

## **APPENDIX C**

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### **CUMULATIVE EMISSION CALCULATIONS**

**Appendix C**  
**ConocoPhillips - Los Angeles Refinery**  
**Cumulative Impacts**  
**Construction Emission Summary**

Emissions from Equipment	Carson Plant							Total for Carson Plant
	Wilmington Plant	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	Rule 1118 Vapor Recovery	
Sulfur Recovery	13.22	5.76	3.44	5.56	34.26	171.65	40.21	255.31
CO (lb/day)	28.05	14.96	10.98	12.60	73.24	282.54	57.44	439.16
VOC (lb/day)	3.92	1.73	1.14	1.51	13.70	59.48	15.11	91.17
SOx (lb/day)	0.02	0.01	0.01	0.01	0.07	0.26	0.06	0.41
PM10 (lb/day)	1.61	0.73	0.45	0.65	3.93	20.83	4.62	30.57

Emission from Trips	Carson Plant							Total for Carson Plant
	Wilmington Plant	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	Rule 1118 Vapor Recovery	
CO (lb/day)	7.78	15.25	27.54	5.22	9.20	92.81	55.58	200.38
NOx (lb/day)	4.53	5.32	6.39	4.72	4.91	17.25	10.06	43.94
VOC (lb/day)	0.95	1.76	3.08	0.69	1.12	10.24	6.13	22.33
SOx (lb/day)	0.01	0.01	0.02	0.01	0.01	0.07	0.04	0.16
Total PM10 (lb/day)	0.59	0.86	1.29	0.53	0.86	3.98	2.36	9.15
Exhaust PM10 (lb/day)	0.10	0.15	0.22	0.09	0.11	0.68	0.41	1.57
Fugitive PM10 (lb/day)	0.49	0.71	1.07	0.44	0.55	3.30	1.96	7.58

Fugitive PM	Carson Plant							Total for Carson Plant
	Wilmington Plant	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	Rule 1118 Vapor Recovery	
PM10 (lb/day) <sup>(1)</sup>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Total Emissions	Thresholds	Carson Plant							Total for Carson Plant
		Wilmington Plant	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	Rule 1118 Vapor Recovery	
CO (lb/day)	550	20.99	21.01	30.98	10.78	43.46	264.46	95.79	455.69
NOx (lb/day)	100	32.58	20.28	17.37	17.32	78.14	299.79	67.50	483.09
VOC (lb/day)	75	4.87	3.49	4.22	2.20	14.81	69.73	21.24	113.49
SOx (lb/day)	150	0.03	0.03	0.03	0.02	0.08	0.33	0.10	0.57
PM10 (lb/day)	150	2.20	1.59	1.74	1.19	4.59	24.81	6.99	39.72
PM2.5 (lb/day) <sup>(1)</sup>	55	1.28	0.92	1.01	0.69	2.66	14.39	4.05	23.04

(1) [https://www.aqmd.gov/ceqa/handbook/PM2\\_5/pm2\\_5ratio.xls](https://www.aqmd.gov/ceqa/handbook/PM2_5/pm2_5ratio.xls) : Profile ID #391.

**Appendix C**  
**ConocoPhillips - Los Angeles Refinery**  
**Cumulative Impacts**  
**Construction Equipment Emission Rates**

Equipment Type	Fuel	Hp	2007 Emission Factors lb/hr <sup>(1)</sup>				
			CO	NOx	PM10	SOx	VOC
Air Compressor	Diesel	50	0.2933	0.2468	0.0290	0.0003	0.1306
Air Compressor	Diesel	50	0.2933	0.2468	0.0290	0.0003	0.1306
Air Compressor	Diesel	50	0.2933	0.2468	0.0290	0.0003	0.1306
Backhoe	Diesel	120	0.3748	0.6979	0.0635	0.0006	0.1179
Backhoe	Diesel	140	0.5918	1.2085	0.0672	0.0011	0.1513
Backhoe	Diesel	150	0.5918	1.2085	0.0672	0.0011	0.1513
Backhoe	Diesel	150	0.5918	1.2085	0.0672	0.0011	0.1513
Backhoe	Diesel	150	0.9129	2.0726	0.1109	0.0016	0.2602
Backhoe	Diesel	200	0.4716	1.9310	0.0643	0.0019	0.1714
Backhoe	Diesel	200	0.4716	1.9310	0.0643	0.0019	0.1714
Plate Compactor	Gasoline	25	0.0263	0.0351	0.0025	0.0001	0.0054
Crane	Diesel	150	0.4975	1.1009	0.0615	0.0009	0.1417
Crane	Diesel	150	0.4975	1.1009	0.0615	0.0009	0.1417
Crane	Diesel	165	0.4975	1.1009	0.0615	0.0009	0.1417
Crane	Diesel	165	0.4975	1.1009	0.0615	0.0009	0.1417
Crane	Diesel	190	0.4119	1.4665	0.0571	0.0013	0.1478
Crane	Diesel	Composite	0.6365	1.6948	0.0755	0.0014	0.1882
Boom Truck <sup>(2)</sup>	Diesel	150	0.4975	1.1009	0.0615	0.0009	0.1417
Boom Truck <sup>(2)</sup>	Diesel	150	0.4975	1.1009	0.0615	0.0009	0.1417
Boom Truck <sup>(2)</sup>	Diesel	200	0.4119	1.4665	0.0571	0.0013	0.1478
Boom Truck <sup>(2)</sup>	Diesel	220	0.4119	1.4665	0.0571	0.0013	0.1478
Boom Truck <sup>(2)</sup>	Diesel	225	0.4119	1.4665	0.0571	0.0013	0.1478
Dozer	Diesel	200	0.8843	2.8004	0.1236	0.0021	0.3139
Front End Loader	Diesel	100	0.3748	0.6979	0.0635	0.0006	0.1179
Man Lift	Diesel	50	0.2042	0.2062	0.0210	0.0003	0.0867
Man Lift	Diesel	50	0.2042	0.2062	0.0210	0.0003	0.0867
Man Lift	Diesel	100	0.2563	0.5110	0.0398	0.0004	0.0819
Pile Driver <sup>(4)</sup>	Diesel	30	0.3262	0.2942	0.0324	0.0004	0.1356
Fork Lift	Diesel	45	0.2119	0.1643	0.0206	0.0002	0.0932
Fork Lift	Diesel	45	0.2119	0.1643	0.0206	0.0002	0.0932
Forklift	Diesel	100	0.2337	0.4359	0.0428	0.0004	0.0786
Fork Lift	Diesel	Composite	0.2495	0.6430	0.0346	0.0006	0.0861
Generator	Gasoline	10	0.0761	0.1277	0.0081	0.0002	0.0198
Generator	Diesel	85	0.5185	1.0338	0.0791	0.0009	0.1638
Generator	Diesel	85	0.5185	1.0338	0.0791	0.0009	0.1638
Generator	Diesel	250	0.5974	2.3843	0.0737	0.0024	0.1982
Generator	Diesel	Composite	0.3549	0.7249	0.0446	0.0007	0.1130
Welder	Electric	40	0.0000	0.0000	0.0000	0.0000	0.0000
Welder	Diesel	40	0.3169	0.2825	0.0317	0.0003	0.1392
Welder	Diesel	50	0.3169	0.2825	0.0317	0.0003	0.1392
Demolition Hammer	Pneumatic	0	0.0000	0.0000	0.0000	0.0000	0.0000

(1) SCAQMD, 2006 : [http://www.aqmd.gov/ceqa/handbook/offroad/offroadEF\\_0620.xls](http://www.aqmd.gov/ceqa/handbook/offroad/offroadEF_0620.xls)

(2) Modelled as 'Crane'.

(3) Modelled as 'Other Construction Equipment'.

**Appendix C  
ConocoPhillips - Los Angeles Refinery  
Cumulative Impacts  
Peak Daily Construction Equipment Emissions**

Equipment	Hours (hr/day)	Wilmington		Carson				Rule 1118 Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	
Air Compressor	8					2		
Air Compressor	10						1	
Air Compressor	16						4	
Backhoe	10							1
Backhoe	4		1					
Backhoe	8				1			
Backhoe	10						2	
Backhoe	10	1						
Backhoe	3			1				
Backhoe	6					1		
Plate Compactor	10						3	
Crane	10						2	
Crane	4	1						
Crane	10						1	2
Crane	16						2	
Crane	8							
Crane	2		1	1				
Boom Truck	10						3	
Boom Truck	16						1	
Boom Truck	6.5					1		
Boom Truck	4		1					
Boom Truck	2				1			
Dozer	5					1		
Front End Loader	10						1	
Man Lift	5	1						
Man Lift	10						4	4
Man Lift	1			1				
Pile Driver	10						1	
Fork Lift	10						2	1
Fork Lift	16						2	
Fork Lift	2	1	1					
Fork Lift	2			1				
Generator	4	2						
Generator	10						1	
Generator	16						4	
Generator	9					1		
Generator	10							1
Welder	8	2	3	4				
Welder	10						6	4
Welder	9						5	
Demolition Hammer	10						2	

CO	Emission Rate (lb/hr)	Wilmington		Carson				Rule 1118 Vapor Recovery	
		2007	Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction		Coker Project
Air Compressor	0.293	0.00	0.00	0.00	0.00	0.00	4.69	0.00	0.00
Air Compressor	0.293	0.00	0.00	0.00	0.00	0.00	0.00	2.93	0.00
Air Compressor	0.293	0.00	0.00	0.00	0.00	0.00	0.00	18.77	0.00
Backhoe	0.375	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.75
Backhoe	0.592	0.00	2.37	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	0.592	0.00	0.00	0.00	0.00	4.73	0.00	0.00	0.00
Backhoe	0.592	0.00	0.00	0.00	0.00	0.00	0.00	11.84	0.00
Backhoe	0.913	9.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	0.472	0.00	0.00	1.41	0.00	0.00	0.00	0.00	0.00
Backhoe	0.472	0.00	0.00	0.00	0.00	2.83	0.00	0.00	0.00
Plate Compactor	0.026	0.00	0.00	0.00	0.00	0.00	0.00	0.79	0.00
Crane	0.497	0.00	0.00	0.00	0.00	0.00	0.00	9.95	0.00
Crane	0.497	1.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.497	0.00	0.00	0.00	0.00	0.00	0.00	4.97	9.95
Crane	0.497	0.00	0.00	0.00	0.00	0.00	0.00	15.92	0.00
Crane	0.412	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.637	0.00	1.27	1.27	0.00	0.00	0.00	0.00	0.00
Boom Truck	0.497	0.00	0.00	0.00	0.00	0.00	0.00	14.92	0.00
Boom Truck	0.497	0.00	0.00	0.00	0.00	0.00	0.00	7.96	0.00
Boom Truck	0.412	0.00	0.00	0.00	0.00	0.00	2.68	0.00	0.00
Boom Truck	0.412	0.00	1.65	0.00	0.00	0.00	0.00	0.00	0.00
Boom Truck	0.412	0.00	0.00	0.00	0.00	0.82	0.00	0.00	0.00
Dozer	0.884	0.00	0.00	0.00	0.00	0.00	4.42	0.00	0.00
Front End Loader	0.375	0.00	0.00	0.00	0.00	0.00	0.00	3.75	0.00
Man Lift	0.204	1.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Man Lift	0.204	0.00	0.00	0.00	0.00	0.00	0.00	8.17	8.17
Man Lift	0.256	0.00	0.00	0.26	0.00	0.00	0.00	0.00	0.00
Pile Driver	0.326	0.00	0.00	0.00	0.00	0.00	0.00	3.26	0.00
Fork Lift	0.212	0.00	0.00	0.00	0.00	0.00	0.00	4.24	2.12
Fork Lift	0.212	0.00	0.00	0.00	0.00	0.00	0.00	6.78	0.00
Fork Lift	0.234	0.47	0.47	0.00	0.00	0.00	0.00	0.00	0.00
Generator	0.250	0.00	0.00	0.50	0.00	0.00	0.00	0.00	0.00
Generator	0.076	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Generator	0.519	0.00	0.00	0.00	0.00	0.00	0.00	5.19	0.00
Generator	0.519	0.00	0.00	0.00	0.00	0.00	0.00	33.19	0.00
Generator	0.597	0.00	0.00	0.00	0.00	0.00	5.38	0.00	0.00
Welder	0.355	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.55
Welder	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welder	0.317	0.00	0.00	0.00	0.00	0.00	0.00	19.02	12.68
Welder	0.317	0.00	0.00	0.00	0.00	0.00	14.26	0.00	0.00
Demolition Hammer	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		13.22	5.76	3.44	5.56	34.26	171.65	40.21	

**Appendix C  
ConocoPhillips  
Cumulative Impacts  
Peak Daily Construction Equipment Emissions (Cont.)**

	Emission Rate (lb/hr)		Carson						
	2007	Wilmington Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	Rule 1118 Vapor Recovery	
NOX	2007	Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	Rule 1118 Vapor Recovery	
Air Compressor	0.247	0.00	0.00	0.00	0.00	3.95	0.00	0.00	
Air Compressor	0.247	0.00	0.00	0.00	0.00	0.00	2.47	0.00	
Air Compressor	0.247	0.00	0.00	0.00	0.00	0.00	15.79	0.00	
Backhoe	0.698	0.00	0.00	0.00	0.00	0.00	0.00	6.98	
Backhoe	1.209	0.00	4.83	0.00	0.00	0.00	0.00	0.00	
Backhoe	1.209	0.00	0.00	0.00	9.67	0.00	0.00	0.00	
Backhoe	1.209	0.00	0.00	0.00	0.00	0.00	24.17	0.00	
Backhoe	2.073	20.73	0.00	0.00	0.00	0.00	0.00	0.00	
Backhoe	1.931	0.00	0.00	5.79	0.00	0.00	0.00	0.00	
Backhoe	1.931	0.00	0.00	0.00	0.00	11.59	0.00	0.00	
Plate Compactor	0.035	0.00	0.00	0.00	0.00	0.00	1.05	0.00	
Crane	1.101	0.00	0.00	0.00	0.00	0.00	22.02	0.00	
Crane	1.101	4.40	0.00	0.00	0.00	0.00	0.00	0.00	
Crane	1.101	0.00	0.00	0.00	0.00	0.00	11.01	22.02	
Crane	1.101	0.00	0.00	0.00	0.00	0.00	35.23	0.00	
Crane	1.466	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Crane	1.695	0.00	3.39	3.39	0.00	0.00	0.00	0.00	
Boom Truck	1.101	0.00	0.00	0.00	0.00	0.00	33.03	0.00	
Boom Truck	1.101	0.00	0.00	0.00	0.00	0.00	17.51	0.00	
Boom Truck	1.466	0.00	0.00	0.00	0.00	9.53	0.00	0.00	
Boom Truck	1.466	0.00	5.87	0.00	0.00	0.00	0.00	0.00	
Boom Truck	1.466	0.00	0.00	0.00	2.93	0.00	0.00	0.00	
Dozer	2.800	0.00	0.00	0.00	0.00	14.00	0.00	0.00	
Front End Loader	0.698	0.00	0.00	0.00	0.00	0.00	6.98	0.00	
Man Lift	0.206	1.03	0.00	0.00	0.00	0.00	0.00	0.00	
Man Lift	0.206	0.00	0.00	0.00	0.00	0.00	8.25	8.25	
Man Lift	0.511	0.00	0.00	0.51	0.00	0.00	0.00	0.00	
Pile Driver	0.294	0.00	0.00	0.00	0.00	0.00	2.94	0.00	
Fork Lift	0.164	0.00	0.00	0.00	0.00	0.00	3.29	1.64	
Fork Lift	0.164	0.00	0.00	0.00	0.00	0.00	5.26	0.00	
Fork Lift	0.436	0.87	0.87	0.00	0.00	0.00	0.00	0.00	
Generator	0.643	0.00	0.00	1.29	0.00	0.00	0.00	0.00	
Generator	0.128	1.02	0.00	0.00	0.00	0.00	0.00	0.00	
Generator	1.034	0.00	0.00	0.00	0.00	0.00	10.34	0.00	
Generator	1.034	0.00	0.00	0.00	0.00	0.00	66.16	0.00	
Generator	2.384	0.00	0.00	0.00	0.00	21.46	0.00	0.00	
Welder	0.725	0.00	0.00	0.00	0.00	0.00	0.00	7.25	
Welder	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Welder	0.282	0.00	0.00	0.00	0.00	0.00	16.95	11.30	
Welder	0.282	0.00	0.00	0.00	0.00	12.71	0.00	0.00	
Demolition Hammer	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total		28.05	14.96	10.98	12.60	73.24	282.54	57.44	

	Emission Rate (lb/hr)		Carson						
	2007	Wilmington Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	Rule 1118 Vapor Recovery	
VOC	2007	Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	Rule 1118 Vapor Recovery	
Air Compressor	0.131	0.00	0.00	0.00	0.00	2.09	0.00	0.00	
Air Compressor	0.131	0.00	0.00	0.00	0.00	0.00	1.31	0.00	
Air Compressor	0.131	0.00	0.00	0.00	0.00	0.00	8.36	0.00	
Backhoe	0.118	0.00	0.00	0.00	0.00	0.00	0.00	1.18	
Backhoe	0.151	0.00	0.61	0.00	0.00	0.00	0.00	0.00	
Backhoe	0.151	0.00	0.00	0.00	1.21	0.00	0.00	0.00	
Backhoe	0.151	0.00	0.00	0.00	0.00	0.00	3.03	0.00	
Backhoe	0.260	2.60	0.00	0.00	0.00	0.00	0.00	0.00	
Backhoe	0.171	0.00	0.00	0.51	0.00	0.00	0.00	0.00	
Backhoe	0.171	0.00	0.00	0.00	0.00	1.03	0.00	0.00	
Plate Compactor	0.005	0.00	0.00	0.00	0.00	0.00	0.16	0.00	
Crane	0.142	0.00	0.00	0.00	0.00	0.00	2.83	0.00	
Crane	0.142	0.57	0.00	0.00	0.00	0.00	0.00	0.00	
Crane	0.142	0.00	0.00	0.00	0.00	0.00	1.42	2.83	
Crane	0.142	0.00	0.00	0.00	0.00	0.00	4.54	0.00	
Crane	0.148	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Crane	0.188	0.00	0.38	0.38	0.00	0.00	0.00	0.00	
Boom Truck	0.142	0.00	0.00	0.00	0.00	0.00	4.25	0.00	
Boom Truck	0.142	0.00	0.00	0.00	0.00	0.00	2.27	0.00	
Boom Truck	0.148	0.00	0.00	0.00	0.00	0.96	0.00	0.00	
Boom Truck	0.148	0.00	0.59	0.00	0.00	0.00	0.00	0.00	
Boom Truck	0.148	0.00	0.00	0.00	0.30	0.00	0.00	0.00	
Dozer	0.314	0.00	0.00	0.00	0.00	1.57	0.00	0.00	
Front End Loader	0.118	0.00	0.00	0.00	0.00	0.00	1.18	0.00	
Man Lift	0.087	0.43	0.00	0.00	0.00	0.00	0.00	0.00	
Man Lift	0.087	0.00	0.00	0.00	0.00	0.00	3.47	3.47	
Man Lift	0.082	0.00	0.00	0.08	0.00	0.00	0.00	0.00	
Pile Driver	0.136	0.00	0.00	0.00	0.00	0.00	1.36	0.00	
Fork Lift	0.093	0.00	0.00	0.00	0.00	0.00	1.86	0.93	
Fork Lift	0.093	0.00	0.00	0.00	0.00	0.00	2.98	0.00	
Fork Lift	0.079	0.16	0.16	0.00	0.00	0.00	0.00	0.00	
Generator	0.086	0.00	0.00	0.17	0.00	0.00	0.00	0.00	
Generator	0.020	0.16	0.00	0.00	0.00	0.00	0.00	0.00	
Generator	0.164	0.00	0.00	0.00	0.00	0.00	1.64	0.00	
Generator	0.164	0.00	0.00	0.00	0.00	0.00	10.48	0.00	
Generator	0.198	0.00	0.00	0.00	0.00	1.78	0.00	0.00	
Welder	0.113	0.00	0.00	0.00	0.00	0.00	0.00	1.13	
Welder	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Welder	0.139	0.00	0.00	0.00	0.00	0.00	8.35	5.57	
Welder	0.139	0.00	0.00	0.00	0.00	6.26	0.00	0.00	
Demolition Hammer	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Total		3.92	1.73	1.14	1.51	13.70	59.48	15.11	

**Appendix C  
ConocoPhillips  
Cumulative Impacts  
Construction Equipment Emissions (Cont.)**

	Emission Rate (lb/hr)		Carson					
	2007	Wilmington Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	Rule 1118 Vapor Recovery
SOx								
Air Compressor	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Air Compressor	0.000	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Backhoe	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Backhoe	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	0.001	0.00	0.00	0.00	0.01	0.00	0.00	0.00
Backhoe	0.001	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Backhoe	0.002	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	0.002	0.00	0.00	0.01	0.00	0.00	0.00	0.00
Backhoe	0.002	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Plate Compactor	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.001	0.00	0.00	0.00	0.00	0.00	0.02	0.00
Crane	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.001	0.00	0.00	0.00	0.00	0.00	0.01	0.02
Crane	0.001	0.00	0.00	0.00	0.00	0.00	0.03	0.00
Crane	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Boom Truck	0.001	0.00	0.00	0.00	0.00	0.00	0.03	0.00
Boom Truck	0.001	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Boom Truck	0.001	0.00	0.01	0.00	0.00	0.00	0.00	0.00
Boom Truck	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dozer	0.002	0.00	0.00	0.00	0.00	0.01	0.00	0.00
Front End Loader	0.001	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Man Lift	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Man Lift	0.000	0.00	0.00	0.00	0.00	0.00	0.01	0.01
Man Lift	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pile Driver	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fork Lift	0.000	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Fork Lift	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Generator	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Generator	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Generator	0.001	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Generator	0.001	0.00	0.00	0.00	0.00	0.00	0.06	0.00
Generator	0.002	0.00	0.00	0.00	0.00	0.02	0.00	0.00
Welder	0.001	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Welder	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welder	0.000	0.00	0.00	0.00	0.00	0.00	0.02	0.01
Welder	0.000	0.00	0.00	0.00	0.00	0.02	0.00	0.00
Demolition Hammer	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.02	0.01	0.01	0.01	0.07	0.26	0.06

	Emission Rate (lb/hr)		Carson					
	2007	Wilmington Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	Rule 1118 Vapor Recovery
PM10								
Air Compressor	0.029	0.00	0.00	0.00	0.00	0.46	0.00	0.00
Air Compressor	0.029	0.00	0.00	0.00	0.00	0.00	0.29	0.00
Air Compressor	0.029	0.00	0.00	0.00	0.00	0.00	1.85	0.00
Backhoe	0.063	0.00	0.00	0.00	0.00	0.00	0.00	0.63
Backhoe	0.067	0.00	0.27	0.00	0.00	0.00	0.00	0.00
Backhoe	0.067	0.00	0.00	0.00	0.54	0.00	0.00	0.00
Backhoe	0.067	0.00	0.00	0.00	0.00	0.00	1.34	0.00
Backhoe	0.111	1.11	0.00	0.00	0.00	0.00	0.00	0.00
Backhoe	0.064	0.00	0.00	0.19	0.00	0.00	0.00	0.00
Backhoe	0.064	0.00	0.00	0.00	0.00	0.39	0.00	0.00
Plate Compactor	0.002	0.00	0.00	0.00	0.00	0.00	0.07	0.00
Crane	0.061	0.00	0.00	0.00	0.00	0.00	1.23	0.00
Crane	0.061	0.25	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.061	0.00	0.00	0.00	0.00	0.00	0.61	1.23
Crane	0.061	0.00	0.00	0.00	0.00	0.00	1.97	0.00
Crane	0.057	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Crane	0.075	0.00	0.15	0.15	0.00	0.00	0.00	0.00
Boom Truck	0.061	0.00	0.00	0.00	0.00	0.00	1.84	0.00
Boom Truck	0.061	0.00	0.00	0.00	0.00	0.00	0.98	0.00
Boom Truck	0.057	0.00	0.00	0.00	0.00	0.37	0.00	0.00
Boom Truck	0.057	0.00	0.23	0.00	0.00	0.00	0.00	0.00
Boom Truck	0.057	0.00	0.00	0.00	0.11	0.00	0.00	0.00
Dozer	0.124	0.00	0.00	0.00	0.00	0.62	0.00	0.00
Front End Loader	0.063	0.00	0.00	0.00	0.00	0.00	0.63	0.00
Man Lift	0.021	0.10	0.00	0.00	0.00	0.00	0.00	0.00
Man Lift	0.021	0.00	0.00	0.00	0.00	0.00	0.84	0.84
Man Lift	0.040	0.00	0.00	0.04	0.00	0.00	0.00	0.00
Pile Driver	0.032	0.00	0.00	0.00	0.00	0.00	0.32	0.00
Fork Lift	0.021	0.00	0.00	0.00	0.00	0.00	0.41	0.21
Fork Lift	0.021	0.00	0.00	0.00	0.00	0.00	0.66	0.00
Fork Lift	0.043	0.09	0.09	0.00	0.00	0.00	0.00	0.00
Generator	0.035	0.00	0.00	0.07	0.00	0.00	0.00	0.00
Generator	0.008	0.07	0.00	0.00	0.00	0.00	0.00	0.00
Generator	0.079	0.00	0.00	0.00	0.00	0.00	0.79	0.00
Generator	0.079	0.00	0.00	0.00	0.00	0.00	5.07	0.00
Generator	0.074	0.00	0.00	0.00	0.00	0.66	0.00	0.00
Welder	0.045	0.00	0.00	0.00	0.00	0.00	0.00	0.45
Welder	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Welder	0.032	0.00	0.00	0.00	0.00	0.00	1.90	1.27
Welder	0.032	0.00	0.00	0.00	0.00	1.43	0.00	0.00
Demolition Hammer	0.000	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		1.61	0.73	0.45	0.65	3.93	20.83	4.62

**Appendix C**  
**ConocoPhillips - Los Angeles Refinery**  
**Cumulative Impacts**  
**On-site Construction Vehicle Trip Emissions**

Vehicle	Miles per Day	Wilmington		Carson				Rule 1118 Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	
Pickup Trucks	10	0	0	0	0	2	1	3
12 Passenger Van	0	0	0	0	0	1	1	2
Total Light Vehicle Miles		0	0	0	0	0	0	40
Flatbed Truck	10	0	0	0	2	1		3
Refueling Truck	10	0	0	0	1	1		2
Dump Truck	10	1	1	0	0	0		2
Water Truck	0	0	0	0	0	0		0
Total Medium Truck Miles		10	10	0	30	20	70	30
Bus	0	0	0	0	0	0	0	0
Semi Tractor	0	0	0	0	0	0	0	0
Bulk Delivery Truck	0	0	0	0	0	0	0	0
Transport Truck	0	0	0	0	0	0	0	0
Total Heavy Truck Miles		0	0	0	0	0	0	0

CO	Emission Rate (lb/mi) <sup>(1)</sup>	Wilmington		Carson				Rule 1118 Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	
Light Duty	0.01282000	0.00	0.00	0.00	0.00	0.00	0.00	0.51
Medium Duty	0.01745500	0.17	0.17	0.00	0.52	0.35	1.22	0.52
Heavy Duty	0.00552033	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.17	0.17	0.00	0.52	0.35	1.22	1.04

NOx	Emission Rate (lb/mi) <sup>(1)</sup>	Wilmington		Carson				Rule 1118 Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	
Light Duty	0.00136100	0.00	0.00	0.00	0.00	0.00	0.00	0.05
Medium Duty	0.02497800	0.25	0.25	0.00	0.75	0.50	1.75	0.75
Heavy Duty	0.03563463	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.25	0.25	0.00	0.75	0.50	1.75	0.80

VOC	Emission Rate (lb/mi) <sup>(1)</sup>	Wilmington		Carson				Rule 1118 Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	
Light Duty	0.00138300	0.00	0.00	0.00	0.00	0.00	0.00	0.06
Medium Duty	0.00260800	0.03	0.03	0.00	0.08	0.05	0.18	0.08
Heavy Duty	0.00122652	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.03	0.03	0.00	0.08	0.05	0.18	0.13

SOx	Emission Rate (lb/mi) <sup>(1)</sup>	Wilmington		Carson				Rule 1118 Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	
Light Duty	0.00000900	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medium Duty	0.00003300	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Heavy Duty	0.00004572	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total		0.00	0.00	0.00	0.00	0.00	0.00	0.00

PM10	Emission Rate (lb/mi) <sup>(1)</sup>	Wilmington		Carson				Rule 1118 Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project	
Light Duty Exhaust	0.00007995	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Medium Duty Exhaust	0.00043966	0.00	0.00	0.00	0.01	0.01	0.03	0.01
Heavy Duty Exhaust	0.00064407	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Exhaust Sub-total		0.00	0.00	0.00	0.01	0.01	0.03	0.02
Light Duty Fugitive <sup>(2)</sup>	0.00038589	0.00	0.00	0.00	0.00	0.00	0.00	0.02
Medium Duty Fugitive <sup>(2)</sup>	0.00210368	0.02	0.02	0.00	0.06	0.04	0.15	0.06
Heavy Duty Fugitive <sup>(2)</sup>	0.02011945	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fugitive Sub-total		0.02	0.02	0.00	0.06	0.04	0.15	0.08
Total		0.03	0.03	0.00	0.08	0.05	0.18	0.09

(1) Based on 2007 SCAQMD on-road emission rates. (<http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>)

(2) Emission Calculations for travel on paved roads from EPA AP-42 Section 13.2.1, December 2003

$$E = k(sL/2)^{0.65} \times (W/3)^{1.5} - C$$

Where: k = 0.016 lb/VMT for PM10, sL = road silt loading (gms/m2) from CARB Methodology 7.9 for paved roads (0.240 for local roads and 0.037 for major/collector roads), W = weight of vehicles (2.4 tons for cars; 5 for pickup trucks, and 20 for heavy trucks), and C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear (0.00047 lbs/VMT).

**Appendix C**  
**ConocoPhillips - Los Angeles Refinery**  
**Cumulative Impacts**  
**Off-Site Construction Vehicle Trip Emissions**

Vehicle	Miles per Day	Wilmington		Carson					Rule 1118 Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project		
Commuters	32.4	12	30	60	5	15		210	125
Pickup Trucks	0	0	0	0	0	0		0	0
12 Passenger Van	0	0	0	0	0	0		0	0
<b>Total Light Vehicle Miles</b>		<b>388.8</b>	<b>972</b>	<b>1944</b>	<b>162</b>	<b>486</b>		<b>6804</b>	<b>4050</b>
Delivery Truck	50	3	3	3	3	3		5	3
Flatbed Truck	0	0	0	0	0	0		0	0
Refueling Truck	0	0	0	0	0	0		0	0
Dump Truck	0	0	0	0	0	0		0	0
Water Truck	0	0	0	0	0	0		0	0
<b>Total Medium Truck Miles</b>		<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>	<b>150</b>		<b>250</b>	<b>150</b>
Bus	0	0	0	0	0	0		0	0
Semi Tractor	0	0	0	0	0	0		0	0
Bulk Delivery Truck	0	0	0	0	0	0		0	0
Transport Truck	0	0	0	0	0	0		0	0
<b>Total Heavy Truck Miles</b>		<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>		<b>0</b>	<b>0</b>

CO	Emission Rate (lb/mi) <sup>(1)</sup>	Wilmington		Carson					Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project		
Light Duty	0.01282000	4.98	12.46	24.92	2.08	6.23		87.23	51.92
Medium Duty	0.01745500	2.62	2.62	2.62	2.62	2.62		4.36	2.62
Heavy Duty	0.00552033	0.00	0.00	0.00	0.00	0.00		0.00	0.00
<b>Total</b>		<b>7.60</b>	<b>15.08</b>	<b>27.54</b>	<b>4.70</b>	<b>8.85</b>		<b>91.59</b>	<b>54.54</b>

NOx	Emission Rate (lb/mi) <sup>(1)</sup>	Wilmington		Carson					Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project		
Light Duty	0.00136100	0.53	1.32	2.65	0.22	0.66		9.26	5.51
Medium Duty	0.02497800	3.75	3.75	3.75	3.75	3.75		6.24	3.75
Heavy Duty	0.03563463	0.00	0.00	0.00	0.00	0.00		0.00	0.00
<b>Total</b>		<b>4.28</b>	<b>5.07</b>	<b>6.39</b>	<b>3.97</b>	<b>4.41</b>		<b>15.50</b>	<b>9.26</b>

VOC	Emission Rate (lb/mi) <sup>(1)</sup>	Wilmington		Carson					Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project		
Light Duty	0.00138300	0.54	1.34	2.69	0.22	0.67		9.41	5.60
Medium Duty	0.00260800	0.39	0.39	0.39	0.39	0.39		0.65	0.39
Heavy Duty	0.00122652	0.00	0.00	0.00	0.00	0.00		0.00	0.00
<b>Total</b>		<b>0.93</b>	<b>1.74</b>	<b>3.08</b>	<b>0.62</b>	<b>1.06</b>		<b>10.06</b>	<b>5.99</b>

SOx	Emission Rate (lb/mi) <sup>(1)</sup>	Wilmington		Carson					Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project		
Light Duty	0.00009000	0.00	0.01	0.02	0.00	0.00		0.06	0.04
Medium Duty	0.00003300	0.00	0.00	0.00	0.00	0.00		0.01	0.00
Heavy Duty	0.00004572	0.00	0.00	0.00	0.00	0.00		0.00	0.00
<b>Total</b>		<b>0.01</b>	<b>0.01</b>	<b>0.02</b>	<b>0.01</b>	<b>0.01</b>		<b>0.07</b>	<b>0.04</b>

PM10	Emission Rate (lb/mi) <sup>(1)</sup>	Wilmington		Carson					Rule 1118 Vapor Recovery
		Sulfur Recovery	DAF	Crude Unit Accumulator	Tank 2625 - Demolition	Tank 2625 - Construction	Coker Project		
Light Duty Exhaust	0.00007995	0.03	0.08	0.16	0.01	0.04		0.54	0.32
Medium Duty Exhaust	0.00043966	0.07	0.07	0.07	0.07	0.07		0.11	0.07
Heavy Duty Exhaust	0.00064407	0.00	0.00	0.00	0.00	0.00		0.00	0.00
Exhaust Sub-total		0.10	0.14	0.22	0.08	0.10		0.65	0.39
Light Duty Fugitive <sup>(2)</sup>	0.00038589	0.15	0.38	0.75	0.06	0.19		2.63	1.56
Medium Duty Fugitive <sup>(2)</sup>	0.00210368	0.32	0.32	0.32	0.32	0.32		0.53	0.32
Heavy Duty Fugitive <sup>(2)</sup>	0.02011945	0.00	0.00	0.00	0.00	0.00		0.00	0.00
Fugitive Sub-total		0.47	0.69	1.07	0.38	0.50		3.15	1.88
<b>Total</b>		<b>0.56</b>	<b>0.83</b>	<b>1.29</b>	<b>0.46</b>	<b>0.61</b>		<b>3.81</b>	<b>2.27</b>

(1) Based on 2007 SCAQMD on-road emission rates. (<http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>)

(2) Emission Calculations for travel on paved roads from EPA AP-42 Section 13.2.1, December 2003

$$E = k(sL/2)^{0.65} \times (W/3)^{1.5} \times C$$

Where: k = 0.016 lb/MT for PM10, sL = road silt loading (gms/m2) from CARB Methodology 7.9 for paved roads

(0.240 for local roads and 0.037 for major/collector roads), W = weight of vehicles (2.4 tons for cars; 5 for pickup trucks,

and 20 for heavy trucks), and C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear (0.00047 lbs/MT).



**Appendix C**  
**ConocoPhillips - Los Angeles Refinery**  
**Cumulative Impacts**  
**Fugitive PM Construction Emissions for Sulfur Recovery Vent System**

Activity	Average Pieces of Equipment Operating	Peak Pieces of Equipment Operating	Hours of Operation	PM10 Emission Factor (lb/hour)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source
						Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	
Grading Operations	0	0	0	5.837	0.5	0.00	0.00	0	0	Table A9-9-F
Construction Activities <sup>(1)</sup>										
<b>TRENCHING OPERATIONS (Backhoe)</b>										
	Average Tons of Materials Handled Per Day	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor						
TEMPORARY STOCKPILES	0	0	0.0035	0.5						Table A9-9-G
Construction Activities <sup>(2)</sup>										
Assumptions: 1cubic yard trench spoils = 1 ton										
	Days of Construction	Average Acreage Disturbed Per Day	Peak Acreage Disturbed Per Day	PM10 Emission Factor (lb/day/acre)						
WIND EROSION Disturbed Area and Temporary Stockpiles	0	0	0	0.200						Table A9-9-E
Construction Activities										
<b>TRUCK FILLING/DUMPING</b>										
	Estimated Materials Handled Per Day (tons)	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor						
Truck Filling <sup>(4)</sup>	0	0	0.02205	0.5						
Truck Dumping	0	0	0.009075	0.5						

TOTAL PM10 Pounds/day (Controlled Emissions)	Average	Peak
	0.0000	0.0000
	0.000	0.000
		0.000

(1) Emissions (lbs/hr) =  $[0.75 \times (G^{1.5}) / (H^{1.4})] \times J$   
 where G = silt content (7.5%), H = moisture content (2.0%) and J = hrs of operation (EPA AP-42 Table 11.9-1 for bulldozing overburden).

(2) Emissions (lbs/ton) =  $0.00112 \times [(G/5)^{-3} / (H/2)^{-1}] \times I / J$   
 where G=mean wind speed (12 mph), H=moisture content of surface material (2%), I=lbs of dirt handled per day (100,000 lbs); and J=2,000 lbs/ton

(3) Emissions (lbs/day/acre) =  $1.7 \times [(G/1.5)^{-3} / (365-H)/235] \times I / 15 \times J$   
 where G = silt content (7.5%); H = days with >0.01 inch of rain (34); I = percentage of time wind speed exceeds 12 mph (50%) and J= fraction of TSP (0.5)

(4) Used SCAQMD Table 9-9 Default emission factors.

**Appendix C  
ConocoPhillips - Los Angeles Refinery  
Cumulative Impacts  
Fugitive PM Construction Emissions for the DAF**

Grading Operations Construction Activities <sup>(1)</sup>	Average Pieces of Equipment Operating	Peak Pieces of Equipment Operating	Hours of Operation	PM10 Emission Factor (lb/hour)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-F
						Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	
0	0	0	0	5.837	0.5	0.00	0.00	0	0	0

TRENCHING OPERATIONS (Backhoe)	Average Tons of Materials Handled Per Day	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-G
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	
TEMPORARY STOCKPILES Construction Activities <sup>(2)</sup>	0	0	0.0035	0.5	0	0	0	0	0

Assumptions: 1cubic yard trench spoils = 1 ton

WIND EROSION Disturbed Area and Temporary Stockpiles Construction Activities	Days of Construction	Average Acreage Disturbed Per Day	Peak Acreage Disturbed Per Day	PM10 Emission Factor (lb/day/acre)	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-E
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	
0	0	0	0	0.200	0.000	0.000	0.000	0.000	0.000

TRUCK FILLING/DUMPING Truck Filling <sup>(4)</sup> Truck Dumping	Estimated Materials Handled Per Day (tons)	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	
0	0	0	0.02205	0.5	0	0	0	0	0
0	0	0	0.009075	0.5	0	0	0	0	0

TOTAL PM10 Pounds/day (Controlled Emissions)	Average	Peak
	0.0000	0.0000
TOTAL PM10 Pounds/day (Uncontrolled Emissions)	Average	Peak
	0.000	0.000

- (1) Emissions (lbs/hr) =  $[0.75 \times (G^{1.5}) / (H^{1.4})] \times J$   
where G = silt content (7.5%), H = moisture content (2.0%) and J = hrs of operation (EPA AP-42 Table 11.9-1 for bulldozing overburden).
- (2) Emissions (lbs/ton) =  $0.00112 \times [(G/5)^{-3} / (H/2)^{-1}] \times I / J$   
where G=mean wind speed (12 mph), H=moisture content of surface material (2%), I=lbs of dirt handled per day (100,000 lbs); and J=2,000 lbs/ton
- (3) Emissions (lbs/day/acre) =  $1.7 \times [(G/1.5)^{-3} / (365-H)/235] \times I / 15 \times J$   
where G = silt content (7.5%); H = days with >0.01 inch of rain (34); I = percentage of time wind speed exceeds 12 mph (50%) and J= fraction of TSP (0.5)
- (4) Used SCAQMD Table 9-9 Default emission factors.

**Appendix C**  
**ConocoPhillips - Los Angeles Refinery**  
**Cumulative Impacts**  
**Fugitive PM Construction Emissions for Crude Unit Accumulator**

Grading Operations Construction Activities <sup>(1)</sup>	Average Pieces of Equipment Operating	Peak Pieces of Equipment Operating	Hours of Operation	PM10 Emission Factor (lb/hour)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source
						Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	
0	0	0	0	5.837	0.5	0.00	0.00	0	0	Table A9-9-F

  

TRENCHING OPERATIONS (Backhoe)										
TEMPORARY STOCKPILES Construction Activities <sup>(2)</sup>	Average Tons of Materials Handled Per Day	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day		
0	0	0	0.0035	0.5	0	0	0	0	0	Table A9-9-G

Assumptions: 1cubic yard trench spoils = 1 ton

  

WIND EROSION Disturbed Area and Temporary Stockpiles Construction Activities										
WIND EROSION Disturbed Area and Temporary Stockpiles Construction Activities	Days of Construction	Average Acreage Disturbed Per Day	Peak Acreage Disturbed Per Day	PM10 Emission Factor (lb/day/acre)	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Tons/Year	Peak PM10 Emissions Tons/Year		
0	0	0	0	0.200	0.000	0.000	0.000	0.000	0.000	Table A9-9-E

  

TRUCK FILLING/DUMPING										
Truck Filling <sup>(4)</sup> Truck Dumping	Estimated Materials Handled Per Day (tons)	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day		
0	0	0	0.02205	0.5	0	0	0	0	0	Table A9-9
0	0	0	0.009075	0.5	0	0	0	0	0	Table A9-9

TOTAL PM10 Pounds/day (Controlled Emissions)	Average	Peak
	0.0000	0.0000
	0.000	0.000

(1) Emissions (lbs/hr) =  $[0.75 \times (G^{1.5}) / (H^{1.4})] \times J$   
where G = silt content (7.5%), H = moisture content (2.0%) and J = hrs of operation (EPA AP-42 Table 11.9-1 for bulldozing overburden).

(2) Emissions (lbs/ton) =  $0.00112 \times [(G/5)^{-3} / (H/2)^{-1}] \times I / J$   
where G=mean wind speed (12 mph), H=moisture content of surface material (2%), I=lbs of dirt handled per day (100,000 lbs); and J=2,000 lbs/ton

(3) Emissions (lbs/day/acre) =  $1.7 \times [(G/1.5)^{-3} / (365-H)/235] \times I / (15 \times J)$   
where G = silt content (7.5%); H = days with >0.01 inch of rain (34); I = percentage of time wind speed exceeds 12 mph (50%) and J= fraction of TSP (0.5)

(4) Used SCAQMD Table 9-9 Default emission factors.

**Appendix C  
ConocoPhillips - Los Angeles Refinery  
Cumulative Impacts  
Fugitive PM Construction Emissions for Tank 2625 Demolition**

Grading Operations Construction Activities <sup>(1)</sup>	Average Pieces of Equipment Operating	Peak Pieces of Equipment Operating	Hours of Operation	PM10 Emission Factor (lb/hour)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-F
						Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	
0	0	0	0	5.837	0.5	0.00	0.00	0	0	0

TRENCHING OPERATIONS (Backhoe)	Average Tons of Materials Handled Per Day	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-G
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	
TEMPORARY STOCKPILES Construction Activities <sup>(2)</sup>	0	0	0.0035	0.5	0	0	0	0	0

Assumptions: 1cubic yard trench spoils = 1 ton

WIND EROSION Disturbed Area and Temporary Stockpiles Construction Activities	Days of Construction	Average Acreage Disturbed Per Day	Peak Acreage Disturbed Per Day	PM10 Emission Factor (lb/day/acre)	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-E
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	
0	0	0	0	0.200	0.000	0.000	0.000	0.000	0.000

TRUCK FILLING/DUMPING Truck Filling <sup>(4)</sup> Truck Dumping	Estimated Materials Handled Per Day (tons)	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	
0	0	0	0.02205	0.5	0	0	0	0	0
0	0	0	0.009075	0.5	0	0	0	0	0

TOTAL PM10 Pounds/day (Controlled Emissions)	Average	Peak
	0.0000	0.0000
(Uncontrolled Emissions)	0.000	0.000

- (1) Emissions (lbs/hr) =  $[0.75 \times (G^{1.5}) / (H^{1.4})] \times J$   
where G = silt content (7.5%), H = moisture content (2.0%) and J = hrs of operation (EPA AP-42 Table 11.9-1 for bulldozing overburden).
- (2) Emissions (lbs/ton) =  $0.00112 \times [(G/5)^{-3} / (H/2)^{-1}] \times I / J$   
where G=mean wind speed (12 mph), H=moisture content of surface material (2%), I=lbs of dirt handled per day (100,000 lbs); and J=2,000 lbs/ton
- (3) Emissions (lbs/day/acre) =  $1.7 \times [(G/1.5)^{-3} / (365-H)/235] \times I / 15 \times J$   
where G = silt content (7.5%); H = days with >0.01 inch of rain (34); I = percentage of time wind speed exceeds 12 mph (50%) and J= fraction of TSP (0.5)
- (4) Used SCAQMD Table 9-9 Default emission factors.

**Appendix C**  
**ConocoPhillips - Los Angeles Refinery**  
**Cumulative Impacts**  
**Fugitive PM Construction Emissions for Tank 2625 Construction**

Grading Operations Construction Activities <sup>(1)</sup>	Average Pieces of Equipment Operating	Peak Pieces of Equipment Operating	Hours of Operation	PM10 Emission Factor (lb/hour)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source
						Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	
	0	0	0	5.837	0.5	0.00	0.00	0	0	Table A9-9-F

  

TRENCHING OPERATIONS (Backhoe)										
TEMPORARY STOCKPILES Construction Activities <sup>(2)</sup>	Average Tons of Materials Handled Per Day	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day		
	0	0	0.0035	0.5	0	0	0	0	0	Table A9-9-G

Assumptions: 1cubic yard trench spoils = 1 ton

  

WIND EROSION Disturbed Area and Temporary Stockpiles Construction Activities										
WIND EROSION Disturbed Area and Temporary Stockpiles Construction Activities	Days of Construction	Average Acreage Disturbed Per Day	Peak Acreage Disturbed Per Day	PM10 Emission Factor (lb/day/acre)	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Tons/Year	Peak PM10 Emissions Tons/Year		
	0	0	0	0.200	0.000	0.000	0.000	0.000	0.000	Table A9-9-E

  

TRUCK FILLING/DUMPING										
Truck Filling <sup>(4)</sup> Truck Dumping	Estimated Materials Handled Per Day (tons)	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day		
	0	0	0.02205	0.5	0	0	0	0	0	Table A9-9
	0	0	0.009075	0.5	0	0	0	0	0	Table A9-9

TOTAL PM10 Pounds/day (Controlled Emissions)	Average	Peak
	0.0000	0.0000
	0.000	0.000

(1) Emissions (lbs/hr) =  $[0.75 \times (G^{1.5}) / (H^{1.4})] \times J$   
where G = silt content (7.5%), H = moisture content (2.0%) and J = hrs of operation (EPA AP-42 Table 11.9-1 for bulldozing overburden).

(2) Emissions (lbs/ton) =  $0.00112 \times [(G/5)^{-3} / (H/2)^{-1}] \times I / J$   
where G=mean wind speed (12 mph), H=moisture content of surface material (2%), I=lbs of dirt handled per day (100,000 lbs); and J=2,000 lbs/ton

(3) Emissions (lbs/day/acre) =  $1.7 \times [(G/1.5)^{-3} / (365-H)/235] \times I / 15 \times J$   
where G = silt content (7.5%); H = days with >0.01 inch of rain (34); I = percentage of time wind speed exceeds 12 mph (50%) and J= fraction of TSP (0.5)

(4) Used SCAQMD Table 9-9 Default emission factors.

**Appendix C**  
**ConocoPhillips - Los Angeles Refinery**  
**Cumulative Impacts**  
**Fugitive PM Construction Emissions for Coker Improvement**

Grading Operations Construction Activities <sup>(1)</sup>	Average Pieces of Equipment Operating	Peak Pieces of Equipment Operating	Hours of Operation	PM10 Emission Factor (lb/hour)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-F
						Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	
0	0	0	0	5.837	0.5	0.00	0.00	0	0	0

  

TRENCHING OPERATIONS (Backhoe)										
TEMPORARY STOCKPILES Construction Activities <sup>(2)</sup>	Average Tons of Materials Handled Per Day	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-G	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day		
0	0	0	0.0035	0.5	0	0	0	0	0	0

Assumptions: 1cubic yard trench spoils = 1 ton

  

WIND EROSION Disturbed Area and Temporary Stockpiles Construction Activities										
WIND EROSION Disturbed Area and Temporary Stockpiles Construction Activities	Days of Construction	Average Acreage Disturbed Per Day	Peak Acreage Disturbed Per Day	PM10 Emission Factor (lb/day/acre)	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-E	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day		
0	0	0	0	0.200	0.000	0.000	0.000	0.000	0.000	0.000

  

TRUCK FILLING/DUMPING										
Truck Filling <sup>(4)</sup> Truck Dumping	Estimated Materials Handled Per Day (tons)	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day		
0	0	0	0.02205	0.5	0	0	0	0	0	0
0	0	0	0.009075	0.5	0	0	0	0	0	0

TOTAL PM10 Pounds/day (Controlled Emissions)	Average	Peak
	0.0000	0.0000
TOTAL PM10 Pounds/day (Uncontrolled Emissions)	Average	Peak
	0.000	0.000

(1) Emissions (lbs/hr) =  $[0.75 \times (G^{1.5}) / (H^{1.4})] \times J$   
where G = silt content (7.5%), H = moisture content (2.0%) and J = hrs of operation (EPA AP-42 Table 11.9-1 for bulldozing overburden).

(2) Emissions (lbs/ton) =  $0.00112 \times [(G/5)^{-3} / (H/2)^{-1}] \times I / J$   
where G=mean wind speed (12 mph), H=moisture content of surface material (2%), I=lbs of dirt handled per day (100,000 lbs); and J=2,000 lbs/ton

(3) Emissions (lbs/day/acre) =  $1.7 \times [(G/1.5)^{-3} / (365-H)/235] \times I / 15 \times J$   
where G = silt content (7.5%); H = days with >0.01 inch of rain (34); I = percentage of time wind speed exceeds 12 mph (50%) and J= fraction of TSP (0.5)

(4) Used SCAQMD Table 9-9 Default emission factors.

**Appendix C  
ConocoPhillips - Los Angeles Refinery  
Cumulative Impacts  
Fugitive PM Construction Emissions for Rule 1118 Vapor Recovery Project**

Grading Operations Construction Activities <sup>(1)</sup>	Average Pieces of Equipment Operating	Peak Pieces of Equipment Operating	Hours of Operation	PM10 Emission Factor (lb/hour)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-F
						Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	Average PM10 Emissions (lbs/day)	Peak PM10 Emissions (lbs/day)	
	0	0	0	5.837	0.5	0.00	0.00	0	0	
<b>TRENCHING OPERATIONS (Backhoe)</b>										
TEMPORARY STOCKPILES Construction Activities <sup>(2)</sup>	Average Tons of Materials Handled Per Day	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-G	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day		
	0	0	0.0035	0.5	0	0	0	0	0	
Assumptions: 1cubic yard trench spoils = 1 ton										
WIND EROSION Disturbed Area and Temporary Stockpiles Construction Activities	Days of Construction	Average Acreage Disturbed Per Day	Peak Acreage Disturbed Per Day	PM10 Emission Factor (lb/day/acre)	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9-E	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Tons/Year	Peak PM10 Emissions Tons/Year		
	0	0	0	0.200	0.000	0.000	0.000	0.000	0.000	
<b>TRUCK FILLING/DUMPING</b>										
Truck Filling <sup>(4)</sup> Truck Dumping	Estimated Materials Handled Per Day (tons)	Peak Tons of Materials Handled Per Day	PM10 Emission Factor (lb/ton)	Water Control Factor	Controlled Emissions		Uncontrolled Emissions		SCAQMD Emission Factor Source Table A9-9	
					Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day	Average PM10 Emissions Pounds/day	Peak PM10 Emissions Pounds/day		
	0	0	0.02205	0.5	0	0	0	0	0	
	0	0	0.009075	0.5	0	0	0	0	0	

TOTAL PM10 Pounds/day (Controlled Emissions)	Average	Peak
	0.0000	0.0000
	0.000	0.000

- (1) Emissions (lbs/hr) =  $[0.75 \times (G^{1.5}) / (H^{1.4})] \times J$   
 where G = silt content (7.5%), H = moisture content (2.0%) and J = hrs of operation (EPA AP-42 Table 11.9-1 for bulldozing overburden).
- (2) Emissions (lbs/ton) =  $0.00112 \times [(G/5)^{0.3} / (H/2)^{1.4}] \times I/J$   
 where G=mean wind speed (12 mph), H=moisture content of surface material (2%), I=lbs of dirt handled per day (100,000 lbs); and J=2,000 lbs/ton
- (3) Emissions (lbs/day/acre) =  $1.7 \times [(G/1.5)^{0.3} (365-H)/235] \times I/15 \times J$   
 where G = silt content (7.5%); H = days with >0.01 inch of rain (34); I = percentage of time wind speed exceeds 12 mph (50%) and J= fraction of TSP (0.5)
- (4) Used SCAQMD Table 9-9 Default emission factors.