Appendix A

Construction Emissions

A. Construction Emissions Appendix

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Appendix A

A.1 Summary of Construction-Related GHG Emissions

Summary of Construction-Related GHG Emissions

Construction Year	CO_2 Emissions (tpy) [1]	CO_2 Emissions (metric tons/year)
Construction Emissions (Programmatic)		
2013	283,717	257,386
2014	856,660	777,157
2015	715,979	649,532
2016	634,735	575,827
2017	517,371	469,356
2018	98,665	89,508
2019	69,749	63,275
Total CO_2	**3,176,874**	**2,882,042**
Total CO_2e [2]	**3,335,718**	**3,026,144**
Construction Emissions (Mitigated)		
2013	283,717	257,386
2014	856,660	777,157
2015	715,979	649,532
2016	634,735	575,827
2017	517,371	469,356
2018	98,665	89,508
2019	69,749	63,275
Total CO_2	**3,176,874**	**2,882,042**
Total CO_2e [2]	**3,335,718**	**3,026,144**

HMF and MOWF [3]

Construction Year	CO_2 Emissions (tpy) [1]	CO_2 Emissions (metric tons/year)
Construction Emissions (Programmatic)		
2017	538	488
2018	7,187	6,520
2021	92,164	83,610
Total CO_2	**99,889**	**90,619**
Total CO_2e [2]	**104,884**	**95,150**
Construction Emissions (Mitigated)		
2017	538	488
2018	7,187	6,520
2021	92,164	83,610
Total CO_2	**99,889**	**90,619**
Total CO_2e [2]	**104,884**	**95,150**

Notes:

1. Only emissions released within the San Joaquin Valley Air Basin have been included above.

2. According to the EPA (http://www.epa.gov/oms/climate/420f05004.htm), emissions of CH_4 and N_2O from passenger vehicles are much lower than emissions of CO_2, contributing in the range of 5-6 percent of the CO_2-equivalent emissions. In addition, the URBEMIS2007 model does not estimate CH_4 and N_2O emissions. Therefore, to account for the CH_4 and N_2O emissions, the CO_2 emissions were conservatively increased by 5 percent to calculate the CO_2-equivalent emissions. Assumed that this approach for passenger vehicles was applicable to all emissions sources.

3. GHG construction emissions from the HMF/ MOWF were not included in the alternatives listed and were instead presented by themselves.

Appendix A

A.2 Construction Emissions Summary

	2013 Construction Emissions (Tons/ Year) (Unmitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mobilization	158.71	476.38	104.98	35.25	50.38	0.01	57,652
Demolition	20.29	57.08	82.51	18.73	4.10	0.10	10,685
Land Clearing	100.77	296.20	11.85	9.30	19.89	0.00	38,285
Earth Moving	210.58	526.41	121.08	43.00	65.58	0.01	59,423
Road Crossings	276.95	667.93	31.42	30.21	86.19	0.01	73,198
Elevated Structure	83.31	149.44	5.81	5.29	10.92	0.06	23,312
Concrete Batch Plant	0.00	0.00	36.41	36.41	0.00	0.00	0.00
Material Hauling	33.77	143.40	6.58	5.58	7.66	0.20	21,162
Total Emissions	**884.39**	**2,316.85**	**400.64**	**183.77**	**244.74**	**0.39**	**283,717**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2014 Construction Emissions (Tons/ Year) (Unmitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Earth Moving	778.25	1,925.08	241.16	118.23	257.96	0.03	210,966
Road Crossings	496.41	1,178.57	57.62	55.55	162.62	0.01	125,688
Track At Grade	1,548.34	2,029.72	85.73	75.14	178.36	1.94	400,629
Track Elevated	112.88	223.31	8.76	8.06	16.73	0.06	33,324
Elevated Structure	139.85	255.40	10.15	9.26	19.44	0.10	40,031
Concrete Batch Plants	0.00	0.00	36.41	36.41	0.00	0.00	0.00
Fresno Station	0.13	0.22	0.84	0.18	0.03	0.00	27.02
Material Hauling	72.65	301.27	13.30	11.34	15.98	0.44	45,993
Total Emissions	**3,148.51**	**5,913.58**	**453.96**	**314.16**	**651.13**	**2.59**	**856,660**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2015 Construction Emissions (Tons/ Year) (Unmitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Earth Moving	310.95	763.08	112.58	51.49	108.71	0.01	81,394
Road Crossings	517.32	1,210.28	61.29	59.22	177.25	0.01	125,689
Track At Grade	1,474.03	1,989.38	85.77	75.35	181.21	1.94	400,667
Track Elevated	111.49	223.27	8.94	8.15	17.44	0.06	33,326
Elevated Structure	137.07	254.50	10.33	9.45	20.15	0.10	40,033
Concrete Batch Plants	0.00	0.00	36.41	36.41	0.00	0.00	0.00
Fresno Station	2.75	2.71	6.42	1.44	0.38	0.00	584
Bakersfield Station	2.20	2.50	5.66	1.27	0.35	0.00	465
Material Hauling	51.40	206.19	9.08	7.74	10.99	0.32	33,822
Total Emissions	**2,607.23**	**4,651.90**	**336.48**	**250.52**	**516.49**	**2.45**	**715,979**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2016 Construction Emissions (Tons/ Year) (Unmitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Road Crossings	538.31	1,242.03	64.96	62.89	191.88	0.01	125,689
Track At Grade	1,409.38	1,955.95	86.13	75.86	184.78	1.94	400,693
Track Elevated	110.43	223.45	9.14	8.45	18.18	0.06	33,327
Elevated Structure	134.79	253.96	10.52	9.65	20.90	0.10	40,035
Concrete Batch Plants	0.00	0.00	36.41	36.41	0.00	0.00	0.00
Fresno Station	4.92	3.16	0.20	0.16	0.50	0.01	1,126.67
Bakersfield Station	4.11	2.79	0.17	0.14	0.45	0.01	926.87
Material Hauling	43.75	169.53	7.51	6.38	9.09	0.29	30,130
Power Paralleling Supply Station	8.44	12.65	0.69	0.57	1.69	0.00	1,847
Switching Power Supply Station	2.11	3.16	0.18	0.14	0.42	0.00	462
Traction Power Supply Station	2.29	3.33	0.25	0.16	0.45	0.00	499
Total Emissions	**2,258.52**	**3,870.02**	**216.16**	**200.83**	**428.33**	**2.42**	**634,735**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2017 Construction Emissions (Tons/ Year) (Unmitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Road Crossings	557.20	1,268.95	68.37	66.31	205.73	0.01	125,207
Track At Grade	901.33	1,285.82	57.73	50.97	125.76	1.29	267,142
Track Elevated	73.07	149.23	6.22	5.77	12.62	0.04	22,218
Elevated Structure	132.39	252.77	10.67	9.82	21.58	0.10	39,882
Concrete Batch Plants	0.00	0.00	36.41	36.41	0.00	0.00	0.00
Fresno Station	4.57	2.84	0.18	0.14	0.45	0.01	1,122.44
Bakersfield Station	3.83	2.52	0.16	0.13	0.41	0.01	923.39
HMF	1.58	2.48	4.98	1.12	0.33	0.00	400
MOWF	0.65	0.88	0.86	0.21	0.12	0.00	138
Material Hauling	38.30	138.66	6.53	5.46	7.66	0.28	28,956
Power Paralleling Supply Station	8.61	11.37	0.55	0.50	1.59	0.00	2,088
Switching Power Supply Station	2.15	2.84	0.14	0.13	0.40	0.00	522
Traction Power Supply Station	2.33	2.64	0.14	0.13	0.38	0.00	502
Demobilization	88.55	258.13	11.02	10.60	34.78	0.00	28,807
Total Emissions	**1,814.56**	**3,379.13**	**203.96**	**187.70**	**411.80**	**1.75**	**517,909**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	***Yes***	***Yes***	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2018 Construction Emissions (Tons/ Year) (Unmitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Fresno Station	4.29	2.58	0.16	0.13	0.41	0.01	1,126.82
Bakersfield Station	3.61	2.29	0.14	0.11	0.37	0.01	926.99
MOWF	0.46	0.46	0.03	0.02	0.24	0.00	102
MOWF Track	18.54	46.36	1.91	1.81	4.45	0.00	5,963
Material Hauling	29.01	89.43	4.75	4.07	5.39	0.25	26,232
MOWF HMF Haul Trucks	1.24	3.82	0.22	0.17	0.23	0.01	1,122
Power Paralleling Supply Station	3.57	4.32	0.20	0.18	0.68	0.00	884
Switching Power Supply Station	0.89	1.08	0.05	0.05	0.17	0.00	221
Traction Power Supply Station	1.35	1.40	0.07	0.06	0.34	0.00	296
Demobilization	217.47	630.49	27.65	26.64	89.06	0.01	68,979
Total Emissions	**280.43**	**782.22**	**35.17**	**33.25**	**101.35**	**0.30**	**105,852**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	No	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2019 Construction Emissions (Tons/ Year) (Unmitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Fresno Station	1.36	0.78	0.05	0.04	3.49	0.00	380
Bakersfield Station	1.44	0.87	0.05	0.04	2.75	0.00	390
Demobilization	222.95	642.91	28.90	27.90	94.85	0.01	68,979
Total Emissions	**225.75**	**644.56**	**29.00**	**27.98**	**101.09**	**0.01**	**69,749**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	No	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2021 Construction Emissions (Tons/ Year) (Unmitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
HMF	1.58	1.03	0.07	0.06	4.24	0.00	634
HMF Track	226.80	571.33	25.00	23.78	61.56	0.05	71,560
MOWF HMF Haul Trucks	21.63	67.94	3.44	2.79	3.90	0.19	19,969
Total Emissions	**250.00**	**640.30**	**28.51**	**26.62**	**69.70**	**0.24**	**92,164**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	No	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2013 Construction Emissions (Tons/ Year) (Mitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mobilization	158.71	74.76	78.26	18.40	21.33	0.01	57,652
Demolition	20.29	8.96	80.69	17.07	1.74	0.10	10,685
Land Clearing	100.77	46.48	3.64	1.82	8.42	0.00	38,285
Earth Moving	210.58	82.61	88.20	21.16	27.77	0.01	59,423
Road Crossings	276.95	104.82	4.88	4.68	36.49	0.01	73,198
Elevated Structure	83.31	23.45	1.11	0.89	4.62	0.06	23,312
Concrete Batch Plant	0.00	0.00	1.71	1.71	0.00	0.00	0.00
Material Hauling	10.82	16.75	1.78	1.16	1.50	0.20	21,162
Total Emissions	**861.43**	**357.84**	**260.28**	**66.89**	**101.88**	**0.39**	**283,717**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	***Yes***	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2014 Construction Emissions (Tons/ Year) (Mitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Earth Moving	778.25	302.11	145.12	40.81	109.22	0.03	210,966
Road Crossings	496.41	184.96	8.95	8.60	68.85	0.01	125,688
Track At Grade	1,548.34	318.54	20.35	14.08	75.52	1.94	400,629
Track Elevated	112.88	35.05	1.59	1.33	7.08	0.06	33,324
Elevated Structure	139.85	40.08	1.94	1.56	8.23	0.10	40,031
Concrete Batch Plants	0.00	0.00	1.71	1.71	0.00	0.00	0.00
Fresno Station	0.13	0.03	0.13	0.03	0.01	0.00	27.02
Material Hauling	32.68	87.43	5.05	3.74	5.45	0.44	45,993
Total Emissions	**3,108.55**	**968.21**	**184.84**	**71.86**	**274.37**	**2.59**	**856,660**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	***Yes***	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2015 Construction Emissions (Tons/ Year) (Mitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Earth Moving	310.95	119.75	71.31	19.22	46.03	0.01	81,394
Road Crossings	517.32	189.94	9.52	9.16	75.05	0.01	125,689
Track At Grade	1,474.03	312.20	20.36	14.11	76.72	1.94	400,667
Track Elevated	111.49	35.04	1.62	1.36	7.38	0.06	33,326
Elevated Structure	137.07	39.94	1.96	1.59	8.53	0.10	40,033
Concrete Batch Plants	0.00	0.00	1.71	1.71	0.00	0.00	0.00
Fresno Station	2.75	0.43	0.98	0.22	0.16	0.00	584
Bakersfield Station	2.20	0.39	0.86	0.19	0.11	0.00	465
Material Hauling	26.76	78.62	4.06	3.12	4.62	0.32	33,822
Total Emissions	**2,582.58**	**776.31**	**112.38**	**50.68**	**218.61**	**2.45**	**715,979**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	***Yes***	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2016 Construction Emissions (Tons/ Year) (Mitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Road Crossings	538.31	194.92	10.08	9.73	81.24	0.01	125,689
Track At Grade	1,409.38	306.96	20.42	14.19	78.23	1.94	400,693
Track Elevated	110.43	35.07	1.65	1.39	7.70	0.06	33,327
Elevated Structure	134.79	39.86	1.99	1.62	8.85	0.10	40,035
Concrete Batch Plants	0.00	0.00	1.71	1.71	0.00	0.00	0.00
Fresno Station	4.92	0.50	0.06	0.03	0.21	0.01	1,126.67
Bakersfield Station	4.11	0.44	0.05	0.03	0.07	0.01	926.87
Material Hauling	25.19	76.53	3.78	2.95	4.40	0.29	30,130
Power Paralleling Supply Station	8.44	1.99	0.18	0.10	0.71	0.00	1,847
Switching Power Supply Station	2.11	0.50	0.05	0.03	0.18	0.00	462
Traction Power Supply Station	2.29	0.52	0.11	0.04	0.19	0.00	499
Total Emissions	**2,239.96**	**657.27**	**40.09**	**31.82**	**181.79**	**2.42**	**634,735**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	No	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2017 Construction Emissions (Tons/ Year) (Mitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Road Crossings	557.20	199.14	10.61	10.26	87.10	0.01	125,207
Track At Grade	901.33	201.79	13.66	9.52	53.24	1.29	267,142
Track Elevated	73.07	23.42	1.12	0.95	5.34	0.04	22,218
Elevated Structure	132.39	39.67	2.02	1.64	9.14	0.10	39,882
Concrete Batch Plants	0.00	0.00	1.71	1.71	0.00	0.00	0.00
Fresno Station	4.57	0.45	0.06	0.03	0.19	0.01	1,122.44
Bakersfield Station	3.83	0.40	0.05	0.03	0.06	0.01	923.39
HMF	1.58	0.39	4.65	0.98	0.14	0.00	400
MOWF	0.65	0.14	0.79	0.17	0.05	0.00	138
Material Hauling	22.52	62.12	3.43	2.59	3.77	0.28	28,956
Power Paralleling Supply Station	8.61	1.78	0.08	0.08	0.67	0.00	2,088
Switching Power Supply Station	2.15	0.45	0.02	0.02	0.17	0.00	522
Traction Power Supply Station	2.33	0.42	0.02	0.02	0.16	0.00	502
Demobilization	88.55	40.51	1.72	1.64	14.72	0.00	28,807
Total Emissions	**1,798.78**	**570.66**	**39.93**	**29.65**	**174.76**	**1.75**	**517,909**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	No	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	***Yes***	***Yes***	***Yes***	NA	NA

	2018 Construction Emissions (Tons/ Year) (Mitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Fresno Station	4.29	0.40	0.06	0.03	0.17	0.01	1,126.82
Bakersfield Station	3.61	0.36	0.05	0.03	0.06	0.01	926.99
MOWF	0.46	0.07	0.01	0.00	0.10	0.00	102
MOWF Track	18.54	7.28	0.31	0.28	1.88	0.00	5,963
Material Hauling	15.77	27.08	2.50	1.71	2.19	0.25	26,232
MOWF HMF Haul Trucks	0.67	1.15	0.08	0.07	0.09	0.01	1,122
Power Paralleling Supply Station	3.57	0.68	0.03	0.03	0.29	0.00	884
Switching Power Supply Station	0.89	0.17	0.01	0.01	0.07	0.00	221
Traction Power Supply Station	1.35	0.22	0.01	0.01	0.14	0.00	296
Demobilization	217.47	98.95	4.31	4.13	37.71	0.01	68,979
Total Emissions	**266.62**	**136.35**	**7.36**	**6.30**	**42.70**	**0.30**	**105,852**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	No	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	No	No	***Yes***	NA	NA

	2019 Construction Emissions (Tons/ Year) (Mitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Fresno Station	1.36	0.12	0.02	0.00	1.33	0.00	380
Bakersfield Station	1.44	0.14	0.02	0.01	0.38	0.14	390
Demobilization	222.95	100.90	4.50	4.32	40.16	0.01	68,979
Total Emissions	**225.75**	**101.15**	**4.53**	**4.33**	**41.88**	**0.15**	**69,749**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	No	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	No	No	***Yes***	NA	NA

	2021 Construction Emissions (Tons/ Year) (Mitigated)						
Activity	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
HMF	1.58	0.16	0.03	0.01	1.63	0.00	634
HMF Track	226.80	89.66	4.03	3.73	26.06	0.05	71,560
MOWF HMF Haul Trucks	16.49	45.88	2.47	1.90	2.73	0.19	19,969
Total Emissions	**244.86**	**135.70**	**6.53**	**5.65**	**30.43**	**0.24**	**92,164**
GC applicability thresholds	100.00	10.00	100.00	100.00	10.00	100.00	NA
Exceeds GC applicability threholds?	***Yes***	***Yes***	No	No	***Yes***	No	NA
SJVAPCD Thresholds	NA	10.00	15.00	15.00	10.00	NA	NA
Exceeds SJVAPCD Thresholds?	NA	***Yes***	No	No	***Yes***	NA	NA

Appendix A

A.3 Construction Emissions by Activity

Mobilization

Data Taken from Project Descriptions or Provided
Estimated Values
Data used in calculations

Construction Start Date:	3/1/2013
Construction End Date:	10/31/2013

Project Data

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Flatbed Truck - 1 Ton	175	15	3	45	174	10
Flatbed Truck - 5 Ton	210	15	3	45	174	10
Flatbed Tractor/Trailer	300-500	30	3	90	174	10
Service Truck - Fuel/Lube	300	5	3	15	174	10
Water Truck	210	5	3	15	174	10
Light Plant - 4 Lights	10	10	3	30	174	10
Truck dump 18 CY triaxle	200	5	3	15	174	10
Boom Truck 20 ton	330	5	3	15	174	10
CAT 416E Backhoe	87	2	3	6	174	10
Cat 330 2.5 CY Excavator	300	1	3	3	174	10
CAT D6K Dozer	125	2	3	6	174	10

Assumptions:

The mobilization equipment was provided by Project Engineers

Assume 5 work days per week (URBEMIS default).

Use the Inudstrial Park Land Use Category in URBEMIS.

For Mobilization, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

Assumed the maximum daily acres cleared were 25% of the total acres cleared(URBEMIS default).

Assumed material hauled was 20 cubic yards per truck and material was hauled for a round trip distance of 20 miles (URBEMIS default)

Mobilization Emissions

		Tons Emitted Per Year (Unmitigated) [1]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO2**
Mobilization	2013	158.71	476.38	104.98	35.25	50.38	0.01	57,652
Total	**2013**	**158.71**	**476.38**	**104.98**	**35.25**	**50.38**	**0.01**	**57,652**

		Tons Emitted Per Year (Mitigated) [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO2**
Mobilization	2013	158.71	74.76	78.26	18.40	21.33	0.01	57,652
Total	**2013**	**158.71**	**74.76**	**78.26**	**18.40**	**21.33**	**0.01**	**57,652**

Notes

1 .Unmitigated:

Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

2. Mitigated:

Mitigation for fugitive dust included: water exposed surfaces 3x daily.

The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.

A reduction of 69% was applied to the equipment loading/unloading per SCAQMD Guidance (Table XI-A Mitigation Measure Examples: Fugitive Dust from Construction & Demolition).

Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Demolition

Data Taken from Project Descriptions or Provided
Estimated Values
Data used in calculations

Construction Start Date:	4/1/2013
Construction End Date:	8/31/2013

Project Data

		Number of Displaced Structures	
Observed_Land_Use	**Average Approx. Size (sq ft)**	**BNSF Alternative**	**Kern Council of Governments - Wasco HMF**
Ag	75,000	18	
Ag/Res	2,500	16	0
Com	50,000	130	1
Comm/Park	3,000	5	
Com/MFR	20,000	10	
Ind	50,000	137	1
MFR	15,000	35	
Mun	3,000	3	
Religious	20,000	3	
SFR	2,000	248	
Total Size (sqft)		**16,045,000**	**100,000**

Soure: Data for displaced strucutures was obtained from the draft Relocation Impact Report from the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for the Proposed California High-Speed Train System

Please note that total numbers of structures might vary slightly from the report, since the alignment footprint has shifted slightly

The average approximate structure size (sqft) for the Ag/Ind and Ag/Com categories were assumed equal to that of the Ag category in the absence of more specific data.

Data to be Used in URBEMIS

Component	**Total Size (sqft)**	**Modeled (Y / N)**	**Length and Width Dimensions (ft)**	**Assumed Duration (days)**	**Daily Length + Width Dimensions (ft)**	**Assumed Height (ft)**
Alignment						
BNSF Alternative	16,045,000	Y	4,005.6	109	384.4	40.0
HMF						
Kern Council of Governments - Wasco HMF	100,000	Y	316.2	109	30.3	40.0
Equipment	**HP**	**QTY (EA/Site)**	**No. of Sites**	**Total Pieces**	**Days**	**Hours/Day**
Concrete/ Industrial Saw	10	1	1	1	109	8
Rubber Tired Dozer	357	1	1	1	109	1
Tractors/ Loaders/ Backhoes	108	2	1	2	109	6

Assumptions:

The demolition equipment was selected from Appendix H of the URBEMIS User's Guide, based on the land use area.

Assume 5 work days per week (URBEMIS default).

Use the General Heavy Industry Land Use Category in URBEMIS.

Land Use was set equal to the total size of buildings to be demolished (sqft).

For Demolition, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

As only a total area was provided, the width and length of the buildings were each assumed to be the square root of the total area.

Daily area disturbed was estimated using the total area provided and the approximate duration of construction activities.

In the absence of project-specific data, the height of all buildings was assumed to be 40 feet. This is a conservative estimate based on the average heights of city buildings (*Building Height Characteristics in Three U.S. Cities* , Table 2, Brown, Burian, Linger, Velugubantla, and Ratta, 2002).

The approximate duration of construction activities was based on the proposed construction schedule and the assumption that up to 2 city blocks (250 ft in length each) could be demolished in a day.

URBEMIS was used to estimate the exhaust emissions from the on-road vehicles used to haul demolished materials to the nearest landfill.

URBEMIS estimates the haul trips per day as follows: Round trips/day = Total cubic yards to be demolished / days of demolition x 0.25 x 1 trip / 20 cubic yards

URBEMIS estimates dust from demolition activities as follows: PM (lbs/day) = (0.00042 lbs/cubic ft) x Width (ft) x Length (ft) x Height (ft) / Number of Days

Demolition Emissions

		Tons Emitted Per Year (Unmitigated) (1)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Demolition	2013	20.29	57.08	82.51	18.73	4.10	0.10	10,685
Total	**2013**	**20.29**	**57.08**	**82.51**	**18.73**	**4.10**	**0.10**	**10,685**
		Tons Emitted Per Year (Mitigated) (2)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Demolition	2013	20.29	8.96	80.69	17.07	1.74	0.10	10,685
Total	**2013**	**20.29**	**8.96**	**80.69**	**17.07**	**1.74**	**0.10**	**10,685**

Notes

1 .Unmitigated:

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

Dust emissions from demolition activities were not mitigated as they cannot be controlled by watering the ground; this is dust from actual building materials.

2. Mitigated:

Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to reach a Tier 4, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Land Clearing

Data Taken from Project Descriptions or Provided
Estimated Values
Data used in calculations

Construction Start Date:	4/1/2013
Construction End Date:	8/31/2013

Project Data

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
CAT 416E Backhoe	87	5	3	15	109	10
CAT 426 Backhoe	97	5	3	15	109	10
CAT D6K Dozer	125	5	3	15	109	10
CAT D8N Dozer	310	5	3	15	109	10
CAT D9N Dozer	410	5	3	15	109	10
CAT D11N Dozer	850	5	3	15	109	10
Cat 330 2.5 CY Excavator	300	5	3	15	109	10
CAT 375 Excavator (36)	450	5	3	15	109	10
CAT 930H Wheel loader 2.6CY	149	5	3	15	109	10
CAT 950H Wheel Loader 4CY	197	5	3	15	109	10
CAT 966H Wheel loader 5.5CY	262	5	3	15	109	10
CAT 980H Wheel Loader 7.5CY	349	5	3	15	109	10
Scissor Lift 19'	15	1	3	3	109	10
Scissor Lift 32'	28	1	3	3	109	10
Flatbed Truck - 1 Ton	175	15	3	45	109	10
Flatbed Truck - 5 Ton	210	15	3	45	109	10
Water Truck	210	15	3	45	109	10
Service Truck - Fuel/Lube	300	2	3	6	109	10
CAT 631E Scraper (31 CY)	335	2	3	6	109	10

Assumptions:

The land clearing equipment was provided by Project Engineers

Assume 5 work days per week (URBEMIS default).

Use the Light Industry Land Use Category in URBEMIS.

For Land Clearing, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

Assumed the maximum daily acres cleared were 25% of the total acres cleared(URBEMIS default).

Assumed material hauled was 20 cubic yards per truck and material was hauled for a round trip distance of 20 miles (URBEMIS default)

Land Clearing Emissions

		Tons Emitted Per Year (Unmitigated) [1]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Land Clearing	2013	100.77	296.20	11.85	9.30	19.89	0.00	38,285
Total	**2013**	**100.77**	**296.20**	**11.85**	**9.30**	**19.89**	**0.00**	**38,285**

		Tons Emitted Per Year (Mitigated) [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Land Clearing	2013	100.77	46.48	3.64	1.82	8.42	0.00	38,285
Total	**2013**	**100.77**	**46.48**	**3.64**	**1.82**	**8.42**	**0.00**	**38,285**

Notes

1 .Unmitigated:

Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

2. Mitigated:

Mitigation for fugitive dust included: water exposed surfaces 3x daily.

The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.

A reduction of 69% was applied to the equipment loading/unloading per SCAQMD Guidance (Table XI-A Mitigation Measure Examples: Fugitive Dust from Construction & Demolition).

Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Earth Moving

Data Taken from Project Descriptions or Provided
Estimated Values
Data used in calculations

Construction Start Date:	8/1/2013
Construction End Date:	8/31/2015

Project Data

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Roadway Saw (w/Blades)	120	5	3	15	543	8
CAT 416E Backhoe	87	5	3	15	543	8
CAT 426 Backhoe	97	5	3	15	543	8
CAT D6K Dozer	125	5	3	15	543	8
CAT D8N Dozer	310	5	3	15	543	8
CAT D9N Dozer	410	5	3	15	543	8
CAT D11N Dozer	850	2	3	6	543	8
Cat 330 2.5 CY Excavator	300	4	3	12	543	8
CAT 375 Excavator (36)	450	4	3	12	543	8
Chain Trencher	40	2	3	6	543	8
CAT 930H Wheel loader 2.6CY	149	5	3	15	543	8
CAT 950H Wheel Loader 4CY	197	5	3	15	543	8
CAT 966H Wheel loader 5.5CY	262	5	3	15	543	8
CAT 980H Wheel Loader 7.5CY	349	5	3	15	543	8
Cat 120H Motorgrader	158	5	3	15	543	8
CAT 14G Motorgrader	260	5	3	15	543	8
Pad foot roller	83	5	3	15	543	8
Pneumatic roller	156	5	3	15	543	8
Steel wheel roller	174	5	3	15	543	8
Walk Behind Whacker	15	5	3	15	543	8
Cat 627 Scraper (20)	266	10	3	30	543	8
CAT 631E Scraper (31 CY)	335	10	3	30	543	8
Cat 633D Scraper (34 CY)	400	10	3	30	543	8
Flatbed Truck - 1 Ton	175	10	3	30	543	8
Flatbed Truck - 5 Ton	210	10	3	30	543	8
CAT 735 Articu Truck (16 CY)	385	2	3	6	543	8
Truck dump 18 CY triaxle	200	10	3	30	543	8
Distributor Truck	150	10	3	30	543	8
Service Truck - Fuel/Lube	300	10	3	30	543	8
Water Truck	210	10	3	30	543	8
Light Plant - 4 Lights	10	40	3	120	543	8

Assumptions:

The Earth Moving equipment was provided by Project Engineers

Assume 5 work days per week (URBEMIS default).

Use the Light Industry Land Use Category in URBEMIS.

For Earth Moving, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

Assumed the maximum daily acres cleared were 25% of the total acres cleared(URBEMIS default).

Assumed material hauled was 20 cubic yards per truck and material was hauled for a round trip distance of 20 miles (URBEMIS default)

Assume mass site grading rather than fine site grading. Fine site grading is the default.

Earth Moving Emissions

		Tons Emitted Per Year (Unmitigated) (1)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2013	208.08	518.44	77.53	33.72	64.94	0.01	58,367
Fine Grading	2013	2.50	7.98	43.55	9.29	0.64	0.00	1,056
Mass Grading	2014	516.02	1,275.83	189.48	84.58	171.09	0.02	139,761
Trenching	2014	260.98	645.25	30.15	29.06	86.53	0.01	70,684
Fine Grading	2014	1.25	4.00	21.53	4.59	0.34	0.00	522
Mass Grading	2015	310.95	763.08	112.58	51.49	108.71	0.01	81,394
Total	**2013**	**210.58**	**526.41**	**121.08**	**43.00**	**65.58**	**0.01**	**59,423**
Total	**2014**	**778.25**	**1,925.08**	**241.16**	**118.23**	**257.96**	**0.03**	**210,966**
Total	**2015**	**310.95**	**763.08**	**112.58**	**51.49**	**108.71**	**0.01**	**81,394**
		Tons Emitted Per Year (Mitigated) (2)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2013	208.08	81.36	50.64	13.29	27.50	0.01	58,367
Fine Grading	2013	2.50	1.25	37.56	7.87	0.27	0.00	1,056
Mass Grading	2014	516.02	200.22	121.85	32.41	72.44	0.02	139,761
Trenching	2014	260.98	101.26	4.70	4.50	36.63	0.01	70,684
Fine Grading	2014	1.25	0.63	18.56	3.89	0.15	0.00	522
Mass Grading	2015	310.95	119.75	71.31	19.22	46.03	0.01	81,394
Total	**2013**	**210.58**	**82.61**	**88.20**	**21.16**	**27.77**	**0.01**	**59,423**
Total	**2014**	**778.25**	**302.11**	**145.12**	**40.81**	**109.22**	**0.03**	**210,966**
Total	**2015**	**310.95**	**119.75**	**71.31**	**19.22**	**46.03**	**0.01**	**81,394**

Notes

1 .Unmitigated:

Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

2. Mitigated:

Mitigation for fugitive dust included: water exposed surfaces 3x daily.

The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.

A reduction of 69% was applied to the equipment loading/unloading per SCAQMD Guidance (Table XI-A Mitigation Measure Examples: Fugitive Dust from Construction & Demolition).

Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Construct Road Crossings

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	6/1/2013
Construction End Date:	12/31/2017

Project Data

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Air Compressor - 185 CFM	50	10	3	30	1196	8
Air Compressor - 900 CFM	450	10	3	30	1196	8
Asphalt Paver (LG)	180	5	3	15	1196	8
Aggregate Spreader	60	5	3	15	1196	8
Sweeper	25	5	3	15	1196	8
Shuttle Buggy	20	5	3	15	1196	8
Roadway Saw (w/Blades)	120	2	3	6	1196	8
Auger truck mounted Large	250	3	3	9	1196	8
Auger truck mounted Small	200	3	3	9	1196	8
CAT 416E Backhoe	87	5	3	15	1196	8
CAT 426 Backhoe	97	5	3	15	1196	8
Concrete Paver 12'/15'	30	5	3	15	1196	8
Concrete Conveyer (100')		5	3	15	1196	8
Gas Engin Vibartor	15	5	3	15	1196	8
Concrete Saw	13	5	3	15	1196	8
Concrete Pump - 50 cy/hr	100	5	3	15	1196	8
Crane, 50 T , Crawler	420	5	3	15	1196	8
Boom Truck 20 ton	330	5	3	15	1196	8
Crawler Crane 250 Ton	420	2	3	6	1196	8
Crawler Crane 300 Ton	470	2	3	6	1196	8
Carrydeck Crane 8 Ton	140	2	3	6	1196	8
Crane Flat Bed Mount 3 Ton	75	2	3	6	1196	8
CAT D6K Dozer	125	1	3	3	1196	8
CAT D8N Dozer	310	1	3	3	1196	8
CAT D9N Dozer	410	1	3	3	1196	8
CAT D11N Dozer	850	1	3	3	1196	8
Cat 330 2.5 CY Excavator	300	5	3	15	1196	8
CAT 375 Excavator (36)	450	1	3	3	1196	8
CAT 930H Wheel loader 2.6CY	149	2	3	6	1196	8
CAT 950H Wheel Loader 4CY	197	2	3	6	1196	8
CAT 966H Wheel loader 5.5CY	262	2	3	6	1196	8
CAT 980H Wheel Loader 7.5CY	349	2	3	6	1196	8
Scissor Lift 19'	15	2	3	6	1196	8

Table A-8
Road Crossing Construction Emissions

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Scissor Lift 32'	28	2	3	6	1196	8
Cat 120H Motorgrader	158	2	3	6	1196	8
CAT 14G Motorgrader	260	2	3	6	1196	8
Off-Highway Trucks / 725	309	3	3	9	1196	8
Off-Highway Trucks / 740	469	3	3	9	1196	8
Delmag D36-32 (Diesel)	92	2	3	6	1196	8
Delmag D80 (Diesel)	245	2	3	6	1196	8
Delmag D100-13 (Diesel)	335	2	3	6	1196	8
Electric Sump Pump - 4"	2	5	3	15	1196	8
Electric Sump Pump - 8"	4	5	3	15	1196	8
Pad foot roller	83	5	3	15	1196	8
Pneumatic roller	156	5	3	15	1196	8
Steel wheel roller	174	5	3	15	1196	8
Walk Behind Whacker	15	5	3	15	1196	8
Flatbed Truck - 1 Ton	175	5	3	15	1196	8
Flatbed Truck - 5 Ton	210	2	3	6	1196	8
CAT 735 Articu Truck (16 CY)	385	2	3	6	1196	8
Ready Mix Truck	200	20	3	60	1196	8
Truck dump 18 CY triaxle	200	20	3	60	1196	8
Distributor Truck	150	10	3	30	1196	8
Service Truck - Fuel/Lube	300	5	3	15	1196	8
Water Truck	210	10	3	30	1196	8
Welding Machine		10	3	30	1196	8
Butt Fusion Machine Electric	30	10	3	30	1196	8
Genset - 15 kW	20	10	3	30	1196	8
Genset - 100 kW	134	5	3	15	1196	8
Light Plant - 4 Lights	10	25	3	75	1196	8
Concrete Batch Plant		1	3	3	1196	8
Flatbed Tractor/Trailer	500	5	3	15	1196	8

Assumptions:

Assume no soil hauling for road crossing construction.

Assume 5 work days per week (URBEMIS default) for construction phases.

Use the General Light Industry Land Use Category in URBEMIS.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

Construct Road Crossings Emissions

		Tons Emitted Per Year (Unmitigated) [1]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Construct Road Crossings	2013	276.95	667.93	31.42	30.21	86.19	0.01	73,198
Construct Road Crossings	2014	496.41	1,178.57	57.62	55.55	162.62	0.01	125,688
Construct Road Crossings	2015	517.32	1,210.28	61.29	59.22	177.25	0.01	125,689
Construct Road Crossings	2016	538.31	1,242.03	64.96	62.89	191.88	0.01	125,689
Construct Road Crossings	2017	557.20	1,268.95	68.37	66.31	205.73	0.01	125,207
Total	**2013**	**276.95**	**667.93**	**31.42**	**30.21**	**86.19**	**0.01**	**73,198**
Total	**2014**	**496.41**	**1,178.57**	**57.62**	**55.55**	**162.62**	**0.01**	**125,688**
Total	**2015**	**517.32**	**1,210.28**	**61.29**	**59.22**	**177.25**	**0.01**	**125,689**
Total	**2016**	**538.31**	**1,242.03**	**64.96**	**62.89**	**191.88**	**0.01**	**125,689**
Total	**2017**	**557.20**	**1,268.95**	**68.37**	**66.31**	**205.73**	**0.01**	**125,207**

		Tons Emitted Per Year (Mitigated) [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Construct Road Crossings	2013	276.95	104.82	4.88	4.68	36.49	0.01	73,198
Construct Road Crossings	2014	496.41	184.96	8.95	8.60	68.85	0.01	125,688
Construct Road Crossings	2015	517.32	189.94	9.52	9.16	75.05	0.01	125,689
Construct Road Crossings	2016	538.31	194.92	10.08	9.73	81.24	0.01	125,689
Construct Road Crossings	2017	557.20	199.14	10.61	10.26	87.10	0.01	125,207
Total	**2013**	**276.95**	**104.82**	**4.88**	**4.68**	**36.49**	**0.01**	**73,198**
Total	**2014**	**496.41**	**184.96**	**8.95**	**8.60**	**68.85**	**0.01**	**125,688**
Total	**2015**	**517.32**	**189.94**	**9.52**	**9.16**	**75.05**	**0.01**	**125,689**
Total	**2016**	**538.31**	**194.92**	**10.08**	**9.73**	**81.24**	**0.01**	**125,689**
Total	**2017**	**557.20**	**199.14**	**10.61**	**10.26**	**87.10**	**0.01**	**125,207**

Notes

1 .Unmitigated:

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

2. Mitigated:

Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Lay Track at Grade

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	1/1/2014
Construction End Date:	8/31/2017

Project Data

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Aerial Lifts	60	1	508	508	956	1.1
Air Compressors	106	1	508	508	956	2.9
Bore/Drill Rigs	291	1	508	508	956	0
Cement and Mortar Mixers	10	1	508	508	956	0.3
Concrete/Industrial Saws	10	1	508	508	956	0.3
Cranes	399	1	508	508	956	0.7
Crawler Tractors	147	1	508	508	956	4.3
Crushing/Processing Equipment	142	1	508	508	956	0
Dumpers/Tenders	16	1	508	508	956	4.3
Excavators	168	1	508	508	956	1.4
Forklifts	145	1	508	508	956	0.6
Generator Sets	549	1	508	508	956	1.4
Graders	174	1	508	508	956	2.9
Off Highway Tractors	267	1	508	508	956	2.9
Off Highway Trucks	479	1	508	508	956	3.6
Plate Compactors	8	1	508	508	956	2.9
Pressure Washers	1	1	508	508	956	1.4
Rollers	95	1	508	508	956	3.6
Rough Terrain Forklifts	93	1	508	508	956	1.4
Scrapers	313	1	508	508	956	3.6
Signal Boards	15	1	508	508	956	0
Skid Steer Loaders	44	1	508	508	956	2.9
Surfacing Equipment	362	1	508	508	956	2.9
Sweepers/Scrubbers	91	1	508	508	956	1.4
Tractors/Loaders/Backhoes	108	1	508	508	956	4.3
Trenchers	63	1	508	508	956	2.9
Water Trucks	189	1	508	508	956	4.3
Welders	45	1	508	508	956	1.4
rail swing	500	1	508	508	956	4.3
Rail Tamper	400	1	508	508	956	4.3
Surface aligning machine	400	1	508	508	956	2.9
Concrete Pumps	600	1	508	508	956	0

Assumptions:

The At-Grade track construction equipment was provided by engineers from the M-F team (January 14 2011)
Equipment List given for laying of 1000 linear feet of track in one year.

508 1,000 foot units of at grade track for F-B alignment
3.67 years of construction
138.58 1,000 foot units of at grade track for F-B alignment spread evenly over the construction period

Each year has 280 days of workable time; the alignment construction will take approximately 4 years.
Hours per day and number of workable days have already been accounted for in URBEMIS
For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).
Assume no soil hauling for track construction.
Assume 5 work days per week (URBEMIS default) for construction phases.
Use the General Light Industry Land Use Category in URBEMIS.

Lay Track at Grade Emissions

		Tons Emitted Per Year (Unmitigated) [1]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Lay Track at Grade	2014	1,548.34	2,029.72	85.73	75.14	178.36	1.94	400,629
Lay Track at Grade	2015	1,474.03	1,989.38	85.77	75.35	181.21	1.94	400,667
Lay Track at Grade	2016	1,409.38	1,955.95	86.13	75.86	184.78	1.94	400,693
Lay Track at Grade	2017	901.33	1,285.82	57.73	50.97	125.76	1.29	267,142
Total	**2014**	**1,548.34**	**2,029.72**	**85.73**	**75.14**	**178.36**	**1.94**	**400,629**
Total	**2015**	**1,474.03**	**1,989.38**	**85.77**	**75.35**	**181.21**	**1.94**	**400,667**
Total	**2016**	**1,409.38**	**1,955.95**	**86.13**	**75.86**	**184.78**	**1.94**	**400,693**
Total	**2017**	**901.33**	**1,285.82**	**57.73**	**50.97**	**125.76**	**1.29**	**267,142**

		Tons Emitted Per Year (Mitigated) [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Lay Track at Grade	2014	1,548.34	318.54	20.35	14.08	75.52	1.94	400,629
Lay Track at Grade	2015	1,474.03	312.20	20.36	14.11	76.72	1.94	400,667
Lay Track at Grade	2016	1,409.38	306.96	20.42	14.19	78.23	1.94	400,693
Lay Track at Grade	2017	901.33	201.79	13.66	9.52	53.24	1.29	267,142
Total	**2014**	**1,548.34**	**318.54**	**20.35**	**14.08**	**75.52**	**1.94**	**400,629**
Total	**2015**	**1,474.03**	**312.20**	**20.36**	**14.11**	**76.72**	**1.94**	**400,667**
Total	**2016**	**1,409.38**	**306.96**	**20.42**	**14.19**	**78.23**	**1.94**	**400,693**
Total	**2017**	**901.33**	**201.79**	**13.66**	**9.52**	**53.24**	**1.29**	**267,142**

Notes
1 .Unmitigated:
Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.
2. Mitigated:
Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Lay Track Elevated plus Retained Fill

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	1/1/2014
Construction End Date:	8/31/2017

Project Data

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Aerial Lifts	60	1	93	93	956	3.6
Air Compressors	106	1	93	93	956	2.9
Bore/Drill Rigs	291	1	93	93	956	2.1
Cement and Mortar Mixers	10	1	93	93	956	2.9
Concrete/Industrial Saws	10	1	93	93	956	2.9
Cranes	399	1	93	93	956	3.6
Crawler Tractors	147	1	93	93	956	1.7
Crushing/Processing Equipment	142	1	93	93	956	0
Dumpers/Tenders	16	1	93	93	956	2.9
Excavators	168	1	93	93	956	0.6
Forklifts	145	1	93	93	956	2.9
Generator Sets	549	1	93	93	956	1.4
Graders	174	1	93	93	956	1.4
Off Highway Tractors	267	1	93	93	956	2.9
Off Highway Trucks	479	1	93	93	956	2.1
Plate Compactors	8	1	93	93	956	2.9
Pressure Washers	1	1	93	93	956	1.4
Rollers	95	1	93	93	956	1.4
Rough Terrain Forklifts	93	1	93	93	956	1.4
Scrapers	313	1	93	93	956	1.4
Signal Boards	15	1	93	93	956	0
Skid Steer Loaders	44	1	93	93	956	1.4
Surfacing Equipment	362	1	93	93	956	0
Sweepers/Scrubbers	91	1	93	93	956	1.4
Tractors/Loaders/Backhoes	108	1	93	93	956	4.3
Trenchers	63	1	93	93	956	2.9
Water Trucks	189	1	93	93	956	2.9
Welders	45	1	93	93	956	5.7
rail swing	500	1	93	93	956	3.4
Rail Tamper	400	1	93	93	956	0
Surface aligning machine	400	1	93	93	956	0
Concrete Pumps	600	1	93	93	956	1.4

Assumptions:

The Elevated track construction equipment was provided by engineers from the M-F team (January 14 2011)
Equipment List given for laying of 1000 linear feet of track in one year.

93 1,000 foot units of elevated track for F-B alignment
3.67 years of construction
25.37 1,000 foot units of elevated track for F-B alignment spread evenly over the construction period

Each year has 280 days of workable time; the alignment construction will take approximately 4 years.
For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).
Assume no soil hauling for track construction.
Assume 5 work days per week (URBEMIS default) for construction phases.
Use the General Light Industry Land Use Category in URBEMIS.

Lay Track Elevated plus Retained Fill Emissions

		Tons Emitted Per Year (Unmitigated) [1]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Lay Track Elevated	2014	112.88	223.31	8.76	8.06	16.73	0.06	33,324
Lay Track Elevated	2015	111.49	223.27	8.94	8.15	17.44	0.06	33,326
Lay Track Elevated	2016	110.43	223.45	9.14	8.45	18.18	0.06	33,327
Lay Track Elevated	2017	73.07	149.23	6.22	5.77	12.62	0.04	22,218
Total	**2014**	**112.88**	**223.31**	**8.76**	**8.06**	**16.73**	**0.06**	**33,324**
Total	**2015**	**111.49**	**223.27**	**8.94**	**8.15**	**17.44**	**0.06**	**33,326**
Total	**2016**	**110.43**	**223.45**	**9.14**	**8.45**	**18.18**	**0.06**	**33,327**
Total	**2017**	**73.07**	**149.23**	**6.22**	**5.77**	**12.62**	**0.04**	**22,218**

		Tons Emitted Per Year (Mitigated) [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Lay Track Elevated	2014	112.88	35.05	1.59	1.33	7.08	0.06	33,324
Lay Track Elevated	2015	111.49	35.04	1.62	1.36	7.38	0.06	33,326
Lay Track Elevated	2016	110.43	35.07	1.65	1.39	7.70	0.06	33,327
Lay Track Elevated	2017	73.07	23.42	1.12	0.95	5.34	0.04	22,218
Total	**2014**	**112.88**	**35.05**	**1.59**	**1.33**	**7.08**	**0.06**	**33,324**
Total	**2015**	**111.49**	**35.04**	**1.62**	**1.36**	**7.38**	**0.06**	**33,326**
Total	**2016**	**110.43**	**35.07**	**1.65**	**1.39**	**7.70**	**0.06**	**33,327**
Total	**2017**	**73.07**	**23.42**	**1.12**	**0.95**	**5.34**	**0.04**	**22,218**

Notes

1 .Unmitigated:
Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.
2. Mitigated:
Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Elevated Structures

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	6/1/2013
Construction End Date:	12/31/2017

Project Data

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Aerial Lifts	60	1	93	93	1196	3.6
Air Compressors	106	1	93	93	1196	2.9
Bore/Drill Rigs	291	1	93	93	1196	2.1
Cement and Mortar Mixers	10	1	93	93	1196	2.9
Concrete/Industrial Saws	10	1	93	93	1196	2.9
Cranes	399	1	93	93	1196	3.6
Crawler Tractors	147	1	93	93	1196	1.7
Crushing/Processing Equipment	142	1	93	93	1196	0
Dumpers/Tenders	16	1	93	93	1196	2.9
Excavators	168	1	93	93	1196	0.6
Forklifts	145	1	93	93	1196	2.9
Generator Sets	549	1	93	93	1196	1.4
Graders	174	1	93	93	1196	1.4
Off Highway Tractors	267	1	93	93	1196	2.9
Off Highway Trucks	479	1	93	93	1196	2.1
Plate Compactors	8	1	93	93	1196	2.9
Pressure Washers	1	1	93	93	1196	1.4
Rollers	95	1	93	93	1196	1.4
Rough Terrain Forklifts	93	1	93	93	1196	1.4
Scrapers	313	1	93	93	1196	1.4
Signal Boards	15	1	93	93	1196	0
Skid Steer Loaders	44	1	93	93	1196	1.4
Surfacing Equipment	362	1	93	93	1196	0
Sweepers/Scrubbers	91	1	93	93	1196	1.4
Tractors/Loaders/Backhoes	108	1	93	93	1196	4.3
Trenchers	63	1	93	93	1196	2.9
Water Trucks	189	1	93	93	1196	2.9
Welders	45	1	93	93	1196	5.7
rail swing	500 hp	1	93	93	1196	3.4
Rail Tamper	400 hp	1	93	93	1196	0
Surface aligning machine	400 hp	1	93	93	1196	0
Concrete Pumps	600 hp	1	93	93	1196	1.4

Assumptions:

The Elevated structure construction equipment was provided by engineers from the M-F team (January 14 2011)

Equipment List given for laying of 1000 linear feet of track in one year.

129 1,000 foot units of elevated structures for F-B alignment

4.59 years of construction

28.21 1,000 foot units of elevated structures for F-B alignment spread evenly over the construction period

Each year has 280 days of workable time; the alignment construction will take approximately 4 years.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

Assume no soil hauling for track construction.

Assume 5 work days per week (URBEMIS default) for construction phases.

Use the General Light Industry Land Use Category in URBEMIS.

Elevated Structures Emissions

		Tons Emitted Per Year (Unmitigated) [1]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Elevated Structures	2013	83.31	149.44	5.81	5.29	10.92	0.06	23,312
Elevated Structures	2014	139.85	255.40	10.15	9.26	19.44	0.10	40,031
Elevated Structures	2015	137.07	254.50	10.33	9.45	20.15	0.10	40,033
Elevated Structures	2016	134.79	253.96	10.52	9.65	20.90	0.10	40,035
Elevated Structures	2017	132.39	252.77	10.67	9.82	21.58	0.10	39,882
Total	**2013**	**83.31**	**149.44**	**5.81**	**5.29**	**10.92**	**0.06**	**23,312**
Total	**2014**	**139.85**	**255.40**	**10.15**	**9.26**	**19.44**	**0.10**	**40,031**
Total	**2015**	**137.07**	**254.50**	**10.33**	**9.45**	**20.15**	**0.10**	**40,033**
Total	**2016**	**134.79**	**253.96**	**10.52**	**9.65**	**20.90**	**0.10**	**40,035**
Total	**2017**	**132.39**	**252.77**	**10.67**	**9.82**	**21.58**	**0.10**	**39,882**
		Tons Emitted Per Year (Mitigated) [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Elevated Structures	2013	83.31	23.45	1.11	0.89	4.62	0.06	23,312
Elevated Structures	2014	139.85	40.08	1.94	1.56	8.23	0.10	40,031
Elevated Structures	2015	137.07	39.94	1.96	1.59	8.53	0.10	40,033
Elevated Structures	2016	134.79	39.86	1.99	1.62	8.85	0.10	40,035
Elevated Structures	2017	132.39	39.67	2.02	1.64	9.14	0.10	39,882
Total	**2013**	**83.31**	**23.45**	**1.11**	**0.89**	**4.62**	**0.06**	**23,312**
Total	**2014**	**139.85**	**40.08**	**1.94**	**1.56**	**8.23**	**0.10**	**40,031**
Total	**2015**	**137.07**	**39.94**	**1.96**	**1.59**	**8.53**	**0.10**	**40,033**
Total	**2016**	**134.79**	**39.86**	**1.99**	**1.62**	**8.85**	**0.10**	**40,035**
Total	**2017**	**132.39**	**39.67**	**2.02**	**1.64**	**9.14**	**0.10**	**39,882**

Notes

1 .Unmitigated:

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

2. Mitigated:

Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Concrete Batch Plant

Data Taken from Project Descriptions or Provided
Estimated Values
Data used in calculations

Construction Start Date:	06/01/13
Construction End Date:	12/31/17
Operation Duration (yrs):	4.8
Operation hours:	8,085
Hours per day:	8
Number of days of operation in year :	250

Total volume of structural concrete to be used (cy):	1,760,000
Daily batch plant rate (concrete) (cy/day):	1,467

Concrete Composition*		
Cement Feed Rate:	491	pounds of cement/cy
Aggregate Feed Rate:	1865	pounds of aggregate/cy
Sand Feed Rate:	1428	pounds of sand/cy
Cement Supplement Feed Rate:	73.0	pounds of supplement/xy
Concrete Production Rate:	4024	pounds of mix/xy

Note:
* Concrete composition data were based on BAAQMD Permit Handbook 11.5 Concrete Batch Plants.

EMISSION FACTORS FOR CONCRETE BATCHING		
Source	**lb of PM_{10} per ton of material loaded**	
	Uncontrolled	**Controlled**
Aggregate transfer [a]	0.0033	ND
Sand transfer [a]	0.00099	ND
Cement supplement unloading to elevated storage silo (pneumatic) [b,c]	1.1	0.0049
Cement unloading to elevated storage silo (pneumatic) [c]	0.46	0.00034
Weigh hopper loading (Aggregate and Sand) [d]	0.0024	ND
Mixer loading - Cement and Cement Supplement (central mix) [e]	0.134	0.0048

Note :

Concrete batching emissions estimated using AP-42 Fifth Edition, Volume I Chapter 11.12: Concrete Batching. Types of controls used may include water sprays, enclosures, hoods, curtains, shrouds, movable and telescoping chutes, central duct collection systems, and the like.

ND= No Data. Since emission factor data is available, the controlled emission assumed the uncontrolled emission factor instead.

a Emission factors are based upon an equation from AP-42, section 13.2.4 Aggregate Handling And Storage Piles, equation 1 with kPM-10 =.35, kPM = .74, U = 10mph, Maggregate =1.77%, and Msand= 4.17%. These moisture contents of the materials (Maggregate and Msand) are the averages of the values [b,c].

b Assume supplement unloading (rather than pneumatic for cement) to storage silo since supplement unloading has the higer emission factor.

c Final Test Report for USEPA [sic] Test Program Conducted at Concrete Ready Mixed Corporation, ETS, Inc., Roanoke, VA April 1994.
d Emission factors were developed by using the Aggregate and Sand Transfer Emission Factors in conjunction with the ratio of aggregate and sand used in an average cubic yard of concrete. The unit for these emission factors is lb of pollutant per ton of aggregate and sand.

e The emission factor units are lb of pollutant per ton of cement and cement supplement. The general factor is the arithmetic mean of all test data.

Daily $PM_{10}/PM_{2.5}$ Concrete Batching Emissions (3 Concrete Batch Plants)

Source	Tons of Material / day	Lbs of $PM_{10}/PM_{2.5}$ per day	
		Uncontrolled	Controlled
Aggregate transfer	1,368	4.51	4.51
Sand transfer	1,047	1.04	1.04
Cement supplement unloading to elevated storage silo (pneumatic)	54	58.89	0.26
Cement unloading to elevated storage silo (pneumatic)	360	165.63	0.12
Weigh hopper loading (Aggregate and Sand)	2,415	5.80	5.80
Mixer loading (central mix) Cement and Cement Supplement	414	55.42	1.99
Daily Emissions for each Concrete Batch Plant:		**291.29**	**13.72**

Note :

Concrete production rate per foot of structures was provided by ARUP in October 2010. The length of structures requiring concrete was provided by ARUP in April 2011.
Assumed concrete production rate of 200 cy/ hr, provided by ARUP in October 2010
Assumed $PM_{2.5}$ emissions are equal to PM_{10} emissions.

Annual $PM_{10}/PM_{2.5}$ Concrete Batching Emissions (3 Concrete Batch Plants)

Source	Tons of Material / year	Tons of $PM_{10}/PM_{2.5}$ per year	
		Uncontrolled	Controlled
Aggregate transfer	341,917	0.56	0.56
Sand transfer	261,800	0.13	0.13
Cement supplement unloading to elevated storage silo (pneumatic)	13,383	7.36	0.03
Cement unloading to elevated storage silo (pneumatic)	90,017	20.70	0.02
Weigh hopper loading (Aggregate and Sand)	603,717	0.72	0.72
Mixer loading (central mix) Cement and Cement Supplement	103,400	6.93	0.25
Annual Emissions for each Concrete Batch Plant:		**36.41**	**1.71**

Note :

Concrete production rate per foot of structures was provided by ARUP in October 2010. The length of structures requiring concrete was provided by ARUP in April 2011.
Assumed concrete production rate of 200 cy/ hr, provided by ARUP in October 2010
Assumed $PM_{2.5}$ emissions are equal to PM_{10} emissions.

Demobilization

Data Taken from Project Descriptions or Provided
Estimated Values
Data used in calculations

Construction Start Date:	8/1/2017
Construction End Date:	12/31/2019

Data to be Used in URBEMIS

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Flatbed Truck - 1 Ton	175	15	3	45	630	10
Flatbed Truck - 5 Ton	210	15	3	45	630	10
Flatbed Tractor/Trailer	300-500	30	3	90	630	10
Service Truck - Fuel/Lube	300	5	3	15	630	10
Water Truck	210	5	3	15	630	10
Light Plant - 4 Lights	10	10	3	30	630	10
Truck dump 18 CY triaxle	200	5	3	15	630	10
Boom Truck 20 ton	330	5	3	15	630	10
CAT 416E Backhoe	87	2	3	6	630	10
Cat 330 2.5 CY Excavator	300	1	3	3	630	10
CAT D6K Dozer	125	2	3	6	630	10

Assumptions:

The demobilization equipment was provided by Project Engineers

Assume 5 work days per week (URBEMIS default).

Use the Inudstrial Park Land Use Category in URBEMIS.

For Demobilization, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

Assumed the maximum daily acres cleared were 25% of the total acres cleared(URBEMIS default).

Assumed material was hauled was 20 cubic yards per truck and material was hauled for a round trip distance of 20 miles (URBEMIS default)

Demobilization Emissions

		Tons Emitted Per Year (Unmitigated) [1]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Demobilization	2017	88.55	258.13	11.02	10.60	34.78	0.00	28,807
Demobilization	2018	217.47	630.49	27.65	26.64	89.06	0.01	68,979
Demobilization	2019	222.95	642.91	28.90	27.90	94.85	0.01	68,979
Total	**2017**	**88.55**	**258.13**	**11.02**	**10.60**	**34.78**	**0.00**	**28,807**
Total	**2018**	**217.47**	**630.49**	**27.65**	**26.64**	**89.06**	**0.01**	**68,979**
Total	**2019**	**222.95**	**642.91**	**28.90**	**27.90**	**94.85**	**0.01**	**68,979**

Table A-13
Demobilization Emissions

		Tons Emitted Per Year (Unmitigated) [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Demobilization	2017	88.55	40.51	1.72	1.64	14.72	0.00	28,807
Demobilization	2018	217.47	98.95	4.31	4.13	37.71	0.01	68,979
Demobilization	2019	222.95	100.90	4.50	4.32	40.16	0.01	68,979
Total	**2017**	**88.55**	**40.51**	**1.72**	**1.64**	**14.72**	**0.00**	**28,807**
Total	**2018**	**217.47**	**98.95**	**4.31**	**4.13**	**37.71**	**0.01**	**68,979**
Total	**2019**	**222.95**	**100.90**	**4.50**	**4.32**	**40.16**	**0.01**	**68,979**

Notes

1 .Unmitigated:

Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.

2. Mitigated:

Mitigation for fugitive dust included: water exposed surfaces 3x daily.

The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.

A reduction of 69% was applied to the equipment loading/unloading per SCAQMD Guidance (Table XI-A Mitigation Measure Examples: Fugitive Dust from Construction & Demolition).

Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Appendix A

A.4 Station and Maintenance Facility Construction Emissions

Fresno Station Construction

Data Taken from Project Descriptions or Provided
Estimated Values
Data used in calculations

Construction Start Date:	Dec-14
Construction End Date:	Oct-19

Project Data

STATION BUILDINGS: STRUCTURE TYPE	Area (ft^2)	Height (ft)	Notes
Station Building	75,000	60	Two Floors + Platform
Platforms	70,000		
Parking Structure Acreage	239,581		Structures located at H & Fresno, H & Mono, E & Fresno
Total Station Site Acreage	566,282		Includes Station, Bus Transit Center, Short Term Parking and Kiss-and Ride

Data to be Used in URBEMIS

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Grader	174	1	1	1	1282	6
Rubber Tired Dozer	357	1	1	1	1282	6
Tractor/Loaders/Backhoes	108	2	1	2	1282	7
Water Trucks	189	1	1	1	1282	8
Cranes	399	1	1	1	1282	4
Forklifts	145	2	1	2	1282	6
Welders	45	3	1	3	1282	8
Generator Set	49	1	1	1	1282	8

Assumptions:

Assume no soil hauling for station construction.

Assume 5 work days per week (URBEMIS default) for construction phases.

Assume emisisons are from result of mass site grading, building construction, and architectural coatings. Assume mass site grading rather than fine site grading. Fine site grading is the default.

Use the General Light Industry Land Use Category in URBEMIS.

The worst-case parking scenario was used for modeling purposes. This scenario involves 3 adjacent parking structures, instead of one parking structure next to an existing parking lot.

No paving activities will occur because no surface parking lots were considered in the worst-case scenario. It is conservatively assumed that the light duty industrial assumptions are applicable to the construction of the parking garage.

Assumed the maximum daily acres graded were 25% of the total acres graded (URBEMIS default).

URBEMIS assumes the total acres graded are 2x the building area; assume this is accurate for the grading phase.

For Grading, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.

Only using the default equipment as provided in URBEMIS for the construction of the Fresno Train Station.

The worst-case impacts were determined by summing the emissions from all 3 activities.

Fresno Station Construction Emissions

		Tons Emitted Per Year Unmitigated (1)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2014	0.13	0.22	0.84	0.18	0.03	0.00	27.02
Mass Grading	2015	0.97	1.53	6.35	1.38	0.20	0.00	204.43
Building Construction	2015	1.78	1.18	0.07	0.06	0.18	0.00	379.83
Building Construction	2016	4.92	3.16	0.20	0.16	0.50	0.01	1,126.67
Building Construction	2017	4.57	2.84	0.18	0.14	0.45	0.01	1,122.44
Building Construction	2018	4.29	2.58	0.16	0.13	0.41	0.01	1,126.82
Building Construction	2019	1.34	0.78	0.05	0.04	0.12	0.00	375.62
Coating	2019	0.02	0.00	0.00	0.00	3.37	0.00	4.03
Total	**2014**	**0.13**	**0.22**	**0.84**	**0.18**	**0.03**	**0.00**	**27.02**
Total	**2015**	**2.75**	**2.71**	**6.42**	**1.44**	**0.38**	**0.00**	**584.26**
Total	**2016**	**4.92**	**3.16**	**0.20**	**0.16**	**0.50**	**0.01**	**1,126.67**
Total	**2017**	**4.57**	**2.84**	**0.18**	**0.14**	**0.45**	**0.01**	**1,122.44**
Total	**2018**	**4.29**	**2.58**	**0.16**	**0.13**	**0.41**	**0.01**	**1,126.82**
Total	**2019**	**1.36**	**0.78**	**0.05**	**0.04**	**3.49**	**0.00**	**379.65**
		Tons Emitted Per Year Mitigated (2)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2014	0.13	0.03	0.13	0.03	0.01	0.00	27.02
Mass Grading	2015	0.97	0.24	0.96	0.21	0.08	0.00	204.43
Building Construction	2015	1.78	0.19	0.02	0.01	0.08	0.00	379.83
Building Construction	2016	4.92	0.50	0.06	0.03	0.21	0.01	1,126.67
Building Construction	2017	4.57	0.45	0.06	0.03	0.19	0.01	1,122.44
Building Construction	2018	4.29	0.40	0.06	0.03	0.17	0.01	1,126.82
Building Construction	2019	1.34	0.12	0.02	0.00	0.05	0.00	375.62
Coating	2019	0.02	0.00	0.00	0.00	1.28	0.00	4.03
Total	**2014**	**0.13**	**0.03**	**0.13**	**0.03**	**0.01**	**0.00**	**27.02**
Total	**2015**	**2.75**	**0.43**	**0.98**	**0.22**	**0.16**	**0.00**	**584.26**
Total	**2016**	**4.92**	**0.50**	**0.06**	**0.03**	**0.21**	**0.01**	**1,126.67**
Total	**2017**	**4.57**	**0.45**	**0.06**	**0.03**	**0.19**	**0.01**	**1,122.44**
Total	**2018**	**4.29**	**0.40**	**0.06**	**0.03**	**0.17**	**0.01**	**1,126.82**
Total	**2019**	**1.36**	**0.12**	**0.02**	**0.00**	**1.33**	**0.00**	**379.65**

Notes

1 .Unmitigated:

Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.

2. Mitigated:

Mitigation for fugitive dust included: water exposed surfaces 3x daily.

The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.

A reduction of 69% was applied to the equipment loading/unloading per SCAQMD Guidance (Table XI-A Mitigation Measure Examples: Fugitive Dust from Construction & Demolition).

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road

Mitigation used for architectural coatings included the use of Low-VOC coatings (providing a 10% reduction in ROG emissions).

Bakersfield Station Construction

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	Jan-15
Construction End Date:	Nov-19

Project Data

STATION BUILDINGS: STRUCTURE TYPE	Area (ft^2)	Height (ft)	Notes
Station Building	56,000	95	From Ground Level to top of roof over guideway
Platforms	55,200		
Parking Structure Acreage	217,801		Parking Structures
Total Station Site Acreage	653,403		Station, Bus Transit Center, Short Term Parking and Kiss-and Ride

Data to be Used in URBEMIS

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Grader	174	1	1	1	1281	6
Rubber Tired Dozer	357	1	1	1	1281	6
Tractor/Loaders/Backhoes	108	2	1	2	1281	7
Water Trucks	189	1	1	1	1281	8
Cranes	399	1	1	1	1281	4
Forklifts	145	2	1	2	1281	6
Welders	45	3	1	3	1281	8
Generator Set	49	1	1	1	1282	8

Assumptions:

Assume no soil hauling for station construction.

Assume 5 work days per week (URBEMIS default) for construction phases.

Assume emisisons are from result of mass site grading, building construction, and architectural coatings. Assume mass site grading rather than fine site grading. Fine site grading is the default.

Use the General Light Industry Land Use Category in URBEMIS.

The worst-case parking scenario was used for modeling purposes. This scenario involves 3 adjacent parking structures, instead of one parking structure next to an existing parking lot.
No paving activities will occur because no surface parking lots were considered in the worst-case scenario. It is conservatively assumed that the light duty industrial assumptions are applicable to the construction of the parking garage.

Assumed the maximum daily acres graded were 25% of the total acres graded (URBEMIS default).

URBEMIS assumes the total acres graded are 2x the building area; assume this is accurate for the grading phase.

For Grading, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.

Only using the default equipment as provided in URBEMIS for the construction of the Bakersfield Train Station.

The worst-case impacts were determined by summing the emissions from all 3 activities.

Bakersfield Station Construction Emissions

		Tons Emitted Per Year Unmitigated (1)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2015	1.09	1.72	5.61	1.23	0.22	0.00	230.28
Building Construction	2015	1.11	0.78	0.05	0.04	0.13	0.00	234.36
Building Construction	2016	4.11	2.79	0.17	0.14	0.45	0.01	926.87
Building Construction	2017	3.83	2.52	0.16	0.13	0.41	0.01	923.39
Building Construction	2018	3.61	2.29	0.14	0.11	0.37	0.01	926.99
Building Construction	2019	1.42	0.87	0.05	0.04	0.14	0.00	387.15
Coating	2019	0.02	0.00	0.00	0.00	2.61	0.00	3.13
Total	**2015**	**2.20**	**2.50**	**5.66**	**1.27**	**0.35**	**0.00**	**464.64**
Total	**2016**	**4.11**	**2.79**	**0.17**	**0.14**	**0.45**	**0.01**	**926.87**
Total	**2017**	**3.83**	**2.52**	**0.16**	**0.13**	**0.41**	**0.01**	**923.39**
Total	**2018**	**3.61**	**2.29**	**0.14**	**0.11**	**0.37**	**0.01**	**926.99**
Total	**2019**	**1.44**	**0.87**	**0.05**	**0.04**	**2.75**	**0.00**	**390.28**

		Tons Emitted Per Year Mitigated (2)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2015	1.09	0.27	0.84	0.18	0.09	0.00	230.28
Building Construction	2015	1.11	0.12	0.02	0.01	0.02	0.00	234.36
Building Construction	2016	4.11	0.44	0.05	0.03	0.07	0.01	926.87
Building Construction	2017	3.83	0.40	0.05	0.03	0.06	0.01	923.39
Building Construction	2018	3.61	0.36	0.05	0.03	0.06	0.01	926.99
Building Construction	2019	1.42	0.14	0.02	0.01	0.02	0.14	387.15
Coating	2019	0.02	0.00	0.00	0.00	0.36	0.00	3.13
Total	**2015**	**2.20**	**0.39**	**0.86**	**0.19**	**0.11**	**0.00**	**464.64**
Total	**2016**	**4.11**	**0.44**	**0.05**	**0.03**	**0.07**	**0.01**	**926.87**
Total	**2017**	**3.83**	**0.40**	**0.05**	**0.03**	**0.06**	**0.01**	**923.39**
Total	**2018**	**3.61**	**0.36**	**0.05**	**0.03**	**0.06**	**0.01**	**926.99**
Total	**2019**	**1.44**	**0.14**	**0.02**	**0.01**	**0.38**	**0.14**	**390.28**

Notes

1 .Unmitigated:

Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.

2. Mitigated:

Mitigation for fugitive dust included: water exposed surfaces 3x daily.

The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.

A reduction of 69% was applied to the equipment loading/unloading per SCAQMD Guidance (Table XI-A Mitigation Measure Examples: Fugitive Dust from Construction & Demolition).

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road

Mitigation used for architectural coatings included the use of Low-VOC coatings (providing a 10% reduction in ROG emissions).

HMF Construction

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date (Phase 1):	Jul-17
Construction End Date (Phase 1):	Dec-18

Construction Start Date (Phase 3):	Jan-21
Construction End Date (Phase 3):	Dec-21

Project Data

Heavy Maintenance Facility		
HMF	Approximate Value	Notes
Total Area to be graded and cleared	154 acres	Heavy Maintenance Facility (2 miles long, 154 acres) Approximate size (including roadway and parking)
Buildings (sqft)	727,676	Based on data in TM5.1-A
Amount of Fuel Stored Onsite	0	Diesel fuel. Fetch parts, rail swing, rail tenders, generator - mostly mobile sources
# of Employees	1500	Revised data provide 1,350 employees split over 2 shifts - use higher value as conservative. Assume same # of employees for 2020 and 2035.
Max # of trucks to visit the site	approx 20 truck delivers per day - heavy duty trucks	This would include equipment / fuel deliveries
Max # of onsite trucks/equipment	on-site diesel pick up trucks, flat bed trucks, diesel train mover (700 hp approx) - move 5-10 miles . Emissions covered by the onsite fuel the vehicles use.	This would include onsite vehicles used by facility staff. No additional emissions from these vehicles.
Area paved (sqft)	5,980,564	Assume equal to the total area to be graded minus the buildings as a conservative estimate.
Parking:	Data Value	Notes
"lay down" equipment staging and storage area	350000 sqft	Maintenance equipment, MOWF employees and the personnel who would operate and maintain the Train Washer and Automatic Wheel Inspection Station.
# Parking Spots Required	1600	Assume 20% employees will ride share

Data to be Used in URBEMIS

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Grader	174	1	1	1	391	8
Rubber Tired Dozer	357	1	1	1	391	8
Tractor/Loaders/Backhoes	108	4	1	4	391	8
Water Trucks	189	1	1	1	391	8
Cranes	399	1	1	1	391	6
Forklifts	145	2	1	2	391	6
Excavator	168	1	1	1	391	8
Scrapers	313	3	1	3	391	8
Pavers	100	1	1	1	391	8
Paving Equipment	104	2	1	2	391	8
Rollers	95	2	1	2	391	6
Generator Sets	49	1	1	1	391	8
Welders	45	3	1	3	391	8

Assumptions:

Assume 5 work days per week (URBEMIS default) for the construction phases.

Assume mass site grading rather than fine site grading. Fine site grading is the default.

Use the General Heavy Industry Land Use Category in URBEMIS.

Land Use was based on the total building construction area (Buildings sqft).

Assumed the maximum daily acres graded were 25% of the total acres graded (URBEMIS default).

URBEMIS assumes the total acres graded are 2x the building area; overwrote the total acres graded with the actual acres of land graded for each facility.

URBEMIS assumes the total acres paved are 2x the building area; overwrote the total acres paved with the actual acres of paving for each facility.

Project-specific data was used to determine the construction schedule for the HMF and MOWF.

Only used the default equipment as provided in URBEMIS for the construction of the HMF.

For Grading and Paving, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.

HMF Construction Emissions

		Tons Emitted Per Year Unmitigated [1]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2017	1.58	2.48	4.98	1.12	0.33	0.00	400.36
Paving	2021	0.17	0.24	0.02	0.01	0.21	0.00	98.95
Building Construction	2021	1.40	0.79	0.06	0.04	0.13	0.00	530.40
Coating	2021	0.01	0.00	0.00	0.00	3.90	0.00	4.66
Total	**2017**	**1.58**	**2.48**	**4.98**	**1.12**	**0.33**	**0.00**	**400.36**
Total	**2021**	**1.58**	**1.03**	**0.07**	**0.06**	**4.24**	**0.00**	**634.01**

		Tons Emitted Per Year Mitigated [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2017	1.58	0.39	4.65	0.98	0.14	0.00	400.36
Paving	2021	0.17	0.04	0.00	0.00	0.09	0.00	98.95
Building Construction	2021	1.40	0.12	0.02	0.01	0.05	0.00	530.40
Coating	2021	0.01	0.00	0.00	0.00	1.48	0.00	4.66
Total	**2017**	**1.58**	**0.39**	**4.65**	**0.98**	**0.14**	**0.00**	**400.36**
Total	**2021**	**1.58**	**0.16**	**0.03**	**0.01**	**1.63**	**0.00**	**634.01**

1 .Unmitigated:
Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.
2. Mitigated:
Mitigation for fugitive dust included: water exposed surfaces 3x daily.
The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.
A reduction of 69% was applied to the equipment loading/unloading per SCAQMD Guidance (Table XI-A Mitigation Measure Examples: Fugitive Dust from Construction & Demolition).
Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.
Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates &
Mitigation used for architectural coatings included the use of Low-VOC coatings (providing a 10% reduction in ROG emissions).

HMF Track at Grade

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	Jan-21
Construction End Date:	Jul-21

Project Data

Heavy Maintenance Facility		
HMF	Approximate Value	Notes
Storage Tracks	Number of tracks: 36 - Length: 800 meter	Drawing No. 5.1-A

Data to be Used in URBEMIS

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Aerial Lifts	60	1	47	47	129	1.1
Air Compressors	106	1	47	47	129	2.9
Bore/Drill Rigs	291	1	47	47	129	0
Cement and Mortar Mixers	10	1	47	47	129	0.3
Concrete/Industrial Saws	10	1	47	47	129	0.3
Cranes	399	1	47	47	129	0.7
Crawler Tractors	147	1	47	47	129	4.3
Crushing/Processing Equipment	142	1	47	47	129	0
Dumpers/Tenders	16	1	47	47	129	4.3
Excavators	168	1	47	47	129	1.4
Forklifts	145	1	47	47	129	0.6
Generator Sets	549	1	47	47	129	1.4
Graders	174	1	47	47	129	2.9
Off Highway Tractors	267	1	47	47	129	2.9
Off Highway Trucks	479	1	47	47	129	3.6
Plate Compactors	8	1	47	47	129	2.9
Pressure Washers	1	1	47	47	129	1.4
Rollers	95	1	47	47	129	3.6
Rough Terrain Forklifts	93	1	47	47	129	1.4
Scrapers	313	1	47	47	129	3.6
Signal Boards	15	1	47	47	129	0
Skid Steer Loaders	44	1	47	47	129	2.9
Surfacing Equipment	362	1	47	47	129	2.9
Sweepers/Scrubbers	91	1	47	47	129	1.4
Tractors/Loaders/Backhoes	108	1	47	47	129	4.3
Trenchers	63	1	47	47	129	2.9
Water Trucks	189	1	47	47	129	4.3
Welders	45	1	47	47	129	1.4
rail swing	500 hp	1	47	47	129	4.3

Table A-17
HMF Phase 3 Track Construction Emissions

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Rail Tamper	400 hp	1	47	47	129	4.3
Surface aligning machine	400 hp	1	47	47	129	2.9
Concrete Pumps	600 hp	1	47	47	129	0

Assumptions:

The HMF track construction equipment was provided by engineers from the M-F team (January 14 2011)

Equipment List given for laying of 1000 linear feet of track in one year.

47.232 1,000 foot units of at grade track for F-B alignment

Assume no soil hauling for track construction.

Assume 5 work days per week (URBEMIS default) for construction phases.

Use the General Light Industry Land Use Category in URBEMIS.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

HMF Track at Grade Emissions

	Tons Emitted Per Year (Unmitigated) (1)							
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Lay Track at Grade	2021	226.80	571.33	25.00	23.78	61.56	0.05	71,560
Total	**2021**	**226.80**	**571.33**	**25.00**	**23.78**	**61.56**	**0.05**	**71,560**

	Tons Emitted Per Year (Mitigated) (2)							
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Lay Track at Grade	2021	226.80	89.66	4.03	3.73	26.06	0.05	71,560
Total	**2021**	**226.80**	**89.66**	**4.03**	**3.73**	**26.06**	**0.05**	**71,560**

Notes

1 .Unmitigated:

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

2. Mitigated:

Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

MOWF Construction

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	Jul-17
Construction End Date:	Dec-18

Project Data

Maintenance of Way Facility		
MOWF	Approximate Size	Notes
Total Area to be graded and cleared	26 acres total, ¾ mile long	Approximate size (including roadway and parking)
Buildings (sqft)	32,500	Based on drawing TM 5.2A/B, MW HQ and MW equipment Repair buildings
Area paved (sqft)	474,600	Based on drawing TM 5.2A,approx size of material storage and employee parking areas
Activities at MOWF	Right of way inspections Store maintenance way materials / replacement parts	
# of Employees (daily)	90 / 295	2020 / 2035 projection - Split over 2 shifts of employees each day.
# of Deliveries (daily)	1 / 4	2020 / 2035 projection; scaled from the HMF deliveries based on employee counts
Fueling Station	20,000 gallon diesel tanks 20,000 gasoline tanks, go through about once a month	Provide Approximate fuel capacity (gallons). Based on data at SAC regional transit center. Max size of a tank is 20K, 1/2 of workers fueling up every day, 30 gallons per tank - 20 days worth of fuel onsite.
Number of MOWF	1	
Data Assumptions and Inputs are based on: MOWF Concept Plan Alternative A (wide Configuration) TM 5.2A.		

Data to be Used in URBEMIS

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Grader	174	1	1	1	391	8
Rubber Tired Dozer	357	1	1	1	391	8
Tractor/Loaders/Backhoes	108	4	1	4	391	8
Water Trucks	189	1	1	1	391	8
Cranes	399	1	1	1	391	6
Forklifts	145	2	1	2	391	6
Excavator	168	1	1	1	391	8
Scrapers	313	3	1	3	391	8
Pavers	100	1	1	1	391	8
Paving Equipment	104	2	1	2	391	8
Rollers	95	2	1	2	391	6
Generator Sets	49	1	1	1	391	8
Welders	45	3	1	3	391	8

Assumptions:

Assume 5 work days per week (URBEMIS default) for the construction phases.

Assume mass site grading rather than fine site grading. Fine site grading is the default.

Use the General Heavy Industry Land Use Category in URBEMIS.
Land Use was based on the total building construction area (Buildings sqft).
Assumed the maximum daily acres graded were 25% of the total acres graded (URBEMIS default).
URBEMIS assumes the total acres graded are 2x the building area; overwrote the total acres graded with the actual acres of land graded for each facility.
URBEMIS assumes the total acres paved are 2x the building area; overwrote the total acres paved with the actual acres of paving for each facility.
Only used the default equipment as provided in URBEMIS for the construction of the MOWF.
For Grading and Paving, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.
For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).
For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.
For operational VMT, assume no truck deliveries to the MOWF

MOWF Construction Emissions

		Tons Emitted Per Year (Unmitigated) [1]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO2**
Mass Grading	2017	0.65	0.88	0.86	0.21	0.12	0.00	137.97
Paving	2018	0.11	0.13	0.01	0.01	0.03	0.00	21.21
Building Construction	2018	0.35	0.32	0.02	0.01	0.05	0.00	80.78
Coating	2018	0.00	0.00	0.00	0.00	0.16	0.00	0.20
Total	**2017**	**0.65**	**0.88**	**0.86**	**0.21**	**0.12**	**0.00**	**137.97**
Total	**2018**	**0.46**	**0.46**	**0.03**	**0.02**	**0.24**	**0.00**	**102.19**

		Tons Emitted Per Year (Mitigated) [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO2**
Mass Grading	2017	0.65	0.14	0.79	0.17	0.05	0.00	137.97
Paving	2018	0.11	0.02	0.00	0.00	0.01	0.00	21.21
Building Construction	2018	0.35	0.05	0.00	0.00	0.02	0.00	80.78
Coating	2018	0.00	0.00	0.00	0.00	0.07	0.00	0.20
Total	**2017**	**0.65**	**0.14**	**0.79**	**0.17**	**0.05**	**0.00**	**137.97**
Total	**2018**	**0.46**	**0.07**	**0.01**	**0.00**	**0.10**	**0.00**	**102.19**

1 .Unmitigated:

Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.

2. Mitigated:

Mitigation for fugitive dust included: water exposed surfaces 3x daily.
The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.
A reduction of 69% was applied to the equipment loading/unloading per SCAQMD Guidance (Table XI-A Mitigation Measure Examples: Fugitive Dust from Construction & Demolition).
Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.
Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of
Mitigation used for architectural coatings included the use of Low-VOC coatings (providing a 10% reduction in ROG emissions).
Only used the default equipment as provided in URBEMIS for the construction of the MOWF.
For Grading and Paving, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.
For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).
For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.
For operational VMT, assume no truck deliveries to the MOWF

MOWF Track at Grade

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	Jul-18
Construction End Date:	Dec-18

Project Data

Maintenance of Way Facility		
MOWF	Approximate Value	Notes
Storage Tracks	Number of tracks: 6 - Length: 400 meter	Drawing No. 5.1-A

Data to be Used in URBEMIS

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Aerial Lifts	60	1	4	4	131	1.1
Air Compressors	106	1	4	4	131	2.9
Bore/Drill Rigs	291	1	4	4	131	0
Cement and Mortar Mixers	10	1	4	4	131	0.3
Concrete/Industrial Saws	10	1	4	4	131	0.3
Cranes	399	1	4	4	131	0.7
Crawler Tractors	147	1	4	4	131	4.3
Crushing/Processing Equipment	142	1	4	4	131	0
Dumpers/Tenders	16	1	4	4	131	4.3
Excavators	168	1	4	4	131	1.4
Forklifts	145	1	4	4	131	0.6
Generator Sets	549	1	4	4	131	1.4
Graders	174	1	4	4	131	2.9
Off Highway Tractors	267	1	4	4	131	2.9
Off Highway Trucks	479	1	4	4	131	3.6
Plate Compactors	8	1	4	4	131	2.9
Pressure Washers	1	1	4	4	131	1.4
Rollers	95	1	4	4	131	3.6
Rough Terrain Forklifts	93	1	4	4	131	1.4
Scrapers	313	1	4	4	131	3.6
Signal Boards	15	1	4	4	131	0
Skid Steer Loaders	44	1	4	4	131	2.9
Surfacing Equipment	362	1	4	4	131	2.9
Sweepers/Scrubbers	91	1	4	4	131	1.4
Tractors/Loaders/Backhoes	108	1	4	4	131	4.3
Trenchers	63	1	4	4	131	2.9
Water Trucks	189	1	4	4	131	4.3
Welders	45	1	4	4	131	1.4
rail swing	500 hp	1	4	4	131	4.3

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Rail Tamper	400 hp	1	4	4	131	4.3
Surface aligning machine	400 hp	1	4	4	131	2.9
Concrete Pumps	600 hp	1	4	4	131	0

Assumptions:

The HMF track construction equipment was provided by engineers from the M-F team (January 14 2011)

Equipment List given for laying of 1000 linear feet of track in one year.

3.936 1,000 foot units of at grade track for F-B alignment

Assume no soil hauling for track construction.

Assume 5 work days per week (URBEMIS default) for construction phases.

Use the General Light Industry Land Use Category in URBEMIS.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

MOWF Track at Grade Emissions

		Tons Emitted Per Year (Unmitigated) (1)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Lay Track at Grade	2018	18.54	46.36	1.91	1.81	4.45	0.00	5,963.29
Total	**2018**	**18.54**	**46.36**	**1.91**	**1.81**	**4.45**	**0.00**	**5,963.29**

		Tons Emitted Per Year (Mitigated) (2)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Lay Track at Grade	2018	18.54	7.28	0.31	0.28	1.88	0.00	5,963.29
Total	**2018**	**18.54**	**7.28**	**0.31**	**0.28**	**1.88**	**0.00**	**5,963.29**

Notes

1 .Unmitigated:

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

2. Mitigated:

Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Appendix A

A.5 Material Hauling Emissions

HST Material Hauling

Data Taken from Project Descriptions or Provided
Estimated Values
Data used in calculations

Truck Capacity

20	cy/truck
30	tons/truck

HST Alignment Construction Haul Trucks [(1), (2)]

Source Geography [(4)]	Material Hauled	Total Quantity	Units	Possible Material Origin Location	Average Distance Travelled within air basin (One-way)	Duration of Activity (Years)	Duration of Activity (Days)
L	Fill (Import)	11,300,000	cy	Between Fresno and Bakersfield	20	2.2	550
R	Sub-Ballast	1,045,000	cy	Bay Area, Sacramento, Riverside	160	5.2	1300
R	Ballast	1,045,000	cy	Bay Area, Sacramento, Riverside	160	5.2	1300
L	Concrete Railway Ties	655,000	each	Between Fresno and Bakersfield	95	4.8	1200
N	Rail [(3)]	2,600,000	LF	Out of state. Only one time delivery	82	4.8	1200
L/R	Reinforcing Steel (Manufacture & Fabricate)	156,000	Ton	Livermore, Fresno, Bakersfield, Pomona	98	4.8	1200
F/N	Structural Steel (Manufacture & Fabricate)	21,000	Ton	Out of state.	82	3.0	750
L	Structural Concrete	1,760,000	cy	Concrete Batch plant to construction site 7.3 miles away	7.3	4.8	1200
R/L	Cement for structures	432,080	tons	Cupertino, Ventura, Riverside, Long Beach	150	4.8	1200
R/L	Sand for structures	1,256,640	tons	Cupertino, Ventura, Riverside, Long Beach	150	4.8	1200
R/L	Aggregate for structures	1,641,200	tons	Cupertino, Ventura, Riverside, Long Beach	150	4.8	1200

Notes:

(1) Information about excavation (import), rail, reinforcing steel and structural steel was obtained from the JV report: 15% Material Haul Data, Revised July 12, 2011. Infromation about the ballast, sub-ballast and rail ties was obtained from the JV report: 15% Material Haul Data, Revised June 29, 2011.

(2) Assumptions for the sand, aggregate and cement composition in the concrete were based on BAAQMD information

(3) Rail will only be a one-time delivery, so it is not inlcuded in the material hauling calculations

(4) L = local, R= regional, N= national

HST Material Hauling Trucks

Material Hauled	No. of Trucks	Total Duration (yrs)	Average RT Distance Traveled in the SJVAB (miles)	Year of Activity					
				2013	2014	2015	2016	2017	2018
Fill (Import)	565,000	2.2	40	1.0	1.0	0.2	0.0	0.0	0.0
Sub-Ballast	52,250	5.2	320	0.2	1.0	1.0	1.0	1.0	1.0
Ballast	52,250	5.2	320	0.2	1.0	1.0	1.0	1.0	1.0
Concrete Railway Ties	10,917	4.8	190	0.0	0.8	1.0	1.0	1.0	1.0
Reinforcing Steel (Manufacture & Fabricate)	5,200	4.8	196	0.0	0.8	1.0	1.0	1.0	1.0
Structural Steel (Manufacture & Fabricate)	700	3.0	164	0.0	0.0	0.0	1.0	1.0	1.0
Structural Concrete	88,000	4.8	14.6	0.0	0.8	1.0	1.0	1.0	1.0
Cement for structures	14,403	4.8	300	0.0	0.8	1.0	1.0	1.0	1.0
Sand for structures	41,888	4.8	300	0.0	0.8	1.0	1.0	1.0	1.0
Aggregate for structures	54,707	4.8	300	0.0	0.8	1.0	1.0	1.0	1.0

Assumptions:

Weight of the average concrete railway tie 1,000 lbs
125 lbs/yrd

Weight of rail (UIC60 rail) 42 lbs/ft

Source: http://www.railway-technical.com/track.shtml

Material Hauled	Number of Miles Driven per Year					
	2013	2014	2015	2016	2017	2018
Fill (Import)	10,272,727	10,272,727	2,054,545	-	-	-
Sub-Ballast	643,077	3,215,385	3,215,385	3,215,385	3,215,385	3,215,385
Ballast	643,077	3,215,385	3,215,385	3,215,385	3,215,385	3,215,385
Concrete Railway Ties	-	345,694	432,118	432,118	432,118	432,118
Reinforcing Steel (Manufacture & Fabricate)	-	169,867	212,333	212,333	212,333	212,333
Structural Steel (Manufacture & Fabricate)	-	-	-	38,267	38,267	38,267
Structural Concrete	-	214,133	267,667	267,667	267,667	267,667
Cement for structures	-	720,133	900,167	900,167	900,167	900,167
Sand for structures	-	2,094,400	2,618,000	2,618,000	2,618,000	2,618,000
Aggregate for structures	-	2,735,333	3,419,167	3,419,167	3,419,167	3,419,167
Total	**11,558,881**	**22,983,058**	**16,334,766**	**14,318,487**	**14,318,487**	**14,318,487**

Assumptions:

Delivery of material of rail: Put it onto the track and then drag - using a rail mounted truck - small locomotive 300 - 300 hp (5 mph - idling) (approx 120 hrs to transport running rail from siding to where it needs to go).

Assume there is no fugitive dust associated with hauling materials, only vehicle exhaust emissions.

The HHDT DSL Emission Factors for SJVAPCD will be used in EMFAC to determine vehicle exhaust emissions. Assume travel speed of 55 mph.

Cannot assume that fill material will not be recycled - unknown what % is organic matter.

Distance travelled will be estimated based on the origin of the material being delivered.
Material haul: quantities will be delivered over the time frame of the use in the construction phase (as per schedule).
Do not account for the emissions from delivering the rail since there is only one trip.
Assume the cement, sand, and gravel will be hauled in support of concrete batch plant operations for 8 hrs/day, 280 days/yr for 5.2 years

Data from EMFAC

Equipment Description	DATA FROM EMFAC2007							
	Unmitigated Grams per Mile							
	CO	NO_x	PM_{10}	$PM_{2.5}$	ROG	SO_2	CO_2	CH_4
HHDT 2013	2.65	11.27	0.52	0.44	0.60	0.016	1,662.35	0.03
HHDT 2014	2.47	9.86	0.47	0.40	0.54	0.016	1,662.35	0.03
HHDT 2015	2.29	8.59	0.43	0.36	0.48	0.016	1,662.35	0.02
HHDT 2016	2.13	7.47	0.39	0.32	0.43	0.016	1,662.35	0.02
HHDT 2017	1.98	6.50	0.35	0.29	0.38	0.016	1,662.35	0.02
HHDT 2018	1.84	5.66	0.30	0.26	0.34	0.016	1,662.35	0.02

Equipment Description	DATA FROM EMFAC2007							
	Mitigated Grams per Mile							
	CO	NO_x	PM_{10}	$PM_{2.5}$	ROG	SO_2	CO_2	CH_4
HHDT 2013	0.85	1.32	0.14	0.09	0.12	0.016	1,662	0.01
HHDT 2014	0.89	1.41	0.15	0.10	0.12	0.016	1,662	0.01
HHDT 2015	0.92	1.49	0.15	0.10	0.13	0.016	1,662	0.01
HHDT 2016	0.95	1.57	0.15	0.10	0.13	0.016	1,662	0.01
HHDT 2017	0.98	1.64	0.16	0.11	0.14	0.016	1,662	0.01
HHDT 2018	1.00	1.70	0.16	0.11	0.14	0.016	1,662	0.01

HST Material Hauling Emissions

Equipment Description	Unmitigated Tons per Year (1)							
	CO	NO_x	PM_{10}	$PM_{2.5}$	ROG	SO_2	CO_2	CH_4
HHDT 2013	33.77	143.40	6.58	5.58	7.66	0.20	21,162	0.36
HHDT 2014	62.44	249.52	11.92	10.00	13.64	0.40	42,077	0.63
HHDT 2015	41.20	154.44	7.70	6.40	8.65	0.29	29,905	0.40
HHDT 2016	33.54	117.78	6.13	5.05	6.75	0.25	26,214	0.32
HHDT 2017	31.16	102.44	5.57	4.53	6.02	0.25	26,214	0.28
HHDT 2018	28.97	89.19	4.75	4.07	5.38	0.25	26,214	0.25

Equipment Description	Mitigated Tons per Year (2)							
	CO	NO_x	PM_{10}	$PM_{2.5}$	ROG	SO_2	CO_2	CH_4
HHDT 2013	10.82	16.75	1.78	1.16	1.50	0.20	21,162	0.06
HHDT 2014	22.48	35.69	3.67	2.40	3.11	0.40	42,077	0.15
HHDT 2015	16.55	26.88	2.68	1.78	2.28	0.29	29,905	0.11
HHDT 2016	14.98	24.79	2.40	1.61	2.07	0.25	26,214	0.09
HHDT 2017	15.38	25.89	2.46	1.66	2.13	0.25	26,214	0.09
HHDT 2018	15.72	26.84	2.49	1.70	2.18	0.25	26,214	0.09

Notes

1 .Unmitigated:

Exhaust emissions were based on EMFAC default range of 45 years for vehicle model years.

2. Mitigated:

Exhaust emissions were mitigated by using only trucks of model year 2010 or newer.

HMF and MOWF Track Material Hauling

Data Taken from Project Descriptions or Provided
Estimated Values
Data used in calculations

Truck Capacity

20	cy/truck
35000	lb/truck
30	tons/truck

MOWF Construction Haul Trucks (1)

Source Geography (3)	Material Hauled	Total Quantity	Units	Possible Material Origin Location	Average Distance Travelled within air basin (One-way)	Duration of Activity (Years)
L	Fill (Import)	73,892	cy	Between Fresno and Bakersfield	20	0.5
R	Sub-Ballast	6,833	cy	Bay Area, Sacramento, Riverside	160	0.5
R	Ballast	6,833	cy	Bay Area, Sacramento, Riverside	160	0.5
L	Concrete Railway Ties	4,283	each	Between Fresno and Bakersfield	95	0.5
L/R	Reinforcing Steel (Manufacture & Fabricate)	1,020	Ton	Livermore, Fresno, Bakersfield, Pomona	98	1
L	Structural Concrete	11,509	cy	miles away	7.3	1
R/L	Cement for structures	2,825	tons	Cupertino, Ventura, Riverside, Long Beach	150	1
R/L	Sand for structures	8,217	tons	Cupertino, Ventura, Riverside, Long Beach	150	1
R/L	Aggregate for structures	10,732	tons	Cupertino, Ventura, Riverside, Long Beach	150	1

HMF Construction Haul Trucks (2)

Source Geography (3)	Material Hauled	Total Quantity	Units	Possible Material Origin Location	Average Distance Travelled within air basin (One-way)	Duration of Activity (Years)
L	Fill (Import)	281,700	cy	Between Fresno and Bakersfield	20	0.5
R	Sub-Ballast	5,429	cy	Bay Area, Sacramento, Riverside	160	0.5
R	Ballast	6,996	cy	Bay Area, Sacramento, Riverside	160	0.5
L	Concrete Railway Ties	17,002	each	Between Fresno and Bakersfield	95	0.5
L/R	Reinforcing Steel (Manufacture & Fabricate)	48,290,880	lbs	Livermore, Fresno, Bakersfield, Pomona	98	1
L	Structural Concrete	184,642	cy	miles away	7.3	1
R/L	Cement for structures	123,200	tons	Cupertino, Ventura, Riverside, Long Beach	150	1
R/L	Sand for structures	291,200	tons	Cupertino, Ventura, Riverside, Long Beach	150	1
R/L	Aggregate for structures	459,200	tons	Cupertino, Ventura, Riverside, Long Beach	150	1

Notes:

(1) Information about the amount of material hauled for the MOWF is based on the ratio of total amount required HST alignment, total length of HST alignment for the BNSF Alternative and the total length of the MOWF tracks in feet.

(2) Information about material hauling for HMF construction was obtained from M-F spreadsheet titled "Material Hauling" provided on January 14, 2011 including amount of material hauled and duration of activity

(3) L = local, R= regional, N= national

HMF and MOWF Track Material Hauling Trucks

Material Hauled	No. of Trucks in 2018	Total Duration in 2018 (yrs)	No. of Trucks in 2021	Total Duration in 2021 (yrs)	Average RT Distance Traveled in the
Fill (Import)	3,695	0.5	14,085	0.5	40
Sub-Ballast	342	0.5	271	0.5	320
Ballast	342	0.5	350	0.5	320
Concrete Railway Ties	71	0.5	283	0.5	190
Reinforcing Steel (Manufacture & Fabricate)	34	1	805	1.0	196
Structural Concrete	575	1	9,232	1.0	14.6
Cement for structures	94	1	4,107	1.0	300
Sand for structures	274	1	9,707	1.0	300
Aggregate for structures	358	1	15,307	1.0	300

Assumptions:

Weight of the average concrete railway tie 1,000 lbs

Source: http://www.railway-technical.com/track.shtml

Material Hauled	Number of Miles Driven per Year	
	2018	2021
Fill (Import)	147,783	563,399
Sub-Ballast	109,333	86,862
Ballast	109,333	111,936
Concrete Railway Ties	13,563	53,838
Reinforcing Steel (Manufacture & Fabricate)	6,665	157,750
Structural Concrete	8,401	134,788
Cement for structures	28,254	1,232,000
Sand for structures	82,173	2,912,000
Aggregate for structures	107,319	4,592,000
Total	**612,825**	**9,844,575**

Notes:

2018 is the year in which all of the MOWF Track is constructed.

2021 is the year in which all of the HMF Track is constructed.

Assume there is no fugitive dust associated with hauling materials, only vehicle exhaust emissions.

The HHDT DSL Emission Factors for SJVAPCD will be used in EMFAC to determine vehicle exhaust emissions. Assume travel speed of 55 mph.

Cannot assume that fill material will not be recycled - unknown what % is organic matter.

Distance travelled will be estimated based on the origin of the material being delivered.

Material haul: quantities will be delivered over the time frame of the use in the construction phase (as per schedule).

Assume the cement, sand, and gravel will be hauled in support of concrete batch plant operations for 10 hrs/day, 280 days/yr for 1 year for the HMF.

Data from EMFAC

Equipment Description	DATA FROM EMFAC2007 Unmitigated Grams per Mile							
	CO	NO_x	PM_{10}	$PM_{2.5}$	ROG	SO_2	CO_2	CH_4
HHDT 2018	1.837	5.656	0.321	0.258	0.341	0.016	1662.352	0.016
HHDT 2021	1.527	3.895	0.254	0.196	0.253	0.016	1662.352	0.012

Equipment Description	DATA FROM EMFAC2007 Mitigated Grams per Mile							
	CO	NO_x	PM_{10}	$PM_{2.5}$	ROG	SO_2	CO_2	CH_4
HHDT 2018	0.997	1.702	0.122	0.108	0.138	0.016	1662.352	0.006
HHDT 2021	1.053	1.86	0.165	0.114	0.145	0.016	1662.352	0.007

HMF and MOWF Track Material Hauling Emissions

Equipment Description	Unmitigated Tons per Year (1)							
	CO	NO_x	PM_{10}	$PM_{2.5}$	ROG	SO_2	CO_2	CH_4
HHDT 2018	1.24	3.82	0.22	0.17	0.23	0.01	1,121.95	0.01
HHDT 2021	16.56	42.23	2.75	2.13	2.74	0.17	18,023.29	0.13

Equipment Description	Mitigated Tons per Year (2)							
	CO	NO_x	PM_{10}	$PM_{2.5}$	ROG	SO_2	CO_2	CH_4
HHDT 2018	0.67	1.15	0.08	0.07	0.09	0.01	1,121.95	0.00
HHDT 2021	11.42	20.17	1.79	1.24	1.57	0.17	18,023.29	0.08

Notes

1 .Unmitigated:

Exhaust emissions were based on EMFAC default range of 45 years for vehicle model years.

2. Mitigated:

Exhaust emissions were mitigated by using only trucks of model year 2010 or newer.

HST Material Hauling by Rail

Data Taken from Project Descriptions or Provided
Estimated Values
Data used in calculations

HST Alignment Construction by Rail [(1), (2)]

Source Geography	Material Hauled	Total Quantity	Units	Total Quantity	Units	Possible Material Origin Location	Average Distance Travelled within air basin by rail (One-way)	Duration of Activity (Years)	Duration of Activity (Days)
R	Sub-Ballast	1,057,262	cy	2,220,251	tons	Riverside	56	5.2	1300
R	Sub-Ballast	1,057,262	cy	2,220,251	tons	Bay Area, Sacramento	158	5.2	1300
R	Ballast	1,058,829	cy	2,223,542	tons	Riverside	56	5.2	1300
R	Ballast	1,058,829	cy	2,223,542	tons	Bay Area, Sacramento	158	5.2	1300

Notes:
(1) Information about excavation (import), sub-ballast, ballast was obtained from the JV report: 15% Material Haul Data, Revised June 29 2011
(2) Distance travelled by rail calculated for travel in the air basin only. Travel outside the air basin is calculated in a separate memo
(3) Density of ballast and sub-ballast was assumed to be 2.1 tons/cubic yard

HST Alignment Construction by Rail by Year

Year	Ballast (tons)	Sub-Ballast (tons)
2014	532,983	532,194
2015	532,983	532,194
2016	532,983	532,194
2017	373,110	372,558
2018	2,446	2,442
2021	264,824	264,432

Emission Factors

Emission Factors - Rail (g/ton-mile) [(1)]							
	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	CO_2
2014	0.013	0.055	0.279	0.000	0.007	0.007	21.1

Emission Factors - Rail (g/gal) [(2), (3)]							
	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$	CO_2
2014	6.1	26.6	135	0.096	3.6	3.49	10217

Notes
(1) The conversaion factor of 484 ton-mile/gallon based on the report by the American Association of Railroads "The Environmental Benefits of Moving Freight by Rail", April 2010
(2) Rail emissions factors from EPA document "Emission Factors for Locomotives" (April 2009) and assumes all locomotives operate using 15 ppm sulfur diesel, as required by California ARB
(3) 2014 was assumed to be the most conservative year, so rail emission factors in 2014 were used for all years.

HST Material Hauling by Rail Emissions

Equipment Description	Unmitigated Tons per Year (1)						
	CO	NO_x	PM_{10}	$PM_{2.5}$	ROG	SO_2	CO_2
Rail from Riverside 2014	3.60	18.26	0.49	0.47	0.83	0.01	1,381.85
Rail from Riverside 2015	3.60	18.26	0.49	0.47	0.83	0.01	1,381.85
Rail from Riverside 2016	3.60	18.26	0.49	0.47	0.83	0.01	1,381.85
Rail from Riverside 2017	2.52	12.78	0.34	0.33	0.58	0.01	967.35
Rail from Riverside 2018	0.02	0.08	0.00	0.00	0.00	0.00	6.34
Rail from Riverside 2021	1.79	9.07	0.24	0.23	0.41	0.01	686.60

Equipment Description	Unmitigated Tons per Year (1)						
	CO	NO_x	PM_{10}	$PM_{2.5}$	ROG	SO_2	CO_2
Rail from Bay Area, Sacramento 2014	10.20	51.75	1.38	1.34	2.34	0.04	3,916.27
Rail from Bay Area, Sacramento 2015	10.20	51.75	1.38	1.34	2.34	0.04	3,916.27
Rail from Bay Area, Sacramento 2016	10.20	51.75	1.38	1.34	2.34	0.04	3,916.27
Rail from Bay Area, Sacramento 2017	7.14	36.22	0.97	0.94	1.64	0.03	2,741.56
Rail from Bay Area, Sacramento 2018	0.05	0.24	0.01	0.01	0.01	0.00	17.97
Rail from Bay Area, Sacramento 2021	5.07	25.71	0.69	0.67	1.16	0.02	1,945.88

Notes

(1) To be conservative, the larger emissions are used for calculations purposes

Appendix A

A.6 Power Supply Station Construction Emissions

Paralleling Power Supply Station

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	Jul-16
Construction End Date:	Nov-18

Project Data

Data per Power Station Location

	Duration of Construction (yr)	Length (ft)	Width(ft)	Station Footprint (ft^2)	Station Footprint (acres)	25% Station Footprint (acres)	Station Control House (ft^2)	Access Road (w) (ft)	Access Road (l) (ft)	# of New Stations	Components	Assumptions
Paralleling Station	2.34	100	80	8,000	0.18	0.04	800	No Road	No Road	every 7.5 miles	2 - 2 x 25kV autotransformers	located at 5 mile intervals between switching station and the substations (4)

Paralleling Station: Building Type	Building size (sqft)
Station Structure	0
Station Control House	450
Total PS Size (sqft)	450

Data to be Used in URBEMIS

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Grader	174	1	12	12	609	6
Rubber Tired Dozer	357	1	12	12	609	6
Tractor/Loaders/Backhoes	108	2	12	24	609	7
Water Trucks	189	1	12	12	609	8
Cranes	399	1	12	12	609	4
Forklifts	145	2	12	24	609	6

Assumptions:

Twelve (12) Parallel Power Stations will be required for the Fresno-Bakersfield alignment.

Total Number of PPSS 12

Assume no specific transmission line construction because the resulting construction emissions will be insignificant relative to the total alignment calculations.
Assume that there are 5 miles of 5 feet wide by 10 feet deep trench
This information will be utilized in the alignment construction emission estimates.
Assume that the transformers and switchgear are not constructed onsite.
Buildings are concrete.
Entire station site will be graded. (0.18 acres for each Parallel Power Station)
There will be no demolition activities included in the construction of the power stations.
Access roads will be covered with gravel so no paving required.
Assume no soil imported or exported during the construction activities. All soil hauling will be included as part of the alignment.
The project area for buildings (for grading calculations) will be based on the station footprint.
Assume 5 work days per week (URBEMIS default).
Assume mass site grading rather than fine site grading. Fine site grading is the default.
Use the General Light Industry Land Use Category in URBEMIS.

Land Use was based on the total building construction area (Building Sizes). (50 sq. ft. for Parallel Power Stations)
Assumed the maximum daily acres graded were 25% of the total acres graded (URBEMIS default).
URBEMIS assumes the total acres graded are 2x the building area; overwrote the total acres graded with the actual station footprint.
Only using the default equipment as provided in URBEMIS for the construction of the power stations.
For Grading, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.
For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).
For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.
Each station will be modeled individually.
URBEMIS defaults the building construction equipment to 0 for the Paralleling Station and the Switching Station due to their small acreage and short construction phase.
URBEMIS defaults were overwritten with the defaults for 1 acre from Appendix H of the URBEMIS User's Guide (1 crane, 2 forklifts, 1 tractor/loader/backhoe).

Paralleling Power Supply Station Emissions

		Tons Emitted Per Year (Unmitigated) (1)						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2016	8.44	12.65	0.69	0.57	1.69	0.00	1,846.96
Building Construction	2017	8.61	11.37	0.55	0.50	1.59	0.00	2,088.13
Building Construction	2018	3.57	4.32	0.20	0.18	0.62	0.00	883.44
Coating	2018	0.00	0.00	0.00	0.00	0.06	0.00	0.07
Total	**2016**	**8.44**	**12.65**	**0.69**	**0.57**	**1.69**	**0.00**	**1,846.96**
Total	**2017**	**8.61**	**11.37**	**0.55**	**0.50**	**1.59**	**0.00**	**2,088.13**
Total	**2018**	**3.57**	**4.32**	**0.20**	**0.18**	**0.68**	**0.00**	**883.51**

		Tons Emitted Per Year (Mitigated) [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2016	8.44	1.99	0.18	0.10	0.71	0.00	1,846.96
Building Construction	2017	8.61	1.78	0.08	0.08	0.67	0.00	2,088.13
Building Construction	2018	3.57	0.68	0.03	0.03	0.26	0.00	883.44
Coating	2018	0.00	0.00	0.00	0.00	0.02	0.00	0.07
Total	**2016**	**8.44**	**1.99**	**0.18**	**0.10**	**0.71**	**0.00**	**1,846.96**
Total	**2017**	**8.61**	**1.78**	**0.08**	**0.08**	**0.67**	**0.00**	**2,088.13**
Total	**2018**	**3.57**	**0.68**	**0.03**	**0.03**	**0.29**	**0.00**	**883.51**

Notes

1 .Unmitigated:

Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.

2. Mitigated:

Mitigation for fugitive dust included: water exposed surfaces 3x daily.

The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.

A reduction of 69% was applied to the equipment loading/unloading per SCAQMD Guidance (Table XI-A Mitigation Measure Examples: Fugitive Dust from Construction & Demolition).

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

Mitigation was applied externally to the exhaust emissions based on the fleet-average Tier mix and the required % reductions to meet Tier 4 standards, based on SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Mitigation used for architectural coatings included the use of Low-VOC coatings (providing a 10% reduction in ROG emissions).

Only used the default equipment as provided in URBEMIS for the construction of the MOWF.

For Grading and Paving, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.

Switching Power Supply Station

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	Jul-16
Construction End Date:	Nov-18

Project Data

Data per Power Station Location	Duration of Construction (yr)	Length (ft)	Width(ft)	Station Footprint (ft^2)	Station Footprint (acres)	25% Station Footprint (acres)	Station Control House (ft^2)	# of New Stations	Components	Assumptions
Switching Station	2.34	120	80	9,600	0.21	0.05	800	every 15-miles	4 - 2 x 25kV autotransformers	Located midway between the TP Station (3)

Switching Station: Building Type	Building size (sqft)
Station Structure	0
Station Control House	450
Total SS Size (sqft)	450

Data to be Used in URBEMIS

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Grader	174	1	3	3	609	6
Rubber Tired Dozer	357	1	3	3	609	6
Tractor/Loaders/Backhoes	108	2	3	6	609	7
Water Trucks	189	1	3	3	609	8
Cranes	399	1	3	3	609	4
Forklifts	145	2	3	6	609	6

Assumptions:

Three (3) Switching Power Stations will be required for the Fresno-Bakersfield alignment.

Total Number of SPSS 3

Assume no specific transmission line construction because the resulting construction emissions will be insignificant relative to the total alignment calculations.

Assume that there are 5 miles of 5 feet wide by 10 feet deep trench

This information will be utilized in the alignment construction emission estimates.

Assume that the transformers and switchgear are not constructed onsite.

Buildings are concrete.

Entire station site will be graded. (0.21 acres for Switching Power Station each)

There will be no demolition activities included in the construction of the power stations.

Access roads will be covered with gravel so no paving required.

Assume no soil imported or exported during the construction activities. All soil hauling will be included as part of the alignment.

The project area for buildings (for grading calculations) will be based on the station footprint.

Assume 5 work days per week (URBEMIS default).

Assume mass site grading rather than fine site grading. Fine site grading is the default.

Use the General Light Industry Land Use Category in URBEMIS.

Land Use was based on the total building construction area (Building Sizes). (450 sq. ft. for both Switching Power Stations)

Assumed the maximum daily acres graded were 25% of the total acres graded (URBEMIS default).

URBEMIS assumes the total acres graded are 2x the building area; overwrote the total acres graded with the actual station footprint.

Only using the default equipment as provided in URBEMIS for the construction of the power stations.

For Grading, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.

Each station will be modeled individually.

URBEMIS defaults the building construction equipment to 0 for the Paralleling Station and the Switching Station due to their small acreage and short construction phase.

URBEMIS defaults were overwritten with the defaults for 1 acre from Appendix H of the URBEMIS User's Guide (1 crane, 2 forklifts, 1 tractor/loader/backhoe).

Switching Power Supply Station Emissions

		Tons Emitted Per Year (Unmitigated) (1)					
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**
Mass Grading	2016	2.11	3.16	0.18	0.14	0.42	0.00
Building Construction	2017	2.15	2.84	0.14	0.13	0.40	0.00
Building Construction	2018	0.89	1.08	0.05	0.05	0.16	0.00
Coating	2018	0.00	0.00	0.00	0.00	0.01	0.00
Total	**2016**	**2.11**	**3.16**	**0.18**	**0.14**	**0.42**	**0.00**
Total	**2017**	**2.15**	**2.84**	**0.14**	**0.13**	**0.40**	**0.00**
Total	**2018**	**0.89**	**1.08**	**0.05**	**0.05**	**0.17**	**0.00**
		Tons Emitted Per Year (Mitigated) (2)					
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**
Mass Grading	2016	2.11	0.50	0.05	0.03	0.18	0.00
Building Construction	2017	2.15	0.45	0.02	0.02	0.17	0.00
Building Construction	2018	0.89	0.17	0.01	0.01	0.07	0.00
Coating	2018	0.00	0.00	0.00	0.00	0.01	0.00
Total	**2016**	**2.11**	**0.50**	**0.05**	**0.03**	**0.18**	**0.00**
Total	**2017**	**2.15**	**0.45**	**0.02**	**0.02**	**0.17**	**0.00**
Total	**2018**	**0.89**	**0.17**	**0.01**	**0.01**	**0.07**	**0.00**

Notes

1 .Unmitigated:

Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.

2. Mitigated:

Mitigation for fugitive dust included: water exposed surfaces 3x daily.

The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.

A reduction of 69% was applied to the equipment loading/unloading per SCAQMD Guidance (Table XI-A Mitigation Measure Examples: Fugitive Dust from Construction & Demolition).

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Mitigation used for architectural coatings included the use of Low-VOC coatings (providing a 10% reduction in ROG emissions).

Only used the default equipment as provided in URBEMIS for the construction of the MOWF.

For Grading and Paving, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.

Traction Power Supply Station

Data Taken from Project Descriptions or Provided	
Estimated Values	
Data used in calculations	
Construction Start Date:	Jul-16
Construction End Date:	Nov-18

Project Data

Data per Power Station Location

	Duration of Construction (yr)	Length (ft)	Width(ft)	Station Footprint (ft^2)	Station Footprint (acres)	25% Station Footprint (acres)	Station Control House (ft^2)	Access Road (w) (ft)	Access Road (l) (ft)	# of New Stations	Components	Assumptions
Traction Power Supply Station	2.34	200	150	30,000	0.66	0.17	800	20	500	2	2 high voltage utility supply circuits	30 mile intervals along HSR right-of-way (2)

TP: Building Type	Building size (sqft)
Station Structure	2,000
Station Control House	1,250
Total TP Size (sqft)	3,250

Data to be Used in URBEMIS

Equipment	HP	QTY (EA/Site)	No. of Sites	Total Pieces	Days	Hours/Day
Grader	174	1	4	4	609	6
Rubber Tired Dozer	357	1	4	4	609	6
Tractor/Loaders/Backhoes	108	2	4	8	609	7
Water Trucks	189	1	4	4	609	8
Cranes	399	1	4	4	609	4
Forklifts	145	2	4	8	609	6

Assumptions:

Four (4) Traction Power Stations will be required for the Fresno-Bakersfield alignment. Each station will be modeled individually. Total Number of TPSS 4

Assume no specific transmission line construction because the resulting construction emissions will be insignificant relative to the total alignment calculations.

TP stations shall be no more than 100 ft from center of CHSR right of way.

Assume that there are 5 miles of 5 feet wide by 10 feet deep trench (assumes 2, 2.5 mile long trench from existing substation to traction power supply station).

This information will be utilized in the alignment construction emission estimates.

Assume that the transformers and switchgear are not constructed onsite.

Buildings are concrete.

Entire station site will be graded. (0.66 acres for Traction Power Station) The project area for buildings (for grading calculations) will be based on the station footprint.

There will be no demolition activities included in the construction of the power stations.

Access roads will be covered with gravel so no paving required.

Assume no soil imported or exported during the construction activities. All soil hauling will be included as part of the alignment.

Assume 5 work days per week (URBEMIS default).
Assume mass site grading rather than fine site grading. Fine site grading is the default.
Use the General Light Industry Land Use Category in URBEMIS.
Land Use was based on the total building construction area (Building Sizes). (3250 sq. ft. for Traction Power Station)
Assumed the maximum daily acres graded were 25% of the total acres graded (URBEMIS default).
URBEMIS assumes the total acres graded are 2x the building area; overwrote the total acres graded with the actual station footprint.
Only using the default equipment as provided in URBEMIS for the construction of the power stations.
For Grading, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.
For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).
For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.
URBEMIS defaults the building construction equipment to 0 for the Paralleling Station and the Switching Station due to their small acreage and short construction phase.
URBEMIS defaults were overwritten with the defaults for 1 acre from Appendix H of the URBEMIS User's Guide (1 crane, 2 forklifts, 1 tractor/loader/backhoe).

Traction Power Supply Station Emissions

		Tons Emitted Per Year (Unmitigated) [1]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2016	1.89	2.83	0.22	0.14	0.38	0.00	413.57
Building Construction	2016	0.40	0.50	0.03	0.02	0.07	0.00	84.99
Building Construction	2017	2.33	2.64	0.14	0.13	0.38	0.00	502.24
Building Construction	2018	1.35	1.40	0.07	0.06	0.20	0.00	295.55
Coating	2018	0.00	0.00	0.00	0.00	0.14	0.00	0.17
Total	**2016**	**2.29**	**3.33**	**0.25**	**0.16**	**0.45**	**0.00**	**498.56**
Total	**2017**	**2.33**	**2.64**	**0.14**	**0.13**	**0.38**	**0.00**	**502.24**
Total	**2018**	**1.35**	**1.40**	**0.07**	**0.06**	**0.34**	**0.00**	**295.71**

Table A-25
TPSS Construction Emissions

		Tons Emitted Per Year (Mitigated) [2]						
Activity	**Year**	**CO**	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**ROG**	**SO_x**	**CO_2**
Mass Grading	2016	1.89	0.44	0.10	0.04	0.16	0.00	413.57
Building Construction	2016	0.40	0.08	0.00	0.00	0.03	0.00	84.99
Building Construction	2017	2.33	0.42	0.02	0.02	0.16	0.00	502.24
Building Construction	2018	1.35	0.22	0.01	0.01	0.09	0.00	295.55
Coating	2018	0.00	0.00	0.00	0.00	0.05	0.00	0.17
Total	**2016**	**2.29**	**0.52**	**0.11**	**0.04**	**0.19**	**0.00**	**498.56**
Total	**2017**	**2.33**	**0.42**	**0.02**	**0.02**	**0.16**	**0.00**	**502.24**
Total	**2018**	**1.35**	**0.22**	**0.01**	**0.01**	**0.14**	**0.00**	**295.71**

Notes

1 .Unmitigated:

Programmatic mitigation for the Baseline Case for fugitive dust included: equipment loading/unloading (trucks hauling loose materials must be covered), replace ground cover in disturbed areas quickly, water exposed surfaces 2x daily, water unpaved access roads 2x daily, and reduce speed on unpaved roads to less than 15 mph.

2. Mitigated:

Mitigation for fugitive dust included: water exposed surfaces 3x daily.

The fugitive dust mitigation measures were applied based on the SJVAPCD Rule 8021; the most stringent watering techniques were applied.

Demolition).

Exhaust emissions were not controlled in URBEMIS as the default, unmitigated emission factors used by URBEMIS create a fleet-average Tier 2 mix.

SCAQMD Table II - Off-Road Engine Emission Rates & Comparison of Uncontrolled to Tiered Rates and Tiered to Tiered Rates.

Mitigation used for architectural coatings included the use of Low-VOC coatings (providing a 10% reduction in ROG emissions).

Only used the default equipment as provided in URBEMIS for the construction of the MOWF.

For Grading and Paving, assume default URBEMIS number of workers (125% of # of construction equipment) and no vendors.

For Building construction, assume default URBEMIS number of vendor trips (0.38 trips / 1,000 sqft) and worker trips (0.42 trips / 1,000 sqft).

For Architectural Coatings, assume default URBEMIS number of worker trips (20% of the building construction worker trips) and no vendor trips.

Appendix A

A.7 URBEMIS2007 Output Files

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6/14/2011 05:00:25 PM												
Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: C:\Documents and Settings\avanti_tamhane\Desktop\Mobilization 4-11.urb924												
Project Name: Mobilization												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2013		50.38	476.38	158.71	0.01	87.11	17.87	104.98	18.20	17.05	35.25	57,652.02
Fine Grading 03/01/2013-10/31/2013		50.38	476.38	158.71	0.01	87.11	17.87	104.98	18.20	17.05	35.25	57,652.02
	Fine Grading Dust	0.00	0.00	0.00	0.00	87.08	0.00	87.08	18.19	0.00	18.19	0.00
	Fine Grading Off Road Diesel	50.22	476.11	153.39	0.00	0.00	17.85	17.85	0.00	17.04	17.04	57,013.55
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.16	0.28	5.32	0.01	0.03	0.02	0.05	0.01	0.01	0.03	638.47
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 3/1/2013 - 10/31/2013 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												
Phase Assumptions												
Phase: Mass Grading 3/1/2013 - 10/31/2013 - Default Fine Site Grading Description												
Total Acres Disturbed: 1262.79												
Maximum Daily Acreage Disturbed: 315.7												
Fugitive Dust Level of Detail: Default												
20 lbs per acre-day												
On Road Truck Travel (VMT): 0												
Off Road Diesel calculated using the Named Equipment EMS functions.												
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\avanti_tamhane\Application Data\Urbemis\Version9a\Data\mob.equip;Mobilization Equipment List												
Off-Road Equipment:												
45 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
45 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
90 Off Highway Tractors (500 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
15 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
15 Water Trucks (189 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
30 Other Equipment (10 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
15 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
15 Off Highway Trucks (330 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
6 Tractors/Loaders/Backhoes (87 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
3 Excavators (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
6 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												

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6/14/2011 05:00:48 PM												
Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: C:\Documents and Settings\avanti_tamhane\Desktop\Mobilization 4-11.urb924												
Project Name: Mobilization												
Project Location: San Joaquin Valley												
On-Road Vehicle Emissions Based on:												
Off-Road Vehicle Emissions Based on:												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2013		50.38	476.38	158.71	0.01	75.50	17.87	93.37	15.77	17.05	32.82	57,652.02
Fine Grading 03/01/2013-10/31/2013		50.38	476.38	158.71	0.01	75.50	17.87	93.37	15.77	17.05	32.82	57,652.02
	Fine Grading Dust	0.00	0.00	0.00	0.00	75.47	0.00	75.47	15.76	0.00	15.76	0.00
	Fine Grading Off Road Diesel	50.22	476.11	153.39	0.00	0.00	17.85	17.85	0.00	17.04	17.04	57,013.55
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.16	0.28	5.32	0.01	0.03	0.02	0.05	0.01	0.01	0.03	638.47
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 3/1/2013 - 10/31/2013 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
Phase Assumptions												
Phase: Mass Grading 3/1/2013 - 10/31/2013 - Default Fine Site Grading Description												
Total Acres Disturbed: 1262.79												
Maximum Daily Acreage Disturbed: 315.7												
Fugitive Dust Level of Detail: Default												
20 lbs per acre-day												
On Road Truck Travel (VMT): 0												
Off Road Diesel calculated using the Named Equipment EMS functions.												
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\avanti_tamhane\Application Data\Urbemis\Version9a\Data\mob.equip;Mobilization Equipment List												
Off-Road Equipment:												
45 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
45 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
90 Off Highway Tractors (500 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
15 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
15 Water Trucks (189 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
30 Other Equipment (10 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
15 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
15 Off Highway Trucks (330 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
6 Tractors/Loaders/Backhoes (87 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
3 Excavators (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												
6 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year												

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)												
File Name: C:\Documents and Settings\avanti_tamhane\Desktop\Demolition.urb924												
Project Name: Demolition												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2013		4.10	57.08	20.29	0.10	80.36	2.15	82.51	16.76	1.97	18.73	10,685.08
Demolition 04/01/2013-08/01/2013		4.10	57.08	20.29	0.10	80.36	2.15	82.51	16.76	1.97	18.73	10,685.08
	Fugitive Dust	0.00	0.00	0.00	0.00	134.78	0.00	134.78	28.03	0.00	28.03	0.00
	Demo Off Road Diesel	0.04	0.28	0.20	0.00	0.00	0.02	0.02	0.00	0.02	0.02	31.16
	Demo On Road Diesel	4.06	56.79	20.06	0.10	0.37	2.13	2.50	0.12	1.96	2.08	10,649.36
	Demo Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.56
Phase Assumptions												
Phase: Demolition 4/1/2013 - 8/1/2013 - Type Your Description Here												
Building Volume Total (cubic feet): 6.417933E+08												
Building Volume Daily (cubic feet): 4279776												
On Road Truck Travel (VMT): 59441.34												
Off-Road Equipment:												
1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day												
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 1 hours per day												
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day												

Column1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
6/15/2011 11:25:09 AM												
Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: C:\Documents and Settings\avanti_tamhane\Desktop\Land Clearing.urb924												
Project Name: Site Prep												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2013		19.89	296.20	100.77	0.00	2.54	9.32	11.85	0.53	8.76	9.30	38,284.87
Mass Grading 04/01/2013-08/31/2013		19.89	296.20	100.77	0.00	2.54	9.32	11.85	0.53	8.76	9.30	38,284.87
	Mass Grading Dust	0.00	0.00	0.00	0.00	2.51	0.00	2.51	0.53	0.00	0.53	0.00
	Mass Grading Off Road Diesel	19.77	296.00	96.86	0.00	0.00	9.30	9.30	0.00	8.75	8.75	37,815.96
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.12	0.20	3.90	0.00	0.02	0.01	0.04	0.01	0.01	0.02	468.92
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 4/1/2013 - 8/31/2013 - Type Your Description Here												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												

Phase Assumptions
Phase: Mass Grading 4/1/2013 - 8/31/2013 - Type Your Description Here
Total Acres Disturbed: 57.98
Maximum Daily Acreage Disturbed: 14.5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\avanti_tamhane\Application Data\Urbemis\Version9a\Data\Site prep 2.equip;Site Preparation Equipment List
Off-Road Equipment:
15 Tractors/Loaders/Backhoes (87 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Tractors/Loaders/Backhoes (97 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Dozers (310 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Dozers (410 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Dozers (850 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2007 with average useage of 900 hrs/year
15 Excavators (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Excavators (450 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Loaders (149 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Loaders (197 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Loaders (262 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Loaders (349 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
3 Aerial Lifts (15 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
3 Aerial Lifts (28 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
45 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
45 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
45 Water Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
6 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
6 Surfacing Eqipment (335 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
6 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
6 Surfacing Eqipment (335 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: C:\Documents and Settings\avanti_tamhane\Desktop\Land Clearing.urb924												
Project Name: Site Prep												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
			ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2013			19.89	296.20	100.77	0.00	2.20	9.32	11.52	0.46	8.76	9.23	38,284.87
Mass Grading 04/01/2013-08/31/2013			19.89	296.20	100.77	0.00	2.20	9.32	11.52	0.46	8.76	9.23	38,284.87
	Mass Grading Dust		0.00	0.00	0.00	0.00	2.18	0.00	2.18	0.46	0.00	0.46	0.00
	Mass Grading Off Road Diesel		19.77	296.00	96.86	0.00	0.00	9.30	9.30	0.00	8.75	8.75	37,815.96
	Mass Grading On Road Diesel		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips		0.12	0.20	3.90	0.00	0.02	0.01	0.04	0.01	0.01	0.02	468.92
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 4/1/2013 - 8/31/2013 - Type Your Description Here												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												

Phase Assumptions
Phase: Mass Grading 4/1/2013 - 8/31/2013 - Type Your Description Here
Total Acres Disturbed: 57.98
Maximum Daily Acreage Disturbed: 14.5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was
Off-Road Equipment:
15 Tractors/Loaders/Backhoes (87
15 Tractors/Loaders/Backhoes (97 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Dozers (310 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Dozers (410 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Dozers (850 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2007 with average useage of 900 hrs/year
15 Excavators (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Excavators (450 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Loaders (149 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Loaders (197 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Loaders (262 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
15 Rubber Tired Loaders (349 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
3 Aerial Lifts (15 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
3 Aerial Lifts (28 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
45 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
45 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
45 Water Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
6 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
6 Surfacing Eqipment (335 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
6 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year
6 Surfacing Eqipment (335 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 900 hrs/year

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Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
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Project Name: Earth Moving												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2013		65.58	526.41	210.58	0.01	97.57	23.50	121.08	20.38	22.62	43.00	59,423.34
Mass Grading 08/01/2013-08/01/2015		64.94	518.44	208.08	0.01	54.28	23.24	77.53	11.34	22.37	33.72	58,367.17
	Mass Grading Dust	0.00	0.00	0.00	0.00	54.24	0.00	54.24	11.33	0.00	11.33	0.00
	Mass Grading Off Road Diesel	64.70	518.03	200.27	0.00	0.00	23.22	23.22	0.00	22.35	22.35	57,429.49
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.24	0.41	7.81	0.01	0.05	0.03	0.07	0.02	0.02	0.04	937.68
Fine Grading 09/01/2013-03/01/2014		0.64	7.98	2.50	0.00	43.29	0.26	43.55	9.04	0.24	9.29	1,056.17
	Fine Grading Dust	0.00	0.00	0.00	0.00	43.29	0.00	43.29	9.04	0.00	9.04	0.00
	Fine Grading Off Road Diesel	0.64	7.97	2.37	0.00	0.00	0.26	0.26	0.00	0.24	0.24	1,040.58
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.59
2014		257.96	1,925.08	778.25	0.03	151.43	89.72	241.16	31.65	86.58	118.23	210,966.47
Fine Grading 09/01/2013-03/01/2014		0.34	4.00	1.25	0.00	21.40	0.13	21.53	4.47	0.13	4.59	522.02
	Fine Grading Dust	0.00	0.00	0.00	0.00	21.40	0.00	21.40	4.47	0.00	4.47	0.00
	Fine Grading Off Road Diesel	0.34	4.00	1.19	0.00	0.00	0.13	0.13	0.00	0.13	0.13	514.31
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.71
Mass Grading 08/01/2013-08/01/2015		171.09	1,275.83	516.02	0.02	129.98	59.50	189.48	27.16	57.41	84.58	139,760.82
	Mass Grading Dust	0.00	0.00	0.00	0.00	129.87	0.00	129.87	27.12	0.00	27.12	0.00
	Mass Grading Off Road Diesel	170.57	1,274.96	499.00	0.00	0.00	59.44	59.44	0.00	57.36	57.36	137,514.65
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.52	0.88	17.02	0.02	0.11	0.06	0.17	0.04	0.05	0.09	2,246.17
Trenching 07/01/2014-12/31/2014		86.53	645.25	260.98	0.01	0.06	30.09	30.15	0.02	29.04	29.06	70,683.63
	Trenching Off Road Diesel	86.27	644.81	252.37	0.00	0.00	30.06	30.06	0.00	29.01	29.01	69,547.64
	Trenching Worker Trips	0.26	0.44	8.61	0.01	0.06	0.03	0.09	0.02	0.03	0.05	1,135.99
2015		108.71	763.08	310.95	0.01	75.70	36.89	112.58	15.82	35.67	51.49	81,393.68
Mass Grading 08/01/2013-08/01/2015		108.71	763.08	310.95	0.01	75.70	36.89	112.58	15.82	35.67	51.49	81,393.68
	Mass Grading Dust	0.00	0.00	0.00	0.00	75.63	0.00	75.63	15.80	0.00	15.80	0.00
	Mass Grading Off Road Diesel	108.45	762.62	301.93	0.00	0.00	36.85	36.85	0.00	35.64	35.64	80,085.16
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.27	0.46	9.02	0.01	0.06	0.04	0.10	0.02	0.03	0.05	1,308.52

Construction Related Mitigation Measures
The following mitigation measures apply to Phase: Fine Grading 9/1/2013 - 3/1/2014 - Default Fine Site Grading Description
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:
PM10: 5% PM25: 5%
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:
PM10: 69% PM25: 69%
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:
PM10: 44% PM25: 44%
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%
The following mitigation measures apply to Phase: Mass Grading 8/1/2013 - 8/1/2015 - Type Your Description Here
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:
PM10: 5% PM25: 5%
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:
PM10: 69% PM25: 69%
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:
PM10: 44% PM25: 44%
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%
Phase Assumptions
Phase: Fine Grading 9/1/2013 - 3/1/2014 - Default Fine Site Grading Description
Total Acres Disturbed: 1262.79
Maximum Daily Acreage Disturbed: 315.7
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\avanti_tamhane\Application Data\Urbemis\Version9a\Data\earth moving.equip;Earth Moving Equipment List
Off-Road Equipment:
2 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year
1 Plate Compactors (8 hp) operating at a 0.43 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 600 hrs/year
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1589 hrs/year
6 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year
Phase: Mass Grading 8/1/2013 - 8/1/2015 - Type Your Description Here
Total Acres Disturbed: 1262.79
Maximum Daily Acreage Disturbed: 315.7
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\avanti_tamhane\Application Data\Urbemis\Version9a\Data\earth moving.equip;Earth Moving Equipment List
Off-Road Equipment:
15 Concrete/Industrial Saws (120 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Tractors/Loaders/Backhoes (87 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Tractors/Loaders/Backhoes (97 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (310 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (410 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Rubber Tired Dozers (850 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2007 with average useage of 2600 hrs/year
12 Excavators (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
12 Excavators (450 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Trenchers (40 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year

15 Rubber Tired Loaders (149 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (197 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (262 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (349 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Graders (158 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Graders (260 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (83 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (156 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (174 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Other Equipment (15 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (266 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (335 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (400 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Off Highway Trucks (385 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (150 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Water Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
120 Other Equipment (10 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
Phase: Trenching 7/1/2014 - 12/31/2014 - Type Your Description Here
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\avanti_tamhane\Application Data\Urbemis\Version9a\Data\earth moving.equip;Earth Moving Equipment List
Off-Road Equipment:
15 Concrete/Industrial Saws (120 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Tractors/Loaders/Backhoes (87 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Tractors/Loaders/Backhoes (97 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (310 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (410 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Rubber Tired Dozers (850 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2007 with average useage of 2600 hrs/year
12 Excavators (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
12 Excavators (450 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Trenchers (40 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (149 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (197 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (262 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (349 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Graders (158 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Graders (260 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (83 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (156 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (174 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Other Equipment (15 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (266 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (335 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (400 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Off Highway Trucks (385 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (150 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Water Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
120 Other Equipment (10 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: C:\Documents and Settings\avanti_tamhane\Desktop\Earth Moving 4-11.urb924												
Project Name: Earth Moving												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2013		65.58	526.41	210.58	0.01	84.57	23.50	108.07	17.67	22.62	40.29	59,423.34
Mass Grading 08/01/2013-08/01/2015		64.94	518.44	208.08	0.01	47.05	23.24	70.30	9.83	22.37	32.21	58,367.17
	Mass Grading Dust	0.00	0.00	0.00	0.00	47.01	0.00	47.01	9.82	0.00	9.82	0.00
	Mass Grading Off Road Diesel	64.70	518.03	200.27	0.00	0.00	23.22	23.22	0.00	22.35	22.35	57,429.49
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.24	0.41	7.81	0.01	0.05	0.03	0.07	0.02	0.02	0.04	937.68
Fine Grading 09/01/2013-03/01/2014		0.64	7.98	2.50	0.00	37.52	0.26	37.78	7.84	0.24	8.08	1,056.17
	Fine Grading Dust	0.00	0.00	0.00	0.00	37.52	0.00	37.52	7.84	0.00	7.84	0.00
	Fine Grading Off Road Diesel	0.64	7.97	2.37	0.00	0.00	0.26	0.26	0.00	0.24	0.24	1,040.58
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.59
2014		257.96	1,925.08	778.25	0.03	131.26	89.72	220.99	27.44	86.58	114.02	210,966.47
Fine Grading 09/01/2013-03/01/2014		0.34	4.00	1.25	0.00	18.54	0.13	18.68	3.87	0.13	4.00	522.02
	Fine Grading Dust	0.00	0.00	0.00	0.00	18.54	0.00	18.54	3.87	0.00	3.87	0.00
	Fine Grading Off Road Diesel	0.34	4.00	1.19	0.00	0.00	0.13	0.13	0.00	0.13	0.13	514.31
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	7.71
Mass Grading 08/01/2013-08/01/2015		171.09	1,275.83	516.02	0.02	112.66	59.50	172.16	23.55	57.41	80.96	139,760.82
	Mass Grading Dust	0.00	0.00	0.00	0.00	112.55	0.00	112.55	23.51	0.00	23.51	0.00
	Mass Grading Off Road Diesel	170.57	1,274.96	499.00	0.00	0.00	59.44	59.44	0.00	57.36	57.36	137,514.65
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.52	0.88	17.02	0.02	0.11	0.06	0.17	0.04	0.05	0.09	2,246.17
Trenching 07/01/2014-12/31/2014		86.53	645.25	260.98	0.01	0.06	30.09	30.15	0.02	29.04	29.06	70,683.63
	Trenching Off Road Diesel	86.27	644.81	252.37	0.00	0.00	30.06	30.06	0.00	29.01	29.01	69,547.64
	Trenching Worker Trips	0.26	0.44	8.61	0.01	0.06	0.03	0.09	0.02	0.03	0.05	1,135.99
2015		108.71	763.08	310.95	0.01	65.61	36.89	102.50	13.71	35.67	49.39	81,393.68
Mass Grading 08/01/2013-08/01/2015		108.71	763.08	310.95	0.01	65.61	36.89	102.50	13.71	35.67	49.39	81,393.68
	Mass Grading Dust	0.00	0.00	0.00	0.00	65.55	0.00	65.55	13.69	0.00	13.69	0.00
	Mass Grading Off Road Diesel	108.45	762.62	301.93	0.00	0.00	36.85	36.85	0.00	35.64	35.64	80,085.16
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.27	0.46	9.02	0.01	0.06	0.04	0.10	0.02	0.03	0.05	1,308.52

Construction Related Mitigation Measures
The following mitigation measures apply to Phase: Fine Grading 9/1/2013 - 3/1/2014 - Default Fine Site Grading Description
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:
PM10: 5% PM25: 5%
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:
PM10: 69% PM25: 69%
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:
PM10: 44% PM25: 44%
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
The following mitigation measures apply to Phase: Mass Grading 8/1/2013 - 8/1/2015 - Type Your Description Here
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:
PM10: 5% PM25: 5%
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:
PM10: 69% PM25: 69%
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:
PM10: 44% PM25: 44%
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%

Phase Assumptions
Phase: Fine Grading 9/1/2013 - 3/1/2014 - Default Fine Site Grading Description
Total Acres Disturbed: 1262.79
Maximum Daily Acreage Disturbed: 315.7
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\avanti_tamhane\Application Data\Urbemis\Version9a\Data\earth moving.equip;Earth Moving Equipment List
Off-Road Equipment:
2 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year
1 Plate Compactors (8 hp) operating at a 0.43 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 600 hrs/year
3 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1589 hrs/year
6 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year
2 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year
Phase: Mass Grading 8/1/2013 - 8/1/2015 - Type Your Description Here
Total Acres Disturbed: 1262.79
Maximum Daily Acreage Disturbed: 315.7
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\avanti_tamhane\Application Data\Urbemis\Version9a\Data\earth moving.equip;Earth Moving Equipment List
Off-Road Equipment:
15 Concrete/Industrial Saws (120 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Tractors/Loaders/Backhoes (87 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Tractors/Loaders/Backhoes (97 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (310 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (410 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Rubber Tired Dozers (850 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2007 with average useage of 2600 hrs/year
12 Excavators (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
12 Excavators (450 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year

6 Trenchers (40 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (149 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (197 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (262 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (349 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Graders (158 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Graders (260 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (83 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (156 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (174 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Other Equipment (15 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (266 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (335 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (400 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Off Highway Trucks (385 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (150 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Water Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
120 Other Equipment (10 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
Phase: Trenching 7/1/2014 - 12/31/2014 - Type Your Description Here
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\avanti_tamhane\Application Data\Urbemis\Version9a\Data\earth moving.equip;Earth Moving Equipment List
Off-Road Equipment:
15 Concrete/Industrial Saws (120 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Tractors/Loaders/Backhoes (87 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Tractors/Loaders/Backhoes (97 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (310 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Dozers (410 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Rubber Tired Dozers (850 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2007 with average useage of 2600 hrs/year
12 Excavators (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
12 Excavators (450 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Trenchers (40 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (149 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (197 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (262 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rubber Tired Loaders (349 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Graders (158 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Graders (260 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (83 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (156 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (174 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Other Equipment (15 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (266 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (335 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Surfacing Eqipment (400 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Off Highway Trucks (385 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (150 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Water Trucks (210 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
120 Other Equipment (10 hp) operating at a 0.65 load factor for 10 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year

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6/27/2011 04:20:58 PM												
Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)												
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Construct Road Crossings\Construct Road Crossings.urb924												
Project Name: Construct Road Crossings												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)												
			ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2013			86.19	667.93	276.95	0.01	0.04	31.38	31.42	0.01	30.20	30.21	73,197.61
Building 06/01/2013-12/31/2017			86.19	667.93	276.95	0.01	0.04	31.38	31.42	0.01	30.20	30.21	73,197.61
	Building Off Road Diesel		85.92	665.61	272.42	0.00	0.00	31.29	31.29	0.00	30.11	30.11	72,337.47
	Building Vendor Trips		0.18	2.18	1.77	0.00	0.02	0.08	0.10	0.01	0.08	0.08	528.01
	Building Worker Trips		0.09	0.14	2.77	0.00	0.02	0.01	0.03	0.01	0.01	0.01	332.13
2014			162.62	1,178.57	496.41	0.01	0.06	57.56	57.62	0.02	55.53	55.55	125,688.34
Building 06/01/2013-12/31/2017			162.62	1,178.57	496.41	0.01	0.06	57.56	57.62	0.02	55.53	55.55	125,688.34
	Building Off Road Diesel		162.21	1,175.04	489.30	0.00	0.00	57.41	57.41	0.00	55.40	55.40	124,211.05
	Building Vendor Trips		0.29	3.31	2.79	0.01	0.03	0.13	0.16	0.01	0.12	0.13	906.76
	Building Worker Trips		0.13	0.22	4.32	0.01	0.03	0.02	0.04	0.01	0.01	0.02	570.53
2015			177.25	1,210.28	517.32	0.01	0.06	61.23	61.29	0.02	59.20	59.22	125,688.61
Building 06/01/2013-12/31/2017			177.25	1,210.28	517.32	0.01	0.06	61.23	61.29	0.02	59.20	59.22	125,688.61
	Building Off Road Diesel		176.87	1,207.16	510.83	0.00	0.00	61.10	61.10	0.00	59.08	59.08	124,211.05
	Building Vendor Trips		0.26	2.91	2.56	0.01	0.03	0.11	0.15	0.01	0.10	0.11	906.86
	Building Worker Trips		0.12	0.20	3.93	0.01	0.03	0.02	0.04	0.01	0.01	0.02	570.70
2016			191.88	1,242.03	538.31	0.01	0.06	64.90	64.96	0.02	62.87	62.89	125,688.80
Building 06/01/2013-12/31/2017			191.88	1,242.03	538.31	0.01	0.06	64.90	64.96	0.02	62.87	62.89	125,688.80
	Building Off Road Diesel		191.54	1,239.29	532.35	0.00	0.00	64.79	64.79	0.00	62.77	62.77	124,211.05
	Building Vendor Trips		0.24	2.56	2.36	0.01	0.03	0.10	0.13	0.01	0.09	0.10	906.94
	Building Worker Trips		0.11	0.18	3.59	0.01	0.03	0.02	0.04	0.01	0.01	0.02	570.81
2017			205.73	1,268.95	557.20	0.01	0.06	68.31	68.37	0.02	66.29	66.31	125,207.38
Building 06/01/2013-12/31/2017			205.73	1,268.95	557.20	0.01	0.06	68.31	68.37	0.02	66.29	66.31	125,207.38
	Building Off Road Diesel		205.42	1,266.54	551.75	0.00	0.00	68.21	68.21	0.00	66.20	66.20	123,735.15
	Building Vendor Trips		0.22	2.24	2.17	0.01	0.03	0.09	0.12	0.01	0.08	0.09	903.53
	Building Worker Trips		0.09	0.16	3.27	0.01	0.03	0.02	0.04	0.01	0.01	0.02	568.70

Phase Assumptions
Phase: Building Construction 6/1/2013 - 12/31/2017 - Type Your Description Here
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\jonathan_tamimi\Application Data\Urbemis\Version9a\Data\Construct Road Crossings Equipment List.equip;Construct Road Crossings Equipment List
Off-Road Equipment:
30 Air Compressors (50 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Air Compressors (450 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Pavers (180 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Surfacing Eqipment (60 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Sweepers/Scrubbers (25 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Other Equipment (20 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Concrete/Industrial Saws (120 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
9 Off Highway Trucks (250 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
9 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Tractors/Loaders/Backhoes (87 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Tractors/Loaders/Backhoes (97 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Pavers (30 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Other Material Handling Equipment (191 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Other General Industrial Equipment (15 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Concrete/Industrial Saws (13 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Pumps (100 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Cranes (420 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Off Highway Trucks (330 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Cranes (420 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Cranes (470 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Cranes (140 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Cranes (75 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
3 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
3 Rubber Tired Dozers (310 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
3 Rubber Tired Dozers (410 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
3 Rubber Tired Dozers (850 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2007 with average useage of 2600 hrs/year
15 Excavators (300 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
3 Excavators (450 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Rubber Tired Loaders (149 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Rubber Tired Loaders (197 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Rubber Tired Loaders (262 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Rubber Tired Loaders (349 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Aerial Lifts (15 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Aerial Lifts (28 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Graders (158 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Graders (260 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
9 Off Highway Trucks (309 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
9 Off Highway Trucks (469 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Other General Industrial Equipment (92 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Other General Industrial Equipment (245 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Other General Industrial Equipment (335 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Pumps (2 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year

15 Pumps (4 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (83 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (156 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Rollers (174 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Other Equipment (15 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
6 Off Highway Trucks (385 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
60 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
60 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Off Highway Trucks (150 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Water Trucks (210 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Welders (45 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Other Equipment (30 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
30 Generator Sets (20 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Generator Sets (134 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
75 Other Equipment (10 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
3 Other General Industrial Equipment (238 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year
15 Off Highway Tractors (500 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 2600 hrs/year

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6/15/2011 03:58:02 PM												
Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)												
File Name: C:\Documents and Settings\avanti_tamhane\Desktop\Lay Track at Grade 1 Year.urb924												
Project Name: Lay Track At Grade												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2014		1.29	14.65	11.17	0.01	0.06	0.56	0.62	0.02	0.52	0.54	2,890.96
Building 01/01/2014-12/31/2014		1.29	14.65	11.17	0.01	0.06	0.56	0.62	0.02	0.52	0.54	2,890.96
	Building Off Road Diesel	0.87	11.11	4.06	0.00	0.00	0.41	0.41	0.00	0.39	0.39	1,413.67
	Building Vendor Trips	0.29	3.31	2.79	0.01	0.03	0.13	0.16	0.01	0.12	0.13	906.76
	Building Worker Trips	0.13	0.22	4.32	0.01	0.03	0.02	0.04	0.01	0.01	0.02	570.53
2015		1.31	14.36	10.64	0.01	0.06	0.56	0.62	0.02	0.52	0.54	2,891.23
Building 01/01/2014-08/31/2017		1.31	14.36	10.64	0.01	0.06	0.56	0.62	0.02	0.52	0.54	2,891.23
	Building Off Road Diesel	0.93	11.24	4.14	0.00	0.00	0.43	0.43	0.00	0.41	0.41	1,413.67
	Building Vendor Trips	0.26	2.91	2.56	0.01	0.03	0.11	0.15	0.01	0.10	0.11	906.86
	Building Worker Trips	0.12	0.20	3.93	0.01	0.03	0.02	0.04	0.01	0.01	0.02	570.70
2016		1.33	14.11	10.17	0.01	0.06	0.56	0.62	0.02	0.53	0.55	2,891.42
Building 01/01/2014-08/31/2017		1.33	14.11	10.17	0.01	0.06	0.56	0.62	0.02	0.53	0.55	2,891.42
	Building Off Road Diesel	0.99	11.37	4.21	0.00	0.00	0.44	0.44	0.00	0.42	0.42	1,413.67
	Building Vendor Trips	0.24	2.56	2.36	0.01	0.03	0.10	0.13	0.01	0.09	0.10	906.94
	Building Worker Trips	0.11	0.18	3.59	0.01	0.03	0.02	0.04	0.01	0.01	0.02	570.81
2017		0.91	9.28	6.50	0.01	0.04	0.38	0.42	0.01	0.35	0.37	1,927.71
Building 01/01/2014-08/31/2017		0.91	9.28	6.50	0.01	0.04	0.38	0.42	0.01	0.35	0.37	1,927.71
	Building Off Road Diesel	0.70	7.67	2.86	0.00	0.00	0.31	0.31	0.00	0.29	0.29	942.45
	Building Vendor Trips	0.14	1.50	1.45	0.01	0.02	0.06	0.08	0.01	0.05	0.06	604.67
	Building Worker Trips	0.06	0.11	2.19	0.00	0.02	0.01	0.03	0.01	0.01	0.01	380.59

Phase Assumptions
Phase: Building Construction 1/1/2014 - 12/31/2014 - Default Building Construction Description
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\avanti_tamhane\Application Data\Urbemis\Version9a\Data\At grade track.equip;Lay Track at Grade
Off-Road Equipment:
1 Aerial Lifts (60 hp) operating at a 0.46 load factor for 1.1 hours per day; Engine Built/Rebuilt in 2005 with average useage of 320 hrs/year
1 Air Compressors (106 hp) operating at a 0.48 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 0.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 80 hrs/year
1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 0.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 80 hrs/year
1 Cranes (399 hp) operating at a 0.43 load factor for 0.7 hours per day; Engine Built/Rebuilt in 2005 with average useage of 200 hrs/year
1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Excavators (168 hp) operating at a 0.57 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Forklifts (145 hp) operating at a 0.3 load factor for 0.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 160 hrs/year
1 Generator Sets (549 hp) operating at a 0.74 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Graders (174 hp) operating at a 0.61 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Off Highway Tractors (267 hp) operating at a 0.65 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year
1 Plate Compactors (8 hp) operating at a 0.43 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Pressure Washers (1 hp) operating at a 0.6 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Rollers (95 hp) operating at a 0.56 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Scrapers (313 hp) operating at a 0.72 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year
1 Signal Boards (15 hp) operating at a 0.78 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Sweepers/Scrubbers (53 hp) operating at a 0.74 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Trenchers (63 hp) operating at a 0.75 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Welders (45 hp) operating at a 0.45 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Pumps (600 hp) operating at a 0.74 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Cranes (500 hp) operating at a 0.51 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Cranes (400 hp) operating at a 0.62 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Surfacing Eqipment (400 hp) operating at a 0.62 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Surfacing Eqipment (362 hp) operating at a 0.45 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year

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6/27/2011 12:08:13 PM													
Urbemis 2007 Version 9.2.4													
Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)													
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Lay Track\Lay Track Elevated.urb924													
Project Name: Lay Track Elevated													
Project Location: San Joaquin Valley APCD													
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006													
Off-Road Vehicle Emissions Based on: OFFROAD2007													
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)													
				ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2014				0.66	8.80	4.45	0.00	0.01	0.33	0.35	0.00	0.31	0.32	1,313.54
Building 01/01/2014-08/31/2017				0.66	8.80	4.45	0.00	0.01	0.33	0.35	0.00	0.31	0.32	1,313.54
	Building Off Road Diesel			0.58	8.16	3.15	0.00	0.00	0.31	0.31	0.00	0.29	0.29	1,043.09
	Building Vendor Trips			0.05	0.61	0.51	0.00	0.01	0.02	0.03	0.00	0.02	0.02	166.00
	Building Worker Trips			0.02	0.04	0.79	0.00	0.01	0.00	0.01	0.00	0.00	0.00	104.45
2015				0.69	8.80	4.39	0.00	0.01	0.34	0.35	0.00	0.32	0.33	1,313.59
Building 01/01/2014-08/31/2017				0.69	8.80	4.39	0.00	0.01	0.34	0.35	0.00	0.32	0.33	1,313.59
	Building Off Road Diesel			0.62	8.23	3.21	0.00	0.00	0.32	0.32	0.00	0.30	0.30	1,043.09
	Building Vendor Trips			0.05	0.53	0.47	0.00	0.01	0.02	0.03	0.00	0.02	0.02	166.02
	Building Worker Trips			0.02	0.04	0.72	0.00	0.01	0.00	0.01	0.00	0.00	0.00	104.48
2016				0.72	8.81	4.35	0.00	0.01	0.35	0.36	0.00	0.33	0.33	1,313.63
Building 01/01/2014-08/31/2017				0.72	8.81	4.35	0.00	0.01	0.35	0.36	0.00	0.33	0.33	1,313.63
	Building Off Road Diesel			0.65	8.31	3.26	0.00	0.00	0.33	0.33	0.00	0.31	0.31	1,043.09
	Building Vendor Trips			0.04	0.47	0.43	0.00	0.01	0.02	0.02	0.00	0.02	0.02	166.03
	Building Worker Trips			0.02	0.03	0.66	0.00	0.01	0.00	0.01	0.00	0.00	0.00	104.50
2017				0.50	5.88	2.88	0.00	0.01	0.24	0.25	0.00	0.22	0.23	875.77
Building 01/01/2014-08/31/2017				0.50	5.88	2.88	0.00	0.01	0.24	0.25	0.00	0.22	0.23	875.77
	Building Off Road Diesel			0.46	5.59	2.21	0.00	0.00	0.23	0.23	0.00	0.21	0.21	695.40
	Building Vendor Trips			0.03	0.27	0.27	0.00	0.00	0.01	0.01	0.00	0.01	0.01	110.70
	Building Worker Trips			0.01	0.02	0.40	0.00	0.00	0.00	0.01	0.00	0.00	0.00	69.68

Phase Assumptions
Phase: Building Construction 1/1/2014 - 8/31/2017 - Default Building Construction Description
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\jonathan_tamimi\Application Data\Urbemis\Version9a\Data\Lay Track At Grade Equip.equip;Lay Track Elevated
Off-Road Equipment:
1 Aerial Lifts (60 hp) operating at a 0.46 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year
1 Air Compressors (106 hp) operating at a 0.48 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 2.1 hours per day; Engine Built/Rebuilt in 2005 with average useage of 600 hrs/year
1 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Cranes (399 hp) operating at a 0.43 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year
1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 1.7 hours per day; Engine Built/Rebuilt in 2005 with average useage of 480 hrs/year
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Excavators (168 hp) operating at a 0.57 load factor for 0.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 160 hrs/year
1 Forklifts (145 hp) operating at a 0.3 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Generator Sets (549 hp) operating at a 0.74 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Graders (174 hp) operating at a 0.61 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Off Highway Tractors (267 hp) operating at a 0.65 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 2.1 hours per day; Engine Built/Rebuilt in 2005 with average useage of 600 hrs/year
1 Plate Compactors (8 hp) operating at a 0.43 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Pressure Washers (1 hp) operating at a 0.6 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Rollers (95 hp) operating at a 0.56 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Scrapers (313 hp) operating at a 0.72 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Signal Boards (15 hp) operating at a 0.78 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Trenchers (63 hp) operating at a 0.75 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Water Trucks (189 hp) operating at a 0.5 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Welders (45 hp) operating at a 0.45 load factor for 5.7 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1600 hrs/year
1 Pumps (600 hp) operating at a 0.74 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Cranes (500 hp) operating at a 0.51 load factor for 3.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 960 hrs/year
1 Cranes (400 hp) operating at a 0.62 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Surfacing Eqipment (400 hp) operating at a 0.62 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Surfacing Eqipment (362 hp) operating at a 0.45 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year

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7/5/2011 05:42:12 PM												
Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)												
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Elevated Structures\Elevated Structure_based on MF.urb924												
Project Name: Lay Track Elevated												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2013		0.39	5.30	2.95	0.00	0.01	0.20	0.21	0.00	0.18	0.19	826.50
Building 06/01/2013-12/31/2017		0.39	5.30	2.95	0.00	0.01	0.20	0.21	0.00	0.18	0.19	826.50
	Building Off Road Diesel	0.32	4.71	1.80	0.00	0.00	0.17	0.17	0.00	0.16	0.16	607.47
	Building Vendor Trips	0.05	0.56	0.45	0.00	0.00	0.02	0.03	0.00	0.02	0.02	134.46
	Building Worker Trips	0.02	0.04	0.70	0.00	0.00	0.00	0.01	0.00	0.00	0.00	84.57
2014		0.69	9.06	4.96	0.00	0.02	0.34	0.36	0.01	0.32	0.33	1,419.28
Building 06/01/2013-12/31/2017		0.69	9.06	4.96	0.00	0.02	0.34	0.36	0.01	0.32	0.33	1,419.28
	Building Off Road Diesel	0.58	8.16	3.15	0.00	0.00	0.31	0.31	0.00	0.29	0.29	1,043.09
	Building Vendor Trips	0.07	0.84	0.71	0.00	0.01	0.03	0.04	0.00	0.03	0.03	230.90
	Building Worker Trips	0.03	0.06	1.10	0.00	0.01	0.00	0.01	0.00	0.00	0.01	145.28
2015		0.71	9.02	4.86	0.00	0.02	0.35	0.37	0.01	0.33	0.33	1,419.35
Building 06/01/2013-12/31/2017		0.71	9.02	4.86	0.00	0.02	0.35	0.37	0.01	0.33	0.33	1,419.35
	Building Off Road Diesel	0.62	8.23	3.21	0.00	0.00	0.32	0.32	0.00	0.30	0.30	1,043.09
	Building Vendor Trips	0.07	0.74	0.65	0.00	0.01	0.03	0.04	0.00	0.03	0.03	230.93
	Building Worker Trips	0.03	0.05	1.00	0.00	0.01	0.00	0.01	0.00	0.00	0.01	145.33
2016		0.74	9.00	4.78	0.00	0.02	0.36	0.37	0.01	0.34	0.34	1,419.40
Building 06/01/2013-12/31/2017		0.74	9.00	4.78	0.00	0.02	0.36	0.37	0.01	0.34	0.34	1,419.40
	Building Off Road Diesel	0.65	8.31	3.26	0.00	0.00	0.33	0.33	0.00	0.31	0.31	1,043.09
	Building Vendor Trips	0.06	0.65	0.60	0.00	0.01	0.03	0.03	0.00	0.02	0.03	230.95
	Building Worker Trips	0.03	0.05	0.91	0.00	0.01	0.00	0.01	0.00	0.00	0.01	145.35
2017		0.77	8.96	4.69	0.00	0.02	0.36	0.38	0.01	0.34	0.35	1,413.99
Building 06/01/2013-12/31/2017		0.77	8.96	4.69	0.00	0.02	0.36	0.38	0.01	0.34	0.35	1,413.99
	Building Off Road Diesel	0.69	8.35	3.31	0.00	0.00	0.34	0.34	0.00	0.32	0.32	1,039.10
	Building Vendor Trips	0.05	0.57	0.55	0.00	0.01	0.02	0.03	0.00	0.02	0.02	230.08
	Building Worker Trips	0.02	0.04	0.83	0.00	0.01	0.00	0.01	0.00	0.00	0.01	144.82

Phase Assumptions
Phase: Building Construction 6/1/2013 - 12/31/2017 - Default Building Construction Description
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\jonathan_tamimi\Application Data\Urbemis\Version9a\Data\Lay Track At Grade Equip.equip;Lay Track Elevated
Off-Road Equipment:
1 Aerial Lifts (60 hp) operating at a 0.46 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year
1 Air Compressors (106 hp) operating at a 0.48 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 2.1 hours per day; Engine Built/Rebuilt in 2005 with average useage of 600 hrs/year
1 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Cranes (399 hp) operating at a 0.43 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year
1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 1.7 hours per day; Engine Built/Rebuilt in 2005 with average useage of 480 hrs/year
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Excavators (168 hp) operating at a 0.57 load factor for 0.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 160 hrs/year
1 Forklifts (145 hp) operating at a 0.3 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Generator Sets (549 hp) operating at a 0.74 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Graders (174 hp) operating at a 0.61 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Off Highway Tractors (267 hp) operating at a 0.65 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 2.1 hours per day; Engine Built/Rebuilt in 2005 with average useage of 600 hrs/year
1 Plate Compactors (8 hp) operating at a 0.43 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Pressure Washers (1 hp) operating at a 0.6 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Rollers (95 hp) operating at a 0.56 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Scrapers (313 hp) operating at a 0.72 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Signal Boards (15 hp) operating at a 0.78 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Sweepers/Scrubbers (91 hp) operating at a 0.68 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Trenchers (63 hp) operating at a 0.75 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Water Trucks (189 hp) operating at a 0.5 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Welders (45 hp) operating at a 0.45 load factor for 5.7 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1600 hrs/year
1 Pumps (600 hp) operating at a 0.74 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Cranes (500 hp) operating at a 0.51 load factor for 3.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 960 hrs/year
1 Cranes (400 hp) operating at a 0.62 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Surfacing Eqipment (400 hp) operating at a 0.62 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Surfacing Eqipment (362 hp) operating at a 0.45 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Mobilization Demobilization Earth Moving\Demobilization 4-6.urb924												
Project Name: Demobilization												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2017		34.78	258.13	88.55	0.00	0.02	11.00	11.02	0.01	10.59	10.60	28,807.13
Fine Grading 08/01/2017-12/31/2019		34.78	258.13	88.55	0.00	0.02	11.00	11.02	0.01	10.59	10.60	28,807.13
	Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Off Road Diesel	34.71	258.01	86.26	0.00	0.00	10.99	10.99	0.00	10.59	10.59	28,409.04
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.07	0.11	2.29	0.00	0.02	0.01	0.03	0.01	0.01	0.02	398.09
2018		89.06	630.49	217.47	0.01	0.05	27.60	27.65	0.02	26.62	26.64	68,978.62
Fine Grading 08/01/2017-12/31/2019		89.06	630.49	217.47	0.01	0.05	27.60	27.65	0.02	26.62	26.64	68,978.62
	Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Off Road Diesel	88.92	630.25	212.44	0.00	0.00	27.57	27.57	0.00	26.60	26.60	68,025.31
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.14	0.25	5.03	0.01	0.05	0.03	0.07	0.02	0.02	0.04	953.30
2019		94.85	642.91	222.95	0.01	0.05	28.86	28.90	0.02	27.88	27.90	68,978.65
Fine Grading 08/01/2017-12/31/2019		94.85	642.91	222.95	0.01	0.05	28.86	28.90	0.02	27.88	27.90	68,978.65
	Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Off Road Diesel	94.72	642.68	218.33	0.00	0.00	28.83	28.83	0.00	27.86	27.86	68,025.31
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.13	0.22	4.62	0.01	0.05	0.03	0.07	0.02	0.02	0.04	953.34
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Fine Grading 8/1/2017 - 12/31/2019 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												

Phase Assumptions
Phase: Fine Grading 8/1/2017 - 12/31/2019 - Default Fine Site Grading Description
Total Acres Disturbed: 57.98
Maximum Daily Acreage Disturbed: 14.5
Fugitive Dust Level of Detail: Default
0 lbs per acre-day
On Road Truck Travel (VMT): 0
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\jonathan_tamimi\Application Data\Urbemis\Version9a\Data\Mobi Equipment.equip;Mobilization Equipment List
Off-Road Equipment:
45 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
45 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
90 Off Highway Tractors (500 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
15 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
15 Water Trucks (189 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
30 Other Equipment (10 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
15 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
15 Off Highway Trucks (330 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
6 Tractors/Loaders/Backhoes (87 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
3 Excavators (300 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
6 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Mobilization Demobilization Earth Moving\Demobilization 4-6.urb924												
Project Name: Demobilization												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2017		34.78	258.13	88.55	0.00	0.02	11.00	11.02	0.01	10.59	10.60	28,807.13
Fine Grading 08/01/2017-12/31/2019		34.78	258.13	88.55	0.00	0.02	11.00	11.02	0.01	10.59	10.60	28,807.13
	Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Off Road Diesel	34.71	258.01	86.26	0.00	0.00	10.99	10.99	0.00	10.59	10.59	28,409.04
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.07	0.11	2.29	0.00	0.02	0.01	0.03	0.01	0.01	0.02	398.09
2018		89.06	630.49	217.47	0.01	0.05	27.60	27.65	0.02	26.62	26.64	68,978.62
Fine Grading 08/01/2017-12/31/2019		89.06	630.49	217.47	0.01	0.05	27.60	27.65	0.02	26.62	26.64	68,978.62
	Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Off Road Diesel	88.92	630.25	212.44	0.00	0.00	27.57	27.57	0.00	26.60	26.60	68,025.31
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.14	0.25	5.03	0.01	0.05	0.03	0.07	0.02	0.02	0.04	953.30
2019		94.85	642.91	222.95	0.01	0.05	28.86	28.90	0.02	27.88	27.90	68,978.65
Fine Grading 08/01/2017-12/31/2019		94.85	642.91	222.95	0.01	0.05	28.86	28.90	0.02	27.88	27.90	68,978.65
	Fine Grading Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Off Road Diesel	94.72	642.68	218.33	0.00	0.00	28.83	28.83	0.00	27.86	27.86	68,025.31
	Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Fine Grading Worker Trips	0.13	0.22	4.62	0.01	0.05	0.03	0.07	0.02	0.02	0.04	953.34
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Fine Grading 8/1/2017 - 12/31/2019 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												

Phase Assumptions
Phase: Fine Grading 8/1/2017 - 12/31/2019 - Default Fine Site Grading Description
Total Acres Disturbed: 57.98
Maximum Daily Acreage Disturbed: 14.5
Fugitive Dust Level of Detail: Default
0 lbs per acre-day
On Road Truck Travel (VMT): 0
Off Road Diesel calculated using the Named Equipment EMS functions.
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\jonathan_tamimi\Application Data\Urbemis\Version9a\Data\Mobi Equipment.equip;Mobilization Equipment List
Off-Road Equipment:
45 Off Highway Trucks (175 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
45 Off Highway Trucks (210 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
90 Off Highway Tractors (500 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
15 Off Highway Trucks (300 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
15 Water Trucks (189 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
30 Other Equipment (10 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
15 Off Highway Trucks (200 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
15 Off Highway Trucks (330 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
6 Tractors/Loaders/Backhoes (87 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
3 Excavators (300 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year
6 Rubber Tired Dozers (125 hp) operating at a 0.65 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1950 hrs/year

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Urbemis 2007 Version 9.2.4													
Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)													
File Name: P:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Stations\Fresno Station.urb924													
Project Name: Fresno Station Construction													
Project Location: San Joaquin Valley APCD													
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006													
Off-Road Vehicle Emissions Based on: OFFROAD2007													
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)													
			ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2014			0.03	0.22	0.13	0.00	0.83	0.01	0.84	0.17	0.01	0.18	27.02
Mass Grading	Mass Grading 12/01/2014-09/01/2015		0.03	0.22	0.13	0.00	0.83	0.01	0.84	0.17	0.01	0.18	27.02
		Mass Grading Dust	0.00	0.00	0.00	0.00	0.83	0.00	0.83	0.17	0.00	0.17	0.00
		Mass Grading Off Road Diesel	0.03	0.22	0.12	0.00	0.00	0.01	0.01	0.00	0.01	0.01	25.84
		Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Mass Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18
2015			0.38	2.71	2.75	0.00	6.29	0.13	6.43	1.32	0.12	1.44	584.27
Mass Grading	Mass Grading 12/01/2014-09/01/2015		0.20	1.53	0.97	0.00	6.28	0.07	6.35	1.31	0.06	1.38	204.43
		Mass Grading Dust	0.00	0.00	0.00	0.00	6.28	0.00	6.28	1.31	0.00	1.31	0.00
		Mass Grading Off Road Diesel	0.20	1.52	0.90	0.00	0.00	0.07	0.07	0.00	0.06	0.06	195.52
		Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Mass Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.92
Building Construction	Building 09/01/2015-05/01/2019		0.18	1.18	1.78	0.00	0.01	0.06	0.07	0.00	0.06	0.06	379.83
		Building Off Road Diesel	0.11	0.53	0.42	0.00	0.00	0.03	0.03	0.00	0.03	0.03	71.33
		Building Vendor Trips	0.05	0.61	0.54	0.00	0.01	0.02	0.03	0.00	0.02	0.02	189.34
		Building Worker Trips	0.02	0.04	0.82	0.00	0.01	0.00	0.01	0.00	0.00	0.00	119.16
2016			0.50	3.16	4.92	0.01	0.04	0.16	0.20	0.01	0.15	0.16	1,126.67
Building Construction	Building 09/01/2015-05/01/2019		0.50	3.16	4.92	0.01	0.04	0.16	0.20	0.01	0.15	0.16	1,126.67
		Building Off Road Diesel	0.29	1.46	1.23	0.00	0.00	0.09	0.09	0.00	0.08	0.08	211.57
		Building Vendor Trips	0.15	1.59	1.46	0.01	0.02	0.06	0.08	0.01	0.06	0.06	561.62
		Building Worker Trips	0.07	0.11	2.22	0.00	0.02	0.01	0.03	0.01	0.01	0.01	353.48
2017			0.45	2.84	4.57	0.01	0.04	0.14	0.18	0.01	0.13	0.14	1,122.44
Building Construction	Building 09/01/2015-05/01/2019		0.45	2.84	4.57	0.01	0.04	0.14	0.18	0.01	0.13	0.14	1,122.44
		Building Off Road Diesel	0.26	1.35	1.20	0.00	0.00	0.08	0.08	0.00	0.07	0.07	210.76
		Building Vendor Trips	0.13	1.39	1.35	0.01	0.02	0.06	0.08	0.01	0.05	0.06	559.51
		Building Worker Trips	0.06	0.10	2.03	0.00	0.02	0.01	0.03	0.01	0.01	0.01	352.17
2018			0.41	2.58	4.29	0.01	0.04	0.13	0.16	0.01	0.12	0.13	1,126.82
Building Construction	Building 09/01/2015-05/01/2019		0.41	2.58	4.29	0.01	0.04	0.13	0.16	0.01	0.12	0.13	1,126.82
		Building Off Road Diesel	0.23	1.26	1.18	0.00	0.00	0.07	0.07	0.00	0.06	0.06	211.57
		Building Vendor Trips	0.12	1.23	1.25	0.01	0.02	0.05	0.07	0.01	0.04	0.05	561.70
		Building Worker Trips	0.05	0.09	1.86	0.00	0.02	0.01	0.03	0.01	0.01	0.01	353.55
2019			3.49	0.78	1.36	0.00	0.01	0.04	0.05	0.00	0.03	0.04	379.65
Building Construction	Building 09/01/2015-05/01/2019		0.12	0.78	1.34	0.00	0.01	0.04	0.05	0.00	0.03	0.04	375.62
		Building Off Road Diesel	0.07	0.39	0.39	0.00	0.00	0.02	0.02	0.00	0.02	0.02	70.52
		Building Vendor Trips	0.04	0.36	0.39	0.00	0.01	0.01	0.02	0.00	0.01	0.02	187.24
		Building Worker Trips	0.02	0.03	0.57	0.00	0.01	0.00	0.01	0.00	0.00	0.00	117.86
Coating	Coating 05/01/2019-10/31/2019		3.37	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.03
		Architectural Coating	3.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.03

Phase Assumptions
Phase: Mass Grading 12/1/2014 - 9/1/2015 - Default Mass Site Grading Description
Total Acres Disturbed: 14.44
Maximum Daily Acreage Disturbed: 3.61
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction 9/1/2015 - 5/1/2019 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day
Phase: Architectural Coating 5/1/2019 - 10/31/2019 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4													
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)													
File Name: P:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Stations\Fresno Station.urb924													
Project Name: Fresno Station Construction													
Project Location: San Joaquin Valley APCD													
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006													
Off-Road Vehicle Emissions Based on: OFFROAD2007													
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)													
			ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2014			0.03	0.22	0.13	0.00	0.13	0.01	0.14	0.03	0.01	0.04	27.02
Mass Grading	Mass Grading 12/01/2014-09/01/2015		0.03	0.22	0.13	0.00	0.13	0.01	0.14	0.03	0.01	0.04	27.02
		Mass Grading Dust	0.00	0.00	0.00	0.00	0.13	0.00	0.13	0.03	0.00	0.03	0.00
		Mass Grading Off Road Diesel	0.03	0.22	0.12	0.00	0.00	0.01	0.01	0.00	0.01	0.01	25.84
		Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Mass Grading Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18
2015			0.38	2.71	2.75	0.00	0.96	0.13	1.09	0.20	0.12	0.32	584.27
Mass Grading	Mass Grading 12/01/2014-09/01/2015		0.20	1.53	0.97	0.00	0.95	0.07	1.02	0.20	0.06	0.26	204.43
		Mass Grading Dust	0.00	0.00	0.00	0.00	0.95	0.00	0.95	0.20	0.00	0.20	0.00
		Mass Grading Off Road Diesel	0.20	1.52	0.90	0.00	0.00	0.07	0.07	0.00	0.06	0.06	195.52
		Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Mass Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.92
Building Construction	Building 09/01/2015-05/01/2019		0.18	1.18	1.78	0.00	0.01	0.06	0.07	0.00	0.06	0.06	379.83
		Building Off Road Diesel	0.11	0.53	0.42	0.00	0.00	0.03	0.03	0.00	0.03	0.03	71.33
		Building Vendor Trips	0.05	0.61	0.54	0.00	0.01	0.02	0.03	0.00	0.02	0.02	189.34
		Building Worker Trips	0.02	0.04	0.82	0.00	0.01	0.00	0.01	0.00	0.00	0.00	119.16
2016			0.50	3.16	4.92	0.01	0.04	0.16	0.20	0.01	0.15	0.16	1,126.67
Building Construction	Building 09/01/2015-05/01/2019		0.50	3.16	4.92	0.01	0.04	0.16	0.20	0.01	0.15	0.16	1,126.67
		Building Off Road Diesel	0.29	1.46	1.23	0.00	0.00	0.09	0.09	0.00	0.08	0.08	211.57
		Building Vendor Trips	0.15	1.59	1.46	0.01	0.02	0.06	0.08	0.01	0.06	0.06	561.62
		Building Worker Trips	0.07	0.11	2.22	0.00	0.02	0.01	0.03	0.01	0.01	0.01	353.48
2017			0.45	2.84	4.57	0.01	0.04	0.14	0.18	0.01	0.13	0.14	1,122.44
Building Construction	Building 09/01/2015-05/01/2019		0.45	2.84	4.57	0.01	0.04	0.14	0.18	0.01	0.13	0.14	1,122.44
		Building Off Road Diesel	0.26	1.35	1.20	0.00	0.00	0.08	0.08	0.00	0.07	0.07	210.76
		Building Vendor Trips	0.13	1.39	1.35	0.01	0.02	0.06	0.08	0.01	0.05	0.06	559.51
		Building Worker Trips	0.06	0.10	2.03	0.00	0.02	0.01	0.03	0.01	0.01	0.01	352.17
2018			0.41	2.58	4.29	0.01	0.04	0.13	0.16	0.01	0.12	0.13	1,126.82
Building Construction	Building 09/01/2015-05/01/2019		0.41	2.58	4.29	0.01	0.04	0.13	0.16	0.01	0.12	0.13	1,126.82
		Building Off Road Diesel	0.23	1.26	1.18	0.00	0.00	0.07	0.07	0.00	0.06	0.06	211.57
		Building Vendor Trips	0.12	1.23	1.25	0.01	0.02	0.05	0.07	0.01	0.04	0.05	561.70
		Building Worker Trips	0.05	0.09	1.86	0.00	0.02	0.01	0.03	0.01	0.01	0.01	353.55
2019			3.16	0.78	1.36	0.00	0.01	0.04	0.05	0.00	0.03	0.04	379.65
Building Construction	Building 09/01/2015-05/01/2019		0.12	0.78	1.34	0.00	0.01	0.04	0.05	0.00	0.03	0.04	375.62
		Building Off Road Diesel	0.07	0.39	0.39	0.00	0.00	0.02	0.02	0.00	0.02	0.02	70.52
		Building Vendor Trips	0.04	0.36	0.39	0.00	0.01	0.01	0.02	0.00	0.01	0.02	187.24
		Building Worker Trips	0.02	0.03	0.57	0.00	0.01	0.00	0.01	0.00	0.00	0.00	117.86
Coating	Coating 05/01/2019-10/31/2019		3.03	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.03
		Architectural Coating	3.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.03

Construction Related Mitigation Measures
The following mitigation measures apply to Phase: Mass Grading 12/1/2014 - 9/1/2015 - Default Mass Site Grading Description
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:
PM10: 5% PM25: 5%
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:
PM10: 69% PM25: 69%
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:
PM10: 44% PM25: 44%
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
The following mitigation measures apply to Phase: Architectural Coating 5/1/2019 - 10/31/2019 - Default Architectural Coating Description
For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:
ROG: 10%
For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:
ROG: 10%

Phase Assumptions
Phase: Mass Grading 12/1/2014 - 9/1/2015 - Default Mass Site Grading Description
Total Acres Disturbed: 14.44
Maximum Daily Acreage Disturbed: 3.61
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Building Construction 9/1/2015 - 5/1/2019 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 5/1/2019 - 10/31/2019 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4													
Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)													
File Name: P:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Stations\Bakersfield Station.urb924													
Project Name: Bakersfield Station													
Project Location: San Joaquin Valley APCD													
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006													
Off-Road Vehicle Emissions Based on: OFFROAD2007													
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)													
			ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2015			0.35	2.50	2.20	0.00	5.54	0.12	5.66	1.16	0.11	1.27	464.64
Mass Grading	Mass Grading 01/01/2015-10/01/2015		0.22	1.72	1.09	0.00	5.53	0.08	5.61	1.15	0.07	1.23	230.28
		Mass Grading Dust	0.00	0.00	0.00	0.00	5.53	0.00	5.53	1.15	0.00	1.15	0.00
		Mass Grading Off Road Diesel	0.22	1.72	1.02	0.00	0.00	0.08	0.08	0.00	0.07	0.07	220.24
		Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Mass Grading Worker Trips	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.04
Building Construction	Building 10/01/2015-06/01/2019		0.13	0.78	1.11	0.00	0.01	0.04	0.05	0.00	0.04	0.04	234.36
		Building Off Road Diesel	0.08	0.40	0.32	0.00	0.00	0.03	0.03	0.00	0.02	0.02	53.50
		Building Vendor Trips	0.03	0.36	0.31	0.00	0.00	0.01	0.02	0.00	0.01	0.01	111.00
		Building Worker Trips	0.01	0.02	0.48	0.00	0.00	0.00	0.01	0.00	0.00	0.00	69.86
2016			0.45	2.79	4.11	0.01	0.03	0.14	0.17	0.01	0.13	0.14	926.87
Building Construction	Building 10/01/2015-06/01/2019		0.45	2.79	4.11	0.01	0.03	0.14	0.17	0.01	0.13	0.14	926.87
		Building Off Road Diesel	0.29	1.46	1.23	0.00	0.00	0.09	0.09	0.00	0.08	0.08	211.57
		Building Vendor Trips	0.11	1.24	1.14	0.00	0.02	0.05	0.06	0.01	0.04	0.05	439.00
		Building Worker Trips	0.05	0.09	1.74	0.00	0.01	0.01	0.02	0.00	0.01	0.01	276.30
2017			0.41	2.52	3.83	0.01	0.03	0.13	0.16	0.01	0.12	0.13	923.39
Building Construction	Building 10/01/2015-06/01/2019		0.41	2.52	3.83	0.01	0.03	0.13	0.16	0.01	0.12	0.13	923.39
		Building Off Road Diesel	0.26	1.35	1.20	0.00	0.00	0.08	0.08	0.00	0.07	0.07	210.76
		Building Vendor Trips	0.10	1.09	1.05	0.00	0.02	0.04	0.06	0.01	0.04	0.04	437.35
		Building Worker Trips	0.05	0.08	1.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01	275.28
2018			0.37	2.29	3.61	0.01	0.03	0.11	0.14	0.01	0.10	0.11	926.99
Building Construction	Building 10/01/2015-06/01/2019		0.37	2.29	3.61	0.01	0.03	0.11	0.14	0.01	0.10	0.11	926.99
		Building Off Road Diesel	0.23	1.26	1.18	0.00	0.00	0.07	0.07	0.00	0.06	0.06	211.57
		Building Vendor Trips	0.10	0.96	0.98	0.00	0.02	0.04	0.05	0.01	0.04	0.04	439.06
		Building Worker Trips	0.04	0.07	1.46	0.00	0.01	0.01	0.02	0.00	0.01	0.01	276.36
2019			2.75	0.87	1.44	0.00	0.01	0.04	0.05	0.00	0.04	0.04	390.27
Building Construction	Building 10/01/2015-06/01/2019		0.14	0.87	1.42	0.00	0.01	0.04	0.05	0.00	0.04	0.04	387.15
		Building Off Road Diesel	0.09	0.49	0.48	0.00	0.00	0.02	0.02	0.00	0.02	0.02	88.36
		Building Vendor Trips	0.04	0.36	0.38	0.00	0.01	0.01	0.02	0.00	0.01	0.02	183.37
		Building Worker Trips	0.02	0.03	0.56	0.00	0.01	0.00	0.01	0.00	0.00	0.00	115.42
Coating	Coating 06/01/2019-11/30/2019		2.61	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.13
		Architectural Coating	2.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.13

Phase Assumptions
Phase: Mass Grading 1/1/2015 - 10/1/2015 - Default Mass Site Grading Description
Total Acres Disturbed: 11.29
Maximum Daily Acreage Disturbed: 2.82
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction 10/1/2015 - 6/1/2019 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day
Phase: Architectural Coating 6/1/2019 - 11/30/2019 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4													
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)													
File Name: P:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Stations\Bakersfield Station.urb924													
Project Name: Bakersfield Station													
Project Location: San Joaquin Valley APCD													
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006													
Off-Road Vehicle Emissions Based on: OFFROAD2007													
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)													
			ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2015			0.35	2.50	2.20	0.00	0.84	0.12	0.96	0.18	0.11	0.29	464.64
Mass Grading	Mass Grading 01/01/2015-10/01/2015		0.22	1.72	1.09	0.00	0.83	0.08	0.91	0.17	0.07	0.25	230.28
		Mass Grading Dust	0.00	0.00	0.00	0.00	0.83	0.00	0.83	0.17	0.00	0.17	0.00
		Mass Grading Off Road Diesel	0.22	1.72	1.02	0.00	0.00	0.08	0.08	0.00	0.07	0.07	220.24
		Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Mass Grading Worker Trips	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.04
Building Construction	Building 10/01/2015-06/01/2019		0.13	0.78	1.11	0.00	0.01	0.04	0.05	0.00	0.04	0.04	234.36
		Building Off Road Diesel	0.08	0.40	0.32	0.00	0.00	0.03	0.03	0.00	0.02	0.02	53.50
		Building Vendor Trips	0.03	0.36	0.31	0.00	0.00	0.01	0.02	0.00	0.01	0.01	111.00
		Building Worker Trips	0.01	0.02	0.48	0.00	0.00	0.00	0.01	0.00	0.00	0.00	69.86
2016			0.45	2.79	4.11	0.01	0.03	0.14	0.17	0.01	0.13	0.14	926.87
Building Construction	Building 10/01/2015-06/01/2019		0.45	2.79	4.11	0.01	0.03	0.14	0.17	0.01	0.13	0.14	926.87
		Building Off Road Diesel	0.29	1.46	1.23	0.00	0.00	0.09	0.09	0.00	0.08	0.08	211.57
		Building Vendor Trips	0.11	1.24	1.14	0.00	0.02	0.05	0.06	0.01	0.04	0.05	439.00
		Building Worker Trips	0.05	0.09	1.74	0.00	0.01	0.01	0.02	0.00	0.01	0.01	276.30
2017			0.41	2.52	3.83	0.01	0.03	0.13	0.16	0.01	0.12	0.13	923.39
Building Construction	Building 10/01/2015-06/01/2019		0.41	2.52	3.83	0.01	0.03	0.13	0.16	0.01	0.12	0.13	923.39
		Building Off Road Diesel	0.26	1.35	1.20	0.00	0.00	0.08	0.08	0.00	0.07	0.07	210.76
		Building Vendor Trips	0.10	1.09	1.05	0.00	0.02	0.04	0.06	0.01	0.04	0.04	437.35
		Building Worker Trips	0.05	0.08	1.58	0.00	0.01	0.01	0.02	0.00	0.01	0.01	275.28
2018			0.37	2.29	3.61	0.01	0.03	0.11	0.14	0.01	0.10	0.11	926.99
Building Construction	Building 10/01/2015-06/01/2019		0.37	2.29	3.61	0.01	0.03	0.11	0.14	0.01	0.10	0.11	926.99
		Building Off Road Diesel	0.23	1.26	1.18	0.00	0.00	0.07	0.07	0.00	0.06	0.06	211.57
		Building Vendor Trips	0.10	0.96	0.98	0.00	0.02	0.04	0.05	0.01	0.04	0.04	439.06
		Building Worker Trips	0.04	0.07	1.46	0.00	0.01	0.01	0.02	0.00	0.01	0.01	276.36
2019			2.49	0.87	1.44	0.00	0.01	0.04	0.05	0.00	0.04	0.04	390.27
Building Construction	Building 10/01/2015-06/01/2019		0.14	0.87	1.42	0.00	0.01	0.04	0.05	0.00	0.04	0.04	387.15
		Building Off Road Diesel	0.09	0.49	0.48	0.00	0.00	0.02	0.02	0.00	0.02	0.02	88.36
		Building Vendor Trips	0.04	0.36	0.38	0.00	0.01	0.01	0.02	0.00	0.01	0.02	183.37
		Building Worker Trips	0.02	0.03	0.56	0.00	0.01	0.00	0.01	0.00	0.00	0.00	115.42
Coating	Coating 06/01/2019-11/30/2019		2.35	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.13
		Architectural Coating	2.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Coating Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.13

Construction Related Mitigation Measures
The following mitigation measures apply to Phase: Mass Grading 1/1/2015 - 10/1/2015 - Default Mass Site Grading Description
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:
PM10: 5% PM25: 5%
For Soil Stablizing Measures, the Water exposed surfaces 2x daily watering mitigation reduces emissions by:
PM10: 55% PM25: 55%
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:
PM10: 69% PM25: 69%
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:
PM10: 44% PM25: 44%
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:
PM10: 61% PM25: 61%
The following mitigation measures apply to Phase: Architectural Coating 6/1/2019 - 11/30/2019 - Default Architectural Coating Description
For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:
ROG: 10%
For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:
ROG: 10%
Phase Assumptions
Phase: Mass Grading 1/1/2015 - 10/1/2015 - Default Mass Site Grading Description
Total Acres Disturbed: 11.29
Maximum Daily Acreage Disturbed: 2.82
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction 10/1/2015 - 6/1/2019 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day
Phase: Architectural Coating 6/1/2019 - 11/30/2019 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: P:\5020 Air Quality\5000 Technical_Latest Construction Calculations\HMF\HMF Construction Emissions.urb924												
Project Name: HMF Construction												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2017		0.33	2.48	1.58	0.00	4.87	0.11	4.98	1.02	0.10	1.12	400.36
Mass Grading 08/01/2017-11/30/2017		0.33	2.48	1.58	0.00	4.87	0.11	4.98	1.02	0.10	1.12	400.36
	Mass Grading Dust	0.00	0.00	0.00	0.00	4.87	0.00	4.87	1.02	0.00	1.02	0.00
	Mass Grading Off Road Diesel	0.33	2.48	1.52	0.00	0.00	0.11	0.11	0.00	0.10	0.10	389.09
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.28
2021		4.24	1.03	1.58	0.00	0.02	0.05	0.07	0.01	0.05	0.06	634.01
Asphalt 01/01/2021-02/01/2021		0.21	0.24	0.17	0.00	0.00	0.01	0.02	0.00	0.01	0.01	98.95
	Paving Off-Gas	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving Off Road Diesel	0.02	0.12	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	15.61
	Paving On Road Diesel	0.01	0.12	0.05	0.00	0.00	0.00	0.01	0.00	0.00	0.00	81.93
	Paving Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41
Building 02/01/2021-07/01/2021		0.13	0.79	1.40	0.00	0.02	0.04	0.06	0.01	0.04	0.04	530.40
	Building Off Road Diesel	0.08	0.46	0.48	0.00	0.00	0.02	0.02	0.00	0.02	0.02	88.36
	Building Vendor Trips	0.04	0.31	0.40	0.00	0.01	0.01	0.02	0.00	0.01	0.02	271.30
	Building Worker Trips	0.01	0.02	0.52	0.00	0.01	0.00	0.01	0.00	0.00	0.01	170.74
Coating 07/01/2021-07/31/2021		3.90	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.66
	Architectural Coating	3.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.66
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 8/1/2017 - 11/30/2017 - Default Architectural Coating Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												

Phase Assumptions
Phase: Mass Grading 8/1/2017 - 11/30/2017 - Default Architectural Coating Description
Total Acres Disturbed: 154
Maximum Daily Acreage Disturbed: 38.5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Paving 1/1/2021 - 2/1/2021 - Type Your Description Here
Acres to be Paved: 137.3
Off-Road Equipment:
1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day
Phase: Building Construction 2/1/2021 - 7/1/2021 - Type Your Description Here
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day
Phase: Architectural Coating 7/1/2021 - 7/31/2021 - Type Your Description Here
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Phase: Architectural Coating 7/1/2021 - 7/31/2021 - Type Your Description Here
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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7/2/2011 10:56:21 AM												
Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: C:\Users\Avanti\Desktop\HMF Construction Emissions.urb924												
Project Name: HMF Construction												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2017		0.33	2.48	1.58	0.00	4.63	0.11	4.74	0.97	0.10	1.07	400.36
Mass Grading 08/01/2017-11/30/2017		0.33	2.48	1.58	0.00	4.63	0.11	4.74	0.97	0.10	1.07	400.36
	Mass Grading Dust	0.00	0.00	0.00	0.00	4.63	0.00	4.63	0.97	0.00	0.97	0.00
	Mass Grading Off Road Diesel	0.33	2.48	1.52	0.00	0.00	0.11	0.11	0.00	0.10	0.10	389.09
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	11.28
2021		3.85	1.03	1.58	0.00	0.02	0.05	0.07	0.01	0.05	0.06	634.01
Asphalt 01/01/2021-02/01/2021		0.21	0.24	0.17	0.00	0.00	0.01	0.02	0.00	0.01	0.01	98.95
	Paving Off-Gas	0.18	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving Off Road Diesel	0.02	0.12	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	15.61
	Paving On Road Diesel	0.01	0.12	0.05	0.00	0.00	0.00	0.01	0.00	0.00	0.00	81.93
	Paving Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.41
Building 02/01/2021-07/01/2021		0.13	0.79	1.40	0.00	0.02	0.04	0.06	0.01	0.04	0.04	530.40
	Building Off Road Diesel	0.08	0.46	0.48	0.00	0.00	0.02	0.02	0.00	0.02	0.02	88.36
	Building Vendor Trips	0.04	0.31	0.40	0.00	0.01	0.01	0.02	0.00	0.01	0.02	271.30
	Building Worker Trips	0.01	0.02	0.52	0.00	0.01	0.00	0.01	0.00	0.00	0.01	170.74
Coating 07/01/2021-07/31/2021		3.51	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.66
	Architectural Coating	3.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coating Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.66
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 8/1/2017 - 11/30/2017 - Default Architectural Coating Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
The following mitigation measures apply to Phase: Architectural Coating 7/1/2021 - 7/31/2021 - Type Your Description Here												
For Residential Architectural Coating Measures, the Residential Exterior: Use Low VOC Coatings mitigation reduces emissions by:												
ROG: 10%												
For Residential Architectural Coating Measures, the Residential Interior: Use Low VOC Coatings mitigation reduces emissions by:												
ROG: 10%												
For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:												
ROG: 10%												
For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:												
ROG: 10%												
Phase Assumptions												

Phase: Mass Grading 8/1/2017 - 11/30/2017 - Default Architectural Coating Description
Total Acres Disturbed: 154
Maximum Daily Acreage Disturbed: 38.5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Paving 1/1/2021 - 2/1/2021 - Type Your Description Here
Acres to be Paved: 137.3
Off-Road Equipment:
1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day
Phase: Building Construction 2/1/2021 - 7/1/2021 - Type Your Description Here
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day
Phase: Architectural Coating 7/1/2021 - 7/31/2021 - Type Your Description Here
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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7/2/2011 11:32:58 AM												
Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)												
File Name: C:\Users\Avanti\Desktop\HMF Track.urb924												
Project Name: Lay Track At Grade												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2021		1.30	12.10	4.80	0.00	0.00	0.53	0.53	0.00	0.50	0.50	1,515.08
Building 01/01/2021-12/31/2021		1.30	12.10	4.80	0.00	0.00	0.53	0.53	0.00	0.50	0.50	1,515.08
	Building Off Road Diesel	1.29	12.02	4.59	0.00	0.00	0.52	0.52	0.00	0.50	0.50	1,413.67
	Building Vendor Trips	0.01	0.07	0.09	0.00	0.00	0.00	0.01	0.00	0.00	0.00	62.24
	Building Worker Trips	0.00	0.01	0.12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.17
Phase Assumptions												
Phase: Building Construction 1/1/2021 - 12/31/2021 - Default Building Construction Description												
Off Road Diesel calculated using the Named Equipment EMS functions.												
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\jonathan_tamimi\Application Data\Urbemis\Version9a\Data\Lay Track At Grade Equip.equip;Lay Track at Grade												
Off-Road Equipment:												
1 Aerial Lifts (60 hp) operating at a 0.46 load factor for 1.1 hours per day; Engine Built/Rebuilt in 2005 with average useage of 320 hrs/year												
1 Air Compressors (106 hp) operating at a 0.48 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year												
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year												
1 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 0.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 80 hrs/year												
1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 0.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 80 hrs/year												
1 Cranes (399 hp) operating at a 0.43 load factor for 0.7 hours per day; Engine Built/Rebuilt in 2005 with average useage of 200 hrs/year												
1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year												
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year												
1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year												
1 Excavators (168 hp) operating at a 0.57 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year												
1 Forklifts (145 hp) operating at a 0.3 load factor for 0.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 160 hrs/year												
1 Generator Sets (549 hp) operating at a 0.74 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year												
1 Graders (174 hp) operating at a 0.61 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year												
1 Off Highway Tractors (267 hp) operating at a 0.65 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year												
1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year												
1 Plate Compactors (8 hp) operating at a 0.43 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year												
1 Pressure Washers (1 hp) operating at a 0.6 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year												
1 Rollers (95 hp) operating at a 0.56 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year												
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year												
1 Scrapers (313 hp) operating at a 0.72 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year												
1 Signal Boards (15 hp) operating at a 0.78 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year												
1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year												

1 Sweepers/Scrubbers (53 hp) operating at a 0.74 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Trenchers (63 hp) operating at a 0.75 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Welders (45 hp) operating at a 0.45 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Pumps (600 hp) operating at a 0.74 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Cranes (500 hp) operating at a 0.51 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Cranes (400 hp) operating at a 0.62 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Surfacing Eqipment (400 hp) operating at a 0.62 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Surfacing Eqipment (362 hp) operating at a 0.45 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: C:\Users\Avanti\Desktop\MOWF Construction Emissions.urb924												
Project Name: MOWF												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2017		0.12	0.88	0.65	0.00	0.82	0.04	0.86	0.17	0.04	0.21	137.97
Mass Grading 08/01/2017-11/30/2017		0.12	0.88	0.65	0.00	0.82	0.04	0.86	0.17	0.04	0.21	137.97
	Mass Grading Dust	0.00	0.00	0.00	0.00	0.82	0.00	0.82	0.17	0.00	0.17	0.00
	Mass Grading Off Road Diesel	0.12	0.88	0.61	0.00	0.00	0.04	0.04	0.00	0.04	0.04	132.33
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.64
2018		0.24	0.46	0.46	0.00	0.00	0.03	0.03	0.00	0.02	0.02	102.19
Asphalt 06/01/2018-07/01/2018		0.03	0.13	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	21.21
	Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving Off Road Diesel	0.02	0.11	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	13.36
	Paving On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.50
	Paving Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.35
Building 07/01/2018-12/31/2018		0.05	0.32	0.35	0.00	0.00	0.02	0.02	0.00	0.01	0.01	80.78
	Building Off Road Diesel	0.04	0.29	0.27	0.00	0.00	0.01	0.01	0.00	0.01	0.01	58.52
	Building Vendor Trips	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.66
	Building Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.60
Coating 11/30/2018-12/31/2018		0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
	Architectural Coating	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 8/1/2017 - 11/30/2017 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												

Phase Assumptions
Phase: Mass Grading 8/1/2017 - 11/30/2017 - Default Fine Site Grading Description
Total Acres Disturbed: 26
Maximum Daily Acreage Disturbed: 6.5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Paving 6/1/2018 - 7/1/2018 - Default Paving Description
Acres to be Paved: 10.9
Off-Road Equipment:
1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day
Phase: Building Construction 7/1/2018 - 12/31/2018 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
Phase: Architectural Coating 11/30/2018 - 12/31/2018 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: C:\Users\Avanti\Desktop\MOWF Construction Emissions.urb924												
Project Name: MOWF												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2017		0.12	0.88	0.65	0.00	0.78	0.04	0.82	0.16	0.04	0.20	137.97
Mass Grading 08/01/2017-11/30/2017		0.12	0.88	0.65	0.00	0.78	0.04	0.82	0.16	0.04	0.20	137.97
	Mass Grading Dust	0.00	0.00	0.00	0.00	0.78	0.00	0.78	0.16	0.00	0.16	0.00
	Mass Grading Off Road Diesel	0.12	0.88	0.61	0.00	0.00	0.04	0.04	0.00	0.04	0.04	132.33
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.64
2018		0.24	0.46	0.46	0.00	0.00	0.03	0.03	0.00	0.02	0.02	102.19
Asphalt 06/01/2018-07/01/2018		0.03	0.13	0.11	0.00	0.00	0.01	0.01	0.00	0.01	0.01	21.21
	Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Paving Off Road Diesel	0.02	0.11	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	13.36
	Paving On Road Diesel	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.50
	Paving Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.35
Building 07/01/2018-12/31/2018		0.05	0.32	0.35	0.00	0.00	0.02	0.02	0.00	0.01	0.01	80.78
	Building Off Road Diesel	0.04	0.29	0.27	0.00	0.00	0.01	0.01	0.00	0.01	0.01	58.52
	Building Vendor Trips	0.00	0.03	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.66
	Building Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.60
Coating 11/30/2018-12/31/2018		0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
	Architectural Coating	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 8/1/2017 - 11/30/2017 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												

Phase Assumptions
Phase: Mass Grading 8/1/2017 - 11/30/2017 - Default Fine Site Grading Description
Total Acres Disturbed: 26
Maximum Daily Acreage Disturbed: 6.5
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Paving 6/1/2018 - 7/1/2018 - Default Paving Description
Acres to be Paved: 10.9
Off-Road Equipment:
1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day
Phase: Building Construction 7/1/2018 - 12/31/2018 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
Phase: Architectural Coating 11/30/2018 - 12/31/2018 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Unmitigated Emissions (Tons/Year)												
File Name: C:\Users\Avanti\Desktop\MOWF Track.urb924												
Project Name: Lay Track At Grade												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2018		1.13	11.78	4.71	0.00	0.00	0.48	0.49	0.00	0.46	0.46	1,515.06
Building 01/01/2018-12/31/2018		1.13	11.78	4.71	0.00	0.00	0.48	0.49	0.00	0.46	0.46	1,515.06
	Building Off Road Diesel	1.11	11.63	4.36	0.00	0.00	0.47	0.47	0.00	0.45	0.45	1,413.67
	Building Vendor Trips	0.01	0.14	0.14	0.00	0.00	0.01	0.01	0.00	0.00	0.01	62.22
	Building Worker Trips	0.01	0.01	0.21	0.00	0.00	0.00	0.00	0.00	0.00	0.00	39.17
Phase Assumptions												
Phase: Building Construction 1/1/2018 - 12/31/2018 - Default Building Construction Description												
Off Road Diesel calculated using the Named Equipment EMS functions.												
The Off Road Equipment was based on the Named Equipment List: C:\Documents and Settings\jonathan_tamimi\Application Data\Urbemis\Version9a\Data\Lay Track At Grade Equip.equip;Lay Track at Grade												
Off-Road Equipment:												
1 Aerial Lifts (60 hp) operating at a 0.46 load factor for 1.1 hours per day; Engine Built/Rebuilt in 2005 with average useage of 320 hrs/year												
1 Air Compressors (106 hp) operating at a 0.48 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year												
1 Bore/Drill Rigs (291 hp) operating at a 0.75 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year												
1 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 0.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 80 hrs/year												
1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 0.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 80 hrs/year												
1 Cranes (399 hp) operating at a 0.43 load factor for 0.7 hours per day; Engine Built/Rebuilt in 2005 with average useage of 200 hrs/year												
1 Crawler Tractors (147 hp) operating at a 0.64 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year												
1 Crushing/Processing Equip (142 hp) operating at a 0.78 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year												
1 Dumpers/Tenders (16 hp) operating at a 0.38 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year												
1 Excavators (168 hp) operating at a 0.57 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year												
1 Forklifts (145 hp) operating at a 0.3 load factor for 0.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 160 hrs/year												
1 Generator Sets (549 hp) operating at a 0.74 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year												
1 Graders (174 hp) operating at a 0.61 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year												
1 Off Highway Tractors (267 hp) operating at a 0.65 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year												
1 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year												
1 Plate Compactors (8 hp) operating at a 0.43 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year												
1 Pressure Washers (1 hp) operating at a 0.6 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year												
1 Rollers (95 hp) operating at a 0.56 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year												
1 Rough Terrain Forklifts (93 hp) operating at a 0.6 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year												
1 Scrapers (313 hp) operating at a 0.72 load factor for 3.6 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1000 hrs/year												

1 Signal Boards (15 hp) operating at a 0.78 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Skid Steer Loaders (44 hp) operating at a 0.55 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Sweepers/Scrubbers (53 hp) operating at a 0.74 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Trenchers (63 hp) operating at a 0.75 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Water Trucks (189 hp) operating at a 0.5 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Welders (45 hp) operating at a 0.45 load factor for 1.4 hours per day; Engine Built/Rebuilt in 2005 with average useage of 400 hrs/year
1 Pumps (600 hp) operating at a 0.74 load factor for 0 hours per day; Engine Built/Rebuilt in 2005 with average useage of 0 hrs/year
1 Cranes (500 hp) operating at a 0.51 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Cranes (400 hp) operating at a 0.62 load factor for 4.3 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1200 hrs/year
1 Surfacing Eqipment (400 hp) operating at a 0.62 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year
1 Surfacing Eqipment (362 hp) operating at a 0.45 load factor for 2.9 hours per day; Engine Built/Rebuilt in 2005 with average useage of 800 hrs/year

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7/5/2011 10:45:21 AM												
Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Systems\Paralleling Power Supply Station Construction Emissions.urb924												
Project Name: Paralleling Power Supply Station Construction												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2016		0.14	1.05	0.70	0.00	0.01	0.05	0.06	0.00	0.05	0.05	153.91
Mass Grading 07/01/2016-12/31/2016		0.14	1.05	0.70	0.00	0.01	0.05	0.06	0.00	0.05	0.05	153.91
	Mass Grading Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
	Mass Grading Off Road Diesel	0.14	1.05	0.66	0.00	0.00	0.05	0.05	0.00	0.05	0.05	147.20
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.71
2017		0.13	0.95	0.72	0.00	0.00	0.05	0.05	0.00	0.04	0.04	174.01
Building 01/01/2017-06/01/2018		0.13	0.95	0.72	0.00	0.00	0.05	0.05	0.00	0.04	0.04	174.01
	Building Off Road Diesel	0.13	0.95	0.71	0.00	0.00	0.05	0.05	0.00	0.04	0.04	172.71
	Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80
	Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
2018		0.06	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.63
Building 01/01/2017-06/01/2018		0.05	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.62
	Building Off Road Diesel	0.05	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.07
	Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
	Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
Coating 06/01/2018-11/30/2018		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 7/1/2016 - 12/31/2016 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												

Phase Assumptions
Phase: Mass Grading 7/1/2016 - 12/31/2016 - Default Fine Site Grading Description
Total Acres Disturbed: 0.18
Maximum Daily Acreage Disturbed: 0.04
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction 1/1/2017 - 6/1/2018 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
Phase: Architectural Coating 6/1/2018 - 11/30/2018 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Systems\Paralleling Power Supply Station Construction Emissions.urb924												
Project Name: Paralleling Power Supply Station Construction												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2016		0.14	1.05	0.70	0.00	0.01	0.05	0.06	0.00	0.05	0.05	153.91
Mass Grading 07/01/2016-12/31/2016		0.14	1.05	0.70	0.00	0.01	0.05	0.06	0.00	0.05	0.05	153.91
	Mass Grading Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
	Mass Grading Off Road Diesel	0.14	1.05	0.66	0.00	0.00	0.05	0.05	0.00	0.05	0.05	147.20
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.71
2017		0.13	0.95	0.72	0.00	0.00	0.05	0.05	0.00	0.04	0.04	174.01
Building 01/01/2017-06/01/2018		0.13	0.95	0.72	0.00	0.00	0.05	0.05	0.00	0.04	0.04	174.01
	Building Off Road Diesel	0.13	0.95	0.71	0.00	0.00	0.05	0.05	0.00	0.04	0.04	172.71
	Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80
	Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
2018		0.06	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.63
Building 01/01/2017-06/01/2018		0.05	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.62
	Building Off Road Diesel	0.05	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.07
	Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
	Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
Coating 06/01/2018-11/30/2018		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 7/1/2016 - 12/31/2016 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
The following mitigation measures apply to Phase: Architectural Coating 6/1/2018 - 11/30/2018 - Default Architectural Coating Description												
For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:												
ROG: 10%												
For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:												
ROG: 10%												

Phase Assumptions
Phase: Mass Grading 7/1/2016 - 12/31/2016 - Default Fine Site Grading Description
Total Acres Disturbed: 0.18
Maximum Daily Acreage Disturbed: 0.04
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction 1/1/2017 - 6/1/2018 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
Phase: Architectural Coating 6/1/2018 - 11/30/2018 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Systems\Switching Power Supply Station Station Construction Emissions.urb924												
Project Name: Switching Power Supply Station Construction												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2016		0.14	1.05	0.70	0.00	0.01	0.05	0.06	0.00	0.05	0.05	153.91
Mass Grading 07/01/2016-12/31/2016		0.14	1.05	0.70	0.00	0.01	0.05	0.06	0.00	0.05	0.05	153.91
	Mass Grading Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
	Mass Grading Off Road Diesel	0.14	1.05	0.66	0.00	0.00	0.05	0.05	0.00	0.05	0.05	147.20
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.71
2017		0.13	0.95	0.72	0.00	0.00	0.05	0.05	0.00	0.04	0.04	
Building 01/01/2017-06/01/2018		0.13	0.95	0.72	0.00	0.00	0.05	0.05	0.00	0.04	0.04	174.01
	Building Off Road Diesel	0.13	0.95	0.71	0.00	0.00	0.05	0.05	0.00	0.04	0.04	174.01
	Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80
	Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
2018		0.06	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.63
Building 01/01/2017-06/01/2018		0.05	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.62
	Building Off Road Diesel	0.05	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.07
	Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
	Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
Coating 06/01/2018-11/30/2018		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 7/1/2016 - 12/31/2016 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												

Phase Assumptions
Phase: Mass Grading 7/1/2016 - 12/31/2016 - Default Fine Site Grading Description
Total Acres Disturbed: 0.21
Maximum Daily Acreage Disturbed: 0.05
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction 1/1/2017 - 6/1/2018 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
Phase: Architectural Coating 6/1/2018 - 11/30/2018 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Systems\Switching Power Supply Station Station Construction Emissions.urb924												
Project Name: Switching Power Supply Station Construction												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2016		0.14	1.05	0.70	0.00	0.01	0.05	0.06	0.00	0.05	0.05	153.91
Mass Grading 07/01/2016-12/31/2016		0.14	1.05	0.70	0.00	0.01	0.05	0.06	0.00	0.05	0.05	153.91
	Mass Grading Dust	0.00	0.00	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.00
	Mass Grading Off Road Diesel	0.14	1.05	0.66	0.00	0.00	0.05	0.05	0.00	0.05	0.05	147.20
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.71
2017		0.13	0.95	0.72	0.00	0.00	0.05	0.05	0.00	0.04	0.04	174.01
Building 01/01/2017-06/01/2018		0.13	0.95	0.72	0.00	0.00	0.05	0.05	0.00	0.04	0.04	174.01
	Building Off Road Diesel	0.13	0.95	0.71	0.00	0.00	0.05	0.05	0.00	0.04	0.04	172.71
	Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.80
	Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50
2018		0.06	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.63
Building 01/01/2017-06/01/2018		0.05	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.62
	Building Off Road Diesel	0.05	0.36	0.30	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.07
	Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
	Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21
Coating 06/01/2018-11/30/2018		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
	Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 7/1/2016 - 12/31/2016 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
The following mitigation measures apply to Phase: Architectural Coating 6/1/2018 - 11/30/2018 - Default Architectural Coating Description												
For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:												
ROG: 10%												
For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:												
ROG: 10%												

Phase Assumptions
Phase: Mass Grading 7/1/2016 - 12/31/2016 - Default Fine Site Grading Description
Total Acres Disturbed: 0.21
Maximum Daily Acreage Disturbed: 0.05
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction 1/1/2017 - 6/1/2018 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 8 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
Phase: Architectural Coating 6/1/2018 - 11/30/2018 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

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Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Systems\Traction Power Supply Station Construction Emissions.urb924												
Project Name: Traction Power Supply Station Construction												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2016		0.11	0.83	0.57	0.00	0.02	0.04	0.06	0.00	0.04	0.04	124.64
Mass Grading 07/01/2016-11/01/2016		0.09	0.71	0.47	0.00	0.02	0.03	0.05	0.00	0.03	0.04	103.39
	Mass Grading Dust	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
	Mass Grading Off Road Diesel	0.09	0.71	0.44	0.00	0.00	0.03	0.03	0.00	0.03	0.03	98.88
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.51
Building 11/01/2016-08/01/2018		0.02	0.12	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	21.25
	Building Off Road Diesel	0.02	0.12	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	19.65
	Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98
	Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62
2017		0.09	0.66	0.58	0.00	0.00	0.03	0.03	0.00	0.03	0.03	125.56
Building 11/01/2016-08/01/2018		0.09	0.66	0.58	0.00	0.00	0.03	0.03	0.00	0.03	0.03	125.56
	Building Off Road Diesel	0.09	0.65	0.55	0.00	0.00	0.03	0.03	0.00	0.03	0.03	116.14
	Building Vendor Trips	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.78
	Building Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64
2018		0.09	0.35	0.34	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.93
Building 11/01/2016-08/01/2018		0.05	0.35	0.34	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.89
	Building Off Road Diesel	0.05	0.34	0.32	0.00	0.00	0.02	0.02	0.00	0.02	0.02	68.34
	Building Vendor Trips	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.40
	Building Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.14
Coating 08/01/2018-11/30/2018		0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	Architectural Coating	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 7/1/2016 - 11/1/2016 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 2x daily watering mitigation reduces emissions by:												
PM10: 55% PM25: 55%												

Phase Assumptions
Phase: Mass Grading 7/1/2016 - 11/1/2016 - Default Fine Site Grading Description
Total Acres Disturbed: 0.66
Maximum Daily Acreage Disturbed: 0.17
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction 11/1/2016 - 8/1/2018 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
Phase: Architectural Coating 8/1/2018 - 11/30/2018 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Page: 1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13
7/5/2011 03:10:09 PM												
Urbemis 2007 Version 9.2.4												
Detail Report for Annual Construction Mitigated Emissions (Tons/Year)												
File Name: T:\5020 Air Quality\5000 Technical_Latest Construction Calculations\Systems\Traction Power Supply Station Construction Emissions.urb924												
Project Name: Traction Power Supply Station Construction												
Project Location: San Joaquin Valley APCD												
On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006												
Off-Road Vehicle Emissions Based on: OFFROAD2007												
CONSTRUCTION EMISSION ESTIMATES (Annual Tons Per Year, Mitigated)												
		ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
2016		0.11	0.83	0.57	0.00	0.02	0.04	0.06	0.00	0.04	0.04	124.64
Mass Grading 07/01/2016-11/01/2016		0.09	0.71	0.47	0.00	0.02	0.03	0.05	0.00	0.03	0.03	103.39
	Mass Grading Dust	0.00	0.00	0.00	0.00	0.02	0.00	0.02	0.00	0.00	0.00	0.00
	Mass Grading Off Road Diesel	0.09	0.71	0.44	0.00	0.00	0.03	0.03	0.00	0.03	0.03	98.88
	Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mass Grading Worker Trips	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.51
Building 11/01/2016-08/01/2018		0.02	0.12	0.10	0.00	0.00	0.01	0.01	0.00	0.01	0.01	21.25
	Building Off Road Diesel	0.02	0.12	0.09	0.00	0.00	0.01	0.01	0.00	0.01	0.01	19.65
	Building Vendor Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.98
	Building Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62
2017		0.09	0.66	0.58	0.00	0.00	0.03	0.03	0.00	0.03	0.03	125.56
Building 11/01/2016-08/01/2018		0.09	0.66	0.58	0.00	0.00	0.03	0.03	0.00	0.03	0.03	125.56
	Building Off Road Diesel	0.09	0.65	0.55	0.00	0.00	0.03	0.03	0.00	0.03	0.03	116.14
	Building Vendor Trips	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.78
	Building Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.64
2018		0.08	0.35	0.34	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.93
Building 11/01/2016-08/01/2018		0.05	0.35	0.34	0.00	0.00	0.02	0.02	0.00	0.02	0.02	73.89
	Building Off Road Diesel	0.05	0.34	0.32	0.00	0.00	0.02	0.02	0.00	0.02	0.02	68.34
	Building Vendor Trips	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.40
	Building Worker Trips	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.14
Coating 08/01/2018-11/30/2018		0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
	Architectural Coating	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Coating Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Construction Related Mitigation Measures												
The following mitigation measures apply to Phase: Mass Grading 7/1/2016 - 11/1/2016 - Default Fine Site Grading Description												
For Soil Stablizing Measures, the Replace ground cover in disturbed areas quickly mitigation reduces emissions by:												
PM10: 5% PM25: 5%												
For Soil Stablizing Measures, the Water exposed surfaces 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
For Soil Stablizing Measures, the Equipment loading/unloading mitigation reduces emissions by:												
PM10: 69% PM25: 69%												
For Unpaved Roads Measures, the Reduce speed on unpaved roads to less than 15 mph mitigation reduces emissions by:												
PM10: 44% PM25: 44%												
For Unpaved Roads Measures, the Manage haul road dust 3x daily watering mitigation reduces emissions by:												
PM10: 61% PM25: 61%												
The following mitigation measures apply to Phase: Architectural Coating 8/1/2018 - 11/30/2018 - Default Architectural Coating Description												
For Nonresidential Architectural Coating Measures, the Nonresidential Exterior: Use Low VOC Coatings mitigation reduces emissions by:												
ROG: 10%												
For Nonresidential Architectural Coating Measures, the Nonresidential Interior: Use Low VOC Coatings mitigation reduces emissions by:												
ROG: 10%												

Phase Assumptions
Phase: Mass Grading 7/1/2016 - 11/1/2016 - Default Fine Site Grading Description
Total Acres Disturbed: 0.66
Maximum Daily Acreage Disturbed: 0.17
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day
Phase: Building Construction 11/1/2016 - 8/1/2018 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 4 hours per day
2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
Phase: Architectural Coating 8/1/2018 - 11/30/2018 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 130
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Appendix A

A.8 Exhaust Mitigation and EMFAC2007 Output Files

Exhaust Mitigation for Construction Equipment

		ROG			NOX			PM		
Equipment	**Horsepower**	**Urbemis EF (g/hp-hr) [1]**	**AQMD Correlation [2]**	**Required % Reduction [3, 4]**	**Urbemis EF (g/hp-hr) [1]**	**AQMD Correlation [2]**	**Required % Reduction [3, 4]**	**Urbemis EF (g/hp-hr) [1]**	**AQMD Correlation [2]**	**Required % Reduction [3, 4]**
Excavator	168	0.259	Tier 2 - 3	46	1.671	Tier 4	82	0.089	Tier 3 - 4	83
Grader	174	0.318	Tier 1 - 2	56	2.179	Tier 4	86	0.12	Tier 3 - 4	88
Rubber Tired Dozer	357	0.337	Tier 1 - 2	58	2.647	Tier 3 - 4	89	0.108	Tier 3 - 4	86
Scrapers	313	0.331	Tier 1 - 2	58	2.596	Tier 3 - 4	88	0.099	Tier 3 - 4	85
Tractors/Loaders/Backhoes	108	0.289	Tier 1 - 2	52	1.945	Tier 4	85	0.131	Tier 3 - 4	89
Water Trucks	189	0.216	Tier 2 - 3	35	1.485	Tier 4	80	0.05	Tier 3 - 4	70
Pavers	100	0.558	Tier 1 - 2	75	3.367	Tier 2 - 3	91	0.279	Tier 1 - 2	95
Paving Equipment	104	0.474	Tier 1 - 2	70	2.87	Tier 2 - 3	90	0.24	Tier 1 - 2	94
Rollers	95	0.398	Tier 1 - 2	65	2.565	Tier 3 - 4	88	0.204	Tier 3 - 4	93
Cranes	399	0.171	Tier 2 - 3	18	1.318	Tier 4	77	0.048	Tier 3 - 4	69
Forklifts	145	0.128	Tier 4	-	0.81	Tier 4	63	0.044	Tier 3 - 4	66
Generator Sets	49	0.754	Tier 1 - 2	81	3.35	Tier 2 - 3	91	0.212	Tier 3 - 4	93
Welders	45	0.618	Tier 1 - 2	77	2.148	Tier 4	86	0.158	Tier 3 - 4	91
Fleet Average Reduction by Pollutant [5]				**57.66**			**84.31**			**84.56**

Notes:

1. URBEMIS EF is the unmitigated default value based on the equipment horsepower for a fleet mix in 2017. 2017 was chosen as the fleet mix year as a conservative estimate since it is the final year during which
2. SCAQMD Correlation taken from TABLE II - OFF-ROAD ENGINE EMISSION RATES & COMPARISON OF UNCONTROLLED TO TIERED RATES AND TIERED TO TIERED RATES. Tier 1-2 means the
3. Required % Reduction was calculated and indicates the % reduction required to reduce the default URBEMIS emission factors to the Tier 4 standards for each pollutant. For NOx, the Tier 4 standard to be met
4. The SCAQMD Tier 4 standards that each equipment piece will meet are as follows:

Tier 4 Emission Standards (g/ bhp hr)		
ROG	NOx	PM
0.14	0.3	0.015

5. The Fleet Average Reduction was taken as the average of reductions required for all construction equipment to meet Tier 4 standards. This average reduction will be applied to exhaust emissions from off-road

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/02/14 18:06:10
Scen Year: 2013 -- All model years in the range 1969 to 2013 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2013 -- Model Years 1969 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.602	0.607	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.029	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	2.653	3.063	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	11.265	11.253	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1648.566	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.453	0.448	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS

MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0	
Pollutant Name: PM10 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0	
Pollutant Name: PM2.5				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.417	0.412	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Tire Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0	
Pollutant Name: Gasoline - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0	15.725	0	0	0	0	0	0	0	
Pollutant Name: Diesel - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0	

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/02/14 18:06:10
Scen Year: 2014 -- All model years in the range 1970 to 2014 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2014 -- Model Years 1970 to 2014 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.539	0.543	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.025	0.026	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	2.467	2.862	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	9.858	9.854	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1648.397	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.407	0.402	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Table A-56
Unmitigated EMFAC HHDT

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0
Pollutant Name: PM2.5	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.374	0.37	0	0	0	0	0	0	0
Pollutant Name: PM2.5 - Tire Wear	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0
Pollutant Name: PM2.5 - Brake Wear	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0
Pollutant Name: Gasoline - mi/gal	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0	15.791	0	0	0	0	0	0	0
Pollutant Name: Diesel - mi/gal	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/02/14 18:06:10
Scen Year: 2015 -- All model years in the range 1971 to 2015 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2015 -- Model Years 1971 to 2015 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.481	0.484	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.022	0.023	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	2.29	2.661	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	8.585	8.588	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1648.301	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.364	0.359	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS

MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0
Pollutant Name: PM2.5	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.335	0.331	0	0	0	0	0	0	0
Pollutant Name: PM2.5 - Tire Wear	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0
Pollutant Name: PM2.5 - Brake Wear	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0
Pollutant Name: Gasoline - mi/gal	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0	15.863	0	0	0	0	0	0	0
Pollutant Name: Diesel - mi/gal	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/02/14 18:06:10
Scen Year: 2016 -- All model years in the range 1972 to 2016 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2016 -- Model Years 1972 to 2016 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.428	0.432	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.02	0.021	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	2.127	2.486	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	7.469	7.478	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1648.215	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.325	0.321	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.299	0.295	0	0	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0

Pollutant Name: Gasoline - mi/gal Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0	15.91	0	0	0	0	0	0	0

Pollutant Name: Diesel - mi/gal Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/02/14 18:06:10
Scen Year: 2017 -- All model years in the range 1973 to 2017 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2017 -- Model Years 1973 to 2017 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.382	0.385	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.018	0.019	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.976	2.324	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	6.496	6.512	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1648.14	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.289	0.285	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.266	0.263	0	0	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0

Pollutant Name: Gasoline - mi/gal Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0	15.952	0	0	0	0	0	0	0

Pollutant Name: Diesel - mi/gal Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/02/14 18:06:10
Scen Year: 2018 -- All model years in the range 1974 to 2018 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2018 -- Model Years 1974 to 2018 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.341	0.344	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.017	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.837	2.177	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	5.656	5.678	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1648.09	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.257	0.254	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS

Table A-56
Unmitigated EMFAC HHDT

MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0
Pollutant Name: PM2.5	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.237	0.234	0	0	0	0	0	0	0
Pollutant Name: PM2.5 - Tire Wear	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0
Pollutant Name: PM2.5 - Brake Wear	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0
Pollutant Name: Gasoline - mi/gal	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0	15.986	0	0	0	0	0	0	0
Pollutant Name: Diesel - mi/gal	Temperature: 60F	Relative Humidity: 30%																			
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0

Title : HMF Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/07/05 10:03:03
Scen Year: 2021 -- All model years in the range 1977 to 2021 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2021 -- Model Years 1977 to 2021 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.253	0.255	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.013	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.527	1.845	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	3.895	3.928	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1648.138	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.19	0.187	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.175	0.172	0	0	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0

Pollutant Name: Gasoline - mi/gal Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0	16.052	0	0	0	0	0	0	0

Pollutant Name: Diesel - mi/gal Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/04/27 19:54:24
Scen Year: 2013 -- All model years in the range 2010 to 2013 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2013 -- Model Years 2010 to 2013 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.118	0.118	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.006	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.85	1.12	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.316	1.367	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1644.786	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.076	0.075	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS

MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0	
Pollutant Name: PM10 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0	
Pollutant Name: PM2.5				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.07	0.069	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Tire Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0	
Pollutant Name: Gasoline - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0	16.491	0	0	0	0	0	0	0	
Pollutant Name: Diesel - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0	

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/04/27 19:54:24
Scen Year: 2014 -- All model years in the range 2010 to 2014 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2014 -- Model Years 2010 to 2014 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.123	0.123	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.006	0.007	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.888	1.16	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.41	1.458	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1645.404	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.081	0.08	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS

MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0	
Pollutant Name: PM10 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0	
Pollutant Name: PM2.5				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.074	0.073	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Tire Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0	
Pollutant Name: Gasoline - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0	16.449	0	0	0	0	0	0	0	
Pollutant Name: Diesel - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0	

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/04/27 19:54:24
Scen Year: 2015 -- All model years in the range 2010 to 2015 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2015 -- Model Years 2010 to 2015 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.127	0.128	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.006	0.007	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.92	1.195	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.494	1.542	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1645.932	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.085	0.084	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS

MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0	
Pollutant Name: PM10 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0	
Pollutant Name: PM2.5				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.078	0.077	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Tire Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0	
Pollutant Name: Gasoline - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0	16.41	0	0	0	0	0	0	0	
Pollutant Name: Diesel - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0	

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/04/27 19:54:24
Scen Year: 2016 -- All model years in the range 2010 to 2016 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2016 -- Model Years 2010 to 2016 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.131	0.132	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.006	0.007	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.95	1.226	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.572	1.618	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1646.435	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.088	0.087	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS

MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0	
Pollutant Name: PM10 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0	
Pollutant Name: PM2.5				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.081	0.08	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Tire Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0	
Pollutant Name: Gasoline - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0	16.375	0	0	0	0	0	0	0	
Pollutant Name: Diesel - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0	

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Scen Year: 2017 -- All model years in the range 2010 to 2017 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2017 -- Model Years 2010 to 2017 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.135	0.135	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.006	0.007	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.975	1.253	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.642	1.686	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1646.814	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.092	0.09	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.084	0.083	0	0	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0

Pollutant Name: Gasoline - mi/gal Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0	16.343	0	0	0	0	0	0	0

Pollutant Name: Diesel - mi/gal Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0

Title : HST Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/04/27 19:54:24
Scen Year: 2018 -- All model years in the range 2010 to 2018 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2018 -- Model Years 2010 to 2018 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.138	0.138	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.006	0.007	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.997	1.277	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.702	1.746	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1647.129	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.094	0.093	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS

MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0	
Pollutant Name: PM10 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0	
Pollutant Name: PM2.5				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.087	0.086	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Tire Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0	
Pollutant Name: PM2.5 - Brake Wear				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0	
Pollutant Name: Gasoline - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	0	16.316	0	0	0	0	0	0	0	
Pollutant Name: Diesel - mi/gal				Temperature: 60F			Relative Humidity: 30%															
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	HHD	HHD	OBUS	OBUS	OBUS	OBUS	UBUS	UBUS	UBUS	
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0	

Title : HMF Haul Truck
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/07/05 10:04:09
Scen Year: 2021 -- All model years in the range 2010 to 2021 selected
Season : Annual
Area : San Joaquin Valley
****

Year: 2021 -- Model Years 2010 to 2021 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.145	0.146	0	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.007	0.008	0	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.053	1.338	0	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1.86	1.903	0	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	1662.352	1647.862	0	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.016	0.016	0	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.101	0.1	0	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.036	0.036	0	0	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.028	0.028	0	0	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.093	0.092	0	0	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.009	0	0	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.012	0	0	0	0	0	0	0

Pollutant Name: Gasoline - mi/gal Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	0	16.242	0	0	0	0	0	0	0

Pollutant Name: Diesel - mi/gal Temperature: 60F Relative Humidity: 30%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	HHD DSL	HHD ALL	OBUS NCAT	OBUS CAT	OBUS DSL	OBUS ALL	UBUS NCAT	UBUS CAT	UBUS DSL
55	0	0	0	0	0	0	0	0	0	0	0	0	6.064	6.064	0	0	0	0	0	0	0

Appendix B

Operational Emissions

B. Operational Emissions Appendix

B.1 Summary of Operational Emissions - 2035

B.2 Station Operational Emissions - 2035
- B.2-1 Fresno Station Emissions Summary - 2035
- B.2-3 Kings-Tulare Regional Station Emissions Summary - 2035
- B.2-5 Bakersfield Station Emissions Summary - 2035

B.3 Regional Emissions By Activity - 2035
- B.3-1 Regional VMT and Change in Emissions - 2035
- B.3-2 Regional Aircraft Travel and Change in Emissions - 2035
- B.3-3 Regional Electricity and Change in Emissions - 2035

B.4 Maintenance Facility Operational Emissions - 2035
- B.4-1 MOWF Operational Emissions - 2035
- B.4-2 HMF Onsite Operational Emissions - 2035
- B.4-3 HMF Offsite Operational Emissions- 2035

B.5 Train Wake Fugitive Dust Emissions - 2035

B.6 URBEMIS2007 Output Files
- B.6-1 Fresno Station Operational URBEMIS Output File
- B.6-2 Kings-Tulare Regional Station Operational URBEMIS Output File
- B.6-3 Bakersfield Station Operational URBEMIS Output File

B.7 EMFAC2007 Output Files
- B.7-1 EMFAC Output File Fresno County 2009 and 2035
- B.7-5 EMFAC Output File Fresno County 2035 Busses
- B.7-7 EMFAC Output File Kings County 2009 and 2035
- B.7-11 EMFAC Output File Kings County 2035 Busses
- B.7-13 EMFAC Output File Kern County 2009 and 2035
- B.7-17 EMFAC Output File Kern County 2035 Busses
- B.7-19 EMFAC Output San Joaquin Valley APCD 2017
- B.7-20 EMFAC Output San Joaquin Valley APCD 2035

Appendix B

B.1 Summary of Operational Emissions - 2035

Summary of Operational Emissions (2035)

Activities	Unmitigated Operational Emisions (tons/ year)						
	VOC	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	CO_2
Indirect Emissions							
Changes in VMT emissions	-128	-2,595	-697	-131	-77	-13	-1,406,170
Changes in airplane emissions	-3.7	-40	-51	0.00	0.00	-3.6	-9,596
Changes in power plant emissions	5.0	52	35	7.5	6.5	4.5	138,190
Direct Emissions							
Station operation	1.4	102	9.0	5.9	3.4	0.6	59,455
HMF onsite emissions	0.56	9.0	3.5	0.13	0.12	0.47	18,563
HMF offsite mobile source emissions	0.21	12	1.6	0.70	0.40	0.07	7,094
MOWF offsite emissions	0.05	4	0.3	0.2	0.1	0.02	2,198
Fugitive dust from train operations	N/A	N/A	N/A	29	4.3	N/A	N/A
Total	**-124**	**-2,457**	**-699**	**-88**	**-62**	**-11**	**-1,190,265**

Appendix B

B.2 Station Operational Emissions - 2035

Fresno Station: Operational Emissions

Operational VMT Emissions

Emission Source	Number of Round Trips per Day	Round Trip Distance (miles)	Emissions (tpy)							
			ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Operational Year 2035										
Employees [2,3]	35	40	0.004	0.333	0.026	0.002	0.019	0.011	193	0.004
Passengers by Shuttle / Bus [4]	23	40	0.003	0.089	0.142	0.002	0.014	0.007	187	0.003
Passengers by Car [5]	4,300	40	0.519	40.639	3.131	0.242	2.353	1.349	23,627	0.433
2035 Total	**--**	**--**	**0.527**	**41.061**	**3.299**	**0.246**	**2.386**	**1.368**	**24,007**	**0.439**

Notes:

1. 400 passengers would arrive at the station via biking or walking which would not generate air emissions. (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)
2. No. of employess is based on the number of employee for the Merced station (40) ratioed by daily boarding. There were 7,600 daily boardings at Merced station and 8,400 daily boarding at Fresno station.
3. Assumed percentage of employees that carpool: 20%
4. 700 passengers travel by bus (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010). Each bus is expected to hold 30 people (Lightbody, James/AECOM. Personal communication with Andrea White/CH2M HILL. July 22, 2010).

5. 4,300 passenger arrive by vehicle (kiss and ride, vehicle, rental cars or taxis). (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

Vehicle Emission Factors

Vehicle Type	Vehicle Emission Factor (g/mile) [1]							
	ROG	CO	NOx	SOx	PM_{10} [2]	$PM_{2.5}$ [2]	CO_2	CH_4
Operational Year 2035								
Passenger	0.008	0.587	0.045	0.004	0.034	0.020	341.418	0.006
Shuttle / Bus [3]	0.009	0.238	0.377	0.005	0.037	0.019	497.421	0.008

Notes:
1. Emission factors are from EMFAC2007 (Version 2.3) for passenger vehicles (50% LDA-All and 50% of the average of LDT1-All and LDT2-All) and urban buses (UBUS-CAT) traveling at 35 mph. All buses and shuttles coming to the Fresno station in 2035 will be natural gas powered. Temperaure of 65 F (annual average for Fresno 5 NE station, Western Regional Climate Center) and RH of 41% was used.
2. Emission factors for PM_{10} and $PM_{2.5}$ include contributions from exhaust, brake-wear, and tire-wear.
3. The bus emission factors were determined using only 2023 - 2035 model years based on a 12-year usable life span for city buses (FTA, *Useful Life of Transit Buses and Vans* , April 2007).

Operational Area Source Emissions

Emission Source	Emissions (tpy) [1]						
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2
Operational Year 2035							
Natural Gas Usage	0.010	0.120	0.150	0.000	0.000	0.000	176
Landscaping	0.010	0.140	0.000	0.000	0.000	0.000	0
2035 Total	**0.020**	**0.260**	**0.150**	**0.000**	**0.000**	**0.000**	**177**

Notes:
1. Emissions calculated in URBEMIS2007 using the General Light Industry land use category.

Operational Indirect Emissions

Emission Source	Building Size (sqft)	Electricity Usage Rate (kWh/sqft/year) [1]	Emissions (tpy)		
			CO_2	CH_4	N_2O
Operational Year 2035					
Station Buildings [2]	75,000	13.55	346	0.014	0.003
2035 Total	**--**	**--**	**346**	**0.014**	**0.003**

Notes:

1. Electricity Usage Rate from Table A9-11-A (CEQA Handbook, 1993). The Station Buildings are considered 'Retail'.
2. Station building size was provided in memomrandum by Bob Lagomarsino (URS) (March 31, 2011)

Electricity Emission Factors

	Emission Factor (lb/MWh) [1, 2]		
	CO_2	CH_4	N_2O
Purchased Electricity	681.01	0.0283	0.00623

Notes:

1. Emission factors from U.S. EPA eGRID2010 Version 1.0 (2007 data) for the WECC California subregion.
2. Emission factors are not available for future years. As a result, the available emission factors were applied to 2035 operations.

2035 Total Operational Emissions

Emission Source	Emissions (tpy) [1]								
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH4	N2O
Operational VMT	0.527	41.061	3.299	0.246	2.386	1.368	24,006.987	0.439	--
Area Source	0.020	0.260	0.150	0.000	0.000	0.000	176.630	--	--
Indirect Electricity	--	--	--	--	--	--	346	0.014	0.003
Total	**0.547**	**41.321**	**3.449**	**0.246**	**2.386**	**1.368**	**24,530**	**0.453**	**0.003**

Kings/ Tulare Regional (KTR) Station: Operational Emissions

Operational VMT Emissions

Emission Source	Number of Round Trips per Day	Round Trip Distance (miles)	Emissions (tpy)							
			ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Operational Year 2035										
Employees [2,3]	14	40	0.002	0.137	0.012	0.001	0.008	0.004	70	0.001
Passengers by Shuttle / Bus [4]	10	40	0.001	0.043	0.075	0.001	0.006	0.003	80	0.001
Passengers by Car [5]	1,700	40	0.219	17.168	1.518	0.089	0.951	0.561	8,802	0.171
2035 Total	**--**	**--**	**0.222**	**17.348**	**1.605**	**0.090**	**0.964**	**0.569**	**8,952**	**0.174**

Notes:

1. 200 passengers would arrive at the station via biking or walking which would not generate air emissions. (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

2. No. of employess is based on the number of employee for the Merced station (40) ratioed by daily boarding. There were 7,600 daily boardings at Merced station and 3,300 daily boarding at the KTR station

3. Assumed percentage of employees that carpool: 20%

4. 300 passengers travel by bus (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010). Each bus is expected to hold 30 people (Lightbody, James/AECOM. Personal communication with Andrea White/CH2M HILL. July 22, 2010).

5. 1,700 passenger arrive by vehicle (kiss and ride, vehicle, rental cars or taxis). (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

Vehicle Emission Factors

Vehicle Type	Vehicle Emission Factor (g/mile) [1]							
	ROG	CO	NOx	SOx	PM_{10} [2]	$PM_{2.5}$ [2]	CO_2	CH_4
Operational Year 2035								
Passenger	0.008	0.628	0.056	0.003	0.035	0.021	321.724	0.006
Shuttle / Bus [3]	0.009	0.265	0.463	0.005	0.038	0.020	497.421	0.008

Notes:

1. Emission factors are from EMFAC2007 (Version 2.3) for passenger vehicles (50% LDA-All and 50% of the average of LDT1-All and LDT2-All) and urban buses (UBUS-CAT) traveling at 35 mph. All buses and shuttles coming to the KTR station in 2035 will be natural gas powered. Temperaure of 62 F (annual average for Hanford station, Western Regional Climate Center) and RH of 41% was used.

2. Emission factors for PM_{10} and $PM_{2.5}$ include contributions from exhaust, brake-wear, and tire-wear.

3. The bus emission factors were determined using only 2023 - 2035 model years based on a 12-year usable life span for city buses (FTA, *Useful Life of Transit Buses and Vans* , April 2007).

Operational Area Source Emissions

Emission Source	Emissions (tpy) [1]						
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2
Operational Year 2035							
Natural Gas Usage	0.010	0.120	0.150	0.000	0.000	0.000	176
Landscaping	0.010	0.140	0.000	0.000	0.000	0.000	0
2035 Total	**0.020**	**0.260**	**0.150**	**0.000**	**0.000**	**0.000**	**177**

Notes:

1. Emissions calculated in URBEMIS2007 using the General Light Industry land use category.

Operational Indirect Emissions

Emission Source	Building Size (sqft)	Electricity Usage Rate (kWh/sqft/year) [1]	Emissions (tpy)		
			CO_2	CH_4	N_2O
Operational Year 2035					
Station Buildings [2]	40,000	13.55	185	0.008	0.002
2035 Total	**--**	**--**	**185**	**0.008**	**0.002**

Notes:

1. Electricity Usage Rate from Table A9-11-A (CEQA Handbook, 1993). The Station Buildings are considered 'Retail'.
2. Station building size was provided in memomrandum by Bob Lagomarsino (URS) (March 31, 2011)

Electricity Emission Factors

	Emission Factor (lb/MWh) [1, 2]		
	CO_2	CH_4	N_2O
Purchased Electricity	681.01	0.0283	0.00623

Notes:

1. Emission factors from U.S. EPA eGRID2010 Version 1.0 (2007 data) for the WECC California subregion.
2. Emission factors are not available for future years. As a result, the available emission factors were applied to 2035 operations.

2035 Total Operational Emissions

Emission Source	Emissions (tpy) [1]								
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH4	N2O
Operational VMT	0.222	17.348	1.605	0.090	0.964	0.569	8,952.472	0.174	--
Area Source	0.020	0.260	0.150	0.000	0.000	0.000	176.630	--	--
Indirect Electricity	--	--	--	--	--	--	185	0.008	0.002
Total	**0.242**	**17.608**	**1.755**	**0.090**	**0.964**	**0.569**	**9,313.655**	**0.181**	**0.002**

Bakersfield Station: Operational Emissions

Operational VMT Emissions

Emission Source	Number of Round Trips per Day	Round Trip Distance (miles)	Emissions (tpy)							
			ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Operational Year 2035										
Employees [2,3]	38	40	0.005	0.360	0.029	0.002	0.021	0.012	211	0.004
Passengers by Shuttle / Bus [4]	30	40	0.004	0.124	0.213	0.002	0.018	0.010	240	0.004
Passengers by Car [5]	4,500	40	0.543	42.239	3.386	0.253	2.462	1.412	24,725	0.453
2035 Total	**--**	**--**	**0.552**	**42.724**	**3.627**	**0.258**	**2.502**	**1.434**	**25,177**	**0.460**

Notes:

1. 500 passengers would arrive at the station via biking or walking which would not generate air emissions. (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

2. No. of employess is based on the number of employee for the Merced station (40) ratioed by daily boarding. There were 7,600 daily boardings at Merced station and 9,200 daily boarding at the Bakersfield station

3. Assumed percentage of employees that carpool: 20%

4. 900 passengers travel by bus (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010). Each bus is expected to hold 30 people (Lightbody, James/AECOM. Personal communication with Andrea White/CH2M HILL. July 22, 2010).

5. 4,500 passenger arrive by vehicle (kiss and ride, vehicle, rental cars or taxis). (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

Vehicle Emission Factors

Vehicle Type	Vehicle Emission Factor (g/mile) [1]							
	ROG	CO	NOx	SOx	PM_{10} [2]	$PM_{2.5}$ [2]	CO_2	CH_4
Operational Year 2035								
Passenger	0.008	0.583	0.047	0.004	0.034	0.020	341.414	0.006
Shuttle / Bus [3]	0.009	0.257	0.441	0.005	0.038	0.020	497.421	0.008

Notes:

1. Emission factors are from EMFAC2007 (Version 2.3) for passenger vehicles (50% LDA-All and 50% of the average of LDT1-All and LDT2-All) and urban buses (UBUS-CAT) traveling at 35 mph. All buses and shuttles coming to the Bakersfield station in 2035 will be natural gas powered. Temperaure of 64 F (annual average for Bakersfield station, Western Regional Climate Center) and RH of 33% was used.

2. Emission factors for PM_{10} and $PM_{2.5}$ include contributions from exhaust, brake-wear, and tire-wear.

3. The bus emission factors were determined using only 2023 - 2035 model years based on a 12-year usable life span for city buses (FTA, *Useful Life of Transit Buses and Vans* , April 2007).

Operational Area Source Emissions

Emission Source	Emissions (tpy) [1]						
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2
Operational Year 2035							
Natural Gas Usage	0.010	0.120	0.150	0.000	0.000	0.000	176
Landscaping	0.010	0.140	0.000	0.000	0.000	0.000	0
2035 Total	**0.020**	**0.260**	**0.150**	**0.000**	**0.000**	**0.000**	**177**

Notes:

1. Emissions calculated in URBEMIS2007 using the General Light Industry land use category.

Operational Indirect Emissions

Emission Source	Building Size (sqft)	Electricity Usage Rate (kWh/sqft/year) [1]	Emissions (tpy)		
			CO_2	CH_4	N_2O
Operational Year 2035					
Station Buildings [2]	56,000	13.55	258	0.011	0.002
2035 Total	**--**	**--**	**258**	**0.011**	**0.002**

Notes:

1. Electricity Usage Rate from Table A9-11-A (CEQA Handbook, 1993). The Station Buildings are considered 'Retail'.
2. Station building size was provided in memomrandum by Bob Lagomarsino (URS) (March 31, 2011)

Electricity Emission Factors

	Emission Factor (lb/MWh) [1, 2]		
	CO_2	CH_4	N_2O
Purchased Electricity	681.01	0.0283	0.00623

Notes:

1. Emission factors from U.S. EPA eGRID2010 Version 1.0 (2007 data) for the WECC California subregion.
2. Emission factors are not available for future years. As a result, the available emission factors were applied to 2035 operations.

2035 Total Operational Emissions

Emission Source	Emissions (tpy) [1]								
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH4	N2O
Operational VMT	0.552	42.724	3.627	0.258	2.502	1.434	25,176.566	0.460	--
Area Source	0.020	0.260	0.150	0.000	0.000	0.000	176.630	--	--
Indirect Electricity	--	--	--	--	--	--	258	0.011	0.002
Total	**0.572**	**42.984**	**3.777**	**0.258**	**2.502**	**1.434**	**25,611.571**	**0.471**	**0.002**

Appendix B

B.3 Regional Emissions by Activity - 2035

Regional Vehicle Miles Traveled

County [1]	No Build VMT	Build VMT	Change in Emissions with HST (Tons/Day)							Change in Emissions with HST (Tons/Year) [2]						
	Total Traffic	Total Traffic	ROG	CO	NOx	PM_{10}	$PM_{2.5}$	CO_2	SO_2	ROG	CO	NOx	PM_{10}	$PM_{2.5}$	CO_2	SO_2
Fresno	27,367,949	24,364,285	-0.13	-2.65	-0.71	-0.14	-0.08	-1433	-0.01	-47.45	-967.25	-259.15	-51.10	-29.20	-523,001	-4.83
Kern	39,240,101	35,149,202	-0.18	-3.65	-0.98	-0.18	-0.11	-1971	-0.02	-65.70	-1,332.25	-357.70	-65.70	-40.15	-719,276	-6.59
Kings	3,136,720	2,663,113	-0.02	-0.41	-0.11	-0.02	-0.01	-228	0.00	-7.30	-149.65	-40.15	-7.30	-3.65	-83,359	-0.76
Tulare	10,112,011	9,648,380	-0.02	-0.4	-0.11	-0.02	-0.01	-221	0.00	-7.30	-146.00	-40.15	-7.30	-3.65	-80,534	-0.75
Regional Total	**79,856,781**	**71,824,980**	**-0.35**	**-7.11**	**-1.91**	**-0.36**	**-0.21**	**-3853**	**-0.04**	**-127.75**	**-2,595.15**	**-697.15**	**-131.40**	**-76.65**	**-1,406,170**	**-12.93**

Notes:

1. VMT analysis was provided by Cambridge Systematics
2. Annualization factor (365) was used, based on conversation between Alice Lovegrove (Parsons Brinkerhoff) and Avanti Tamhane (URS)

Regional Aircraft Travel

Origin [1]	No. of Flights	Change in Emission Burdens due to HST (Tons/Day)							Change in Emission Burdens due to HST (Tons/Year) [2]						
	Removed	ROG	CO	NOx	PM_{10}	$PM_{2.5}$	CO_2	SO_2	ROG	CO	NOx	PM_{10}	$PM_{2.5}$	CO_2	SO_2
San Joaquin	-7	-0.01	-0.11	-0.14	0	0	-26.29	-0.01	-3.65	-40.15	-51.1	0	0	-9,596	-3.63

Notes:

1. VMT analysis was done in EDMS, provided by PMT
2. Annualization factor (365) was used, based on conversation between Alice Lovegrove (Parsons Brinkerhoff) and Avanti Tamhane (URS)

Regional Electricity

Electricity required [1]		Change in Emissions due to HST (Tons/Day)							Change in Emissions due to HST (Tons/Year)						
Area	(GWH per day)	HC	CO	NO_x	PM_{10}	$PM_{2.5}$	CO_2	SO_2	HC	CO	NO_x	PM_{10}	$PM_{2.5}$	CO_2	SO_2
Statewide	8.32	0.10	1.04	0.70	0.15	0.13	2,756.50	0.09	36.50	379.60	255.50	54.75	47.45	1,006,123	32.85
Regional [2]	1.14	0.01	0.14	0.10	0.02	0.02	378.60	0.01	5.01	52.14	35.09	7.52	6.52	138,190	4.51

Notes:

1. VMT analysis was done in EDMS, provided by PMT
2. Regional analysis is based on ratioing the total power requirements for the entire HST alignment and the lengths of the entire alignment, and the Fresno to Bakersfield alignment

Total length of HST = 830 miles

Length of Fresno to Bakersfield Alignmen 114 miles

3. Annualization factor (365) was used, based on conversation between Alice Lovegrove (Parsons Brinkerhoff) and Avanti Tamhane (URS)

Appendix B

B.4 Maintenance Facility Operational Emissions - 2035

Maintenance-of-Way (MOWF) : Offsite Emissions

Data Assumptions / Inputs

	# / period	VMT (RT)	Average Speed (mph)
Employees (# / day) [1]	400	40	35
Working Days per Yr	365		

Notes:

1. The number of employees and speed for trucks and patrol vehicles is based on information from the PMT Technical Memorandum (TM 5.1), Drawing No. TM 5.1-A

Offsite MOWF Emissions

Emission Source	Emissions (tpy)							
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Passenger Vehicles	0.05	3.75	0.30	0.02	0.22	0.13	2197.81	0.04
Total Emissions	**0.05**	**3.75**	**0.30**	**0.02**	**0.22**	**0.13**	**2197.81**	**0.04**

Vehicle Emission Factors

	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Passenger Vehicles (g/mile) [1]	0.01	0.58	0.05	0.00	0.03	0.02	341.41	0.01

Notes:
1. The MOWF will be located at the Shafter-West HMF site, which is in Kern County. Emission factors are from EMFAC2007 (Version 2.3) for passenger vehicles (50% LDA-All and 50% of the average of LDT1-All and LDT2-All). Temperaure of 64 F (annual average for Bakersfield station, Western Regional Climate Center) and RH of 33% was used.

Heavy Maintenance Facility (HMF): Onsite Emissions

Switch Locomotive Horsepower and Load Factors [1]

Notch	Horsepower	Percent Horsepower in Use	Percent Time in Notch	Actual Percent Time in Use	Engine Horsepower	Equivalent Horsepower Used in Analysis	Load Factors
Idle	13	0.3%	38.0%	100.0%	7	7	0.3%
Dynamic Brake	128	3.4%	12.5%	20.2%	68	14	--
1	211	5.6%	6.5%	10.5%	112	12	--
2	457	12.1%	6.5%	10.5%	242	25	--
3	928	24.6%	5.2%	8.4%	492	41	--
4	1,084	28.7%	4.4%	7.1%	575	41	--
5	1,666	44.2%	3.8%	6.1%	883	54	--
6	2,375	62.9%	3.9%	6.3%	1,259	79	--
7	3,182	84.3%	3.0%	4.8%	1,687	82	--
8	3,773	100.0%	16.2%	26.1%	2,000	523	--
Total for Moving Locomotives	--	--	100%	100%	--	877	44%

Notes:
1. Data was prepared by Parsons Brinckerhoff in July 2011 and was provided in a spreadsheet called "CA HMF All EmissionsR.xls"

Onsite Operational Emission Factors

HMF Operations	Mode	Average Number of Equipment	Engine Horespower	Load Factor (%) [3]	Emission Factors (g/bhp-hr)						
					PM_{10}	$PM_{2.5}$	NOx	VOC	CO	SOx [6,8]	CO_2 [5]
Locomotive [1,2,4]	Idle	2	2,000	0.3%	0.03	0.03	1.3	0.08	1.83	0.006	672.19
	Moving	2	2,000	44.0%	0.03	0.03	1.3	0.08	1.83	0.006	672.19
Diesel Equipment [7,9]	--	6	200	60.0%	0.015	0.015	0.3	0.14	2.6	0.2	1756.33
Diesel Trucks [10,11]	--	20	--	--	0.596	0.514	11.03	1.45	3.56	0.01	1437.39
Total	--	--	--	--	--	--	--	--	--	--	--

Notes:
1. Number of trains operated in the yard (2), duration of operation in each mode, and number of pieces of diesel equipment (6) were provided by the project engineers
It is assumed that locomotive will be continously moving and/or idling for 2 hours over 24-hours period
2. The horse-power of the switching train locomotive is assumed to be 2,000 hp; horse-power of equipment was assumed to be 200 hp
3. Load factors for locomotives are weighted-average factors that were estimated for idling and moving modes based on in-use power at each notch settings (see Table AQ-1)
4. Locomotive will be purchased after 2015 and, therefore, will be subject to Tier 4 emission standards. PM Emission factors are most stringent Tier 4 federal standards for switch locomotives
that were introduced in May 2008 (73 FR 88 25098-25352, May 6, 2008) and are also povided in Table 4, Switch Locomotive Tier 4 Emission Standards on online source
http://dieselnet.com/standards/us/
5. CO2 emission factors for locomotives are based on the carbon content and fuel density
6. SOx emission factors for locomotives are based on the carbon content and fuel density
7. Equipment emission factors are Tier 4 federal standards for on-road (off-road) diesel engines that were introduced in May, 2004 (69 FR 38957-39273, 29 June, 2004) and are also
provided in Table 3, Tier 4 Emission Standards for engines up to 560 kw on online source
http://dieselnet.com/standards/us/
8. SO2 emission factor was obtained from "Technical Information and References", Table 2, Santa Barbara County Air Pollution Control District "Construction Equipment
Controlled Emission Factors" (such as loaders, graders, dozers, etc.). These emission factors reflect usage of low (0.05%) sulfur content in the fuel. http://www.sbcapcd.org/eng/tech/apcd-24.htm
9. Each piece of equipment was assumed to operate for 8 hours over 24-hours period; load factor for equipment was assumied to be 0.6
10. PM emission factors are for 2017 year for HDD vehicles from EMFAC2007 model that are sum of the running, tire wear, and break wear emissions and expressed in grams per mile
NOx, VOC and CO emission factors are for 2017 year for HDD vehicles from EMFAC2007 model
11. Number of delivery trucks and its operations were assumed to be 20 trucks per hour that will operate 8 hours over 24-hr time period

Onsite Operational Emissions

HMF Operations	Mode	Emissions (lbs/year)							Emissions (tpy) [1]						
		PM_{10}	$PM_{2.5}$	NOx	VOC	CO	SOx	CO_2	PM_{10}	$PM_{2.5}$	NOx	VOC	CO	SOx	CO_2
Locomotive [1,4]	Idle	0.665	0.645	28.8	1.770	40.600	0.14	12970	0.0003	0.0003	0.014	0.001	0.020	0.000	6
	Moving	84.7	82.2	3,670	226.0	5170.0	17.51	3094354	0.042	0.041	1.835	0.113	2.585	0.009	1547
Diesel Equipment [5,6,7]	--	69.5	67.4	1,390	649.0	12100.0	927.00	8133277	0.035	0.034	0.695	0.325	6.050	0.464	4067
Diesel Trucks [8,9]	--	104.0	89.6	1,920	253.0	621.0	1.74	25885746	0.052	0.045	0.960	0.127	0.311	0.001	12943
Total	--	**258.865**	**239.845**	**7,009**	**1129.770**	**17,932**	**946**	**37,126,346**	**0.129**	**0.120**	**3.504**	**0.565**	**8.966**	**0.473**	**18563**

Notes:
1. Emissions (lbs/year) were converted to Emissions (tpy) using the following conversion: 2,000 lbs/ton

Operational emissions from electricity consumption were considered negligible for the Heavy Maintenance Facility and were, therefore, not estimated.

Heavy Maintenance Facility (HMF): Offsite Emissions

Offsite Operational VMT Emissions

Emission Source [1]	Number of Round Trips per Day	Round Trip Distance (miles)	Emissions (tpy)							
			ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Operational Year 2035										
Employees [2]	1,200	40	0.145	11.288	0.797	0.068	0.657	0.377	6,593	0.121
Deliveries	20	120	0.065	0.513	0.779	0.005	0.042	0.024	501	0.003
2035 Total	**--**	**--**	**0.210**	**11.801**	**1.575**	**0.072**	**0.698**	**0.400**	**7,094**	**0.124**

Notes:
1. Onsite diesel-fueled vehicle emissions were included with the stationary source combustion calculations.
2. Assumed percentage of employees that carpool: 20%

Vehicle Emission Factors

Vehicle Type	Vehicle Emission Factor (g/mile)							
	ROG	CO	NOx	SOx	PM_{10} [2]	$PM_{2.5}$ [2]	CO_2	CH_4
Operational Year 2035								
Passenger [1]	0.008	0.585	0.041	0.004	0.034	0.020	341.399	0.006
Delivery Truck [1]	0.067	0.532	0.807	0.005	0.043	0.025	519.115	0.003

Notes:

1. Emission factors are from EMFAC2007 (Version 2.3) for passenger vehicles (50% LDA-All and 50% of the average of LDT1-All and LDT2-All) and delivery trucks (average of LHD1-DSL and LHD2-DSL) traveling at 35 mph.
2. Emission factors for PM_{10} and $PM_{2.5}$ include contributions from exhaust, brake-wear, and tire-wear.

Appendix B

B.5 Train Wake Fugitive Dust Emissions - 2035

Train Wake Dust: Fugitive Dust Emissions

Train Velocity 97.0 m/s 217 mph
98.3 m/s 220 mph
At grade length 91 miles

Wind speed Profile

$$u = (1.2319)^{0.072v-4} \times (0.4575\,d^2 - 3.5496\,d + 9.1545)$$

Where:
u: the maximum wind velocity around human body near the train (m/s).
d: human-train distance (m).

v: train running speed (m/s).

EF (per event) = k x P
k is a particle size multiplier

k = 0.5 for particles < 10 um

k = 0.075 for particles < 2.5 um

$P = 58(u^* - ut^*)^2 + 25(u^* - ut^*)$
P = 0 for u* < ut*
ut* = 0.19 m/s

u(z) = (u*/0.4) ln(z/zo)

z = 288 cm
z0 = 0.01 cm

u* = Friction Velocity for the Fastest Mile (m/s)

ut* = Threshold friction velocity (m/s), 0.5 m/s (lowest number from AP42, for coal pile)
0.19 m/s based on the lowest value for disturbed desert soil

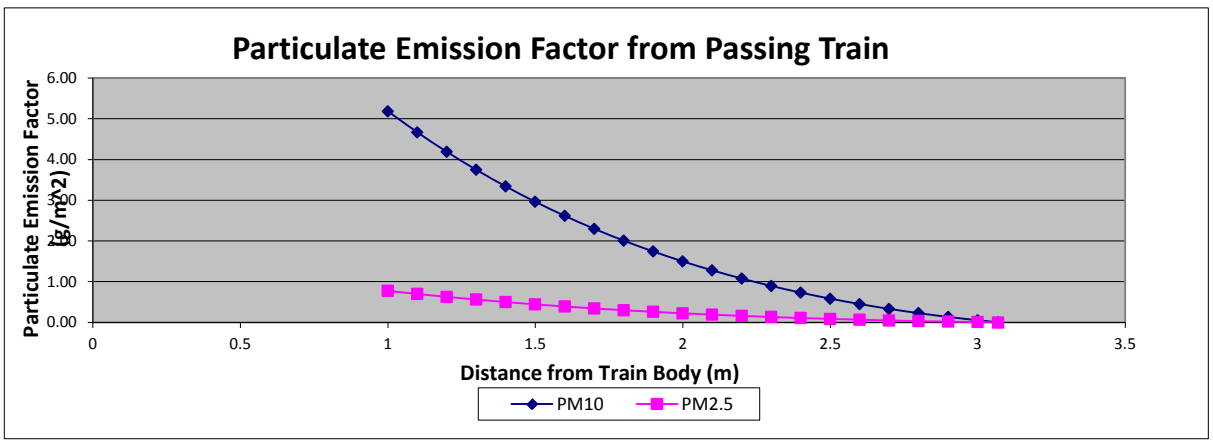
u(z) = wind speed at a certain height above the surface (cm/s)
u* = friction velocity for fastest mile. Based on disturbed desert soils (DRI Study)

z = height above the surface (288 cm), based on 1/2 of the train height (1.88 m) & embankment height (1m)
zo = surface roughness height (cm), assume 0.01 cm for the at grade right of way
0.4 is von Karman's constant, dimensionless

Input Parameters and Emissions Factors

Train-Object Distance	Wind Speed from 217 mph Train	Wind Speed from 220 mph Train	Friction Velocity	Erosion Potential	Emission Factor	
(m)	u (m/s)		u*(m/s)	P (g/m^2)	PM_{10} (g/m^2)	$PM_{2.5}$ (g/m^2)
1	11.30	11.53	0.45	10.37	5.18	0.78
1.1	10.81	11.03	0.43	9.33	4.67	0.70
1.2	10.35	10.56	0.41	8.38	4.19	0.63
1.3	9.90	10.10	0.39	7.49	3.75	0.56
1.4	9.47	9.66	0.38	6.68	3.34	0.50
1.5	9.06	9.24	0.36	5.92	2.96	0.44
1.6	8.66	8.83	0.34	5.23	2.62	0.39
1.7	8.28	8.45	0.33	4.60	2.30	0.34
1.8	7.92	8.08	0.31	4.02	2.01	0.30
1.9	7.57	7.72	0.30	3.48	1.74	0.26
2	7.24	7.39	0.29	3.00	1.50	0.22
2.1	6.93	7.07	0.28	2.56	1.28	0.19
2.2	6.63	6.77	0.26	2.16	1.08	0.16
2.3	6.36	6.48	0.25	1.79	0.90	0.13
2.4	6.09	6.22	0.24	1.46	0.73	0.11
2.5	5.85	5.97	0.23	1.17	0.58	0.09
2.6	5.62	5.74	0.22	0.90	0.45	0.07
2.7	5.41	5.53	0.22	0.67	0.33	0.05
2.8	5.22	5.33	0.21	0.46	0.23	0.03
2.9	5.05	5.15	0.20	0.27	0.14	0.02
3	4.89	4.99	0.19	0.11	0.05	0.01
3.07	4.79	4.88	0.19	0.01	0.00	0.00

Emissions		
PM_{10} Emissions	$PM_{2.5}$ Emissions	Emissions Units
3.74	0.56	grams/meter traveled
6023.03	903.45	grams/VMT (one side)
26.53	3.98	lb/miles (both sides)
28.974	4.346	Tpy (24 disturbances)



Appendix B

B.6 URBEMIS2007 Output Files

Page: 1
7/28/2010 02:49:06 PM

Urbemis 2007 Version 9.2.4

Detail Report for Annual Area Source Unmitigated Emissions (Tons/Year)

File Name: U:\5020 Air Quality\5000 Technical\5200 Emission Calculations\Building Operation Emissions\Building Operation Emissions.urb924

Project Name: HST Fresno Station Operation emissions

Project Location: San Joaquin Valley APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	**0.01**	**0.15**	**0.12**	**0.00**	**0.00**	**0.00**	**176.38**
Hearth							
Landscape	**0.01**	**0.00**	**0.14**	**0.00**	**0.00**	**0.00**	**0.25**
Consumer Products							
Architectural Coatings	0.00						
TOTALS (tons/year, unmitigated)	0.02	0.15	0.26	0.00	0.00	0.00	176.63

Area Source Changes to Defaults

Page: 1
6/8/2011 12:30:48 PM

Urbemis 2007 Version 9.2.4

Detail Report for Annual Area Source Unmitigated Emissions (Tons/Year)

File Name: T:\5020 Air Quality\5000 Technical_Operational\Building Operation Emissions\VTH Station Operation Emissions_v2.urb924

Project Name: HST KTR Station Operation emissions

Project Location: San Joaquin Valley APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	**0.01**	**0.15**	**0.12**	**0.00**	**0.00**	**0.00**	**176.38**
Hearth							
Landscape	**0.01**	**0.00**	**0.14**	**0.00**	**0.00**	**0.00**	**0.25**
Consumer Products	0.00						
Architectural Coatings	0.00						
TOTALS (tons/year, unmitigated)	0.02	0.15	0.26	0.00	0.00	0.00	176.63

Area Source Changes to Defaults

Page: 1
6/8/2011 01:32:09 PM

Urbemis 2007 Version 9.2.4

Detail Report for Annual Area Source Unmitigated Emissions (Tons/Year)

File Name: T:\5020 Air Quality\5000 Technical_Operational\Building Operation Emissions\Bakersfield Station Operation Emissions_v2.urb924

Project Name: HST Bakersfield Station Operation emissions 2009

Project Location: San Joaquin Valley APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	**0.01**	**0.15**	**0.12**	**0.00**	**0.00**	**0.00**	**176.38**
Hearth							
Landscape	**0.01**	**0.00**	**0.14**	**0.00**	**0.00**	**0.00**	**0.25**
Consumer Products	0.00						
Architectural Coatings	0.00						
TOTALS (tons/year, unmitigated)	0.02	0.15	0.26	0.00	0.00	0.00	176.63

Area Source Changes to Defaults

Appendix B

B.7 EMFAC2007 Output Files

Title : 2009 and 2035 Fresno station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:38:54
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Fresno
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	4.836	0.05	0.167	0.087	4.97	0.061	0.072	0.16	4.836	0.083	0.143	0.124	0.142	0.1145	6.354	0.095	0.069	0.155	2.81	0.235	0.139

Pollutant Name: Methane Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.296	0.025	0.008	0.027	0.301	0.026	0.003	0.03	0.296	0.034	0.007	0.036	0.033	0.03	0.353	0.041	0.003	0.044	0.218	0.033	0.006

Pollutant Name: Carbon Monoxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	53.064	2.373	0.638	2.759	53.412	2.955	0.48	3.845	51.708	3.587	0.628	3.992	3.9185	3.33875	95.291	3.5	0.466	4.373	70.474	3.28	0.647

Pollutant Name: Oxides of Nitrogen Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	4.557	0.233	1.173	0.267	4.522	0.285	1.184	0.415	4.406	0.515	1.14	0.549	0.482	0.3745	7.35	0.6	1.193	0.666	2.376	0.905	3.949

Pollutant Name: Carbon Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	427.432	310.77	361.91	311.75	427.95	385.516	346.915	384.444	428.294	385.557	356.12	385.85	385.147	348.4485	536.741	529.011	347.171	528.611	497.421	497.421	521.82

Pollutant Name: Sulfur Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.005	0.003	0.003	0.003	0.005	0.004	0.003	0.004	0.005	0.004	0.003	0.004	0.004	0.0035	0.007	0.005	0.003	0.005	0.006	0.005	0.005

Pollutant Name: PM10 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.027	0.01	0.127	0.01	0.026	0.01	0.047	0.012	0.027	0.023	0.105	0.023	0.0175	0.01375	0.027	0.021	0.045	0.021	0.015	0.006	0.038

Pollutant Name: PM10 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.012	0.012	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013

Pollutant Name: PM2.5 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.02	0.009	0.117	0.009	0.02	0.009	0.044	0.011	0.02	0.021	0.097	0.021	0.016	0.0125	0.021	0.019	0.042	0.02	0.011	0.005	0.035

Pollutant Name: PM2.5 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Title : 2009 and 2035 Fresno station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:38:54
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Fresno
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.006	0.052	0.006	0	0.006	0.054	0.006	0	0.012	0.065	0.012	0.009	0.0075	0	0.016	0.049	0.016	0	0.007	0.07

Pollutant Name: Methane Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.005	0.002	0.005	0	0.005	0.002	0.005	0	0.01	0.003	0.01	0.0075	0.00625	0	0.012	0.002	0.012	0	0.005	0.003

Pollutant Name: Carbon Monoxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.466	0.417	0.466	0	0.524	0.424	0.523	0	0.894	0.464	0.894	0.7085	0.58725	0	1.192	0.409	1.192	0	0.158	0.549

Pollutant Name: Oxides of Nitrogen Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.034	1.218	0.034	0	0.038	1.214	0.04	0	0.073	1.189	0.073	0.0565	0.04525	0	0.088	1.223	0.088	0	0.132	0.894

Pollutant Name: Carbon Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	299.861	345.72	299.862	0	378.702	345.72	378.654	0	387.294	345.72	387.294	382.974	341.418	0	526.824	345.72	526.802	0	497.421	519.009

Pollutant Name: Sulfur Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.003	0.003	0.003	0	0.004	0.003	0.004	0	0.004	0.003	0.004	0.004	0.0035	0	0.005	0.003	0.005	0	0.005	0.005

Pollutant Name: PM10 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.009	0.032	0.009	0	0.011	0.033	0.011	0	0.023	0.041	0.023	0.017	0.013	0	0.024	0.03	0.024	0	0.007	0.019

Pollutant Name: PM10 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.012	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013	0.013

Pollutant Name: PM2.5 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.009	0.029	0.009	0	0.01	0.031	0.01	0	0.022	0.038	0.022	0.016	0.0125	0	0.022	0.028	0.022	0	0.006	0.017

Pollutant Name: PM2.5 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.003	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005	0.005

Title : 2035 Fresno station - Busses; Shuttles
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:40:12
Scen Year: 2035 -- All model years in the range 2023 to 2035 selected
Season : Annual
Area : Fresno
****
Year: 2035 -- Model Years 2023 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.022	0.014	0	0	0	0	0

Pollutant Name: Methane Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	0.001	0.005	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.238	0.609	0.379	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.377	0.484	0.417	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	497.421	2151.028	1126.019	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.021	0.011	0	0	0	0	0

Pollutant Name: PM10 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.026	0.017	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.008	0.01	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.013	0.013	0.013	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.011	0.024	0.016	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0.002	0.003	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.005	0.005	0	0	0	0	0

Title : 2009 and 2035 KTR station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:40:43
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Kings
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Kings County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	5.195	0.078	0.153	0.12	5.275	0.129	0.072	0.241	5.156	0.123	0.128	0.172	0.146	0.133	6.574	0.108	0.064	0.157	2.906	0.107	0.136	0.124

Pollutant Name: Methane Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0.309	0.03	0.007	0.032	0.312	0.038	0.003	0.042	0.308	0.038	0.006	0.04	0.036	0.034	0.361	0.04	0.003	0.042	0.222	0.018	0.006	0.015

Pollutant Name: Carbon Monoxide Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	56.834	2.942	0.619	3.377	57.287	4.683	0.479	5.591	56.311	4.247	0.577	4.751	4.064	3.7205	108.008	3.486	0.459	4.269	73.591	1.475	0.639	1.452

Pollutant Name: Oxides of Nitrogen Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	4.775	0.32	1.178	0.358	4.69	0.527	1.195	0.665	4.635	0.686	1.183	0.727	0.5425	0.45025	7.719	0.65	1.202	0.706	2.454	0.507	3.874	1.499

Pollutant Name: Carbon Dioxide Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	427.432	310.854	359.443	311.898	428.198	385.022	346.85	383.46	428.354	385.761	356.1	386.09	348.994	330.446	524.845	528.463	346.833	527.777	497.421	497.421	520.441	504.164

Pollutant Name: Sulfur Dioxide Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0.005	0.003	0.003	0.003	0.005	0.004	0.003	0.004	0.005	0.004	0.003	0.004	0.0035	0.00325	0.007	0.005	0.003	0.005	0.006	0.005	0.005	0.005

Pollutant Name: PM10 Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0.027	0.011	0.115	0.011	0.026	0.012	0.047	0.015	0.027	0.024	0.095	0.024	0.0175	0.01425	0.027	0.02	0.043	0.021	0.015	0.004	0.036	0.014

Pollutant Name: PM10 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1

MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012
Pollutant Name: PM10 - Brake Wear				Temperature: 62F				Relative Humidity: 41%														
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013
Pollutant Name: PM2.5				Temperature: 62F				Relative Humidity: 41%														
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0.02	0.01	0.106	0.01	0.02	0.011	0.043	0.014	0.02	0.022	0.087	0.022	0.016	0.013	0.021	0.019	0.039	0.019	0.011	0.004	0.033	0.013
Pollutant Name: PM2.5 - Tire Wear				Temperature: 62F				Relative Humidity: 41%														
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
Pollutant Name: PM2.5 - Brake Wear				Temperature: 62F				Relative Humidity: 41%														
Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Title : 2009 and 2035 KTR station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:40:43
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Kings
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Kings County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.006	0.052	0.006	0	0.008	0.053	0.008	0	0.014	0.055	0.014	0.01	0.008	0	0.017	0.049	0.017	0	0.006	0.073	0.019

Pollutant Name: Methane Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.005	0.002	0.005	0	0.006	0.002	0.006	0	0.01	0.003	0.01	0.0075	0.00625	0	0.012	0.002	0.012	0	0.004	0.003	0.004

Pollutant Name: Carbon Monoxide Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.507	0.417	0.507	0	0.593	0.424	0.592	0	0.989	0.429	0.989	0.748	0.6275	0	1.263	0.408	1.263	0	0.128	0.583	0.216

Pollutant Name: Oxides of Nitrogen Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.042	1.229	0.042	0	0.05	1.225	0.053	0	0.096	1.222	0.096	0.069	0.0555	0	0.109	1.235	0.109	0	0.12	0.911	0.272

Pollutant Name: Carbon Dioxide Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	299.868	345.72	299.869	0	378.757	345.72	378.68	0	387.289	345.72	387.287	343.578	321.7235	0	526.824	345.72	526.789	0	497.421	519.005	501.587

Pollutant Name: Sulfur Dioxide Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.003	0.003	0.003	0	0.004	0.003	0.004	0	0.004	0.003	0.004	0.0035	0.00325	0	0.005	0.003	0.005	0	0.005	0.005	0.005

Pollutant Name: PM10 Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.01	0.032	0.01	0	0.011	0.033	0.011	0	0.025	0.034	0.025	0.0175	0.01375	0	0.026	0.03	0.026	0	0.007	0.02	0.01

Pollutant Name: PM10 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.012	0.012	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013	0.013	0.013

Pollutant Name: PM2.5 Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.01	0.029	0.01	0	0.011	0.031	0.011	0	0.024	0.032	0.024	0.017	0.0135	0	0.024	0.028	0.024	0	0.007	0.018	0.009

Pollutant Name: PM2.5 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.003	0.003	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1	LHD1	LHD1	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
35	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005	0.005	0.005

Title : 2035 Kings station - Busses; Shuttles
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:42:58
Scen Year: 2035 -- All model years in the range 2023 to 2035 selected
Season : Annual
Area : Kings
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Year: 2035 -- Model Years 2023 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Kings County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.022	0.014	0	0	0	0	0

Pollutant Name: Methane Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.008	0.001	0.005	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.265	0.609	0.396	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.463	0.489	0.473	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	497.421	2151.028	1127.372	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.021	0.011	0	0	0	0	0

Pollutant Name: PM10 Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.013	0.026	0.018	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	UBUS	UBUS	UBUS	UBUS	MCY	MCY	MCY	MCY	SBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.008	0.01	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	UBUS	UBUS	UBUS	UBUS	MCY	MCY	MCY	MCY	SBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.013	0.013	0.013	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	UBUS	UBUS	UBUS	UBUS	MCY	MCY	MCY	MCY	SBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.024	0.017	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	UBUS	UBUS	UBUS	UBUS	MCY	MCY	MCY	MCY	SBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0.002	0.003	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	UBUS	UBUS	UBUS	UBUS	MCY	MCY	MCY	MCY	SBUS
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.005	0.005	0	0	0	0	0

Title : 2009 and 2035 Bakersfield station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 12:47:59
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Kern (SJV)
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	4.92	0.048	0.156	0.085	5.069	0.049	0.066	0.134	4.915	0.071	0.107	0.101	0.1175	0.10125	6.586	0.087	0.064	0.136	2.851

Pollutant Name: Methane Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0.299	0.024	0.007	0.026	0.305	0.023	0.003	0.026	0.299	0.03	0.005	0.032	0.029	0.0275	0.362	0.039	0.003	0.041	0.22

Pollutant Name: Carbon Monoxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	54.062	2.35	0.619	2.744	54.56	2.592	0.46	3.328	53.048	3.212	0.534	3.519	3.4235	3.08375	97.079	3.304	0.448	3.996	71.626

Pollutant Name: Oxides of Nitrogen Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	4.753	0.238	1.197	0.274	4.735	0.256	1.219	0.389	4.621	0.476	1.207	0.504	0.4465	0.36025	7.649	0.585	1.228	0.64	2.477

Pollutant Name: Carbon Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	427.431	310.527	361.563	311.505	427.83	385.733	346.61	384.053	428.233	385.816	352.513	386.003	385.028	348.2665	537.939	528.719	347.233	528.167	497.421

Pollutant Name: Sulfur Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0.005	0.003	0.003	0.003	0.005	0.004	0.003	0.004	0.005	0.004	0.003	0.004	0.004	0.0035	0.007	0.005	0.003	0.005	0.006

Pollutant Name: PM10 Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0.027	0.01	0.12	0.01	0.026	0.01	0.043	0.012	0.027	0.022	0.076	0.022	0.017	0.0135	0.027	0.021	0.042	0.021	0.015

Pollutant Name: PM10 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013

Pollutant Name: PM2.5 Temperature: 64F Relative Humidity: 33%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0.02	0.009	0.11	0.009	0.02	0.009	0.039	0.011	0.02	0.02	0.07	0.02	0.0155	0.01225	0.021	0.02	0.039	0.02	0.011

Pollutant Name: PM2.5 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Title : 2009 and 2035 Bakersfield station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 12:47:59
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Kern (SJV)
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.006	0.05	0.006	0	0.006	0.052	0.006	0	0.012	0.056	0.012	0.009	0.0075	0	0.015	0.049	0.015	0

Pollutant Name: Methane Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.005	0.002	0.005	0	0.005	0.002	0.005	0	0.01	0.003	0.01	0.0075	0.00625	0	0.012	0.002	0.012	0

Pollutant Name: Carbon Monoxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.469	0.411	0.469	0	0.516	0.419	0.516	0	0.879	0.432	0.879	0.6975	0.58325	0	1.201	0.409	1.201	0

Pollutant Name: Oxides of Nitrogen Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.036	1.246	0.036	0	0.039	1.241	0.041	0	0.074	1.233	0.074	0.0575	0.04675	0	0.091	1.247	0.091	0

Pollutant Name: Carbon Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	299.866	345.72	299.866	0	378.677	345.72	378.619	0	387.306	345.72	387.305	382.962	341.414	0	526.827	345.72	526.798	0

Pollutant Name: Sulfur Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.003	0.003	0.003	0	0.004	0.003	0.004	0	0.004	0.003	0.004	0.004	0.0035	0	0.005	0.003	0.005	0

Pollutant Name: PM10 Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.009	0.031	0.009	0	0.011	0.032	0.011	0	0.023	0.035	0.023	0.017	0.013	0	0.025	0.03	0.025	0

Pollutant Name: PM10 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0.008	0.008	0	0.008	0.008	0.008	0

Pollutant Name: PM10 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.013	0.013	0	0.013	0.013	0.013	0

Pollutant Name: PM2.5 Temperature: 64F Relative Humidity: 33%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0	0.009	0.028	0.009	0	0.01	0.03	0.01	0	0.022	0.032	0.022	0.016	0.0125	0	0.023	0.028	0.023	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0.002	0.002	0	0.002	0.002	0.002	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0.005	0.005	0	0.005	0.005	0.005	0

Title : 2035 Bakersfield station - Busses; Shuttles
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 12:50:36
Scen Year: 2035 -- All model years in the range 2023 to 2035 selected
Season : Annual
Area : Kern (SJV)
****
Year: 2035 -- Model Years 2023 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.022	0.014	0	0	0	0	0	0

Pollutant Name: Methane Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.008	0.001	0.005	0	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.257	0.609	0.39	0	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.441	0.494	0.461	0	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	497.421	2151.028	1124.79	0	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.021	0.011	0	0	0	0	0	0

Pollutant Name: PM10 Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.013	0.026	0.018	0	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.008	0.01	0	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.013	0.013	0.013	0	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.024	0.016	0	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0.002	0.003	0	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT	SBUS CAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.005	0.005	0	0	0	0	0	0

C.3-3 Emission Factors for HMF Onsite Vehicles for 2035 Operational Emissions

Title : SJVAB Annual (ROG and PM10)
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/04/12 13:23:40
Scen Year: 2017 -- All model years in the range 1973 to 2017 selected
Season : Annual
Area : San Joaquin Valley Unified APCD
****
Year: 2017 -- Model Years 1973 to 2017 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average District Average San Joaquin Valley Unified APCD

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	11.603	0.367	0.312	0.365	11.603	0.247	0.359	0.306	17.453	0.767	0.369	0.458	61.617	4.501	3.147	3.166	18.324	0.619	2.643	2.329

Pollutant Name: Carbon Monoxide Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	214.511	3.595	2.197	3.484	214.511	2.797	2.148	2.585	321.766	8.721	4.551	5.677	1596.869	95.999	6.627	7.789	375.202	9.091	6.095	6.7

Pollutant Name: Oxides of Nitrogen Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	1.55	0.276	3.763	1.098	1.55	0.262	3.967	2.029	2.325	0.701	4.917	4.234	17.107	4.604	12.413	12.318	3.16	0.559	10.989	9.341

Pollutant Name: Carbon Dioxide Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	1672.267	1672.267	519.874	1401.022	1672.267	1672.267	524.214	1125.064	1672.267	1672.267	1505	1532.197	1672.267	1672.267	3165.447	3147.072	1672.267	1672.267	2800.796	2622.425

Pollutant Name: Sulfur Dioxide Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.02	0.016	0.005	0.013	0.02	0.016	0.005	0.011	0.021	0.016	0.014	0.015	0.042	0.018	0.03	0.03	0.022	0.016	0.027	0.025

Pollutant Name: PM10 Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.066	0.029	0.075	0.04	0.066	0.027	0.078	0.051	0.066	0.034	0.423	0.36	0.066	0.059	0.585	0.578	0.066	0.031	0.532	0.453

Pollutant Name: PM10 - Tire Wear Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.036	0.036	0.012	0.012	0.032	0.029

Pollutant Name: PM10 - Brake Wear Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.028	0.028	0.028	0.028	0.014	0.013	0.025	0.023

Pollutant Name: PM2.5 Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.05	0.027	0.069	0.037	0.05	0.025	0.072	0.047	0.05	0.032	0.389	0.331	0.05	0.055	0.538	0.532	0.05	0.028	0.49	0.417

Pollutant Name: PM2.5 - Tire Wear Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.009	0.009	0.003	0.003	0.008	0.007

Pollutant Name: PM2.5 - Brake Wear Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.012	0.012	0.012	0.012	0.006	0.006	0.011	0.01

Title : HMF offsite
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/13 10:08:46
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : San Joaquin Valley
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.006	0.05	0.006	0	0.006	0.053	0.006	0	0.012	0.06	0.012	0.009	0.0075	0.067	0	0.011	0.101	0.085	0	0.428

Pollutant Name: Methane Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.005	0.002	0.005	0	0.005	0.002	0.005	0	0.01	0.003	0.01	0.0075	0.00625	0.003	0	0.007	0.005	0.005	0	0.106

Pollutant Name: Carbon Monoxide Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.467	0.413	0.467	0	0.521	0.423	0.521	0	0.883	0.445	0.883	0.702	0.5845	0.5315	0	0.217	1.124	0.962	0	26.935

Pollutant Name: Oxides of Nitrogen Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.031	1.172	0.031	0	0.035	1.166	0.037	0	0.066	1.154	0.066	0.0515	0.04125	0.8065	0	0.15	0.904	0.769	0	4.61

Pollutant Name: Carbon Dioxide Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	299.856	345.72	299.857	0	378.641	345.72	378.583	0	387.301	345.72	387.3	382.9415	341.3993	519.1145	0	497.421	1505	1324.82	0	497.421

Pollutant Name: Sulfur Dioxide Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.003	0.003	0.003	0	0.004	0.003	0.004	0	0.004	0.003	0.004	0.004	0.0035	0.005	0	0.005	0.014	0.013	0	0.005

Pollutant Name: PM10 Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.009	0.031	0.009	0	0.01	0.033	0.011	0	0.023	0.037	0.023	0.017	0.013	0.018	0	0.009	0.118	0.099	0	0.014

Pollutant Name: PM10 - Tire Wear Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT ALL	LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0.008	0.008	0.008	0.012	0	0.012	0.012	0.012	0	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT ALL	LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.028

Pollutant Name: PM2.5 Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT ALL	LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.009	0.029	0.009	0	0.01	0.03	0.01	0	0.022	0.034	0.022	0.016	0.0125	0.0165		0	0.008	0.109	0.091	0	0.013

Pollutant Name: PM2.5 - Tire Wear Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT ALL	LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0	0.003	0.003	0.003	0	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT ALL	LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT	HHD CAT
35	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.012

Appendix C

Microscale CO Analysis

C. Microscale CO Analysis Appendix

C.1 Summary of Microscale CO Analysis

C.1-1 Fresno Station Intersections Modeled CO Concentrations
C.1-2 Bakersfield Station Intersections Modeled CO Concentrations
C.1-3 Kings-Tulare Regional Station Modeled Intersections CO Concentrations
C.1-4 Fresno HMF Modeled Intersections CO Concentrations
C.1-5 Wasco HMF Modeled Intersections CO Concentrations

C.2 Fresno Station Intersection CALINE Inputs

C.2-1 Fresno Station Van Ness St./Inyo St. CALINE Inputs
C.2-2 Fresno Station H St./Tulare St. CALINE Inputs
C.2-3 Fresno Station Van Ness Ave./Fresno St. CALINE Inputs

C.3 Bakersfield Station Intersection CALINE Inputs

C.3-1 Bakersfield Station Union Ave./California Ave. CALINE Inputs
C.3-2 Bakersfield Station Oak St./Truxton Ave. CALINE Inputs
C.3-3 Bakersfield Station Oak St./SR 178 CALINE Inputs

C.4 Kings Tulare Regional Station Intersection CALINE Inputs

C.4-1 Kings Tulare Regional Station 8th Ave./SR 198 WB Ramps CALINE Inputs
C.4-2 Kings Tulare Regional Station 9th Ave./SR 198 EB Ramps CALINE Inputs
C.4-3 Kings Tulare Regional Station SR 43/Lacey Blvd. CALINE Inputs

C.5 Fresno HMF Intersection CALINE Inputs

C.5-1 Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM CALINE Inputs
C.5-2 Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM CALINE Inputs
C.5-3 Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM CALINE Inputs
C.5-4 Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM CALINE Inputs

C.6 Wacso HMF Intersection CALINE Inputs

C.6-1 Wasco HMF SR 43/Wasco Ave. AM CALINE Inputs
C.6-2 Wasco HMF SR 43/Wasco Ave. PM CALINE Inputs
C.6-3 Wasco HMF Wasco Ave.-J St./6th St. PM CALINE Inputs

C.7 Station Parking Lot CALINE Inputs

C.7-1 Bakersfield North Option Parking Lot CALINE Inputs
C.7-6 Bakersfield South Option Parking Lot CALINE Inputs
C.7-11 Fresno Mariposa Option Parking Lot CALINE Inputs
C.7-16 Fresno Kern Option Parking Lot CALINE Inputs
C.7-21 Kings Tulare Regional Option Parking Lot CALINE Inputs

C.8 EMFAC2007 Output Files

C.8-1 Fresno County EMFAC2007 2025 and 2035 Output File
C.8-3 Kern County EMFAC2007 2025 and 2035 Output File
C.8-5 Kings County EMFAC2007 2025 and 2035 Output File
C.8-7 Fresno County EMFAC2007 2009 and 2035 Output File
C.8-8 Kern County EMFAC2007 2009 and 2035 Output File

C.9 Fresno Station Intersection CALINE Outputs

C.9-1 Fresno Station Van Ness St./Inyo St. 2009 Existing CALINE Output
C.9-5 Fresno Station Van Ness St./Inyo St. 2009 Existing Plus Project CALINE Output

C.9-9 Fresno Station Van Ness St./Inyo St. 2035 No Build CALINE Output
C.9-13 Fresno Station Van Ness St./Inyo St. 2035 Build CALINE Output
C.9-17 Fresno Station H St./Tulare St. 2009 Existing CALINE Output
C.9-21 Fresno Station H St./Tulare St. 2009 Existing Plus Project CALINE Output
C.9-25 Fresno Station H St./Tulare St. 2035 No Build CALINE Output
C.9-29 Fresno Station H St./Tulare St. 2035 Build CALINE Output
C.9-33 Fresno Station Van Ness Ave./Fresno St. 2009 Existing CALINE Output
C.9-37 Fresno Station Van Ness Ave./Fresno St. 2009 Existing Plus Project CALINE Output
C.9-41 Fresno Station Van Ness Ave./Fresno St. 2035 No Build CALINE Output
C.9-45 Fresno Station Van Ness Ave./Fresno St. 2035 Build CALINE Output

C.10 Bakersfield Station Intersection CALINE Outputs
C.10-1 Bakersfield Station Union Ave./California Ave. 2009 Existing CALINE Output
C.10-5 Bakersfield Station Union Ave./California Ave. 2009 Existing Plus Project CALINE Output
C.10-9 Bakersfield Station Union Ave./California Ave. 2035 No Build CALINE Output
C.10-13 Bakersfield Station Union Ave./California Ave. 2035 Build CALINE Output
C.10-17 Bakersfield Station Oak St./Truxton Ave. 2009 Existing CALINE Output
C.10-21 Bakersfield Station Oak St./Truxton Ave. 2009 Existing Plus Project CALINE Output
C.10-25 Bakersfield Station Oak St./Truxton Ave. 2035 No Build CALINE Output
C.10-29 Bakersfield Station Oak St./Truxton Ave. 2035 Build CALINE Output
C.10-33 Bakersfield Station Oak St./SR 178 2009 Existing CALINE Output
C.10-37 Bakersfield Station Oak St./SR 178 2009 Existing Plus Project CALINE Output
C.10-41 Bakersfield Station Oak St./SR 178 2035 No Build CALINE Output
C.10-45 Bakersfield Station Oak St./SR 178 2035 Build CALINE Output

C.11 Kings Tulare Regional (KTR) Station Intersection CALINE Outputs
C.11-1 KTR Station 8th Ave./SR 198 WB Ramps 2009 Existing CALINE Output
C.11-4 KTR Station 8th Ave./SR 198 WB Ramps 2009 Existing Plus Project CALINE Output
C.11-7 KTR Station 8th Ave./SR 198 WB Ramps 2035 No Build CALINE Output
C.11-10 KTR Station 8th Ave./SR 198 WB Ramps 2035 Build CALINE Output
C.11-13 KTR Station 9th Ave./SR 198 EB Ramps 2009 Existing CALINE Output
C.11-16 KTR Station 9th Ave./SR 198 EB Ramps 2009 Existing Plus Project CALINE Output
C.11-19 KTR Station 9th Ave./SR 198 EB Ramps 2035 No Build CALINE Output
C.11-22 KTR Station 9th Ave./SR 198 EB Ramps 2035 Build CALINE Output
C.11-25 KTR Station SR 43/Lacey Blvd. 2009 Existing CALINE Output
C.11-29 KTR Station SR 43/Lacey Blvd. 2009 Existing Plus Project CALINE Output
C.11-33 KTR Station SR 43/Lacey Blvd. 2035 No Build CALINE Output
C.11-37 KTR Station SR 43/Lacey Blvd. 2035 Build CALINE Output

C.12 Fresno HMF Intersection CALINE Outputs
C.12-1 Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2009 Existing CALINE Output
C.12-5 Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2009 Existing Plus Project CALINE Output
C.12-9 Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2035 No Build CALINE Output
C.12-13 Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2035 Build CALINE Output
C.12-17 Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2009 Existing CALINE Output
C.12-21 Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2009 Existing Plus Project CALINE Output
C.12-25 Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2035 No Build CALINE Output
C.12-29 Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2035 Build CALINE Output
C.12-33 Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2009 Existing CALINE Output
C.12-36 Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2009 Existing Plus Project CALINE Output

C.12-39 Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2035 No Build CALINE Output
C.12-42 Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2035 Build CALINE Output
C.12-45 Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2009 Existing CALINE Output
C.12-48 Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2009 Existing Plus Project CALINE Output
C.12-51 Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2035 No Build CALINE Output
C.12-54 Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2035 Build CALINE Output

C.13 Wasco HMF Intersection CALINE Outputs
C.13-1 Wasco HMF SR 43/Wasco Ave. AM 2009 Existing CALINE Output
C.13-5 Wasco HMF SR 43/Wasco Ave. AM 2009 Existing Plus Project CALINE Output
C.13-9 Wasco HMF SR 43/Wasco Ave. AM 2035 No Build CALINE Output
C.13-13 Wasco HMF SR 43/Wasco Ave. AM 2035 Build CALINE Output
C.13-17 Wasco HMF SR 43/Wasco Ave. PM 2009 Existing CALINE Output
C.13-21 Wasco HMF SR 43/Wasco Ave. PM 2009 Existing Plus Project CALINE Output
C.13-25 Wasco HMF SR 43/Wasco Ave. PM 2035 No Build CALINE Output
C.13-29 Wasco HMF SR 43/Wasco Ave. PM 2035 Build CALINE Output
C.13-33 Wasco HMF Wasco Ave.-J St./6th St. PM 2009 Existing CALINE Output
C.13-37 Wasco HMF Wasco Ave.-J St./6th St. PM 2009 Existing Plus Project CALINE Output
C.13-41 Wasco HMF Wasco Ave.-J St./6th St. PM 2035 No Build CALINE Output
C.13-45 Wasco HMF Wasco Ave.-J St./6th St. PM 2035 Build CALINE Output

C.14 Station Parking Lot CALINE Outputs
C.14-1 Bakersfield North Option Parking Lot CALINE Output
C.14-5 Bakersfield South Option Parking Lot CALINE Output
C.14-9 Fresno Mariposa Option Parking Lot CALINE Output
C.14-14 Fresno Kern Option Parking Lot CALINE Output
C.14-19 Kings Tulare Regional Option Parking Lot CALINE Output

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C.15-7 Summary of Fresno Station Signalized Intersection Emission Factors

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C.16-1 Kern County EMFAC Emission Factor Summary 2009 and 2035
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Appendix C

C.1 Summary of Microscale CO Analysis

Intersection CO Analysis - Fresno

Model: Evening - Central Valley (Wind Speed :1.0 m/s, stdev 5 deg, Stability Class 7, 31+5 F - 2.22 C)

Fresno Caline4 Model Input and Result			
Intersection	**Van Ness St./ Inyo St.**	**H St./Tulare St.**	**Van Ness Ave./Fresno St.**
AM/PM	PM	PM	PM
No Build LOS	B	D	E
Build LOS	B	E	F
Existing (vph)	841	961	1809
Existing + Project (vph)	976	1230	2022
Future No Build (vph)	2246	4516	3652
Future Plus Project (vph)	2381	4785	3865
Project Impact Ratio	6.01%	5.96%	5.83%
Caline Result - Existing (ppm)	0.4	0.4	0.6
Caline Result - Existing + Proj (ppm)	0.4	0.5	0.7
Caline Result - No Build (ppm)	0.2	0.3	0.3
Caline Result - Build (ppm)	0.2	0.3	0.4
Background CO 1hr (ppm)	3.1	3.1	3.1
Background CO 8hr (ppm)	2.34	2.34	2.34

Note: Background CO was taken from Fresno 1st Street station (second highest data from the last three years)

Intersection CO Analysis - Bakersfield

Model: Evening - Central Valley (Wind Speed :1.0 m/s, stdev 5 deg, Stability Class 7, 41+5 F - 5 C)

Bakersfield Caline4 Model Input and Result			
Intersection	**Union Ave./ California Ave.**	**Oak St./ Truxton Ave.**	**Oak St./SR 178**
AM/PM	PM	PM	PM
No Build LOS	D	E	F
Build LOS	D	E	F
Existing (vph)	4267	5633	5214
Existing + Project (vph)	4501	5676	5230
Future No Build (vph)	6720	7495	9374
Future Plus Project (vph)	6954	7528	9390
Project Impact Ratio	3.48%	0.44%	0.17%
Caline Result - Existing (ppm)	1.5	3.2	2
Caline Result - Existing + Proj (ppm)	1.8	3.2	2
Caline Result - No Build (ppm)	0.5	0.6	0.7
Caline Result - Build (ppm)	0.6	0.6	0.7
Background CO 1hr (ppm)	2.8	2.8	2.8
Background CO 8hr (ppm)	2.13	2.13	2.13

Note: Background CO was taken from Bakersfield Golden State HWY Station (second highest data from the last three years, 2007-2009)

Intersection CO Analysis - Kings-Tulare

Running Exhaust Emission Factors (EF)

Speed (mph)	2009 Emissions (g/mile)	2035 Emissions (g/mile)
27	6.004	1.185

Emfac 2007: Kings Co. Winter, 2009 (35 F, 41% RH)
Emfac 2007: Kings Co. Winter, 2035 (35 F, 41% RH)
Model: Evening - Central Valley (Wind Speed :1.0 m/s, stdev 5 deg, Stability Class 7, 35+5 F - 4.44 C)

Kings-Tulare Caline4 Model Input and Result			
Intersection	**8th Ave./SR 198 WB Ramps**	**9th Ave./SR 198 EB Ramps**	**SR 43/Lacey Blvd.**
AM/PM	PM	PM	AM
No Build LOS	B	C	E
Build LOS	B	C	F
Existing (vph)	993	922	1002
Existing + Project (vph)	1204	1038	1237
Future No Build (vph)	1384	1591	1083
Future Plus Project (vph)	1595	1707	1318
Project Impact Ratio	15.25%	7.29%	21.70%
Caline Result - Existing (ppm)	0.2	0.2	0.3
Caline Result - Existing + Proj (ppm)	0.2	0.2	0.3
Caline Result - No Build (ppm)	0	0	0
Caline Result - Build (ppm)	0	0	0
Background CO 1hr (ppm)	3.5	3.5	3.5
Background CO 8hr (ppm)	2.14	2.14	2.14

Note: Background CO was taken from Fresno Drummond Station (second highest data from the last three years, 2007-2009)

Intersection CO Analysis - Fresno HMF

Running Exhaust Emission Factors (EF)

Speed (mph)	2009 Emissions (g/mile)	2035 Emissions (g/mile)
27	5.058	1.01

Emfac 2007: Fresno Co. (SJV) Winter, 2009 (41 F, 33% RH)
Emfac 2007: Fresno Co. (SJV) Winter, 2035 (41 F, 33% RH)
Model: Evening - Central Valley (Wind Speed :1.0 m/s, stdev 5 deg, Stability Class 7, 5 C)

Fresno HMF Caline4 Model Input and Result				
Intersection	**SR 99 SB Off-Ramp/ E. American Ave.**	**SR 99 SB Off-Ramp/ E. American Ave.**	**SR 99 NB On-Ramp/ E. American Ave.**	**SR 99 NB On-Ramp/ E. American Ave.**
AM/PM	AM	PM	AM	PM
No Build LOS	B	D	C	
Build LOS	B	E	C	
Existing (vph)	409	362	97	234
Existing + Project (vph)	536	489	200	337
Future No Build (vph)	975	1,399	108	414
Future Plus Project (vph)	1,102	1,526	211	517
Project Impact Ratio	13.03%	9.08%	95.37%	24.88%
Caline Result - Existing (ppm)	0.1	0.1	0.0	0.0
Caline Result - Existing + Proj (ppm)	0.1	0.2	0.0	0.1
Caline Result - No Build (ppm)	0.0	0.0	0.0	0.0
Caline Result - Build (ppm)	0.0	0.0	0.0	0.0
Background CO 1hr (ppm)	3.5	3.5	3.5	3.5
Background CO 8hr (ppm)	2.14	2.14	2.14	2.14

Note: Background CO was taken from Fresno Drummond Station (second highest data from the last three years, 2007-2009)

Intersection CO Analysis - Wasco HMF

Running Exhaust Emission Factors (EF)

Speed (mph)	2009 Emissions (g/mile)	2035 Emissions (g/mile)
27	5.16	1.17

Emfac 2007: Kern Co. (SJV) Winter, 2009 (41 F, 33% RH)
Emfac 2007: Kern Co. (SJV) Winter, 2035 (41 F, 33% RH)
Model: Evening - Central Valley (Wind Speed :1.0 m/s, stdev 5 deg, Stability Class 7, 5 C)

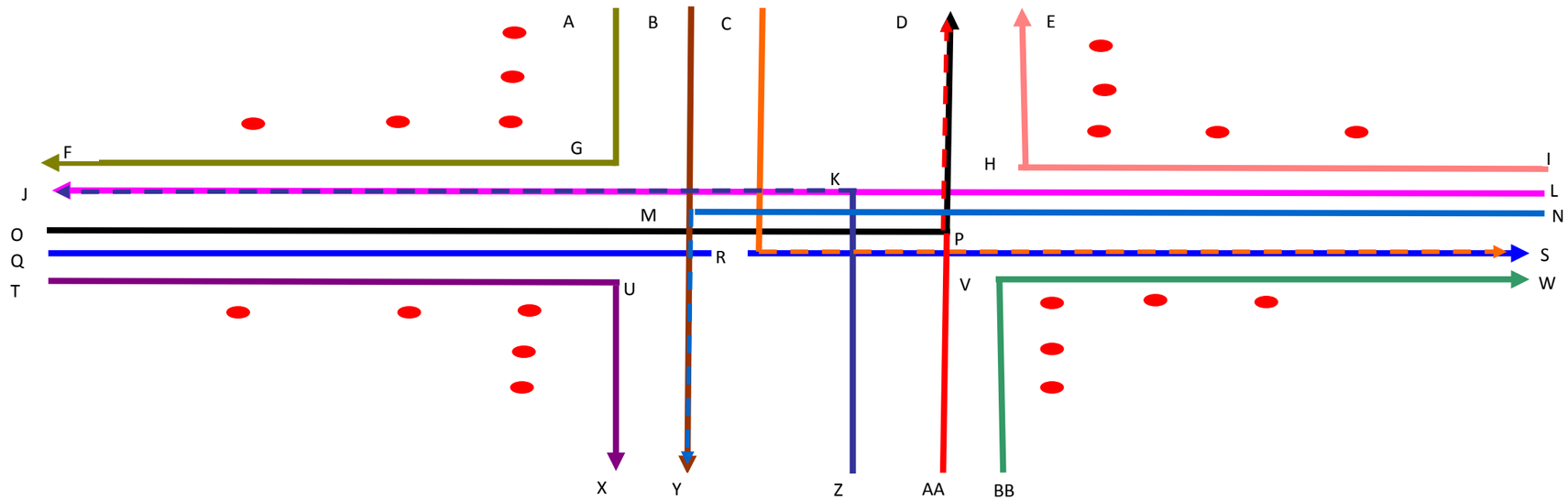
Wasco Caline4 Model Input and Result			
Intersection	**SR 43/Wasco Ave.**	**SR 43/Wasco Ave.**	**Wasco Ave.-J St./6th St.**
AM/PM	AM	PM	PM
No Build LOS	B	D	C
Build LOS	B	E	C
Existing (vph)	619	787	252
Existing + Project (vph)	820	988	294
Future No Build (vph)	1,839	2,272	783
Future Plus Project (vph)	2,040	2,473	825
Project Impact Ratio	10.93%	8.85%	5.36%
Caline Result - Existing (ppm)	0.0	0.1	0.0
Caline Result - Existing + Proj (ppm)	0.1	0.1	0.0
Caline Result - No Build (ppm)	0.0	0.0	0.0
Caline Result - Build (ppm)	0.0	0.0	0.0
Background CO 1hr (ppm)	2.8	2.8	2.8
Background CO 8hr (ppm)	2.13	2.13	2.13

Note: Background CO was taken from Bakersfield Golden State HWY Station (second highest data from the last three years, 2007-2009)

Appendix C

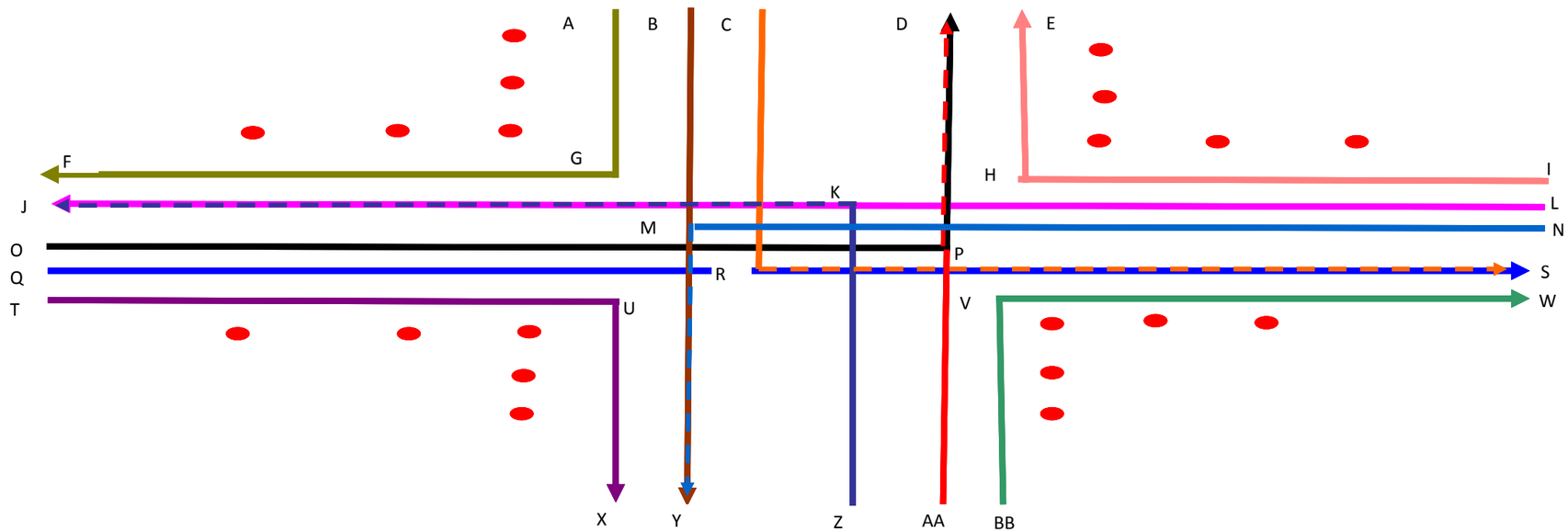
C.2 Fresno Station Intersection CALINE Inputs

Fresno - Van Ness St./Inyo Street PM



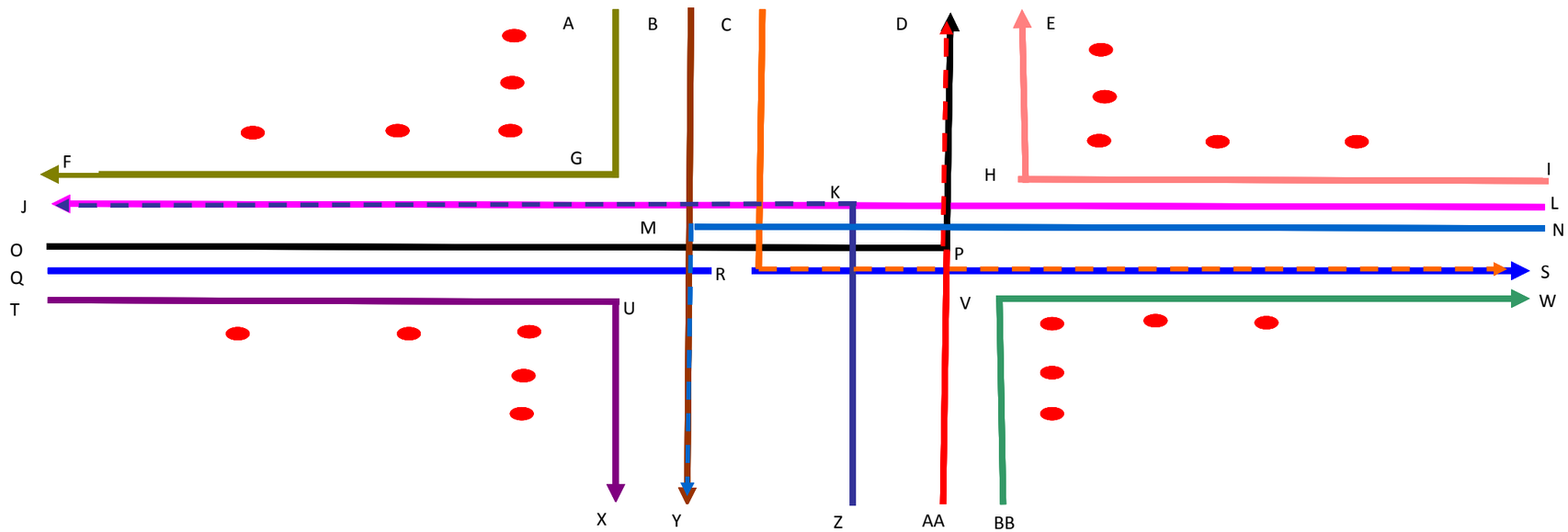
CALINE INPUT						2035				2009				Receptors		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Rate (g/mi)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Rate (g/mi)	Existing + Proj (vph)	Receptor No	x1	y1
1	AG	1059.11	8917.58	1123.00	8834.97	1.51	269	1.63	272	7.36	118	7.36	121	1	1085.79	8872.15
2	BM	1061.59	8919.50	1132.42	8833.86	1.51	269	1.63	272	7.36	118	7.36	121	2	1101.60	8852.68
3	CR	1064.72	8921.73	1137.94	8833.72	1.51	84	1.63	84	7.36	9	7.36	9	3	1115.36	8835.34
4	DP	1066.59	8923.05	1136.90	8839.09	1.10	310	1.30	323	5.29	192	5.29	205	4	1098.64	8821.05
5	EH	1069.00	8924.71	1136.96	8846.61	1.10	310	1.30	323	5.29	192	5.29	205	5	1078.99	8805.45
6	FG	1052.11	8774.85	1123.00	8834.97	1.14	295	1.30	296	5.41	69	5.41	70	6	1108.58	8888.28
7	HI	1136.96	8846.61	1209.34	8905.93	1.63	298	1.63	298	8.31	49	8.31	49	7	1123.85	8868.52
8	JK	1053.65	8772.87	1132.92	8839.15	1.14	295	1.30	296	5.41	69	5.41	70	8	1137.77	8851.32
9	KL	1132.92	8839.15	1211.29	8903.86	1.63	298	1.63	298	8.31	49	8.31	49	9	1154.67	8865.56
10	MY	1132.42	8833.86	1187.62	8770.20	1.10	287	1.30	292	5.17	125	5.17	129	10	1173.82	8881.35
11	MN	1132.42	8833.86	1213.30	8901.17	1.63	99	1.63	99	8.31	20	8.31	20	11	1098.83	8791.13
12	OP	1056.29	8770.06	1136.90	8839.09	1.63	74	1.63	74	8.31	47	8.31	47	12	1117.74	8807.60
13	QR	1057.96	8767.51	1137.94	8833.72	1.97	158	1.97	159	8.31	36	8.31	37	13	1134.61	8821.63
14	RS	1137.94	8833.72	1215.55	8898.08	1.14	232	1.30	232	5.41	35	5.41	35	14	1148.62	8804.62
15	TU	1060.06	8764.98	1136.20	8826.14	1.97	158	1.97	159	8.31	36	8.31	37	15	1164.82	8785.23
16	UX	1136.20	8826.14	1184.57	8767.67	1.10	287	1.30	292	5.17	125	5.17	129	16	1187.00	8865.25
17	KZ	1132.92	8839.15	1189.62	8772.16	1.51	66	1.63	67	7.36	40	7.36	41	17	1167.67	8849.21
18	PAA	1136.90	8839.09	1192.12	8774.10	1.63	238	1.86	251	7.66	161	7.66	174	18	1150.10	8835.07
19	VBB	1145.24	8835.44	1195.17	8776.20	1.63	238	1.86	251	7.66	161	7.66	174	19	1164.54	8818.33
20	VW	1145.24	8835.44	1217.57	8895.82	1.14	232	1.30	232	5.41	35	5.41	35	20	1181.16	8799.35

Fresno - H St./Tulare St. PM



CALINE INPUT						2035				2009				Receptors		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Rate (g/mi)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Rate (g/mi)	Existing + Proj (vph)	Receptor No	x1	y1
1	AG	576.90	923.31	659.17	828.32	1.86	310	1.97	383	9.07	101	9.07	127	1	708.01	874.59
2	BM	579.35	925.96	665.02	825.48	1.86	310	1.97	383	9.07	101	9.07	127	2	688.55	858.54
3	CR	582.01	928.40	669.51	825.58	1.78	189	1.86	250	9.07	99	9.07	99	3	671.43	844.41
4	DP	587.40	932.33	670.60	830.04	1.95	317	1.99	349	5.55	134	5.55	165	4	657.07	861.20
5	EH	589.26	933.95	669.86	838.66	1.95	317	1.99	349	5.55	134	5.55	165	5	640.76	880.29
6	FG	607.37	783.91	659.17	828.32	1.40	1020	1.03	1065	5.55	127	5.55	183	6	719.80	853.17
7	HI	669.86	838.66	742.30	897.00	1.35	470	1.35	485	9.07	73	9.07	88	7	700.52	838.61
8	JK	609.52	781.75	666.11	830.21	1.40	1020	1.03	1065	5.55	127	5.55	183	8	683.56	825.79
9	KL	666.11	830.21	744.37	894.91	1.35	470	1.35	485	9.07	73	9.07	88	9	698.67	807.30
10	MY	665.02	825.48	707.16	771.42	1.99	364	1.99	393	5.55	104	5.55	106	10	715.85	786.28
11	MN	665.02	825.48	746.69	892.93	1.35	175	1.35	175	9.07	37	9.07	37	11	621.66	863.81
12	OP	614.11	777.66	670.60	830.04	1.35	88	1.35	93	9.07	16	9.07	78	12	637.53	844.46
13	QR	615.30	775.36	669.51	825.58	1.95	456	1.45	456	9.07	51	9.07	120	13	651.50	827.43
14	RS	669.51	825.58	749.06	890.74	1.40	558	1.03	588	5.55	116	5.55	184	14	634.51	813.42
15	TU	617.00	773.50	666.08	815.43	1.95	456	1.45	456	9.07	51	9.07	120	15	615.21	797.50
16	UX	666.08	815.43	704.55	769.69	1.99	364	1.99	393	5.55	104	5.55	106	16	631.05	777.28
17	KZ	666.11	830.21	709.84	772.99	1.78	187	1.78	187	9.07	22	9.07	23	17	650.37	793.32
18	PAA	670.60	830.04	712.88	775.36	1.99	233	1.99	234	9.07	96	9.07	96	18	667.38	807.43
19	VBB	675.82	826.21	714.91	776.86	1.99	233	1.99	234	9.07	96	9.07	96	19	681.64	790.62
20	VW	675.82	826.21	751.42	888.68	1.40	558	1.03	588	5.55	116	5.55	184	20	697.85	771.52

Fresno - Van Ness Ave./Fresno St. PM

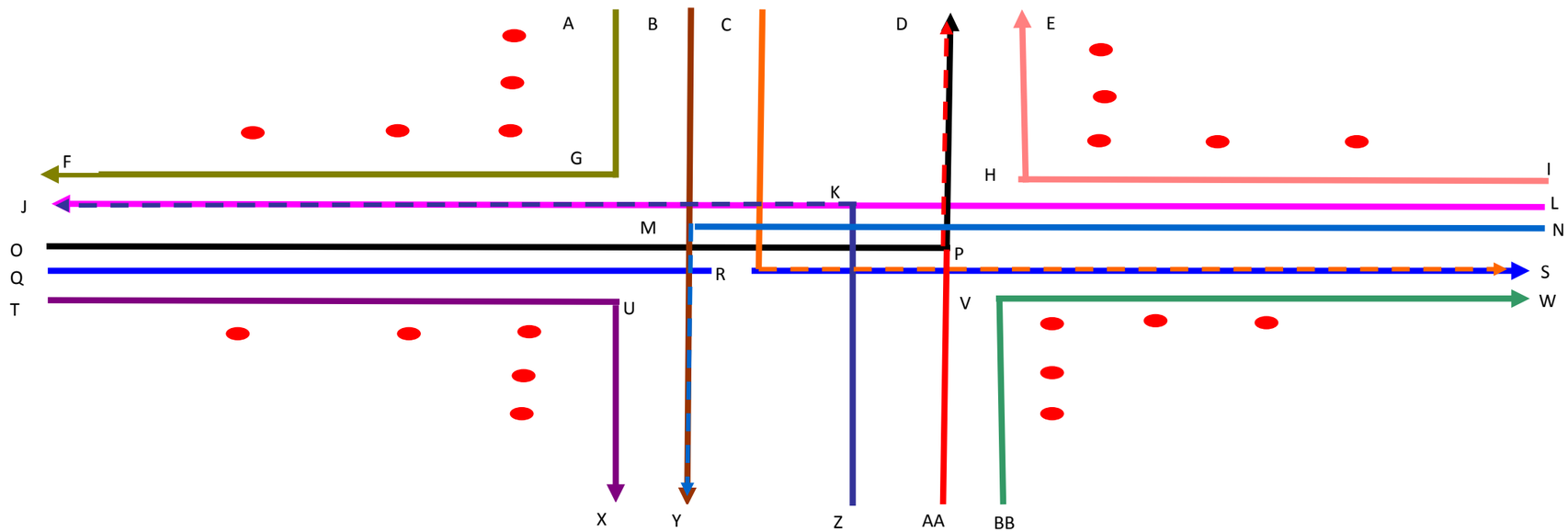


CALINE INPUT						2035				2009				Receptors		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Rate (g/mi)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Rate (g/mi)	Existing + Proj (vph)	No	x1	y1
1	AG	706.05	336.87	744.87	288.12	1.78	234	1.86	258	9.95	143	9.95	167	1	707.77	326.25
2	BM	709.26	338.81	754.21	284.02	1.78	234	1.86	258	9.95	143	9.95	167	2	724.03	307.20
3	CR	712.54	340.53	759.01	285.23	1.99	106	1.99	106	11.67	62	11.67	62	3	738.34	290.44
4	DP	715.82	342.30	760.77	290.01	1.23	365	1.23	407	6.00	264	6.00	306	4	721.84	275.83
5	EH	719.58	343.65	758.24	300.70	1.23	365	1.23	407	6.00	264	6.00	306	5	703.09	259.23
6	FG	702.80	251.71	744.87	288.12	1.99	718	1.99	747	6.00	277	6.00	306	6	720.63	236.51
7	HI	758.24	300.70	818.19	346.66	1.99	578	1.99	583	11.67	183	11.67	188	7	740.19	252.16
8	JK	706.09	248.78	755.68	290.51	1.99	718	1.99	747	6.00	277	6.00	306	8	757.41	265.94
9	KL	755.68	290.51	820.54	344.67	1.99	578	1.99	583	11.67	183	11.67	188	9	771.37	249.03
10	MY	754.21	284.02	806.61	222.23	1.99	299	1.95	299	11.67	151	11.67	151	10	787.23	229.81
11	MN	754.21	284.02	823.25	342.50	1.99	183	1.99	183	11.67	61	11.67	61	11	729.28	343.11
12	OP	709.10	246.30	760.77	290.01	1.99	201	1.99	285	10.98	120	10.98	204	12	745.12	323.76
13	QR	712.14	244.52	759.01	285.23	1.99	388	1.97	424	9.95	170	9.95	206	13	759.06	306.74
14	RS	759.01	285.23	826.70	340.54	1.99	445	1.99	481	6.00	214	6.00	250	14	775.65	321.21
15	TU	714.37	242.54	757.00	274.79	1.99	388	1.97	424	9.95	170	9.95	206	15	794.50	337.65
16	UX	757.00	274.79	803.50	220.29	1.99	299	1.95	299	11.67	151	11.67	151	16	831.86	314.83
17	KZ	755.68	290.51	810.31	225.28	1.99	203	1.99	203	10.98	126	11.67	126	17	809.24	303.35
18	PAA	760.77	290.01	815.31	228.39	1.86	280	1.86	280	9.95	225	9.95	225	18	789.33	293.25
19	VBB	779.55	295.12	824.94	235.87	1.86	280	1.86	280	9.95	225	9.95	225	19	803.63	276.56
20	VW	779.55	295.12	829.64	338.58	1.99	445	1.99	481	6.00	214	6.00	250	20	819.89	257.59

Appendix C

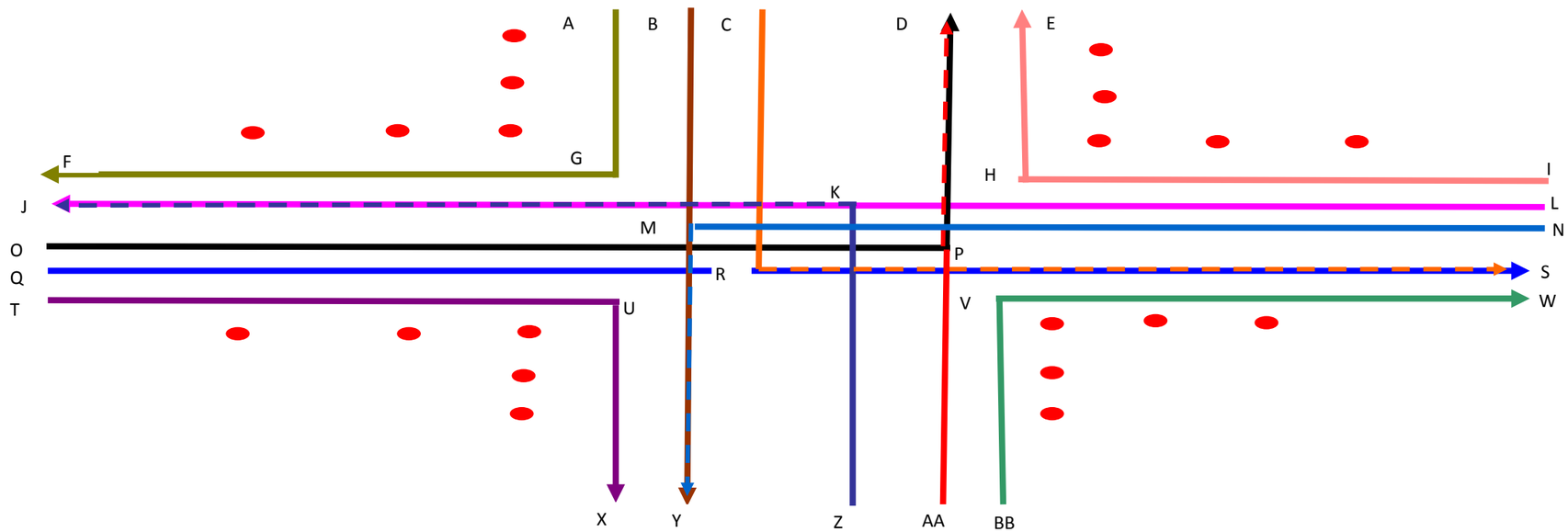
C.3 Bakersfield Station Intersection CALINE Inputs

Bakersfield - Union Ave./ California Ave. PM



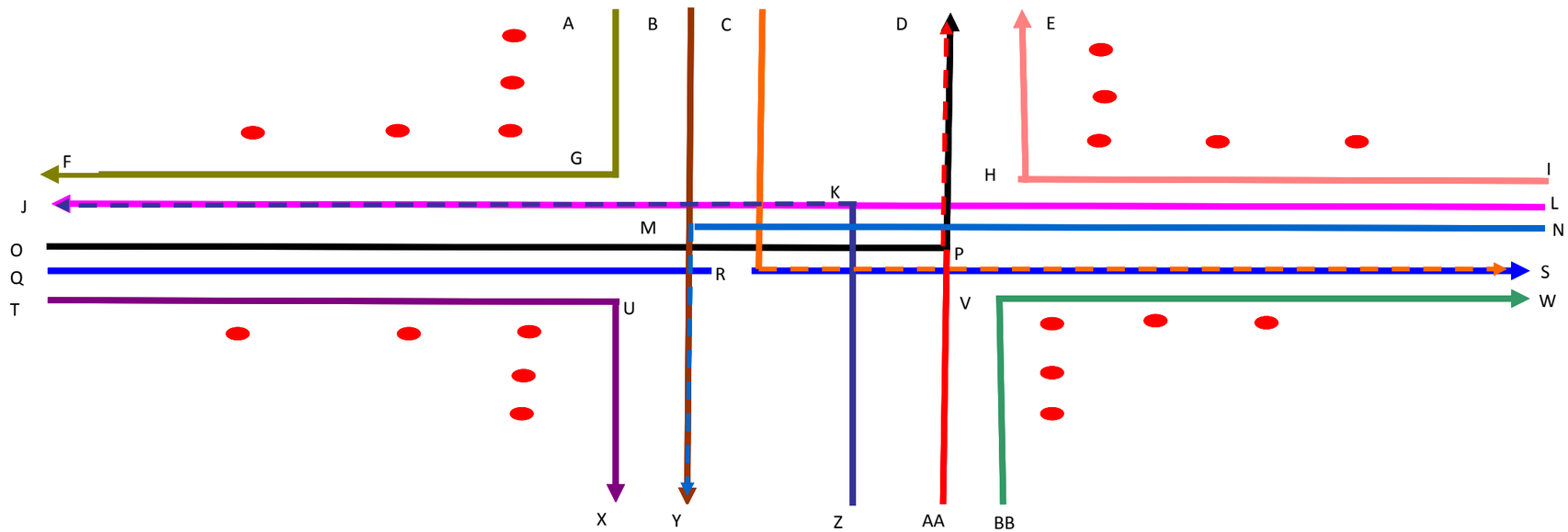
CALINE INPUT						2035				2009				Receptors		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Rate (g/mi)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Rate (g/mi)	Existing + Proj (vph)	No	x1	y1
1	AG	128.36	836.40	126.35	756.76	1.91	1079	2.40	1088	9.86	722	11.72	730	1	123.50	809.04
2	BM	136.43	836.40	136.66	744.60	1.91	1079	2.40	1088	9.86	722	11.72	730	2	122.82	784.00
3	CR	144.30	836.40	140.75	738.64	2.59	283	2.59	290	11.49	181	11.49	188	3	122.18	761.94
4	DP	149.84	836.00	146.54	742.92	1.91	1079	1.91	1097	6.10	624	6.10	642	4	100.05	761.92
5	EH	154.75	836.00	154.84	757.66	1.91	1079	1.91	1097	6.10	624	6.10	642	5	75.03	763.15
6	FG	63.46	757.23	126.35	756.76	1.91	427	1.91	444	8.95	418	8.95	435	6	74.00	726.86
7	HI	154.84	757.66	230.72	755.10	2.59	288	2.59	293	11.96	273	11.96	279	7	99.00	725.94
8	JK	63.37	752.90	144.43	748.85	1.91	427	1.91	444	8.95	418	8.95	435	8	121.00	725.44
9	KL	144.43	748.85	230.70	749.40	2.59	288	2.59	293	11.96	273	11.96	279	9	120.34	703.40
10	MY	136.66	744.60	132.10	660.89	1.42	1270	2.59	1339	5.45	778	11.49	847	10	119.77	678.50
11	MN	136.66	744.60	231.00	743.10	2.59	240	2.59	240	11.96	156	11.96	156	11	161.09	809.64
12	OP	62.80	744.30	146.54	742.92	2.59	374	2.59	374	11.96	239	11.96	239	12	160.54	784.63
13	QR	62.80	738.00	140.75	738.64	2.59	419	2.59	489	11.49	220	11.49	290	13	159.58	762.60
14	RS	140.75	738.64	230.82	734.50	1.91	585	1.91	598	8.95	315	8.95	328	14	181.65	762.20
15	TU	62.57	733.10	127.81	730.43	2.59	419	2.59	489	11.49	220	11.49	290	15	206.70	761.84
16	UX	127.81	730.43	125.60	661.19	1.42	1270	2.59	1339	5.45	778	11.49	847	16	205.97	723.47
17	KZ	144.43	748.85	141.22	661.10	2.59	131	2.59	161	11.96	114	11.96	144	17	180.96	723.69
18	PAA	146.54	742.92	144.88	660.12	2.57	941	2.57	956	10.37	497	10.37	512	18	158.95	724.15
19	VBB	154.76	729.80	150.96	659.66	2.57	941	2.57	956	10.37	497	10.37	512	19	158.47	702.12
20	VW	154.76	729.80	230.62	729.03	1.91	585	1.91	598	8.95	315	8.95	328	20	157.88	677.17

Bakersfield - Oak St./ Truxton Ave. PM



CALINE INPUT						2035				2009				Receptors		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Rate (g/mi)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Rate (g/mi)	Existing + Proj (vph)	No	x1	y1
1	AG	795.67	446.66	791.07	382.37	2.59	886	2.59	886	11.72	626	11.72	626	1	788.45	434.73
2	BM	802.33	445.60	798.88	367.85	2.59	886	2.59	886	11.72	626	11.72	626	2	787.96	409.62
3	CR	807.35	445.40	803.69	363.84	2.59	108	2.55	113	11.96	46	11.96	51	3	786.24	387.62
4	DP	812.49	444.66	809.31	367.23	2.59	841	2.59	846	11.96	681	11.96	686	4	764.26	388.70
5	EH	815.95	444.45	813.04	379.13	2.59	841	2.59	846	11.96	681	11.96	686	5	739.82	383.57
6	FG	725.82	383.57	791.07	382.37	1.15	1217	1.15	1227	11.96	928	11.96	938	6	741.40	354.50
7	HI	813.04	379.13	881.50	370.59	2.59	640	2.59	655	11.49	549	11.49	564	7	766.40	352.88
8	JK	725.70	379.23	804.97	373.82	1.15	1217	1.15	1227	11.96	928	11.96	938	8	788.30	351.11
9	KL	804.97	373.82	881.38	365.50	2.59	640	2.59	655	11.49	549	11.49	564	9	787.50	329.11
10	MY	798.88	367.85	796.55	298.00	2.59	802	2.59	802	11.96	742	11.96	742	10	786.60	304.15
11	MN	798.88	367.85	881.44	360.00	2.59	447	2.59	447	11.49	447	11.49	447	11	821.37	429.58
12	OP	725.58	375.50	809.31	367.23	2.59	1001	2.59	1001	11.96	689	11.96	689	12	820.66	404.45
13	QR	725.40	367.08	803.69	363.84	2.57	847	2.57	851	10.37	497	10.37	501	13	819.83	382.50
14	RS	803.69	363.84	881.48	354.24	1.15	883	1.15	890	11.96	466	11.96	473	14	841.72	380.10
15	TU	725.20	362.22	793.91	357.00	2.57	847	2.57	851	10.37	497	10.37	501	15	866.65	377.40
16	UX	793.91	357.00	792.53	298.04	2.59	802	2.59	802	11.96	742	11.96	742	16	866.42	346.70
17	KZ	804.97	373.82	800.71	297.50	2.59	283	2.59	283	11.96	283	11.96	283	17	841.72	348.00
18	PAA	809.31	367.23	807.68	297.10	2.55	451	2.55	451	10.37	414	10.37	414	18	819.96	351.67
19	VBB	815.53	356.97	812.86	296.35	2.55	451	2.55	451	10.37	414	10.37	414	19	819.16	329.70
20	VW	815.53	356.97	880.98	349.65	1.15	883	1.15	890	11.96	466	11.96	473	20	818.75	304.64

Bakersfield - Oak St./SR 178 PM

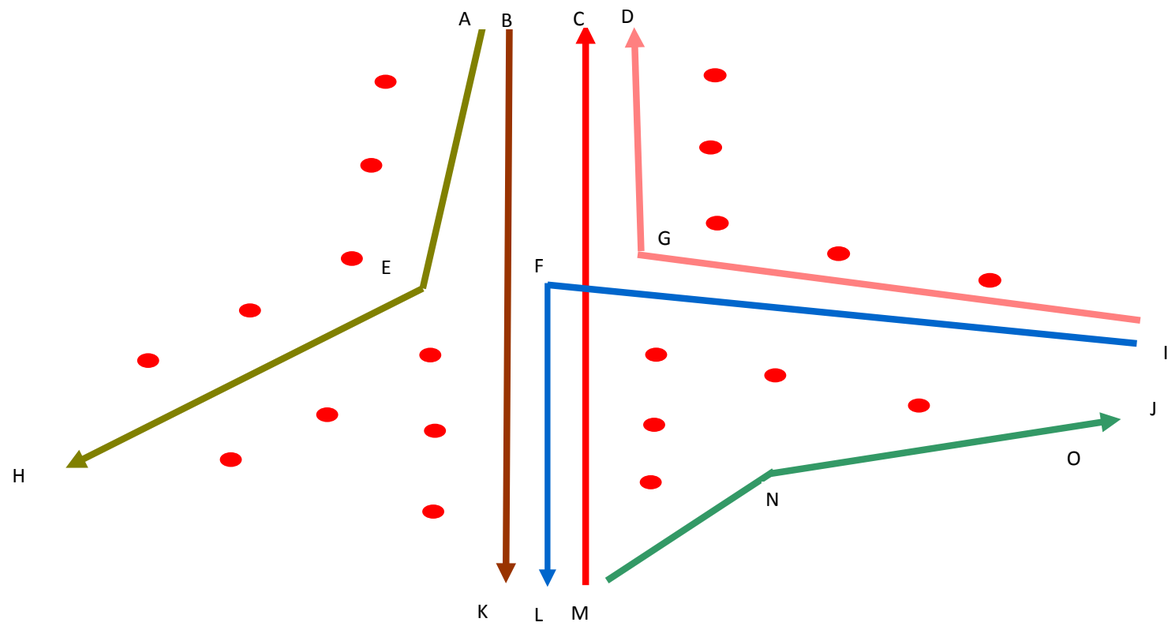


CALINE INPUT						2035				2009				Receptors		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Rate (g/mi)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Rate (g/mi)	Existing + Proj (vph)	No	x1	y1
1	AG	824.81	292.58	822.56	227.60	2.59	45	2.59	45	11.96	28	11.96	28	1	818.51	284.06
2	BM	827.25	292.41	826.75	214.61	2.59	45	2.59	45	11.96	28	11.96	28	2	818.75	259.00
3	CR	829.84	292.45	827.95	206.43	-	-	-	-	-	-	-	-	3	817.50	237.14
4	DP	832.29	292.32	831.16	209.76	1.19	45	1.19	45	5.60	29	5.60	29	4	796.65	244.20
5	EH	835.96	292.20	834.80	227.21	1.19	45	1.19	45	5.60	29	5.60	29	5	774.15	255.35
6	FG	763.06	252.31	822.56	227.60	1.03	1690	1.03	1695	5.60	1110	5.60	1115	6	769.93	209.97
7	HI	834.80	227.21	935.46	217.29	2.59	1420	2.59	1420	11.49	825	11.49	825	7	793.51	201.64
8	JK	759.68	247.36	832.41	217.21	1.03	1690	1.03	1695	5.60	1110	5.60	1115	8	814.42	194.61
9	KL	832.41	217.21	935.46	211.72	2.59	1420	2.59	1420	11.49	825	11.49	825	9	812.82	172.67
10	MY	826.75	214.61	823.17	132.10	2.59	896	2.59	899	11.96	470	11.96	472	10	812.55	147.55
11	MN	826.75	214.61	935.70	204.54	2.59	1349	2.59	1349	11.49	496	11.49	496	11	841.46	277.80
12	OP	754.76	239.72	831.16	209.76	2.59	36	2.59	36	11.96	36	11.96	36	12	840.75	252.74
13	QR	751.33	234.63	827.95	206.43	1.91	1610	1.91	1613	11.96	983	11.96	986	13	839.84	230.76
14	RS	827.95	206.43	935.20	197.63	1.03	2057	1.03	2057	5.60	1000	5.60	1000	14	861.52	227.12
15	TU	748.58	230.22	820.18	200.21	1.91	1610	1.91	1613	11.96	983	11.96	986	15	886.43	224.20
16	UX	820.18	200.21	818.40	132.18	2.59	896	2.59	899	11.96	470	11.96	472	16	894.63	189.42
17	KZ	832.41	217.21	828.62	131.42	2.59	565	2.59	576	11.96	565	11.96	576	17	869.56	190.28
18	PAA	831.16	209.76	832.43	130.66	2.59	638	2.59	638	11.49	223	11.49	223	18	847.72	192.34
19	VBB	841.49	200.28	836.40	130.58	2.59	638	2.59	638	11.49	223	11.49	223	19	846.68	170.38
20	VW	841.49	200.28	934.80	193.96	1.03	2057	1.03	2057	5.60	1000	5.60	1000	20	845.14	145.34

Appendix C

C.4 Kings Tulare Regional Station Intersection CALINE Inputs

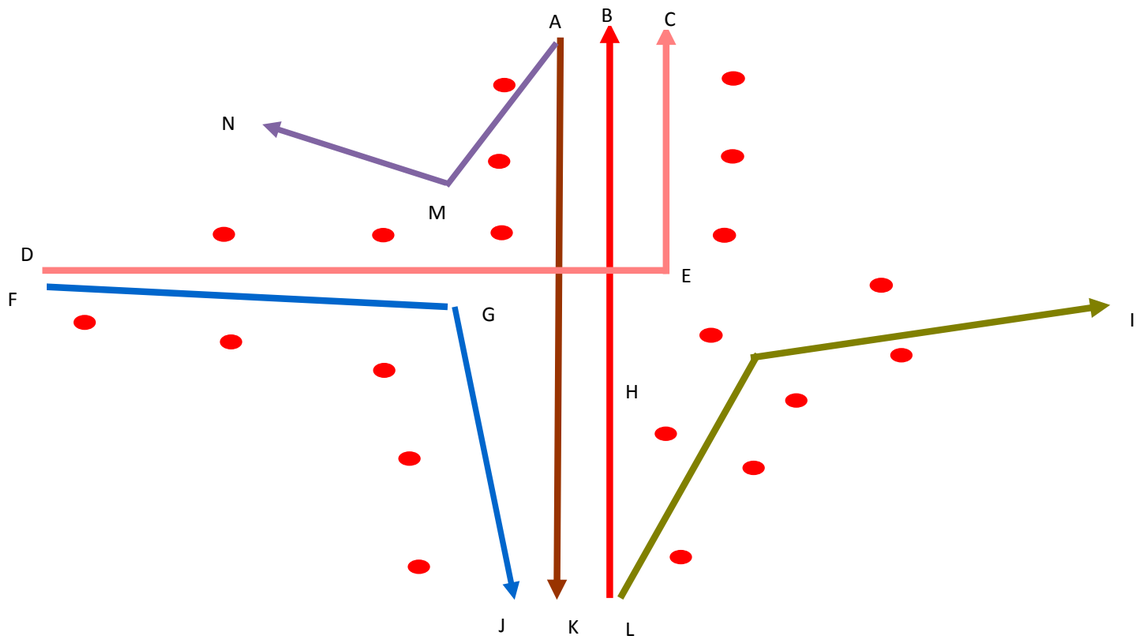
KTR 8th Ave./SR 198 WB Ramps 2 PM



Receptors		
No	x1	y1
1	520.73	413.20
2	518.56	388.50
3	515.73	366.70
4	500.35	351.10
5	481.56	335.00
6	546.17	411.43
7	545.00	386.34
8	550.86	366.84
9	568.41	360.35
10	592.6	355.9
11	483.72	318.9
12	503.56	334.46
13	520.50	348.30
14	519.50	326.47
15	518.70	301.52
16	543.64	349.00
17	543.20	271.30
18	543.10	297.10
19	564.83	344.71
20	587.85	338.35

CALINE INPUT						2035			2009		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Existing + Proj (vph)
1	AE	529.20	461.30	523.37	364.15	1.19	67	134	6.00	67	134
2	BK	532.20	461.30	523.30	217.40	1.19	251	332	6.00	251	332
3	CM	535.30	461.30	529.40	217.40	1.19	710	746	6.00	414	450
4	DG	539.10	461.30	542.17	360.96	1.19	182	209	6.00	142	169
5	EH	523.37	364.15	392.64	256.39	1.19	67	134	6.00	67	134
6	GI	542.17	360.96	682.57	334.37	1.19	182	209	6.00	142	169
7	FL	530.33	357.70	525.70	217.40	1.19	48	48	6.00	21	98
8	FJ	530.33	357.70	682.82	330.42	1.19	48	48	6.00	21	98
9	MN	529.40	217.40	558.80	311.15	1.19	126	126	6.00	98	98
10	NO	558.80	311.15	635.60	324.15	1.19	126	126	6.00	98	98

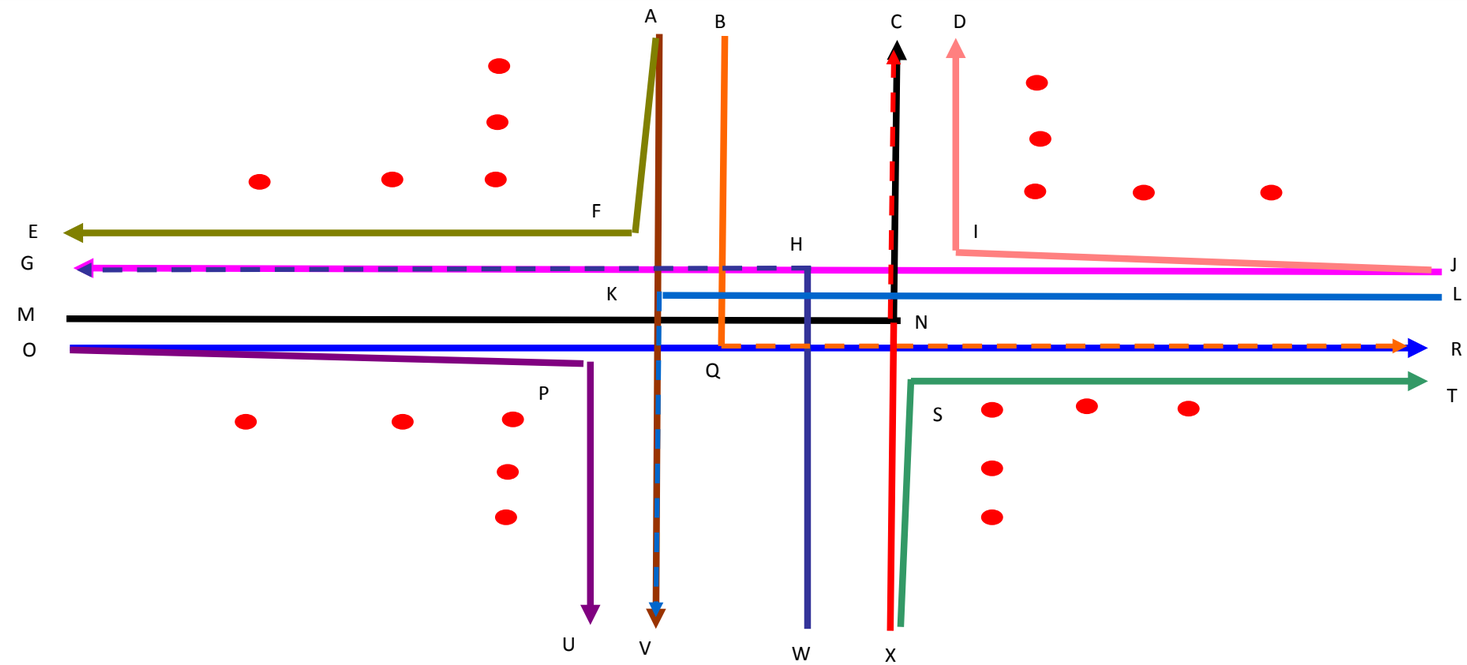
KTR 9th Ave./SR 198 EB Ramps PM



Receptors		
No	x1	y1
1	515.70	1038.53
2	515.42	1013.46
3	510.62	991.16
4	492.60	990.50
5	462.80	994.30
6	462.44	985.90
7	486.09	981.83
8	505.53	974.06
9	511.55	953.85
10	510.77	929.16
11	531.4	1031.43
12	530.77	1006.18
13	529.70	981.45
14	539.50	948.20
15	573.80	979.60
16	529.12	871.17
17	559.41	930.50
18	573.40	953.00
19	540.50	905.00
20	539.75	846.81

CALINE INPUT						2035			2009		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Existing + Proj (vph)
1	AK	521.42	1105.60	514.67	757.80	1.19	272	290	6.00	166	184
2	BL	524.76	1105.60	518.90	757.76	1.19	814	822	6.00	431	439
3	CE	528.11	1105.60	524.30	981.50	1.19	77	105	6.00	77	105
4	DE	370.20	1010.28	524.30	981.50	1.19	77	105	6.00	77	105
5	FG	369.80	1007.81	514.60	977.73	1.19	213	213	6.00	85	85
6	GJ	514.60	977.73	511.50	757.60	1.19	213	213	6.00	85	85
7	HL	549.50	934.52	518.90	757.76	1.19	109	109	6.00	57	57
8	HI	549.50	934.52	677.57	1083.99	1.19	109	109	6.00	57	57
9	AM	521.42	1105.60	459.45	1003.40	1.19	106	168	6.00	106	168
10	MN	459.45	1003.40	397.70	1043.70	1.19	106	168	6.00	106	168

KTR SR 43/Lacey Blvd. AM

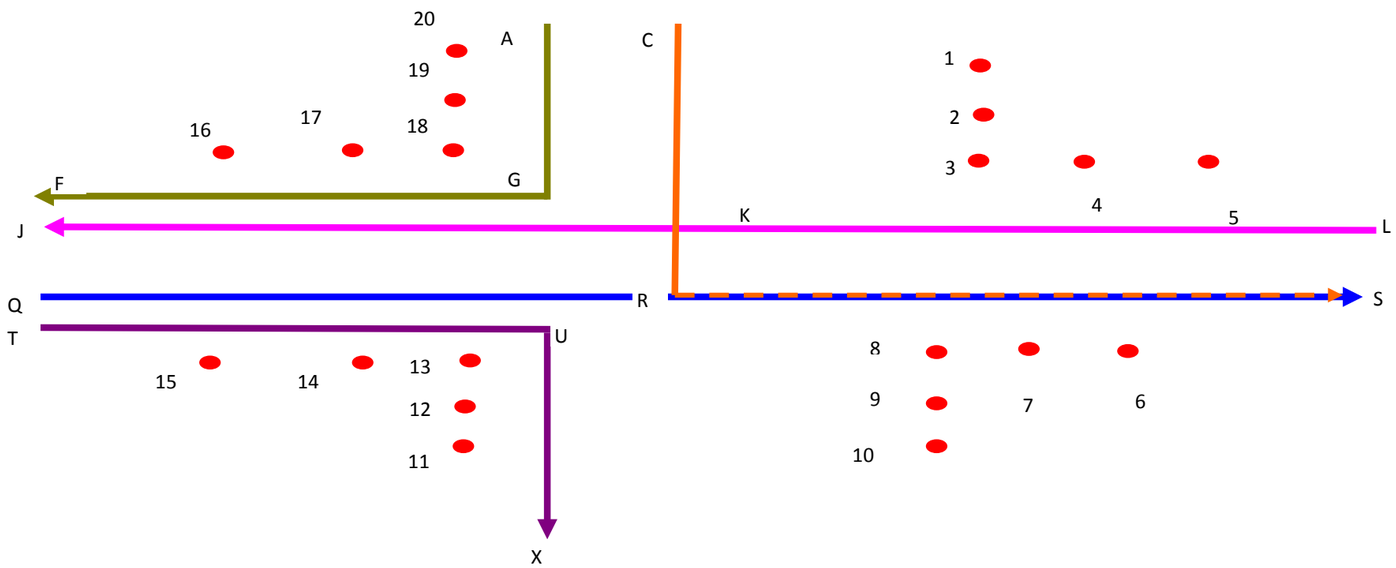


CALINE INPUT						2035			2009			Receptors		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Existing + Proj (vph)	No	x1	y1
1	AF	533.48	579.58	526.90	476.18	1.19	14	14	6.00	14	14	1	523.68	531.30
2	AK	533.48	579.58	531.54	468.93	1.19	513	513	6.00	471	471	2	522.26	506.35
3	BQ	538.03	579.58	535.62	466.24	1.19	55	55	6.00	18	18	3	518.88	484.60
4	CN	541.30	579.58	537.92	466.48	1.19	245	245	6.00	245	245	4	498.56	482.62
5	DI	544.79	579.58	545.77	477.20	1.19	20	20	6.00	20	20	5	473.65	483.14
6	EF	394.30	475.56	526.90	476.18	1.19	14	14	6.00	14	14	6	474.03	461.05
7	IJ	545.77	477.20	704.81	473.17	1.19	20	20	6.00	20	20	7	499.20	460.88
8	GH	394.30	473.15	534.36	470.70	1.19	76	83	6.00	76	83	8	520.00	455.90
9	HW	534.36	470.70	533.00	384.55	1.19	65	65	6.00	65	65	9	525.86	434.9
10	HJ	534.36	470.70	704.81	473.17	1.19	11	18	6.00	11	18	10	524.62	410.03
11	KV	531.54	468.93	529.19	384.55	1.19	557	620	6.00	515	578	11	552.3	529.93
12	KL	531.54	468.93	704.81	462.20	1.19	44	107	6.00	44	107	12	552.28	504.89
13	MN	394.30	470.00	537.92	466.48	1.19	14	14	6.00	14	14	13	552.10	482.80
14	NX	537.92	466.48	536.00	384.55	1.19	231	231	6.00	231	231	14	574.04	482.16
15	OP	394.30	468.60	524.57	458.67	1.19	66	66	6.00	66	66	15	599.11	482.47
16	OQ	394.30	468.60	535.62	466.24	1.19	7	24	6.00	7	24	16	550.10	454.70
17	QR	535.62	466.24	704.81	462.20	1.19	62	79	6.00	25	42	17	571.15	457.80
18	PU	524.57	458.67	526.59	384.55	1.19	66	66	6.00	66	66	18	595.57	457.25
19	SX	544.07	461.04	536.00	384.55	1.19	43	191	6.00	41	189	19	545.92	433.63
20	ST	544.07	461.04	704.81	456.65	1.19	43	191	6.00	41	189	20	545.57	408.34

Appendix C

C.5 Fresno HMF Intersection CALINE Inputs

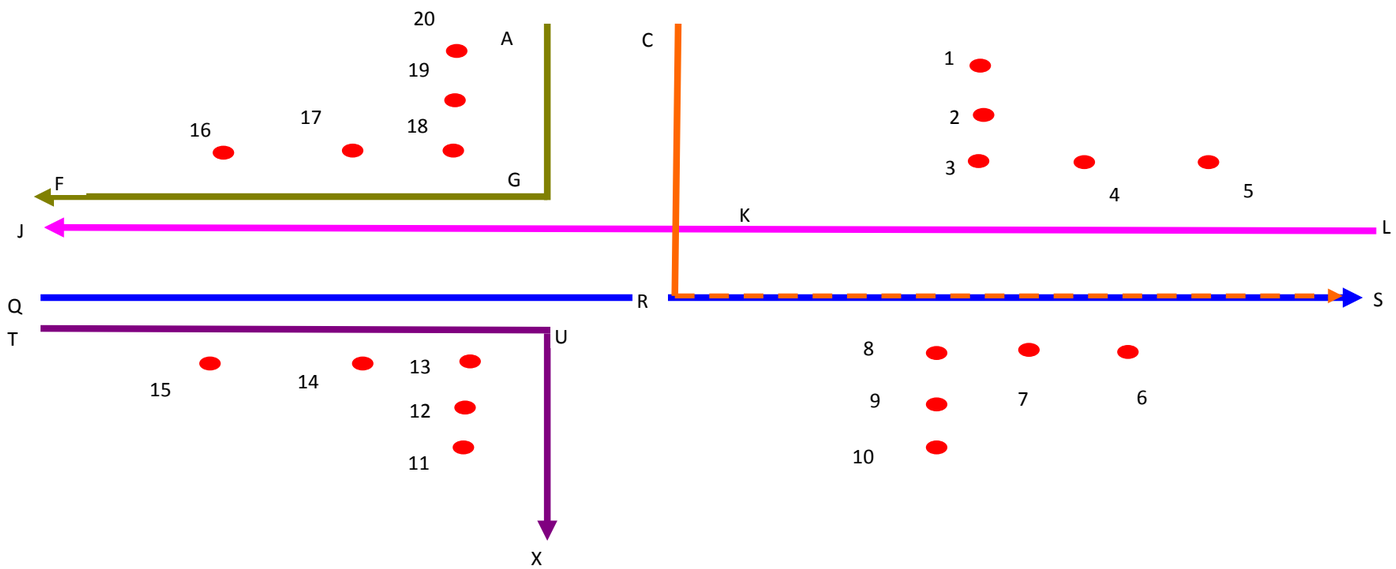
Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM



Receptors		
Receptor No	x1	y1
1	3746.29	2231.47
2	3758.71	2205.40
3	3769.85	2182.74
4	3792.11	2194.31
5	3817.61	2207.43
6	3827.41	2175.61
7	3801.69	2172.53
8	3778.62	2161.54
9	3789.49	2138.42
10	3802.10	211.75
11	3781.35	2103.02
12	3768.96	2127.89
13	3757.44	2151.22
14	3734.09	2139.91
15	3708.08	2127.30
16	3690.89	2152.78
17	3716.96	2165.68
18	3740.15	2177.10
19	3728.25	2201.54
20	3716.40	2226.48

CALINE INPUT						2035			2009		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Existing + Proj (vph)
1	AG	3733.87	2221.64	3747.21	2172.07	1.01	144	198	5.058	144	198
2	CR	3737.35	2223.61	3779.80	2171.25	1.01	108	108	5.058	81	81
3	FG	3688.75	2132.69	3747.21	2172.07	1.01	144	198	5.058	144	198
4	JK	3689.86	2130.14	3769.73	2174.07	1.01	442	464	5.058	102	124
5	KL	3769.73	2174.07	3809.21	2193.87	1.01	442	464	5.058	102	124
6	QR	3691.58	2126.63	3779.80	2171.25	1.01	280	331	5.058	81	132
7	RS	3779.80	2171.25	3812.81	2187.10	1.01	388	439	5.058	162	213
8	TU	3692.72	2124.11	3760.66	2159.13	1.01	1	1	5.058	1	1
9	UX	3760.66	2159.13	3777.98	2129.50	1.01	1	1	5.058	1	1

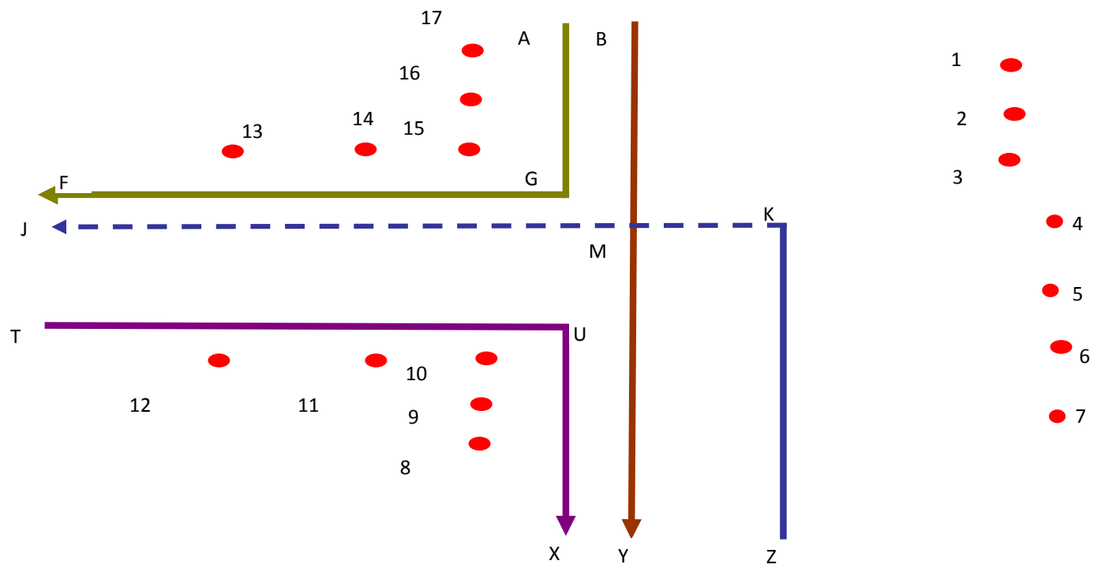
Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM



Receptors		
Receptor No	x1	y1
1	3746.29	2231.47
2	3758.71	2205.40
3	3769.85	2182.74
4	3792.11	2194.31
5	3817.61	2207.43
6	3827.41	2175.61
7	3801.69	2172.53
8	3778.62	2161.54
9	3789.49	2138.42
10	3802.10	211.75
11	3781.35	2103.02
12	3768.96	2127.89
13	3757.44	2151.22
14	3734.09	2139.91
15	3708.08	2127.30
16	3690.89	2152.78
17	3716.96	2165.68
18	3740.15	2177.10
19	3728.25	2201.54
20	3716.40	2226.48

CALINE INPUT						2035			2009		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Existing + Proj (vph)
1	AG	3733.87	2221.64	3747.21	2172.07	1.01	41	77	5.058	36	72
2	CR	3737.35	2223.61	3779.80	2171.25	1.01	325	325	5.058	56	56
3	FG	3688.75	2132.69	3747.21	2172.07	1.01	41	77	5.058	36	72
4	JK	3689.86	2130.14	3769.73	2174.07	1.01	537	552	5.058	49	64
5	KL	3769.73	2174.07	3809.21	2193.87	1.01	537	552	5.058	49	64
6	QR	3691.58	2126.63	3779.80	2171.25	1.01	496	572	5.058	221	297
7	RS	3779.80	2171.25	3812.81	2187.10	1.01	821	897	5.058	277	353
8	TU	3692.72	2124.11	3760.66	2159.13	1.01	0	0	5.058	0	0
9	UX	3760.66	2159.13	3777.98	2129.50	1.01	0	0	5.058	0	0

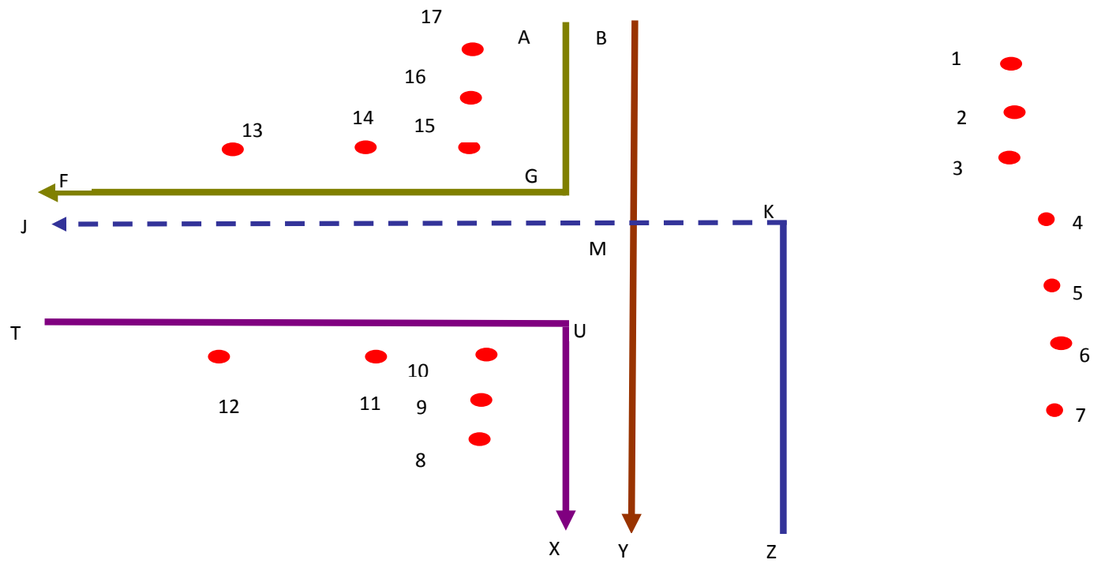
Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM



Receptors		
Receptor No	x1	y1
1	7289.21	824.18
2	7314.30	809.22
3	7337.00	795.15
4	7360.09	807.14
5	7384.12	789.96
6	7407.73	771.66
7	7430.96	753.53
8	7389.51	744.25
9	7361.94	755.76
10	7335.25	761.84
11	7309.23	757.14
12	7281.78	748.00
13	7247.88	757.06
14	7272.12	772.23
15	7295.06	785.86
16	7278.44	804.72
17	7255.94	824.57

CALINE INPUT						2035			2009		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Existing + Proj (vph)
1	AG	7269.06	825.05	7304.25	787.25	1.01	6	6	5.058	6	6
2	BM	7270.45	827.09	7335.66	788.02	1.01	23	23	5.058	23	23
6	FG	7224.29	735.60	7304.25	787.25	1.01	6	6	5.058	6	6
8	JK	7225.39	733.17	7354.01	790.46	1.01	36	98	5.058	25	87
10	MY	7335.66	788.02	7447.49	719.57	1.01	23	23	5.058	23	23
15	TU	7227.70	729.07	7333.87	770.53	1.01	43	84	5.058	43	84
16	UX	7333.87	770.53	7446.31	718.36	1.01	43	84	5.058	43	84
17	KZ	7354.01	790.46	7450.42	722.93	1.01	36	98	5.058	25	87

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM



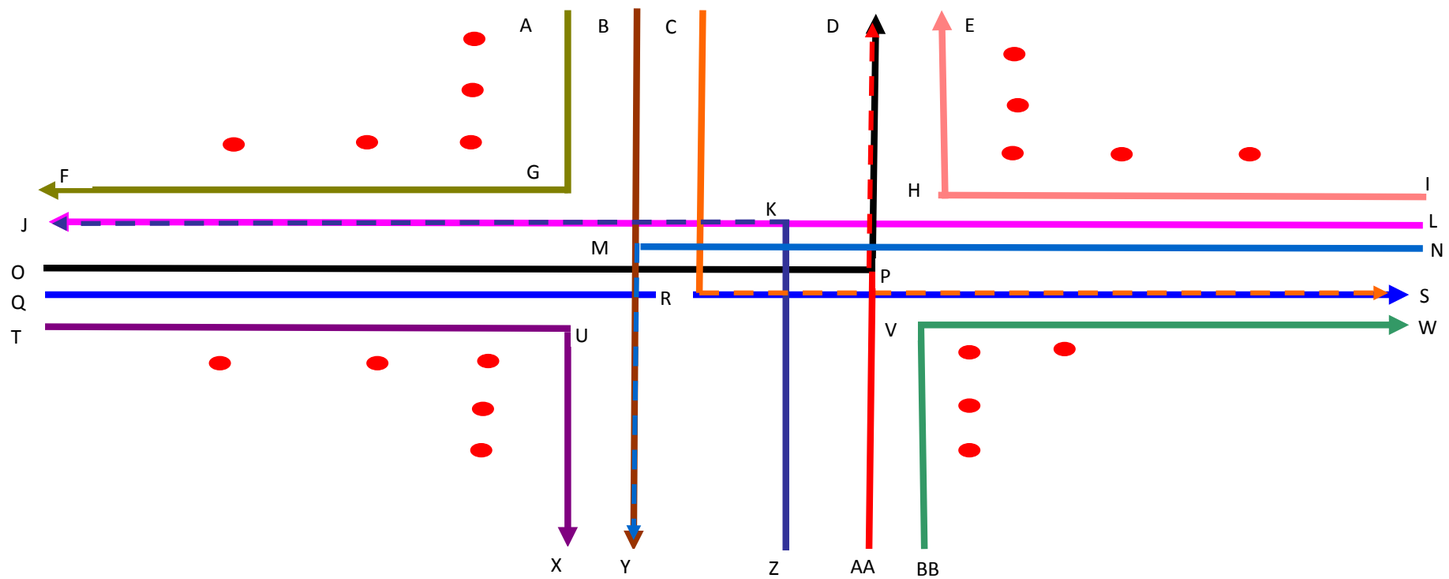
Receptors		
Receptor No	x1	y1
1	7289.21	824.18
2	7314.30	809.22
3	7337.00	795.15
4	7360.09	807.14
5	7384.12	789.96
6	7407.73	771.66
7	7430.96	753.53
8	7389.51	744.25
9	7361.94	755.76
10	7335.25	761.84
11	7309.23	757.14
12	7281.78	748.00
13	7247.88	757.06
14	7272.12	772.23
15	7295.06	785.86
16	7278.44	804.72
17	7255.94	824.57

CALINE INPUT						2035			2009		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Existing + Proj (vph)
1	AG	7269.06	825.05	7304.25	787.25	1.01	20	20	5.058	10	10
2	BM	7270.45	827.09	7335.66	788.02	1.01	178	178	5.058	96	96
6	FG	7224.29	735.60	7304.25	787.25	1.01	20	20	5.058	10	10
8	JK	7225.39	733.17	7354.01	790.46	1.01	79	120	5.058	54	95
10	MY	7335.66	788.02	7447.49	719.57	1.01	178	178	5.058	96	96
15	TU	7227.70	729.07	7333.87	770.53	1.01	137	199	5.058	74	136
16	UX	7333.87	770.53	7446.31	718.36	1.01	137	199	5.058	74	136
17	KZ	7354.01	790.46	7450.42	722.93	1.01	79	120	5.058	54	95

Appendix C

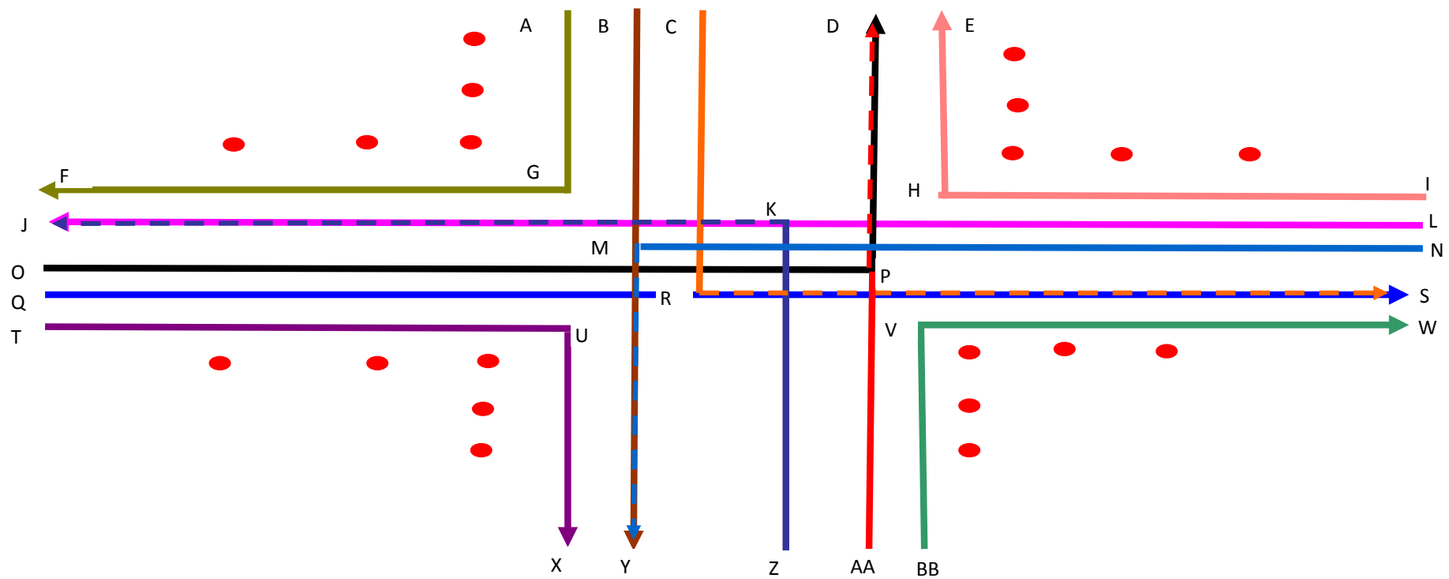
C.6 Wasco HMF Intersection CALINE Inputs

Wasco HMF - SR 43/Wasco Ave. AM



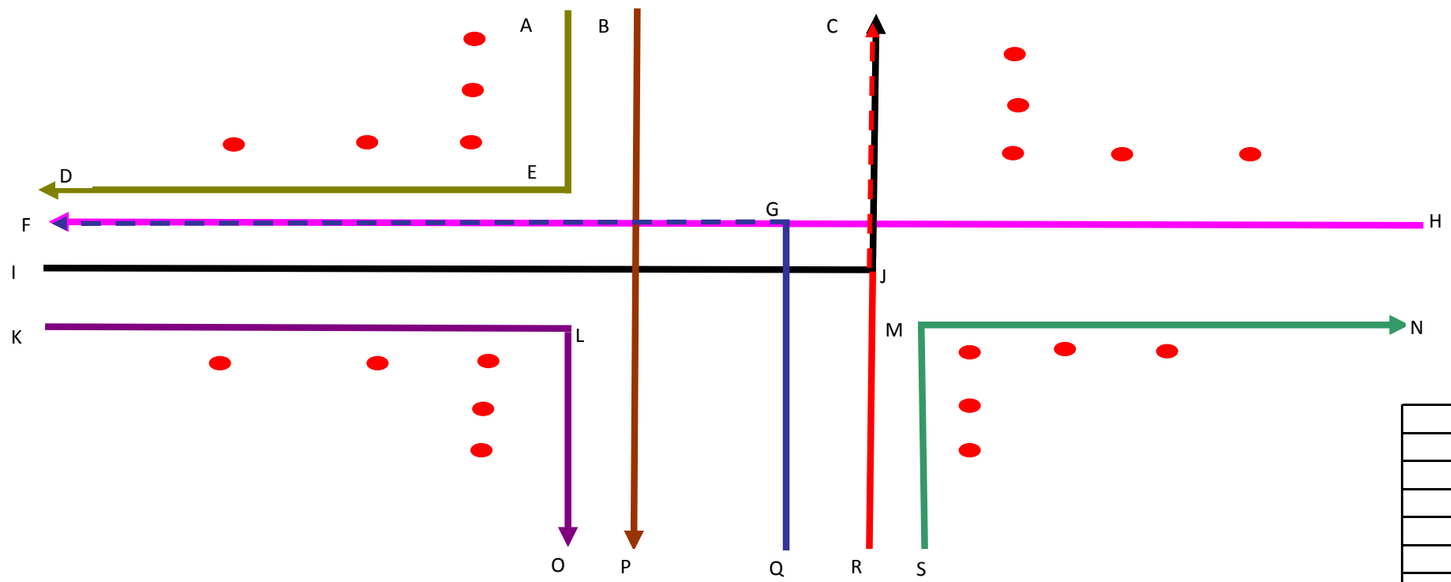
CALINE INPUT						2035			2009			Receptors		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Existing + Proj (vph)	No	x1	y1
1	AG	9093.03	2308.97	9095.65	2254.24	1.17	180	180	5.16	26	26	1	9088.89	2260.50
2	BM	9094.07	2308.86	9097.50	2248.37	1.17	125	170	5.16	37	82	2	9069.88	2261.17
3	CR	9095.59	2308.56	9099.44	2243.75	1.17	19	30	5.16	7	18	3	9044.88	2261.85
4	DP	9097.80	2308.51	9106.06	2248.39	1.17	502	532	5.16	113	143	4	9088.69	2284.69
5	EH	9098.92	2308.57	9108.92	2254.82	1.17	14	21	5.16	10	17	5	9087.69	2309.48
6	FG	9044.23	2254.93	9095.65	2254.24	1.17	180	180	5.16	26	26	6	9089.21	2236.07
7	HI	9108.92	2254.82	9155.45	2253.21	1.17	14	21	5.16	10	17	7	9090.57	2213.93
8	JK	9044.11	2253.48	9104.30	2252.87	1.17	481	525	5.16	207	251	8	9092.01	2189.06
9	KL	9104.30	2252.87	9155.45	2251.97	1.17	354	376	5.16	186	208	9	9066.04	2238.57
10	MY	9097.50	2248.37	9098.84	2200.15	1.17	143	188	5.16	55	100	10	9040.86	2239.33
11	MN	9097.50	2248.37	9155.48	2250.08	1.17	18	18	5.16	18	18	11	9115.65	2236.70
12	OP	9043.78	2250.87	9106.06	2248.39	1.17	271	271	5.16	61	61	12	9117.21	2214.09
13	QR	9043.99	2246.66	9099.44	2243.75	1.17	369	401	5.16	152	184	13	9116.23	2188.36
14	RS	9099.44	2243.75	9155.01	2244.59	1.17	388	431	5.16	159	202	14	9140.58	2237.19
15	TU	9043.94	2244.63	9095.56	2240.71	1.17	73	105	5.16	25	57	15	9114.51	2261.40
16	UX	9095.56	2240.71	9097.12	2200.19	1.17	73	105	5.16	25	57	16	9109.33	2282.67
17	KZ	9104.30	2252.87	9102.19	2199.92	1.17	127	149	5.16	21	43	17	9105.04	2307.68
18	PAA	9106.06	2248.39	9104.13	2199.79	1.17	231	261	5.16	52	82	18	9140.16	2259.15
19	VBB	9108.89	2242.35	9106.68	2199.96	1.17	58	58	5.16	24	24	19	9165.70	2259.11
20	VW	9108.89	2242.35	9155.20	2243.10	1.17	58	58	5.16	24	24			

Wasco HMF - SR 43/Wasco Ave. PM



CALINE INPUT						2035			2009			Receptors		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Existing + Proj (vph)	No	x1	y1
1	AG	9093.03	2308.97	9095.65	2254.24	1.17	296	296	5.16	77	77	1	9088.89	2260.50
2	BM	9094.07	2308.86	9097.50	2248.37	1.17	241	271	5.16	102	132	2	9069.88	2261.17
3	CR	9095.59	2308.56	9099.44	2243.75	1.17	13	20	5.16	13	20	3	9044.88	2261.85
4	DP	9097.80	2308.51	9106.06	2248.39	1.17	497	542	5.16	98	143	4	9088.69	2284.69
5	EH	9098.92	2308.57	9108.92	2254.82	1.17	9	20	5.16	7	18	5	9087.69	2309.48
6	FG	9044.23	2254.93	9095.65	2254.24	1.17	296	296	5.16	77	77	6	9089.21	2236.07
7	HI	9108.92	2254.82	9155.45	2253.21	1.17	9	20	5.16	7	18	7	9090.57	2213.93
8	JK	9044.11	2253.48	9104.30	2252.87	1.17	582	646	5.16	211	275	8	9092.01	2189.06
9	KL	9104.30	2252.87	9155.45	2251.97	1.17	480	512	5.16	199	231	9	9066.04	2238.57
10	MY	9097.50	2248.37	9098.84	2200.15	1.17	301	331	5.16	143	173	10	9040.86	2239.33
11	MN	9097.50	2248.37	9155.48	2250.08	1.17	60	60	5.16	41	41	11	9115.65	2236.70
12	OP	9043.78	2250.87	9106.06	2248.39	1.17	299	299	5.16	57	57	12	9117.21	2214.09
13	QR	9043.99	2246.66	9099.44	2243.75	1.17	401	423	5.16	193	215	13	9116.23	2188.36
14	RS	9099.44	2243.75	9155.01	2244.59	1.17	414	443	5.16	206	235	14	9140.58	2237.19
15	TU	9043.94	2244.63	9095.56	2240.71	1.17	131	153	5.16	23	45	15	9114.51	2261.40
16	UX	9095.56	2240.71	9097.12	2200.19	1.17	131	153	5.16	23	45	16	9109.33	2282.67
17	KZ	9104.30	2252.87	9102.19	2199.92	1.17	102	134	5.16	12	44	17	9105.04	2307.68
18	PAA	9106.06	2248.39	9104.13	2199.79	1.17	198	243	5.16	41	86	18	9140.16	2259.15
19	VBB	9108.89	2242.35	9106.68	2199.96	1.17	13	42	5.16	22	22	19	9165.70	2259.11
20	VW	9108.89	2242.35	9155.20	2243.10	1.17	13	42	5.16	22	22			

Wasco HMF - Wasco Ave.-J St./6th St. PM



Receptors		
No	x1	y1
1	9066.33	1572.71
2	9067.43	1550.74
3	9065.54	1525.78
4	9042.99	1574.48
5	9018.05	1574.62
6	9068.72	1597.00
7	9069.37	1619.22
8	9069.28	1644.29
9	9045.92	1597.69
10	9020.94	1598.09
11	9093.15	1594.04
12	9091.44	1616.05
13	9091.83	1641.00
14	9114.70	1595.03
15	9139.70	1594.84
16	9093.33	1579.92
17	9093.07	1559.84
18	9092.29	1534.74
19	9115.68	1579.47
20	9140.70	1579.17

CALINE INPUT						2035			2009		
No	Link	x1	y1	x2	y2	Rate (g/mi)	Nobuild Traffic (vph)	Build Traffic (vph)	Rate (g/mi)	Existing Traffic (vph)	Existing + Proj (vph)
1	AE	9076.43	1641.22	9073.02	1590.83	1.17	69	69	5.16	26	26
2	BP	9080.04	1641.14	9075.49	1532.33	1.17	356	381	5.16	136	161
3	CJ	9086.33	1641.09	9085.39	1580.85	1.17	343	360	5.16	75	92
4	DE	9030.30	1592.16	9073.02	1590.83	1.17	69	69	5.16	26	26
5	FG	9030.37	1589.44	9080.69	1587.98	1.17	9	9	5.16	9	9
6	GH	9080.69	1587.98	9137.71	1587.47	1.17	0	0	5.16	0	0
7	IJ	9030.07	1583.89	9085.39	1580.85	1.17	60	60	5.16	17	17
8	KL	9029.96	1580.52	9073.87	1576.57	1.17	6	6	5.16	6	6
9	MN	9087.28	1585.90	9137.66	1584.77	1.17	0	0	5.16	0	0
10	LO	9073.87	1576.57	9071.55	1532.42	1.17	6	6	5.16	6	6
11	GQ	9080.69	1587.98	9080.34	1531.96	1.17	9	9	5.16	9	9
12	RJ	9085.18	1532.00	9085.39	1580.85	1.17	283	300	5.16	58	75
13	MS	9087.28	1585.90	9088.67	1532.15	1.17	0	0	5.16	0	0

Appendix C

C.7 Station Parking Lot CALINE Inputs

Parking Lot Emission Factors (Bakersfield North Option)

Running Exhaust Emission Factors (EF)

Speed (mph)	Emissions (g/mile) 2035
10	0.796

Source: EMFAC 2007 run for Kern Co. (SJV) Winter 2035 (41 F, 33%)

Start-Up Emission Factors

Rest Time (Hrs)	(g/trip) 2035
12	1.877

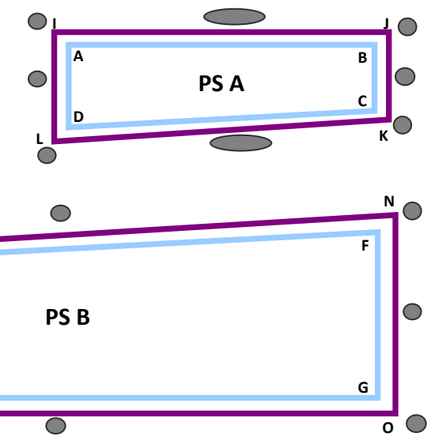
Source: EMFAC 2007 run for Kern Co. (SJV) Winter 2035 (41 F, 33%)

Parking Structure A
Parking Capacity: 1,500 spaces
300 spaces/level
5 Levels

Parking Structure B
Parking Capacity: 3,000 spaces
600 spaces/level
5 Levels

Assumptions:

Emfac 2007: Kern Co. (SJV) Winter 2035 (41 F, 33%)
Assumed max speed of 10 mph within parking lot
Assumed 50% LDA and 50% LDT1
Assumed vehicles had been in the parking lot for 12 hours (cold start)
Assumed vehicles had been in the short term parking lot for 3 hours (hot start)



Since the cold start emissions segment was included with the running emissions in the CALINE4 model, it had to be converted to a gram per mile factor. A corrected running emission factor was calculated to account for the running exhaust emissions and the slug of emissions released during cold start-up. The conversion of the slug start-up emission factors for outbound link from grams per trip to grams per mile were calculated using eq. 6-20 of the CALINE4- A Dispersion Model For Predicting Air Pollutant Concentrations Near Roadways guidance (Nov 1984) as presented below. Inbound link activities used the stabilized hot running emission factor as generated by EMFAC 2007 model for the specific scenario.

For Caline4 CO modeling, acess activity data is based on California High-Speed Train Project Technical Memorandum: Station Parking Area Guidance (PB. May 13, 2010). Worst case hourly assumptions assumed the average daily vehicles arriving to park (total inbound) and equal number of vehicles leaving the parking lot after at least 12 hours of parking period (total outbound) as link activities for Caline4 modeling. The allocation of activities is based on the parking structure capacity (note that the capacity of Parking Structure B is twice Parking Structure A).

$$EFL = \frac{1}{LL_T} * \left[(E_{tr} * f_e) + (EF_{hot} * SPD * t_e) \right] , \qquad (6\text{-}20)$$

Where:

		Parking Structure A	Parking Structure B
EFL :	Emission Factor in the Lot (grams/vehicle mile)		
LL_T :	Average distance traveled within the parking lot (mile)	0.132	0.196
E_{tr} :	Transient emission mass (grams/veh start)		
f_e :	Fraction of excess transient emission	0.106	0.155
EF_{hot} :	Hot stabilized emission rate at SPD		
SPD :	Average vehicle speed in the lot (mph), assumed 10 mph.	10	10
t_e :	Average egress time (hr). Assumed average time elapsed to reach the average distance within the parking lot (LL_T/SPD)	0.013	0.020

$f_e = f_r^3 - 3f_r^2 + 3f_r$ $\qquad f_r = r/R$.	Parking Structure A	Parking Structure B
f_r : Fraction of transient cycle completed	0.037	0.055
R : Total distance travelled during transient cycle. Assumed 3.59 miles (FTP-75)	3.59	3.59
r : Trip length to a certain destination. In this case, equals to LL_T	0.132	0.196

Calculation for EF with Cold Start

Location	Emission Factor in the Lot for Outbound Vehicle (g/mile)
	2035
Parking Structure A	2.308
Parking Structure B	2.280

Ridership Data for Caline4 Model

Location	Worst Case Access Activity (Vehile/hour)
	2035
Total Inbound*	2,300
Total Outound	2,300
PS. A Inbound	767
PS. A Outbound	767
PS. B Inbound	1,533
PS. B Outbound	1,533

* Total inbound access data was provided as number of vehicle arriving to park in the Station Parking Area Guidance (PB. May 13, 2010). Worst case hourly assumptions assumed the average daily vehicles arriving to park (total inbound) and equal number of vehicles leaving the parking lot after at least 12 hours of parking period (total outbound) as link activities for Caline4 modeling.

Links	Distance (Miles)	2035 Corrected Running EF (grams/mile)
AB (inbound)	0.08	0.796
BC (inbound)	0.04	0.796
CD (inbound)	0.09	0.796
DA (inbound)	0.05	0.796
EF (inbound)	0.13	0.796
FG (inbound)	0.08	0.796
GH (inbound)	0.13	0.796
HE (inbound)	0.06	0.796
IJ (outbound)	0.08	2.31
JK (outbound)	0.04	2.31
KL (outbound)	0.09	2.31
LI (outbound)	0.05	2.31
MN (outbound)	0.13	2.28
NO (outbound)	0.08	2.28
OP (outbound)	0.13	2.28
PM (outbound)	0.06	2.28

CALINE INPUT					2035	
Link	x1	y1	x2	y2	Rate (g/mi)	Traffic (vph)
AB (inbound)	7898.57	6264.19	8035.43	6261.86	0.796	383
BC (inbound)	8035.43	6261.86	8033.65	6197.04	0.796	383
CD (inbound)	8033.65	6197.04	7896.95	6178.72	0.796	383
DA (inbound)	7896.95	6178.72	7898.57	6264.19	0.796	383
EF (inbound)	7824.91	6115.04	8029.57	6134.40	0.796	767
FG (inbound)	8029.57	6134.40	8026.55	6011.69	0.796	767
GH (inbound)	8026.55	6011.69	7822.58	6015.55	0.796	767
HE (inbound)	7822.58	6015.55	7824.91	6115.04	0.796	767
IJ (outbound)	7902.07	6260.69	8031.93	6258.56	2.308	383
JK (outbound)	8031.93	6258.56	8030.15	6200.54	2.308	383
KL (outbound)	8030.15	6200.54	7900.45	6182.22	2.308	383
LI (outbound)	7900.45	6182.22	7902.07	6260.69	2.308	383
MN (outbound)	7828.41	6111.94	8026.07	6130.90	2.280	767
NO (outbound)	8026.07	6130.90	8023.05	6014.19	2.280	767
OP (outbound)	8023.05	6014.19	7826.08	6019.05	2.280	767
PM (outbound)	7826.08	6019.05	7828.41	6111.94	2.280	767

Note: UTM x axis (removed first two digits 31), UTM y axis(removed first 3 digits 391)
Link Type: pk, Height: 0 , Mix Zone: 10

CALINE INPUT

Receptor	x1	y1
1	7894.56	6269.32
2	7970.4	6268.61
3	8039.32	6267.68
4	8041.79	6234.90
5	8039.32	6195.17
6	7970.80	6181.86
7	7891.36	6173.91
8	7890.93	6216.08
9	7818.37	6114.97
10	7932.96	6133.42
11	8037.11	6138.10
12	8032.92	6063.19
13	8033.06	6008.47
14	7942.70	6005.91
15	7816.34	6010.42
16	7817.70	6059.86

Run
BKF North 2035
Worst Case Wind Angle
Central Bussines District
Evening
0.5 m/s , stdev 5, G, ambient 7.777 C

Parking Lot Emission Factors (Bakersfield South Option)

Running Exhaust Emission Factors (EF)

Speed (mph)	Emissions (g/mile) 2035
10	0.796

Source: EMFAC 2007 run for Kern Co. (SJV) Winter 2035 (41 F, 33%)

Start-Up Emission Factors

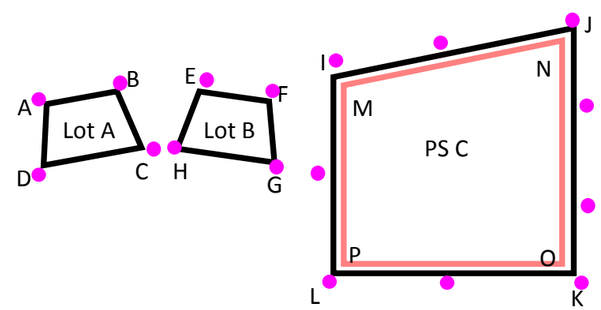
Rest Time (Hrs)	(g/trip) 2035
3	1.325
12	1.877

Source: EMFAC 2007 run for Kern Co. (SJV) Winter 2035 (41 F, 33%)

Parking Capacity:	4500	spaces
Each Level Capacity:	750	spaces/level
Short Term Lot:	90	spaces/ lot
	2	Short term Lot

Assumptions:

Emfac 2007: Kern Co. Winter 2035 (41 F, 33%)
Assumed max speed of 10 mph within parking lot
Assumed 50% LDA and 50% LDT1
Assumed vehicles had been in the parking lot for 12 hours (cold start)
Assumed vehicles had been in the short term parking lot for 3 hours (hot start)



Since the cold start emissions segment was included with the running emissions in the CALINE4 model, it had to be converted to a gram per mile factor. A corrected running emission factor was calculated to account for the running exhaust emissions and the slug of emissions released during cold start-up. The conversion of the slug start-up emission factors for outbound link from grams per trip to grams per mile were calculated using eq. 6-20 of the CALINE4- A Dispersion Model For Predicting Air Pollutant Concentrations Near Roadways guidance (Nov 1984) as presented below. Inbound link activities used the stabilized hot running emission factor as generated by EMFAC 2007 model for the specific scenario.

For Caline4 CO modeling, acess activity data is based on California High-Speed Train Project Technical Memorandum: Station Parking Area Guidance (PB. May 13, 2010). Worst case hourly assumptions assumed the average daily vehicles arriving to park (total inbound) and equal number of vehicles leaving the parking lot after at least 12 hours of parking period (total outbound) as link activities for the parking structure in the Caline4 modeling. Additional activities from the short term parking lots (A and B) was modeled assuming the maximum capacity of each lot, and all vehicles are traveling outbound with hot start (3 hours of parking period).

$$EFL = \frac{1}{LL_T} * \left[(E_{tr} * f_e) + (EF_{hot} * SPD * t_e) \right] , \qquad (6\text{-}20)$$

Where:

		Short Term Parking Lot	Parking Structure C
EFL :	Emission Factor in the Lot (grams/vehicle mile)		
LL_T :	Average distance traveled within the parking lot (mile)	0.070	0.206
E_{tr} :	Transient emission mass (grams/veh start)		
f_e :	Fraction of excess transient emission	0.058	0.162
EF_{hot} :	Hot stabilized emission rate at SPD		
SPD :	Average vehicle speed in the lot (mph), assumed 10 mph.	10	10
t_e :	Average egress time (hr). Assumed average time elapsed to reach the average distance within the parking lot (LL_T/SPD)	0.007	0.021

$f_e = f_r^3 - 3f_r^2 + 3f_r$ $\qquad f_r = r/R$.	Parking Structure A	Parking Structure A
f_r : Fraction of transient cycle completed	0.020	0.057
R : Total distance travelled during transient cycle. Assumed 3.59 miles (FTP-75)	3.59	3.59
r : Trip length to a certain destination. In this case, equals to LL_T	0.070	0.206

Calculation for EF with Cold Start

Location	Emission Factor in the Lot for Outbound Vehicle (g/mile)
	2035
Short Term Lot A&B	1.882
Parking Structure C	2.276

Ridership Data for Caline4 Model

Location	Worst Case Access Activity (Vehile/hour)
	2035
Total Inbound*	2,300
Total Outound	2,300
STL A Outbound	90
STL B Outbound	90
PS. C Inbound	2,300
PS. C Outbound	2,300

* Total inbound access data was provided as number of vehicle arriving to park in the Station Parking Area Guidance (PB. May 13, 2010). Worst case hourly assumptions assumed the average daily vehicles arriving to park (total inbound) and equal number of vehicles leaving the parking lot after at least 12 hours of parking period (total outbound) as link activities for Caline4 modeling.

Links	Distance (Miles)	2035 Corrected Running EF (grams/mile)
AB (outbound)	0.03	1.882
BC (outbound)	0.03	1.882
CD (outbound)	0.04	1.882
DA (outbound)	0.03	1.882
EF (outbound)	0.03	1.882
FG (outbound)	0.03	1.882
GH (outbound)	0.04	1.882
HE (outbound)	0.03	1.882
IJ (inbound)	0.10	0.80
JK (inbound)	0.11	0.80
KL (inbound)	0.10	0.80
LI (inbound)	0.10	0.80
MN (outbound)	0.10	2.276
NO (outbound)	0.11	2.276
OP (outbound)	0.10	2.276
PM (outbound)	0.10	2.276

CALINE INPUT					2035	
Link	x1	y1	x2	y2	Rate (g/mi)	Traffic (vph)
AB (outbound)	7679.80	6098.34	7732.60	6114.19	1.882	45
BC (outbound)	7732.60	6114.19	7746.26	6068.20	1.882	45
CD (outbound)	7746.26	6068.20	7677.32	6049.04	1.882	45
DA (outbound)	7677.32	6049.04	7679.80	6098.34	1.882	45
EF (outbound)	7797.42	6114.63	7852.34	6099.01	1.882	45
FG (outbound)	7852.34	6099.01	7846.33	6044.88	1.882	45
GH (outbound)	7846.33	6044.88	7782.56	6066.04	1.882	45
HE (outbound)	7782.56	6066.04	7797.42	6114.63	1.882	45
IJ (inbound)	7874.20	6156.70	8034.28	6177.20	0.796	1150
JK (inbound)	8034.28	6177.20	8031.56	5994.43	0.796	1150
KL (inbound)	8031.56	5994.43	7872.14	5995.49	0.796	1150
LI (inbound)	7872.14	5995.49	7874.20	6156.70	0.796	1150
MN (outbound)	7878.70	6153.20	8030.78	6173.70	2.276	1150
NO (outbound)	8030.78	6173.70	8027.96	5997.93	2.276	1150
OP (outbound)	8027.96	5997.93	7875.64	5998.99	2.276	1150
PM (outbound)	7875.64	5998.99	7878.70	6153.20	2.276	1150

Note: UTM x axis (removed first two digits 37), UTM y axis(removed first 3 digits 391)
Link Type: pk, Height: 0 , Mix Zone: 10

CALINE INPUT

Receptor	x1	y1
1	7673.25	6107.89
2	7741.81	6119.64
3	7681.17	6042.33
4	7752.78	6057.30
5	7788.76	6115.95
6	7857.70	6091.60
7	7846.50	6039.99
8	7775.14	6058.86
9	7871.06	6159.15
10	7954.09	6172.88
11	8039.84	6182.24
12	8039.95	6116.52
13	8037.86	6051.78
14	8034.09	5990.39
15	7950.37	5989.36
16	7870.95	5990.36
17	7864.92	6058.41

Run

BKF South 2035
Worst Case Wind Angle
Central Bussines District
Evening
0.5 m/s , stdev 5, G, ambient 7.777 C

Parking Lot Emission Factors (Fresno Mariposa Option)

Running Exhaust Emission Factors (EF)

Speed (mph)	Emissions (g/mile) 2035
10	0.813

Source: EMFAC 2007 run for Fresno Co. (SJV) Winter, 2035 (31 F, 41% RH)

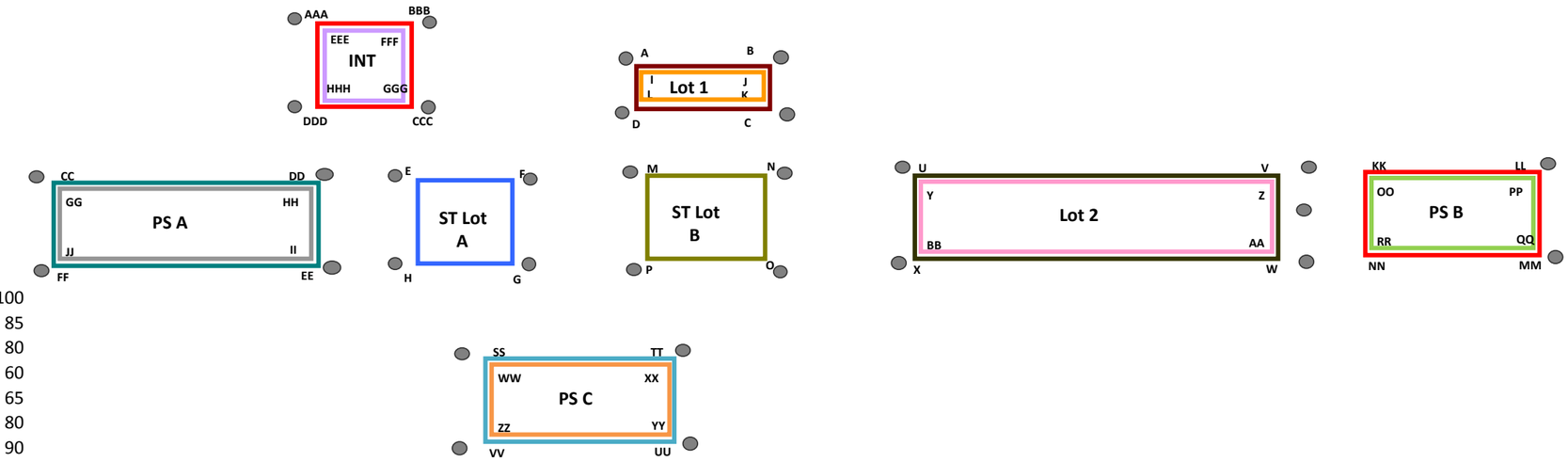
Start-Up Emission Factors

Rest Time (Hrs)	Emissions (g/trip) 2035
3	1.3785
12	1.9515

Source: EMFAC 2007 run for Fresno Co. (SJV) Winter, 2035 (31 F, 41% RH)

Assumptions:

Emfac 2007: Fresno Co. (SJV) Winter, 2035 (31 F, 41% RH)
Assumed max speed of 10 mph within parking lot
Assumed 50% LDA and 50% LDT1
Assumed vehicles had been in the parking lot for 12 hours (cold start)
Assumed vehicles had been in the short term parking lot for 3 hours (hot start)



Short Term Parking Lot (ST Lot)

Parking Capacity:	100 spaces	
INT	130	100
PS A	165	85
PSB	140	80
PSC	140	60
Lot 1	145	65
lot 2	140	80
ST Lot	90	90

Since the cold start emissions segment was included with the running emissions in the CALINE4 model, it had to be converted to a gram per mile factor. A corrected running emission factor was calculated to account for the running exhaust emissions and the slug of emissions released during cold start-up. The conversion of the slug start-up emission factors for outbound link from grams per trip to grams per mile were calculated using eq. 6-20 of the CALINE4- A Dispersion Model For Predicting Air Pollutant Concentrations Near Roadways guidance (Nov 1984) as presented below. Inbound link activities used the stabilized hot running emission factor as generated by EMFAC 2007 model for the specific scenario.

For Caline4 CO modeling, acess activity data is based on California High-Speed Train Project Technical Memorandum: Station Parking Area Guidance (PB. May 13, 2010). Worst case hourly assumptions assumed the average daily vehicles arriving to park (total inbound) and equal number of vehicles leaving the parking lot after at least 12 hours of parking period (total outbound) as link activities for the parking structure in the Caline4 modeling. The allocation of activities is based on the parking structure capacity (evenly distributed among the four parking lots). Additional activities from the short term parking lot was modeled assuming the maximum capacity of the lot, and all vehicles are traveling outbound with hot start (3 hours of parking period).

$$EFL = \frac{1}{LL_T} * \left[(E_{tr} * f_e) + (EF_{hot} * SPD * t_e) \right] , \qquad (6\text{-}20)$$

Where:

		PS B, Lot 2	Short Term Parking Lot	Int	PS A	PS C	Lot 1
EFL :	Emission Factor in the Lot (grams/vehicle mile)						
LL_T :	Average distance traveled within the parking lot (mile)	0.137	0.130	0.143	0.155	0.124	0.130
E_{tr} :	Transient emission mass (grams/veh start)						
f_e :	Fraction of excess transient emission	0.110	0.105	0.115	0.124	0.100	0.105
EF_{hot} :	Hot stabilized emission rate at SPD						
SPD :	Average vehicle speed in the lot (mph), assumed 10 mph.	10	10	10	10	10	10
t_e :	Average egress time (hr). Assumed average time elapsed to reach the average distance within the parking lot (LL_T/SPD)	0.014	0.013	0.014	0.016	0.012	0.013

$f_e = f_r^3 - 3f_r^2 + 3f_r$ $\qquad f_r = r/R$.		PS B, Lot 2	Short Term Parking Lot	Int	PS A	PS C	Lot 1
f_r :	Fraction of transient cycle completed	0.038	0.036	0.040	0.043	0.035	0.036
R :	Total distance travelled during transient cycle. Assumed 3.59 miles (FTP-75)	3.59	3.59	3.59	3.59	3.59	3.59
r :	Trip length to a certain destination. In this case, equals to LL_T	0.137	0.130	0.143	0.155	0.124	0.130

Calculation for EF with Cold Start

Location	Emission Factor in the Lot for Outbound Vehicle (g/mile)
	2035
PS B, Lot 2	2.382
Short Term Parking Lot	1.924
Int	2.380
PS A	2.374
PS C	2.388
Lot 1	2.385

Ridership Data for Caline4 Model

Location	Worst Case Access Activity (Vehile/hour)
	2035
Total Inbound*	2,200
Total Outound	2,200
PS and Lot Inbound	367
PS and Lot Outbound	367
ST Lot Outbound	100

* Total inbound access data was provided as number of vehicle arriving to park in the Station Parking Area Guidance (PB. May 13, 2010). Worst case hourly assumptions assumed the average daily vehicles arriving to park (total inbound) and equal number of vehicles leaving the parking lot after at least 12 hours of parking period (total outbound) as link activities for Caline4 modeling.Short term Lot assumed maximum capacity as outbound vph.

Links	Distance (Miles)	2035 Corrected Running EF (grams/mile)	Links	Distance (Miles)	2035 Corrected Running EF (grams/mile)
AB (outbound)	0.09	2.385	JJGG (inbound)	0.05	2.374
BC (outbound)	0.04	2.385	KKLL (outbound)	0.09	2.382
CD (outbound)	0.09	2.385	LLMM (outbound)	0.05	2.382
DA (outbound)	0.04	2.385	MMNN (outbound)	0.09	2.382
IJ (inbound)	0.09	2.385	NNKK (outbound)	0.05	2.382
JK (inbound)	0.04	2.385	OOPP (inbound)	0.09	2.382
KL (inbound)	0.09	2.385	PPQQ (inbound)	0.05	2.382
LI (inbound)	0.04	2.385	QQRR (inbound)	0.09	2.382
EF (outbound)	0.06	1.924	RROO (inbound)	0.05	2.382
FG (outbound)	0.06	1.924	SSTT (outbound)	0.09	2.388
GH (outbound)	0.06	1.924	TTUU (outbound)	0.04	2.388
HE (outbound)	0.06	1.924	UUVV (outbound)	0.09	2.388
MN (outbound)	0.06	1.924	VVSS (outbound)	0.04	2.388
NO (outbound)	0.06	1.924	WWXX (inbound)	0.09	2.388
OP (outbound)	0.06	1.924	XXYY (inbound)	0.04	2.388
PM (outbound)	0.06	1.924	YYZZ (inbound)	0.09	2.388
UV (outbound)	0.09	2.382	ZZWW (inbound)	0.04	2.388
VW (outbound)	0.05	2.382	AAABBB (outbound)	0.08	2.380
WX (outbound)	0.09	2.382	BBBCCC (outbound)	0.06	2.380
XU (outbound)	0.05	2.382	CCCDDD (outbound)	0.08	2.380
YZ (inbound)	0.09	2.382	DDDAAA (outbound)	0.06	2.380
ZAA (inbound)	0.05	2.382	EEEFFF (inbound)	0.08	2.380
AABB (inbound)	0.09	2.382	FFFGGG (inbound)	0.06	2.380
BBY (inbound)	0.05	2.382	GGGHHH (inbound)	0.08	2.380
CCDD (outbound)	0.10	2.374	HHHEEE (inbound)	0.06	2.380
DDEE (outbound)	0.05	2.374			
EEFF (outbound)	0.10	2.374			
FFCC (outbound)	0.05	2.374			
GGHH (inbound)	0.10	2.374			
HHII (inbound)	0.05	2.374			
IIJJ (inbound)	0.10	2.374			

CALINE INPUT					2035	
Link	x1	y1	x2	y2	Rate (g/mi)	Traffic (vph)
AB (outbound)	4063654.04	4867298.81	4063788.02	4867246.11	2.385	183
BC (outbound)	4063788.02	4867246.11	4063760.67	4867185.60	2.385	183
CD (outbound)	4063760.67	4867185.60	4063628.03	4867238.85	2.385	183
DA (outbound)	4063628.03	4867238.85	4063654.04	4867298.81	2.385	183
IJ (inbound)	4063656.77	4867294.58	4063784.17	4867244.32	2.385	183
JK (inbound)	4063784.17	4867244.32	4063757.94	4867189.83	2.385	183
KL (inbound)	4063757.94	4867189.83	4063632.27	4867240.64	2.385	183
LI (inbound)	4063632.27	4867240.64	4063656.77	4867294.58	2.385	183
EF (outbound)	4063469.58	4867258.37	4063553.77	4867227.59	1.924	50
FG (outbound)	4063553.77	4867227.59	4063516.19	4867142.86	1.924	50
GH (outbound)	4063516.19	4867142.86	4063433.65	4867180.43	1.924	50
HE (outbound)	4063433.65	4867180.43	4063469.58	4867258.37	1.924	50
MN (outbound)	4063664.71	4867183.80	4063747.52	4867148.86	1.924	50
NO (outbound)	4063747.52	4867148.86	4063712.95	4867058.86	1.924	50
OP (outbound)	4063712.95	4867058.86	4063627.16	4867096.15	1.924	50
PM (outbound)	4063627.16	4867096.15	4063664.71	4867183.80	1.924	50
UV (outbound)	4063935.36	4867070.84	4064065.14	4867015.56	2.382	183
VW (outbound)	4064065.14	4867015.56	4064032.36	4866943.40	2.382	183
WX (outbound)	4064032.36	4866943.40	4063905.04	4866995.08	2.382	183
XU (outbound)	4063905.04	4866995.08	4063935.36	4867070.84	2.382	183
YZ (inbound)	4063938.09	4867066.61	4064060.91	4867015.56	2.382	183
ZAA (inbound)	4064060.91	4867015.56	4064029.63	4866947.63	2.382	183
AABB (inbound)	4064029.63	4866947.63	4063909.27	4866995.08	2.382	183
BBY (inbound)	4063909.27	4866995.08	4063938.09	4867066.61	2.382	183
CCDD (outbound)	4063278.84	4867344.86	4063425.08	4867281.67	2.374	183
DDEE (outbound)	4063425.08	4867281.67	4063397.60	4867203.20	2.374	183
EEFF (outbound)	4063397.60	4867203.20	4063240.31	4867271.29	2.374	183
FFCC (outbound)	4063240.31	4867271.29	4063278.84	4867344.86	2.374	183
GGHH (inbound)	4063281.57	4867341.61	4063420.85	4867281.30	2.374	183
HHII (inbound)	4063420.85	4867281.30	4063394.87	4867206.45	2.374	183
IIJJ (inbound)	4063394.87	4867206.45	4063244.54	4867271.66	2.374	183
JJGG (inbound)	4063244.54	4867271.66	4063281.57	4867341.61	2.374	183
KKLL (outbound)	4064089.89	4867009.67	4064223.32	4866956.72	2.382	183
LLMM (outbound)	4064223.32	4866956.72	4064187.19	4866879.95	2.382	183
MMNN (outbound)	4064187.19	4866879.95	4064061.20	4866932.68	2.382	183
NNKK (outbound)	4064061.20	4866932.68	4064089.89	4867009.67	2.382	183
OOPP (inbound)	4064092.62	4867005.44	4064219.09	4866959.45	2.382	183
PPQQ (inbound)	4064219.09	4866959.45	4064184.46	4866884.18	2.382	183
QQRR (inbound)	4064184.46	4866884.18	4064065.43	4866929.95	2.382	183
RROO (inbound)	4064065.43	4866929.95	4064092.62	4867005.44	2.382	183
SSTT (outbound)	4063265.82	4866784.34	4063391.72	4866731.52	2.388	183
TTUU (outbound)	4063391.72	4866731.52	4063372.83	4866678.88	2.388	183
UUVV (outbound)	4063372.83	4866678.88	4063245.43	4866730.57	2.388	183
VVSS (outbound)	4063245.43	4866730.57	4063265.82	4866784.34	2.388	183
WWXX (inbound)	4063268.55	4866781.09	4063387.49	4866731.15	2.388	183

CALINE INPUT					2035	
Link	x1	y1	x2	y2	Rate (g/mi)	Traffic (vph)
XXYY (inbound)	4063387.49	4866731.15	4063370.10	4866682.13	2.388	183
YYZZ (inbound)	4063370.10	4866682.13	4063249.66	4866730.94	2.388	183
ZZWW (inbound)	4063249.66	4866730.94	4063268.55	4866781.09	2.388	183
AAABBB (outbound)	4063519.65	4867395.55	4063634.66	4867346.01	2.380	183
BBBCCC (outbound)	4063634.66	4867346.01	4063598.72	4867249.41	2.380	183
CCCDDD (outbound)	4063598.72	4867249.41	4063481.41	4867299.19	2.380	183
DDDAAA (outbound)	4063481.41	4867299.19	4063519.65	4867395.55	2.380	183
EEEFFF (inbound)	4063522.38	4867391.32	4063630.81	4867344.22	2.380	183
FFFGGG (inbound)	4063630.81	4867344.22	4063595.99	4867253.64	2.380	183
GGGHHH (inbound)	4063595.99	4867253.64	4063485.65	4867300.98	2.380	183
HHHEEE (inbound)	4063485.65	4867300.98	4063522.38	4867391.32	2.380	183

Note: UTM x axis , UTM y axis(removed first 1 digit)
Link Type: pk, Height: 0 , Mix Zone: 10

CALINE INPUT

Receptor	x1	y1
1	4063648.82	4867302.35
2	4063793.65	4867245.38
3	4063764.97	4867178.86
4	4063622.69	4867236.24
5	4063463.40	4867258.00
6	4063547.01	4867234.87
7	4063507.15	4867143.12
8	4063432.89	4867180.63
9	4063663.20	4867188.41
10	4063753.71	4867151.84
11	4063716.99	4867059.15
12	4063621.20	4867096.28
13	4063932.51	4867076.90
14	4064063.92	4867024.48
15	4064026.18	4866940.45
16	4063897.17	4866991.33
17	4063277.15	4867350.26
18	4063421.79	4867279.58
19	4063402.06	4867195.83
20	4063230.41	4867269.79
21	4063263.82	4866788.85
22	4063397.31	4866732.18
23	4063373.08	4866676.55
24	4063240.53	4866728.03
25	4064090.68	4867014.76
26	4064225.67	4866956.71
27	4064192.10	4866872.67
28	4064056.19	4866929.73
29	4063517.37	4867400.98
30	4063638.40	4867346.80
31	4063600.81	4867243.99
32	4063477.36	4867296.26

Run
F Mar 2035
Worst Case Wind Angle
Central Bussines District
0.5 m/s , stdev 5, G, ambient 2.22 C

Caline Model Run Plan

	Link 1-20	**Link 21-40**	**Link 41-56**
Rec 1-20	**Run 1**	**Run 2**	**Run 3**
Rec 21-32	**Run 3**	**Run 5**	**Run 6**

Parking Lot Emission Factors (Fresno Kern Option)

Running Exhaust Emission Factors (EF)

Speed (mph)	Emissions (g/mile) 2035
10	0.813

Source: EMFAC 2007 run for Fresno Co. (SJV) Winter, 2035 (31 F, 41% RH)

Start-Up Emission Factors

Rest Time (Hrs)	(g/trip) 2035
3	1.3785
12	1.9515

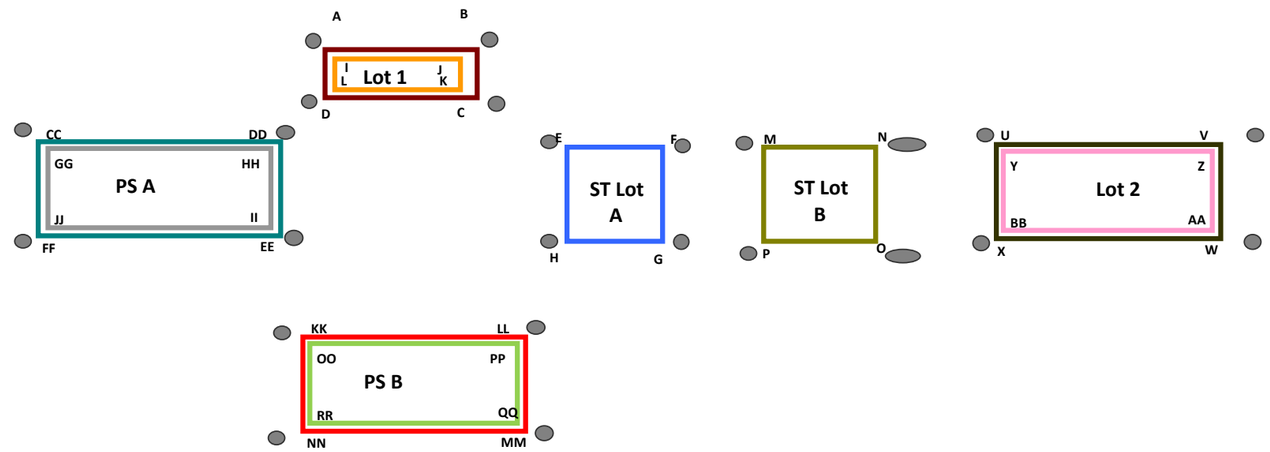
Source: EMFAC 2007 run for Fresno Co. (SJV) Winter, 2035 (31 F, 41% RH)

Short Term Parking Lot

Parking Capacity:	175 spaces	
PS A	130	85
PSB	140	60
Lot 1	145	65
lot 2	140	80
ST Lot	90	90

Assumptions:

Emfac 2007: Fresno Co. (SJV) Winter, 2035 (31 F, 41% RH)
Assumed max speed of 10 mph within parking lot
Assumed 50% LDA and 50% LDT1
Assumed vehicles had been in the parking lot for 12 hours (cold start)
Assumed vehicles had been in the short term parking lot for 3 hours (hot start)



Since the cold start emissions segment was included with the running emissions in the CALINE4 model, it had to be converted to a gram per mile factor. A corrected running emission factor was calculated to account for the running exhaust emissions and the slug of emissions released during cold start-up. The conversion of the slug start-up emission factors for outbound link from grams per trip to grams per mile were calculated using eq. 6-20 of the CALINE4- A Dispersion Model For Predicting Air Pollutant Concentrations Near Roadways guidance (Nov 1984) as presented below. Inbound link activities used the stabilized hot running emission factor as generated by EMFAC 2007 model for the specific scenario.

For Caline4 CO modeling, acess activity data is based on California High-Speed Train Project Technical Memorandum: Station Parking Area Guidance (PB. May 13, 2010). Worst case hourly assumptions assumed the average daily vehicles arriving to park (total inbound) and equal number of vehicles leaving the parking lot after at least 12 hours of parking period (total outbound) as link activities for the parking structure in the Caline4 modeling. Since the parking lots are almost the same size, the activities were evenly distributed among the four parking lots. Additional activities from the short term parking lot was modeled assuming the maximum capacity of the lot, and all vehicles are traveling outbound with hot start (3 hours of parking period).

$$EFL = \frac{1}{LL_T} * \left[(E_{tr} * f_e) + (EF_{hot} * SPD * t_e) \right] , \qquad (6\text{-}20)$$

Where:

		PS A	PS B	Short Term Parking Lot	Lot 1	Lot 2
EFL :	Emission Factor in the Lot (grams/vehicle mile)					
LL_T :	Average distance traveled within the parking lot (mile)	0.134	0.124	0.112	0.130	0.137
E_{tr} :	Transient emission mass (grams/veh start)					
f_e :	Fraction of excess transient emission	0.108	0.100	0.091	0.105	0.110
EF_{hot} :	Hot stabilized emission rate at SPD					
SPD :	Average vehicle speed in the lot (mph), assumed 10 mph.	10	10	10	10	10
t_e :	Average egress time (hr). Assumed average time elapsed to reach the average distance within the parking lot (LL_T/SPD)	0.013	0.012	0.011	0.013	0.014

$f_e = f_r^3 - 3f_r^2 + 3f_r$ $\qquad f_r = r/R$.		PS A	PS B	Short Term Parking Lot	Lot 1	Lot 2
f_r :	Fraction of transient cycle completed	0.037	0.035	0.031	0.036	0.038
R :	Total distance travelled during transient cycle. Assumed 3.59 miles (FTP-75)	3.59	3.59	3.59	3.59	3.59
r :	Trip length to a certain destination. In this case, equals to LL_T	0.134	0.124	0.112	0.130	0.137

Calculation for EF with Cold Start

Location	Emission Factor in the Lot for Outbound Vehicle (g/mile)
	2035
PS A	2.384
PS B	2.388
Short Term Lot	1.929
Lot 1	2.385
Lot 2	2.382

Ridership Data for Caline4 Model

Location	Worst Case Access Activity (Vehile/hour)
	2035
Total Inbound*	2,200
Total Outound	2,200
PS/ Lot Outbound	550
PS/ Lot Inbound	550
ST Lot Outbound	175

* Total inbound access data was provided as number of vehicle arriving to park in the Station Parking Area Guidance (PB. May 13, 2010). Worst case hourly assumptions assumed the average daily vehicles arriving to park (total inbound) and equal number of vehicles leaving the parking lot after at least 12 hours of parking period (total outbound) as link activities for Caline4 modeling. Short term Lot assumed maximum capacity as outbound vph.

Table C-25
Fresno Kern Option Parking Lot CALINE Inputs

Links	Distance (Miles)	2035 Corrected Running EF (grams/mile)
AB (outbound)	0.09	2.385
BC (outbound)	0.04	2.385
CD (outbound)	0.09	2.385
DA (outbound)	0.04	2.385
IJ (inbound)	0.09	2.385
JK (inbound)	0.04	2.385
KL (inbound)	0.09	2.385
LI (inbound)	0.04	2.385
EF (outbound)	0.06	1.929
FG (outbound)	0.06	1.929
GH (outbound)	0.06	1.929
HE (outbound)	0.06	1.929
MN (outbound)	0.06	1.929
NO (outbound)	0.06	1.929
OP (outbound)	0.06	1.929
PM (outbound)	0.06	1.929
UV (outbound)	0.09	2.382
VW (outbound)	0.05	2.382
WX (outbound)	0.09	2.382
XU (outbound)	0.05	2.382
YZ (inbound)	0.09	2.382
ZAA (inbound)	0.05	2.382
AABB (inbound)	0.09	2.382
BBY (inbound)	0.05	2.382
CCDD (outbound)	0.08	2.384
DDEE (outbound)	0.05	2.384
EEFF (outbound)	0.08	2.384
FFCC (outbound)	0.05	2.384
GGHH (inbound)	0.08	2.384
HHII (inbound)	0.05	2.384
IIJJ (inbound)	0.08	2.384
JJGG (inbound)	0.05	2.384
KKLL (outbound)	0.09	2.388
LLMM (outbound)	0.04	2.388
MMNN (outbound)	0.09	2.388
NNKK (outbound)	0.04	2.388
OOPP (inbound)	0.09	2.388
PPQQ (inbound)	0.04	2.388
QQRR (inbound)	0.09	2.388
RROO (inbound)	0.04	2.388

CALINE INPUT					2035	
Link	x1	y1	x2	y2	Rate (g/mi)	Traffic (vph)
AB (outbound)	4063654.04	4867298.81	4063788.02	4867246.11	2.385	275
BC (outbound)	4063788.02	4867246.11	4063760.67	4867185.60	2.385	275
CD (outbound)	4063760.67	4867185.60	4063628.03	4867238.85	2.385	275
DA (outbound)	4063628.03	4867238.85	4063654.04	4867298.81	2.385	275
IJ (inbound)	4063656.77	4867294.58	4063784.17	4867244.32	2.385	275
JK (inbound)	4063784.17	4867244.32	4063757.94	4867189.83	2.385	275
KL (inbound)	4063757.94	4867189.83	4063632.27	4867240.64	2.385	275
LI (inbound)	4063632.27	4867240.64	4063656.77	4867294.58	2.385	275
EF (outbound)	4063780.37	4867136.14	4063875.83	4867097.90	1.929	88
FG (outbound)	4063875.83	4867097.90	4063841.28	4867022.40	1.929	88
GH (outbound)	4063841.28	4867022.40	4063750.80	4867059.67	1.929	88
HE (outbound)	4063750.80	4867059.67	4063780.37	4867136.14	1.929	88
MN (outbound)	4063985.20	4867057.59	4064065.14	4867015.56	1.929	88
NO (outbound)	4064065.14	4867015.56	4064032.36	4866943.40	1.929	88
OP (outbound)	4064032.36	4866943.40	4063954.89	4866973.71	1.929	88
PM (outbound)	4063954.89	4866973.71	4063985.20	4867057.59	1.929	88
UV (outbound)	4064089.89	4867009.67	4064223.32	4866956.72	2.382	275
VW (outbound)	4064223.32	4866956.72	4064187.19	4866879.95	2.382	275
WX (outbound)	4064187.19	4866879.95	4064061.20	4866932.68	2.382	275
XU (outbound)	4064061.20	4866932.68	4064089.89	4867009.67	2.382	275
YZ (inbound)	4064092.617	4867006.42	4064219.094	4866956.35	2.382	275
ZAA (inbound)	4064219.094	4866956.35	4064184.463	4866883.2	2.382	275
AABB (inbound)	4064184.463	4866883.2	4064065.426	4866933.05	2.382	275
BBY (inbound)	4064065.426	4866933.05	4064092.617	4867006.42	2.382	275
CCDD (outbound)	4063307.98	4867331.03	4063425.08	4867281.67	2.384	275
DDEE (outbound)	4063425.08	4867281.67	4063397.6	4867203.2	2.384	275
EEFF (outbound)	4063397.6	4867203.2	4063273.71	4867254.39	2.384	275
FFCC (outbound)	4063273.71	4867254.39	4063307.98	4867331.03	2.384	275
GGHH (inbound)	4063310.707	4867327.78	4063420.854	4867281.3	2.384	275
HHII (inbound)	4063420.854	4867281.3	4063394.873	4867206.45	2.384	275
IIJJ (inbound)	4063394.873	4867206.45	4063277.936	4867254.76	2.384	275
JJGG (inbound)	4063277.936	4867254.76	4063310.707	4867327.78	2.384	275
KKLL (outbound)	4063265.82	4866784.34	4063391.72	4866731.52	2.388	275
LLMM (outbound)	4063391.72	4866731.52	4063372.83	4866678.88	2.388	275
MMNN (outbound)	4063372.83	4866678.88	4063245.43	4866730.57	2.388	275
NNKK (outbound)	4063245.43	4866730.57	4063265.82	4866784.34	2.388	275
OOPP (inbound)	4063268.547	4866781.09	4063387.494	4866731.15	2.388	275
PPQQ (inbound)	4063387.494	4866731.15	4063370.103	4866682.13	2.388	275
QQRR (inbound)	4063370.103	4866682.13	4063249.656	4866730.94	2.388	275
RROO (inbound)	4063249.656	4866730.94	4063268.547	4866781.09	2.388	275

Note: UTM x axis , UTM y axis(removed first 1 digit)
Link Type: pk, Height: 0 , Mix Zone: 10

CALINE INPUT

Receptor	x1	y1
1	4063648.82	4867302.35
2	4063793.65	4867245.38
3	4063764.97	4867178.86
4	4063622.69	4867236.24
5	4063779.35	4867140.60
6	4063879.19	4867100.89
7	4063841.98	4867018.37
8	4063744.29	4867057.64
9	4063983.21	4867057.75
10	4064063.92	4867024.48
11	4064026.18	4866940.45
12	4063948.74	4866970.65
13	4064090.68	4867014.76
14	4064225.67	4866956.71
15	4064192.10	4866872.67
16	4064056.19	4866929.73
17	4063306.63	4867340.44
18	4063421.79	4867279.58
19	4063402.06	4867195.83
20	4063268.64	4867248.57
21	4063263.82	4866788.85
22	4063397.31	4866732.18
23	4063373.08	4866676.55
24	4063240.53	4866728.03

Run
F Kern 2035
Worst Case Wind Angle
Central Bussines District
0.5 m/s , stdev 5, G, ambient 2.22 C

Caline Model Run Plan		
	Link 1-20	**Link 21-40**
Rec 1-20	**Run 1**	**Run 2**
Rec 21-24	**Run 3**	**Run 4**

Parking Lot Emission Factors (Kings Tulare Regional Option)

Running Exhaust Emission Factors (EF)

Speed (mph)	Emissions (g/mile) 2035
10	0.8935

Source: EMFAC 2007 run for Kern Co. (SJV) Winter 2035 (41 F, 33%)

Start-Up Emission Factors

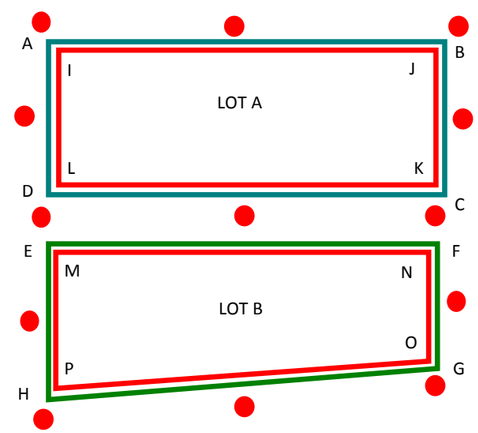
Rest Time (Hrs)	(g/trip) 2035
12	2.135

Source: EMFAC 2007 run for Kern Co. (SJV) Winter 2035 (41 F, 33%)

Parking Capacity:	1601	spaces		
Each Lot Capacity:	800	spaces/lot		
Parking Lot length:	920	ft	280.4	Meter
Parking Lot Width:	345	ft (Lot A)	105.2	Meter
	250	ft (Lot B Short)	76.2	Meter
	405	ft (Lot B Long)	123.4	Meter
	975	ft (Lot B Diag)	297.2	Meter

Assumptions:

Emfac 2007: Kings Co. (SJV) Winter 2035 (35 F, 46%)
Assumed max speed of 10 mph within parking lot
Assumed 50% LDA and 50% LDT1
Assumed vehicles had been in the parking lot for 12 hours (cold start)



Since the cold start emissions segment was included with the running emissions in the CALINE4 model, it had to be converted to a gram per mile factor. A corrected running emission factor was calculated to account for the running exhaust emissions and the slug of emissions released during cold start-up. The conversion of the slug start-up emission factors for outbound link from grams per trip to grams per mile were calculated using eq. 6-20 of the CALINE4- A Dispersion Model For Predicting Air Pollutant Concentrations Near Roadways guidance (Nov 1984) as presented below. Inbound link activities used the stabilized hot running emission factor as generated by EMFAC 2007 model for the specific scenario.

For Caline4 CO modeling, access activity data is based on CFor Caline4 CO modeling, acess activity data is based on California High-Speed Train Project Technical Memorandum: Station Parking Area Guidance Rev 4 (May 10, 2010) Table A-5 Highest Station Boardings and Access Activity for New Stations - 2035, 2030, and 2025. Worst case hourly assumptions assumed the average daily vehicles arriving to park (total inbound) and equal number of vehicles leaving the parking lot after at least 12 hours of parking period (total outbound) as link activities for Caline4 modeling. The allocation of activities is assumed equal between the two parking lots.

$$EFL = \frac{1}{LL_T} * \left[(E_{tr} * f_e) + (EF_{hot} * SPD * t_e) \right] , \qquad (6\text{-}20)$$

Where:

		Parking Lot A	Parking Lot B
EFL :	Emission Factor in the Lot (grams/vehicle mile)		
LL_T :	Average distance traveled within the parking lot (mile)	0.239	0.246
E_{tr} :	Transient emission mass (grams/veh start)		
f_e :	Fraction of excess transient emission	0.187	0.192
EF_{hot} :	Hot stabilized emission rate at SPD		
SPD :	Average vehicle speed in the lot (mph), assumed 10 mph.	10	10
t_e :	Average egress time (hr). Assumed average time elapsed to reach the average distance within the parking lot (LL_T/SPD)	0.024	0.025

$f_e = f_r^3 - 3f_r^2 + 3f_r$ $\qquad f_r = r/R$.		Parking Structure A	Parking Structure B
f_r :	Fraction of transient cycle completed	0.067	0.069
R :	Total distance travelled during transient cycle. Assumed 3.59 miles (FTP-75)	3.59	3.59
r :	Trip length to a certain destination. In this case, equals to LL_T	0.239	0.246

Calculation for EF with Cold Start

Location	Emission Factor in the Lot for Outbound Vehicle (g/mile) 2035
Parking Structure A	2.561
Parking Structure B	2.558

Ridership Data for Caline4 Model

Location	Worst Case Access Activity (Vehile/hour) 2035
Total Inbound*	800
Total Outound	800
PL. A Inbound	400
PL. A Outbound	400
PL. B Inbound	400
PL. B Outbound	400

* Total inbound access data was provided as number of vehicle arriving to park in the Station Parking Area Guidance (PB. May 13, 2010). Worst case hourly assumptions assumed the average daily vehicles arriving to park (total inbound) and equal number of vehicles leaving the parking lot after at least 12 hours of parking period (total outbound) as link activities for Caline4 modeling.

Links	Distance (Miles)	2035 Corrected Running EF (grams/mile)
AB (inbound)	0.17	0.894
BC (inbound)	0.07	0.894
CD (inbound)	0.17	0.894
DA (inbound)	0.07	0.894
EF (inbound)	0.18	0.894
FG (inbound)	0.05	0.894
GH (inbound)	0.18	0.894
HE (inbound)	0.08	0.894
IJ (outbound)	0.17	2.56
JK (outbound)	0.07	2.56
KL (outbound)	0.17	2.56
LI (outbound)	0.07	2.56
MN (outbound)	0.18	2.56
NO (outbound)	0.05	2.56
OP (outbound)	0.18	2.56
PM (outbound)	0.08	2.56

CALINE INPUT					2035	
Link	x1	y1	x2	y2	Rate (g/mi)	Traffic (vph)
AB (inbound)	6778.42	4253.24	7047.51	4246.06	0.894	200
BC (inbound)	7047.51	4246.06	7045.61	4145.12	0.894	200
CD (inbound)	7045.61	4145.12	6777.22	4150.76	0.894	200
DA (inbound)	6777.22	4150.76	6778.42	4253.24	0.894	200
EF (inbound)	6775.37	4111.32	7035.58	4103.98	0.894	200
FG (inbound)	7035.58	4103.98	7026.18	4028.77	0.894	200
GH (inbound)	7026.18	4028.77	6771.33	3990.69	0.894	200
HE (inbound)	6771.33	3990.69	6775.37	4111.32	0.894	200
IJ (outbound)	6782.42	4249.10	7043.50	4243.06	2.561	200
JK (outbound)	7043.50	4243.06	7041.61	4150.12	2.561	200
KL (outbound)	7041.61	4150.12	6781.22	4153.76	2.561	200
LI (outbound)	6781.22	4153.76	6782.42	4249.10	2.561	200
MN (outbound)	6778.99	4107.16	7032.01	4100.25	2.558	200
NO (outbound)	7032.01	4100.25	7022.58	4032.33	2.558	200
OP (outbound)	7022.58	4032.33	6774.99	3994.25	2.558	200
PM (outbound)	6774.99	3994.25	6778.99	4107.16	2.558	200

Note: UTM x axis (removed first two digits 26), UTM y axis(removed first 3 digits 402)
Link Type: pk, Height: 0 , Mix Zone: 10

CALINE INPUT

Receptor	x1	y1
1	6772.25	4269.65
2	6902.28	4264.66
3	7046.24	4256.54
4	6768.83	4201.27
5	7054.46	4195.48
6	6766.65	4133.62
7	6897.05	4127.42
8	7037.50	4122.57
9	67671.42	4051.84
10	7039.89	4065.82
11	6762.85	3978.53
12	6896.10	4000.39
13	7039.84	4016.41

Run
VTH 2035
Worst Case Wind Angle
Central Bussines District

Evening
0.5 m/s , stdev 5, G, ambient 10.55 C

Appendix C

C.8 EMFAC2007 Output Files

Title : Fresno Parking 061410
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/06/14 10:46:45
Scen Year: 2025 -- All model years in the range 1981 to 2025 selected
Season : Winter
Area : Fresno
****
Year: Inclusive --
Emfac2007 Emission Factors: V2.3 Nov 1 2006
County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Carbon Monoxide Temperature: 31F

Speed MPH	LDA ALL	LDT1 ALL
10	1.073	1.387

Title : Fresno Parking 061410
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/06/14 10:46:45
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : Fresno
****
Year: Inclusive --
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Carbon Monoxide Temperature: 31F

Speed MPH	LDA ALL	LDT1 ALL
10	0.869	1.051

Title : Fresno Parking 061410
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/06/14 10:46:45
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno
****
Year: Inclusive --
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Carbon Monoxide Temperature: 31F

Speed MPH	LDA ALL	LDT1 ALL
10	0.764	0.862

Title : Fresno Parking 061410
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/06/14 10:46:45
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno
****

Title : BKF Parking 2025 2030 2035
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/06/10 12:28:04
Scen Year: 2025 -- All model years in the range 1981 to 2025 selected
Season : Winter
Area : Kern
****
Year: Inclusive --
Emfac2007 Emission Factors: V2.3 Nov 1 2006
County Average
Table 1: Running Exhaust Emissions (grams/mile)

Temperature: 41F
Pollutant Name: Carbon Monoxide

Speed MPH	LDA ALL	LDT1 ALL
10	1.044	1.384

Title : BKF Parking 2025 2030 2035
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/06/10 12:28:04
Scen Year: 2025 -- All model years in the range 1981 to 2025 selected
Season : Winter
Area : Kern
****
Year: Inclusive --
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average

Table 1: Running Exhaust Emissions (grams/mile)
Temperature: 41F
Pollutant Name: Carbon Monoxide

Speed MPH	LDA ALL	LDT1 ALL
10	0.85	1.033

Title : BKF Parking 2025 2030 2035
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/06/10 12:28:04
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern
****
Year: Inclusive --
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average

Table 1: Running Exhaust Emissions (grams/mile)
Temperature: 41F
Pollutant Name: Carbon Monoxide

Speed	LDA	LDT1
MPH	ALL	ALL
10	0.749	0.843

Title : VTH Parking Lot 061110
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/06/11 12:51:42
Scen Year: 2025 -- All model years in the range 1981 to 2025 selected
Season : Winter
Area : Kings
****
Year: Inclusive --
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average

Table 1: Running Exhaust Emissions (grams/mile)
Temperature: 35F
Pollutant Name: Carbon Monoxide

Speed MPH	LDA ALL	LDT1 ALL
10	1.22	1.926

Title : VTH Parking Lot 061110
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/06/11 12:51:42
Scen Year: 2030 -- All model years in the range 1986 to 2030 selected
Season : Winter
Area : Kings
****
Year: Inclusive --
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average

Table 1: Running Exhaust Emissions (grams/mile)
Temperature: 35F
Pollutant Name: Carbon Monoxide

Speed MPH	LDA ALL	LDT1 ALL
10	0.955	1.319

Title : VTH Parking Lot 061110
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2010/06/11 12:51:42
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kings
****
Year: Inclusive --
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average

Table 1: Running Exhaust Emissions (grams/mile)
Temperature: 35F
Pollutant Name: Carbon Monoxide

Speed	LDA	LDT1
MPH	ALL	ALL
10	0.821	0.966

Title : Fresno 2009 and 2035
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/05/10 06:41:25
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Winter
Area : Fresno
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Carbon Monoxide Temperature: 31F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
27	97.927	2.955	0.822	3.68	98.569	3.785	0.618	5.531	95.423	4.519	0.809	5.288	21.471	87.087	3.743	4.722	5.058

Title : Fresno 2009 and 2035
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/05/10 06:41:25
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Fresno
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Carbon Monoxide Temperature: 31F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	MH ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
27	0	0.569	0.537	0.569	0	0.64	0.546	0.64	0	1.093	0.597	1.093	0.228	42.209	0.878	1.084	1.011

Title : Kern 2009 and 2035
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/05/10 08:48:38
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Winter
Area : Kern
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Kern County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Carbon Monoxide Temperature: 41F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
27	85.249	2.79	0.771	3.454	85.584	3.882	0.599	5.305	83.609	3.912	0.704	4.467	66.914	3.606	5.894	5.16

Title : Kern 2009 and 2035
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/05/10 08:48:38
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Winter
Area : Kern
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Winter
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Kern County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Carbon Monoxide Temperature: 41F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	ALL NCAT	ALL CAT	ALL DSL	ALL ALL
27	0	0.558	0.529	0.558	0	0.626	0.542	0.625	0	1.052	0.568	1.052	36.481	0.983	1.134	1.167

Appendix C

C.9 Fresno Station Intersection CALINE Outputs

Fresno Station Van Ness St./Inyo St. 2009 Existing CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Fresno	In	17	Existing									
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK			LINK	COORDINATES	(M)					EF	H	W	
DESCRIPTION			X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)	
A.	Link	A	1059	8918	1123	8835	AG	118		7.4	0	10	
B.	Link	B	1062	8920	1132	8834	AG	118		7.4	0	10	
C.	Link	C	1065	8922	1138	8834	AG	9		7.4	0	10	
D.	Link	D	1067	8923	1137	8839	AG	192		5.3	0	10	
E.	Link	E	1069	8925	1137	8847	AG	192		5.3	0	10	
F.	Link	F	1052	8775	1123	8835	AG	69		5.4	0	10	
G.	Link	G	1137	8847	1209	8906	AG	49		8.3	0	10	
H.	Link	H	1054	8773	1133	8839	AG	69		5.4	0	10	
I.	Link	I	1133	8839	1211	8904	AG	49		8.3	0	10	
J.	Link	J	1132	8834	1188	8770	AG	125		5.2	0	10	
K.	Link	K	1132	8834	1213	8901	AG	20		8.3	0	10	
L.	Link	L	1056	8770	1137	8839	AG	47		8.3	0	10	
M.	Link	M	1058	8768	1138	8834	AG	36		8.3	0	10	
N.	Link	N	1138	8834	1216	8898	AG	35		5.4	0	10	
O.	Link	O	1060	8765	1136	8826	AG	36		8.3	0	10	
P.	Link	P	1136	8826	1185	8768	AG	125		5.2	0	10	
Q.	Link	Q	1133	8839	1190	8772	AG	40		7.4	0	10	
R.	Link	R	1137	8839	1192	8774	AG	161		7.7	0	10	
S.	Link	S	1145	8835	1195	8776	AG	161		7.7	0	10	
T.	Link	T	1145	8835	1218	8896	AG	35		5.4	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno In 17 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	1086	8872	1.8
2	Recpt 2	1102	8853	1.8
3	Recpt 3	1115	8835	1.8
4	Recpt 4	1099	8821	1.8
5	Recpt 5	1079	8806	1.8
6	Recpt 6	1109	8888	1.8
7	Recpt 7	1124	8869	1.8
8	Recpt 8	1138	8851	1.8
9	Recpt 9	1155	8866	1.8
10	Recpt 10	1174	8881	1.8
11	Recpt 11	1099	8791	1.8
12	Recpt 12	1118	8808	1.8
13	Recpt 13	1135	8822	1.8
14	Recpt 14	1149	8805	1.8
15	Recpt 15	1165	8785	1.8
16	Recpt 16	1187	8865	1.8
17	Recpt 17	1168	8849	1.8
18	Recpt 18	1150	8835	1.8
19	Recpt 19	1165	8818	1.8
20	Recpt 20	1181	8799	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno In 17 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	C	D	E	F	G	H
	*	*				CONC/LINK *	(PPM)				
1	Recpt	1	129	0.3	0	0	0	0	0	0	0	0
2	Recpt	2	126	0.3	0	0	0	0	0	0	0	0
3	Recpt	3	122	0.3	0	0	0	0	0	0	0	0
4	Recpt	4	57	0.2	0	0	0	0	0	0	0	0
5	Recpt	5	58	0.2	0	0	0	0	0	0	0	0
6	Recpt	6	149	0.3	0	0	0	0	0	0	0	0
7	Recpt	7	149	0.3	0	0	0	0	0	0	0	0
8	Recpt	8	150	0.3	0	0	0	0	0	0	0	0
9	Recpt	9	223	0.2	0	0	0	0	0	0	0	0
10	Recpt	10	224	0.2	0	0	0	0	0	0	0	0
11	Recpt	11	42	0.2	0	0	0	0	0	0	0	0
12	Recpt	12	342	0.2	0	0	0	0	0	0	0	0
13	Recpt	13	328	0.3	0	0	0	0	0	0	0	0
14	Recpt	14	328	0.3	0	0	0	0	0	0	0	0
15	Recpt	15	328	0.3	0	0	0	0	0	0	0	0
16	Recpt	16	237	0.2	0	0	0	0	0	0	0	0
17	Recpt	17	237	0.2	0	0	0	0	0	0	0	0
18	Recpt	18	152	0.3	0	0	0	0	0	0	0	0
19	Recpt	19	311	0.3	0	0	0	0	0	0	0	0
20	Recpt	20	312	0.4	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno In 17 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0.1	0.1	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0.1	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Fresno	Int	17	Existing	+	Project						
RUN:	Hour	1	(WORST	CASE	ANGLE)							
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)				
BRG=	WORST	CASE	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK			LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION			X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
----------*----------*----------												
A.	Link	A	1059	8918	1123	8835	AG	121		7.4	0	10
B.	Link	B	1062	8920	1132	8834	AG	121		7.4	0	10
C.	Link	C	1065	8922	1138	8834	AG	9		7.4	0	10
D.	Link	D	1067	8923	1137	8839	AG	205		5.3	0	10
E.	Link	E	1069	8925	1137	8847	AG	205		5.3	0	10
F.	Link	F	1052	8775	1123	8835	AG	70		5.4	0	10
G.	Link	G	1137	8847	1209	8906	AG	49		8.3	0	10
H.	Link	H	1054	8773	1133	8839	AG	70		5.4	0	10
I.	Link	I	1133	8839	1211	8904	AG	49		8.3	0	10
J.	Link	J	1132	8834	1188	8770	AG	129		5.2	0	10
K.	Link	K	1132	8834	1213	8901	AG	20		8.3	0	10
L.	Link	L	1056	8770	1137	8839	AG	47		8.3	0	10
M.	Link	M	1058	8768	1138	8834	AG	37		8.3	0	10
N.	Link	N	1138	8834	1216	8898	AG	35		5.4	0	10
O.	Link	O	1060	8765	1136	8826	AG	37		8.3	0	10
P.	Link	P	1136	8826	1185	8768	AG	129		5.2	0	10
Q.	Link	Q	1133	8839	1190	8772	AG	41		7.4	0	10
R.	Link	R	1137	8839	1192	8774	AG	174		7.7	0	10
S.	Link	S	1145	8835	1195	8776	AG	174		7.7	0	10
T.	Link	T	1145	8835	1218	8896	AG	35		5.4	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 17 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	1086	8872	1.8
2	Recpt 2	1102	8853	1.8
3	Recpt 3	1115	8835	1.8
4	Recpt 4	1099	8821	1.8
5	Recpt 5	1079	8806	1.8
6	Recpt 6	1109	8888	1.8
7	Recpt 7	1124	8869	1.8
8	Recpt 8	1138	8851	1.8
9	Recpt 9	1155	8866	1.8
10	Recpt 10	1174	8881	1.8
11	Recpt 11	1099	8791	1.8
12	Recpt 12	1118	8808	1.8
13	Recpt 13	1135	8822	1.8
14	Recpt 14	1149	8805	1.8
15	Recpt 15	1165	8785	1.8
16	Recpt 16	1187	8865	1.8
17	Recpt 17	1168	8849	1.8
18	Recpt 18	1150	8835	1.8
19	Recpt 19	1165	8818	1.8
20	Recpt 20	1181	8799	1.8

Fresno Station Van Ness St./Inyo St. 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 17 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	CONC/LINK * (PPM) A	B	C	D	E	F	G	H
1	Recpt 1	129	0.3	0	0	0	0	0	0	0	0
2	Recpt 2	126	0.3	0	0	0	0	0	0	0	0
3	Recpt 3	122	0.3	0	0	0	0	0	0	0	0
4	Recpt 4	57	0.2	0	0	0	0	0	0	0	0
5	Recpt 5	58	0.2	0	0	0	0	0	0	0	0
6	Recpt 6	149	0.3	0	0	0	0	0	0	0	0
7	Recpt 7	149	0.3	0	0	0	0	0	0	0	0
8	Recpt 8	150	0.3	0	0	0	0	0	0	0	0
9	Recpt 9	223	0.2	0	0	0	0	0	0	0	0
10	Recpt 10	224	0.2	0	0	0	0	0	0	0	0
11	Recpt 11	42	0.2	0	0	0	0	0	0	0	0
12	Recpt 12	342	0.2	0	0	0	0	0	0	0	0
13	Recpt 13	328	0.3	0	0	0	0	0	0	0	0
14	Recpt 14	328	0.3	0	0	0	0	0	0	0	0
15	Recpt 15	328	0.3	0	0	0	0	0	0	0	0
16	Recpt 16	237	0.2	0	0	0	0	0	0	0	0
17	Recpt 17	237	0.2	0	0	0	0	0	0	0	0
18	Recpt 18	152	0.3	0	0	0	0	0	0	0	0
19	Recpt 19	311	0.4	0	0	0	0	0	0	0	0
20	Recpt 20	312	0.4	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 17 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0.1	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0.1	0.1	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0.1	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0.2	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Fresno	Int	17	No	Build							
RUN:	Hour	1	(WORST	CASE	ANGLE)							
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)				
BRG=	WORST	CASE	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	1059	8918	1123	8835	AG	269		1.5	0	10
B.	Link	B	1062	8920	1132	8834	AG	269		1.5	0	10
C.	Link	C	1065	8922	1138	8834	AG	84		1.5	0	10
D.	Link	D	1067	8923	1137	8839	AG	310		1.1	0	10
E.	Link	E	1069	8925	1137	8847	AG	310		1.1	0	10
F.	Link	F	1052	8775	1123	8835	AG	295		1.1	0	10
G.	Link	G	1137	8847	1209	8906	AG	298		1.6	0	10
H.	Link	H	1054	8773	1133	8839	AG	295		1.1	0	10
I.	Link	I	1133	8839	1211	8904	AG	298		1.6	0	10
J.	Link	J	1132	8834	1188	8770	AG	287		1.1	0	10
K.	Link	K	1132	8834	1213	8901	AG	99		1.6	0	10
L.	Link	L	1056	8770	1137	8839	AG	74		1.6	0	10
M.	Link	M	1058	8768	1138	8834	AG	158		2	0	10
N.	Link	N	1138	8834	1216	8898	AG	232		1.1	0	10
O.	Link	O	1060	8765	1136	8826	AG	158		2	0	10
P.	Link	P	1136	8826	1185	8768	AG	287		1.1	0	10
Q.	Link	Q	1133	8839	1190	8772	AG	66		1.5	0	10
R.	Link	R	1137	8839	1192	8774	AG	238		1.6	0	10
S.	Link	S	1145	8835	1195	8776	AG	238		1.6	0	10
T.	Link	T	1145	8835	1218	8896	AG	232		1.1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 17 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	1086	8872	1.8
2	Recpt 2	1102	8853	1.8
3	Recpt 3	1115	8835	1.8
4	Recpt 4	1099	8821	1.8
5	Recpt 5	1079	8806	1.8
6	Recpt 6	1109	8888	1.8
7	Recpt 7	1124	8869	1.8
8	Recpt 8	1138	8851	1.8
9	Recpt 9	1155	8866	1.8
10	Recpt 10	1174	8881	1.8
11	Recpt 11	1099	8791	1.8
12	Recpt 12	1118	8808	1.8
13	Recpt 13	1135	8822	1.8
14	Recpt 14	1149	8805	1.8
15	Recpt 15	1165	8785	1.8
16	Recpt 16	1187	8865	1.8
17	Recpt 17	1168	8849	1.8
18	Recpt 18	1150	8835	1.8
19	Recpt 19	1165	8818	1.8
20	Recpt 20	1181	8799	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 17 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

*	*	*	*	PRED			CONC/LINK					
*		*	BRG	CONC			*	(PPM)				
RECEPTOR	*		(DEG)	(PPM)	A	B	C	D	E	F	G	H
1	Recpt	1	129	0.1	0	0	0	0	0	0	0	0
2	Recpt	2	127	0.1	0	0	0	0	0	0	0	0
3	Recpt	3	59	0.1	0	0	0	0	0	0	0	0
4	Recpt	4	58	0.1	0	0	0	0	0	0	0	0
5	Recpt	5	58	0.1	0	0	0	0	0	0	0	0
6	Recpt	6	150	0.1	0	0	0	0	0	0	0	0
7	Recpt	7	149	0.1	0	0	0	0	0	0	0	0
8	Recpt	8	221	0.1	0	0	0	0	0	0	0	0
9	Recpt	9	222	0.1	0	0	0	0	0	0	0	0
10	Recpt	10	223	0.2	0	0	0	0	0	0	0	0
11	Recpt	11	42	0.1	0	0	0	0	0	0	0	0
12	Recpt	12	40	0.1	0	0	0	0	0	0	0	0
13	Recpt	13	39	0.1	0	0	0	0	0	0	0	0
14	Recpt	14	327	0.1	0	0	0	0	0	0	0	0
15	Recpt	15	327	0.1	0	0	0	0	0	0	0	0
16	Recpt	16	238	0.1	0	0	0	0	0	0	0	0
17	Recpt	17	238	0.1	0	0	0	0	0	0	0	0
18	Recpt	18	312	0.1	0	0	0	0	0	0	0	0
19	Recpt	19	311	0.1	0	0	0	0	0	0	0	0
20	Recpt	20	312	0.1	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 17 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

*						CONC/LINK (PPM)							
RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Fresno	Int	17	Build									
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATE	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)		
A.	Link	A	1059	8918	1123	8835	AG	272	1.6	0	10		
B.	Link	B	1062	8920	1132	8834	AG	272	1.6	0	10		
C.	Link	C	1065	8922	1138	8834	AG	84	1.6	0	10		
D.	Link	D	1067	8923	1137	8839	AG	323	1.3	0	10		
E.	Link	E	1069	8925	1137	8847	AG	323	1.3	0	10		
F.	Link	F	1052	8775	1123	8835	AG	296	1.3	0	10		
G.	Link	G	1137	8847	1209	8906	AG	298	1.6	0	10		
H.	Link	H	1054	8773	1133	8839	AG	296	1.3	0	10		
I.	Link	I	1133	8839	1211	8904	AG	298	1.6	0	10		
J.	Link	J	1132	8834	1188	8770	AG	292	1.3	0	10		
K.	Link	K	1132	8834	1213	8901	AG	99	1.6	0	10		
L.	Link	L	1056	8770	1137	8839	AG	74	1.6	0	10		
M.	Link	M	1058	8768	1138	8834	AG	159	2	0	10		
N.	Link	N	1138	8834	1216	8898	AG	232	1.3	0	10		
O.	Link	O	1060	8765	1136	8826	AG	159	2	0	10		
P.	Link	P	1136	8826	1185	8768	AG	292	1.3	0	10		
Q.	Link	Q	1133	8839	1190	8772	AG	67	1.6	0	10		
R.	Link	R	1137	8839	1192	8774	AG	251	1.9	0	10		
S.	Link	S	1145	8835	1195	8776	AG	251	1.9	0	10		
T.	Link	T	1145	8835	1218	8896	AG	232	1.3	0	10		

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 17 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	1086	8872	1.8
2	Recpt 2	1102	8853	1.8
3	Recpt 3	1115	8835	1.8
4	Recpt 4	1099	8821	1.8
5	Recpt 5	1079	8806	1.8
6	Recpt 6	1109	8888	1.8
7	Recpt 7	1124	8869	1.8
8	Recpt 8	1138	8851	1.8
9	Recpt 9	1155	8866	1.8
10	Recpt 10	1174	8881	1.8
11	Recpt 11	1099	8791	1.8
12	Recpt 12	1118	8808	1.8
13	Recpt 13	1135	8822	1.8
14	Recpt 14	1149	8805	1.8
15	Recpt 15	1165	8785	1.8
16	Recpt 16	1187	8865	1.8
17	Recpt 17	1168	8849	1.8
18	Recpt 18	1150	8835	1.8
19	Recpt 19	1165	8818	1.8
20	Recpt 20	1181	8799	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 17 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	CONC/LINK * C	D	E	F	G	H
1	Recpt 1	129	0.1	0	0	0	0	0	0	0	0
2	Recpt 2	127	0.1	0	0	0	0	0	0	0	0
3	Recpt 3	60	0.2	0	0	0	0	0	0	0	0
4	Recpt 4	58	0.1	0	0	0	0	0	0	0	0
5	Recpt 5	58	0.1	0	0	0	0	0	0	0	0
6	Recpt 6	150	0.1	0	0	0	0	0	0	0	0
7	Recpt 7	149	0.1	0	0	0	0	0	0	0	0
8	Recpt 8	151	0.2	0	0	0	0	0	0	0	0
9	Recpt 9	222	0.2	0	0	0	0	0	0	0	0
10	Recpt 10	223	0.2	0	0	0	0	0	0	0	0
11	Recpt 11	42	0.1	0	0	0	0	0	0	0	0
12	Recpt 12	41	0.1	0	0	0	0	0	0	0	0
13	Recpt 13	40	0.2	0	0	0	0	0	0	0	0
14	Recpt 14	328	0.1	0	0	0	0	0	0	0	0
15	Recpt 15	328	0.2	0	0	0	0	0	0	0	0
16	Recpt 16	238	0.1	0	0	0	0	0	0	0	0
17	Recpt 17	239	0.1	0	0	0	0	0	0	0	0
18	Recpt 18	312	0.2	0	0	0	0	0	0	0	0
19	Recpt 19	312	0.2	0	0	0	0	0	0	0	0
20	Recpt 20	312	0.2	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 17 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

*						CONC/LINK (PPM)								
RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T	
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Fresno	Int	25	Existing									
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)		
A.	Link	A	577	923	659	828	AG	101	9.1	0	10		
B.	Link	B	579	926	665	826	AG	101	9.1	0	10		
C.	Link	C	582	928	670	826	AG	99	9.1	0	10		
D.	Link	D	587	932	671	830	AG	134	5.6	0	10		
E.	Link	E	589	934	670	839	AG	134	5.6	0	10		
F.	Link	F	607	784	659	828	AG	127	5.6	0	10		
G.	Link	G	670	839	742	897	AG	73	9.1	0	10		
H.	Link	H	610	782	666	830	AG	127	5.6	0	10		
I.	Link	I	666	830	744	895	AG	73	9.1	0	10		
J.	Link	J	665	826	707	771	AG	104	5.6	0	10		
K.	Link	K	665	826	747	893	AG	37	9.1	0	10		
L.	Link	L	614	778	671	830	AG	16	9.1	0	10		
M.	Link	M	615	775	670	826	AG	51	9.1	0	10		
N.	Link	N	670	826	749	891	AG	116	5.6	0	10		
O.	Link	O	617	774	666	815	AG	51	9.1	0	10		
P.	Link	P	666	815	705	770	AG	104	5.6	0	10		
Q.	Link	Q	666	830	710	773	AG	22	9.1	0	10		
R.	Link	R	671	830	713	775	AG	96	9.1	0	10		
S.	Link	S	676	826	715	777	AG	96	9.1	0	10		
T.	Link	T	676	826	751	889	AG	116	5.6	0	10		

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 25 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	708	875	1.8
2	Recpt 2	689	859	1.8
3	Recpt 3	671	844	1.8
4	Recpt 4	657	861	1.8
5	Recpt 5	641	880	1.8
6	Recpt 6	720	853	1.8
7	Recpt 7	701	839	1.8
8	Recpt 8	684	826	1.8
9	Recpt 9	699	807	1.8
10	Recpt 10	716	786	1.8
11	Recpt 11	622	864	1.8
12	Recpt 12	638	845	1.8
13	Recpt 13	652	827	1.8
14	Recpt 14	635	813	1.8
15	Recpt 15	615	798	1.8
16	Recpt 16	631	777	1.8
17	Recpt 17	650	793	1.8
18	Recpt 18	667	807	1.8
19	Recpt 19	682	791	1.8
20	Recpt 20	698	772	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 25 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	CONC/LINK * C	D	E	F	G	H
1 Recpt	1	222	0.3	0	0	0	0	0	0	0	0
2 Recpt	2	220	0.3	0	0	0	0	0	0	0	0
3 Recpt	3	218	0.3	0	0	0	0	0	0	0	0
4 Recpt	4	152	0.3	0	0	0	0	0	0	0	0
5 Recpt	5	151	0.3	0	0	0	0	0	0	0	0
6 Recpt	6	245	0.2	0	0	0	0	0	0	0	0
7 Recpt	7	300	0.2	0	0	0	0	0	0	0	0
8 Recpt	8	311	0.4	0	0	0	0	0	0	0	0
9 Recpt	9	312	0.4	0	0	0	0	0	0	0	0
10 Recpt	10	313	0.4	0	0	0	0	0	0	0	0
11 Recpt	11	128	0.3	0.1	0	0	0	0	0	0	0
12 Recpt	12	332	0.3	0	0	0	0	0	0	0	0
13 Recpt	13	59	0.3	0	0	0	0	0	0	0	0
14 Recpt	14	58	0.3	0	0	0	0	0	0	0	0
15 Recpt	15	57	0.3	0	0	0	0	0	0	0	0
16 Recpt	16	40	0.2	0	0	0	0	0	0	0	0
17 Recpt	17	39	0.2	0	0	0	0	0	0	0	0
18 Recpt	18	330	0.4	0	0	0	0	0	0	0	0
19 Recpt	19	328	0.3	0	0	0	0	0	0	0	0
20 Recpt	20	327	0.3	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 25 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*													
*													
					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

Fresno Station H St./Tulare St. 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Fresno	Int	25	Existing	+	Project							
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATE	(M)					EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)	
A.	Link	A	577	923	659	828	AG	127		9.1	0	10	
B.	Link	B	579	926	665	826	AG	127		9.1	0	10	
C.	Link	C	582	928	670	826	AG	99		9.1	0	10	
D.	Link	D	587	932	671	830	AG	165		5.6	0	10	
E.	Link	E	589	934	670	839	AG	165		5.6	0	10	
F.	Link	F	607	784	659	828	AG	183		5.6	0	10	
G.	Link	G	670	839	742	897	AG	88		9.1	0	10	
H.	Link	H	610	782	666	830	AG	183		5.6	0	10	
I.	Link	I	666	830	744	895	AG	88		9.1	0	10	
J.	Link	J	665	826	707	771	AG	106		5.6	0	10	
K.	Link	K	665	826	747	893	AG	37		9.1	0	10	
L.	Link	L	614	778	671	830	AG	78		9.1	0	10	
M.	Link	M	615	775	670	826	AG	120		9.1	0	10	
N.	Link	N	670	826	749	891	AG	184		5.6	0	10	
O.	Link	O	617	774	666	815	AG	120		9.1	0	10	
P.	Link	P	666	815	705	770	AG	106		5.6	0	10	
Q.	Link	Q	666	830	710	773	AG	23		9.1	0	10	
R.	Link	R	671	830	713	775	AG	96		9.1	0	10	
S.	Link	S	676	826	715	777	AG	96		9.1	0	10	
T.	Link	T	676	826	751	889	AG	184		5.6	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 25 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	708	875	1.8
2	Recpt 2	689	859	1.8
3	Recpt 3	671	844	1.8
4	Recpt 4	657	861	1.8
5	Recpt 5	641	880	1.8
6	Recpt 6	720	853	1.8
7	Recpt 7	701	839	1.8
8	Recpt 8	684	826	1.8
9	Recpt 9	699	807	1.8
10	Recpt 10	716	786	1.8
11	Recpt 11	622	864	1.8
12	Recpt 12	638	845	1.8
13	Recpt 13	652	827	1.8
14	Recpt 14	635	813	1.8
15	Recpt 15	615	798	1.8
16	Recpt 16	631	777	1.8
17	Recpt 17	650	793	1.8
18	Recpt 18	667	807	1.8
19	Recpt 19	682	791	1.8
20	Recpt 20	698	772	1.8

Fresno Station H St./Tulare St. 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 25 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	CONC/LINK * (PPM) C	D	E	F	G	H
1	Recpt 1	222	0.4	0	0	0	0	0	0	0	0
2	Recpt 2	219	0.4	0	0	0	0	0	0	0	0
3	Recpt 3	216	0.4	0	0	0	0	0	0	0	0
4	Recpt 4	192	0.3	0	0	0	0	0	0	0	0
5	Recpt 5	152	0.3	0	0	0	0	0	0	0	0
6	Recpt 6	242	0.3	0	0	0	0	0	0	0	0
7	Recpt 7	242	0.3	0	0	0	0	0	0	0	0
8	Recpt 8	311	0.4	0	0	0	0	0	0	0	0
9	Recpt 9	312	0.4	0	0	0	0	0	0	0	0
10	Recpt 10	313	0.4	0	0	0	0	0	0	0	0
11	Recpt 11	128	0.4	0.1	0	0	0	0	0	0	0
12	Recpt 12	122	0.3	0	0	0	0	0	0	0	0
13	Recpt 13	60	0.4	0	0	0	0	0	0	0	0
14	Recpt 14	59	0.4	0	0	0	0	0	0	0	0
15	Recpt 15	58	0.4	0	0	0	0	0	0.1	0	0
16	Recpt 16	38	0.4	0	0	0	0	0	0	0	0
17	Recpt 17	38	0.3	0	0	0	0	0	0	0	0
18	Recpt 18	330	0.5	0	0	0	0	0	0	0	0
19	Recpt 19	328	0.4	0	0	0	0	0	0	0	0
20	Recpt 20	327	0.4	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 25 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*									CONC/LINK				
*									(PPM)				
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0.1	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Fresno	Int	25	No	Build								
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATE	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)		
A.	Link	A	577	923	659	828	AG	310	1.9	0	10		
B.	Link	B	579	926	665	826	AG	310	1.9	0	10		
C.	Link	C	582	928	670	826	AG	189	1.8	0	10		
D.	Link	D	587	932	671	830	AG	317	2	0	10		
E.	Link	E	589	934	670	839	AG	317	2	0	10		
F.	Link	F	607	784	659	828	AG	1020	1.4	0	10		
G.	Link	G	670	839	742	897	AG	470	1.4	0	10		
H.	Link	H	610	782	666	830	AG	1020	1.4	0	10		
I.	Link	I	666	830	744	895	AG	470	1.4	0	10		
J.	Link	J	665	826	707	771	AG	364	2	0	10		
K.	Link	K	665	826	747	893	AG	175	1.4	0	10		
L.	Link	L	614	778	671	830	AG	88	1.4	0	10		
M.	Link	M	615	775	670	826	AG	456	2	0	10		
N.	Link	N	670	826	749	891	AG	558	1.4	0	10		
O.	Link	O	617	774	666	815	AG	456	2	0	10		
P.	Link	P	666	815	705	770	AG	364	2	0	10		
Q.	Link	Q	666	830	710	773	AG	187	1.8	0	10		
R.	Link	R	671	830	713	775	AG	233	2	0	10		
S.	Link	S	676	826	715	777	AG	233	2	0	10		
T.	Link	T	676	826	751	889	AG	558	1.4	0	10		

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 25 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	708	875	1.8
2	Recpt 2	689	859	1.8
3	Recpt 3	671	844	1.8
4	Recpt 4	657	861	1.8
5	Recpt 5	641	880	1.8
6	Recpt 6	720	853	1.8
7	Recpt 7	701	839	1.8
8	Recpt 8	684	826	1.8
9	Recpt 9	699	807	1.8
10	Recpt 10	716	786	1.8
11	Recpt 11	622	864	1.8
12	Recpt 12	638	845	1.8
13	Recpt 13	652	827	1.8
14	Recpt 14	635	813	1.8
15	Recpt 15	615	798	1.8
16	Recpt 16	631	777	1.8
17	Recpt 17	650	793	1.8
18	Recpt 18	667	807	1.8
19	Recpt 19	682	791	1.8
20	Recpt 20	698	772	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 25 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	C	D	E	F	G	H
	*	*				*	CONC/LINK (PPM)				
1	Recpt	1	222	0.3	0	0	0	0	0	0	0	0
2	Recpt	2	221	0.3	0	0	0	0	0	0	0	0
3	Recpt	3	218	0.3	0	0	0	0	0	0	0	0
4	Recpt	4	194	0.2	0	0	0	0	0	0	0	0
5	Recpt	5	152	0.2	0	0	0	0	0	0	0	0
6	Recpt	6	242	0.2	0	0	0	0	0	0	0	0
7	Recpt	7	244	0.2	0	0	0	0	0	0	0	0
8	Recpt	8	244	0.3	0	0	0	0	0	0	0	0
9	Recpt	9	312	0.2	0	0	0	0	0	0	0	0
10	Recpt	10	312	0.2	0	0	0	0	0	0	0	0
11	Recpt	11	131	0.2	0	0	0	0	0	0	0	0
12	Recpt	12	130	0.2	0	0	0	0	0	0	0	0
13	Recpt	13	61	0.3	0	0	0	0	0	0	0	0
14	Recpt	14	61	0.3	0	0	0	0	0	0.1	0	0
15	Recpt	15	59	0.3	0	0	0	0	0	0.1	0	0
16	Recpt	16	37	0.2	0	0	0	0	0	0	0	0
17	Recpt	17	38	0.2	0	0	0	0	0	0	0	0
18	Recpt	18	331	0.3	0	0	0	0	0	0	0	0
19	Recpt	19	329	0.3	0	0	0	0	0	0	0	0
20	Recpt	20	328	0.3	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 25 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

* RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Fresno	Int	25	Build								
RUN:	Hour	1	(WORST	CASE	ANGLE)							
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)				
BRG=	WORST	CASE	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	577	923	659	828	AG	383		2	0	10
B.	Link	B	579	926	665	826	AG	383		2	0	10
C.	Link	C	582	928	670	826	AG	250		1.9	0	10
D.	Link	D	587	932	671	830	AG	349		2	0	10
E.	Link	E	589	934	670	839	AG	349		2	0	10
F.	Link	F	607	784	659	828	AG	1065		1	0	10
G.	Link	G	670	839	742	897	AG	485		1.4	0	10
H.	Link	H	610	782	666	830	AG	1065		1	0	10
I.	Link	I	666	830	744	895	AG	485		1.4	0	10
J.	Link	J	665	826	707	771	AG	393		2	0	10
K.	Link	K	665	826	747	893	AG	175		1.4	0	10
L.	Link	L	614	778	671	830	AG	93		1.4	0	10
M.	Link	M	615	775	670	826	AG	456		1.5	0	10
N.	Link	N	670	826	749	891	AG	588		1	0	10
O.	Link	O	617	774	666	815	AG	456		1.5	0	10
P.	Link	P	666	815	705	770	AG	393		2	0	10
Q.	Link	Q	666	830	710	773	AG	187		1.8	0	10
R.	Link	R	671	830	713	775	AG	234		2	0	10
S.	Link	S	676	826	715	777	AG	234		2	0	10
T.	Link	T	676	826	751	889	AG	588		1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 25 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	708	875	1.8
2	Recpt 2	689	859	1.8
3	Recpt 3	671	844	1.8
4	Recpt 4	657	861	1.8
5	Recpt 5	641	880	1.8
6	Recpt 6	720	853	1.8
7	Recpt 7	701	839	1.8
8	Recpt 8	684	826	1.8
9	Recpt 9	699	807	1.8
10	Recpt 10	716	786	1.8
11	Recpt 11	622	864	1.8
12	Recpt 12	638	845	1.8
13	Recpt 13	652	827	1.8
14	Recpt 14	635	813	1.8
15	Recpt 15	615	798	1.8
16	Recpt 16	631	777	1.8
17	Recpt 17	650	793	1.8
18	Recpt 18	667	807	1.8
19	Recpt 19	682	791	1.8
20	Recpt 20	698	772	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 25 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	PRED CONC (PPM)	CONC/LINK * (PPM) A	B	C	D	E	F	G	H
1	Recpt 1	222	0.2	0	0	0	0	0	0	0	0
2	Recpt 2	220	0.2	0	0	0	0	0	0	0	0
3	Recpt 3	218	0.3	0	0	0	0	0	0	0	0
4	Recpt 4	156	0.2	0	0	0	0	0	0	0	0
5	Recpt 5	153	0.2	0	0	0	0	0	0	0	0
6	Recpt 6	243	0.2	0	0	0	0	0	0	0	0
7	Recpt 7	245	0.2	0	0	0	0	0	0	0	0
8	Recpt 8	311	0.3	0	0	0	0	0	0	0	0
9	Recpt 9	312	0.2	0	0	0	0	0	0	0	0
10	Recpt 10	313	0.2	0	0	0	0	0	0	0	0
11	Recpt 11	130	0.2	0	0	0	0	0	0	0	0
12	Recpt 12	128	0.2	0	0	0	0	0	0	0	0
13	Recpt 13	59	0.3	0	0	0	0	0	0	0	0
14	Recpt 14	59	0.3	0	0	0	0	0	0	0	0
15	Recpt 15	59	0.3	0	0	0	0	0	0.1	0	0
16	Recpt 16	38	0.2	0	0	0	0	0	0	0	0
17	Recpt 17	344	0.2	0	0	0	0	0	0	0	0
18	Recpt 18	330	0.3	0	0	0	0	0	0	0	0
19	Recpt 19	329	0.3	0	0	0	0	0	0	0	0
20	Recpt 20	328	0.3	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 25 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

* RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

Fresno Station Van Ness Ave./Fresno St. 2009 Existing CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Fresno	Int	42	Existing									
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)		
A.	Link	A	706	337	745	288	AG	143	10	0	10		
B.	Link	B	709	339	754	284	AG	143	10	0	10		
C.	Link	C	713	341	759	285	AG	62	11.7	0	10		
D.	Link	D	716	342	761	290	AG	264	6	0	10		
E.	Link	E	720	344	758	301	AG	264	6	0	10		
F.	Link	F	703	252	745	288	AG	277	6	0	10		
G.	Link	G	758	301	818	347	AG	183	11.7	0	10		
H.	Link	H	706	249	756	291	AG	277	6	0	10		
I.	Link	I	756	291	821	345	AG	183	11.7	0	10		
J.	Link	J	754	284	807	222	AG	151	11.7	0	10		
K.	Link	K	754	284	823	343	AG	61	11.7	0	10		
L.	Link	L	709	246	761	290	AG	120	11	0	10		
M.	Link	M	712	245	759	285	AG	170	10	0	10		
N.	Link	N	759	285	827	341	AG	214	6	0	10		
O.	Link	O	714	243	757	275	AG	170	10	0	10		
P.	Link	P	757	275	804	220	AG	151	11.7	0	10		
Q.	Link	Q	756	291	810	225	AG	126	11	0	10		
R.	Link	R	761	290	815	228	AG	225	10	0	10		
S.	Link	S	780	295	825	236	AG	225	10	0	10		
T.	Link	T	780	295	830	339	AG	214	6	0	10		

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 42 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	708	326	1.8
2	Recpt 2	724	307	1.8
3	Recpt 3	738	290	1.8
4	Recpt 4	722	276	1.8
5	Recpt 5	703	259	1.8
6	Recpt 6	721	237	1.8
7	Recpt 7	740	252	1.8
8	Recpt 8	757	266	1.8
9	Recpt 9	771	249	1.8
10	Recpt 10	787	230	1.8
11	Recpt 11	729	343	1.8
12	Recpt 12	745	324	1.8
13	Recpt 13	759	307	1.8
14	Recpt 14	776	321	1.8
15	Recpt 15	795	338	1.8
16	Recpt 16	832	315	1.8
17	Recpt 17	809	303	1.8
18	Recpt 18	789	293	1.8
19	Recpt 19	804	277	1.8
20	Recpt 20	819	258	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 42 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	CONC/LINK * C	(PPM) D	E	F	G	H
1	Recpt 1	130	0.6	0.2	0	0	0	0	0	0	0
2	Recpt 2	127	0.6	0.1	0	0	0	0	0	0	0
3	Recpt 3	128	0.6	0	0	0	0	0	0	0	0
4	Recpt 4	60	0.5	0	0	0	0	0	0	0	0
5	Recpt 5	60	0.6	0	0	0	0	0	0.2	0	0
6	Recpt 6	37	0.5	0	0	0	0	0	0	0	0
7	Recpt 7	33	0.5	0	0	0	0	0	0	0	0
8	Recpt 8	335	0.5	0	0	0	0	0	0	0	0
9	Recpt 9	337	0.5	0	0	0	0	0	0	0	0
10	Recpt 10	333	0.6	0	0	0	0	0	0	0	0
11	Recpt 11	151	0.5	0	0	0	0	0.1	0	0	0
12	Recpt 12	154	0.6	0	0	0	0	0.1	0	0	0
13	Recpt 13	157	0.6	0	0	0	0	0	0	0	0
14	Recpt 14	213	0.6	0	0	0	0	0	0	0.2	0
15	Recpt 15	217	0.6	0	0	0	0	0	0	0.2	0
16	Recpt 16	246	0.3	0	0	0	0	0	0	0	0
17	Recpt 17	247	0.4	0	0	0	0	0	0	0	0
18	Recpt 18	246	0.5	0	0	0	0	0	0	0	0
19	Recpt 19	261	0.4	0	0	0	0	0	0	0	0
20	Recpt 20	302	0.4	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 42 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

* RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0.1	0	0
3	Recpt	3	0	0.1	0	0	0	0	0	0	0	0	0
4	Recpt	4	0.1	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0.1	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0.1	0	0	0
10	Recpt	10	0	0.1	0	0	0	0	0	0.2	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0.1	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0.1	0

Fresno Station Van Ness Ave./Fresno St. 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Fresno	Int	42	Existing	+	Project						
RUN:	Hour	1	(WORST	CASE	ANGLE)							
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)				
BRG=	WORST	CASE	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)	
A.	Link	A	706	337	745	288	AG	167	10	0	10	
B.	Link	B	709	339	754	284	AG	167	10	0	10	
C.	Link	C	713	341	759	285	AG	62	11.7	0	10	
D.	Link	D	716	342	761	290	AG	306	6	0	10	
E.	Link	E	720	344	758	301	AG	306	6	0	10	
F.	Link	F	703	252	745	288	AG	306	6	0	10	
G.	Link	G	758	301	818	347	AG	188	11.7	0	10	
H.	Link	H	706	249	756	291	AG	306	6	0	10	
I.	Link	I	756	291	821	345	AG	188	11.7	0	10	
J.	Link	J	754	284	807	222	AG	151	11.7	0	10	
K.	Link	K	754	284	823	343	AG	61	11.7	0	10	
L.	Link	L	709	246	761	290	AG	204	11	0	10	
M.	Link	M	712	245	759	285	AG	206	10	0	10	
N.	Link	N	759	285	827	341	AG	250	6	0	10	
O.	Link	O	714	243	757	275	AG	206	10	0	10	
P.	Link	P	757	275	804	220	AG	151	11.7	0	10	
Q.	Link	Q	756	291	810	225	AG	126	11.7	0	10	
R.	Link	R	761	290	815	228	AG	225	10	0	10	
S.	Link	S	780	295	825	236	AG	225	10	0	10	
T.	Link	T	780	295	830	339	AG	250	6	0	10	

Fresno Station Van Ness Ave./Fresno St. 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 42 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	708	326	1.8
2	Recpt 2	724	307	1.8
3	Recpt 3	738	290	1.8
4	Recpt 4	722	276	1.8
5	Recpt 5	703	259	1.8
6	Recpt 6	721	237	1.8
7	Recpt 7	740	252	1.8
8	Recpt 8	757	266	1.8
9	Recpt 9	771	249	1.8
10	Recpt 10	787	230	1.8
11	Recpt 11	729	343	1.8
12	Recpt 12	745	324	1.8
13	Recpt 13	759	307	1.8
14	Recpt 14	776	321	1.8
15	Recpt 15	795	338	1.8
16	Recpt 16	832	315	1.8
17	Recpt 17	809	303	1.8
18	Recpt 18	789	293	1.8
19	Recpt 19	804	277	1.8
20	Recpt 20	819	258	1.8

Fresno Station Van Ness Ave./Fresno St. 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 42 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	CONC/LINK * C	(PPM) D	E	F	G	H
1	Recpt 1	130	0.6	0.2	0	0	0	0	0	0	0
2	Recpt 2	127	0.6	0.1	0	0	0	0	0	0	0
3	Recpt 3	128	0.7	0	0	0	0	0	0	0	0
4	Recpt 4	61	0.6	0	0	0	0	0	0.1	0	0
5	Recpt 5	61	0.6	0	0	0	0	0	0.2	0	0
6	Recpt 6	36	0.6	0	0	0	0	0	0	0	0
7	Recpt 7	29	0.5	0	0	0	0	0	0	0	0
8	Recpt 8	335	0.6	0	0.1	0	0	0	0	0	0
9	Recpt 9	335	0.6	0	0	0	0	0	0	0	0
10	Recpt 10	332	0.6	0	0	0	0	0	0	0	0
11	Recpt 11	152	0.6	0	0	0	0	0.1	0	0	0
12	Recpt 12	154	0.6	0	0	0	0	0.1	0	0	0
13	Recpt 13	213	0.6	0	0	0	0	0	0	0	0
14	Recpt 14	214	0.6	0	0	0	0	0	0	0.2	0
15	Recpt 15	217	0.6	0	0	0	0	0	0	0.2	0
16	Recpt 16	246	0.4	0	0	0	0	0	0	0	0
17	Recpt 17	246	0.4	0	0	0	0	0	0	0	0
18	Recpt 18	246	0.5	0	0	0	0	0	0	0	0
19	Recpt 19	261	0.5	0	0	0	0	0	0	0	0
20	Recpt 20	277	0.5	0	0	0	0	0	0	0	0

Fresno Station Van Ness Ave./Fresno St. 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 42 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0.1	0	0	0	0	0	0	0	0	0
4	Recpt	4	0.1	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0.1	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0.1	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0.1	0	0	0
10	Recpt	10	0	0.1	0	0	0	0	0	0.2	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0.1	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0.1	0	0	0	0	0	0	0
15	Recpt	15	0.1	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0.1	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

Fresno Station Van Ness Ave./Fresno St. 2035 No Build CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Fresno	Int	42	No	Build								
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)					EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)	
A.	Link	A	706	337	745	288	AG	234		1.8	0	10	
B.	Link	B	709	339	754	284	AG	234		1.8	0	10	
C.	Link	C	713	341	759	285	AG	106		2	0	10	
D.	Link	D	716	342	761	290	AG	365		1.2	0	10	
E.	Link	E	720	344	758	301	AG	365		1.2	0	10	
F.	Link	F	703	252	745	288	AG	718		2	0	10	
G.	Link	G	758	301	818	347	AG	578		2	0	10	
H.	Link	H	706	249	756	291	AG	718		2	0	10	
I.	Link	I	756	291	821	345	AG	578		2	0	10	
J.	Link	J	754	284	807	222	AG	299		2	0	10	
K.	Link	K	754	284	823	343	AG	183		2	0	10	
L.	Link	L	709	246	761	290	AG	201		2	0	10	
M.	Link	M	712	245	759	285	AG	388		2	0	10	
N.	Link	N	759	285	827	341	AG	445		2	0	10	
O.	Link	O	714	243	757	275	AG	388		2	0	10	
P.	Link	P	757	275	804	220	AG	299		2	0	10	
Q.	Link	Q	756	291	810	225	AG	203		2	0	10	
R.	Link	R	761	290	815	228	AG	280		1.9	0	10	
S.	Link	S	780	295	825	236	AG	280		1.9	0	10	
T.	Link	T	780	295	830	339	AG	445		2	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 42 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	708	326	1.8
2	Recpt 2	724	307	1.8
3	Recpt 3	738	290	1.8
4	Recpt 4	722	276	1.8
5	Recpt 5	703	259	1.8
6	Recpt 6	721	237	1.8
7	Recpt 7	740	252	1.8
8	Recpt 8	757	266	1.8
9	Recpt 9	771	249	1.8
10	Recpt 10	787	230	1.8
11	Recpt 11	729	343	1.8
12	Recpt 12	745	324	1.8
13	Recpt 13	759	307	1.8
14	Recpt 14	776	321	1.8
15	Recpt 15	795	338	1.8
16	Recpt 16	832	315	1.8
17	Recpt 17	809	303	1.8
18	Recpt 18	789	293	1.8
19	Recpt 19	804	277	1.8
20	Recpt 20	819	258	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 42 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	PRED CONC (PPM)	A	B	CONC/LINK * C	D	E	F	G	H
1	Recpt 1	131	0.2	0	0	0	0	0	0	0	0
2	Recpt 2	133	0.2	0	0	0	0	0	0	0	0
3	Recpt 3	130	0.2	0	0	0	0	0	0	0	0
4	Recpt 4	64	0.3	0	0	0	0	0	0	0	0
5	Recpt 5	60	0.3	0	0	0	0	0	0.1	0	0
6	Recpt 6	37	0.2	0	0	0	0	0	0	0	0
7	Recpt 7	34	0.2	0	0	0	0	0	0	0	0
8	Recpt 8	34	0.2	0	0	0	0	0	0	0	0
9	Recpt 9	19	0.2	0	0	0	0	0	0	0	0
10	Recpt 10	333	0.2	0	0	0	0	0	0	0	0
11	Recpt 11	152	0.2	0	0	0	0	0	0	0	0
12	Recpt 12	154	0.2	0	0	0	0	0	0	0	0
13	Recpt 13	216	0.2	0	0	0	0	0	0	0	0
14	Recpt 14	215	0.3	0	0	0	0	0	0	0	0
15	Recpt 15	218	0.3	0	0	0	0	0	0	0	0
16	Recpt 16	249	0.2	0	0	0	0	0	0	0	0
17	Recpt 17	249	0.2	0	0	0	0	0	0	0	0
18	Recpt 18	251	0.2	0	0	0	0	0	0	0	0
19	Recpt 19	262	0.2	0	0	0	0	0	0	0	0
20	Recpt 20	275	0.1	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 42 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Fresno	Int	42	Build									
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)		
A.	Link	A	706	337	745	288	AG	258	1.9	0	10		
B.	Link	B	709	339	754	284	AG	258	1.9	0	10		
C.	Link	C	713	341	759	285	AG	106	2	0	10		
D.	Link	D	716	342	761	290	AG	407	1.2	0	10		
E.	Link	E	720	344	758	301	AG	407	1.2	0	10		
F.	Link	F	703	252	745	288	AG	747	2	0	10		
G.	Link	G	758	301	818	347	AG	583	2	0	10		
H.	Link	H	706	249	756	291	AG	747	2	0	10		
I.	Link	I	756	291	821	345	AG	583	2	0	10		
J.	Link	J	754	284	807	222	AG	299	2	0	10		
K.	Link	K	754	284	823	343	AG	183	2	0	10		
L.	Link	L	709	246	761	290	AG	285	2	0	10		
M.	Link	M	712	245	759	285	AG	424	2	0	10		
N.	Link	N	759	285	827	341	AG	481	2	0	10		
O.	Link	O	714	243	757	275	AG	424	2	0	10		
P.	Link	P	757	275	804	220	AG	299	2	0	10		
Q.	Link	Q	756	291	810	225	AG	203	2	0	10		
R.	Link	R	761	290	815	228	AG	280	1.9	0	10		
S.	Link	S	780	295	825	236	AG	280	1.9	0	10		
T.	Link	T	780	295	830	339	AG	481	2	0	10		

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Int 42 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	708	326	1.8
2	Recpt 2	724	307	1.8
3	Recpt 3	738	290	1.8
4	Recpt 4	722	276	1.8
5	Recpt 5	703	259	1.8
6	Recpt 6	721	237	1.8
7	Recpt 7	740	252	1.8
8	Recpt 8	757	266	1.8
9	Recpt 9	771	249	1.8
10	Recpt 10	787	230	1.8
11	Recpt 11	729	343	1.8
12	Recpt 12	745	324	1.8
13	Recpt 13	759	307	1.8
14	Recpt 14	776	321	1.8
15	Recpt 15	795	338	1.8
16	Recpt 16	832	315	1.8
17	Recpt 17	809	303	1.8
18	Recpt 18	789	293	1.8
19	Recpt 19	804	277	1.8
20	Recpt 20	819	258	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Int 42 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	CONC/LINK * C	D	E	(PPM) F	G	H
1	Recpt 1	131	0.2	0	0	0	0	0	0	0	0
2	Recpt 2	132	0.2	0	0	0	0	0	0	0	0
3	Recpt 3	130	0.3	0	0	0	0	0	0	0	0
4	Recpt 4	64	0.3	0	0	0	0	0	0	0	0
5	Recpt 5	61	0.4	0	0	0	0	0	0.1	0	0
6	Recpt 6	37	0.2	0	0	0	0	0	0	0	0
7	Recpt 7	34	0.2	0	0	0	0	0	0	0	0
8	Recpt 8	34	0.2	0	0	0	0	0	0	0	0
9	Recpt 9	19	0.2	0	0	0	0	0	0	0	0
10	Recpt 10	332	0.2	0	0	0	0	0	0	0	0
11	Recpt 11	152	0.2	0	0	0	0	0	0	0	0
12	Recpt 12	194	0.2	0	0	0	0	0	0	0	0
13	Recpt 13	216	0.3	0	0	0	0	0	0	0	0
14	Recpt 14	216	0.3	0	0	0	0	0	0	0	0
15	Recpt 15	218	0.3	0	0	0	0	0	0	0	0
16	Recpt 16	248	0.2	0	0	0	0	0	0	0	0
17	Recpt 17	249	0.2	0	0	0	0	0	0	0	0
18	Recpt 18	250	0.2	0	0	0	0	0	0	0	0
19	Recpt 19	262	0.2	0	0	0	0	0	0	0	0
20	Recpt 20	275	0.2	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Int 42 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

* RECEPTOR	*	I	J	K	CONC/LINK (PPM) L	M	N	O	P	Q	R	S	T
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

Appendix C

C.10 Bakersfield Station Intersection CALINE Outputs

Bakersfield Station Union Ave./California Ave. 2009 Existing CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	BKF	Int	23	Existing								
RUN:	Hour	1	(WORST	CASE	ANGLE)							
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)				
BRG=	WORST	CASE	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	128	836	126	757	AG	722		9.9	0	10
B.	Link	B	136	836	137	745	AG	722		9.9	0	10
C.	Link	C	144	836	141	739	AG	181		11.5	0	10
D.	Link	D	150	836	147	743	AG	624		6.1	0	10
E.	Link	E	155	836	155	758	AG	624		6.1	0	10
F.	Link	F	64	757	126	757	AG	418		9	0	10
G.	Link	G	155	758	231	755	AG	273		12	0	10
H.	Link	H	63	753	144	749	AG	418		9	0	10
I.	Link	I	144	749	231	749	AG	273		12	0	10
J.	Link	J	137	745	132	661	AG	778		5.5	0	10
K.	Link	K	137	745	231	743	AG	156		12	0	10
L.	Link	L	63	744	147	743	AG	239		12	0	10
M.	Link	M	63	738	141	739	AG	220		12	0	10
N.	Link	N	141	739	231	735	AG	315		9	0	10
O.	Link	O	63	733	128	730	AG	220		11.5	0	10
P.	Link	P	128	730	126	661	AG	778		5.5	0	10
Q.	Link	Q	144	749	141	661	AG	114		12	0	10
R.	Link	R	147	743	145	660	AG	497		10.4	0	10
S.	Link	S	155	730	151	660	AG	497		10.4	0	10
T.	Link	T	155	730	231	729	AG	315		9	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 23 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	124	809	1.8
2	Recpt 2	123	784	1.8
3	Recpt 3	122	762	1.8
4	Recpt 4	100	762	1.8
5	Recpt 5	75	763	1.8
6	Recpt 6	74	727	1.8
7	Recpt 7	99	726	1.8
8	Recpt 8	121	725	1.8
9	Recpt 9	120	703	1.8
10	Recpt 10	120	679	1.8
11	Recpt 11	161	810	1.8
12	Recpt 12	161	785	1.8
13	Recpt 13	160	763	1.8
14	Recpt 14	182	762	1.8
15	Recpt 15	207	762	1.8
16	Recpt 16	206	724	1.8
17	Recpt 17	181	724	1.8
18	Recpt 18	159	724	1.8
19	Recpt 19	159	702	1.8
20	Recpt 20	158	677	1.8

Bakersfield Station Union Ave./California Ave. 2009 Existing CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 23 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	CONC/LINK * C	D	E	F	G	H
1	Recpt	1	167	1.5	0.7	0.2	0	0	0	0	0	0
2	Recpt	2	159	1.3	0.5	0.2	0	0	0	0	0	0
3	Recpt	3	132	1.1	0.2	0.2	0	0	0	0	0	0.1
4	Recpt	4	110	1	0	0.1	0	0	0	0.3	0	0.2
5	Recpt	5	105	1	0	0	0	0	0	0.3	0	0.2
6	Recpt	6	76	0.9	0	0	0	0	0	0	0	0
7	Recpt	7	32	0.9	0.2	0.2	0	0	0	0	0	0
8	Recpt	8	10	0.9	0.3	0.2	0	0	0	0	0	0
9	Recpt	9	19	1	0	0.2	0	0.1	0	0	0	0
10	Recpt	10	15	1	0	0.1	0	0.1	0	0	0	0
11	Recpt	11	196	1	0	0	0	0.2	0.3	0	0	0
12	Recpt	12	201	1	0	0	0	0.1	0.3	0	0	0
13	Recpt	13	252	0.9	0	0.1	0	0.1	0.1	0	0	0.2
14	Recpt	14	252	0.9	0	0	0	0	0	0	0.2	0
15	Recpt	15	257	1	0	0	0	0	0	0	0.3	0
16	Recpt	16	286	0.9	0	0	0	0	0	0	0	0.1
17	Recpt	17	294	0.9	0	0	0	0	0	0	0	0.1
18	Recpt	18	322	1.1	0.1	0.2	0	0	0	0	0	0
19	Recpt	19	342	1.3	0.2	0.2	0	0	0	0	0	0
20	Recpt	20	347	1.3	0.2	0.2	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 23 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0.2	0.1	0
2	Recpt	2	0	0	0	0	0	0	0	0	0.2	0.1	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0.1	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0.1	0	0	0	0.1	0	0.2	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0.1	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0.2	0	0	0
10	Recpt	10	0	0.1	0	0	0	0	0	0.3	0	0	0
11	Recpt	11	0	0.1	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0.1	0	0	0	0	0	0.1	0	0	0
13	Recpt	13	0	0	0	0.1	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0.1	0	0	0	0	0	0	0
15	Recpt	15	0.1	0	0	0.1	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0.1	0	0	0	0	0.3
17	Recpt	17	0	0	0	0	0	0.1	0	0	0	0	0.2
18	Recpt	18	0	0	0	0	0	0	0	0	0.1	0.1	0
19	Recpt	19	0	0	0	0	0	0	0	0	0.2	0.4	0
20	Recpt	20	0	0	0	0	0	0	0	0	0.2	0.4	0

Bakersfield Station Union Ave./California Ave. 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	BKF	Int	23	Existing+	Project								
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)					EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)	
A.	Link	A	128	836	126	757	AG	730		11.7	0	10	
B.	Link	B	136	836	137	745	AG	730		11.7	0	10	
C.	Link	C	144	836	141	739	AG	188		11.5	0	10	
D.	Link	D	150	836	147	743	AG	642		6.1	0	10	
E.	Link	E	155	836	155	758	AG	642		6.1	0	10	
F.	Link	F	64	757	126	757	AG	435		9	0	10	
G.	Link	G	155	758	231	755	AG	279		12	0	10	
H.	Link	H	63	753	144	749	AG	435		9	0	10	
I.	Link	I	144	749	231	749	AG	279		12	0	10	
J.	Link	J	137	745	132	661	AG	847		11.5	0	10	
K.	Link	K	137	745	231	743	AG	156		12	0	10	
L.	Link	L	63	744	147	743	AG	239		12	0	10	
M.	Link	M	63	738	141	739	AG	290		11.5	0	10	
N.	Link	N	141	739	231	735	AG	328		9	0	10	
O.	Link	O	63	733	128	730	AG	290		11.5	0	10	
P.	Link	P	128	730	126	661	AG	847		11.5	0	10	
Q.	Link	Q	144	749	141	661	AG	144		12	0	10	
R.	Link	R	147	743	145	660	AG	512		10.4	0	10	
S.	Link	S	155	730	151	660	AG	512		10.4	0	10	
T.	Link	T	155	730	231	729	AG	328		9	0	10	

Bakersfield Station Union Ave./California Ave. 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 23 Existing+ Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	124	809	1.8
2	Recpt 2	123	784	1.8
3	Recpt 3	122	762	1.8
4	Recpt 4	100	762	1.8
5	Recpt 5	75	763	1.8
6	Recpt 6	74	727	1.8
7	Recpt 7	99	726	1.8
8	Recpt 8	121	725	1.8
9	Recpt 9	120	703	1.8
10	Recpt 10	120	679	1.8
11	Recpt 11	161	810	1.8
12	Recpt 12	161	785	1.8
13	Recpt 13	160	763	1.8
14	Recpt 14	182	762	1.8
15	Recpt 15	207	762	1.8
16	Recpt 16	206	724	1.8
17	Recpt 17	181	724	1.8
18	Recpt 18	159	724	1.8
19	Recpt 19	159	702	1.8
20	Recpt 20	158	677	1.8

Bakersfield Station Union Ave./California Ave. 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 23 Existing+ Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	PRED CONC (PPM)	A	B	CONC/LINK * C	(PPM) D	E	F	G	H
1	Recpt 1	168	1.8	0.8	0.2	0	0	0	0	0	0
2	Recpt 2	163	1.6	0.7	0.1	0	0	0	0	0	0
3	Recpt 3	171	1.4	0.2	0	0	0	0	0.1	0	0.1
4	Recpt 4	148	1.2	0	0	0	0	0	0.2	0	0.1
5	Recpt 5	135	1.1	0	0	0	0	0	0.2	0	0.2
6	Recpt 6	77	1.1	0	0	0	0	0	0	0	0
7	Recpt 7	32	1.1	0.2	0.2	0	0	0	0	0	0
8	Recpt 8	70	1.3	0	0	0	0	0	0	0	0
9	Recpt 9	25	1.5	0	0	0	0.1	0	0	0	0
10	Recpt 10	16	1.7	0	0.1	0	0.1	0	0	0	0
11	Recpt 11	196	1.3	0	0	0	0.2	0.3	0	0	0
12	Recpt 12	201	1.3	0	0	0	0.1	0.3	0	0	0
13	Recpt 13	204	1.3	0	0	0	0	0	0	0.1	0
14	Recpt 14	214	1.1	0	0	0	0	0	0	0.1	0
15	Recpt 15	256	1	0	0	0	0	0	0	0.3	0
16	Recpt 16	285	1	0	0	0	0	0	0	0	0.1
17	Recpt 17	291	1	0	0	0	0	0	0.1	0	0.1
18	Recpt 18	322	1.2	0.2	0.2	0	0	0	0	0	0
19	Recpt 19	341	1.4	0.2	0.3	0	0	0	0	0	0
20	Recpt 20	346	1.5	0.2	0.2	0	0	0	0	0	0

Bakersfield Station Union Ave./California Ave. 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 23 Existing+ Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

* RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
					CONC/LINK (PPM)								
1	Recpt	1	0	0.2	0	0	0	0	0	0	0	0.2	0.1	0
2	Recpt	2	0	0.2	0	0	0	0	0	0	0	0.2	0.1	0
3	Recpt	3	0	0.4	0	0	0	0	0	0.4	0	0	0	0
4	Recpt	4	0	0.2	0	0	0	0	0	0.2	0	0.1	0	0
5	Recpt	5	0	0.1	0	0	0	0	0	0.2	0	0	0	0
6	Recpt	6	0.1	0	0	0	0.2	0	0.3	0	0	0	0	0
7	Recpt	7	0	0	0	0	0.1	0	0.1	0	0	0	0	0
8	Recpt	8	0.1	0.3	0	0	0	0.1	0	0.4	0	0.1	0	0
9	Recpt	9	0	0.3	0	0	0	0	0	0.6	0	0	0	0
10	Recpt	10	0	0.3	0	0	0	0	0	0.8	0	0	0	0
11	Recpt	11	0	0.3	0	0	0	0	0	0.2	0	0	0	0
12	Recpt	12	0	0.3	0	0	0	0	0	0.2	0	0	0	0
13	Recpt	13	0	0.3	0	0	0	0	0	0.2	0	0.2	0	0
14	Recpt	14	0.1	0.2	0	0	0	0	0	0.2	0	0.1	0.1	0
15	Recpt	15	0.1	0	0	0	0.1	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0.1	0	0	0	0	0	0.3
17	Recpt	17	0	0.1	0	0.1	0	0	0	0	0	0	0	0.2
18	Recpt	18	0	0	0	0	0	0	0	0	0	0.1	0.1	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0.2	0.4	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0.2	0.4	0

Bakersfield Station Union Ave./California Ave. 2035 No Build CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	BKF	Int	23	No	Build							
RUN:	Hour	1	(WORST	CASE	ANGLE)							
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)				
BRG=	WORST	CASE	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	128	836	126	757	AG	1079		1.9	0	10
B.	Link	B	136	836	137	745	AG	1079		1.9	0	10
C.	Link	C	144	836	141	739	AG	283		2.6	0	10
D.	Link	D	150	836	147	743	AG	1079		1.9	0	10
E.	Link	E	155	836	155	758	AG	1079		1.9	0	10
F.	Link	F	64	757	126	757	AG	427		1.9	0	10
G.	Link	G	155	758	231	755	AG	288		2.6	0	10
H.	Link	H	63	753	144	749	AG	427		1.9	0	10
I.	Link	I	144	749	231	749	AG	288		2.6	0	10
J.	Link	J	137	745	132	661	AG	1270		1.4	0	10
K.	Link	K	137	745	231	743	AG	240		2.6	0	10
L.	Link	L	63	744	147	743	AG	374		2.6	0	10
M.	Link	M	63	738	141	739	AG	419		2.6	0	10
N.	Link	N	141	739	231	735	AG	585		1.9	0	10
O.	Link	O	63	733	128	730	AG	419		2.6	0	10
P.	Link	P	128	730	126	661	AG	1270		1.4	0	10
Q.	Link	Q	144	749	141	661	AG	131		2.6	0	10
R.	Link	R	147	743	145	660	AG	941		2.6	0	10
S.	Link	S	155	730	151	660	AG	941		2.6	0	10
T.	Link	T	155	730	231	729	AG	585		1.9	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 23 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	124	809	1.8
2	Recpt 2	123	784	1.8
3	Recpt 3	122	762	1.8
4	Recpt 4	100	762	1.8
5	Recpt 5	75	763	1.8
6	Recpt 6	74	727	1.8
7	Recpt 7	99	726	1.8
8	Recpt 8	121	725	1.8
9	Recpt 9	120	703	1.8
10	Recpt 10	120	679	1.8
11	Recpt 11	161	810	1.8
12	Recpt 12	161	785	1.8
13	Recpt 13	160	763	1.8
14	Recpt 14	182	762	1.8
15	Recpt 15	207	762	1.8
16	Recpt 16	206	724	1.8
17	Recpt 17	181	724	1.8
18	Recpt 18	159	724	1.8
19	Recpt 19	159	702	1.8
20	Recpt 20	158	677	1.8

Bakersfield Station Union Ave./California Ave. 2035 No Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 23 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	*	BRG (DEG)	PRED CONC (PPM)	A	B	CONC/LINK * C	(PPM) D	E	F	G	H
1	Recpt	1	166	0.5	0.2	0	0	0	0	0	0	0
2	Recpt	2	161	0.4	0.2	0	0	0	0	0	0	0
3	Recpt	3	135	0.4	0	0	0	0	0	0	0	0
4	Recpt	4	147	0.3	0	0	0	0	0	0	0	0
5	Recpt	5	135	0.3	0	0	0	0	0	0	0	0
6	Recpt	6	77	0.3	0	0	0	0	0	0	0	0
7	Recpt	7	32	0.3	0	0	0	0	0	0	0	0
8	Recpt	8	22	0.3	0	0	0	0	0	0	0	0
9	Recpt	9	22	0.4	0	0	0	0	0	0	0	0
10	Recpt	10	16	0.4	0	0	0	0	0	0	0	0
11	Recpt	11	196	0.4	0	0	0	0	0.2	0	0	0
12	Recpt	12	201	0.4	0	0	0	0	0.1	0	0	0
13	Recpt	13	190	0.3	0	0	0	0	0	0	0	0
14	Recpt	14	212	0.3	0	0	0	0	0	0	0	0
15	Recpt	15	256	0.3	0	0	0	0	0	0	0	0
16	Recpt	16	285	0.3	0	0	0	0	0	0	0	0
17	Recpt	17	330	0.3	0	0	0	0	0	0	0	0
18	Recpt	18	322	0.4	0	0	0	0	0	0	0	0
19	Recpt	19	342	0.5	0	0	0	0	0	0	0	0
20	Recpt	20	347	0.5	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 23 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0.1	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0.1	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0.2	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0.2	0

Bakersfield Station Union Ave./California Ave. 2035 Build CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	BKF	Int	23	Build									
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2		TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	128	836	126	757		AG	1088		2.4	0	10
B.	Link	B	136	836	137	745		AG	1088		2.4	0	10
C.	Link	C	144	836	141	739		AG	290		2.6	0	10
D.	Link	D	150	836	147	743		AG	1097		1.9	0	10
E.	Link	E	155	836	155	758		AG	1097		1.9	0	10
F.	Link	F	64	757	126	757		AG	444		1.9	0	10
G.	Link	G	155	758	231	755		AG	293		2.6	0	10
H.	Link	H	63	753	144	749		AG	444		1.9	0	10
I.	Link	I	144	749	231	749		AG	293		2.6	0	10
J.	Link	J	137	745	132	661		AG	1339		2.6	0	10
K.	Link	K	137	745	231	743		AG	240		2.6	0	10
L.	Link	L	63	744	147	743		AG	374		2.6	0	10
M.	Link	M	63	738	141	739		AG	489		2.6	0	10
N.	Link	N	141	739	231	735		AG	598		1.9	0	10
O.	Link	O	63	733	128	730		AG	489		2.6	0	10
P.	Link	P	128	730	126	661		AG	1339		2.6	0	10
Q.	Link	Q	144	749	141	661		AG	161		2.6	0	10
R.	Link	R	147	743	145	660		AG	956		2.6	0	10
S.	Link	S	155	730	151	660		AG	956		2.6	0	10
T.	Link	T	155	730	231	729		AG	598		1.9	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 23 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	124	809	1.8
2	Recpt 2	123	784	1.8
3	Recpt 3	122	762	1.8
4	Recpt 4	100	762	1.8
5	Recpt 5	75	763	1.8
6	Recpt 6	74	727	1.8
7	Recpt 7	99	726	1.8
8	Recpt 8	121	725	1.8
9	Recpt 9	120	703	1.8
10	Recpt 10	120	679	1.8
11	Recpt 11	161	810	1.8
12	Recpt 12	161	785	1.8
13	Recpt 13	160	763	1.8
14	Recpt 14	182	762	1.8
15	Recpt 15	207	762	1.8
16	Recpt 16	206	724	1.8
17	Recpt 17	181	724	1.8
18	Recpt 18	159	724	1.8
19	Recpt 19	159	702	1.8
20	Recpt 20	158	677	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 23 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	C	D	E	F	G	H
						* CONC/LINK (PPM)					
1 Recpt	1	168	0.6	0.2	0	0	0	0	0	0	0
2 Recpt	2	163	0.5	0.2	0	0	0	0	0	0	0
3 Recpt	3	170	0.4	0	0	0	0	0	0	0	0
4 Recpt	4	148	0.4	0	0	0	0	0	0	0	0
5 Recpt	5	136	0.3	0	0	0	0	0	0	0	0
6 Recpt	6	77	0.4	0	0	0	0	0	0	0	0
7 Recpt	7	32	0.4	0	0	0	0	0	0	0	0
8 Recpt	8	153	0.4	0	0	0	0	0	0	0	0
9 Recpt	9	25	0.5	0	0	0	0	0	0	0	0
10 Recpt	10	17	0.6	0	0	0	0	0	0	0	0
11 Recpt	11	196	0.5	0	0	0	0	0.2	0	0	0
12 Recpt	12	201	0.5	0	0	0	0	0.1	0	0	0
13 Recpt	13	204	0.4	0	0	0	0	0	0	0	0
14 Recpt	14	213	0.3	0	0	0	0	0	0	0	0
15 Recpt	15	226	0.3	0	0	0	0	0	0	0	0
16 Recpt	16	285	0.3	0	0	0	0	0	0	0	0
17 Recpt	17	330	0.3	0	0	0	0	0	0	0	0
18 Recpt	18	211	0.4	0	0	0	0	0	0	0	0
19 Recpt	19	341	0.5	0	0	0	0	0	0	0	0
20 Recpt	20	347	0.5	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 23 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0.1	0	0	0	0	0	0.1	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0.1	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0.1	0	0	0	0	0	0.2	0	0	0
9	Recpt	9	0	0.1	0	0	0	0	0	0.2	0	0	0
10	Recpt	10	0	0.1	0	0	0	0	0	0.3	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0.1	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0.1	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0.1
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0.2	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0.2	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0.2	0

Bakersfield Station Oak St./Truxton Ave. 2009 Existing CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	BKF	Int	30	Existing								
RUN:	Hour	1	(WORST	CASE	ANGLE)							
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)				
BRG=	WORST	CASE	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	796	447	791	382	AG	626		11.7	0	10
B.	Link	B	802	446	799	368	AG	626		11.7	0	10
C.	Link	C	807	445	804	364	AG	46		12	0	10
D.	Link	D	813	445	809	367	AG	681		12	0	10
E.	Link	E	816	445	813	379	AG	681		12	0	10
F.	Link	F	726	384	791	382	AG	928		12	0	10
G.	Link	G	813	379	882	371	AG	549		11.5	0	10
H.	Link	H	726	379	805	374	AG	928		12	0	10
I.	Link	I	805	374	881	366	AG	549		11.5	0	10
J.	Link	J	799	368	797	298	AG	742		12	0	10
K.	Link	K	799	368	881	360	AG	447		11.5	0	10
L.	Link	L	726	376	809	367	AG	689		12	0	10
M.	Link	M	725	367	804	364	AG	497		10.4	0	10
N.	Link	N	804	364	882	354	AG	466		12	0	10
O.	Link	O	725	362	794	357	AG	497		10.4	0	10
P.	Link	P	793	357	793	298	AG	742		12	0	10
Q.	Link	Q	805	374	801	298	AG	283		12	0	10
R.	Link	R	809	367	808	297	AG	414		10.4	0	10
S.	Link	S	816	357	813	296	AG	414		10.4	0	10
T.	Link	T	816	357	881	350	AG	466		12	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 30 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	789	435	1.8
2	Recpt 2	788	410	1.8
3	Recpt 3	786	388	1.8
4	Recpt 4	764	389	1.8
5	Recpt 5	740	384	1.8
6	Recpt 6	741	355	1.8
7	Recpt 7	766	353	1.8
8	Recpt 8	788	351	1.8
9	Recpt 9	788	329	1.8
10	Recpt 10	787	304	1.8
11	Recpt 11	821	430	1.8
12	Recpt 12	821	404	1.8
13	Recpt 13	820	383	1.8
14	Recpt 14	842	380	1.8
15	Recpt 15	867	377	1.8
16	Recpt 16	866	347	1.8
17	Recpt 17	842	348	1.8
18	Recpt 18	820	352	1.8
19	Recpt 19	819	330	1.8
20	Recpt 20	819	305	1.8

Bakersfield Station Oak St./Truxton Ave. 2009 Existing CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 30 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	C	D	E	F	G	H
	*	*				CONC/LINK *	(PPM)				
1	Recpt 1	170	1.7	0.6	0.2	0	0	0	0	0	0.1
2	Recpt 2	172	1.8	0.5	0	0	0	0	0	0	0.2
3	Recpt 3	168	2.1	0.1	0	0	0	0	0.4	0	0.3
4	Recpt 4	115	2.2	0	0.1	0	0	0	0.7	0	0.4
5	Recpt 5	103	3.2	0	0	0	0	0	0.8	0	1.1
6	Recpt 6	51	1.7	0.1	0.1	0	0.1	0.1	0.2	0	0.3
7	Recpt 7	33	1.7	0.2	0.2	0	0.2	0.1	0.2	0	0.2
8	Recpt 8	30	1.9	0	0.2	0	0.3	0.2	0	0	0.2
9	Recpt 9	20	2.2	0	0	0	0.3	0.2	0	0	0
10	Recpt 10	15	2.2	0	0	0	0.2	0.2	0	0	0
11	Recpt 11	196	2.1	0	0	0	0.4	0.7	0	0	0
12	Recpt 12	202	2	0	0	0	0.4	0.5	0	0	0
13	Recpt 13	263	2.1	0	0.2	0	0.2	0.3	0.3	0.1	0.6
14	Recpt 14	260	2	0	0.1	0	0.1	0	0	0.5	0.3
15	Recpt 15	265	2	0	0	0	0	0	0	0.6	0.2
16	Recpt 16	288	2.1	0	0	0	0	0	0.2	0	0.3
17	Recpt 17	293	1.9	0	0	0	0	0	0.3	0	0.3
18	Recpt 18	294	1.9	0	0	0	0	0	0.3	0	0.4
19	Recpt 19	307	1.7	0	0	0	0	0	0.2	0	0.2
20	Recpt 20	347	1.6	0.2	0.2	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 30 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0.2	0	0	0	0	0	0	0.1	0.1	0	0
2	Recpt	2	0	0.4	0	0.1	0	0	0	0.2	0.1	0	0	0
3	Recpt	3	0	0.4	0	0.2	0.1	0	0	0.3	0.1	0	0	0
4	Recpt	4	0	0	0.2	0.2	0	0.2	0	0	0	0	0	0.2
5	Recpt	5	0	0	0.2	0.3	0	0.2	0	0	0	0	0	0.1
6	Recpt	6	0	0	0	0.2	0.2	0	0.2	0	0	0	0	0
7	Recpt	7	0	0	0	0.2	0.2	0	0.2	0	0	0	0	0
8	Recpt	8	0	0.2	0	0.2	0.1	0	0.2	0.2	0	0	0	0
9	Recpt	9	0	0.4	0	0.1	0	0	0	0.7	0	0	0	0
10	Recpt	10	0	0.4	0	0	0	0	0	0.8	0	0	0	0
11	Recpt	11	0	0.2	0	0	0	0	0	0.2	0	0	0	0
12	Recpt	12	0	0.3	0	0.1	0	0	0	0.2	0.1	0	0	0
13	Recpt	13	0	0	0	0.3	0	0	0	0	0	0	0	0
14	Recpt	14	0.2	0	0	0.3	0.2	0	0.1	0	0	0	0	0
15	Recpt	15	0.3	0	0	0.3	0.2	0	0	0	0	0	0	0
16	Recpt	16	0	0	0.1	0.2	0	0.3	0	0	0	0	0	0.6
17	Recpt	17	0	0	0	0.3	0.1	0.2	0	0	0	0	0	0.4
18	Recpt	18	0	0.2	0	0.4	0.2	0	0	0	0	0.1	0.2	0.1
19	Recpt	19	0	0.2	0	0.2	0.1	0	0.1	0.2	0	0.1	0.2	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0.2	0.4	0

Bakersfield Station Oak St./Truxton Ave. 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE		DISPERSION	MODEL							
JUNE	1989	VERSION											
PAGE	1												
JOB:	BKF	Int		30	Existing	+	Project						
RUN:	Hour		1	(WORST	CASE	ANGLE)							
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)					EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)	
A.	Link	A	796	447	791	382	AG	626		11.7	0	10	
B.	Link	B	802	446	799	368	AG	626		11.7	0	10	
C.	Link	C	807	445	804	364	AG	51		12	0	10	
D.	Link	D	813	445	809	367	AG	686		12	0	10	
E.	Link	E	816	445	813	379	AG	686		12	0	10	
F.	Link	F	726	384	791	382	AG	938		12	0	10	
G.	Link	G	813	379	882	371	AG	564		11.5	0	10	
H.	Link	H	726	379	805	374	AG	938		12	0	10	
I.	Link	I	805	374	881	366	AG	564		11.5	0	10	
J.	Link	J	799	368	797	298	AG	742		12	0	10	
K.	Link	K	799	368	881	360	AG	447		11.5	0	10	
L.	Link	L	726	376	809	367	AG	689		12	0	10	
M.	Link	M	725	367	804	364	AG	501		10.4	0	10	
N.	Link	N	804	364	882	354	AG	473		12	0	10	
O.	Link	O	725	362	794	357	AG	501		10.4	0	10	
P.	Link	P	793	357	793	298	AG	742		12	0	10	
Q.	Link	Q	805	374	801	298	AG	283		12	0	10	
R.	Link	R	809	367	808	297	AG	414		10.4	0	10	
S.	Link	S	816	357	813	296	AG	414		10.4	0	10	
T.	Link	T	816	357	881	350	AG	473		12	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 30 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES	(M)	
RECEPTOR	*	X	Y	Z
----------*----------				
1	Recpt 1	789	435	1.8
2	Recpt 2	788	410	1.8
3	Recpt 3	786	388	1.8
4	Recpt 4	764	389	1.8
5	Recpt 5	740	384	1.8
6	Recpt 6	741	355	1.8
7	Recpt 7	766	353	1.8
8	Recpt 8	788	351	1.8
9	Recpt 9	788	329	1.8
10	Recpt 10	787	304	1.8
11	Recpt 11	821	430	1.8
12	Recpt 12	821	404	1.8
13	Recpt 13	820	383	1.8
14	Recpt 14	842	380	1.8
15	Recpt 15	867	377	1.8
16	Recpt 16	866	347	1.8
17	Recpt 17	842	348	1.8
18	Recpt 18	820	352	1.8
19	Recpt 19	819	330	1.8
20	Recpt 20	819	305	1.8

Bakersfield Station Oak St./Truxton Ave. 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 30 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	C	D	E	F	G	H
	*	*				CONC/LINK *	(PPM)				
1	Recpt	1	170	1.7	0.6	0.2	0	0	0	0	0	0.1
2	Recpt	2	172	1.8	0.5	0	0	0	0	0	0	0.2
3	Recpt	3	168	2.1	0.1	0	0	0	0	0.4	0	0.3
4	Recpt	4	115	2.2	0	0.1	0	0	0	0.8	0	0.4
5	Recpt	5	103	3.2	0	0	0	0	0	0.9	0	1.2
6	Recpt	6	51	1.7	0.1	0.1	0	0.1	0.1	0.2	0	0.3
7	Recpt	7	33	1.7	0.2	0.2	0	0.2	0.1	0.2	0	0.2
8	Recpt	8	30	2	0	0.2	0	0.3	0.2	0	0	0.2
9	Recpt	9	20	2.2	0	0	0	0.3	0.2	0	0	0
10	Recpt	10	15	2.2	0	0	0	0.3	0.2	0	0	0
11	Recpt	11	196	2.2	0	0	0	0.5	0.7	0	0	0
12	Recpt	12	202	2	0	0	0	0.4	0.5	0	0	0
13	Recpt	13	263	2.2	0	0.2	0	0.2	0.3	0.3	0.2	0.7
14	Recpt	14	260	2	0	0.1	0	0.1	0	0	0.5	0.3
15	Recpt	15	265	2	0	0	0	0	0	0	0.7	0.2
16	Recpt	16	288	2.1	0	0	0	0	0	0.2	0	0.3
17	Recpt	17	293	1.9	0	0	0	0	0	0.3	0	0.3
18	Recpt	18	294	1.9	0	0	0	0	0	0.3	0	0.4
19	Recpt	19	307	1.7	0	0	0	0	0	0.2	0	0.2
20	Recpt	20	347	1.6	0.2	0.2	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 30 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0.2	0	0	0	0	0	0	0.1	0.1	0	0
2	Recpt	2	0	0.4	0	0.1	0	0	0	0.2	0.1	0	0	0
3	Recpt	3	0	0.4	0	0.2	0.1	0	0	0.3	0.1	0	0	0
4	Recpt	4	0	0	0.2	0.2	0	0.2	0	0	0	0	0	0.2
5	Recpt	5	0	0	0.2	0.3	0	0.2	0	0	0	0	0	0.1
6	Recpt	6	0	0	0	0.2	0.2	0	0.3	0	0	0	0	0
7	Recpt	7	0	0	0	0.2	0.2	0	0.2	0	0	0	0	0
8	Recpt	8	0	0.2	0	0.2	0.2	0	0.2	0.2	0	0	0	0
9	Recpt	9	0	0.4	0	0.1	0	0	0	0.7	0	0	0	0
10	Recpt	10	0	0.4	0	0	0	0	0	0.8	0	0	0	0
11	Recpt	11	0	0.2	0	0	0	0	0	0.2	0	0	0	0
12	Recpt	12	0.1	0.3	0	0.1	0	0	0	0.2	0.1	0	0	0
13	Recpt	13	0	0	0	0.3	0	0	0	0	0	0	0	0
14	Recpt	14	0.2	0	0	0.3	0.2	0	0.1	0	0	0	0	0
15	Recpt	15	0.3	0	0	0.3	0.2	0	0	0	0	0	0	0
16	Recpt	16	0	0	0.1	0.2	0	0.3	0	0	0	0	0	0.6
17	Recpt	17	0	0	0	0.3	0.1	0.2	0	0	0	0	0	0.4
18	Recpt	18	0	0.2	0	0.4	0.2	0	0	0	0	0.1	0.2	0.1
19	Recpt	19	0	0.2	0	0.2	0.1	0	0.1	0.2	0	0.1	0.2	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0.2	0.4	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	BKF	Int	30	No	Build								
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2		TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	796	447	791	382		AG	886		2.6	0	10
B.	Link	B	802	446	799	368		AG	886		2.6	0	10
C.	Link	C	807	445	804	364		AG	108		2.6	0	10
D.	Link	D	813	445	809	367		AG	841		2.6	0	10
E.	Link	E	816	445	813	379		AG	841		2.6	0	10
F.	Link	F	726	384	791	382		AG	1217		1.2	0	10
G.	Link	G	813	379	882	371		AG	640		2.6	0	10
H.	Link	H	726	379	805	374		AG	1217		1.2	0	10
I.	Link	I	805	374	881	366		AG	640		2.6	0	10
J.	Link	J	799	368	797	298		AG	802		2.6	0	10
K.	Link	K	799	368	881	360		AG	447		2.6	0	10
L.	Link	L	726	376	809	367		AG	1001		2.6	0	10
M.	Link	M	725	367	804	364		AG	847		2.6	0	10
N.	Link	N	804	364	882	354		AG	883		1.2	0	10
O.	Link	O	725	362	794	357		AG	847		2.6	0	10
P.	Link	P	793	357	793	298		AG	802		2.6	0	10
Q.	Link	Q	805	374	801	298		AG	283		2.6	0	10
R.	Link	R	809	367	808	297		AG	451		2.6	0	10
S.	Link	S	816	357	813	296		AG	451		2.6	0	10
T.	Link	T	816	357	881	350		AG	883		1.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 30 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	789	435	1.8
2	Recpt 2	788	410	1.8
3	Recpt 3	786	388	1.8
4	Recpt 4	764	389	1.8
5	Recpt 5	740	384	1.8
6	Recpt 6	741	355	1.8
7	Recpt 7	766	353	1.8
8	Recpt 8	788	351	1.8
9	Recpt 9	788	329	1.8
10	Recpt 10	787	304	1.8
11	Recpt 11	821	430	1.8
12	Recpt 12	821	404	1.8
13	Recpt 13	820	383	1.8
14	Recpt 14	842	380	1.8
15	Recpt 15	867	377	1.8
16	Recpt 16	866	347	1.8
17	Recpt 17	842	348	1.8
18	Recpt 18	820	352	1.8
19	Recpt 19	819	330	1.8
20	Recpt 20	819	305	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 30 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	*	* BRG (DEG)	PRED CONC (PPM)	A	B	CONC/LINK * C	(PPM) D	E	F	G	H
1	Recpt	1	169	0.5	0.2	0	0	0	0	0	0	0
2	Recpt	2	165	0.5	0.2	0	0	0	0	0	0	0
3	Recpt	3	168	0.5	0	0	0	0	0	0	0	0
4	Recpt	4	146	0.4	0	0	0	0	0	0	0	0
5	Recpt	5	105	0.6	0	0	0	0	0	0	0	0
6	Recpt	6	77	0.5	0	0	0	0	0	0	0	0
7	Recpt	7	68	0.5	0	0	0	0	0	0	0	0
8	Recpt	8	24	0.5	0	0	0	0	0	0	0	0
9	Recpt	9	18	0.5	0	0	0	0	0	0	0	0
10	Recpt	10	14	0.5	0	0	0	0	0	0	0	0
11	Recpt	11	196	0.5	0	0	0	0.1	0.2	0	0	0
12	Recpt	12	204	0.5	0	0	0	0.1	0.1	0	0	0
13	Recpt	13	254	0.5	0	0	0	0	0	0	0	0
14	Recpt	14	257	0.5	0	0	0	0	0	0	0.1	0
15	Recpt	15	263	0.5	0	0	0	0	0	0	0.2	0
16	Recpt	16	286	0.4	0	0	0	0	0	0	0	0
17	Recpt	17	290	0.4	0	0	0	0	0	0	0	0
18	Recpt	18	347	0.5	0	0	0	0.1	0	0	0	0
19	Recpt	19	344	0.4	0	0	0	0	0	0	0	0
20	Recpt	20	348	0.4	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 30 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0.1	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0.2	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0.1	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0.2	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0.2	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0.1
17	Recpt	17	0	0	0	0.1	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0.1	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	BKF	Int	30	Build									
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH			(G/MI)	(M)	(M)
A.	Link	A	796	447	791	382	AG	886			2.6	0	10
B.	Link	B	802	446	799	368	AG	886			2.6	0	10
C.	Link	C	807	445	804	364	AG	113			2.6	0	10
D.	Link	D	813	445	809	367	AG	846			2.6	0	10
E.	Link	E	816	445	813	379	AG	846			2.6	0	10
F.	Link	F	726	384	791	382	AG	1227			1.2	0	10
G.	Link	G	813	379	882	371	AG	655			2.6	0	10
H.	Link	H	726	379	805	374	AG	1227			1.2	0	10
I.	Link	I	805	374	881	366	AG	655			2.6	0	10
J.	Link	J	799	368	797	298	AG	802			2.6	0	10
K.	Link	K	799	368	881	360	AG	447			2.6	0	10
L.	Link	L	726	376	809	367	AG	1001			2.6	0	10
M.	Link	M	725	367	804	364	AG	851			2.6	0	10
N.	Link	N	804	364	882	354	AG	890			1.2	0	10
O.	Link	O	725	362	794	357	AG	851			2.6	0	10
P.	Link	P	793	357	793	298	AG	802			2.6	0	10
Q.	Link	Q	805	374	801	298	AG	283			2.6	0	10
R.	Link	R	809	367	808	297	AG	451			2.6	0	10
S.	Link	S	816	357	813	296	AG	451			2.6	0	10
T.	Link	T	816	357	881	350	AG	890			1.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 30 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	789	435	1.8
2	Recpt 2	788	410	1.8
3	Recpt 3	786	388	1.8
4	Recpt 4	764	389	1.8
5	Recpt 5	740	384	1.8
6	Recpt 6	741	355	1.8
7	Recpt 7	766	353	1.8
8	Recpt 8	788	351	1.8
9	Recpt 9	788	329	1.8
10	Recpt 10	787	304	1.8
11	Recpt 11	821	430	1.8
12	Recpt 12	821	404	1.8
13	Recpt 13	820	383	1.8
14	Recpt 14	842	380	1.8
15	Recpt 15	867	377	1.8
16	Recpt 16	866	347	1.8
17	Recpt 17	842	348	1.8
18	Recpt 18	820	352	1.8
19	Recpt 19	819	330	1.8
20	Recpt 20	819	305	1.8

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL
JUNE	1989	VERSION			
PAGE	3				
JOB:	BKF	Int	30	Build	
RUN:	Hour	1	(WORST	CASE	ANGLE)
POLLUTANT:	Carbon	Monoxide			

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

*	*	*	PRED				CONC/LINK				
*		*	BRG	CONC			*	(PPM)			
RECEPTOR	*		(DEG)	(PPM)	A	B	C	D	E	F	G	H
1	Recpt	1	169	0.5	0.2	0	0	0	0	0	0	0
2	Recpt	2	165	0.5	0.2	0	0	0	0	0	0	0
3	Recpt	3	168	0.5	0	0	0	0	0	0	0	0
4	Recpt	4	146	0.4	0	0	0	0	0	0	0	0
5	Recpt	5	105	0.6	0	0	0	0	0	0	0	0
6	Recpt	6	77	0.5	0	0	0	0	0	0	0	0
7	Recpt	7	68	0.5	0	0	0	0	0	0	0	0
8	Recpt	8	24	0.5	0	0	0	0	0	0	0	0
9	Recpt	9	18	0.5	0	0	0	0	0	0	0	0
10	Recpt	10	14	0.5	0	0	0	0	0	0	0	0
11	Recpt	11	196	0.6	0	0	0	0.1	0.2	0	0	0
12	Recpt	12	204	0.5	0	0	0	0.1	0.1	0	0	0
13	Recpt	13	254	0.5	0	0	0	0	0	0	0	0
14	Recpt	14	257	0.5	0	0	0	0	0	0	0.1	0
15	Recpt	15	263	0.5	0	0	0	0	0	0	0.2	0
16	Recpt	16	286	0.4	0	0	0	0	0	0	0	0
17	Recpt	17	290	0.4	0	0	0	0	0	0	0	0
18	Recpt	18	347	0.5	0	0	0	0.1	0	0	0	0
19	Recpt	19	344	0.4	0	0	0	0	0	0	0	0
20	Recpt	20	348	0.4	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 30 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

* RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0.1	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0.2	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0.1	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0.2	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0.2	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0	0.1
17	Recpt	17	0	0	0	0.1	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0.1	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	BKF	Int	47	Existing									
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH			(G/MI)	(M)	(M)
A.	Link	A	825	293	823	228	AG	28			12	0	10
B.	Link	B	827	292	827	215	AG	28			12	0	10
C.	Link	C	830	293	828	206	AG	0			0	0	10
D.	Link	D	832	292	831	210	AG	29			5.6	0	10
E.	Link	E	836	292	835	227	AG	29			5.6	0	10
F.	Link	F	765	252	823	228	AG	1110			5.6	0	10
G.	Link	G	835	227	936	217	AG	825			11.5	0	10
H.	Link	H	760	247	832	217	AG	1110			5.6	0	10
I.	Link	I	832	217	936	212	AG	825			11.5	0	10
J.	Link	J	827	215	823	130	AG	470			12	0	10
K.	Link	K	827	215	936	205	AG	496			11.5	0	10
L.	Link	L	755	240	831	210	AG	36			12	0	10
M.	Link	M	751	235	828	206	AG	983			12	0	10
N.	Link	N	828	206	935	198	AG	1000			5.6	0	10
O.	Link	O	749	230	820	200	AG	983			12	0	10
P.	Link	P	820	200	818	132	AG	470			12	0	10
Q.	Link	Q	832	217	829	131	AG	565			12	0	10
R.	Link	R	831	210	832	131	AG	223			11.5	0	10
S.	Link	S	842	200	836	131	AG	223			11.5	0	10
T.	Link	T	842	200	935	194	AG	1000			5.6	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 47 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	819	284	1.8
2	Recpt 2	819	259	1.8
3	Recpt 3	818	237	1.8
4	Recpt 4	797	244	1.8
5	Recpt 5	774	255	1.8
6	Recpt 6	770	210	1.8
7	Recpt 7	794	202	1.8
8	Recpt 8	814	195	1.8
9	Recpt 9	813	173	1.8
10	Recpt 10	813	148	1.8
11	Recpt 11	842	278	1.8
12	Recpt 12	841	253	1.8
13	Recpt 13	840	231	1.8
14	Recpt 14	862	227	1.8
15	Recpt 15	886	224	1.8
16	Recpt 16	895	189	1.8
17	Recpt 17	870	190	1.8
18	Recpt 18	848	192	1.8
19	Recpt 19	847	170	1.8
20	Recpt 20	845	145	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 47 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	C	D	E	F	G	H
	*	*				*	CONC/LINK (PPM)				
1	Recpt 1	175	0.9	0	0	0	0	0	0	0	0
2	Recpt 2	174	1.1	0	0	0	0	0	0	0	0.1
3	Recpt 3	171	1.6	0	0	0	0	0	0.3	0	0.2
4	Recpt 4	158	1.6	0	0	0	0	0	0.3	0	0.2
5	Recpt 5	146	1.5	0	0	0	0	0	0.3	0	0.2
6	Recpt 6	87	2	0	0	0	0	0	0	0.2	0
7	Recpt 7	80	2	0	0	0	0	0	0	0.2	0
8	Recpt 8	77	1.7	0	0	0	0	0	0	0.2	0
9	Recpt 9	58	1.4	0	0	0	0	0	0	0.2	0
10	Recpt 10	23	1.4	0	0	0	0	0	0	0.1	0
11	Recpt 11	188	1	0	0	0	0	0	0	0	0
12	Recpt 12	190	1.3	0	0	0	0	0	0	0.1	0
13	Recpt 13	194	1.9	0	0	0	0	0	0	0.3	0
14	Recpt 14	244	1.7	0	0	0	0	0	0	0.5	0
15	Recpt 15	258	2	0	0	0	0	0	0	0.7	0
16	Recpt 16	287	1.4	0	0	0	0	0	0	0	0
17	Recpt 17	290	1.5	0	0	0	0	0	0	0	0
18	Recpt 18	294	1.7	0	0	0	0	0	0	0	0
19	Recpt 19	313	1.4	0	0	0	0	0	0	0	0
20	Recpt 20	328	1.4	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 47 Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

* RECEPTOR	*	I	J	K	CONC/LINK (PPM) L	M	N	O	P	Q	R	S	T
1	Recpt	1	0	0.2	0	0	0	0	0	0	0.2	0	0	0
2	Recpt	2	0	0.3	0	0	0.1	0	0	0	0.2	0	0	0
3	Recpt	3	0	0.3	0	0	0.2	0	0	0.1	0.3	0.1	0	0
4	Recpt	4	0	0.1	0	0	0.3	0	0.2	0.2	0.2	0	0	0
5	Recpt	5	0	0.1	0	0	0.3	0	0.2	0.1	0.1	0	0	0
6	Recpt	6	0.4	0	0.2	0	0.4	0	0.6	0	0	0	0	0
7	Recpt	7	0.4	0	0.2	0	0.3	0.1	0.5	0	0.1	0	0	0
8	Recpt	8	0.3	0.2	0.2	0	0	0.3	0	0.2	0.2	0	0	0.1
9	Recpt	9	0.2	0.2	0.1	0	0	0.1	0	0.2	0.2	0	0	0.1
10	Recpt	10	0.1	0.3	0	0	0	0	0	0.4	0.3	0	0	0
11	Recpt	11	0	0.2	0	0	0	0	0	0	0.2	0	0	0
12	Recpt	12	0.1	0.2	0	0	0	0	0	0.1	0.4	0.1	0	0
13	Recpt	13	0.2	0.3	0.1	0	0	0.1	0	0.2	0.5	0.1	0	0
14	Recpt	14	0.4	0	0.2	0	0.2	0	0.2	0	0.1	0	0	0
15	Recpt	15	0.5	0	0.2	0	0.2	0	0.2	0	0	0	0	0
16	Recpt	16	0	0	0	0	0.4	0.2	0.2	0	0	0	0	0.4
17	Recpt	17	0	0	0	0	0.5	0.1	0.3	0	0.1	0	0	0.2
18	Recpt	18	0	0.1	0	0	0.7	0	0.5	0	0.2	0	0	0
19	Recpt	19	0	0.1	0	0	0.3	0	0.3	0.1	0.2	0	0.1	0
20	Recpt	20	0	0.2	0	0	0.2	0	0.2	0.1	0.2	0.1	0.1	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	BKF	Int	47	Existing	+	Project							
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)					EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)	
A.	Link	A	825	293	823	228	AG	28		12	0	10	
B.	Link	B	827	292	827	215	AG	28		12	0	10	
C.	Link	C	830	293	828	206	AG	0		0	0	10	
D.	Link	D	832	292	831	210	AG	29		5.6	0	10	
E.	Link	E	836	292	835	227	AG	29		5.6	0	10	
F.	Link	F	765	252	823	228	AG	1115		5.6	0	10	
G.	Link	G	835	227	936	217	AG	825		11.5	0	10	
H.	Link	H	760	247	832	217	AG	1115		5.6	0	10	
I.	Link	I	832	217	936	212	AG	825		11.5	0	10	
J.	Link	J	827	215	823	130	AG	472		12	0	10	
K.	Link	K	827	215	936	205	AG	496		11.5	0	10	
L.	Link	L	755	240	831	210	AG	36		12	0	10	
M.	Link	M	751	235	828	206	AG	986		12	0	10	
N.	Link	N	828	206	935	198	AG	1000		5.6	0	10	
O.	Link	O	749	230	820	200	AG	986		12	0	10	
P.	Link	P	820	200	818	132	AG	472		12	0	10	
Q.	Link	Q	832	217	829	131	AG	576		12	0	10	
R.	Link	R	831	210	832	131	AG	223		11.5	0	10	
S.	Link	S	842	200	836	131	AG	223		11.5	0	10	
T.	Link	T	842	200	935	194	AG	1000		5.6	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 47 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	819	284	1.8
2	Recpt 2	819	259	1.8
3	Recpt 3	818	237	1.8
4	Recpt 4	797	244	1.8
5	Recpt 5	774	255	1.8
6	Recpt 6	770	210	1.8
7	Recpt 7	794	202	1.8
8	Recpt 8	814	195	1.8
9	Recpt 9	813	173	1.8
10	Recpt 10	813	148	1.8
11	Recpt 11	842	278	1.8
12	Recpt 12	841	253	1.8
13	Recpt 13	840	231	1.8
14	Recpt 14	862	227	1.8
15	Recpt 15	886	224	1.8
16	Recpt 16	895	189	1.8
17	Recpt 17	870	190	1.8
18	Recpt 18	848	192	1.8
19	Recpt 19	847	170	1.8
20	Recpt 20	845	145	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 47 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	CONC/LINK * C	D	E	F	G	H
1	Recpt 1	175	0.9	0	0	0	0	0	0	0	0
2	Recpt 2	174	1.1	0	0	0	0	0	0	0	0.1
3	Recpt 3	171	1.6	0	0	0	0	0	0.3	0	0.2
4	Recpt 4	158	1.6	0	0	0	0	0	0.3	0	0.2
5	Recpt 5	146	1.5	0	0	0	0	0	0.3	0	0.2
6	Recpt 6	87	2	0	0	0	0	0	0	0.2	0
7	Recpt 7	80	2	0	0	0	0	0	0	0.2	0
8	Recpt 8	77	1.7	0	0	0	0	0	0	0.2	0
9	Recpt 9	58	1.4	0	0	0	0	0	0	0.2	0
10	Recpt 10	23	1.4	0	0	0	0	0	0	0.1	0
11	Recpt 11	188	1	0	0	0	0	0	0	0	0
12	Recpt 12	190	1.3	0	0	0	0	0	0	0.1	0
13	Recpt 13	194	1.9	0	0	0	0	0	0	0.3	0
14	Recpt 14	244	1.7	0	0	0	0	0	0	0.5	0
15	Recpt 15	258	2	0	0	0	0	0	0	0.7	0
16	Recpt 16	287	1.4	0	0	0	0	0	0	0	0
17	Recpt 17	290	1.5	0	0	0	0	0	0	0	0
18	Recpt 18	294	1.7	0	0	0	0	0	0	0	0
19	Recpt 19	313	1.4	0	0	0	0	0	0	0	0
20	Recpt 20	328	1.4	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 47 Existing + Project
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0.2	0	0	0	0	0	0	0.2	0	0	0
2	Recpt	2	0	0.3	0	0	0.1	0	0	0	0.2	0	0	0
3	Recpt	3	0	0.3	0	0	0.2	0	0	0.1	0.3	0.1	0	0
4	Recpt	4	0	0.2	0	0	0.3	0	0.2	0.2	0.2	0	0	0
5	Recpt	5	0	0.1	0	0	0.3	0	0.2	0.1	0.1	0	0	0
6	Recpt	6	0.4	0	0.2	0	0.4	0	0.6	0	0	0	0	0
7	Recpt	7	0.4	0	0.2	0	0.3	0.1	0.5	0	0.1	0	0	0
8	Recpt	8	0.3	0.2	0.2	0	0	0.3	0	0.2	0.2	0	0	0.1
9	Recpt	9	0.2	0.2	0.1	0	0	0.1	0	0.2	0.2	0	0	0.1
10	Recpt	10	0.1	0.3	0	0	0	0	0	0.4	0.3	0	0	0
11	Recpt	11	0	0.2	0	0	0	0	0	0	0.3	0	0	0
12	Recpt	12	0.1	0.2	0	0	0	0	0	0.1	0.4	0.1	0	0
13	Recpt	13	0.2	0.3	0.1	0	0	0.1	0	0.2	0.5	0.1	0	0
14	Recpt	14	0.4	0	0.2	0	0.2	0	0.2	0	0.1	0	0	0
15	Recpt	15	0.5	0	0.2	0	0.2	0	0.2	0	0	0	0	0
16	Recpt	16	0	0	0	0	0.4	0.2	0.2	0	0	0	0	0.4
17	Recpt	17	0	0	0	0	0.5	0.1	0.3	0	0.1	0	0	0.2
18	Recpt	18	0	0.1	0	0	0.7	0	0.5	0	0.2	0	0	0
19	Recpt	19	0	0.1	0	0	0.3	0	0.3	0.1	0.2	0	0.1	0
20	Recpt	20	0	0.2	0	0	0.2	0	0.2	0.1	0.2	0.1	0.1	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL										
JUNE	1989	VERSION													
PAGE	1														
JOB:	BKF	Int	47	No	Build										
RUN:	Hour	1	(WORST	CASE	ANGLE)										
POLLUTANT:	Carbon	Monoxide													
I.	SITE	VARIABLES													
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)							
BRG=	WORST	CASE	VD=	0	CM/S										
CLAS=	7	(G)	VS=	0	CM/S										
MIXH=	1000	M	AMB=	0	PPM										
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)									
II.	LINK	VARIABLES													
LINK	*		LINK	COORDINATES	(M)						EF	H	W		
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH			(G/MI)	(M)	(M)		
A.	Link	A	825	293	823	228	AG	45			2.6	0	10		
B.	Link	B	827	292	827	215	AG	45			2.6	0	10		
C.	Link	C	830	293	828	206	AG	0			0	0	10		
D.	Link	D	832	292	831	210	AG	45			1.2	0	10		
E.	Link	E	836	292	835	227	AG	45			1.2	0	10		
F.	Link	F	765	252	823	228	AG	1690			1	0	10		
G.	Link	G	835	227	936	217	AG	1420			2.6	0	10		
H.	Link	H	760	247	832	217	AG	1690			1	0	10		
I.	Link	I	832	217	936	212	AG	1420			2.6	0	10		
J.	Link	J	827	215	823	130	AG	896			2.6	0	10		
K.	Link	K	827	215	936	205	AG	1349			2.6	0	10		
L.	Link	L	755	240	831	210	AG	36			2.6	0	10		
M.	Link	M	751	235	828	206	AG	1610			1.9	0	10		
N.	Link	N	828	206	935	198	AG	2057			1	0	10		
O.	Link	O	749	230	820	200	AG	1610			1.9	0	10		
P.	Link	P	820	200	818	132	AG	896			2.6	0	10		
Q.	Link	Q	832	217	829	131	AG	565			2.6	0	10		
R.	Link	R	831	210	832	131	AG	638			2.6	0	10		
S.	Link	S	842	200	836	131	AG	638			2.6	0	10		
T.	Link	T	842	200	935	194	AG	2057			1	0	10		

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 47 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	819	284	1.8
2	Recpt 2	819	259	1.8
3	Recpt 3	818	237	1.8
4	Recpt 4	797	244	1.8
5	Recpt 5	774	255	1.8
6	Recpt 6	770	210	1.8
7	Recpt 7	794	202	1.8
8	Recpt 8	814	195	1.8
9	Recpt 9	813	173	1.8
10	Recpt 10	813	148	1.8
11	Recpt 11	842	278	1.8
12	Recpt 12	841	253	1.8
13	Recpt 13	840	231	1.8
14	Recpt 14	862	227	1.8
15	Recpt 15	886	224	1.8
16	Recpt 16	895	189	1.8
17	Recpt 17	870	190	1.8
18	Recpt 18	848	192	1.8
19	Recpt 19	847	170	1.8
20	Recpt 20	845	145	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 47 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	CONC/LINK * (PPM) A	B	C	D	E	F	G	H
1	Recpt 1	174	0.3	0	0	0	0	0	0	0	0
2	Recpt 2	172	0.4	0	0	0	0	0	0	0	0
3	Recpt 3	170	0.5	0	0	0	0	0	0	0	0
4	Recpt 4	158	0.5	0	0	0	0	0	0	0	0
5	Recpt 5	146	0.4	0	0	0	0	0	0	0	0
6	Recpt 6	88	0.6	0	0	0	0	0	0	0	0
7	Recpt 7	81	0.7	0	0	0	0	0	0	0	0
8	Recpt 8	77	0.6	0	0	0	0	0	0	0	0
9	Recpt 9	56	0.5	0	0	0	0	0	0	0	0
10	Recpt 10	28	0.5	0	0	0	0	0	0	0	0
11	Recpt 11	187	0.3	0	0	0	0	0	0	0	0
12	Recpt 12	190	0.5	0	0	0	0	0	0	0	0
13	Recpt 13	194	0.7	0	0	0	0	0	0	0.1	0
14	Recpt 14	210	0.6	0	0	0	0	0	0	0.1	0
15	Recpt 15	256	0.7	0	0	0	0	0	0	0.2	0
16	Recpt 16	296	0.5	0	0	0	0	0	0	0	0
17	Recpt 17	290	0.4	0	0	0	0	0	0	0	0
18	Recpt 18	70	0.5	0	0	0	0	0	0	0	0
19	Recpt 19	313	0.5	0	0	0	0	0	0	0	0
20	Recpt 20	329	0.5	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 47 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
*					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0.1	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0.1	0	0.1	0	0	0	0.1	0	0	0	0
7	Recpt	7	0.1	0	0.1	0	0	0	0.1	0	0	0	0
8	Recpt	8	0	0	0.1	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0.1	0	0	0	0	0	0.1	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0.1	0	0	0	0	0	0	0.1	0	0
14	Recpt	14	0.1	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0.2	0	0.1	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0.1	0	0	0	0	0	0	0	0.1
17	Recpt	17	0	0	0	0	0.1	0	0	0	0	0	0
18	Recpt	18	0	0	0.1	0	0	0	0	0	0	0	0.1
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	BKF	Int	47	Build									
RUN:	Hour	1	(WORST	CASE	ANGLE)								
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	WORST	CASE	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH			(G/MI)	(M)	(M)
A.	Link	A	825	293	823	228	AG	45			2.6	0	10
B.	Link	B	827	292	827	215	AG	45			2.6	0	10
C.	Link	C	830	293	828	206	AG	0			0	0	10
D.	Link	D	832	292	831	210	AG	45			1.2	0	10
E.	Link	E	836	292	835	227	AG	45			1.2	0	10
F.	Link	F	765	252	823	228	AG	1695			1	0	10
G.	Link	G	835	227	936	217	AG	1420			2.6	0	10
H.	Link	H	760	247	832	217	AG	1695			1	0	10
I.	Link	I	832	217	936	212	AG	1420			2.6	0	10
J.	Link	J	827	215	823	130	AG	899			2.6	0	10
K.	Link	K	827	215	936	205	AG	1349			2.6	0	10
L.	Link	L	755	240	831	210	AG	36			2.6	0	10
M.	Link	M	751	235	828	206	AG	1613			1.9	0	10
N.	Link	N	828	206	935	198	AG	2057			1	0	10
O.	Link	O	749	230	820	200	AG	1613			1.9	0	10
P.	Link	P	820	200	818	132	AG	899			2.6	0	10
Q.	Link	Q	832	217	829	131	AG	576			2.6	0	10
R.	Link	R	831	210	832	131	AG	638			2.6	0	10
S.	Link	S	842	200	836	131	AG	638			2.6	0	10
T.	Link	T	842	200	935	194	AG	2057			1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF Int 47 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	819	284	1.8
2	Recpt 2	819	259	1.8
3	Recpt 3	818	237	1.8
4	Recpt 4	797	244	1.8
5	Recpt 5	774	255	1.8
6	Recpt 6	770	210	1.8
7	Recpt 7	794	202	1.8
8	Recpt 8	814	195	1.8
9	Recpt 9	813	173	1.8
10	Recpt 10	813	148	1.8
11	Recpt 11	842	278	1.8
12	Recpt 12	841	253	1.8
13	Recpt 13	840	231	1.8
14	Recpt 14	862	227	1.8
15	Recpt 15	886	224	1.8
16	Recpt 16	895	189	1.8
17	Recpt 17	870	190	1.8
18	Recpt 18	848	192	1.8
19	Recpt 19	847	170	1.8
20	Recpt 20	845	145	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF Int 47 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	CONC/LINK * C	D	E	F	G	H
1 Recpt	1	174	0.3	0	0	0	0	0	0	0	0
2 Recpt	2	172	0.4	0	0	0	0	0	0	0	0
3 Recpt	3	170	0.5	0	0	0	0	0	0	0	0
4 Recpt	4	158	0.5	0	0	0	0	0	0	0	0
5 Recpt	5	146	0.4	0	0	0	0	0	0	0	0
6 Recpt	6	88	0.6	0	0	0	0	0	0	0	0
7 Recpt	7	81	0.7	0	0	0	0	0	0	0	0
8 Recpt	8	77	0.6	0	0	0	0	0	0	0	0
9 Recpt	9	55	0.5	0	0	0	0	0	0	0	0
10 Recpt	10	28	0.5	0	0	0	0	0	0	0	0
11 Recpt	11	187	0.3	0	0	0	0	0	0	0	0
12 Recpt	12	190	0.5	0	0	0	0	0	0	0	0
13 Recpt	13	194	0.7	0	0	0	0	0	0	0.1	0
14 Recpt	14	210	0.6	0	0	0	0	0	0	0.1	0
15 Recpt	15	256	0.7	0	0	0	0	0	0	0.2	0
16 Recpt	16	296	0.5	0	0	0	0	0	0	0	0
17 Recpt	17	290	0.4	0	0	0	0	0	0	0	0
18 Recpt	18	70	0.5	0	0	0	0	0	0	0	0
19 Recpt	19	313	0.5	0	0	0	0	0	0	0	0
20 Recpt	20	329	0.5	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF Int 47 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

* RECEPTOR	*	I	J	K	L	M	N	O	P	Q	R	S	T
					CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0.1	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0.1	0	0.1	0	0	0	0.1	0	0	0	0
7	Recpt	7	0.1	0	0.1	0	0	0	0.1	0	0	0	0
8	Recpt	8	0	0	0.1	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0.1	0	0	0	0	0	0.1	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0.1	0	0	0	0	0	0	0.1	0	0
14	Recpt	14	0.1	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0.2	0	0.1	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0.1	0	0	0	0	0	0	0	0.1
17	Recpt	17	0	0	0	0	0.1	0	0	0	0	0	0
18	Recpt	18	0	0	0.1	0	0	0	0	0	0	0	0.1
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

Appendix C

C.11 Kings Tulare Regional Intersection CALINE Outputs

KTR Station 8th Ave./SR 198 WB Ramps 2009 Existing CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	KTH	Int	2	Existing									
RUN:	Hour	1											
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	0	DEGREES	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)					EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)	
A.	Link	A	529	461	523	364	AG	67		6	0	10	
B.	Link	B	532	461	523	217	AG	251		6	0	10	
C.	Link	C	535	461	529	217	AG	414		6	0	10	
D.	Link	D	539	461	542	361	AG	142		6	0	10	
E.	Link	E	523	364	393	256	AG	67		6	0	10	
F.	Link	F	542	361	683	334	AG	142		6	0	10	
G.	Link	G	530	358	526	217	AG	21		6	0	10	
H.	Link	H	530	358	683	330	AG	21		6	0	10	
I.	Link	I	529	217	559	311	AG	98		6	0	10	
J.	Link	J	559	311	636	324	AG	98		6	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: KTH Int 2 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS
* COORDINATES (M)

RECEPTOR	*	X	Y	Z
1	Recpt 1	521	413	1.8
2	Recpt 2	519	389	1.8
3	Recpt 3	516	367	1.8
4	Recpt 4	500	351	1.8
5	Recpt 5	482	335	1.8
6	Recpt 6	546	411	1.8
7	Recpt 7	545	386	1.8
8	Recpt 8	551	367	1.8
9	Recpt 9	568	360	1.8
10	Recpt 10	593	356	1.8
11	Recpt 11	484	319	1.8
12	Recpt 12	504	335	1.8
13	Recpt 13	521	348	1.8
14	Recpt 14	520	327	1.8
15	Recpt 15	519	302	1.8
16	Recpt 16	544	349	1.8
17	Recpt 17	543	271	1.8
18	Recpt 18	543	297	1.8
19	Recpt 19	565	345	1.8
20	Recpt 20	588	338	1.8

KTR Station 8th Ave./SR 198 WB Ramps 2009 Existing CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: KTH Int 2 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)
* * PRED CONC/LINK
* * CONC (PPM)

RECEPTOR	*	(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt 1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0.2	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0.1	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0.1	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt 20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	KTH	Int	2	Existing	+	Project							
RUN:	Hour	1											
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	0	DEGREES	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)		
A.	Link	A	529	461	523	364	AG	134	6	0	10		
B.	Link	B	532	461	523	217	AG	332	6	0	10		
C.	Link	C	535	461	529	217	AG	450	6	0	10		
D.	Link	D	539	461	542	361	AG	169	6	0	10		
E.	Link	E	523	364	393	256	AG	134	6	0	10		
F.	Link	F	542	361	683	334	AG	169	6	0	10		
G.	Link	G	530	358	526	217	AG	98	6	0	10		
H.	Link	H	530	358	683	330	AG	98	6	0	10		
I.	Link	I	529	217	559	311	AG	98	6	0	10		
J.	Link	J	559	311	636	324	AG	98	6	0	10		

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: KTH Int 2 Existing + Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide
III. RECEPTOR LOCATIONS

*	COORDINATES (M)			
RECEPTOR	*	X	Y	Z
1	Recpt 1	521	413	1.8
2	Recpt 2	519	389	1.8
3	Recpt 3	516	367	1.8
4	Recpt 4	500	351	1.8
5	Recpt 5	482	335	1.8
6	Recpt 6	546	411	1.8
7	Recpt 7	545	386	1.8
8	Recpt 8	551	367	1.8
9	Recpt 9	568	360	1.8
10	Recpt 10	593	356	1.8
11	Recpt 11	484	319	1.8
12	Recpt 12	504	335	1.8
13	Recpt 13	521	348	1.8
14	Recpt 14	520	327	1.8
15	Recpt 15	519	302	1.8
16	Recpt 16	544	349	1.8
17	Recpt 17	543	271	1.8
18	Recpt 18	543	297	1.8
19	Recpt 19	565	345	1.8
20	Recpt 20	588	338	1.8

KTR Station 8th Ave./SR 198 WB Ramps 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL	
JUNE	1989	VERSION				
PAGE	3					
JOB:	KTH	Int	2	Existing	+	Project
RUN:	Hour	1				
POLLUTANT:	Carbon	Monoxide				
IV.	MODEL	RESULTS	(PRED.	CONC.	INCLUDES	AMB.)

*		*	PRED			CONC/LINK							
*		*	CONC			(PPM)							
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0.1	0	0	0	0.1	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0.1	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0.2	0	0	0	0.1	0	0	0	0	0	0
17	Recpt	17	0.1	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0.1	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL
JUNE	1989	VERSION			
PAGE	1				
JOB:	KTH	Int	2	No	Build
RUN:	Hour	1			
POLLUTANT:	Carbon	Monoxide			

I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	0	DEGREES	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)	

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK X1	COORDINATES (M) Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A.	Link	A	529 461	523	364	AG	67	1.2	0	10
B.	Link	B	532 461	523	217	AG	251	1.2	0	10
C.	Link	C	535 461	529	217	AG	710	1.2	0	10
D.	Link	D	539 461	542	361	AG	182	1.2	0	10
E.	Link	E	523 364	393	256	AG	67	1.2	0	10
F.	Link	F	542 361	683	334	AG	182	1.2	0	10
G.	Link	G	530 358	526	217	AG	48	1.2	0	10
H.	Link	H	530 358	683	330	AG	48	1.2	0	10
I.	Link	I	529 217	559	311	AG	126	1.2	0	10
J.	Link	J	559 311	636	324	AG	126	1.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: KTH Int 2 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide
III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	521	413	1.8
2	Recpt 2	519	389	1.8
3	Recpt 3	516	367	1.8
4	Recpt 4	500	351	1.8
5	Recpt 5	482	335	1.8
6	Recpt 6	546	411	1.8
7	Recpt 7	545	386	1.8
8	Recpt 8	551	367	1.8
9	Recpt 9	568	360	1.8
10	Recpt 10	593	356	1.8
11	Recpt 11	484	319	1.8
12	Recpt 12	504	335	1.8
13	Recpt 13	521	348	1.8
14	Recpt 14	520	327	1.8
15	Recpt 15	519	302	1.8
16	Recpt 16	544	349	1.8
17	Recpt 17	543	271	1.8
18	Recpt 18	543	297	1.8
19	Recpt 19	565	345	1.8
20	Recpt 20	588	338	1.8

KTR Station 8th Ave./SR 198 WB Ramps 2035 No Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3
JOB: KTH Int 2 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	*	* PRED CONC (PPM)	A	CONC/LINK (PPM) B	C	D	E	F	G	H	I	J
1	Recpt 1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt 20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL
JUNE	1989	VERSION			
PAGE	1				

JOB:	KTH	Int	2	Build
RUN:	Hour	1		
POLLUTANT:	Carbon	Monoxide		

I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	0	DEGREES	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)	

II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)	
A.	Link	A	529	461	523	364	AG	134	1.2	0	10	
B.	Link	B	532	461	523	217	AG	332	1.2	0	10	
C.	Link	C	535	461	529	217	AG	746	1.2	0	10	
D.	Link	D	539	461	542	361	AG	209	1.2	0	10	
E.	Link	E	523	364	393	256	AG	134	1.2	0	10	
F.	Link	F	542	361	683	334	AG	209	1.2	0	10	
G.	Link	G	530	358	526	217	AG	48	1.2	0	10	
H.	Link	H	530	358	683	330	AG	48	1.2	0	10	
I.	Link	I	529	217	559	311	AG	126	1.2	0	10	
J.	Link	J	559	311	636	324	AG	126	1.2	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: KTH Int 2 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	521	413	1.8
2	Recpt 2	519	389	1.8
3	Recpt 3	516	367	1.8
4	Recpt 4	500	351	1.8
5	Recpt 5	482	335	1.8
6	Recpt 6	546	411	1.8
7	Recpt 7	545	386	1.8
8	Recpt 8	551	367	1.8
9	Recpt 9	568	360	1.8
10	Recpt 10	593	356	1.8
11	Recpt 11	484	319	1.8
12	Recpt 12	504	335	1.8
13	Recpt 13	521	348	1.8
14	Recpt 14	520	327	1.8
15	Recpt 15	519	302	1.8
16	Recpt 16	544	349	1.8
17	Recpt 17	543	271	1.8
18	Recpt 18	543	297	1.8
19	Recpt 19	565	345	1.8
20	Recpt 20	588	338	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3
JOB: KTH Int 2 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)
* * PRED CONC/LINK
* * CONC (PPM)

RECEPTOR	*			A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL				
JUNE	1989	VERSION							
PAGE	1								
JOB:	KTH	Int	3	Existing					
RUN:	Hour	1							
POLLUTANT:	Carbon	Monoxide							
I.	SITE	VARIABLES							
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)	
BRG=	0	DEGREES	VD=	0	CM/S				
CLAS=	7	(G)	VS=	0	CM/S				
MIXH=	1000	M	AMB=	0	PPM				
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)			

II. LINK VARIABLES

LINK	*	LINK	COORDINATES	(M)	*				EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)
A.	Link	A	521	1106	515	758	AG	166	6	0	10
B.	Link	B	525	1106	519	758	AG	431	6	0	10
C.	Link	C	528	1106	524	982	AG	77	6	0	10
D.	Link	D	370	1010	524	982	AG	77	6	0	10
E.	Link	E	370	1008	515	978	AG	85	6	0	10
F.	Link	F	515	978	512	758	AG	85	6	0	10
G.	Link	G	550	935	519	758	AG	57	6	0	10
H.	Link	H	550	935	678	1084	AG	57	6	0	10
I.	Link	I	521	1106	460	1003	AG	106	6	0	10
J.	Link	J	460	1003	398	1044	AG	106	6	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2
JOB: KTH Int 3 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	516	1039	1.8
2	Recpt 2	515	1014	1.8
3	Recpt 3	511	991	1.8
4	Recpt 4	493	991	1.8
5	Recpt 5	463	994	1.8
6	Recpt 6	462	986	1.8
7	Recpt 7	486	982	1.8
8	Recpt 8	506	974	1.8
9	Recpt 9	512	954	1.8
10	Recpt 10	511	929	1.8
11	Recpt 11	531	1031	1.8
12	Recpt 12	531	1007	1.8
13	Recpt 13	530	982	1.8
14	Recpt 14	540	948	1.8
15	Recpt 15	574	980	1.8
16	Recpt 16	529	871	1.8
17	Recpt 17	559	931	1.8
18	Recpt 18	573	953	1.8
19	Recpt 19	541	905	1.8
20	Recpt 20	540	847	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3
JOB: KTH Int 3 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	*	* PRED CONC (PPM)	A	B	CONC/LINK (PPM) C	D	E	F	G	H	I	J
1	Recpt 1	0.1	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0.1	0.1	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0.1	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0.1	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0.1	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0.2	0	0.1	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0.2	0	0.1	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt 20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	KTH	Int	3	Existing	+	Project							
RUN:	Hour	1											
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	0	DEGREES	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH			(G/MI)	(M)	(M)
A.	Link	A	521	1106	515	758	AG	184			6	0	10
B.	Link	B	525	1106	519	758	AG	439			6	0	10
C.	Link	C	528	1106	524	982	AG	105			6	0	10
D.	Link	D	370	1010	524	982	AG	105			6	0	10
E.	Link	E	370	1008	515	978	AG	85			6	0	10
F.	Link	F	515	978	512	758	AG	85			6	0	10
G.	Link	G	550	935	519	758	AG	57			6	0	10
H.	Link	H	550	935	678	1084	AG	57			6	0	10
I.	Link	I	521	1106	460	1003	AG	168			6	0	10
J.	Link	J	460	1003	398	1044	AG	168			6	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: KTH Int 3 Existing + Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	516	1039	1.8
2	Recpt 2	515	1014	1.8
3	Recpt 3	511	991	1.8
4	Recpt 4	493	991	1.8
5	Recpt 5	463	994	1.8
6	Recpt 6	462	986	1.8
7	Recpt 7	486	982	1.8
8	Recpt 8	506	974	1.8
9	Recpt 9	512	954	1.8
10	Recpt 10	511	929	1.8
11	Recpt 11	531	1031	1.8
12	Recpt 12	531	1007	1.8
13	Recpt 13	530	982	1.8
14	Recpt 14	540	948	1.8
15	Recpt 15	574	980	1.8
16	Recpt 16	529	871	1.8
17	Recpt 17	559	931	1.8
18	Recpt 18	573	953	1.8
19	Recpt 19	541	905	1.8
20	Recpt 20	540	847	1.8

KTR Station 9th Ave./SR 198 EB Ramps 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL									
JUNE	1989	VERSION												
PAGE	3													
JOB:	KTH	Int	3	Existing	+	Project								
RUN:	Hour	1												
POLLUTANT:	Carbon	Monoxide												
IV.	MODEL	RESULTS	(PRED.	CONC.	INCLUDES	AMB.)								
*		*	PRED		CONC/LINK									
*		*	CONC		(PPM)									
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J	
1	Recpt	1	0.1	0	0	0	0	0	0	0	0	0	0	
2	Recpt	2	0.2	0.1	0	0	0	0	0	0	0	0	0	
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0	
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0	
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0	
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0	
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0	
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0	
9	Recpt	9	0.1	0	0	0	0	0	0	0	0	0	0	
10	Recpt	10	0.1	0	0	0	0	0	0	0	0	0	0	
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0	
12	Recpt	12	0.1	0	0	0	0	0	0	0	0	0	0	
13	Recpt	13	0.2	0	0.1	0	0	0	0	0	0	0	0	
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0	
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0	
16	Recpt	16	0.2	0	0.1	0	0	0	0	0	0	0	0	
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0	
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0	
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0	
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0	

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL
JUNE	1989	VERSION			
PAGE	1				

JOB:	KTH	Int	3	No	Build
RUN:	Hour	1			
POLLUTANT:	Carbon	Monoxide			

I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	0	DEGREES	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)	

II. LINK VARIABLES

LINK DESCRIPTION	* *	LINK X1	COORDINATES (M) Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A.	Link A	521	1106	515	758	AG	290	1.2	0	10
B.	Link B	525	1106	519	758	AG	822	1.2	0	10
C.	Link C	528	1106	524	982	AG	105	1.2	0	10
D.	Link D	370	1010	524	982	AG	105	1.2	0	10
E.	Link E	370	1008	515	978	AG	213	1.2	0	10
F.	Link F	515	978	512	758	AG	213	1.2	0	10
G.	Link G	550	935	519	758	AG	109	1.2	0	10
H.	Link H	550	935	678	1084	AG	109	1.2	0	10
I.	Link I	521	1106	460	1003	AG	168	1.2	0	10
J.	Link J	460	1003	398	1044	AG	168	1.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: KTH Int 3 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS
* COORDINATES (M)

RECEPTOR *	*	X	Y	Z
1	Recpt 1	516	1039	1.8
2	Recpt 2	515	1014	1.8
3	Recpt 3	511	991	1.8
4	Recpt 4	493	991	1.8
5	Recpt 5	463	994	1.8
6	Recpt 6	462	986	1.8
7	Recpt 7	486	982	1.8
8	Recpt 8	506	974	1.8
9	Recpt 9	512	954	1.8
10	Recpt 10	511	929	1.8
11	Recpt 11	531	1031	1.8
12	Recpt 12	531	1007	1.8
13	Recpt 13	530	982	1.8
14	Recpt 14	540	948	1.8
15	Recpt 15	574	980	1.8
16	Recpt 16	529	871	1.8
17	Recpt 17	559	931	1.8
18	Recpt 18	573	953	1.8
19	Recpt 19	541	905	1.8
20	Recpt 20	540	847	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3
JOB: KTH Int 3 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)
* * PRED CONC/LINK
* * CONC (PPM)

RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL						
JUNE	1989	VERSION									
PAGE	1										
JOB:	KTH	Int	3	Build							
RUN:	Hour	1									
POLLUTANT:	Carbon	Monoxide									
I.	SITE	VARIABLES									
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)			
BRG=	0	DEGREES	VD=	0	CM/S						
CLAS=	7	(G)	VS=	0	CM/S						
MIXH=	1000	M	AMB=	0	PPM						
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)					
II.	LINK		VARIABLES								
LINK	*		LINK	COORDINATES	(M)				EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)
A.	Link	A	521	1106	515	758	AG	290	1.2	0	10
B.	Link	B	525	1106	519	758	AG	822	1.2	0	10
C.	Link	C	528	1106	524	982	AG	105	1.2	0	10
D.	Link	D	370	1010	524	982	AG	105	1.2	0	10
E.	Link	E	370	1008	515	978	AG	213	1.2	0	10
F.	Link	F	515	978	512	758	AG	213	1.2	0	10
G.	Link	G	550	935	519	758	AG	109	1.2	0	10
H.	Link	H	550	935	678	1084	AG	109	1.2	0	10
I.	Link	I	521	1106	460	1003	AG	168	1.2	0	10
J.	Link	J	460	1003	398	1044	AG	168	1.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2
JOB: KTH Int 3 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*		X	COORDINATES Y	(M) Z
1	Recpt	1	516	1039	1.8
2	Recpt	2	515	1014	1.8
3	Recpt	3	511	991	1.8
4	Recpt	4	493	991	1.8
5	Recpt	5	463	994	1.8
6	Recpt	6	462	986	1.8
7	Recpt	7	486	982	1.8
8	Recpt	8	506	974	1.8
9	Recpt	9	512	954	1.8
10	Recpt	10	511	929	1.8
11	Recpt	11	531	1031	1.8
12	Recpt	12	531	1007	1.8
13	Recpt	13	530	982	1.8
14	Recpt	14	540	948	1.8
15	Recpt	15	574	980	1.8
16	Recpt	16	529	871	1.8
17	Recpt	17	559	931	1.8
18	Recpt	18	573	953	1.8
19	Recpt	19	541	905	1.8
20	Recpt	20	540	847	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3
JOB: KTH Int 3 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

*		*	PRED			CONC/LINK							
*		*	CONC			(PPM)							
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	KTH	Int	8	Existing								
RUN:	Hour	1										
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)					
BRG=	0	DEGREES	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	534	580	527	476	AG	14		6	0	10
B.	Link	B	534	580	532	469	AG	471		6	0	10
C.	Link	C	538	580	536	466	AG	18		6	0	10
D.	Link	D	541	580	538	467	AG	245		6	0	10
E.	Link	E	545	580	546	477	AG	20		6	0	10
F.	Link	F	394	476	527	476	AG	14		6	0	10
G.	Link	G	546	477	705	473	AG	20		6	0	10
H.	Link	H	394	473	534	471	AG	76		6	0	10
I.	Link	I	534	471	533	385	AG	65		6	0	10
J.	Link	J	534	471	705	473	AG	11		6	0	10
K.	Link	K	532	469	529	385	AG	515		6	0	10
L.	Link	L	532	469	705	462	AG	44		6	0	10
M.	Link	M	394	470	538	467	AG	14		6	0	10
N.	Link	N	538	467	536	385	AG	231		6	0	10
O.	Link	O	394	469	525	459	AG	66		6	0	10
P.	Link	P	394	469	536	466	AG	7		6	0	10
Q.	Link	Q	536	466	705	462	AG	25		6	0	10
R.	Link	R	525	459	527	385	AG	66		6	0	10
S.	Link	S	544	461	536	385	AG	41		6	0	10
T.	Link	T	544	461	705	457	AG	41		6	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: KTH Int 8 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	* COORDINATES (M)	X	Y	Z
1	Recpt 1	524	531	1.8
2	Recpt 2	522	506	1.8
3	Recpt 3	519	485	1.8
4	Recpt 4	499	483	1.8
5	Recpt 5	474	483	1.8
6	Recpt 6	474	461	1.8
7	Recpt 7	499	461	1.8
8	Recpt 8	520	456	1.8
9	Recpt 9	526	435	1.8
10	Recpt 10	525	410	1.8
11	Recpt 11	552	530	1.8
12	Recpt 12	552	505	1.8
13	Recpt 13	552	483	1.8
14	Recpt 14	574	482	1.8
15	Recpt 15	599	483	1.8
16	Recpt 16	550	455	1.8
17	Recpt 17	571	458	1.8
18	Recpt 18	596	457	1.8
19	Recpt 19	546	434	1.8
20	Recpt 20	546	408	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: KTH Int 8 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

*		*	PRED		CONC/LINK								
*		*	CONC		(PPM)								
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0.3	0	0.1	0	0	0	0	0	0	0	0
10	Recpt	10	0.2	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0.1	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0.1	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: KTH Int 8 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

*		CONC/LINK									
*		(PPM)									
RECEPTOR	*	K	L	M	N	O	P	Q	R	S	T
1	Recpt	1	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0
9	Recpt	9	0.1	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0

KTR Station SR 43/Lacey Blvd. 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL						
JUNE	1989	VERSION									
PAGE	1										
JOB:	KTH	Int	8	Existing	+	Project					
RUN:	Hour	1									
POLLUTANT:	Carbon	Monoxide									
I.	SITE	VARIABLES									
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)			
BRG=	0	DEGREES	VD=	0	CM/S						
CLAS=	7	(G)	VS=	0	CM/S						
MIXH=	1000	M	AMB=	0	PPM						
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)					
II.	LINK	VARIABLES									
LINK	*		LINK	COORDINATES	(M)				EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)
A.	Link	A	534	580	527	476	AG	14	6	0	10
B.	Link	B	534	580	532	469	AG	471	6	0	10
C.	Link	C	538	580	536	466	AG	18	6	0	10
D.	Link	D	541	580	538	467	AG	245	6	0	10
E.	Link	E	545	580	546	477	AG	20	6	0	10
F.	Link	F	394	476	527	476	AG	14	6	0	10
G.	Link	G	546	477	705	473	AG	20	6	0	10
H.	Link	H	394	473	534	471	AG	83	6	0	10
I.	Link	I	534	471	533	385	AG	65	6	0	10
J.	Link	J	534	471	705	473	AG	18	6	0	10
K.	Link	K	532	469	529	385	AG	578	6	0	10
L.	Link	L	532	469	705	462	AG	107	6	0	10
M.	Link	M	394	470	538	467	AG	14	6	0	10
N.	Link	N	538	467	536	385	AG	231	6	0	10
O.	Link	O	394	469	525	459	AG	66	6	0	10
P.	Link	P	394	469	536	466	AG	24	6	0	10
Q.	Link	Q	536	466	705	462	AG	42	6	0	10
R.	Link	R	525	459	527	385	AG	66	6	0	10
S.	Link	S	544	461	536	385	AG	189	6	0	10
T.	Link	T	544	461	705	457	AG	189	6	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: KTH Int 8 Existing + Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	524	531	1.8
2	Recpt 2	522	506	1.8
3	Recpt 3	519	485	1.8
4	Recpt 4	499	483	1.8
5	Recpt 5	474	483	1.8
6	Recpt 6	474	461	1.8
7	Recpt 7	499	461	1.8
8	Recpt 8	520	456	1.8
9	Recpt 9	526	435	1.8
10	Recpt 10	525	410	1.8
11	Recpt 11	552	530	1.8
12	Recpt 12	552	505	1.8
13	Recpt 13	552	483	1.8
14	Recpt 14	574	482	1.8
15	Recpt 15	599	483	1.8
16	Recpt 16	550	455	1.8
17	Recpt 17	571	458	1.8
18	Recpt 18	596	457	1.8
19	Recpt 19	546	434	1.8
20	Recpt 20	546	408	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: KTH Int 8 Existing + Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

*		*	PRED		CONC/LINK								
*		*	CONC		(PPM)								
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0.3	0	0.1	0	0	0	0	0	0	0	0
10	Recpt	10	0.3	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0.1	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0.2	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0.2	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: KTH Int 8 Existing + Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

*				CONC/LINK								
*				(PPM)								
RECEPTOR	*		K	L	M	N	O	P	Q	R	S	T
1	Recpt	1	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0.2	0	0	0	0	0	0	0	0	0
10	Recpt	10	0.1	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	KTH	Int	8	No	Build								
RUN:	Hour	1											
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	0	DEGREES	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)		
A.	Link	A	534	580	527	476	AG	14	1.2	0	10		
B.	Link	B	534	580	532	469	AG	513	1.2	0	10		
C.	Link	C	538	580	536	466	AG	55	1.2	0	10		
D.	Link	D	541	580	538	467	AG	245	1.2	0	10		
E.	Link	E	545	580	546	477	AG	20	1.2	0	10		
F.	Link	F	394	476	527	476	AG	14	1.2	0	10		
G.	Link	G	546	477	705	473	AG	20	1.2	0	10		
H.	Link	H	394	473	534	471	AG	76	1.2	0	10		
I.	Link	I	534	471	533	385	AG	65	1.2	0	10		
J.	Link	J	534	471	705	473	AG	11	1.2	0	10		
K.	Link	K	532	469	529	385	AG	557	1.2	0	10		
L.	Link	L	532	469	705	462	AG	44	1.2	0	10		
M.	Link	M	394	470	538	467	AG	14	1.2	0	10		
N.	Link	N	538	467	536	385	AG	231	1.2	0	10		
O.	Link	O	394	469	525	459	AG	66	1.2	0	10		
P.	Link	P	394	469	536	466	AG	7	1.2	0	10		
Q.	Link	Q	536	466	705	462	AG	62	1.2	0	10		
R.	Link	R	525	459	527	385	AG	66	1.2	0	10		
S.	Link	S	544	461	536	385	AG	43	1.2	0	10		
T.	Link	T	544	461	705	457	AG	43	1.2	0	10		

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: KTH Int 8 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	524	531	1.8
2	Recpt 2	522	506	1.8
3	Recpt 3	519	485	1.8
4	Recpt 4	499	483	1.8
5	Recpt 5	474	483	1.8
6	Recpt 6	474	461	1.8
7	Recpt 7	499	461	1.8
8	Recpt 8	520	456	1.8
9	Recpt 9	526	435	1.8
10	Recpt 10	525	410	1.8
11	Recpt 11	552	530	1.8
12	Recpt 12	552	505	1.8
13	Recpt 13	552	483	1.8
14	Recpt 14	574	482	1.8
15	Recpt 15	599	483	1.8
16	Recpt 16	550	455	1.8
17	Recpt 17	571	458	1.8
18	Recpt 18	596	457	1.8
19	Recpt 19	546	434	1.8
20	Recpt 20	546	408	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: KTH Int 8 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

*			PRED		CONC/LINK								
*			CONC		(PPM)								
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: KTH Int 8 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	K	L	M	N	O	P	Q	R	S	T
*			CONC/LINK (PPM)								
1	Recpt	1	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	KTH	Int	8	B								
RUN:	Hour	1										
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)				
BRG=	0	DEGREES	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	4.4	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)				*	EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE		VPH	(G/MI)	(M)	(M)
A.	Link	A	534	580	527	476	AG		14	1.2	0	10
B.	Link	B	534	580	532	469	AG		513	1.2	0	10
C.	Link	C	538	580	536	466	AG		55	1.2	0	10
D.	Link	D	541	580	538	467	AG		245	1.2	0	10
E.	Link	E	545	580	546	477	AG		20	1.2	0	10
F.	Link	F	394	476	527	476	AG		14	1.2	0	10
G.	Link	G	546	477	705	473	AG		20	1.2	0	10
H.	Link	H	394	473	534	471	AG		83	1.2	0	10
I.	Link	I	534	471	533	385	AG		65	1.2	0	10
J.	Link	J	534	471	705	473	AG		18	1.2	0	10
K.	Link	K	532	469	529	385	AG		620	1.2	0	10
L.	Link	L	532	469	705	462	AG		107	1.2	0	10
M.	Link	M	394	470	538	467	AG		14	1.2	0	10
N.	Link	N	538	467	536	385	AG		231	1.2	0	10
O.	Link	O	394	469	525	459	AG		66	1.2	0	10
P.	Link	P	394	469	536	466	AG		24	1.2	0	10
Q.	Link	Q	536	466	705	462	AG		79	1.2	0	10
R.	Link	R	525	459	527	385	AG		66	1.2	0	10
S.	Link	S	544	461	536	385	AG		191	1.2	0	10
T.	Link	T	544	461	705	457	AG		191	1.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: KTH Int 8 B
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*	COORDINATES (M)			
RECEPTOR	*	X	Y	Z
1	Recpt 1	524	531	1.8
2	Recpt 2	522	506	1.8
3	Recpt 3	519	485	1.8
4	Recpt 4	499	483	1.8
5	Recpt 5	474	483	1.8
6	Recpt 6	474	461	1.8
7	Recpt 7	499	461	1.8
8	Recpt 8	520	456	1.8
9	Recpt 9	526	435	1.8
10	Recpt 10	525	410	1.8
11	Recpt 11	552	530	1.8
12	Recpt 12	552	505	1.8
13	Recpt 13	552	483	1.8
14	Recpt 14	574	482	1.8
15	Recpt 15	599	483	1.8
16	Recpt 16	550	455	1.8
17	Recpt 17	571	458	1.8
18	Recpt 18	596	457	1.8
19	Recpt 19	546	434	1.8
20	Recpt 20	546	408	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: KTH Int 8 B
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

*	PRED	*	CONC/LINK										
*	CONC	*	(PPM)										
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: KTH Int 8 B
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	K	L	M	N	O	P	Q	R	S	T			
1	Recpt	1	*		0	0	0	0	0	0	0	0	0	0
2	Recpt	2	*		0	0	0	0	0	0	0	0	0	0
3	Recpt	3	*		0	0	0	0	0	0	0	0	0	0
4	Recpt	4	*		0	0	0	0	0	0	0	0	0	0
5	Recpt	5	*		0	0	0	0	0	0	0	0	0	0
6	Recpt	6	*		0	0	0	0	0	0	0	0	0	0
7	Recpt	7	*		0	0	0	0	0	0	0	0	0	0
8	Recpt	8	*		0	0	0	0	0	0	0	0	0	0
9	Recpt	9	*		0	0	0	0	0	0	0	0	0	0
10	Recpt	10	*		0	0	0	0	0	0	0	0	0	
11	Recpt	11	*		0	0	0	0	0	0	0	0	0	
12	Recpt	12	*		0	0	0	0	0	0	0	0	0	
13	Recpt	13	*		0	0	0	0	0	0	0	0	0	
14	Recpt	14	*		0	0	0	0	0	0	0	0	0	
15	Recpt	15	*		0	0	0	0	0	0	0	0	0	
16	Recpt	16	*		0	0	0	0	0	0	0	0	0	
17	Recpt	17	*		0	0	0	0	0	0	0	0	0	
18	Recpt	18	*		0	0	0	0	0	0	0	0	0	
19	Recpt	19	*		0	0	0	0	0	0	0	0	0	
20	Recpt	20	*		0	0	0	0	0	0	0	0	0	

Appendix C

C.12 Fresno HMF Intersection CALINE Outputs

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL		
JUNE	1989	VERSION					
PAGE	1						
JOB:	Fresno	HMF	Existing	Int		6	AM
RUN:	Hour	1	(WORST	CASE	ANGLE)		
POLLUTANT:	Carbon	Monoxide					

I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	WORST	CASE	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)	

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK X1	COORDINATES Y1	(M) X2	* Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A.	Link	A	3734 2222	3747 2172		AG	144	5.1	0	10
B.	Link	B	3737 2224	3780 2171		AG	81	5.1	0	10
C.	Link	C	3689 2133	3747 2172		AG	144	5.1	0	10
D.	Link	D	3690 2130	3770 2174		AG	102	5.1	0	10
E.	Link	E	3770 2174	3809 2194		AG	102	5.1	0	10
F.	Link	F	3692 2127	3780 2171		AG	81	5.1	0	10
G.	Link	G	3780 2171	3813 2187		AG	162	5.1	0	10
H.	Link	H	3693 2124	3761 2159		AG	1	5.1	0	10
I.	Link	I	3761 2159	3778 2130		AG	1	5.1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Existing Int 6 AM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES X	Y	(M) Z
1	Recpt 1	3746	2232	1.8
2	Recpt 2	3759	2205	1.8
3	Recpt 3	3770	2183	1.8
4	Recpt 4	3792	2194	1.8
5	Recpt 5	3818	2207	1.8
6	Recpt 6	3827	2176	1.8
7	Recpt 7	3802	2173	1.8
8	Recpt 8	3779	2162	1.8
9	Recpt 9	3790	2138	1.8
10	Recpt 10	3802	2112	1.8
11	Recpt 11	3781	2103	1.8
12	Recpt 12	3769	2128	1.8
13	Recpt 13	3757	2151	1.8
14	Recpt 14	3734	2140	1.8
15	Recpt 15	3708	2127	1.8
16	Recpt 16	3691	2153	1.8
17	Recpt 17	3717	2166	1.8
18	Recpt 18	3740	2177	1.8
19	Recpt 19	3728	2202	1.8
20	Recpt 20	3716	2227	1.8

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2009 Existing CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Existing Int 6 AM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

*	*	*	*	PRED				CONC/LINK			
*		*	BRG	CONC			(PPM)				
RECEPTOR	*		(DEG)	(PPM)	A	B	C	D	E	F	G	H
1	Recpt	1	188	0	0	0	0	0	0	0	0	0
2	Recpt	2	215	0	0	0	0	0	0	0	0	0
3	Recpt	3	236	0.1	0	0	0	0	0	0	0	0
4	Recpt	4	236	0	0	0	0	0	0	0	0	0
5	Recpt	5	236	0	0	0	0	0	0	0	0	0
6	Recpt	6	268	0	0	0	0	0	0	0	0	0
7	Recpt	7	256	0	0	0	0	0	0	0	0	0
8	Recpt	8	257	0	0	0	0	0	0	0	0	0
9	Recpt	9	331	0	0	0	0	0	0	0	0	0
10	Recpt	10	324	0	0	0	0	0	0	0	0	0
11	Recpt	11	336	0	0	0	0	0	0	0	0	0
12	Recpt	12	337	0	0	0	0	0	0	0	0	0
13	Recpt	13	260	0	0	0	0	0	0	0	0	0
14	Recpt	14	10	0	0	0	0	0	0	0	0	0
15	Recpt	15	35	0.1	0	0	0	0	0	0	0	0
16	Recpt	16	77	0	0	0	0	0	0	0	0	0
17	Recpt	17	82	0	0	0	0	0	0	0	0	0
18	Recpt	18	220	0	0	0	0	0	0	0	0	0
19	Recpt	19	110	0	0	0	0	0	0	0	0	0
20	Recpt	20	124	0	0	0	0	0	0	0	0	0

```
CALINE4:        CALIFORNIA    LINE     SOURCE    DISPERSION     MODEL
JUNE                    1989  VERSION
PAGE                       4

JOB:            Fresno        HMF      Existing  Int                    6 AM
RUN:            Hour                1  (WORST    CASE           ANGLE)
POLLUTANT:      Carbon        Monoxide


IV.             MODEL         RESULTS  (WORST    CASE           WIND      ANGLE)    (CONT.)

*
*                                                (PPM)
RECEPTOR                                *        I
------------*-----
              1 Recpt                1 *                    0
              2 Recpt                2 *                    0
              3 Recpt                3 *                    0
              4 Recpt                4 *                    0
              5 Recpt                5 *                    0
              6 Recpt                6 *                    0
              7 Recpt                7 *                    0
              8 Recpt                8 *                    0
              9 Recpt                9 *                    0
             10 Recpt               10 *                    0
             11 Recpt               11 *                    0
             12 Recpt               12 *                    0
             13 Recpt               13 *                    0
             14 Recpt               14 *                    0
             15 Recpt               15 *                    0
             16 Recpt               16 *                    0
             17 Recpt               17 *                    0
             18 Recpt               18 *                    0
             19 Recpt               19 *                    0
             20 Recpt               20 *                    0
```

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL	
JUNE	1989	VERSION				
PAGE	1					
JOB:	Fresno	HMF	Ex+Proj	Int	6	AM
RUN:	Hour	1	(WORST	CASE	ANGLE)	
POLLUTANT:	Carbon	Monoxide				

I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	WORST	CASE	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)	

II.	LINK	VARIABLES										
LINK	*			LINK	COORDI	(M)				EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	3734	2222	3747	2172	AG	198		5.1	0	10
B.	Link	B	3737	2224	3780	2171	AG	81		5.1	0	10
C.	Link	C	3689	2133	3747	2172	AG	198		5.1	0	10
D.	Link	D	3690	2130	3770	2174	AG	124		5.1	0	10
E.	Link	E	3770	2174	3809	2194	AG	124		5.1	0	10
F.	Link	F	3692	2127	3780	2171	AG	132		5.1	0	10
G.	Link	G	3780	2171	3813	2187	AG	213		5.1	0	10
H.	Link	H	3693	2124	3761	2159	AG	1		5.1	0	10
I.	Link	I	3761	2159	3778	2130	AG	1		5.1	0	10

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Ex+Proj Int 6 AM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	3746	2232	1.8
2	Recpt 2	3759	2205	1.8
3	Recpt 3	3770	2183	1.8
4	Recpt 4	3792	2194	1.8
5	Recpt 5	3818	2207	1.8
6	Recpt 6	3827	2176	1.8
7	Recpt 7	3802	2173	1.8
8	Recpt 8	3779	2162	1.8
9	Recpt 9	3790	2138	1.8
10	Recpt 10	3802	2112	1.8
11	Recpt 11	3781	2103	1.8
12	Recpt 12	3769	2128	1.8
13	Recpt 13	3757	2151	1.8
14	Recpt 14	3734	2140	1.8
15	Recpt 15	3708	2127	1.8
16	Recpt 16	3691	2153	1.8
17	Recpt 17	3717	2166	1.8
18	Recpt 18	3740	2177	1.8
19	Recpt 19	3728	2202	1.8
20	Recpt 20	3716	2227	1.8

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Ex+Proj Int 6 AM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

* RECEPTOR	*	BRG (DEG)	PRED CONC (PPM)	A	B	C	CONC/LINK (PPM) D	E	F	G	H
1	Recpt 1	189	0.1	0	0	0	0	0	0	0	0
2	Recpt 2	215	0.1	0	0	0	0	0	0	0	0
3	Recpt 3	236	0.1	0	0	0	0	0	0	0	0
4	Recpt 4	235	0.1	0	0	0	0	0	0	0	0
5	Recpt 5	236	0.1	0	0	0	0	0	0	0	0
6	Recpt 6	260	0	0	0	0	0	0	0	0	0
7	Recpt 7	256	0.1	0	0	0	0	0	0	0	0
8	Recpt 8	257	0.1	0	0	0	0	0	0	0	0
9	Recpt 9	273	0	0	0	0	0	0	0	0	0
10	Recpt 10	324	0	0	0	0	0	0	0	0	0
11	Recpt 11	336	0	0	0	0	0	0	0	0	0
12	Recpt 12	337	0	0	0	0	0	0	0	0	0
13	Recpt 13	260	0.1	0	0	0	0	0	0	0	0
14	Recpt 14	10	0.1	0	0	0	0	0	0	0	0
15	Recpt 15	35	0.1	0	0	0	0	0	0	0	0
16	Recpt 16	78	0.1	0	0	0	0	0	0	0	0
17	Recpt 17	82	0.1	0	0	0	0	0	0	0	0
18	Recpt 18	219	0.1	0	0	0	0	0	0	0	0
19	Recpt 19	110	0	0	0	0	0	0	0	0	0
20	Recpt 20	124	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno HMF Ex+Proj Int 6 AM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR		(PPM)
1	Recpt 1	0
2	Recpt 2	0
3	Recpt 3	0
4	Recpt 4	0
5	Recpt 5	0
6	Recpt 6	0
7	Recpt 7	0
8	Recpt 8	0
9	Recpt 9	0
10	Recpt 10	0
11	Recpt 11	0
12	Recpt 12	0
13	Recpt 13	0
14	Recpt 14	0
15	Recpt 15	0
16	Recpt 16	0
17	Recpt 17	0
18	Recpt 18	0
19	Recpt 19	0
20	Recpt 20	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL	
JUNE	1989	VERSION				
PAGE	1					
JOB:	Fresno	HMF	2035	No	Build	
RUN:	Hour	1	(WORST	CASE	ANGLE)	
POLLUTANT:	Carbon	Monoxide				
I.	SITE	VARIABLES				
U=	1	M/S	Z0=	100	CM	ALT= 0 (M)
BRG=	WORST	CASE	VD=	0	CM/S	
CLAS=	7	(G)	VS=	0	CM/S	
MIXH=	1000	M	AMB=	0	PPM	
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)
II.	LINK	VARIABLES				

LINK	*	LINK	COORDINATES	(M)			EF	H	W
DESCRIPTION	*	X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)
A.	Link	A	3734	2222	3747	2172	AG	144	1	0	10
B.	Link	B	3737	2224	3780	2171	AG	108	1	0	10
C.	Link	C	3689	2133	3747	2172	AG	144	1	0	10
D.	Link	D	3690	2130	3770	2174	AG	442	1	0	10
E.	Link	E	3770	2174	3809	2194	AG	442	1	0	10
F.	Link	F	3692	2127	3780	2171	AG	280	1	0	10
G.	Link	G	3780	2171	3813	2187	AG	388	1	0	10
H.	Link	H	3693	2124	3761	2159	AG	1	1	0	10
I.	Link	I	3761	2159	3778	2130	AG	1	1	0	10

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2035 No Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF 2035 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	3746	2232	1.8
2	Recpt 2	3759	2205	1.8
3	Recpt 3	3770	2183	1.8
4	Recpt 4	3792	2194	1.8
5	Recpt 5	3818	2207	1.8
6	Recpt 6	3827	2176	1.8
7	Recpt 7	3802	2173	1.8
8	Recpt 8	3779	2162	1.8
9	Recpt 9	3790	2138	1.8
10	Recpt 10	3802	2112	1.8
11	Recpt 11	3781	2103	1.8
12	Recpt 12	3769	2128	1.8
13	Recpt 13	3757	2151	1.8
14	Recpt 14	3734	2140	1.8
15	Recpt 15	3708	2127	1.8
16	Recpt 16	3691	2153	1.8
17	Recpt 17	3717	2166	1.8
18	Recpt 18	3740	2177	1.8
19	Recpt 19	3728	2202	1.8
20	Recpt 20	3716	2227	1.8

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2035 No Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF 2035 No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	PRED CONC (PPM)	A	B	C	CONC/LINK (PPM) D	E	F	G	H
1	Recpt 1	198	0	0	0	0	0	0	0	0	0
2	Recpt 2	213	0	0	0	0	0	0	0	0	0
3	Recpt 3	231	0	0	0	0	0	0	0	0	0
4	Recpt 4	233	0	0	0	0	0	0	0	0	0
5	Recpt 5	234	0	0	0	0	0	0	0	0	0
6	Recpt 6	260	0	0	0	0	0	0	0	0	0
7	Recpt 7	256	0	0	0	0	0	0	0	0	0
8	Recpt 8	256	0	0	0	0	0	0	0	0	0
9	Recpt 9	273	0	0	0	0	0	0	0	0	0
10	Recpt 10	332	0	0	0	0	0	0	0	0	0
11	Recpt 11	336	0	0	0	0	0	0	0	0	0
12	Recpt 12	281	0	0	0	0	0	0	0	0	0
13	Recpt 13	259	0	0	0	0	0	0	0	0	0
14	Recpt 14	49	0	0	0	0	0	0	0	0	0
15	Recpt 15	51	0	0	0	0	0	0	0	0	0
16	Recpt 16	78	0	0	0	0	0	0	0	0	0
17	Recpt 17	82	0	0	0	0	0	0	0	0	0
18	Recpt 18	89	0	0	0	0	0	0	0	0	0
19	Recpt 19	109	0	0	0	0	0	0	0	0	0
20	Recpt 20	123	0	0	0	0	0	0	0	0	0

```
CALINE4:          CALIFORNIA    LINE      SOURCE      DISPERSION     MODEL
JUNE                      1989  VERSION
PAGE                         4

JOB:              Fresno        HMF                2035  No             Build
RUN:              Hour                  1  (WORST      CASE           ANGLE)
POLLUTANT:        Carbon        Monoxide

IV.               MODEL         RESULTS    (WORST      CASE           WIND    ANGLE)  (CONT.)

*
*                               (PPM)
RECEPTOR                        *          I
------------*-----
                1 Recpt                 1            0
                2 Recpt                 2            0
                3 Recpt                 3            0
                4 Recpt                 4            0
                5 Recpt                 5            0
                6 Recpt                 6            0
                7 Recpt                 7            0
                8 Recpt                 8            0
                9 Recpt                 9            0
               10 Recpt                10            0
               11 Recpt                11            0
               12 Recpt                12            0
               13 Recpt                13            0
               14 Recpt                14            0
               15 Recpt                15            0
               16 Recpt                16            0
               17 Recpt                17            0
               18 Recpt                18            0
               19 Recpt                19            0
               20 Recpt                20            0
```

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL						
JUNE	1989	VERSION									
PAGE	1										
JOB:	Fresno	HMF	2035	Build							
RUN:	Hour	1	(WORST	CASE	ANGLE)						
POLLUTANT:	Carbon	Monoxide									
I.	SITE	VARIABLES									
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)			
BRG=	WORST	CASE	VD=	0	CM/S						
CLAS=	7	(G)	VS=	0	CM/S						
MIXH=	1000	M	AMB=	0	PPM						
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)					
II.	LINK	VARIABLES									
LINK	*		LINK	COORDINATES	(M)				EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/M	(M)	(M)
A.	Link	A	3734	2222	3747	2172	AG	198	1	0	10
B.	Link	B	3737	2224	3780	2171	AG	108	1	0	10
C.	Link	C	3689	2133	3747	2172	AG	198	1	0	10
D.	Link	D	3690	2130	3770	2174	AG	464	1	0	10
E.	Link	E	3770	2174	3809	2194	AG	464	1	0	10
F.	Link	F	3692	2127	3780	2171	AG	331	1	0	10
G.	Link	G	3780	2171	3813	2187	AG	439	1	0	10
H.	Link	H	3693	2124	3761	2159	AG	1	1	0	10
I.	Link	I	3761	2159	3778	2130	AG	1	1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF 2035 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	3746	2232	1.8
2	Recpt 2	3759	2205	1.8
3	Recpt 3	3770	2183	1.8
4	Recpt 4	3792	2194	1.8
5	Recpt 5	3818	2207	1.8
6	Recpt 6	3827	2176	1.8
7	Recpt 7	3802	2173	1.8
8	Recpt 8	3779	2162	1.8
9	Recpt 9	3790	2138	1.8
10	Recpt 10	3802	2112	1.8
11	Recpt 11	3781	2103	1.8
12	Recpt 12	3769	2128	1.8
13	Recpt 13	3757	2151	1.8
14	Recpt 14	3734	2140	1.8
15	Recpt 15	3708	2127	1.8
16	Recpt 16	3691	2153	1.8
17	Recpt 17	3717	2166	1.8
18	Recpt 18	3740	2177	1.8
19	Recpt 19	3728	2202	1.8
20	Recpt 20	3716	2227	1.8

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. AM 2035 Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF 2035 Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	PRED CONC (PPM)	A	B	C	CONC/LINK (PPM) D	E	F	G	H
1	Recpt 1	197	0	0	0	0	0	0	0	0	0
2	Recpt 2	213	0	0	0	0	0	0	0	0	0
3	Recpt 3	232	0	0	0	0	0	0	0	0	0
4	Recpt 4	233	0	0	0	0	0	0	0	0	0
5	Recpt 5	234	0	0	0	0	0	0	0	0	0
6	Recpt 6	259	0	0	0	0	0	0	0	0	0
7	Recpt 7	256	0	0	0	0	0	0	0	0	0
8	Recpt 8	257	0	0	0	0	0	0	0	0	0
9	Recpt 9	273	0	0	0	0	0	0	0	0	0
10	Recpt 10	287	0	0	0	0	0	0	0	0	0
11	Recpt 11	336	0	0	0	0	0	0	0	0	0
12	Recpt 12	281	0	0	0	0	0	0	0	0	0
13	Recpt 13	260	0	0	0	0	0	0	0	0	0
14	Recpt 14	49	0	0	0	0	0	0	0	0	0
15	Recpt 15	52	0	0	0	0	0	0	0	0	0
16	Recpt 16	78	0	0	0	0	0	0	0	0	0
17	Recpt 17	82	0	0	0	0	0	0	0	0	0
18	Recpt 18	89	0	0	0	0	0	0	0	0	0
19	Recpt 19	109	0	0	0	0	0	0	0	0	0
20	Recpt 20	123	0	0	0	0	0	0	0	0	0

```
CALINE4:                CALIFORNIA    LINE        SOURCE        DISPERSION     MODEL
JUNE                          1989  VERSION
PAGE                             4

JOB:                    Fresno        HMF                 2035  Build
RUN:                    Hour                  1  (WORST        CASE           ANGLE)
POLLUTANT:              Carbon        Monoxide
IV.                     MODEL         RESULTS     (WORST        CASE           WIND    ANGLE)  (CONT.)

*
*                                     (PPM)
RECEPTOR                              *           I
------------*-----
                     1  Recpt                  1              0
                     2  Recpt                  2              0
                     3  Recpt                  3              0
                     4  Recpt                  4              0
                     5  Recpt                  5              0
                     6  Recpt                  6              0
                     7  Recpt                  7              0
                     8  Recpt                  8              0
                     9  Recpt                  9              0
                    10  Recpt                 10              0
                    11  Recpt                 11              0
                    12  Recpt                 12              0
                    13  Recpt                 13              0
                    14  Recpt                 14              0
                    15  Recpt                 15              0
                    16  Recpt                 16              0
                    17  Recpt                 17              0
                    18  Recpt                 18              0
                    19  Recpt                 19              0
                    20  Recpt                 20              0
```

CALINE4:	CALIFORNIA		LINE	SOURCE	DISPERSION	MODEL						
JUNE		1989	VERSION									
PAGE		1										
JOB:	Fresno		HMF	Ex	Int	6	PM					
RUN:	Hour		1	(WORST	CASE	ANGLE)						
POLLUTANT:	Carbon		Monoxide									
I.	SITE		VARIABLES									
U=		1	M/S	Z0=	100	CM	ALT=	0	(M)			
BRG=	WORST		CASE	VD=	0	CM/S						
CLAS=		7	(G)	VS=	0	CM/S						
MIXH=		1000	M	AMB=	0	PPM						
SIGTH=		5	DEGREES	TEMP=	2.2	DEGREE	(C)					
II.	LINK		VARIABLES									
LINK	*			LINK	COORDINATES	(M)				EF	H	W
DESCRIPTION	*			X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)
A.	Link		A	3734	2222	3747	2172	AG	36	5.1	0	10
B.	Link		B	3737	2224	3780	2171	AG	56	5.1	0	10
C.	Link		C	3689	2133	3747	2172	AG	36	5.1	0	10
D.	Link		D	3690	2130	3770	2174	AG	49	5.1	0	10
E.	Link		E	3770	2174	3809	2194	AG	49	5.1	0	10
F.	Link		F	3692	2127	3780	2171	AG	221	5.1	0	10
G.	Link		G	3780	2171	3813	2187	AG	277	5.1	0	10
H.	Link		H	3693	2124	3761	2159	AG	0	5.1	0	10
I.	Link		I	3761	2159	3778	2130	AG	0	5.1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Ex Int 6 PM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	3746	2232	1.8
2	Recpt 2	3759	2205	1.8
3	Recpt 3	3770	2183	1.8
4	Recpt 4	3792	2194	1.8
5	Recpt 5	3818	2207	1.8
6	Recpt 6	3827	2176	1.8
7	Recpt 7	3802	2173	1.8
8	Recpt 8	3779	2162	1.8
9	Recpt 9	3790	2138	1.8
10	Recpt 10	3802	2112	1.8
11	Recpt 11	3781	2103	1.8
12	Recpt 12	3769	2128	1.8
13	Recpt 13	3757	2151	1.8
14	Recpt 14	3734	2140	1.8
15	Recpt 15	3708	2127	1.8
16	Recpt 16	3691	2153	1.8
17	Recpt 17	3717	2166	1.8
18	Recpt 18	3740	2177	1.8
19	Recpt 19	3728	2202	1.8
20	Recpt 20	3716	2227	1.8

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2009 Existing CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL	
JUNE	1989	VERSION				
PAGE	3					
JOB:	Fresno	HMF	Ex	Int	6	PM
RUN:	Hour	1	(WORST	CASE	ANGLE)	
POLLUTANT:	Carbon	Monoxide				

IV.	MODEL	RESULTS	(WORST	CASE	WIND	ANGLE	)					
*	*		*	PRED			CONC/LINK					
*		*	BRG	CONC			(PPM)					
RECEPTOR	*		(DEG)	(PPM)	A	B	C	D	E	F	G	H
1	Recpt	1	200	0	0	0	0	0	0	0	0	0
2	Recpt	2	213	0	0	0	0	0	0	0	0	0
3	Recpt	3	230	0	0	0	0	0	0	0	0	0
4	Recpt	4	232	0	0	0	0	0	0	0	0	0
5	Recpt	5	233	0	0	0	0	0	0	0	0	0
6	Recpt	6	258	0	0	0	0	0	0	0	0	0
7	Recpt	7	254	0.1	0	0	0	0	0	0	0	0
8	Recpt	8	255	0.1	0	0	0	0	0	0	0	0
9	Recpt	9	272	0	0	0	0	0	0	0	0	0
10	Recpt	10	333	0	0	0	0	0	0	0	0	0
11	Recpt	11	338	0	0	0	0	0	0	0	0	0
12	Recpt	12	26	0	0	0	0	0	0	0	0	0
13	Recpt	13	48	0.1	0	0	0	0	0	0	0	0
14	Recpt	14	52	0.1	0	0	0	0	0	0	0	0
15	Recpt	15	54	0.1	0	0	0	0	0	0.1	0	0
16	Recpt	16	78	0	0	0	0	0	0	0	0	0
17	Recpt	17	82	0	0	0	0	0	0	0	0	0
18	Recpt	18	89	0	0	0	0	0	0	0	0	0
19	Recpt	19	109	0	0	0	0	0	0	0	0	0
20	Recpt	20	123	0	0	0	0	0	0	0	0	0

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2009 Existing CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno HMF Ex Int 6 PM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)
* (PPM)
RECEPTOR * I
----------*-----

1	Recpt 1	0
2	Recpt 2	0
3	Recpt 3	0
4	Recpt 4	0
5	Recpt 5	0
6	Recpt 6	0
7	Recpt 7	0
8	Recpt 8	0
9	Recpt 9	0
10	Recpt 10	0
11	Recpt 11	0
12	Recpt 12	0
13	Recpt 13	0
14	Recpt 14	0
15	Recpt 15	0
16	Recpt 16	0
17	Recpt 17	0
18	Recpt 18	0
19	Recpt 19	0
20	Recpt 20	0

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL		
JUNE	1989	VERSION					
PAGE	1						
JOB:	Fresno	HMF	Ex+Proj	Int	6	PM	
RUN:	Hour	1	(WORST	CASE	ANGLE)		
POLLUTANT:	Carbon	Monoxide					
I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	WORST	CASE	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)	

II. LINK VARIABLES

LINK	*	LINK	COORDINATES	(M)				EF	H	W
DESCRIPTION	*	X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)
A.	Link	A	3734	2222	3747	2172	AG	72	5.1	0	10
B.	Link	B	3737	2224	3780	2171	AG	56	5.1	0	10
C.	Link	C	3689	2133	3747	2172	AG	72	5.1	0	10
D.	Link	D	3690	2130	3770	2174	AG	64	5.1	0	10
E.	Link	E	3770	2174	3809	2194	AG	64	5.1	0	10
F.	Link	F	3692	2127	3780	2171	AG	297	5.1	0	10
G.	Link	G	3780	2171	3813	2187	AG	353	5.1	0	10
H.	Link	H	3693	2124	3761	2159	AG	0	5.1	0	10
I.	Link	I	3761	2159	3778	2130	AG	0	5.1	0	10

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Ex+Proj Int 6 PM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATI (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	3746	2232	1.8
2	Recpt 2	3759	2205	1.8
3	Recpt 3	3770	2183	1.8
4	Recpt 4	3792	2194	1.8
5	Recpt 5	3818	2207	1.8
6	Recpt 6	3827	2176	1.8
7	Recpt 7	3802	2173	1.8
8	Recpt 8	3779	2162	1.8
9	Recpt 9	3790	2138	1.8
10	Recpt 10	3802	2112	1.8
11	Recpt 11	3781	2103	1.8
12	Recpt 12	3769	2128	1.8
13	Recpt 13	3757	2151	1.8
14	Recpt 14	3734	2140	1.8
15	Recpt 15	3708	2127	1.8
16	Recpt 16	3691	2153	1.8
17	Recpt 17	3717	2166	1.8
18	Recpt 18	3740	2177	1.8
19	Recpt 19	3728	2202	1.8
20	Recpt 20	3716	2227	1.8

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3
JOB: Fresno HMF Ex+Proj Int 6 PM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

*	*	*	*	PRED				CONC/LINK				
*		*	BRG	CONC				*	(PPM)			
RECEPTOR	*		(DEG)	(PPM)	A	B	C	D	E	F	G	H
1	Recpt	1	198	0	0	0	0	0	0	0	0	0
2	Recpt	2	213	0	0	0	0	0	0	0	0	0
3	Recpt	3	230	0.1	0	0	0	0	0	0	0	0
4	Recpt	4	232	0.1	0	0	0	0	0	0	0	0
5	Recpt	5	233	0.1	0	0	0	0	0	0	0	0
6	Recpt	6	258	0	0	0	0	0	0	0	0	0
7	Recpt	7	254	0.1	0	0	0	0	0	0.1	0	0
8	Recpt	8	255	0.1	0	0	0	0	0	0.1	0	0
9	Recpt	9	272	0	0	0	0	0	0	0	0	0
10	Recpt	10	332	0	0	0	0	0	0	0	0	0
11	Recpt	11	337	0	0	0	0	0	0	0	0	0
12	Recpt	12	280	0	0	0	0	0	0	0	0	0
13	Recpt	13	258	0.1	0	0	0	0	0	0.1	0	0
14	Recpt	14	52	0.2	0	0	0	0	0	0.1	0	0
15	Recpt	15	54	0.2	0	0	0	0	0	0.1	0	0
16	Recpt	16	79	0	0	0	0	0	0	0	0	0
17	Recpt	17	83	0	0	0	0	0	0	0	0	0
18	Recpt	18	89	0	0	0	0	0	0	0	0	0
19	Recpt	19	109	0	0	0	0	0	0	0	0	0
20	Recpt	20	123	0	0	0	0	0	0	0	0	0

```
CALINE4:          CALIFORNIA    LINE      SOURCE      DISPERSION    MODEL
JUNE                      1989  VERSION
PAGE                         4
JOB:              Fresno        HMF       Ex+Proj     Int                 6 PM
RUN:              Hour                 1  (WORST      CASE          ANGLE)
POLLUTANT:        Carbon        Monoxide

IV.               MODEL         RESULTS   (WORST      CASE          WIND    ANGLE)  (CONT.)

*
*                                         (PPM)
RECEPTOR                                  I
------------*-----
                1 Recpt                 1            0
                2 Recpt                 2            0
                3 Recpt                 3            0
                4 Recpt                 4            0
                5 Recpt                 5            0
                6 Recpt                 6            0
                7 Recpt                 7            0
                8 Recpt                 8            0
                9 Recpt                 9            0
               10 Recpt                10            0
               11 Recpt                11            0
               12 Recpt                12            0
               13 Recpt                13            0
               14 Recpt                14            0
               15 Recpt                15            0
               16 Recpt                16            0
               17 Recpt                17            0
               18 Recpt                18            0
               19 Recpt                19            0
               20 Recpt                20            0
```

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2035 No Build CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL		
JUNE	1989	VERSION					
PAGE	1						
JOB:	Fresno	HMF	No	Build	Int	6	PM
RUN:	Hour	1	(WORST	CASE	ANGLE)		
POLLUTANT:	Carbon	Monoxide					

I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	WORST	CASE	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)	

II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)
A.	Link	A	3734	2222	3747	2172	AG	41	1	0	10
B.	Link	B	3737	2224	3780	2171	AG	325	1	0	10
C.	Link	C	3689	2133	3747	2172	AG	41	1	0	10
D.	Link	D	3690	2130	3770	2174	AG	537	1	0	10
E.	Link	E	3770	2174	3809	2194	AG	537	1	0	10
F.	Link	F	3692	2127	3780	2171	AG	496	1	0	10
G.	Link	G	3780	2171	3813	2187	AG	821	1	0	10
H.	Link	H	3693	2124	3761	2159	AG	0	1	0	10
I.	Link	I	3761	2159	3778	2130	AG	0	1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF No Build Int 6 PM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	3746	2232	1.8
2	Recpt 2	3759	2205	1.8
3	Recpt 3	3770	2183	1.8
4	Recpt 4	3792	2194	1.8
5	Recpt 5	3818	2207	1.8
6	Recpt 6	3827	2176	1.8
7	Recpt 7	3802	2173	1.8
8	Recpt 8	3779	2162	1.8
9	Recpt 9	3790	2138	1.8
10	Recpt 10	3802	2112	1.8
11	Recpt 11	3781	2103	1.8
12	Recpt 12	3769	2128	1.8
13	Recpt 13	3757	2151	1.8
14	Recpt 14	3734	2140	1.8
15	Recpt 15	3708	2127	1.8
16	Recpt 16	3691	2153	1.8
17	Recpt 17	3717	2166	1.8
18	Recpt 18	3740	2177	1.8
19	Recpt 19	3728	2202	1.8
20	Recpt 20	3716	2227	1.8

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2035 No Build CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL									
JUNE	1989	VERSION												
PAGE	3													
JOB:	Fresno	HMF	No	Build	Int	6	PM							
RUN:	Hour	1	(WORST	CASE	ANGLE)									
POLLUTANT:	Carbon	Monoxide												
IV.	MODEL	RESULTS	(WORST	CASE	WIND	ANGLE	)							
*	*		*	PRED			CONC/LINK							
*		*	BRG	CONC			(PPM)							
RECEPTOR	*		(DEG)	(PPM)	A	B	C	D	E	F	G	H		
1	Recpt	1	198	0	0	0	0	0	0	0	0	0		
2	Recpt	2	149	0	0	0	0	0	0	0	0	0		
3	Recpt	3	229	0	0	0	0	0	0	0	0	0		
4	Recpt	4	232	0	0	0	0	0	0	0	0	0		
5	Recpt	5	233	0	0	0	0	0	0	0	0	0		
6	Recpt	6	273	0	0	0	0	0	0	0	0	0		
7	Recpt	7	276	0	0	0	0	0	0	0	0	0		
8	Recpt	8	38	0	0	0	0	0	0	0	0	0		
9	Recpt	9	331	0	0	0	0	0	0	0	0	0		
10	Recpt	10	334	0	0	0	0	0	0	0	0	0		
11	Recpt	11	347	0	0	0	0	0	0	0	0	0		
12	Recpt	12	25	0	0	0	0	0	0	0	0	0		
13	Recpt	13	46	0	0	0	0	0	0	0	0	0		
14	Recpt	14	50	0	0	0	0	0	0	0	0	0		
15	Recpt	15	52	0	0	0	0	0	0	0	0	0		
16	Recpt	16	77	0	0	0	0	0	0	0	0	0		
17	Recpt	17	82	0	0	0	0	0	0	0	0	0		
18	Recpt	18	89	0	0	0	0	0	0	0	0	0		
19	Recpt	19	109	0	0	0	0	0	0	0	0	0		
20	Recpt	20	123	0	0	0	0	0	0	0	0	0		

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL		
JUNE	1989	VERSION					
PAGE	4						
JOB:	Fresno	HMF	No	Build	Int	6	PM
RUN:	Hour	1	(WORST	CASE	ANGLE)		
POLLUTANT:	Carbon	Monoxide					

IV.	MODEL	RESULTS	(WORST	CASE	WIND	ANGLE)	(CONT.)
*							
*		(PPM)					
RECEPTOR		*	I				
----------*-----							
1	Recpt	1	0				
2	Recpt	2	0				
3	Recpt	3	0				
4	Recpt	4	0				
5	Recpt	5	0				
6	Recpt	6	0				
7	Recpt	7	0				
8	Recpt	8	0				
9	Recpt	9	0				
10	Recpt	10	0				
11	Recpt	11	0				
12	Recpt	12	0				
13	Recpt	13	0				
14	Recpt	14	0				
15	Recpt	15	0				
16	Recpt	16	0				
17	Recpt	17	0				
18	Recpt	18	0				
19	Recpt	19	0				
20	Recpt	20	0				

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Fresno	HMF	Build	Int	6	PM						
RUN:	Hour	1	(WORST	CASE	ANGLE)							
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)				
BRG=	WORST	CASE	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	3734	2222	3747	2172	AG	77		1	0	10
B.	Link	B	3737	2224	3780	2171	AG	325		1	0	10
C.	Link	C	3689	2133	3747	2172	AG	77		1	0	10
D.	Link	D	3690	2130	3770	2174	AG	552		1	0	10
E.	Link	E	3770	2174	3809	2194	AG	552		1	0	10
F.	Link	F	3692	2127	3780	2171	AG	572		1	0	10
G.	Link	G	3780	2171	3813	2187	AG	897		1	0	10
H.	Link	H	3693	2124	3761	2159	AG	0		1	0	10
I.	Link	I	3761	2159	3778	2130	AG	0		1	0	10

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2035 Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Build Int 6 PM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	3746	2232	1.8
2	Recpt 2	3759	2205	1.8
3	Recpt 3	3770	2183	1.8
4	Recpt 4	3792	2194	1.8
5	Recpt 5	3818	2207	1.8
6	Recpt 6	3827	2176	1.8
7	Recpt 7	3802	2173	1.8
8	Recpt 8	3779	2162	1.8
9	Recpt 9	3790	2138	1.8
10	Recpt 10	3802	2112	1.8
11	Recpt 11	3781	2103	1.8
12	Recpt 12	3769	2128	1.8
13	Recpt 13	3757	2151	1.8
14	Recpt 14	3734	2140	1.8
15	Recpt 15	3708	2127	1.8
16	Recpt 16	3691	2153	1.8
17	Recpt 17	3717	2166	1.8
18	Recpt 18	3740	2177	1.8
19	Recpt 19	3728	2202	1.8
20	Recpt 20	3716	2227	1.8

Fresno HMF SR 99 SB Off-Ramp/ E. American Ave. PM 2035 Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Build Int 6 PM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	C	D	E	F	G	H
				CONC/LINK * (PPM)							
1	Recpt 1	198	0	0	0	0	0	0	0	0	0
2	Recpt 2	149	0	0	0	0	0	0	0	0	0
3	Recpt 3	230	0	0	0	0	0	0	0	0	0
4	Recpt 4	232	0	0	0	0	0	0	0	0	0
5	Recpt 5	233	0	0	0	0	0	0	0	0	0
6	Recpt 6	273	0	0	0	0	0	0	0	0	0
7	Recpt 7	275	0	0	0	0	0	0	0	0	0
8	Recpt 8	38	0	0	0	0	0	0	0	0	0
9	Recpt 9	331	0	0	0	0	0	0	0	0	0
10	Recpt 10	334	0	0	0	0	0	0	0	0	0
11	Recpt 11	346	0	0	0	0	0	0	0	0	0
12	Recpt 12	25	0	0	0	0	0	0	0	0	0
13	Recpt 13	46	0	0	0	0	0	0	0	0	0
14	Recpt 14	50	0	0	0	0	0	0	0	0	0
15	Recpt 15	52	0	0	0	0	0	0	0	0	0
16	Recpt 16	78	0	0	0	0	0	0	0	0	0
17	Recpt 17	82	0	0	0	0	0	0	0	0	0
18	Recpt 18	89	0	0	0	0	0	0	0	0	0
19	Recpt 19	109	0	0	0	0	0	0	0	0	0
20	Recpt 20	123	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno HMF Build Int 6 PM
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)
*
* (PPM)
RECEPTOR * I
----------*-----

1	Recpt	1	0
2	Recpt	2	0
3	Recpt	3	0
4	Recpt	4	0
5	Recpt	5	0
6	Recpt	6	0
7	Recpt	7	0
8	Recpt	8	0
9	Recpt	9	0
10	Recpt	10	0
11	Recpt	11	0
12	Recpt	12	0
13	Recpt	13	0
14	Recpt	14	0
15	Recpt	15	0
16	Recpt	16	0
17	Recpt	17	0
18	Recpt	18	0
19	Recpt	19	0
20	Recpt	20	0

CALINE4:	CALIFORNIA		LINE	SOURCE	DISPERSION		MODEL					
JUNE		1989	VERSION									
PAGE		1										
JOB:	Fresno		HMF	Int		9	AM	Existing				
RUN:	Hour		1	(WORST	CASE		ANGLE)					
POLLUTANT:	Carbon		Monoxide									
I.	SITE		VARIABLES									
U=		1	M/S	Z0=		100	CM	ALT=	0	(M)		
BRG=	WORST		CASE	VD=		0	CM/S					
CLAS=		7	(G)	VS=		0	CM/S					
MIXH=		1000	M	AMB=		0	PPM					
SIGTH=		5	DEGREES	TEMP=		2.2	DEGREE	(C)				
II.	LINK		VARIABLES									
LINK	*			LINK	COORDINATES		(M)			*	EF	H	W
DESCRIPTION	*			X1	Y1		X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)
A.	Link		A	7269	825		7304	787	AG	6	5.1	0	10
B.	Link		B	7271	827		7336	788	AG	23	5.1	0	10
C.	Link		C	7224	736		7304	787	AG	6	5.1	0	10
D.	Link		D	7225	733		7354	791	AG	25	5.1	0	10
E.	Link		E	7336	788		7448	720	AG	23	5.1	0	10
F.	Link		F	7228	729		7334	771	AG	43	5.1	0	10
G.	Link		G	7334	771		7446	718	AG	43	5.1	0	10
H.	Link		H	7354	791		7450	723	AG	25	5.1	0	10

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2009 Existing CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Int 9 AM Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	7289	824	1.8
2	Recpt 2	7314	809	1.8
3	Recpt 3	7337	795	1.8
4	Recpt 4	7360	807	1.8
5	Recpt 5	7384	790	1.8
6	Recpt 6	7408	772	1.8
7	Recpt 7	7431	754	1.8
8	Recpt 8	7390	744	1.8
9	Recpt 9	7362	756	1.8
10	Recpt 10	7335	762	1.8
11	Recpt 11	7309	757	1.8
12	Recpt 12	7282	748	1.8
13	Recpt 13	7248	757	1.8
14	Recpt 14	7272	772	1.8
15	Recpt 15	7295	786	1.8
16	Recpt 16	7278	805	1.8
17	Recpt 17	7256	825	1.8

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2009 Existing CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Int 9 AM Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* MODEL *	* RESULTS *	* BRG (DEG)	PRED CONC (PPM)	A	B	C	CONC/LINK * D	(PPM) E	F	G	H
1	Recpt	1	126	0	0	0	0	0	0	0	0	0
2	Recpt	2	126	0	0	0	0	0	0	0	0	0
3	Recpt	3	126	0	0	0	0	0	0	0	0	0
4	Recpt	4	235	0	0	0	0	0	0	0	0	0
5	Recpt	5	250	0	0	0	0	0	0	0	0	0
6	Recpt	6	262	0	0	0	0	0	0	0	0	0
7	Recpt	7	273	0	0	0	0	0	0	0	0	0
8	Recpt	8	111	0	0	0	0	0	0	0	0	0
9	Recpt	9	111	0	0	0	0	0	0	0	0	0
10	Recpt	10	106	0	0	0	0	0	0	0	0	0
11	Recpt	11	255	0	0	0	0	0	0	0	0	0
12	Recpt	12	63	0	0	0	0	0	0	0	0	0
13	Recpt	13	89	0	0	0	0	0	0	0	0	0
14	Recpt	14	101	0	0	0	0	0	0	0	0	0
15	Recpt	15	112	0	0	0	0	0	0	0	0	0
16	Recpt	16	117	0	0	0	0	0	0	0	0	0
17	Recpt	17	117	0	0	0	0	0	0	0	0	0

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL		
JUNE	1989	VERSION					
PAGE	1						
JOB:	Fresno	HMF	Int	9	AM	Existing+Proj	
RUN:	Hour	1	(WORST	CASE	ANGLE)		
POLLUTANT:	Carbon	Monoxide					
I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	WORST	CASE	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)	

II. LINK VARIABLES

LINK DESCRIPTION	*	LINK X1	COORDINATES Y1	(M) X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A.	Link	A	7269	825	7304	787	AG	6	5.1	0	10
B.	Link	B	7271	827	7336	788	AG	23	5.1	0	10
C.	Link	C	7224	736	7304	787	AG	6	5.1	0	10
D.	Link	D	7225	733	7354	791	AG	87	5.1	0	10
E.	Link	E	7336	788	7448	720	AG	23	5.1	0	10
F.	Link	F	7228	729	7334	771	AG	84	5.1	0	10
G.	Link	G	7334	771	7446	718	AG	84	5.1	0	10
H.	Link	H	7354	791	7450	723	AG	87	5.1	0	10

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Int 9 AM Existing+Proj
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
----------*----------				
1	Recpt 1	7289	824	1.8
2	Recpt 2	7314	809	1.8
3	Recpt 3	7337	795	1.8
4	Recpt 4	7360	807	1.8
5	Recpt 5	7384	790	1.8
6	Recpt 6	7408	772	1.8
7	Recpt 7	7431	754	1.8
8	Recpt 8	7390	744	1.8
9	Recpt 9	7362	756	1.8
10	Recpt 10	7335	762	1.8
11	Recpt 11	7309	757	1.8
12	Recpt 12	7282	748	1.8
13	Recpt 13	7248	757	1.8
14	Recpt 14	7272	772	1.8
15	Recpt 15	7295	786	1.8
16	Recpt 16	7278	805	1.8
17	Recpt 17	7256	825	1.8

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Int 9 AM Existing+Proj
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	*	* BRG (DEG)	PRED CONC (PPM)	A	B	CONC/LINK (PPM) C	D	E	F	G	H
1	Recpt	1	124	0	0	0	0	0	0	0	0	0
2	Recpt	2	123	0	0	0	0	0	0	0	0	0
3	Recpt	3	122	0	0	0	0	0	0	0	0	0
4	Recpt	4	235	0	0	0	0	0	0	0	0	0
5	Recpt	5	251	0	0	0	0	0	0	0	0	0
6	Recpt	6	262	0	0	0	0	0	0	0	0	0
7	Recpt	7	273	0	0	0	0	0	0	0	0	0
8	Recpt	8	109	0	0	0	0	0	0	0	0	0
9	Recpt	9	111	0	0	0	0	0	0	0	0	0
10	Recpt	10	260	0	0	0	0	0	0	0	0	0
11	Recpt	11	256	0	0	0	0	0	0	0	0	0
12	Recpt	12	59	0	0	0	0	0	0	0	0	0
13	Recpt	13	89	0	0	0	0	0	0	0	0	0
14	Recpt	14	101	0	0	0	0	0	0	0	0	0
15	Recpt	15	112	0	0	0	0	0	0	0	0	0
16	Recpt	16	117	0	0	0	0	0	0	0	0	0
17	Recpt	17	117	0	0	0	0	0	0	0	0	0

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2035 No Build CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL			
JUNE	1989	VERSION						
PAGE	1							
JOB:	Fresno	HMF	Int	9	AM	No	Build	
RUN:	Hour	1	(WORST	CASE	ANGLE)			
POLLUTANT:	Carbon	Monoxide						
I.	SITE	VARIABLES						
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)
BRG=	WORST	CASE	VD=	0	CM/S			
CLAS=	7	(G)	VS=	0	CM/S			
MIXH=	1000	M	AMB=	0	PPM			
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)		

II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)				EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)	
A.	Link	A	7269	825	7304	787	AG	6	1	0	10	
B.	Link	B	7271	827	7336	788	AG	23	1	0	10	
C.	Link	C	7224	736	7304	787	AG	6	1	0	10	
D.	Link	D	7225	733	7354	791	AG	36	1	0	10	
E.	Link	E	7336	788	7448	720	AG	23	1	0	10	
F.	Link	F	7228	729	7334	771	AG	43	1	0	10	
G.	Link	G	7334	771	7446	718	AG	43	1	0	10	
H.	Link	H	7354	791	7450	723	AG	36	1	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Int 9 AM No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	7289	824	1.8
2	Recpt 2	7314	809	1.8
3	Recpt 3	7337	795	1.8
4	Recpt 4	7360	807	1.8
5	Recpt 5	7384	790	1.8
6	Recpt 6	7408	772	1.8
7	Recpt 7	7431	754	1.8
8	Recpt 8	7390	744	1.8
9	Recpt 9	7362	756	1.8
10	Recpt 10	7335	762	1.8
11	Recpt 11	7309	757	1.8
12	Recpt 12	7282	748	1.8
13	Recpt 13	7248	757	1.8
14	Recpt 14	7272	772	1.8
15	Recpt 15	7295	786	1.8
16	Recpt 16	7278	805	1.8
17	Recpt 17	7256	825	1.8

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2035 No Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Int 9 AM No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	A	B	C	D	CONC/LINK (PPM) E	F	G	H
1 Recpt 1	126	0	0	0	0	0	0	0	0	0	0
2 Recpt 2	125	0	0	0	0	0	0	0	0	0	0
3 Recpt 3	124	0	0	0	0	0	0	0	0	0	0
4 Recpt 4	235	0	0	0	0	0	0	0	0	0	0
5 Recpt 5	250	0	0	0	0	0	0	0	0	0	0
6 Recpt 6	262	0	0	0	0	0	0	0	0	0	0
7 Recpt 7	273	0	0	0	0	0	0	0	0	0	0
8 Recpt 8	109	0	0	0	0	0	0	0	0	0	0
9 Recpt 9	110	0	0	0	0	0	0	0	0	0	0
10 Recpt 10	106	0	0	0	0	0	0	0	0	0	0
11 Recpt 11	255	0	0	0	0	0	0	0	0	0	0
12 Recpt 12	59	0	0	0	0	0	0	0	0	0	0
13 Recpt 13	87	0	0	0	0	0	0	0	0	0	0
14 Recpt 14	101	0	0	0	0	0	0	0	0	0	0
15 Recpt 15	112	0	0	0	0	0	0	0	0	0	0
16 Recpt 16	116	0	0	0	0	0	0	0	0	0	0
17 Recpt 17	117	0	0	0	0	0	0	0	0	0	0

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2035 Build CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL		
JUNE	1989	VERSION					
PAGE	1						
JOB:	Fresno	HMF	Int	9	AM	Build	
RUN:	Hour	1	(WORST	CASE	ANGLE)		
POLLUTANT:	Carbon	Monoxide					
I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	WORST	CASE	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)	

II. LINK VARIABLES

LINK DESCRIPTION	* *	LINK X1	COORDINATES Y1	(M) X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A.	Link A	7269	825	7304	787	AG	6	1	0	10
B.	Link B	7271	827	7336	788	AG	23	1	0	10
C.	Link C	7224	736	7304	787	AG	6	1	0	10
D.	Link D	7225	733	7354	791	AG	98	1	0	10
E.	Link E	7336	788	7448	720	AG	23	1	0	10
F.	Link F	7228	729	7334	771	AG	84	1	0	10
G.	Link G	7334	771	7446	718	AG	84	1	0	10
H.	Link H	7354	791	7450	723	AG	98	1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Int 9 AM Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	7289	824	1.8
2	Recpt 2	7314	809	1.8
3	Recpt 3	7337	795	1.8
4	Recpt 4	7360	807	1.8
5	Recpt 5	7384	790	1.8
6	Recpt 6	7408	772	1.8
7	Recpt 7	7431	754	1.8
8	Recpt 8	7390	744	1.8
9	Recpt 9	7362	756	1.8
10	Recpt 10	7335	762	1.8
11	Recpt 11	7309	757	1.8
12	Recpt 12	7282	748	1.8
13	Recpt 13	7248	757	1.8
14	Recpt 14	7272	772	1.8
15	Recpt 15	7295	786	1.8
16	Recpt 16	7278	805	1.8
17	Recpt 17	7256	825	1.8

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. AM 2035 Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Int 9 AM Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* MODEL *	* BRG (DEG)	* PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1	Recpt 1	124	0	0	0	0	0	0	0	0	0
2	Recpt 2	123	0	0	0	0	0	0	0	0	0
3	Recpt 3	122	0	0	0	0	0	0	0	0	0
4	Recpt 4	235	0	0	0	0	0	0	0	0	0
5	Recpt 5	251	0	0	0	0	0	0	0	0	0
6	Recpt 6	262	0	0	0	0	0	0	0	0	0
7	Recpt 7	273	0	0	0	0	0	0	0	0	0
8	Recpt 8	109	0	0	0	0	0	0	0	0	0
9	Recpt 9	110	0	0	0	0	0	0	0	0	0
10	Recpt 10	260	0	0	0	0	0	0	0	0	0
11	Recpt 11	256	0	0	0	0	0	0	0	0	0
12	Recpt 12	58	0	0	0	0	0	0	0	0	0
13	Recpt 13	87	0	0	0	0	0	0	0	0	0
14	Recpt 14	101	0	0	0	0	0	0	0	0	0
15	Recpt 15	112	0	0	0	0	0	0	0	0	0
16	Recpt 16	116	0	0	0	0	0	0	0	0	0
17	Recpt 17	117	0	0	0	0	0	0	0	0	0

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2009 Existing CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL		
JUNE	1989	VERSION					
PAGE	1						
JOB:	Fresno	HMF	Int	9	PM	Existing	
RUN:	Hour	1	(WORST	CASE	ANGLE)		
POLLUTANT:	Carbon	Monoxide					
I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	WORST	CASE	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)	

II. LINK VARIABLES

LINK	*	LINK	COORDINATES	(M)	*	EF	H	W					
DESCRIPTION	*	X1	Y1	X2	Y2	*	TYPE	VPH	(G/MI)	(M)	(M)		
A.	Link	A	*	7269	825	7304	787	*	AG	10	5.1	0	10
B.	Link	B	*	7271	827	7336	788	*	AG	96	5.1	0	10
C.	Link	C	*	7224	736	7304	787	*	AG	10	5.1	0	10
D.	Link	D	*	7225	733	7354	791	*	AG	54	5.1	0	10
E.	Link	E	*	7336	788	7448	720	*	AG	96	5.1	0	10
F.	Link	F	*	7228	729	7334	771	*	AG	74	5.1	0	10
G.	Link	G	*	7334	771	7446	718	*	AG	74	5.1	0	10
H.	Link	H	*	7354	791	7450	723	*	AG	54	5.1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Int 9 PM Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	7289	824	1.8
2	Recpt 2	7314	809	1.8
3	Recpt 3	7337	795	1.8
4	Recpt 4	7360	807	1.8
5	Recpt 5	7384	790	1.8
6	Recpt 6	7408	772	1.8
7	Recpt 7	7431	754	1.8
8	Recpt 8	7390	744	1.8
9	Recpt 9	7362	756	1.8
10	Recpt 10	7335	762	1.8
11	Recpt 11	7309	757	1.8
12	Recpt 12	7282	748	1.8
13	Recpt 13	7248	757	1.8
14	Recpt 14	7272	772	1.8
15	Recpt 15	7295	786	1.8
16	Recpt 16	7278	805	1.8
17	Recpt 17	7256	825	1.8

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2009 Existing CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Int 9 PM Existing
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	* BRG (DEG)	* PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1	Recpt 1	127	0	0	0	0	0	0	0	0	0
2	Recpt 2	127	0	0	0	0	0	0	0	0	0
3	Recpt 3	127	0	0	0	0	0	0	0	0	0
4	Recpt 4	235	0	0	0	0	0	0	0	0	0
5	Recpt 5	250	0	0	0	0	0	0	0	0	0
6	Recpt 6	262	0	0	0	0	0	0	0	0	0
7	Recpt 7	273	0	0	0	0	0	0	0	0	0
8	Recpt 8	109	0	0	0	0	0	0	0	0	0
9	Recpt 9	110	0	0	0	0	0	0	0	0	0
10	Recpt 10	105	0	0	0	0	0	0	0	0	0
11	Recpt 11	255	0	0	0	0	0	0	0	0	0
12	Recpt 12	60	0	0	0	0	0	0	0	0	0
13	Recpt 13	90	0	0	0	0	0	0	0	0	0
14	Recpt 14	101	0	0	0	0	0	0	0	0	0
15	Recpt 15	112	0	0	0	0	0	0	0	0	0
16	Recpt 16	114	0	0	0	0	0	0	0	0	0
17	Recpt 17	115	0	0	0	0	0	0	0	0	0

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL		
JUNE	1989	VERSION					
PAGE	1						
JOB:	Fresno	HMF	Int	9	PM	Existing+Proj	
RUN:	Hour	1	(WORST	CASE	ANGLE)		
POLLUTANT:	Carbon	Monoxide					
I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	WORST	CASE	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)	

II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2		TYPE	VPH	(G/MI)	(M)	(M)
A.	Link	A	7269	825	7304	787		AG	10	5.1	0	10
B.	Link	B	7271	827	7336	788		AG	96	5.1	0	10
C.	Link	C	7224	736	7304	787		AG	10	5.1	0	10
D.	Link	D	7225	733	7354	791		AG	95	5.1	0	10
E.	Link	E	7336	788	7448	720		AG	96	5.1	0	10
F.	Link	F	7228	729	7334	771		AG	136	5.1	0	10
G.	Link	G	7334	771	7446	718		AG	136	5.1	0	10
H.	Link	H	7354	791	7450	723		AG	95	5.1	0	10

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Int 9 PM Existing+Proj
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	7289	824	1.8
2	Recpt 2	7314	809	1.8
3	Recpt 3	7337	795	1.8
4	Recpt 4	7360	807	1.8
5	Recpt 5	7384	790	1.8
6	Recpt 6	7408	772	1.8
7	Recpt 7	7431	754	1.8
8	Recpt 8	7390	744	1.8
9	Recpt 9	7362	756	1.8
10	Recpt 10	7335	762	1.8
11	Recpt 11	7309	757	1.8
12	Recpt 12	7282	748	1.8
13	Recpt 13	7248	757	1.8
14	Recpt 14	7272	772	1.8
15	Recpt 15	7295	786	1.8
16	Recpt 16	7278	805	1.8
17	Recpt 17	7256	825	1.8

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Int 9 PM Existing+Proj
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* BRG *	* (DEG)	* *	PRED CONC (PPM)	A	B	C	CONC/LINK * (PPM) D	E	F	G	H
1	Recpt	1	127	0	0	0	0	0	0	0	0	0
2	Recpt	2	127	0	0	0	0	0	0	0	0	0
3	Recpt	3	126	0.1	0	0	0	0	0	0	0	0
4	Recpt	4	235	0	0	0	0	0	0	0	0	0
5	Recpt	5	250	0.1	0	0	0	0	0	0	0	0
6	Recpt	6	262	0	0	0	0	0	0	0	0	0
7	Recpt	7	273	0	0	0	0	0	0	0	0	0
8	Recpt	8	109	0.1	0	0	0	0	0	0	0	0
9	Recpt	9	110	0.1	0	0	0	0	0	0	0	0
10	Recpt	10	105	0.1	0	0	0	0	0	0	0	0
11	Recpt	11	255	0.1	0	0	0	0	0	0	0	0
12	Recpt	12	60	0.1	0	0	0	0	0	0	0	0
13	Recpt	13	90	0	0	0	0	0	0	0	0	0
14	Recpt	14	101	0	0	0	0	0	0	0	0	0
15	Recpt	15	112	0.1	0	0	0	0	0	0	0	0
16	Recpt	16	116	0	0	0	0	0	0	0	0	0
17	Recpt	17	116	0	0	0	0	0	0	0	0	0

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2035 No Build CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL			
JUNE	1989	VERSION						
PAGE	1							
JOB:	Fresno	HMF	Int	9	PM	No	Build	
RUN:	Hour	1	(WORST	CASE	ANGLE)			
POLLUTANT:	Carbon	Monoxide						
I.	SITE	VARIABLES						
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)
BRG=	WORST	CASE	VD=	0	CM/S			
CLAS=	7	(G)	VS=	0	CM/S			
MIXH=	1000	M	AMB=	0	PPM			
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)		
II.	LINK	VARIABLES						

LINK	*	LINK	COORDINATES	(M)				EF	H	W
DESCRIPTION	*	X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)
A.	Link	A	7269	825	7304	787	AG	20	1	0	10
B.	Link	B	7271	827	7336	788	AG	178	1	0	10
C.	Link	C	7224	736	7304	787	AG	20	1	0	10
D.	Link	D	7225	733	7354	791	AG	79	1	0	10
E.	Link	E	7336	788	7448	720	AG	178	1	0	10
F.	Link	F	7228	729	7334	771	AG	137	1	0	10
G.	Link	G	7334	771	7446	718	AG	137	1	0	10
H.	Link	H	7354	791	7450	723	AG	79	1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Int 9 PM No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	7289	824	1.8
2	Recpt 2	7314	809	1.8
3	Recpt 3	7337	795	1.8
4	Recpt 4	7360	807	1.8
5	Recpt 5	7384	790	1.8
6	Recpt 6	7408	772	1.8
7	Recpt 7	7431	754	1.8
8	Recpt 8	7390	744	1.8
9	Recpt 9	7362	756	1.8
10	Recpt 10	7335	762	1.8
11	Recpt 11	7309	757	1.8
12	Recpt 12	7282	748	1.8
13	Recpt 13	7248	757	1.8
14	Recpt 14	7272	772	1.8
15	Recpt 15	7295	786	1.8
16	Recpt 16	7278	805	1.8
17	Recpt 17	7256	825	1.8

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2035 No Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Int 9 PM No Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	*	BRG (DEG)	PRED CONC (PPM)	A	B	C	D	E	F	G	H
*	*					CONC/LINK * (PPM)					
1	Recpt 1	127	0	0	0	0	0	0	0	0	0
2	Recpt 2	127	0	0	0	0	0	0	0	0	0
3	Recpt 3	128	0	0	0	0	0	0	0	0	0
4	Recpt 4	235	0	0	0	0	0	0	0	0	0
5	Recpt 5	250	0	0	0	0	0	0	0	0	0
6	Recpt 6	262	0	0	0	0	0	0	0	0	0
7	Recpt 7	273	0	0	0	0	0	0	0	0	0
8	Recpt 8	109	0	0	0	0	0	0	0	0	0
9	Recpt 9	110	0	0	0	0	0	0	0	0	0
10	Recpt 10	105	0	0	0	0	0	0	0	0	0
11	Recpt 11	255	0	0	0	0	0	0	0	0	0
12	Recpt 12	63	0	0	0	0	0	0	0	0	0
13	Recpt 13	90	0	0	0	0	0	0	0	0	0
14	Recpt 14	101	0	0	0	0	0	0	0	0	0
15	Recpt 15	112	0	0	0	0	0	0	0	0	0
16	Recpt 16	115	0	0	0	0	0	0	0	0	0
17	Recpt 17	115	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL		
JUNE	1989	VERSION					
PAGE	1						
JOB:	Fresno	HMF	Int	9	PM	Build	
RUN:	Hour	1	(WORST	CASE	ANGLE)		
POLLUTANT:	Carbon	Monoxide					
I.	SITE	VARIABLES					
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)
BRG=	WORST	CASE	VD=	0	CM/S		
CLAS=	7	(G)	VS=	0	CM/S		
MIXH=	1000	M	AMB=	0	PPM		
SIGTH=	5	DEGREES	TEMP=	2.2	DEGREE	(C)	

II. LINK VARIABLES

LINK	*		LINK	COORDINATES	(M)				EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)
A.	Link	A	7269	825	7304	787	AG	20	1	0	10
B.	Link	B	7271	827	7336	788	AG	178	1	0	10
C.	Link	C	7224	736	7304	787	AG	20	1	0	10
D.	Link	D	7225	733	7354	791	AG	120	1	0	10
E.	Link	E	7336	788	7448	720	AG	178	1	0	10
F.	Link	F	7228	729	7334	771	AG	199	1	0	10
G.	Link	G	7334	771	7446	718	AG	199	1	0	10
H.	Link	H	7354	791	7450	723	AG	120	1	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno HMF Int 9 PM Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	7289	824	1.8
2	Recpt 2	7314	809	1.8
3	Recpt 3	7337	795	1.8
4	Recpt 4	7360	807	1.8
5	Recpt 5	7384	790	1.8
6	Recpt 6	7408	772	1.8
7	Recpt 7	7431	754	1.8
8	Recpt 8	7390	744	1.8
9	Recpt 9	7362	756	1.8
10	Recpt 10	7335	762	1.8
11	Recpt 11	7309	757	1.8
12	Recpt 12	7282	748	1.8
13	Recpt 13	7248	757	1.8
14	Recpt 14	7272	772	1.8
15	Recpt 15	7295	786	1.8
16	Recpt 16	7278	805	1.8
17	Recpt 17	7256	825	1.8

Fresno HMF SR 99 NB On-Ramp/ E. American Ave. PM 2035 Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno HMF Int 9 PM Build
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	* MODEL *	* RESULTS *	* BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1	Recpt	1	127	0	0	0	0	0	0	0	0	0
2	Recpt	2	127	0	0	0	0	0	0	0	0	0
3	Recpt	3	128	0	0	0	0	0	0	0	0	0
4	Recpt	4	235	0	0	0	0	0	0	0	0	0
5	Recpt	5	250	0	0	0	0	0	0	0	0	0
6	Recpt	6	262	0	0	0	0	0	0	0	0	0
7	Recpt	7	273	0	0	0	0	0	0	0	0	0
8	Recpt	8	109	0	0	0	0	0	0	0	0	0
9	Recpt	9	110	0	0	0	0	0	0	0	0	0
10	Recpt	10	105	0	0	0	0	0	0	0	0	0
11	Recpt	11	255	0	0	0	0	0	0	0	0	0
12	Recpt	12	63	0	0	0	0	0	0	0	0	0
13	Recpt	13	90	0	0	0	0	0	0	0	0	0
14	Recpt	14	101	0	0	0	0	0	0	0	0	0
15	Recpt	15	112	0	0	0	0	0	0	0	0	0
16	Recpt	16	116	0	0	0	0	0	0	0	0	0
17	Recpt	17	115	0	0	0	0	0	0	0	0	0

Appendix C

C.13 Wasco HMF Intersection CALINE Outputs

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Wasco	HMF	2009	Existing								
RUN:	Hour	1										
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)					
BRG=	0	DEGREES	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	9093	2309	9096	2254	AG	26		5.2	0	10
B.	Link	B	9094	2309	9098	2248	AG	37		5.2	0	10
C.	Link	C	9096	2309	9099	2244	AG	7		5.2	0	10
D.	Link	D	9098	2309	9106	2248	AG	113		5.2	0	10
E.	Link	E	9099	2309	9109	2255	AG	10		5.2	0	10
F.	Link	F	9044	2255	9096	2254	AG	26		5.2	0	10
G.	Link	G	9109	2255	9156	2253	AG	10		5.2	0	10
H.	Link	H	9044	2254	9104	2253	AG	207		5.2	0	10
I.	Link	I	9104	2253	9156	2252	AG	186		5.2	0	10
J.	Link	J	9098	2248	9099	2200	AG	55		5.2	0	10
K.	Link	K	9098	2248	9156	2250	AG	18		5.2	0	10
L.	Link	L	9044	2251	9106	2248	AG	61		5.2	0	10
M.	Link	M	9044	2247	9099	2244	AG	152		5.2	0	10
N.	Link	N	9099	2244	9155	2245	AG	159		5.2	0	10
O.	Link	O	9044	2245	9096	2241	AG	25		5.2	0	10
P.	Link	P	9096	2241	9097	2200	AG	25		5.2	0	10
Q.	Link	Q	9104	2253	9102	2200	AG	21		5.2	0	10
R.	Link	R	9106	2248	9104	2200	AG	52		5.2	0	10
S.	Link	S	9109	2242	9107	2200	AG	24		5.2	0	10
T.	Link	T	9109	2242	9155	2243	AG	24		5.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Wasco HMF 2009 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	9089	2261	1.8
2	Recpt 2	9070	2261	1.8
3	Recpt 3	9045	2262	1.8
4	Recpt 4	9089	2285	1.8
5	Recpt 5	9088	2310	1.8
6	Recpt 6	9089	2236	1.8
7	Recpt 7	9091	2214	1.8
8	Recpt 8	9092	2189	1.8
9	Recpt 9	9066	2239	1.8
10	Recpt 10	9041	2239	1.8
11	Recpt 11	9116	2237	1.8
12	Recpt 12	9117	2214	1.8
13	Recpt 13	9116	2188	1.8
14	Recpt 14	9141	2237	1.8
15	Recpt 15	9115	2261	1.8
16	Recpt 16	9109	2283	1.8
17	Recpt 17	9105	2308	1.8
18	Recpt 18	9140	2259	1.8
19	Recpt 19	9166	2259	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Wasco HMF 2009 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

*		*	PRED				CONC/LINK					
*		*	CONC				(PPM)					
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Wasco HMF 2009 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

*						CONC/LINK					
*						(PPM)					
RECEPTOR	*	K	L	M	N	O	P	Q	R	S	T
1	Recpt	1	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0

Wasco HMF SR 43/Wasco Ave. AM 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Wasco	HMF	2009	Existing	plus	Project						
RUN:	Hour	1										
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)					
BRG=	0	DEGREES	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	9093	2309	9096	2254	AG	26		5.2	0	10
B.	Link	B	9094	2309	9098	2248	AG	82		5.2	0	10
C.	Link	C	9096	2309	9099	2244	AG	18		5.2	0	10
D.	Link	D	9098	2309	9106	2248	AG	143		5.2	0	10
E.	Link	E	9099	2309	9109	2255	AG	17		5.2	0	10
F.	Link	F	9044	2255	9096	2254	AG	26		5.2	0	10
G.	Link	G	9109	2255	9156	2253	AG	17		5.2	0	10
H.	Link	H	9044	2254	9104	2253	AG	251		5.2	0	10
I.	Link	I	9104	2253	9156	2252	AG	208		5.2	0	10
J.	Link	J	9098	2248	9099	2200	AG	100		5.2	0	10
K.	Link	K	9098	2248	9156	2250	AG	18		5.2	0	10
L.	Link	L	9044	2251	9106	2248	AG	61		5.2	0	10
M.	Link	M	9044	2247	9099	2244	AG	184		5.2	0	10
N.	Link	N	9099	2244	9155	2245	AG	202		5.2	0	10
O.	Link	O	9044	2245	9096	2241	AG	57		5.2	0	10
P.	Link	P	9096	2241	9097	2200	AG	57		5.2	0	10
Q.	Link	Q	9104	2253	9102	2200	AG	43		5.2	0	10
R.	Link	R	9106	2248	9104	2200	AG	82		5.2	0	10
S.	Link	S	9109	2242	9107	2200	AG	24		5.2	0	10
T.	Link	T	9109	2242	9155	2243	AG	24		5.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Wasco HMF 2009 Existing plus Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	9089	2261	1.8
2	Recpt 2	9070	2261	1.8
3	Recpt 3	9045	2262	1.8
4	Recpt 4	9089	2285	1.8
5	Recpt 5	9088	2310	1.8
6	Recpt 6	9089	2236	1.8
7	Recpt 7	9091	2214	1.8
8	Recpt 8	9092	2189	1.8
9	Recpt 9	9066	2239	1.8
10	Recpt 10	9041	2239	1.8
11	Recpt 11	9116	2237	1.8
12	Recpt 12	9117	2214	1.8
13	Recpt 13	9116	2188	1.8
14	Recpt 14	9141	2237	1.8
15	Recpt 15	9115	2261	1.8
16	Recpt 16	9109	2283	1.8
17	Recpt 17	9105	2308	1.8
18	Recpt 18	9140	2259	1.8
19	Recpt 19	9166	2259	1.8

Wasco HMF SR 43/Wasco Ave. AM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Wasco HMF 2009 Existing plus Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	*	* PRED CONC (PPM)	* CONC/LINK (PPM) A	B	C	D	E	F	G	H	I	J
1	Recpt 1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0.1	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0.1	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Wasco HMF 2009 Existing plus Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	* CONC/LINK (PPM) *	K	L	M	N	O	P	Q	R	S	T
1	Recpt 1	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0

Wasco HMF SR 43/Wasco Ave. AM 2035 No Build CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Wasco	HMF	2035	No	Build							
RUN:	Hour	1										
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)					
BRG=	0	DEGREES	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	9093	2309	9096	2254	AG	180		1.2	0	10
B.	Link	B	9094	2309	9098	2248	AG	125		1.2	0	10
C.	Link	C	9096	2309	9099	2244	AG	19		1.2	0	10
D.	Link	D	9098	2309	9106	2248	AG	502		1.2	0	10
E.	Link	E	9099	2309	9109	2255	AG	14		1.2	0	10
F.	Link	F	9044	2255	9096	2254	AG	180		1.2	0	10
G.	Link	G	9109	2255	9156	2253	AG	14		1.2	0	10
H.	Link	H	9044	2254	9104	2253	AG	481		1.2	0	10
I.	Link	I	9104	2253	9156	2252	AG	354		1.2	0	10
J.	Link	J	9098	2248	9099	2200	AG	143		1.2	0	10
K.	Link	K	9098	2248	9156	2250	AG	18		1.2	0	10
L.	Link	L	9044	2251	9106	2248	AG	271		1.2	0	10
M.	Link	M	9044	2247	9099	2244	AG	369		1.2	0	10
N.	Link	N	9099	2244	9155	2245	AG	388		1.2	0	10
O.	Link	O	9044	2245	9096	2241	AG	73		1.2	0	10
P.	Link	P	9096	2241	9097	2200	AG	73		1.2	0	10
Q.	Link	Q	9104	2253	9102	2200	AG	127		1.2	0	10
R.	Link	R	9106	2248	9104	2200	AG	231		1.2	0	10
S.	Link	S	9109	2242	9107	2200	AG	58		1.2	0	10
T.	Link	T	9109	2242	9155	2243	AG	58		1.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Wasco HMF 2035 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	9089	2261	1.8
2	Recpt 2	9070	2261	1.8
3	Recpt 3	9045	2262	1.8
4	Recpt 4	9089	2285	1.8
5	Recpt 5	9088	2310	1.8
6	Recpt 6	9089	2236	1.8
7	Recpt 7	9091	2214	1.8
8	Recpt 8	9092	2189	1.8
9	Recpt 9	9066	2239	1.8
10	Recpt 10	9041	2239	1.8
11	Recpt 11	9116	2237	1.8
12	Recpt 12	9117	2214	1.8
13	Recpt 13	9116	2188	1.8
14	Recpt 14	9141	2237	1.8
15	Recpt 15	9115	2261	1.8
16	Recpt 16	9109	2283	1.8
17	Recpt 17	9105	2308	1.8
18	Recpt 18	9140	2259	1.8
19	Recpt 19	9166	2259	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Wasco HMF 2035 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

*		*	PRED			CONC/LINK						
*		*	CONC			(PPM)						
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0 0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0 0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0 0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0 0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0 0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0 0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0 0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0 0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0 0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0 0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0 0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0 0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0 0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0 0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0 0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0 0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0 0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0 0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0 0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Wasco HMF 2035 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	* CONC/LINK (PPM) *	K	L	M	N	O	P	Q	R	S	T
1	Recpt 1	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Wasco	HMF	2035	Build									
RUN:	Hour	1											
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	0	DEGREES	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH			(G/MI)	(M)	(M)
A.	Link	A	9093	2309	9096	2254	AG	180			1.2	0	10
B.	Link	B	9094	2309	9098	2248	AG	170			1.2	0	10
C.	Link	C	9096	2309	9099	2244	AG	30			1.2	0	10
D.	Link	D	9098	2309	9106	2248	AG	532			1.2	0	10
E.	Link	E	9099	2309	9109	2255	AG	21			1.2	0	10
F.	Link	F	9044	2255	9096	2254	AG	180			1.2	0	10
G.	Link	G	9109	2255	9156	2253	AG	21			1.2	0	10
H.	Link	H	9044	2254	9104	2253	AG	525			1.2	0	10
I.	Link	I	9104	2253	9156	2252	AG	376			1.2	0	10
J.	Link	J	9098	2248	9099	2200	AG	188			1.2	0	10
K.	Link	K	9098	2248	9156	2250	AG	18			1.2	0	10
L.	Link	L	9044	2251	9106	2248	AG	271			1.2	0	10
M.	Link	M	9044	2247	9099	2244	AG	401			1.2	0	10
N.	Link	N	9099	2244	9155	2245	AG	431			1.2	0	10
O.	Link	O	9044	2245	9096	2241	AG	105			1.2	0	10
P.	Link	P	9096	2241	9097	2200	AG	105			1.2	0	10
Q.	Link	Q	9104	2253	9102	2200	AG	149			1.2	0	10
R.	Link	R	9106	2248	9104	2200	AG	261			1.2	0	10
S.	Link	S	9109	2242	9107	2200	AG	58			1.2	0	10
T.	Link	T	9109	2242	9155	2243	AG	58			1.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Wasco HMF 2035 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	* COORDINATES (M)	X	Y	Z
1	Recpt 1	9089	2261	1.8
2	Recpt 2	9070	2261	1.8
3	Recpt 3	9045	2262	1.8
4	Recpt 4	9089	2285	1.8
5	Recpt 5	9088	2310	1.8
6	Recpt 6	9089	2236	1.8
7	Recpt 7	9091	2214	1.8
8	Recpt 8	9092	2189	1.8
9	Recpt 9	9066	2239	1.8
10	Recpt 10	9041	2239	1.8
11	Recpt 11	9116	2237	1.8
12	Recpt 12	9117	2214	1.8
13	Recpt 13	9116	2188	1.8
14	Recpt 14	9141	2237	1.8
15	Recpt 15	9115	2261	1.8
16	Recpt 16	9109	2283	1.8
17	Recpt 17	9105	2308	1.8
18	Recpt 18	9140	2259	1.8
19	Recpt 19	9166	2259	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Wasco HMF 2035 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	*	* PRED CONC (PPM)	A	B	C	D	E	F	G	H	I	J
		* PRED CONC (PPM)			CONC/LINK (PPM)							
1	Recpt 1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Wasco HMF 2035 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

*					CONC/LINK							
*					(PPM)							
RECEPTOR	*	K	L	M	N	O	P	Q	R	S	T	
1	Recpt	1	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Wasco	HMF	2009	Existing								
RUN:	Hour	1										
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)					
BRG=	0	DEGREES	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	9093	2309	9096	2254	AG	77		5.2	0	10
B.	Link	B	9094	2309	9098	2248	AG	102		5.2	0	10
C.	Link	C	9096	2309	9099	2244	AG	13		5.2	0	10
D.	Link	D	9098	2309	9106	2248	AG	98		5.2	0	10
E.	Link	E	9099	2309	9109	2255	AG	7		5.2	0	10
F.	Link	F	9044	2255	9096	2254	AG	77		5.2	0	10
G.	Link	G	9109	2255	9156	2253	AG	7		5.2	0	10
H.	Link	H	9044	2254	9104	2253	AG	211		5.2	0	10
I.	Link	I	9104	2253	9156	2252	AG	199		5.2	0	10
J.	Link	J	9098	2248	9099	2200	AG	143		5.2	0	10
K.	Link	K	9098	2248	9156	2250	AG	41		5.2	0	10
L.	Link	L	9044	2251	9106	2248	AG	57		5.2	0	10
M.	Link	M	9044	2247	9099	2244	AG	193		5.2	0	10
N.	Link	N	9099	2244	9155	2245	AG	206		5.2	0	10
O.	Link	O	9044	2245	9096	2241	AG	23		5.2	0	10
P.	Link	P	9096	2241	9097	2200	AG	23		5.2	0	10
Q.	Link	Q	9104	2253	9102	2200	AG	12		5.2	0	10
R.	Link	R	9106	2248	9104	2200	AG	41		5.2	0	10
S.	Link	S	9109	2242	9107	2200	AG	22		5.2	0	10
T.	Link	T	9109	2242	9155	2243	AG	22		5.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Wasco HMF 2009 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	9089	2261	1.8
2	Recpt 2	9070	2261	1.8
3	Recpt 3	9045	2262	1.8
4	Recpt 4	9089	2285	1.8
5	Recpt 5	9088	2310	1.8
6	Recpt 6	9089	2236	1.8
7	Recpt 7	9091	2214	1.8
8	Recpt 8	9092	2189	1.8
9	Recpt 9	9066	2239	1.8
10	Recpt 10	9041	2239	1.8
11	Recpt 11	9116	2237	1.8
12	Recpt 12	9117	2214	1.8
13	Recpt 13	9116	2188	1.8
14	Recpt 14	9141	2237	1.8
15	Recpt 15	9115	2261	1.8
16	Recpt 16	9109	2283	1.8
17	Recpt 17	9105	2308	1.8
18	Recpt 18	9140	2259	1.8
19	Recpt 19	9166	2259	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Wasco HMF 2009 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

*		*	PRED			CONC/LINK							
*		*	CONC			(PPM)							
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0.1	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0.1	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0.1	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Wasco HMF 2009 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	* CONC/LINK (PPM) *	K	L	M	N	O	P	Q	R	S	T
1	Recpt	1	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0

Wasco HMF SR 43/Wasco Ave. PM 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Wasco	HMF	2009	Existing	plus	Project							
RUN:	Hour	1											
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)						
BRG=	0	DEGREES	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)					EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)	
A.	Link	A	9093	2309	9096	2254	AG	77		5.2	0	10	
B.	Link	B	9094	2309	9098	2248	AG	132		5.2	0	10	
C.	Link	C	9096	2309	9099	2244	AG	20		5.2	0	10	
D.	Link	D	9098	2309	9106	2248	AG	143		5.2	0	10	
E.	Link	E	9099	2309	9109	2255	AG	18		5.2	0	10	
F.	Link	F	9044	2255	9096	2254	AG	77		5.2	0	10	
G.	Link	G	9109	2255	9156	2253	AG	18		5.2	0	10	
H.	Link	H	9044	2254	9104	2253	AG	275		5.2	0	10	
I.	Link	I	9104	2253	9156	2252	AG	231		5.2	0	10	
J.	Link	J	9098	2248	9099	2200	AG	173		5.2	0	10	
K.	Link	K	9098	2248	9156	2250	AG	41		5.2	0	10	
L.	Link	L	9044	2251	9106	2248	AG	57		5.2	0	10	
M.	Link	M	9044	2247	9099	2244	AG	215		5.2	0	10	
N.	Link	N	9099	2244	9155	2245	AG	235		5.2	0	10	
O.	Link	O	9044	2245	9096	2241	AG	45		5.2	0	10	
P.	Link	P	9096	2241	9097	2200	AG	45		5.2	0	10	
Q.	Link	Q	9104	2253	9102	2200	AG	44		5.2	0	10	
R.	Link	R	9106	2248	9104	2200	AG	86		5.2	0	10	
S.	Link	S	9109	2242	9107	2200	AG	22		5.2	0	10	
T.	Link	T	9109	2242	9155	2243	AG	22		5.2	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Wasco HMF 2009 Existing plus Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	*	COORDINATES (M) X	Y	Z
1	Recpt 1	9089	2261	1.8
2	Recpt 2	9070	2261	1.8
3	Recpt 3	9045	2262	1.8
4	Recpt 4	9089	2285	1.8
5	Recpt 5	9088	2310	1.8
6	Recpt 6	9089	2236	1.8
7	Recpt 7	9091	2214	1.8
8	Recpt 8	9092	2189	1.8
9	Recpt 9	9066	2239	1.8
10	Recpt 10	9041	2239	1.8
11	Recpt 11	9116	2237	1.8
12	Recpt 12	9117	2214	1.8
13	Recpt 13	9116	2188	1.8
14	Recpt 14	9141	2237	1.8
15	Recpt 15	9115	2261	1.8
16	Recpt 16	9109	2283	1.8
17	Recpt 17	9105	2308	1.8
18	Recpt 18	9140	2259	1.8
19	Recpt 19	9166	2259	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Wasco HMF 2009 Existing plus Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

*		*	PRED				CONC/LINK					
*		*	CONC				(PPM)					
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt	1	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0.1	0	0	0	0	0	0	0	0	0
7	Recpt	7	0.1	0	0	0	0	0	0	0	0	0
8	Recpt	8	0.1	0	0	0	0	0	0	0	0	0
9	Recpt	9	0.1	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Wasco HMF 2009 Existing plus Project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	* CONC/LINK (PPM) *	K	L	M	N	O	P	Q	R	S	T
1	Recpt	1	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Wasco	HMF	2035	No	Build								
RUN:	Hour	1											
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	0	DEGREES	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)					EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)	
A.	Link	A	9093	2309	9096	2254	AG	296		1.2	0	10	
B.	Link	B	9094	2309	9098	2248	AG	241		1.2	0	10	
C.	Link	C	9096	2309	9099	2244	AG	13		1.2	0	10	
D.	Link	D	9098	2309	9106	2248	AG	497		1.2	0	10	
E.	Link	E	9099	2309	9109	2255	AG	9		1.2	0	10	
F.	Link	F	9044	2255	9096	2254	AG	296		1.2	0	10	
G.	Link	G	9109	2255	9156	2253	AG	9		1.2	0	10	
H.	Link	H	9044	2254	9104	2253	AG	582		1.2	0	10	
I.	Link	I	9104	2253	9156	2252	AG	480		1.2	0	10	
J.	Link	J	9098	2248	9099	2200	AG	301		1.2	0	10	
K.	Link	K	9098	2248	9156	2250	AG	60		1.2	0	10	
L.	Link	L	9044	2251	9106	2248	AG	299		1.2	0	10	
M.	Link	M	9044	2247	9099	2244	AG	401		1.2	0	10	
N.	Link	N	9099	2244	9155	2245	AG	414		1.2	0	10	
O.	Link	O	9044	2245	9096	2241	AG	131		1.2	0	10	
P.	Link	P	9096	2241	9097	2200	AG	131		1.2	0	10	
Q.	Link	Q	9104	2253	9102	2200	AG	102		1.2	0	10	
R.	Link	R	9106	2248	9104	2200	AG	198		1.2	0	10	
S.	Link	S	9109	2242	9107	2200	AG	13		1.2	0	10	
T.	Link	T	9109	2242	9155	2243	AG	13		1.2	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Wasco HMF 2035 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	* COORDINATES (M)	X	Y	Z
1	Recpt 1	9089	2261	1.8
2	Recpt 2	9070	2261	1.8
3	Recpt 3	9045	2262	1.8
4	Recpt 4	9089	2285	1.8
5	Recpt 5	9088	2310	1.8
6	Recpt 6	9089	2236	1.8
7	Recpt 7	9091	2214	1.8
8	Recpt 8	9092	2189	1.8
9	Recpt 9	9066	2239	1.8
10	Recpt 10	9041	2239	1.8
11	Recpt 11	9116	2237	1.8
12	Recpt 12	9117	2214	1.8
13	Recpt 13	9116	2188	1.8
14	Recpt 14	9141	2237	1.8
15	Recpt 15	9115	2261	1.8
16	Recpt 16	9109	2283	1.8
17	Recpt 17	9105	2308	1.8
18	Recpt 18	9140	2259	1.8
19	Recpt 19	9166	2259	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Wasco HMF 2035 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	*	* PRED CONC (PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt 1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Wasco HMF 2035 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

*	CONC/LINK										
*	(PPM)										
RECEPTOR	*	K	L	M	N	O	P	Q	R	S	T
1	Recpt 1	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Wasco	HMF	2035	Build									
RUN:	Hour	1											
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)					
BRG=	0	DEGREES	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)						EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH			(G/MI)	(M)	(M)
A.	Link	A	9093	2309	9096	2254	AG	296			1.2	0	10
B.	Link	B	9094	2309	9098	2248	AG	271			1.2	0	10
C.	Link	C	9096	2309	9099	2244	AG	20			1.2	0	10
D.	Link	D	9098	2309	9106	2248	AG	542			1.2	0	10
E.	Link	E	9099	2309	9109	2255	AG	20			1.2	0	10
F.	Link	F	9044	2255	9096	2254	AG	296			1.2	0	10
G.	Link	G	9109	2255	9156	2253	AG	20			1.2	0	10
H.	Link	H	9044	2254	9104	2253	AG	646			1.2	0	10
I.	Link	I	9104	2253	9156	2252	AG	512			1.2	0	10
J.	Link	J	9098	2248	9099	2200	AG	331			1.2	0	10
K.	Link	K	9098	2248	9156	2250	AG	60			1.2	0	10
L.	Link	L	9044	2251	9106	2248	AG	299			1.2	0	10
M.	Link	M	9044	2247	9099	2244	AG	423			1.2	0	10
N.	Link	N	9099	2244	9155	2245	AG	443			1.2	0	10
O.	Link	O	9044	2245	9096	2241	AG	153			1.2	0	10
P.	Link	P	9096	2241	9097	2200	AG	153			1.2	0	10
Q.	Link	Q	9104	2253	9102	2200	AG	134			1.2	0	10
R.	Link	R	9106	2248	9104	2200	AG	243			1.2	0	10
S.	Link	S	9109	2242	9107	2200	AG	42			1.2	0	10
T.	Link	T	9109	2242	9155	2243	AG	42			1.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Wasco HMF 2035 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

* RECEPTOR	* COORDINATES (M)	X	Y	Z
1	Recpt 1	9089	2261	1.8
2	Recpt 2	9070	2261	1.8
3	Recpt 3	9045	2262	1.8
4	Recpt 4	9089	2285	1.8
5	Recpt 5	9088	2310	1.8
6	Recpt 6	9089	2236	1.8
7	Recpt 7	9091	2214	1.8
8	Recpt 8	9092	2189	1.8
9	Recpt 9	9066	2239	1.8
10	Recpt 10	9041	2239	1.8
11	Recpt 11	9116	2237	1.8
12	Recpt 12	9117	2214	1.8
13	Recpt 13	9116	2188	1.8
14	Recpt 14	9141	2237	1.8
15	Recpt 15	9115	2261	1.8
16	Recpt 16	9109	2283	1.8
17	Recpt 17	9105	2308	1.8
18	Recpt 18	9140	2259	1.8
19	Recpt 19	9166	2259	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Wasco HMF 2035 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	*	* PRED CONC (PPM)	A	B	C	D	E	F	G	H	I	J
1	Recpt 1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Wasco HMF 2035 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

*	CONC/LINK										
*	(PPM)										
RECEPTOR	*	K	L	M	N	O	P	Q	R	S	T
1	Recpt 1	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Wasco	HMF	2009	Existing								
RUN:	Hour	1										
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)					
BRG=	0	DEGREES	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	9076	1641	9073	1591	AG	26		5.2	0	10
B.	Link	B	9080	1641	9076	1532	AG	136		5.2	0	10
C.	Link	C	9086	1641	9085	1581	AG	75		5.2	0	10
D.	Link	D	9030	1592	9073	1591	AG	26		5.2	0	10
E.	Link	E	9030	1589	9081	1588	AG	9		5.2	0	10
F.	Link	F	9081	1588	9138	1588	AG	0		5.2	0	10
G.	Link	G	9030	1584	9085	1581	AG	17		5.2	0	10
H.	Link	H	9030	1581	9074	1577	AG	6		5.2	0	10
I.	Link	I	9087	1586	9138	1585	AG	0		5.2	0	10
J.	Link	J	9074	1577	9072	1532	AG	6		5.2	0	10
K.	Link	K	9081	1588	9080	1532	AG	9		5.2	0	10
L.	Link	L	9085	1532	9085	1581	AG	58		5.2	0	10
M.	Link	M	9087	1586	9089	1532	AG	0		5.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Wasco HMF 2009 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*	COORDINATES (M)			
RECEPTOR	*	X	Y	Z
1	Recpt 1	9066	1573	1.8
2	Recpt 2	9067	1551	1.8
3	Recpt 3	9066	1526	1.8
4	Recpt 4	9043	1575	1.8
5	Recpt 5	9018	1575	1.8
6	Recpt 6	9069	1597	1.8
7	Recpt 7	9069	1619	1.8
8	Recpt 8	9070	1644	1.8
9	Recpt 9	9046	1598	1.8
10	Recpt 10	9021	1598	1.8
11	Recpt 11	9093	1594	1.8
12	Recpt 12	9091	1616	1.8
13	Recpt 13	9092	1641	1.8
14	Recpt 14	9115	1595	1.8
15	Recpt 15	9140	1595	1.8
16	Recpt 16	9093	1580	1.8
17	Recpt 17	9093	1560	1.8
18	Recpt 18	9092	1535	1.8
19	Recpt 19	9116	1580	1.8
20	Recpt 20	9141	1579	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Wasco HMF 2009 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)

RECEPTOR	*	* PRED CONC (PPM)	CONC. A	CONC/LINK (PPM) B	C	D	E	F	G	H	I	J
1	Recpt 1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt 20	0	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL

JUNE 1989 VERSION
PAGE 4

JOB: Wasco HMF 2009 Existing
RUN: Hour 1
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

*	CONC/LINK				
*	(PPM)				
RECEPTOR	*		K	L	M
1	Recpt	1	0	0	0
2	Recpt	2	0	0	0
3	Recpt	3	0	0	0
4	Recpt	4	0	0	0
5	Recpt	5	0	0	0
6	Recpt	6	0	0	0
7	Recpt	7	0	0	0
8	Recpt	8	0	0	0
9	Recpt	9	0	0	0
10	Recpt	10	0	0	0
11	Recpt	11	0	0	0
12	Recpt	12	0	0	0
13	Recpt	13	0	0	0
14	Recpt	14	0	0	0
15	Recpt	15	0	0	0
16	Recpt	16	0	0	0
17	Recpt	17	0	0	0
18	Recpt	18	0	0	0
19	Recpt	19	0	0	0
20	Recpt	20	0	0	0

Wasco HMF Wasco Ave.-J St./6th St. PM 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Wasco	HMF	2009	Existing	plus	project						
RUN:	Hour	1										
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0	(M)				
BRG=	0	DEGREES	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)				EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH	(G/MI)	(M)	(M)	
A.	Link	A	9076	1641	9073	1591	AG	26	5.2	0	10	
B.	Link	B	9080	1641	9076	1532	AG	161	5.2	0	10	
C.	Link	C	9086	1641	9085	1581	AG	92	5.2	0	10	
D.	Link	D	9030	1592	9073	1591	AG	26	5.2	0	10	
E.	Link	E	9030	1589	9081	1588	AG	9	5.2	0	10	
F.	Link	F	9081	1588	9138	1588	AG	0	5.2	0	10	
G.	Link	G	9030	1584	9085	1581	AG	17	5.2	0	10	
H.	Link	H	9030	1581	9074	1577	AG	6	5.2	0	10	
I.	Link	I	9087	1586	9138	1585	AG	0	5.2	0	10	
J.	Link	J	9074	1577	9072	1532	AG	6	5.2	0	10	
K.	Link	K	9081	1588	9080	1532	AG	9	5.2	0	10	
L.	Link	L	9085	1532	9085	1581	AG	75	5.2	0	10	
M.	Link	M	9087	1586	9089	1532	AG	0	5.2	0	10	

Wasco HMF Wasco Ave.-J St./6th St. PM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2
JOB: Wasco HMF 2009 Existing plus project
RUN: Hour 1
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

*		COORDINAT (M)			
RECEPTOR	*	X	Y	Z	
1	Recpt 1	9066	1573	1.8	
2	Recpt 2	9067	1551	1.8	
3	Recpt 3	9066	1526	1.8	
4	Recpt 4	9043	1575	1.8	
5	Recpt 5	9018	1575	1.8	
6	Recpt 6	9069	1597	1.8	
7	Recpt 7	9069	1619	1.8	
8	Recpt 8	9070	1644	1.8	
9	Recpt 9	9046	1598	1.8	
10	Recpt 10	9021	1598	1.8	
11	Recpt 11	9093	1594	1.8	
12	Recpt 12	9091	1616	1.8	
13	Recpt 13	9092	1641	1.8	
14	Recpt 14	9115	1595	1.8	
15	Recpt 15	9140	1595	1.8	
16	Recpt 16	9093	1580	1.8	
17	Recpt 17	9093	1560	1.8	
18	Recpt 18	9092	1535	1.8	
19	Recpt 19	9116	1580	1.8	
20	Recpt 20	9141	1579	1.8	

Wasco HMF Wasco Ave.-J St./6th St. PM 2009 Existing Plus Project CALINE Output

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL									
JUNE	1989	VERSION												
PAGE	3													
JOB:	Wasco	HMF	2009	Existing	plus	project								
RUN:	Hour	1												
POLLUTANT:	Carbon	Monoxide												
IV.	MODEL	RESULTS	(PRED.	CONC.	INCLUDES	AMB.)								
*		*	PRED		CONC/LINK									
*		*	CONC		(PPM)									
RECEPTOR	*		(PPM)	A	B	C	D	E	F	G	H	I	J	
1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0	
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0	
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0	
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0	
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0	
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0	
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0	
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0	
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0	
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0	
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0	
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0	
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0	
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0	
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0	
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0	
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0	
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0	
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0	
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0	

Wasco HMF Wasco Ave.-J St./6th St. PM 2009 Existing Plus Project CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4
JOB: Wasco HMF 2009 Existing plus project
RUN: Hour 1
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) *	K	L	M
1	Recpt	1	0	0	0
2	Recpt	2	0	0	0
3	Recpt	3	0	0	0
4	Recpt	4	0	0	0
5	Recpt	5	0	0	0
6	Recpt	6	0	0	0
7	Recpt	7	0	0	0
8	Recpt	8	0	0	0
9	Recpt	9	0	0	0
10	Recpt	10	0	0	0
11	Recpt	11	0	0	0
12	Recpt	12	0	0	0
13	Recpt	13	0	0	0
14	Recpt	14	0	0	0
15	Recpt	15	0	0	0
16	Recpt	16	0	0	0
17	Recpt	17	0	0	0
18	Recpt	18	0	0	0
19	Recpt	19	0	0	0
20	Recpt	20	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL								
JUNE	1989	VERSION											
PAGE	1												
JOB:	Wasco	HMF	2035	No	Build								
RUN:	Hour	1											
POLLUTANT:	Carbon	Monoxide											
I.	SITE	VARIABLES											
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)						
BRG=	0	DEGREES	VD=	0	CM/S								
CLAS=	7	(G)	VS=	0	CM/S								
MIXH=	1000	M	AMB=	0	PPM								
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)							
II.	LINK	VARIABLES											
LINK	*		LINK	COORDINATES	(M)					EF	H	W	
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/M	(M)	(M)	
A.	Link	A	9076	1641	9073	1591	AG	69		1.2	0	10	
B.	Link	B	9080	1641	9076	1532	AG	356		1.2	0	10	
C.	Link	C	9086	1641	9085	1581	AG	343		1.2	0	10	
D.	Link	D	9030	1592	9073	1591	AG	69		1.2	0	10	
E.	Link	E	9030	1589	9081	1588	AG	9		1.2	0	10	
F.	Link	F	9081	1588	9138	1588	AG	0		1.2	0	10	
G.	Link	G	9030	1584	9085	1581	AG	60		1.2	0	10	
H.	Link	H	9030	1581	9074	1577	AG	6		1.2	0	10	
I.	Link	I	9087	1586	9138	1585	AG	0		1.2	0	10	
J.	Link	J	9074	1577	9072	1532	AG	6		1.2	0	10	
K.	Link	K	9081	1588	9080	1532	AG	9		1.2	0	10	
L.	Link	L	9085	1532	9085	1581	AG	283		1.2	0	10	
M.	Link	M	9087	1586	9089	1532	AG	0		1.2	0	10	

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2
JOB: Wasco HMF 2035 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide
III. RECEPTOR LOCATIONS

*		COORDINATES (M)		
RECEPTOR	*	X	Y	Z
----------*----------				
1	Recpt 1	9066	1573	1.8
2	Recpt 2	9067	1551	1.8
3	Recpt 3	9066	1526	1.8
4	Recpt 4	9043	1575	1.8
5	Recpt 5	9018	1575	1.8
6	Recpt 6	9069	1597	1.8
7	Recpt 7	9069	1619	1.8
8	Recpt 8	9070	1644	1.8
9	Recpt 9	9046	1598	1.8
10	Recpt 10	9021	1598	1.8
11	Recpt 11	9093	1594	1.8
12	Recpt 12	9091	1616	1.8
13	Recpt 13	9092	1641	1.8
14	Recpt 14	9115	1595	1.8
15	Recpt 15	9140	1595	1.8
16	Recpt 16	9093	1580	1.8
17	Recpt 17	9093	1560	1.8
18	Recpt 18	9092	1535	1.8
19	Recpt 19	9116	1580	1.8
20	Recpt 20	9141	1579	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Wasco HMF 2035 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)
* * PRED CONC/LINK
* * CONC (PPM)
RECEPTOR * (PPM) A B C D E F G H I J

1	Recpt	1	0	0	0	0	0	0	0	0	0	0	0
2	Recpt	2	0	0	0	0	0	0	0	0	0	0	0
3	Recpt	3	0	0	0	0	0	0	0	0	0	0	0
4	Recpt	4	0	0	0	0	0	0	0	0	0	0	0
5	Recpt	5	0	0	0	0	0	0	0	0	0	0	0
6	Recpt	6	0	0	0	0	0	0	0	0	0	0	0
7	Recpt	7	0	0	0	0	0	0	0	0	0	0	0
8	Recpt	8	0	0	0	0	0	0	0	0	0	0	0
9	Recpt	9	0	0	0	0	0	0	0	0	0	0	0
10	Recpt	10	0	0	0	0	0	0	0	0	0	0	0
11	Recpt	11	0	0	0	0	0	0	0	0	0	0	0
12	Recpt	12	0	0	0	0	0	0	0	0	0	0	0
13	Recpt	13	0	0	0	0	0	0	0	0	0	0	0
14	Recpt	14	0	0	0	0	0	0	0	0	0	0	0
15	Recpt	15	0	0	0	0	0	0	0	0	0	0	0
16	Recpt	16	0	0	0	0	0	0	0	0	0	0	0
17	Recpt	17	0	0	0	0	0	0	0	0	0	0	0
18	Recpt	18	0	0	0	0	0	0	0	0	0	0	0
19	Recpt	19	0	0	0	0	0	0	0	0	0	0	0
20	Recpt	20	0	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4
JOB: Wasco HMF 2035 No Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)

*		CONC/LINK			
*		(PPM)			
RECEPTOR	*	K	L	M	
1	Recpt	1	0	0	0
2	Recpt	2	0	0	0
3	Recpt	3	0	0	0
4	Recpt	4	0	0	0
5	Recpt	5	0	0	0
6	Recpt	6	0	0	0
7	Recpt	7	0	0	0
8	Recpt	8	0	0	0
9	Recpt	9	0	0	0
10	Recpt	10	0	0	0
11	Recpt	11	0	0	0
12	Recpt	12	0	0	0
13	Recpt	13	0	0	0
14	Recpt	14	0	0	0
15	Recpt	15	0	0	0
16	Recpt	16	0	0	0
17	Recpt	17	0	0	0
18	Recpt	18	0	0	0
19	Recpt	19	0	0	0
20	Recpt	20	0	0	0

CALINE4:	CALIFORNIA	LINE	SOURCE	DISPERSION	MODEL							
JUNE	1989	VERSION										
PAGE	1											
JOB:	Wasco	HMF	2035	Build								
RUN:	Hour	1										
POLLUTANT:	Carbon	Monoxide										
I.	SITE	VARIABLES										
U=	1	M/S	Z0=	100	CM	ALT=	0 (M)					
BRG=	0	DEGREES	VD=	0	CM/S							
CLAS=	7	(G)	VS=	0	CM/S							
MIXH=	1000	M	AMB=	0	PPM							
SIGTH=	5	DEGREES	TEMP=	5	DEGREE	(C)						
II.	LINK	VARIABLES										
LINK	*		LINK	COORDINATES	(M)					EF	H	W
DESCRIPTION	*		X1	Y1	X2	Y2	TYPE	VPH		(G/MI)	(M)	(M)
A.	Link	A	9076	1641	9073	1591	AG	69		1.2	0	10
B.	Link	B	9080	1641	9076	1532	AG	381		1.2	0	10
C.	Link	C	9086	1641	9085	1581	AG	360		1.2	0	10
D.	Link	D	9030	1592	9073	1591	AG	69		1.2	0	10
E.	Link	E	9030	1589	9081	1588	AG	9		1.2	0	10
F.	Link	F	9081	1588	9138	1588	AG	0		1.2	0	10
G.	Link	G	9030	1584	9085	1581	AG	60		1.2	0	10
H.	Link	H	9030	1581	9074	1577	AG	6		1.2	0	10
I.	Link	I	9087	1586	9138	1585	AG	0		1.2	0	10
J.	Link	J	9074	1577	9072	1532	AG	6		1.2	0	10
K.	Link	K	9081	1588	9080	1532	AG	9		1.2	0	10
L.	Link	L	9085	1532	9085	1581	AG	300		1.2	0	10
M.	Link	M	9087	1586	9089	1532	AG	0		1.2	0	10

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Wasco HMF 2035 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide
III. RECEPTOR LOCATIONS

*	COORDINATES	(M)		
RECEPTOR	*	X	Y	Z
1	Recpt 1	9066	1573	1.8
2	Recpt 2	9067	1551	1.8
3	Recpt 3	9066	1526	1.8
4	Recpt 4	9043	1575	1.8
5	Recpt 5	9018	1575	1.8
6	Recpt 6	9069	1597	1.8
7	Recpt 7	9069	1619	1.8
8	Recpt 8	9070	1644	1.8
9	Recpt 9	9046	1598	1.8
10	Recpt 10	9021	1598	1.8
11	Recpt 11	9093	1594	1.8
12	Recpt 12	9091	1616	1.8
13	Recpt 13	9092	1641	1.8
14	Recpt 14	9115	1595	1.8
15	Recpt 15	9140	1595	1.8
16	Recpt 16	9093	1580	1.8
17	Recpt 17	9093	1560	1.8
18	Recpt 18	9092	1535	1.8
19	Recpt 19	9116	1580	1.8
20	Recpt 20	9141	1579	1.8

Wasco HMF Wasco Ave.-J St./6th St. PM 2035 Build CALINE Output

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3
JOB: Wasco HMF 2035 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.)
* * PRED CONC/LINK
* * CONC (PPM)
RECEPTOR * (PPM) A B C D E F G H I J

1	Recpt 1	0	0	0	0	0	0	0	0	0	0	0	0
2	Recpt 2	0	0	0	0	0	0	0	0	0	0	0	0
3	Recpt 3	0	0	0	0	0	0	0	0	0	0	0	0
4	Recpt 4	0	0	0	0	0	0	0	0	0	0	0	0
5	Recpt 5	0	0	0	0	0	0	0	0	0	0	0	0
6	Recpt 6	0	0	0	0	0	0	0	0	0	0	0	0
7	Recpt 7	0	0	0	0	0	0	0	0	0	0	0	0
8	Recpt 8	0	0	0	0	0	0	0	0	0	0	0	0
9	Recpt 9	0	0	0	0	0	0	0	0	0	0	0	0
10	Recpt 10	0	0	0	0	0	0	0	0	0	0	0	0
11	Recpt 11	0	0	0	0	0	0	0	0	0	0	0	0
12	Recpt 12	0	0	0	0	0	0	0	0	0	0	0	0
13	Recpt 13	0	0	0	0	0	0	0	0	0	0	0	0
14	Recpt 14	0	0	0	0	0	0	0	0	0	0	0	0
15	Recpt 15	0	0	0	0	0	0	0	0	0	0	0	0
16	Recpt 16	0	0	0	0	0	0	0	0	0	0	0	0
17	Recpt 17	0	0	0	0	0	0	0	0	0	0	0	0
18	Recpt 18	0	0	0	0	0	0	0	0	0	0	0	0
19	Recpt 19	0	0	0	0	0	0	0	0	0	0	0	0
20	Recpt 20	0	0	0	0	0	0	0	0	0	0	0	0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4
JOB: Wasco HMF 2035 Build
RUN: Hour 1
POLLUTANT: Carbon Monoxide
IV. MODEL RESULTS (PRED. CONC. INCLUDES AMB.) (CONT.)
* CONC/LINK
* (PPM)

RECEPTOR	*	K	L	M	
1	Recpt	1	0	0	0
2	Recpt	2	0	0	0
3	Recpt	3	0	0	0
4	Recpt	4	0	0	0
5	Recpt	5	0	0	0
6	Recpt	6	0	0	0
7	Recpt	7	0	0	0
8	Recpt	8	0	0	0
9	Recpt	9	0	0	0
10	Recpt	10	0	0	0
11	Recpt	11	0	0	0
12	Recpt	12	0	0	0
13	Recpt	13	0	0	0
14	Recpt	14	0	0	0
15	Recpt	15	0	0	0
16	Recpt	16	0	0	0
17	Recpt	17	0	0	0
18	Recpt	18	0	0	0
19	Recpt	19	0	0	0
20	Recpt	20	0	0	0

Appendix C

C.14 Station Parking Lot CALINE Outputs

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: BKF North 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 7 (G) VS= .0 CM/S
MIXH= 1000. M AMB= .0 PPM
SIGTH= 5. DEGREES TEMP= 7.8 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	7899	6264	8035	6262	PK	383	.8	.0	10.0
B. Link B	8035	6262	8034	6197	PK	383	.8	.0	10.0
C. Link C	8034	6197	7897	6179	PK	383	.8	.0	10.0
D. Link D	7897	6179	7899	6264	PK	383	.8	.0	10.0
E. Link E	7825	6115	8030	6134	PK	767	.8	.0	10.0
F. Link F	8030	6134	8027	6012	PK	767	.8	.0	10.0
G. Link G	8027	6012	7823	6016	PK	767	.8	.0	10.0
H. Link H	7823	6016	7825	6115	PK	767	.8	.0	10.0
I. Link I	7902	6261	8032	6259	PK	383	2.3	.0	10.0
J. Link J	8032	6259	8030	6201	PK	383	2.3	.0	10.0
K. Link K	8030	6201	7901	6182	PK	383	2.3	.0	10.0
L. Link L	7901	6182	7902	6261	PK	383	2.3	.0	10.0
M. Link M	7828	6112	8026	6131	PK	767	2.3	.0	10.0
N. Link N	8026	6131	8023	6014	PK	767	2.3	.0	10.0
O. Link O	8023	6014	7826	6019	PK	767	2.3	.0	10.0
P. Link P	7826	6019	7828	6112	PK	767	2.3	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF North 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	7895	6269	1.8
2. Recpt 2	*	7970	6269	1.8
3. Recpt 3	*	8039	6268	1.8
4. Recpt 4	*	8042	6235	1.8
5. Recpt 5	*	8039	6195	1.8
6. Recpt 6	*	7971	6182	1.8
7. Recpt 7	*	7891	6174	1.8
8. Recpt 8	*	7891	6216	1.8
9. Recpt 9	*	7818	6115	1.8
10. Recpt 10	*	7933	6133	1.8
11. Recpt 11	*	8037	6138	1.8
12. Recpt 12	*	8033	6063	1.8
13. Recpt 13	*	8033	6009	1.8
14. Recpt 14	*	7943	6006	1.8
15. Recpt 15	*	7816	6010	1.8
16. Recpt 16	*	7818	6060	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF North 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	172	0.2	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	217	0.2	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	188	0.2	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	209	0.2	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	268	0.2	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	276	0.1	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	76	0.2	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	137	0.2	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	87	0.5	.0	.0	.0	.0	.1	.0	.0	.0
10. Recpt 1	252	0.3	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 1	260	0.4	.0	.0	.0	.0	.1	.0	.0	.0
12. Recpt 1	349	0.3	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 1	276	0.5	.0	.0	.0	.0	.0	.0	.1	.0
14. Recpt 1	282	0.3	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 1	85	0.4	.0	.0	.0	.0	.0	.0	.1	.0
16. Recpt 1	25	0.3	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF North 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Recpt 1	*	.0	.0	.0	.1	.0	.0	.0	.0
2. Recpt 2	*	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	*	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	*	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	*	.0	.0	.1	.0	.0	.0	.0	.0
6. Recpt 6	*	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	*	.0	.0	.1	.0	.0	.0	.0	.0
8. Recpt 8	*	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	*	.0	.0	.0	.0	.4	.0	.0	.0
10. Recpt 10	*	.0	.0	.0	.0	.2	.0	.0	.0
11. Recpt 11	*	.0	.0	.0	.0	.3	.0	.0	.0
12. Recpt 12	*	.0	.0	.0	.0	.0	.2	.0	.0
13. Recpt 13	*	.0	.0	.0	.0	.0	.0	.3	.0
14. Recpt 14	*	.0	.0	.0	.0	.0	.0	.2	.0
15. Recpt 15	*	.0	.0	.0	.0	.0	.0	.2	.0
16. Recpt 16	*	.0	.0	.0	.0	.0	.0	.0	.1

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: BKF South 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 7 (G) VS= .0 CM/S
MIXH= 1000. M AMB= .0 PPM
SIGTH= 5. DEGREES TEMP= 7.8 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	7680	6098	7733	6114	PK	45	3.2	.0	10.0
B. Link B	7733	6114	7746	6068	PK	45	1.9	.0	10.0
C. Link C	7746	6068	7677	6049	PK	45	1.9	.0	10.0
D. Link D	7677	6049	7680	6098	PK	45	1.9	.0	10.0
E. Link E	7797	6115	7852	6099	PK	45	1.9	.0	10.0
F. Link F	7852	6099	7846	6045	PK	45	1.9	.0	10.0
G. Link G	7846	6045	7783	6066	PK	45	1.9	.0	10.0
H. Link H	7783	6066	7797	6115	PK	45	1.9	.0	10.0
I. Link I	7874	6157	8035	6177	PK	1150	.8	.0	10.0
J. Link J	8035	6177	8032	5994	PK	1150	.8	.0	10.0
K. Link K	8032	5994	7872	5996	PK	1150	.8	.0	10.0
L. Link L	7872	5996	7874	6157	PK	1150	.8	.0	10.0
M. Link M	7879	6153	8031	6174	PK	1150	2.3	.0	10.0
N. Link N	8031	6174	8028	5998	PK	1150	2.3	.0	10.0
O. Link O	8028	5998	7876	5999	PK	1150	2.3	.0	10.0
P. Link P	7876	5999	7879	6153	PK	1150	2.3	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: BKF South 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	7673	6108	1.8
2. Recpt 2	*	7742	6120	1.8
3. Recpt 3	*	7681	6042	1.8
4. Recpt 4	*	7753	6057	1.8
5. Recpt 5	*	7789	6116	1.8
6. Recpt 6	*	7858	6092	1.8
7. Recpt 7	*	7847	6040	1.8
8. Recpt 8	*	7775	6059	1.8
9. Recpt 9	*	7870	6161	1.8
10. Recpt 10	*	7954	6173	1.8
11. Recpt 11	*	8040	6182	1.8
12. Recpt 12	*	8040	6117	1.8
13. Recpt 13	*	8038	6052	1.8
14. Recpt 14	*	8034	5990	1.8
15. Recpt 15	*	7950	5989	1.8
16. Recpt 16	*	7870	5990	1.8
17. Recpt 17	*	7865	6058	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: BKF South 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	112	0.1	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	78	0.2	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	99	0.1	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	62	0.1	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	73	0.2	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	29	0.3	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	110	0.2	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	110	0.2	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	90	0.5	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 1	249	0.4	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 1	188	0.5	.0	.0	.0	.0	.0	.0	.0	.0
12. Recpt 1	191	0.4	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 1	352	0.5	.0	.0	.0	.0	.0	.0	.0	.0
14. Recpt 1	277	0.6	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 1	78	0.4	.0	.0	.0	.0	.0	.0	.0	.0
16. Recpt 1	6	0.6	.0	.0	.0	.0	.0	.0	.0	.0
17. Recpt 1	162	0.4	.0	.0	.0	.0	.0	.0	.0	.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: BKF South 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Recpt 1	*	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	*	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	*	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	*	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	*	.0	.0	.0	.0	.1	.0	.0	.0
6. Recpt 6	*	.0	.0	.0	.0	.0	.0	.0	.1
7. Recpt 7	*	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	*	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	*	.2	.0	.0	.0	.3	.0	.0	.0
10. Recpt 10	*	.1	.0	.0	.0	.3	.0	.0	.0
11. Recpt 11	*	.0	.2	.0	.0	.0	.3	.0	.0
12. Recpt 12	*	.0	.1	.0	.0	.0	.3	.0	.0
13. Recpt 13	*	.0	.1	.0	.0	.0	.3	.0	.0
14. Recpt 14	*	.0	.0	.2	.0	.0	.0	.4	.0
15. Recpt 15	*	.0	.0	.1	.0	.0	.0	.3	.0
16. Recpt 16	*	.0	.0	.0	.2	.0	.0	.0	.5
17. Recpt 17	*	.0	.0	.0	.0	.0	.0	.0	.2

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Fresno Mariposa 2035 Run 1
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 7 (G) VS= .0 CM/S
MIXH= 1000. M AMB= .0 PPM
SIGTH= 5. DEGREES TEMP= 2.2 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTIC	LINK COO X1	Y1	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	3654	729	PK	2	183.0	.0	10.0
B. Link B	3788	724	PK	2	183.0	.0	10.0
C. Link C	3761	718	PK	2	183.0	.0	10.0
D. Link D	3628	723	PK	2	183.0	.0	10.0
E. Link E	3657	729	PK	2	183.0	.0	10.0
F. Link F	3784	724	PK	2	183.0	.0	10.0
G. Link G	3758	719	PK	2	183.0	.0	10.0
H. Link H	3632	724	PK	2	183.0	.0	10.0
I. Link I	3470	725	PK	2	50.0	.0	10.0
J. Link J	3554	722	PK	2	50.0	.0	10.0
K. Link K	3516	714	PK	2	50.0	.0	10.0
L. Link L	3434	718	PK	2	50.0	.0	10.0
M. Link M	3665	718	PK	2	50.0	.0	10.0
N. Link N	3748	714	PK	2	50.0	.0	10.0
O. Link O	3713	705	PK	2	50.0	.0	10.0
P. Link P	3627	709	PK	2	50.0	.0	10.0
Q. Link Q	3935	707	PK	2	183.0	.0	10.0
R. Link R	4065	701	PK	2	183.0	.0	10.0
S. Link S	4032	694	PK	2	183.0	.0	10.0
T. Link T	3905	699	PK	2	183.0	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Mariposa 2035 Run 1
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	COORDINATES (M) X	Y	Z
1. Recpt 1	3649	7302	1.8
2. Recpt 2	3794	7245	1.8
3. Recpt 3	3765	7179	1.8
4. Recpt 4	3623	7236	1.8
5. Recpt 5	3463	7258	1.8
6. Recpt 6	3547	7235	1.8
7. Recpt 7	3507	7143	1.8
8. Recpt 8	3433	7181	1.8
9. Recpt 9	3663	7188	1.8
10. Recpt 10	3754	7152	1.8
11. Recpt 11	3717	7059	1.8
12. Recpt 12	3621	7096	1.8
13. Recpt 13	3933	7077	1.8
14. Recpt 14	4064	7025	1.8
15. Recpt 15	4026	6941	1.8
16. Recpt 16	3897	6991	1.8
17. Recpt 17	3277	7350	1.8
18. Recpt 18	3422	7280	1.8
19. Recpt 19	3402	7196	1.8
20. Recpt 20	3230	7270	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Mariposa 2035 Run 1
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	PRED CONC (PPM)	PRED CONC (PPM)
1. Recpt 1	114	0.3	.1	.0	.0	.0	.1	.0	.0	.0	0	0.1
2. Recpt 2	289	0.3	.1	.0	.0	.0	.1	.0	.0	.0	0	0
3. Recpt 3	297	0.2	.0	.0	.1	.0	.0	.0	.1	.0	0	0
4. Recpt 4	107	0.2	.0	.0	.1	.0	.0	.0	.0	.0	0	0.2
5. Recpt 5	100	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0.2	0.2
6. Recpt 6	97	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0.1	0
7. Recpt 7	49	0	.0	.0	.0	.0	.0	.0	.0	.0	0.1	0
8. Recpt 8	77	0	.0	.0	.0	.0	.0	.0	.0	.0	0.2	0
9. Recpt 9	82	0	.0	.0	.0	.0	.0	.0	.0	.0	0	0.1
10. Recpt 10	16	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0	0
11. Recpt 11	18	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0	0
12. Recpt 12	51	0	.0	.0	.0	.0	.0	.0	.0	.0	0	0
13. Recpt 13	117	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0.2	0
14. Recpt 14	200	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0.2	0
15. Recpt 15	297	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0.2	0
16. Recpt 16	29	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0.2	0
17. Recpt 17	107	0	.0	.0	.0	.0	.0	.0	.0	.0	0.3	0
18. Recpt 18	103	0	.0	.0	.0	.0	.0	.0	.0	.0	0.3	0
19. Recpt 19	82	0	.0	.0	.0	.0	.0	.0	.0	.0	0.3	0
20. Recpt 20	95	0	.0	.0	.0	.0	.0	.0	.0	.0	0.3	0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Mariposa 2035 Run 1
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

CONC/LINK
(PPM)

RECEPTOR	I	J	K	L	M	N	O	P	Q	R	S	T
1. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
12. Recpt 12	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 13	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0	.0	.0
14. Recpt 14	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
15. Recpt 15	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.1	.0
16. Recpt 16	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
17. Recpt 17	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18. Recpt 18	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19. Recpt 19	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20. Recpt 20	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

Fresno Mariposa Option Parking Lot CALINE Output

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	PRED CONC (PPM)	PRED CONC (PPM)
1. Recpt 1	47	0	0	0.4
2. Recpt 2	35	0	0	0.4
3. Recpt 3	33	0	0	0.3
4. Recpt 4	45	0	0	0.3
5. Recpt 5	286	0.1	0.2	0
6. Recpt 6	291	0	0.4	0
7. Recpt 7	310	0	0.3	0
8. Recpt 8	295	0.1	0.3	0
9. Recpt 9	124	0.1	0	0.2
10. Recpt 10	131	0.1	0	0.3
11. Recpt 11	107	0.2	0	0.2
12. Recpt 12	110	0.1	0.1	0.2

1	**0.4**
2	**0.3**
3	**0.2**
4	**0.4**
5	**0.5**
6	**0.2**
7	**0.1**
8	**0.2**
9	**0.1**
10	**0.1**
11	**0.1**
12	**0**
13	**0.3**
14	**0.3**
15	**0.3**
16	**0.3**
17	**0.3**
18	**0.3**
19	**0.3**
20	**0.3**
21	**0.4**
22	**0.4**
23	**0.3**
24	**0.3**
25	**0.3**
26	**0.4**
27	**0.3**
28	**0.4**
29	**0.3**
30	**0.4**
31	**0.4**
32	**0.4**

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: Fresno Kern 2035 Run 1
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 7 (G) VS= .0 CM/S
MIXH= 1000. M AMB= .0 PPM
SIGTH= 5. DEGREES TEMP= 2.2 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIP	LINK COO X1	Y1	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	3654	729	PK	2	275.0	.0	10.0
B. Link B	3788	724	PK	2	275.0	.0	10.0
C. Link C	3761	718	PK	2	275.0	.0	10.0
D. Link D	3628	723	PK	2	275.0	.0	10.0
E. Link E	3657	729	PK	2	275.0	.0	10.0
F. Link F	3784	724	PK	2	275.0	.0	10.0
G. Link G	3758	719	PK	2	275.0	.0	10.0
H. Link H	3632	724	PK	2	275.0	.0	10.0
I. Link I	3780	713	PK	2	88.0	.0	10.0
J. Link J	3876	709	PK	2	88.0	.0	10.0
K. Link K	3841	702	PK	2	88.0	.0	10.0
L. Link L	3751	706	PK	2	88.0	.0	10.0
M. Link M	3985	705	PK	2	88.0	.0	10.0
N. Link N	4065	701	PK	2	88.0	.0	10.0
O. Link O	4032	694	PK	2	88.0	.0	10.0
P. Link P	3955	697	PK	2	88.0	.0	10.0
Q. Link Q	4090	701	PK	2	275.0	.0	10.0
R. Link R	4223	695	PK	2	275.0	.0	10.0
S. Link S	4187	688	PK	2	275.0	.0	10.0
T. Link T	4061	693	PK	2	275.0	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: Fresno Kern 2035 Run 1
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTO	COORDINATES (M) X	Y	Z
1. Recpt 1	3649	7302	1.8
2. Recpt 2	3794	7245	1.8
3. Recpt 3	3765	7179	1.8
4. Recpt 4	3623	7236	1.8
5. Recpt 5	3779	7141	1.8
6. Recpt 6	3879	7101	1.8
7. Recpt 7	3842	7018	1.8
8. Recpt 8	3744	7058	1.8
9. Recpt 9	3983	7058	1.8
10. Recpt 1	4064	7025	1.8
11. Recpt 1	4026	6941	1.8
12. Recpt 1	3949	6971	1.8
13. Recpt 1	4091	7015	1.8
14. Recpt 1	4226	6957	1.8
15. Recpt 1	4192	6873	1.8
16. Recpt 1	4056	6930	1.8
17. Recpt 1	3307	7340	1.8
18. Recpt 1	3422	7280	1.8
19. Recpt 1	3402	7196	1.8
20. Recpt 2	3269	7249	1.8

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: Fresno Kern 2035 Run 1
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H	PRED CONC (PPM)
1. Recpt 1	114	0.4	.2	.0	.0	.0	.2	.0	.0	.0	0
2. Recpt 2	289	0.4	.2	.0	.0	.0	.2	.0	.0	.0	0
3. Recpt 3	297	0.4	.0	.0	.2	.0	.0	.0	.2	.0	0
4. Recpt 4	107	0.4	.0	.0	.2	.0	.0	.0	.1	.0	0
5. Recpt 5	310	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0
6. Recpt 6	302	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0
7. Recpt 7	332	0	.0	.0	.0	.0	.0	.0	.0	.0	0
8. Recpt 8	9	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0
9. Recpt 9	299	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0
10. Recpt 1	115	0.2	.0	.0	.0	.0	.0	.0	.0	.0	0.2
11. Recpt 1	108	0.2	.0	.0	.0	.0	.0	.0	.0	.0	0.1
12. Recpt 1	109	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0
13. Recpt 1	116	0.2	.0	.0	.0	.0	.0	.0	.0	.0	0.2
14. Recpt 1	292	0.3	.0	.0	.0	.0	.0	.0	.0	.0	0.3
15. Recpt 1	297	0.2	.0	.0	.0	.0	.0	.0	.0	.0	0.2
16. Recpt 1	109	0.2	.0	.0	.0	.0	.0	.0	.0	.0	0.1
17. Recpt 1	107	0	.0	.0	.0	.0	.0	.0	.0	.0	0.3
18. Recpt 1	103	0.1	.0	.0	.0	.0	.0	.0	.0	.0	0.4
19. Recpt 1	82	0	.0	.0	.0	.0	.0	.0	.0	.0	0.4
20. Recpt 2	94	0	.0	.0	.0	.0	.0	.0	.0	.0	0.3

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 4

JOB: Fresno Kern 2035 Run 1
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

CONC/LINK
(PPM)

RECEPTOR	I	J	K	L	M	N	O	P	Q	R	S	T
1. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0	.0
11. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0
12. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0	.0
14. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0	.0	.0
15. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0
16. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.2	.0
17. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
18. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
19. Recpt 1	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0
20. Recpt 2	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	PRED CONC (PPM)
1. Recpt 1	40	0	0.4
2. Recpt 2	26	0	0.4
3. Recpt 3	27	0	0.4
4. Recpt 4	39	0	0.4

1	**0.4**
2	**0.4**
3	**0.4**
4	**0.4**
5	**0.1**
6	**0.1**
7	**0**
8	**0.1**
9	**0.1**
10	**0.4**
11	**0.3**
12	**0.1**
13	**0.4**
14	**0.6**
15	**0.4**
16	**0.3**
17	**0.3**
18	**0.5**
19	**0.4**
20	**0.3**
21	**0.4**
22	**0.4**
23	**0.4**
24	**0.4**
25	**0**
26	**0**

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 1

JOB: VTH Station 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

I. SITE VARIABLES

U= 1.0 M/S Z0= 100. CM ALT= 0. (M)
BRG= WORST CASE VD= .0 CM/S
CLAS= 7 (G) VS= .0 CM/S
MIXH= 1000. M AMB= .0 PPM
SIGTH= 5. DEGREES TEMP= 10.6 DEGREE (C)

II. LINK VARIABLES

LINK DESCRIPTION	LINK COORDINATES (M) X1	Y1	X2	Y2	TYPE	VPH	EF (G/MI)	H (M)	W (M)
A. Link A	6778	4253	7048	4246	PK	200	.9	.0	10.0
B. Link B	7048	4246	7046	4145	PK	200	.9	.0	10.0
C. Link C	7046	4145	6777	4151	PK	200	.9	.0	10.0
D. Link D	6777	4151	6778	4253	PK	200	.9	.0	10.0
E. Link E	6775	4111	7036	4104	PK	200	.9	.0	10.0
F. Link F	7036	4104	7026	4029	PK	200	.9	.0	10.0
G. Link G	7026	4029	6771	3991	PK	200	.9	.0	10.0
H. Link H	6771	3991	6775	4111	PK	200	.9	.0	10.0
I. Link I	6782	4249	7044	4243	PK	200	2.6	.0	10.0
J. Link J	7044	4243	7042	4150	PK	200	2.6	.0	10.0
K. Link K	7042	4150	6781	4154	PK	200	2.6	.0	10.0
L. Link L	6781	4154	6782	4249	PK	200	2.6	.0	10.0
M. Link M	6779	4107	7032	4100	PK	200	2.6	.0	10.0
N. Link N	7032	4100	7023	4032	PK	200	2.6	.0	10.0
O. Link O	7023	4032	6775	3994	PK	200	2.6	.0	10.0
P. Link P	6775	3994	6779	4107	PK	200	2.6	.0	10.0

CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 2

JOB: VTH Station 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

III. RECEPTOR LOCATIONS

RECEPTOR	*	COORDINATES (M) X	Y	Z
1. Recpt 1	*	6772	4270	1.8
2. Recpt 2	*	6902	4265	1.8
3. Recpt 3	*	7046	4257	1.8
4. Recpt 4	*	6769	4201	1.8
5. Recpt 5	*	7055	4197	1.8
6. Recpt 6	*	6767	4134	1.8
7. Recpt 7	*	6897	4127	1.8
8. Recpt 8	*	7038	4123	1.8
9. Recpt 9	*	6767	4052	1.8
10. Recpt 10	*	7040	4066	1.8
11. Recpt 11	*	6763	3979	1.8
12. Recpt 12	*	6896	4000	1.8
13. Recpt 13	*	7040	4016	1.8

IV. MODEL RESULTS (WORST CASE WIND ANGLE)

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D	E	F	G	H
1. Recpt 1	173	0.1	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	211	0	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	184	0.2	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	157	0	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	203	0.1	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	172	0	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	108	0	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	190	0.1	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	17	0.1	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 1	337	0	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 1	11	0.1	.0	.0	.0	.0	.0	.0	.0	.0
12. Recpt 1	70	0	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 1	347	0	.0	.0	.0	.0	.0	.0	.0	.0

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CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
JUNE 1989 VERSION
PAGE 3

JOB: VTH Station 2035
RUN: Hour 1 (WORST CASE ANGLE)
POLLUTANT: Carbon Monoxide

IV. MODEL RESULTS (WORST CASE WIND ANGLE) (CONT.)

RECEPTOR	*	CONC/LINK (PPM) I	J	K	L	M	N	O	P
1. Recpt 1	*	.0	.0	.0	.0	.0	.0	.0	.0
2. Recpt 2	*	.0	.0	.0	.0	.0	.0	.0	.0
3. Recpt 3	*	.0	.0	.0	.0	.0	.0	.0	.0
4. Recpt 4	*	.0	.0	.0	.0	.0	.0	.0	.0
5. Recpt 5	*	.0	.0	.0	.0	.0	.0	.0	.0
6. Recpt 6	*	.0	.0	.0	.0	.0	.0	.0	.0
7. Recpt 7	*	.0	.0	.0	.0	.0	.0	.0	.0
8. Recpt 8	*	.0	.0	.0	.0	.0	.0	.0	.0
9. Recpt 9	*	.0	.0	.0	.0	.0	.0	.0	.0
10. Recpt 10	*	.0	.0	.0	.0	.0	.0	.0	.0
11. Recpt 11	*	.0	.0	.0	.0	.0	.0	.0	.0
12. Recpt 12	*	.0	.0	.0	.0	.0	.0	.0	.0
13. Recpt 13	*	.0	.0	.0	.0	.0	.0	.0	.0

Appendix C

C.15 Fresno Station Signalized Intersection CALINE Outputs

Emission Factors for CO Hot Spots Analysis (EMFAC2007 v2.3)

Year	Speed (mph)	Emission Factor (g/mile) [1, 2]
2009	0	10.72
2009	1	11.855
2009	2	11.855
2009	3	11.665
2009	4	11.309
2009	5	10.981
2009	6	10.447
2009	7	9.952
2009	8	9.495
2009	9	9.07
2009	10	8.677
2009	11	8.311
2009	12	7.972
2009	13	7.656
2009	14	7.362
2009	15	7.089
2009	16	6.836
2009	17	6.6
2009	18	6.381
2009	19	6.176
2009	20	6.003
2009	21	5.841
2009	22	5.689
2009	23	5.547
2009	24	5.413
2009	25	5.287
2009	26	5.169
2009	27	5.058
2009	28	4.955
2009	29	4.858
2009	30	4.767
2009	31	4.683
2009	32	4.604
2009	33	4.531
2009	34	4.464
2009	35	4.403
2009	36	4.346
2009	37	4.296
2009	38	4.25
2009	39	4.209
2009	40	4.174

Table C-105

Fresno County EMFAC Emission Factor Summary 2009 and 2035

Year	Speed (mph)	Emission Factor (g/mile) [1, 2]
2035	0	8.954
2035	1	1.999
2035	2	1.999
2035	3	1.988
2035	4	1.968
2035	5	1.948
2035	6	1.861
2035	7	1.78
2035	8	1.704
2035	9	1.633
2035	10	1.567
2035	11	1.506
2035	12	1.449
2035	13	1.397
2035	14	1.348
2035	15	1.304
2035	16	1.264
2035	17	1.227
2035	18	1.194
2035	19	1.164
2035	20	1.141
2035	21	1.119
2035	22	1.099
2035	23	1.079
2035	24	1.061
2035	25	1.043
2035	26	1.027
2035	27	1.011
2035	28	0.996
2035	29	0.982
2035	30	0.969
2035	31	0.956
2035	32	0.944
2035	33	0.933
2035	34	0.923
2035	35	0.914
2035	36	0.905
2035	37	0.897
2035	38	0.889
2035	39	0.883
2035	40	0.877

[1] Emission factors are for the 'ALL' category in EMFAC2007.
[2] Emission factors for speeds of 0 mph are idling emissions in units of g/idle-hour.
[3] Emission factors are for Fresno county in the winter, 31 F 41% RH

Summary of Approaching Traffic Data for CO Hot Spots Analysis

Intersection		Alternatives	Approach Cruise Speed (MPH)								Approximate Red Time Approach							
			NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT
Int 17	Van Ness and Inyo Street (PM only)	Existing 2009	30	30	30	30	30	30	30	30	43%	43%	43%	43%	49%	49%	49%	49%
		Existing plus project 2009	30	30	30	30	30	30	30	30	43%	43%	43%	43%	49%	49%	49%	49%
		No Build 2035	30	30	30	30	30	30	30	30	55%	55%	55%	55%	60%	60%	60%	60%
		Build 2035	30	30	30	30	30	30	30	30	55%	55%	55%	55%	60%	60%	60%	60%
Int 25	H Street and Tulare Street (PM only)	Existing 2009	27	27	27	27	30	30	30	30	59%	59%	59%	59%	56%	56%	56%	56%
		Existing plus project 2009	27	27	27	27	30	30	30	30	59%	59%	59%	59%	56%	56%	56%	56%
		No Build 2035	27	27	27	27	30	30	30	30	66%	66%	66%	66%	42%	42%	42%	42%
		Build 2035	27	27	27	27	30	30	30	30	66%	66%	66%	66%	42%	42%	42%	42%
Int 26	Van Ness Avenue and Tulare Street (AM only)	Existing 2009	30	30	30	30	30	30	30	30	88%	70%	86%	65%	86%	71%	88%	76%
		Existing plus project 2009	30	30	30	30	30	30	30	30	88%	70%	87%	65%	85%	74%	87%	75%
		No Build 2035	30	30	30	30	30	30	30	30	87%	69%	89%	75%	88%	68%	90%	72%
		Build 2035	30	30	30	30	30	30	30	30	88%	70%	89%	74%	89%	69%	90%	73%
Int 42	Van Ness Avenue and Fresno Street (PM only)	Existing 2009	30	30	30	30	30	30	30	30	83%	69%	86%	72%	84%	71%	87%	74%
		Existing plus project 2009	30	30	30	30	30	30	30	30	86%	67%	89%	74%	84%	69%	89%	77%
		No Build 2035	30	30	30	30	30	30	30	30	88%	72%	89%	73%	88%	69%	86%	67%
		Build 2035	30	30	30	30	30	30	30	30	90%	68%	91%	70%	86%	69%	87%	71%

Notes:

1) Departure red times for each direction taken as red times of approach through lanes except where noted.

2) Left lane approach volumes are taken as the volumes of dedicated left lanes / the number of dedicated left lanes

3) Through lane approach volumes are taken as the sum of the through, combined and right turn volumes / the number of through or combined lanes

4) Departure volumes are taken as the sum of the volumes of the through, right and left lanes departing in a direction / the number of departure lanes

5) All red time and volume values are from intersection specific Synchro and Traffix files

6) Cruise speed was provided by the traffic engineers for all signalized intersection, and was based on posted speed. Where no posted speed was available, the speed was estimated using the \CO Guidance Table B.10 for intermediate, principal arterial

Summary of Approaching Traffic Data for CO Hot Spots Analysis

Intersection		Alternatives	Traffic Volume Approach (vphpl)								Average Speed - Approach (mph)							
			NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT
Int 17	Van Ness and Inyo Street (PM only)	Existing 2009	40	322	9	118	20	97	47	71	13.7	13.1	13.7	13.7	11.1	11.1	11.1	11.1
		Existing plus project 2009	68	322	9	124	20	97	77	135	13.7	13.1	13.7	13.7	11.1	11.1	11.1	11.1
		No Build 2035	66	475	84	269	99	595	74	315	11.1	9	11.1	10.5	9.1	3.5	9.1	8.5
		Build 2035	94	475	84	276	99	595	104	379	9.1	6.1	9.1	8.5	9.1	3.5	9.1	7.6
Int 25	H Street and Tulare Street (PM only)	Existing 2009	22	192	99	101	37	147	16	51	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
		Existing plus project 2009	101	301	99	118	80	147	16	53	9.1	8.5	9.1	9.1	9.1	9.1	9.1	9.1
		No Build 2035	187	466	189	310	175	940	88	481	7.4	1.7	7.4	6.4	13.7	4.8	13.7	11.6
		Build 2035	266	575	189	327	218	940	88	458	6.4	0.7	7.4	6.4	13.7	4.8	13.7	11.6
Int 26	Van Ness Avenue and Tulare Street (AM only)	Existing 2009	49	211	85	80	37	160	71	118	0.2	7.4	0.2	7.4	0.2	7.4	0.2	5.1
		Existing plus project 2009	49	222	85	215	67	183	95	128	0.2	7.4	0.2	7.4	0.2	7.4	0.2	5.1
		No Build 2035	136	216	85	295	60	773	118	335	0.2	7.4	0.2	6.4	0.2	0.2	0.2	6.4
		Build 2035	136	223	85	350	90	215	142	345	0.2	7.4	0.2	4.1	0.2	7.4	0.2	6.4
Int 42	Van Ness Avenue and Fresno Street (PM only)	Existing 2009	126	225	62	143	61	183	120	170	5.1	7.4	0.2	7.4	5.1	7.4	0.2	7.4
		Existing plus project 2009	126	262	62	334	61	188	177	182	0.2	6.4	0.2	6.4	5.1	7.4	0.2	5.1
		No Build 2035	203	280	106	468	183	578	201	388	0.2	6.4	0.2	1.7	0.2	0.7	0.2	4.1
		Build 2035	203	318	106	516	183	583	258	400	0.2	6.4	0.2	1.7	0.2	0.7	0	4.1

Notes:

1) Departure red times for each direction taken as red times of approach through lanes except where noted.

2) Left lane approach volumes are taken as the volumes of dedicated left lanes / the number of dedicated left lanes

3) Through lane approach volumes are taken as the sum of the through, combined and right turn volumes / the number of through or combined lanes

4) Departure volumes are taken as the sum of the volumes of the through, right and left lanes departing in a direction / the number of departure lanes

5) All red time and volume values are from intersection specific Synchro and Traffix files

6) Cruise speed was provided by the traffic engineers for all signalized intersection, and was based on posted speed. Where no posted speed was available, the speed was estimated using the \CO Guidance Table B.10 for intermediate, principal arterial

Summary of Departing Traffic Data for CO Hot Spots Analysis

Intersection		Alternatives	Departure Cruise Speed (MPH)				Approximate Red Time Departure				Traffic Volume Departure (vphpl)			
			NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB
Int 17	Van Ness and Inyo Street (PM only)	Existing 2009	30	30	30	30	43%	43%	49%	49%	320	244	69	124
		Existing plus project 2009	30	30	30	30	43%	43%	49%	49%	320	274	69	158
		No Build 2035	30	30	30	30	55%	55%	60%	60%	460	499	495	331
		Build 2035	30	30	30	30	55%	55%	59%	59%	460	529	495	359
Int 25	H Street and Tulare Street (PM only)	Existing 2009	27	27	30	30	59%	59%	56%	56%	186	176	145	74
		Existing plus project 2009	27	27	30	30	59%	59%	56%	56%	238	210	145	116
		No Build 2035	27	27	30	30	66%	66%	42%	42%	496	510	923	484
		Build 2035	27	27	30	30	66%	66%	42%	42%	548	544	923	524
Int 26	Van Ness Avenue and Tulare Street (AM only)	Existing 2009	30	30	30	30	70%	86%	76%	72%	207	179	125	132
		Existing plus project 2009	30	30	30	30	70%	87%	75%	74%	226	203	142	147
		No Build 2035	30	30	30	30	69%	89%	72%	68%	489	328	157	323
		Build 2035	30	30	30	30	70%	74%	73%	69%	238	352	179	333
Int 42	Van Ness Avenue and Fresno Street (PM only)	Existing 2009	30	30	30	30	69%	86%	74%	71%	160	296	190	201
		Existing plus project 2009	30	30	30	30	67%	89%	77%	69%	223	377	195	213
		No Build 2035	30	30	30	30	72%	89%	67%	69%	300	479	574	422
		Build 2035	30	30	30	30	68%	70%	71%	69%	312	560	579	433

Notes:

1) Departure red times for each direction taken as red times of approach through lanes except where noted.

2) Left lane approach volumes are taken as the volumes of dedicated left lanes / the number of dedicated left lanes.

3) Through lane approach volumes are taken as the sum of the through, combined and right turn volumes / the number of through or combined lanes.

4) Departure volumes are taken as the sum of the volumes of the through, right and left lanes departing in a direction / the number of departure lanes.

5) All red time and volume values are from intersection specific Synchro and Traffix files.

6) The highest cruise speed in Tables B.13 and B.14, 40 mph, was used for cruise speeds of 40 mph and greater.

7) Cruise speed was provided by the traffic engineers for all signalized intersection, and was based on posted speed. Where no posted speed was available, the speed was estimated using the \CO Guidance Table B.10 for intermediate, principal arterial

Summary of Departing Traffic Data for CO Hot Spots Analysis

Intersection		Alternatives	Average Speed - Departure (mph)			
			NB	SB	EB	WB
Int 17	Van Ness and Inyo Street (PM only)	Existing 2009	25.6	25.9	24.4	24.4
		Existing plus project 2009	25.6	25.6	24.4	24.4
		No Build 2035	23.0	23.0	19.9	22.5
		Build 2035	19.9	19.9	19.9	21.5
Int 25	H Street and Tulare Street (PM only)	Existing 2009	23.0	23.0	23.0	23.0
		Existing plus project 2009	23.0	23.0	23.0	23.0
		No Build 2035	9.0	9.0	17.8	24.8
		Build 2035	9.0	9.0	17.8	24.8
Int 26	Van Ness Avenue and Tulare Street (AM only)	Existing 2009	21.5	1.8	18.2	21.5
		Existing plus project 2009	21.5	1.8	18.2	21.5
		No Build 2035	9.0	0.1	21.5	20.0
		Build 2035	21.5	16.7	21.5	20.0
Int 42	Van Ness Avenue and Fresno Street (PM only)	Existing 2009	21.5	0.1	21.5	21.5
		Existing plus project 2009	21.5	0.0	18.2	21.5
		No Build 2035	20.0	0.0	5.1	16.7
		Build 2035	20.0	5.1	5.1	16.7

Notes:

1) Departure red times for each direction taken as red times of approach through lanes except where noted.

2) Left lane approach volumes are taken as the volumes of dedicated left lanes / the number of dedicated left lanes.

3) Through lane approach volumes are taken as the sum of the through, combined and right turn volumes / the number of through or combined lanes.

4) Departure volumes are taken as the sum of the volumes of the through, right and left lanes departing in a direction / the number of departure lanes.

5) All red time and volume values are from intersection specific Synchro and Traffix files.

6) The highest cruise speed in Tables B.13 and B.14, 40 mph, was used for cruise speeds of 40 mph and greater.

7) Cruise speed was provided by the traffic engineers for all signalized intersection, and was based on posted speed. Where no posted speed was available, the speed was estimated using the \CO Guidance Table B.10 for intermediate, principal arterial

Summary of Average Speeds and Emission Factors for CO Hot Spot Analysis

Intersection		Alternatives	Analysis Year	Average Speed - Approach (mph)							
				NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT
Int 17	Van Ness and Inyo Street (PM only)	Existing 2009	2009	13.7	13.1	13.7	13.7	11.1	11.1	11.1	11.1
		Existing plus project 2009	2009	13.7	13.1	13.7	13.7	11.1	11.1	11.1	11.1
		No Build 2035	2035	11.1	9.0	11.1	10.5	9.1	3.5	9.1	8.5
		Build 2035	2035	9.1	6.1	9.1	8.5	9.1	3.5	9.1	7.6
Int 25	H Street and Tulare Street (PM only)	Existing 2009	2009	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1
		Existing plus project 2009	2009	9.1	8.5	9.1	9.1	9.1	9.1	9.1	9.1
		No Build 2035	2035	7.4	3.0	7.4	6.4	13.7	4.8	13.7	11.6
		Build 2035	2035	6.4	3.0	7.4	6.4	13.7	4.8	13.7	11.6
Int 26	Van Ness Avenue and Tulare Street (AM only)	Existing 2009	2009	3.0	7.4	3.0	7.4	3.0	7.4	3.0	5.1
		Existing plus project 2009	2009	3.0	7.4	3.0	7.4	3.0	7.4	3.0	5.1
		No Build 2035	2035	3.0	7.4	3.0	6.4	3.0	3.0	3.0	6.4
		Build 2035	2035	3.0	7.4	3.0	4.1	3.0	7.4	3.0	6.4
Int 42	Van Ness Avenue and Fresno Street (PM only)	Existing 2009	2009	5.1	7.4	3.0	7.4	5.1	7.4	3.0	7.4
		Existing plus project 2009	2009	3.0	6.4	3.0	6.4	5.1	7.4	3.0	5.1
		No Build 2035	2035	3.0	6.4	3.0	3.0	3.0	3.0	3.0	4.1
		Build 2035	2035	3.0	6.4	3.0	3.0	3.0	3.0	3.0	4.1

Notes:
1) If average speeds were less than 3 mph, they were set equal to 3 mph.

Summary of Average Speeds and Emission Factors for CO Hot Spot Analysis

Intersection		Alternatives	Analysis Year	Approach Emission Factors (g/mile)							
				NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT
Int 17	Van Ness and Inyo Street (PM only)	Existing 2009	2009	7.36	7.66	7.36	7.36	8.31	8.31	8.31	8.31
		Existing plus project 2009	2009	7.36	7.66	7.36	7.36	8.31	8.31	8.31	8.31
		No Build 2035	2035	1.51	1.63	1.51	1.51	1.63	1.97	1.63	1.63
		Build 2035	2035	1.63	1.86	1.63	1.63	1.63	1.97	1.63	1.70
Int 25	H Street and Tulare Street (PM only)	Existing 2009	2009	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07
		Existing plus project 2009	2009	9.07	9.07	9.07	9.07	9.07	9.07	9.07	9.07
		No Build 2035	2035	1.78	1.99	1.78	1.86	1.35	1.95	1.35	1.45
		Build 2035	2035	1.86	1.99	1.78	1.86	1.35	1.95	1.35	1.45
Int 26	Van Ness Avenue and Tulare Street (AM only)	Existing 2009	2009	11.67	9.95	11.67	9.95	11.67	9.95	11.67	10.98
		Existing plus project 2009	2009	11.67	9.95	11.67	9.95	11.67	9.95	11.67	10.98
		No Build 2035	2035	1.99	1.78	1.99	1.86	1.99	1.99	1.99	1.86
		Build 2035	2035	1.99	1.78	1.99	1.97	1.99	1.78	1.99	1.86
Int 42	Van Ness Avenue and Fresno Street (PM only)	Existing 2009	2009	10.98	9.95	11.67	9.95	10.98	9.95	11.67	9.95
		Existing plus project 2009	2009	11.67	10.45	11.67	10.45	10.98	9.95	11.67	10.98
		No Build 2035	2035	1.99	1.86	1.99	1.99	1.99	1.99	1.99	1.97
		Build 2035	2035	1.99	1.86	1.99	1.99	1.99	1.99	1.99	1.97

Notes:
1) If average speeds were less than 3 mph, they were set equal to 3 mph.

Summary of Average Speeds and Emission Factors for CO Hot Spot Analysis

Intersection		Alternatives	Analysis Year	Average Speed - Departure (mph)				Departure Emission Factors (g/mile)			
				NB	SB	EB	WB	NB	SB	EB	WB
Int 17	Van Ness and Inyo Street (PM only)	Existing 2009	2009	25.6	25.9	24.4	24.4	5.17	5.17	5.41	5.41
		Existing plus project 2009	2009	25.6	25.6	24.4	24.4	5.17	5.17	5.41	5.41
		No Build 2035	2035	23.0	23.0	19.9	22.5	1.08	1.08	1.14	1.08
		Build 2035	2035	19.9	19.9	19.9	21.5	1.14	1.14	1.14	1.10
Int 25	H Street and Tulare Street (PM only)	Existing 2009	2009	23.0	23.0	23.0	23.0	5.55	5.55	5.55	5.55
		Existing plus project 2009	2009	23.0	23.0	23.0	23.0	5.55	5.55	5.55	5.55
		No Build 2035	2035	9.0	9.0	17.8	24.8	1.63	1.63	1.19	1.04
		Build 2035	2035	9.0	9.0	17.8	24.8	1.63	1.63	1.19	1.04
Int 26	Van Ness Avenue and Tulare Street (AM only)	Existing 2009	2009	21.5	3.0	18.2	21.5	5.69	11.67	6.38	5.69
		Existing plus project 2009	2009	21.5	3.0	18.2	21.5	5.69	11.67	6.38	5.69
		No Build 2035	2035	9.0	3.0	21.5	20.0	1.63	1.99	1.10	1.14
		Build 2035	2035	21.5	16.7	21.5	20.0	1.10	1.23	1.10	1.14
Int 42	Van Ness Avenue and Fresno Street (PM only)	Existing 2009	2009	21.5	3.0	21.5	21.5	5.69	11.67	5.69	5.69
		Existing plus project 2009	2009	21.5	3.0	18.2	21.5	5.69	11.67	6.38	5.69
		No Build 2035	2035	20.0	3.0	5.1	16.7	1.14	1.99	1.95	1.23
		Build 2035	2035	20.0	5.1	5.1	16.7	1.14	1.95	1.95	1.23

Notes:
1) If average speeds were less than 3 mph, they were set equal to 3 mph.

Appendix C

C.16 Bakersfield Station Signalized Intersection CALINE Outputs

Emission Factors for CO Hot Spots Analysis (EMFAC2007 v2.3)

Year	Speed (mph)	Emission Factor (g/mile) [1, 2]
2009	0	18.828
2009	1	12.09
2009	2	12.09
2009	3	11.96
2009	4	11.715
2009	5	11.488
2009	6	10.908
2009	7	10.366
2009	8	9.861
2009	9	9.39
2009	10	8.949
2009	11	8.538
2009	12	8.153
2009	13	7.794
2009	14	7.46
2009	15	7.148
2009	16	6.857
2009	17	6.587
2009	18	6.337
2009	19	6.102
2009	20	5.924
2009	21	5.756
2009	22	5.598
2009	23	5.448
2009	24	5.306
2009	25	5.171
2009	26	5.044
2009	27	4.925
2009	28	4.811
2009	29	4.705
2009	30	4.604
2009	31	4.51
2009	32	4.421
2009	33	4.338
2009	34	4.261
2009	35	4.189
2009	36	4.123
2009	37	4.061
2009	38	4.006
2009	39	3.955
2009	40	3.91

Table C-109

Kern County EMFAC Emission Factor Summary 2009 and 2035

Year	Speed (mph)	Emission Factor (g/mile) [1, 2]
2035	0	15.784
2035	1	2.594
2035	2	2.594
2035	3	2.585
2035	4	2.568
2035	5	2.551
2035	6	2.401
2035	7	2.263
2035	8	2.134
2035	9	2.015
2035	10	1.905
2035	11	1.804
2035	12	1.711
2035	13	1.626
2035	14	1.549
2035	15	1.479
2035	16	1.417
2035	17	1.362
2035	18	1.314
2035	19	1.272
2035	20	1.244
2035	21	1.218
2035	22	1.194
2035	23	1.171
2035	24	1.15
2035	25	1.13
2035	26	1.111
2035	27	1.093
2035	28	1.076
2035	29	1.061
2035	30	1.047
2035	31	1.033
2035	32	1.021
2035	33	1.009
2035	34	0.999
2035	35	0.989
2035	36	0.98
2035	37	0.973
2035	38	0.966
2035	39	0.96
2035	40	0.955

[1] Emission factors are for the 'ALL' category in EMFAC2007.
[2] Emission factors for speeds of 0 mph are idling emissions in units of g/idle-hour.
[3] Emission factors are for Fresno county in the winter, 31 F 41% RH

Summary of Approaching Traffic Data for CO Hot Spots Analysis

Intersection		Alternatives	Approach Cruise Speed (MPH)								Approximate Red Time Approach							
			NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT
Int 15	SR 99 NB Ramps/ California Avenue (PM only)	Existing 2009	40	40	27	27	40	40	40	40	79%	79%	91%	91%	91%	41%	-	52%
		Existing plus project 2009	40	40	27	27	40	40	40	40	79%	79%	91%	91%	91%	41%	-	52%
		No Build 2035	40	40	27	27	40	40	40	40	67%	67%	94%	94%	94%	48%	-	56%
		Build 2035	40	40	27	27	40	40	40	40	68%	68%	94%	94%	94%	47%	-	55%
Int 23	Union Avenue/ California Avenue (PM only)	Existing 2009	40	40	40	40	40	40	40	40	89%	69%	83%	62%	87%	80%	85%	78%
		Existing plus project 2009	40	40	40	40	40	40	40	40	87%	70%	83%	65%	87%	78%	85%	76%
		No Build 2035	40	40	40	40	40	40	40	40	91%	61%	84%	54%	86%	84%	86%	83%
		Build 2035	40	40	40	40	40	40	40	40	90%	60%	85%	55%	86%	82%	88%	83%
Int 30	Oak Street/ Truxtun Avenue (PM only)	Existing 2009	27	27	40	40	45	45	40	40	89%	73%	88%	74%	80%	73%	79%	72%
		Existing plus project 2009	27	27	40	40	45	45	40	40	89%	73%	88%	74%	80%	73%	79%	72%
		No Build 2035	27	27	40	40	45	45	40	40	93%	77%	85%	70%	80%	60%	90%	70%
		Build 2035	27	27	40	40	45	45	40	40	93%	77%	85%	69%	81%	60%	91%	70%
Int 47	Oak Street/ SR 178 (PM only)	Existing 2009	40	40	27	27	40	40	40	40	81%	81%	-	94%	88%	57%	84%	48%
		Existing plus project 2009	40	40	27	27	40	40	40	40	81%	81%	-	94%	88%	57%	84%	48%
		No Build 2035	40	40	27	27	40	40	40	40	77%	77%	-	95%	95%	61%	82%	45%
		Build 2035	40	40	27	27	40	40	40	40	77%	77%	-	95%	95%	61%	82%	45%

Notes:

1) Departure red times for each direction taken as red times of approach through lanes except where noted.

2) Left lane approach volumes are taken as the volumes of dedicated left lanes / the number of dedicated left lanes

3) Through lane approach volumes are taken as the sum of the through, combined and right turn volumes / the number of through or combined lanes

4) Departure volumes are taken as the sum of the volumes of the through, right and left lanes departing in a direction / the number of departure lanes

5) All red time and volume values are from intersection specific Synchro and Traffix files

6) Cruise speed was provided by the traffic engineers for all signalized intersection, and was based on posted speed. Where no posted speed was available, the speed was estimated using the \CO Guidance Table B.10 for intermediate, principal arterial

Summary of Approaching Traffic Data for CO Hot Spots Analysis

Intersection		Alternatives	Traffic Volume Approach (vphpl)								Average Speed - Approach (mph)							
			NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT
Int 15	SR 99 NB Ramps/ California Avenue (PM only)	Existing 2009	301	343	18	60	69	604	-	457	1.7	1.7	0.2	0.2	0.2	11.6	-	9.7
		Existing plus project 2009	301	365	18	60	69	618	-	494	1.7	0.5	0.2	0.2	0.2	11.6	-	9.7
		No Build 2035	301	573	55	74	69	776	-	541	6.8	0.7	0.2	0.0	0.2	3.1	-	6.4
		Build 2035	301	595	55	74	69	790	-	578	6.8	0.7	0.2	0.0	0.2	3.1	-	3.6
Int 23	Union Avenue/ California Avenue (PM only)	Existing 2009	114	331	181	361	120	146	156	182	0.2	6.8	5.4	8.1	0.2	5.4	0.2	5.4
		Existing plus project 2009	144	341	188	365	120	193	156	186	0.2	6.8	5.4	4.2	0.2	5.4	0.2	5.4
		No Build 2035	131	627	283	540	187	279	240	192	0.2	3.6	1.7	9.7	0.2	1.7	0.2	5.4
		Build 2035	161	637	290	544	187	326	240	195	0.2	3.6	1.7	6.4	0.2	1.7	0.2	5.4
Int 30	Oak Street/ Truxtun Avenue (PM only)	Existing 2009	142	276	23	417	345	331	224	366	0.2	7.4	0.2	4.2	1.7	6.8	5.4	4.2
		Existing plus project 2009	142	276	26	417	345	334	224	376	0.2	7.4	0.2	4.2	1.7	6.8	5.4	4.2
		No Build 2035	142	301	54	590	501	565	224	426	0.2	5.1	0.2	0.7	0.2	3.6	0.2	4.2
		Build 2035	142	301	57	590	501	567	224	436	0.2	5.1	5.4	0.7	0.2	3.6	0.2	4.2
Int 47	Oak Street/ SR 178 (PM only)	Existing 2009	565	223	-	56	36	655	248	825	0.1	5.4	-	0.2	0.2	1.7	5.4	3.1
		Existing plus project 2009	576	223	-	56	36	657	248	825	0.1	5.4	-	0.2	0.2	1.7	5.4	3.1
		No Build 2035	565	638	-	89	36	1073	675	1420	0.1	0.1	-	0.2	0.2	10.0	0.1	10.0
		Build 2035	576	638	-	89	36	1075	675	1420	0.1	0.1	-	0.0	0.2	10.0	0.1	10.0

Notes:

1) Departure red times for each direction taken as red times of approach through lanes except where noted.

2) Left lane approach volumes are taken as the volumes of dedicated left lanes / the number of dedicated left lanes

3) Through lane approach volumes are taken as the sum of the through, combined and right turn volumes / the number of through or combined lanes

4) Departure volumes are taken as the sum of the volumes of the through, right and left lanes departing in a direction / the number of departure lanes

5) All red time and volume values are from intersection specific Synchro and Traffix files

6) Cruise speed was provided by the traffic engineers for all signalized intersection, and was based on posted speed. Where no posted speed was available, the speed was estimated using the \CO Guidance Table B.10 for intermediate, principal arterial

Summary of Departing Traffic Data for CO Hot Spots Analysis

Intersection		Alternatives	Departure Cruise Speed (MPH)				Approximate Red Time Departure				Traffic Volume Departure (vphpl)			
			NB	SB	EB	WB	NB	SB	EB	WB	NB	SB	EB	WB
Int 15	SR 99 NB Ramps/ California Avenue (PM only)	Existing 2009	40	27	40	40	79%	91%	41%	52%	109	686	493	719
		Existing plus project 2009	40	27	40	40	79%	91%	41%	52%	109	686	514	768
		No Build 2035	40	27	40	40	67%	94%	48%	56%	146	1202	582	824
		Build 2035	40	27	40	40	68%	94%	47%	55%	146	1202	603	873
Int 23	Union Avenue/ California Avenue (PM only)	Existing 2009	40	40	40	40	69%	62%	80%	78%	416	518	210	279
		Existing plus project 2009	40	40	40	40	70%	65%	78%	76%	428	564	218	290
		No Build 2035	40	40	40	40	61%	54%	84%	83%	719	847	390	284
		Build 2035	40	40	40	40	60%	55%	82%	83%	731	893	399	296
Int 30	Oak Street/ Truxtun Avenue (PM only)	Existing 2009	27	40	45	40	73%	74%	73%	72%	681	742	466	928
		Existing plus project 2009	27	40	45	40	73%	74%	73%	72%	686	742	473	938
		No Build 2035	27	40	45	40	77%	70%	60%	70%	841	802	883	1217
		Build 2035	27	40	45	40	77%	69%	60%	70%	846	802	890	1227
Int 47	Oak Street/ SR 178 (PM only)	Existing 2009	40	27	40	40	81%	94%	57%	48%	57	470	1000	740
		Existing plus project 2009	40	27	40	40	81%	94%	57%	48%	57	472	1000	743
		No Build 2035	40	27	40	40	77%	95%	61%	45%	89	896	2057	1126
		Build 2035	40	27	40	40	77%	95%	61%	45%	89	899	2057	1130

Notes:

1) Departure red times for each direction taken as red times of approach through lanes except where noted.

2) Left lane approach volumes are taken as the volumes of dedicated left lanes / the number of dedicated left lanes.

3) Through lane approach volumes are taken as the sum of the through, combined and right turn volumes / the number of through or combined lanes.

4) Departure volumes are taken as the sum of the volumes of the through, right and left lanes departing in a direction / the number of departure lanes.

5) All red time and volume values are from intersection specific Synchro and Traffix files.

6) The highest cruise speed in Tables B.13 and B.14, 40 mph, was used for cruise speeds of 40 mph and greater.

7) Cruise speed was provided by the traffic engineers for all signalized intersection, and was based on posted speed. Where no posted speed was available, the speed was estimated using the \CO Guidance Table B.10 for intermediate, principal arterial

Summary of Departing Traffic Data for CO Hot Spots Analysis

Intersection		Alternatives	Average Speed - Departure (mph)			
			NB	SB	EB	WB
Int 15	SR 99 NB Ramps/ California Avenue (PM only)	Existing 2009	22	0.0	31.2	22.1
		Existing plus project 2009	22	0.0	31.2	15.7
		No Build 2035	26	0.0	26.6	6.6
		Build 2035	26	0.0	26.6	3.3
Int 23	Union Avenue/ California Avenue (PM only)	Existing 2009	19	23.4	21.6	9.7
		Existing plus project 2009	19	5.1	21.6	9.7
		No Build 2035	10	15.7	3.8	9.7
		Build 2035	10	3.3	3.8	9.7
Int 30	Oak Street/ Truxtun Avenue (PM only)	Existing 2009	3	3.2	10.1	1.2
		Existing plus project 2009	3	3.2	10.1	1.2
		No Build 2035	0	1.6	3.3	24.0
		Build 2035	0	1.6	3.3	24.0
Int 47	Oak Street/ SR 178 (PM only)	Existing 2009	22	0.0	2.7	22.1
		Existing plus project 2009	22	0.0	2.7	22.1
		No Build 2035	22	0.0	2.7	31.0
		Build 2035	22	0.0	2.7	31.0

Notes:

1) Departure red times for each direction taken as red times of approach through lanes except where noted.

2) Left lane approach volumes are taken as the volumes of dedicated left lanes / the number of dedicated left lanes.

3) Through lane approach volumes are taken as the sum of the through, combined and right turn volumes / the number of through or combined lanes.

4) Departure volumes are taken as the sum of the volumes of the through, right and left lanes departing in a direction / the number of departure lanes.

5) All red time and volume values are from intersection specific Synchro and Traffix files.

6) The highest cruise speed in Tables B.13 and B.14, 40 mph, was used for cruise speeds of 40 mph and greater.

7) Cruise speed was provided by the traffic engineers for all signalized intersection, and was based on posted speed. Where no posted speed was available, the speed was estimated using the \CO Guidance Table B.10 for intermediate, principal arterial

Summary of Average Speeds and Emission Factors for CO Hot Spots Analysis

Intersection		Alternatives	Analysis Year	Average Speed - Approach (mph)								Approach Emission Factors (g/mile)							
				NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	EBL	EBT	WBL	WBT
Int 15	SR 99 NB Ramps/ California Avenue (PM only)	Existing 2009	2009	3.0	3.0	3.0	3.0	3.0	11.6	-	9.7	11.96	11.96	11.96	11.96	11.96	8.15	-	8.95
		Existing plus project 2009	2009	3.0	3.0	3.0	3.0	3.0	11.6	-	9.7	11.96	11.96	11.96	11.96	11.96	8.15	-	8.95
		No Build 2035	2035	6.8	3.0	3.0	3.0	3.0	3.1	-	6.4	2.26	2.59	2.59	2.59	2.59	2.59	-	2.40
		Build 2035	2035	6.8	3.0	3.0	3.0	3.0	3.1	-	3.6	2.26	2.59	2.59	2.59	2.59	2.59	-	2.57
Int 23	Union Avenue/ California Avenue (PM only)	Existing 2009	2009	3.0	6.8	5.4	8.1	3.0	5.4	3.0	5.4	11.96	10.37	11.49	9.86	11.96	11.49	11.96	11.49
		Existing plus project 2009	2009	3.0	6.8	5.4	4.2	3.0	5.4	3.0	5.4	11.96	10.37	11.49	11.72	11.96	11.49	11.96	11.49
		No Build 2035	2035	3.0	3.6	3.0	9.7	3.0	3.0	3.0	5.4	2.59	2.57	2.59	1.91	2.59	2.59	2.59	2.55
		Build 2035	2035	3.0	3.6	3.0	6.4	3.0	3.0	3.0	5.4	2.59	2.57	2.59	2.40	2.59	2.59	2.59	2.55
Int 30	Oak Street/ Truxtun Avenue (PM only)	Existing 2009	2009	3.0	7.4	3.0	4.2	3.0	6.8	5.4	4.2	11.96	10.37	11.96	11.72	11.96	10.37	11.49	11.72
		Existing plus project 2009	2009	3.0	7.4	3.0	4.2	3.0	6.8	5.4	4.2	11.96	10.37	11.96	11.72	11.96	10.37	11.49	11.72
		No Build 2035	2035	3.0	5.1	3.0	3.0	3.0	3.6	3.0	4.2	2.59	2.55	2.59	2.59	2.59	2.57	2.59	2.57
		Build 2035	2035	3.0	5.1	5.4	3.0	3.0	3.6	3.0	4.2	2.59	2.55	2.55	2.59	2.59	2.57	2.59	2.57
Int 47	Oak Street/ SR 178 (PM only)	Existing 2009	2009	3.0	5.4	-	3.0	3.0	3.0	5.4	3.1	11.96	11.49	-	11.96	11.96	11.96	11.49	11.96
		Existing plus project 2009	2009	3.0	5.4	-	3.0	3.0	3.0	5.4	3.1	11.96	11.49	-	11.96	11.96	11.96	11.49	11.96
		No Build 2035	2035	3.0	3.0	-	3.0	3.0	10.0	3.0	10.0	2.59	2.59	-	2.59	2.59	1.91	2.59	1.91
		Build 2035	2035	3.0	3.0	-	3.0	3.0	10.0	3.0	10.0	2.59	2.59	-	2.59	2.59	1.91	2.59	1.91

Notes:
1) If average speeds were less than 3 mph, they were set equal to 3 mph.

Summary of Average Speeds and Emission Factors for CO Hot Spots Analysi

Intersection		Alternatives	Average Speed - Departure (mph)				Departure Emission Factors (g/mile)			
			NB	SB	EB	WB	NB	SB	EB	WB
Int 15	SR 99 NB Ramps/ California Avenue (PM only)	Existing 2009	21.60	3.00	31.20	22.10	5.60	11.96	4.51	5.60
		Existing plus project 2009	21.60	3.00	31.20	15.70	5.60	11.96	4.51	6.86
		No Build 2035	26.10	3.00	26.60	6.60	1.11	2.59	1.09	2.26
		Build 2035	26.10	3.00	26.60	3.30	1.11	2.59	1.09	2.59
Int 23	Union Avenue/ California Avenue (PM only)	Existing 2009	18.70	23.40	21.60	9.70	6.10	5.45	5.60	8.95
		Existing plus project 2009	18.70	5.10	21.60	9.70	6.10	11.49	5.60	8.95
		No Build 2035	10.20	15.70	3.80	9.70	1.91	1.42	2.57	1.91
		Build 2035	10.20	3.30	3.80	9.70	1.91	2.59	2.57	1.91
Int 30	Oak Street/ Truxtun Avenue (PM only)	Existing 2009	3.20	3.20	10.10	3.00	11.96	11.96	8.95	11.96
		Existing plus project 2009	3.20	3.20	10.10	3.00	11.96	11.96	8.95	11.96
		No Build 2035	3.00	3.00	3.30	24.00	2.59	2.59	2.59	1.15
		Build 2035	3.00	3.00	3.30	24.00	2.59	2.59	2.59	1.15
Int 47	Oak Street/ SR 178 (PM only)	Existing 2009	21.60	3.00	3.00	22.10	5.60	11.96	11.96	5.60
		Existing plus project 2009	21.60	3.00	3.00	22.10	5.60	11.96	11.96	5.60
		No Build 2035	21.60	3.00	3.00	31.00	1.19	2.59	2.59	1.03
		Build 2035	21.60	3.00	3.00	31.00	1.19	2.59	2.59	1.03

Notes:
1) If average speeds were less than 3 mph, they were set equal to 3 mph.

Appendix D

Fugitive Dust Memo

URS/HMM/Arup Joint Venture
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MEMORANDUM

To: **PMT**
From: Nathalia Prasetyo Jo (URS)
Date: July 12, 2010
Subject: **Wind-Generated Fugitive Dust Emissions from a Passing High-Speed Train**

Wind erosion occurs when drag forces or shear stresses exerted by the wind exceed the retention forces acting on particles or debris at the surface. Once the minimum wind speed required to initiate particle motion (threshold friction velocity) has been reached, wind erosion occurs as a function of wind power or wind speed.
Trains traveling at high velocity, such as the High-Speed Train, drag the surrounding air along the side of its body, which induces sideways turbulent fluctuations and rear wake. The strong turbulent airflow along the sides of a moving train and the wake at the rear of the train may resuspend erodible debris and fine particulates from the surface of the surrounding impacted area, similar to particle resuspension from wind erosion.

Methodology

To estimate the fugitive dust emission from the particle resuspension, the AP42 guidance Chapter 13.2.5 Wind Erosion was used to quantify the emission factor for wind-generated fugitive particulates emissions from a passing High-Speed Train. This memo presents the approach used to estimate the annual PM_{10} and $PM_{2.5}$ emissions from the High-Speed Train operation based on the AP42 guidance and current project description (at 15%design).
Annual wind-generated fugitive dust/particulates emissions from a passing High-Speed Train are a function of the impacted zone area and the wind erosion emission factor (per unit area). According to the AP42 guidance, the wind erosion emission factor emission factor (in terms of mass per unit area) is a function of the disturbance frequency (where disturbance is defined as an action that results in the exposure of fresh surface material) in a year and erosion potential (which depends on friction velocity and threshold friction velocity).
The influencing factors such as the impacted zone area, wind erosion emission factor, disturbance frequency, erosion potential and induced wind speed profile are discussed in detail in the following subsections.

Impacted Zone Area

The impacted zone area for the High-Speed Train scenario is defined as the surface area within both shoulders of the train track or within the right of way, at which the maximum friction

velocity on the surface material is higher than the threshold friction velocity (the minimum wind speed required to initiate particle motion).

The length of the impacted zone area is equal to the length of the at-grade track. Along the Fresno to Bakersfield alignment, the length of the at-grade track is approximately 43.56 miles (total track length subtracted by the elevated track section length)[1].

The width of the impacted zone is twice the distance from the beginning of the right of way area to the point where the corresponding maximum surface friction velocity generated by the induced turbulence is equal to the threshold friction velocity (assumed 0.19 m/s, based on the lowest value available for disturbed desert soil[2]). In this memo, the width of the impacted zone is referred to in terms of distance from the train body. The doubling of width was to account for the right of way area on the left and right side of the train track.

The boundary for the impacted zone is assumed to start at beginning of the right of way area (approximately one meter from the train body) and end at the distance where the corresponding friction velocity is equal to the threshold friction velocity. The surface area from the train body to the beginning of the right of way area was assumed to consist of non-erodible material because that area is within the embankment and rock ballast area.

To quantify the fugitive dust emissions generated by a High-Speed train passing at the speed of 220 mph, the emission factor needs to account for the induced wind speed profile and the distance within the impacted zone. Further discussion on the determination of the impacted zone boundary is presented in the induced wind speed section.

Wind Erosion Emission Factor

Based on the AP42 guidance, the emission factor for wind-generated dust emissions from the surface material of the impacted zone should be calculated as follows:

Emission factor (g/m2): $k\sum_{i=1}^{N} P_i$ (Eq.1)

Where:

k = particle size multiplier

N = number of disturbances per year

Pi = erosion potential corresponding to the observed (or probable) fastest mile of wind for the ith period between disturbances, g/m^2

As described in Eq.1, the emission factor is a function of the disturbance frequency and erosion potential. The approach and assumptions used to determine the disturbance frequency and erosion potential for the High-Speed Train operation scenario are presented as follows:

Disturbance Frequency

The disturbance is defined as an action that results in the exposure of fresh surface material. The

1 The length of at-grade track was estimated based on the Fresno to Bakersfield HST Alignments Preliminary Draft Map, URS, 2010.

2 Watson, J.G, "Effectiveness Demonstration of Fugitive Dust Control Methods for Public Unpaved Roads and Unpaved Shoulders on Paved Roads", DRI Document No. 685-5200. IF2: August 2, 1996.

number of disturbances per year during normal High-Speed Train operation is equal to the frequency of right of way access in a year (for maintenance or other purposes). The wind generated emission factor is dependent on the disturbance frequency because each time that the right of way surface area is disturbed, its erosion potential is restored.
The right of way surface area is currently expected to be disturbed twice monthly for visual inspection based on the operational and maintenance schedule of the High-Speed Train. Therefore, the erosion potential is assumed to be restored twice a month, which translates to 24 disturbances/year or N=24[3].

Erosion Potential
The erosion potential (P_i) is the finite availability of erodible material (mass/area) on a surface. For the wind erosion emission factor calculation, Pi is defined as the erosion potential corresponding to the observed fastest mile of wind[4] for the ith period between disturbances, and can be calculated as follows:

$P = 58\,(u^* - u^*_t)^2 + 25\,(u^* - u^*_t)$ (Eq.2)
$P = 0$ for $u^* < u^*_t$ (Eq.3)
Where:
u^* = friction velocity (m/s)
u^*_t = threshold friction velocity (m/s). Assumed 0.19 m/s, based on the lowest value available for disturbed desert soil.

Since there was no documentation for the friction velocity from High-Speed Train operation, induced wind velocity was used to estimate the friction velocity on the right of way surface based on the correlation given by Eq.4.

$$u_z = \frac{u^*}{0.4}\ln\left(\frac{z}{z_0}\right) \qquad (z > z_0) \qquad \text{(Eq.4)}$$

Where:
u_z = induced wind speed, m/s
u^* = friction velocity, m/s
z = height above test surface, cm
z_0 = roughness height, cm
0.4 = von Karman's constant, dimensionless

By substituting the friction velocity (u^*) from Eq.4 into Eq.2 and the erosion potential (Pi) from Eq. 2 into Eq. 1, the emission factor in Eq.1 can be expressed as a function of induced wind speed as shown in Eq. 5

3 Email correspondence between Thomas Baily (URS) with Arnold Luft (ARUP) dated July 6, 2010.
4 Fastest mile is the fastest one minute observed wind speed taken from a multiple register that contains a time record of the passing of each mile of wind

Emission factor (g/m^2): $$k\sum_{i=1}^{N}\left[58\left(\frac{0.4\,u_z}{\ln\left(\frac{z}{z_0}\right)}-u_t^*\right)^2+25\left(\frac{0.4\,u_z}{\ln\left(\frac{z}{z_0}\right)}-u_t^*\right)\right]_i \qquad \text{(Eq.5)}$$

Where:
k = particle size multiplier (0.5 for PM_{10} and 0.075 for $PM_{2.5}$).
u_z = induced wind speed at a certain height above the surface (m/s). Note that emissions are only calculated in area with $u^* > u^*_t$. Because, when $u^* < u^*_t$, the erosion potential (P) is equal to zero.
u^*_t = threshold friction velocity. Assumed 0.19 m/s, based on the lowest value available for disturbed desert soil.
z = height above the surface (288 cm), based on 1/2 of the train height (1.88 m) and the average embankment height (3ft ~1 meter) with respect to the right of way5.
z_0 = surface roughness height (cm), assume 0.01 cm for the at grade right of way
0.4 = von Karman's constant, dimensionless

By substituting the assumptions above and other known parameters into Eq. 5, the equation can be simplified to.

Emission factor (g/m^2): $$k\sum_{i=1}^{N}\left[58\left(0.038955u_z-0.19\right)^2+25\left(0.038955u_z-0.19\right)\right]_i \quad \text{(Eq.6)}$$

Where:
k = particle size multiplier (0.5 for PM_{10} and 0.075 for $PM_{2.5}$).
u_z = induced wind speed at a certain height above the surface (m/s). Note that emissions are only calculated in area with $u_z > 4.88$ m/s (a substitute for $u^* > u^*_t$). Because, when $u^* < u^*_t$, the erosion potential (P) is equal to zero.

As shown in Eq. 6, the emission factor can be expressed as a function of induced wind speed along the side of the train body. By integrating the emission factor function in Eq.6 across the induced wind speed values within the impacted zone boundary (u_z) area, and multiplying the emission factor by the number of disturbance (24 times per year) and the particle size multiplier (k), the annual fugitive dust emissions from the High-Speed Train activity can be estimated. Dust emissions generated by the wake at the rear of the train were not added to this calculation to avoid double counting. The erodible dust is already suspended in the air when the rear end of the train passes through and therefore additional turbulence or the rear wake will not contribute to more raised dust in the air.

Induced Wind Speed Profile

The width of the impacted zone is twice the distance from the beginning of the right of way to the point where the corresponding maximum surface friction velocity generated by the induced turbulence is equal to the threshold friction velocity. To determine the distance where the corresponding maximum surface friction velocity generated by the induced turbulence is equal to the threshold friction velocity, a wind speed profile analysis is required.

5 Track related measurements are based on Technical Memorandum, Typical Cross Sections for 15% Design TM 1.1.21 Appendix A: Two Track At-Grade Drawing and Project Description Summary (June 28, 2010)

A study on the potential aerodynamic forces created by a passing High-Speed Train on nearby objects (such as humans standing in the proximity of the train) are influenced by train speed, distance from the train, and the geometry of the train[6]. Li, et. al. analyzed the maximum wind velocity around a human body for a specific train speed as a function of human-train distance based on different train shape models:

$$u = (1.2319)^{0.072v-4} \times (0.4575d^2 - 3.5496d + 9.1545) \qquad \text{(Eq.7)}$$

Where:
u: the maximum wind velocity around human body near the train (m/s).
d: human-train distance (m).
v: train running speed (m/s).

The range of train speeds specified for Eq. 7 are between 55.56 m/s and 97.22 m/s (between 124 mph and 217 mph) with a human-train distance between 1.0 m and 3.5 m. This raises questions about the validity of this equation to estimate aerodynamic forces from a High Speed train traveling at a speed of 220 mph.
An induced wind speed profile comparison was graphed to determine the relative accuracy of using Eq 7 to estimated aerodynamic forces for train speeds of 220 mp compared to 217 mph (the upper bound of the train speed range for Eq 7). Figure 1 shows that Eq. 7 presents a similar trend when a train speed of 220 mph is used as compared to a train speed of 217 mph. Therefore Eq. 7 can be used to determine the induced wind speed profile as a function of distance from train body for train passing at 220 mph.

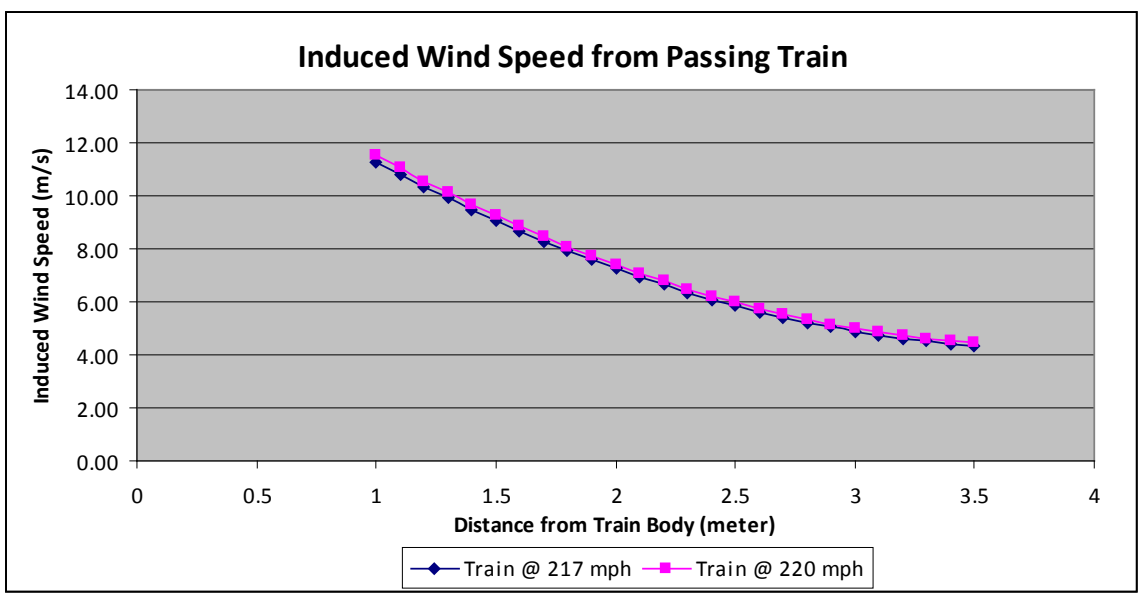

Figure 1. Wind Speed Profile Comparison from Train at 220 mph and 217 mph

6 Li, Renxian, et.al, "A Study of the Influence of Aerodynamic Forces on a Human Body near a High-Speed Train, Aerodynamics of Heavy Vehicles", Trucks, Buses, and Trains, 2008.

Emission Calculation

The emission factor profiles over the distance from the train body are presented in Figure 2 and the emission factor over the impacted zone area is summarized in Table 1.

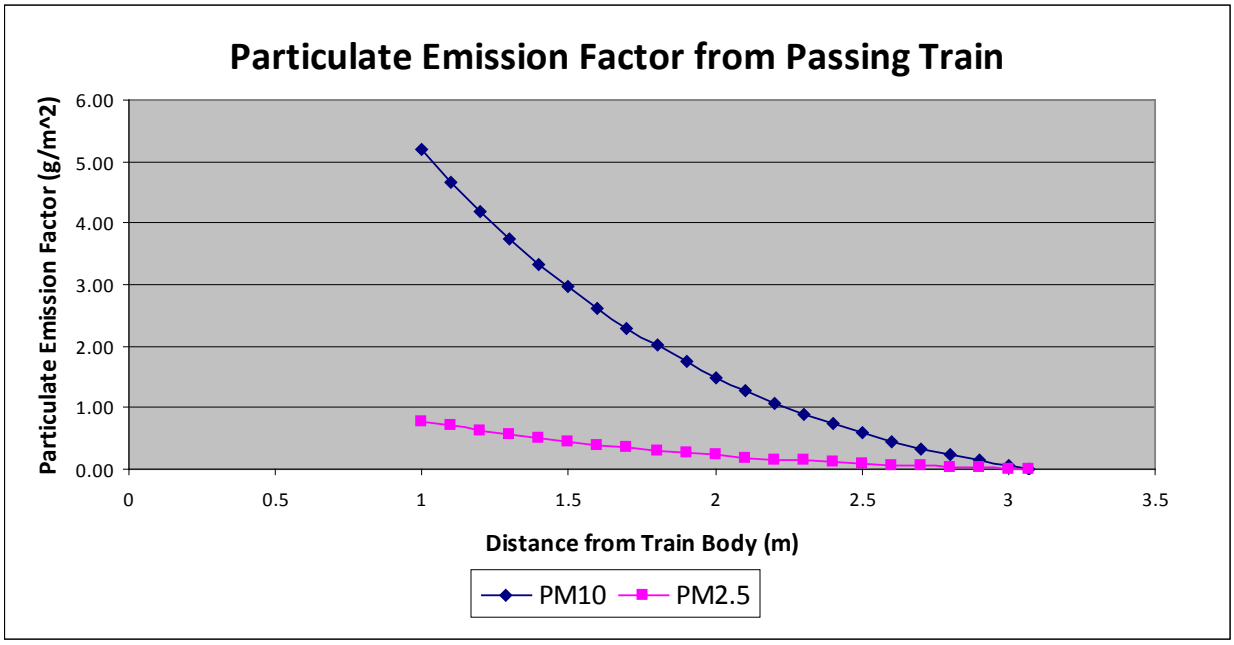

Figure 2. Particulate Emission Factor from Passing Train

Table 1. Emission Factor from Passing Train

Distance from Train-Body	Wind Speed (220 mph Train)	Friction Velocity	Erosion Potential	Emission Factor (g/m^2)	
(m)	u (m/s)	u*(m/s)	P (g/m^2)	PM_{10}	$PM_{2.5}$
1	11.53	0.45	10.37	5.18	0.78
1.1	11.03	0.43	9.33	4.67	0.70
1.2	10.56	0.41	8.38	4.19	0.63
1.3	10.10	0.39	7.49	3.75	0.56
1.4	9.66	0.38	6.68	3.34	0.50
1.5	9.24	0.36	5.92	2.96	0.44
1.6	8.83	0.34	5.23	2.62	0.39
1.7	8.45	0.33	4.60	2.30	0.34
1.8	8.08	0.31	4.02	2.01	0.30
1.9	7.72	0.30	3.48	1.74	0.26
2	7.39	0.29	3.00	1.50	0.22
2.1	7.07	0.28	2.56	1.28	0.19
2.2	6.77	0.26	2.16	1.08	0.16
2.3	6.48	0.25	1.79	0.90	0.13
2.4	6.22	0.24	1.46	0.73	0.11
2.5	5.97	0.23	1.17	0.58	0.09
2.6	5.74	0.22	0.90	0.45	0.07
2.7	5.53	0.22	0.67	0.33	0.05
2.8	5.33	0.21	0.46	0.23	0.03
2.9	5.15	0.20	0.27	0.14	0.02
3	4.99	0.19	0.11	0.05	0.01
3.07	4.88	0.19	0.01	0.00	0.00

As shown in Table 1, the corresponding friction velocity at the distance of 3.07 meters from the train body is equal to the threshold friction velocity of 0.19 m/s. Therefore, emission factor for wind-generated dust emissions should be calculated from the beginning of the right of way (1 meter from the train body) to the distance of 3.07 meters from the train body.

The emission factor for wind-generated particulate emissions from a passing High-Speed Train moving at 220 mph was calculated with the following steps:

- Using Eq. 6 and Eq. 7, integrate the emission factor over the distance of 1 meter to 3.07 meter from the train body.
- Multiply by particle size multiplier, k (0.5 for PM_{10} and 0.075 for $PM_{2.5}$)
- Multiply by 43.56 miles of at grade track length (impacted zone length).
- Multiply by two (to account for the left and right shoulders).
- Multiply by 24 disturbances per year (twice monthly).

Using the trapezoidal rule for numerical integration, the results for emission factor for wind-generated particulate emissions from a passing High-Speed train moving at 220 mph are 26.53 lb PM_{10} /miles of at grade track and 3.98 lb $PM_{2.5}$/ miles of at grade track. Multiplied by the

impacted zone length and disturbance frequency, the annual PM_{10} and $PM_{2.5}$ emissions from the High-Speed Train operation for the Fresno-Bakersfield section are 28.97 ton of PM_{10} /year and 4.3 ton of $PM_{2.5}$ /year.

Reference

H. Lee, "Assessment of Potential Aerodynamic Effects on Personnel and Equipment in Proximity to High-Speed Trains Operations", DOT/FRA/ORD-99/11, December 1999.

U.S. Environmental Protection Agency (USEPA), “Compilation of Air Pollutant Emission Factors Chapter 13.2.5”, AP-42, 5th ed., Washington, D. C., 2006.

Li, Renxian, et.al, “A Study of the Influence of Aerodynamic Forces on a Human Body near a High-Speed Train, Aerodynamics of Heavy Vehicles”, Trucks, Buses, and Trains, 2008.

Watson, J.G, “Effectiveness Demonstration of Fugitive Dust Control Methods for Public Unpaved Roads and Unpaved Shoulders on Paved Roads”, DRI Document No. 685-5200. IF2: August 2, 1996.

Appendix E

Existing Conditions Memo

E. Existing Conditions Appendix

E.1 Existing Conditions Memorandum

E.2 HST 2009 Operational Emissions Summary

E.3 Station Operational Emissions Summary – 2009
- E.3-1 Fresno Station Operational Emissions - 2009
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Appendix E

E.1 Existing Conditions Memorandum

Existing Conditions Plus Project Analysis

This technical memorandum (TM) summarizes the air quality analysis conducted for the Existing Conditions Plus Project against the Existing Conditions.

1.0 Purpose and Approach

Per California Environmental Quality Act (CEQA) requirements, an Environmental Impact Report (EIR) must include a description of the existing physical environmental conditions in the vicinity of the project. Those conditions, in turn, "will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." (CEQA Guidelines §15125[a]).

However, for a project, such as the California High-Speed Train (HST) Project, that would not commence operation for almost 10 years and would not reach full operation for almost 25 years, use of only existing conditions as a baseline for air quality impacts would be misleading. It is more likely that existing background traffic volumes, background roadway changes from other programmed traffic improvement projects, and vehicle emission factors would change between today and 2020/2035 than it is that existing conditions would remain unchanged over the next 10 to 25 years. For example, Regional Transportation Plans (RTPs) include funded transportation projects that are programmed to be constructed by 2035. To ignore that these projects would be in place before the HST project reaches maturity (i.e., the point/year at which HST-related traffic emissions reach their maximum), and to evaluate the HST project's air quality impacts ignoring that these RTP improvements would change the underlying background conditions to which HST project traffic would be added, would be misleading because it would represent a hypothetical comparison.

Therefore, the air quality analysis uses a dual baseline approach. That is, the HST project's air quality impacts are evaluated both against existing conditions and against background (i.e., No Project) conditions as they are expected to be in 2035. This approach complies with CEQA. (See Woodwark Park Homeowners Ass'n v. City of Fresno (2007), 150 Cal.App.4th 683, 707 and Sunnyvale West Neighborhood Assn. v. City of Sunnyvale (2010), 190 Cal.App.4th 1351). Results for both baselines are presented. The results comparing the project with the future expected baseline are presented in detail in the main text of the air quality section. The results comparing the project with existing conditions are presented in the main text in summary format; details (including mitigation) are presented in this TM. This approach complies with CEQA. It informs the public of potential project impacts under both baselines, but focuses the analysis on the baseline analysis more likely to occur.

Using the air quality analysis methodologies described in Section 6 of the Fresno to Bakersfield Section Air Quality and Global Climate Change Technical Report (Authority and FRA 2011a), the impacts of the proposed project have been evaluated and are discussed in the following sections of this technical memorandum.

2.0 Methodology

The Existing Conditions Plus Project versus Existing Conditions analysis provides a comparison between the future HST project, not accounting for natural growth and other transportation and program improvement projects in the region in 2035 (Existing Conditions Plus Project), and the existing conditions in 2009 (Existing Conditions).

2.1.1 Construction

There is no future natural growth or other non-HST related improvements included in the project construction impacts presented in the Fresno to Bakersfield Section Draft Project Environmental Impact Report and Environmental Impact Statement (EIR/EIS) for the California HST Project (Authority and FRA 2011b). Therefore, project construction impacts from existing conditions plus compared to existing conditions would be the same as discussed in the EIR and EIS. No additional analysis was done for the HST construction-phase analysis.

2.1.2 Operation

The Existing Conditions Plus Project versus Existing Conditions analysis was conducted for the HST, and includes evaluation of the state, regional, and local impacts.

Operational impacts from the six Fresno to Bakersfield HST Project Alternatives would be the same. Therefore, the analysis presented below applies to each of the project alternatives evaluated for the Fresno to Bakersfield Section.

The following operational-phase impacts were evaluated for the Existing Conditions Plus Project for comparison to Existing Conditions:

- Criteria and greenhouse gas (GHG) emissions from on-road vehicles, airport emissions, and power requirements
- Mobile source air toxic (MSAT) emissions from on-road vehicles
- Local carbon monoxide (CO) hot spots

The emissions from these sources include the changes from planned traffic improvements and regional growth. Therefore, to evaluate the impacts from Existing Conditions Plus Project, revised traffic information was used in these analyses, which excluded changes from planned traffic improvements and regional growth. Otherwise, the approach used for evaluating the impacts for the Existing Conditions Plus Project are the same as those used to evaluate the Project Alternative and are discussed in the EIR/EIS and Fresno to Bakersfield Section Air Quality and Global Climate Change Technical Report (Authority and FRA 2011a).

Operational-phase impacts for the Project compared against existing conditions would be the same as those analyzed in the EIR/EIS for the following sources because no additional non-HST related future improvements were incorporated into the operational conditions evaluated for these facilities:

- Fugitive dust from train movement
- Maintenance facilities onsite equipment operations[1]
- Local particulate matter (PM) hot spots
- Odors

Detailed information regarding the impacts from these sources is included in the EIR/EIS (Authority and FRA 2011b) and Fresno to Bakersfield Section Air Quality and Global Climate Change

Technical Report (Authority and FRA 2011a) and are not discussed further in this technical memorandum.

3.0 Statewide and Regional Criteria Emission Analysis

Table 3-1 summarizes statewide emission changes between the Existing Plus Project and the Existing Conditions. As shown in Table 3-1, the project is predicted to have a beneficial effect on (i.e., reduce) statewide emissions of all applicable pollutants. The analysis estimated the emission changes due to projected reductions of on-road VMT and intrastate plane travel, and increases in electrical demand (required to power the HST).

Table 3-1

2009 Estimated Statewide Emission Burden Changes due to the Existing Conditions Plus Project

Project Element	HC (tons/day)	CO (tons/day)	NO_x (tons/day)	SO2 (tons/day)	PM_{10} (tons/day)	$PM_{2.5}$ (tons/day)
Roadways	-3.56	-69.67	-24.31	0.08	-1.21	-0.90
Planes	-0.37	-3.42	-4.58	-0.32	-0.04	-0.04
Energy (Power Plants)	0.10	1.03	0.69	0.09	0.14	0.13
Total	**-3.84**	**-72.06**	**-28.20**	**-0.31**	**-1.11**	**-0.80**

Note: *Totals may not add up exactly due to rounding.*

3.1 On-Road Vehicles

As shown in Table 3-2, the HST is predicted to reduce daily roadway VMT by over 17 million miles a day statewide due to travelers choosing to use the HST rather than drive. As such it is predicted to reduce roadway emissions by approximately 2%, compared to the existing conditions. The on-road vehicle emission analysis is based on VMT changes and associated average daily speed estimates, calculated for each affected county. Emission factors were obtained from EMFAC2007, using parameters set within the program for each individual county to reflect travel within each county and statewide parameters to reflect travel through each county.

Table 3-2
2009 On-Road Vehicle Emission Changes due to HST

County	Existing VMT	Existing Plus Project VMT	Change in Emissions with HST (Tons/Day)					
			HC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$
Fresno County	22,500,000	22,050,000	-0.10	-1.78	-1.07	0.00	-0.05	-0.03
Kern County	21,500,000	21,070,000	-0.13	-1.82	-1.83	-0.00	-0.07	-0.06
Kings County	3,700,000	3,626,000	-0.02	-0.35	-0.34	0.00	-0.01	-0.01
Madera County	4,177,690	4,094,136	-0.02	-0.39	-0.22	0.00	-0.01	-0.01
Merced County	7,000,000	6,860,000	-0.04	-0.63	-0.54	0.00	-0.02	-0.02
Tulare County	9,900,000	9,900,000	0.00	0.00	0.00	0.00	0.00	0.00
Statewide Total	888,400,000	870,632,000	-3.56	-69.67	-24.31	-0.08	-1.21	-0.90

Note: *Totals may not add up exactly due to rounding.*

3.2 Airport Emissions

As shown in Table 3-3, the HST is predicted to reduce the number of plane flights due to travelers choosing to use the HST rather than fly to their destination. Emissions and Dispersion Modeling System (EDMS) was used to estimate airplane emission factors. The EDMS estimated the emissions generated from the projected number of landing and takeoff (LTO) cycles. Along with the emissions from the planes themselves, emissions generated from associated ground maintenance requirements are also included. Average plane emissions are calculated based on the profile of aircraft currently servicing the San Francisco to Los Angeles corridor. The number of air trips removed due to the HST was estimated in the travel demand modeling analysis conducted for the project.

Table 3-3
2009 Aircraft Emission Changes due to HST

Origin	No. of Flights Removed	Change in Emission Burdens due to HST (Tons/Day)					
		HC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$
Central Coast	-1	0.00	-0.01	-0.01	0.00	0.00	0.00
Far North	-9	-0.02	-0.14	-0.19	-0.02	0.00	0.00
Fresno/Madera	0	0.00	0.00	0.00	0.00	0.00	0.00
Kern	-9	-0.02	-0.14	-0.19	-0.02	0.00	0.00
LA Basin_North	-25	-0.04	-0.38	-0.51	-0.04	0.00	0.00
LA Basin_South	-51	-0.09	-0.78	-1.04	-0.08	-0.01	-0.01
Merced	-1	0.00	-0.01	-0.01	0.00	0.00	0.00
Monterey Bay	-9	-0.02	-0.14	-0.19	-0.02	0.00	0.00
Sacramento Region	-9	-0.02	-0.14	-0.19	-0.02	0.00	0.00
San Diego Region	-27	-0.05	-0.42	-0.56	-0.04	0.00	0.00
San Joaquin	-4	-0.01	-0.06	-0.08	-0.01	0.00	0.00
SF Bay Area	-75	-0.13	-1.15	-1.54	-0.13	-0.01	-0.01
South SJ Valley	0	0.00	0.00	0.00	0.00	0.00	0.00
Stanislaus	-3	0.00	-0.04	-0.06	-0.01	0.00	0.00
W. Sierra Nevada	-1	0.00	-0.01	-0.01	0.00	0.00	0.00
Statewide Total	-224	-0.37	-3.42	-4.58	-0.32	-0.04	-0.04

3.3 Power Plant Emissions

The HST is expected to increase electrical requirements as compared to the existing scenario. The electrical demands due to propulsion of the trains, the operation of the trains at terminal stations and in storage depots and maintenance facilities etc., are conservatively estimated to be 8.24 gigawatt hours per day (including transmission losses of approximately 3%). Average emission factors (in terms of grams per kilowatt hour) were derived from ARB statewide emission inventories of electrical and cogeneration facilities data along with the California energy commission's electrical generation data. As shown in Table 3-4, the project is expected to increase emissions.

Table 3-4

Power Plant Emission Changes due to HST

Electricity required (GWH per day)	Change in Emissions due to HST (Tons/Day)					
	HC	CO	NO_x	SO_2	PM_{10}	$PM_{2.5}$
8.24	0.10	1.03	0.69	0.09	0.14	0.13

The system will be powered by the state's electrical grid, and therefore no one generation source for the electrical power requirements can be positively identified. Emission changes from power generation can therefore be predicted on a statewide level only. The State of California is requiring an increasing fraction of electricity generated for the state's power portfolio to come from renewable energy sources. As such, the emissions generated for powering the HST system are expected to be lower in the future as compared to emission estimates used in this analysis.

3.4 Regional Emissions

Regional emissions include the portion of emissions from vehicle and air travel, power stations that would operate in the project study area, and the direct HST operation emissions from the stations, Heavy Maintenance Facility (HMF), Maintenance-of-Way Facility (MOWF), and train movements. As shown in Table 3-5, the regional criteria pollutant emissions from the Existing Conditions Plus Project would be less than those under Existing Conditions for all pollutants. Therefore, the Project demonstrates a regional benefit for all criteria pollutants analyzed compared to Existing Conditions.

Table 3-5
Summary of 2009 Regional Changes in Operational Emissions (tons/year)[e]

Activities	Change in Emission Burdens due to HST (Tons/Year)					
	VOC	CO	NOx	SO_2	PM_{10}	$PM_{2.5}$
Indirect Existing Conditions Plus Project Emissions						
Vehicle emissions	-91	-1,442	-1,183	-3.9	-47	-37
Air travel emissions	-3.7	-22	-29	-2.1	0.00	0.00
Power plant emissions[a]	5.0	52	35	4.5	7.0	6.5
Direct Existing Conditions Plus Project Emissions [b]						
Train station operations	19	563	67	0.6	6.0	3.3
HMF onsite emissions	0.56	9.0	3.5	0.47	0.13	0.12
HMF offsite mobile sources emissions	2.37	66	10	0.07	0.73	0.43
MOWF offsite emissions	0.65	20	2.3	0.0	0.2	0.1
Fugitive dust from train operations	N/A	N/A	N/A	N/A	29	4.3
Existing Conditions Plus Project Total [c]	-67	-754	-1,095	-0.29	-4.4	-22
San Joaquin Valley Air Pollution Control District (SJVAPCD) CEQA Significance Thresholds	10	N/A	10	N/A	15	15
Exceeds SJVAPCD CEQA Thresholds d	No	N/A	No	N/A	No	No

[a] The change in power plant emissions are presented for the alternative with the longest alignment.
[b] Direct emissions were taken from the EIR/EIS and *Air Quality and Global Climate Change Technical Report, with adjustments to on-road vehicle emissions using 2009 emission factors.*
[c] The total includes the indirect and direct emissions.
[d] The SJVAPCD has significance thresholds for NO_x and Reactive Organic Gasses (ROG)/VOC(SJVAPCD, 2002). The District provided information about thresholds for PM_{10} (Willis, 2010) and $PM_{2.5}$ (Barber, 2011). The District currently does not have thresholds for CO
[e] All emissions presented in this table are differences between Existing Conditions Plus Project and the Existing Conditions.

4.0 State and Regional Greenhouse Gas Impacts

Table 4-1 summarizes the statewide GHG emission changes (expressed in terms of CO_2) due to the project. As shown in Table 4-1, the project is predicted to have a beneficial effect on statewide GHG

emissions. The analysis estimated the emission changes from reduced on-road VMT, reduced intrastate plane travel, and increased electrical demand.

GHG emissions would be reduced when comparing the Existing Conditions Plus Project to Existing conditions, due to the reductions in regional VMT and air travel after project build-out. Although operation of the HST would use indirect electricity, which would cause an increase in indirect GHG emissions, the Project would overall have lower GHG emissions compared to Existing Conditions due to the greater reduction in GHGs emitted from vehicles and aircraft compared to Existing Conditions.

Table 4-1
2009 Estimated Statewide GHG Emission Changes due to the HST

Project Element	Change in CO_2 Emissions due to HST (Tons/Day)
Roadways	-8,909.24
Planes	-842.96
Energy (Power Plants)	2,730.00
Total	**-7,022.20**

Note: Totals may not add up exactly due to rounding.

4.1 On-Road Vehicles

As shown in Table 4-2, the HST is predicted to reduce statewide daily roadway VMT by over 17 million miles due to travelers choosing to use the HST rather than drive. This equates to a savings of approximately 8,900 tons of CO_2 per day as compared to the existing scenario. The on-road vehicle emission analysis is based on projected VMT changes and associated average daily speed estimates, calculated for each affected county as part of the project's transportation analysis. GHG emission factors were obtained from EMFAC2007, using parameters set within the program for each individual county to reflect travel within each specific county and statewide parameters to reflect travel through each county.

Table 4-2
2009 On-Road Vehicles GHG Emission Changes due to the HST

County	Existing VMT	Existing Plus Project VMT	Change in CO_2 Emissions with HST (Tons/Day)
Fresno County	22,500,000	22,050,000	-253.97
Kern County	21,500,000	21,070,000	-310.24
Kings County	3,700,000	3,626,000	-52.19
Madera County	4,177,690	4,094,136	-47.21
Merced County	7,000,000	6,860,000	-92.24
Tulare County	9,900,000	9,702,000	-102.58
Statewide Total	888,400,000	870,632,000	-8,909.24

Note: *Totals do not add up because additional counties outside of the region are not presented.*

4.2 Airport Emissions

As shown in Table 4-3, the HST is predicted to reduce the number of plane flights due to travelers choosing to use the HST rather than fly to their destination. The EDMS was used to estimate an airplane's GHG emission factors. The EDMS estimated the emissions generated from the projected number of LTO cycles. Along with the emissions from the planes themselves, emissions generated from associated ground maintenance requirements are also included. Average plane GHG emissions are calculated based on the profile of aircraft currently servicing the San Francisco to Los Angeles corridor. The number of air trips removed due to the HST was estimated in the travel demand modeling analysis conducted for the project.

Table 4-3

2009 Aircraft GHG Emission Changes (in terms of CO_2) due to the HST

Origin	No. of Flights Removed	Change in CO_2 Emissions due to HST (Tons/Day)
Central Coast	-1	-2.18
Far North	-9	-34.85
Fresno/Madera	0	0.00
Kern	-9	-34.85
LA Basin_North	-25	-93.66
LA Basin_South	-51	-191.68
Merced	-1	-2.18
Monterey Bay	-9	-34.85
Sacramento Region	-9	-34.85
San Diego Region	-27	-102.37
San Joaquin	-4	-15.25
SF Bay Area	-75	-283.16
South SJ Valley	0	0.00
Stanislaus	-3	-10.89
W. Sierra Nevada	-1	-2.18
Statewide Total	-224	-842.96

Note: *Totals may not add up exactly due to rounding.*

4.3 Power Plant Emissions

The HST is expected to increase electrical requirements as compared to the existing scenario. The electrical demands due to propulsion of the trains, the operation of the trains at terminal stations and in storage depots and maintenance facilities etc., are conservatively estimated to be 8.24 gigawatt hours per day (including transmission losses of approximately 3%). Average emission factors (in terms of grams per kilowatt hour) were derived from CARB statewide emission inventories of electrical and cogeneration facilities data along with the California energy commission's electrical generation data. As shown in Table 4-4, the project is expected to increase emissions.

The system will be powered by the state's electrical grid, and therefore no one generation source for the electrical power requirements can be positively identified. Emission changes from power generation can therefore be predicted on a statewide level only. The State of California is requiring

an increasing fraction of electricity generated for the state's power portfolio to come from renewable energy sources. As such, the emissions generated for powering the HST system are expected to be lower in the future as compared to emission estimates used in this analysis.

Table 4-4
Power Plant Emission Changes due to the HST

Electricity required (GWH per day)	Change in CO_2 Emissions due to HST (Tons/Day)
8.24	2,730.00

4.4 HST Operations

Operation of the HST would result in GHG emissions from the combustion of fossil fuels through onsite sources and offsite mobile sources used for employee commutes and vendor trips to the maintenance facilities and HST stations. No direct GHG emissions would result from operation of the trains on the alignment because the trains would be electrically powered. Train operation would result in only indirect GHG emissions from energy consumption, as discussed in the power plant analysis. Table 4-5 summarizes the regional GHG emissions from the proposed Project, indicating a net increase in emissions compared to Existing Conditions.

Table 4-5
2009 HST Regional GHG Emissions (tons/year)

Activities	2009 CO_2 Operational Emissions [a]
Regional VMT	-262,428
Regional Airport	-5,566
Indirect Regional Power	136,862
HST Station and HMF Operation	88,721
Net Regional Difference	-42,411
[a] Emission factors for CO_2 do not account for improvements in technology.	

5.0 Mobile Source Air Toxic Analysis

As shown in Table 3.2, the Existing Conditions Plus Project would reduce regional VMT by an average of 2% from the Existing Conditions. Since MSAT emission rates are proportional to VMT, a reduction of the regional VMT would also result in a reduction of MSAT emissions. Therefore, the Existing Conditions Plus Project would have lower MSAT emissions than the Existing Conditions and would result in a net beneficial impact.

6.0 Microscale CO Analysis

Intersections near the project area were considered to determine whether the Project would create areas of potentially elevated CO concentrations, referred to as hot spots. The CO analysis focused on locations near the HST stations, the HMF, and locations where a change in roadway structure or traffic conditions would occur. The intersections evaluated for potential violations of state and local CO standards using the methodology described in the CO Hot-Spot Analysis Section of the EIR/EIS. The methodology was used for the following areas:

- Fresno Station
- Kings/Tulare Regional Station
- Bakersfield Station
- Fresno HMF
- Wasco HMF

Intersections included in the CO hot spot modeling were selected based on comparisons of level of service, traffic volumes, and delay time under Existing Conditions and Existing Conditions Plus Project at the intersections. Tables 6-1, 6-2, 6-3, 6-4, and 6-5 summarize the modeled CO concentrations for the selected intersections. The CO hot-spot analysis results presented in the tables include the modeled concentrations plus the background concentrations. The background CO concentrations are from monitored data representing existing conditions (2007 – 2009).

As shown in Tables 6-1, 6-2, 6-3, 6-4, and 6-5, the intersections evaluated would have CO concentrations lower than the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) for both the Existing Conditions and Existing Conditions Plus Project. Therefore, the localized CO emissions from the Existing Conditions Plus Project would not be expected to cause a violation of the ambient air standards, and the localized impacts at affected intersections would be less than significant

Table 6-1
Modeled CO Concentrations at Intersections Near Fresno Station

	1-Hour Concentration (ppm)			8-Hour Concentration		
Intersection	**Max. Modeled Increase**	**1-Hour Back-ground**	**Total Concen-tration**	**Max. Modeled Increase**	**8-Hour Back-ground**	**Total Concen-tration**
2009 Existing						
Van Ness St. / Inyo St.	0.4	3.1	3.5	0.28	2.34	2.6
H St. / Tulare St.	0.4	3.1	3.5	0.28	2.34	2.6
Van Ness Ave. / Fresno St.	0.6	3.1	3.7	0.42	2.34	2.8
2009 Existing Plus Project						
Van Ness St. /Inyo St.	0.4	3.1	3.5	0.28	2.34	2.6
H St. / Tulare St.	0.5	3.1	3.6	0.35	2.34	2.7
Van Ness Ave. / Fresno St.	0.7	3.1	3.8	0.49	2.34	2.8
Ambient Air Quality Standards						
CAAQS	-	-	20	-	-	9
NAAQS	-	-	35	-	-	9

Note: The 8-hour modeled increase is derived from the 1-hour modeled increase concentration by multiplying by a persistence factor of 0.7; see Coe, D.; Eisinger, D.S.; Prouty, J.D.; Kear. T. *Users' Guide for CL4: A User Friendly Interface for the CALINE4 Model for Transportation Project Impact Assessments*; Caltrans - University of California, Davis Air Quality Project, Sacramento (1998).

CO = carbon monoxide

ppm = parts per million

Table 6-2

Modeled CO concentrations at intersections near Kings - Tulare Station

	1-Hour Concentration (ppm)			8-Hour Concentration		
	Max. Modeled Increase	1-Hour Back-ground	Total Concen-tration	Max. Modeled Increase	8-Hour Back-ground	Total Concen-tration
2009 Existing						
8th Ave. / SR 198 WB Ramps	0.2	3.5	3.7	0.14	2.14	2.3
8th Ave. / SR 198 EB Ramps	0.2	3.5	3.7	0.14	2.14	2.3
SR 43 / Lacey Blvd.	0.3	3.5	3.8	0.21	2.14	2.4
2009 Existing Plus Project						
8th Ave. / SR 198 WB Ramps	0.2	3.5	3.7	0.14	2.14	2.3
8th Ave. / SR 198 EB Ramps	0.2	3.5	3.7	0.14	2.14	2.3
SR 43 / Lacey Blvd.	0.3	3.5	3.8	0.21	2.14	2.4
Ambient Air Quality Standards						
CAAQS	-	-	20	-	-	9
NAAQS	-	-	35	-	-	9

Note: The 8-hour modeled increase is derived from the 1-hour modeled increase concentration by multiplying by a persistence factor of 0.7; see Coe, D.; Eisinger, D.S.; Prouty, J.D.; Kear. T. *Users' Guide for CL4: A User Friendly Interface for the CALINE4 Model for Transportation Project Impact Assessments*; Caltrans - University of California, Davis Air Quality Project, Sacramento (1998).

CO = carbon monoxide

ppm = parts per million

Table 6-3

Modeled CO Concentrations at Intersections Near Bakersfield Station

	1-Hour Concentration (ppm)			8-Hour Concentration		
	Max. Modeled Increase	1-Hour Back-ground	Total Concen-tration	Max. Modeled Increase	8-Hour Back-ground	Total Concen-tration
2009 Existing						
Union Ave. / California Ave.	1.5	2.8	4.3	1.05	2.13	3.2
Oak Street / Truxton Ave.	3.2	2.8	6.0	2.24	2.13	4.4
Oak St. / SR 178	2.0	2.8	4.8	1.4	2.13	3.5
2009 Existing Plus Project						
Union Ave. / California Ave.	1.8	2.8	4.6	1.26	2.13	3.4
Oak Street / Truxton Ave.	3.2	2.8	6.0	2.24	2.13	4.4
Oak St. / SR 178	2.0	2.8	4.8	1.4	2.13	3.5
Ambient Air Quality Standards						
CAAQS	-	-	20	-	-	9
NAAQS	-	-	35	-	-	9

Note: The 8-hour modeled increase is derived from the 1-hour modeled increase concentration by multiplying by a persistence factor of 0.7; see Coe, D.; Eisinger, D.S.; Prouty, J.D.; Kear. T. *Users' Guide for CL4: A User Friendly Interface for the CALINE4 Model for Transportation Project Impact Assessments*; Caltrans - University of California, Davis Air Quality Project, Sacramento (1998).

CO = carbon monoxide

ppm = parts per million

Table 6-4
Modeled CO Concentrations at Intersections Near Fresno HMF

	1-Hour Concentration (ppm)			8-Hour Concentration		
	Max. Modeled Increase	1-Hour Back-ground	Total Concen-tration	Max. Modeled Increase	8-Hour Back-ground	Total Concen-tration
2009 Existing						
SR 99 SB Off-Ramp / E. American Ave. AM	0.1	3.5	3.6	0.07	2.14	2.21
SR 99 SB Off-Ramp / E. American Ave. PM	0.1	3.5	3.6	0.07	2.14	2.21
SR 99 SB Off-Ramp / Clayton Ave. AM	0.0	3.5	3.5	0	2.14	2.14
SR 99 SB Off-Ramp / Clayton Ave. PM	0.0	3.5	3.5	0	2.14	2.14
2009 Existing plus Project						
SR 99 SB Off-Ramp / E. American Ave. AM	0.1	3.5	3.6	0.07	2.14	2.21
SR 99 SB Off-Ramp / E. American Ave. PM	0.2	3.5	3.7	0.14	2.14	2.28
SR 99 SB Off-Ramp / Clayton Ave. AM	0.0	3.5	3.5	0	2.14	2.14
SR 99 SB Off-Ramp / Clayton Ave. PM	0.1	3.5	3.6	0.07	2.14	2.21
Ambient Air Quality Standards						
CAAQS	-	-	20	-	-	9
NAAQS	-	-	35	-	-	9

Note: The 8-hour modeled increase is derived from the 1-hour modeled increase concentration by multiplying by a persistence factor of 0.7; see Coe, D.; Eisinger, D.S.; Prouty, J.D.; Kear. T. *Users' Guide for CL4: A User Friendly Interface for the CALINE4 Model for Transportation Project Impact Assessments*; Caltrans - University of California, Davis Air Quality Project, Sacramento (1998).
CO = carbon monoxide

ppm = parts per million

Table 6-5
Modeled CO Concentrations at Intersections Near Wasco HMF

	1-Hour Concentration (ppm)			8-Hour Concentration		
	Max. Modeled Increase	1-Hour Back-ground	Total Concen-tration	Max. Modeled Increase	8-Hour Back-ground	Total Concen-tration
2009 Existing						
SR 43/Wasco Avenue AM	0.0	2.8	2.8	0	2.13	2.13
SR 43/Wasco Avenue PM	0.1	2.8	2.9	0.07	2.13	2.2
Wasco Avenue - J Street/6th Street	0.0	2.8	2.8	0	2.13	2.13
2009 Existing Plus Project						
SR 43/Wasco Avenue AM	0.1	2.8	2.9	0.07	2.13	2.2
SR 43/Wasco Avenue PM	0.1	2.8	2.9	0.07	2.13	2.2
Wasco Avenue - J Street/6th Street	0.0	2.8	2.8	0	2.13	2.13
Ambient Air Quality Standards						
CAAQS	-	-	20	-	-	9
NAAQS	-	-	35	-	-	9

Note: The 8-hour modeled increase is derived from the 1-hour modeled increase concentration by multiplying by a persistence factor of 0.7; see Coe, D.; Eisinger, D.S.; Prouty, J.D.; Kear. T. *Users' Guide for CL4: A User Friendly Interface for the CALINE4 Model for Transportation Project Impact Assessments*; Caltrans - University of California, Davis Air Quality Project, Sacramento (1998).
CO = carbon monoxide

ppm = parts per million

7.0 Emission Reduction

Measures

As discussed above, the HST Project would have net beneficial effects to air quality compared to Existing Conditions because of the reduction in regional emissions. No additional adverse impacts would be expected from the HST Project compared to what is described in the EIR/EIS. The proposed emission reduction measures are still valid and no additional emission mitigation measures are required.

8.0 References.

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Appendix E

E.2 HST 2009 Operation Emissions Summary

Summary of Operational Emissions (2009)

Activities	Unmitigated Operational Emisions (tons/ year)						
	VOC	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	CO_2
Indirect Emissions							
Changes in VMT emissions	-91	-1,442	-1,183	-47	-37	-3.9	-262,428
Changes in airplane emissions	-3.7	-22	-29	0.00	0.00	-2.1	-5,566
Changes in power plant emissions	5.0	52	35	7.0	6.5	4.5	136,862
Direct Emissions							
Station operation	19.2	563	66.5	6.0	3.3	0.6	60,686
HMF onsite emissions	0.56	9.0	3.5	0.13	0.12	0.47	18,563
HMF offsite mobile source emissions	2.37	66	10.0	0.73	0.43	0.07	7,229
MOWF offsite emissions	0.65	20	2.3	0.2	0.1	0.0	2,242
Fugitive dust from train operations	N/A	N/A	N/A	29	4.3	N/A	N/A
Total	**-67**	**-754**	**-1,095**	**-4.4**	**-22**	**-0.29**	**-42,411**

Appendix E

E.3 Station Operational Emissions Summary

Fresno Station: Operational Emissions

Operational VMT Emissions

Emission Source	Number of Round Trips per Day	Round Trip Distance (miles)	Emissions (tpy)							
			ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Operational Year 2009										
Employees [2,3]	35	40	0.065	1.891	0.212	0.002	0.020	0.011	197	0.017
Passengers by Shuttle / Bus [4]	23	40	0.075	1.264	0.750	0.014	0.014	0.008	187	0.011
Passengers by Car [5]	4,300	40	7.924	231.048	25.916	0.242	2.405	1.349	24,113	2.076
2009 Total	**--**	**--**	**8.064**	**234.204**	**26.878**	**0.258**	**2.439**	**1.368**	**24,497**	**2.104**

Notes:

1. 400 passengers would arrive at the station via biking or walking which would not generate air emissions. (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

2. No. of employess is based on the number of employee for the Merced station (40) ratioed by daily boarding. There were 7,600 daily boardings at Merced station and 8,400 daily boarding at Fresno station.

3. Assumed percentage of employees that carpool: 20%

4. 700 passengers travel by bus (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010). Each bus is expected to hold 30 people (Lightbody, James/AECOM. Personal communication with Andrea White/CH2M HILL. July 22, 2010).

5. 4,300 passenger arrive by vehicle (kiss and ride, vehicle, rental cars or taxis). (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

Vehicle Emission Factors

Vehicle Type	Vehicle Emission Factor (g/mile) [1]							
	ROG	CO	NOx	SOx	PM_{10} [2]	$PM_{2.5}$ [2]	CO_2	CH_4
Operational Year 2009								
Passenger	0.115	3.339	0.375	0.004	0.035	0.020	348.449	0.030
Shuttle / Bus [3]	0.201	3.367	1.997	0.038	0.038	0.020	497.421	0.029

Notes:

1. Emission factors are from EMFAC2007 (Version 2.3) for passenger vehicles (50% LDA-All and 50% of the average of LDT1-All and LDT2-All) and urban buses (UBUS-CAT) traveling at 35 mph. All buses and shuttles coming to the Fresno station in 2009 will be natural gas powered. Temperaure of 65 F (annual average for Fresno 5 NE station, Western Regional Climate Center) and RH of 41% was used.

2. Emission factors for PM_{10} and $PM_{2.5}$ include contributions from exhaust, brake-wear, and tire-wear.

3. The bus emission factors were determined using only 1997-2009 model years based on a 12-year usable life span for city buses (FTA, *Useful Life of Transit Buses and Vans* , April 2007).

Operational Area Source Emissions

Emission Source	Emissions (tpy) [1]						
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2
Operational Year 2009							
Natural Gas Usage	0.010	0.120	0.150	0.000	0.000	0.000	176
Landscaping	0.010	0.140	0.000	0.000	0.000	0.000	0
2009 Total	**0.020**	**0.260**	**0.150**	**0.000**	**0.000**	**0.000**	**177**

Notes:

1. Emissions calculated in URBEMIS2007 using the General Light Industry land use category.

Operational Indirect Emissions

Emission Source	Building Size (sqft)	Electricity Usage Rate (kWh/sqft/year) [1]	Emissions (tpy)		
			CO_2	CH_4	N_2O
Operational Year 2009					
Station Buildings [2]	75,000	13.55	346	0.014	0.003
2009 Total	**--**	**--**	**346**	**0.014**	**0.003**

Notes:

1. Electricity Usage Rate from Table A9-11-A (CEQA Handbook, 1993). The Station Buildings are considered 'Retail'.
2. Station building size was provided in memomrandum by Bob Lagomarsino (URS) (March 31, 2011)

Electricity Emission Factors

	Emission Factor (lb/MWh) [1, 2]		
	CO_2	CH_4	N_2O
Purchased Electricity	681.01	0.0283	0.00623

Notes:

1. Emission factors from U.S. EPA eGRID2010 Version 1.0 (2007 data) for the WECC California subregion.
2. Emission factors are not available for future years. As a result, the available emission factors were applied to 2009 operations.

2009 Total Operational Emissions

Emission Source	Emissions (tpy) [1]								
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH4	N2O
Operational VMT	8.064	234.204	26.878	0.258	2.439	1.368	24,497.494	2.104	--
Area Source	0.020	0.260	0.150	0.000	0.000	0.000	176.630	--	--
Indirect Electricity	--	--	--	--	--	--	346	0.014	0.003
Total	**8.084**	**234.464**	**27.028**	**0.258**	**2.439**	**1.368**	**25,020.162**	**2.118**	**0.003**

Kings/ Tulare Regional (KTR) Station: Operational Emissions

Operational VMT Emissions

Emission Source	Number of Round Trips per Day	Round Trip Distance (miles)	Emissions (tpy)							
			ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Operational Year 2009										
Employees [2,3]	14	40	0.029	0.814	0.099	0.001	0.008	0.004	72	0.007
Passengers by Shuttle / Bus [4]	10	40	0.002	0.053	0.092	0.001	0.006	0.003	80	0.002
Passengers by Car [5]	1,700	40	3.639	101.789	12.318	0.089	0.964	0.547	9,041	0.930
2009 Total	**--**	**--**	**3.670**	**102.656**	**12.509**	**0.090**	**0.978**	**0.554**	**9,193**	**0.940**

Notes:

1. 200 passengers would arrive at the station via biking or walking which would not generate air emissions. (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

2. No. of employess is based on the number of employee for the Merced station (40) ratioed by daily boarding. There were 7,600 daily boardings at Merced station and 3,300 daily boarding at the KTR station

3. Assumed percentage of employees that carpool: 20%

4. 300 passengers travel by bus (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010). Each bus is expected to hold 30 people (Lightbody, James/AECOM. Personal communication with Andrea White/CH2M HILL. July 22, 2010).

5. 1,700 passenger arrive by vehicle (kiss and ride, vehicle, rental cars or taxis). (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

Vehicle Emission Factors

Vehicle Type	Vehicle Emission Factor (g/mile) [1]							
	ROG	CO	NOx	SOx	PM_{10} [2]	$PM_{2.5}$ [2]	CO_2	CH_4
Operational Year 2009								
Passenger	0.133	3.721	0.450	0.003	0.035	0.020	330.446	0.034
Shuttle / Bus [3]	0.014	0.327	0.570	0.005	0.035	0.017	497.421	0.012

Notes:

1. Emission factors are from EMFAC2007 (Version 2.3) for passenger vehicles (50% LDA-All and 50% of the average of LDT1-All and LDT2-All) and urban buses (UBUS-CAT) traveling at 35 mph. All buses and shuttles coming to the KTR station in 2009 will be natural gas powered. Temperaure of 62 F (annual average for Hanford station, Western Regional Climate Center) and RH of 41% was used.

2. Emission factors for PM_{10} and $PM_{2.5}$ include contributions from exhaust, brake-wear, and tire-wear.

3. The bus emission factors were determined using only 1997 - 2009 model years based on a 12-year usable life span for city buses (FTA, Useful Life of Transit Buses and Vans, April 2007).

Operational Area Source Emissions

Emission Source	Emissions (tpy) [1]						
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2
Operational Year 2009							
Natural Gas Usage	0.010	0.120	0.150	0.000	0.000	0.000	176
Landscaping	0.010	0.140	0.000	0.000	0.000	0.000	0
2009 Total	**0.020**	**0.260**	**0.150**	**0.000**	**0.000**	**0.000**	**177**

Notes:

1. Emissions calculated in URBEMIS2007 using the General Light Industry land use category.

Operational Indirect Emissions

Emission Source	Building Size (sqft)	Electricity Usage Rate (kWh/sqft/year) [1]	Emissions (tpy)		
			CO_2	CH_4	N_2O
Operational Year 2009					
Station Buildings [2]	40,000	13.55	185	0.008	0.002
2009 Total	**--**	**--**	**185**	**0.008**	**0.002**

Notes:

1. Electricity Usage Rate from Table A9-11-A (CEQA Handbook, 1993). The Station Buildings are considered 'Retail'.
2. Station building size was provided in memomrandum by Bob Lagomarsino (URS) (March 31, 2011)

Electricity Emission Factors

	Emission Factor (lb/MWh) [1, 2]		
	CO_2	CH_4	N_2O
Purchased Electricity	681.01	0.0283	0.00623

Notes:

1. Emission factors from U.S. EPA eGRID2010 Version 1.0 (2007 data) for the WECC California subregion.
2. Emission factors are not available for future years. As a result, the available emission factors were applied to 2035 operations.

2009 Total Operational Emissions

Emission Source	Emissions (tpy) [1]								
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH4	N2O
Operational VMT	3.670	102.656	12.509	0.090	0.978	0.554	9,193.019	0.940	--
Area Source	0.020	0.260	0.150	0.000	0.000	0.000	176.630	--	--
Indirect Electricity	--	--	--	--	--	--	185	0.008	0.002
Total	**3.690**	**102.916**	**12.659**	**0.090**	**0.978**	**0.554**	**9,554.202**	**0.947**	**0.002**

Bakersfield Station: Operational Emissions

Operational VMT Emissions

Emission Source	Number of Round Trips per Day	Round Trip Distance (miles)	Emissions (tpy)							
			ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Operational Year 2009										
Employees [2,3]	38	40	0.063	1.906	0.223	0.002	0.021	0.012	215	0.017
Passengers by Shuttle / Bus [4]	30	40	0.008	0.214	0.400	0.002	0.019	0.010	240	0.007
Passengers by Car [5]	4,500	40	7.333	223.327	26.090	0.253	2.499	1.394	25,222	1.992
2009 Total	**--**	**--**	**7.403**	**225.447**	**26.712**	**0.258**	**2.539**	**1.416**	**25,677**	**2.016**

Notes:

1. 500 passengers would arrive at the station via biking or walking which would not generate air emissions. (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

2. No. of employess is based on the number of employee for the Merced station (40) ratioed by daily boarding. There were 7,600 daily boardings at Merced station and 9,200 daily boarding at the Bakersfield station

3. Assumed percentage of employees that carpool: 20%

4. 900 passengers travel by bus (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010). Each bus is expected to hold 30 people (Lightbody, James/AECOM. Personal communication with Andrea White/CH2M HILL. July 22, 2010).

5. 4,500 passenger arrive by vehicle (kiss and ride, vehicle, rental cars or taxis). (Technical Memorandum: Station Area Parking Guidance, created by Bryan Porter and Nick Brand, 06/09/2010)

Vehicle Emission Factors

Vehicle Type	Vehicle Emission Factor (g/mile) [1]							
	ROG	CO	NOx	SOx	PM_{10} [2]	$PM_{2.5}$ [2]	CO_2	CH_4
Operational Year 2009								
Passenger	0.101	3.084	0.360	0.004	0.035	0.019	348.267	0.028
Shuttle / Bus [3]	0.017	0.444	0.828	0.005	0.039	0.021	497.421	0.015

Notes:

1. Emission factors are from EMFAC2007 (Version 2.3) for passenger vehicles (50% LDA-All and 50% of the average of LDT1-All and LDT2-All) and urban buses (UBUS-CAT) traveling at 35 mph. All buses and shuttles coming to the Bakersfield station in 2009 will be natural gas powered. Temperaure of 64 F (annual average for Bakersfield station, Western Regional Climate Center) and RH of 33% was used.

2. Emission factors for PM_{10} and $PM_{2.5}$ include contributions from exhaust, brake-wear, and tire-wear.

3. The bus emission factors were determined using only 1997-2009 model years based on a 12-year usable life span for city buses (FTA, *Useful Life of Transit Buses and Vans* , April 2007).

Operational Area Source Emissions

Emission Source	Emissions (tpy) [1]						
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2
Operational Year 2009							
Natural Gas Usage	0.010	0.120	0.150	0.000	0.000	0.000	176
Landscaping	0.010	0.140	0.000	0.000	0.000	0.000	0
2009 Total	**0.020**	**0.260**	**0.150**	**0.000**	**0.000**	**0.000**	**177**

Notes:

1. Emissions calculated in URBEMIS2007 using the General Light Industry land use category.

Operational Indirect Emissions

Emission Source	Building Size (sqft)	Electricity Usage Rate (kWh/sqft/year) [1]	Emissions (tpy)		
			CO_2	CH_4	N_2O
Operational Year 2009					
Station Buildings [2]	56,000	13.55	258	0.011	0.002
2009 Total	**--**	**--**	**258**	**0.011**	**0.002**

Notes:

1. Electricity Usage Rate from Table A9-11-A (CEQA Handbook, 1993). The Station Buildings are considered 'Retail'.
2. Station building size was provided in memomrandum by Bob Lagomarsino (URS) (March 31, 2011)

Electricity Emission Factors

	Emission Factor (lb/MWh) [1, 2]		
	CO_2	CH_4	N_2O
Purchased Electricity	681.01	0.0283	0.00623

Notes:

1. Emission factors from U.S. EPA eGRID2010 Version 1.0 (2007 data) for the WECC California subregion.
2. Emission factors are not available for future years. As a result, the available emission factors were applied to 2035 operations.

2009 Total Operational Emissions

Emission Source	Emissions (tpy) [1]								
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH4	N2O
Operational VMT	7.403	225.447	26.712	0.258	2.539	1.416	25,677.063	2.016	--
Area Source	0.020	0.260	0.150	0.000	0.000	0.000	176.630	--	--
Indirect Electricity	--	--	--	--	--	--	258	0.011	0.002
Total	**7.423**	**225.707**	**26.862**	**0.258**	**2.539**	**1.416**	**26,112.068**	**2.027**	**0.002**

Appendix E

E.4 Regional Emissions by Activity

Regional Vehicle Miles Traveled

County [1]	No Build VMT	Build VMT	Change in Emissions with HST (Tons/Day)							Change in Emissions with HST (Tons/Year) [2]						
	Total Traffic	Total Traffic	ROG	CO	NOx	PM_{10}	$PM_{2.5}$	CO_2	SO_2	ROG	CO	NOx	PM_{10}	$PM_{2.5}$	CO_2	SO_2
Fresno	22,500,000	22,050,000	-0.1	-1.78	-1.07	-0.05	-0.03	-254	0.00	-36.50	-649.70	-390.55	-18.25	-10.95	-92,699	-0.97
Kern	21,500,000	21,070,000	-0.13	-1.82	-1.83	-0.07	-0.06	-310	-0.01	-47.45	-664.30	-667.95	-25.55	-21.90	-113,238	-1.95
Kings	3,700,000	3,626,000	-0.02	-0.35	-0.34	-0.01	-0.01	-52	0.00	-7.30	-127.75	-124.10	-3.65	-3.65	-19,049	-0.32
Tulare	9,900,000	9,900,000	0	0	0	0	0	-103	0.00	0.00	0.00	0.00	0.00	0.00	-37,442	-0.65
Regional Total	**57,600,000**	**56,646,000**	**-0.25**	**-3.95**	**-3.24**	**-0.13**	**-0.10**	**-719**	**-0.01**	**-91.25**	**-1,442**	**-1,183**	**-47.45**	**-36.50**	**-262,428**	**-3.89**

Notes:

1. VMT analysis was provided by Cambridge Systematics
2. Annualization factor (365) was used, based on conversation between Alice Lovegrove (Parsons Brinkerhoff) and Avanti Tamhane (URS)

Regional Aircraft Travel

Origin [1]	No. of Flights	Change in Emission Burdens due to HST (Tons/Day)							Change in Emission Burdens due to HST (Tons/Year) [2]						
	Removed	ROG	CO	NOx	PM_{10}	$PM_{2.5}$	CO_2	SO_2	ROG	CO	NOx	PM_{10}	$PM_{2.5}$	CO_2	SO_2
San Joaquin	-4	-0.01	-0.06	-0.08	0.00	0.00	-15.3	-0.01	-3.65	-21.90	-29.20	0.00	0.00	-5,566	-2.09

Notes:

1. VMT analysis was done in EDMS, provided by PMT
2. Annualization factor (365) was used, based on conversation between Alice Lovegrove (Parsons Brinkerhoff) and Avanti Tamhane (URS)

Regional Electricity

Electricity required [1]		Change in Emissions due to HST (Tons/Day)							Change in Emissions due to HST (Tons/Year)[2]						
Area	(GWH per day)	HC	CO	NO_x	PM_{10}	$PM_{2.5}$	CO_2	SO_2	HC	CO	NO_x	PM_{10}	$PM_{2.5}$	CO_2	SO_2
Statewide	8.24	0.10	1.03	0.69	0.14	0.13	2,730	0.09	36.50	375.95	251.85	51.10	47.45	996,450	32.85
Regional [2]	1.13	0.01	0.14	0.09	0.02	0.02	375	0.01	5.01	51.64	34.59	7.02	6.52	136,862	4.51

Notes:

1. VMT analysis was done in EDMS, provided by PMT

2. Regional analysis is based on ratioing the total power requirements for the entire HST alignment and the lengths of the entire alignment, and the Fresno to Bakersfield alignment

Total length of HST = 830 miles

Length of Fresno to Bakersfield Alignment = 114 miles

3. Annualization factor (365) was used, based on conversation between Alice Lovegrove (Parsons Brinkerhoff) and Avanti Tamhane (URS)

Appendix E

E.5 Maintenance Facility Operational Emissions - 2009

Maintenance-of-Way (MOWF) : Offsite Emissions

Data Assumptions / Inputs

	# / period	VMT (RT)	Average Speed (mph)
Employees (# / day) [1]	400	40	35
Working Days per Yr	365		

Notes:

1. The number of employees and speed for trucks and patrol vehicles is based on information from the PMT Technical Memorandum (TM 5.1), Drawing No. TM 5.1-A

Offsite MOWF Emissions

Emission Source	Emissions (tpy)							
	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Passenger Vehicles	0.65	19.85	2.32	0.02	0.22	0.12	2241.93	0.18
Total Emissions	**0.65**	**19.85**	**2.32**	**0.02**	**0.22**	**0.12**	**2241.93**	**0.18**

Vehicle Emission Factors

	ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Passenger Vehicles (g/mile) [1]	0.10	3.08	0.36	0.00	0.03	0.02	348.27	0.03

Notes:

1. The MOWF will be located at the Shafter-West HMF site, which is in Kern County. Emission factors are from EMFAC2007 (Version 2.3) for passenger vehicles (50% LDA-All and 50% of the average of LDT1-All and LDT2-All). Temperaure of 64 F (annual average for Bakersfield station, Western Regional Climate Center) and RH of 33% was used.

Heavy Maintenance Facility (HMF): Onsite Emissions

Switch Locomotive Horsepower and Load Factors [1]

Notch	Horsepower	Percent Horsepower in Use	Percent Time in Notch	Actual Percent Time in Use	Engine Horsepower	Equivalent Horsepower Used in Analysis	Load Factors
Idle	13	0.3%	38.0%	100.0%	7	7	0.3%
Dynamic Brake	128	3.4%	12.5%	20.2%	68	14	--
1	211	5.6%	6.5%	10.5%	112	12	--
2	457	12.1%	6.5%	10.5%	242	25	--
3	928	24.6%	5.2%	8.4%	492	41	--
4	1,084	28.7%	4.4%	7.1%	575	41	--
5	1,666	44.2%	3.8%	6.1%	883	54	--
6	2,375	62.9%	3.9%	6.3%	1,259	79	--
7	3,182	84.3%	3.0%	4.8%	1,687	82	--
8	3,773	100.0%	16.2%	26.1%	2,000	523	--
Total for Moving Locomotives	--	--	100%	100%	--	877	44%

Notes:
1. Data was prepared by Parsons Brinckerhoff in July 2011 and was provided in a spreadsheet called "CA HMF All EmissionsR.xls"

Onsite Operational Emission Factors

HMF Operations	Mode	Average Number of Equipment	Engine Horespower	Load Factor (%) [3]	Emission Factors (g/bhp-hr)						
					PM_{10}	$PM_{2.5}$	NOx	VOC	CO	SOx [6,8]	CO_2 [5]
Locomotive [1,2,4]	Idle	2	2,000	0.3%	0.03	0.03	1.3	0.08	1.83	0.006	672.19
	Moving	2	2,000	44.0%	0.03	0.03	1.3	0.08	1.83	0.006	672.19
Diesel Equipment [7,9]	--	6	200	60.0%	0.015	0.015	0.3	0.14	2.6	0.2	1756.33
Diesel Trucks [10,11]	--	20	--	--	0.596	0.514	11.03	1.45	3.56	0.01	1437.39
Total	--	--	--	--	--	--	--	--	--	--	--

Notes:
1. Number of trains operated in the yard (2), duration of operation in each mode, and number of pieces of diesel equipment (6) were provided by the project engineers
It is assumed that locomotive will be continously moving and/or idling for 2 hours over 24-hours period
2. The horse-power of the switching train locomotive is assumed to be 2,000 hp; horse-power of equipment was assumed to be 200 hp
3. Load factors for locomotives are weighted-average factors that were estimated for idling and moving modes based on in-use power at each notch settings (see Table AQ-1)
4. Locomotive will be purchased after 2015 and, therefore, will be subject to Tier 4 emission standards. PM Emission factors are most stringent Tier 4 federal standards for switch locomotives
that were introduced in May 2008 (73 FR 88 25098-25352, May 6, 2008) and are also povided in Table 4, Switch Locomotive Tier 4 Emission Standards on online source
http://dieselnet.com/standards/us/
5. CO2 emission factors for locomotives are based on the carbon content and fuel density
6. SOx emission factors for locomotives are based on the carbon content and fuel density
7. Equipment emission factors are Tier 4 federal standards for on-road (off-road) diesel engines that were introduced in May, 2004 (69 FR 38957-39273, 29 June, 2004) and are also
provided in Table 3, Tier 4 Emission Standards for engines up to 560 kw on online source
http://dieselnet.com/standards/us/
8. SO2 emission factor was obtained from "Technical Information and References", Table 2, Santa Barbara County Air Pollution Control District "Construction Equipment
Controlled Emission Factors" (such as loaders, graders, dozers, etc.). These emission factors reflect usage of low (0.05%) sulfur content in the fuel. http://www.sbcapcd.org/eng/tech/apcd-24.htm
9. Each piece of equipment was assumed to operate for 8 hours over 24-hours period; load factor for equipment was assumied to be 0.6
10. PM emission factors are for 2017 year for HDD vehicles from EMFAC2007 model that are sum of the running, tire wear, and break wear emissions and expressed in grams per mile
NOx, VOC and CO emission factors are for 2017 year for HDD vehicles from EMFAC2007 model
11. Number of delivery trucks and its operations were assumed to be 20 trucks per hour that will operate 8 hours over 24-hr time period

Onsite Operational Emissions

HMF Operations	Mode	Emissions (lbs/year)							Emissions (tpy) [1]						
		PM_{10}	$PM_{2.5}$	NOx	VOC	CO	SOx	CO_2	PM_{10}	$PM_{2.5}$	NOx	VOC	CO	SOx	CO_2
Locomotive [1,4]	Idle	0.665	0.645	28.8	1.770	40.600	0.14	12970	0.0003	0.0003	0.014	0.001	0.020	0.000	6
	Moving	84.7	82.2	3,670	226.0	5170.0	17.51	3094354	0.042	0.041	1.835	0.113	2.585	0.009	1547
Diesel Equipment [5,6,7]	--	69.5	67.4	1,390	649.0	12100.0	927.00	8133277	0.035	0.034	0.695	0.325	6.050	0.464	4067
Diesel Trucks [8,9]	--	104.0	89.6	1,920	253.0	621.0	1.74	25885746	0.052	0.045	0.960	0.127	0.311	0.001	12943
Total	--	**258.865**	**239.845**	**7,009**	**1129.770**	**17,932**	**946**	**37126346**	**0.129**	**0.120**	**3.504**	**0.565**	**8.966**	**0.473**	**18563**

Notes:
1. Emissions (lbs/year) were converted to Emissions (tpy) using the following conversion: 2,000 lbs/ton

Operational emissions from electricity consumption were considered negligible for the Heavy Maintenance Facility and were, therefore, not estimated.

Heavy Maintenance Facility (HMF): Offsite Emissions

Offsite Operational VMT Emissions

Emission Source [1]	Number of Round Trips per Day	Round Trip Distance (miles)	Emissions (tpy)							
			ROG	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4
Operational Year 2009										
Employees [2]	1,200	40	2.197	64.966	6.783	0.068	0.671	0.391	6,728	0.594
Deliveries	20	120	0.171	1.353	3.231	0.005	0.056	0.037	501	0.013
2009 Total	**--**	**--**	**2.368**	**66.319**	**10.015**	**0.072**	**0.727**	**0.428**	**7,229**	**0.607**

Notes:
1. Onsite diesel-fueled vehicle emissions were included with the stationary source combustion calculations.
2. Assumed percentage of employees that carpool: 20%

Vehicle Emission Factors

Vehicle Type	Vehicle Emission Factor (g/mile)							
	ROG	CO	NOx	SOx	PM_{10} [2]	$PM_{2.5}$ [2]	CO_2	CH_4
Operational Year 2009								
Passenger [1]	0.114	3.364	0.351	0.004	0.035	0.020	348.405	0.031
Delivery Truck [1]	0.177	1.401	3.347	0.005	0.058	0.038	518.694	0.014

Notes:

1. Emission factors are from EMFAC2007 (Version 2.3) for passenger vehicles (50% LDA-All and 50% of the average of LDT1-All and LDT2-All) and delivery trucks (average of LHD1-DSL and LHD2-DSL) traveling at 35 mph.
2. Emission factors for PM_{10} and $PM_{2.5}$ include contributions from exhaust, brake-wear, and tire-wear.

Appendix E

E.6 Train Wake Fugitive Dust Emissions - 2009

Train Wake Dust: Fugitive Dust Emissions

Train Velocity	97.0 m/s	217 mph	
	98.3 m/s	220 mph	
At grade length	91 miles		

$P = 58(u^* - ut^*)^2 + 25(u^* - ut^*)$
P = 0 for u* < ut*
ut* = 0.19 m/s

Wind speed Profile

$$u = (1.2319)^{0.072v-4} \times (0.4575\,d^2 - 3.5496\,d + 9.1545)$$

Where:
u: the maximum wind velocity around human body near the train (m/s).
d: human-train distance (m).

v: train running speed (m/s).

EF (per event) = k x P
k is a particle size multiplier

k = 0.5 for particles < 10 um

k = 0.075 for particles < 2.5 um

u(z) = (u*/0.4) ln(z/zo)

z = 288 cm
z0 = 0.01 cm

u* = Friction Velocity for the Fastest Mile (m/s)

ut* = Threshold friction velocity (m/s), 0.5 m/s (lowest number from AP42, for coal pile)
0.19 m/s based on the lowest value for disturbed desert soil

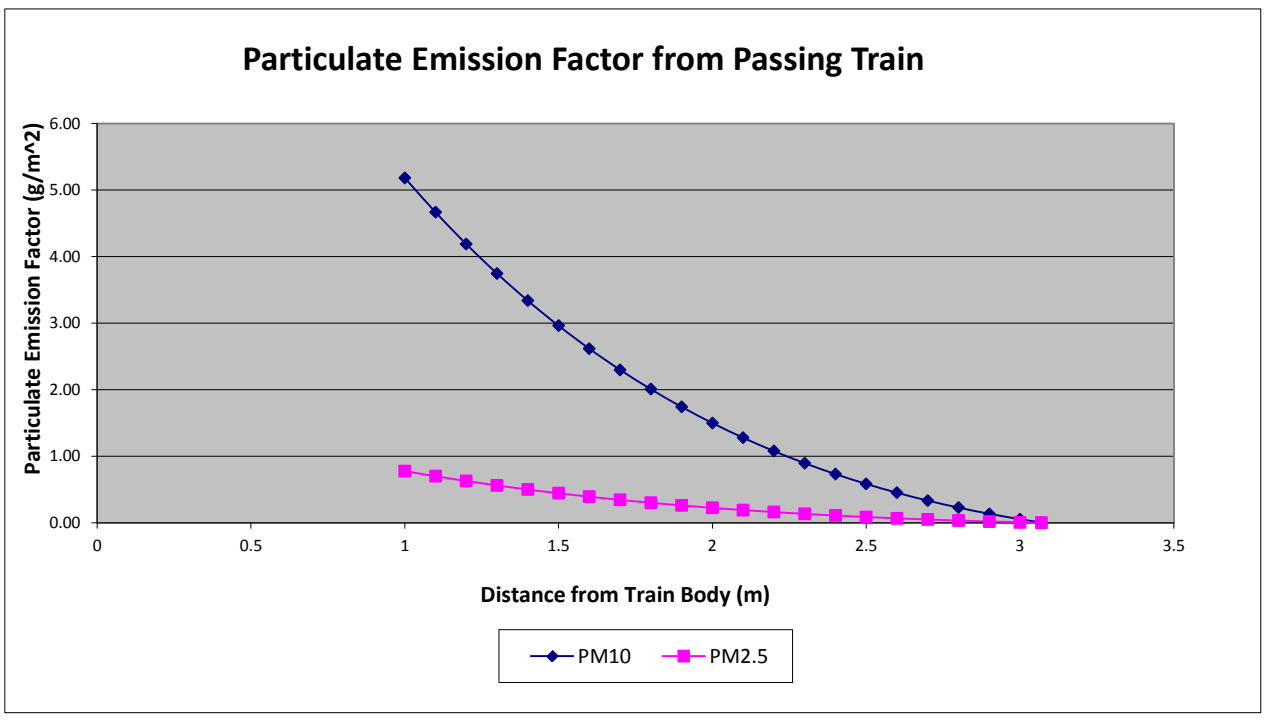
u(z) = wind speed at a certain height above the surface (cm/s)
u* = friction velocity for fastest mile. Based on disturbed desert soils (DRI Study)

z = height above the surface (288 cm), based on 1/2 of the train height (1.88 m) & embankment height (1m)
zo = surface roughness height (cm), assume 0.01 cm for the at grade right of way
0.4 is von Karman's constant, dimensionless

Input Parameters and Emissions Factors

Train-Object Distance	Wind Speed from 217 mph Train	Wind Speed from 220 mph Train	Friction Velocity	Erosion Potential	Emission Factor	
(m)	u (m/s)		u*(m/s)	P (g/m^2)	PM_{10} (g/m^2)	$PM_{2.5}$ (g/m^2)
1	11.30	11.53	0.45	10.37	5.18	0.78
1.1	10.81	11.03	0.43	9.33	4.67	0.70
1.2	10.35	10.56	0.41	8.38	4.19	0.63
1.3	9.90	10.10	0.39	7.49	3.75	0.56
1.4	9.47	9.66	0.38	6.68	3.34	0.50
1.5	9.06	9.24	0.36	5.92	2.96	0.44
1.6	8.66	8.83	0.34	5.23	2.62	0.39
1.7	8.28	8.45	0.33	4.60	2.30	0.34
1.8	7.92	8.08	0.31	4.02	2.01	0.30
1.9	7.57	7.72	0.30	3.48	1.74	0.26
2	7.24	7.39	0.29	3.00	1.50	0.22
2.1	6.93	7.07	0.28	2.56	1.28	0.19
2.2	6.63	6.77	0.26	2.16	1.08	0.16
2.3	6.36	6.48	0.25	1.79	0.90	0.13
2.4	6.09	6.22	0.24	1.46	0.73	0.11
2.5	5.85	5.97	0.23	1.17	0.58	0.09
2.6	5.62	5.74	0.22	0.90	0.45	0.07
2.7	5.41	5.53	0.22	0.67	0.33	0.05
2.8	5.22	5.33	0.21	0.46	0.23	0.03
2.9	5.05	5.15	0.20	0.27	0.14	0.02
3	4.89	4.99	0.19	0.11	0.05	0.01
3.07	4.79	4.88	0.19	0.01	0.00	0.00

Emissions		
PM_{10} Emissions	$PM_{2.5}$ Emissions	Emissions Units
3.74	0.56	grams/meter traveled
6023.03	903.45	grams/VMT (one side)
26.53	3.98	lb/miles (both sides)
28.974	4.346	Tpy (24 disturbances)



Appendix E

E.7 URBEMIS2007 Output Files

Page: 1
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Urbemis 2007 Version 9.2.4

Detail Report for Annual Area Source Unmitigated Emissions (Tons/Year)

File Name: U:\5020 Air Quality\5000 Technical\5200 Emission Calculations\Building Operation Emissions\Building Operation Emissions.urb924

Project Name: HST Fresno Station Operation emissions

Project Location: San Joaquin Valley APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	**0.01**	**0.15**	**0.12**	**0.00**	**0.00**	**0.00**	**176.38**
Hearth							
Landscape	**0.01**	**0.00**	**0.14**	**0.00**	**0.00**	**0.00**	**0.25**
Consumer Products							
Architectural Coatings	0.00						
TOTALS (tons/year, unmitigated)	0.02	0.15	0.26	0.00	0.00	0.00	176.63

Area Source Changes to Defaults

Page: 1
6/8/2011 12:30:48 PM

Urbemis 2007 Version 9.2.4

Detail Report for Annual Area Source Unmitigated Emissions (Tons/Year)

File Name: T:\5020 Air Quality\5000 Technical_Operational\Building Operation Emissions\VTH Station Operation Emissions_v2.urb924

Project Name: HST KTR Station Operation emissions

Project Location: San Joaquin Valley APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	**0.01**	**0.15**	**0.12**	**0.00**	**0.00**	**0.00**	**176.38**
Hearth							
Landscape	**0.01**	**0.00**	**0.14**	**0.00**	**0.00**	**0.00**	**0.25**
Consumer Products	0.00						
Architectural Coatings	0.00						
TOTALS (tons/year, unmitigated)	0.02	0.15	0.26	0.00	0.00	0.00	176.63

Area Source Changes to Defaults

Page: 1
6/8/2011 01:32:09 PM

Urbemis 2007 Version 9.2.4

Detail Report for Annual Area Source Unmitigated Emissions (Tons/Year)

File Name: T:\5020 Air Quality\5000 Technical_Operational\Building Operation Emissions\Bakersfield Station Operation Emissions_v2.urb924

Project Name: HST Bakersfield Station Operation emissions 2009

Project Location: San Joaquin Valley APCD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	**0.01**	**0.15**	**0.12**	**0.00**	**0.00**	**0.00**	**176.38**
Hearth							
Landscape	**0.01**	**0.00**	**0.14**	**0.00**	**0.00**	**0.00**	**0.25**
Consumer Products	0.00						
Architectural Coatings	0.00						
TOTALS (tons/year, unmitigated)	0.02	0.15	0.26	0.00	0.00	0.00	176.63

Area Source Changes to Defaults

Appendix E

E.8 EMFAC2007 Output Files

Title : 2009 and 2035 Fresno station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:38:54
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Fresno
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	4.836	0.05	0.167	0.087	4.97	0.061	0.072	0.16	4.836	0.083	0.143	0.124	0.142	0.1145	6.354	0.095	0.069	0.155	2.81	0.235	0.139

Pollutant Name: Methane Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.296	0.025	0.008	0.027	0.301	0.026	0.003	0.03	0.296	0.034	0.007	0.036	0.033	0.03	0.353	0.041	0.003	0.044	0.218	0.033	0.006

Pollutant Name: Carbon Monoxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	53.064	2.373	0.638	2.759	53.412	2.955	0.48	3.845	51.708	3.587	0.628	3.992	3.9185	3.33875	95.291	3.5	0.466	4.373	70.474	3.28	0.647

Pollutant Name: Oxides of Nitrogen Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	4.557	0.233	1.173	0.267	4.522	0.285	1.184	0.415	4.406	0.515	1.14	0.549	0.482	0.3745	7.35	0.6	1.193	0.666	2.376	0.905	3.949

Pollutant Name: Carbon Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	427.432	310.77	361.91	311.75	427.95	385.516	346.915	384.444	428.294	385.557	356.12	385.85	385.147	348.4485	536.741	529.011	347.171	528.611	497.421	497.421	521.82

Pollutant Name: Sulfur Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.005	0.003	0.003	0.003	0.005	0.004	0.003	0.004	0.005	0.004	0.003	0.004	0.004	0.0035	0.007	0.005	0.003	0.005	0.006	0.005	0.005

Pollutant Name: PM10 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.027	0.01	0.127	0.01	0.026	0.01	0.047	0.012	0.027	0.023	0.105	0.023	0.0175	0.01375	0.027	0.021	0.045	0.021	0.015	0.006	0.038

Pollutant Name: PM10 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.012	0.012	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013

Pollutant Name: PM2.5 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.02	0.009	0.117	0.009	0.02	0.009	0.044	0.011	0.02	0.021	0.097	0.021	0.016	0.0125	0.021	0.019	0.042	0.02	0.011	0.005	0.035

Pollutant Name: PM2.5 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Title : 2009 and 2035 Fresno station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:38:54
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Fresno
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.006	0.052	0.006	0	0.006	0.054	0.006	0	0.012	0.065	0.012	0.009	0.0075	0	0.016	0.049	0.016	0	0.007	0.07

Pollutant Name: Methane Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.005	0.002	0.005	0	0.005	0.002	0.005	0	0.01	0.003	0.01	0.0075	0.00625	0	0.012	0.002	0.012	0	0.005	0.003

Pollutant Name: Carbon Monoxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.466	0.417	0.466	0	0.524	0.424	0.523	0	0.894	0.464	0.894	0.7085	0.58725	0	1.192	0.409	1.192	0	0.158	0.549

Pollutant Name: Oxides of Nitrogen Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.034	1.218	0.034	0	0.038	1.214	0.04	0	0.073	1.189	0.073	0.0565	0.04525	0	0.088	1.223	0.088	0	0.132	0.894

Pollutant Name: Carbon Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	299.861	345.72	299.862	0	378.702	345.72	378.654	0	387.294	345.72	387.294	382.974	341.418	0	526.824	345.72	526.802	0	497.421	519.009

Pollutant Name: Sulfur Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.003	0.003	0.003	0	0.004	0.003	0.004	0	0.004	0.003	0.004	0.004	0.0035	0	0.005	0.003	0.005	0	0.005	0.005

Pollutant Name: PM10 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.009	0.032	0.009	0	0.011	0.033	0.011	0	0.023	0.041	0.023	0.017	0.013	0	0.024	0.03	0.024	0	0.007	0.019

Pollutant Name: PM10 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.012	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013	0.013

Pollutant Name: PM2.5 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.009	0.029	0.009	0	0.01	0.031	0.01	0	0.022	0.038	0.022	0.016	0.0125	0	0.022	0.028	0.022	0	0.006	0.017

Pollutant Name: PM2.5 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.003	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT	LHD1 DSL
35	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005	0.005

Title : 2009 Fresno station - Busses; Shuttles
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:39:50
Scen Year: 2009 -- All model years in the range 1997 to 2009 selected
Season : Annual
Area : Fresno
****
Year: 2009 -- Model Years 1997 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Fresno County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.201	0.443	0.296	0	0	0	0	0

Pollutant Name: Methane Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.029	0.021	0.026	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	3.367	1.009	2.446	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	1.997	12.398	6.059	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	497.421	2392.417	1237.606	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.023	0.012	0	0	0	0	0

Pollutant Name: PM10 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.013	0.201	0.086	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.008	0.01	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.013	0.013	0.013	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.185	0.08	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0.002	0.003	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 65F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.005	0.005	0	0	0	0	0

Title : 2009 and 2035 KTR station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:40:43
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Kings
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Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Kings County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	5.195	0.078	0.153	0.12	5.275	0.129	0.072	0.241	5.156	0.123	0.128	0.172	0.146	0.133	6.574	0.108	0.064	0.157	2.906

Pollutant Name: Methane Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0.309	0.03	0.007	0.032	0.312	0.038	0.003	0.042	0.308	0.038	0.006	0.04	0.036	0.034	0.361	0.04	0.003	0.042	0.222

Pollutant Name: Carbon Monoxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	56.834	2.942	0.619	3.377	57.287	4.683	0.479	5.591	56.311	4.247	0.577	4.751	4.064	3.7205	108.008	3.486	0.459	4.269	73.591

Pollutant Name: Oxides of Nitrogen Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	4.775	0.32	1.178	0.358	4.69	0.527	1.195	0.665	4.635	0.686	1.183	0.727	0.5425	0.45025	7.719	0.65	1.202	0.706	2.454

Pollutant Name: Carbon Dioxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	427.432	310.854	359.443	311.898	428.198	385.022	346.85	383.46	428.354	385.761	356.095	386.09	348.994	330.446	524.845	528.463	346.833	527.777	497.421

Pollutant Name: Sulfur Dioxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0.005	0.003	0.003	0.003	0.005	0.004	0.003	0.004	0.005	0.004	0.003	0.004	0.0035	0.00325	0.007	0.005	0.003	0.005	0.006

Pollutant Name: PM10 Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0.027	0.011	0.115	0.011	0.026	0.012	0.047	0.015	0.027	0.024	0.095	0.024	0.0175	0.01425	0.027	0.02	0.043	0.021	0.015

Pollutant Name: PM10 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013

Pollutant Name: PM2.5 Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0.02	0.01	0.106	0.01	0.02	0.011	0.043	0.014	0.02	0.022	0.087	0.022	0.016	0.013	0.021	0.019	0.039	0.019	0.011

Pollutant Name: PM2.5 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 62F Relative Humidity: 41%

Speed	LDA	LDA	LDA	LDA	LDT1	LDT1	LDT1	LDT1	LDT2	LDT2	LDT2	LDT2	LDT	LDA LDT	MDV	MDV	MDV	MDV	LHD1
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	ALL	ALL	NCAT	CAT	DSL	ALL	NCAT
35	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Title : 2009 and 2035 KTR station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:40:43
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Kings
****

Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Kings County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.006	0.052	0.006	0	0.008	0.053	0.008	0	0.014	0.055	0.014	0.01	0.008	0	0.017	0.049	0.017	0

Pollutant Name: Methane Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.005	0.002	0.005	0	0.006	0.002	0.006	0	0.01	0.003	0.01	0.0075	0.00625	0	0.012	0.002	0.012	0

Pollutant Name: Carbon Monoxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.507	0.417	0.507	0	0.593	0.424	0.592	0	0.989	0.429	0.989	0.748	0.6275	0	1.263	0.408	1.263	0

Pollutant Name: Oxides of Nitrogen Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.042	1.229	0.042	0	0.05	1.225	0.053	0	0.096	1.222	0.096	0.069	0.0555	0	0.109	1.235	0.109	0

Pollutant Name: Carbon Dioxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	299.868	345.72	299.869	0	378.757	345.72	378.677	0	387.289	345.72	387.287	343.578	321.7235	0	526.824	345.72	526.789	0

Pollutant Name: Sulfur Dioxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.003	0.003	0.003	0	0.004	0.003	0.004	0	0.004	0.003	0.004	0.0035	0.00325	0	0.005	0.003	0.005	0

Pollutant Name: PM10 Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.01	0.032	0.01	0	0.011	0.033	0.011	0	0.025	0.034	0.025	0.0175	0.01375	0	0.026	0.03	0.026	0

Pollutant Name: PM10 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0.008	0.008	0	0.008	0.008	0.008	0

Pollutant Name: PM10 - Brake Wear Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.013	0.013	0	0.013	0.013	0.013	0

Pollutant Name: PM2.5 Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.01	0.029	0.01	0	0.011	0.031	0.011	0	0.024	0.032	0.024	0.017	0.0135	0	0.024	0.028	0.024	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0.002	0.002	0	0.002	0.002	0.002	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT
35	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0.005	0.005	0	0.005	0.005	0.005	0

Title : 2009 KTR station - Busses; Shuttles
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 11:41:50
Scen Year: 2009 -- All model years in the range 1997 to 2009 selected
Season : Annual
Area : Kings
****
Year: 2009 -- Model Years 1997 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

County Average Kings County Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.014	0.454	0.377	0	0	0	0	0

Pollutant Name: Methane Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.021	0.019	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.327	1.026	0.904	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.57	9.665	8.088	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	497.421	2405.928	2074.864	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.023	0.02	0	0	0	0	0

Pollutant Name: PM10 Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.01	0.118	0.099	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.008	0.009	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.013	0.013	0.013	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.009	0.109	0.091	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0.002	0.002	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 62F Relative Humidity: 41%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.005	0.005	0	0	0	0	0

Title : 2009 and 2035 Bakersfield station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 12:47:59
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : Kern (SJV)
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	4.92	0.048	0.156	0.085	5.069	0.049	0.066	0.134	4.915	0.071	0.107	0.101	0.1175	0.10125	6.586	0.087	0.064	0.136	2.851	0.185

Pollutant Name: Methane Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0.299	0.024	0.007	0.026	0.305	0.023	0.003	0.026	0.299	0.03	0.005	0.032	0.029	0.0275	0.362	0.039	0.003	0.041	0.22	0.027

Pollutant Name: Carbon Monoxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	54.062	2.35	0.619	2.744	54.56	2.592	0.46	3.328	53.048	3.212	0.534	3.519	3.4235	3.08375	97.079	3.304	0.448	3.996	71.626	2.582

Pollutant Name: Oxides of Nitrogen Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	4.753	0.238	1.197	0.274	4.735	0.256	1.219	0.389	4.621	0.476	1.207	0.504	0.4465	0.36025	7.649	0.585	1.228	0.64	2.477	0.8

Pollutant Name: Carbon Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	427.431	310.527	361.563	311.505	427.83	385.733	346.61	384.053	428.233	385.816	352.513	386.003	385.028	348.2665	537.939	528.719	347.233	528.167	497.421	497.421

Pollutant Name: Sulfur Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0.005	0.003	0.003	0.003	0.005	0.004	0.003	0.004	0.005	0.004	0.003	0.004	0.004	0.0035	0.007	0.005	0.003	0.005	0.006	0.005

Pollutant Name: PM10 Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0.027	0.01	0.12	0.01	0.026	0.01	0.043	0.012	0.027	0.022	0.076	0.022	0.017	0.0135	0.027	0.021	0.042	0.021	0.015	0.005

Pollutant Name: PM10 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.012	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013

Pollutant Name: PM2.5 Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0.02	0.009	0.11	0.009	0.02	0.009	0.039	0.011	0.02	0.02	0.07	0.02	0.0155	0.01225	0.021	0.02	0.039	0.02	0.011	0.005

Pollutant Name: PM2.5 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005

Title : 2009 and 2035 Bakersfield station
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 12:47:59
Scen Year: 2035 -- All model years in the range 1991 to 2035 selected
Season : Annual
Area : Kern (SJV)
****
Year: 2035 -- Model Years 1991 to 2035 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.006	0.05	0.006	0	0.006	0.052	0.006	0	0.012	0.056	0.012	0.009	0.0075	0	0.015	0.049	0.015	0	0.007

Pollutant Name: Methane Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.005	0.002	0.005	0	0.005	0.002	0.005	0	0.01	0.003	0.01	0.0075	0.00625	0	0.012	0.002	0.012	0	0.005

Pollutant Name: Carbon Monoxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.469	0.411	0.469	0	0.516	0.419	0.516	0	0.879	0.432	0.879	0.6975	0.58325	0	1.201	0.409	1.201	0	0.15

Pollutant Name: Oxides of Nitrogen Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.036	1.246	0.036	0	0.039	1.241	0.041	0	0.074	1.233	0.074	0.0575	0.04675	0	0.091	1.247	0.091	0	0.133

Pollutant Name: Carbon Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	299.866	345.72	299.866	0	378.677	345.72	378.619	0	387.306	345.72	387.305	382.962	341.414	0	526.827	345.72	526.798	0	497.421

Pollutant Name: Sulfur Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.003	0.003	0.003	0	0.004	0.003	0.004	0	0.004	0.003	0.004	0.004	0.0035	0	0.005	0.003	0.005	0	0.005

Pollutant Name: PM10 Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.009	0.031	0.009	0	0.011	0.032	0.011	0	0.023	0.035	0.023	0.017	0.013	0	0.025	0.03	0.025	0	0.007

Pollutant Name: PM10 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.008	0.008	0.008	0.008	0.008	0	0.008	0.008	0.008	0	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013	0.013	0.013	0.013	0.013	0	0.013	0.013	0.013	0	0.013

Pollutant Name: PM2.5 Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.009	0.028	0.009	0	0.01	0.03	0.01	0	0.022	0.032	0.022	0.016	0.0125	0	0.023	0.028	0.023	0	0.007

Pollutant Name: PM2.5 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.002	0.002	0.002	0.002	0.002	0	0.002	0.002	0.002	0	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDA LDT ALL	MDV NCAT	MDV CAT	MDV DSL	MDV ALL	LHD1 NCAT	LHD1 CAT
35	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005	0.005	0.005	0.005	0.005	0	0.005	0.005	0.005	0	0.005

Title : 2009 Bakersfield station - Busses; Shuttles
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/08 12:49:42
Scen Year: 2009 -- All model years in the range 1997 to 2009 selected
Season : Annual
Area : Kern (SJV)
****
Year: 2009 -- Model Years 1997 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

Kern (SJV) Kern (SJV) Kern (SJV)

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.017	0.457	0.358	0	0	0	0	0

Pollutant Name: Methane Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.015	0.021	0.02	0	0	0	0	0

Pollutant Name: Carbon Monoxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.444	1.032	0.899	0	0	0	0	0

Pollutant Name: Oxides of Nitrogen Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.828	10.217	8.096	0	0	0	0	0

Pollutant Name: Carbon Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	497.421	2412.978	1980.162	0	0	0	0	0

Pollutant Name: Sulfur Dioxide Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.023	0.019	0	0	0	0	0

Pollutant Name: PM10 Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.014	0.124	0.099	0	0	0	0	0

Pollutant Name: PM10 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.012	0.008	0.009	0	0	0	0	0

Pollutant Name: PM10 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.013	0.013	0.013	0	0	0	0	0

Pollutant Name: PM2.5 Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.013	0.114	0.091	0	0	0	0	0

Pollutant Name: PM2.5 - Tire Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.003	0.002	0.002	0	0	0	0	0

Pollutant Name: PM2.5 - Brake Wear Temperature: 64F Relative Humidity: 33%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	UBUS NCAT	UBUS CAT	UBUS DSL	UBUS ALL	MCY NCAT	MCY CAT	MCY DSL	MCY ALL	SBUS NCAT
35	0	0	0	0	0	0	0	0	0	0	0	0	0	0.005	0.005	0.005	0	0	0	0	0

C.3-3 Emission Factors for HMF Onsite Vehicles for 2035 Operational Emissions

Title : SJVAB Annual (ROG and PM10)
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/04/12 13:23:40
Scen Year: 2017 -- All model years in the range 1973 to 2017 selected
Season : Annual
Area : San Joaquin Valley Unified APCD
****
Year: 2017 -- Model Years 1973 to 2017 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

District Average District Average San Joaquin Valley Unified APCD

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	11.603	0.367	0.312	0.365	11.603	0.247	0.359	0.306	17.453	0.767	0.369	0.458	61.617	4.501	3.147	3.166	18.324	0.619	2.643	2.329

Pollutant Name: Carbon Monoxide Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	214.511	3.595	2.197	3.484	214.511	2.797	2.148	2.585	321.766	8.721	4.551	5.677	1596.869	95.999	6.627	7.789	375.202	9.091	6.095	6.7

Pollutant Name: Oxides of Nitrogen Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	1.55	0.276	3.763	1.098	1.55	0.262	3.967	2.029	2.325	0.701	4.917	4.234	17.107	4.604	12.413	12.318	3.16	0.559	10.989	9.341

Pollutant Name: Carbon Dioxide Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	1672.267	1672.267	519.874	1401.022	1672.267	1672.267	524.214	1125.064	1672.267	1672.267	1505	1532.197	1672.267	1672.267	3165.447	3147.072	1672.267	1672.267	2800.796	2622.425

Pollutant Name: Sulfur Dioxide Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.02	0.016	0.005	0.013	0.02	0.016	0.005	0.011	0.021	0.016	0.014	0.015	0.042	0.018	0.03	0.03	0.022	0.016	0.027	0.025

Pollutant Name: PM10 Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.066	0.029	0.075	0.04	0.066	0.027	0.078	0.051	0.066	0.034	0.423	0.36	0.066	0.059	0.585	0.578	0.066	0.031	0.532	0.453

Pollutant Name: PM10 - Tire Wear Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.036	0.036	0.012	0.012	0.032	0.029

Pollutant Name: PM10 - Brake Wear Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.028	0.028	0.028	0.028	0.014	0.013	0.025	0.023

Pollutant Name: PM2.5 Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.05	0.027	0.069	0.037	0.05	0.025	0.072	0.047	0.05	0.032	0.389	0.331	0.05	0.055	0.538	0.532	0.05	0.028	0.49	0.417

Pollutant Name: PM2.5 - Tire Wear Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.009	0.009	0.003	0.003	0.008	0.007

Pollutant Name: PM2.5 - Brake Wear Temperature: 67F Relative Humidity: 55%

Speed	LHD1	LHD1	LHD1	LHD1	LHD2	LHD2	LHD2	LHD2	MHD	MHD	MHD	MHD	HHD	HHD	HHD	HHD	ALL	ALL	ALL	ALL
MPH	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL	NCAT	CAT	DSL	ALL
10	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.012	0.012	0.012	0.012	0.006	0.006	0.011	0.01

Title : HMF offsite 2009
Version : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/13 10:53:50
Scen Year: 2009 -- All model years in the range 1965 to 2009 selected
Season : Annual
Area : San Joaquin Valley
****
Year: 2009 -- Model Years 1965 to 2009 Inclusive -- Annual
Emfac2007 Emission Factors: V2.3 Nov 1 2006

San Joaquin Valley Basin Average Basin Average

Table 1: Running Exhaust Emissions (grams/mile)

Pollutant Name: Reactive Org Gases Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	4.741	0.051	0.151	0.09	4.848	0.068	0.07	0.16	4.725	0.078	0.126	0.115	0.1375	0.11375	0.177	4.143	0.622	0.249	0.33	14.669

Pollutant Name: Methane Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	0.292	0.026	0.007	0.028	0.296	0.029	0.003	0.032	0.291	0.033	0.006	0.035	0.0335	0.03075	0.0135	0.269	0.083	0.012	0.023	0.667

Pollutant Name: Carbon Monoxide Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	51.725	2.43	0.607	2.828	51.787	3.254	0.474	4.008	50.448	3.423	0.587	3.792	3.9	3.364	1.401	102.357	9.778	1.993	3.85	501.124

Pollutant Name: Oxides of Nitrogen Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	4.213	0.218	1.132	0.253	4.158	0.291	1.14	0.419	4.078	0.449	1.111	0.48	0.4495	0.35125	3.3465	3.269	2.939	8.04	7.343	23.856

Pollutant Name: Carbon Dioxide Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	427.432	310.912	359.913	311.963	428.01	385.326	346.655	383.713	428.282	385.724	354.445	385.982	384.8475	348.40525	518.6935	497.421	497.421	1505	1366.667	497.421

Pollutant Name: Sulfur Dioxide Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	0.005	0.003	0.003	0.003	0.005	0.004	0.003	0.004	0.005	0.004	0.003	0.004	0.004	0.0035	0.005	0.006	0.005	0.014	0.013	0.013

Pollutant Name: PM10 Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	0.027	0.01	0.114	0.01	0.026	0.011	0.045	0.013	0.027	0.022	0.092	0.022	0.0175	0.01375	0.033	0.015	0.009	0.297	0.257	0.015

Pollutant Name: PM10 - Tire Wear Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.012	0.012	0.012	0.012	0.012	0.012

Pollutant Name: PM10 - Brake Wear Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.028

Pollutant Name: PM2.5 Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	0.02	0.009	0.105	0.01	0.02	0.01	0.042	0.012	0.02	0.021	0.084	0.021	0.0165	0.01325	0.03	0.011	0.008	0.273	0.237	0.011

Pollutant Name: PM2.5 - Tire Wear Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003

Pollutant Name: PM2.5 - Brake Wear Temperature: 67F Relative Humidity: 55%

Speed MPH	LDA NCAT	LDA CAT	LDA DSL	LDA ALL	LDT1 NCAT	LDT1 CAT	LDT1 DSL	LDT1 ALL	LDT2 NCAT	LDT2 CAT	LDT2 DSL	LDT2 ALL	LDT ALL	LDT LDA ALL	LHD DSL	MHD NCAT	MHD CAT	MHD DSL	MHD ALL	HHD NCAT
35	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.012

APPENDIX F

POTENTIAL AIR QUALITY IMPACTS OF HEAVY MAINTENANCE FACILITY (HMF) OPERATIONS

Parsons Brinckerhoff

August 2011

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1.0 Introduction

The HST project will include a heavy maintenance facility (HMF) that would service and repair the rail cars and locomotives. The facility would include locomotives, diesel equipment (e.g., cranes, backhoes, loaders, etc.), heavy-duty diesel trucks, and a spray booth for painting the trains. While measures would be incorporated to minimize atmospheric emissions from these sources, such as the use of electric yard trains to move the rail cars and electric locomotives around the site, the use of diesel-retrofits on heavy-duty diesel engines, etc., the activities at the HMF site would generate emissions that could impact nearby sensitive land uses. The major sources of HMF emissions include:

- Switch diesel locomotive activities associated with maintenance of way operations;
- Spray booth painting operations;
- Diesel equipment; and
- Diesel trucks.

While only one HMF will be needed for the HST project, several sites are currently being considered. Some of these may have sensitive land uses located nearby. As no one site has been selected, an air quality analysis was conducted for a prototypical facility (using the current facility design and anticipated activities) to determine whether HMF operations have the potential to significantly impact nearby sensitive land uses.

2.0 Pollutants of Concern

Criteria pollutants (i.e. pollutants for which national ambient air quality standards [NAAQS] have been established), pollutants for which California ambient air quality standards [CAAQS] have been established, and non-criteria toxic air contaminants (TACs) were considered in this analysis of potential localized impacts. The criteria pollutants considered are:

- Nitrogen dioxide (NO_2) from diesel locomotives, diesel equipment, and trucks; and
- Particulate matter smaller than 10 microns (PM_{10}) and particulate matter smaller than 2.5 microns ($PM_{2.5}$) from diesel locomotives, diesel equipment, trucks, and spray booth operations.

The TACs considered are contaminants identified by the California Air Resources Board (CARB) and the California Office of Environmental Health Hazard Assessment (OEHHA) that may be emitted from HMF operations, including diesel engines and spray booth activities. Of these, the most critical pollutant for determining the potential health effects of the HMF operations is diesel particulate matter (diesel PM), which has been identified by CARB as a TAC based on its potential to cause cancer and other adverse health problems, including respiratory illnesses, and increased risk of heart disease. There are also a number of toxic pollutants (with various toxicities) that are either caricnogenic or non-carconogenic that can also be potentially released from spray booth operations and diesel vehicular exhaust.

Analyses were conducted that considered chronic (long-term) carcinogenic, chronic non-carcinogenic, and acute (short-term) health risks. These analyses were conducted following San Joaquin Valley Air Pollution Control District (SJVAPCD) modeling guidance for a diesel “only” facility, which is defined as a facility where diesel PM is the predominant TAC and where emissions of other toxic pollutants will not contribute significantly (i.e., cancer risk greater than 1 in one million) to the overall risk.

3.0 Emission Factors and Rates

Emission factors from the locomotives and diesel-powered engines of the equipment and trucks and spray booth operations were estimated as follows:

- PM_{10}, $PM_{2.5}$, and NO_2 emissions from switch locomotives were estimated assuming these vehicles would comply with EPA Tier 4 emission standards (which are standards also adopted by CARB) applicable for newly manufactured (after 2015) locomotives (73 FR 88 25098-25352, May 6, 2008) that utilize stringent control technologies and use ultra-low sulfur diesel fuel, and locomotive emission rates were estimated based on locomotive type, notch setting, activity time, and duration;
- For other diesel equipment, EPA's Tier 4 emission standards for non-road diesel engines were used (69 FR 38957-39273, 29 June 2004);
- PM_{10} emission factors were used to represent diesel PM;
- Diesel truck emissions were estimated using EMFAC2007, CARB's latest vehicular emission factor algorithm; and
- Volatile organic compounds (VOCs) from paint booth emissions were estimated using conservative volatility rates and paint usage projections assuming that the paint booths would be equipped with conventional filters with 90% control efficiency. Speciation of VOC compounds from these emissions was obtained from *CARB's Organic Speciation Profile for Surface Coating Operations.* Speciation of VOC compounds from diesel combustion emissions was obtained from CARB's *Organic Speciation Profile for Diesel Light & Heavy Equipment*.

Emission rates for the locomotives, diesel equipment, and trucks were estimated based on the following HMF operating scenario, which was supplied by the project's design engineers:

- Two (2) switch locomotives (for maintenance-of-way operations) and six (6) pieces of diesel-fueled equipment would be operating at the HMF;
- Two (2) maintenance-of-way locomotives, which are assumed to be 2,000 horse-power (hp) each, would be idling for 2 hours and moving around the HMF site for 2 hours over a 24-hour period, and the locomotives would go through all notches (gears) when moving (see Table 1 for the hp and load factors used in this analysis);
- The diesel equipment, which is assumed to be 200 hp each, would be operating continuously for 8 hours over a 24-hour period; and
- Twenty (20) diesel trucks would be operating on the site continuously for 8 hours over each 24-hour period.

Tables 2, 3, and 4 present estimated PM_{10}, $PM_{2.5}$, and NO_2 emission rates estimated for locomotives, diesel equipment, and trucks, respectively, together with the parameters and references used to develop these estimates.

Table 1
Switch Locomotive Horse-Power and Load Factors

Notch	HP (1)	% HP in use	Percent Time in Notch (2)	Actual % time in use	Engine HP (3)	Equivalent HP Used in Analysis	Load Factors (4)
Idle	13	0.3%	38%	100%	7	7	0.3%
Dynamic Brake	128	3.4%	12.5%	20.2%	68	14	
1	211	5.6%	6.5%	10.5%	112	12	
2	457	12.1%	6.5%	10.5%	242	25	
3	928	24.6%	5.2%	8.4%	492	41	
4	1,084	28.7%	4.4%	7.1%	575	41	
5	1,666	44.2%	3.8%	6.1%	883	54	
6	2,375	62.9%	3.9%	6.3%	1,259	79	
7	3,182	84.3%	3.0%	4.8%	1,687	82	
8	3,773	100.0%	16.2%	26.1%	2,000	523	
Total for Moving Locomotives			100%	100%		877	44%

Assumptions:

1. Notch horsepower usage was obtained from tests conducted by MotivePower, a Wabtec company, for the MP36PH-3C locomotive.
2. Percent time in each notch is based on EPA-estimated high power duty-cycles for locomotives.
3. Each switch locomotive is assumed to be 2,000 hp.
4. Average load factors were estimated for two operational modes: idling and moving. It is assumed that the engines would go through all notches when moving.

Table 2
PM_{10} Emission Rates for Switch Locomotive and Diesel Equipment

HMF Operations	Mode	Average Number of Locomotives[1] or Pieces of Diesel Equipment	Engine Horsepower (hp) [2]	Load Factor[3] (%)	Tier 4 Emission Factors [4] (g/bhp-hr)	PM_{10} Emission Rates	
						24-hour	Annual
						g/sec	lb/year
Locomotive	Idle	2	2,000	0.3%	0.03	9.57E-06	6.65E-01
	Moving	2	2,000	44%	0.03	1.22E-03	8.47E+01
Diesel Equipment[5,6]	—	6	200	60%	0.015	1. 00E-03	6.95E+01
Diesel Trucks[7,8]	—	20	—	—	0.596 [7]	1.49E-03	1.04E+02
Total	**—**		**—**	**—**	**—**	**4.06E-03**	**2.82E+02**

Assumptions:

1. Number of locomotives operating in yard, duration of operation in each mode, and number of pieces of diesel equipment were provided by the project engineers. It is assumed that each locomotive would be moving and idling continuously for 2 hours over a 24-hour period.

2. The switch locomotive is assumed to be 2,000 hp; the diesel equipment is assumed to be 200 hp.

3. Load factors for locomotives are weighted-average factors that were estimated for idling and moving modes based on in-use power at each notch setting (see Table 1).

4. Locomotives would be purchased after 2015 and, therefore, subject to Tier 4 emission standards (http://dieselnet.com/standards/us/). The emission factors used are the most stringent locomotive Tier 4 federal standards for switch locomotives (73 FR 88 25098-25352, May 6, 2008).

5. PM_{10} emission factors used for diesel for equipment are Tier 4 federal standards for on-road (off-road) diesel engines introduced in May, 2004 (69 FR 38957-39273, 29 June, 2004) and are provided in Table 3, Tier 4 Emission Standards for engines up to 560 KW from an online source: http://dieselnet.com/standards/us/

6. Each piece of diesel equipment was assumed to operate for 8 hours over a 24-hour period; the load factor for this equipment was assumed to be 0.6.

7. Emission factors for the diesel trucks, which are for 2017, were estimated using California's EMFAC2007 model and are in units of grams of PM per vehicle-mile. Values are for running exhaust emissions at 10 mph, and include tire wear and brake wear emissions for diesel trucks.

8. It was assumed that 20 trucks would operate on the site for 8 hours over each 24-hour period.

Table 3
$PM_{2.5}$ Emission Rates for Switch Locomotive and Diesel Equipment

HMF Operations	Mode	Average Number of Locomotives(1) or Pieces of Diesel Equipment	Engine Horsepower (hp) (2)	Load Factor 3) (%)	Tier 4 Emission Factors (4) (g/bhp-hr)	$PM_{2.5}$ Emission Rates	
						24-hour	Annual
						g/sec	lb/year
Locomotive	**Idle**	2	2,000	0.3%	0.03	9.28E-06	6.45E-01
	Moving	2	2,000	44%	0.03	1.18E-03	8.22E+01
Diesel Equipment(5,6)	—	6	200	60%	0.015	9.70E-04	6.74E+01
Diesel Trucks(7,8)	—	20	—	—	0.514 (7)	1.29E-03	8.96E+01
Total	**—**		**—**	**—**	**—**	**3.45E-03**	**2.40E+02**

Assumptions:

1. Number of locomotives operating in yard, duration of operation in each mode, and number of pieces of diesel equipment were provided by the project engineers. It is assumed that each locomotive would be moving and idling continuously for 2 hours over a 24-hour period.

2. The switch locomotive is assumed to be 2,000 hp; the diesel equipment is assumed to be 200 hp.

3. Load factors for locomotives are weighted-average factors that were estimated for the idling and moving modes based on in-use power at each notch setting (see Table 1).

4. Locomotives would be purchased after 2015 and, therefore, subject to Tier 4 emission standards (http://dieselnet.com/standards/us/). The emission factors used are the most stringent locomotive Tier 4 federal standards for switch locomotives (73 FR 88 25098-25352, May 6, 2008). $PM_{2.5}$ emission factors are assumed to be 92 percent of the PM_{10} emission factors.

5. $PM_{2.5}$ emission factors used for diesel for equipment are Tier 4 federal standards for on-road (off-road) diesel engines introduced in May, 2004 (69 FR 38957-39273, 29 June, 2004) and are provided in Table 3, Tier 4 Emission Standards for engines up to 560 KW from an online source: http://dieselnet.com/standards/us/

6. Each piece of diesel equipment was assumed to operate for 8 hours over a 24-hour period; the load factor for this equipment was assumed to be 0.6.

7. Emission factors for the diesel trucks, which are for 2017, were estimated using California's EMFAC2007 model and are in units of grams of PM per vehicle-mile. Values are for running exhaust emissions at 10 mph, and include tire wear and brake wear emissions for diesel trucks.

8. It was assumed that 20 trucks would operate on the site for 8 hours over each 24-hour period.

Table 4
NO_2 Emission Rates for Switch Locomotives and Diesel Equipment

HMF Operations	Mode	Average Number of Locomotive (1) or Pieces of Equipment	Engine Horsepower (2) (hp)	Load Factor (3) (%)	Tier 4 Emission Factors (4) (g/bhp-hour)	Annual NO_2 Emission Rates[5]	
						g/sec	lb/year
Locomotive	**Idle**	2	2,000	0.3%	1.3	4.15E-04	2.88E+01
	Moving	2	2,000	44%	1.3	5.28E-02	3.67E+03
Diesel Equipment (6,7)		6	200	60%	0.3	2.00E-02	1.39E+03
Diesel Trucks (8,9)		20			11.03	2.77E-02	1.92E+03
Total						**1.01E-01**	**7.01E+03**

Assumptions:

1. Number of locomotives operating in yard, duration of operation in each mode, and number of pieces of diesel equipment were provided by the project engineers. It is assumed that each locomotive would be moving and idling continuously for 2 hours over a 24-hour period.

2. The switch locomotive is assumed to be 2,000 hp; the diesel equipment is assumed to be 200 hp.

3. Load factors for locomotives are weighted-average factors that were estimated for the idling and moving modes based on in-use power at each notch setting (see Table 1).

4. Locomotives would be purchased after 2015 and, therefore, subject to Tier 4 emission standards (http://dieselnet.com/standards/us/). The emission factors used are the most stringent locomotive Tier 4 federal standards for switch locomotives that were introduced in May 2008 (73 FR 88 25098-25352, May 6, 2008)

5. It is conservatively assumed that all of the nitrogen oxides released from the diesel exhaust would be in the form of NO_2.

6. Emission factors used for diesel for equipment are Tier 4 federal standards for on-road (off-road) diesel engines introduced in May, 2004 (69 FR 38957-39273, 29 June, 2004) and are provided in Table 3, Tier 4 Emission Standards for engines up to 560 kW from an online source. (http://dieselnet.com/standards/us/).

7. Each piece of diesel equipment was assumed to operate for 8 hours over a 24-hour period; the load factor for this equipment was assumed to be 0.6.

8. NOx emission factors for the diesel trucks, which are for 2017, were estimated using California's EMFAC2007 model.

9. It was assumed that 20 trucks would operate on the site for 8 hours over each 24-hour period.

4.0 Dispersion Modeling

As the operation of the HMF has the potential to cause health impacts on nearby sensitive land uses, detailed dispersion modeling analyses were conducted to determine whether these impacts would be significant. USEPA's AERMOD atmospheric dispersion model was used to simulate physical conditions and predict pollutant concentrations at the facility's property line and at specified distances from the boundaries of a prototypical HMF facility.

AERMOD is generally applied to estimate impacts from simple point-source emissions from stacks as well as emissions from volume and area sources. The model accepts actual hourly meteorological observations and directly estimates hourly and average concentrations for various time periods. Regulatory default options and the rural dispersion algorithm of the AERMOD model were conservatvely used in these analyses.

The final site of the HMF has not as yet been selected and there are several potential sites between Merced and Bakersfield that are being considered. As such, site-specific coordinates that include locations of nearby sensitive land uses cannot be considered at this time. Instead, a prototypical site was analyzed (using a conceptual design and anticipated HMF activities), and pollutant concentrations were estimated at the site's property line and distances of approximately 500, 1,000, 1,300, 3,000, and 5,000 feet from the site boundary. Receptors were located around the property boundary in increments of 25 meters, as specified in SJVAPCD modeling guidance. The maximum concentrations found at any location were used to estimate potential impacts, and these values were compared with applicable federal and state air quality standards and health-related guidelines.

Emissions from all operations were simulated as one area source spread out over the 140 acre prototypical HMF site. An emissions release height was assumed to be 4.5 meters (14.8 feet) to approximate the stack heights of the locomotive engines, diesel trucks, and spray booth stack(s). Five years of meteorological data (i.e., 2004 through 2009) from Merced County Airport, as compiled by SJVAPCD, were used for all analyses.

The results of these analyses were used to estimate worst-case pollutant (criteria and TAC) concentrations for:

- Comparison with the NAAQS and CAAQS; and
- Input to the health risk analysis.

5.0 Health Risk Methodology

Maximum estimated dispersion modeling concentrations of diesel PM and other representative TACs were used to calculate cancer risks, chronic noncancer health risks, and acute health risks associated with HMF operations. The following methodologies were applied.

5.1 Cancer Risk

From the multiple pollutants that may be emitted from diesel vehicular exhaust, and spray booth operations, six pollutants, are considered by OEHHA as carcinogens for which cancer potency factors (or unit risk factors) were developed. These are diesel PM, benzene, 1, 3-butadiene, acetaldehyde, formaldehyde, and methylene chloride. The maximum individual cancer risk for each pollutant and total incremental cancer risks associated with these pollutant releases were calculated as described below. The 5-year average AERMOD-estimated concentrations were used for these calculations, as recommended by the SJVAPCD. Metal elements bounded to PM from vehicular exhaust, such as arsenic, cadmium, nickel, and others, were considered as part of the diesel PM.

The cancer risk calculation procedures developed by OEHHA, together with OEHHA/CARB-approved health values for health risk assessments, that were used are based on the following:

- Guidance for Air Dispersion Modeling, San Joaquin Valley Air Pollution Control District, Section 2.7 Alternative Modeling Procedures, Diesel "Only" Facilities, Page 81, Calculation of the Diesel PM Adjustment Factor; and
- OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines, OEHHA, 2003, OEHHA/ARB Approved Health Values for Use in Hot Spot Facility Risk Assessments, Appendix L – Table 1, Cancer Risk, Inhalation Cancer Potency Factors and Chronic Inhalation REL and Acute REL values.

The detailed procedures and equations used in these calculations are as follows:

Inhalation Dose = C_{air} x DBR x A x EF x ED x 10^{-6}/AT

Where,

C_{air} = concentration in air (ug/m3)

DBR = Daily Breathing Rate (L/kg body weight-day)

A = Inhalation absorption factor

EF = Exposure frequency (days/year)

ED = Exposure duration (years)

AT = Averaging time period over which exposure is averaged

10^{-6} = Conversion Factor

Cancer Risk (per million) = CP x Inhalation Dose x 1.0E+06 = URF x C_{air}

Where,

CP = Cancer potency factor $(mg/kg\text{-}day)^{-1}$

URF = Unit risk factor (cancer risk per ug/m3)

The following are detailed descriptions of some of the parameters used in the health risk assessment:

5.1.1 Daily Breathing Rate (DBR)

Exposure to airborne chemicals occurs through inhalation and subsequent absorption into the body, potentially resulting in adverse health effects depending on toxicological properties of the chemical and concentration in air. The dose of a substance through inhalation is a function of the concentration of the substance and the amount of air inhaled. DBR values used in these procedures, expressed in liters per kilogram-day (L/kg-day), as recommended by SJVAPCD for diesel PM, is 393 L/kg body weight-day. This DBR value was also used for calculations of the cancer risk of other carcinogenic pollutants.

5.1.2 Cancer Potency Factor (CP)

The inhalation cancer potency factor is a measure of the cancer potency of a carcinogen. It is the estimated probability that a person will contract cancer as a result of inhalation of a concentration of 1 milligram of the TAC per kilogram of body weight continuously over a period of 70 years. The inhalation cancer potency factors used in this analysis (see Tables 8-13) were obtained from OEHHA.

5.1.3 Exposure Value Factors

In order to protect public health, and in accordance with the recommendations of OEHHA, a 70-year lifetime exposure is assumed for all receptor locations. In addition to the 70-year exposure duration (ED) values, exposure values used to calculate cancer risk are exposure frequency (EF), which is the number of days per year of exposure, and the averaging time period in days over which exposure is averaged (AT). For EF, OEHHA and SJVAPCD recommend the use of 350 days/year for residential exposure. For AT, OEHHA and SJVAPCD recommend the use of 25,550 days (70 years x 365 days/year). For ED values used to calculate chronic noncancer risk, EPA recommends the use of 30 years.

5.2 Chronic Noncancer Risk

Calculations for estimating the chronic noncancer hazard index (HQ) are based on the EPA's Human Health Risk Assessment Protocol (HHRAP, Appendix C, Tables C-2-1 and C-2-2) methodology and equations, as follows:

HQ = EC x 0.001/RfC

Where,

EC = Ca x EF x ED/AT x 365 days/year or EC = Ca x Fc, where

HQ = hazard quotient for direct inhalation of noncarcinogen (unitless)

Ca = annual concentration estimated by the AERMOD, ug/m3

EC = exposure concentration, ug/m3

EF = exposure frequency, days/year, assumed by EPA to be equal 350 days/year

ED = exposure duration is assumed to be 70 years

AT = averaging time, years; AT is assumed by EPA to be equal 30 years

RfC = reference concentration for chronic inhalation exposure, mg/m3 (EPA Integrated Risk Information System (IRIS)

0.001=units conversion factor, mg/ug

5.3 Acute Hazard Risk

Acute hazard index analyses are based on HHRAP methodology and equations (HHRAP, Appendix C, Table C-4-1 and B, Table B-6-1), as follows:

AHQ = C_{acute} x 0.001/AIEC

Where,

AHQ acute hazard quotient, unitless

C_{acute}=1-hr estimated concentration, ug/m3

AIEC = acute inhalation exposure criteria, mg/m3. They were obtained from EPA Table 2 "Acute Dose-Response Values for Screening Risk Assessments

0.001= units conversion factor, mg/ug

REL are OEHHA/ARB approved health values for use in Hot Spot facility Risk Assessment, Acute Reference Exposure Levels and target Organs. Appendix L-Table 2

Diesel PM has no acute health value; therefore, it was not included in acute hazard index calculations.

6.0 Results

6.1 Criteria Pollutants

Total estimated concentrations of the criteria pollutants at the HMF property line are provided in Table 5. In general, HMF emissions of criteria pollutants would not cause an exceedance of a NAAQS or CAAQS at the facility's property line. However, because ambient values currently being monitored at the Merced, Madera, Drummond, and/or Fresno monitoring stations currently exceed the 24-hour and annual PM2.5 NAAQS and the 24-hour and annual PM10 CAAQS, and may continue to exceed these standards under future No Build conditions, there is a potential that HMF emissions could exacerbate future exceedances even though the maximum estimated project impacts at the property line are minimal.

Table 5
Total Estimated Concentrations of the Criteria Pollutants at the Property Line

Pollutant	Time Period	CAAQS (ug/m3)	NAAQS (ug/m3)	Estimated Impacts (ug/m3)	Background Conc. (ug/m3)	Total Estimated Concentrations (ug/m3)	Exceed CAAQS ?	Exceed NAAQS ?
NO_2	1-hour	339	188	25.2	81.8	106.9	No	No
	Annual	57	100	2.3	30.1	32.4	No	No
PM_{10}	24-hr	50	150	0.44	99.5	99.9	Yes	No
	Annual	20	—	0.15	40.5	40.7	Yes	—
$PM_{2.5}$	24-hr	—	35	0.25	81.6	81.8	—	Yes
	Annual	12	15	0.08	15.23	15.3	Yes	Yes

6.2 Toxic Pollutants

6.2.1 Chronic Noncancer Risk

The results of hazard chronic noncancer index calculations are summarized in Table 6. Pollutants listed are those for which non-cancer RfC (reference dose concentration) guideline values are available from EPA's Integrated Risk Information System (IRIS), Prioritized Chronic Dose-Response Values for Screening Risk Assessments (EPA, Table 1, June 2007) and REL (Reference Exposure Limit) values from OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines, OEHHA, 2003, OEHHA/ARB Approved Health Values for Use in Hot Spot Facility Risk Assessments.

As shown, the total maximum chronic noncancer hazard index at the HMF property line is estimated to be less than 1 – using both EPA and OEHHA health risk values. As such, potential chronic noncancer risks associated with HMF operations are not considered to be significant.

6.2.2 Acute Risk

The results of acute hazard index calculations are summarized in Table 7. Pollutants listed are those for which acute inhalation exposure criteria values are available from the Prioritized Chronic Dose-Response Values for Screening Risk Assessments (EPA, Table 1, June 2007) and acute REL values from OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines, OEHHA, 2003, OEHHA/ARB Approved Health Values for Use in Hot Spot Facility Risk Assessments.

As shown, the total maximum acute hazard index at the HMF property line are estimated to be less than 1 – using both EPA and OEHHA health risk values. As such, potential acute health risks associated with HMF operations are not considered to be significant.

6.2.3 Cancer Risks

Maximum cancer risks were estimated at various distances from the HMF boundary until impacts were not considered to be significant. Based on the results of these preliminary analyses, it was determined that at a distance of approximately 1,300 feet from the facility boundary, the overall incremental cancer impacts would be below applicable significant thresholds.

Based on this result, maximum cancer risks at 1,300 feet from the HMF boundary were then computed using procedures recommended by SJVAPCD and OEHHA, which assume continuous exposure over a 70-year life-time for residences. This resulted in a diesel PM unit risk factor of 414.5 for 70-years residential exposure, as determined by the SJVAPCD guidance. This factor was then multiplied by the estimated average diesel PM concentration at 1,300 feet to arrive at an increased cancer risk of approximately 9.7 per million. The same calculations were then performed for each of the other applicable carcinogenic pollutants at a distance of 1,300 feet from the facility boundary (Table 10).

As shown, the total incremental cancer risk due to all these pollutant releases at 1,300 feet from the HMF property does not exceed (i.e., are within) the 10 in a million (10×10^{-6}) significance threshold. As such, the estimated cancer risk at distances greater than 1,300 feet from the HMF boundary is not considered to be significant.

7.0 Conclusions

The results of the air quallity analyses for a prototypical HMF facility are as follows:

1. Criteria pollutant impacts at the HMF property line are not considered to be significant. However, there could be minimal criteria pollutant impacts in areas that would exceed a NAAQS or CAAQS under future No Build conditions. Therefore, prior to the issuance of the final EIS for the HST project, a more detailed analysis, using an actual facility design, actual nearby sensitive land uses, and a more detailed consideration of future background values near the selected site, will be conducted. More stringent emission reduction strategies may also be considered;
2. The total chronic noncancer hazard index at the HMF propery line is less than the threshold value of 1 and, therefore, is not considered to be significant;
3. The total acute hazard index at the HMF propery line is less than the threshold value of 1 and, therefore, is not considered to be significant; and
4. Total incremental cancer risk found at the distance of 1,300 feet from the HMF boundary is less than 10 per million and, therefore, is not considered to be significant. However, until detailed analyses are conducted for an actual (as opposed to a prototypical) HMF facility, the potential cancer risks at sensitive land uses that are located closer than 1,300 feet from the HMF boundary are considered to be significant.

Table 6
Chronic Non-Cancer Hazard Index at the HMF Property Line

Contaminant	CAS No.	Annual Conc. (C_a) ug/m^3	Exposure Conc. (EC) ug/m^3	Reference Dose Conc. (RfC) mg/m^3	OEHHA Chronic Inhalation Exposure (REL) mg/m^3	Hazard Quotients (HQ) based on EPA RfC	Hazard Quotients (HQ) based on OEHHA REL
Ethyl benzene	100-41-4	1.33E-02	1.33E-02	2.0E+00	2.0E+00	1.33E-05	5.00E-04
1,3-butadiene	106-99-0	5.80E-05	5.80E-05	2.0E-02	2.0E-02	2.90E-05	1.00E-04
Formaldehyde	50-00-0	4.49E-03	4.49E-03	3.0E-03	3.0E-03	4.58E-04	3.27E-03
Naphthalene	91-20-3	2.60E-05	2.60E-05			8.65E-06	
Acetaldehyde	75-07-0	2.25E-03	2.25E-03	9.0E-03	9.0E-03	2.49E-04	1.00E-03
Xylene	1330-20-7	1.26E-03	1.26E-03	7.0E-01	7.0E-01	1.26E-05	1.43E-04
Ethylene dibromide	106-93-4	9.48E-04	9.48E-04	8.0E-04	8.0E-04	1.05E-04	1.13E-02
Ethylene glycol	107-21-1	6.32E-04	6.32E-04	4.0E-01	4.0E-01	1.58E-06	1.00E-03
Toluene	108-88-3	2.12E-01	2.12E-01	3.0E-01	3.0E-01	4.25E-05	1.67E-02
n-hexane	110-54-3	1.30E-02	1.30E-02	7.0E+00	7.0E+00	1.85E-05	1.00E-04
Methanol	67-56-1	1.05E-01	1.05E-01	4.0E+00	4.0E+00	2.63E-05	1.00E-03
Dimethyl formamide	68-12-2	1.05E-01	1.05E-01	8.0E-02	8.0E-02	3.51E-03	3.75E-04
Benzene	71-43-2	1.58E-03	1.58E-03	6.0E-02	6.0E-02	5.27E-05	5.00E-04
Ethyl chloride	75-00-3	6.32E-04	6.32E-04	3.0E+01	3.0E+01	6.32E-08	3.33E-04
Methylene chloride	75-09-2	6.95E-03	6.95E-03	4.0E-01	4.0E-01	6.95E-06	2.50E-03
Methyl ethyl ketone	78-93-3	1.74E-01	1.74E-01	5.0E+00		3.48E-05	
Phthalic anhydride	85-44-9	9.48E-04	9.48E-04	2.0E-02	2.0E-02	4.74E-05	1.00E-03
Diesel PM	9901	8.57E-02	8.57E-02	5.0E-03	5.0E-03	1.71E-02	1.00E-03
Total Hazard Index						**2.18E-02**	**4.07E-02**
Hazard Index Threshold						**1**	**1**

Table 7
Total Acute Hazard Index at the HMF Property Line

Contaminant	CAS No.	1-hr Estimated Conc. (C_{acute}) (ug/m^3)	EPA Acute Inhalation Exposure Criteria (AIEC) mg/m^3	OEHHA Acute Inhalation Exposure Criteria (Acute REL) mg/m^3	Hazard Quotients (AHQ) Based on AIEC	Acute Hazard Quotients Based on Acute REL
ethyl benzene	100-41-4	0.15759	3.5E+02		4.50E-04	
1,3-butadiene	106-99-0	0.00068	1.5E+03		4.56E-07	
formaldehyde	50-00-0	0.05297	1.1E+00	9.40E-02	4.82E-02	5.64E-01
naphthalene	91-20-3	0.00031	1.3E+02		2.35E-06	
acetaldehyde	75-07-0	0.02647	8.1E+01		3.27E-04	
xylene	106-42-3	0.01525	2.2E+01	2.20E+01	6.93E-04	6.93E-04
ethylene dibromide	106-93-4	0.01118	1.3E+02		8.60E-05	
ethylene glycol	107-21-1	0.00745	1.3E+00		5.73E-03	
toluene	108-88-3	2.50917	3.7E+01	3.70E+01	6.78E-02	6.78E-02
n-hexane	110-54-3	0.15333	1.2E+04		1.28E-05	
methanol	67-56-1	1.24086	2.8E+01	2.80E+01	4.43E-02	4.43E-02
dimethyl formamide	68-12-2	1.24076	2.7E+02		4.60E-03	
benzene	71-43-2	0.02583	1.3E+00	1.30E+00	1.99E-02	1.99E-02
ethyl chloride	75-00-3	0.00745	4.0E+01		1.86E-04	
methylene chloride	75-09-2	0.08197	1.4E+01	1.40E+01	5.86E-03	5.86E-03
methyl ethyl ketone (mek)	78-93-3	2.05461	1.3E+01	1.30E+01	1.58E-01	1.58E-01
phthalic anhydride	85-44-9	0.01118	6.0E+00		1.86E-03	
Total Estimated Acute Hazard Index					**3.58E-01**	**8.60E-01**
Hazard Index threshold					**1**	**1**

Table 8
Diesel PM and TAC Cancer Risk Calculations at the distance of 500 feet from HMF Boundary

Inhalation Dose Factors (1)

	Value					
	DBR	A	Exposure	EF	ED	AT
Exposure Type	L/kg BW-day		hours/day	days/year	years	days
Residential (70-years)	393	1	24	350	70	25,550

Unit Risk Factor Calculations (1, 2)

Pollutant	CP (mg/kg-day) $^{-1}$	URF (Risk/million/ug/m^3)
Diesel PM	1.10E+00	414.5
Benzene	1.00E-01	37.7
Acetaldehyde	1.00E-02	3.8
1,3-Butadiene	6.00E-01	226.1
Formaldehyde	2.10E-02	7.9
Methylene Chloride	3.50E-03	1.3

Cancer Risk Calculations (1, 2)

Pollutant	Estimated Conc. (ug/m^3)	Cancer Risk per million
Diesel PM	0.04262	17.66859
Benzene	0.00079	0.02962
Acetaldehyde	0.00112	0.00421
1,3-Butadiene	0.00003	0.00652
Formaldehyde	0.00223	0.01769
Methylene Chloride	0.00346	0.00456
Total Incremental Cancer Risk		**17.7312**
Significance Threshold		**10**

Notes:

1. Guidance for Air Dispersion Modeling, San Joaquin Valley Air Pollution Control District, Section 2.7 Alternative Modeling Procedures, Diesel "Only" Facilities, Page 81, Calculation of the Diesel PM Adjustment Factor

2. OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines, OEHHA, 2003, OEHHA/ARB Approved Health Values for Use in Hot Spot Facility Risk Assessments, Appendix L - Table 1, Cancer Risk, Inhalation Cancer Potency Factors.

Table 9
Diesel PM and TAC Cancer Risk Calculations at the distance of 1,000 feet from HMF Boundary

Inhalation Dose Factors [1]

Exposure Type	Value					
	DBR	A	Exposure	EF	ED	AT
	L/kg BW-day		hours/day	days/year	years	days
Residential (70-years)	393	1	24	350	70	25,550

Unit Risk Factor Calculations [1, 2]

Pollutant	CP (mg/kg-day) $^{-1}$	URF (Risk/million/ug/m^3)
Diesel PM	1.10E+00	414.5
Benzene	1.00E-01	37.7
Acetaldehyde	1.00E-02	3.8
1,3-Butadiene	6.00E-01	226.1
Formaldehyde	2.10E-02	7.9
Methylene Chloride	3.50E-03	1.3

Cancer Risk Calculations [1, 2]

Pollutant	Estimated Conc. (ug/m^3)	Cancer Risk per million
Diesel PM	0.02858	11.84592
Benzene	0.00053	0.01986
Acetaldehyde	0.00075	0.00282
1,3-Butadiene	0.00002	0.00437
Formaldehyde	0.00150	0.01186
Methylene Chloride	0.00232	0.00306
Total Incremental Cancer Risk		**11.8879**
Significance Threshold		**10**

Notes:

1. Guidance for Air Dispersion Modeling, San Joaquin Valley Air Pollution Control District, Section 2.7 Alternative Modeling Procedures, Diesel "Only" Facilities, Page 81, Calculation of the Diesel PM Adjustment Factor

2. OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines, OEHHA, 2003, OEHHA/ARB Approved Health Values for Use in Hot Spot Facility Risk Assessments, Appendix L - Table 1, Cancer Risk, Inhalation Cancer Potency Factors.

Table 10
Diesel PM and TAC Cancer Risk Calculations at the distance of 1,300 feet from HMF Boundary

Inhalation Dose Factors [1]

Exposure Type	Value					
	DBR	A	Exposure	EF	ED	AT
	L/kg BW-day		hours/day	days/year	years	days
Residential (70-years)	393	1	24	350	70	25,550

Unit Risk Factor Calculations [1, 2]

Pollutant	CP (mg/kg-day) $^{-1}$	URF (Risk/million/ug/m^3)
Diesel PM	1.10E+00	414.5
Benzene	1.00E-01	37.7
Acetaldehyde	1.00E-02	3.8
1,3-Butadiene	6.00E-01	226.1
Formaldehyde	2.10E-02	7.9
Methylene Chloride	3.50E-03	1.3

Cancer Risk Calculations [1, 2]

Pollutant	Estimated Conc. (ug/m^3)	Cancer Risk per million
Diesel PM	0.02334	9.67366
Benzene	0.00043	0.01622
Acetaldehyde	0.00061	0.00230
1,3-Butadiene	0.00002	0.00357
Formaldehyde	0.00122	0.00968
Methylene Chloride	0.00189	0.00250
Total Incremental Cancer Risk		**9.7079**
Significance Threshold		**10**

Notes:

1. Guidance for Air Dispersion Modeling, San Joaquin Valley Air Pollution Control District, Section 2.7 Alternative Modeling Procedures, Diesel "Only" Facilities, Page 81, Calculation of the Diesel PM Adjustment Factor

2. OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines, OEHHA, 2003, OEHHA/ARB Approved Health Values for Use in Hot Spot Facility Risk Assessments, Appendix L - Table 1, Cancer Risk, Inhalation Cancer Potency Factors.

Table 11
Diesel PM and TAC Cancer Risk Calculations at the distance of 2,000 feet from HMF Boundary

Inhalation Dose Factors [1]

Exposure Type	Value					
	DBR	A	Exposure	EF	ED	AT
	L/kg BW-day		hours/day	days/year	years	days
Residential (70-years)	393	1	24	350	70	25,550

Unit Risk Factor Calculations [1, 2]

Pollutant	CP (mg/kg-day) $^{-1}$	URF (Risk/million/ug/m^3)
Diesel PM	1.10E+00	414.5
Benzene	1.00E-01	37.7
Acetaldehyde	1.00E-02	3.8
1,3-Butadiene	6.00E-01	226.1
Formaldehyde	2.10E-02	7.9
Methylene Chloride	3.50E-03	1.3

Cancer Risk Calculations [1, 2]

Pollutant	Estimated Conc. (ug/m^3)	Cancer Risk per million
Diesel PM	0.01640	6.79665
Benzene	0.00030	0.01139
Acetaldehyde	0.00043	0.00162
1,3-Butadiene	0.00001	0.00251
Formaldehyde	0.00086	0.00680
Methylene Chloride	0.00133	0.00175
Total Incremental Cancer Risk		**6.8207**
Significance Threshold		**10**

Notes:

1. Guidance for Air Dispersion Modeling, San Joaquin Valley Air Pollution Control District, Section 2.7 Alternative Modeling Procedures, Diesel "Only" Facilities, Page 81, Calculation of the Diesel PM Adjustment Factor

2. OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines, OEHHA, 2003, OEHHA/ARB Approved Health Values for Use in Hot Spot Facility Risk Assessments, Appendix L - Table 1, Cancer Risk, Inhalation Cancer Potency Factors.

Table 12
Diesel PM and TAC Cancer Risk Calculations at the distance of 3,000 feet from HMF Boundary

Inhalation Dose Factors [1]

Exposure Type	Value					
	DBR	A	Exposure	EF	ED	AT
	L/kg BW-day		hours/day	days/year	years	days
Residential (70-years)	393	1	24	350	70	25,550

Unit Risk Factor Calculations [1, 2]

Pollutant	CP (mg/kg-day) $^{-1}$	URF (Risk/million/ug/m^3)
Diesel PM	1.10E+00	414.5
Benzene	1.00E-01	37.7
Acetaldehyde	1.00E-02	3.8
1,3-Butadiene	6.00E-01	226.1
Formaldehyde	2.10E-02	7.9
Methylene Chloride	3.50E-03	1.3

Cancer Risk Calculations [1, 2]

Pollutant	Estimated Conc. (ug/m^3)	Cancer Risk per million
Diesel PM	0.01121	4.64486
Benzene	0.00021	0.00779
Acetaldehyde	0.00029	0.00111
1,3-Butadiene	0.00001	0.00172
Formaldehyde	0.00059	0.00465
Methylene Chloride	0.00091	0.00120
Total Incremental Cancer Risk		**4.6613**
Significance Threshold		**10**

Notes:

1. Guidance for Air Dispersion Modeling, San Joaquin Valley Air Pollution Control District, Section 2.7 Alternative Modeling Procedures, Diesel "Only" Facilities, Page 81, Calculation of the Diesel PM Adjustment Factor

2. OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines, OEHHA, 2003, OEHHA/ARB Approved Health Values for Use in Hot Spot Facility Risk Assessments, Appendix L - Table 1, Cancer Risk, Inhalation Cancer Potency Factors.

Table 13
Diesel PM and TAC Cancer Risk Calculations at the distance of 5,000 feet from HMF Boundary

Inhalation Dose Factors [1]

Exposure Type	Value					
	DBR	A	Exposure	EF	ED	AT
	L/kg BW-day		hours/day	days/year	years	days
Residential (70-years)	393	1	24	350	70	25,550

Unit Risk Factor Calculations [1, 2]

Pollutant	CP (mg/kg-day) $^{-1}$	URF (Risk/million/ug/m^3)
Diesel PM	1.10E+00	414.5
Benzene	1.00E-01	37.7
Acetaldehyde	1.00E-02	3.8
1,3-Butadiene	6.00E-01	226.1
Formaldehyde	2.10E-02	7.9
Methylene Chloride	3.50E-03	1.3

Cancer Risk Calculations [1, 2]

Pollutant	Estimated Conc. (ug/m^3)	Cancer Risk per million
Diesel PM	0.00636	2.63653
Benzene	0.00012	0.00442
Acetaldehyde	0.00017	0.00063
1,3-Butadiene	0.00000	0.00097
Formaldehyde	0.00033	0.00264
Methylene Chloride	0.00052	0.00068
Total Incremental Cancer Risk		**2.6459**
Significance Threshold		**10**

Notes:

1. Guidance for Air Dispersion Modeling, San Joaquin Valley Air Pollution Control District, Section 2.7 Alternative Modeling Procedures, Diesel "Only" Facilities, Page 81, Calculation of the Diesel PM Adjustment Factor

2. OEHHA Air Toxics Hot Spots Program Risk Assessment Guidelines, OEHHA, 2003, OEHHA/ARB Approved Health Values for Use in Hot Spot Facility Risk Assessments, Appendix L - Table 1, Cancer Risk, Inhalation Cancer Potency Factors.

Appendix G

Quarry and Ballast Hauling Memorandum

URS/HMM/Arup Joint Venture
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MEMORANDUM

To: **Ann Koby/PMT; Bryan Porter/PMT**
From: **Jonathan Tamimi /URS/HMM/Arup; Avanti Tamhane /URS/HMM/Arup**
Date: **7/21/2011**
Subject: **Estimated Emissions from Hauling Ballast Material – Merced to Fresno and Fresno to Bakersfield Sections of the California High-Speed Train Project**

Analysis of pollutant emissions that are associated with hauling railway ballast material needed for the Merced to Fresno and Fresno to Bakersfield Sections of the California High-Speed Train Project are included in the air quality analysis section in Chapter 3 of the *California High-Speed Train Project Environmental Impact Report/Environmental Impact Statement*. Since the construction period for the Merced to Fresno Section and the Fresno to Bakersfield would overlap, the total amount of material and the associated emissions for both sections are analyzed in this memorandum. Air emissions were proportioned based on the material requirement for each section and were then compared to the General Conformity de minimis thresholds as well as the CEQA thresholds.

Over the course of the construction period, the Merced to Fresno and Fresno to Bakersfield Sections will require about 3.9 million cubic yards (cy) of ballast and sub-ballast material (hereby referred to as ballast material), however, this total amount is not currently available within San Joaquin Valley Air Basin (SJVAB), and there would be a need to haul it from quarries located in other air basins. If project material is hauled through other air basins, the associated emissions must be analyzed with respect to pollutant thresholds in the air basins traversed.

This memorandum describes the analysis performed to determine (1) the potential amount of railroad ballast material available from California quarries for the Merced to Fresno and Fresno to Bakersfield Sections of the California High-Speed Train Project and (2) pollutant emissions associated with hauling the materials to the SJVAB boundary.

Quarries Evaluated

The Office of Mine Reclamation (California Department of Conservation [CDC]) provided a list of quarries within the state of California (CDC 2010). The list was screened for active rock quarries with 200 or more acres of permitted area because they are considered to be of sufficient size to serve the demand effectively. Quarries that are in the planning stage and have not received a permit, such as the Jesse Morrow Mountain Quarry in Fresno County and Liberty Quarry in Riverside County, were not considered in the analysis.

A general inquiry call (which did not identify the project) was made to the five quarries that met the screening criteria. The quarries were asked (1) if they could manufacture ballast material to

American Railway Engineering and Maintenance-of-Way Association (AREMA) 4 specifications, (2) the distance from the quarry to the nearest railhead for transport, and (3) the amount of ballast material that could be produced by the quarry in 1 year. Table 1 summarizes the results. Two quarries, Bowman Quarry and Mountain Avenue Pit No. 1 (Elsinore Ready Mix Concrete) met the screening criteria but contact information was not available and, therefore, they were not considered in this analysis.

TABLE 1
Quarry Information

Quarry Name and Address	Distance to SJVAB (rail miles)	AREMA 4 Ballast Availability	Distance to Nearest Railhead	Annual Ballast Production Capacity
Kaiser Eagle Mountain Quarry 1 Court Street Desert Center, CA 92239 (Mojave Air Basin)	350	Yes	Railhead onsite	1,000,000 cy/yr
Napa Quarry 2301 Napa-Vallejo Highway Napa, CA 94558 (San Francisco Bay Air Basin)	70	Yes	Railhead onsite	150,000 tons/yr
Lake Herman Quarry 885 Lake Herman Road Vallejo, CA 94591 (San Francisco Bay Air Basin)	70	Yes	15 miles	200,000 tons/yr
San Rafael Rock Quarry 1000 Point San Pedro Road San Rafael, CA 94901 (San Francisco Bay Air Basin)	55	Yes	15 miles	150,000 tons/yr
Bangor Rock Quarry – Site A 5522 LaPorte Road Bangor, CA 92194 (Sacramento Valley Air Basin)	85	Yes	15 miles	300,000 tons/yr

Methodology for Estimating Pollutant Emissions from Hauling Ballast to the Project Site

As the construction schedules of the Merced to Fresno and Fresno to Bakersfield Sections of the California High Speed Train Project overlap, the ballast material hauling analysis took into account the requirements for both sections to ensure realistic emission estimates. Five scenarios were developed for hauling ballast materials from quarries listed in Table 1 to the boundary of SJVAB to develop a range of emission estimates (the actual hauling scenario during construction

is uncertain). The scenarios represent a range of combinations of supply from the different quarries and different methods of hauling (either by truck to the nearest railhead and railway the remainder of the distance, or by truck the entire distance). The scenarios include the following:

- Scenario 1: All Ballast Hauled from Kaiser Eagle Mountain Quarry by Rail Only – Haul all of the ballast material, for both sites, via rail from the Kaiser Eagle Mountain Quarry (the longest hauling distance).
- Scenario 2: Ballast from Quarries Nearest to the Project by Truck and Rail and Balance from Kaiser Eagle Mountain Quarry by Truck and Rail - Haul all of the ballast material from the quarries closest to the project site (Napa Quarry, Lake Herman Quarry, and San Rafael Rock Quarry) via truck to the nearest railhead, then by railway the remainder of the distance and the balance from Bangor Rock Quarry by truck and rail.
- Scenario 3: Ballast from Quarries Nearest to the Project by Truck and Rail and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry - Haul the maximum amount of ballast available from the quarries closest to the project site (Napa Quarry, Lake Herman Quarry, and San Rafael Rock Quarry), the maximum amount from Bangor Rock Quarry – Site A (which is closer than Kaiser Eagle Mountain Quarry) up to ballast production limits; and then the balance from Kaiser Eagle Mountain Quarry. Haul ballast by truck to the nearest railhead, then by rail the remainder of the distance.
- Scenario 4: Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only – Haul the maximum amount of ballast from the quarries closest to the project site (Napa Quarry, Lake Herman Quarry, and San Rafael Rock Quarry), and obtain the balance of material needed from Bangor Rock Quarry – Site A (closer than Kaiser Eagle Mountain Quarry) and Kaiser Eagle Mountain Quarry, transported by truck for the entire distance.
- Scenario 5: – Maximum Ballast from Quarries Nearest Project and Balance from Kaiser Eagle Mountain Quarry by Truck Only - Haul the maximum amount of ballast up to emission threshold limits from the quarries closest to the project site (Napa Quarry, Lake Herman Quarry, and San Rafael Rock Quarry), and obtain the balance of material needed from Kaiser Eagle Mountain Quarry transported by truck the entire distance.

For each scenario, emissions were calculated using year 2014 emission factors. Year 2014 would be the first year that ballast is required for the project, and emission factors for that year are the most conservative within the project schedule because they are expected to decrease each year as vehicle technology improves. Table 2 provides the emission factors used in the analysis. For unmitigated truck emissions, emission factors were based on a fleet composed of the last 45 model years (1969-2014). Mitigated haul truck emission factors are for a fleet composed of model year 2010 and newer trucks.

TABLE 2
Ballast Hauling Emission Factors

Emission Source	Emission Factors						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2
Unmitigated Haul Trucks (grams/mile)[a]	2.76	7.89	0.313	0.34	0.015	0.423	1561
Mitigated Haul Trucks (grams/mile)[a]	1.02	1.18	0.063	0.068	0.015	0.096	1600
Large Haul Rail (grams/ton-mile)[b]	0.055	0.28	0.0072	0.0074	0.0002	0.013	21.1

[a] Truck emission factors were developed using the EMFAC2007 emissions model and statewide average emission factors.
[b] Railway emission factors were developed using the *Emission Factors for Locomotives* (EPA 2009) and a conversion factor of 484 ton-mile per gallon from *The Environmental Benefits of Moving Freight by Rail,* (The Association of American Railroads, 2010)

Notes:
CO = carbon monoxide
NO_x = nitrogen oxide
$PM_{2.5}$ = particulate matter less than 2.5 micrometers in aerodynamic diameter
PM_{10} = particulate matter less than 10 micrometers in aerodynamic diameter
SO_2 = sulfur dioxide
VOC = volatile organic compound

For each scenario, emissions were calculated by multiplying the emission factor by the distance traveled and the amount of material hauled per trip for each hauling method. The following pollutant emissions were calculated: CO, NOx, $PM_{2.5}$, PM_{10}, SO_2, and VOC. Greenhouse gas (GHG) emissions were also estimated. Emissions were calculated separately for each federal nonattainment or maintenance area through which the materials would be hauled (reference Attachment A). The results were compared to the General Conformity (GC) de minimis values to determine if an exceedance would occur. Emissions were also calculated for each air quality management district (AQMD) or air pollution control district (APCD) that the material was hauled through and compared to daily and annual CEQA significance threshold values for each of the air districts (reference Attachment B). Although the quantity of ballast material being considered was the combined amounts from both sections to ensure plausible scenarios, the emissions for each section were calculated by proportioning out the total air emissions based on the material requirements for each section.

For each scenario, the maximum material hauled in one year was used to estimate the annual emissions. The daily emissions calculations were estimated by assuming that the annual material requirements would be hauled by trucks that would operate 260 days per year and trains that would run twice weekly from each of the railheads to the SJVAB.

Estimated Pollutant Emissions from Hauling Ballast to the Project Site

Tables 3 shows the amounts of material hauled from the quarries for each scenario in cubic yards

(cy) per year. For daily emissions calculations, it was assumed trucks would operate 260 days per year and that trains would run twice weekly from each of the railheads to the SJVAB.

TABLE 3

Amount of Material Hauled from Each Quarry Under Scenarios 1-5

Scenario / Quarry Name	1 (cy/yr)	2 (cy/yr)	3 (cy/yr)	4 (cy/yr)	5 (cy/yr)
Kaiser Eagle Mountain Quarry	939,621	701,526	558,668	558,669	701,526
Napa Quarry	0	71,429	71,429	71,429	71,429
Lake Herman Quarry	0	95,238	95,238	87,139	87,139
San Rafael Rock Quarry	0	71,429	71,429	71,429	71,429
Bangor Rock Quarry – Site A	0	0	142,857	142,857	0

Tables C-1 through C-10 (reference Attachment C) show the estimated unmitigated emissions for the five scenarios relative to the GC de minimis thresholds for the air basins traversed. Tables D-1 through D-20 (reference Attachment D) show the estimated unmitigated emissions relative to CEQA significance thresholds for the AQMDs/APCDs traversed. Tables E-1 through E-8 (reference Attachment E) show estimated mitigated emissions for scenarios 2 through 5 relative to GC de minimis thresholds for the air basins traversed. Tables F-1 through F-16 (reference Attachment F) show the estimated mitigated emissions for scenarios 2 through 5 relative to CEQA significance thresholds for the AQMDs/APCDs traversed. Scenario 1 did not change under the mitigated scenario since tall the material was transported by rail. Please note that a particular air basin could be under the jurisdiction of more than one AQMD.

All five scenarios would result in emissions that exceed the GC de minimis thresholds for NO_X in the Salton Sea Air Basin and South Coast Air Basins for the Fresno to Bakersfield sections without mitigation. Four out of the five scenarios would result in emissions that would exceed the GC de minimis thresholds for NOx for the Merced for Fresno section. In Scenario 3, GC de minimis thresholds for NO_X would not be exceeded in the Salton Sea Air Basin for the Merced to Fresno Section. With a mitigation measure to use a fleet of model year 2010 and newer trucks, Scenarios 4 and 5 no longer exceed any de minimis thresholds in any air basin for either section.

Annual CEQA emission threshold limits would not be exceeded by any of the scenarios for either section. Daily CEQA thresholds for NO_X would be exceeded under Scenario 1 in the Mojave Desert, South Coast AQMDs, and Kern County APCD for both sections. Emissions from Scenarios 2 and 3 would exceed the daily CEQA threshold limits for NO_X in the Bay Area, Mojave Desert, South Coast AQMDs, and East Kern County APCD for both sections. Emissions from Scenarios 4 and 5 would exceed daily CEQA threshold limits for NO_X in the Bay Area and South Coast AQMD for the Fresno to Bakersfield section. For the Merced to Fresno Section,

Scenarios 4 and 5 exceed daily CEQA threshold limits for NO_X in the South Coast AQMD only. With the proposed mitigation for haul trucks, Scenarios 4 and 5 would no longer exceed any daily CEQA threshold limits for both sections.

GHG emissions (in units of CO_2e) from ballast hauling range were calculated by assuming methane and nitrogen dioxide impacts were 5% of the total CO_2 impacts. Total CO_2e impacts ranged from 5,700 to 16,500 metric tons annually, depending on the chosen scenario. The total statewide emissions in 2008 of CO_2e was 477,740,000 metric tons. Material hauling for this project will have a negligible impact (less than 0.1%) on statewide greenhouse gas emissions.

Conclusion

According to this analysis, sufficient ballast material of the type needed for the project is available from quarries within the state of California. General Conformity de minimis pollutant thresholds in nonattainment areas for NO_X would be exceeded in some air basin for each scenario without mitigation. With mitigation, Scenarios 4 and 5 no longer exceed GC de minimis threshold limits for any pollutant for either section. Annual CEQA threshold limits would not be exceeded for either section in any scenario. Daily CEQA NO_X thresholds would be exceeded for certain AQMDs/APCDs for every scenario for both sections without mitigation. With mitigation, Scenarios 4 and 5 would no longer exceed daily CEQA NO_X thresholds for either section. Additionally, material hauling for this project will have a negligible impact on statewide greenhouse gas emissions.

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Attachment A
Air Basins and Nonattainment/Maintenance Areas

TABLE A-1
Air Basins and Nonattainment/Maintenance Areas

Nonattainment/Maintenance Area	Pollutant(s)
Mojave Desert Air Basin	
East Kern County	8-hour ozone, PM_{10}
Western San Bernardino/Los Angeles County	8-hour ozone, PM_{10}
Sacramento Valley Air Basin	
Chico, Butte County	8-hour ozone, $PM_{2.5}$ (2006)
Sacramento Metropolitan Area	8-hour ozone, PM_{10}, $PM_{2.5}$ (2006)
Yuba City	8-hour ozone, $PM_{2.5}$ (2006)
Salton Sea Air Basin	
Coachella Valley, Riverside County	8-hour ozone, PM_{10}
San Francisco Bay Air Basin	
Bay Area	8-hour ozone, $PM_{2.5}$ (2006)
South Coast Air Basin	
Los Angeles County	8-hour ozone, PM_{10}, $PM_{2.5}$ (2006)

Notes:

$PM_{2.5}$ = particulate matter less than 2.5 micrometers in aerodynamic diameter

PM_{10} = particulate matter less than 10 micrometers in aerodynamic diameter

Attachment B
Air Quality Management Districts and CEQA Thresholds

TABLE B-1

Air Quality Management Districts/Air Pollution Control District and CEQA Thresholds

	Daily CEQA Thresholds (lb/day)						Annual CEQ Thresholds (tpy)					
	VOC	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**	**VOC**	**CO**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Antelope Valley AQMD	137	548	137	137	82	82	25	100	25	25	15	15
Bay Area AQMD	54	-	54	-	82	54	-	-	-	-	-	-
Butte County AQMD	25	-	-	-	80	-	-	-	-	-	-	-
Kern Country APCD	137	-	137	-	-	-	-	-	-	-	-	-
Feather River AQMD	-	-	-	-	80	-	4.5	-	4.5	-	-	-
Mojave Desert AQMD	137	548	137	137	82	82	25	100	25	25	15	15
Sac Metro AQMD	65	-	85	-	-	-	-	-	-	-	-	-
South Coast AQMD	75	550	100	150	150	55	-	-	-	-	-	-

Notes:

– = no CEQA annual threshold for this pollutant in the AQMD/ APCD

$PM_{2.5}$ = particulate matter less than 2.5 micrometers in aerodynamic diameter

PM_{10} = particulate matter less than 10 micrometers in aerodynamic diameter

tpy = tons per year

Attachment C
Emission Calculations for Scenarios Compared to GC de minimis Thresholds

TABLE C-1
Emissions for Scenario 1 - All Ballast from Kaiser Eagle Mountain Quarry by Rail (Merced to Fresno Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Coachella Valley, Riverside County (Salton Sea)	7.86	***39.9***	1.03	1.06	0.03	1.80	2,736
General Conformity de Minimis	100	***25***	–	70	–	25	–
Western San Bernardino/Los Angeles County (Mojave Desert)	2.93	14.9	0.38	0.40	0.01	0.67	1,021
General Conformity de Minimis	100	100	–	100	–	50	–
Los Angeles County (South Coast)	5.54	***28.1***	0.73	0.75	0.02	1.27	1,927
General Conformity de Minimis	100	***10***	100	70	100	10	–
East Kern County (Mojave Desert)	3.04	15.4	0.40	0.41	0.01	0.70	1,060
General Conformity de Minimis	100	100	–	70	–	50	–

Notes:
– = no de minimis threshold for this pollutant in the air basin

TABLE C-2
Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Merced to Fresno), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	1.27	5.66	0.16	0.17	0.01	0.26	500
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	5.87	***29.8***	0.77	0.79	0.02	1.34	2,043
General Conformity de Minimis	100	***25***	–	70	–	25	–
Western San Bernardino/Los Angeles County (Mojave Desert)	2.19	11.1	0.29	0.30	0.01	0.50	763
General Conformity de Minimis	100	100	–	100	–	50	–
Los Angeles County (South Coast)	4.13	***21.0***	0.54	0.56	0.01	0.95	1,439
General Conformity de Minimis	100	***10***	100	70	100	10	–
East Kern County (Mojave Desert)	2.27	11.5	0.30	0.31	0.01	0.52	791
General Conformity de Minimis	100	100	–	70	–	50	–

Notes:
– = no de minimis threshold for this pollutant in the air basin

TABLE C-3
Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Merced to Fresno Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	1.27	5.66	0.16	0.17	0.01	0.26	500
General Conformity de Minimis	100	100	100	–	100	50	–
Chico, Butte County (Sacramento Valley)	0.39	1.29	0.05	0.05	0.00	0.07	184
General Conformity de Minimis	100	100	100	–	100	50	–
Sacramento Metropolitan Area (Sacramento Valley)	0.29	1.45	0.04	0.04	0.00	0.07	100
General Conformity de Minimis	100	25	100	100	100	25	–
Yuba City, Sutter County (Sacramento Valley)	0.35	1.75	0.05	0.05	0.00	0.08	120
General Conformity de Minimis	–	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	4.67	23.7	0.61	0.63	0.02	1.07	1,627
General Conformity de Minimis	100	25	–	70	–	25	–
Western San Bernardino/Los Angeles County (Mojave Desert)	1.74	8.84	0.23	0.24	0.01	0.40	607
General Conformity de Minimis	100	100	–	100	–	50	–
Los Angeles County (South Coast)	3.29	***16.7***	0.43	0.44	0.01	0.75	1,146
General Conformity de Minimis	100	***10***	100	70	100	10	–
East Kern County (Mojave Desert)	1.81	9.18	0.24	0.24	0.01	0.41	630
General Conformity de Minimis	100	100	–	70	–	50	–

Note:
– = no de minimis threshold for this pollutant in the air basin

TABLE C-4

Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section) , Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	2.16	6.18	0.25	0.26	0.01	0.33	1,109
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	9.21	***26.3***	1.04	1.12	0.05	1.41	4,721
General Conformity de Minimis	100	***25***	–	70	–	25	–
Los Angeles County (South Coast)	10.6	***30.3***	1.20	1.29	0.06	1.63	5,447
General Conformity de Minimis	100	***10***	100	70	100	10	–
Chico, Butte County (Sacramento Valley)	0.37	1.06	0.04	0.05	0.00	0.06	191
General Conformity de Minimis	100	100	100	–	100	50	–
Sacramento Metropolitan Area (Sacramento Valley)	0.70	2.01	0.08	0.09	0.00	0.11	361
General Conformity de Minimis	100	25.0	100	100	100	25	–
Yuba City, Sutter County (Sacramento Valley)	0.85	2.41	0.10	0.10	0.00	0.13	433
General Conformity de Minimis	–	100	100	–	100	50	–

Note:
– = no de minimis threshold for this pollutant in the air basin

TABLE C-5

Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section) , Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	2.16	6.18	0.25	0.26	0.01	0.33	1,109
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	11.57	***33.0***	1.31	1.40	0.06	1.77	5,928
General Conformity de Minimis	100	***25***	–	70	–	25	–
Los Angeles County (South Coast)	13.4	***38.1***	1.51	1.62	0.07	2.04	6,840
General Conformity de Minimis	100	***10***	100	70	100	10	–

Note:
– = no de minimis threshold for this pollutant in the Air Basin

TABLE C-6
Emissions for Scenario 1 - All Ballast from Kaiser Eagle Mountain Quarry by Rail (Fresno to Bakersfield Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Coachella Valley, Riverside County (Salton Sea)	9.13	***46.3***	1.20	1.23	0.03	2.09	3,179
General Conformity de Minimis	100	***25***	–	70	–	25	–
Western San Bernardino/Los Angeles County (Mojave Desert)	3.41	17.3	0.45	0.46	0.01	0.78	1,186
General Conformity de Minimis	100	100	–	100	–	50	–
Los Angeles County (South Coast)	6.43	***32.6***	0.84	0.87	0.02	1.47	2,238
General Conformity de Minimis	100	***10***	100	70	100	10	–
East Kern County (Mojave Desert)	3.54	17.9	0.46	0.48	0.01	0.81	1,231
General Conformity de Minimis	100	100	–	70	–	50	–

Notes:
– = no de minimis threshold for this pollutant in the air basin

TABLE C-7
Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Fresno to Bakersfield Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	1.48	6.58	0.19	0.19	0.01	0.31	581
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	6.82	***34.6***	0.89	0.92	0.02	1.56	2,373
General Conformity de Minimis	100	***25***	–	70	–	25	–
Western San Bernardino/Los Angeles County (Mojave Desert)	2.54	12.9	0.33	0.34	0.01	0.58	886
General Conformity de Minimis	100	100	–	100	–	50	–
Los Angeles County (South Coast)	4.80	***24.3***	0.63	0.65	0.02	1.10	1,671
General Conformity de Minimis	100	***10***	100	70	100	10	–
East Kern County (Mojave Desert)	2.64	13.4	0.35	0.36	0.01	0.60	919
General Conformity de Minimis	100	100	–	70	–	50	–

Notes:
– = no de minimis threshold for this pollutant in the air basin

TABLE C-8
Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Fresno to Bakersfield Section) , Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	1.48	6.58	0.19	0.19	0.01	0.31	581
General Conformity de Minimis	100	100	100	–	100	50	–
Chico, Butte County (Sacramento Valley)	0.45	1.50	0.05	0.06	0.00	0.08	214
General Conformity de Minimis	100	100	100	–	100	50	–
Sacramento Metropolitan Area (Sacramento Valley)	0.33	1.69	0.04	0.04	0.00	0.08	116
General Conformity de Minimis	100	25	100	100	100	25	–
Yuba City, Sutter County (Sacramento Valley)	0.40	2.03	0.05	0.05	0.00	0.09	140
General Conformity de Minimis	–	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	5.43	***27.5***	0.71	0.73	0.02	1.24	1,890
General Conformity de Minimis	100	***25***	–	70	–	25	–
Western San Bernardino/Los Angeles County (Mojave Desert)	2.03	10.3	0.27	0.27	0.01	0.46	705
General Conformity de Minimis	100	100	–	100	–	50	–
Los Angeles County (South Coast)	3.82	***19.4***	0.50	0.52	0.01	0.88	1,331
General Conformity de Minimis	100	***10***	100	70	100	10	–
East Kern County (Mojave Desert)	2.10	10.7	0.28	0.28	0.01	0.48	732
General Conformity de Minimis	100	100	–	70	–	50	–

Note:
– = no de minimis threshold for this pollutant in the air basin

TABLE C-9

Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section) , Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	2.51	7.18	0.28	0.30	0.01	0.38	1,288
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	10.7	***30.6***	1.21	1.30	0.06	1.64	5,483
General Conformity de Minimis	100	***25***	–	70	–	25	–
Los Angeles County (South Coast)	12.4	***35.3***	1.40	1.50	0.07	1.89	6,327
General Conformity de Minimis	100	***10***	100	70	100	10	–
Chico, Butte County (Sacramento Valley)	0.43	1.24	0.05	0.05	0.00	0.07	222
General Conformity de Minimis	100	100	100	–	100	50	–
Sacramento Metropolitan Area (Sacramento Valley)	0.82	2.34	0.09	0.10	0.00	0.13	419
General Conformity de Minimis	100	25	100	100	100	25	–
Yuba City, Sutter County (Sacramento Valley)	0.98	2.80	0.11	0.12	0.01	0.15	503
General Conformity de Minimis	–	100	100	–	100	50	–

Note:
– = no de minimis threshold for this pollutant in the air basin

TABLE C-10

Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section) , Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	2.51	7.18	0.28	0.30	0.01	0.38	1,288
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	13.4	***38.4***	1.52	1.63	0.07	2.06	7,590
General Conformity de Minimis	100	***25***	–	70	–	25	–
Los Angeles County (South Coast)	15.5	***44.3***	1.76	1.88	0.08	2.37	8,758
General Conformity de Minimis	100	***10***	100	70	100	10	–

Note:
– = no de minimis threshold for this pollutant in the Air Basin

Attachment D
Emission Calculations for Scenarios Compared to CEQA Thresholds

TABLE D-1

Emissions for Scenario 1 - All Ballast from Kaiser Eagle Mountain Quarry by Rail (Merced to Fresno Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
San Bernardino/Los Angeles County (Mojave Desert AQMD)	2.93	14.9	0.38	0.40	0.01	0.67	1,021
CEQA Annual Threshold Limits	100	25	15	15	25	25	–
Los Angeles County/Riverside County (South Coast AQMD)	13.4	67.9	1.76	1.81	0.05	3.07	4,663
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
East Kern County (Kern County APCD)	3.04	15.4	0.40	0.41	0.01	0.70	1,060
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Notes:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE D-2
Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Merced to Fresno Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	1.27	5.66	0.16	0.17	0.01	0.26	500
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
San Bernardino/Los Angeles County (Mojave Desert AQMD)	2.19	11.1	0.29	0.30	0.01	0.50	763
CEQA Annual Threshold Limits	100	25	15	15	25	25	–
Los Angeles County/Riverside County (South Coast AQMD)	10.00	50.7	1.31	1.35	0.04	2.29	3,482
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
East Kern County (Kern County APCD)	2.27	11.5	0.30	0.31	0.01	0.52	791
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Notes:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE D-3
Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Merced to Fresno Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	1.27	5.66	0.16	0.17	0.01	0.26	500
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Chico, Butte County (Butte County AQMD)	0.39	1.29	0.05	0.05	0.00	0.07	184
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	0.29	1.45	0.04	0.04	0.00	0.07	100
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Yuba City, Sutter County (Feather River AQMD)	0.35	1.75	0.05	0.05	0.00	0.08	120
CEQA Annual Threshold Limits	–	4.5	–	–	–	4.5	–
San Bernardino/Los Angeles County (Mojave Desert AQMD)	1.74	8.84	0.23	0.24	0.01	0.40	607
CEQA Annual Threshold Limits	100	25	15	15	25	25	–
Los Angeles County/Riverside County (South Coast AQMD)	7.96	40.4	1.04	1.08	0.03	1.82	2,773
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
East Kern County (Kern County APCD)	1.81	9.18	0.24	0.24	0.01	0.41	630
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE D-4
Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	2.16	6.18	0.25	0.26	0.01	0.33	1,109
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Los Angeles County/Riverside County (South Coast AQMD)	19.8	56.6	2.25	2.41	0.11	3.04	10,167
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Chico, Butte County (Butte County AQMD)	0.37	1.06	0.04	0.05	0.00	0.06	191
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	0.70	2.01	0.08	0.09	0.00	0.11	361
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Yuba City, Sutter County Feather River AQMD	0.85	2.41	0.10	0.10	0.00	0.13	433
CEQA Annual Threshold Limits	–	4.5	–	–	–	4.5	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE D-5
Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	2.16	6.18	0.25	0.26	0.01	0.33	1,109
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Los Angeles County/Riverside County (South Coast AQMD)	24.9	71.1	2.82	3.02	0.14	3.81	12,767
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE D-6
Emissions for Scenario 1 - All Ballast from Kaiser Eagle Mountain Quarry by Rail (Fresno to Bakersfield Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
San Bernardino/Los Angeles County (Mojave Desert AQMD)	3.41	17.3	0.45	0.46	0.01	0.78	1,186
CEQA Annual Threshold Limits	100	25	15	15	25	25	–
Los Angeles County/Riverside County (South Coast AQMD)	15.6	78.9	2.04	2.10	0.06	3.56	5,417
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
East Kern County (Kern County APCD)	3.54	17.9	0.46	0.48	0.01	0.81	1,231
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Notes:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE D-7
Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Fresno to Bakersfield Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	1.48	6.58	0.19	0.19	0.01	0.31	581
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
San Bernardino/Los Angeles County (Mojave Desert AQMD)	2.54	12.9	0.33	0.34	0.01	0.58	886
CEQA Annual Threshold Limits	100	25	15	15	25	25	–
Los Angeles County/Riverside County (South Coast AQMD)	10.7	54.1	1.40	1.44	0.04	2.44	4,044
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
East Kern County (Kern County APCD)	2.64	13.4	0.35	0.36	0.01	0.60	919
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Notes:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE D-8
Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Fresno to Bakersfield Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	1.48	6.58	0.19	0.19	0.01	0.31	581
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Chico, Butte County (Butte County AQMD)	0.45	1.50	0.05	0.06	0.00	0.08	214
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	0.33	1.69	0.04	0.04	0.00	0.08	116
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Yuba City, Sutter County (Feather River AQMD)	0.40	2.03	0.05	0.05	0.00	0.09	140
CEQA Annual Threshold Limits	–	4.5	–	–	–	4.5	–
San Bernardino/Los Angeles County (Mojave Desert AQMD)	2.03	10.3	0.27	0.27	0.01	0.46	705
CEQA Annual Threshold Limits	100	25	15	15	25	25	–
Los Angeles County/Riverside County (South Coast AQMD)	3.82	19.4	0.50	0.52	0.01	0.88	3,221
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
East Kern County (Kern County APCD)	2.10	10.7	0.28	0.28	0.01	0.48	732
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE D-9
Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	2.51	7.18	0.28	0.30	0.01	0.38	1,288
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Chico, Butte County (Butte County AQMD)	0.43	1.24	0.05	0.05	0.00	0.07	222
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	0.82	2.34	0.09	0.10	0.00	0.13	419
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Yuba City, Sutter County Feather River AQMD	0.98	2.80	0.11	0.12	0.01	0.15	503
CEQA Annual Threshold Limits	–	4.5	–	–	–	4.5	–
Los Angeles County/Riverside County (South Coast AQMD)	21.6	61.6	2.44	2.61	0.12	3.30	11,810
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE D-10
Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	2.51	7.18	0.28	0.30	0.01	0.38	1,288
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Los Angeles County/Riverside County (South Coast AQMD)	27.1	77.3	3.07	3.28	0.15	4.14	16,348
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE D-11
Emissions for Scenario 1 - All Ballast from Kaiser Eagle Mountain Quarry by Rail (Merced to Fresno Section), Comparison to Daily CEQA Daily Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Merced to Fresno					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
San Bernardino/Los Angeles County (Mojave Desert AQMD)	56.4	***286***	7.40	7.63	0.20	12.9
CEQA Daily Threshold Limits	548	***137***	82	82	137	137
Los Angeles County/Riverside County (South Coast AQMD)	258	***1306***	33.8	34.8	0.93	59.0
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
East Kern County (Kern County APCD)	58.5	***297***	7.68	7.92	0.21	13.4
CEQA Daily Threshold Limits	–	***137***	–	–	–	137

Notes:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE D-12
Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Merced to Fresno Section), Comparison to CEQA Daily Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Merced to Fresno					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	20.4	***97.3***	2.62	2.72	0.08	4.46
CEQA Daily Threshold Limits	–	***54***	54	82	–	54
San Bernardino/Los Angeles County (Mojave Desert AQMD)	42	***214***	6	6	0	10
CEQA Daily Threshold Limits	548	***137***	82	82	137	137
Los Angeles County/Riverside County (South Coast AQMD)	192	***975***	25	26	1	44
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
East Kern County (Kern County APCD)	44	***222***	6	6	0	10
CEQA Daily Threshold Limits	-	***137***	-	-	-	137

Notes:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE D-13
Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Merced to Fresno Section), Comparison to CEQA Daily Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Merced to Fresno					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	20.4	***97.3***	2.62	2.72	0.08	4.46
CEQA Daily Threshold Limits	–	***54***	54	82	–	54
Chico, Butte County (Butte County AQMD)	3.94	14.8	0.48	0.50	0.02	0.73
CEQA Daily Threshold Limits	–	–	–	80	–	25
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	5.50	27.9	0.72	0.74	0.02	1.26
CEQA Daily Threshold Limits	–	85	–	–	–	65
Yuba City, Sutter County (Feather River AQMD)	6.64	***33.6***	0.87	0.90	0.02	1.52
CEQA Daily Threshold Limits	–	***25***	–	80	–	25
San Bernardino/Los Angeles County (Mojave Desert AQMD)	33.5	***170***	4.40	4.54	0.12	7.69
CEQA Daily Threshold Limits	548	***137***	82	82	137	137
Los Angeles County/Riverside County (South Coast AQMD)	153	***777***	20.1	20.7	0.55	35.1
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
East Kern County (Kern County APCD)	34.8	***177***	4.57	4.71	0.13	7.98
CEQA Daily Threshold Limits	–	***137***	–	–	–	137

Note:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE D-14
Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section), Comparison to CEQA Daily Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Merced to Fresno					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	16.7	47.5	1.89	2.02	0.09	2.55
CEQA Daily Threshold Limits	–	54	54	82	–	54
Los Angeles County/Riverside County (South Coast AQMD)	153	***436***	17.3	18.5	0.83	23.4
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
Chico, Butte County (Butte County AQMD)	2.87	8.18	0.32	0.35	0.02	0.44
CEQA Daily Threshold Limits	–	–	–	80	–	25
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	5.42	15.5	0.61	0.66	0.03	0.83
CEQA Daily Threshold Limits	–	85	–	–	–	65
Yuba City, Sutter County (Feather River AQMD)	6.51	18.6	0.74	0.79	0.04	1.00
CEQA Daily Threshold Limits	–	85	–	–	–	65

Note:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE D-15
Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section), Comparison to CEQA Daily Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Merced to Fresno					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	16.7	47.5	1.89	2.02	0.09	2.55
CEQA Daily Threshold Limits	–	54	54	82	–	54
Los Angeles County/Riverside County (South Coast AQMD)	191	***547***	21.7	23.2	1.04	29.3
CEQA Daily Threshold Limits	550	***100***	55	150	150	75

Note:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE D-16
Emissions for Scenario 1 - All Ballast from Kaiser Eagle Mountain Quarry by Rail (Fresno to Bakersfield Section), Comparison to CEQA Daily Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Fresno to Bakersfield					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
San Bernardino/Los Angeles County (Mojave Desert AQMD)	65.5	***332***	8.60	8.86	0.24	15.01
CEQA Daily Threshold Limits	548	***137***	82	82	137	137
Los Angeles County/Riverside County (South Coast AQMD)	299	***1517***	39.3	40.5	1.08	68.6
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
East Kern County (Kern County APCD)	68.0	***345***	8.92	9.20	0.25	15.58
CEQA Daily Threshold Limits	–	***137***	–	–	–	137

Notes: – = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE D-17
Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Fresno to Bakersfield Section), Comparison to CEQA Daily Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Fresno to Bakersfield					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	23.7	***113***	3.05	3.16	0.09	5.18
CEQA Daily Threshold Limits	–	***54***	54	82	–	54
San Bernardino/Los Angeles County (Mojave Desert AQMD)	48.9	***248***	6.42	6.62	0.18	11.2
CEQA Daily Threshold Limits	548	***137***	82	82	137	137
Los Angeles County/Riverside County (South Coast AQMD)	205	***1040***	26.9	27.7	0.74	47.0
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
East Kern County (Kern County APCD)	50.8	***258***	6.66	6.87	0.18	11.6
CEQA Daily Threshold Limits	–	***137***	–	–	–	137

Notes:

– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE D-18
Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Fresno to Bakersfield Section), Comparison to CEQA Daily Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Fresno to Bakersfield					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	23.7	***113***	3.05	3.16	0.09	5.18
CEQA Daily Threshold Limits	–	***54***	54	82	–	54
Chico, Butte County (Butte County AQMD)	4.58	17.2	0.55	0.58	0.02	0.84
CEQA Daily Threshold Limits	–	–	–	80	–	25
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	6.39	32.4	0.84	0.86	0.02	1.46
CEQA Daily Threshold Limits	–	85	–	–	–	65
Yuba City, Sutter County (Feather River AQMD)	7.71	39.0	1.01	1.04	0.03	1.77
CEQA Daily Threshold Limits	–	25	–	80	–	25
San Bernardino/Los Angeles County (Mojave Desert AQMD)	39.0	***198***	5.11	5.27	0.14	8.93
CEQA Daily Threshold Limits	548	***137***	82	82	137	137
Los Angeles County/Riverside County (South Coast AQMD)	73.5	***373***	9.64	9.94	0.27	16.84
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
East Kern County (Kern County APCD)	40.4	***205***	5.30	5.47	0.15	9.26
CEQA Daily Threshold Limits	–	***137***	–	–	–	137

Note:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE D-19
Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section), Comparison to CEQA Daily Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Fresno to Bakersfield					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	19.3	***55.2***	2.19	2.34	0.10	2.96
CEQA Daily Threshold Limits	–	***54***	54	82	–	54
Los Angeles County/Riverside County (South Coast AQMD)	166	***473***	19	20	1	25
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
Chico, Butte County (Butte County AQMD)	3.33	9.50	0.38	0.40	0.02	0.51
CEQA Daily Threshold Limits	–	–	–	80	–	25
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	6.30	18.0	0.71	0.76	0.03	0.96
CEQA Daily Threshold Limits	–	85	–	–	–	65
Yuba City, Sutter County (Feather River AQMD)	7.56	21.6	0.86	0.92	0.04	1.16
CEQA Daily Threshold Limits	–	85	–	–	–	65

Note:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE D-20
Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section), Comparison to CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD	Emissions (pounds per day) Fresno to Bakersfield					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	19.3	***55.2***	2.19	2.34	0.10	2.96
CEQA Daily Threshold Limits	–	***54***	54	82	–	54
Los Angeles County/Riverside County (South Coast AQMD)	208	***595***	23.6	25.2	1.13	31.9
CEQA Daily Threshold Limits	550	***100***	55	150	150	75

Note:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

Attachment E
Mitigated Emission Calculations for Scenarios Compared to GCR de minimis Thresholds

TABLE E-1
Mitigated Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Merced to Fresno Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Merced to Fresno						
	CO	**NO_x**	**$PM_{2.5}$**	**PM_{10}**	**SO_2**	**VOC**	**CO_2 (Metric Tons)**
Bay Area (San Francisco Bay)	1.05	4.81	0.13	0.13	0.01	0.22	505
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	5.87	***29.8***	0.77	0.79	0.02	1.34	2,042
General Conformity de Minimis	100	***25***	–	70	–	25	–
Western San Bernardino/Los Angeles County (Mojave Desert)	2.19	11.1	0.29	0.30	0.01	0.50	762
General Conformity de Minimis	100	100	–	100	–	50	–
Los Angeles County (South Coast)	4.13	***21.0***	0.54	0.56	0.01	0.95	1,438
General Conformity de Minimis	100	***10***	100	70	100	10	–
East Kern County (Mojave Desert)	2.27	11.5	0.30	0.31	0.01	0.52	791
General Conformity de Minimis	100	100	–	70	–	50	–

Notes:

– = no de minimis threshold for this pollutant in the air basin

TABLE E-2
Mitigated Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Merced to Fresno Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	1.05	4.81	0.13	0.13	0.01	0.22	505
General Conformity de Minimis	100	100	100	–	100	50	–
Chico, Butte County (Sacramento Valley)	0.20	0.56	0.02	0.02	0.00	0.03	187
General Conformity de Minimis	100	100	100	–	100	50	–
Sacramento Metropolitan Area (Sacramento Valley)	0.29	1.45	0.04	0.04	0.00	0.07	120
General Conformity de Minimis	100	25	100	100	100	25	–
Yuba City, Sutter County (Sacramento Valley)	0.35	1.75	0.05	0.05	0.00	0.08	99
General Conformity de Minimis	–	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	4.67	23.7	0.61	0.63	0.02	1.07	1,626
General Conformity de Minimis	100	25	–	70	–	25	–
Western San Bernardino/Los Angeles County (Mojave Desert)	1.74	8.84	0.23	0.24	0.01	0.40	607
General Conformity de Minimis	100	100	–	100	–	50	–
Los Angeles County (South Coast)	3.29	***16.7***	0.43	0.44	0.01	0.75	1,145
General Conformity de Minimis	100	***10***	100	70	100	10	–
East Kern County (Mojave Desert)	1.81	9.18	0.24	0.24	0.01	0.41	630
General Conformity de Minimis	100	100	–	70	–	50	–

Note:
– = no de minimis threshold for this pollutant in the air basin

TABLE E-3

Mitigated Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	0.80	0.93	0.05	0.05	0.01	0.08	1,137
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	3.41	3.94	0.21	0.23	0.05	0.32	4,838
General Conformity de Minimis	100	25	–	70	–	25	–
Los Angeles County (South Coast)	3.93	4.55	0.24	0.26	0.06	0.37	5,582
General Conformity de Minimis	100	10	100	70	100	10	–
Chico, Butte County (Sacramento Valley)	0.14	0.16	0.01	0.01	0.00	0.01	196
General Conformity de Minimis	100	100	100	–	100	50	–
Sacramento Metropolitan Area (Sacramento Valley)	0.26	0.30	0.02	0.02	0.00	0.02	444
General Conformity de Minimis	100	25.0	100	100	100	25	–
Yuba City, Sutter County (Sacramento Valley)	0.31	0.36	0.02	0.02	0.00	0.03	370
General Conformity de Minimis	–	100	100	–	100	50	–

Note:

– = no de minimis threshold for this pollutant in the air basin

TABLE E-4

Mitigated Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	0.80	0.93	0.05	0.05	0.01	0.08	1,137
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	4.28	4.95	0.26	0.28	0.06	0.40	6,075
General Conformity de Minimis	100	25	–	70	–	25	–
Los Angeles County (South Coast)	4.94	5.71	0.30	0.33	0.07	0.46	7,010
General Conformity de Minimis	100	10	100	70	100	10	–

Note:

– = no de minimis threshold for this pollutant in the Air Basin

TABLE E-5
Mitigated Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Fresno to Bakersfield Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	1.22	5.59	0.15	0.15	0.01	0.26	586
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	6.82	***34.6***	0.89	0.92	0.02	1.56	2,373
General Conformity de Minimis	100	***25***	–	70	–	25	–
Western San Bernardino/Los Angeles County (Mojave Desert)	2.54	12.9	0.33	0.34	0.01	0.58	886
General Conformity de Minimis	100	100	–	100	–	50	–
Los Angeles County (South Coast)	4.80	***24.3***	0.63	0.65	0.02	1.10	1,671
General Conformity de Minimis	100	***10***	100	70	100	10	–
East Kern County (Mojave Desert)	2.64	13.4	0.35	0.36	0.01	0.60	919
General Conformity de Minimis	100	100	–	70	–	50	–

Notes:

– = no de minimis threshold for this pollutant in the air basin

TABLE E-6
Mitigated Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Fresno to Bakersfield Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	1.22	5.59	0.15	0.15	0.01	0.26	586
General Conformity de Minimis	100	100	100	–	100	50	–
Chico, Butte County (Sacramento Valley)	0.23	0.65	0.02	0.02	0.00	0.03	218
General Conformity de Minimis	100	100	100	–	100	50	–
Sacramento Metropolitan Area (Sacramento Valley)	0.33	1.69	0.04	0.04	0.00	0.08	116
General Conformity de Minimis	100	25	100	100	100	25	–
Yuba City, Sutter County (Sacramento Valley)	0.40	2.03	0.05	0.05	0.00	0.09	140
General Conformity de Minimis	–	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	5.43	***27.5***	0.71	0.73	0.02	1.24	1,890
General Conformity de Minimis	100	***25***	–	70	–	25	–
Western San Bernardino/Los Angeles County (Mojave Desert)	2.03	10.3	0.27	0.27	0.01	0.46	705
General Conformity de Minimis	100	100	–	100	–	50	–
Los Angeles County (South Coast)	3.82	***19.4***	0.50	0.52	0.01	0.88	1,331
General Conformity de Minimis	100	***10***	100	70	100	10	–
East Kern County (Mojave Desert)	2.10	10.7	0.28	0.28	0.01	0.48	732
General Conformity de Minimis	100	100	–	70	–	50	–

Note:
– = no de minimis threshold for this pollutant in the air basin

TABLE E-7

Mitigated Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	0.93	1.08	0.06	0.06	0.01	0.09	1,320
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	3.96	4.58	0.24	0.26	0.06	0.37	5,620
General Conformity de Minimis	100	25	–	70	–	25	–
Los Angeles County (South Coast)	4.57	5.28	0.28	0.30	0.07	0.43	6,485
General Conformity de Minimis	100	10	100	70	100	10	–
Chico, Butte County (Sacramento Valley)	0.16	0.19	0.01	0.01	0.00	0.02	227
General Conformity de Minimis	100	100	100	–	100	50	–
Sacramento Metropolitan Area (Sacramento Valley)	0.30	0.35	0.02	0.02	0.00	0.03	430
General Conformity de Minimis	100	25	100	100	100	25	–
Yuba City, Sutter County (Sacramento Valley)	0.36	0.42	0.02	0.02	0.01	0.03	516
General Conformity de Minimis	–	100	100	–	100	50	–

Note:
– = no de minimis threshold for this pollutant in the air basin

TABLE E-8

Mitigated Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section), Comparison to GC de Minimis Thresholds

Nonattainment/Maintenance Area (Air Basin)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (San Francisco Bay)	0.93	1.08	0.06	0.06	0.01	0.09	1,320
General Conformity de Minimis	100	100	100	–	100	50	–
Coachella Valley, Riverside County (Salton Sea)	4.97	5.75	0.31	0.33	0.07	0.47	7,057
General Conformity de Minimis	100	25	–	70	–	25	–
Los Angeles County (South Coast)	5.73	6.63	0.35	0.38	0.08	0.54	8,143
General Conformity de Minimis	100	10	100	70	100	10	–

Note:
– = no de minimis threshold for this pollutant in the Air Basin

Attachment F
Mitigated Emission Calculations for Scenarios Compared to CEQA Thresholds

TABLE F-1
Mitigated Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Merced to Fresno Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Merced to Fresno						
	CO	**NO_x**	**$PM_{2.5}$**	**PM_{10}**	**SO_2**	**VOC**	**CO_2 (Metric Tons)**
Bay Area (Bay Area AQMD)	1.05	4.81	0.13	0.13	0.01	0.22	505
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
San Bernardino/Los Angeles County (Mojave Desert AQMD)	2.19	11.1	0.29	0.30	0.01	0.50	763
CEQA Annual Threshold Limits	100	25	15	15	25	25	–
Los Angeles County/Riverside County (South Coast AQMD)	10.00	50.7	1.31	1.35	0.04	2.29	3,482
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
East Kern County (Kern County APCD)	2.27	11.5	0.30	0.31	0.01	0.52	791
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Notes:

– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE F-2
Mitigated Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Merced to Fresno Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	1.05	4.81	0.13	0.13	0.01	0.22	505
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Chico, Butte County (Butte County AQMD)	0.20	0.56	0.02	0.02	0.00	0.03	188
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	0.29	1.45	0.04	0.04	0.00	0.07	100
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Yuba City, Sutter County (Feather River AQMD)	0.35	1.75	0.05	0.05	0.00	0.08	120
CEQA Annual Threshold Limits	–	4.5	–	–	–	4.5	–
San Bernardino/Los Angeles County (Mojave Desert AQMD)	1.74	8.84	0.23	0.24	0.01	0.40	607
CEQA Annual Threshold Limits	100	25	15	15	25	25	–
Los Angeles County/Riverside County (South Coast AQMD)	7.96	40.4	1.04	1.08	0.03	1.82	2,773
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
East Kern County (Kern County APCD)	1.81	9.18	0.24	0.24	0.01	0.41	630
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE F-3
Mitigated Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	0.80	0.93	0.05	0.05	0.01	0.08	1,137
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Los Angeles County/Riverside County (South Coast AQMD)	7.34	8.49	0.45	0.49	0.11	0.69	10,421
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Chico, Butte County (Butte County AQMD)	0.14	0.16	0.01	0.01	0.00	0.01	196
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	0.26	0.30	0.02	0.02	0.00	0.02	444
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Yuba City, Sutter County (Feather River AQMD)	0.31	0.36	0.02	0.02	0.00	0.03	370
CEQA Annual Threshold Limits	–	4.5	–	–	–	4.5	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE F-4
Mitigated Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section), Comparison to CEQA Annual Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Merced to Fresno						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	0.80	0.93	0.05	0.05	0.01	0.08	1,137
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Los Angeles County/Riverside County (South Coast AQMD)	9.21	10.7	0.57	0.61	0.14	0.87	13,085
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE F-5
Mitigated Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Fresno to Bakersfield Section), Comparison to Annual CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Fresno to Bakersfield						
	CO	**NO_x**	**$PM_{2.5}$**	**PM_{10}**	**SO_2**	**VOC**	**CO_2 (Metric Tons)**
Bay Area (Bay Area AQMD)	1.22	5.59	0.15	0.15	0.01	0.26	586
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
San Bernardino/Los Angeles County (Mojave Desert AQMD)	2.54	12.9	0.33	0.34	0.01	0.58	886
CEQA Annual Threshold Limits	100	25	15	15	25	25	–
Los Angeles County/Riverside County (South Coast AQMD)	10.7	54.1	1.40	1.44	0.04	2.44	4,044
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
East Kern County (Kern County APCD)	2.64	13.4	0.35	0.36	0.01	0.60	919
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Notes:

– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE F-6
Mitigated Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Fresno to Bakersfield Section), Comparison to Annual CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	1.22	5.59	0.15	0.15	0.01	0.26	586
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Chico, Butte County (Butte County AQMD)	0.23	0.65	0.02	0.02	0.00	0.03	218
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	0.33	1.69	0.04	0.04	0.00	0.08	116
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Yuba City, Sutter County (Feather River AQMD)	0.40	2.03	0.05	0.05	0.00	0.09	140
CEQA Annual Threshold Limits	–	4.5	–	–	–	4.5	–
San Bernardino/Los Angeles County (Mojave Desert AQMD)	2.03	10.3	0.27	0.27	0.01	0.46	705
CEQA Annual Threshold Limits	100	25	15	15	25	25	–
Los Angeles County/Riverside County (South Coast AQMD)	3.82	19.4	0.50	0.52	0.01	0.88	3,221
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
East Kern County (Kern County APCD)	2.10	10.7	0.28	0.28	0.01	0.48	732
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE F-7
Mitigated Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section), Comparison to Annual CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	0.93	1.08	0.06	0.06	0.01	0.09	1,320
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Chico, Butte County Butte County AQMD	0.16	0.19	0.01	0.01	0.00	0.02	227
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	0.30	0.35	0.02	0.02	0.00	0.03	430
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Yuba City, Sutter County (Feather River AQMD)	0.36	0.42	0.02	0.02	0.01	0.03	516
CEQA Annual Threshold Limits	–	4.5	–	–	–	4.5	–
Los Angeles County/Riverside County (South Coast AQMD)	7.97	9.22	0.49	0.53	0.12	0.75	12,105
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE F-8
Mitigated Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section), Comparison to Annual CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (tons per year) Fresno to Bakersfield						
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC	CO_2 (Metric Tons)
Bay Area (Bay Area AQMD)	0.93	1.08	0.06	0.06	0.01	0.09	1,320
CEQA Annual Threshold Limits	–	–	–	–	–	–	–
Los Angeles County/Riverside County (South Coast AQMD)	10.01	11.58	0.62	0.67	0.15	0.94	15,200
CEQA Annual Threshold Limits	–	–	–	–	–	–	–

Note:
– = no CEQA annual threshold for this pollutant in the AQMD/APCD

TABLE F-9
Mitigated Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Merced to Fresno Section), Comparison to CEQA Daily Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	**Emissions (pounds per day) Merced to Fresno**					
	CO	**NO_x**	**$PM_{2.5}$**	**PM_{10}**	**SO_2**	**VOC**
Bay Area (Bay Area AQMD)	18.7	***90.7***	2.38	2.46	0.08	4.14
CEQA Daily Threshold Limits	–	***54***	54	82	–	54
San Bernardino/Los Angeles County (Mojave Desert AQMD)	42	***214***	6	6	0	10
CEQA Daily Threshold Limits	548	***137***	82	82	137	137
Los Angeles County/Riverside County (South Coast AQMD)	192	***975***	25	26	1	44
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
East Kern County (Kern County APCD)	44	***222***	6	6	0	10
CEQA Daily Threshold Limits	-	***137***	-	-	-	137

Notes:

– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE F-10
Mitigated Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Merced to Section), Comparison to Daily CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Merced to Fresno					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	18.7	***90.7***	2.38	2.46	0.08	4.14
CEQA Daily Threshold Limits	–	***54***	54	82	–	54
Chico, Butte County Butte County AQMD	2.48	9.20	0.27	0.28	0.02	0.45
CEQA Daily Threshold Limits	–	–	–	80	–	25
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	5.50	27.9	0.72	0.74	0.02	1.26
CEQA Daily Threshold Limits	–	85	–	–	–	65
Yuba City, Sutter County (Feather River AQMD)	6.64	***33.6***	0.87	0.90	0.02	1.52
CEQA Daily Threshold Limits	–	***25***	–	80	–	25
San Bernardino/Los Angeles County (Mojave Desert AQMD)	33.5	***170***	4.40	4.54	0.12	7.69
CEQA Daily Threshold Limits	548	***137***	82	82	137	137
Los Angeles County/Riverside County (South Coast AQMD)	153	***777***	20.1	20.7	0.55	35.1
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
East Kern County (Kern County APCD)	34.8	***177***	4.57	4.71	0.13	7.98
CEQA Daily Threshold Limits	–	***137***	–	–	–	137

Note:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE F-11
Mitigated Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno Section), Comparison to Daily CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Merced to Fresno					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	6.16	7.12	0.38	0.41	0.09	0.58
CEQA Daily Threshold Limits	–	54	54	82	–	54
Los Angeles County/Riverside County (South Coast AQMD)	56.4	65.3	3.48	3.76	0.83	5.30
CEQA Daily Threshold Limits	550	100	55	150	150	75
Chico, Butte County Butte County AQMD	1.06	1.23	0.07	0.07	0.02	0.10
CEQA Daily Threshold Limits	–	–	–	80	–	25
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	2.00	2.32	0.12	0.13	0.03	0.19
CEQA Daily Threshold Limits	–	85	–	–	–	65
Yuba City, Sutter County (Feather River AQMD)	2.41	2.78	0.15	0.16	0.04	0.23
CEQA Daily Threshold Limits	–	85	–	–	–	65

Note:
– = no CEQA daily threshold for this pollutant in the AQMD

TABLE F-12
Mitigated Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Merced to Fresno), Comparison to Daily CEQA thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Merced to Fresno					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	6.16	7.12	0.38	0.41	0.09	0.58
CEQA Daily Threshold Limits	–	54	54	82	–	54
Los Angeles County/Riverside County (South Coast AQMD)	70.9	82.0	4.37	4.72	1.04	6.66
CEQA Daily Threshold Limits	550	100	55	150	150	75

Note:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE F-13
Mitigated Emissions for Scenario 2 –Ballast from Quarries Nearest Project and Balance From Kaiser Eagle Quarry by Rail and Truck (Fresno to Bakersfield Section), Comparison to Daily CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	**Emissions (pounds per day) Fresno to Bakersfield**					
	CO	**NO_x**	**$PM_{2.5}$**	**PM_{10}**	**SO_2**	**VOC**
Bay Area (Bay Area AQMD)	21.7	105	2.76	2.85	0.09	4.81
CEQA Daily Threshold Limits	–	***54***	54	82	–	54
San Bernardino/Los Angeles County (Mojave Desert AQMD)	48.9	***248***	6.42	6.62	0.18	11.2
CEQA Daily Threshold Limits	548	***137***	82	82	137	137
Los Angeles County/Riverside County (South Coast AQMD)	205	***1040***	26.9	27.7	0.74	47.0
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
East Kern County (Kern County APCD)	50.8	***258***	6.66	6.87	0.18	11.6
CEQA Daily Threshold Limits	–	***137***	–	–	–	137

Notes:

– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE F-14
Mitigated Emissions for Scenario 3 - Ballast from a Mixture of Quarries by Truck and Rail (Fresno to Bakersfield Section), Comparison to Daily CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Fresno to Bakersfield					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	21.6	***105***	2.76	2.85	0.09	4.81
CEQA Daily Threshold Limits	–	***54***	54	82	–	54
Chico, Butte County Butte County AQMD	2.88	10.7	0.31	0.32	0.02	0.52
CEQA Daily Threshold Limits	–	–	–	80	–	25
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	6.39	32.4	0.84	0.86	0.02	1.46
CEQA Daily Threshold Limits	–	85	–	–	–	65
Yuba City, Sutter County (Feather River AQMD)	7.71	39.1	1.01	1.04	0.03	1.77
CEQA Daily Threshold Limits	–	25	–	80	–	25
San Bernardino/Los Angeles County (Mojave Desert AQMD)	39.0	***198***	5.11	5.27	0.14	8.93
CEQA Daily Threshold Limits	548	***137***	82	82	137	137
Los Angeles County/Riverside County (South Coast AQMD)	73.5	***373***	9.64	9.94	0.27	16.84
CEQA Daily Threshold Limits	550	***100***	55	150	150	75
East Kern County (Kern County APCD)	40.4	***205***	5.30	5.47	0.15	9.26
CEQA Daily Threshold Limits	–	***137***	–	–	–	137

Note:
– = no CEQA daily threshold for this pollutant in the AQMD/APCD

TABLE F-15
Mitigated Emissions for Scenario 4 - Maximum Ballast from Quarries Nearest to the Project and Balance from Bangor Rock Quarry and Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section), Comparison to Daily CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Fresno to Bakersfield					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	7.15	8.27	0.44	0.48	0.10	0.67
CEQA Daily Threshold Limits	–	54	54	82	–	54
Los Angeles County/Riverside County (South Coast AQMD)	61.3	70.9	3.78	4.08	0.90	5.76
CEQA Daily Threshold Limits	550	100	55	150	150	75
Chico, Butte County Butte County AQMD	1.23	1.42	0.08	0.08	0.02	0.12
CEQA Daily Threshold Limits	–	–	–	80	–	25
Sacramento Metropolitan Area (Sacramento Metropolitan AQMD)	2.33	2.69	0.14	0.15	0.03	0.22
CEQA Daily Threshold Limits	–	85	–	–	–	65
Yuba City, Sutter County (Feather River AQMD)	2.79	3.23	0.17	0.19	0.04	0.26
CEQA Daily Threshold Limits	–	85	–	–	–	65

Note:
– = no CEQA daily threshold for this pollutant in the AQMD

TABLE F-16
Mitigated Emissions for Scenario 5 - Maximum Ballast from Quarries Nearest Project Balance from Kaiser Eagle Mountain Quarry by Truck Only (Fresno to Bakersfield Section), Comparison to Daily CEQA Thresholds

Air Quality Management District/ Air Pollution Control District (AQMD/APCD)	Emissions (pounds per day) Fresno to Bakersfield					
	CO	NO_x	$PM_{2.5}$	PM_{10}	SO_2	VOC
Bay Area (Bay Area AQMD)	7.15	8.27	0.44	0.48	0.10	0.67
CEQA Daily Threshold Limits	–	54	54	82	–	54
Los Angeles County/Riverside County (South Coast AQMD)	77.01	89.1	4.75	5.12	1.13	7.23
CEQA Daily Threshold Limits	550	100	55	150	150	75

Note:
– = no CEQA daily threshold for this pollutant in the AQMD

Appendix H

URBEMIS vs. RCM Memorandum

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MEMORANDUM

To: **Ann Koby/PMT; Bryan Porter/PMT**
From: **Tim Rimpo /URS/HMM/Arup; Avanti Tamhane /URS/HMM/Arup**
Date: **7/13/2011**
Subject: **Comparison of RCM and URBEMIS model features**

This memo compares two air quality software tools for their effectiveness in estimating emissions generated by large scale linear construction projects such as the High Speed Train (HST). These tools include URBEMIS2007 and the Roadway Construction Model (RCM). URBEMIS2007 was developed to quantify emissions from land use projects, whereas RCM was designed for road and bridge construction projects.

Given that RCM was designed specifically to estimate linear project emissions, it would seem to be the most appropriate model for HST. However, URBEMIS2007 has several advantages over RCM in estimating emissions from large linear construction projects.

Construction Exhaust Emission Factors

Construction exhaust emissions are generated by on-road and off-road vehicles. Both RCM and URBEMIS2007 use the California Air Board's (CARB) OFFROAD2007 model to estimate emissions for off-road construction equipment and CARB's EMFAC2007 model to estimate on-road vehicle emissions.

One key difference between the models is that RCM uses OFFROAD2007 emission factors specific to Sacramento County[1], whereas URBEMIS2007 uses statewide average OFFROAD2007 emission factors[2]. Neither RCM nor URBEMIS' emission factors can be over-written with SJVAPCD-specific OFFROAD2007 factors.

For estimating on-road emissions, RCM uses Sacramento County specific EMFAC2007 emission factors for light duty trucks and heavy-heavy duty vehicles based on an average vehicle speed of 30 mph. In contrast, URBEMIS2007 uses EMFAC emission factors for the geographic area selected by the user (e.g., county or air district). This model also uses county or air basin specific speeds to estimate on-road emissions.

[1] RCM was developed by the Sacramento Metropolitan Air Quality Management District.
[2] Development of URBEMIS2007 was funded by several California Air Districts.

Fugitive Dust Assumptions

Both RCM and URBEMIS2007 estimate fugitive dust emissions by multiplying the acreage actively disturbed per day by an emission factor. The acreage actively disturbed per day is generated by RCM and URBEMIS2007 based on project information. The disturbed acreage estimates can be overridden by the user. Both models use an identical fugitive dust emission factor as specified by CARB[3]. RCM does not allow the dust emission factor to be overridden, whereas URBEMIS does allow that factor to be modified by the user.

Phasing

One similarity between the two models is they assume that equipment specified for each construction phase will operate continuously throughout the phase. However, this is where the similarities end. RCM only allows the user to estimate emissions for four phases - grubbing/land clearing, grading/excavation, draining, and paving - and those phases cannot overlap. URBEMIS2007 is much more flexible in this regard. It includes seven distinct phases and allows those phases to overlap. Plus, it allows the user to specify as many additional phases as are needed. For example, if the user knows that grading will consist of two separate sets of activities, they can set up URBEMIS2007 to estimate emissions for two grading phases. Because RCM does not allow this, URBEMIS2007 is a much more flexible tool for evaluating large projects with multiple phases.

Reporting

Another advantage of URBEMIS is that it reports emissions in tons per year, which allows for easy comparison to annual significance thresholds. In contrast, RCM reports emissions as tons over the entire construction project instead of tons per year, making it difficult to compare emissions to a tons-per-year threshold.

Equipment Lists

To estimate construction emissions, both RCM and URBEMIS2007 require that an equipment list be specified for each active construction phase. Table 1 shows a typical equipment list. Both models require that the user enter basic project description information. Both models then use that information to generate phasing assumptions and a default equipment list for each phase.

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[3] Under contract to the South Coast Air Quality Management District, the Midwest Research Institute derived a value of 0.11 tons fugitive PM10 dust per acre per month from construction activities, which converts to 10 pounds per day, assuming 22 workdays per month. The California Air Resources Board has reviewed this factor and concluded that it represents PM10 emissions with watering. Consequently, ARB concludes that 20 pounds per acre day is more appropriate for unmitigated fugitive dust conditions (http://www.arb.ca.gov/ei/areasrc/fullpdf/full7-7.pdf).

Phasing and default equipment lists generated by each model are based on a construction database of similar projects. URBEMIS2007 generates default phasing and equipment lists for land use projects and RCM generates default phasing and equipment lists for road construction projects. These estimates are reasonably accurate for small projects of the same type. However, the defaults are only approximations and project specific phasing and equipment should be used when available. Also, when using URBEMIS2007 to estimate emissions for a linear project, the default construction equipment list should never be used. Instead, the user should override the default equipment list with project specific equipment estimates. Also, for large projects like HST, the user should always override the default phasing and equipment specified by the model with project specific phasing, construction equipment and, if available, equipment horsepower.

Examples for Using Project Specific Construction Lists

To ensure that construction emissions are not underestimated, it is important to use project-specific equipment lists as opposed to the default lists in URBEMIS2007. For both the Merced to Fresno (MF) and Fresno to Bakersfield (FB) alignments, the URBEMIS2007 default construction phasing and equipment lists were over-written using data provided by the project engineers for guideway/alignment construction. The project specific lists contained information about the equipment type, number in use, horsepower, and hours of operations. The default load factors from URBEMIS2007 for each equipment type were used, since the project engineers were unable to provide this value.

For example, earth moving activities associated with HST construction take place over two years from August 2013 to August 2015. Table 1 shows the default equipment list that URBEMIS2007 generates for these earth moving activities.

Table 1 – URBEMIS Default Equipment List for Earth Moving

Equipment	HP	Total Pieces	Load Factor	Hours/Day
Fine Grading/ Mass Grading				
Graders	174	2	0.61	8
Rubber Tired Dozers	357	2	0.59	8
Water Trucks	189	2	0.5	8
Tractors/Loaders/Backhoes	108	4	0.55	7
Trenching				
Excavators	168	2	0.57	8
Other General Industrial Equipment	238	1	0.51	8
Tractors/Loaders/Backhoes	108	1	0.55	0

Alternatively, Table 2 shows the more comprehensive equipment list provided by the HST project engineers for these earth moving activities.

Table 2 – Project Specific Equipment List for Earth Moving

Equipment	HP	Total Pieces	Load Factor	Hours/Day
Fine Grading/ Mass Grading/ Trenching				
Concrete/Industrial Saws	120	15	0.65	8
Excavators	300	12	0.65	8
Excavators	450	12	0.65	8
Graders	158	15	0.65	8
Graders	260	15	0.65	8
Off Highway Trucks	175	30	0.65	8
Off Highway Trucks	210	30	0.65	8
Off Highway Trucks	385	6	0.65	8
Off Highway Trucks	200	30	0.65	8
Off Highway Trucks	150	30	0.65	8
Off Highway Trucks	300	30	0.65	8
Other Equipment	15	15	0.65	8
Other Equipment	10	120	0.65	8
Rollers	83	15	0.65	8
Rollers	156	15	0.65	8
Rollers	174	15	0.65	8
Rubber Tired Dozers	125	15	0.65	8
Rubber Tired Dozers	310	15	0.65	8
Rubber Tired Dozers	410	15	0.65	8
Rubber Tired Dozers	850	6	0.65	8
Rubber Tired Loaders	149	15	0.65	8
Rubber Tired Loaders	197	15	0.65	8
Rubber Tired Loaders	262	15	0.65	8
Rubber Tired Loaders	349	15	0.65	8
Surfacing Equipment	266	30	0.65	8
Surfacing Equipment	335	30	0.65	8
Surfacing Equipment	400	30	0.65	8
Tractors/Loaders/Backhoes	87	15	0.65	8
Tractors/Loaders/Backhoes	97	15	0.65	8
Trenchers	40	6	0.65	8
Water Trucks	210	30	0.65	8

Conclusions

The URBEMIS2007 model can be used to estimate emissions for linear construction projects if project specific construction phasing and equipment is known. The URBEMIS2007 model has several advantages when compared to the RCM model. These include:

- the use of statewide OFFROAD2007 emission factors for off-road equipment,
- on-road equipment emission factors specific to the user-selected geographic area,
- overlapping construction phases,
- the ability to specify as many phases as needed, and
- the capability to report annual emissions.

As compared to RCM, URBEMIS2007 represents a more flexible and comprehensive model for estimating construction emissions from large linear projects such as HST.