

APPENDIX D

AIR EMISSIONS MODEL OUTPUT

Urbemis 2007 Version 9.2.4

Summary Report for Annual Emissions (Tons/Year)

File Name:

Project Name: Rumsey 75A - Alternatives A and B

Project Location: Yolo-Solano AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010 TOTALS (tons/year unmitigated)	0.37	2.39	1.65	0.00	4.67	0.15	4.82	0.98	0.14	1.11	245.70
2011 TOTALS (tons/year unmitigated)	0.60	2.34	2.20	0.00	0.00	0.17	0.17	0.00	0.16	0.16	305.87
2012 TOTALS (tons/year unmitigated)	0.55	2.04	1.97	0.00	0.00	0.14	0.14	0.00	0.13	0.13	287.83
2013 TOTALS (tons/year unmitigated)	0.16	0.55	0.54	0.00	0.00	0.04	0.04	0.00	0.03	0.03	82.75

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.38	0.11	1.10	0.00	0.14	0.13	135.81

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.43	0.71	5.41	0.00	0.92	0.19	511.68

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	0.81	0.82	6.51	0.00	1.06	0.32	647.49

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Combined Summer Emissions Reports (Pounds/Day)

File Name:

Project Name: Rumsey 75A - Alternatives A and B

Project Location: Yolo-Solano AQMD

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2010 TOTALS (lbs/day unmitigated)	7.14	50.14	30.55	0.01	183.21	2.85	185.72	38.26	2.62	40.57	4,775.40
2011 TOTALS (lbs/day unmitigated)	6.66	34.50	29.32	0.01	0.05	2.72	2.77	0.02	2.50	2.52	4,033.11
2012 TOTALS (lbs/day unmitigated)	4.20	15.61	15.11	0.01	0.03	1.08	1.11	0.01	0.99	1.00	2,205.56
2013 TOTALS (lbs/day unmitigated)	3.92	14.62	14.40	0.01	0.03	0.97	1.00	0.01	0.89	0.90	2,205.80

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	1.68	0.51	2.64	0.00	0.01	0.01	617.67

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	2.25	3.37	29.09	0.02	5.03	1.01	2,927.70

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (lbs/day, unmitigated)	3.93	3.88	31.73	0.02	5.04	1.02	3,545.37

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

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	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
Time Slice 6/1/2010-8/13/2010 Active Days: 54	3.05	25.07	13.94	0.00	91.61	1.25	92.86	19.13	1.15	20.29	2,387.70
Mass Grading 06/01/2010-09/01/2010	3.05	25.07	13.94	0.00	91.61	1.25	92.86	19.13	1.15	20.29	2,387.70
Mass Grading Dust	0.00	0.00	0.00	0.00	91.60	0.00	91.60	19.13	0.00	19.13	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
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	0.04	0.08	1.48	0.00	0.01	0.00	0.01	0.00	0.00	0.01	140.38
Time Slice 8/16/2010-9/1/2010 Active Days: 13	6.09	50.14	27.88	0.00	183.21	2.51	185.72	38.26	2.31	40.57	4,775.40
Fine Grading 08/15/2010-10/01/2010	3.05	25.07	13.94	0.00	91.61	1.25	92.86	19.13	1.15	20.29	2,387.70
Fine Grading Dust	0.00	0.00	0.00	0.00	91.60	0.00	91.60	19.13	0.00	19.13	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
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	0.04	0.08	1.48	0.00	0.01	0.00	0.01	0.00	0.00	0.01	140.38
Mass Grading 06/01/2010-09/01/2010	3.05	25.07	13.94	0.00	91.61	1.25	92.86	19.13	1.15	20.29	2,387.70
Mass Grading Dust	0.00	0.00	0.00	0.00	91.60	0.00	91.60	19.13	0.00	19.13	0.00
Mass Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
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	0.04	0.08	1.48	0.00	0.01	0.00	0.01	0.00	0.00	0.01	140.38

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Time Slice 9/2/2010-9/30/2010 Active Days: 21	3.05	25.07	13.94	0.00	91.61	1.25	92.86	19.13	1.15	20.29	2,387.70
Fine Grading 08/15/2010-10/01/2010	3.05	25.07	13.94	0.00	91.61	1.25	92.86	19.13	1.15	20.29	2,387.70
Fine Grading Dust	0.00	0.00	0.00	0.00	91.60	0.00	91.60	19.13	0.00	19.13	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
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	0.04	0.08	1.48	0.00	0.01	0.00	0.01	0.00	0.00	0.01	140.38
Time Slice 10/1/2010-10/1/2010 Active Days: 1	6.89	42.59	30.55	0.01	91.63	2.49	94.13	19.14	2.29	21.43	4,589.56
Building 10/01/2010-04/15/2013	3.85	17.52	16.61	0.01	0.03	1.24	1.27	0.01	1.14	1.15	2,201.86
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.06	0.72	0.61	0.00	0.00	0.03	0.04	0.00	0.03	0.03	125.83
Building Worker Trips	0.13	0.26	4.80	0.00	0.02	0.01	0.04	0.01	0.01	0.02	454.83
Fine Grading 08/15/2010-10/01/2010	3.05	25.07	13.94	0.00	91.61	1.25	92.86	19.13	1.15	20.29	2,387.70
Fine Grading Dust	0.00	0.00	0.00	0.00	91.60	0.00	91.60	19.13	0.00	19.13	0.00
Fine Grading Off Road Diesel	3.00	24.99	12.46	0.00	0.00	1.25	1.25	0.00	1.15	1.15	2,247.32
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	0.04	0.08	1.48	0.00	0.01	0.00	0.01	0.00	0.00	0.01	140.38
Time Slice 10/4/2010-10/14/2010 Active Days: 9	3.85	17.52	16.61	0.01	0.03	1.24	1.27	0.01	1.14	1.15	2,201.86
Building 10/01/2010-04/15/2013	3.85	17.52	16.61	0.01	0.03	1.24	1.27	0.01	1.14	1.15	2,201.86
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.06	0.72	0.61	0.00	0.00	0.03	0.04	0.00	0.03	0.03	125.83
Building Worker Trips	0.13	0.26	4.80	0.00	0.02	0.01	0.04	0.01	0.01	0.02	454.83

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Time Slice 10/15/2010-12/31/2010 Active Days: 56	<u>7.14</u>	36.46	30.53	<u>0.01</u>	0.05	<u>2.85</u>	2.89	0.02	<u>2.62</u>	2.63	4,032.74
Asphalt 10/15/2010-01/31/2011	3.29	18.94	13.91	0.00	0.02	1.61	1.63	0.01	1.48	1.49	1,830.88
Paving Off-Gas	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.98	18.01	10.28	0.00	0.00	1.57	1.57	0.00	1.44	1.44	1,418.44
Paving On Road Diesel	0.06	0.75	0.31	0.00	0.00	0.03	0.04	0.00	0.03	0.03	96.59
Paving Worker Trips	0.09	0.18	3.33	0.00	0.02	0.01	0.03	0.01	0.01	0.01	315.86
Building 10/01/2010-04/15/2013	3.85	17.52	16.61	0.01	0.03	1.24	1.27	0.01	1.14	1.15	2,201.86
Building Off Road Diesel	3.65	16.55	11.20	0.00	0.00	1.19	1.19	0.00	1.10	1.10	1,621.20
Building Vendor Trips	0.06	0.72	0.61	0.00	0.00	0.03	0.04	0.00	0.03	0.03	125.83
Building Worker Trips	0.13	0.26	4.80	0.00	0.02	0.01	0.04	0.01	0.01	0.02	454.83
Time Slice 1/3/2011-1/31/2011 Active Days: 21	<u>6.66</u>	<u>34.50</u>	<u>29.32</u>	<u>0.01</u>	<u>0.05</u>	<u>2.72</u>	<u>2.77</u>	<u>0.02</u>	<u>2.50</u>	<u>2.52</u>	<u>4,033.11</u>
Asphalt 10/15/2010-01/31/2011	3.10	17.94	13.50	0.00	0.02	1.54	1.56	0.01	1.42	1.42	1,831.02
Paving Off-Gas	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	2.80	17.10	10.16	0.00	0.00	1.50	1.50	0.00	1.38	1.38	1,418.44
Paving On Road Diesel	0.06	0.68	0.28	0.00	0.00	0.03	0.03	0.00	0.03	0.03	96.59
Paving Worker Trips	0.08	0.16	3.06	0.00	0.02	0.01	0.03	0.01	0.01	0.01	316.00
Building 10/01/2010-04/15/2013	3.57	16.56	15.82	0.01	0.03	1.18	1.21	0.01	1.09	1.09	2,202.08
Building Off Road Diesel	3.39	15.67	10.85	0.00	0.00	1.14	1.14	0.00	1.05	1.05	1,621.20
Building Vendor Trips	0.06	0.65	0.57	0.00	0.00	0.03	0.03	0.00	0.03	0.03	125.85
Building Worker Trips	0.12	0.23	4.41	0.00	0.02	0.02	0.04	0.01	0.01	0.02	455.03

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Time Slice 1/1/2013-4/15/2013	<u>3.92</u>	<u>14.62</u>	<u>14.40</u>	<u>0.01</u>	<u>0.03</u>	<u>0.97</u>	<u>1.00</u>	<u>0.01</u>	<u>0.89</u>	<u>0.90</u>	<u>2,205.80</u>
Active Days: 75											
Building 10/01/2010-04/15/2013	3.02	14.62	14.38	0.01	0.03	0.97	1.00	0.01	0.89	0.90	2,202.55
Building Off Road Diesel	2.88	13.91	10.20	0.00	0.00	0.93	0.93	0.00	0.86	0.86	1,621.20
Building Vendor Trips	0.05	0.52	0.48	0.00	0.00	0.02	0.03	0.00	0.02	0.02	125.89
Building Worker Trips	0.10	0.19	3.69	0.00	0.02	0.01	0.04	0.01	0.01	0.02	455.46
Coating 02/15/2011-05/15/2013	0.90	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.25
Architectural Coating	0.90	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	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.25
Time Slice 4/16/2013-5/15/2013	0.90	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.25
Active Days: 22											
Coating 02/15/2011-05/15/2013	0.90	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.25
Architectural Coating	0.90	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	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.25

Phase Assumptions

- Phase: Fine Grading 8/15/2010 - 10/1/2010 - Default Fine Site Grading Description
- Total Acres Disturbed: 18.31
- Maximum Daily Acreage Disturbed: 4.58
- 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

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Phase: Mass Grading 6/1/2010 - 9/1/2010 - Type Your Description Here

Total Acres Disturbed: 18.31

Maximum Daily Acreage Disturbed: 4.58

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: Paving 10/15/2010 - 1/31/2011 - Default Paving Description

Acres to be Paved: 4.58

Off-Road Equipment:

- 4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
- 1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
- 2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
- 1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 10/1/2010 - 4/15/2013 - 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 2/15/2011 - 5/15/2013 - Default Architectural Coating Description

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Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 100

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 150

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 150

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 150

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.04	0.48	0.20	0.00	0.00	0.00	613.43
Hearth - No Summer Emissions							
Landscape	0.28	0.03	2.44	0.00	0.01	0.01	4.24
Consumer Products	1.22						
Architectural Coatings	0.14						
TOTALS (lbs/day, unmitigated)	1.68	0.51	2.64	0.00	0.01	0.01	617.67

Area Source Changes to Defaults

Percent residential using natural gas changed from 60% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	1.93	2.90	25.05	0.02	4.33	0.87	2,521.09
Condo/townhouse general	0.32	0.47	4.04	0.00	0.70	0.14	406.61
TOTALS (lbs/day, unmitigated)	2.25	3.37	29.09	0.02	5.03	1.01	2,927.70

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2013 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	18.00	10.68	dwelling units	20.00	213.60	2,487.37
Condo/townhouse general	0.31	6.89	dwelling units	5.00	34.45	401.17
					248.05	2,888.54

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	45.0	0.4	99.4	0.2
Light Truck < 3750 lbs	13.0	1.5	91.6	6.9
Light Truck 3751-5750 lbs	20.5	0.5	99.0	0.5
Med Truck 5751-8500 lbs	9.5	1.1	98.9	0.0

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Lite-Heavy Truck 8501-10,000 lbs	2.3	0.0	73.9	26.1
Lite-Heavy Truck 10,001-14,000 lbs	0.8	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	12.5	87.5
Heavy-Heavy Truck 33,001-60,000 lbs	1.2	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	0.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	5.0	54.0	46.0	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	1.0	0.0	90.0	10.0

Travel Conditions

	Residential			Commuter	Commercial	
	Home-Work	Home-Shop	Home-Other		Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			

% of Trips - Commercial (by land use)