
Wastewater Treatment Facility Emissions

Urbemis 2007 Version 9.2.4
 Combined Summer Emissions Reports (Pounds/Day)

File Name:
 Project Name: Wastewater Treatment Facility
 Project Location: South Coast AQMD
 On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006
 Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.30	0.83	2.23	0.00	0.01	0.01

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.32	0.29	2.74	0.00	0.68	0.13

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>
TOTALS (lbs/day, unmitigated)	0.62	1.12	4.97	0.00	0.69	0.14

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>
Natural Gas	0.06	0.81	0.68	0.00	0.00	0.00
Hearth						
Landscape	0.12	0.02	1.55	0.00	0.01	0.01
Consumer Products	0.00					
Architectural Coatings	0.12					
TOTALS (lbs/day, unmitigated)	0.30	0.83	2.23	0.00	0.01	0.01

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
General heavy industry	0.32	0.29	2.74	0.00	0.68	0.13
TOTALS (lbs/day, unmitigated)	0.32	0.29	2.74	0.00	0.68	0.13

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2015 Temperature (F): 80 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
General heavy industry		1.50	1000 sq ft	20.60	30.90	395.06
					30.90	395.06

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9	0.2	99.6	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.2	0.0	100.0	0.0
Med Truck 5751-8500 lbs	10.8	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	82.4	17.6
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.9	48.3	51.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% 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 Winter Emissions Reports (Pounds/Day)

File Name:
 Project Name: Wastewater Treatment Facility
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 Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.18	0.81	0.68	0.00	0.00	0.00

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>
TOTALS (lbs/day, unmitigated)	0.28	0.35	2.55	0.00	0.68	0.13

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>
TOTALS (lbs/day, unmitigated)	0.46	1.16	3.23	0.00	0.68	0.13

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Winter 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>
Natural Gas	0.06	0.81	0.68	0.00	0.00	0.00
Hearth						
Landscaping - No Winter Emissions						
Consumer Products	0.00					
Architectural Coatings	0.12					
TOTALS (lbs/day, unmitigated)	0.18	0.81	0.68	0.00	0.00	0.00

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Winter Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25
General heavy industry	0.28	0.35	2.55	0.00	0.68	0.13
TOTALS (lbs/day, unmitigated)	0.28	0.35	2.55	0.00	0.68	0.13

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2015 Temperature (F): 60 Season: Winter

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		1.50	1000 sq ft	20.60	30.90	395.06
					30.90	395.06

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	50.9	0.2	99.6	0.2
Light Truck < 3750 lbs	7.3	1.4	95.9	2.7
Light Truck 3751-5750 lbs	23.2	0.0	100.0	0.0
Med Truck 5751-8500 lbs	10.8	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	1.7	0.0	82.4	17.6
Lite-Heavy Truck 10,001-14,000 lbs	0.5	0.0	60.0	40.0
Med-Heavy Truck 14,001-33,000 lbs	0.9	0.0	22.2	77.8
Heavy-Heavy Truck 33,001-60,000 lbs	0.6	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.9	48.3	51.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.9	0.0	88.9	11.1

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	12.7	7.0	9.5	13.3	7.4	8.9
Rural Trip Length (miles)	17.6	12.1	14.9	15.4	9.6	12.6
Trip speeds (mph)	30.0	30.0	30.0	30.0	30.0	30.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
General heavy industry				90.0	5.0	5.0

**Vista Canyon Ranch Project
Water Reclamation Facility
New Emergency Generators**

Standby Emergency Generator
 Rating: 350 kW
 469 HP (1 kW ~ 1.341 HP)
 Number of Generators 1
 Operating Hours: 50 hours/year (typical for permitted emergency generators)
 1 hour/day (daily max for maintenance)

Emissions	VOC	NO _x	CO	SO ₂	PM	CO ₂	CO ₂ e
g/HP-hr	0.1500	2.8500	2.6000	--	0.1500	--	--
lb/HP-hr	0.0003	0.0063	0.0057	1.20E-05	0.0003	1.15	1.16
lb/hr	0.1551	2.9468	2.6883	0.0056	0.1551	539.35	544.80
lb/day	0.1551	2.9468	2.6883	0.0056	0.1551	539.35	544.80
lb/yr	7.7548	147.3404	134.4158	0.2814	7.7548	26,967.50	27,239.90
ton/yr	0.0039	0.0737	0.0672	0.0001	0.0039	13.48	13.62
metric ton/yr	--	--	--	--	--	12.23	12.36

Sources/Notes:

1. Emission factors for VOC, NO_x, CO, and PM are based on U.S. EPA Tier 3 nonroad diesel engine standards.
2. Where NO_x and VOC standards are not separately listed (i.e. the standard is given as "NMHC+NO_x"), NO_x = 95% and VOC = 5% of the "NMHC+NO_x" value. CARB NMHC/NO_x fractions are listed in Table B-22 of the Carl Moyer Program Guidelines, which is included in Part IV (Appendices) and can be downloaded from the following location: <http://www.arb.ca.gov/msprog/moyer/guidelines/current.htm>.
3. Emission factor for PM assumes all PM is less than 2.5 microns in diameter.
4. Emission factor for SO_x is based on 15 ppm (0.0015%) S and fuel usage of 0.4 lb/HP-hr.
5. Emission factor for CO₂ is based on U.S. EPA AP-42, Chapter 3.3, Table 3.3-1.
6. Emission factor for CO₂e assumes that 99 percent of GHG emissions are emitted as CO₂.

**Vista Canyon Ranch Project
Water Reclamation Facility
VOC Emissions**

Source	Emission Factor ¹ (lb/yr/mgd)	Wastewater treatment Facility		
		Influent Flow (mgd)	Number of Units	Estimated VOC Emissions (lb/yr)
Preliminary Treatment				
Headworks	0.1	0.416	1	0.0416
Grit Removal	7	0.416	1	2.912
Primary Sedimentation	40	0.416	1	16.64
Flow Equalization	30	0.416	1	12.48
Secondary Treatment				
Diffused Air Activated Sludge	190	0.416	1	79.04
Mechanically Aerated Activated Sludge	30	0.416	1	12.48
Secondary Clarifier	12	0.416	1	4.992
Effluent Filtration	0.6	0.416	1	0.2496
UV Disinfection	0.9	0.416	1	0.3744
Open Solids Handling	10	0.416	1	4.16
Total Annual VOC Emissions				133.3696

Sources:

1. University of California, Davis, *Campus WWTP Expansion Draft EIR*, (2004).

**Vista Canyon Ranch Project
Water Reclamation Facility
TAC Emissions**

Toxic Air Contaminant (TAC)	Emission Factor ¹ (lb/yr/mgd)	Wastewater treatment Facility		
		Influent Flow (mgd)	Number of Units	Estimated TAC Emissions (lb/yr)
Grit Removal				
Benzene	3.00E-01	0.416	1	1.25E-01
Ethyl benzene	2.10E-01	0.416	1	8.74E-02
Toluene	5.90E-02	0.416	1	2.45E-02
Xylene	1.60E-02	0.416	1	6.66E-03
1,1,1-Trichloroethane	1.50E-01	0.416	1	6.24E-02
Chloroform	6.60E-02	0.416	1	2.75E-02
Methylene chloride	7.00E-02	0.416	1	2.91E-02
Tetrachloroethylene	1.80E-01	0.416	1	7.49E-02
Acetone	8.10E-01	0.416	1	3.37E-01
MEK	1.60E-01	0.416	1	6.66E-02
MIBK	1.50E-01	0.416	1	6.24E-02
Primary Sedimentation				
Benzene	4.10E-02	0.416	1	1.71E-02
Ethyl benzene	2.90E-02	0.416	1	1.21E-02
Toluene	1.80E-01	0.416	1	7.49E-02
Xylene	1.60E-02	0.416	1	6.66E-03
1,1,1-Trichloroethane	4.00E-02	0.416	1	1.66E-02
Chloroform	5.60E-02	0.416	1	2.33E-02
Methylene chloride	1.00E-01	0.416	1	4.16E-02
Tetrachloroethylene	7.10E-02	0.416	1	2.95E-02
Acetone	5.10E+00	0.416	1	2.12E+00
MEK	1.02E+00	0.416	1	4.24E-01
MIBK	9.30E-01	0.416	1	3.87E-01
Flow Equalization				
Acetone	4.70E+00	0.416	1	1.96E+00
MEK	9.40E-01	0.416	1	3.91E-01
MIBK	8.50E-01	0.416	1	3.54E-01
Diffused Air Activated Sludge				
Benzene	1.70E+00	0.416	1	7.07E-01
Ethyl benzene	1.20E+00	0.416	1	4.99E-01
Toluene	7.30E+00	0.416	1	3.04E+00
Xylene	7.00E+00	0.416	1	2.91E+00
1,1,1-Trichloroethane	6.50E+00	0.416	1	2.70E+00
Chloroform	4.70E+00	0.416	1	1.96E+00
Methylene chloride	4.30E+00	0.416	1	1.79E+00
Tetrachloroethylene	8.50E+00	0.416	1	3.54E+00
Acetone	3.20E-02	0.416	1	1.33E-02
MEK	6.40E-03	0.416	1	2.66E-03
MIBK	5.80E-03	0.416	1	2.41E-03

Toxic Air Contaminant (TAC)	Emission Factor ¹ (lb/yr/mgd)	Wastewater treatment Facility		
		Influent Flow (mgd)	Number of Units	Estimated TAC Emissions (lb/yr)
Mechanical Aeration				
1,1,1-Trichloroethane	2.90E+00	0.416	1	1.21E+00
Chloroform	3.90E+00	0.416	1	1.62E+00
Methylene chloride	7.30E+00	0.416	1	3.04E+00
Tetrachloroethylene	5.00E+00	0.416	1	2.08E+00
Acetone	4.70E+00	0.416	1	1.96E+00
MEK	9.40E-01	0.416	1	3.91E-01
MIBK	8.50E-01	0.416	1	3.54E-01
Secondary Clarifier				
Benzene	NA	0.416	1	
Ethyl benzene	NA	0.416	1	
Toluene	NA	0.416	1	
Xylene	NA	0.416	1	
1,1,1-Trichloroethane	1.20E-02	0.416	1	4.99E-03
Chloroform	3.80E-02	0.416	1	1.58E-02
Methylene chloride	7.00E-02	0.416	1	2.91E-02
Tetrachloroethylene	2.10E-02	0.416	1	8.74E-03
Acetone	1.21E+01	0.416	1	5.03E+00
MEK	2.40E+00	0.416	1	9.98E-01
MIBK	2.19E+00	0.416	1	9.11E-01
Effluent Filtration				
Benzene	8.90E-03	0.416	1	3.70E-03
Ethyl benzene	6.20E-03	0.416	1	2.58E-03
Toluene	3.90E-02	0.416	1	1.62E-02
Xylene	5.50E-02	0.416	1	2.29E-02
1,1,1-Trichloroethane	7.20E-03	0.416	1	3.00E-03
Chloroform	9.90E-03	0.416	1	4.12E-03
Methylene chloride	1.80E-02	0.416	1	7.49E-03
Tetrachloroethylene	1.30E-02	0.416	1	5.41E-03
Acetone	NA	0.416	1	
MEK	NA	0.416	1	
MIBK	NA	0.416	1	
Total TAC Emissions				41.63

Sources:

1. Parakasam Tata, Jay Witherspoon, and Cecil Lue-Hing. 2003. *VOC Emissions from Wastewater Treatment Plants - Characterization, Control, and Compliance*. Lewis Publishers.