# APPENDIX B.

## AIR POLLUTANT EMISSION CALCULATIONS

## Table B-1: Earthmovement and Other Trips Summary

| Activity | Quantity | Unit | Import/Export/ On/Off-site | Truck Rnd Trips | Assumptions |
|---|---|---|---|---|---|
| **Mobilization and Demobilization** | 1 | LS | Import/Export | 120 | Equipment + 12 misc. trips/E.W |
| **Clear and Grub** | 180 | AC | Export | 10 | 10 refuse trips |
| **Topsoil Preservation** | 80 | AC | Onsite | | |
| **Inlet Channel & Drainage Crossing** | | | | | |
| Inlet Weir Earth Work | 5,000 | CY | Onsite | | |
| Channel Excavation | 260,000 | CY | Onsite | | |
| Concrete Liner | 2,000 | CY | Import | 204 | 10CY/load ready-mix +2%waste |
| Compacted Backfill Embankment | 21,000 | CY | Onsite | | |
| Soil Subliner | 17,000 | CY | Onsite | | |
| **Isolation Weir** | | | | | |
| Compacted Backfill | 11,000 | CY | Onsite | | |
| Clay liner under and around inlet | 8,000 | CY | Onsite | | |
| Geotextile Fabric | 7,000 | SY | Import | 1 | 1 Load |
| Drain Rock | 600 | TN | Import | 30 | 20 Ton/Truck |
| Rip Rap | 300 | TN | Import | 15 | 20 Ton/Truck |
| Concrete | 2,950 | CY | Import | 301 | 10CY/load ready-mix +2% waste |
| Steel Reinforcement | 442,500 | LB | Import | 11 | |
| **Reservoir** | | | | | |
| Excavation and Spoil | 2,700,000 | CY | Onsite | | |
| Compacted Embankment | 25,000 | CY | Onsite | | |
| **Reservoir Barrier** | | | | | |
| Excavate and Recompact Foundation | 5,000 | CY | Onsite | | |
| Concrete | 2,300 | CY | Import | 235 | 10CY/load ready-mix +2% waste |
| Steel Reinforcement | 345,000 | LB | Import | 9 | 20 Ton/Load |
| **Reservoir Lining** | | | | | |
| Compacted Soil Liner (Remove and Replace) | 300,000 | CY | Onsite | | |
| Permeable Asphalt Concrete (PAC) | 25,000 | TN | Import | 1250 | 20 Ton/Load |
| Hydraulic Asphalt Concrete (HAC) | 36,000 | TN | Import | 1800 | 20 Ton/Load |
| **Drainage Culvert** | | | | | |
| Excavation | 30,800 | CY | Onsite | | |
| Backfill | 19,000 | CY | Onsite | | |
| Concrete | 1,300 | CY | Import | 133 | 10 CY/Load ready-mix +2%waste |
| Steel Reinforcement | 195,000 | LB | Import | 5 | 20 Ton/Load |
| Riprap | 150 | TN | Import | 8 | 20 Ton/Load |
| **Bypass** | | | | | |
| Excavation | 42,000 | CY | Onsite | | |
| Compacted Backfill | 21,000 | LF | Onsite | | |
| Concrete | 6,300 | CY | Import | 643 | 10 CY/Load ready-mix +2% waste |
| Steel Reinforcement | 945,000 | LB | Import | 24 | 20 Ton/Load |
| Trashrack | 1 | LS | Import | 2 | 5 Panels/Load |
| Slide Gate with Gate Operator | 1 | LS | Import | 2 | 1 Gate/Load |
| Stoplog | 1 | LS | Import | 1 | 2 Stoplogs/Load |
| Misc. Metal | 1 | LS | Import | 2 | Q<5,000 Lbs. |
| **Outlet Channel & Drainage Crossing** | | | | | |
| Rockfill and Impervious Membrane | 4,400 | CY | Onsite/offsite | 60 | Rockfill= 600CY=1,200T 20T/Load |
| Channel Excavation | 420,000 | CY | Onsite | | |
| Compacted Backfill Embankment | 91,000 | CY | Onsite | | |
| Drain Rock | 20,000 | TN | Import | 1000 | 20 Ton/Load |
| Hydraulic Asphalt Concrete (HAC) Lining | 13,500 | TN | Import | 675 | 20 Ton/Load |
| Concrete Liner Demolition | 800 | CY | Export | 160 | 10 Ton/Load, Assume Demo hauled to waste |
| Geotextile Fabric | 60,000 | SY | Import | 3 | |
| Soil Reinforcement/20' Soil Nails | 13,200 | LF | Import | 5 | |
| **Penstock Headworks Channel Reconstruction** | | | | | |
| Reinforced Concrete Demolition | 2,100 | CY | Export | 420 | 10 Ton/Load, Assume Demo hauled to waste |
| Structural Excavation | 7,200 | CY | Onsite | | |
| Structural Backfill | 5,400 | CY | Onsite | | |
| Reinforced Concrete Lining and Wing Wall | 3,500 | CY | Import | 357 | 10 CY/Load ready-mix +2% waste |
| Steel Reinforcement | 525,000 | LB | Import | 14 | 20 Ton/Load |
| **Permanent Cofferdam** | | | | | |
| Cofferdam | 1 | LS | Import | 400 | 20 Ton/Load, Assume 4,000 CY Rock Cofferdam |
| **Temporary Cofferdam** | | | | | |
| Cofferdam | 1 | LS | Import | 400 | 20 Ton/Load, Assume 4,000 CY Rock Cofferdam |
| **Sitework** | | | | | |
| Access Roads - Aggregate Base (13,100' x 18' x 3") | 4,400 | TN | Import | 220 | 20 Ton/Load |
| Access Roads - Asphalt Concrete (5,100 x 18' x 3") | 4,000 | TN | Import | 200 | 20 Ton/Load |
| Metal Guard Rail | 400 | LF | Import | 2 | 200 LF/Load |
| Precast Concrete Drop Inlet | 5 | EA | Import | 3 | 2 DI's/Load |
| 18" CMP Pipe | 400 | LF | Import | 1 | |
| Seeding | 150 | AC | Import | 5 | 1 trip for seeding truck, 4 for matls |
| Fencing | 12,000 | LF | Import | 12 | 1000 LF/Load |
| Drive Gate | 3 | EA | Import | 1 | |
| Filter Fabric | 20,000 | SY | Import | 1 | 20,000 SY/Load |
| Stone Slope Protection | 20,000 | TN | Import | 1000 | 20 Ton/Load |
| **Control Building** | | | | | |
| 23' x 30' Building | 1 | LS | Import | 5 | 5 Truck loads |
| HVAC | 1 | LS | Import | 1 | 1 Truck |
| Engine Generator | 1 | LS | Import | 1 | 1 Truck |
| Electrical Items | 1 | LS | Import | 4 | 4 Trucks |
| Concrete Foundation (minimal amount) | | | Import | 1 | |
| **Wood Forms** | | | | | |
| Wood Forms | | | | 7 | 18,500 CY concrete, 2,800 CY/Truck |
| **Fuel** | | | | | |
| Fuel | | | | 265 | Based on fuel use by montl |
| | | | Total Trips | 10,029 | |

**Table B-2: Maximum Daily and Project Total Fugitive PM $_{10}$ Emissions**

| Equipment | Uncontrolled Emissions, lbs/day (Month 7) | Project Uncontrolled Emissions, Tons | Emissions Equation | Variables | | | | | | Source/Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **On-site Emissions** | | | | | | | S (%) | M (%) | E (lbs/hr) | |
| Bulldozer Earthmoving | 176.0 | 20.5 | E = (0.75)(s^1.5)/(M^1.4) | | | | 20 | 7 | 4.400165392 | AP-42, Table 11.9.2, 1/95 |
| Scraper Earthmoving | 352.0 | 35.9 | E = (0.75)(s^1.5)/(M^1.4) | | | | 20 | 7 | 4.400165392 | AP-42, Table 11.9.2, 1/95 |
| | | | | k (const) | U (mph) | | 20 | 7 | E (lb/ton) | |
| Scraper Unloading | 6.0 | 0.6 | E = (k)(0.0032)[(U/5)^1.3]/[(M/2)^1.4] | 0.35 | 5.7 | | | 7 | 0.000229879 | AP-42, p. 13.2.4-3, 1/95, Silt content at site is out of normal range of this equation |
| Loaders (unloading) | 17.1 | 2.5 | E = (k)(0.0032)[(U/5)^1.3]/[(M/2)^1.4] | 0.35 | 5.7 | | | 7 | 0.000229879 | AP-42, p. 13.2.4-3, 1/95 |
| | | | | | | D (feet) | | | E (lb/cuyd) | |
| Excavators | 26.6 | 3.4 | E = (0.75)(0.0021)(d^0.7)/(M^0.3) | | | 6 | | 7 | 0.003079336 | AP-42, Table 11.9-2 1/95 |
| | | | | | | | | | E (t/acre/mo) | |
| Wind Erosion | 145.2 | 30.2 | | | | | | | 0.011 | "Improvement of Specific Emission Factors (BACM Project No. 1), Final Report", prepared for South Coast AQMD by Midwest Research Institute, March 1996 |
| | | | | k (const) | Silt (%) | W (tons) | | | E (lb/VMT) | |
| Offroad Unpaved Travel All Vehicles | 13154.7 | 1408.7 | E = (k)[(s/12)^0.9][(W/3)^0.45] | 1.5 | 20 | 60.3 | | | 9.167023903 | AP-42, Section 13.2.2, 12/03 |
| Onroad Unpaved Travel All Vehicles | 1467.0 | 111.4 | E = (k)[(s/12)^0.9][(W/3)^0.45] | 1.5 | 20 | 12.7 | | | 4.541517116 | (Note 2) |
| | | | | | S (mph) | (Note 1) | | | E (lb/VMT) | |
| Motor Grader Travel/Earthmoving | 13.2 | 2.9 | E = (0.60)(0.051)(S^2.0) | | 3 | | | | 0.2754 | AP-42, Table 11.9-2, 7/98 |
| Total Uncontrolled Emissions | 15357.8 | 1616.3 | | | | | | | | |
| Control Efficiency | 70 to 85% | 70 to 85% | | | | | | | | |
| Controlled Emission Totals | **4387.3** | **468.24** | | | | | | | | |

Note 1: this represents the Month 7 distance traveled weighted average
Note 2: these represent the Month 7 emission factors.

| Off-site Emissions | Controlled Emissions, lbs/day (Month 7) | Project Controlled Emissions, Tons | Emissions Equation | Variables | | | | | | Speed |
|---|---|---|---|---|---|---|---|---|---|---|
| Paved Road Travel | | | | | | | | | | |
| Onsite Vehicles | | | | k (const) | sL (g/m2) | W (tons) | C (lbs/VMT) | P (days) | E (lbs/VMT) | |
| 1 Ton Pickup | 1.1 | 0.1 | E = [k(sL/2)^0.65*(W/3)^1.5 -C]*(1-P/(4*365)) | 0.016 | 1.4 | 4.5 | 0.00047 | 40 | 0.022215725 | AP-42, Section 13.2.1, 10/97 |
| 3/4 Ton Pickup | 1.7 | 0.3 | E = [k(sL/2)^0.65*(W/3)^1.5 -C]*(1-P/(4*365)) | 0.016 | 1.4 | 4.5 | 0.00047 | 40 | 0.022215725 | |
| Offsite | | | | | | | | | | |
| Employee Trips | 47.5 | 7.0 | E = [k(sL/2)^0.65*(W/3)^1.5 -C]*(1-P/(4*365)) | 0.016 | 0.04 | 10 | 0.00047 | 40 | 0.006990935 | |
| All Deliveries | 12.0 | 2.8 | E = [k(sL/2)^0.65*(W/3)^1.5 -C]*(1-P/(4*365)) | 0.016 | 0.04 | 10 | 0.00047 | 40 | 0.006990935 | |
| Total Offsite Paved Road Travel | **54.7** | **10.14** | | | | | | | | |

**Table B-3: Non-Road Emissions Basis**

| | | | | | Base Factors g/bhp, if Tier 1 >50 hp | | | | | Load Adjustment Factors | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Equipment | HP | HP Cat. | Tier | BSFC lb/hp-hr | NOx | CO | VOC | SOx | PM10 | Adj. Type | NOx | CO | VOC | SOx | PM10 |
| Crane - Mobile 80 ton | 268 | 175-300 | 1 | 0.367 | 5.5772 | 0.7475 | 0.3085 | 0.00499 | 0.2521 | None | 1 | 1 | 1 | 1 | 1 |
| Bulldozer D9 | 405 | 300-600 | 1 | 0.367 | 6.0153 | 1.306 | 0.2025 | 0.00499 | 0.2008 | Hi LF | 0.95 | 1.53 | 1.05 | 1.01 | 1.23 |
| Excavator- Trencher - 325 B L | 168 | 100-175 | 1 | 0.367 | 5.6523 | 0.8667 | 0.3384 | 0.00499 | 0.2799 | Hi LF | 0.95 | 1.53 | 1.05 | 1.01 | 1.23 |
| Scrapers - 637E Series II - Average | 740 | Two | 1 | 0.367 | 5.867293 | 1.117318 | 0.238311 | 0.004994 | 0.218131 | Hi LF | 0.95 | 1.53 | 1.05 | 1.01 | 1.23 |
| Motor Grader - 120H | 140 | 100-175 | 1 | 0.367 | 5.6523 | 0.8667 | 0.3384 | 0.00499 | 0.2799 | Hi LF | 0.95 | 1.53 | 1.05 | 1.01 | 1.23 |
| Loaders - 824G | 315 | 300-600 | 1 | 0.367 | 6.0153 | 1.306 | 0.2025 | 0.00499 | 0.2008 | Hi LF | 0.95 | 1.53 | 1.05 | 1.01 | 1.23 |
| Asphalt Paver - AP-650B | 121 | 100-175 | 1 | 0.367 | 5.6523 | 0.8667 | 0.3384 | 0.00499 | 0.2799 | Hi LF | 0.95 | 1.53 | 1.05 | 1.01 | 1.23 |
| Asphalt Compactor - CB-534C | 107 | 100-175 | 1 | 0.367 | 5.6523 | 0.8667 | 0.3384 | 0.00499 | 0.2799 | Hi LF | 0.95 | 1.53 | 1.05 | 1.01 | 1.23 |
| Compactors 826G | 315 | 300-600 | 1 | 0.367 | 6.0153 | 1.306 | 0.2025 | 0.00499 | 0.2008 | Hi LF | 0.95 | 1.53 | 1.05 | 1.01 | 1.23 |
| Truck- Water | na | Onroad | na | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad |
| Dump Truck | na | Onroad | na | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad |
| Concrete Pumper Truck | na | Onroad | na | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad |
| Pickup Truck- 1 ton | na | Onroad | na | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad |
| Trucks- Pickup 3/4 ton | na | Onroad | na | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad |
| Diesel Powered Welder - DAW500SS | 34.5 | 25-50 | 0 | 0.408 | 6.9 | 5 | 1.8 | 0.00555 | 0.8 | Lo LF | 1.1 | 2.57 | 2.29 | 1.18 | 1.97 |
| Portable Power Generators | 33.5 | 25-50 | 0 | 0.408 | 6.9 | 5 | 1.8 | 0.00555 | 0.8 | None | 1 | 1 | 1 | 1 | 1 |

Tier 1

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scrapers - 637E Series II Front | 490 | 300-600 | 1 | 0.367 | 6.0153 | 1.306 | 0.2025 | 0.00499 | 0.2008 | Hi LF | 0.95 | 1.53 | 1.05 | 1.01 | 1.23 |
| Scrapers - 637E Series II Back | 250 | 175-300 | 1 | 0.367 | 5.5772 | 0.7475 | 0.3085 | 0.00499 | 0.2521 | Hi LF | 0.95 | 1.53 | 1.05 | 1.01 | 1.23 |

**Table B-3: Non-Road Emissions**

| Equipment | Adjustment PM10 Fuel S | Adjusted Factors g/bhp BSFC | NOx | CO | VOC | SOx | PM10 | Adjusted factors lbs/1000 gallons (or lbs/trip) Tier | NOx | CO | VOC | SOx | PM10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crane - Mobile 80 ton | -0.086 | 0.367 | 5.58 | 0.75 | 0.31 | 0.0049 | 0.17 | 1 | 237.87 | 31.88 | 13.16 | 0.21 | 7.09 |
| Bulldozer D9 | -0.087 | 0.371 | 5.71 | 2.00 | 0.21 | 0.0049 | 0.16 | 1 | 241.31 | 84.38 | 8.98 | 0.21 | 6.77 |
| Excavator- Trencher - 325 B L | -0.087 | 0.371 | 5.37 | 1.33 | 0.36 | 0.0049 | 0.26 | 1 | 226.75 | 56.00 | 15.00 | 0.21 | 10.88 |
| Scrapers - 637E Series II - Average | -0.087 | 0.371 | 5.57 | 1.71 | 0.25 | 0.0049 | 0.18 | 1 | 235.37 | 72.19 | 10.57 | 0.21 | 7.67 |
| Motor Grader - 120H | -0.087 | 0.371 | 5.37 | 1.33 | 0.36 | 0.0049 | 0.26 | 1 | 226.75 | 56.00 | 15.00 | 0.21 | 10.88 |
| Loaders - 824G | -0.087 | 0.371 | 5.71 | 2.00 | 0.21 | 0.0049 | 0.16 | 1 | 241.31 | 84.38 | 8.98 | 0.21 | 6.77 |
| Asphalt Paver - AP-650B | -0.087 | 0.371 | 5.37 | 1.33 | 0.36 | 0.0049 | 0.26 | 1 | 226.75 | 56.00 | 15.00 | 0.21 | 10.88 |
| Asphalt Compactor - CB-534C | -0.087 | 0.371 | 5.37 | 1.33 | 0.36 | 0.0049 | 0.26 | 1 | 226.75 | 56.00 | 15.00 | 0.21 | 10.88 |
| Compactors 826G | -0.087 | 0.371 | 5.71 | 2.00 | 0.21 | 0.0049 | 0.16 | 1 | 241.31 | 84.38 | 8.98 | 0.21 | 6.77 |
| Truck- Water | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | na | 200.27 | 234.76 | 29.17 | 1.72 | 8.08 |
| Dump Truck | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | na | 200.27 | 234.76 | 29.17 | 1.72 | 8.08 |
| Concrete Pumper Truck | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | na | 200.27 | 234.76 | 29.17 | 1.72 | 8.08 |
| Pickup Truck- 1 ton | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | na | 0.17 | 0.61 | 0.07 | 0.00 | 0.01 |
| Trucks- Pickup 3/4 ton | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | Onroad | na | 0.14 | 1.02 | 0.09 | 0.00 | 0.01 |
| Diesel Powered Welder - DAW500SS | -0.094 | 0.40 | 7.59 | 12.85 | 4.12 | 0.0052 | 1.48 | 0 | 297.01 | 502.84 | 161.30 | 0.20 | 58.01 |
| Portable Power Generators | -0.095 | 0.408 | 6.90 | 5.00 | 1.80 | 0.0054 | 0.70 | 0 | 264.71 | 191.82 | 69.06 | 0.21 | 27.03 |

Tier 1

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scrapers - 637E Series II Front | -0.087 | 0.371 | 5.71 | 2.00 | 0.21 | 0.0049 | 0.16 | 1 | 241.31 | 84.38 | 8.98 | 0.21 | 6.77 |
| Scrapers - 637E Series II Back | -0.087 | 0.371 | 5.30 | 1.14 | 0.32 | 0.0049 | 0.22 | 1 | 223.74 | 48.29 | 13.68 | 0.21 | 9.43 |

**Table B-3: Non-Road Emissions**

| Equipment | Total Fuel Use (Gals/day) Or Trips | Worst Case Daily Emissions Lbs/day NOx | CO | VOC | SOx | PM10 | Total Project Fuel Use (Gals) | Project Emissions Lbs NOx | CO | VOC | SOx | PM10 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Crane - Mobile 80 ton | 95.31 | 22.67 | 3.04 | 1.25 | 0.02 | 0.68 | 32095.65 | 7634.52 | 1023.24 | 422.30 | 6.67 | 227.57 |
| Bulldozer D9 | 560.00 | 135.13 | 47.25 | 5.03 | 0.12 | 3.79 | 121666.67 | 29359.62 | 10266.07 | 1092.41 | 25.30 | 823.41 |
| Excavator- Trencher - 325 B L | 153.75 | 34.86 | 8.61 | 2.31 | 0.03 | 1.67 | 37857.89 | 8584.26 | 2119.90 | 568.03 | 7.87 | 411.75 |
| Scrapers - 637E Series II - Average | 2225.27 | 523.77 | 160.64 | 23.51 | 0.46 | 17.06 | 426055.33 | 100282.53 | 30756.15 | 4501.91 | 88.58 | 3266.98 |
| Motor Grader - 120H | 71.34 | 16.18 | 3.99 | 1.07 | 0.01 | 0.78 | 31771.99 | 7204.29 | 1779.11 | 476.72 | 6.60 | 345.56 |
| Loaders - 824G | 344.00 | 83.01 | 29.03 | 3.09 | 0.07 | 2.33 | 99027.98 | 23896.63 | 8355.85 | 889.14 | 20.59 | 670.20 |
| Asphalt Paver - AP-650B | 36.00 | 8.16 | 2.02 | 0.54 | 0.01 | 0.39 | 4497.32 | 1019.77 | 251.83 | 67.48 | 0.93 | 48.91 |
| Asphalt Compactor - CB-534C | 34.00 | 7.71 | 1.90 | 0.51 | 0.01 | 0.37 | 4247.47 | 963.11 | 237.84 | 63.73 | 0.88 | 46.20 |
| Compactors 826G | 502.50 | 121.26 | 42.40 | 4.51 | 0.10 | 3.40 | 61865.33 | 14928.84 | 5220.11 | 555.47 | 12.86 | 418.69 |
| Truck- Water | 200.00 | 40.05 | 46.95 | 5.83 | 0.34 | 1.62 | 47797.62 | 9572.5 | 11221.0 | 1394.2 | 82.2 | 386.4 |
| Dump Truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Concrete Pumper Truck | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 11949.40 | 2393.1 | 2805.2 | 348.6 | 20.5 | 96.6 |
| Pickup Truck- 1 ton | 2 | 0.33 | 1.22 | 0.15 | 0.00 | 0.01 | 474.50 | 78.32 | 290.26 | 35.37 | 0.76 | 2.52 |
| Trucks- Pickup 3/4 ton | 3 | 0.42 | 3.06 | 0.27 | 0.00 | 0.02 | 869.50 | 120.66 | 887.22 | 79.24 | 0.80 | 5.80 |
| Diesel Powered Welder - DAW500SS | 13.99 | 4.16 | 7.04 | 2.26 | 0.00 | 0.81 | 3724.54 | 1106.22 | 1872.84 | 600.77 | 0.76 | 216.06 |
| Portable Power Generators | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | **Construction Equip, Lbs/day** | **997.72** | **357.15** | **50.34** | **1.19** | **32.93** | **Construction Equip, Lbs** | **207144.40** | **77086.60** | **11095.32** | **275.31** | **6966.67** |
| | | | | | | | **Construction Equip, Tons** | **103.57** | **38.54** | **5.55** | **0.14** | **3.48** |

| | Acres to be Paved | VOC Emissions Lbs/Acre Paved | VOC Lbs | VOC Tons |
|---|---|---|---|---|
| **Paving Emissions** | **75.0** | **2.62** | **196.50** | **0.098** |

Source: URBEMIS 2002, Version 7.4.2 (paving emissions rate)

Tier 1

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Scrapers - 637E Series II Front | 216 | 52.12 | 18.23 | 1.94 | 0.04 | 1.46 | 1964 | 473.94 | 165.72 | 17.63 | 0.41 | 13.29 |
| Scrapers - 637E Series II Back | 216 | 48.33 | 10.43 | 2.95 | 0.04 | 2.04 | 1964 | 439.42 | 94.85 | 26.86 | 0.41 | 18.53 |

On-Site/Off-Site Emissions Summary

| | NOx | CO | VOC | SOx | PM10 | Project Totals | NOx | CO | VOC | SOx | PM10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Off-site lbs/day | 83.70 | 203.64 | 23.52 | 0.69 | 2.00 | Lbs | 12829.10 | 46141.08 | 5266.18 | 135.43 | 417.82 |
| | | | | | | Tons | 6.41 | 23.07 | 2.63 | 0.07 | 0.21 |
| On-site lbs/day | 997.72 | 357.15 | 50.34 | 1.19 | 32.93 | Lbs | 207144.40 | 77086.60 | 11095.32 | 275.31 | 6966.67 |
| | | | | | | Tons | 103.57 | 38.54 | 5.55 | 0.14 | 3.48 |
| On-site + lbs/day | 1081.42 | 560.80 | 73.85 | 1.88 | 34.92 | Lbs | 219973.51 | 123227.68 | 16361.50 | 410.75 | 7384.49 |
| Off-site | | | | | | Tons | 109.99 | 61.61 | 8.18 | 0.21 | 3.69 |

**Table B-4a: Truck Trips Per Month**

| Trip Type | R/T Miles | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | Total Trips |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Employee (1) | 70 | 700 | 1860 | 1950 | 2015 | 1950 | 2170 | 3100 | 3000 | 3100 | 3000 | 2325 | 2015 | 1540 | 1705 | 1500 | 1395 | 1200 | 34525 |
| Deliveries | | | | | | | | | | | | | | | | | | | |
| Equipment/Mobilization-Demobilization | 120 | 27 | 3 | 2 | 6 | 0 | 6 | 7 | 3 | 2 | 20 | 6 | 10 | 3 | 5 | 0 | 2 | 18 | 120 |
| Fuel | 120 | 2 | 23 | 23 | 24 | 23 | 25 | 27 | 25 | 25 | 17 | 7 | 9 | 11 | 11 | 5 | 5 | 3 | 265 |
| Rock/Rip Rap/Aggregate | 40 | 0 | 0 | 4 | 4 | 0 | 530 | 542 | 22 | 11 | 266 | 534 | 0 | 0 | 0 | 0 | 720 | 500 | 3133 |
| Permeable and Hydraulic Asphalt Concrete | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 96 | 193 | 193 | 1210 | 1017 | 1016 | 0 | 0 | 0 | 200 | 0 | 3925 |
| Concrete | 40 | 0 | 0 | 67 | 67 | 0 | 0 | 0 | 602 | 502 | 284 | 44 | 90 | 90 | 90 | 44 | 0 | 1 | 1881 |
| Steel | 40 | 0 | 0 | 3 | 2 | 0 | 0 | 0 | 20 | 16 | 8 | 2 | 3 | 4 | 3 | 2 | 0 | 0 | 63 |
| Specialty Port Import Materials | 200 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| Specialty Los Angeles Area Import Materials | 120 | 0 | 0 | 0 | 0 | 0 | 0 | 9 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 23 |
| Miscellaneous and Sitework Materials | 40 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 24 | 24 |
| Export to Landfill | 70 | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 140 | 140 | 140 | 80 | 80 | 0 | 590 |
| Total Trips | | 739 | 1886 | 2049 | 2118 | 1973 | 2731 | 3781 | 3865 | 3849 | 4812 | 3935 | 3283 | 1788 | 1954 | 1631 | 2402 | 1758 | 44554 |

Note: (1) An average of 105 daily employee trips were assumed.

**Table B-4b: On-Road Emissions Per Trip (lbs/trip)**

| Trip Type | R/T Miles | NOx | CO | VOC | SOx | PM10 |
|---|---|---|---|---|---|---|
| Employee | 70 | 0.11438 | 1.06155 | 0.11382 | 0.0007 | 0.005552 |
| Deliveries | | | | | | |
| Equipment/Mobilization-Demobilization | 120 | 3.37704 | 2.51808 | 0.3546 | 0.02952 | 0.059994 |
| Fuel | 120 | 3.37704 | 2.51808 | 0.3546 | 0.02952 | 0.059994 |
| Rock/Rip Rap/Aggregate | 40 | 1.12568 | 0.83936 | 0.1182 | 0.00984 | 0.019998 |
| Permeable and Hydraulic Asphalt Concrete | 40 | 1.12568 | 0.83936 | 0.1182 | 0.00984 | 0.019998 |
| Concrete | 40 | 1.12568 | 0.83936 | 0.1182 | 0.00984 | 0.019998 |
| Steel | 40 | 1.12568 | 0.83936 | 0.1182 | 0.00984 | 0.019998 |
| Specialty Port Import Materials | 200 | 5.6284 | 4.1968 | 0.591 | 0.0492 | 0.09999 |
| Specialty Los Angeles Area Import Materials | 120 | 3.37704 | 2.51808 | 0.3546 | 0.02952 | 0.059994 |
| Miscellaneous and Sitework Materials | 40 | 1.12568 | 0.83936 | 0.1182 | 0.00984 | 0.019998 |
| Export to Landfill | 70 | 1.96994 | 1.46888 | 0.20685 | 0.01722 | 0.034997 |

**Table B-4c: Daily On-Road Emissions During Maximum Emissions Month (Month 7)**

| Trip Type | **NOx** | **CO** | **VOC** | **SOx** | **PM10** |
|---|---|---|---|---|---|
| Employee | 354.58 | 3290.81 | 352.84 | 2.17 | 17.21 |
| Deliveries | | | | | |
| Equipment/Mobilization-Demobilization | 23.64 | 17.63 | 2.48 | 0.21 | 0.42 |
| Fuel | 91.18 | 67.99 | 9.57 | 0.80 | 1.62 |
| Rock/Rip Rap/Aggregate | 610.12 | 454.93 | 64.06 | 5.33 | 10.84 |
| Permeable and Hydraulic Asphalt Concrete | 108.07 | 80.58 | 11.35 | 0.94 | 1.92 |
| Concrete | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Steel | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Specialty Port Import Materials | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Specialty Los Angeles Area Import Materials | 30.39 | 22.66 | 3.19 | 0.27 | 0.54 |
| Miscellaneous and Sitework Materials | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Export to Landfill | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| Total Emissions, lbs/month | 1217.97 | 3934.59 | 443.50 | 9.72 | 32.55 |
| Worker Travel, lbs/day | **13.79** | **127.98** | **13.72** | **0.08** | **0.67** |
| Truck Deliveries, lbs/day (1) | **67.15** | **50.07** | **7.05** | **0.59** | **1.19** |
| Total Emissions, lbs/day | **83.70** | **203.64** | **23.52** | **0.69** | **2.00** |

Note: (1) Maximum daily truck delivery emissions are assumed to be twice (2x) the average daily (from monthly average) truck delivery emissions.

**Table B-4d: Project On-Road Emissions (17 months)**

| Trip Type | NOx | CO | VOC | SOx | PM10 |
|---|---|---|---|---|---|
| Employee | 3948.97 | 36650.01 | 3929.64 | 24.17 | 191.69 |
| Deliveries | | | | | |
| Equipment/Mobilization-Demobilization | 405.24 | 302.17 | 42.55 | 3.54 | 7.20 |
| Fuel | 894.92 | 667.29 | 93.97 | 7.82 | 15.90 |
| Rock/Rip Rap/Aggregate | 3526.76 | 2629.71 | 370.32 | 30.83 | 62.65 |
| Permeable and Hydraulic Asphalt Concrete | 4418.29 | 3294.49 | 463.94 | 38.62 | 78.49 |
| Concrete | 2117.40 | 1578.84 | 222.33 | 18.51 | 37.62 |
| Steel | 70.92 | 52.88 | 7.45 | 0.62 | 1.26 |
| Specialty Port Import Materials | 28.14 | 20.98 | 2.96 | 0.25 | 0.50 |
| Specialty Los Angeles Area Import Materials | 77.67 | 57.92 | 8.16 | 0.68 | 1.38 |
| Miscellaneous and Sitework Materials | 27.02 | 20.14 | 2.84 | 0.24 | 0.48 |
| Export to Landfill | 1162.26 | 866.64 | 122.04 | 10.16 | 20.65 |
| Total Emissions, lbs | 12829.10 | 46141.08 | 5266.18 | 135.43 | 417.82 |
| Worker Travel, tons | **1.97** | **18.33** | **1.96** | **0.0121** | **0.0958** |
| Truck Deliveries, tons | **4.44** | **4.75** | **0.67** | **0.06** | **0.11** |
| Total Emissions, tons | **6.41** | **23.07** | **2.63** | **0.07** | **0.21** |