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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\Lois Clarke\My Documents\Lois\Miller Env't Inc\TID Route\Analysis\Air\TID T-Line.urb924

Project Name: TID T-Line

Project Location: Stanislaus County

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>
2009 TOTALS (tons/year unmitigated)	0.75	7.62	2.42	0.00	0.01	0.28	0.29	0.00	0.26	0.26	827.36
2010 TOTALS (tons/year unmitigated)	0.47	4.64	1.39	0.00	0.00	0.16	0.16	0.00	0.15	0.15	492.13

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)	0.02	0.15	0.26	0.00	0.00	0.00	176.63

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)	0.00	0.00	0.00	0.00	0.00	0.00	0.07

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)	0.02	0.15	0.26	0.00	0.00	0.00	176.70

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	<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>
2009	0.75	7.62	2.42	0.00	0.01	0.28	0.29	0.00	0.26	0.26	827.36

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2010	0.47	4.64	1.39	0.00	0.00	0.16	0.16	0.00	0.15	0.15	492.13
Building 08/24/2009-05/06/2010	0.47	4.64	1.39	0.00	0.00	0.16	0.16	0.00	0.15	0.15	492.13
Building Off Road Diesel	0.47	4.62	1.36	0.00	0.00	0.16	0.16	0.00	0.15	0.15	487.19
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.89
Building Worker Trips	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.05

Phase Assumptions

Phase: Fine Grading 7/13/2009 - 9/1/2009 - Default Fine Site Grading Description
 Total Acres Disturbed: 0.04
 Maximum Daily Acreage Disturbed: 0.01
 Fugitive Dust Level of Detail: Default
 20 lbs per acre-day
 On Road Truck Travel (VMT): 70.38
 Off-Road Equipment:
 2 Bore/Drill Rigs (240 hp) operating at a 0.75 load factor for 8 hours per day
 1 Tractors/Loaders/Backhoes (79 hp) operating at a 0.55 load factor for 5 hours per day
 1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 7/13/2009 - 9/1/2009 - Type Your Description Here
 Total Acres Disturbed: 0.04
 Maximum Daily Acreage Disturbed: 0.01
 Fugitive Dust Level of Detail: Default
 20 lbs per acre-day
 On Road Truck Travel (VMT): 0
 Off-Road Equipment:
 2 Bore/Drill Rigs (240 hp) operating at a 0.75 load factor for 8 hours per day
 3 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 10.8 hours per day
 1 Tractors/Loaders/Backhoes (79 hp) operating at a 0.55 load factor for 5 hours per day

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1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 7/13/2009 - 9/1/2009 - Type Your Description Here

Off-Road Equipment:

2 Bore/Drill Rigs (240 hp) operating at a 0.75 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (79 hp) operating at a 0.55 load factor for 5 hours per day

Phase: Paving 7/13/2009 - 9/1/2009 - Type Your Description Here

Acres to be Paved: 0.01

Off-Road Equipment:

2 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 8 hours per day

Phase: Building Construction 8/24/2009 - 5/6/2010 - Type Your Description Here

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 5.5 hours per day

3 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 10.8 hours per day

5 Other General Industrial Equipment (240 hp) operating at a 0.51 load factor for 8 hours per day

1 Other Material Handling Equipment (250 hp) operating at a 0.59 load factor for 8 hours per day

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, 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	0.01	0.15	0.12	0.00	0.00	0.00	176.38
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>	<u>CO2</u>
General heavy industry	0.00	0.00	0.00	0.00	0.00	0.00	0.07
TOTALS (tons/year, unmitigated)	0.00	0.00	0.00	0.00	0.00	0.00	0.07

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Season: Annual

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
General heavy industry		0.01	1000 sq ft	3.46	0.03	0.35
					0.03	0.35

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	0.0	1.6	98.2	0.2
Light Truck < 3750 lbs	0.0	3.3	88.5	8.2
Light Truck 3751-5750 lbs	0.0	1.4	98.1	0.5
Med Truck 5751-8500 lbs	0.0	0.8	99.2	0.0
Lite-Heavy Truck 8501-10,000 lbs	100.0	0.0	72.0	28.0
Lite-Heavy Truck 10,001-14,000 lbs	0.0	0.0	44.4	55.6
Med-Heavy Truck 14,001-33,000 lbs	0.0	7.1	14.3	78.6
Heavy-Heavy Truck 33,001-60,000 lbs	0.0	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	0.0	68.2	31.8	0.0
School Bus	0.0	0.0	0.0	100.0
Motor Home	0.0	0.0	90.9	9.1

Travel Conditions

	Residential			Commuter	Commercial	
	Home-Work	Home-Shop	Home-Other		Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	16.8	7.1	7.9	10.0	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)						
General heavy industry				90.0	5.0	5.0

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Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\Lois Clarke\My Documents\Lois\Miller Env't Inc\TID Route\Analysis\TID Substation.urb924

Project Name: TID Substation

Project Location: Stanislaus County

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>
2009 TOTALS (tons/year unmitigated)	0.21	1.74	0.81	0.00	0.88	0.08	0.96	0.18	0.07	0.26	196.77
2010 TOTALS (tons/year unmitigated)	0.19	1.39	0.77	0.00	0.00	0.06	0.06	0.00	0.06	0.06	178.03

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)	0.04	0.15	0.26	0.00	0.00	0.00	176.63

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)	0.00	0.00	0.00	0.00	0.00	0.00	0.42

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)	0.04	0.15	0.26	0.00	0.00	0.00	177.05

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	<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>
2009	0.21	1.74	0.81	0.00	0.88	0.08	0.96	0.18	0.07	0.26	196.77

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2010	0.19	1.39	0.77	0.00	0.00	0.06	0.06	0.00	0.06	0.06	178.03
Building 11/02/2009-06/25/2010	0.19	1.39	0.77	0.00	0.00	0.06	0.06	0.00	0.06	0.06	178.03
Building Off Road Diesel	0.18	1.25	0.52	0.00	0.00	0.06	0.06	0.00	0.05	0.05	138.03
Building Vendor Trips	0.01	0.13	0.09	0.00	0.00	0.00	0.01	0.00	0.00	0.00	23.41
Building Worker Trips	0.00	0.01	0.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.58

Phase Assumptions

Phase: Fine Grading 8/14/2009 - 9/15/2009 - Default Fine Site Grading Description

Total Acres Disturbed: 7.35

Maximum Daily Acreage Disturbed: 1.84

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 257.83

Off-Road Equipment:

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (79 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Mass Grading 7/13/2009 - 8/14/2009 - Type Your Description Here

Total Acres Disturbed: 7.35

Maximum Daily Acreage Disturbed: 1.84

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

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 4 hours per day

1 Rollers (114 hp) operating at a 0.56 load factor for 6 hours per day

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1 Tractors/Loaders/Backhoes (79 hp) operating at a 0.55 load factor for 6 hours per day

1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 9/7/2009 - 10/14/2009 - Type Your Description Here

Off-Road Equipment:

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 4 hours per day

1 Tractors/Loaders/Backhoes (79 hp) operating at a 0.55 load factor for 6 hours per day

1 Trenchers (63 hp) operating at a 0.75 load factor for 6 hours per day

Phase: Paving 10/5/2009 - 11/9/2009 - Type Your Description Here

Acres to be Paved: 1.84

Off-Road Equipment:

1 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 4 hours per day

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 4 hours per day

Phase: Building Construction 11/2/2009 - 6/25/2010 - Type Your Description Here

Off-Road Equipment:

1 Cranes (190 hp) operating at a 0.43 load factor for 6 hours per day

1 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

2 Off Highway Trucks (479 hp) operating at a 0.57 load factor for 4 hours per day

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, 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	0.01	0.15	0.12	0.00	0.00	0.00	176.38
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscape	0.01	0.00	0.14	0.00	0.00	0.00	0.25
Consumer Products	0.00						
Architectural Coatings	0.02						
TOTALS (tons/year, unmitigated)	0.04	0.15	0.26	0.00	0.00	0.00	176.63

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>	<u>CO2</u>
General heavy industry	0.00	0.00	0.00	0.00	0.00	0.00	0.42
TOTALS (tons/year, unmitigated)	0.00	0.00	0.00	0.00	0.00	0.00	0.42

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2010 Season: Annual

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
General heavy industry		0.01	1000 sq ft	20.00	0.20	2.00
					0.20	2.00

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	0.0	1.6	98.2	0.2
Light Truck < 3750 lbs	0.0	3.3	88.5	8.2
Light Truck 3751-5750 lbs	0.0	1.4	98.1	0.5
Med Truck 5751-8500 lbs	0.0	0.8	99.2	0.0
Lite-Heavy Truck 8501-10,000 lbs	100.0	0.0	72.0	28.0
Lite-Heavy Truck 10,001-14,000 lbs	0.0	0.0	44.4	55.6
Med-Heavy Truck 14,001-33,000 lbs	0.0	7.1	14.3	78.6
Heavy-Heavy Truck 33,001-60,000 lbs	0.0	0.0	0.0	100.0
Other Bus	0.0	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	0.0	68.2	31.8	0.0
School Bus	0.0	0.0	0.0	100.0
Motor Home	0.0	0.0	90.9	9.1

Travel Conditions

	Residential			Commuter	Commercial	
	Home-Work	Home-Shop	Home-Other		Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Rural Trip Length (miles)	16.8	7.1	7.9	10.0	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)						
General heavy industry				90.0	5.0	5.0

Greenhouse Gas (GHG) Emissions Calculations

Project Name: **Hughson-Grayson Substation** and Transmission Line

Greenhouse Gas (GHG) Emissions from Area Sources and Vehicles

	Annual Emissions		
	pounds (lbs.)	Tons	Metric Tons
URBEMIS2007 Area Emissions	706,520	353	320
URBEMIS2007 Vehicle Emissions	980	0	0
Total Emissions (area sources + vehicles)	707,500	354	321

Indirect Greenhouse Gas (GHG) Emissions from Project use of Electricity (Power Plant Emissions)

Estimated Project Annual Electrical Use: **696,000** kWh (kilowatt hours)/year
696 mWh (megawatt hours)/year

Indirect GHG gases	Emission Factor lb/mWh	Annual		CO2 Equivalent Factor	Annual
		Project Electricity mWh	GHGs metric tons		CO2 Equivalent Emissions (metric tons)
Carbon Dioxide (CO2)	524	696	165	1	165
Nitrous Oxide (N2O)	0.0037	696	0.0	296	0
Methane (CH4)	0.0067	696	0.0	23	0
Total Indirect GHG Emissions from Project Electricity Use=					166

Total Annual Greenhouse Gas (GHG) Emission from Project Operations -- All Sources (CO2 equivalent Metric Tons)

Area Sources	320	65.8%
Vehicles	0	0.1%
Electrical Use	166	34.1%
Total=	487	100.0%

Notes and References:

Total Emissions from Indirect Electricity Use
Formula and Emission Factor from The California Climate Action Registry Report Protocol 2006

Pg. 32 (CCARRP) gives Equations

Pg. 36 (CCARRP - April 2008 update) gives CO2 output emission rate (lbs/mWh)
878.71 (lbs/mWh)

Pg. 85 (CCARRP) gives CO2 equivalency factors

Pg. 87 (CCARRP) gives Methane and Nitrous Oxide electricity emission factors (lbs/mWh)
Methane - 0.0067 (lbs/mWh)
Nitrous Oxide - 0.0037 (lbs/mWh)

PG&E Carbon Footprint Calculator gives CO2 output emission rate (lbs/kWh)
0.524 lbs/kWh

lbs/metric ton = 2204.62

Percentage of 25,000 1.9%
Percentage of 169 Million 0.0003%

	Tons from URBEMIS	Metric Tons
Construction CO2	1024.05	929

Annual kWh Calculations for Project Emissions of Electricity Used by the project

Project Name: Hughson-Grayson Substation and Transmission Line

Total GHG Emissions From Commercial Electricity Use
Average monthly consumption (kWh)

Miscellaneous* (kWh/sq ft/Year)	square footage**	kWhhours per year
4.35	160,000	696,000

*Electricity Usage Rates from Table A9-11-A South Coast AQMD CEQA Air Quality Handbook
1993 - Usage Rate is Average for SCE and LADWP

**Substation is 320,000 square feet, assumed 1/2 area due to minimal electricity usage expected but some needed for lighting