# APPENDIX 10A

# SPREADHSEETS FOR CALCULATION OF PROCESS EMISSIONS

Spreadsheet to Calculate Process Emissions

| Sources | Existing ORG | Existing NOx | Existing CO | Existing PM | 2008 ORG | 2008 NOx | 2008 CO | 2008 PM | 2015 ORG | 2015 NOx | 2015 CO | 2015 PM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Landfill Operation: | | | | | | | | | | | | |
| Landfill/Gas Collection | 0.2 | 0.0 | 0.0 | 144.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 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 | 8.2 | 52.0 | 297.0 | 1378.4 | 5.3 | 34.0 | 194.1 | 2072.4 |

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**

| VMT: | 11000 | Emissions Factors (grams/mile) ROG | NOX | PM10 |
|---|---|---|---|---|
| | | 0.517 | 13.75 | 0.321 |

| DAILY EMISSIONS (LBS/DAY) ROG | NOX | PM10 |
|---|---|---|
| 12.5 | 333.1 | 7.8 |

**LDT**

| VMT: | 8500 | Emissions Factors (grams/mile) ROG | NOX | PM10 |
|---|---|---|---|---|
| | | 0.867 | 1.051 | 0.039 |

| DAILY EMISSIONS (LBS/DAY) ROG | NOX | PM10 |
|---|---|---|
| 16.2 | 19.7 | 0.7 |

**LDA**

| VMT: | 9300 | Emissions Factors (grams/mile) ROG | NOX | PM10 |
|---|---|---|---|---|
| | | 0.766 | 0.674 | 0.032 |

| DAILY EMISSIONS (LBS/DAY) ROG | NOX | PM10 |
|---|---|---|
| 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: | 14900 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.496 | 12.25 | 0.293 | 16.3 | 402.0 | 9.6 |

**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 | 39.9 | 425.8 | 11.2 |

Spreadsheet to Calculate Vehicular Emissions

Project: West Contra Costa
YEAR: 2015

**Diesel Truck**

| | | Emissions Factors (grams/mile) | | | DAILY EMISSIONS (LBS/DAY) | | |
|---|---|---|---|---|---|---|---|
| VMT: | 19800 | ROG | NOX | PM10 | ROG | NOX | PM10 |
| | | 0.309 | 5.79 | 0.187 | 13.5 | 252.5 | 8.2 |

**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 | 29.9 | 267.2 | 10.2 |