

TAB C

PLANTWIDE POTENTIAL EMISSIONS INVENTORY

| Plantwide Total Emissions | | Future Emissions | | | | | | | | | |
|-----------------------------|-----------------|-----------------------------|------------------------------|----------------------------|----------------------------|-----------------|----------------|-----------------|---------------------|--|--|
| Sources | PM tons/yr | PM ₁₀ tons/yr | PM _{2.5} tons/yr | SO ₂ tons/yr | NO _x tons/yr | CO tons/yr | VOC tons/yr | Lead tons/yr | Fluoride tons/yr | | |
| Kiln System | 297.85 | 259.19 | 164.94 | 1,966.96 | 3,231.43 | 3,512.42 | 255.42 | 0.11 | 1.26 | | |
| New Misc Point Sources | 437.30 | 367.33 | 196.78 | 2.31 | 0.65 | 0.34 | 0.02 | | | | |
| Existing Misc Point Sources | 78.76 | 66.15 | 35.44 | | | | | | | | |
| Process Equipment Fugitives | 28.42 | 13.35 | 2.08 | | | | | | | | |
| Storage Piles | 8.06 | 4.03 | 0.60 | | | | | | | | |
| Quarry Operations | 36.11 | 13.21 | 3.05 | | | | | | | | |
| Roads | 284.44 | 78.82 | 8.56 | | | | | | | | |
| Total | 1,170.94 | 802.09 | 411.47 | 1,969.27 | 3,232.08 | 3,512.77 | 255.45 | 0.11 | 1.26 | | |

Clinker production = 2,809,939 tons/yr
2,549,160 metric

Notes

Kiln System stack emissions include kiln, in-line raw mill, preheater bypass, coal mill, and clinker cooler.
Kiln PM emissions include estimated condensibles. See "Kiln System" sheet for details.
Maximum projected actual emissions are shown above for all pollutants.

Pollutant: PM

| Emission Unit | EU Description | New Points | Existing Points | Process Fugitives | Quarry | Roads | Piles | Total (ton/yr) | Total (lb/yr) | Average (lb/hr) | Maximum (lb/hr) |
|---------------|-------------------------------------|------------|-----------------|-------------------|--------|--------|-------|----------------|---------------|-----------------|-----------------|
| 020000 | Existing raw material handling | | 7.60 | 3.16 | | | | 10.76 | 21,526 | 2.46 | 2.46 |
| 021000 | New raw material handling | 76.14 | | 0.19 | | | | 76.33 | 152,658 | 17.43 | 17.43 |
| 022000 | New solid fuel handling systems | 12.23 | | 0.73 | | | | 12.95 | 25,907 | 2.96 | 2.96 |
| 033000 | New raw mill & kiln feed systems | 29.88 | | | | | | 29.88 | 59,754 | 6.82 | 6.82 |
| 041100 | New kiln & clinker cooler system | 297.85 | | | | | | 297.85 | 595,707 | 68.00 | 77.90 |
| 041200 | New kiln dust system | 8.29 | | 0.02 | | | | 8.30 | 16,606 | 1.90 | 1.90 |
| 042000 | Existing clinker handling & storage | | 10.96 | 1.96 | | | | 12.93 | 25,853 | 2.95 | 13.48 |
| 043000 | New clinker handling & storage | 83.32 | | | | | | 83.32 | 166,636 | 19.02 | 19.02 |
| 051000 | Finish Mill 1 (existing/modified) | 39.18 | 13.22 | | | | | 52.40 | 104,794 | 11.96 | 11.96 |
| 053000 | Finish Mill 3 (existing/modified) | 39.18 | 13.22 | | | | | 52.40 | 104,794 | 11.96 | 11.96 |
| 055000 | Finish Mill 5 & additive systems | 145.78 | | 0.07 | | | | 145.85 | 291,706 | 33.30 | 33.30 |
| 071000 | Existing cement storage & loadout | | 14.50 | | | | | 14.50 | 28,995 | 3.31 | 5.71 |
| 071100 | New cement transfer system | 3.31 | | | | | | 3.31 | 6,621 | 0.76 | 0.76 |
| 072000 | Existing cement storage & transfer | | 16.31 | | | | | 16.31 | 32,628 | 3.72 | 4.51 |
| 090000 | Quarry operation & roads | | 1.66 | 22.20 | 36.11 | 207.14 | | 267.12 | 534,237 | 60.99 | 61.25 |
| 091000 | Plant roads & storage piles | | | | | 77.30 | 8.06 | 85.36 | 170,717 | 19.49 | 19.49 |
| 100000 | Wharf operations | | 1.29 | 0.08 | | | | 1.37 | 2,741 | 0.31 | 0.88 |
| Total | | 735.15 | 78.76 | 28.42 | 36.11 | 284.44 | 8.06 | 1,170.94 | 2,341,880 | 267.34 | 291.77 |

Pollutant: PM10

| Emission Unit | EU Description | New Points | Existing Points | Process Fugitives | Quarry | Roads | Piles | Total (ton/yr) | Total (lb/yr) | Average (lb/hr) | Maximum (lb/hr) |
|---------------|-------------------------------------|------------|-----------------|-------------------|--------|-------|-------|----------------|---------------|-----------------|-----------------|
| 020000 | Existing raw material handling | | 6.39 | 1.49 | | | | 7.87 | 15,748 | 1.80 | 1.80 |
| 021000 | New raw material handling | 63.96 | | 0.09 | | | | 64.05 | 128,092 | 14.62 | 14.62 |
| 022000 | New solid fuel handling systems | 10.27 | | 0.34 | | | | 10.61 | 21,226 | 2.42 | 2.42 |
| 033000 | New raw mill & kiln feed systems | 25.10 | | | | | | 25.10 | 50,193 | 5.73 | 5.73 |
| 041100 | New kiln & clinker cooler system | 259.19 | | | | | | 259.19 | 518,378 | 59.18 | 67.78 |
| 041200 | New kiln dust system | 6.96 | | 0.01 | | | | 6.97 | 13,936 | 1.59 | 1.59 |
| 042000 | Existing clinker handling & storage | | 9.21 | 0.93 | | | | 10.14 | 20,275 | 2.31 | 11.16 |
| 043000 | New clinker handling & storage | 69.99 | | | | | | 69.99 | 139,974 | 15.98 | 15.98 |
| 051000 | Finish Mill 1 (existing/modified) | 32.91 | 11.10 | | | | | 44.01 | 88,027 | 10.05 | 10.05 |
| 053000 | Finish Mill 3 (existing/modified) | 32.91 | 11.10 | | | | | 44.01 | 88,027 | 10.05 | 10.05 |
| 055000 | Finish Mill 5 & additive systems | 122.46 | | 0.03 | | | | 122.49 | 244,980 | 27.97 | 27.97 |
| 071000 | Existing cement storage & loadout | | 12.18 | | | | | 12.18 | 24,356 | 2.78 | 4.80 |
| 071100 | New cement transfer system | 2.78 | | | | | | 2.78 | 5,562 | 0.63 | 0.63 |
| 072000 | Existing cement storage & transfer | | 13.70 | | | | | 13.70 | 27,408 | 3.13 | 3.79 |
| 090000 | Quarry operation & roads | | 1.40 | 10.42 | 13.21 | 58.90 | | 83.93 | 167,869 | 19.16 | 19.38 |
| 091000 | Plant roads & storage piles | | | | | 19.91 | 4.03 | 23.94 | 47,885 | 5.47 | 5.47 |
| 100000 | Wharf operations | | 1.08 | 0.04 | | | | 1.12 | 2,240 | 0.26 | 0.73 |
| Total | | 626.52 | 66.15 | 13.35 | 13.21 | 78.82 | 4.03 | 802.09 | 1,604,177 | 183.13 | 203.95 |

Pollutant: PM2.5

| Emission Unit | EU Description | New Points | Existing Points | Process Fugitives | Quarry | Roads | Piles | Total (ton/yr) | Total (lb/yr) | Average (lb/hr) | Maximum (lb/hr) |
|---------------|-------------------------------------|------------|-----------------|-------------------|--------|-------|-------|----------------|---------------|-----------------|-----------------|
| 020000 | Existing raw material handling | | 3.42 | 0.23 | | | | 3.65 | 7,302 | 0.83 | 0.83 |
| 021000 | New raw material handling | 34.26 | | 0.01 | | | | 34.28 | 68,551 | 7.83 | 7.83 |
| 022000 | New solid fuel handling systems | 5.50 | | 0.05 | | | | 5.55 | 11,109 | 1.27 | 1.27 |
| 033000 | New raw mill & kiln feed systems | 13.44 | | | | | | 13.44 | 26,889 | 3.07 | 3.07 |
| 041100 | New kiln & clinker cooler system | 164.94 | | | | | | 164.94 | 329,887 | 37.66 | 43.14 |
| 041200 | New kiln dust system | 3.73 | | 0.00 | | | | 3.73 | 7,460 | 0.85 | 0.85 |
| 042000 | Existing clinker handling & storage | | 4.93 | 0.14 | | | | 5.07 | 10,148 | 1.16 | 5.89 |
| 043000 | New clinker handling & storage | 37.49 | | | | | | 37.49 | 74,986 | 8.56 | 8.56 |
| 051000 | Finish Mill 1 (existing/modified) | 17.63 | 5.95 | | | | | 23.58 | 47,157 | 5.38 | 5.38 |
| 053000 | Finish Mill 3 (existing/modified) | 17.63 | 5.95 | | | | | 23.58 | 47,157 | 5.38 | 5.38 |
| 055000 | Finish Mill 5 & additive systems | 65.60 | | 0.01 | | | | 65.61 | 131,213 | 14.98 | 14.98 |
| 071000 | Existing cement storage & loadout | | 6.52 | | | | | 6.52 | 13,048 | 1.49 | 2.57 |
| 071100 | New cement transfer system | 1.49 | | | | | | 1.49 | 2,979 | 0.34 | 0.34 |
| 072000 | Existing cement storage & transfer | | 7.34 | | | | | 7.34 | 14,683 | 1.68 | 2.03 |
| 090000 | Quarry operation & roads | | 0.75 | 1.63 | 3.05 | 5.89 | | 11.32 | 22,648 | 2.59 | 2.70 |
| 091000 | Plant roads & storage piles | | | | | 2.67 | 0.60 | 3.27 | 6,545 | 0.75 | 0.75 |
| 100000 | Wharf operations | | 0.58 | 0.01 | | | | 0.58 | 1,169 | 0.13 | 0.39 |
| Total | | 361.73 | 35.44 | 2.08 | 3.05 | 8.56 | 0.60 | 411.47 | 822,932 | 93.94 | 105.96 |

Notes

See Kiln System and Air Toxics sheets for other pollutant emissions.
See individual source calculations for maximum hourly emission rates.

| Operation/Material | Capacity tons/hr | Average tons/hr | Maximum Thruput | | |
|------------------------------|---------------------|--------------------|-----------------|--------|---------|
| | | | tons/yr | hrs/yr | % |
| Quarry | | | | | |
| Overburden moved | | | 65,188 | | |
| New Scotland LS (to waste) | | | 3,637,104 | | |
| Kalkberg (6% M) | | | 1,190,061 | | |
| Coeymans (6% M) | | | 3,475,093 | | |
| Becraft | | | 122,313 | | |
| New Scotland LS (Callanan) | | | 1,062,275 | | |
| Total | | | 5,849,742 | | |
| Primary Crusher | 1,210 | 1,131 | 5,849,742 | 5,173 | |
| Average Tph | | | 1,131 | | |
| Raw Materials Used | | | | | |
| Kalkberg | | | 1,122,699 | | 24.78% |
| Aggregate (plant roads etc) | | | 25,000 | | |
| Limestone | | | 128,847 | | |
| Coeymans | | | 3,278,389 | | 72.36% |
| Becraft | | | 40,000 | | |
| Subtotal LS reclaim | | | 4,401,088 | | |
| Bauxite | | | 87,442 | | 1.93% |
| Gypsum | | | 161,059 | | |
| Total (Belt 3/4) | | | | | |
| Secondary Crusher (Existing) | 1,250 | 41 | 354,906 | 8,760 | |
| Secondary Crusher (New) | 1,540 | 517 | 4,531,118 | 8,760 | |
| Iron | | | 42,588 | | 0.94% |
| Coke | | | 108,647 | | |
| Subtotal (auxilliary hopper) | | | | | |
| Fly Ash transfer | 33 | | 0 | 0 | 0.00% |
| Total (Raw Mill Input) | 697 | 575 | 4,530,665 | 7,884 | 100.01% |
| Raw Mill #1 | | | | | |
| Raw Mill #2 | | | | | |
| Raw Mill #3 | 697 | 575 | 4,530,665 | 7,884 | 90.0% |
| Raw mix produced | 697 | 575 | 4,530,665 | | |
| Raw mix used | | | | | |
| Dry kiln feed | 575 | | 4,358,215 | | |
| Dry kiln feed (w/recycle) | 625 | 541 | 4,737,557 | 8,760 | |
| Kiln #1 & Clinker Cooler #1 | | | | | |
| Kiln #2 & Clinker Cooler #2 | | | | | |
| Kiln #3 & Clinker Cooler #3 | 367 | 321 | 2,809,939 | 8,760 | 1.33333 |
| Clinker produced | 367 | 321 | 2,809,939 | 8,760 | 1.49465 |
| Yield (Total Feed/Clinker) | | | 1.686 | | |
| Yield (Virgin Feed/Clinker) | | | 1.551 | | |
| Dust Scoop System | | | | | |
| Bypass Dust | 5.3 | | 46,350 | 8,760 | |
| Clinker Hall Silo #8 | | | 421,491 | 8,760 | 15% |
| Clinker Hall Silo #11 | | | 421,491 | 8,760 | 15% |
| Clinker Hall Storage Bins | | | 266,799 | | |
| New Clinker Silos | | | 1,966,957 | 8,760 | 70% |
| CKD Pugmill (Pelletizer) | | 12 | 50,984 | 4,380 | 1.8% |
| Dry basis | | | 46,350 | | |
| Kiln 1&2 Fuels Used | | | | | |
| Coal | | | | | |
| Coke | | | | | |
| Subtotal solid fuels | | | | | |
| Fuel oil (gallons) | | | | | |
| Natural gas (MMCF) | | | | | |
| Coal Mill (Coal/Coke/PRB) | 59.1 | 57.4 | 456,811 | 7,964 | |
| Coal/Coke Firing | | | | | |
| Kiln | 19.8 | | | | |
| Precalciner | 32.4 | | | | |
| Total coal/coke (100%) | 52.1 | 52.1 | 456,811 | 8,760 | |
| Other Kiln Fuels | | | | | |
| TDF (8% HI) | 6.6 | 4.2 | 36,545 | 8,760 | |
| ASF (18.5% HI) | 9.6 | 7.6 | 66,667 | 8,760 | |
| Subtotal solid fuels | | | 560,023 | | |

| Operation/Material | Capacity tons/hr | Average tons/hr | Maximum Thruput | | |
|---------------------------------------|---------------------|--------------------|-----------------|--------|------|
| | | | tons/yr | hrs/yr | % |
| Scrubber Materials | | | | | |
| Limestone reagent | 3.6 | 2.4 | 21,430 | 8,760 | |
| Syn gyp produced | 6.3 | 4.4 | 38,138 | 8,760 | |
| Finish Materials | | | | | |
| Gypsum | | | 161,059 | | 5% |
| Limestone | | | 128,847 | | 4% |
| Masonry stone | | | 40,000 | | |
| Finish Mills (Cement) | | | | | |
| Cement Mill #1 | 99 | 55.2 | 483,177 | 8,760 | 15% |
| Cement Mill #2 | | | | | |
| Cement Mill #3 | 99 | 55.2 | 483,177 | 8,760 | 15% |
| Cement Mill #4 | | | | | |
| Cement Mill #5 | 270 | 257.4 | 2,254,825 | 8,760 | 70% |
| Cement Mill #6 | | | | | |
| Total cement (includes masonry) | 468 | 368 | 3,221,178 | 8,760 | |
| Masonry cement | | | 133,333 | | |
| Customer Silos | | | 812,544 | 8,760 | |
| Masonry Fringe Silo | | | | 8,760 | |
| Buffer Silos | | | 1,513,954 | 8,760 | |
| Buffer Silos Discharge | | | 1,513,954 | 3,000 | |
| Existing Truck Loading | | | | | |
| Bulk cement | | | 812,544 | | |
| Bulk masonry | | | 89,386 | | |
| Total | | | 901,930 | 6,013 | 28% |
| Truck Loadout N/S (each) | 214 | 150 | 450,965 | 3,006 | |
| CKD truck loadout | | | 35,000 | 1,664 | |
| Existing Rail Loading (cement) | | | | | |
| | 550 | 500 | 644,236 | 1,288 | 20% |
| Packhouse | | | | | |
| Bags packed (number) | | | 161,059 | 4,194 | 5% |
| Packing E/W (each) | 70.5 | 38 | 4,026,473 | 4,194 | |
| Vacuum system | | | 80,529 | 2,097 | |
| Bag shredder | | | | 2,097 | |
| | | | | 832 | |
| Barge Loading (cement) | | | | | |
| | 1,000 | 505 | 1,513,954 | 3,000 | 47% |
| Total Cement Shipped | | | 3,221,178 | | 100% |
| Rail Unloading | | | | | |
| Coal | 275 | | 385,203 | | 78% |
| Coke | | | 108,647 | | 22% |
| Total (7.5% M) | | | 493,850 | 4,992 | |
| Barge Unloading | | | | | |
| Gypsum (15% M) | | | 189,481 | 1,248 | |
| Truck Unloading | | | | | |
| Fly Ash (silo) | | | 0 | 0 | |
| Bauxite (12% M) | | | 154,454 | | |
| Iron (12% M) | | | 48,396 | | |
| Limestone (5% M) | | | 135,289 | 8,760 | |
| Total | | | 338,140 | | |
| Miscellaneous | | | | | |
| Quarry Drilling (feet) | | | 347,898 | | |
| Blasts (number) | | | 200 | | |

Kiln System (Main Stack) - Maximum Emissions - EU.041100

| Pollutant | Emission | | Notes | Total | | NESHAP Limit | Production (8000 mtpd) | | |
|--------------------|----------|------------|-------|---------|-----------|--------------|------------------------|----------------|-----------|
| | Factor | lb/T basis | | tons/yr | lbs/yr | | Max lbs/hr | Average lbs/hr | Kiln Feed |
| PM (Filterable) | 0.172 | clinker | 1 | 241.65 | 483,310 | 0.30 | 55.17 | Kiln Feed | 4,737,557 |
| PM10 (Filterable) | 0.144 | clinker | 2 | 202.99 | 405,980 | | 46.34 | Kiln Feed | 624.64 |
| PM2.5 (Filterable) | 0.077 | clinker | 3 | 108.74 | 217,489 | | 24.83 | Clinker | 2,809,939 |
| Condensable PM | 0.040 | clinker | 4 | 56.20 | 112,398 | | 12.83 | Clinker | 367.43 |
| PM (Total) | 0.212 | clinker | 5 | 297.85 | 595,707 | | 68.00 | Operation | 8,760 |
| PM10 (Total) | 0.184 | clinker | 5 | 259.19 | 518,378 | | 59.18 | | |
| PM2.5 (Total) | 0.117 | clinker | 5 | 164.94 | 329,887 | | 37.66 | | |
| SO2 | 1.40 | clinker | 6 | 1966.96 | 3,933,915 | | 514.41 | | |
| NOX | 2.30 | clinker | 7 | 3231.43 | 6,462,860 | | 845.10 | | |
| CO | 2.50 | clinker | 8 | 3512.42 | 7,024,848 | | 918.58 | | |
| VOC | 0.18 | clinker | 9 | 255.42 | 510,847 | | 66.80 | | |
| Lead | 7.50E-05 | clinker | 10 | 0.105 | 211 | | 0.028 | | |
| Fluoride | 9.00E-04 | clinker | 10 | 1.264 | 2,529 | | 0.331 | | |

Notes

- Proposed NSPS emission limit for PM is 0.086 lb/ton clinker for kiln and clinker cooler (each)
- PM10 estimated at 84% of PM emissions for kilns with fabric filters using AP-42 Table 11.6-5
- PM2.5 estimated at 45% of PM emissions for kilns with fabric filters using AP-42 Table 11.6-5
- Assumes 75% reduction in condensable PM emissions (uncontrolled basis from AP-42 Table 11.6-2) by scrubber.
- Sum of filterable and condensable PM
- SO2 emissions based on discussions with EPA and DEC
- NOx allowance based on discussions with EPA and DEC
- CO preliminary BACT emission limit
- Proposed annual VOC emissions based on PSD avoidance
- Emission factor from EPA's AP-42 Table 11.6-9

Main Stack

| | Normal conditions, raw mill on | Raw mill off condition |
|-------------|--------------------------------|------------------------|
| Max Flow | 1,354,435 acfm | 1,083,297 acfm |
| Temperature | 2,301,200 am3/h | 1,840,533 am3/h |
| Stack Dia | 189 deg F | 181 deg F |
| Area | 7.10 m | 7.10 m |
| Velocity | 39.59 m2 | 39.59 m2 |
| Height | 16.15 m/s | 12.91 m/s |
| Base Elev | 526 ft | 526 ft |
| | 164 ft MSL | 164 ft MSL |

| Kiln System (Main Stack) - Emissions at 75% of Capacity | | | | | | | | | | | | |
|--|----------|------------|-------|------------------|---------------|-------------------|--------------|---------|------------------------|-----------|--------|--|
| Pollutant | Emission | | Notes | Total tons/yr | Max lbs/hr | Average lbs/hr | NESHAP Limit | | Production (6000 mtpd) | | | |
| | Factor | lb/T basis | | | | | | lb/T KF | Kiln Feed | | | |
| PM (Filterable) | 0.172 | clinker | 1 | 181.24 | 47.40 | 41.38 | 0.30 | lb/T KF | Kiln Feed | 3,553,168 | TPY | |
| PM10 (Filterable) | 0.144 | clinker | 2 | 152.24 | 39.82 | 34.76 | | | Kiln Feed | 468.48 | TPH | |
| PM2.5 (Filterable) | 0.077 | clinker | 3 | 81.56 | 21.33 | 18.62 | | | Clinker | 2,107,454 | TPY | |
| Condensable PM | 0.040 | clinker | 4 | 42.15 | 11.02 | 9.62 | | | Clinker | 275.58 | TPH | |
| PM (Total) | 0.212 | clinker | 5 | 223.39 | 58.42 | 51.00 | | | Operation | 8,760 | hrs/yr | |
| PM10 (Total) | 0.184 | clinker | 5 | 194.39 | 50.84 | 44.38 | | | | | | |
| PM2.5 (Total) | 0.117 | clinker | 5 | 123.71 | 32.35 | 28.24 | | | | | | |
| SO2 | 1.40 | clinker | 6 | 1475.22 | 385.81 | 336.81 | | | | | | |
| NOX | 2.30 | clinker | 7 | 2423.57 | 633.82 | 553.33 | | | | | | |
| CO | 2.50 | clinker | 8 | 2634.32 | 688.94 | 601.44 | | | | | | |
| VOC | 0.18 | clinker | 9 | 191.57 | 50.10 | 43.74 | | | | | | |
| Lead | 7.50E-05 | clinker | 10 | 0.079 | 0.021 | 0.018 | | | | | | |
| Fluoride | 9.00E-04 | clinker | 10 | 0.948 | 0.248 | 0.217 | | | | | | |

Notes

- 1 Proposed NSPS emission limit for PM is 0.086 lb/ton clinker for kiln and clinker cooler (each)
- 2 PM10 estimated at 84% of PM emissions for kilns with fabric filters using AP-42 Table 11.6-5
- 3 PM2.5 estimated at 45% of PM emissions for kilns with fabric filters using AP-42 Table 11.6-5
- 4 Assumes 75% reduction in condensable PM emissions (uncontrolled basis from AP-42 Table 11.6-2) by scrubber.
- 5 Sum of filterable and condensable PM
- 6 SO2 emissions based on discussions with EPA and DEC
- 7 NOx allowance based on discussions with EPA and DEC
- 8 CO preliminary BACT emission limit
- 9 Proposed annual VOC emissions based on PSD avoidance
- 10 Emission factor from EPA's AP-42 Table 11.6-9

Main Stack

| | <u>Normal conditions, raw mill on</u> | | <u>Raw mill off condition</u> | |
|-------------|---------------------------------------|--------|-------------------------------|--------|
| | | | | |
| Max Flow | 1,015,826 | acfm | 812,473 | acfm |
| | 1,725,900 | am3/h | 1,380,400 | am3/h |
| Temperature | 189 | deg F | 181 | deg F |
| Stack Dia | 7.10 | m | 7.10 | m |
| Area | 39.59 | m2 | 39.59 | m2 |
| Velocity | 12.11 | m/s | 9.68 | m/s |
| Height | 526 | ft | 526 | ft |
| Base Elev | 164 | ft MSL | 164 | ft MSL |

Kiln System (Main Stack) - Emissions During Kiln Preheating*

| Pollutant | Emission | | Notes | Max Startup | Max Operation | Percent of Kiln Operation | Startup Data | |
|--------------------|----------|------------|-------|-------------|---------------|------------------------------|--------------|--------------------|
| | Factor | Units | | lbs/hr | lbs/hr | | | |
| PM (Filterable) | 0.02 | lb/1000gal | 1 | 0.02 | 63.20 | 0.03% | Fuel used | No. 2 fuel oil |
| PM10 (Filterable) | 0.01 | lb/1000gal | 2 | 0.01 | 53.09 | 0.02% | Heat input | 25,000,000 kcal/hr |
| PM2.5 (Filterable) | 0.0025 | lb/1000gal | 3 | 0.00 | 28.44 | 0.01% | Firing rate | 3,086 l/hr |
| Condensable PM | 1.3 | lb/1000gal | 4 | 1.06 | 14.70 | 7.21% | Firing rate | 815.32 gal/hr |
| PM (Total) | 1.32 | lb/1000gal | 5 | 1.08 | 77.90 | 1.38% | | |
| PM10 (Total) | 1.31 | lb/1000gal | 5 | 1.07 | 67.78 | 1.58% | | |
| PM2.5 (Total) | 1.3025 | lb/1000gal | 5 | 1.06 | 43.14 | 2.46% | | |
| SO2 | 78.5 | lb/1000gal | 6 | 64.00 | 514.41 | 12.44% | | |
| NOX | 24 | lb/1000gal | 7 | 19.57 | 845.10 | 2.32% | | |
| CO | 5 | lb/1000gal | 8 | 4.08 | 918.58 | 0.44% | | |
| VOC | 0.2 | lb/1000gal | 9 | 0.16 | 66.80 | 0.24% | | |

Notes

- * Emissions during preheating/startup are a small fraction of emissions during normal kiln operation
- 1 Filterable PM estimated using AP-42 Table 1.3-1 and 99% minimum control efficiency
- 2 Filterable PM10 estimated using AP-42 Table 1.3-6 and 99% minimum control efficiency
- 3 Filterable PM2.5 estimated using AP-42 Table 1.3-6 and 99% minimum control efficiency
- 4 Condensable PM estimated using AP-42 Table 1.3-2
- 5 Sum of filterable and condensable PM
- 6 SO2 estimated using AP-42 Table 1.3-1 assuming 0.5% maximum sulfur content in fuel oil
- 7 NOx estimated using AP-42 Table 1.3-1
- 8 CO estimated using AP-42 Table 1.3-1
- 9 VOC estimated using NMTOC from AP-42 Table 1.3-1

POTENTIAL AIR TOXICS EMISSIONS

| Pollutant | CAS Number | EPA HAP | NY DAR-1 | Selected EF | EF Units (Clinker) | Emission Factor Reference | | | Notes | Emission Rates | | | |
|---------------------------------------|------------|---------|----------|-------------|--------------------|---------------------------|----------|----------|-------|----------------|----------|----------|----------|
| | | | | | | AP-42 | FIRE | Other | | lb/hr | ton/yr | lb/yr | |
| Metals | | | | | | | | | | | | | |
| Aluminum | 07429-90-5 | | X | 1.30E-02 | lb/ton | 1.30E-02 | | | | | 4.78E+00 | 1.83E+01 | 3.65E+04 |
| Arsenic | 07440-38-2 | X | X | 1.20E-05 | lb/ton | 1.20E-05 | | | | | 4.41E-03 | 1.69E-02 | 3.37E+01 |
| Barium | 07440-39-3 | | X | 4.60E-04 | lb/ton | 4.60E-04 | | | | | 1.69E-01 | 6.46E-01 | 1.29E+03 |
| Beryllium | 07440-41-7 | X | X | 6.60E-07 | lb/ton | 6.60E-07 | | | | | 2.43E-04 | 9.27E-04 | 1.85E+00 |
| Cadmium | 07440-43-9 | X | X | 2.20E-06 | lb/ton | 2.20E-06 | | | | | 8.08E-04 | 3.09E-03 | 6.18E+00 |
| Chromium | 07440-47-3 | X | X | 1.40E-04 | lb/ton | 1.40E-04 | | | | | 5.14E-02 | 1.97E-01 | 3.93E+02 |
| Copper | 07440-50-8 | | X | 5.30E-03 | lb/ton | 5.30E-03 | | | | | 1.95E+00 | 7.45E+00 | 1.49E+04 |
| Lead | 07439-92-1 | X | X | 7.50E-05 | lb/ton | 7.50E-05 | | | | | 2.76E-02 | 1.05E-01 | 2.11E+02 |
| Manganese | 07439-96-5 | X | X | 8.60E-04 | lb/ton | 8.60E-04 | 2.42E-04 | | 1 | | 3.16E-01 | 1.21E+00 | 2.42E+03 |
| Mercury | 07439-97-6 | X | X | 1.51E-04 | lb/ton | 2.40E-05 | | 1.51E-04 | 5 | | 5.55E-02 | 2.12E-01 | 4.24E+02 |
| Nickel | 07440-02-0 | X | X | 3.00E-04 | lb/ton | | | 3.00E-04 | | | 1.10E-01 | 4.21E-01 | 8.43E+02 |
| Selenium | 07782-49-2 | X | X | 2.00E-04 | lb/ton | 2.00E-04 | | | | | 7.35E-02 | 2.81E-01 | 5.62E+02 |
| Silver | 07440-22-4 | | X | 6.10E-07 | lb/ton | 6.10E-07 | | | | | 2.24E-04 | 8.57E-04 | 1.71E+00 |
| Thallium | 07440-28-0 | | X | 5.40E-06 | lb/ton | 5.40E-06 | | | | | 1.98E-03 | 7.59E-03 | 1.52E+01 |
| Zinc | 07440-66-6 | | X | 3.40E-04 | lb/ton | 3.40E-04 | | | | | 1.25E-01 | 4.78E-01 | 9.55E+02 |
| Other Inorganics | | | | | | | | | | | | | |
| Ammonia | 07664-41-7 | | X | 1.00E-02 | lb/ton | 1.00E-02 | | | | | 3.67E+00 | 1.40E+01 | 2.81E+04 |
| Fluoride | NA | | X | 9.00E-04 | lb/ton | 9.00E-04 | | | | | 3.31E-01 | 1.26E+00 | 2.53E+03 |
| Hydrogen chloride | 07647-01-0 | X | X | 2.87E-02 | lb/ton | 4.90E-02 | | 2.87E-02 | 2 | | 1.05E+01 | 4.03E+01 | 8.06E+04 |
| Organics | | | | | | | | | | | | | |
| Acetone | 00067-64-1 | | X | 3.70E-04 | lb/ton | 3.70E-04 | | | | | 1.36E-01 | 5.20E-01 | 1.04E+03 |
| Benzene | 00071-43-2 | X | X | 1.60E-02 | lb/ton | 1.60E-02 | | | | | 5.88E+00 | 2.25E+01 | 4.50E+04 |
| Bromomethane | 00074-83-9 | X | X | 4.30E-05 | lb/ton | 4.30E-05 | | | | | 1.58E-02 | 6.04E-02 | 1.21E+02 |
| Carbon disulfide | 00075-15-0 | X | X | 1.10E-04 | lb/ton | 1.10E-04 | | | | | 4.04E-02 | 1.55E-01 | 3.09E+02 |
| Chlorobenzene | 00108-90-7 | X | | 1.60E-05 | lb/ton | 1.60E-05 | | | | | 5.88E-03 | 2.25E-02 | 4.50E+01 |
| Dibutylphthalate | 00084-74-2 | X | X | 4.10E-05 | lb/ton | 4.10E-05 | | | | | 1.51E-02 | 5.76E-02 | 1.15E+02 |
| Di(2-ethylhexyl) phthalate (DEHP) | 00117-81-7 | | X | 9.50E-05 | lb/ton | 9.50E-05 | | | | | 3.49E-02 | 1.33E-01 | 2.67E+02 |
| Dibenzofurans | 00132-64-9 | X | X | 2.90E-10 | lb/ton | 2.90E-10 | | | | | 1.07E-07 | 4.07E-07 | 8.15E-04 |
| TCDDioxin, 2,3,7,8- | 01746-01-6 | (D/F) | X | 1.20E-02 | ng/kg | | | 1.20E-02 | 3 | | 8.82E-09 | 3.37E-08 | 6.74E-05 |
| Hexa-CDD | 57653-85-7 | (D/F) | X | 4.20E-02 | ng/kg | | | 4.20E-02 | 3 | | 3.09E-08 | 1.18E-07 | 2.36E-04 |
| Hexa-CDD | 19408-74-3 | (D/F) | X | 4.80E-02 | ng/kg | | | 4.80E-02 | 3 | | 3.53E-08 | 1.35E-07 | 2.70E-04 |
| TCDFuran, 2,3,7,8- | 51207-31-9 | (D/F) | X | 7.29E-01 | ng/kg | | | 7.29E-01 | 3 | | 5.36E-07 | 2.05E-06 | 4.10E-03 |
| Ethylbenzene | 00100-41-4 | X | X | 1.90E-05 | lb/ton | 1.90E-05 | | | | | 6.98E-03 | 2.67E-02 | 5.34E+01 |
| Formaldehyde | 00050-00-0 | X | X | 4.60E-04 | lb/ton | 4.60E-04 | | | | | 1.69E-01 | 6.46E-01 | 1.29E+03 |
| Methyl chloride | 00074-87-3 | X | X | 3.80E-04 | lb/ton | 3.80E-04 | | | | | 1.40E-01 | 5.34E-01 | 1.07E+03 |
| Methyl ethyl ketone | 00078-93-3 | | X | 3.00E-05 | lb/ton | 3.00E-05 | | | | | 1.10E-02 | 4.21E-02 | 8.43E+01 |
| Methylene chloride | 00075-09-2 | X | X | 4.90E-04 | lb/ton | 4.90E-04 | | | | | 1.80E-01 | 6.88E-01 | 1.38E+03 |
| Phenol | 00108-95-2 | X | X | 1.10E-04 | lb/ton | 1.10E-04 | | | | | 4.04E-02 | 1.55E-01 | 3.09E+02 |
| Styrene | 00100-42-5 | X | X | 1.50E-06 | lb/ton | 1.50E-06 | | | | | 5.51E-04 | 2.11E-03 | 4.21E+00 |
| Toluene | 00108-88-3 | X | X | 1.90E-04 | lb/ton | 1.90E-04 | | | | | 6.98E-02 | 2.67E-01 | 5.34E+02 |
| 1,1,2-trichloro-1,2,2-trifluoroethane | 00076-13-1 | | X | 5.00E-05 | lb/ton | 5.00E-05 | | | | | 1.84E-02 | 7.02E-02 | 1.40E+02 |
| Xylenes | 01330-20-7 | X | X | 1.30E-04 | lb/ton | 1.30E-04 | | | | | 4.78E-02 | 1.83E-01 | 3.65E+02 |
| PAHs | | | | | | | | | | | | | |
| Acenaphthylene | | | | 1.20E-04 | lb/ton | 1.20E-04 | | | | 4 | 4.41E-02 | 1.69E-01 | 3.37E+02 |
| Benz(a)anthracene | 00056-55-3 | | X | 4.30E-08 | lb/ton | 4.30E-08 | | | | | 1.58E-05 | 6.04E-05 | 1.21E-01 |
| Benzo(a)pyrene | | | | 1.30E-07 | lb/ton | 1.30E-07 | | | | 4 | 4.78E-05 | 1.83E-04 | 3.65E-01 |
| Benzo(b) fluoranthene | | | | 5.60E-07 | lb/ton | 5.60E-07 | | | | 4 | 2.06E-04 | 7.87E-04 | 1.57E+00 |
| Benzo(k) fluoranthene | | | | 1.50E-07 | lb/ton | 1.50E-07 | | | | 4 | 5.51E-05 | 2.11E-04 | 4.21E-01 |
| Benzo(g,h,i) perylene | | | | 7.80E-08 | lb/ton | 7.80E-08 | | | | 4 | 2.87E-05 | 1.10E-04 | 2.19E-01 |
| Biphenyl | 00092-52-4 | | X | 6.10E-06 | lb/ton | 6.10E-06 | | | | | 2.24E-03 | 8.57E-03 | 1.71E+01 |
| Chrysene | 00218-01-9 | | X | 1.60E-07 | lb/ton | 1.60E-07 | | | | | 5.88E-05 | 2.25E-04 | 4.50E-01 |
| Dibenz(a,h) anthracene | 00053-70-3 | | X | 6.30E-07 | lb/ton | 6.30E-07 | | | | | 2.31E-04 | 8.85E-04 | 1.77E+00 |
| Fluoranthene | | | | 8.80E-06 | lb/ton | 8.80E-06 | | | | 4 | 3.23E-03 | 1.24E-02 | 2.47E+01 |
| Fluorene | | | | 1.90E-05 | lb/ton | 1.90E-05 | | | | 4 | 6.98E-03 | 2.67E-02 | 5.34E+01 |
| Indeno(1,2,3-cd) pyrene | | | | 8.70E-08 | lb/ton | 8.70E-08 | | | | 4 | 3.20E-05 | 1.22E-04 | 2.44E-01 |
| 2-Methyl-naphthalene | | | | 4.20E-06 | lb/ton | 4.20E-06 | | | | 4 | 1.54E-03 | 5.90E-03 | 1.18E+01 |
| Naphthalene | 00091-20-3 | X | X | 1.70E-03 | lb/ton | 1.70E-03 | | | | | 6.25E-01 | 2.39E+00 | 4.78E+03 |
| Phenanthrene | 00085-01-8 | | X | 3.90E-04 | lb/ton | 3.90E-04 | | | | | 1.43E-01 | 5.48E-01 | 1.10E+03 |
| Pyrene | 00129-00-0 | | X | 4.40E-06 | lb/ton | 4.40E-06 | | | | | 1.62E-03 | 6.18E-03 | 1.24E+01 |

| Pollutant | CAS Number | EPA HAP | NY DAR-1 | Selected EF | EF Units (Clinker) | Emission Factor Reference | | | Notes | Emission Rates | | |
|------------|------------|---------|----------|-------------|--------------------|---------------------------|------|-------|-------|----------------|----------|----------|
| | | | | | | AP-42 | FIRE | Other | | lb/hr | ton/yr | lb/yr |
| Total PAHs | | (POM) | X | 2.25E-03 | | | | | | 8.28E-01 | 3.17E+00 | 6.33E+03 |

Notes

1. The higher AP-42 factor will be used for manganese evaluation
2. Use PCA emission factor for HCl as more representative than the older AP-42 factor
3. Emission factors for dioxin/furan compounds taken from EPA's TRI reporting guidance
4. Individual PAH compounds not listed in DAR-1 will be evaluated with total PAHs
5. Mercury emissions based on compliance with EPA NESHAP limit (41 ug/dscm @ 7% O2)

| Process Area | Emission Unit | DC No. | Emission Point ID | Equipment Description | Control Device | Material Processed | Operation hrs/yr | Phase Note | Flow Am ³ /h | Temp deg C | Flow SCFM | Grain Loading gr/scf | PM Emiss lb/hr | PM Emiss TPY |
|----------------|---------------|--------|-------------------|---|----------------|--------------------|------------------|------------|-------------------------|------------|-----------|----------------------|----------------|--------------|
| Sec Crushing | 021000 | 1 | 115DC01 | New Secondary Crusher & Screen | DC | Limestone | 8,760 | 1 | 106,000 | 20 | 62,389 | 0.008 | 4.28 | 18.74 |
| Pre-Homo | 021000 | 2 | 138DC04 | Transfer to Pre-Homo / RM Feed Bins | DC | Limestone | 8,760 | 1 | 56,300 | 20 | 33,137 | 0.008 | 2.27 | 9.95 |
| Pre-Homo | 021000 | 3 | 138DC02 | Circular Stacker Feed | DC | Limestone | 8,760 | 2 | 28,000 | 20 | 16,480 | 0.008 | 1.13 | 4.95 |
| Pre-Homo | 021000 | 4 | 138DC03 | Pre-Homo reclaim | DC | Limestone | 8,760 | 2 | 30,400 | 20 | 17,893 | 0.008 | 1.23 | 5.37 |
| LS & Additives | 021000 | 5 | 233DC01 | Raw Material Storage Silos | DC | Limestone | 8,760 | 1 | 27,900 | 20 | 16,421 | 0.008 | 1.13 | 4.93 |
| LS & Additives | 021000 | 6 | 233DC02 | Limestone Silos | DC | Limestone | 8,760 | 1 | 19,700 | 20 | 11,595 | 0.008 | 0.80 | 3.48 |
| LS & Additives | 021000 | 7 | 233DC03 | Additive Silo 1 | DC | Additives | 8,760 | 1 | 8,000 | 20 | 4,709 | 0.008 | 0.32 | 1.41 |
| LS & Additives | 021000 | 8 | 233DC04 | Additive Silo 2 | DC | Additives | 8,760 | 1 | 8,000 | 20 | 4,709 | 0.008 | 0.32 | 1.41 |
| LS & Additives | 021000 | 9 | 233DC05 | Additive Silo - Spare | DC | Additives | 8,760 | 1 | 8,000 | 20 | 4,709 | 0.008 | 0.32 | 1.41 |
| LS & Additives | 021000 | 10 | 236DC01 | Limestone Silos withdrawl | DC | Limestone | 8,760 | 1 | 18,300 | 20 | 10,771 | 0.008 | 0.74 | 3.23 |
| LS & Additives | 021000 | 11 | 236DC02 | Additives/Limestone Silos withdrawl | DC | Additives | 8,760 | 1 | 31,700 | 20 | 18,658 | 0.008 | 1.28 | 5.60 |
| LS & Additives | 021000 | 12 | 236DC03 | Additive Silos withdrawl - Spare | DC | Additives | 8,760 | 1 | 15,100 | 20 | 8,888 | 0.008 | 0.61 | 2.67 |
| LS & Additives | 021000 | 80 | 236DC04 | Raw Mix Belt to Belt | DC | Raw Mix | 8,760 | 1 | 28,400 | 20 | 16,716 | 0.008 | 1.15 | 5.02 |
| LS & Additives | 021000 | 81 | 233DC06 | Additive to Silo | DC | Bauxite | 8,760 | 1 | 13,300 | 20 | 7,828 | 0.008 | 0.54 | 2.35 |
| LS & Additives | 021000 | 82 | 233DC07 | Additive to Silo | DC | Iron | 8,760 | 1 | 13,300 | 20 | 7,828 | 0.008 | 0.54 | 2.35 |
| LS & Additives | 021000 | 109 | 236DC08 | Limestone Silo withdrawl | DC | Limestone | 8,760 | 1 | 18,300 | 20 | 10,771 | 0.008 | 0.74 | 3.23 |
| Subtotal | 021000 | | | | | | | | 18,300 | 20 | 10,771 | 0.008 | 17.38 | 76.14 |
| Coal Mill | 022000 | 70 | 633DC02 | Solid Fuel Bin (Coal) | DC | Coke | 8,760 | 1 | 9,900 | 20 | 5,827 | 0.008 | 0.40 | 1.75 |
| Coal Mill | 022000 | 71 | 633DC03 | Solid Fuel Bin (Coke) | DC | Coal | 8,760 | 1 | 9,900 | 20 | 5,827 | 0.008 | 0.40 | 1.75 |
| Coal Mill | 022000 | 72 | 633DC04 | PC Bin (Kiln) | DC | Coal & Coke | 8,760 | 1 | 4,800 | 90 | 2,281 | 0.008 | 0.16 | 0.69 |
| Coal Mill | 022000 | 73 | 633DC05 | PC Bin (Calciner) | DC | Coal & Coke | 8,760 | 1 | 4,800 | 90 | 2,281 | 0.008 | 0.16 | 0.69 |
| Coal Mill | 022000 | 74 | 633DC06 | Solid Fuel Pump Hopper | DC | Coal & Coke | 8,760 | 1 | 4,800 | 90 | 2,281 | 0.008 | 0.16 | 0.69 |
| Coal Mill | 022000 | 75 | 633DC07 | Solid Fuel Pump Hopper | DC | Coal & Coke | 8,760 | 1 | 4,800 | 90 | 2,281 | 0.008 | 0.16 | 0.69 |
| ASF System | 022000 | 76 | 660DC01 | ASF Handling | DC | ASF | 8,760 | 1 | 8,900 | 40 | 4,904 | 0.008 | 0.34 | 1.47 |
| ASF System | 022000 | 77 | 660DC02 | ASF Storage | DC | ASF | 8,760 | 1 | 10,400 | 40 | 5,730 | 0.008 | 0.39 | 1.72 |
| Coal Mill | 022000 | 94 | 633DC08 | Coal Hopper before pumps | DC | Coal | 8,760 | 1 | 7,500 | 100 | 3,468 | 0.008 | 0.24 | 1.04 |
| Coal Mill | 022000 | 108 | 633DC06 | Solid Fuel Feed Bin | DC | PRB | 8,760 | 1 | 9,900 | 20 | 5,827 | 0.008 | 0.40 | 1.75 |
| Coal Mill | 022000 | | 633DC01 | Coal Mill | DC | Coal & Coke | 8,760 | 1 | | | | | | |
| Subtotal | 022000 | | | | | | | 2 | | | | | 2.79 | 12.23 |
| Raw Mill | 033000 | 13 | 236DC06 | VRM - Fresh Feed & Recirc BE Head | DC | Raw Mix | 8,760 | 1 | 44,400 | 100 | 20,533 | 0.008 | 1.41 | 6.17 |
| Raw Mill | 033000 | 14 | 236DC05 | VRM - Reject Belt/BE Boot | DC | Raw Mix | 8,760 | 1 | 21,500 | 135 | 9,091 | 0.008 | 0.62 | 2.73 |
| Raw Meal Trans | 033000 | 15 | 238DC01 | VRM - Cyclone Discharge | DC | Raw Meal | 8,760 | 1 | 4,400 | 135 | 1,860 | 0.008 | 0.13 | 0.56 |
| Raw Meal Trans | 033000 | 16 | 238DC02 | KF Silo Bucket Elevators | DC | Raw Meal | 8,760 | 1 | 24,700 | 135 | 10,444 | 0.008 | 0.72 | 3.14 |
| Raw Meal Trans | 033000 | 17 | 238DC03 | KF Silo Feed | DC | Raw Meal | 8,760 | 1 | 31,500 | 135 | 13,319 | 0.008 | 0.91 | 4.00 |
| Kiln Feed | 033000 | 19 | 332DC02 | CKD Bin / PHTR BE Boots | DC | CKD | 8,760 | 1 | 28,000 | 135 | 11,839 | 0.008 | 0.81 | 3.56 |
| Kiln Feed | 033000 | 20 | 332DC03 | PHTR Feed | DC | Raw Meal | 8,760 | 1 | 26,400 | 135 | 11,162 | 0.008 | 0.77 | 3.35 |
| Kiln Feed | 033000 | 21 | 332DC04 | Pump hopper (conveying to coal sys) | DC | Coal | 8,760 | 1 | 12,400 | 135 | 5,243 | 0.008 | 0.36 | 1.57 |
| Raw Mill | 033000 | 83 | 236DC07 | Raw Mill Reject Hopper | DC | Raw Mix | 8,760 | 1 | 11,500 | 20 | 6,769 | 0.008 | 0.46 | 2.03 |
| Raw Meal Trans | 033000 | 85 | 238DC05 | Blend Silo B/E Dust Collector (Standby) | DC | Raw Mix | 0 | 1 | 15,300 | 135 | 6,469 | 0.008 | 0.00 | 0.00 |
| Kiln Feed | 033000 | 88 | 332DC05 | Blend Silo Withdrawl Bin | DC | Raw Mix | 8,760 | 1 | 8,300 | 135 | 3,509 | 0.008 | 0.24 | 1.05 |
| Kiln Feed | 033000 | 89 | 332DC06 | Blend Silo B/E Boot | DC | Raw Mix | 8,760 | 1 | 13,500 | 135 | 5,708 | 0.008 | 0.39 | 1.71 |
| Kiln Feed | 033000 | 104 | 332DC07 | PHTR Feed (Standby) | DC | Kiln Feed | 0 | 1 | 26,400 | 135 | 11,162 | 0.008 | 0.00 | 0.00 |

| Process Area | Emission Unit | DC No. | Emission Point ID | Equipment Description | Control Device | Material Processed | Operation hrs/yr | Phase Note | 8000 mtpd Flow Am3/h | Temp deg C | Flow SCFM | Grain Loading gr/scf | PM Emis lb/hr | PM Emis TPY |
|------------------|---------------|--------|-------------------|-------------------------------------|----------------|--------------------|------------------|------------|----------------------|------------|-----------|----------------------|---------------|-------------|
| Subtotal | 033000 | | | | | | | | | | | | 6.82 | 29.88 |
| Kiln DC | 041100 | 23 | 334SK01 | Main Kiln Stack (Scrubber Exhaust) | Note | CKD | 8,760 | 1 | 1.3 | 87 | 1,102,593 | 0.00669 | 63.20 | 241.65 |
| Kiln DC | 041100 | | 334DC01 | Kiln Dust Collector | DC | CKD | 8,760 | 1 | 2 | | | | | |
| By-Pass Sys | 041100 | | 335DC01/02 | Alkali Bypass System | DC | CKD | 8,760 | 1 | 2 | | | | | |
| Kiln DC | 041200 | 22 | 334DC05 | Wet Scrubber Reagent Bin | DC | Reagent | 8,760 | 1 | 3,500 | 100 | 1,619 | 0.008 | 0.11 | 0.49 |
| By-Pass Sys | 041200 | 24 | 335DC02 | Alkali Bypass Bin Vent | DC | CKD | 8,760 | 1 | 16,100 | 100 | 7,446 | 0.008 | 0.51 | 2.24 |
| By-Pass Sys | 041200 | 25 | 335DC02 | Pump Hopper Vent | DC | CKD | 8,760 | 1 | 5,600 | 100 | 2,590 | 0.008 | 0.18 | 0.78 |
| Kiln Dust | 041200 | 84 | 334DC03 | Dust Bin | DC | CKD | 8,760 | 1 | 11,600 | 135 | 4,905 | 0.008 | 0.34 | 1.47 |
| Kiln Dust | 041200 | 86 | 334DC04 | F-K Pump to Finish Mill | DC | CKD | 8,760 | 1 | 6,100 | 135 | 2,579 | 0.008 | 0.18 | 0.77 |
| Kiln Dust | 041200 | 90 | 334DC02 | Screw/CKD Bin to Belt Conveyor | DC | CKD | 8,760 | 1 | 17,500 | 220 | 6,124 | 0.008 | 0.42 | 1.84 |
| Kiln Dust | 041200 | 110 | 335DC06 | FK Pump to Kiln Dust Collector | DC | CKD | 8,760 | 1 | 5,500 | 135 | 2,325 | 0.008 | 0.16 | 0.70 |
| Subtotal | 041200 | | | | | | | | | | | | 1.89 | 8.29 |
| Clinker DC | 043000 | 26 | 339DC09 | Heat Exchanger Discharge (Optional) | DC | Clinker | 8,760 | 1 | 36,300 | 220 | 12,704 | 0.008 | 0.87 | 3.82 |
| Clinker DC | 043000 | | 338DC01 | Clinker Cooler Dust Collector | DC | Clinker | 8,760 | 1 | 2 | | | | | |
| Clinker DC | 043000 | 28 | 339DC01 | Clinker Cooler Discharge | DC | Clinker | 8,760 | 1 | 22,400 | 220 | 7,839 | 0.008 | 0.54 | 2.35 |
| Clinker DC | 043000 | 29 | 339DC02 | Cooler Cyclone Discharge | DC | Clinker | 8,760 | 1 | 13,500 | 220 | 4,725 | 0.008 | 0.32 | 1.42 |
| Clinker DC | 043000 | 30 | 339DC03 | WHR Boiler Discharge | DC | Clinker | 8,760 | 1 | 33,600 | 220 | 11,759 | 0.008 | 0.81 | 3.53 |
| Clinker Handling | 043000 | 31 | 339DC04 | Hot Clinker Bin | DC | Clinker | 8,760 | 1 | 64,100 | 120 | 28,136 | 0.008 | 1.93 | 8.45 |
| Clinker Handling | 043000 | 32 | 339DC05 | Hot Clinker Bin Truck loadout | DC | Clinker | 8,760 | 1 | 27,500 | 120 | 12,071 | 0.008 | 0.83 | 3.63 |
| Clinker Handling | 043000 | 33 | 339DC06 | Top of New Clinker Storage Silo | DC | Clinker | 8,760 | 3 | 32,100 | 120 | 14,090 | 0.008 | 0.97 | 4.23 |
| Clinker Handling | 043000 | 34 | 339DC07 | Top of New Clinker Storage Silo | DC | Clinker | 8,760 | 3 | 32,100 | 120 | 14,090 | 0.008 | 0.97 | 4.23 |
| Clinker Storage | 043000 | 38 | 411DC01 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 39 | 411DC03 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 40 | 411DC05 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 41 | 411DC07 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 42 | 411DC09 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 43 | 411DC11 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 44 | 411DC13 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 45 | 411DC15 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 46 | 411DC17 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 47 | 411DC19 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 38-A | 411DC02 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 39-A | 411DC04 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 40-A | 411DC06 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 41-A | 411DC08 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 42-A | 411DC10 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 43-A | 411DC12 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 44-A | 411DC14 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 45-A | 411DC16 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 46-A | 411DC18 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |
| Clinker Storage | 043000 | 47-A | 411DC20 | Clinker Storage Reclaim | DC | Clinker | 8,760 | 3 | 20,000 | 95 | 9,375 | 0.008 | 0.64 | 2.82 |

| Process Area | Emission Unit | DC No. | Emission Point ID | Equipment Description | Control Device | Material Processed | Operation hrs/yr | Phase | Note | 8000 mtpd Flow Am3/h | Temp deg C | Flow SCFM | Grain Loading gr/scf | PM Emiss lb/hr | PM Emiss TPY |
|---------------------------------|---------------|--------|-------------------|---|----------------|--------------------|------------------|-------|------|----------------------|------------|-----------|----------------------|----------------|--------------|
| Clinker Storage | 043000 | 50 | 411DC13 | Clinker Reclaim Discharge to Belt | DC | Clinker | 8,760 | 3 | | 31,200 | 95 | 14,624 | 0.008 | 1.00 | 4.39 |
| Clinker Storage | 043000 | 51 | 411DC14 | Clinker Reclaim Discharge to Belt | DC | Clinker | 8,760 | 3 | | 31,200 | 95 | 14,624 | 0.008 | 1.00 | 4.39 |
| Clinker Conv | 043000 | 87 | 309DC03 | Transfer pt - Pan to belt conveyors | DC | Clinker | 8,760 | 1 | 7 | 37,900 | 120 | 16,636 | 0.008 | 1.14 | 5.00 |
| Clinker Conv | 043000 | 91 | 339DC08 | B/E to belt (Old Clinker storage to New DC) | DC | Clinker | 8,760 | 3A | 7 | 25,500 | 50 | 13,616 | 0.008 | 0.93 | 4.09 |
| Subtotal | 043000 | | | | | | | | | | | | | 19.02 | 83.32 |
| CM1 | 051000 | 105 | 416DC04 | FM 1 Dust Bin to bypass Cement Cool | DC | CKD | 8,760 | 3A | | 5,300 | 135 | 2,241 | 0.008 | 0.15 | 0.67 |
| CM1 | 051000 | 107 | 416DC03 | Existing FM 1 HES Dust Collector | DC | Cement | 8,760 | 3A | | 262,400 | 80 | 128,217 | 0.008 | 8.79 | 38.51 |
| Subtotal | 051000 | | | | | | | | | | | | | 8.95 | 39.18 |
| CM3 | 053000 | 79 | 436DC03 | Existing Finish Mill 3 HES | DC | Cement | 8,760 | 3A | 5 | 262,400 | 80 | 128,217 | 0.008 | 8.79 | 38.51 |
| CM3 | 053000 | 106 | 436DC04 | FM 3 Dust Bin to bypass Cement Cool | DC | CKD | 8,760 | 3B | | 5,300 | 135 | 2,241 | 0.008 | 0.15 | 0.67 |
| Subtotal | 053000 | | | | | | | | | | | | | 8.95 | 39.18 |
| FM Additives | 055000 | 35 | 403DC01 | Tripper Discharge | DC | Additives | 8,760 | 3 | | 38,800 | 95 | 18,187 | 0.008 | 1.25 | 5.46 |
| FM Additives | 055000 | 36 | 403DC02 | Additives Transfer Pt (belt to belt) | DC | Additives | 8,760 | 3 | | 38,800 | 95 | 18,187 | 0.008 | 1.25 | 5.46 |
| FM Additives | 055000 | 56 | 463DC01 | Ck reclaim from bin | DC | Clinker | 8,760 | 3A | | 29,200 | 95 | 13,687 | 0.008 | 0.94 | 4.11 |
| FM Additives | 055000 | 57 | 463DC02 | Additives reclaim from bin | DC | Gypsum | 8,760 | 3A | | 20,900 | 95 | 9,796 | 0.008 | 0.67 | 2.94 |
| FM5 | 055000 | 58 | 463DC03 | FM5 feed | DC | Limestone | 8,760 | 3A | | 9,000 | 100 | 4,162 | 0.008 | 0.29 | 1.25 |
| FM5 | 055000 | 59 | 463DC04 | FM5 Stack | DC | Cement | 8,760 | 3A | | 713,600 | 91 | 338,159 | 0.008 | 23.19 | 101.56 |
| FM5 | 055000 | 60 | 465DC01 | FM5 Reject Bin/Bin Reclaim | DC | Clinker, gyp | 8,760 | 3A | | 14,600 | 100 | 6,752 | 0.008 | 0.46 | 2.03 |
| FM5 | 055000 | 92 | 456DC06 | CKD Bin to FM transport airside | DC | Cement | 8,760 | 3A | | 5,300 | 135 | 2,241 | 0.008 | 0.15 | 0.67 |
| FM Additives | 055000 | 95 | 403DC03 | Transfer pt - clinker to BUCKET ELEV | DC | Clinker/Add | 8,760 | 3 | | 41,700 | 95 | 19,546 | 0.008 | 1.34 | 5.87 |
| FM Additives | 055000 | 96 | 453DC01 | Clinker Silo Feed for FM5 | DC | Clinker | 8,760 | 3A | | 53,600 | 95 | 25,124 | 0.008 | 1.72 | 7.55 |
| FM Additives | 055000 | 97 | 453DC02 | Additives for FM5 | DC | Additive | 8,760 | 3A | | 17,300 | 30 | 9,847 | 0.008 | 0.68 | 2.96 |
| FM Additives | 055000 | 98 | 453DC03 | Bin Vent for Additives for FM5 | DC | Additive | 8,760 | 3A | | 17,300 | 30 | 9,847 | 0.008 | 0.68 | 2.96 |
| FM Additives | 055000 | 99 | 453DC04 | Bin Vent for Additives for FM5 | DC | Additive | 8,760 | 3A | | 17,300 | 30 | 9,847 | 0.008 | 0.68 | 2.96 |
| Subtotal | 055000 | | | | | | | | | | | | | 33.28 | 145.78 |
| Cement Trans | 071100 | 78 | 408DC01 | Cement Transfer to Silos | DC | Cement | 8,760 | 3 | | 21,600 | 65 | 11,022 | 0.008 | 0.76 | 3.31 |
| Grand Total | | | | | | | | | | | | | | 163.04 | 678.95 |
| Total w/o Kiln & Clinker Cooler | | | | | | | | | | | | | | 99.84 | 437.30 |

Notes

1. Kiln system controlled by dust collector and scrubber combination
2. Exhaust flow and emissions included with main kiln stack
3. Stack flow is variable. Normal conditions are shown.
4. Two identical dust collectors are provided. Only one of the dust collectors can operate at a time.
5. Replacement for existing Finish Mill 3 separator (in Phase 3A-3B)
6. Replacement for existing Finish Mill 4 separator (in Phase 3B only)
7. Shut down in Phase 3C
8. Only one of 2 bucket elevators and one DC will operate at any time (either DC#16 or DC#85).
9. Only one of 2 bucket elevators and one head DC will operate at any time (either DC#20 or DC#104).

| Process Area | Emission Unit | DC No. | Emission Point ID | Equipment Description | PM10 Fraction | PM10 Emiss TPY | PM2.5 Fraction | PM2.5 Emiss TPY | Stack Height ft | Diameter ft | Velocity ft/s | Velocity m/s |
|----------------|---------------|--------|-------------------|---|---------------|----------------|----------------|-----------------|-----------------|-------------|---------------|--------------|
| Sec Crushing | 021000 | 1 | 115DC01 | New Secondary Crusher & Screen | 0.84 | 15.74 | 0.45 | 8.43 | | | | |
| Pre-Homo | 021000 | 2 | 138DC04 | Transfer to Pre-Homo / RM Feed Bins | 0.84 | 8.36 | 0.45 | 4.48 | | | | |
| Pre-Homo | 021000 | 3 | 138DC02 | Circular Stacker Feed | 0.84 | 4.16 | 0.45 | 2.23 | | | | |
| Pre-Homo | 021000 | 4 | 138DC03 | Pre-Homo reclaim | 0.84 | 4.51 | 0.45 | 2.42 | | | | |
| LS & Additives | 021000 | 5 | 233DC01 | Raw Material Storage Silos | 0.84 | 4.14 | 0.45 | 2.22 | | | | |
| LS & Additives | 021000 | 6 | 233DC02 | Limestone Silos | 0.84 | 2.93 | 0.45 | 1.57 | | | | |
| LS & Additives | 021000 | 7 | 233DC03 | Additive Silo 1 | 0.84 | 1.19 | 0.45 | 0.64 | | | | |
| LS & Additives | 021000 | 8 | 233DC04 | Additive Silo 2 | 0.84 | 1.19 | 0.45 | 0.64 | | | | |
| LS & Additives | 021000 | 9 | 233DC05 | Additive Silo - Spare | 0.84 | 1.19 | 0.45 | 0.64 | | | | |
| LS & Additives | 021000 | 10 | 236DC01 | Limestone Silos withdrawal | 0.84 | 2.72 | 0.45 | 1.46 | | | | |
| LS & Additives | 021000 | 11 | 236DC02 | Additives/Limestone Silos withdrawal | 0.84 | 4.71 | 0.45 | 2.52 | | | | |
| LS & Additives | 021000 | 12 | 236DC03 | Additive Silos withdrawal - Spare | 0.84 | 2.24 | 0.45 | 1.20 | | | | |
| LS & Additives | 021000 | 80 | 236DC04 | Raw Mix Belt to Belt | 0.84 | 4.22 | 0.45 | 2.26 | | | | |
| LS & Additives | 021000 | 81 | 233DC06 | Additive to Silo | 0.84 | 1.97 | 0.45 | 1.06 | | | | |
| LS & Additives | 021000 | 82 | 233DC07 | Additive to Silo | 0.84 | 1.97 | 0.45 | 1.06 | | | | |
| LS & Additives | 021000 | 109 | 236DC08 | Limestone Silo withdrawal | 0.84 | 2.72 | 0.45 | 1.46 | | | | |
| Subtotal | 021000 | | | | | 63.96 | | 34.26 | | | | |
| Coal Mill | 022000 | 70 | 633DC02 | Solid Fuel Bin (Coal) | 0.84 | 1.47 | 0.45 | 0.79 | | | | |
| Coal Mill | 022000 | 71 | 633DC03 | Solid Fuel Bin (Coke) | 0.84 | 1.47 | 0.45 | 0.79 | | | | |
| Coal Mill | 022000 | 72 | 633DC04 | PC Bin (Kiln) | 0.84 | 0.58 | 0.45 | 0.31 | | | | |
| Coal Mill | 022000 | 73 | 633DC05 | PC Bin (Calcliner) | 0.84 | 0.58 | 0.45 | 0.31 | | | | |
| Coal Mill | 022000 | 74 | 633DC06 | Solid Fuel Pump Hopper | 0.84 | 0.58 | 0.45 | 0.31 | | | | |
| Coal Mill | 022000 | 75 | 633DC07 | Solid Fuel Pump Hopper | 0.84 | 0.58 | 0.45 | 0.31 | | | | |
| ASF System | 022000 | 76 | 660DC01 | ASF Handling | 0.84 | 1.24 | 0.45 | 0.66 | | | | |
| ASF System | 022000 | 77 | 660DC02 | ASF Storage | 0.84 | 1.45 | 0.45 | 0.77 | | | | |
| Coal Mill | 022000 | 94 | 633DC08 | Coal Hopper before pumps | 0.84 | 0.88 | 0.45 | 0.47 | | | | |
| Coal Mill | 022000 | 108 | 633DC06 | Solid Fuel Feed Bin | 0.84 | 1.47 | 0.45 | 0.79 | | | | |
| Coal Mill | 022000 | | 633DC01 | Coal Mill | | 10.27 | | 5.50 | | | | |
| Subtotal | 022000 | | | | | | | | | | | |
| Raw Mill | 033000 | 13 | 236DC06 | VRM - Fresh Feed & Recirc BE Head | 0.84 | 5.18 | 0.45 | 2.78 | | | | |
| Raw Mill | 033000 | 14 | 236DC05 | VRM - Reject Belt/BE Boot | 0.84 | 2.29 | 0.45 | 1.23 | | | | |
| Raw Meal Trans | 033000 | 15 | 238DC01 | VRM - Cyclone Discharge | 0.84 | 0.47 | 0.45 | 0.25 | | | | |
| Raw Meal Trans | 033000 | 16 | 238DC02 | KF Silo Bucket Elevators | 0.84 | 2.63 | 0.45 | 1.41 | | | | |
| Raw Meal Trans | 033000 | 17 | 238DC03 | KF Silo Feed | 0.84 | 3.36 | 0.45 | 1.80 | | | | |
| Kiln Feed | 033000 | 19 | 332DC02 | CKD Bin / PHTR BE Boots | 0.84 | 2.99 | 0.45 | 1.60 | | | | |
| Kiln Feed | 033000 | 20 | 332DC03 | PHTR Feed | 0.84 | 2.82 | 0.45 | 1.51 | | | | |
| Kiln Feed | 033000 | 21 | 332DC04 | Pump hopper (conveying to coal sys) | 0.84 | 1.32 | 0.45 | 0.71 | | | | |
| Raw Mill | 033000 | 83 | 236DC07 | Raw Mill Reject Hopper | 0.84 | 1.71 | 0.45 | 0.91 | | | | |
| Raw Meal Trans | 033000 | 85 | 238DC05 | Blend Silo B/E Dust Collector (Standby) | 0.84 | 0.00 | 0.45 | 0.00 | | | | |
| Kiln Feed | 033000 | 88 | 332DC05 | Blend Silo Withdrawl Bin | 0.84 | 0.89 | 0.45 | 0.47 | | | | |
| Kiln Feed | 033000 | 89 | 332DC06 | Blend Silo B/E Boot | 0.84 | 1.44 | 0.45 | 0.77 | | | | |
| Kiln Feed | 033000 | 104 | 332DC07 | PHTR Feed (Standby) | 0.84 | 0.00 | 0.45 | 0.00 | | | | |

| Process Area | Emission Unit | DC No. | Emission Point ID | Equipment Description | PM10 Fraction | PM10 Emis TPY | PM2.5 Fraction | PM2.5 Emis TPY | Stack Height ft | Diameter | | Velocity | |
|------------------|---------------|--------|-------------------|-------------------------------------|---------------|---------------|----------------|----------------|-----------------|----------|------|----------|------|
| | | | | | | | | | | ft | m | ft/s | m/s |
| Subtotal | 033000 | | | | 25.10 | 13.44 | | | | | | | |
| Kiln DC | 041100 | 23 | 334SK01 | Main Kiln Stack (Scrubber Exhaust) | 0.84 | 202.99 | 0.45 | 108.74 | 526 | 23.29 | 7.10 | 53.0 | 16.1 |
| Kiln DC | 041100 | | 334DC01 | Kiln Dust Collector | | | | | | | | | |
| By-Pass Sys | 041100 | | 335DC01/02 | Alkali Bypass System | | | | | | | | | |
| Kiln DC | 041200 | 22 | 334DC05 | Wet Scrubber Reagent Bin | 0.84 | 0.41 | 0.45 | 0.22 | | | | | |
| By-Pass Sys | 041200 | 24 | 335DC02 | Alkali Bypass Bin Vent | 0.84 | 1.88 | 0.45 | 1.01 | | | | | |
| By-Pass Sys | 041200 | 25 | 335DC02 | Pump Hopper Vent | 0.84 | 0.65 | 0.45 | 0.35 | | | | | |
| Kiln Dust | 041200 | 84 | 334DC03 | Dust Bin | 0.84 | 1.24 | 0.45 | 0.66 | | | | | |
| Kiln Dust | 041200 | 86 | 334DC04 | F-K Pump to Finish Mill | 0.84 | 0.65 | 0.45 | 0.35 | | | | | |
| Kiln Dust | 041200 | 90 | 334DC02 | Screw/CKD Bin to Belt Conveyor | 0.84 | 1.55 | 0.45 | 0.83 | | | | | |
| Kiln Dust | 041200 | 110 | 335DC06 | FK Pump to Kiln Dust Collector | 0.84 | 0.59 | 0.45 | 0.31 | | | | | |
| Subtotal | 041200 | | | | 6.96 | 3.73 | | | | | | | |
| Clinker DC | 043000 | 26 | 339DC09 | Heat Exchanger Discharge (Optional) | 0.84 | 3.21 | 0.45 | 1.72 | | | | | |
| Clinker DC | 043000 | | 338DC01 | Clinker Cooler Dust Collector | | | | | | | | | |
| Clinker DC | 043000 | 28 | 339DC01 | Clinker Cooler Discharge | 0.84 | 1.98 | 0.45 | 1.06 | | | | | |
| Clinker DC | 043000 | 29 | 339DC02 | Cooler Cyclone Discharge | 0.84 | 1.19 | 0.45 | 0.64 | | | | | |
| Clinker DC | 043000 | 30 | 339DC03 | WHR Boiler Discharge | 0.84 | 2.97 | 0.45 | 1.59 | | | | | |
| Clinker Handling | 043000 | 31 | 339DC04 | Hot Clinker Bin | 0.84 | 7.10 | 0.45 | 3.80 | | | | | |
| Clinker Handling | 043000 | 32 | 339DC06 | Hot Clinker Bin Truck loadout | 0.84 | 3.05 | 0.45 | 1.63 | | | | | |
| Clinker Handling | 043000 | 33 | 339DC06 | Top of New Clinker Storage Silo | 0.84 | 3.55 | 0.45 | 1.90 | | | | | |
| Clinker Handling | 043000 | 34 | 339DC07 | Top of New Clinker Storage Silo | 0.84 | 3.55 | 0.45 | 1.90 | | | | | |
| Clinker Storage | 043000 | 38 | 411DC01 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 39 | 411DC03 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 40 | 411DC05 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 41 | 411DC07 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 42 | 411DC09 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 43 | 411DC11 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 44 | 411DC13 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 45 | 411DC15 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 46 | 411DC17 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 47 | 411DC19 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 38-A | 411DC02 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 39-A | 411DC04 | Clinker Storage Reclaim | 0.84 | 2.37 | 0.45 | 1.27 | | | | | |
| Clinker Storage | 043000 | 40-A | 411DC06 | Clinker Storage Reclaim | 0.84 | 0.00 | 0.45 | 0.00 | | | | | |
| Clinker Storage | 043000 | 41-A | 411DC08 | Clinker Storage Reclaim | 0.84 | 0.00 | 0.45 | 0.00 | | | | | |
| Clinker Storage | 043000 | 42-A | 411DC10 | Clinker Storage Reclaim | 0.84 | 0.00 | 0.45 | 0.00 | | | | | |
| Clinker Storage | 043000 | 43-A | 411DC12 | Clinker Storage Reclaim | 0.84 | 0.00 | 0.45 | 0.00 | | | | | |
| Clinker Storage | 043000 | 44-A | 411DC14 | Clinker Storage Reclaim | 0.84 | 0.00 | 0.45 | 0.00 | | | | | |
| Clinker Storage | 043000 | 45-A | 411DC16 | Clinker Storage Reclaim | 0.84 | 0.00 | 0.45 | 0.00 | | | | | |
| Clinker Storage | 043000 | 46-A | 411DC18 | Clinker Storage Reclaim | 0.84 | 0.00 | 0.45 | 0.00 | | | | | |
| Clinker Storage | 043000 | 47-A | 411DC20 | Clinker Storage Reclaim | 0.84 | 0.00 | 0.45 | 0.00 | | | | | |

| Process Area | Emission Unit | DC No. | Emission Point ID | Equipment Description | PM10 Fraction | PM10 Emis TPY | PM2.5 Fraction | PM2.5 Emis TPY | Stack Height ft | Diameter | | Velocity | |
|---------------------------------|---------------|--------|-------------------|---|---------------|---------------|----------------|----------------|-----------------|----------|------|----------|------|
| | | | | | | | | | | ft | m | ft/s | m/s |
| Clinker Storage | 043000 | 50 | 411DC13 | Clinker Reclaim Discharge to Belt | 0.84 | 3.69 | 0.45 | 1.98 | | | | | |
| Clinker Storage | 043000 | 51 | 411DC14 | Clinker Reclaim Discharge to Belt | 0.84 | 3.69 | 0.45 | 1.98 | | | | | |
| Clinker Conv | 043000 | 87 | 309DC03 | Transfer pt - Pan to belt conveyors | 0.84 | 4.20 | 0.45 | 2.25 | | | | | |
| Clinker Conv | 043000 | 91 | 339DC08 | B/E to belt (Old Clinker storage to New | 0.84 | 3.44 | 0.45 | 1.84 | | | | | |
| Subtotal | 043000 | | | | | 69.99 | | 37.49 | | | | | |
| CM1 | 051000 | 105 | 416DC04 | FM 1 Dust Bin to bypass Cement Cool | 0.84 | 0.57 | 0.45 | 0.30 | | | | | |
| CM1 | 051000 | 107 | 416DC03 | Existing FM 1 HES Dust Collector | 0.84 | 32.35 | 0.45 | 17.33 | | | | | |
| Subtotal | 051000 | | | | | 32.91 | | 17.63 | | | | | |
| CM3 | 053000 | 79 | 436DC03 | Existing Finish Mill 3 HES | 0.84 | 32.35 | 0.45 | 17.33 | | | | | |
| CM3 | 053000 | 106 | 436DC04 | FM 3 Dust Bin to bypass Cement Cool | 0.84 | 0.57 | 0.45 | 0.30 | | | | | |
| Subtotal | 053000 | | | | | 32.91 | | 17.63 | | | | | |
| FM Additives | 055000 | 35 | 403DC01 | Tripper Discharge | 0.84 | 4.59 | 0.45 | 2.46 | | | | | |
| FM Additives | 055000 | 36 | 403DC02 | Additives Transfer Pt (belt to belt) | 0.84 | 4.59 | 0.45 | 2.46 | | | | | |
| FM Additives | 055000 | 56 | 463DC01 | Ck reclaim from bin | 0.84 | 3.45 | 0.45 | 1.85 | | | | | |
| FM Additives | 055000 | 57 | 463DC02 | Additives reclaim from bin | 0.84 | 2.47 | 0.45 | 1.32 | | | | | |
| FM5 | 055000 | 58 | 463DC03 | FM5 feed | 0.84 | 1.05 | 0.45 | 0.56 | | | | | |
| FM5 | 055000 | 59 | 463DC04 | FM5 Stack | 0.84 | 85.31 | 0.45 | 45.70 | 145 | 13.12 | 4.00 | 51.8 | 15.8 |
| FM5 | 055000 | 60 | 465DC01 | FM5 Reject Bin/Bin Reclaim | 0.84 | 1.70 | 0.45 | 0.91 | | | | | |
| FM5 | 055000 | 92 | 456DC06 | CKD Bin to FM transport airside | 0.84 | 0.57 | 0.45 | 0.30 | | | | | |
| FM Additives | 055000 | 95 | 403DC03 | Transfer pt - clinker to BUCKET ELEV | 0.84 | 4.93 | 0.45 | 2.64 | | | | | |
| FM Additives | 055000 | 96 | 453DC01 | Clinker Silo Feed for FM5 | 0.84 | 6.34 | 0.45 | 3.40 | | | | | |
| FM Additives | 055000 | 97 | 453DC02 | Additives for FM5 | 0.84 | 2.48 | 0.45 | 1.33 | | | | | |
| FM Additives | 055000 | 98 | 453DC03 | Bin Vent for Additives for FM5 | 0.84 | 2.48 | 0.45 | 1.33 | | | | | |
| FM Additives | 055000 | 99 | 453DC04 | Bin Vent for Additives for FM5 | 0.84 | 2.48 | 0.45 | 1.33 | | | | | |
| Subtotal | 055000 | | | | | 122.46 | | 65.60 | | | | | |
| Cement Trans | 071100 | 78 | 408DC01 | Cement Transfer to Silos | 0.84 | 2.78 | 0.45 | 1.49 | | | | | |
| Grand Total | | | | | | 570.32 | | 305.53 | | | | | |
| Total w/o Kiln & Clinker Cooler | | | | | | 367.33 | | 196.78 | | | | | |

Emissions from External Combustion

Finish Mill #5 Hot Gas Generator

Maximum Hourly Emissions:

| Emission Unit | Exhaust Point ID | Description | Fuel | SO2 lbs/hr | NOx lbs/hr | CO lbs/hr | VOC lbs/hr |
|---------------|------------------|--------------------|-------------|------------|------------|-----------|------------|
| 055000 | 59 | FM #5 Dryer Burner | NG/fuel oil | 11.57 | 3.26 | 1.71 | 0.11 |
| | | Total | | 11.57 | 3.26 | 1.71 | 0.11 |

Maximum Annual Emissions:

| Emission Unit | Exhaust Point ID | Description | Fuel | Operating Hours | SO2 tons/yr | NOx tons/yr | CO tons/yr | VOC tons/yr |
|---------------|------------------|--------------------|-------------|-----------------|-------------|-------------|------------|-------------|
| 055000 | 59 | FM #5 Dryer Burner | NG/fuel oil | 400 | 2.31 | 0.65 | 0.34 | 0.02 |
| | | Total | | | 2.31 | 0.65 | 0.34 | 0.02 |

Notes:

Maximum emissions are higher of either natural gas or fuel oil combustion. HGG operates as needed during startup periods (average approximately 1 hr/day) Controlled PM emissions from fuel combustion are negligible; PM emissions are included elsewhere in the finish mill dust collector emission estimates.

Case 1 - Natural Gas Burning

Hourly Emissions:

| Emission Unit | Exhaust Point ID | Description | Fuel | Heat Value Btu/scf | Fuel Rate MMscf/hr | Heat Input MMBtu/hr | SO2 lbs/hr | NOx lbs/hr | CO lbs/hr | VOC lbs/hr |
|---------------|------------------|--------------------|-------------|--------------------|--------------------|---------------------|------------|------------|-----------|------------|
| 055000 | 59 | FM #5 Dryer Burner | Natural gas | 1,020 | 0.0204 | 20.8 | 0.0122 | 2.0404 | 1.7139 | 0.1122 |
| | | Total | | | 0.0204 | 20.8 | 0.0122 | 2.0404 | 1.7139 | 0.1122 |

Annual Emissions:

| Emission Unit | Exhaust Point ID | Description | Fuel | Operating Hours | Fuel Rate MMscf/yr | Heat Input MMBtu/yr | SO2 tons/yr | NOx tons/yr | CO tons/yr | VOC tons/yr |
|---------------|------------------|--------------------|-------------|-----------------|--------------------|---------------------|-------------|-------------|------------|-------------|
| 055000 | 59 | FM #5 Dryer Burner | Natural gas | 400 | 8.162 | 3,496 | 0.0024 | 0.4081 | 0.3428 | 0.0224 |
| | | Total | | | 8.162 | 3,496 | 0.0024 | 0.4081 | 0.3428 | 0.0224 |

Notes:

Burner firing rate 6.1 MW/hr / 0.2931 MW/MMBtu = 20.8 MMBtu/hr (startup only)

NG Emissions Basis:

| Pollutant | Emission Factor | EF Units | Source of EF |
|-----------------|-----------------|----------|-------------------|
| SO ₂ | 0.6 | lb/MMscf | AP-42 Table 1.4-2 |
| NO _x | 100 | lb/MMscf | AP-42 Table 1.4-1 |
| CO | 84 | lb/MMscf | AP-42 Table 1.4-1 |
| VOC | 5.5 | lb/MMscf | AP-42 Table 1.4-2 |

Case 2 - Fuel Oil Burning

Hourly Emissions:

| Emission Unit | Exhaust Point ID | Description | Fuel | Fuel Rate gal/hr | SO ₂ lbs/hr | NO _x lbs/hr | CO lbs/hr | VOC lbs/hr |
|---------------|------------------|--------------------|----------------|------------------|------------------------|------------------------|-----------|------------|
| 055000 | 59 | FM #5 Dryer Burner | No. 2 fuel oil | 163 | 11.5730 | 3.2600 | 0.8150 | 0.0326 |
| | | Total | | 163 | 11.5730 | 3.2600 | 0.8150 | 0.0326 |

Annual Emissions:

| Emission Unit | Exhaust Point ID | Description | Fuel | Operating Hours | Fuel Rate MMscf/yr | SO ₂ tons/yr | NO _x tons/yr | CO tons/yr | VOC tons/yr |
|---------------|------------------|--------------------|----------------|-----------------|--------------------|-------------------------|-------------------------|------------|-------------|
| 055000 | 59 | FM #5 Dryer Burner | No. 2 fuel oil | 400 | 65,200 | 2,3146 | 0.6520 | 0.1630 | 0.0065 |
| | | Total | | | 65,200 | 2,3146 | 0.6520 | 0.1630 | 0.0065 |

Notes:

Burner heat input 5 MM kcal/hr; firing rate 617 l/hr * 0.2642 gal/l = 163.0 gal/hr
Assume maximum 0.5% sulfur in fuel oil

Fuel Oil Emissions Basis:

| Pollutant | Emission Factor | EF Units | Source of EF |
|-----------------|-----------------|-------------|-------------------|
| SO ₂ | 71 | lb/1000 gal | AP-42 Table 1.3-1 |
| NO _x | 20 | lb/1000 gal | AP-42 Table 1.3-1 |
| CO | 5 | lb/1000 gal | AP-42 Table 1.3-1 |
| VOC | 0.2 | lb/1000 gal | AP-42 Table 1.3-3 |

| Process Group | Emission Unit | Emission Point ID | Description | Control Device | Material Processed | Operation hrs/yr | Note | Flow ACFM | Grain Loading gr/acf | PM Emiss lb/hr | PM Emiss TPY | PM10 Fraction | PM10 Emiss lb/hr | PM10 Emiss TPY | PM2.5 Fraction | |
|---------------|---------------|-------------------|-------------------------------|--------------------|--------------------|------------------|-------|-----------|----------------------|----------------|--------------|---------------|------------------|----------------|----------------|------|
| LCR, RX1 | 020000 | 34301 | Secondary Crusher D/C | DC | Raw mix | 8,760 | | 15,000 | 0.01 | 1.29 | 5.63 | 0.84 | 1.08 | 4.73 | 0.45 | |
| | 020000 | 46015 | East Storage Silo | DC | Limestone | 8,760 | 5 | 1,250 | 0.01 | 0.11 | 0.47 | 0.84 | 0.09 | 0.39 | 0.45 | |
| | 020000 | 46017 | Belt 7 Discharge D/C | DC | Raw mix | 8,760 | | 4,000 | 0.01 | 0.34 | 1.50 | 0.84 | 0.29 | 1.26 | 0.45 | |
| Subtotal | 020000 | | | | | | | | | 1.74 | 7.60 | | 1.46 | 6.39 | | |
| PUG | 042000 | 00100 | CKD Pugmill | DC | CKD | 4,380 | 1,5 | 4,500 | 0.01 | 0.39 | 0.84 | 0.84 | 0.32 | 0.71 | 0.45 | |
| | 042000 | 45201 | Kiln 2 Clinker Cooler D/C | DC | Clinker | 1,080 | 4,5 | 137,500 | 0.01 | 11.79 | 6.36 | 0.84 | 9.90 | 5.35 | 0.45 | |
| | 042000 | 46008 | Silo 8 D/C | DC | Clinker | 8,760 | | 5,000 | 0.01 | 0.43 | 1.88 | 0.84 | 0.36 | 1.58 | 0.45 | |
| | 042000 | 46011 | Silo 11 D/C | DC | Clinker | 8,760 | | 5,000 | 0.01 | 0.43 | 1.88 | 0.84 | 0.36 | 1.58 | 0.45 | |
| | Subtotal | 042000 | | | | | | | | 13.03 | 10.96 | | 10.94 | 9.21 | | |
| CM1 | 051000 | 52101 | CM 1 Auxillary D/C | DC | Cement | 8,760 | | 10,200 | 0.01 | 0.87 | 3.83 | 0.84 | 0.73 | 3.22 | 0.45 | |
| | 051000 | 53101 | CM 1 Discharge D/C | DC | Cement | 8,760 | | 25,000 | 0.01 | 2.14 | 9.39 | 0.84 | 1.80 | 7.88 | 0.45 | |
| | Subtotal | 051000 | | | | | | | | 3.02 | 13.22 | | 2.53 | 11.10 | | |
| CM3 | 053000 | 52301 | CM 3 Auxillary D/C | DC | Cement | 8,760 | | 10,200 | 0.01 | 0.87 | 3.83 | 0.84 | 0.73 | 3.22 | 0.45 | |
| | 053000 | 53301 | CM 3 Discharge D/C | DC | Cement | 8,760 | | 25,000 | 0.01 | 2.14 | 9.39 | 0.84 | 1.80 | 7.88 | 0.45 | |
| | Subtotal | 053000 | | | | | | | | 3.02 | 13.22 | | 2.53 | 11.10 | | |
| CL1 | 071000 | 46014 | Masonry Silo D/C | DC | Cement | 8,760 | | 2,000 | 0.01 | 0.17 | 0.75 | 0.84 | 0.14 | 0.63 | 0.45 | |
| | 071000 | 62002 | Customer Silos 1,9 D/C | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |
| | 071000 | 62003 | Customer Silos 2,10,11 D/C | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |
| | 071000 | 62004 | Customer Silos 3,4,12 D/C | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |
| | 071000 | 62005 | Customer Silos 5,13 D/C | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |
| | 071000 | 62006 | Customer Silos 6,7,8,14,15,16 | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |
| | 071000 | 62007 | West Truck Loading D/C | DC | Cement | 3,006 | | 7,000 | 0.01 | 0.60 | 0.90 | 0.84 | 0.50 | 0.76 | 0.45 | |
| | 071000 | 62008 | East Truck Loading D/C | DC | Cement | 3,006 | | 7,000 | 0.01 | 0.60 | 0.90 | 0.84 | 0.50 | 0.76 | 0.45 | |
| | 071000 | 62009 | Railcar Loading D/C | DC | Cement | 1,288 | | 7,000 | 0.01 | 0.60 | 0.39 | 0.84 | 0.50 | 0.32 | 0.45 | |
| | BAG | 071000 | 63001 | Bagging D/C (West) | DC | Cement | 2,097 | | 6,000 | 0.01 | 0.51 | 0.54 | 0.84 | 0.43 | 0.45 | 0.45 |
| | BAG | 071000 | 63002 | Bagging D/C (East) | DC | Cement | 2,097 | | 6,000 | 0.01 | 0.51 | 0.54 | 0.84 | 0.43 | 0.45 | 0.45 |
| | PVC | 071000 | 63003 | Packhouse Vacuum | DC | Cement | 2,097 | | 120 | 0.01 | 0.01 | 0.01 | 0.84 | 0.01 | 0.01 | 0.45 |
| | PBS | 071000 | 63004 | Bag Shredder D/C | DC | Cement | 832 | | 4,000 | 0.01 | 0.34 | 0.14 | 0.84 | 0.29 | 0.12 | 0.45 |
| Subtotal | 071000 | | | | | | | | | 5.71 | 14.50 | | 4.80 | 12.18 | | |
| 072000 | 072000 | 55001 | Buffer Silo #6 D/C | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |
| | 072000 | 55002 | Buffer Silo #5 D/C | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |
| | 072000 | 55003 | Buffer Silo #4 D/C | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |
| | 072000 | 55004 | Buffer Silo #3 D/C | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |
| | 072000 | 55005 | Buffer Silo #2 D/C | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |

| Process Group | Emission Unit | Emission Point ID | Description | Control Device | Material Processed | Operation hrs/yr | Note | Flow ACFM | Grain Loading gr/acf | PM Emission lb/hr | PM Emission TPY | PM10 Fraction | PM10 Emission lb/hr | PM10 Emission TPY | PM2.5 Fraction | |
|---------------------------------|---------------|-------------------|-----------------------------------|----------------|--------------------|------------------|------|-----------|----------------------|-------------------|-----------------|---------------|---------------------|-------------------|----------------|--|
| | 072000 | 55006 | Buffer Silo #1 D/C | DC | Cement | 8,760 | | 5,500 | 0.01 | 0.47 | 2.06 | 0.84 | 0.40 | 1.73 | 0.45 | |
| | 072000 | 57001 | Buffer Silo Trans. to Belt 8A | DC | Cement | 3,000 | | 5,000 | 0.01 | 0.43 | 0.64 | 0.84 | 0.36 | 0.54 | 0.45 | |
| | 072000 | 57002 | Belt 8A/8B Transfer House | DC | Cement | 3,000 | | 6,000 | 0.01 | 0.51 | 0.77 | 0.84 | 0.43 | 0.65 | 0.45 | |
| | 072000 | 57003 | Belt 8A/9 Transfer House | DC | Cement | 3,000 | | 3,000 | 0.01 | 0.26 | 0.39 | 0.84 | 0.22 | 0.32 | 0.45 | |
| CMX | 072000 | 62001 | Transfer to/from Buffer Silo Belt | DC | Cement | 8,760 | | 5,660 | 0.01 | 0.49 | 2.12 | 0.84 | 0.41 | 1.78 | 0.45 | |
| Subtotal | 072000 | | | | | | | | | 4.51 | 16.31 | | 3.79 | 13.70 | | |
| PCR | 090000 | 32002 | Primary Crusher-Rock Box D/C | DC | Limestone | 5,173 | | 3,000 | 0.01 | 0.26 | 0.67 | 0.84 | 0.22 | 0.56 | 0.45 | |
| PCR | 090000 | 32002 | Primary Crusher-Belt 1 D/C | DC | Limestone | 5,173 | | 4,500 | 0.01 | 0.39 | 1.00 | 0.84 | 0.32 | 0.84 | 0.45 | |
| Subtotal | 090000 | | | | | | | | | 0.64 | 1.66 | | 0.54 | 1.40 | | |
| CMB | 100000 | 58001 | Transfer from Belt 9 to Barge | DC | Cement | 3,000 | | 10,000 | 0.01 | 0.86 | 1.29 | 0.84 | 0.72 | 1.08 | 0.45 | |
| | | | Grand Total | | | 37 | | | | 32.52 | 78.76 | | 27.32 | 66.15 | | |
| EXISTING UNITS TO BE ELIMINATED | | | | | | | | | | | | | | | | |
| RM1 | | 35101 | Raw Mill 1 Scrubber | IPS | Raw mix | 0 | 2,6 | 10,000 | 0.02 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| RM2 | | 35201 | Raw Mill 2 Scrubber | IPS | Raw mix | 0 | 2,6 | 10,000 | 0.02 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| K12 | | 43101 | Main Kiln Stack | ESPs | CKD | 0 | 6 | 880,000 | | 0.00 | 0.00 | 0.85 | 0.00 | 0.00 | 0.64 | |
| DS1 | | 43102 | Kiln 1 Feed End D/C | DC | Raw mix | 0 | 6 | 4,000 | 0.02 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| DS1 | | 43103 | Dust Scoop D/C | DC | CKD | 0 | 6 | 15,000 | 0.02 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| | | 43106 | CKD Loadout | DC | CKD | 0 | 5,6 | 1,000 | 0.01 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| CC1 | | 45101 | Kiln 1 Clinker Cooler D/C | DC | Clinker | 0 | 6 | 137,500 | | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| FAX | | 46012 | Fly Ash Silo (W) D/C | DC | Fly ash | 0 | 6 | 7,000 | 0.02 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| FAX | | 46013 | Fly Ash Transfer D/C | DC | Fly ash | 0 | 6 | 2,500 | 0.02 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| CX2 | | 46018 | Kiln 1 Clinker Transport D/C | DC | Clinker | 0 | 6 | 22,000 | 0.02 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| CX2 | | 46019 | Kiln 2 Clinker Transport D/C | DC | Clinker | 0 | 6 | 16,050 | 0.02 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| CM2 | | 52201 | CM 2 Auxillary D/C | DC | Cement | 0 | 6 | 10,200 | 0.01 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| CM4 | | 52401 | CM 4 Auxillary D/C | DC | Cement | 0 | 6 | 21,000 | 0.01 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| FX1 | | 53102 | CM 1 Separator D/C | DC | Cement | 0 | 3 | 45,000 | 0.01 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| CM2 | | 53201 | CM 2 Discharge D/C | DC | Cement | 0 | 6 | 25,000 | 0.01 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| FX2 | | 53202 | CM 2 Separator D/C | DC | Cement | 0 | 6 | 45,000 | 0.01 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| FX3 | | 53302 | CM 3 Separator D/C | DC | Cement | 0 | 3 | 45,000 | 0.01 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| CM4 | | 53401 | CM 4 Discharge D/C | DC | Cement | 0 | 5,6 | 20,000 | 0.01 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| FX4 | | 53402 | CM 4 West Separator D/C | DC | Cement | 0 | 6 | 48,000 | 0.01 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| FX5 | | 53403 | CM 4 East Separator D/C | DC | Cement | 0 | 6 | 48,000 | 0.01 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |
| KCM | | 62010 | K-Cement Railcar Loading | DC | Cement | 0 | 2,6 | 1,800 | 0.02 | 0.00 | 0.00 | 0.84 | 0.00 | 0.00 | 0.45 | |

| Process Group | Emission Unit | Emission Point ID | Description | Control Device | Material Processed | Operation hrs/yr | Note | Flow ACFM | Grain Loading gr/acf | PM Emission lb/hr | PM Fraction | PM10 Emission lb/hr | PM10 Emission TPY | PM2.5 Fraction |
|---------------|---------------|-------------------|-------------|----------------|--------------------|------------------|------|-----------|----------------------|-------------------|-------------|---------------------|-------------------|----------------|
|---------------|---------------|-------------------|-------------|----------------|--------------------|------------------|------|-----------|----------------------|-------------------|-------------|---------------------|-------------------|----------------|

Notes

- 1 CKD pelletizer was replaced with a pugmill and 4500 acfm DC in late 2005
- 2 Equipment is not operational or does not exist
- 3 Cement Mills 1 and 3 separators to be modified and dust collectors replaced (see New Point Sources sheet for replacement units)
- 4 One existing clinker cooler baghouse to vent existing clinker storage building only when the new kiln is not operating.
- 5 Source added or modified after 2004-2005 baseline period
- 6 Source to be permanently shut down

| Process Group | Emission Unit | Emission Point ID | Description | PM2.5 Emiss lb/hr | PM2.5 Emiss TPY |
|---------------|---------------|-------------------|-------------------------------|-------------------|-----------------|
| LCR, RX1 | 020000 | 34301 | Secondary Crusher D/C | 0.58 | 2.53 |
| | 020000 | 46015 | East Storage Silo | 0.05 | 0.21 |
| | 020000 | 46017 | Belt 7 Discharge D/C | 0.15 | 0.68 |
| Subtotal | 020000 | | | 0.78 | 3.42 |
| PUG | 042000 | 00100 | CKD Pugmill | 0.17 | 0.38 |
| | 042000 | 45201 | Kiln 2 Clinker Cooler D/C | 5.30 | 2.86 |
| | 042000 | 46008 | Silo 8 D/C | 0.19 | 0.84 |
| | 042000 | 46011 | Silo 11 D/C | 0.19 | 0.84 |
| | Subtotal | 042000 | | | 5.86 |
| CM1 | 051000 | 52101 | CM 1 Auxillary D/C | 0.39 | 1.72 |
| | 051000 | 53101 | CM 1 Discharge D/C | 0.96 | 4.22 |
| | Subtotal | 051000 | | 1.36 | 5.95 |
| CM3 | 053000 | 52301 | CM 3 Auxillary D/C | 0.39 | 1.72 |
| | 053000 | 53301 | CM 3 Discharge D/C | 0.96 | 4.22 |
| | Subtotal | 053000 | | 1.36 | 5.95 |
| CL1 | 071000 | 46014 | Masonry Silo D/C | 0.08 | 0.34 |
| | 071000 | 62002 | Customer Silos 1,9 D/C | 0.21 | 0.93 |
| | 071000 | 62003 | Customer Silos 2,10,11 D/C | 0.21 | 0.93 |
| | 071000 | 62004 | Customer Silos 3,4,12 D/C | 0.21 | 0.93 |
| | 071000 | 62005 | Customer Silos 5,13 D/C | 0.21 | 0.93 |
| | 071000 | 62006 | Customer Silos 6,7,8,14,15,16 | 0.21 | 0.93 |
| | 071000 | 62007 | West Truck Loading D/C | 0.27 | 0.41 |
| | 071000 | 62008 | East Truck Loading D/C | 0.27 | 0.41 |
| | 071000 | 62009 | Railcar Loading D/C | 0.27 | 0.17 |
| | 071000 | 63001 | Bagging D/C (West) | 0.23 | 0.24 |
| | 071000 | 63002 | Bagging D/C (East) | 0.23 | 0.24 |
| BAG | 071000 | 63003 | Packhouse Vacuum | 0.00 | 0.00 |
| | 071000 | 63004 | Bag Shredder D/C | 0.15 | 0.06 |
| | Subtotal | 071000 | | 2.57 | 6.52 |
| CL2 | 072000 | 55001 | Buffer Silo #6 D/C | 0.21 | 0.93 |
| | 072000 | 55002 | Buffer Silo #5 D/C | 0.21 | 0.93 |
| | 072000 | 55003 | Buffer Silo #4 D/C | 0.21 | 0.93 |
| | 072000 | 55004 | Buffer Silo #3 D/C | 0.21 | 0.93 |
| | 072000 | 55005 | Buffer Silo #2 D/C | 0.21 | 0.93 |

| Process Group | Emission Unit | Emission Point ID | Description | PM2.5 Emis lb/hr | PM2.5 Emis TPY |
|---------------|---------------|-------------------|-----------------------------------|------------------|----------------|
| | 072000 | 55006 | Buffer Silo #1 D/C | 0.21 | 0.93 |
| | 072000 | 57001 | Buffer Silo Trans. to Belt 8A | 0.19 | 0.29 |
| | 072000 | 57002 | Belt 8A/8B Transfer House | 0.23 | 0.35 |
| | 072000 | 57003 | Belt 8A/9 Transfer House | 0.12 | 0.17 |
| CMX | 072000 | 62001 | Transfer to/from Buffer Silo Belt | 0.22 | 0.96 |
| Subtotal | 072000 | | | 2.03 | 7.34 |
| PCR | 090000 | 32002 | Primary Crusher-Rock Box D/C | 0.12 | 0.30 |
| PCR | 090000 | 32002 | Primary Crusher-Belt 1 D/C | 0.17 | 0.45 |
| Subtotal | 090000 | | | 0.29 | 0.75 |
| CMB | 100000 | 58001 | Transfer from Belt 9 to Barge | 0.39 | 0.58 |
| | | | Grand Total | 14.64 | 35.44 |

EXISTING UNITS TO BE ELIMINATED

| | | | | |
|-----|-------|------------------------------|------|------|
| RM1 | 35101 | Raw Mill 1 Scrubber | 0.00 | 0.00 |
| RM2 | 35201 | Raw Mill 2 Scrubber | 0.00 | 0.00 |
| K12 | 43101 | Main Kiln Stack | 0.00 | 0.00 |
| DS1 | 43102 | Kiln 1 Feed End D/C | 0.00 | 0.00 |
| DS1 | 43103 | Dust Scoop D/C | 0.00 | 0.00 |
| | 43106 | CKD Loadout | 0.00 | 0.00 |
| CC1 | 45101 | Kiln 1 Clinker Cooler D/C | 0.00 | 0.00 |
| FAX | 46012 | Fly Ash Silo (W) D/C | 0.00 | 0.00 |
| FAX | 46013 | Fly Ash Transfer D/C | 0.00 | 0.00 |
| CX2 | 46018 | Kiln 1 Clinker Transport D/C | 0.00 | 0.00 |
| CX2 | 46019 | Kiln 2 Clinker Transport D/C | 0.00 | 0.00 |
| CM2 | 52201 | CM 2 Auxiliary D/C | 0.00 | 0.00 |
| CM4 | 52401 | CM 4 Auxiliary D/C | 0.00 | 0.00 |
| FX1 | 53102 | CM 1 Separator D/C | 0.00 | 0.00 |
| CM2 | 53201 | CM 2 Discharge D/C | 0.00 | 0.00 |
| FX2 | 53202 | CM 2 Separator D/C | 0.00 | 0.00 |
| FX3 | 53302 | CM 3 Separator D/C | 0.00 | 0.00 |
| CM4 | 53401 | CM 4 Discharge D/C | 0.00 | 0.00 |
| FX4 | 53402 | CM 4 West Separator D/C | 0.00 | 0.00 |
| FX5 | 53403 | CM 4 East Separator D/C | 0.00 | 0.00 |
| KCM | 62010 | K-Cement Railcar Loading | 0.00 | 0.00 |

| Process Group | Emission Unit | Emission Point ID | Description | PM2.5 Emiss lb/hr | PM2.5 Emiss TPY |
|---------------|---------------|-------------------|-------------|-------------------|-----------------|
|---------------|---------------|-------------------|-------------|-------------------|-----------------|

Notes

- 1 CKD pelletizer was replaced with a pugmill ar
- 2 Equipment is not operational or does not exis
- 3 Cement Mills 1 and 3 separators to be modifi.
- 4 One existing clinker cooler baghouse to vent
- 5 Source added or modified after 2004-2005 be
- 6 Source to be permanently shut down

Emission Factor Calculation Sheet (Fugitives)

| Material Transfer Operations | | PM | PM-10 | PM-2.5 |
|---|------|----------|----------|----------|
| k (particle size multiplier) | | 0.74 | 0.35 | 0.053 |
| Mean Wind Speed (mph) Albany, NY | 8.9 | | | |
| <i>(Source: NCDC, long-term average)</i> | | | | |
| Limestone Average Moisture Content (%) | 3 | 2.84E-03 | 1.34E-03 | 2.03E-04 |
| Bauxite Average Moisture Content (%) | 12 | 4.08E-04 | 1.93E-04 | 2.92E-05 |
| Coal Average Moisture Content (%) As Rcvd | 3.2 | 2.60E-03 | 1.23E-03 | 1.86E-04 |
| Coke Average Moisture Content (%) | 3.3 | 2.49E-03 | 1.18E-03 | 1.78E-04 |
| Gypsum Average Moisture Content (%) | 15 | 2.98E-04 | 1.41E-04 | 2.14E-05 |
| Iron Average Moisture Content (%) | 9 | 6.10E-04 | 2.89E-04 | 4.37E-05 |
| Clinker Average Moisture Content (%) | 0.05 | 8.77E-01 | 4.15E-01 | 6.28E-02 |
| Additives Average Moisture Content (%) | 10 | 5.26E-04 | 2.49E-04 | 3.77E-05 |
| Raw Mix Average Moisture Content (%) | 4 | 1.90E-03 | 8.98E-04 | 1.36E-04 |
| CKD (Dry) Moisture Content (%) | 0.05 | 8.77E-01 | 4.15E-01 | 6.28E-02 |
| CKD (Conditioned) Moisture Content (%) | 10 | 5.26E-04 | 2.49E-04 | 3.77E-05 |
| Overburden Average Moisture Content (%) | 2.1 | 4.68E-03 | 2.21E-03 | 3.35E-04 |

Material transfer factors from AP-42 Section 13.2.4.3 (Aggregate Handling and Storage Piles, 11/06)

$$E = k * 0.0032 * (U/5)^{1.3} / (M/2)^{1.4}$$

E = transfer emission factor (lb/ton)

k = particle size multiplier

U = mean wind speed (mph)

M = material moisture content (%)

| Crushing Operations | Reference | PM EF (lb/ton) | PM-10 EF (lb/ton) | PM-2.5 EF (lb/ton) |
|---------------------|-----------|----------------|-------------------|--------------------|
| Primary crusher | 1 | 0.0012 | 0.00054 | 0.00010 |

1) AP-42 Table 11.19.2-2 (Crushed Stone Processing, 8/04) (wet crushing = controlled)

| Area (Flowsheet) | Emission Unit | Point ID | Status | Description | Material | Control Type | Efficiency % | Throughput | | TSP | | PM ₁₀ | |
|------------------------------|---------------|----------|----------|--|---------------------|----------------------|--------------|------------|----------------|---------|----------------|------------------|----------------|
| | | | | | | | | tons/yr | Factor lbs/ton | tons/yr | Factor lbs/ton | tons/yr | Factor lbs/ton |
| Secondary Crushing | 020000 | | Existing | Bauxite truck unloading | Bauxite | None | | 154,454 | 4.08E-04 | 0.03 | 1.93E-04 | 0.01 | 0.01 |
| Secondary Crushing | 020000 | | Existing | Gypsum truck unloading | Gypsum | None | | 161,059 | 2.98E-04 | 0.02 | 1.41E-04 | 0.01 | 0.01 |
| Secondary Crushing | 020000 | | Existing | Iron truck unloading | Iron Ore | None | | 48,396 | 6.10E-04 | 0.01 | 2.89E-04 | 0.01 | 0.01 |
| Secondary Crushing | 020000 | | Existing | Rock storage piles reclaim to Belt 3 | Limestone | U/G Enclosure | 90 | 4,401,088 | 2.84E-03 | 0.63 | 1.34E-03 | 0.30 | 0.30 |
| Secondary Crushing | 020000 | | Existing | Bauxite transfer to Stammer Feeder | Bauxite | None | | 87,442 | 4.08E-04 | 0.02 | 1.93E-04 | 0.01 | 0.01 |
| Secondary Crushing | 020000 | | Existing | Bauxite feeder to Belt 3 | Bauxite | U/G Enclosure | 90 | 87,442 | 4.08E-04 | 0.00 | 1.93E-04 | 0.00 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Iron storage pile reclaim to Belt 3 | Iron Ore | U/G Enclosure | 90 | 42,588 | 6.10E-04 | 0.00 | 2.89E-04 | 0.00 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Gypsum storage pile reclaim to Belt 3 | Gypsum | U/G Enclosure | 90 | 161,059 | 2.98E-04 | 0.00 | 1.41E-04 | 0.00 | 0.00 |
| Secondary Crushing | 020000 | 34101 | Existing | Coal rail shaker/unloading hopper | Coal & Coke | Enclosure | 50 | 493,850 | 2.60E-03 | 0.32 | 1.23E-03 | 0.15 | 0.15 |
| Secondary Crushing | 020000 | | Existing | Coal cracker | Coal & Coke | None | | 493,850 | 0.0012 | 0.30 | 0.00054 | 0.13 | 0.13 |
| Secondary Crushing | 020000 | NP21 | Existing | Coal Belt 4 | Coal & Coke | None | | 493,850 | 2.60E-03 | 0.64 | 1.23E-03 | 0.30 | 0.30 |
| Secondary Crushing | 020000 | | Existing | Coal Belt 5 | Coal | None | | 385,203 | 2.60E-03 | 0.50 | 1.23E-03 | 0.24 | 0.24 |
| Secondary Crushing | 020000 | 33005 | Existing | Belt 5 drop to coal pile | Coal | Telescope chute | 90 | 385,203 | 2.60E-03 | 0.05 | 1.23E-03 | 0.02 | 0.02 |
| Secondary Crushing | 020000 | | Existing | Coke Belt 6 | Coke | None | | 108,647 | 2.49E-03 | 0.14 | 1.18E-03 | 0.06 | 0.06 |
| Secondary Crushing | 020000 | | Existing | Belt 6 drop to coke pile | Coke | None | | 108,647 | 2.49E-03 | 0.14 | 1.18E-03 | 0.06 | 0.06 |
| Secondary Crushing | 020000 | NP23 | Existing | Auxiliary hopper/feeder | Limestone | None | | 128,847 | 2.49E-03 | 0.16 | 1.18E-03 | 0.08 | 0.08 |
| Secondary Crushing | 020000 | NP24 | Existing | Feeder to Belt 7 | Limestone | None | | 128,847 | 2.49E-03 | 0.16 | 1.18E-03 | 0.08 | 0.08 |
| Secondary Crushing | 020000 | | Existing | Raw Silos | Limestone (Becraft) | Enclosed in building | 90 | 40,000 | 2.84E-03 | 0.01 | 1.34E-03 | 0.00 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Raw Silos | Limestone (Finish) | Enclosed in building | 90 | 128,847 | 2.84E-03 | 0.02 | 1.34E-03 | 0.01 | 0.01 |
| Secondary Crushing | 020000 | | Existing | Raw Silos | Gypsum | Enclosed in building | 90 | 161,059 | 2.98E-04 | 0.00 | 1.41E-04 | 0.00 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Raw Silos | Iron Ore | Enclosed in building | 90 | 0 | 6.10E-04 | 0.00 | 2.89E-04 | 0.00 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Coal Silos | Coal & Coke | Enclosed in building | 90 | 0 | 2.60E-03 | 0.00 | 1.23E-03 | 0.00 | 0.00 |
| Secondary Crushing | 020000 | 50001 | Existing | Conveyor 12 drop to aggregate surge pile | Limestone | Spray system | 50 | 25,000 | 2.84E-03 | 0.02 | 1.34E-03 | 0.01 | 0.01 |
| Subtotal | | | | | | | | | | 3.16 | | 1.49 | 1.49 |
| Secondary Crushing | 021000 | | New | Limestone truck unloading | Limestone | None | | 135,289 | 2.84E-03 | 0.19 | 1.34E-03 | 0.09 | 0.09 |
| Prehomo Stocking | 021000 | | New | N/A - All sources are controlled | | | | | | | | | |
| Solid Fuel Reclaim & Feeding | 022000 | | New | Coal & Coke feeders | Coal & Coke | Water spray | 50 | 456,811 | 2.60E-03 | 0.30 | 1.23E-03 | 0.14 | 0.14 |
| Solid Fuel Reclaim & Feeding | 022000 | | New | Coal & Coke feeders to belt 632BC01 | Coal & Coke | Moisture & enclosure | 50 | 456,811 | 2.60E-03 | 0.30 | 1.23E-03 | 0.14 | 0.14 |
| Alternative Solid Fuel | 022000 | | New | ASF hopper | ASF | None | | 66,667 | 2.84E-03 | 0.09 | 1.34E-03 | 0.04 | 0.04 |
| Alternative Solid Fuel | 022000 | | New | Primary crusher/shredder | ASF | Water spray | 50 | 66,667 | 1.20E-03 | 0.02 | 5.40E-04 | 0.01 | 0.01 |
| Alternative Solid Fuel | 022000 | | New | Secondary crusher/shredder | ASF | Water spray | 50 | 66,667 | 1.20E-03 | 0.02 | 5.40E-04 | 0.01 | 0.01 |
| Subtotal | | | | | | | | | | 0.73 | | 0.34 | 0.34 |
| Wet Scrubber | 041200 | | New | Centrifuge to belt | Gypsum | None | | 38,138 | 2.98E-04 | 0.01 | 1.41E-04 | 0.00 | 0.00 |

| Area (Flowsheet) | Emission | | Status | Description | Material | Control Type | Efficiency % | Throughput | | TSP | | PM ₁₀ | |
|-----------------------------------|----------|----------|----------|-----------------------------------|-------------|----------------------|--------------|------------|----------|---------|----------|------------------|---------|
| | Unit | Point ID | | | | | | tons/yr | lbs/ton | tons/yr | lbs/ton | tons/yr | lbs/ton |
| Wet Scrubber | 041200 | | New | Belt to pile | Gypsum | None | | 38,138 | 2.98E-04 | 0.01 | 1.41E-04 | 0.00 | |
| Wet Scrubber | 041200 | | New | Syngyp truck loading | Gypsum | None | | 38,138 | 2.98E-04 | 0.01 | 1.41E-04 | 0.00 | |
| Subtotal | 041200 | | | | | | | | 0.02 | | | 0.01 | |
| CKD System | 042000 | NP41 | Existing | Waste dust silo truck loadout | CKD | Water spray | 95 | 35,000 | 8.77E-01 | 0.77 | 4.15E-01 | 0.36 | |
| CKD System | 042000 | | Existing | CKD Pugmill truck loading | CKD | None | | 50,984 | 5.26E-04 | 0.01 | 2.49E-04 | 0.01 | |
| CKD System | 042000 | | Existing | CKD unloading (landfill) | CKD | None | | 50,984 | 5.26E-04 | 0.01 | 2.49E-04 | 0.01 | |
| Clinker Handling | 042000 | NP40 | Existing | Clinker drop to storage hall | Clinker | Enclosed & vented* | 99 | 266,799 | 8.77E-01 | 1.17 | 4.15E-01 | 0.55 | |
| Subtotal | 042000 | | | | | | | | 1.96 | | | 0.93 | |
| Finish Mill 5 | 055000 | | New | FM5 Auxilliary hopper/feeder | Gypsum | None | | 161,059 | 2.98E-04 | 0.02 | 1.41E-04 | 0.01 | |
| Finish Mill 5 | 055000 | | New | Belt conveyor 456BC02 | Gypsum | None | | 161,059 | 2.98E-04 | 0.02 | 1.41E-04 | 0.01 | |
| Finish Mill 5 | 055000 | | New | Transfer to belt 465BC01 | Gypsum | None | | 161,059 | 2.98E-04 | 0.02 | 1.41E-04 | 0.01 | |
| Subtotal | 055000 | | | | | | | | 0.07 | | | 0.03 | |
| Primary Crushing | 090000 | | Existing | Truck unloading to crusher hopper | Limestone | None | | 5,849,742 | 2.84E-03 | 8.31 | 1.34E-03 | 3.93 | |
| Primary Crushing | 090000 | | Existing | Primary crusher | Limestone | None | | 5,849,742 | 0.0012 | 3.51 | 0.00054 | 1.58 | |
| Primary Crushing | 090000 | NP20 | Existing | Belt 1 to Belt 2 transfer point | Limestone | Covered | 25 | 5,849,742 | 2.84E-03 | 6.23 | 1.34E-03 | 2.95 | |
| Primary Crushing | 090000 | 32001 | Existing | Belt 2 drop to storage piles | Limestone | Spray system | 50 | 5,849,742 | 2.84E-03 | 4.15 | 1.34E-03 | 1.96 | |
| Subtotal | 090000 | | | | | | | | 22.20 | | | 10.42 | |
| Barge Unloading | 1000000 | | Existing | Gypsum barge unloading hopper | Gypsum | None | | 189,481 | 2.98E-04 | 0.03 | 1.41E-04 | 0.01 | |
| Barge Unloading | 1000000 | 34401 | Existing | Gypsum unloading belt | Gypsum | Water spray | 50 | 189,481 | 2.98E-04 | 0.01 | 1.41E-04 | 0.01 | |
| Barge Unloading | 1000000 | | Existing | Gypsum belt drop to pile | Gypsum | Water spray | 50 | 189,481 | 2.98E-04 | 0.01 | 1.41E-04 | 0.01 | |
| Barge Unloading | 1000000 | | Existing | Gypsum truck loading | Gypsum | None | | 189,481 | 2.98E-04 | 0.03 | 1.41E-04 | 0.01 | |
| Subtotal | 1000000 | | | | | | | | 0.08 | | | 0.04 | |
| | | | | Grand total | | | | | 28.42 | | | 13.35 | |
| EXISTING SOURCES TO BE ELIMINATED | | | | | | | | | | | | | |
| Secondary Crushing | | | Existing | Coal reclaim hopper | Coal | None | | 0 | 2.60E-03 | 0.00 | 1.23E-03 | 0.00 | |
| Secondary Crushing | | NP22 | Existing | Coal Belt 6A | Coal | None | | 0 | 2.60E-03 | 0.00 | 1.23E-03 | 0.00 | |
| Raw Mill 1 | | | Existing | Raw Mill 1 additive belt | Additives | Enclosed in building | 90 | 0 | 5.26E-04 | 0.00 | 2.49E-04 | 0.00 | |
| Raw Mill 1 | | | Existing | Raw Mill 1 feed belt | Raw Mix | Enclosed in building | 90 | 0 | 1.90E-03 | 0.00 | 8.98E-04 | 0.00 | |
| Raw Mill 2 | | | Existing | Raw Mill 2 additive belt | Additives | Enclosed in building | 90 | 0 | 5.26E-04 | 0.00 | 2.49E-04 | 0.00 | |
| Raw Mill 2 | | | Existing | Raw Mill 2 feed belt | Raw Mix | Enclosed in building | 90 | 0 | 1.90E-03 | 0.00 | 8.98E-04 | 0.00 | |
| Fuel Preparation | | | Existing | Coal Silo 1 to Belt C235 | Coal & Coke | Enclosed in building | 90 | 0 | 2.60E-03 | 0.00 | 1.23E-03 | 0.00 | |

| Area (Flowsheet) | Emission | | Status | Description | Material | Control Type | Efficiency % | Throughput tons/yr | TSP | | PM ₁₀ | |
|------------------|----------|----------|----------|-----------------------------------|-------------|----------------------|--------------|--------------------|----------------|---------|------------------|---------|
| | Unit | Point ID | | | | | | | Factor lbs/ton | tons/yr | Factor lbs/ton | tons/yr |
| Fuel Preparation | | | Existing | Belt C235 to feeder (Coal Mill 2) | Coal & Coke | Enclosed in building | 90 | 0 | 2.60E-03 | 0.00 | 1.23E-03 | 0.00 |
| Fuel Preparation | | | Existing | Coal Silo 2 to Belt C135 | Coal & Coke | Enclosed in building | 90 | 0 | 2.60E-03 | 0.00 | 1.23E-03 | 0.00 |
| Fuel Preparation | | | Existing | Belt C135 to feeder (Coal Mill 1) | Coal & Coke | Enclosed in building | 90 | 0 | 2.60E-03 | 0.00 | 1.23E-03 | 0.00 |

Notes

Equipment that is fully enclosed and/or vented to dust collectors are not included as fugitive sources.
* Clinker storage hall vented to clinker cooler air intake. Estimate 99% capture of fugitive emissions.

| Emission | | Emission | | PM _{2.5} | | | |
|------------------------------|--------|----------|----------|--|------------------------|-------------------|---------|
| Area (Flowsheet) | Unit | Point ID | Status | Description | Material | Factor lbs/ton | tons/yr |
| Secondary Crushing | 020000 | | Existing | Bauxite truck unloading | Bauxite | 2.92E-05 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Gypsum truck unloading | Gypsum | 2.14E-05 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Iron truck unloading | Iron Ore | 4.37E-05 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Rock storage piles reclaim to Belt 3 | Limestone | 2.03E-04 | 0.04 |
| Secondary Crushing | 020000 | | Existing | Bauxite transfer to Stamler Feeder | Bauxite | 2.92E-05 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Bauxite feeder to Belt 3 | Bauxite | 2.92E-05 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Iron storage pile reclaim to Belt 3 | Iron Ore | 4.37E-05 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Gypsum storage pile reclaim to Belt 3 | Gypsum | 2.14E-05 | 0.00 |
| Secondary Crushing | 020000 | 34101 | Existing | Coal rail shaker/unloading hopper | Coal & Coke | 1.86E-04 | 0.02 |
| Secondary Crushing | 020000 | | Existing | Coal cracker | Coal & Coke | 0.0001 | 0.02 |
| Secondary Crushing | 020000 | NP21 | Existing | Coal Belt 4 | Coal & Coke | 1.86E-04 | 0.05 |
| Secondary Crushing | 020000 | | Existing | Coal Belt 5 | Coal | 1.86E-04 | 0.04 |
| Secondary Crushing | 020000 | | Existing | Belt 5 drop to coal pile | Coal | 1.86E-04 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Coke Belt 6 | Coke | 1.78E-04 | 0.01 |
| Secondary Crushing | 020000 | | Existing | Belt 6 drop to coke pile | Coke | 1.78E-04 | 0.01 |
| Secondary Crushing | 020000 | NP23 | Existing | Auxiliary hopper/feeder | Limestone | 1.78E-04 | 0.01 |
| Secondary Crushing | 020000 | NP24 | Existing | Feeder to Belt 7 | Limestone | 1.78E-04 | 0.01 |
| Secondary Crushing | 020000 | | Existing | Raw Silos | Limestone (Becraft) | 2.03E-04 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Raw Silos | Limestone (Finish) | 2.03E-04 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Raw Silos | Gypsum | 2.14E-05 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Raw Silos | Iron Ore | 4.37E-05 | 0.00 |
| Secondary Crushing | 020000 | | Existing | Coal Silos | Coal & Coke | 1.86E-04 | 0.00 |
| Secondary Crushing | 020000 | 50001 | Existing | Conveyor 12 drop to aggregate surge pile | Limestone | 2.03E-04 | 0.00 |
| Subtotal | 020000 | | | | | | 0.23 |
| Secondary Crushing | 021000 | | New | Limestone truck unloading | Limestone | 2.03E-04 | 0.01 |
| Prehomo Stocking | 021000 | | New | N/A - All sources are controlled | | | |
| Solid Fuel Reclaim & Feeding | 022000 | | New | Coal & Coke feeders | Coal & Coke | 1.86E-04 | 0.02 |
| Solid Fuel Reclaim & Feeding | 022000 | | New | Coal & Coke feeders to belt 632BC01 | Coal & Coke | 1.86E-04 | 0.02 |
| Alternative Solid Fuel | 022000 | | New | ASF hopper | ASF | 2.03E-04 | 0.01 |
| Alternative Solid Fuel | 022000 | | New | Primary crusher/shredder | ASF | 1.00E-04 | 0.00 |
| Alternative Solid Fuel | 022000 | | New | Secondary crusher/shredder | ASF | 1.00E-04 | 0.00 |
| Subtotal | 022000 | | | | | | 0.05 |
| Wet Scrubber | 041200 | | New | Centrifuge to belt | Gypsum | 2.14E-05 | 0.00 |

| Area (Flowsheet) | | Emission | | Point ID | Status | Description | Material | PM _{2.5} | |
|-----------------------------------|---------|----------------|-----------------------------------|----------|--------|-------------|----------|-------------------|--|
| Unit | Unit | Factor lbs/ton | tons/yr | | | | | | |
| Wet Scrubber | 041200 | New | Belt to pile | | | Gypsum | 2.14E-05 | 0.00 | |
| Wet Scrubber | 041200 | New | Syngyp truck loading | | | Gypsum | 2.14E-05 | 0.00 | |
| Subtotal | 041200 | | | | | | | 0.00 | |
| CKD System | 042000 | Existing | Waste dust silo truck loadout | NP41 | | CKD | 6.28E-02 | 0.05 | |
| CKD System | 042000 | Existing | CKD Pugmill truck loading | | | CKD | 3.77E-05 | 0.00 | |
| CKD System | 042000 | Existing | CKD unloading (landfill) | | | CKD | 3.77E-05 | 0.00 | |
| Clinker Handling | 042000 | Existing | Clinker drop to storage hall | NP40 | | Clinker | 6.28E-02 | 0.08 | |
| Subtotal | 042000 | | | | | | | 0.14 | |
| Finish Mill 5 | 055000 | New | FM5 Auxilliary hopper/feeder | | | Gypsum | 2.14E-05 | 0.00 | |
| Finish Mill 5 | 055000 | New | Belt conveyor 456BC02 | | | Gypsum | 2.14E-05 | 0.00 | |
| Finish Mill 5 | 055000 | New | Transfer to belt 465BC01 | | | Gypsum | 2.14E-05 | 0.00 | |
| Subtotal | 055000 | | | | | | | 0.01 | |
| Primary Crushing | 090000 | Existing | Truck unloading to crusher hopper | | | Limestone | 2.03E-04 | 0.60 | |
| Primary Crushing | 090000 | Existing | Primary crusher | | | Limestone | 0.0001 | 0.29 | |
| Primary Crushing | 090000 | Existing | Belt 1 to Belt 2 transfer point | NP20 | | Limestone | 2.03E-04 | 0.45 | |
| Primary Crushing | 090000 | Existing | Belt 2 drop to storage piles | 32001 | | Limestone | 2.03E-04 | 0.30 | |
| Subtotal | 090000 | | | | | | | 1.63 | |
| Barge Unloading | 1000000 | Existing | Gypsum barge unloading hopper | | | Gypsum | 2.14E-05 | 0.00 | |
| Barge Unloading | 1000000 | Existing | Gypsum unloading belt | 34401 | | Gypsum | 2.14E-05 | 0.00 | |
| Barge Unloading | 1000000 | Existing | Gypsum belt drop to pile | | | Gypsum | 2.14E-05 | 0.00 | |
| Barge Unloading | 1000000 | Existing | Gypsum truck loading | | | Gypsum | 2.14E-05 | 0.00 | |
| Subtotal | 1000000 | | | | | | | 0.01 | |
| Grand total | | | | | | | | | |
| 2.08 | | | | | | | | | |
| EXISTING SOURCES TO BE ELIMINATED | | | | | | | | | |
| Secondary Crushing | | Existing | Coal reclaim hopper | | | Coal | 1.86E-04 | 0.00 | |
| Secondary Crushing | | Existing | Coal Belt 6A | NP22 | | Coal | 1.86E-04 | 0.00 | |
| Raw Mill 1 | | Existing | Raw Mill 1 additive belt | | | Additives | 3.77E-05 | 0.00 | |
| Raw Mill 1 | | Existing | Raw Mill 1 feed belt | | | Raw Mix | 1.36E-04 | 0.00 | |
| Raw Mill 2 | | Existing | Raw Mill 2 additive belt | | | Additives | 3.77E-05 | 0.00 | |
| Raw Mill 2 | | Existing | Raw Mill 2 feed belt | | | Raw Mix | 1.36E-04 | 0.00 | |
| Fuel Preparation | | Existing | Coal Silo 1 to Belt C235 | | | Coal & Coke | 1.86E-04 | 0.00 | |

| Area (Flowsheet) | Emission | | | Description | Material | PM _{2.5} | |
|------------------|----------|----------|----------|-----------------------------------|-------------|-------------------|---------|
| | Unit | Point ID | Status | | | Factor lbs/ton | tons/yr |
| Fuel Preparation | | | Existing | Belt C235 to feeder (Coal Mill 2) | Coal & Coke | 1.86E-04 | 0.00 |
| Fuel Preparation | | | Existing | Coal Silo 2 to Belt C135 | Coal & Coke | 1.86E-04 | 0.00 |
| Fuel Preparation | | | Existing | Belt C135 to feeder (Coal Mill 1) | Coal & Coke | 1.86E-04 | 0.00 |

Notes

Equipment that is fully enclosed and/or vented to dust collectors are not included as fugitive sources.
 * Clinker storage hall vented to clinker cooler air intake. Estimate 99% capture of fugitive emissions.

| Emission Point ID | Pile Material | Material Category | Moisture Content (%) | Throughput (tons/yr) | Storage Capacity (tons) | Active Days (n) | Silt Content (s) | Base Radius (ft) | Pile Height (ft) | PILE AREA (A) (acres) | Wind Speed > 12 mph (f) percent | Rain Days (p) | Control Efficiency (%) | TSP Emission Factor (lb/acre/day) | TSP Wind Emissions (T/yr) | PM10 Wind Emissions (T/yr) | PM2.5 Wind Emissions (T/yr) |
|-------------------|--------------------|-------------------|----------------------|----------------------|-------------------------|-----------------|------------------|------------------|------------------|-----------------------|---------------------------------|---------------|------------------------|-----------------------------------|---------------------------|----------------------------|-----------------------------|
| NP01 | Kalkberg | Limestone | 3.0 | 1,190,061 | 150,000 | 365 | 1.6 | 162.5 | 127 | 2.42 | 10 | 146 | 0 | 1.13 | 0.50 | 0.25 | 0.04 |
| NP02 | Beecraft | Limestone | 3.0 | 122,313 | 100,000 | 365 | 1.6 | 162.5 | 127 | 2.42 | 10 | 146 | 0 | 1.13 | 0.50 | 0.25 | 0.04 |
| NP03 | Coeymans | Limestone | 3.0 | 3,475,093 | 300,000 | 365 | 1.6 | 162.5 | 127 | 2.42 | 10 | 146 | 0 | 1.13 | 0.50 | 0.25 | 0.04 |
| NP04 | Callanan Aggregate | Limestone | 3.0 | 1,062,275 | 350,000 | 365 | 1.6 | 162.5 | 127 | 2.42 | 10 | 146 | 0 | 1.13 | 0.50 | 0.25 | 0.04 |
| NP05 | Aggregate (Surge) | Limestone | 3.0 | 25,000 | 50,000 | 365 | 1.6 | 120 | 90 | 1.30 | 10 | 146 | 0 | 1.13 | 0.27 | 0.13 | 0.02 |
| NP06 | Gypsum | Gypsum | 15.0 | 161,059 | 4,000 | 365 | 3.9 | 50 | 20 | 0.19 | 10 | 0 | 50 | 2.29 | 0.08 | 0.04 | 0.01 |
| NP10 | Bauxite | Bauxite | 12.0 | 87,442 | 15,000 | 365 | 4 | 100 | 25 | 0.74 | 10 | 0 | 50 | 2.35 | 0.32 | 0.16 | 0.02 |
| NP07 | Iron | Iron ore | 9.0 | 42,588 | 2,500 | 365 | 5.4 | 40 | 15 | 0.12 | 10 | 0 | 50 | 3.17 | 0.07 | 0.04 | 0.01 |
| NP08 | Coal | Coal | 3.2 | 385,203 | 100,000 | 365 | 4.6 | 238 | 100 | 4.43 | 10 | 146 | 0 | 3.24 | 2.62 | 1.31 | 0.20 |
| NP09 | Coke | Coke | 3.3 | 108,647 | 35,000 | 365 | 4.9 | 140 | 30 | 1.45 | 10 | 146 | 0 | 3.45 | 0.91 | 0.46 | 0.07 |
| TBA | PRB | Coal | 3.2 | See note | 35,000 | 365 | 4.9 | 140 | 30 | 1.45 | 10 | 146 | 0 | 3.45 | 0.91 | 0.46 | 0.07 |
| TBA | Limestone | Limestone | 3.0 | 135,289 | 50,000 | 365 | 1.6 | 100 | 25 | 0.74 | 10 | 146 | 0 | 1.13 | 0.15 | 0.08 | 0.01 |
| TBA | Gypsum (Barge) | Gypsum | 15.0 | 189,481 | 60,000 | 365 | 3.9 | 140 | 45 | 1.48 | 10 | 146 | 0 | 2.75 | 0.74 | 0.37 | 0.06 |
| Totals | | | | | | | | | | | | | | | | | |
| EU 091000 | | | | | | | | | | | | | | | | | |

Equation for Wind Erosion:

Reference: Control of Open Fugitive Dust Sources, EPA-450/3-88-008, p. 4-17

$$E_f = 1.7^{*}(s/1.5)^{*}(f/15)^{*}(365-p)/235^{*}(1-(C/100))$$

$$E = A^{*}n^{*}E_f/2000$$

TSP (lbs/acre/day)
TSP (tons/yr)

PM10 fraction =
PM2.5 fraction (AP-42) =

0.5
0.075

- s = Silt content of the aggregate (%)
- f = Percent of time that the unobstructed wind speed exceeds 12 mph at the mean pile height
- p = Number of days with >= 0.01 in. of precipitation per year
- C = Overall control efficiency (%)
- A = Size of the pile (acres)
- n = Number of days per year the pile is continuously active

Notes: Gypsum, iron, and bauxite piles are located under covered storage; wind effects are reduced by 50% due to partial enclosure; materials are not exposed to rain. PRB quantity included in coal quantity given above.

Quarry Miscellaneous Emissions Summary

| Emission Unit | Operation | TSP Emissions (Ton/yr) | Annual Emissions | |
|---------------|-------------------|------------------------|-------------------------|--------------------------|
| | | | PM10 Emissions (Ton/yr) | PM2.5 Emissions (Ton/yr) |
| 090000 | Drilling | 0.45 | 0.24 | 0.01 |
| 090000 | Blasting | 0.95 | 0.49 | 0.03 |
| 090000 | Bulldozing | 15.76 | 3.53 | 1.66 |
| 090000 | Loading/Unloading | 18.94 | 8.96 | 1.36 |
| Total | | 36.11 | 13.21 | 3.05 |

Quarry Drilling

| Emission Point ID | Material | Drill Footage (ft/yr) | Average Depth (ft/hole) | Number of Holes (holes/yr) | TSP Emission Factor (lb/hole) | Control Efficiency (%) | TSP Emissions (T/yr) | PM10 Emissions (T/yr) | PM2.5 Emissions (T/yr) |
|-------------------|-----------|-----------------------|-------------------------|----------------------------|-------------------------------|------------------------|----------------------|-----------------------|------------------------|
| NP92 | Limestone | 347,898 | 50 | 6,958 | 1.3 | 90 | 0.45 | 0.24 | 0.01 |

Notes

TSP emission factor from AP-42 Table 11.9-4

Assume PM10 and PM2.5 fractions are similar to emissions from blasting given below

Control efficiency based on drill rigs using dust collectors or water/methanol dust suppression

Quarry Blasting

| Emission Point ID | Material | Number of Blasts (blasts/yr) | Average Blast Area, A (sq ft) | TSP Emission Factor (lb/blast) | Control Efficiency (%) | TSP Emissions (T/yr) | PM10 Emissions (T/yr) | PM2.5 Emissions (T/yr) |
|-------------------|-----------|------------------------------|-------------------------------|--------------------------------|------------------------|----------------------|-----------------------|------------------------|
| NP93 | Limestone | 152 | 9,250 | 12.45 | 0 | 0.49 | 0.24 | 0.03 |

Notes

TSP emission factor (lb/blast) from AP-42 Table 11.9-1

$0.000014 \times (A)^{1.5}$

PM10 fraction is 0.52 from AP-42 Table 11.9-1

PM2.5 fraction is 0.03 from AP-42 Table 11.9-1

Bulldozing Overburden

| Emission Point ID | Material | Silt Content (%) | Moisture Content (%) | Dozing Hours (hrs/yr) | TSP Emission Factor (lb/hr) | TSP Emission Factor (lb/hr) | Control Efficiency (%) | TSP Emissions (T/yr) | PM10 Emissions (T/yr) | PM2.5 Emissions (T/yr) |
|-------------------|------------|------------------|----------------------|-----------------------|-----------------------------|-----------------------------|------------------------|----------------------|-----------------------|------------------------|
| NP94 | Overburden | 7.5 | 2.1 | 5,173 | 24.38 | 5.45 | 75 | 15.76 | 3.53 | 1.66 |

Notes

Assume overburden bulldozing hours are approximately the same as hours for primary crusher operation
 Assume 75% dust control with watering
 TSP emission factor (lb/hr) from AP-42 Table 11.9-1
 $5.7 \times (s)^{1.2} / (M)^{1.3}$
 PM10 emission factor (lb/hr) from AP-42 Table 11.9-1
 $0.75 \times 1.0 \times (s)^{1.5} / (M)^{1.4}$
 PM2.5 fraction of TSP is 0.105 from AP-42 Table 11.9-1

Truck Loading & Unloading

| Emission Point ID | Description | Material | Control % | Throughput tons/yr | TSP Factor lbs/ton | TSP tons/yr | PM10 Factor lbs/ton | PM10 tons/yr | PM2.5 Factor lbs/ton | PM2.5 tons/yr |
|-------------------|-----------------|-------------------|-----------|--------------------|--------------------|-------------|---------------------|--------------|----------------------|---------------|
| NP94 | Truck loading | Overburden | | 65,188 | 4.68E-03 | 0.15 | 2.21E-03 | 0.07 | 3.35E-04 | 0.01 |
| | Truck unloading | Overburden | | 65,188 | 4.68E-03 | 0.15 | 2.21E-03 | 0.07 | 3.35E-04 | 0.01 |
| NP95 | Truck loading | Limestone (total) | | 9,486,846 | 2.84E-03 | 13.47 | 1.34E-03 | 6.37 | 2.03E-04 | 0.97 |
| NP95 | Truck unloading | Limestone (waste) | | 3,637,104 | 2.84E-03 | 5.17 | 1.34E-03 | 2.44 | 2.03E-04 | 0.37 |
| | Total | | | | | 18.94 | | 8.96 | | 1.36 |

Note

Truck unloading of limestone to be crushed is included with emissions at primary crusher hopper

| Location | Material | Quantity Transported (tons/yr) | Vehicle Type | Vehicle Weight (Empty) | Load Capacity (tons) | Total Trips |
|----------|--------------------|--------------------------------|--------------|------------------------|----------------------|-------------|
| Quarry | New Scotland | 3,637,104 | Truck | 68 | 91 | 39,968 |
| Quarry | Coeymans | 3,475,093 | Truck | 68 | 91 | 38,188 |
| Quarry | Kalkberg | 1,190,061 | Truck | 68 | 91 | 13,078 |
| Quarry | Callanan Aggregate | 1,062,275 | Truck | 68 | 91 | 11,673 |
| Quarry | Beeecraft | 122,313 | Truck | 68 | 91 | 1,344 |
| Quarry | Overburden | 65,188 | Truck | 68 | 91 | 716 |

| | | | | | | |
|-------------|----------------|---------|-------|----|----|--------|
| Plant | Fly Ash | 0 | Truck | 20 | 25 | 0 |
| Plant | Iron | 48,396 | Truck | 20 | 25 | 1,936 |
| Plant | Bauxite | 154,454 | Truck | 20 | 25 | 6,178 |
| Plant | Limestone | 135,289 | Truck | 20 | 25 | 5,412 |
| Barge/Plant | Gypsum | 189,481 | Truck | 93 | 50 | 3,790 |
| Plant | Cement bulk | 901,930 | Truck | 20 | 25 | 36,077 |
| Plant | Cement bags | 161,059 | Truck | 20 | 25 | 6,442 |
| Plant | CKD (sales) | 35,000 | Truck | 20 | 25 | 1,400 |
| Plant | CKD (landfill) | 50,984 | Truck | 20 | 25 | 2,039 |
| Plant | TDF fuel | 36,545 | Truck | 20 | 25 | 1,462 |
| Plant | ASF fuel | 66,667 | Truck | 20 | 25 | 2,667 |

All Roads Emission Summary

| Road Type | Emission Unit | Area | Total Mileage (Mi/yr) | Annual Emissions | | |
|-------------|---------------|--------|-----------------------|------------------------|-------------------------|--------------------------|
| | | | | TSP Emissions (Ton/yr) | PM10 Emissions (Ton/yr) | PM2.5 Emissions (Ton/yr) |
| Unpaved | 090000 | Quarry | 136,036 | 207.14 | 58.90 | 5.89 |
| Paved | 091000 | Plant | 69,850 | 23.17 | 4.52 | 1.13 |
| Unpaved | 091000 | Plant | 51,970 | 54.13 | 15.39 | 1.54 |
| Subtotal | | | | 77.30 | 19.91 | 2.67 |
| Grand total | | | | 284.44 | 78.82 | 8.56 |

Paved Roads

| Route No. | Material Hauled | Round Trip (mi) | Silt Loading (g/m ²) | Truck Weight | | | Avg Weight (Tons) | Material Thruput (T/yr) | Material Trips (#/yr) | Total Mileage (MI/yr) | TSP E Factor lb/VMT | PM10 E Factor lb/VMT | PM2.5 E Factor lb/VMT | Control Efficiency (%) | TSP Emissions (Ton/yr) | PM10 Emissions (Ton/yr) | PM2.5 Emissions (Ton/yr) |
|-----------|-----------------|-----------------|----------------------------------|--------------|--------------|---------------|-------------------|-------------------------|-----------------------|-----------------------|---------------------|----------------------|-----------------------|------------------------|------------------------|-------------------------|--------------------------|
| | | | | Load (Tons) | Empty (Tons) | Loaded (Tons) | | | | | | | | | | | |
| PR1 | Fly Ash | 1.5 | 8.2 | 20 | 25 | 45 | 32.5 | 0 | 0 | 6.63 | 1.29 | 0.32 | 90 | 0.00 | 0.00 | 0.00 | |
| PR2 | Iron | 1.5 | 8.2 | 20 | 25 | 45 | 32.5 | 48,396 | 2,904 | 6.63 | 1.29 | 0.32 | 90 | 0.96 | 0.19 | 0.05 | |
| PR3 | Cement bulk | 1.5 | 8.2 | 20 | 25 | 45 | 32.5 | 901,930 | 54,116 | 6.63 | 1.29 | 0.32 | 90 | 17.95 | 3.50 | 0.87 | |
| PR4 | Cement bags | 1.5 | 8.2 | 20 | 25 | 45 | 32.5 | 161,059 | 9,664 | 6.63 | 1.29 | 0.32 | 90 | 3.21 | 0.63 | 0.16 | |
| PR5 | CKD sales | 1.5 | 8.2 | 20 | 25 | 45 | 32.5 | 35,000 | 1,400 | 6.63 | 1.29 | 0.32 | 90 | 0.70 | 0.14 | 0.03 | |
| PR6 | ASF | 0.4 | 8.2 | 20 | 25 | 45 | 32.5 | 66,667 | 1,067 | 6.63 | 1.29 | 0.32 | 90 | 0.35 | 0.07 | 0.02 | |
| Total | | | | | | | | | | 69,850 | | | | 23.17 | 4.52 | 1.13 | |

Notes:

Emissions based on AP-42 Section 13.2.1 (11/06), Equation (2).

$$E = [k * (sL/2)^{0.65} * (W/3)^{1.5} - C] * (1 - P/4N)$$

where

- E = emission factor, lb/VMT
- k = particle size multiplier
- sL = road surface silt loading, g/m²
- W = average vehicle weight, tons
- C = 1980's vehicle exhaust, brake & tire wear, lb/VMT
- P = number of days with >= 0.01 in precipitation
- N = number of days in the averaging period (365)
- k (PM-30) = 0.082 lb/VMT
- k (PM-10) = 0.016 lb/VMT
- k (PM-2.5) = 0.0024 lb/VMT
- C (PM-30) = 0.00047 lb/VMT
- C (PM-10) = 0.00047 lb/VMT
- C (PM-2.5) = 0.00036 lb/VMT
- P = 136 days (Albany average)

ASSUMPTION: 90% control efficiency assumed due to watering and sweeping (per Fugitive Dust Plan).

Unpaved Roads

| Route No. | Material Hauled | Round Trip (mi) | Surface Silt Content (%) | Truck Weights | | | Truck Weight | Material Thruput (T/yr) | Material Trips (#/yr) | Total Mileage (Mi/yr) | TSP E Factor lb/VMT | PM10 E Factor lb/VMT | PM2.5 E Factor lb/VMT | Control Efficiency (%) | TSP Emissions (Ton/yr) | PM10 Emissions (Ton/yr) | PM2.5 Emissions (Ton/yr) |
|-----------|--------------------|-----------------|--------------------------|---------------|----------|---------------|--------------|-------------------------|-----------------------|-----------------------|---------------------|----------------------|-----------------------|------------------------|------------------------|-------------------------|--------------------------|
| | | | | Empty (Tons) | Capacity | Loaded (Tons) | | | | | | | | | | | |
| UR1 | New Scotland | 1.6 | 8.3 | 68 | 91 | 159 | 113.5 | 3,637,104 | 39,968 | 63,949 | 12.18 | 3.46 | 0.35 | 75 | 97.38 | 27.69 | 2.77 |
| UR2 | Coeymans | 1.0 | 8.3 | 68 | 91 | 159 | 113.5 | 3,475,093 | 38,188 | 38,188 | 12.18 | 3.46 | 0.35 | 75 | 58.15 | 16.54 | 1.65 |
| UR3 | Kalkberg | 1.25 | 8.3 | 68 | 91 | 159 | 113.5 | 1,190,061 | 13,078 | 16,347 | 12.18 | 3.46 | 0.35 | 75 | 24.89 | 7.08 | 0.71 |
| UR4 | Callanan Aggregate | 1.25 | 8.3 | 68 | 91 | 159 | 113.5 | 1,062,275 | 11,673 | 14,592 | 12.18 | 3.46 | 0.35 | 75 | 22.22 | 6.32 | 0.63 |
| UR5 | Beecraft | 1.6 | 8.3 | 68 | 91 | 159 | 113.5 | 122,313 | 1,344 | 2,151 | 12.18 | 3.46 | 0.35 | 75 | 3.27 | 0.93 | 0.09 |
| UR6 | Overburden | 1.13 | 8.3 | 68 | 91 | 159 | 113.5 | 65,188 | 716 | 809 | 12.18 | 3.46 | 0.35 | 75 | 1.23 | 0.35 | 0.04 |
| | Subtotal (Quarry) | | | | | | | | 136,036 | | | | | | 207.14 | 58.90 | 5.89 |
| UR7 | Gypsum | 3.5 | 8.3 | 93 | 50 | 143 | 118.0 | 189,481 | 3,790 | 13,264 | 12.40 | 3.53 | 0.35 | 75 | 20.55 | 5.84 | 0.58 |
| UR8 | CKD (landfill) | 0.5 | 8.3 | 20 | 25 | 45 | 32.5 | 50,984 | 2,039 | 1,020 | 6.94 | 1.97 | 0.20 | 75 | 0.88 | 0.25 | 0.03 |
| UR9 | Bauxite | 2.7 | 8.3 | 20 | 25 | 45 | 32.5 | 154,454 | 6,178 | 16,681 | 6.94 | 1.97 | 0.20 | 75 | 14.47 | 4.11 | 0.41 |
| UR10 | Iron | 0.5 | 8.3 | 20 | 25 | 45 | 32.5 | 48,396 | 1,936 | 968 | 6.94 | 1.97 | 0.20 | 75 | 0.84 | 0.24 | 0.02 |
| UR11 | Limestone | 2.7 | 8.3 | 20 | 25 | 45 | 32.5 | 135,289 | 5,412 | 14,611 | 6.94 | 1.97 | 0.20 | 75 | 12.67 | 3.60 | 0.36 |
| UR12 | TDF | 2.8 | 8.3 | 20 | 25 | 45 | 32.5 | 36,545 | 1,462 | 4,093 | 6.94 | 1.97 | 0.20 | 75 | 3.55 | 1.01 | 0.10 |
| UR13 | ASF | 0.5 | 8.3 | 20 | 25 | 45 | 32.5 | 66,667 | 2,667 | 1,333 | 6.94 | 1.97 | 0.20 | 75 | 1.16 | 0.33 | 0.03 |
| | Subtotal (Plant) | | | | | | | | 51,970 | | | | | | 54.13 | 15.39 | 1.54 |
| | TOTAL | | | | | | | | 188,006 | | | | | | 261.27 | 74.30 | 7.43 |

Notes:

$E = k * (s/12)^a * (W/3)^b * (365 - P)^{3/65}$ for industrial unpaved roads

where

- E = emission factor, lb/VMT
- k = particle size multiplier
- s = surface material silt content, %
- W = average vehicle weight, tons
- P = number of days with >= 0.01 in precipitation
- a, b = constants for specific particle size

| Constant | PM-30 | PM-10 | PM-2.5 |
|----------|---------------------------|-------|--------|
| k | 4.9 | 1.5 | 0.15 |
| a | 0.7 | 0.9 | 0.9 |
| b | 0.45 | 0.45 | 0.45 |
| P = | 136 days (Albany average) | | |

Emission factors from AP-42 Section 13.2.2 (11/06), Equations (1a) & (2). Silt content based on stone quarrying haul road (Table 13.2.2-1). A control efficiency of 75% was used to account for natural surface moisture or watering as needed at an equivalent surface moisture ratio of 2 (Figure 13.2.2-2).