# APPENDIX B

# DRAFT EIR APPENDIX 10A

# SPREADSHEETS FOR CALCULATION OF PROCESS EMISSIONS (REVISED)

## WCCSL Air Quality Assumptions

- Future emissions from the collection and combustion of landfill gas would be proportional to BAAQMD estimates of existing emissions factored proportionally to anticipated gas production in 2008 and 2015 as estimated by the applicant.

- BAAQMD estimates of existing emissions from equipment used in the concrete/asphalt recycling and composting operations could be factored up to reflect the increased annual throughputs for the operations.

- Emissions from the soil reclamation and wet waste/dusty materials operations could be calculated using BAAQMD emission factors for soil handling.

- Existing and future emissions from various mobile equipment and vehicles used on the site would be proportional to estimated hours of use multiplied by California Air Resources Board estimates of emission rates. Equipment/vehicle usage in 2008 was based on operation of the Waste Recycling Center at 85% and other BMPC operations at 75% of capacity.

- The population of equipment and vehicles in use on the site would be similar to the state-wide population of similar equipment and vehicles in 2003, 2008 and 2015.

- Daily VMT was estimated using estimated daily trip generation and assumed average one-way trip length of 10 miles for collection trucks, 20 miles for other large trucks, 10 miles for self haulers and 15 for all other vehicles. On-road emissions associated with project vehicle use were calculated using EMFAC-2002 emission factors and estimated vehicle miles traveled (VMT) for each vehicle classification. Trips to the Potrero Hills landfill were assumed to generate an additional 40 miles VMT per trip. A re-entrained road dust $PM_{10}$ emission factor of 0.427 grams per mile was assumed in addition to exhaust emissions.

- Fugitive emissions could be conservatively estimated using an emission factor for construction sites from the operation of vehicles and equipment on unpaved areas. BAAQMD's required dust control practices were assumed to be 75% efficient in controlling emissions. Overall acreages of the composting and concrete/asphalt operations in 2003 and 2015 were multiplied by the emission factor to estimate emissions. Emissions from this source in 2008 were taken as 75% of the emission at full capacity in 2015.

Spreadsheet to Calculate Emissions from Equipment/Vehicles

Scenario: Existing 2003

| Equipment/Vehicle | Emission Factors (Pounds/day) | | | | Daily Hours | Ann. Hours | Daily Emission (Pounds/Day) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ROG | NOx | CO | PM10 | | | ROG | NOx | CO | PM10 |
| **Campactor** | 1.84 | 16.4 | 11.6 | 0.74 | 16 | 5824 | 3.7 | 32.8 | 23.2 | 1.5 |
| **Crawler Tractor** | 1.45 | 12.93 | 9.14 | 0.59 | 22 | 6136 | 4.0 | 35.6 | 25.1 | 1.6 |
| **Rubber-Tired Loader** | 1.35 | 8.23 | 11.52 | 0.3 | 46 | 13208 | 7.8 | 47.3 | 66.2 | 1.7 |
| **Motor Grader** | 1.76 | 16.4 | 11.6 | 0.74 | 4 | 1040 | 0.9 | 8.2 | 5.8 | 0.4 |
| **Utility Tractor** | 0.65 | 5.8 | 4.1 | 0.26 | 6 | 1560 | 0.5 | 4.4 | 3.1 | 0.2 |
| **Off Road Trucks** | 3.6 | 25.96 | 27.44 | 1.06 | 42 | 10920 | 18.9 | 136.3 | 144.1 | 5.6 |
| | | | | | | | 35.7 | 264.5 | 267.5 | 11.0 |

**Annual Emissions (Tons)**

| ROG | NOx | CO | PM10 |
|---|---|---|---|
| 5.4 | 47.8 | 33.8 | 2.2 |
| 4.4 | 39.7 | 28.0 | 1.8 |
| 8.9 | 54.4 | 76.1 | 2.0 |
| 0.9 | 8.5 | 6.0 | 0.4 |
| 0.5 | 4.5 | 3.2 | 0.2 |
| 19.7 | 141.7 | 149.8 | 5.8 |
| 39.8 | 296.6 | 297.0 | 12.3 |

Spreadsheet to Calculate Emissions from Equipment/Vehicles

Scenario: Project 2008

| Equipment/Vehicle | Emission Factors (Pounds/day) | | | | Daily Hours | Ann. Hours | Daily Emission (Pounds/Day) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ROG | NOx | CO | PM10 | | | ROG | NOx | CO | PM10 |
| **Campactor** | 1.84 | 12.74 | 14.14 | 0.44 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Crawler Tractor** | 1.45 | 10.04 | 11.15 | 0.51 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Rubber-Tired Loader** | 1.35 | 7.86 | 11.52 | 0.22 | 46.4 | 13707.2 | 7.8 | 45.6 | 66.8 | 1.3 |
| **Motor Grader** | 1.76 | 10.22 | 14.98 | 0.28 | 1.7 | 442 | 0.4 | 2.2 | 3.2 | 0.1 |
| **Utility Tractor** | 0.65 | 4.5 | 5 | 0.16 | 5.1 | 1326 | 0.4 | 2.9 | 3.2 | 0.1 |
| **Off Road Trucks** | 3.6 | 20.89 | 30.62 | 0.58 | 35.7 | 9282 | 16.1 | 93.2 | 136.6 | 2.6 |
| | | | | | | | 24.7 | 143.9 | 209.8 | 4.0 |

**Annual Emissions (Tons)**

| ROG | NOx | CO | PM10 |
|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 |
| 0.0 | 0.0 | 0.0 | 0.0 |
| 9.3 | 53.9 | 79.0 | 1.5 |
| 0.4 | 2.3 | 3.3 | 0.1 |
| 0.4 | 3.0 | 3.3 | 0.1 |
| 16.7 | 97.0 | 142.1 | 2.7 |
| 26.8 | 156.1 | 227.7 | 4.4 |

Spreadsheet to Calculate Emissions from Equipment/Vehicles

Scenario: Project 2015

| Equipment/Vehicle | Emission Factors (Pounds/day) | | | | Daily Hours | Ann. Hours | Daily Emission (Pounds/Day) | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | ROG | NOx | CO | PM10 | | | ROG | NOx | CO | PM10 |
| **Campactor** | 1.84 | 11.37 | 15.16 | 0.34 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Crawler Tractor** | 1.45 | 8.96 | 11.95 | 0.27 | 0 | 0 | 0.0 | 0.0 | 0.0 | 0.0 |
| **Rubber-Tired Loader** | 1.35 | 7.86 | 11.52 | 0.22 | 46.4 | 17680 | 7.8 | 45.6 | 66.8 | 1.3 |
| **Motor Grader** | 1.76 | 10.22 | 14.98 | 0.28 | 1.7 | 520 | 0.4 | 2.2 | 3.2 | 0.1 |
| **Utility Tractor** | 0.65 | 4.02 | 5.36 | 0.12 | 5.1 | 1560 | 0.4 | 2.6 | 3.4 | 0.1 |
| **Off Road Trucks** | 3.6 | 20.89 | 30.62 | 0.58 | 35.7 | 10920 | 16.1 | 93.2 | 136.6 | 2.6 |
| | | | | | | | 24.7 | 143.5 | 210.1 | 4.0 |

**Annual Emissions (Tons)**

| ROG | NOx | CO | PM10 |
|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 |
| 0.0 | 0.0 | 0.0 | 0.0 |
| 11.9 | 69.5 | 101.8 | 1.9 |
| 0.5 | 2.7 | 3.9 | 0.1 |
| 0.5 | 3.1 | 4.2 | 0.1 |
| 19.7 | 114.1 | 167.2 | 3.2 |
| 32.6 | 189.3 | 277.1 | 5.3 |

Spreadsheet to Calculate Vehicular Emissions

Project: West Contra Costa
YEAR: 2003

**Diesel Truck**

| | | Emissions Factors (grams/mile) | | | DAILY EMISSIONS (LBS/DAY) | | |
|---|---|---|---|---|---|---|---|
| VMT: | 11000 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.517 | 13.75 | 0.321 | 12.5 | 333.1 | 7.8 |

LDT

| | | Emissions Factors (grams/mile) | | | DAILY EMISSIONS (LBS/DAY) | | |
|---|---|---|---|---|---|---|---|
| VMT: | 8500 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.867 | 1.051 | 0.039 | 16.2 | 19.7 | 0.7 |

**LDA**

| | | Emissions Factors (grams/mile) | | | DAILY EMISSIONS (LBS/DAY) | | |
|---|---|---|---|---|---|---|---|
| VMT: | 9300 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.766 | 0.674 | 0.032 | 15.7 | 13.8 | 0.7 |
| | | | | Total | 44.5 | 366.6 | 9.2 |

Spreadsheet to Calculate Vehicular Emissions

Project: West Contra Costa
YEAR: 2008

**Diesel Truck**

| | | Emissions Factors (grams/mile) | | | DAILY EMISSIONS (LBS/DAY) | | |
|---|---|---|---|---|---|---|---|
| VMT: | 16060 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.496 | 12.25 | 0.293 | 17.5 | 433.3 | 10.4 |

LDT

| | | Emissions Factors (grams/mile) | | | DAILY EMISSIONS (LBS/DAY) | | |
|---|---|---|---|---|---|---|---|
| VMT: | 12400 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.617 | 0.658 | 0.041 | 16.9 | 18.0 | 1.1 |

**LDA**

| | | Emissions Factors (grams/mile) | | | DAILY EMISSIONS (LBS/DAY) | | |
|---|---|---|---|---|---|---|---|
| VMT: | 6900 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.443 | 0.382 | 0.033 | 6.7 | 5.8 | 0.5 |

| | | | |
|---|---|---|---|
| Total | 41.1 | 457.1 | 12.0 |

Spreadsheet to Calculate Vehicular Emissions

Project: West Contra Costa
YEAR: 2015

**Diesel Truck**

| | | Emissions Factors (grams/mile) | | | DAILY EMISSIONS (LBS/DAY) | | |
|---|---|---|---|---|---|---|---|
| VMT: | 21160 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.309 | 5.79 | 0.187 | 14.4 | 269.9 | 8.7 |

LDT

| | | Emissions Factors (grams/mile) | | | DAILY EMISSIONS (LBS/DAY) | | |
|---|---|---|---|---|---|---|---|
| VMT: | 14800 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.375 | 0.345 | 0.0424 | 12.2 | 11.2 | 1.4 |

**LDA**

| | | Emissions Factors (grams/mile) | | | DAILY EMISSIONS (LBS/DAY) | | |
|---|---|---|---|---|---|---|---|
| VMT: | 8700 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.217 | 0.178 | 0.033 | 4.2 | 3.4 | 0.6 |

| | | | |
|---|---|---|---|
| Total | 30.8 | 284.5 | 10.7 |

Spreadsheet to Calculate Process Emissions

| | Existing | | | | 2008 | | | | 2015 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sources** | ORG | NOx | CO | PM | ORG | NOx | CO | PM | ORG | NOx | CO | PM |
| Landfill Operation: | | | | | | | | | | | | |
| Landfill/Gas Collection | 0.2 | 0.0 | 0.0 | 144.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 |
| Landfill Gas Combustion | 9.0 | 57.1 | 326.0 | 9.0 | 8.2 | 52.0 | 297.0 | 8.2 | 5.3 | 34.0 | 194.1 | 5.4 |
| | | | | | | | | | | | | |
| Concrete/Asphalt Recycling: | | | | | | | | | | | | |
| Concrete Crusher | 0.0 | 0.0 | 0.0 | 5.0 | 0.0 | 0.0 | 0.0 | 62.3 | 0.0 | 0.0 | 0.0 | 83.0 |
| Asphalt Crusher | 0.0 | 0.0 | 0.0 | 5.0 | 0.0 | 0.0 | 0.0 | 62.3 | 0.0 | 0.0 | 0.0 | 83.0 |
| Concrete Screen | 0.0 | 0.0 | 0.0 | 13.0 | 0.0 | 0.0 | 0.0 | 162.0 | 0.0 | 0.0 | 0.0 | 215.8 |
| Concrete/Asphalt Storage | 0.0 | 0.0 | 0.0 | 61.0 | 0.0 | 0.0 | 0.0 | 760.1 | 0.0 | 0.0 | 0.0 | 1012.6 |
| | | | | | | | | | | | | |
| Composting Operation: | | | | | | | | | | | | |
| Wood Shredder | 0.0 | 0.0 | 0.0 | 52.0 | 0.0 | 0.0 | 0.0 | 218.4 | 0.0 | 0.0 | 0.0 | 291.2 |
| Wood Waste Screener | 0.0 | 0.0 | 0.0 | 20.0 | 0.0 | 0.0 | 0.0 | 84.0 | 0.0 | 0.0 | 0.0 | 352.8 |
| | | | | | | | | | | | | |
| Soil Reclamation Operation: | | | | | | | | | | | | |
| Soil Handling | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 4.2 | 0 | 0 | 0 | 6 |
| | | | | | | | | | | | | |
| Wet Waste/Dusty Material: | | | | | | | | | | | | |
| Material Handling | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 0 | 0 | 0 | 22.6 |
| | | | | | | | | | | | | |
| | 9.1 | 57.1 | 326.0 | 309.0 | 8.3 | 52.0 | 297.0 | 1378.4 | 5.4 | 34.0 | 194.1 | 2072.4 |

| S# | Source Description | Annual Average lbs/day PART | ORG | NOx | SO2 | CO |
|---|---|---|---|---|---|---|
| 5 | Waukesha Lean Burn Engine, 975 KW | 5 | 5.04 | 32.1 | - | 183 |
| 6 | Waukesha Lean Burn Engine,975 KW | 4 | 3.92 | 25 | - | 143 |
| 15 | Landfill with Methane Wells & Collection S | 144 | .16 | - | - | - |
| 21 | Oil Collection Tank | - | - | - | - | - |
| 22 | Primary Oil/Water Separator, TK-2 | - | - | - | - | - |
| 23 | SECONDARY OIL/WATER SEPARATOR | - | - | - | - | - |
| 24 | Load Equalization Tank, TK-7 | - | - | - | - | - |
| 25 | Photo-Oxidizer Tank, TK-5 | - | - | - | - | - |
| 26 | Neutralization Tank, TK-9 | - | - | - | - | - |
| 27 | First Stage Clarifier, TK-8 | - | - | - | - | - |
| 28 | Air Stripper Sump | - | - | - | - | - |
| 29 | Floculation/Mixing Tank, TK-8A | - | - | - | - | - |
| 30 | Air Stripper | - | - | - | - | - |
| 31 | Bio Reactor Sump | - | - | - | - | - |
| 32 | Bio Reactor | - | - | - | - | - |
| 33 | Second Stage Clarifier | - | - | - | - | - |
| 34 | Treated Leachate Storage Tank | - | - | - | - | - |
| 35 | Treated Leachate Storage Tank | - | - | - | - | - |
| 36 | Treated Leachate Storage Tank | - | - | - | - | - |
| 37 | Landfill Gas IC | - | - | - | 7.68 | - |
| 38 | Secondary Oil/Water Separator, TK-4 | - | - | - | - | - |
| 39 | Sludge Storage Tank, TK-3 | - | - | - | - | - |
| 40 | Equalization Tank, TK-1 | - | - | - | - | - |
| [illegible] | Landfill Gas Standby Flare | - | - | - | - | - |
| | T O T A L S | 152 | 9.13 | 57 | 7.68 | 326 |

** PLANT TOTALS FOR EACH EMITTED TOXIC POLLUTANT **

| Pollutant Name | Emissions lbs/day |
|---|---|
| Benzene | .03 |
| Toluene | .33 |
| Trichloroethylene | .02 |
| Xylene | .25 |
| Ethyl benzene | .17 |
| Vinyl chloride | .02 |
| Hydrogen Sulfide (H2S) | .08 |

Bay Area Air Quality Management District

** SOURCE EMISSIONS **

PLANT # 198
Apr 17, 2002

| S# | Source Description | Annual Average lbs/day PART | ORG | NOx | SO2 | CO |
|---|---|---|---|---|---|---|
| 11 | Concrete Crusher | 5 | - | - | - | - |
| 12 | Crushed Concrete Screener | 13 | - | - | - | - |
| 13 | Concrete/Asphalt Storage Piles | 61 | - | - | - | - |
| 14 | Conveyors (Crushed Concrete) | 0 | - | - | - | - |
| 15 | Wood/Yard Waste Shredder (Tub Grinder) | - | - | - | - | - |
| 16 | Wood Waste Screener | 20 | - | - | - | - |
| 17 | Composting Operation | - | - | - | - | - |
| 18 | Crushing of asphalt debris | 5 | - | - | - | - |
| | T O T A L S | 105 | | | | |

Bay Area Air Quality Management District

** SOURCE EMISSIONS **

PLANT #12667
Jun 20, 2001

| S# | Source Description | Annual Average lbs/day PART | ORG | NOx | SO2 | CO |
|---|---|---|---|---|---|---|
| 1 | Thermal Rotary Vaporizer | - | - | 22 | 1 | 3 |
| 2 | Soil Stockpiles | 1 | 2 | - | - | - |
| 3 | Soil Handling Operations | 1 | 1 | - | - | - |
| 6 | Soil Screening Device | 8 | 10 | - | - | - |
| | T O T A L S | 10 | 13 | 22 | 1 | 3 |

** PLANT TOTALS FOR EACH EMITTED TOXIC POLLUTANT **

| Pollutant Name | Emissions lbs/day |
|---|---|
| Benzene | .98 |