Therefore, the calculated acute hazard index is 0.47, which is less than the significance threshold of 1.0. The results of the modeling indicate that occupants of the adjacent residential community would not be adversely impacted by DPM, $PM_{2.5}$ and acrolein emissions during the two-year construction period.

8.2 COMMUNITY RISK ASSESSMENT

Results of the community health risk assessment indicate that the incremental cancer risk for a resident at the project site, based on a 70-year, 24-hour outdoor exposure duration, is 9.4 x 10^{-6} (roughly 9.4 in a million), which is below the BAAQMD threshold of 1.0 x 10^{-5} (roughly 10 in a million). For non-carcinogenic effects, the hazard index identified for each toxicological endpoint totaled less than one. Therefore, emissions of TACs and DPM from Highway 24 would not significantly impact the health of persons residing at the project.

It should be noted that the standard exposure assumptions used in this assessment are very conservative. The cancer risk is based on a continuous 70-year, 24-hour exposure, whereas the average period of residency at any one location is approximately 9 years, and the high-end estimate is 30 years (USEPA, 1997). Additionally, studies show that the typical person spends most of their time (approximately 87%) indoors (USEPA, 1996), whereas the calculated cancer risk was based upon the assumption that residents would be exposed to outdoor concentrations. Indoor air concentrations are much less than outdoor air concentrations. Therefore, the incremental cancer risk is likely less than was calculated.

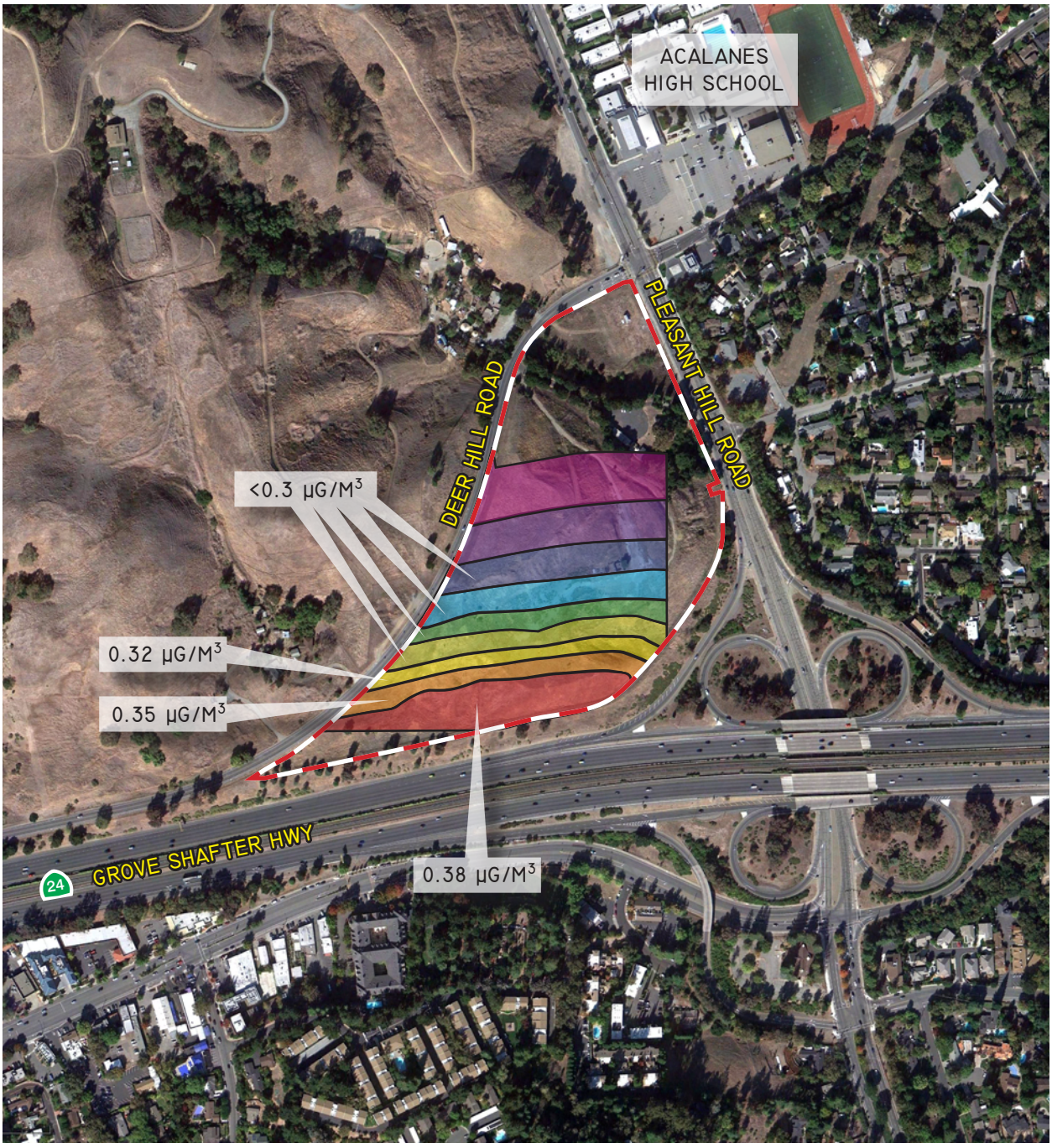
7. Conclusions

The annual average $PM_{2.5}$ concentrations for on-site receptors were also evaluated. The results from the ISCST3 computer model run indicated that the maximum $PM_{2.5}$ concentration to an on-site receptor would be 0.40 $\mu g/m^3$, which exceeds the BAAQMD significance threshold of 0.3 $\mu g/m^3$. As shown on Figure 3, the $PM_{2.5}$ contours that exceed 0.3 $\mu g/m^3$ extend approximately 300 feet onto the project site. Therefore, to minimize resident exposure to $PM_{2.5}$ concentrations, the following mitigation measure is recommended:

- The use of heating, ventilation, and air conditioning (HVAC) system filtration is effective in reducing indoor concentrations of $PM_{2.5}$. Commercially available filters with a minimum efficiency rating value (MERV) of 9 to 12 are recommended. These types of filters are capable of removing between 40% and 80% of $PM_{2.5}$ from air introduced to the HVAC system. Filters with a high MERV rating may be considered. Manufacturers of these types of filters recommend that they be replaced after two to three months of use. It should be noted that outside air entering a residence, through open doors or windows or as a result of inadequate pressure within the structure, would not be filtered.

The above mitigation measure is capable of reducing $PM_{2.5}$ concentrations by at least 40% (ASHRAE, 2007). Using the lowest proposed removal efficiency for the MERV filters, the maximum onsite exposure to $PM_{2.5}$ would be reduced to 0.24 $\mu g/m^3$, which is below the BAAQMD significance threshold. With the proposed mitigation measure, the impact of $PM_{2.5}$ concentrations from Highway 24 would be reduced to a less than significant level.

PM2.5 Contours



Site Boundary

0 XX
Scale (Feet)

Source: Google Earth Pro 2011

9. References

American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE). 2007. *Standard 52.2-2007. Method of testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.*

Bay Area Air Quality Management District (BAAQMD), 2010a. *California Environmental Quality Act Air Quality Guidelines.* Dated June 2010.

BAAQMD, 2010b. *Screening Tables for Air Toxics Evaluation During Construction. Version 1.0.* Dated May 2010.

BAAQMD, 2011. *Recommended Methods for Screening and Modeling Local Risks and Hazards.* Version 2.0. May 2011.

BAAQMD, 2012. Website access to screening tools: http://www.baaqmd.gov/Divisions/Planning-and-Research/CEQA-GUIDELINES/Tools-and-Methodology.aspx.

California Air Resources Board (CARB), 2000. *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles.*

California Department of Transportation (Caltrans), 2012. Online traffic counts for freeways and roadways within the State Highway System. Website: http://traffic-counts.dot.ca.gov/

Caltrans, 1996. *Transportation Project-Level Carbon Monoxide Protocol.* University of California Davis, Institute of Transportation Studies. UCD-ITS-RR-96-1.

Office of Environmental Health Hazard Assessment (OEHHA). 2010. *Toxicity Criteria Database*. http://oehha.ca.gov/risk/chemicaldb/index.asp. Accessed November 2, 2010.

OEHHA, 2003. *Air Toxic Hot Spots Program Risk Assessment Guidelines.*

South Coast Air Quality Management District (SCAQMD), 2011. *California Emissions Estimator Model User's Guide. Version 2011.1* Prepared for SCAQMD, Diamond Bar, CA by ENVIRON International Corporation, Emeryville, CA. Dated February 2011.

United States Environmental Protection Agency (USEPA), 2011. *Speciate Version 4.2.* Online database for EPA's total organic compound (TOC) and particulate matter (PM) speciation profiles of air pollution sources. Website: http://www.epa.gov/ttnchie1/software/speciate/

USEPA, 1993. Office of Mobile Sources. *Motor Vehicle-Related Air Toxics Study*. EPA-420-R-93-005.

USEPA, 1997. *Exposure Factors Handbook.* National Center for Environmental Assessment.

USEPA, 1996. *The National Human Activity Pattern Survey.* National Exposure Research Laboratory.

Appendix A.
CalEEMod Input Parameters and Output

Worksheet - CalEEMOD Maximum to Average Daily Construction Emissions

ONSITE

ANNUAL		ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Year		tons/yr	Mitigated w/ Tier 3 equipment								
2013											
Onsite Demolition	1	0.02	0.12	0.14	0	0	0.01	0.01	0	0.01	0.01
Onsite Demolition	2	0.02	0.12	0.14	0	0	0.01	0.01	0	0.01	0.01
Onsite Site Preparation		0.4	2.53	2.66	0	0.78	0.17	0.95	0.42	0.17	0.59
OnsiteGrading		0.4	2.59	2.92	0.01	0.29	0.18	0.47	0.12	0.18	0.3
Onsite Building		0.18	1.05	1.27	0		0.09	0.09		0.09	0.09
total Onsite 2013		*1.02*	*6.41*	*7.13*	*0.01*	*1.07*	*0.46*	*1.53*	*0.54*	*0.46*	*1*
2014											
Onsite Building		0.19	1.07	1.3	0		0.09	0.09		0.09	0.09
Onsite Paving		0.12	0.69	0.85	0		0.07	0.07		0.07	0.07
Onsite Coating		5.43	0.07	0.08	0		0.01	0.01		0.01	0.01
Total Onsite 2014		*5.74*	*1.83*	*2.23*	*0*	*0*	*0.17*	*0.17*	*0*	*0.17*	*0.17*
Total		6.76	8.24	9.36	0.01	1.07	0.63	1.7	0.54	0.63	1.17

approximation of days in 2013 v. 2014

Total Construction Days	437.8	2013	264
		2014	173.8

Average Daily Construction Emissions (lbs/day)

	ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2013	7.73	48.56	54.02	0.08	8.11	3.48	11.59	4.09	3.48	7.58
2014	66.05	21.06	25.66	0.00	0.00	1.96	1.96	0.00	1.96	1.96
Total	30.88	37.64	42.76	0.05	4.89	2.88	7.77	2.47	2.88	5.34
Threshold	54	54	NA	NA	BCM	82	NA	BCM	54	NA

Fugitive Dust Excluded from BAAQMD's daily thresholds. BAAQMD's Basic Control Measures (BCM) required.

OFFSITE

ANNUAL		ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
Year		tons/yr	Mitigated w/ Tier 3 equipment								
2013											
Offsite Demolition	1	0	0.01	0.01	0	0.00	0	0.00	0	0	0
Offsite Demolition	2	0	0.01	0.01	0	0.00	0	0.00	0	0	0
Offsite Site Preparation		1.79	19.7	10.86	0.03	0.67	0.67	1.34	0.11	0.67	0.78
Offsite Grading		0.01	0.01	0.12	0	0.02	0	0.02	0	0	0
Offsite Building		0.17	0.54	1.63	0	0.21	0.02	0.23	0.01	0.02	0.03
total Offsite 2013		1.97	20.27	12.63	0.03	0.90	0.69	1.59	0.12	0.69	0.81
2014											
Offsite Building		0.16	0.51	1.52	0	0.22	0.02	0.24	0.01	0.02	0.03
Offsite Paving		0.01	0.01	0.07	0	0.01	0	0.01	0	0	0
Offsite Coating		0.02	0.02	0.21	0	0.03	0	0.03	0	0	0
Total Offsite 2014		0.19	0.54	1.8	0	0.26	0.02	0.28	0.01	0.02	0.03
Total		2.16	20.81	14.43	0.03	1.16	0.71	1.87	0.13	0.71	0.84

Bug in CalEEmod calculates PM10 fugitive dust from haul as if all trucks occurred on 1 day.

* For reporting purposes Fugitive PM10 is corrected for hauling error.

Average Daily Construction Emissions (lbs/day)

	ROG	NOx	CO	SO2	Fugitive PM10*	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total
2013	14.92	153.56	95.68	0.23	6.81	5.23	12.04	0.91	5.23	6.14
2014	2.19	6.21	20.71	0.00	2.99	0.23	3.22	0.12	0.23	0.35
Total	9.87	95.07	65.92	0.14	5.29	3.24	8.54	0.59	3.24	3.84
Threshold	54	54	NA	NA	BCM	82	NA	BCM	54	NA

Appendix B.
ISCST3 Model Output Files

ISCST3 Output - Construction 2013

```
** BREEZE ISC

** Trinity Consultants

** VERSION  7.4


CO STARTING

CO TITLEONE  Terraces at Lafayette

CO TITLETWO  Construction Health Risk Assessment

CO MODELOPT  DFAULT  CONC  URBAN

CO RUNORNOT  RUN

CO AVERTIME  1  ANNUAL

CO POLLUTID  OTHER

CO TERRHGTS  ELEV

CO FLAGPOLE  1.8

CO FINISHED
```



```
                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - -

**Intermediate Terrain Processing is Selected

**Model Is Setup For Calculation of Average CONCentration Values.

  --  SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION.  DDPLETE =  F
**Model Uses NO WET DEPLETION.  WDPLETE =  F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:
           1. Final Plume Rise.
           2. Stack-tip Downwash.
           3. Buoyancy-induced Dispersion.
           4. Use Calms Processing Routine.
           5. Not Use Missing Data Processing Routine.
           6. Default Wind Profile Exponents.
           7. Default Vertical Potential Temperature Gradients.
           8. "Upper Bound" Values for Supersquat Buildings.
           9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates ANNUAL Averages

**This Run Includes:    45 Source(s);      4 Source Group(s); and     295 Receptor(s)

**The Model Assumes A Pollutant Type of:  OTHER

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
```

Model Outputs Tables of ANNUAL Averages by Receptor
Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Anem. Hgt. (m) = 10.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor =
0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 1.3 MB of RAM.

**Input Runstream File: ISCST3.INP

**Output Print File: ISCST3.OUT

CONC URBAN ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM ANNUAL (1 YRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ONDPM	1ST HIGHEST VALUE IS	0.23483 AT (579332.88, 4195225.00, 102.08, 1.80)		DC	NA
	2ND HIGHEST VALUE IS	0.22411 AT (579326.38, 4195244.50, 100.10, 1.80)		DC	NA
	3RD HIGHEST VALUE IS	0.21954 AT (579357.25, 4195179.50, 101.60, 1.80)		DC	NA
	4TH HIGHEST VALUE IS	0.20569 AT (579373.88, 4195134.00, 100.20, 1.80)		DC	NA
	5TH HIGHEST VALUE IS	0.19574 AT (579357.25, 4195201.00, 101.10, 1.80)		DC	NA
	6TH HIGHEST VALUE IS	0.19351 AT (579326.38, 4195266.00, 99.90, 1.80)		DC	NA
	7TH HIGHEST VALUE IS	0.19326 AT (579295.50, 4195309.50, 100.90, 1.80)		DC	NA
	8TH HIGHEST VALUE IS	0.18853 AT (579291.81, 4195316.00, 101.15, 1.80)		DC	NA
	9TH HIGHEST VALUE IS	0.17520 AT (579357.25, 4195222.50, 100.10, 1.80)		DC	NA
	10TH HIGHEST VALUE IS	0.16811 AT (579388.12, 4195114.50, 96.60, 1.80)		DC	NA
OFFDPM	1ST HIGHEST VALUE IS	0.01668 AT (579420.69, 4195030.00, 94.25, 1.80)		DC	NA
	2ND HIGHEST VALUE IS	0.01661 AT (579419.06, 4195071.00, 94.20, 1.80)		DC	NA
	3RD HIGHEST VALUE IS	0.01630 AT (579449.94, 4195028.00, 91.60, 1.80)		DC	NA
	4TH HIGHEST VALUE IS	0.01620 AT (579357.25, 4195244.50, 98.80, 1.80)		DC	NA
	5TH HIGHEST VALUE IS	0.01607 AT (579419.06, 4195114.50, 93.50, 1.80)		DC	NA
	6TH HIGHEST VALUE IS	0.01607 AT (579449.94, 4195049.50, 91.40, 1.80)		DC	NA
	7TH HIGHEST VALUE IS	0.01598 AT (579388.12, 4195136.00, 97.20, 1.80)		DC	NA
	8TH HIGHEST VALUE IS	0.01557 AT (579419.06, 4195136.00, 93.70, 1.80)		DC	NA
	9TH HIGHEST VALUE IS	0.01546 AT (579449.94, 4195071.00, 91.00, 1.80)		DC	NA
	10TH HIGHEST VALUE IS	0.01528 AT (579388.12, 4195201.00, 97.60, 1.80)		DC	NA
OFFACRO	1ST HIGHEST VALUE IS	0.00023 AT (579388.12, 4195201.00, 97.60, 1.80)		DC	NA
	2ND HIGHEST VALUE IS	0.00023 AT (579419.06, 4195049.50, 94.40, 1.80)		DC	NA
	3RD HIGHEST VALUE IS	0.00023 AT (579388.12, 4195158.00, 98.40, 1.80)		DC	NA
	4TH HIGHEST VALUE IS	0.00023 AT (579357.25, 4195201.00, 101.10, 1.80)		DC	NA
	5TH HIGHEST VALUE IS	0.00022 AT (579419.06, 4195136.00, 93.70, 1.80)		DC	NA
	6TH HIGHEST VALUE IS	0.00022 AT (579415.00, 4195042.50, 94.86, 1.80)		DC	NA
	7TH HIGHEST VALUE IS	0.00022 AT (579388.12, 4195179.50, 98.50, 1.80)		DC	NA
	8TH HIGHEST VALUE IS	0.00022 AT (579357.25, 4195244.50, 98.80, 1.80)		DC	NA
	9TH HIGHEST VALUE IS	0.00022 AT (579449.94, 4195028.00, 91.60, 1.80)		DC	NA
	10TH HIGHEST VALUE IS	0.00022 AT (579449.94, 4195049.50, 91.40, 1.80)		DC	NA

CONC URBAN ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM ANNUAL (1 YRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ONACRO	1ST HIGHEST VALUE IS	0.00233 AT (579332.88, 4195225.00, 102.08, 1.80)		DC	NA
	2ND HIGHEST VALUE IS	0.00222 AT (579326.38, 4195244.50, 100.10, 1.80)		DC	NA
	3RD HIGHEST VALUE IS	0.00219 AT (579357.25, 4195179.50, 101.60, 1.80)		DC	NA
	4TH HIGHEST VALUE IS	0.00207 AT (579373.88, 4195134.00, 100.20, 1.80)		DC	NA
	5TH HIGHEST VALUE IS	0.00194 AT (579357.25, 4195201.00, 101.10, 1.80)		DC	NA
	6TH HIGHEST VALUE IS	0.00191 AT (579326.38, 4195266.00, 99.90, 1.80)		DC	NA
	7TH HIGHEST VALUE IS	0.00190 AT (579295.50, 4195309.50, 100.90, 1.80)		DC	NA
	8TH HIGHEST VALUE IS	0.00185 AT (579291.81, 4195316.00, 101.15, 1.80)		DC	NA
	9TH HIGHEST VALUE IS	0.00173 AT (579357.25, 4195222.50, 100.10, 1.80)		DC	NA
	10TH HIGHEST VALUE IS	0.00169 AT (579388.12, 4195114.50, 96.60, 1.80)		DC	NA

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP	NETWORK ID		AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ONDPM	HIGH	1ST HIGH VALUE IS	13.97390	ON 05012008: AT (579332.88, 4195225.00, 102.08, 1.80)		DC	NA
OFFDPM	HIGH	1ST HIGH VALUE IS	0.95291	ON 05031508: AT (579326.38, 4195244.50, 100.10, 1.80)		DC	NA
OFFACRO	HIGH	1ST HIGH VALUE IS	0.01341	ON 05031508: AT (579295.50, 4195309.50, 100.90, 1.80)		DC	NA
ONACRO	HIGH	1ST HIGH VALUE IS	0.13619	ON 05012008: AT (579332.88, 4195225.00, 102.08, 1.80)		DC	NA

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

*** Message Summary : ISCST3 Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 9 Warning Message(s)
A Total of 3 Informational Message(s)

A Total of 3 Calm Hours Identified

ISCST3 Output - Construction 2014

CONC URBAN ELEV FLGPOL DFAULT

*** MODEL SETUP OPTIONS SUMMARY ***

**Intermediate Terrain Processing is Selected

**Model Is Setup For Calculation of Average CONCentration Values.

-- SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION. DDPLETE = F
**Model Uses NO WET DEPLETION. WDPLETE = F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:
1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates 1 Short Term Average(s) of: 1-HR
and Calculates ANNUAL Averages

**This Run Includes: 45 Source(s); 4 Source Group(s); and 293 Receptor(s)

**The Model Assumes A Pollutant Type of: OTHER

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
Model Outputs Tables of ANNUAL Averages by Receptor
Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Anem. Hgt. (m) = 10.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor =
0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 1.3 MB of RAM.

**Input Runstream File: ISCST3.INP

**Output Print File: ISCST3.OUT

CONC URBAN ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM ANNUAL (1 YRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ONDPM	1ST HIGHEST VALUE IS	0.13248 AT (579332.88, 4195225.00, 102.08, 1.80)	DC	NA
	2ND HIGHEST VALUE IS	0.12643 AT (579326.38, 4195244.50, 100.10, 1.80)	DC	NA
	3RD HIGHEST VALUE IS	0.12385 AT (579357.25, 4195179.50, 101.60, 1.80)	DC	NA
	4TH HIGHEST VALUE IS	0.11604 AT (579373.88, 4195134.00, 100.20, 1.80)	DC	NA
	5TH HIGHEST VALUE IS	0.11043 AT (579357.25, 4195201.00, 101.10, 1.80)	DC	NA
	6TH HIGHEST VALUE IS	0.10917 AT (579326.38, 4195266.00, 99.90, 1.80)	DC	NA
	7TH HIGHEST VALUE IS	0.10902 AT (579295.50, 4195309.50, 100.90, 1.80)	DC	NA
	8TH HIGHEST VALUE IS	0.10636 AT (579291.81, 4195316.00, 101.15, 1.80)	DC	NA
	9TH HIGHEST VALUE IS	0.09884 AT (579357.25, 4195222.50, 100.10, 1.80)	DC	NA
	10TH HIGHEST VALUE IS	0.09484 AT (579388.12, 4195114.50, 96.60, 1.80)	DC	NA
OFFDPM	1ST HIGHEST VALUE IS	0.00079 AT (579388.12, 4195136.00, 97.20, 1.80)	DC	NA
	2ND HIGHEST VALUE IS	0.00078 AT (579419.06, 4195136.00, 93.70, 1.80)	DC	NA
	3RD HIGHEST VALUE IS	0.00076 AT (579388.12, 4195201.00, 97.60, 1.80)	DC	NA
	4TH HIGHEST VALUE IS	0.00075 AT (579388.12, 4195222.50, 96.50, 1.80)	DC	NA
	5TH HIGHEST VALUE IS	0.00075 AT (579357.25, 4195201.00, 101.10, 1.80)	DC	NA
	6TH HIGHEST VALUE IS	0.00075 AT (579419.06, 4195093.00, 93.60, 1.80)	DC	NA
	7TH HIGHEST VALUE IS	0.00075 AT (579449.94, 4195028.00, 91.60, 1.80)	DC	NA
	8TH HIGHEST VALUE IS	0.00075 AT (579357.25, 4195244.50, 98.80, 1.80)	DC	NA
	9TH HIGHEST VALUE IS	0.00074 AT (579357.25, 4195287.50, 97.40, 1.80)	DC	NA
	10TH HIGHEST VALUE IS	0.00074 AT (579419.06, 4195158.00, 94.30, 1.80)	DC	NA
OFFACRO	1ST HIGHEST VALUE IS	0.00003 AT (579388.12, 4195201.00, 97.60, 1.80)	DC	NA
	2ND HIGHEST VALUE IS	0.00003 AT (579388.12, 4195114.50, 96.60, 1.80)	DC	NA
	3RD HIGHEST VALUE IS	0.00003 AT (579388.12, 4195158.00, 98.40, 1.80)	DC	NA
	4TH HIGHEST VALUE IS	0.00003 AT (579357.25, 4195222.50, 100.10, 1.80)	DC	NA
	5TH HIGHEST VALUE IS	0.00003 AT (579357.25, 4195266.00, 98.10, 1.80)	DC	NA
	6TH HIGHEST VALUE IS	0.00003 AT (579419.06, 4195114.50, 93.50, 1.80)	DC	NA
	7TH HIGHEST VALUE IS	0.00003 AT (579419.06, 4195136.00, 93.70, 1.80)	DC	NA
	8TH HIGHEST VALUE IS	0.00003 AT (579419.06, 4195071.00, 94.20, 1.80)	DC	NA
	9TH HIGHEST VALUE IS	0.00003 AT (579388.12, 4195222.50, 96.50, 1.80)	DC	NA
	10TH HIGHEST VALUE IS	0.00003 AT (579449.94, 4195049.50, 91.40, 1.80)	DC	NA

*** THE SUMMARY OF MAXIMUM ANNUAL (1 YRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ONACRO	1ST HIGHEST VALUE IS	0.01993 AT (579332.88, 4195225.00, 102.08, 1.80)	DC	NA
	2ND HIGHEST VALUE IS	0.01898 AT (579326.38, 4195244.50, 100.10, 1.80)	DC	NA
	3RD HIGHEST VALUE IS	0.01870 AT (579357.25, 4195179.50, 101.60, 1.80)	DC	NA
	4TH HIGHEST VALUE IS	0.01768 AT (579373.88, 4195134.00, 100.20, 1.80)	DC	NA
	5TH HIGHEST VALUE IS	0.01661 AT (579357.25, 4195201.00, 101.10, 1.80)	DC	NA
	6TH HIGHEST VALUE IS	0.01634 AT (579326.38, 4195266.00, 99.90, 1.80)	DC	NA
	7TH HIGHEST VALUE IS	0.01622 AT (579295.50, 4195309.50, 100.90, 1.80)	DC	NA
	8TH HIGHEST VALUE IS	0.01580 AT (579291.81, 4195316.00, 101.15, 1.80)	DC	NA
	9TH HIGHEST VALUE IS	0.01483 AT (579357.25, 4195222.50, 100.10, 1.80)	DC	NA
	10TH HIGHEST VALUE IS	0.01444 AT (579388.12, 4195114.50, 96.60, 1.80)	DC	NA

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

CONC   URBAN ELEV FLGPOL DFAULT

*** Message Summary : ISCST3 Model Execution ***

 --------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   1 Warning Message(s)
A Total of   3 Informational Message(s)

A Total of   3 Calm Hours Identified

   ******** FATAL ERROR MESSAGES ********
              *** NONE ***

   ********   WARNING MESSAGES   ********
RE W282   121 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in MCB#9

   ****
   *** ISCST3 Finishes Successfully ***
   ****

ISCST3 OUTPUT - OPERATION - TOG

```
************************************

♀ *** ISCST3 - VERSION 02035 ***    ***  Terraces at Lafayette                                          ***
02/20/12
                                   ***  Community Health Risk Assessment - TOG                          ***
11:11:37
**MODELOPTs:
PAGE   1
CONC                    URBAN ELEV  FLGPOL DFAULT


                                           ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - -

**Intermediate Terrain Processing is Selected

**Model Is Setup For Calculation of Average CONCentration Values.

  --  SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION.  DDPLETE =  F
**Model Uses NO WET DEPLETION.  WDPLETE =  F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:
           1. Final Plume Rise.
           2. Stack-tip Downwash.
           3. Buoyancy-induced Dispersion.
           4. Use Calms Processing Routine.
           5. Not Use Missing Data Processing Routine.
           6. Default Wind Profile Exponents.
           7. Default Vertical Potential Temperature Gradients.
           8. "Upper Bound" Values for Supersquat Buildings.
           9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates ANNUAL Averages Only

**This Run Includes:    16 Source(s);      1 Source Group(s); and      40 Receptor(s)

**The Model Assumes A Pollutant Type of:  OTHER

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Anem. Hgt. (m) =    10.00 ;    Decay Coef. =    0.000     ;    Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =   0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =     1.2 MB of RAM.

**Input Runstream File:          ISCST3.INP
**Output Print File:             ISCST3.OUT
♀ *** ISCST3 - VERSION 02035 ***    ***  Terraces at Lafayette                                          ***
02/20/12
                                   ***  Community Health Risk Assessment - TOG                          ***
11:11:37
**MODELOPTs:
PAGE   2
CONC                    URBAN ELEV  FLGPOL DFAULT



                                                    *** VOLUME SOURCE DATA ***

             NUMBER EMISSION RATE                       BASE    RELEASE     INIT.    INIT.   EMISSION RATE
   SOURCE     PART.  (GRAMS/SEC)     X         Y        ELEV.    HEIGHT      SY       SZ      SCALAR VARY
     ID       CATS.                (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)        BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

-

RWJ0A002	0	0.25000E-03	578690.5	4194733.0	97.8	0.46	32.60	4.24
RWJ0A003	0	0.25000E-03	578759.3	4194746.0	99.1	0.46	32.60	4.24
RWJ0A004	0	0.25000E-03	578828.1	4194759.5	98.7	0.46	32.60	4.24
RWJ0A005	0	0.25000E-03	578896.9	4194773.0	98.7	0.46	32.60	4.24
RWJ0A006	0	0.25000E-03	578965.8	4194786.5	100.9	0.46	32.60	4.24
RWJ0A007	0	0.25000E-03	579034.7	4194798.5	100.8	0.46	32.60	4.24
RWJ0A008	0	0.25000E-03	579104.1	4194809.0	103.7	0.46	32.60	4.24
RWJ0A009	0	0.25000E-03	579173.4	4194819.5	104.3	0.46	32.60	4.24
RWJ0A00A	0	0.25000E-03	579242.7	4194830.0	105.9	0.46	32.60	4.24
RWJ0A00B	0	0.25000E-03	579312.0	4194840.5	106.3	0.46	32.60	4.24
RWJ0A00C	0	0.25000E-03	579382.1	4194843.5	97.6	0.46	32.60	4.24
RWJ0A00D	0	0.25000E-03	579452.1	4194846.5	92.7	0.46	32.60	4.24
RWJ0A00E	0	0.25000E-03	579522.1	4194849.0	90.2	0.46	32.60	4.24
RWJ0A00F	0	0.25000E-03	579592.2	4194852.0	93.1	0.46	32.60	4.24
RWJ0A00G	0	0.25000E-03	579662.2	4194855.5	93.2	0.46	32.60	4.24
RWJ0A00H	0	0.25000E-03	579732.1	4194861.0	94.0	0.46	32.60	4.24

CONC URBAN ELEV FLGPOL DFAULT

*** SOURCE IDs DEFINING SOURCE GROUPS ***

GROUP ID SOURCE IDs

TOG RWJ0A002, RWJ0A003, RWJ0A004, RWJ0A005, RWJ0A006, RWJ0A007, RWJ0A008, RWJ0A009, RWJ0A00A, RWJ0A00B, RWJ0A00C, RWJ0A00D,
RWJ0A00E, RWJ0A00F, RWJ0A00G, RWJ0A00H,

CONC URBAN ELEV FLGPOL DFAULT

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZFLAG)
(METERS)

(579083.9, 4194909.0, 114.9, 1.8); (579154.4, 4194910.0, 119.3, 1.8);

(579209.2, 4194921.0, 124.7, 1.8); (579249.4, 4194938.5, 125.1, 1.8);

(579293.5, 4194988.5, 115.3, 1.8); (579309.1, 4195040.5, 128.2, 1.8);

(579239.6, 4195069.0, 139.9, 1.8); (579233.7, 4195024.5, 131.9, 1.8);

(579197.5, 4194973.0, 130.0, 1.8); (579296.4, 4195133.5, 121.4, 1.8);

(579257.2, 4195249.0, 103.2, 1.8); (579176.9, 4195135.5, 141.6, 1.8);

(579168.1, 4195082.5, 150.7, 1.8); (579150.5, 4195032.5, 142.0, 1.8);

(578988.7, 4194869.5, 114.9, 1.8); (579046.8, 4194915.0, 114.0, 1.8);

(579061.9, 4194936.5, 119.1, 1.8); (579099.8, 4194991.0, 134.0, 1.8);

(579115.7, 4195020.5, 140.8, 1.8); (579138.5, 4195063.5, 149.5, 1.8);

(579151.0, 4195113.5, 151.4, 1.8); (579160.4, 4195151.0, 142.1, 1.8);

(579181.7, 4195208.5, 121.6, 1.8); (579186.3, 4195221.0, 117.1, 1.8);

(579232.8, 4195267.5, 104.8, 1.8); (579253.3, 4195271.5, 103.1, 1.8);

(579257.3, 4195272.5, 102.7, 1.8); (579280.5, 4195200.0, 107.4, 1.8);

(579288.0, 4195181.5, 110.7, 1.8); (579314.1, 4195117.5, 121.3, 1.8);

(579320.7, 4195087.5, 125.3, 1.8); (579328.3, 4195053.0, 124.5, 1.8);

```
    ( 579325.7, 4195010.5,     120.3,       1.8);          ( 579313.6, 4194992.0,     114.9,       1.8);

    ( 579298.6, 4194969.0,     112.9,       1.8);          ( 579267.6, 4194917.5,     123.8,       1.8);

    ( 579255.5, 4194915.0,     123.8,       1.8);          ( 579157.0, 4194898.0,     117.2,       1.8);

    ( 579058.5, 4194880.5,     108.9,       1.8);          ( 578987.4, 4194868.5,     114.9,       1.8);
♀ *** ISCST3 - VERSION 02035 ***    ***  Terraces at Lafayette                                          ***
02/20/12
                                   ***  Community Health Risk Assessment - TOG                          ***
11:11:37
**MODELOPTs:
PAGE   5
CONC                    URBAN ELEV  FLGPOL DFAULT


                                           *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                              (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1

               NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.


                                     *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                           (METERS/SEC)

                                                1.54,   3.09,   5.14,   8.23,  10.80,

                                                    *** WIND PROFILE EXPONENTS ***

               STABILITY                                     WIND SPEED CATEGORY
               CATEGORY        1               2               3               4               5               6
                  A          .15000E+00     .15000E+00     .15000E+00     .15000E+00     .15000E+00     .15000E+00
                  B          .15000E+00     .15000E+00     .15000E+00     .15000E+00     .15000E+00     .15000E+00
                  C          .20000E+00     .20000E+00     .20000E+00     .20000E+00     .20000E+00     .20000E+00
                  D          .25000E+00     .25000E+00     .25000E+00     .25000E+00     .25000E+00     .25000E+00
                  E          .30000E+00     .30000E+00     .30000E+00     .30000E+00     .30000E+00     .30000E+00
                  F          .30000E+00     .30000E+00     .30000E+00     .30000E+00     .30000E+00     .30000E+00

                                           *** VERTICAL POTENTIAL TEMPERATURE GRADIENTS ***
                                                    (DEGREES KELVIN PER METER)

               STABILITY                                     WIND SPEED CATEGORY
               CATEGORY        1               2               3               4               5               6
                  A          .00000E+00     .00000E+00     .00000E+00     .00000E+00     .00000E+00     .00000E+00
                  B          .00000E+00     .00000E+00     .00000E+00     .00000E+00     .00000E+00     .00000E+00
                  C          .00000E+00     .00000E+00     .00000E+00     .00000E+00     .00000E+00     .00000E+00
                  D          .00000E+00     .00000E+00     .00000E+00     .00000E+00     .00000E+00     .00000E+00
                  E          .20000E-01     .20000E-01     .20000E-01     .20000E-01     .20000E-01     .20000E-01
                  F          .35000E-01     .35000E-01     .35000E-01     .35000E-01     .35000E-01     .35000E-01
♀ *** ISCST3 - VERSION 02035 ***    ***  Terraces at Lafayette                                          ***
02/20/12
                                   ***  Community Health Risk Assessment - TOG                          ***
11:11:37
**MODELOPTs:
PAGE   6
CONC                    URBAN ELEV  FLGPOL DFAULT


                     *** THE FIRST  24 HOURS OF METEOROLOGICAL DATA ***

     FILE:   C:\Users\CFITZG~1\DOCUME~1\METDAT~1\BAAQMD\concord05300.asc
     FORMAT: (4I2,2F9.4,F6.1,I2,2F7.1,f9.4,f10.1,f8.4,i4,f7.2)
     SURFACE STATION NO.:   2903                   UPPER AIR STATION NO.:   2903
                    NAME: UNKNOWN                                    NAME: UNKNOWN
                    YEAR:   2005                                     YEAR:   2005

              FLOW   SPEED  TEMP  STAB  MIXING HEIGHT (M)  USTAR  M-O LENGTH   Z-0 IPCODE PRATE
YR MN DY HR VECTOR  (M/S)   (K)  CLASS   RURAL   URBAN    (M/S)     (M)       (M)       (mm/HR)
```

05 01 01 01	2.7	1.83	280.3	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 02	24.7	1.34	279.8	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 03	346.1	1.56	279.9	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 04	0.1	1.70	279.7	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 05	357.2	2.19	279.7	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 06	343.8	1.56	279.4	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 07	29.7	1.12	278.3	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 08	66.2	1.00	277.8	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 09	42.6	1.00	278.9	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 10	10.1	2.10	282.4	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 11	339.6	3.53	283.4	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 12	39.0	2.95	283.9	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 13	30.5	3.13	284.8	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 14	50.1	2.37	284.5	1	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 15	9.2	3.58	284.4	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 16	12.5	2.68	284.0	2	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 17	332.7	2.15	282.2	3	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 18	350.6	1.61	282.0	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 19	10.3	1.83	281.4	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 20	341.3	1.92	281.1	4	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 21	16.1	1.30	280.6	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 22	13.1	1.48	280.2	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 23	61.8	1.03	279.4	6	300.0	300.0	0.0000	0.0	0.0000	0	0.00
05 01 01 24	357.9	1.92	280.8	5	300.0	300.0	0.0000	0.0	0.0000	0	0.00

*** NOTES: STABILITY CLASS 1=A, 2=B, 3=C, 4=D, 5=E AND 6=F.
FLOW VECTOR IS DIRECTION TOWARD WHICH WIND IS BLOWING.

CONC URBAN ELEV FLGPOL DFAULT

*** THE ANNUAL (1 YRS) AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: TOG ***
INCLUDING SOURCE(S): RWJ0A002, RWJ0A003, RWJ0A004, RWJ0A005, RWJ0A006, RWJ0A007, RWJ0A008,
RWJ0A009, RWJ0A00A, RWJ0A00B, RWJ0A00C, RWJ0A00D, RWJ0A00E, RWJ0A00F, RWJ0A00G, RWJ0A00H,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
579083.88	4194909.00	0.08311	579154.38	4194910.00	0.08752
579209.19	4194921.00	0.08667	579249.38	4194938.50	0.08173
579293.50	4194988.50	0.06396	579309.12	4195040.50	0.05079
579239.62	4195069.00	0.04417	579233.69	4195024.50	0.05223
579197.50	4194973.00	0.06443	579296.38	4195133.50	0.03660
579257.19	4195249.00	0.02680	579176.88	4195135.50	0.03470
579168.12	4195082.50	0.04055	579150.50	4195032.50	0.04786
578988.69	4194869.50	0.08558	579046.81	4194915.00	0.07725
579061.88	4194936.50	0.06933	579099.81	4194991.00	0.05470
579115.69	4195020.50	0.04892	579138.50	4195063.50	0.04242
579151.00	4195113.50	0.03646	579160.38	4195151.00	0.03297
579181.69	4195208.50	0.02879	579186.31	4195221.00	0.02800
579232.81	4195267.50	0.02559	579253.31	4195271.50	0.02546
579257.31	4195272.50	0.02541	579280.50	4195200.00	0.03037
579288.00	4195181.50	0.03191	579314.12	4195117.50	0.03862
579320.69	4195087.50	0.04272	579328.31	4195053.00	0.04861

579325.69	4195010.50	0.05826	579313.62	4194992.00	0.06347
579298.62	4194969.00	0.07121	579267.62	4194917.50	0.08823
579255.50	4194915.00	0.08916	579157.00	4194898.00	0.08716
579058.50	4194880.50	0.08606	578987.38	4194868.50	0.08529

CONC URBAN ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM ANNUAL (1 YRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
TOG	1ST HIGHEST VALUE IS	0.08916 AT (579255.50, 4194915.00, 123.83, 1.80)	DC	NA
	2ND HIGHEST VALUE IS	0.08823 AT (579267.62, 4194917.50, 123.85, 1.80)	DC	NA
	3RD HIGHEST VALUE IS	0.08752 AT (579154.38, 4194910.00, 119.27, 1.80)	DC	NA
	4TH HIGHEST VALUE IS	0.08716 AT (579157.00, 4194898.00, 117.21, 1.80)	DC	NA
	5TH HIGHEST VALUE IS	0.08667 AT (579209.19, 4194921.00, 124.74, 1.80)	DC	NA
	6TH HIGHEST VALUE IS	0.08606 AT (579058.50, 4194880.50, 108.93, 1.80)	DC	NA
	7TH HIGHEST VALUE IS	0.08558 AT (578988.69, 4194869.50, 114.92, 1.80)	DC	NA
	8TH HIGHEST VALUE IS	0.08529 AT (578987.38, 4194868.50, 114.93, 1.80)	DC	NA
	9TH HIGHEST VALUE IS	0.08311 AT (579083.88, 4194909.00, 114.86, 1.80)	DC	NA
	10TH HIGHEST VALUE IS	0.08173 AT (579249.38, 4194938.50, 125.07, 1.80)	DC	NA

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

CONC URBAN ELEV FLGPOL DFAULT

*** Message Summary : ISCST3 Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)
A Total of 3 Informational Message(s)

A Total of 3 Calm Hours Identified

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
RE W282 114 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in MCB#9
OU W565 125 PERPLT:Possible Conflict With Dynamically Allocated FUNIT PLOTFILE

****
*** ISCST3 Finishes Successfully ***
****

ISCST3 Output - Operation - DPM

```
** BREEZE ISC

** Trinity Consultants

** VERSION  7.4



♀ *** ISCST3 - VERSION 02035 ***    ***  Terraces at Lafayette                                    ***
       02/14/12
                                    ***  Construction Health Risk Assessment - DPM                 ***
      17:23:01
**MODELOPTs:
      PAGE   1
CONC                    URBAN ELEV  FLGPOL DFAULT


                                         ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - -

**Intermediate Terrain Processing is Selected

**Model Is Setup For Calculation of Average CONCentration Values.

  --  SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION.  DDPLETE =  F
**Model Uses NO WET DEPLETION.  WDPLETE =  F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:
           1. Final Plume Rise.
           2. Stack-tip Downwash.
           3. Buoyancy-induced Dispersion.
           4. Use Calms Processing Routine.
           5. Not Use Missing Data Processing Routine.
           6. Default Wind Profile Exponents.
           7. Default Vertical Potential Temperature Gradients.
           8. "Upper Bound" Values for Supersquat Buildings.
           9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates ANNUAL Averages Only

**This Run Includes:    16 Source(s);      1 Source Group(s); and      51 Receptor(s)

**The Model Assumes A Pollutant Type of:  OTHER

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Anem. Hgt. (m) =    10.00 ;    Decay Coef. =    0.000     ;    Rot. Angle =     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =
0.10000E+07
                 Output Units   = MICROGRAMS/M**3

**Approximate Storage Requirements of Model =     1.2 MB of RAM.

**Input Runstream File:          ISCST3.INP

**Output Print File:             ISCST3.OUT

♀ *** ISCST3 - VERSION 02035 ***    ***  Terraces at Lafayette                                    ***
       02/14/12
                                    ***  Construction Health Risk Assessment - DPM                 ***
      17:23:01
**MODELOPTs:
      PAGE   2
CONC                    URBAN ELEV  FLGPOL DFAULT
```

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	EMISSION RATE SCALAR VARY BY
RWJ0A002	0	0.28200E-04	578690.5	4194733.0	97.8	4.18	32.60	4.24	
RWJ0A003	0	0.28200E-04	578759.3	4194746.0	99.1	4.18	32.60	4.24	
RWJ0A004	0	0.28200E-04	578828.1	4194759.5	98.7	4.18	32.60	4.24	
RWJ0A005	0	0.28200E-04	578896.9	4194773.0	98.7	4.18	32.60	4.24	
RWJ0A006	0	0.28200E-04	578965.8	4194786.5	100.9	4.18	32.60	4.24	
RWJ0A007	0	0.28200E-04	579034.7	4194798.5	100.8	4.18	32.60	4.24	
RWJ0A008	0	0.28200E-04	579104.1	4194809.0	103.7	4.18	32.60	4.24	
RWJ0A009	0	0.28200E-04	579173.4	4194819.5	104.3	4.18	32.60	4.24	
RWJ0A00A	0	0.28200E-04	579242.7	4194830.0	105.9	4.18	32.60	4.24	
RWJ0A00B	0	0.28200E-04	579312.0	4194840.5	106.3	4.18	32.60	4.24	
RWJ0A00C	0	0.28200E-04	579382.1	4194843.5	97.6	4.18	32.60	4.24	
RWJ0A00D	0	0.28200E-04	579452.1	4194846.5	92.7	4.18	32.60	4.24	
RWJ0A00E	0	0.28200E-04	579522.1	4194849.0	90.2	4.18	32.60	4.24	
RWJ0A00F	0	0.28200E-04	579592.2	4194852.0	93.1	4.18	32.60	4.24	
RWJ0A00G	0	0.28200E-04	579662.2	4194855.5	93.2	4.18	32.60	4.24	
RWJ0A00H	0	0.28200E-04	579732.1	4194861.0	94.0	4.18	32.60	4.24	

♀ *** ISCST3 - VERSION 02035 *** *** Terraces at Lafayette ***
02/14/12
*** Construction Health Risk Assessment - DPM ***
17:23:01
**MODELOPTs:
PAGE 3
CONC URBAN ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM ANNUAL (1 YRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID		AVERAGE CONC		RECEPTOR (XR, YR, ZELEV, ZFLAG)		OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.01006	AT (579255.50, 4194915.00, 123.83, 1.80)		DC	NA
	2ND HIGHEST VALUE IS	0.01006	AT (579255.50, 4194915.00, 123.83, 1.80)		DC	NA
	3RD HIGHEST VALUE IS	0.00995	AT (579267.62, 4194917.50, 123.85, 1.80)		DC	NA
	4TH HIGHEST VALUE IS	0.00987	AT (579154.38, 4194910.00, 119.27, 1.80)		DC	NA
	5TH HIGHEST VALUE IS	0.00983	AT (579157.00, 4194898.00, 117.21, 1.80)		DC	NA
	6TH HIGHEST VALUE IS	0.00983	AT (579157.00, 4194898.00, 117.21, 1.80)		DC	NA
	7TH HIGHEST VALUE IS	0.00978	AT (579209.19, 4194921.00, 124.74, 1.80)		DC	NA
	8TH HIGHEST VALUE IS	0.00971	AT (579058.50, 4194880.50, 108.93, 1.80)		DC	NA
	9TH HIGHEST VALUE IS	0.00971	AT (579058.50, 4194880.50, 108.93, 1.80)		DC	NA
	10TH HIGHEST VALUE IS	0.00965	AT (578988.69, 4194869.50, 114.92, 1.80)		DC	NA

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
BD = BOUNDARY

♀ *** ISCST3 - VERSION 02035 *** *** Terraces at Lafayette ***
02/14/12
*** Construction Health Risk Assessment - DPM ***
17:23:01
**MODELOPTs:
PAGE 9
CONC URBAN ELEV FLGPOL DFAULT

*** Message Summary : ISCST3 Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 2 Warning Message(s)

ISCST3 OUTPUT - OPERATION - PM2.5

CONC URBAN ELEV FLGPOL DFAULT

*** MODEL SETUP OPTIONS SUMMARY ***

**Intermediate Terrain Processing is Selected

**Model Is Setup For Calculation of Average CONCentration Values.

-- SCAVENGING/DEPOSITION LOGIC --
**Model Uses NO DRY DEPLETION. DDPLETE = F
**Model Uses NO WET DEPLETION. WDPLETE = F
**NO WET SCAVENGING Data Provided.
**NO GAS DRY DEPOSITION Data Provided.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations

**Model Uses URBAN Dispersion.

**Model Uses Regulatory DEFAULT Options:
1. Final Plume Rise.
2. Stack-tip Downwash.
3. Buoyancy-induced Dispersion.
4. Use Calms Processing Routine.
5. Not Use Missing Data Processing Routine.
6. Default Wind Profile Exponents.
7. Default Vertical Potential Temperature Gradients.
8. "Upper Bound" Values for Supersquat Buildings.
9. No Exponential Decay for URBAN/Non-SO2

**Model Accepts Receptors on ELEV Terrain.

**Model Accepts FLAGPOLE Receptor Heights.

**Model Calculates ANNUAL Averages Only

**This Run Includes: 16 Source(s); 1 Source Group(s); and 14 Receptor(s)

**The Model Assumes A Pollutant Type of: OTHER

**Model Set To Continue RUNning After the Setup Testing.

**Output Options Selected:
Model Outputs Tables of ANNUAL Averages by Receptor
Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

**NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Anem. Hgt. (m) = 10.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 1.2 MB of RAM.

**Input Runstream File: ISCST3.INP
**Output Print File: ISCST3.OUT

CONC URBAN ELEV FLGPOL DFAULT

*** VOLUME SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	INIT. SY (METERS)	INIT. SZ (METERS)	EMISSION RATE SCALAR VARY BY

-

RWJ0A002	0	0.11800E-02	578690.5	4194733.0	97.8	1.00	32.60	4.24
RWJ0A003	0	0.11800E-02	578759.3	4194746.0	99.1	1.00	32.60	4.24
RWJ0A004	0	0.11800E-02	578828.1	4194759.5	98.7	1.00	32.60	4.24
RWJ0A005	0	0.11800E-02	578896.9	4194773.0	98.7	1.00	32.60	4.24
RWJ0A006	0	0.11800E-02	578965.8	4194786.5	100.9	1.00	32.60	4.24
RWJ0A007	0	0.11800E-02	579034.7	4194798.5	100.8	1.00	32.60	4.24
RWJ0A008	0	0.11800E-02	579104.1	4194809.0	103.7	1.00	32.60	4.24
RWJ0A009	0	0.11800E-02	579173.4	4194819.5	104.3	1.00	32.60	4.24
RWJ0A00A	0	0.11800E-02	579242.7	4194830.0	105.9	1.00	32.60	4.24
RWJ0A00B	0	0.11800E-02	579312.0	4194840.5	106.3	1.00	32.60	4.24
RWJ0A00C	0	0.11800E-02	579382.1	4194843.5	97.6	1.00	32.60	4.24
RWJ0A00D	0	0.11800E-02	579452.1	4194846.5	92.7	1.00	32.60	4.24
RWJ0A00E	0	0.11800E-02	579522.1	4194849.0	90.2	1.00	32.60	4.24
RWJ0A00F	0	0.11800E-02	579592.2	4194852.0	93.1	1.00	32.60	4.24
RWJ0A00G	0	0.11800E-02	579662.2	4194855.5	93.2	1.00	32.60	4.24
RWJ0A00H	0	0.11800E-02	579732.1	4194861.0	94.0	1.00	32.60	4.24

CONC URBAN ELEV FLGPOL DFAULT

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
579083.88	4194909.00	0.37690	579154.38	4194910.00	0.39757
579209.19	4194921.00	0.39318	579249.38	4194938.50	0.37137
579293.50	4194988.50	0.28940	579309.12	4195040.50	0.22889
579239.62	4195069.00	0.19810	579233.69	4195024.50	0.23509
579197.50	4194973.00	0.29116	579296.38	4195133.50	0.16362
579257.19	4195249.00	0.11899	579176.88	4195135.50	0.15464
579168.12	4195082.50	0.18131	579150.50	4195032.50	0.21462

CONC URBAN ELEV FLGPOL DFAULT

*** THE SUMMARY OF MAXIMUM ANNUAL (1 YRS) RESULTS ***

** CONC OF OTHER IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZFLAG)	OF TYPE	NETWORK GRID-ID
ALL	1ST HIGHEST VALUE IS	0.39757 AT (579154.38, 4194910.00, 122.70, 1.80)	DC	NA
	2ND HIGHEST VALUE IS	0.39318 AT (579209.19, 4194921.00, 122.10, 1.80)	DC	NA
	3RD HIGHEST VALUE IS	0.37690 AT (579083.88, 4194909.00, 127.70, 1.80)	DC	NA
	4TH HIGHEST VALUE IS	0.37137 AT (579249.38, 4194938.50, 120.70, 1.80)	DC	NA
	5TH HIGHEST VALUE IS	0.29116 AT (579197.50, 4194973.00, 400.00, 1.80)	DC	NA
	6TH HIGHEST VALUE IS	0.28940 AT (579293.50, 4194988.50, 120.70, 1.80)	DC	NA
	7TH HIGHEST VALUE IS	0.23509 AT (579233.69, 4195024.50, 400.00, 1.80)	DC	NA
	8TH HIGHEST VALUE IS	0.22889 AT (579309.12, 4195040.50, 120.70, 1.80)	DC	NA
	9TH HIGHEST VALUE IS	0.21462 AT (579150.50, 4195032.50, 420.00, 1.80)	DC	NA
	10TH HIGHEST VALUE IS	0.19810 AT (579239.62, 4195069.00, 400.00, 1.80)	DC	NA

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

CONC   URBAN ELEV FLGPOL DFAULT

*** Message Summary : ISCST3 Model Execution ***

 --------- Summary of Total Messages --------

A Total of   0 Fatal Error Message(s)
A Total of   3 Warning Message(s)
A Total of   72 Informational Message(s)

A Total of   72 Calm Hours Identified

   ******** FATAL ERROR MESSAGES ********
             *** NONE ***

   ********   WARNING MESSAGES   ********
RE W282   85 CHK_EL:RecElev < SrcBase; See non-DFAULT HE>ZI option in MCB#9
OU W565   96 PERPLT:Possible Conflict With Dynamically Allocated FUNIT PLOTFILE
OU W565   97 PERPST:Possible Conflict With Dynamically Allocated FUNIT POSTFILE

   ****
   *** ISCST3 Finishes Successfully ***
   ****

Appendix C.
Risk Calculation Tables and Worksheets

Construction HRA

Construction Risk Assessment
Resident Exposure Scenario - 70 Years

Source	Mass GLC	Weight Fraction	Contaminant	Carcinogenic Risk			Noncarcinogenic Hazards/ Toxicological Endpoints*												
				CPF	CDI**	RISK	REL	ALI	BONE	CARDIO	DEV	ENDO	EYE	HEME	IMM	KID	NERV	REPRO	RESP	SKIN
	(ug/m^3)			$(mg/kg/day)^{-1}$	(mg/kg/day)		(ug/m^3)												
(a)	(b)	(d)	(e)	(f)	(g)	(h)	(i)	(k)	(l)	(m)	(n)	(o)	(p)	(q)					(r)
Year 2013 - Onsite Sources	0.2348	1.00E+00	Diesel Particulate	1.1E+00	1.5E-06	1.6E-06	5.0E+00												4.7E-02	
Year 2013 - Offsite Sources	0.0167	1.00E+00	Diesel Particulate	1.1E+00	1.0E-07	1.1E-07	5.0E+00												3.3E-03	
Year 2013 - Onsite Sources	0.0023	1.00E+00	Acrolein				3.5E-01						6.7E-03						6.7E-03	
Year 2013 - Offsite Sources	0.0002	1.00E+00	Acrolein				3.5E-01						6.6E-04						6.6E-04	
Year 2014 - Onsite Sources	0.1325	1.00E+00	Diesel Particulate	1.1E+00	5.4E-07	6.0E-07	5.0E+00												2.6E-02	
Year 2014 - Offsite Sources	0.0008	1.00E+00	Diesel Particulate	1.1E+00	3.2E-09	3.6E-09	5.0E+00												1.6E-04	
Year 2014 - Onsite Sources	0.0199	1.00E+00	Acrolein				3.5E-01						5.7E-02						5.7E-02	
Year 2014 - Offsite Sources	0.00003	1.00E+00	Acrolein				3.5E-01						8.6E-05						8.6E-05	
TOTAL						2.3E-06		0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	6.4E-02	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	1.4E-01	0.0E+00
BAAQMD Cancer Risk Adjustment Factor						1.70														
Adjusted Cancer Risk						4.0E-06														

* Key to Toxicological Endpoints

ALI	Alimentary
BONE	Bone
CARDIO	Cardiovascular
DEV	Developmental
ENDO	Endocrine
EYE	Eye
HEME	Hematologic
IMM	Immune
KID	Kidney
NERV	Nervous
REPRO	Reproductive
RESP	Respiratory
SKIN	Skin

** Exposure factors used to calculate CDI

daily breathing rate (L/kg-day)	302	
inhalation absorption factor	1	
exposure frequency (days/year) - 2013	264	
exposure frequency (days/year) - 2014	174	
exposure duration (years)	2	
averaging time (days)	25,550	
cancer risk adjustment factor	1.7	
Maximum annual PM2.5 concentration	0.23	ug/m3
Maximum 1-hour acrolein concentration - 2014	1.17	ug/m3
Acrolein Acute REL	2.50	ug/m3
Acrolein Acute Hazard	0.47	

CONSTRUCTION DPM, PM2.5, and ACROLEIN EMISSIONS
INPUT TO ISCST3 MODEL

Year	Onsite - 2013	Offsite - 2013[1]	Onsite - 2014	Offsite - 2014[1]
DPM Emissions (lbs/day)	3.48	0.4023	1.96	0.0177
DPM Emissions (lbs/hr)	0.4350	0.0503	0.2450	0.0022
DPM Emissions (gm/sec)	0.05481	**6.34E-03**	0.03087	**2.79E-04**
Modeled Area (acres)	22.27		22.27	
Modeled Area (m2)	90124		90123.5722	
DPM Emission Rate (gm/sec	**6.08E-07**		**3.43E-07**	
PM2.5 Emissions (lbs/day)	3.48	0.4023	1.96	0.0177
PM2.5 Emissions (lbs/hr)	0.4350	0.0503	0.2450	0.0022
PM2.5 Emissions (gm/sec)	0.05481	**6.34E-03**	0.03087	**2.79E-04**
Modeled Area (acres)	22.27		22.27	
Modeled Area (m2)	90124		90123.5722	
PM2.5 Emission Rate (gm/se	**6.08E-07**		**3.43E-07**	
ROG Emissions (lb/day)	7.73	1.148	66.05	0.1685
TOG Emissions[2] (lbs/day)	9.24	1.37	78.94	0.20
Acrolein Emissions[3] (lbs/day	0.0337	0.0050	0.2881	0.0007
Acrolein Emissions (lbs/hr)	0.0042	0.0006	0.0360	9.19E-05
Acrolein Emissions (gm/sec)	0.00053	**7.89E-05**	0.00454	**1.16E-05**
Modeled Area (acres)	22.27		22.27	
Modeled Area (m2)	90124		90123.5722	
Acrolein Emission Rate (gm/	**5.89E-09**		**5.04E-08**	

[1]Emissions from CalEEMod proportioned based on haul truck trip of 13 miles to evaluate emissions from 1 mile route next to site

[2]ROG converted to TOG using conversion factor of 1.195157 from ARB OFFROAD2007 model

[3]Acrolein concentration in diesel exhaust is 0.365% as per USEPA Speciate database for CA reformulated diesel #2

5.23

Emissions assumed to be evenly distributed over entire construction area

	2013	2014
Hr/day	8	8
Days/yr	264	174

Assume maximum of 8.0 hrs/day of heavy equipment operation
Operating hours between 7 am and 3 pm

Operational HRA

Community Risk Assessment
Residential Exposure Scenario

Source Number*	Source	Mass GLC		Weight Fraction	Contaminant	Carcinogenic Risk			Noncarcinogenic Hazards/ Toxicological Endpoints***									
						URF	CPF	RISK	REL	RfD	RESP	CNS/PNS	CV/BL	IMMUN	KIDN	GI/LV	REPRO	EYES
		(ug/m^3)	(mg/m^3)			(ug/m^3)$^{-1}$	(mg/kg/day)$^{-1}$		(ug/m^3)	(mg/kg/day)								
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)
	Highway 24	0.08916	8.92E-05	6.32E-01	Benzene	2.9E-05	1.0E-01	1.5E-06	6.0E+01	1.7E-02		8.6E-04	8.6E-04				8.6E-04	
				2.05E-01	Formaldehyde	6.0E-06	2.1E-02	1.0E-07	9.0E+00	2.6E-03	1.9E-03							1.9E-03
				8.60E-02	1,3-Butadiene	1.7E-04	6.0E-01	1.2E-06	2.0E+01	5.7E-03							3.5E-04	
				7.70E-02	Acetaldehyde	2.7E-06	9.5E-03	1.7E-08	9.0E+00	2.6E-03	6.9E-04							
		0.01006	1.01E-05	1.00E+00	Diesel Particulate	3.0E-04	1.1E+00	2.7E-06	5.0E+00	1.4E-03	1.8E-03							
	TOTAL							5.5E-06			4.4E-03	8.6E-04	8.6E-04	0.0E+00	0.0E+00	0.0E+00	1.2E-03	1.9E-03
	BAAQMD Cancer Risk Adjustment Factor							1.7										
	Adjusted Cancer Risk							9.4E-06										

** Key to Toxicological Endpoints

RESP	Respiratory System	exposure frequency (days/year	350	
CNS/PNS	Central/Peripheral Nervous System	exposure duration (years)	70	
CV/BL	Cardiovascular/Blood System	inhalation rate (m^3/day)	19.0	
IMMUN	Immune System	average body weight (kg)	70.0	
KIDN	Kidney	averaging time$_{(cancer)}$ (days)	25,550	
GI/LV	Gastrointestinal System/Live	averaging time$_{noncancer)}$ (days)	25,550	
REPRO	Reproductive System (e.g. teratogenic and developmental effects			
EYES	Eye irritation and/or other effects			
		Maximum PM2.5 concentration	0.41	ug/m3
Note:	Exposure factors used to calculate contaminant intake	BAAQMD Significance Criterion	0.30	ug/m3
		Exceeds Significance Criterion?	Yes	Mitigation measures recommended

Operational HRA -
Roadways with > 10,000 vehicles/day

EHIB Home
What's New
About EHIB
Newsletters
Topics
Projects
Papers/Fact Sheets
FAQs
Related Links
Partners
Tools
Search

CEHTP Traffic Linkage Service Demonstration

Background | Enter Buffer Parameters | Spatial Linkage Results

Metric	Value
(sl) Sum of all length-adjusted traffic volumes within buffer (vehicle-km/hr)	8,888
(sg) Sum of all Gauss-adjusted traffic volumes within buffer (vehicles/day*)	4,047
(hl) Length-adjusted traffic volume of highest segment within buffer (vehicle-km/hr)	6,769

Show more metrics

*average annual daily traffic

N=nearest segment to buffer center H=segment with highest traffic volume in buffer

Hide Buffer

AADT ON HIGHWAY 24

Dist	Route	CO		Postmile	Description	Back Peak Hour	Back Peak Month	W Back AADT	Ahead Peak Hour	Ahead Peak Month	E Ahead AADT
4	24	ALA	R	1.847	OAKLAND, JCT RTE 580 AND 980				10,900	153,000	152,000
4	24	ALA	R	3.063	OAKLAND, TELEGRAPH/CLAREMONT	10,900	153,000	152,000	10,200	144,000	143,000
4	24	ALA	R	4.152	OAKLAND, BRDWAY/PATTON	10,200	144,000	143,000	10,500	148,000	147,000
4	24	ALA	R	5.117	OAKLAND, JCT. RTE. 13	10,500	148,000	147,000	11,600	153,000	148,000
4	24	ALA	R	5.65	CALDECOTT LANE	11,600	153,000	148,000	12,000	159,000	154,000
4	24	ALA	R	6.241	ALAMAEDA/CONTRA COSTA CO LINE	12,000	159,000	154,000			
4	24	CC	R	0	ALAMAEDA/CONTRA COSTA CO LINE				12,100	158,000	154,000
4	24	CC	R	0.4	FISH RANCH/CLAREMONT	12,100	159,000	154,000	12,300	162,000	157,000
4	24	CC		1.196	GATEWAY BLVD	12,300	162,000	157,000	12,300	162,000	158,000
4	24	CC	R	2.319	CAMINO PABLO	12,300	163,000	158,000	12,700	170,000	163,000
4	24	CC	R	3.473	SAINT STEPHENS	12,700	170,000	163,000	12,800	171,000	164,000
4	24	CC	R	4.397	LAFAYETTE, ACALANES RD	12,800	171,000	164,000	12,000	165,000	160,000
4	24	CC	R	6.512	LAFAYETTE, OAK HILL/FIRST	12,000	165,000	160,000	13,400	184,000	178,000
4	24	CC	R	7.656	LAFAYETTE, PLEASANT HILL RD	13,400	184,000	178,000	13,500	185,000	179,000
4	24	CC		9.119	WALNUT CREEK, JCT RTE 680	13,500	185,000	179,000	13,500	185,000	179,000
4	24	CC		9.684	END OF WB LANES RTE 24	13,500	185,000	179,000			
5	25	MON		0	JCT. RTE. 198				50	250	200
5	25	MON		11.75	MONTEREY/SAN BENITO CO LINE	50	250	200			
5	25	SBT		0	MONTEREY/SAN BENITO CO LINE				70	380	300
5	25	SBT		7.3	BITTER WATER/KING CITY RD	70	380	300	70	550	500
5	25	SBT		21.47	JCT. RTE. 146 WEST	70	500	450	80	590	500
5	25	SBT		39.533	PAICINES, PANOCHE RD	120	940	730	240	2,300	1,900
5	25	SBT		49.014	VALLEY VIEW RD	240	2,000	1,900	1,000	7,900	6,600
5	25	SBT		49.946	SUNNYSLOPE/PROSPECT	1,150	11,400	9,500	2,550	26,500	22,000
5	25	SBT		50.573	HOLLISTER, NASH RD	2,450	25,500	21,000	1,150	14,200	14,000
5	25	SBT		51.443	4TH ST	1,150	14,200	14,000	1,800	22,500	21,000
5	25	SBT		51.454	HOLLISTER, SAN FELIPE/BOLSA	1,550	19,300	18,000	1,450	18,200	17,000
5	25	SBT		52.194	BRIGGS RD E	1,500	20,300	19,000	1,400	15,300	15,000
5	25	SBT		54.048	JCT RTE 156	1,400	15,300	15,000	1,800	19,200	18,500
5	25	SBT		55.134	HUDNER LANE	1,550	19,000	18,000	1,550	19,000	18,000
5	25	SBT		60.084	SAN BENITO SNTA CLARA CO LINE	1,800	19,800	18,600			
4	25	SCL		0	SAN BENITO SNTA CLARA CO LINE				1,900	19,800	18,600
4	25	SCL		2.528	GILROY, JCT RTE 101	1,900	23,800	22,400	1,900	23,800	22,400
4	25	SCL		2.56	JCT. RTE. 101, GILROY, SOUTH	1,900	23,800	22,400			
10	26	SJ		1.11	JCT. RTE. 99				1,350	22,100	15,500
10	26	SJ		1.897	CARDINAL AVE	1,300	16,500	13,500	1,100	15,400	11,700
10	26	SJ	R	4.217	ALPINE RD	920	10,600	9,000	840	9,800	8,600

TRUCK MIX ON HIGHWAY 24

RTE	DIST	CNTY	POST MILE	LEG	DESCRIPTION	VEHICLE AADT TOTAL	TRUCK AADT TOTAL	TRUCK % TOT VEH	TRUCK AADT TOTAL ---- By Axle ---- 2	3	4	5+	% TRUCK AADT ---- By Axle ---- 2	3	4	5+	EAL 2-WAY (1000)	YEAR VER/ EST
024	04	ALA	R 1.847	A	OAKLAND, JCT. RTES. 580 AND 980	152,000	3,770	2.48	2,318	625	135	692	61.49	16.58	3.57	18.35	397	00V
024	04	ALA	R 5.117	B	OAKLAND, JCT. RTE. 13	147,000	4,101	2.79	2,392	573	144	992	58.33	13.97	3.51	24.20	500	00V
024	04	ALA	R 5.117	A	OAKLAND, JCT. RTE. 13	148,000	2,975	2.01	1,871	301	91	712	62.89	10.13	3.05	23.93	352	03V
024	04	ALA	R 5.887	O	OAKLAND, CALDECOTT TUNNEL	155,000	3,503	2.26	2,394	373	132	604	68.35	10.64	3.76	17.25	346	02V
024	04	CC	R 2.319	A	CAMINO PABLO	163,000	4,075	2.50	2,262	538	167	1,108	55.50	13.20	4.10	27.20	535	97E
024	04	CC	R 7.656	B	LAFAYETTE, PLEASANT HILL ROAD	178,000	4,450	2.50	2,554	596	200	1,099	57.40	13.40	4.50	24.70	553	97E
024	04	CC	R 7.656	A	LAFAYETTE, PLEASANT HILL ROAD	179,000	6,265	3.50	3,396	720	219	1,930	54.20	11.50	3.50	30.80	883	97E

AVERAGE EMISSION FACTOR
SAN FRANCISCO AIR BASIN - 2014-2084

YEAR	*SPEED (mph)*	*TOG (gm/mile)*	*DPM (gm/mile)*	*PM2.5 (gm/mile)*	*CARB Regulation Diesel Reduction (%)*	*DPM Revised (gm/mile)*	*PM2.5 Revised (gm/mile)*
2014	55	0.09	0.188	0.100	22	0.147	0.078
2015	55	0.091	0.018	0.091	37	0.011	0.057
2016	55	0.084	0.017	0.017	39	0.010	0.010
2017	55	0.078	0.016	0.016	41	0.009	0.009
2018	55	0.072	0.016	0.016	41	0.009	0.009
2019	55	0.068	0.016	0.016	40	0.010	0.010
2020	55	0.064	0.015	0.015	38	0.009	0.009
2021	55	0.061	0.015	0.015	38	0.009	0.009
2022	55	0.058	0.015	0.015	38	0.009	0.009
2023	55	0.056	0.014	0.014	36	0.009	0.009
2024	55	0.054	0.014	0.014	34	0.009	0.009
2025	55	0.052	0.014	0.014	31	0.010	0.010
2026	55	0.051	0.014	0.014	29	0.010	0.010
2027	55	0.049	0.014	0.014	26.7	0.010	0.010
2028	55	0.048	0.014	0.014	24.4	0.011	0.011
2029	55	0.047	0.014	0.014	22.1	0.011	0.011
2030	55	0.046	0.013	0.013	19.8	0.010	0.010
2031	55	0.045	0.013	0.013	17.5	0.011	0.011
2032	55	0.044	0.013	0.013	15.2	0.011	0.011
2033	55	0.044	0.013	0.013	12.9	0.011	0.011
2034	55	0.043	0.013	0.013	10.6	0.012	0.012
2035	55	0.042	0.013	0.013	8.3	0.012	0.012
2036	55	0.042	0.013	0.013	6	0.012	0.012
2037	55	0.041	0.013	0.013	3.7	0.013	0.013
2038	55	0.041	0.013	0.013	1.4	0.013	0.013
2039	55	0.041	0.013	0.013	0	0.013	0.013
2040-2084	55	0.04	0.013	0.013	0	0.013	0.013
Average - 2014-2039		0.055				0.016	0.015
Average - 2014-2084		**0.046**				**0.014**	**0.014**

Vehicle Fleet Mix Composition

Route: 24
Post Mile: 7.443-7.870

AADT Total	Total Trucks	Truck %/100	2 axle vol	3 axle vol	4 axle vol	5 axle vol	2 axle %	3 axle %	4 axle %	5 axle %
178000	4450	0.025	2554	596	200	1099	0.574	0.134	0.045	0.247

Fleet Mix Computation w/ Truck Volume Adjustment

Non-HDT	0.975
2-axle	0.014
3-axle	0.003
4-axle	0.001
5-axle	0.006
	1.000

Fleet Mix Computation w/ Time of Day Adjustment

Non-HDT	1.36	1.326	0.970
2-axle	1.74	0.025	0.018
3-axle	1.82	0.006	0.004
4-axle	1.55	0.002	0.001
5-axle	1.23	0.008	0.006
		1.366	1.000

Corrected Fleet Mix (EMFAC7F Vehicle Classes)

LDA	0.7763
LDT	0.1359
MDT	0.0485
HDGT	0.0104
HDDT	0.0192
MCY	0.0097
	1.000

Source: UCD, Institute of Transportation Studies, *Transporation Project-Level Carbon Monoxide Protocol* . UCD-ITS-RR-96-1

EMFAC Worksheet

Model Version	: Emfac 2007 V2.3
Run Date	9/19/2011
Scen Year	: 2013 (Model Years 1971-2013)
Location	: Los Angeles County
Season	: Annual
Temperature	: All
Relative Humidity	: All

Table A: Estimated Travel Fractions

	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL
%VEH	0.002	0.508	0.001	0.511	0.001	0.127	0.004	0.131	0.001	0.203	0	0.204
	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL	LHD1 ALL	LHD2 NCAT	LHD2 CAT	LHD2 DSL	LHD2 ALL
%VEH	0	0.077	0	0.077	0	0.008	0.003	0.011	0	0.003	0.003	0.006
	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL
%VEH	0	0.001	0.005	0.007	0	0	0.003	0.003	0	0	0	0
	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT	SBUS DSL	SBUS ALL
%VEH	0	0	0	0.001	0.02	0.018	0	0.037	0	0	0.003	0.004
	MH NCAT	MH CAT	MH DSL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL				
%VEH	0	0.007	0.001	0.008	0.024	0.953	0.024	1				

Table B: Travel Fractions (Emfac2007 Format/Vehicle Classifications)

Class	NCAT	CAT	DSL
LDA	0.002	0.508	0.001
LDT	0.002	0.330	0.004
MDT	0.000	0.088	0.006
HDTG	0.000	0.008	0.000
HDTD	0.000	0.000	0.012
MCY	0.020	0.018	0.000

Table C: Travel Fractions (Emfac2007 Format)

Class	NCAT	CAT	DSL
LDA	0.39	99.41	0.20
LDT	0.60	98.21	1.19
MDT	0.00	93.62	6.38
HDTG	0.00	100.00	0.00
HDTD	0.00	0.00	100.00
MCY	52.63	47.37	0.00

EMFAC Worksheet

Table D: Vehicle Fleet Mix

Class	Fraction
LDA	0.7763
LDT	0.1359
MDT	0.0485
HDTG	0.0104
HDTD	0.0192
MCY	0.0097

Table E: Population Profile (Emfac2007 Format)

AADT 178,000

Class	All	Fraction	Gas	Fraction	Diesel	Fraction
LDA	138190.1	1.000	137919.7	0.998	270.4	0.002
LDT1	9500.6	0.393	9212.7	0.970	287.9	0.030
LDT2	14682.7	0.607	14682.7	1.000	0.0	0.000
MDV	7074.9	0.819	7074.9	1.000	0.0	0.000
LHD1	1010.7	0.117	735.1	0.727	275.6	0.273
LHD2	551.3	0.064	275.6	0.500	275.6	0.500
MHD	1578.7	0.300	263.1	0.167	1315.6	0.833
HHD	789.4	0.150	0.0	0.000	789.4	1.000
LH	0.0	0.000	0.0	0.000	0.0	0.000
URB	0.0	0.000	0.0	0.000	0.0	0.000
MCY	1727.4	1.000	1727.4	1.000	0.0	0.000
SB	789.4	0.150	0.0	0.000	789.4	1.000
MH	2104.9	0.400	1841.8	0.875	263.1	0.125
Total	178000.0		173733.0		4267.0	

Emission Factor Profile Worksheet

FLEET MIX COMPUTATION / GASOLINE (TOG)

U.S. EPA Mobile Fleet Mix Categories		California Mobile Fleet Mix Categories
LDGV	Light Duty Auto/Gas	LDA/LDT (Gas)
LDDV	Light Duty Auto/Diesel	LDA/LDT (Diesel)
LDGT1	Light Duty Truck/Gas (<6500 lbs)	(average NCAT/CAT percentages into LDA/LDT categories)
LDGT2	Light Duty Truck/Gas (>6500 lbs)	MDT
LDDT	Light Duty Truck/Diesel (<8500 lbs)	(use LDT Diesel percentage as surrogate for category)
HDGV	Heavy Duty Truck/Gas (>8500 lbs)	HDG
HDDV	Heavy Duty Truck/Diesel (>8500 lbs)	HDD
MC	Motorcycle	MCY

Project Fleet Mix (Emfac7F format)		Travel Fractions/%Vehicle NCAT	CAT
LDA	54.2	0.39	99.61
LDT	32.3	0.60	99.40
MDT	8.2	0.00	100.00
HDTG	2.1	0.00	100.00
MCY	3.2	52.63	47.37

Adjusted Fleet Mix	Percent/100
LDA/LDT - CAT	0.861
LDA/LDT - NCAT	0.004
MDT - CAT	0.082
MDT - NCAT	0.000
HDG - CAT	0.021
HDG - NCAT	0.000
MCY - CAT	0.015
MCY - NCAT	0.017

TOXIC EMISSIONS

Compound: Benzene

Vehicle Fleet	TOG/Toxic Emission Fractions Exhaust	Composite Emission Fractions Exhaust
LDA/LDT - CAT	0.04220	0.03633
LDA/LDT - NCAT	0.02740	0.00011
MDT - CAT	0.04220	0.00346
MDT - NCAT	0.02740	0.00000
HDG -CAT	0.04220	0.00089
HDG - NCAT	0.02740	0.00000
MCY - CAT	0.04220	0.00064
MCY - NCAT	0.02740	0.00046
	Total	0.04189

Compound: Formaldehyde

Vehicle Fleet	TOG/Toxic Emission Fractions Exhaust	Composite Emission Fractions Exhaust
LDA/LDT - CAT	0.01300	0.01119
LDA/LDT - NCAT	0.03740	0.00015
MDT - CAT	0.01300	0.00107
MDT - NCAT	0.03740	0.00000
HDG -CAT	0.01500	0.00032
HDG - NCAT	0.04310	0.00000
MCY - CAT	0.01300	0.00020
MCY - NCAT	0.03740	0.00063
	Total	0.01355

Emission Factor Profile Worksheet

Compound: 1,3-Butadiene

Vehicle Fleet	TOG/Toxic Emission Fractions Exhaust	Composite Emission Fractions Exhaust
LDA/LDT - CAT	0.00560	0.00482
LDA/LDT - NCAT	0.01150	0.00005
MDT - CAT	0.00560	0.00046
MDT - NCAT	0.01150	0.00000
HDG -CAT	0.00560	0.00012
HDG - NCAT	0.01150	0.00000
MCY - CAT	0.00560	0.00008
MCY - NCAT	0.01150	0.00019
		Total 0.00572

Compound: Acetaldehyde

Vehicle Fleet	TOG/Toxic Emission Fractions Exhaust	Composite Emission Fractions Exhaust
LDA/LDT - CAT	0.00500	0.00430
LDA/LDT - NCAT	0.00820	0.00003
MDT - CAT	0.00500	0.00041
MDT - NCAT	0.00820	0.00000
HDG -CAT	0.00500	0.00011
HDG - NCAT	0.00830	0.00000
MCY - CAT	0.00500	0.00008
MCY - NCAT	0.00820	0.00014
		Total 0.00507

TOG Emisson Rate - Exhaust (Average Route Speed 55 MPH): 0.046 grams/mile — Total-gr/mi

Benzene	0.001927
Formaldehyde	0.000623
1,3-Butadiene	0.000263
Acetaldehyde	0.000233

TOXIC EMISSIONS - Mass Emission Rate — Total

Exhaust / Average Route Speed 55 MPH (grams/mile) — **0.003047**

Normalized Weight Fraction / Speciation

Benzene	0.632
Formaldehyde	0.205
1,3-Butadiene	0.086
Acetaldehyde	0.077

Note: Fleet mix normalized for the NCAT and CAT travel fractions.

Emission Factor Profile Worksheet

FLEET MIX COMPUTATION / DIESEL
U.S. Route 101

U.S. EPA Mobile Fleet Mix Categories		California Mobile Fleet Mix Categories
LDGV	Light Duty Auto/Gas	LDA/LDT (Gas)
LDDV	Light Duty Auto/Diesel	LDA/LDT (Diesel)
LDGT1	Light Duty Truck/Gas (<6500 lbs)	(average NCAT/CAT percentages into LDA/LDT categories)
LDGT2	Light Duty Truck/Gas (>6500 lbs)	MDT
LDDT	Light Duty Truck/Diesel (<8500 lbs)	(use LDT Diesel percentage as surrogate for category)
HDGV	Heavy Duty Truck/Gas (>8500 lbs)	HDG
HDDV	Heavy Duty Truck/Diesel (>8500 lbs)	HDD
MC	Motorcycle	MCY

Project Fleet Mix (Emfac7F format)		Travel Fractions/%Vehicle DSL
LDA	4.5	100.00
LDT	14.4	100.00
MDT	21.5	100.00
HDTD	59.6	100.00

Adjusted Fleet Mix	Percent/100
LDA/LDT (Diesel)	0.189
MDT (Diesel)	0.215
HDD	0.596

PARTICULATE EMISSIONS

Vehicle Fleet	PM Emission Fractions Exhaust	Composite Emission Fractions Exhaust
LDA/LDT (Diesel)	1.00000	0.18900
MDT (Diesel)	1.00000	0.21500
HDD	1.00000	0.59600
		Total 1.00000

Particulate Mass Emission Rate - Exhaust (Average Route Speed 55 MPH): 0.014 grams/mile

Total-gr/mi

0.014

Note: Fleet mix normalized for the DSL travel fractions.

Highway Parameters

Link Measurements							Link Volumes					
Link/Segment	Link length (m)	Width of roadway (m)	Source Sep (m)	No. of Sources	Freeway Configuration	Mile Post	AADT 2010	Baseline	Volume TOG	Volume Baseline TOG	Volume Diesel	Volume Baseline Diesel
State Highway 24	1052	70	70	16	At Grade	7.443-7.870	178,000	7,417	173,733	7,239	4,267	178
EB Offramp to Pleasant Hill	561	7.9	8	72	At Grade	7.443	10,100	421	9,858	411	242	10
WB Onramp from Pleasant Hill	350	10	10	36	At Grade	7.510	12,600	525	12,298	512	302	13
WB Offramp to Pleasant Hill	264	8.5	9	32	At Grade	7.922	10,700	446	10,443	435	257	11

On-Road Mobile Sources
Emission Rate Computation

TOG Emissions

State Highway 24
Mile Post 7.443 to 7.870

Number of Sources	16
Link Length (meters)	1052
Volume/Baseline (VPH)	7,239
Toxic Mass Emission Rate (gr/mi)	0.003047

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Toxic Emission Rate (gr/sec)	4.00E-03
Toxic Emission Rate (gr/sec/source)	**2.50E-04**

On-Road Mobile Sources
Emission Rate Computation

DPM Emissions

State Highway 24
Mile Post 7.443 to 7.870

Number of Sources	16
Link Length (meters)	1052
Volume/Baseline (VPH)	178
Toxic Mass Emission Rate (gr/mi)	0.014000

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Toxic Emission Rate (gr/sec)	4.52E-04
Toxic Emission Rate (gr/sec/source)	**2.82E-05**

PM2.5 Emissions

State Highway 24
Mile Post 7.443 to 7.870

Number of Sources	16
Link Length (meters)	1052
Volume/Baseline (VPH)	7,417
Toxic Mass Emission Rate (gr/mi)	0.014000

Emission Rate (gr/sec) = ((Mass Emission Rate x Volume/Baseline)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)

Toxic Emission Rate (gr/sec)	1.88E-02
Toxic Emission Rate (gr/sec/source)	**1.18E-03**

Initial Sigma Computation

State Highway 24
Mile Post 7. 11.543-12.023

Width of Traveled Way (m)	70
Average Wind Speed (m/s)	2.04
Source Separation Distance (m)	70

Initial Vertical Dispersion Parameter (Sigma Z)

SZ = (1.8 + 0.11(TR)) x (60/30)0.2
TR = W2/U

Where:

W2 = traveled way half width (m)
U = average wind speed (m/s)

SZ = **4.24**

Initial Horizontal Dispersion Parameter (Sigma Y)

SY = (source separation distance)/2.15

SY = **32.60**