Amendment No. 2 to Reclamation Plan 2006-01

AIR QUALITY IMPACT ANALYSIS

CITY OF LAKE ELSINORE

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JULY 14, 2016

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LIST OF ABBREVIATED TERMS

(1)	Reference
µg/m3	Microgram per Cubic Meter
AADT	Annual Average Daily Trips
AQIA	Air Quality Impact Analysis
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	California Air Resources Board
BACM	Best Available Control Measures
BMPs	Best Management Practices
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DPM	Diesel Particulate Matter
EPA	Environmental Protection Agency
LST	Localized Significance Threshold
NAAQS	National Ambient Air Quality Standards
NO2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
Pb	Lead
PM10	Particulate Matter 10 microns in diameter or less
PM2.5	Particulate Matter 2.5 microns in diameter or less
PPM	Parts Per Million
Project	Amendment No. 2 to Reclamation Plan 2006-01
ROG	Reactive Organic Gases
SCAB	South Coast Air Basin
SCAQMD	South Coast Air Quality Management District
SIPs	State Implementation Plans
SRA	Source Receptor Area
TAC	Toxic Air Contaminant

TIA	Traffic Impact Analysis
TOG	Total Organic Gases
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds

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EXECUTIVE SUMMARY

SUMMARY OF FINDINGS

For regional emissions, with implementation of applicable mitigation measures, the Project's operational activity would exceed the numerical thresholds of significance established by the SCAQMD for emissions of NOx. Thus a significant impact would occur for Project-related operational-source emissions with respect to NOx.

Project operational-source emissions will not result in or cause a significant localized air quality impact (with mitigation) as discussed in the operational LSTs section of this report. The proposed Project would not result in a significant CO "hotspot" as a result of Project related traffic during ongoing operations. The Project would not result in a significant cancer risk, and therefore the Project will not result in a significant impact to sensitive receptors during operational activity. Lastly, project operational-source emissions have the potential to conflict with the AQMP during operational activity as shown in Section 3.7 of this report.

Substantial odor-generating sources include land uses such as agricultural activities, feedlots, wastewater treatment facilities, landfills or heavy manufacturing uses. As evaluated in this report, the Project would not result in significant odor impacts associated with the asphalt batch plant operations. Potential sources of operational odors generated by the Project would include disposal of miscellaneous refuse. Moreover, SCAQMD Rule 402 acts to prevent occurrences of odor nuisances (1). Consistent with City requirements, all Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with solid waste regulations. Potential operational-source odor impacts are therefore considered less-than-significant.

AIR QUALITY IMPACT MITIGATION MEASURES

MM AQ-1

The Project shall ensure that all net new project equipment horsepower hours as summarized in Table 3-2 of this report shall be California Air Resources Board (CARB) Tier 4 Certified or better.

MM AQ-2

The asphalt batch plant shall be required to implement Best Available Control Technology (BACT) as required through obtaining permits from SCAQMD.

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1 INTRODUCTION

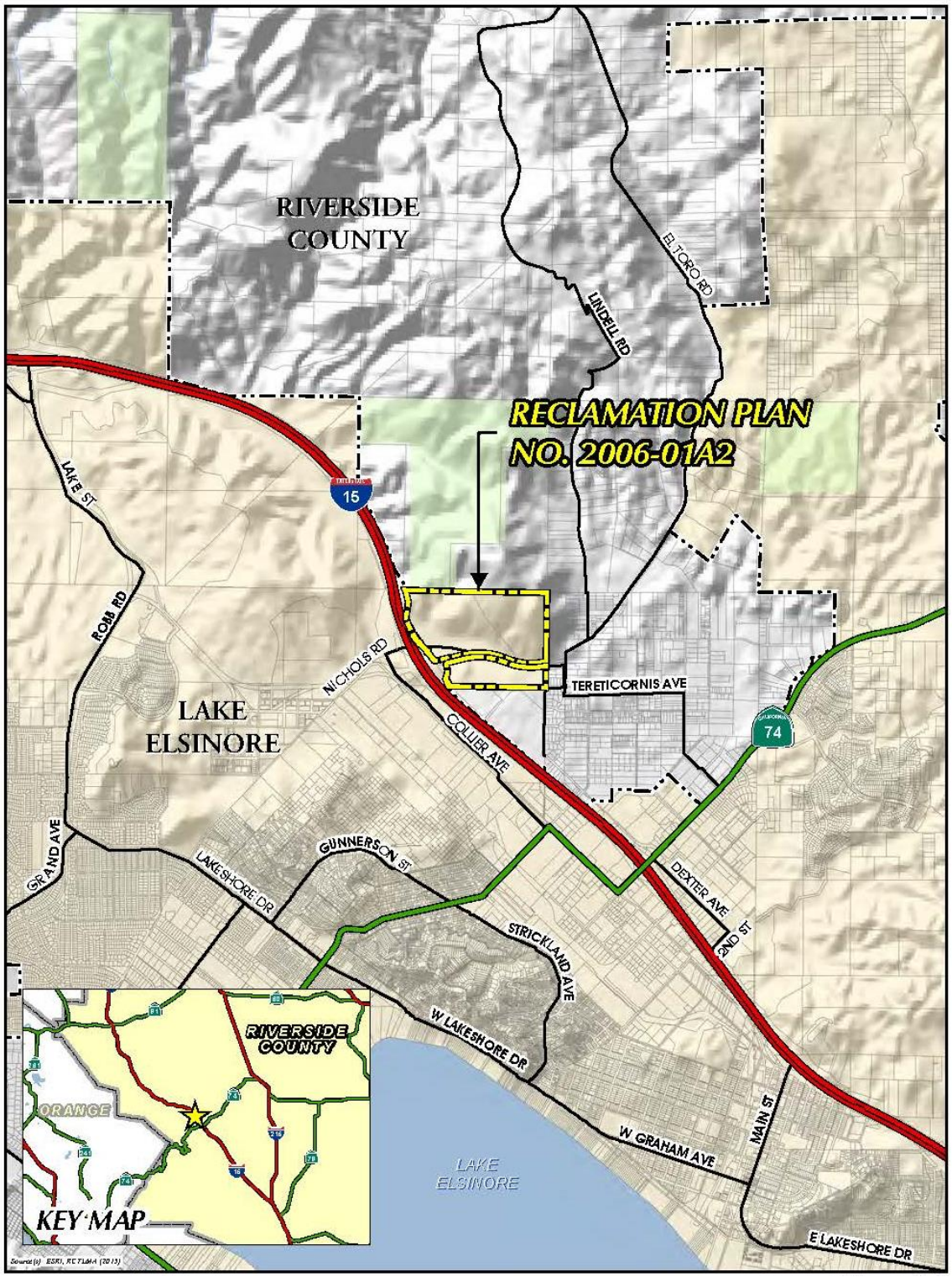
This report presents the results of the air quality impact analysis (AQIA) for the proposed Amendment No. 2 to Reclamation Plan 2006-01 (referred to as "Project") located north and south of Nichols Road and east of the I-15 Freeway in the City of Lake Elsinore as shown on Exhibit 1-A.

1.1 PROJECT OVERVIEW

The historic tonnage average is 556,348 tons per year (TPY). Although proposed RP 2006-01A2 would reduce the allowed maximum total annual tonnage material from 4,000,000 TPY to 856,560 TPY, historical data recorded by the mine operator indicates that the mine produced an average of approximately 556,348 TPY between 2007 and 2014 (herein, "historic baseline").

The Project is proposing a permit that would allow up to 856,560 TPY, which is a reduction to the originally permitted 4,000,000 TPY for the site. However, because the Project's proposed annual tonnage cap (856,560 TPY) is greater than the historic baseline average (556,348 TPY), the Project would result in a net increase of 300,212 TPY as compared to the historic baseline, representing an increase of 35.1%. Impact calculations herein that rely on annual tonnage account the net increase over the historic baseline (e.g., 300,212 TPY). The Project Applicant also estimates that a reasonable high-end estimate of daily tonnage at the site is approximately 5,000 tons per day (TPD). Because the Project represents 35.1% of the total annual tonnage cap, it is also reasonable to assume that approximately 1,752 TPD (35.1% of 5,000 TPD) would be attributable to the Project. In addition, the Project also proposes to modify the existing mining operations from 7:00 AM to 12:00 AM (Mondays through Fridays, excluding Federal Holidays) and between 7:00 AM to 7:00 PM (Saturdays only) to between 4:00 AM and 12:00 AM (Mondays through Saturdays, excluding Federal Holidays) for mining equipment and asphalt batch plant operation and 24 hours per day (Mondays through Saturdays, excluding Federal Holidays) for aggregate and asphalt batch plant export activities. The proposed changes to the Mine's operating hours also would apply to the asphalt batch plant. For purposes of this air quality impact analysis it is anticipated that the Project will be fully operational by Year 2016 (i.e., opening year). As indicated on Exhibit 1-A, access to the Project site is currently and will continue to be provided to Nichols Road via 2 existing driveways. Regional access to the Project site is provided via the I-15 Freeway at Nichols Road interchange. The Nichols North site is also subject to approved Conditional Use Permit (CUP 2014-07) which allows for the operation of a portable asphalt batch plant on approximately 1.76 acres of the Project site. Although the asphalt batch plant is previously approved, entitled and permitted, the analysis in this AQIA conservatively assumes 100% of the impacts from the asphalt batch plant.

EXHIBIT 1-A: LOCATION MAP



Source: T&B Planning

2 AIR QUALITY SETTING

This section provides an overview of the existing air quality conditions in the Project area and region.

2.1 SOUTH COAST AIR BASIN

The Project site is located in the South Coast Air Basin (SCAB) within the jurisdiction of SCAQMD (2). The SCAQMD was created by the 1977 Lewis-Presley Air Quality Management Act, which merged four county air pollution control bodies into one regional district. Under the Act, the SCAQMD is responsible for bringing air quality in areas under its jurisdiction into conformity with federal and state air quality standards. As discussed above, the Project site is located within the South Coast Air Basin, a 6,745-square mile subregion of the SCAQMD, which includes portions of Los Angeles, Riverside, and San Bernardino Counties, and all of Orange County. The larger South Coast district boundary includes 10,743 square miles.

The SCAB is bound by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. The Los Angeles County portion of the Mojave Desert Air Basin is bound by the San Gabriel Mountains to the south and west, the Los Angeles / Kern County border to the north, and the Los Angeles / San Bernardino County border to the east. The Riverside County portion of the Salton Sea Air Basin is bound by the San Jacinto Mountains in the west and spans eastward up to the Palo Verde Valley.

2.2 REGIONAL CLIMATE

The regional climate has a substantial influence on air quality in the SCAB. In addition, the temperature, wind, humidity, precipitation, and amount of sunshine influence the air quality.

The annual average temperatures throughout the SCAB vary from the low to middle 60s (degrees Fahrenheit). Due to a decreased marine influence, the eastern portion of the SCAB shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the SCAB, with average minimum temperatures of 47°F in downtown Los Angeles and 36°F in San Bernardino. All portions of the SCAB have recorded maximum temperatures above 100°F.

Although the climate of the SCAB can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of SCAB climate. Humidity restricts visibility in the SCAB, and the conversion of sulfur dioxide to sulfates is heightened in air with high relative humidity. The marine layer provides an environment for that conversion process, especially during the spring and summer months. The annual average relative humidity within the SCAB is 71 percent along the coast and 59 percent inland. Since the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90 percent of the SCAB's rainfall occurs from November through April. The annual average rainfall varies from approximately nine inches in Riverside to fourteen inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thunderstorms near the coast and slightly heavier shower activity in the eastern portion of the SCAB with frequency being higher near the coast.

Due to its generally clear weather, about three-quarters of available sunshine is received in the SCAB. The remaining one-quarter is absorbed by clouds. The ultraviolet portion of this abundant radiation is a key factor in photochemical reactions. On the shortest day of the year there are approximately 10 hours of possible sunshine, and on the longest day of the year there are approximately 14 1/2 hours of possible sunshine.

The importance of wind to air pollution is considerable. The direction and speed of the wind determines the horizontal dispersion and transport of the air pollutants. During the late autumn to early spring rainy season, the SCAB is subjected to wind flows associated with the traveling storms moving through the region from the northwest. This period also brings five to ten periods of strong, dry offshore winds, locally termed "Santa Anas" each year. During the dry season, which coincides with the months of maximum photochemical smog concentrations, the wind flow is bimodal, typified by a daytime onshore sea breeze and a nighttime offshore drainage wind. Summer wind flows are created by the pressure differences between the relatively cold ocean and the unevenly heated and cooled land surfaces that modify the general northwesterly wind circulation over southern California. Nighttime drainage begins with the radiational cooling of the mountain slopes. Heavy, cool air descends the slopes and flows through the mountain passes and canyons as it follows the lowering terrain toward the ocean. Another characteristic wind regime in the SCAB is the "Catalina Eddy," a low level cyclonic (counterclockwise) flow centered over Santa Catalina Island which results in an offshore flow to the southwest. On most spring and summer days, some indication of an eddy is apparent in coastal sections.

In the SCAB, there are two distinct temperature inversion structures that control vertical mixing of air pollution. During the summer, warm high-pressure descending (subsiding) air is undercut by a shallow layer of cool marine air. The boundary between these two layers of air is a persistent marine subsidence/inversion. This boundary prevents vertical mixing which effectively acts as an impervious lid to pollutants over the entire SCAB. The mixing height for the inversion structure is normally situated 1,000 to 1,500 feet above mean sea level.

A second inversion-type forms in conjunction with the drainage of cool air off the surrounding mountains at night followed by the seaward drift of this pool of cool air. The top of this layer forms a sharp boundary with the warmer air aloft and creates nocturnal radiation inversions. These inversions occur primarily in the winter, when nights are longer and onshore flow is weakest. They are typically only a few hundred feet above mean sea level. These inversions effectively trap pollutants, such as NOX and CO from vehicles, as the pool of cool air drifts seaward. Winter is therefore a period of high levels of primary pollutants along the coastline.

2.3 WIND PATTERNS AND PROJECT LOCATION

The distinctive climate of the Project area and the SCAB is determined by its terrain and geographical location. The Basin is located in a coastal plain with connecting broad valleys and low hills, bounded by the Pacific Ocean in the southwest quadrant with high mountains forming the remainder of the perimeter.

Wind patterns across the south coastal region are characterized by westerly and southwesterly on-shore winds during the day and easterly or northeasterly breezes at night. Winds are characteristically light although the speed is somewhat greater during the dry summer months than during the rainy winter season.

2.4 EXISTING AIR QUALITY

Existing air quality is measured at established SCAQMD air quality monitoring stations. Monitored air quality is evaluated and in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) currently in effect, as well health effects of each pollutant regulated under these standards are shown in Table 2-1 (3) (4).

The determination of whether a region's air quality is healthful or unhealthful is determined by comparing contaminant levels in ambient air samples to the state and federal standards presented in Table 2-1. The air quality in a region is considered to be in attainment by the state if the measured ambient air pollutant levels for O3, CO, SO2, NO2, PM10, and PM2.5 are not equaled or exceeded at any time in any consecutive three-year period; and the federal standards (other than O3, PM10, PM2.5, and those based on annual averages or arithmetic mean) are not exceeded more than once per year. The O3 standard is attained when the fourth highest eight-hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when 99 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

TABLE 2-1: AMBIENT AIR QUALITY STANDARDS (1 OF 2)

Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[10]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[10]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 13	Beta Attenuation and Transmittance through Filter Tape	No National Standards		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page ...

For more information please call ARB-PIO at (916) 322-2990 — California Air Resources Board (10/1/15)

TABLE 2-1: AMBIENT AIR QUALITY STANDARDS (2 OF 2)

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

For more information please call ARB-PIO at (916) 322-2990 **California Air Resources Board (10/1/15)**

2.5 REGIONAL AIR QUALITY

The SCAQMD monitors levels of various criteria pollutants at 30 monitoring stations throughout the air district. In 2014, the federal and state ambient air quality standards (NAAQS and CAAQS) were exceeded on one or more days for ozone, PM10, and PM2.5 at most monitoring locations (5). No areas of the SCAB exceeded federal or state standards for NO2, SO2, CO, sulfates or lead. See Table 2-2 for attainment designations for the SCAB (6). Appendix 3.1 provides geographic representation of the state and federal attainment status for applicable criteria pollutants within the SCAB.

2.6 LOCAL AIR QUALITY

Relative to the Project site, the nearest long-term air quality monitoring site in relation to the project for Ozone (O3), Carbon Monoxide (CO), and Nitrogen Dioxide (NO2) is carried out by the South Coast Air Quality Management District (SCAQMD) at the Lake Elsinore monitoring station located approximately 2 miles south of the project site (7). Data for Inhalable Particulates (PM10) was obtained from the Perris Valley monitoring station located approximately 10 miles northeast of the project site. Data for Ultra-Fine Particulates (PM2.5) was obtained from the Metropolitan Riverside County 2 monitoring station, located approximately 22 miles north of the project site. It should be noted that the Perris Valley and Metropolitan Riverside County 2 monitoring stations were utilized in lieu of the Lake Elsinore monitoring station only where data was not available from the nearest monitoring site. See Table 2-2 for attainment designations for the SCAB. The 3 years of data in Table 2-3 shows the number of days standards were exceeded for the study area.

The most recent three (3) years of data available is shown on Table 2-3 and identifies the number of days ambient air quality standards were exceeded at monitoring sites in the study area, which is was considered to be representative of the local air quality at the Project site (8). Additionally, data for SO2 has been omitted as attainment is regularly met in the South Coast Air Basin and few monitoring stations measure SO2 concentrations.

Criteria pollutants are pollutants that are regulated through the development of human health based and/or environmentally based criteria for setting permissible levels. Criteria pollutants, their typical sources, and effects are identified below:

- Carbon Monoxide (CO): Is a colorless, odorless gas produced by the incomplete combustion of carbon-containing fuels, such as gasoline or wood. CO concentrations tend to be the highest during the winter morning, when little to no wind and surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the Basin. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.
- Sulfur Dioxide (SO2): Is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of burning high sulfur-content fuel oils and coal and from chemical processes occurring at chemical plants and refineries. When SO2 oxidizes in the atmosphere, it forms sulfates (SO4). Collectively, these pollutants are referred to as sulfur oxides (SOX).

TABLE 2-2: ATTAINMENT STATUS OF CRITERIA POLLUTANTS IN THE SOUTH COAST AIR BASIN (SCAB)

Criteria Pollutant	State Designation	Federal Designation
Ozone - 1hour standard	Nonattainment	No Standard
Ozone - 8 hour standard	Nonattainment	Nonattainment
PM_{10}	Nonattainment	Attainment
$PM_{2.5}$	Nonattainment	Nonattainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead[1]	Attainment	Attainment

Source: State/Federal designations were taken from http://www.arb.ca.gov/desig/adm/adm.htm
Note: See Appendix 3.1 for a detailed map of State/National Area Designations within the South Coast Air Basin

[1] The Federal nonattainment designation for lead is only applicable towards the Los Angeles County portion of the SCAB.

TABLE 2-3: PROJECT AREA AIR QUALITY MONITORING SUMMARY 2013-2015

POLLUTANT	STANDARD	YEAR		
		2013	2014	2015
Ozone (O3)[1]				
Maximum 1-Hour Concentration (ppm)		0.102	0.104	0.131
Maximum 8-Hour Concentration (ppm)		0.089	0.086	0.098
Number of Days Exceeding State 1-Hour Standard	> 0.09 ppm	6	4	18
Number of Days Exceeding State 8-Hour Standard	> 0.07 ppm	25	13	35
Number of Days Exceeding Federal 1-Hour Standard	> 0.12 ppm	0	0	1
Number of Days Exceeding Federal 8-Hour Standard	> 0.075 ppm	12	6	19
Number of Days Exceeding Health Advisory	≥ 0.15 ppm	0	0	0
Carbon Monoxide (CO)				
Maximum 1-Hour Concentration (ppm)		--	2	--
Maximum 8-Hour Concentration (ppm)		0.6	1.4	--
Number of Days Exceeding State 1-Hour Standard	> 20 ppm	--	0	--
Number of Days Exceeding Federal / State 8-Hour Standard	> 9.0 ppm	0	0	--
Number of Days Exceeding Federal 1-Hour Standard	> 35 ppm	--	0	--
Nitrogen Dioxide (NO2)				
Maximum 1-Hour Concentration (ppm)		0.0466	0.0453	0.0472
Annual Arithmetic Mean Concentration (ppm)		0.0084	0.0082	0.008
Number of Days Exceeding State 1-Hour Standard	> 0.18 ppm	0	0	0
Particulate Matter ≤ 10 Microns (PM10)[2]				
Maximum 24-Hour Concentration (µg/m3)		70	87	188
Annual Arithmetic Mean (µg/m3)		33.6	35.1	33.1
Number of Samples		57	60	--
Number of Samples Exceeding State Standard	> 50 µg/m3	10	8	4
Number of Samples Exceeding Federal Standard	> 150 µg/m3	0	0	1
Particulate Matter ≤ 2.5 Microns (PM2.5)[3]				
Maximum 24-Hour Concentration (µg/m3)		53.7	30.9	--
Annual Arithmetic Mean (µg/m3)		11.28	--	--
Number of Samples		117	--	--
Number of Samples Exceeding Federal 24-Hour Standard	> 35 µg/m3	1	--	--

[1] Referenced Lake Elsinore (SRA 25) monitoring station data for O3, CO, NO2 concentrations

[2] Referenced Perris Valley (SRA 24) monitoring station data for PM10 concentrations

[3] Referenced Metropolitan Riverside County 2 monitoring station data for PM2.5 concentrations

-- = data not available from SCAQMD or ARB

- Nitrogen Oxides (Oxides of Nitrogen, or NOx): Nitrogen oxides (NOx) consist of nitric oxide (NO), nitrogen dioxide (NO2) and nitrous oxide (N2O) and are formed when nitrogen (N2) combines with oxygen (O2). Their lifespan in the atmosphere ranges from one to seven days for nitric oxide and nitrogen dioxide, to 170 years for nitrous oxide. Nitrogen oxides are typically created during combustion processes, and are major contributors to smog formation and acid deposition. NO2 is a criteria air pollutant, and may result in numerous adverse health effects; it absorbs blue light, resulting in a brownish-red cast to the atmosphere and reduced visibility. Of the seven types of nitrogen oxide compounds, NO2 is the most abundant in the atmosphere. As ambient concentrations of NO2 are related to traffic density, commuters in heavy traffic may be exposed to higher concentrations of NO2 than those indicated by regional monitors.
- Ozone (O3): Is a highly reactive and unstable gas that is formed when volatile organic compounds (VOCs) and nitrogen oxides (NOX) undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.
- PM10 (Particulate Matter less than 10 microns): A major air pollutant consisting of tiny solid or liquid particles of soot, dust, smoke, fumes, and aerosols. The size of the particles (10 microns or smaller, about 0.0004 inches or less) allows them to easily enter the lungs where they may be deposited, resulting in adverse health effects. PM10 also causes visibility reduction and is a criteria air pollutant.
- PM2.5 (Particulate Matter less than 2.5 microns): A similar air pollutant consisting of tiny solid or liquid particles which are 2.5 microns or smaller (which is often referred to as fine particles). These particles are formed in the atmosphere from primary gaseous emissions that include sulfates formed from SO2 release from power plants and industrial facilities and nitrates that are formed from NOX release from power plants, automobiles and other types of combustion sources. The chemical composition of fine particles highly depends on location, time of year, and weather conditions. PM2.5 is a criteria air pollutant.
- Volatile Organic Compounds (VOC): Volatile organic compounds are hydrocarbon compounds (any compound containing various combinations of hydrogen and carbon atoms) that exist in the ambient air. VOCs contribute to the formation of smog through atmospheric photochemical reactions and/or may be toxic. Compounds of carbon (also known as organic compounds) have different levels of reactivity; that is, they do not react at the same speed or do not form ozone to the same extent when exposed to photochemical processes. VOCs often have an odor, and some examples include gasoline, alcohol, and the solvents used in paints. Exceptions to the VOC designation include: carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate. VOCs are a precursor to O3, which is a criteria pollutant. The SCAQMD uses the terms VOC and ROG (see below) interchangeably.
- Reactive Organic Gases (ROG): Similar to VOC, Reactive Organic Gases (ROG) are also precursors in forming ozone. Smog is formed when ROG and nitrogen oxides react in the presence of sunlight. The SCAQMD uses the terms ROG and VOC (see previous) interchangeably.
- Lead (Pb): Lead is a heavy metal that is highly persistent in the environment. In the past, the primary source of lead in the air was emissions from vehicles burning leaded gasoline. As a result of the removal of lead from gasoline, there have been no violations at any of the SCAQMD's regular air monitoring stations since 1982. Currently, emissions of lead are largely limited to stationary sources such as lead smelters. It should be noted that the Project is not anticipated to generate a quantifiable amount of lead emissions. Lead is a criteria air pollutant.

Health Effects of Air Pollutants

Ozone

Individuals exercising outdoors, children, and people with preexisting lung disease, such as asthma and chronic pulmonary lung disease, are considered to be the most susceptible sub-groups for ozone effects. Short-term exposure (lasting for a few hours) to ozone at levels typically observed in Southern California can result in breathing pattern changes, reduction of breathing capacity, increased susceptibility to infections, inflammation of the lung tissue, and some immunological changes. Elevated ozone levels are associated with increased school absences. In recent years, a correlation between elevated ambient ozone levels and increases in daily hospital admission rates, as well as mortality, has also been reported. An increased risk for asthma has been found in children who participate in multiple sports and live in communities with high ozone levels.

Ozone exposure under exercising conditions is known to increase the severity of the responses described above. Animal studies suggest that exposure to a combination of pollutants that includes ozone may be more toxic than exposure to ozone alone. Although lung volume and resistance changes observed after a single exposure diminish with repeated exposures, biochemical and cellular changes appear to persist, which can lead to subsequent lung structural changes.

Carbon Monoxide

Individuals with a deficient blood supply to the heart are the most susceptible to the adverse effects of CO exposure. The effects observed include earlier onset of chest pain with exercise, and electrocardiograph changes indicative of decreased oxygen supply to the heart. Inhaled CO has no direct toxic effect on the lungs, but exerts its effect on tissues by interfering with oxygen transport and competing with oxygen to combine with hemoglobin present in the blood to form carboxyhemoglobin (COHb). Hence, conditions with an increased demand for oxygen supply can be adversely affected by exposure to CO. Individuals most at risk include fetuses, patients with diseases involving heart and blood vessels, and patients with chronic hypoxemia (oxygen deficiency) as seen at high altitudes.

Reduction in birth weight and impaired neurobehavioral development have been observed in animals chronically exposed to CO, resulting in COHb levels similar to those observed in smokers. Recent studies have found increased risks for adverse birth outcomes with exposure to elevated CO levels; these include pre-term births and heart abnormalities.

Particulate Matter

A consistent correlation between elevated ambient fine particulate matter (PM10 and PM2.5) levels and an increase in mortality rates, respiratory infections, number and severity of asthma attacks and the number of hospital admissions has been observed in different parts of the United States and various areas around the world. In recent years, some studies have reported an association between long-term exposure to air pollution dominated by fine particles and increased mortality, reduction in life-span, and an increased mortality from lung cancer.

Daily fluctuations in PM2.5 concentration levels have also been related to hospital admissions for acute respiratory conditions in children, to school and kindergarten absences, to a decrease in respiratory lung volumes in normal children, and to increased medication use in children and adults with asthma. Recent studies show lung function growth in children is reduced with long-term exposure to particulate matter.

The elderly, people with pre-existing respiratory or cardiovascular disease, and children appear to be more susceptible to the effects of high levels of PM10 and PM2.5.

Nitrogen Dioxide

Population-based studies suggest that an increase in acute respiratory illness, including infections and respiratory symptoms in children (not infants), is associated with long-term exposure to NO2 at levels found in homes with gas stoves, which are higher than ambient levels found in Southern California. Increase in resistance to air flow and airway contraction is observed after short-term exposure to NO2 in healthy subjects. Larger decreases in lung functions are observed in individuals with asthma or chronic obstructive pulmonary disease (e.g., chronic bronchitis, emphysema) than in healthy individuals, indicating a greater susceptibility of these sub-groups.

In animals, exposure to levels of NO2 considerably higher than ambient concentrations results in increased susceptibility to infections, possibly due to the observed changes in cells involved in maintaining immune functions. The severity of lung tissue damage associated with high levels of ozone exposure increases when animals are exposed to a combination of ozone and NO2.

Sulfur Dioxide

A few minutes of exposure to low levels of SO2 can result in airway constriction in some asthmatics, all of whom are sensitive to its effects. In asthmatics, increase in resistance to air flow, as well as reduction in breathing capacity leading to severe breathing difficulties, are observed after acute exposure to SO2. In contrast, healthy individuals do not exhibit similar acute responses even after exposure to higher concentrations of SO2.

Animal studies suggest that despite SO2 being a respiratory irritant, it does not cause substantial lung injury at ambient concentrations. However, very high levels of exposure can cause lung edema (fluid accumulation), lung tissue damage, and sloughing off of cells lining the respiratory tract.

Some population-based studies indicate that the mortality and morbidity effects associated with fine particles show a similar association with ambient SO2 levels. In these studies, efforts to separate the effects of SO2 from those of fine particles have not been successful. It is not clear whether the two pollutants act synergistically or one pollutant alone is the predominant factor.

Lead

Fetuses, infants, and children are more sensitive than others to the adverse effects of Pb exposure. Exposure to low levels of Pb can adversely affect the development and function of

the central nervous system, leading to learning disorders, distractibility, inability to follow simple commands, and lower intelligence quotient. In adults, increased Pb levels are associated with increased blood pressure.

Pb poisoning can cause anemia, lethargy, seizures, and death; although it appears that there are no direct effects of Pb on the respiratory system. Pb can be stored in the bone from early age environmental exposure, and elevated blood Pb levels can occur due to breakdown of bone tissue during pregnancy, hyperthyroidism (increased secretion of hormones from the thyroid gland) and osteoporosis (breakdown of bony tissue). Fetuses and breast-fed babies can be exposed to higher levels of Pb because of previous environmental Pb exposure of their mothers.

Odors

The science of odor as a health concern is still new. Merely identifying the hundreds of VOCs that cause odors poses a big challenge. Offensive odors can potentially affect human health in several ways. First, odorant compounds can irritate the eye, nose, and throat, which can reduce respiratory volume. Second, studies have shown that the VOCs that cause odors can stimulate sensory nerves to cause neurochemical changes that might influence health, for instance, by compromising the immune system. Finally, unpleasant odors can trigger memories or attitudes linked to unpleasant odors, causing cognitive and emotional effects such as stress.

2.7 REGULATORY BACKGROUND

2.7.1 FEDERAL REGULATIONS

The U.S. EPA is responsible for setting and enforcing the NAAQS for O3, CO, NOx, SO2, PM10, and lead (9). The U.S. EPA has jurisdiction over emissions sources that are under the authority of the federal government including aircraft, locomotives, and emissions sources outside state waters (Outer Continental Shelf). The U.S. EPA also establishes emission standards for vehicles sold in states other than California. Automobiles sold in California must meet the stricter emission requirements of the CARB.

The Federal Clean Air Act (CAA) was first enacted in 1955, and has been amended numerous times in subsequent years (1963, 1965, 1967, 1970, 1977, and 1990). The CAA establishes the federal air quality standards, the NAAQS, and specifies future dates for achieving compliance (10). The CAA also mandates that states submit and implement State Implementation Plans (SIPs) for local areas not meeting these standards. These plans must include pollution control measures that demonstrate how the standards will be met.

The 1990 amendments to the CAA that identify specific emission reduction goals for areas not meeting the NAAQS require a demonstration of reasonable further progress toward attainment and incorporate additional sanctions for failure to attain or to meet interim milestones. The sections of the CAA most directly applicable to the development of the Project site include Title I (Non-Attainment Provisions) and Title II (Mobile Source Provisions). Title I provisions were established with the goal of attaining the NAAQS for the following criteria pollutants O3, NO2, SO2, PM10, CO, PM2.5, and lead. The NAAQS were amended in July 1997 to include an

additional standard for O3 and to adopt a NAAQS for PM2.5. Table 3-1 (previously presented) provides the NAAQS within the basin.

Mobile source emissions are regulated in accordance with Title II provisions. These provisions require the use of cleaner burning gasoline and other cleaner burning fuels such as methanol and natural gas. Automobile manufacturers are also required to reduce tailpipe emissions of hydrocarbons and nitrogen oxides (NOx). NOx is a collective term that includes all forms of nitrogen oxides (NO, NO2, NO3) which are emitted as byproducts of the combustion process.

2.7.2 CALIFORNIA REGULATIONS

The CARB, which became part of the California EPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (AB 2595), responding to the federal CAA, and for regulating emissions from consumer products and motor vehicles. The California CAA mandates achievement of the maximum degree of emissions reductions possible from vehicular and other mobile sources in order to attain the state ambient air quality standards by the earliest practical date. The CARB established the CAAQS for all pollutants for which the federal government has NAAQS and, in addition, establishes standards for sulfates, visibility, hydrogen sulfide, and vinyl chloride. However at this time, hydrogen sulfide and vinyl chloride are not measured at any monitoring stations in the SCAB because they are not considered to be a regional air quality problem. Generally, the CAAQS are more stringent than the NAAQS (4) (3).

Local air quality management districts, such as the SCAQMD, regulate air emissions from commercial and light industrial facilities. All air pollution control districts have been formally designated as attainment or non-attainment for each CAAQS.

Serious non-attainment areas are required to prepare air quality management plans that include specified emission reduction strategies in an effort to meet clean air goals. These plans are required to include:

- Application of Best Available Retrofit Control Technology to existing sources;
- Developing control programs for area sources (e.g., architectural coatings and solvents) and indirect sources (e.g. motor vehicle use generated by residential and commercial development);
- A District permitting system designed to allow no net increase in emissions from any new or modified permitted sources of emissions;
- Implementing reasonably available transportation control measures and assuring a substantial reduction in growth rate of vehicle trips and miles traveled;
- Significant use of low emissions vehicles by fleet operators;
- Sufficient control strategies to achieve a five percent or more annual reduction in emissions or 15 percent or more in a period of three years for ROGs, NOx, CO and PM10. However, air basins may use alternative emission reduction strategy that achieves a reduction of less than five percent per year under certain circumstances.

2.7.3 AIR QUALITY MANAGEMENT PLANNING

Currently, the NAAQS and CAAQS are exceeded in most parts of the SCAB. In regards to the NAAQS, the Project region within the SCAB is in nonattainment for ozone (8-hour) and PM2.5. For the CAAQS, the Project region within the SCAB is in nonattainment for ozone (1-hour and 8-hour), PM10, and PM2.5. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards (11). AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy. A detailed discussion on the AQMP and Project consistency with the AQMP is provided in Section 3.9.

2.8 REGIONAL AIR QUALITY IMPROVEMENT

The Project is within the jurisdiction of the SCAQMD. In 1976, California adopted the Lewis Air Quality Management Act which created SCAQMD from a voluntary association of air pollution control districts in Los Angeles, Orange, Riverside, and San Bernardino counties. The geographic area of which SCAQMD consists is known as the Basin. SCAQMD develops comprehensive plans and regulatory programs for the region to attain federal standards by dates specified in federal law. The agency is also responsible for meeting state standards by the earliest date achievable, using reasonably available control measures.

SCAQMD rule development through the 1970s and 1980s resulted in dramatic improvement in Basin air quality. Nearly all control programs developed through the early 1990s relied on (i) the development and application of cleaner technology; (ii) add-on emission controls, and (iii) uniform CEQA review throughout the Basin. Industrial emission sources have been significantly reduced by this approach and vehicular emissions have been reduced by technologies implemented at the state level by CARB.

As discussed above, the SCAQMD is the lead agency charged with regulating air quality emission reductions for the entire Basin. SCAQMD created AQMPs which represent a regional blueprint for achieving healthful air on behalf of the 16 million residents of the South Coast Basin. The remarkable historical improvement in air quality since the 1970's is the direct result of Southern California's comprehensive, multiyear strategy of reducing air pollution from all sources as outlined in its Air Quality Management Plans (AQMPs) and by utilizing uniform CEQA review throughout the Basin.

The 2012 AQMP states, " the remarkable historical improvement in air quality since the 1970's is the direct result of Southern California's comprehensive, multiyear strategy of reducing air pollution from all sources as outlined in its AQMPs," (12). Ozone, NOx, VOC, and CO have been decreasing in the Basin since 1975 and are projected to continue to decrease through 2020 (13). These decreases result primarily from motor vehicle controls and reductions in evaporative emissions. Although vehicle miles traveled in the Basin continue to increase, NOx and VOC levels are decreasing because of the mandated controls on motor vehicles and the replacement of older polluting vehicles with lower-emitting vehicles. NOx emissions from electric utilities have also decreased due to use of cleaner fuels and renewable energy. Ozone

contour maps show that the number of days exceeding the national 8-hour standard has decreased between 1997 and 2007. In the 2007 period, there was an overall decrease in exceedance days compared with the 1997 period. The overall trends of PM10 and PM2.5 in the air (not emissions) show an overall improvement since 1975. Direct emissions of PM10 have remained somewhat constant in the Basin and direct emissions of PM2.5 have decreased slightly since 1975. Area wide sources (fugitive dust from roads, dust from construction and demolition, and other sources) contribute the greatest amount of direct particulate matter emissions.

Ozone levels in the SCAB have decreased substantially over the last 30 years as shown in Table 2-4 (14). Today, the maximum measured concentrations are approximately one-third of concentrations within the late 70's.

As with other pollutants, the most recent PM10 statistics also show overall improvement as illustrated in Table 2-5. During the period for which data are available, the 24-hour national annual average decreased by almost 45 percent, from 103.7 µg/m³ in 1989 to 57.6 µg/m³ in 2014. Although the values in the late 1990's show some variability, this is probably due to meteorology rather than a change in emissions. Despite the overall decrease, ambient concentrations still exceed the State annual and 24-hour PM10 standards. Similar to the ambient concentrations, the calculated number of days above the 24-hour PM10 standards has also shown an overall drop. During 1995, there were 25 calculated days above the national standard. By 2014, there was one calculated national standard exceedance days (15).

Table 2-6 shows the most recent 24-hour average $PM_{2.5}$ concentrations (national) in the SCAB from 1999 through 2014. Overall, the annual average concentrations have decreased by almost 52 percent. The calculated number of days above the national standard also decreased, from about 88 days in 1999 to about 9 days in 2014. The SCAB is currently designated as nonattainment for the State and national $PM_{2.5}$ standards. Measures adopted as part of the upcoming $PM_{2.5}$ SIP, as well as programs to reduce ozone and diesel PM will help in reducing public exposure to $PM_{2.5}$ in this region.

The most recent Carbon dioxide concentrations in the SCAB 1986 are shown in Table 2-7 (16). Carbon monoxide concentrations in the SCAB have decreased markedly — a total decrease of more about 80 percent in the peak 8-hour concentration since 1986. The number of exceedance days has also declined. The entire SCAB is now designated as attainment for both the state and national CO standards. Ongoing reductions from motor vehicle control programs should continue the downward trend in ambient CO concentrations.

TABLE 2-4: SOUTH COAST AIR BASIN OZONE TREND

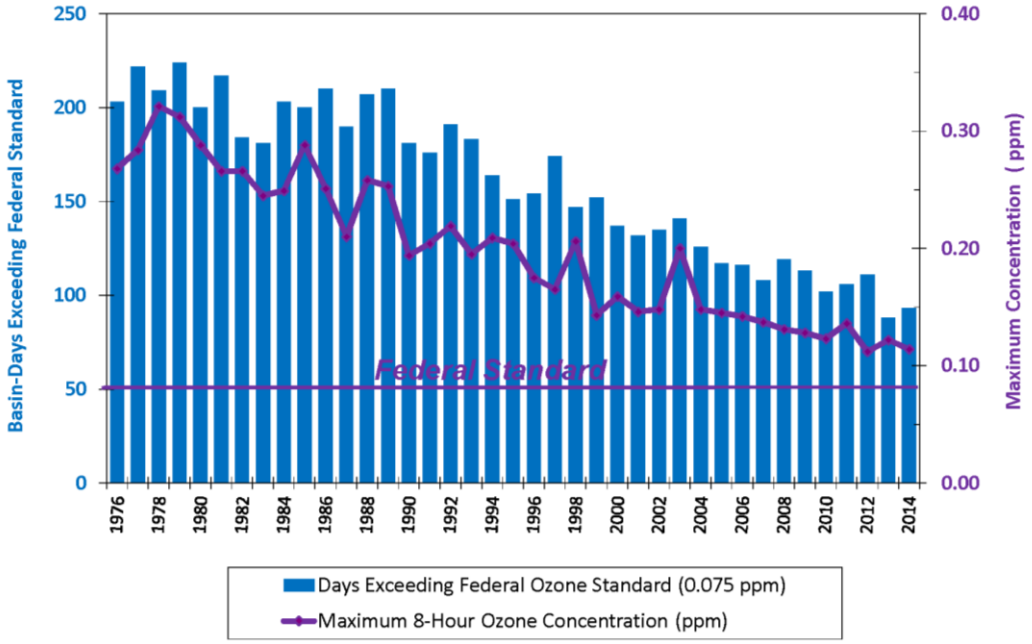


TABLE 2-5: SOUTH COAST AIR BASIN PM10 TREND

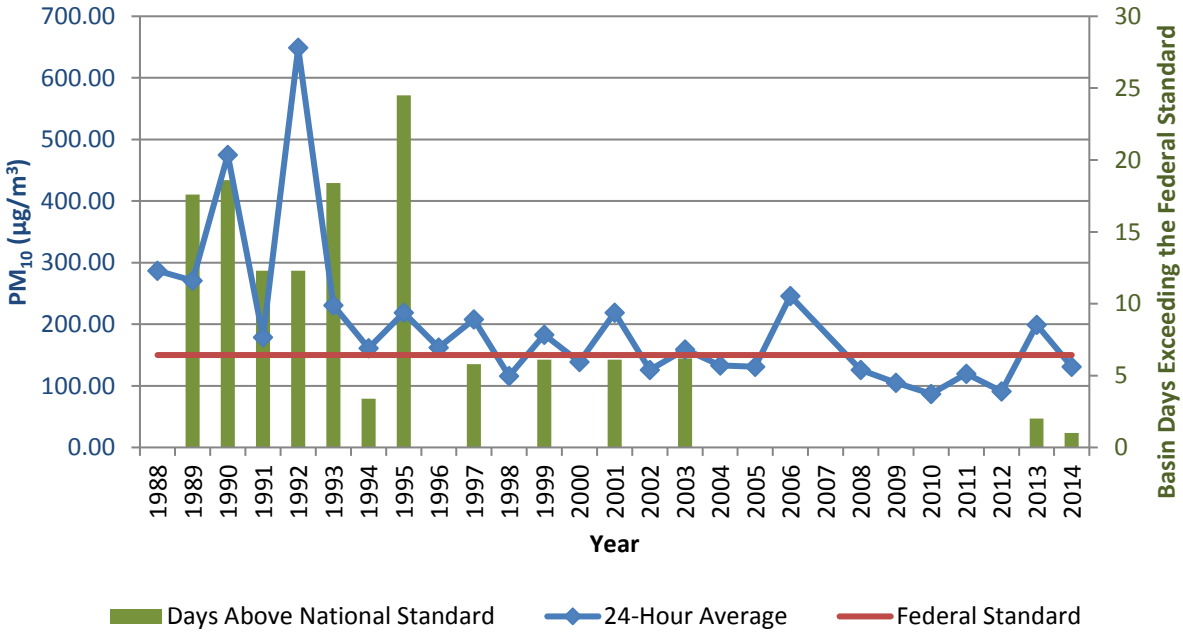


TABLE 2-6: SOUTH COAST AIR BASIN $PM_{2.5}$ TREND

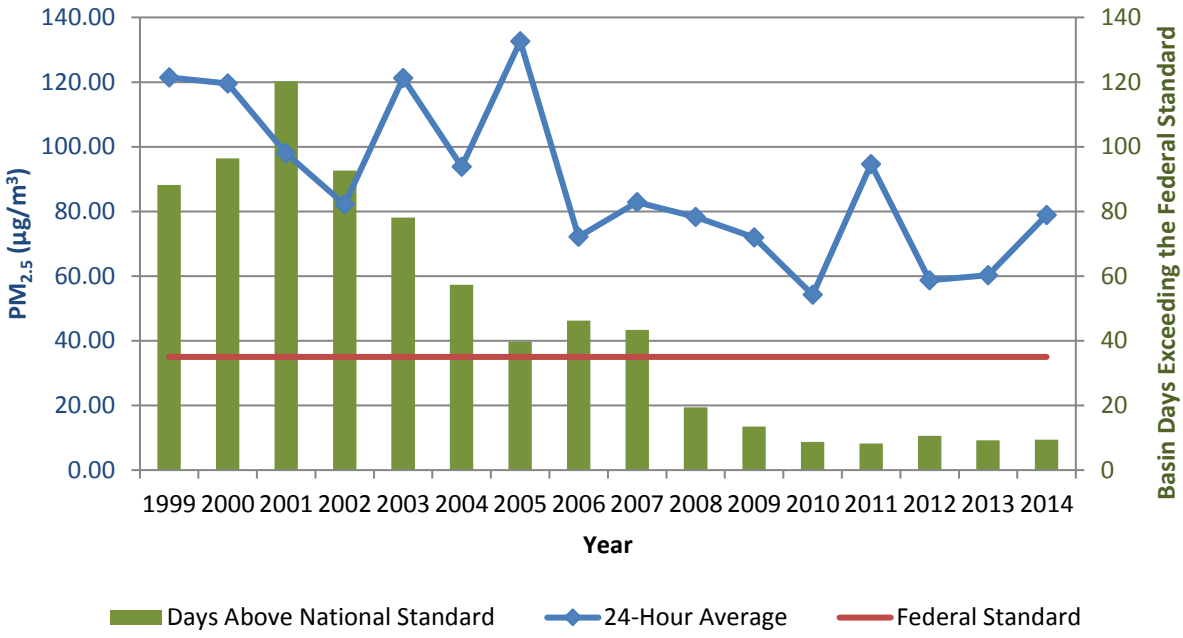
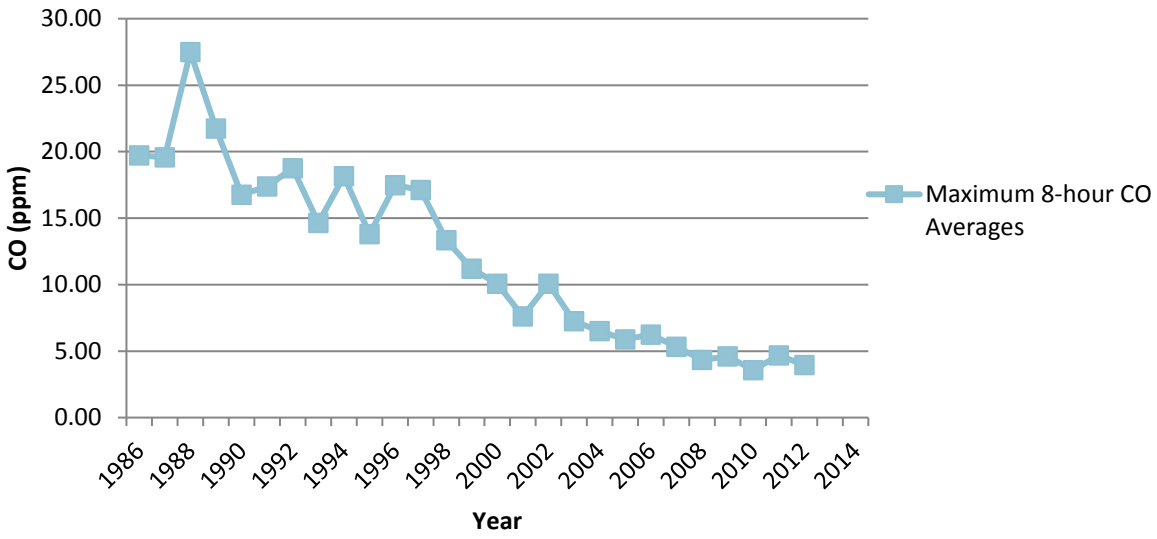


TABLE 2-7: SOUTH COAST AIR BASIN CARBON MONOXIDE TREND



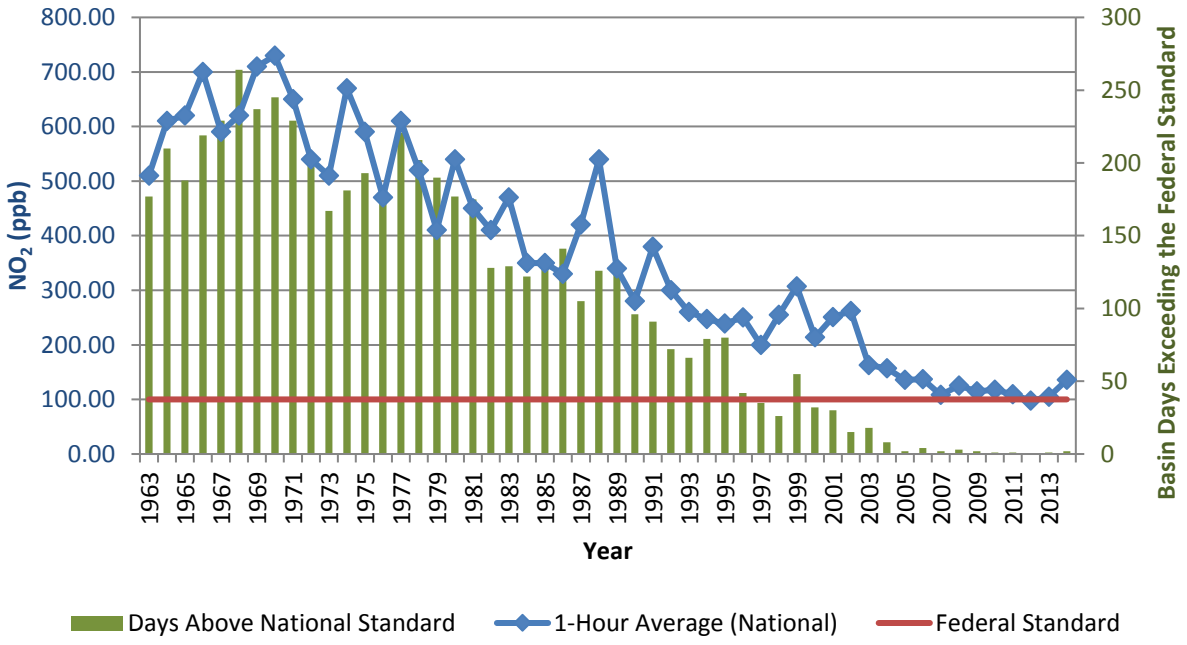
Part of the control process of the SCAQMD's duty to greatly improve the air quality in the Basin is the uniform CEQA review procedures required by SCAQMD's CEQA Handbook (17). The single threshold of significance used to assess Project direct and cumulative impacts has in fact "worked" as evidenced by the track record of the air quality in the Basin dramatically improving over the course of the past decades. As stated by the SCAQMD the District's thresholds of

significance are based on factual and scientific data and are therefore appropriate thresholds of significance to use for this Project.

The most recent NO_2 data for the SCAB is shown in Table 2-8 (16). Over the last 50 years, NO_2 values have decreased significantly; the peak 1-hour average for 2013 was almost 74 percent lower than what it was during 1963. The SCAB attained the State 1-hour NO_2 standard in 1994, bringing the entire State into attainment. A new state annual average standard of 0.030 parts per million was adopted by the ARB in February 2007 (18). The new standard is just barely exceeded in the South Coast. NO_2 is formed from NO_x emissions, which also contribute to ozone. As a result, the majority of the future emission control measures will be implemented as part of the overall ozone control strategy. Many of these control measures will target mobile sources, which account for more than three-quarters of California's NO_x emissions. These measures are expected to bring the South Coast into attainment of the State annual average standard.

The American Lung Association website includes data collected from State air quality monitors that are used to compile an annual State of the Air report. These reports have been published over the last 13 years. The latest State of the Air Report compiled for the Basin was in 2010 (19). As noted in this report, air quality in the Basin has significantly improved in terms of both pollution levels and high pollution days over the past three decades. The area's average number of high ozone days dropped from 189.5 day per year in the initial 2000 State of the Air report (1996–1998) to 141.8 in the 2006–2008 report. The region has seen dramatic reduction in particle pollution since the initial State of the Air report (19).

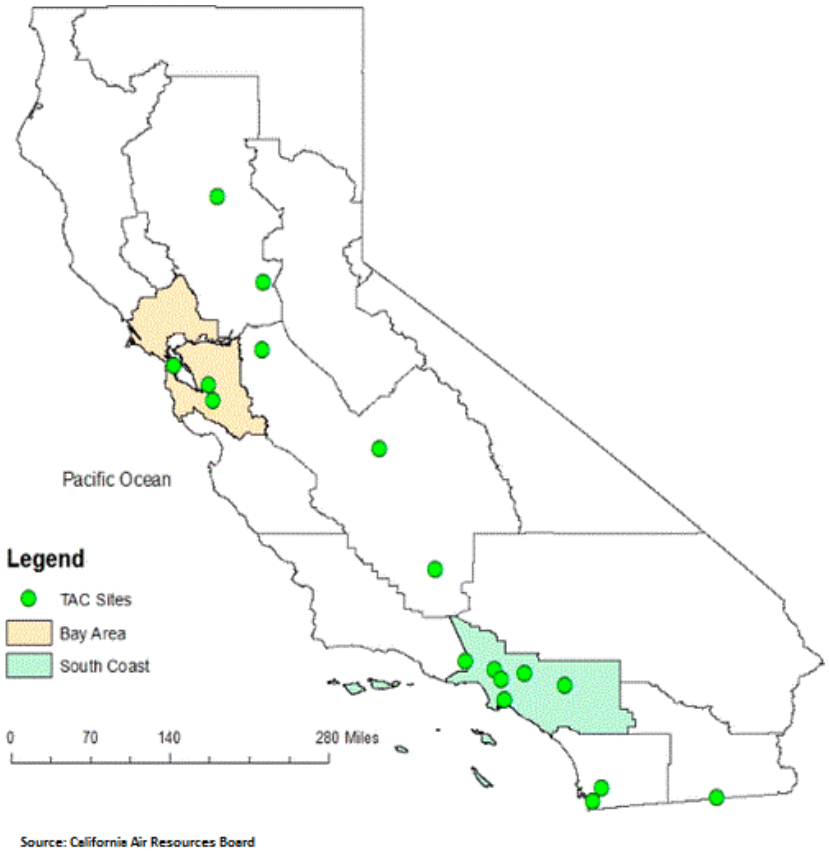
TABLE 2-8: SOUTH COAST AIR BASIN NITROGEN DIOXIDE TREND



TOXIC AIR CONTAMINANTS (TACS) TRENDS

In 1984, as a result of public concern for exposure to airborne carcinogens, the CARB adopted regulations to reduce the amount of air toxic contaminant emissions resulting from mobile and area sources, such as cars, trucks, stationary products, and consumer products. According to the *Ambient and Emission Trends of Toxic Air Contaminants in California* journal article which was prepared for CARB, results show that, between 1990-2012, ambient concentration and emission trends for the seven TACs responsible for most of the known cancer risk associated with airborne exposure in California have declined significantly (20). The seven TACs studied shown below include those that are derived from mobile sources: diesel particulate matter (DPM), benzene, and 1,3-butadiene; those that are derived from stationary sources: perchloroethylene and hexavalent chromium; and those derived from photochemical reactions of emitted VOCs: formaldehyde and acetaldehyde[2]. TACs data was gathered at monitoring sites from both the Bay Area and South Coast Air Basins, as shown on Exhibit 2-A; Several of the sites in the SCAB include Reseda, Compton, Rubidoux, Burbank, and Fontana. The decline in ambient concentration and emission trends of these TACs are a result of various regulations CARB has implemented to address cancer risk.

EXHIBIT 2-A: CALIFORNIA TOXIC AIR CONTAMINANT SITES



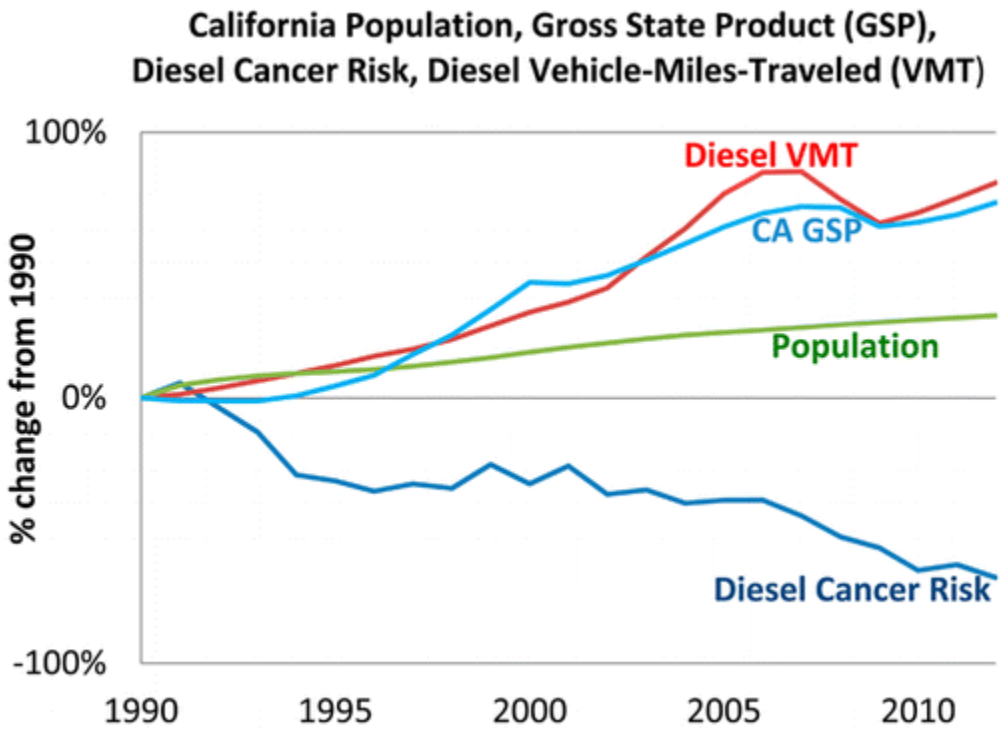
[2] It should be noted that ambient DPM concentrations are not measured directly. Rather, a surrogate method using the coefficient of haze (COH) and elemental carbon (EC) is used to estimate DPM concentrations.

Mobile Source TACs

The CARB introduced two programs that aimed at reducing mobile emissions for light and medium duty vehicles through vehicle emissions controls and cleaner fuel. Since 1996, light-duty vehicles sold in California are equipped with California's second-generation On-Board Diagnostic (OBD-II) system as a result of about half of total car emissions stemming from emissions control device malfunctions. CARB's phase II Reformulated Gasoline (RFG-2) regulation, adopted in 1996, also led to a reduction of mobile source emissions. Through such regulations, benzene levels declined 88% from 1990-2012. 1,3-Butadiene concentrations also declined 85% from 1990-2012 as a result of the motor vehicle regulations (20).

In 2000, CARB's Diesel Risk Reduction Plan (DRRP) recommended the replacement and retrofit of diesel-fueled engines and the use of ultra-low-sulfur (<15ppm) diesel fuel. As a result of these measures, DPM concentrations have declined 68%, even though the state's population increased 31% and the amount of diesel vehicles miles traveled increased 81%, as shown on Exhibit 2-B. With the implementation of these diesel-related control regulations, ARB expects a DPM decline of 71% for 2000-2020.

EXHIBIT 2-B: DIESEL PARTICULATE MATTER AND DIESEL VEHICLE MILES TREND



Source: California Air Resources Board

Stationary Source TACs

Various regulations led to a decrease in perchloroethylene and hexavalent chromium, with a 92% and 86% decline, respectively. By 1993, several local air districts required dry cleaning businesses to use a carbon absorber and refrigerated condenser, as well as, dry-to-dry machines and closed-looped machines instead of vented transfer machines. Starting in 2003, California provided financial incentives for dry cleaners to use other solvents and soon after, the CARB banned the use of perchloroethylene in automotive products, aerosol coatings, and most consumer products. In 2007, CARB's dry cleaning regulation was amended to require phase-out of perchloroethylene machines by 2023, which would further reduce emissions to minimal levels (20).

Hexavalent chromium emissions began to decline in 1988 with the ARB-regulated regulations contributing to more than 97% emission reduction within four years. The various regulations include prohibiting the use of hexavalent chromium in cooling towers (1989), in motor vehicle and mobile equipment coatings (2001), and in thermal spraying operations (2005). By 2005, hexavalent chromium emissions were 99.97% less than in 1987, far exceeding expectations. In 2006, hexavalent chromium emissions were further reduced with the 2006 ARB regulation requiring add-on air pollution control devices and chemical fume suppressants.

Secondary TACs

Between 1996-2012, ambient concentrations of formaldehyde and acetaldehyde declined 22% and 21%, respectively. The decline in these TACs are attributed from increasingly stringent motor vehicle exhaust emission standards, vehicle fleet turnover, fuel reformulation, and the switch from MTBE (formaldehyde precursor) to ethanol in gasoline (20).

As previously discussed, ambient and emissions levels of TACs have reduced significantly from 1990-2012. The overall declining trend in TACs is expected to continue in California from implementation of toxic air controls.

DIESEL REGULATIONS

The CARB and the Ports of Los Angeles and Long Beach have adopted several iterations of regulations for diesel trucks that are aimed at reducing diesel particulate matter (DPM). More specifically, the CARB Drayage Truck Regulation (21), the CARB statewide On-road Truck and Bus Regulation (22), and the Ports of Los Angeles and Long Beach "Clean Truck Program" (CTP) require accelerated implementation of "clean trucks" into the statewide truck fleet (23). In other words, older more polluting trucks will be replaced with newer, cleaner trucks as a function of these regulatory requirements

Moreover, the average statewide DPM emissions for Heavy Duty Trucks (HHDT), in terms of grams of DPM generated per mile traveled, will dramatically be reduced due to the aforementioned regulatory requirements.

Diesel emissions identified in this analysis would therefore overstate future DPM emissions since not all the regulatory requirements are reflected in the modeling.

CANCER RISK TRENDS

Based on information available from CARB, overall cancer risk throughout the basin has had a declining trend since 1990. In 1998, following an exhaustive 10-year scientific assessment process, the State of California Air Resources Board (ARB) identified particulate matter from diesel-fueled engines as a toxic air contaminant. The SCAQMD initiated a comprehensive urban toxic air pollution study, called MATES-II (for Multiple Air Toxics Exposure Study). MATES-II showed that average cancer risk in the SCAB ranges from 1,100 in a million to 1,750 in a million, with an average regional risk of about 1,400 in a million. Moreover, diesel particulate matter (DPM) accounts for more than 70 percent of the cancer risk.

In 2008 the SCAQMD prepared an update to the MATES-II study, referred to as MATES-III. MATES-III estimates the average excess cancer risk level from exposure to TACs is approximately 1,200 in one million basin-wide (a decrease in a regional risk by 200 in a million in comparison to the MATES-II study).

Nonetheless, the SCAQMD's most recent in-depth analysis of the toxic air contaminants and their resulting health risks for all of Southern California was from the *Multiple Air Toxics Exposure Study in the South Coast Air Basin, MATES IV,"* which shows that cancer risk has decreased more than 50% between MATES III (2005) and MATES IV (2012) (24).

MATES-IV study represents the baseline health risk for a cumulative analysis. MATES-IV estimates the average excess cancer risk level from exposure to TACs is less than 400 in one million basin-wide. These model estimates were based on monitoring data collected at ten fixed sites within the South Coast Air Basin. None of the fixed monitoring sites are within the local area of the Project site. However, MATES-IV has extrapolated the excess cancer risk levels throughout the basin by modeling the specific grids. MATES-IV modeling predicted an excess cancer risk of 402.04 in one million for the Project area[3]. DPM is included in this cancer risk along with all other TAC sources. DPM accounts for 68% of the total risk shown in MATES-IV. Cumulative Project generated TACs are limited to DPM.

[3] Based on a conversation with SCAQMD employee Kalam Cheung on December 10, 2015, the Mates IV Methodology was updated on November 20, 2015.

3 PROJECT AIR QUALITY IMPACT

3.1 INTRODUCTION

The Project has been evaluated to determine if it will violate an air quality standard or contribute to an existing or projected air quality violation. Additionally, the Project has been evaluated to determine if it will result in a cumulatively considerable net increase of a criteria pollutant for which the SCAB is non-attainment under an applicable federal or state ambient air quality standard. The significance of these potential impacts is described in the following section.

3.2 STANDARDS OF SIGNIFICANCE

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the Initial Study Checklist in Appendix G of the State CEQA Guidelines (14 California Code of Regulations §§15000, et seq.). Based on these thresholds, a project would result in a significant impact related to air quality if it would (25):

- Conflict with or obstruct implementation of the applicable air quality plan.
- Violate any air quality standard or contribute to an existing or projected air quality violation.
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions, which exceed quantitative thresholds for ozone precursors).
- Expose sensitive receptors to substantial pollutant concentrations.
- Create objectionable odors affecting a substantial number of people.

Within the context of the above threshold considerations, and based on the SCAQMD's CEQA Air Quality Handbook (1993), a project's localized CO emissions impacts would be significant if they exceed the following California standards for localized CO concentrations (17):

- 1-hour CO standard of 20.0 parts per million (ppm)
- 8-hour CO standard of 9.0 ppm.

The SCAQMD has also developed regional and localized thresholds for other regulated pollutants, as summarized at Table 3-1 (26). The SCAQMD's CEQA Air Quality Significance Thresholds (March 2015) indicate that any projects in the SCAB with daily emissions that exceed any of the indicated thresholds should be considered as having an individually and cumulatively significant air quality impact (discussed further below).

The AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (27). In this report the AQMD clearly states (Page D-3):

"…the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the

Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.

Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

TABLE 3-1: MAXIMUM DAILY REGIONAL EMISSIONS THRESHOLDS

Pollutant	Operations
Regional Thresholds	
NOx	55 lbs/day
VOC	55 lbs/day
PM10	150 lbs/day
PM2.5	55 lbs/day
SOx	150 lbs/day
CO	550 lbs/day
Lead	3 lbs/day

3.3 PROJECT-RELATED SOURCES OF POTENTIAL IMPACT

On October 2, 2013, the SCAQMD in conjunction with the California Air Pollution Control Officers Association (CAPCOA) released the latest version of the California Emissions Estimator Model™ (CalEEMod™) v2013.2.2. The purpose of this model is to calculate criteria pollutant (NO_x, VOC, PM_{10}, $PM_{2.5}$, SO_x, and CO) and greenhouse gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from mitigation measures (28). Accordingly, the latest version of CalEEMod™ has been used for this Project to determine air quality emissions generation. The CalEEMod calculations are supplemented by engineering calculations for fugitive dust associated with the crushing and processing of aggregate materials. Output from the model and calculations is provided in Appendix 3.2.

3.4 OPERATIONAL EMISSIONS

Operational activities associated with the proposed Project will result in emissions of ROG, NOX, CO, SOX, PM10, and PM2.5. Operational emissions would be expected from the following primary sources: On-Site Equipment, Mobile Source (Passenger Cars and Truck Traffic) Emissions, and Fugitive Dust from Material Processing. The Project will not result in an increase in the amount of natural gas associated with aggregate usage (since aggregate usage does not currently use any natural gas), although the Project will result in a 35.1% increase in electricity associated with the aggregate production. It should be noted that natural gas is utilized in conjunction with the asphalt batch plant operations and 100% of the asphalt batch plant's demand for natural gas is reflected in the emissions summary for the asphalt batch plant.

3.4.1 OPERATIONAL EQUIPMENT

Table 3-2 summarizes the equipment utilized at the Mine on a daily basis for the baseline operating period, proposed project operating characteristics, and net new equipment activity. As shown, mining activities during the baseline period result in approximately 20,316 horsepower hours per day. However, during most of the baseline operating period, the Mine was under different ownership, and the equipment utilized during that period is not reflective of the equipment that has been utilized on-site since 2014. At the time the Project's Notice of Preparation (NOP) was distributed for public review in July 2015, existing mining operations on-site were estimated to be approximately 25,148 horsepower hours per day (hh/d), representing an approximate 23.8% increase as compared to the horsepower hours per day that was were associated with mining operations under previous ownership. Although the Project would not increase the amount of hh/d as compared to the existing operational conditions that existed on-site at the time the Project's NOP was distributed for public review, in an effort to be conservative and consistent with the annual tonnage increase of 35.1%, the analysis herein increases the Project's hh/d to approximately 35.1% above what was in use under previous ownership. Thus, for analytical purposes herein, it is assumed that equipment used under the proposed Project would require approximately 27,495 horsepower hours per day, reflecting an approximate 35.1% increase in horsepower as compared to the baseline condition.

3.4.2 MOBILE SOURCE EMISSIONS

As shown in the Project's traffic study (11), the Project is anticipated to generate 140 net new daily truck trips above the historical baseline and 4 net new employee trips above the historical baseline.

The CalEEMod default of a 20 mile one-way trip length for trucks was increased to 25 miles based on discussion with the Project applicant and based on regional aggregate studies that have found that 25 miles is generally the maximum distance for aggregate to travel before the cost of delivery renders the aggregate material non-economical (29) (30).

TABLE 3-2: OPERATIONAL EQUIPMENT

Baseline Operational Equipment Summary				
Hours/Day	Description	Quantity	Horsepower	Total Horsepower Hours Per Day
2	Skidsteer	1	51	102
6	769C Haul Truck	1	474	2,844
10	980K Wheel Loader	1	406	4,060
10	980H Wheel Loader	1	393	3,930
10	988G Wheel Loader	1	520	5,200
4	D8R Dozer	1	337	1,348
8	Water Truck 4000 Gal	1	354	2,832
Total Baseline Horsepower Hours				**20,316**
Proposed Project Equipment Summary				
Hours/Day	Description	Quantity	Horsepower	Total Horsepower Hours Per Day
4	Skidsteer	1	51	204
8	769C Haul Truck	2	474	7,584
10	980K Wheel Loader	1	406	4,060
10	980H Wheel Loader	1	393	3,930
10	988G Wheel Loader	1	520	5,200
4	D8R Dozer	1	337	1,348
8	Water Truck 4000 Gal	1	354	2,832
Subtotal Project Horsepower Hours				**25,158**
Additional Equipment Summary				
Hours/Day	Description	Quantity	Horsepower	Total Horsepower Hours Per Day
4	Skidsteer	1	51	204
4.4	769C Haul Truck	1	474	2,085
Subtotal Additional Equipment Horsepower Hours				**2,289**
Total Project Horsepower Hours				**27,447**
Net New Project Equipment Summary				
Hours/Day	Description	Quantity	Horsepower	Total Horsepower Hours Per Day
6	Skidsteer	1	51	306
2	769C Haul Truck	1	474	948
8	769C Haul Truck	1	474	3,792
4.4	769C Haul Truck	1	474	2,085
Total Net New Project Horsepower Hours				**7,131**

The Project is anticipated to serve a regional need and will likely reduce vehicle miles traveled (VMT) in the long term by diverting trips that would otherwise travel to other aggregate

facilities in the region. Notwithstanding, for purposes of this analysis, no "credit" has been taken and emissions associated with the Project are considered "new" as a conservative measure.

The fact is that aggregate will be consumed with or without the proposed Project. The Project will not have an effect on demand for aggregate but will have an effect on the distance that aggregates travel within the region in the long term. Project aggregate made available by the proposed expansion area will replace materials hauled from farther distances in the long term and supply new demand for aggregate that will occur in the Riverside County region. This rationale is supported by Dr. Peter Berk's "Working Paper No. 994 – A Note on the Environmental Costs of Aggregate" (Department of Agricultural and Resource Economics and Policy, Division of Agricultural and Natural Resources, University of California Berkley, January 2005) (29). Dr. Berck states that:

> *"The opening of a new quarry for aggregates will change the pattern of transportation of aggregates in the area served by the quarry. In this note, we will show that, so long as aggregate producers are cost minimizing, the new pattern of transportation requires less truck transport than the pattern of transportation that existed before the opening of the new quarry. Since the costs of providing aggregates falls, it is reasonable to assume that the price of delivered aggregates also will fall. This note also shows that the demand expansion effect is of very small magnitude. Since the demand increase from a new quarry is quite small, the dominant effect is that the quarries are on average closer to the users of aggregates and, as a result, the truck mileage for aggregate hauling decreases. To summarize the effects of a new quarry project:*
>
> > *a) The project in itself will not significantly increase the demand for construction materials in the region through market forces, which include the downward pressure on pricing.*
> >
> > *b) Truck traffic (i.e. vehicle miles traveled) in the region will not increase and may decrease as a result of the project."*

In its guidance document *CEQA and Climate Change* the California Air Pollution Control Officers Association (CAPCOA) lists various mitigation measures that can be implemented to reduce AQ and GHG emissions for various projects. One particular mitigation measure for reducing AQ and GHG emissions during construction activity is Mitigation Measure C-5 "Use of Local Building Materials." The Project will provide local building materials to serve the demand for aggregate resources in the local area, thus resulting in a reduction in emissions associated with transport of materials from sources of aggregate products located further away. However, no "credit" is taken for this measure in this analysis in an effort to be conservative.

3.4.3 FUGITIVE DUST FROM MATERIAL PROCESSING

The emissions from the aggregate processing plant are not accounted for in CalEEMod. An engineering analysis that was prepared for the Project in support of the permitting process required by the South Coast Air Quality Management District (SCAQMD) was utilized to determine the amount of fugitive dust attributable to the Project.

The *Application for a Stationary Crushing & Screening Plant Nichols Road Facility, SCAQMD Facility ID: 177101* prepared for submittal to the SCAQMD on August 21, 2014 by Associates Environmental indicates that the Project operating at a maximum daily capacity of 5,000 tons processed would yield approximately 9.25 pounds per day of PM10 emissions. As such, the

amount attributable to the Project is 3.24 pounds per day of PM10 (or 35.05%) which indicates the net increase from the existing baseline. For analytical purposes PM2.5 fugitive dust emissions are assumed to be 21% of the PM10 emissions totals consistent with guidance from SCAQMD. The *Application for a Stationary Crushing & Screening Plant Nichols Road Facility, SCAQMD Facility ID: 177101* report is included in its entirety in Appendix 3.3.

Based on discussion with the Project applicant, a maximum of 15,000 square foot (SF) surface area for blasting is a reasonable working estimate for analytical purposes on days when blasting were to occur. Fugitive dust emissions during blasting activities were estimated using the US EPA AP-42 emission factor (Table 11.9-1, on Page 11.9-5 from AP-42) (23).

3.4.4 Asphalt Batch Plant Emissions

The Nichols North site is also subject to approved Conditional Use Permit (CUP 2014-07) which allows for the operation of a portable asphalt batch plant on approximately 1.76 acres of the Project site. Although the asphalt batch plant is previously approved, entitled, and permitted, the analysis in this AQIA conservatively assumes 100% of the impacts from the previously entitled asphalt batch plant.

Emissions estimates for the asphalt batch plant were obtained from the report *Comparison of Uncontrolled and Controlled Hot Mix Asphalt Plant Emissions* prepared by Associates Environmental and is included in its entirety in Appendix 3.5.

3.4.5 Net New Emissions Summary

Impacts Without Mitigation

Net new operational-source emissions without implementation of mitigation measures are summarized on Table 3-3. Detailed operational model outputs are presented in Appendix 3.2. For regional emissions, the Project would exceed the numerical thresholds of significance established by the SCAQMD for emissions of VOCs, NO_x, and $PM_{2.5}$. Mitigation Measure (MM) AQ-1 and MM AQ-2 are recommended to reduce the impact to the maximum extent possible.

Impacts With Mitigation

Operational-source emissions with implementation of MM AQ-1 and MM AQ-2 are summarized on Table 3-4. Detailed operational model outputs are presented in Appendix 3.2. For regional emissions, even with implementation of the recommended mitigation measure, the Project will still exceed the numerical thresholds of significance established by the SCAQMD for emissions of NO_x only, as such the Project will result in a significant impact.

TABLE 3-3: SUMMARY OF PEAK OPERATIONAL EMISSIONS (WITHOUT MITIGATION)

Operational Activities – Summer Emissions	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Operational Equipment	2.08	24.06	11.63	0.03	0.92	0.85
Mobile Sources	2.81	47.74	30.28	0.13	3.84	1.53
Fugitive Dust Material Processing/Blasting	--	--	--	--	9.94	2.08
Asphalt Batch Plant Emissions	101.11	52.6	272.37	6.81	75.47	72.75
Maximum Daily Emissions	**106**	**106.71**	**53.54**	**6.97**	**90.17**	**77.21**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**YES**	**YES**	**NO**	**NO**	**NO**	**YES**

Operational Activities – Winter Emissions	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Operational Equipment	2.08	24.06	11.63	0.03	0.92	0.85
Mobile Sources	2.95	49.51	34.21	0.13	3.84	1.53
Fugitive Dust Material Processing/Blasting	--	--	--	--	9.94	2.08
Asphalt Batch Plant Emissions	101.11	52.6	272.37	6.81	75.47	72.75
Maximum Daily Emissions	**106.14**	**126.17**	**318.21**	**6.97**	**90.17**	**77.21**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**YES**	**YES**	**NO**	**NO**	**NO**	**YES**

TABLE 3-4: SUMMARY OF PEAK OPERATIONAL EMISSIONS (WITH MITIGATION)

Operational Activities – Summer Emissions	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Operational Equipment	0.37	2.17	13.52	0.03	0.05	0.05
Mobile Sources	2.81	47.74	30.28	0.13	3.84	1.53
Fugitive Dust Material Processing/Blasting	--	--	--	--	9.94	2.08
Asphalt Batch Plant Emissions	12.32	19.58	99.49	4.15	11.61	11.19
Maximum Daily Emissions	**15.50**	**69.49**	**143.29**	**4.31**	**25.44**	**14.85**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**YES**	**NO**	**NO**	**NO**	**NO**

Operational Activities – Winter Emissions	VOC	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Operational Equipment	0.37	2.17	13.52	0.03	0.05	0.05
Mobile Sources	2.95	49.51	34.21	0.13	3.84	1.53
Fugitive Dust Material Processing/Blasting	--	--	--	--	9.94	2.08
Asphalt Plant Emissions	12.32	19.58	99.49	4.15	11.61	11.19
Maximum Daily Emissions	**15.64**	**71.26**	**147.22**	**4.31**	**25.44**	**14.85**
SCAQMD Regional Threshold	55	55	550	150	150	55
Threshold Exceeded?	**NO**	**YES**	**NO**	**NO**	**NO**	**NO**

3.5 LOCALIZED SIGNIFICANCE

BACKGROUND ON LOCALIZED SIGNIFICANCE THRESHOLD (LST) DEVELOPMENT

The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (Methodology) (31). The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the federal and/or state ambient air quality standards (NAAQS/CAAQS). Collectively, these are referred to as Localized Significance Thresholds (LSTs).

The significance of localized emissions impacts depends on whether ambient levels in the vicinity of any given project are above or below State standards. In the case of CO and NO2, if ambient levels are below the standards, a project is considered to have a significant impact if project emissions result in an exceedance of one or more of these standards. If ambient levels already exceed a state or federal standard, then project emissions are considered significant if they increase ambient concentrations by a measurable amount. This would apply to PM10 and PM2.5; both of which are non-attainment pollutants.

The SCAQMD established LSTs in response to the SCAQMD Governing Board's Environmental Justice Initiative I-4. LSTs represent the maximum emissions from a project that will not cause or contribute to an exceedance of the most stringent applicable federal or state ambient air quality standard at the nearest residence or sensitive receptor. The SCAQMD states that lead agencies can use the LSTs as another indicator of significance in its air quality impact analyses.

LSTs were developed in response to environmental justice and health concerns raised by the public regarding exposure of individuals to criteria pollutants in local communities. To address the issue of localized significance, the SCAQMD adopted LSTs that show whether a project would cause or contribute to localized air quality impacts and thereby cause or contribute to potential localized adverse health effects. The analysis makes use of methodology included in the SCAQMD *Final Localized Significance Threshold Methodology* (LST Methodology) (32).

APPLICABILITY OF LSTS FOR THE PROJECT

For this Project, the appropriate Source Receptor Area (SRA) for the LST is the Lake Elsinore area (SRA 25). LSTs apply to carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter ≤ 10 microns (PM_{10}), and particulate matter ≤ 2.5 microns ($PM_{2.5}$).

Emissions Considered

SCAQMD's Methodology clearly states that "off-site mobile emissions from the Project should NOT be included in the emissions compared to LSTs (33)." Therefore, for purposes of the LST analysis only emissions included in the CalEEMod "on-site" emissions outputs were considered.

In an effort to establish a maximum potential impact scenario for analytic purposes, emissions for operational LSTs include all Project-related on-site sources and five percent (5%) of the Project-related mobile sources. Considering that the weighted trip length used in CalEEMod™ for the Project is approximately 25 miles, 5% of this total would represent an on-site travel distance for each car and truck of more than 1 mile or 5,280 feet, thus the 5% assumption is

conservative and would tend to overstate the actual impact. Modeling based on these assumptions demonstrates that even within broad encompassing parameters, Project operational-source emissions would not exceed applicable LSTs.

Receptors

The nearest sensitive receptor land uses to the Project site were modeled as illustrated on Exhibit 3-A.

LOCALIZED THRESHOLDS FOR OPERATIONAL ACTIVITY

The SCAQMD has established that impacts to air quality are significant if there is a potential to contribute or cause localized exceedances of the Federal and/or State Ambient Air Quality Standards (34).

Applicable localized thresholds are as follows:

- California State 1-hour CO standard of 20.0 ppm;
- California State 8-hour CO standard of 9.0 ppm;
- California State 1-hour NO2 standard of 0.18 ppm;
- California State Annual NO2 standard of 0.03 ppm;
- SCAQMD 24-hour operational PM_{10} LST of 2.5 µg/m3;
- SCAQMD Annual operational PM_{10} LST of 1.0 µg/m3;
- SCAQMD 24-hour operational $PM_{2.5}$ LST of 2.5 µg/m3.

For operational LSTS, on-site passenger car, truck travel, operational equipment, and fugitive dust emissions were modeled in AERMOD. Outputs from the model runs for operational LSTs are provided in Appendix 3.4.

Impacts without Mitigation

The estimated localized operational emissions without mitigation are summarized on Table 3-5. As shown, Project operational emissions have the potential to exceed the SCAQMD's localized significance thresholds for emissions of PM10 and PM2.5 at the nearest sensitive receptor.

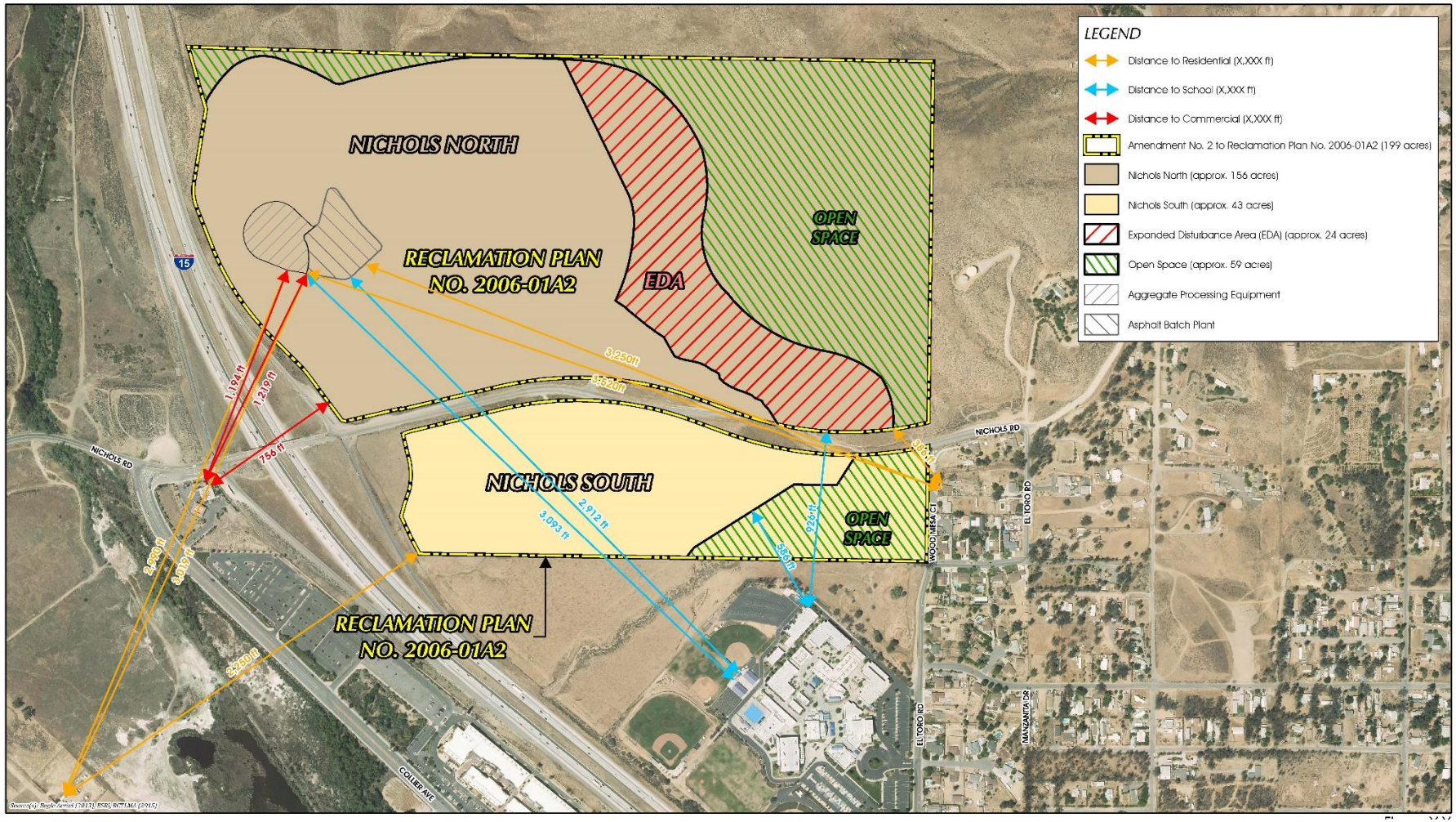
TABLE 3-5 LOCALIZED SIGNIFICANCE SUMMARY OPERATIONS (WITHOUT MITIGATION)

Operation	CO		NO_2		PM_{10}		$PM_{2.5}$
	Averaging Time						
	1-Hour	8-Hour	1-Hour	Annual	24-Hours	Annual	24-Hours
Peak Day Localized Emissions	0.13	0.06	0.02	0.001	9.98	1.87	9.62
Background Concentration [A]	2	1.4	0.05	0.01			
Total Concentration	**2.13**	**1.46**	**0.07**	**0.0101**	**9.98**	**1.87**	**9.62**
SCAQMD Localized Significance Threshold	20	9	0.18	0.03	2.5	1	2.5
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**YES**	**YES**	**YES**

[A] Highest concentration from the last three years of available data

Note: PM_{10} and $PM_{2.5}$ concentrations are expressed in $\mu g/m^3$. All others are expressed in ppm

EXHIBIT 3-A: AIR QUALITY SENSITIVE RECEPTOR LOCATIONS



Source: T&B Planning Inc.

Impacts with Mitigation

The estimated localized operational emissions with mitigation are summarized on Table 3-6. MMs AQ-1 and AQ-2 are recommended to reduce the severity of the PM10 and PM2.5 emissions impacts. After implementation of MMs AQ-1 and AQ-2, Project operational emissions would not exceed the applicable SCAQMD LSTs for any criteria pollutant.

TABLE 3-6 LOCALIZED SIGNIFICANCE SUMMARY OPERATIONS (WITH MITIGATION)

Operation	CO		NO_2		PM_{10}		$PM_{2.5}$
	Averaging Time						
	1-Hour	8-Hour	1-Hour	Annual	24-Hours	Annual	24-Hours
Peak Day Localized Emissions	0.05	0.02	0.01	0.0003	1.54	0.35	1.48
Background Concentration [A]	2	1.4	0.05	0.01			
Total Concentration	**2.05**	**1.42**	**0.06**	**0.01**	**1.54**	**0.35**	**1.48**
SCAQMD Localized Significance Threshold	20	9	0.18	0.03	2.5	1	2.5
Threshold Exceeded?	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**	**NO**

[A] Highest concentration from the last three years of available data

Note: PM_{10} and $PM_{2.5}$ concentrations are expressed in $\mu g/m^3$. All others are expressed in ppm

3.6 CO "HOT SPOT" ANALYSIS

As discussed below, the Project would not result in potentially adverse CO concentrations or "hot spots." Further, detailed modeling of Project-specific carbon monoxide (CO) "hot spots" is not needed to reach this conclusion.

It has long been recognized that adverse localized CO concentrations ("hot spots") are caused by vehicular emissions, primarily when idling at congested intersections. In response, vehicle emissions standards have become increasingly stringent in the last twenty years. Currently, the allowable CO emissions standard in California is a maximum of 3.4 grams/mile for passenger cars (there are requirements for certain vehicles that are more stringent). With the turnover of older vehicles, introduction of cleaner fuels, and implementation of increasingly sophisticated and efficient emissions control technologies, CO concentrations in the air basin have steadily declined, as indicated by historical emissions data presented previously at Table 2-3.

A CO "hotspot" would occur if an exceedance of the state one-hour standard of 20 ppm or the eight-hour standard of 9 ppm were to occur. At the time of the 1993 Handbook, the SCAB was designated nonattainment under the California AAQS and National AAQS for CO (35).

As identified within SCAQMD's 2003 AQMP and the 1992 Federal Attainment Plan for Carbon Monoxide (1992 CO Plan), peak carbon monoxide concentrations in the SCAB were a result of unusual meteorological and topographical conditions and not a result of congestion at a particular intersection (36). To establish a more accurate record of baseline CO concentrations affecting the SCAB, a CO "hot spot" analysis was conducted in 2003 for four busy intersections in Los Angeles at the peak morning and afternoon time periods. The intersections evaluated included: Long Beach Blvd. and Imperial Highway (Lynwood); Wilshire Blvd. and Veteran Ave.

(Westwood); Sunset Blvd. and Highland Ave. (Hollywood); and La Cienega Blvd. and Century Blvd. (Inglewood). These analyses did not predict a violation of CO standards. The busiest intersection evaluated was that at Wilshire Blvd. and Veteran Ave., which has a daily traffic volume of approximately 100,000 vehicles per day. The 2003 AQMP estimated that the 1-hour concentration for this intersection was 4.6 ppm, which indicates that the most stringent 1-hour CO standard (20.0 ppm) would likely not be exceeded until the daily traffic at the intersection exceeded more than 400,000 vehicles per day.[4] The Los Angeles County Metropolitan Transportation Authority evaluated the LOS in the vicinity of the Wilshire Blvd./Veteran Ave. intersection[5] and found it to be Level E at peak morning traffic and Level F at peak afternoon traffic.[6]

It can therefore be reasonably concluded that projects (such as the proposed Project) that are not subject to the extremes in vehicle volumes and vehicle congestion that was evidenced in the 2003 Los Angeles hot spot analysis would similarly not create or result in CO hot spots.

Similar considerations are also employed by other Air Districts when evaluating potential CO concentration impacts. More specifically, the Bay Area Air Quality Management District (BAAQMD) concludes that under existing and future vehicle emission rates, a given project would have to increase traffic volumes at a single intersection by more than 44,000 vehicles per hour—or 24,000 vehicles per hour where vertical and/or horizontal air does not mix—in order to generate a significant CO impact (37). The proposed Project considered herein would not produce the volume of traffic required to generate a CO hotspot either in the context of the 2003 Los Angeles hot spot study, or based on representative BAAQMD CO threshold considerations (see Table 3-7). Therefore, CO hotspots are not an environmental impact of concern for the proposed Project. Localized air quality impacts related to mobile-source emissions would therefore be less than significant.

TABLE 3-7: PROJECT PEAK HOUR TRAFFIC VOLUMES

Intersection Location	Northbound (AM/PM)	Southbound (AM/PM)	Eastbound (AM/PM)	Westbound (AM/PM)	Total (AM/PM)
I-15 SB Ramps & Nichols Rd.	--/--	520/470	1,025/1,033	529/786	2,074/2,289
I-15 NB Ramps & Nichols Rd.	503/643	--/--	886/625	523/290	1,912/1,558
Driveway 1 & Nichols Rd.	--/--	73/32	1,003/380	450/259	1,526/671
Driveway 2 & Nihcols Rd.	--/--	--/--	1,003/380	450/259	1,453/639

Source: Amendment No. 2 to Reclamation Plan 2006-01 Traffic Impact Analysis (Urban Crossroads, Inc., 2015).
AM = 7am-9am, PM = 4pm-6pm

4 Based on the ratio of the CO standard (20.0 ppm) and the modeled value (4.6 ppm).

5 The Metropolitan Transportation Authority measured traffic volumes and calculated the LOS for the intersection of Whilshire Boulevar/Sepulveda Avenue, which is a block west along Wilshire Boulevard but still east of Interstate 405.

6 Metropolitan Transportation Authority. 2004. Congestion Management Program for Los Angeles County. Exhibit 2-6 and Appendix A. July 22.

3.7 AIR QUALITY MANAGEMENT PLANNING

The Project site is located within the SCAB, which is characterized by relatively poor air quality. The SCAQMD has jurisdiction over an approximately 10,743 square-mile area consisting of the four-county Basin and the Los Angeles County and Riverside County portions of what use to be referred to as the Southeast Desert Air Basin. In these areas, the SCAQMD is principally responsible for air pollution control, and works directly with the Southern California Association of Governments (SCAG), county transportation commissions, local governments, as well as state and federal agencies to reduce emissions from stationary, mobile, and indirect sources to meet state and federal ambient air quality standards.

Currently, these state and federal air quality standards are exceeded in most parts of the Basin. In response, the SCAQMD has adopted a series of Air Quality Management Plans (AQMPs) to meet the state and federal ambient air quality standards. AQMPs are updated regularly in order to more effectively reduce emissions, accommodate growth, and to minimize any negative fiscal impacts of air pollution control on the economy.

The Final 2012 AQMP was adopted by the AQMD Governing Board on December 7, 2012 (38). The 2012 AQMP incorporates the latest scientific and technological information and planning assumptions, including the 2012 Regional Transportation Plan/Sustainable Communities Strategy and updated emission inventory methodologies for various source categories.

Similar to the 2007 AQMP, the 2012 AQMP was based on assumptions provided by both CARB and SCAG in the latest available EMFAC model for the most recent motor vehicle and demographics information, respectively. The air quality levels projected in the 2012 AQMP are based on several assumptions. For example, the 2012 AQMP has assumed that development associated with general plans, specific plans, residential projects, and wastewater facilities will be constructed in accordance with population growth projections identified by SCAG in its 2012 RTP. The 2012 AQMP also has assumed that such development projects will implement strategies to reduce emissions generated during the construction and operational phases of development. The Project's consistency with the 2012 AQMP is discussed as follows:

Criteria for determining consistency with the AQMP are defined in Chapter 12, Section 12.2 and Section 12.3 of the SCAQMD's CEQA Air Quality Handbook (1993) (17). These indicators are discussed below:

- Consistency Criterion No. 1: The proposed Project will not result in an increase in the frequency or severity of existing air quality violations or cause or contribute to new violations, or delay the timely attainment of air quality standards or the interim emissions reductions specified in the AQMP.

The Project LST analysis demonstrates that Project operational-source emissions have the potential to exceed applicable LSTs for emissions of PM10 only and therefore the Project has the potential to result in a significant impact.

Nonetheless, the location of the Project proximate to local and regional transportation facilities would act to reduce vehicle miles traveled (VMTs) and associated mobile-source (vehicular)

emissions. Additionally, by making additional aggregate reserves available on site, the Project would result in reduced VMTs by reducing the distance aggregate materials need to be transported to serve the local area. These Project attributes and features are consistent with and support AQMP air pollution reduction strategies and promote timely attainment of AQMP air quality standards.

On the basis of the preceding discussion, the Project is determined to be consistent with the first criterion.

- Consistency Criterion No. 2: The Project will not exceed the assumptions in the AQMP based on the years of Project build-out phase.

The 2012 Air Quality Management Plan (AQMP) demonstrates that the applicable ambient air quality standards can be achieved within the timeframes required under federal law. Growth projections from local general plans adopted by cities in the district are provided to the Southern California Association of Governments (SCAG), which develops regional growth forecasts, which are then used to develop future air quality forecasts for the AQMP. Development consistent with the growth projections in the City of Lake Elsinore General Plan is considered to be consistent with the AQMP.

The Project is consistent with the site's land use at the time the 2012 AQMP was adopted and the site's "Extractive Overlay" General Plan land use designation and would therefore result in emissions that would have been "accounted for" in the AQMP based on the mining activities that occurred on-site in 2012 and the site's General Plan land use designation. Notwithstanding, the Projects operational impacts will exceed the applicable regional thresholds even after mitigation for emissions of NOx.

AQMP Consistency Conclusion

Based on the preceding discussion, and based primarily on the level of emissions of NOx that would be generated by the Project, the Project would conflict with the AQMP and has the potential to result in a significant impact with respect to AQMP consistency.

3.8 POTENTIAL IMPACTS TO SENSITIVE RECEPTORS

The potential impact of Project-generated air pollutant emissions at sensitive receptors has also been considered. Sensitive receptors can include uses such as long term health care facilities, rehabilitation centers, and retirement homes. Residences, schools, playgrounds, child care centers, and athletic facilities can also be considered as sensitive receptors.

Results of the LST analysis indicate that the Project will not exceed the SCAQMD localized significance thresholds during operational activity (with mitigation). The proposed Project would not result in a CO "hotspot" as a result of Project related traffic during ongoing operations. An air toxics health risk assessment has been prepared in a separate document, Amendment No. 2 to Reclamation Plan 2006-01 Air Toxics Health Risk Assessment (Urban Crossroads 2016) (39). As identified in the report, the Project would not result in a significant adverse health impact to sensitive receptors and would not result in a significant health risk impact.

3.9 ODORS

The potential for the Project to generate objectionable odors has also been considered. Land uses generally associated with odor complaints include:

- Agricultural uses (livestock and farming)
- Wastewater treatment plants
- Food processing plants
- Chemical plants
- Composting operations
- Refineries
- Landfills
- Dairies
- Fiberglass molding facilities

The proposed Project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the proposed Project may result from equipment exhaust and the temporary storage of typical solid waste (refuse) associated with the proposed Project's (long-term operational) uses. It is expected that Project-generated refuse would be stored in covered containers and removed at regular intervals in compliance with the City's solid waste regulations. The proposed Project would also be required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances. Therefore, odors associated with the proposed Project would be less than significant and no mitigation is required.

In order to evaluate the Project's potential to expose nearby sensitive receptors to odors associated with the asphalt batch plant operation, an Odor Impact Analysis was prepared by Giroux and Associates, the results of which are contained in Appendix A of the previous MND. The analysis includes a quantification of odor strength. Quantification of odor strength has traditionally been accomplished by presenting a panel of average people with an air sample and having them progressively dilute the sample with clean air until fewer than half the panel could still smell the underlying odor. The number of fresh air dilutions was called the number of odor units (OU) per unit volume, or the dilutions-to-threshold (D/T) of the sample. Some more recent approaches have been to automate the process to feed the odorant and dilution air in a dynamic mixing chamber. Fence-line surveys of odor strengths have been conducted for various asphalt plants and the theoretical limit of odor detection has been estimated using dispersion models to extrapolate the on-site measurement to the distance where natural dilution has achieved a 1.0 D/T odor level. It should be noted that the SCAQMD CEQA Air Quality Handbook identifies an odor strength of 5.0 D/T as an odor impact condition and 10.0 D/T as a significant impact under CEQA. Given the sensitivity of some people to odor, and in an effort to be conservative, for purposes of analysis herein a significant odor impact would occur if sensitive receptors were to be exposed to odors in excess of 1.0 D/T. (Giroux Associates, 2014a, p. 2)

A very detailed asphalt plant odor study in Australia (Kilburn Odour Study, 2005) observed an asphalt plant odor level of 6 D/T at the plant fence-line. A similar detailed study in Everett, Washington (PCCAA Regional Odor Monitoring Program, 2014) found that the CEMEX/Granite Asphalt Plant generated less than 1.0 D/T at any downwind sensitive receptor. If one assumes that the Kilburn measured odor plume would expand in a random Gaussian dispersion pattern, nearby sensitive receptors (i.e., residential homes and the high school) would only be exposed to plant-related odors up to 0.07 D/T, which is well below the identified threshold of significance of 1.0 D/T. (Giroux Associates, 2014a, p. 2)

In addition, odor impact assessment requires knowledge of the volume of odorant released, the wind direction carrying the odor off-site, and the amount of dilution that the odor plume will experience between the source and the receptor. For the proposed Project, none of these parameters are static during any 24 hour period. Asphalt production as the period of maximum odor generation occurs during an early morning window. Early mornings have very poor turbulent dispersion, but winds blow primarily SE to NW during the morning hours. By the time winds reverse to blow SE toward the high school, odor generation would be small and daytime turbulence will progressively increase. Even without a distance separation of more the 0.5 miles between the plant site and the nearest homes or school, meteorology and production schedules combine to minimize any adverse impact potential. Since prevailing winds generally follow I-15 (toward Corona at night and in the early morning, toward Temecula from mid- morning to evening), there is further minimal potential to exposure the closest homes east and west of I-15 to the residual of any on-site odor emissions from asphalt production, storage and distribution. (Giroux Associates, 2014a, p. 1)

Accordingly, due to the low level of odors affecting sensitive receptors, likely production schedules, and prevailing wind patterns, the Project would not expose nearby sensitive receptors to substantial odors, and impacts would be less than significant.

3.10 CUMULATIVE IMPACTS

The Project area is designated as an extreme non-attainment area for ozone, and a non-attainment area for PM_{10}, $PM_{2.5}$, and lead.

The AQMD has published a report on how to address cumulative impacts from air pollution: *White Paper on Potential Control Strategies to Address Cumulative Impacts from Air Pollution* (27). In this report the AQMD clearly states (Page D-3):

"…the AQMD uses the same significance thresholds for project specific and cumulative impacts for all environmental topics analyzed in an Environmental Assessment or EIR. The only case where the significance thresholds for project specific and cumulative impacts differ is the Hazard Index (HI) significance threshold for toxic air contaminant (TAC) emissions. The project specific (project increment) significance threshold is HI > 1.0 while the cumulative (facility-wide) is HI > 3.0. It should be noted that the HI is only one of three TAC emission significance thresholds considered (when applicable) in a CEQA analysis. The other two are the maximum individual cancer risk (MICR) and the cancer burden, both of which use the same significance thresholds (MICR of 10 in 1 million and cancer burden of 0.5) for project specific and cumulative impacts.

Projects that exceed the project-specific significance thresholds are considered by the SCAQMD to be cumulatively considerable. This is the reason project-specific and cumulative significance thresholds are the same. Conversely, projects that do not exceed the project-specific thresholds are generally not considered to be cumulatively significant."

Therefore, this analysis assumes that individual projects that do not generate emissions that exceed the SCAQMD's recommended daily thresholds for project-specific impacts would also not cause a cumulatively considerable increase in emissions for those pollutants for which the Basin is in nonattainment, and, therefore, would not be considered to have a significant, adverse air quality impact. Alternatively, individual project-related emissions that exceed SCAQMD thresholds for project-specific impacts would be considered cumulatively considerable.

As previously noted under the discussion and analysis of the Project's Regional operational emissions, the Project would exceed the Regional Thresholds for NO_X, an ozone precursor. Even with implementation of MM AQ-1 and MM AQ-2, the Project's NO_X emissions would exceed the SCAQMD Regional Thresholds for NO_X, thereby resulting in a significant project-specific and cumulative impact.

CRITERION 1; REGIONAL EMISSIONS ANALYSIS

Project operational-source emissions have the potential to exceed applicable SCAQMD regional thresholds for emissions of NO_x, even with the application of mitigation. Therefore, Project operational-source emissions would be considered significant on a project-specific and cumulative basis.

CRITERION 2; LOCAL EMISSIONS ANALYSIS UTILIZING LIST APPROACH

A list approach is used, in accordance with Section 15130(b) of the CEQA Guidelines, which states the following:

> *The following elements are necessary to an adequate discussion of significant cumulative impacts: 1) Either: (A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or (B) A summary of projections contained in an adopted general plan or related planning document, or in a prior environmental document which has been adopted or certified, which described or evaluated regional or area wide conditions contributing to the cumulative impact.*

The SCAQMD has recognized that there is typically insufficient information to quantitatively evaluate the cumulative contributions of multiple projects because each project applicant has no control over nearby projects. Nevertheless, the potential cumulative impacts from the Project and other projects are discussed below. A cumulative project list was developed for this analysis and is shown in Table 3-8.

Related projects could contribute to an existing or projected air quality exceedance because the Basin is currently nonattainment for ozone, PM10, and PM2.5. As previously noted under the discussion and analysis of the Project's Regional operational emissions, the Project would

exceed the Regional Thresholds for NO_x, even with the application of mitigation. As such the Project would result in a significant project-specific and cumulative impact with respect to NO_x.

TABLE 3-8: CUMULATIVE DEVELOPMENT LIST

No.	Project Name	Location	Land Use	Quantity[1]	
City of Lake Elsinore					
LE1	Greenwald[2]	Lake Elsinore	Shopping Center	104.450	TSF
LE2	Ramsgate	Lake Elsinore	Single Family Residential	1,012	DU
			Condo/Townhomes	120	DU
LE3	Trieste Residential (Tract 36624)	Lake Elsinore	Single Family Residential	75	DU
LE4					
LE5	1400 Minthorn Street[3]	Lake Elsinore	Single Family Residential	84	DU
LE6	Spyglass Ranch[4]	Lake Elsinore	Single Family Residential	523	DU
			Condo/Townhomes	171	DU
			Shopping Center	145.00	TSF
LE7	South Shore I (Tract 31593)[5]	Lake Elsinore	Single Family Residential	521	DU
	South Shore II (Tract 36567)[5]	Lake Elsinore	Single Family Residential	147	DU
LE8	La Strada (Tract 32077)	Lake Elsinore	Single Family Residential	134	DU
LE9	Tuscany West (Tract 25473)[5]	Lake Elsinore	Single Family Residential	164	DU
LE10	Marina Village Condos (Tract 33820)[6]	Lake Elsinore	Condo/Townhomes	94	DU
LE11	Watersedge[5]	Lake Elsinore	Single Family Residential	170	DU
			Condo/Townhomes	250	DU
			Apartments	110	DU
			Office	54.600	TSF
			Hotel	150	RM
			Boat/Watercraft Dealers & Service	50.000	TSF
			Mini-Warehouse (Boat & Watercraft Storage)	76.000	TSF
			Shopping Center	86.600	TSF
	Cottages by the Lake	Lake Elsinore	Condo/Townhomes	169	DU
LE12	Tessera[5]	Lake Elsinore	Single Family Residential	90	DU
LE13	TAG Property[6]	Lake Elsinore	New Car Sales	50.000	TSF
LE14	City Center Condos[6]	Lake Elsinore	Condo/Townhomes	144	DU
LE15	Lake View Villas	Lake Elsinore	Condo/Townhomes	155	DU
LE16	Diamond Specific Plan[7]	Lake Elsinore	Condo/Townhomes	600	DU
			Hotel	150	RM
			General Office	425.000	TSF

			Shopping Center	472.000	TSF
LE17	The Colony[6]	Lake Elsinore	Apartments	211	DU
	Back Basin Specific Plan & East Lake Specific Plan	Lake Elsinore	Single Family Residential	2,407	DU
			Condo/Townhomes	324	DU
	John Laing Homes (Phase 2)	Lake Elsinore	Single Family Residential	506	DU
			Condo/Townhomes	1,141	DU
			Apartments	308	DU
			Shopping Center	117.000	TSF
LE18	Canyon Hills Estates (Tract 34249)	Lake Elsinore	Single Family Residential	302	DU
	Canyon Hills (Multiple Tracts)	Lake Elsinore	Single Family Residential	2,700	DU
			Apartments	1,575	DU
	Audie Murphy (Tract 36484)	Lake Elsinore	Single Family Residential	109	DU
	Audie Murphy (Tract 36485)	Lake Elsinore	Single Family Residential	1,003	DU
LE19	Gruneto Hills	Lake Elsinore	Single Family Residential	191	DU
LE20	Hotel at 17584 Lawrence Way	Lake Elsinore	Hotel	57	RM
LE21	Alberhill Ridge (Tract 35001)	Lake Elsinore	Single Family Residential	1,056	DU
			Apartments	345	DU
			Shopping Center	679.000	TSF
			General Office	679.000	TSF
LE22	Alberhill Ranch	Lake Elsinore	Single Family Residential	1,986	DU
LE23	Lake Elsinore Walmart	Lake Elsinore	Free-Standing Discount Superstore	154.487	TSF
			Specialty Retail	4.600	TSF
			Fast Food w/Drive Thru	6.800	TSF
			Fast Food w/o Drive Thru	4.600	TSF
LE24	Circle K	Lake Elsinore	Gas Station	4.500	TSF
LE25	Alberhill Villages	Lake Elsinore	Single Family Residential	9,536	DU
LE26	Terracina	Lake Elsinore	Single Family Residential	365	DU
LE27	Encore at Cambria Hills	Lake Elsinore	Single Family Residential	214	DU
LE28	Family Dollar Store	Lake Elsinore	Discount Store	8.320	TSF
LE29	Fisherman's Wharf	Lake Elsinore	Fisherman's Wharf	12.748	TSF
LE30	Wake Rider Beach Resort	Lake Elsinore	Beach Resort	11.350	TSF
LE31	Lakeshore Town Center	Lake Elsinore	Town Center	237.400	TSF
LE32	Ortega	Lake Elsinore	Single Family Residential	105	DU
LE3	Summerly	Lake Elsinore	Single Family Residential	142	DU

3					
LE34	Beazer, KB Homes, McMillin Homes, Richmond American	Lake Elsinore	Single Family Residential	395	DU
LE35	Village at Lake Elsinore SPA #1	Lake Elsinore	Single Family Residential	163	DU
LE36	Lake Shore Pointe Phase I	Lake Elsinore	Single Family Residential	43	DU
			Apartments	161	DU
LE37	Golden Corral Restaurant	Lake Elsinore	Restaurant	7.798	TSF
County of Riverside					
RC1	Lennar (Tract 31792)	County of Riverside	Single Family Residential	191	DU
RC2	PM33840	County of Riverside	Single Family Residential	4	DU
RC3	PP20158R1	County of Riverside	Storage Facility	103.727	TSF
RC4	CUP03651	County of Riverside	Recycling Facility	0.504	TSF
City of Wildomar					
W1	Rancon Monte Vista Residential (TTM No. 31409, APN: 367-110-007, 367-110-008)	Wildomar	SFDR	126	DU
W2	Wildomar Walmart	Wildomar	Free-Standing Discount Superstore	200.000	TSF
			Specialty Retail	3.900	TSF
			Fast-food with Drive-Through	126.000	TSF
W3	Cornerstone Church Pre-School Expansion (PUP No. 778)[4]	Wildomar	Pre-School/Day Care	180	STU
W4	Sehremelis PAR (TTM 29426, APN:367-250-007)	Lake Elsinore	SFDR	80	DU
W5	Subway (Case No. 10-0222, APN:366-390-026, 366-390-027)	Wildomar	Specialty Retail	10.500	TSF
W6	Orange Bundy (TPM 30522, APN: 367-100-024, 367-100-026)	Wildomar	Retail	79.497	TSF
			Fast Food w/Drive Thru	1.500	TSF
			Gas Station w/ Market	6	VFP
W7	Bundy Canyon Plaza (Case No. 08-0179, TPM 32257, APN:367-100-019)	Wildomar	Retail	33.800	TSF
			Fast Food w/Drive Thru	6.200	TSF
			Gas Station w/ Market	12	VFP

[1] TSF = Thousand Square Feet; DU = Dwelling Unit; AC = Acres; STU = Students; VFP = Vehicle Fueling Positions

[2] Source: Greenwald Avenue Commercial Center TIA, Urban Crossroads, Inc., May 2008.

[3] Source: 1400 Minthorn Street Traffic Study Report, ASM Consulting, August 2007.

[4] Source: Spyglass Ranch TIA (Revised), Kunzman Associates, February 2007.

[5] Source: Porto Romano SP TIA (Revised), Urban Crossroads, Inc., May 2007.

[6] Source: Lake Elsinore TAG Property TIA (Revised), Urban Crossroads, Inc., August 2008.

[7] Source: The Diamond Specific Plan TIA, Urban Crossroads, Inc., April 2009.

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5 CERTIFICATION

The contents of this air study report represent an accurate depiction of the environmental impacts associated with the proposed Amendment No. 2 to Reclamation Plan 2006-01 Project. The information contained in this air quality impact assessment report is based on the best available data at the time of preparation. If you have any questions, please contact me directly at (949) 336-5987.

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EDUCATION

Master of Science in Environmental Studies
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Bachelor of Arts in Environmental Analysis and Design
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PROFESSIONAL AFFILIATIONS

AEP – Association of Environmental Planners
AWMA – Air and Waste Management Association
ASTM – American Society for Testing and Materials

PROFESSIONAL CERTIFICATIONS

Environmental Site Assessment – American Society for Testing and Materials • June, 2013
Planned Communities and Urban Infill – Urban Land Institute • June, 2011
Indoor Air Quality and Industrial Hygiene – EMSL Analytical • April, 2008
Principles of Ambient Air Monitoring – California Air Resources Board • August, 2007
AB2588 Regulatory Standards – Trinity Consultants • November, 2006
Air Dispersion Modeling – Lakes Environmental • June, 2006

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APPENDIX 2.1:

STATE/FEDERAL ATTAINMENT STATUS OF CRITERIA POLLUTANTS

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APPENDIX 3.1:

ATTAINMENT DESIGNATIONS

Area Designations
for
National Ambient Air Quality Standards

CARBON MONOXIDE

Last Reviewed: December 2015
Air Quality Planning Branch, AQPSD, CARB

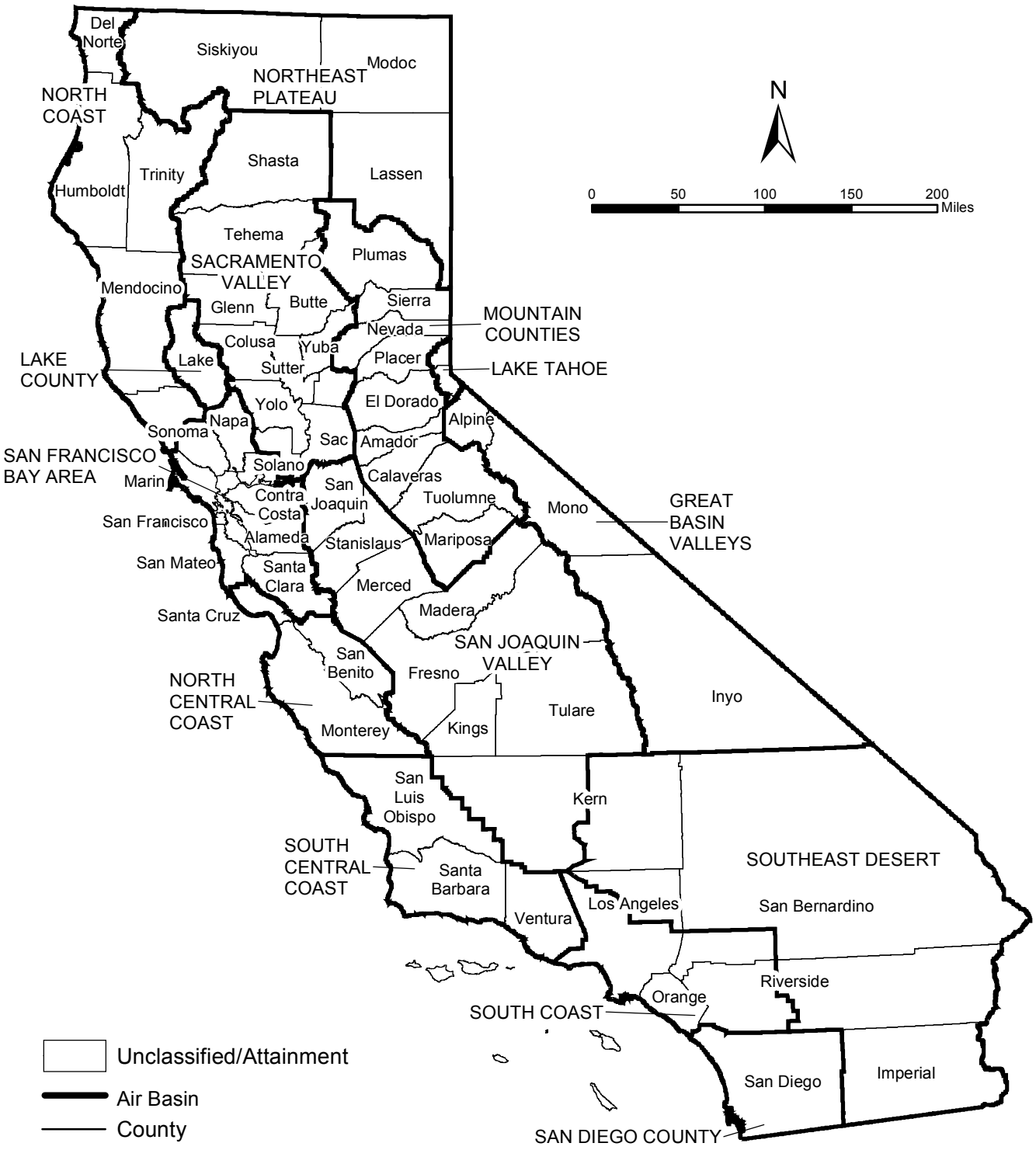
Area Designations
for
National Ambient Air Quality Standards

LEAD

Last Reviewed: December 2015
Air Quality Planning Branch, AQPSD, CARB

Area Designations
for
National Ambient Air Quality Standards

NITROGEN DIOXIDE



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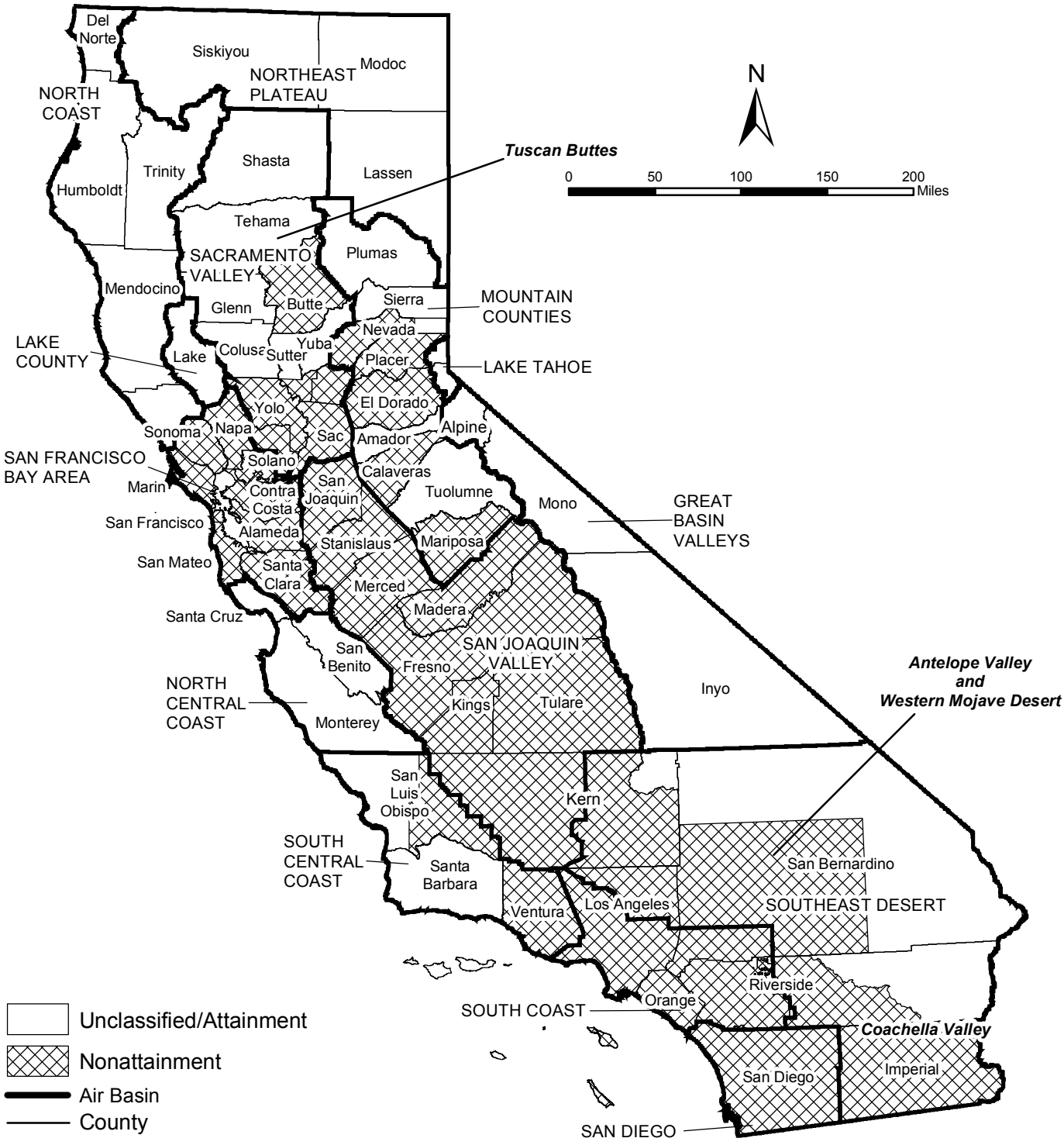
Area Designations
for
National Ambient Air Quality Standards

8-HOUR OZONE



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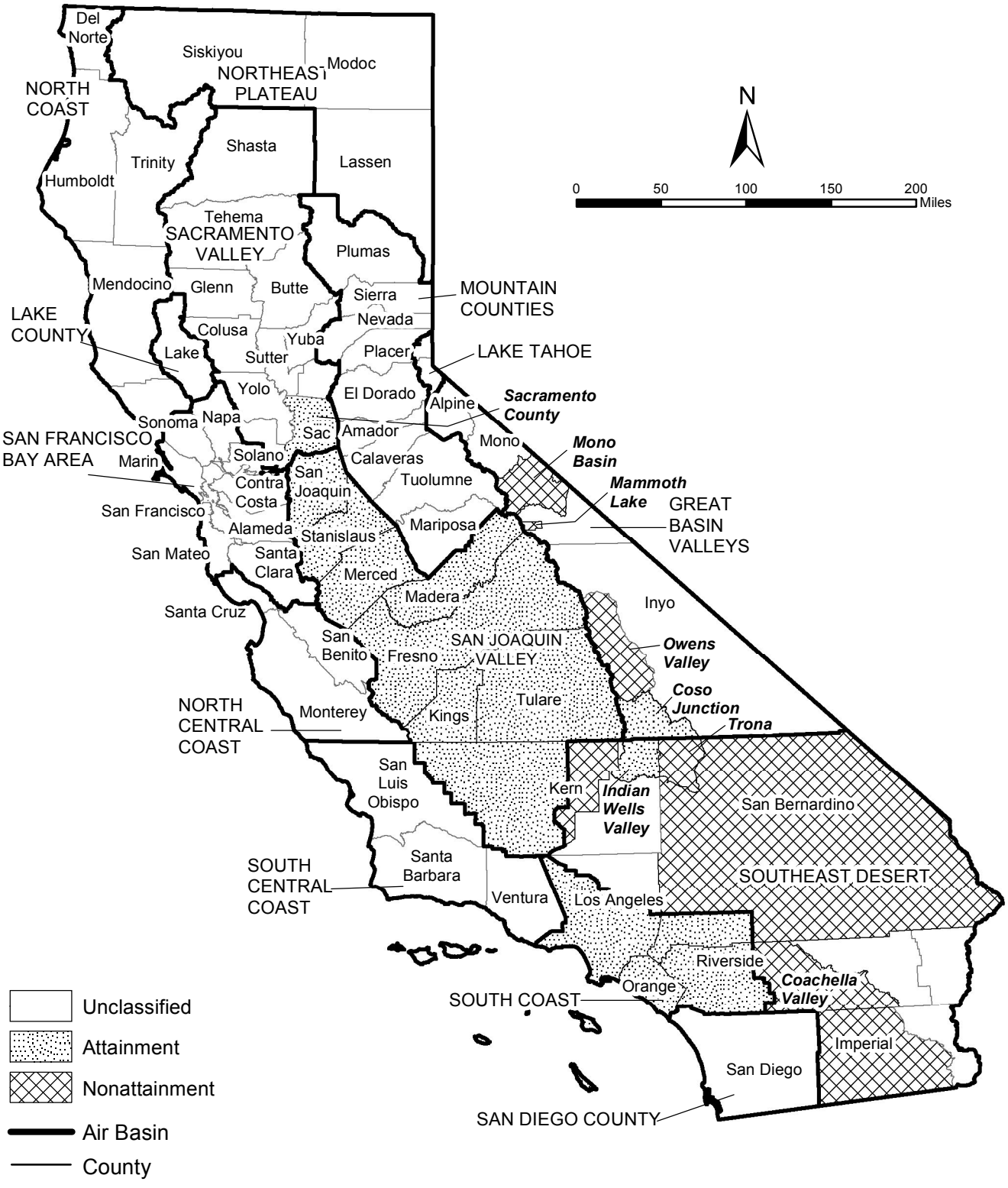
Area Designations
for
National Ambient Air Quality Standards

PM10



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Area Designations
for
National Ambient Air Quality Standards

PM2.5

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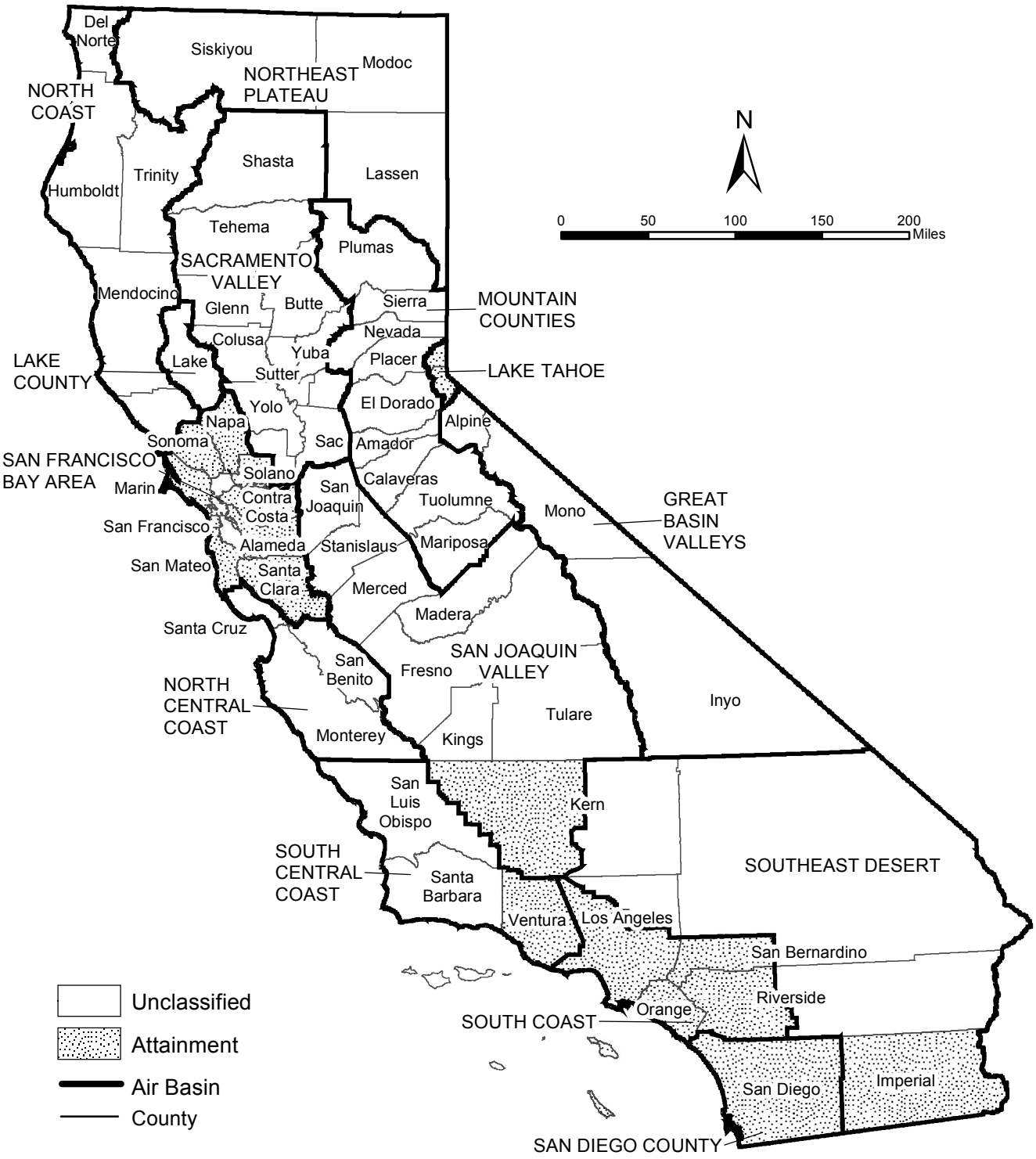
Area Designations
for
National Ambient Air Quality Standards

SULFUR DIOXIDE



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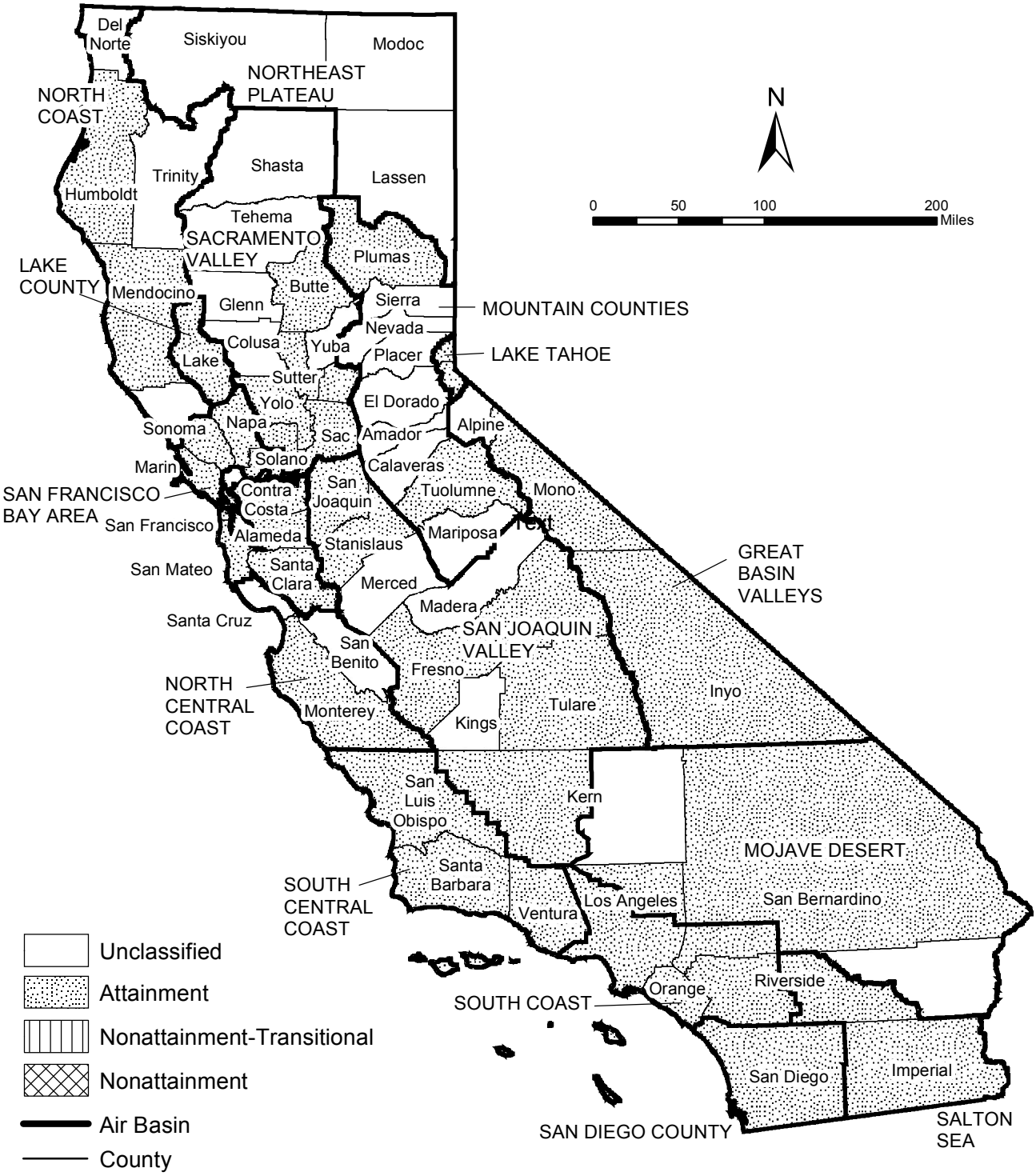
Area Designations
for
State Ambient Air Quality Standards

CARBON MONOXIDE



Source Date:
December 2015
Air Quality Planning Branch, AQPSD

Area Designations
for
State Ambient Air Quality Standards

LEAD

Source Date:
December 2015
Air Quality Planning Branch, AQPSD

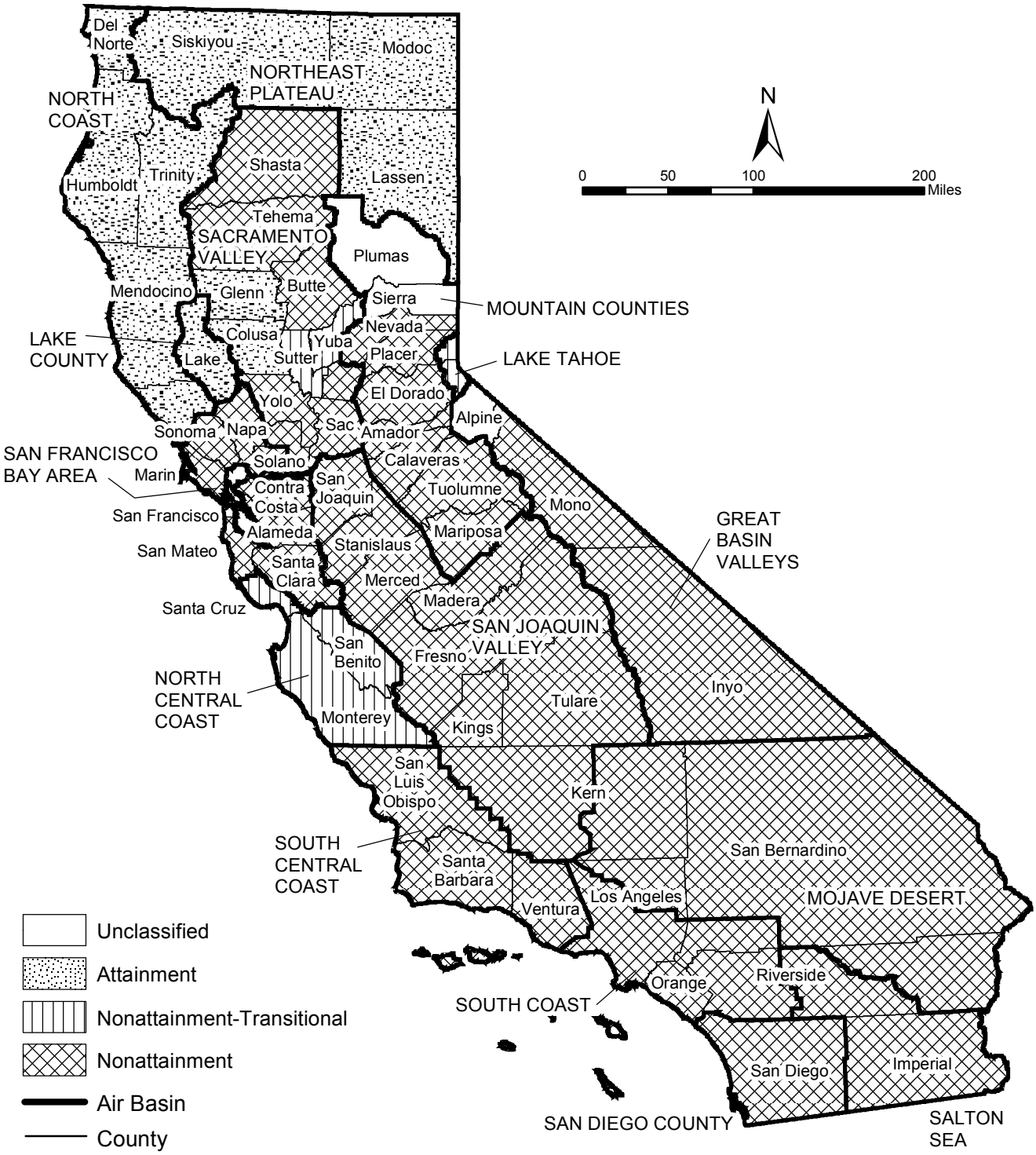
Area Designations
for
State Ambient Air Quality Standards

NITROGEN DIOXIDE

Source Date:
December 2015
Air Quality Planning Branch, AQPSD

Area Designations
for
State Ambient Air Quality Standards

OZONE



Source Date:
December 2015
Air Quality Planning Branch, AQPSD

Area Designations
for
State Ambient Air Quality Standards

PM10

Source Date:
December 2015
Air Quality Planning Branch, AQPSD

Area Designations
for
State Ambient Air Quality Standards

PM2.5

Source Date:
December 2015
Air Quality Planning Branch, AQPSD

Area Designations
for
State Ambient Air Quality Standards

SULFUR DIOXIDE

Source Date:
December 2015
Air Quality Planning Branch, AQPSD

APPENDIX 3.2:

CALEEMOD EMISSIONS MODEL OUTPUTS

Nichols Mine -Proposed Project

South Coast Air Basin, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Monday-Saturday Operations

Off-road Equipment - Initial Study

Off-road Equipment - Project Equipment

Trips and VMT - Number of trips = net new passenger car and truck trips per the Traffic Impact Analysis. Haul Trip Length estimated to be 25 miles one-way based on discussion with applicant.

Vehicle Trips - Mobile Sources Modeled in Construction section of CalEEMod.

Vechicle Emission Factors -

Vechicle Emission Factors -

Vechicle Emission Factors -

Consumer Products - Project modeled within "construction" portion of CalEEMod

Area Coating - Project modeled within "construction" portion of CalEEMod

Landscape Equipment - Project modeled within "construction" portion of CalEEMod

Energy Use - Project modeled within "construction" portion of CalEEMod

Water And Wastewater - Project modeled within "construction" portion of CalEEMod

Solid Waste - Project modeled within "construction" portion of CalEEMod

Construction Off-road Equipment Mitigation - Mitigation Measure AQ-1

Table Name	Column Name	Default Value	New Value
tblAreaCoating	Area_Nonresidential_Interior	1500	0
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblEnergyUse	LightingElect	3.36	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.69	0.00
tblEnergyUse	T24NG	16.16	0.00
tblOffRoadEquipment	HorsePower	400.00	474.00
tblOffRoadEquipment	HorsePower	400.00	474.00
tblOffRoadEquipment	HorsePower	64.00	51.00
tblOffRoadEquipment	HorsePower	400.00	474.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblProjectCharacteristics	OperationalYear	2014	2016
tblSolidWaste	SolidWasteGenerationRate	1.24	0.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	0.00	43,820.00
tblTripsAndVMT	WorkerTripNumber	10.00	4.00
tblVehicleTrips	ST_TR	1.49	0.00
tblVehicleTrips	SU_TR	0.62	0.00
tblVehicleTrips	WD_TR	3.82	0.00
tblWater	IndoorWaterUseRate	231,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	5.0286	73.5764	45.8386	0.1582	3.0925	1.6731	4.7656	0.8463	1.5392	2.3855	0.0000	16,023.4559	16,023.4559	1.0139	0.0000	16,044.7469
Total	**5.0286**	**73.5764**	**45.8386**	**0.1582**	**3.0925**	**1.6731**	**4.7656**	**0.8463**	**1.5392**	**2.3855**	**0.0000**	**16,023.4559**	**16,023.4559**	**1.0139**	**0.0000**	**16,044.7469**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	3.3217	51.6846	47.7342	0.1582	3.0925	0.7971	3.8896	0.8463	0.7370	1.5834	0.0000	16,023.4559	16,023.4559	1.0139	0.0000	16,044.7469
Total	**3.3217**	**51.6846**	**47.7342**	**0.1582**	**3.0925**	**0.7971**	**3.8896**	**0.8463**	**0.7370**	**1.5834**	**0.0000**	**16,023.4559**	**16,023.4559**	**1.0139**	**0.0000**	**16,044.7469**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**33.94**	**29.75**	**-4.14**	**0.00**	**0.00**	**52.36**	**18.38**	**0.00**	**52.12**	**33.63**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0214	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0214**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0214	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0214**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Project Equipment	Trenching	1/1/2016	12/30/2016	6	313	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Project Equipment	Off-Highway Trucks	1	2.00	474	0.38
Project Equipment	Off-Highway Trucks	1	8.00	474	0.38
Project Equipment	Skid Steer Loaders	1	6.00	51	0.37
Project Equipment	Off-Highway Trucks	1	4.40	474	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Project Equipment	4	4.00	0.00	43,820.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Clean Paved Roads

3.2 Project Equipment - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0804	24.0647	11.6272	0.0293		0.9239	0.9239		0.8500	0.8500		3,046.3091	3,046.3091	0.9189		3,065.6054
Total	**2.0804**	**24.0647**	**11.6272**	**0.0293**		**0.9239**	**0.9239**		**0.8500**	**0.8500**		**3,046.3091**	**3,046.3091**	**0.9189**		**3,065.6054**

3.2 Project Equipment - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.9311	49.4888	33.9722	0.1283	3.0478	0.7489	3.7967	0.8345	0.6889	1.5234		12,932.5190	12,932.5190	0.0925		12,934.4624
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0170	0.0229	0.2392	5.3000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		44.6278	44.6278	2.4400e-003		44.6790
Total	**2.9482**	**49.5117**	**34.2114**	**0.1288**	**3.0925**	**0.7493**	**3.8418**	**0.8463**	**0.6892**	**1.5356**		**12,977.1469**	**12,977.1469**	**0.0950**		**12,979.1414**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3736	2.1729	13.5228	0.0293		0.0478	0.0478		0.0478	0.0478	0.0000	3,046.3091	3,046.3091	0.9189		3,065.6054
Total	**0.3736**	**2.1729**	**13.5228**	**0.0293**		**0.0478**	**0.0478**		**0.0478**	**0.0478**	**0.0000**	**3,046.3091**	**3,046.3091**	**0.9189**		**3,065.6054**

3.2 Project Equipment - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.9311	49.4888	33.9722	0.1283	3.0478	0.7489	3.7967	0.8345	0.6889	1.5234		12,932.5190	12,932.5190	0.0925		12,934.4624
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0170	0.0229	0.2392	5.3000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		44.6278	44.6278	2.4400e-003		44.6790
Total	**2.9482**	**49.5117**	**34.2114**	**0.1288**	**3.0925**	**0.7493**	**3.8418**	**0.8463**	**0.6892**	**1.5356**		**12,977.1469**	**12,977.1469**	**0.0950**		**12,979.1414**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Manufacturing	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.514315	0.060290	0.180146	0.139458	0.042007	0.006636	0.015782	0.029894	0.001929	0.002512	0.004343	0.000595	0.002093

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Manufacturing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Manufacturing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0214	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0214	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	1.5900e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.0198					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Total	**0.0214**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.0198					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Architectural Coating	1.5900e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0214**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

Nichols Mine -Proposed Project

South Coast Air Basin, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Manufacturing	1.00	1000sqft	0.02	1,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	31
Climate Zone	10			**Operational Year**	2016
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	630.89	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

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Trips and VMT - Number of trips = net new passenger car and truck trips per the Traffic Impact Analysis. Haul Trip Length estimated to be 25 miles one-way based on discussion with applicant.

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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDaysWeek	5.00	6.00
tblEnergyUse	LightingElect	3.36	0.00
tblEnergyUse	NT24E	5.02	0.00
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.69	0.00
tblEnergyUse	T24NG	16.16	0.00
tblOffRoadEquipment	HorsePower	400.00	474.00
tblOffRoadEquipment	HorsePower	400.00	474.00
tblOffRoadEquipment	HorsePower	64.00	51.00
tblOffRoadEquipment	HorsePower	400.00	474.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblProjectCharacteristics	OperationalYear	2014	2016
tblSolidWaste	SolidWasteGenerationRate	1.24	0.00
tblTripsAndVMT	HaulingTripLength	20.00	25.00
tblTripsAndVMT	HaulingTripNumber	0.00	43,820.00
tblTripsAndVMT	WorkerTripNumber	10.00	4.00
tblVehicleTrips	ST_TR	1.49	0.00
tblVehicleTrips	SU_TR	0.62	0.00
tblVehicleTrips	WD_TR	3.82	0.00
tblWater	IndoorWaterUseRate	231,250.00	0.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	4.8933	71.8068	41.9092	0.1584	3.0925	1.6717	4.7642	0.8463	1.5379	2.3842	0.0000	16,051.1496	16,051.1496	1.0129	0.0000	16,072.4199
Total	**4.8933**	**71.8068**	**41.9092**	**0.1584**	**3.0925**	**1.6717**	**4.7642**	**0.8463**	**1.5379**	**2.3842**	**0.0000**	**16,051.1496**	**16,051.1496**	**1.0129**	**0.0000**	**16,072.4199**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2016	3.1865	49.9150	43.8048	0.1584	3.0925	0.7957	3.8882	0.8463	0.7357	1.5821	0.0000	16,051.1496	16,051.1496	1.0129	0.0000	16,072.4199
Total	**3.1865**	**49.9150**	**43.8048**	**0.1584**	**3.0925**	**0.7957**	**3.8882**	**0.8463**	**0.7357**	**1.5821**	**0.0000**	**16,051.1496**	**16,051.1496**	**1.0129**	**0.0000**	**16,072.4199**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**34.88**	**30.49**	**-4.52**	**0.00**	**0.00**	**52.41**	**18.39**	**0.00**	**52.16**	**33.64**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0214	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0214**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.0214	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0214**	**0.0000**	**1.0000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**	**0.0000**	**2.3000e-004**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Project Equipment	Trenching	1/1/2016	12/30/2016	6	313	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Project Equipment	Off-Highway Trucks	1	2.00	474	0.38
Project Equipment	Off-Highway Trucks	1	8.00	474	0.38
Project Equipment	Skid Steer Loaders	1	6.00	51	0.37
Project Equipment	Off-Highway Trucks	1	4.40	474	0.38

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Project Equipment	4	4.00	0.00	43,820.00	14.70	6.90	25.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Clean Paved Roads

3.2 Project Equipment - 2016

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	2.0804	24.0647	11.6272	0.0293		0.9239	0.9239		0.8500	0.8500		3,046.3091	3,046.3091	0.9189		3,065.6054
Total	**2.0804**	**24.0647**	**11.6272**	**0.0293**		**0.9239**	**0.9239**		**0.8500**	**0.8500**		**3,046.3091**	**3,046.3091**	**0.9189**		**3,065.6054**

3.2 Project Equipment - 2016

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.7963	47.7212	30.0225	0.1285	3.0478	0.7475	3.7953	0.8345	0.6876	1.5221		12,957.2572	12,957.2572	0.0916		12,959.1799
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0167	0.0208	0.2595	5.7000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		47.5833	47.5833	2.4400e-003		47.6345
Total	**2.8129**	**47.7421**	**30.2820**	**0.1291**	**3.0925**	**0.7478**	**3.8403**	**0.8463**	**0.6879**	**1.5343**		**13,004.8405**	**13,004.8405**	**0.0940**		**13,006.8144**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	0.3736	2.1729	13.5228	0.0293		0.0478	0.0478		0.0478	0.0478	0.0000	3,046.3091	3,046.3091	0.9189		3,065.6054
Total	**0.3736**	**2.1729**	**13.5228**	**0.0293**		**0.0478**	**0.0478**		**0.0478**	**0.0478**	**0.0000**	**3,046.3091**	**3,046.3091**	**0.9189**		**3,065.6054**

3.2 Project Equipment - 2016

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	2.7963	47.7212	30.0225	0.1285	3.0478	0.7475	3.7953	0.8345	0.6876	1.5221		12,957.2572	12,957.2572	0.0916		12,959.1799
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0167	0.0208	0.2595	5.7000e-004	0.0447	3.7000e-004	0.0451	0.0119	3.4000e-004	0.0122		47.5833	47.5833	2.4400e-003		47.6345
Total	**2.8129**	**47.7421**	**30.2820**	**0.1291**	**3.0925**	**0.7478**	**3.8403**	**0.8463**	**0.6879**	**1.5343**		**13,004.8405**	**13,004.8405**	**0.0940**		**13,006.8144**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Manufacturing	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Manufacturing	16.60	8.40	6.90	59.00	28.00	13.00	92	5	3

LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
0.514315	0.060290	0.180146	0.139458	0.042007	0.006636	0.015782	0.029894	0.001929	0.002512	0.004343	0.000595	0.002093

4.4 Fleet Mix

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Manufacturing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Manufacturing	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0214	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Unmitigated	0.0214	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.0198					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Architectural Coating	1.5900e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0214**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Consumer Products	0.0198					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.0000e-005	0.0000	1.0000e-004	0.0000		0.0000	0.0000		0.0000	0.0000		2.2000e-004	2.2000e-004	0.0000		2.3000e-004
Architectural Coating	1.5900e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.0214**	**0.0000**	**1.0000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.2000e-004**	**2.2000e-004**	**0.0000**		**2.3000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Vegetation

BLASTING

E= .000014(A)^1.5*.52 lbs PM10/lbs TSP

E= PM10 emissions, lbs/total
A= Area to be blasted (SF)

A(day)=	15,000	
E=	13.37	lbs PM10/day without watering
E=	2.81	lbs PM2.5/day without watering
CE=	50.00%	pre-wetting blasting areas and stabalizing soils once blasting is complete (Source:Western regional Air Partnership)
E=	**6.7**	**lbs of PM10/day with watering**
E=	**1.4**	**lbs of PM2.5/day with watering**

.

APPENDIX 3.3:

APPLICATION FOR A STATIONARY CRUSHING & SCREENING PLANT NICHOLS ROAD FACILITY, SCAQMD FACILITY ID 177101

Associates Environmental

August 21, 2014

Chandler Aggregates, Inc.
P.O. Box 78450
Corona, CA 92877

Attention: Todd Pendergrass

Subject: Application for a Stationary Crushing & Screening Plant
Nichols Road Facility, SCAQMD Facility ID: 177101

Dear Todd:

Enclosed are an original and a copy of the application to permit the stationary Crushing & Screening Plant at the Nichols Road Facility.

Please sign the originals, attach a check in the amount of $12,472.44 to cover the initial filing fees and forward to:

Attn: Rod Millican
South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765

If you have any questions please do not hesitate to call me at (562) 652-4727.

Sincerely,

Ricardo Flores
Associates Environmental

Associates Environmental

August 21, 2014

South Coast Air Quality Management District
21865 Copley Drive
Diamond Bar, CA 91765-4178

Attention: Rod Millican

Subject: Chandler Aggregates, Inc., Facility ID: 177101
Application to Permit a Stationary Crushing & Screening Plant

Dear Rod:

Enclosed is an application to permit a stationary Crushing & Screening Plant for Chandler Aggregates, Inc. Nichols Road Facility.

As part of the submittal we have included the application forms, support information and a check in the amount of $12,472.44 to cover the initial filing fees. Since the application is being submitted under Rule 202(c), the fees required by Rule 301(c)(1)(D) have been included. Below is a breakdown of the fees associated with this submittal:

Application Type	Permit Unit:	Are Subsequent Units Identical[1]	Fee Schedule	Filing Fee
Existing Equipment	Aggregate Crushing & Screening, < 5,000 TPD	--	C	$3,671.95
	Rule 301(c)(1)(D) Fee	--	--	$1,835.98
Existing Equipment	Baghouse, Ambient, > 100-500 SQ. FT.	--	B	$2,321.50
	Rule 301(c)(1)(D) Fee	--	--	$1,160.75
Existing Equipment	Baghouse, Ambient, > 100-500 SQ. FT.	Yes	B	$1,160.75
	Rule 301(c)(1)(D) Fee	--	--	$580.38
Existing Equipment	Baghouse, Ambient, > 100-500 SQ. FT.	Yes	B	$1,160.75
	Rule 301(c)(1)(D) Fee	--	--	$580.38
			Total	$12,472.44

[1]Identical units require a fee of 50% of the initial filing fee according to Rule 301(c)(1)(F).

If you have any questions please do not hesitate to call me at (562) 652-4727.

Sincerely,

Ricardo Flores
Associates Environmental

cc: Todd Pendergrass, Chandler Aggregates, Inc.

Associates Environmental

Permit to Operate Application to the South Coast Air Quality Management District

Covering a:

Crushing & Screening Plant and Three Dust Collectors

Prepared For:

Chandler Aggregates, Inc.
P.O. Box 78450
Corona, CA 92877

Equipment Location:

10000 Nichols Road
Lake Elsinore, CA 92532

Prepared by:

Ricardo Flores
Associates Environmental
16882 Bolsa Chica Street, Suite 202
Huntington Beach, CA 92649

Project No: 1571

Associates Environmental

TABLE OF CONTENTS

Application to Permit a Crushing & Screening Plant and Three Baghouses

Associates Environmental

Section 1

Form 400A
(Four Permit Applications)

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
Chandler Aggregates, Inc.

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
177101

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

10000 Nichols Road
Street Address

Lake Elsinore , CA 92532
City Zip

Todd Pendergrass — Tech. Services Manager
Contact Name — Title

(951) 277-3900 — Ext. — (951) 277-3339
Phone # — Ext. — Fax #

E-Mail: tpendergrass@wernercorp.net

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O. Box 78450
Address

Corona , CA 92877
City State Zip

Todd Pendergrass — Tech. Services Manager
Contact Name — Title

(951) 277-3900 — Ext. — (951) 277-3339
Phone # — Ext. — Fax #

E-Mail: tpendergrass@wernercorp.net

Section D - Application Type

6. The Facility Is: (●) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V ( ) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- (●) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Also submit Form 500-A1)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- ( ) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Aggregate Production/Crushing, < 5000 tpd

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process)
0

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center)
(●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? If Yes, provide NOV/NC#:
(●) No ( ) Yes

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Processing Aggregate

14. What is your business primary NAICS Code? (North American Industrial Classification System)

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator?
( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line?
(●) No ( ) Yes

Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Technical Services Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.)
( ) No (●) Yes

20. Print Name:
Todd Pendergrass

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.)
(●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
Chandler Aggregates, Inc.

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
177101

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

10000 Nichols Road
Street Address

Lake Elsinore , CA 92532
City Zip

Todd Pendergrass — Tech. Services Manager
Contact Name — Title

(951) 277-3900 — Ext. — (951) 277-3339
Phone # — Ext. — Fax #

E-Mail: tpendergrass@wernercorp.net

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O. Box 78450
Address

Corona , CA 92877
City State Zip

Todd Pendergrass — Tech. Services Manager
Contact Name — Title

(951) 277-3900 — Ext. — (951) 277-3339
Phone # — Ext. — Fax #

E-Mail: tpendergrass@wernercorp.net

Section D - Application Type

6. The Facility Is: (●) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V ( ) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

7a. New Equipment or Process Application:

- ( ) New Construction (Permit to Construct)
- ( ) Equipment On-Site But Not Constructed or Operational
- (●) Equipment Operating Without A Permit *
- ( ) Compliance Plan
- ( ) Registration/Certification
- ( ) Streamlined Standard Permit

7b. Facility Permits:

- ( ) Title V Application or Amendment (Also submit Form 500-A1)
- ( ) RECLAIM Facility Permit Amendment

7c. Equipment or Process with an Existing/Previous Application or Permit:

- ( ) Administrative Change
- ( ) Alteration/Modification
- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
- ( ) Change of Location without Prior Approval *
- ( ) Equipment Operating with an Expired/Inactive Permit *

Existing or Previous Permit/Application
If you checked any of the items in 7c., you MUST provide an existing Permit or Application Number:

* A Higher Permit Processing Fee and additional Annual Operating Fees (up to 3 full years) may apply (Rule 301(c)(1)(D)(i)).

8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Baghouse, Ambient, > 100-500 SQ. FT.

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process)
2

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center)
(●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? If Yes, provide NOV/NC#:
(●) No ( ) Yes

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Processing Aggregate

14. What is your business primary NAICS Code? (North American Industrial Classification System)

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator?
( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line?
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Section F - Authorization/Signature

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18. Title of Responsible Official:
Technical Services Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.)
( ) No (●) Yes

20. Print Name:
Todd Pendergrass

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.)
(●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

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South Coast Air Quality Management District

Form 400-A

Application Form for Permit or Plan Approval

List only one piece of equipment or process per form.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

1. Facility Name (Business Name of Operator to Appear on the Permit):
Chandler Aggregates, Inc.

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD):
177101

3. Owner's Business Name (If different from Business Name of Operator):

Section B - Equipment Location Address

4. Equipment Location Is: (●) Fixed Location ( ) Various Location
(For equipment operated at various locations, provide address of initial site.)

10000 Nichols Road
Street Address

Lake Elsinore , CA 92532
City Zip

Todd Pendergrass — Tech. Services Manager
Contact Name — Title

(951) 277-3900 — Ext. — (951) 277-3339
Phone # — Ext. — Fax #

E-Mail: tpendergrass@wernercorp.net

Section C - Permit Mailing Address

5. Permit and Correspondence Information:
[ ] Check here if same as equipment location address

P.O. Box 78450
Address

Corona , CA 92877
City State Zip

Todd Pendergrass — Tech. Services Manager
Contact Name — Title

(951) 277-3900 — Ext. — (951) 277-3339
Phone # — Ext. — Fax #

E-Mail: tpendergrass@wernercorp.net

Section D - Application Type

6. The Facility Is: (●) Not In RECLAIM or Title V ( ) In RECLAIM ( ) In Title V ( ) In RECLAIM & Title V Programs

7. Reason for Submitting Application (Select only ONE):

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- ( ) Alteration/Modification without Prior Approval *
- ( ) Change of Condition
- ( ) Change of Condition without Prior Approval *
- ( ) Change of Location
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8a. Estimated Start Date of Construction (mm/dd/yyyy):

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9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Baghouse, Ambient, > 100-500 SQ. FT.

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process)
2

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center)
(●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? If Yes, provide NOV/NC#:
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Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Processing Aggregate

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Todd Pendergrass

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South Coast Air Quality Management District

Form 400-A

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Mail To:
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P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

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Todd Pendergrass — Tech. Services Manager
Contact Name — Title

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E-Mail: tpendergrass@wernercorp.net

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Contact Name — Title

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Phone # — Ext. — Fax #

E-Mail: tpendergrass@wernercorp.net

Section D - Application Type

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8a. Estimated Start Date of Construction (mm/dd/yyyy):

8b. Estimated End Date of Construction (mm/dd/yyyy):

8c. Estimated Start Date of Operation (mm/dd/yyyy):

9. Description of Equipment or Reason for Compliance Plan (list applicable rule):
Baghouse, Ambient, > 100-500 SQ. FT.

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each equipment / process)
2

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less OR a not-for-profit training center)
(●) No ( ) Yes

12. Has a Notice of Violation (NOV) or a Notice to Comply (NC) been issued for this equipment? If Yes, provide NOV/NC#:
(●) No ( ) Yes

Section E - Facility Business Information

13. What type of business is being conducted at this equipment location?
Processing Aggregate

14. What is your business primary NAICS Code? (North American Industrial Classification System)

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator?
( ) No (●) Yes

16. Are there any schools (K-12) within 1000 feet of the facility property line?
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Section F - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application are true and correct.

17. Signature of Responsible Official:

18. Title of Responsible Official:
Technical Services Manager

19. I wish to review the permit prior to issuance. (This may cause a delay in the application process.)
( ) No (●) Yes

20. Print Name:
Todd Pendergrass

21. Date:

22. Do you claim confidentiality of data? (If Yes, see instructions.)
(●) No ( ) Yes

23. Check List: [X] Authorized Signature/Date [X] Form 400-CEQA [X] Supplemental Form(s) (ie., Form 400-E-xx) [X] Fees Enclosed

AQMD USE ONLY	APPLICATION TRACKING #	CHECK #	AMOUNT RECEIVED $	PAYMENT TRACKING #	VALIDATION

DATE	APP REJ	DATE	APP REJ	CLASS I III	BASIC CONTROL	EQUIPMENT CATEGORY CODE	TEAM	ENGINEER	REASON/ACTION TAKEN

Associates Environmental

Section 2

Form 400-CEQA
(California Environmental Quality Act Applicability)

South Coast Air Quality Management District

Form 400-CEQA
California Environmental Quality Act (CEQA) Applicability

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944

Tel: (909) 396-3385
www.aqmd.gov

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project[1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines §15060(a)].[2] Refer to the attached instructions for guidance in completing this form.[3] For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one 400-CEQA form is necessary for the entire project. If you need assistance completing this form, contact Permit Services at (909) 396-3385 or (909) 396-2668.

Section A - Facility Information

1. Facility Name (Business Name of Operator To Appear On The Permit): Chandler Aggregates, Inc.

2. Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 177101

3. Project Description:
Permit an existing aggregate crushing and screening plant and three baghouses.

Section B - Review For Exemption From Further CEQA Action

Check "Yes" or "No" as applicable

	Yes	No	Is this application for:
1.	○	◉	**A CEQA and/or NEPA document previously or currently prepared that specifically evaluates this project?** If yes, attach a copy of the signed Notice of Determination to this form.
2.	○	◉	**A request for a change of permittee only (without equipment modifications)?**
3.	○	◉	**A functionally identical permit unit replacement with no increase in rating or emissions?**
4.	○	◉	**A change of daily VOC permit limit to a monthly VOC permit limit?**
5.	○	◉	**Equipment damaged as a result of a disaster during state of emergency?**
6.	○	◉	**A Title V** (i.e., Regulation XXX) **permit renewal (without equipment modifications)?**
7.	○	◉	**A Title V administrative permit revision?**
8.	○	◉	**The conversion of an existing permit into an initial Title V permit?**

If "**Yes**" is checked for any question in Section B, your application does not require additional evaluation for CEQA applicability. Skip to Section D - Signatures on page 2 and sign and date this form.

Section C - Review of Impacts Which May Trigger CEQA

Complete Parts I-VI by checking "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	Part I - General
1.	○	◉	**Has this project generated any known public controversy regarding potential adverse impacts that may be generated by the project?** Controversy may be construed as concerns raised by local groups at public meetings; adverse media attention such as negative articles in newspapers or other periodical publications, local news programs, environmental justice issues, etc.
2.	○	◉	**Is this project part of a larger project?** If yes, attach a separate sheet to briefly describe the larger project.
			Part II - Air Quality
3.	○	◉	**Will there be any demolition, excavating, and/or grading construction activities that encompass an area exceeding 20,000 square feet?**
4.	◉	○	**Does this project include the open outdoor storage of dry bulk solid materials that could generate dust?** If Yes, include a plot plan with the application package.

[1] A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry-cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.

[2] To download the CEQA guidelines, visit http://ceres.ca.gov/env_law/state.html.

[3] To download this form and the instructions, visit http://www.aqmd.gov/ceqa or http://www.aqmd.gov/permit

Section C - Review of Impacts Which May Trigger CEQA (cont.)			
	Yes	No	Part II - Air Quality (cont.)
5.	○	◉	**Would this project result in noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements?** For example, compost materials or other types of greenwaste (i.e., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to Rule 402 – Nuisance.
6.	○	◉	**Does this project cause an increase of emissions from marine vessels, trains and/or airplanes?**
7.	○	◉	**Will the proposed project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound on the attached Table 1?[4]**
			Part III – Water Resources
8.	○	◉	**Will the project increase demand for water at the facility by more than 5,000,000 gallons per day?** The following examples identify some, but not all, types of projects that may result in a "yes" answer to this question: 1) projects that generate steam; 2) projects that use water as part of the air pollution control equipment; 3) projects that require water as part of the production process; 4) projects that require new or expansion of existing sewage treatment facilities; 5) projects where water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; and 6) projects that require new or expansion of existing water supply facilities.
9.	○	◉	**Will the project require construction of new water conveyance infrastructure?** Examples of such projects are when water demands exceed the capacity of the local water purveyor to supply sufficient water for the project, or require new or modified sewage treatment facilities such that the project requires new water lines, sewage lines, sewage hook-ups, etc.
			Part IV – Transportation/Circulation
10.			**Will the project result in** (Check all that apply)**:**
	○	◉	**a. the need for more than 350 new employees?**
	○	◉	**b. an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?**
	○	◉	**c. increase customer traffic by more than 700 visits per day?**
			Part V – Noise
11.	○	◉	**Will the project include equipment that will generate noise GREATER THAN 90 decibels (dB) at the property line?**
			Part VI – Public Services
12.			**Will the project create a permanent need for new or additional public services in any of the following areas** (Check all that apply)**:**
	○	◉	**a. Solid waste disposal?** Check "No" if the projected potential amount of wastes generated by the project is less than five tons per day.
	○	◉	**b. Hazardous waste disposal?** Check "No" if the projected potential amount of hazardous wastes generated by the project is less than 42 cubic yards per day (or equivalent in pounds).

REMINDER: *For each "Yes" response in Section C, attach all pertinent information including but not limited to estimated quantities, volumes, weights, etc.*

Section D - Signatures

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

1. Signature of Responsible Official of Firm:		2. Title of Responsible Official of Firm: Technical Services Manager
3. Print Name of Responsible Official of Firm: Todd Pendergrass		4. Date Signed:
5. Phone # of Responsible Official of Firm: (951) 277-3900	6. Fax # of Responsible Official of Firm: (951) 277-3339	7. Email of Responsible Official of Firm: tpendergrass@wernercorp.net
8. Signature of Preparer, (If prepared by person other than responsible official of firm):		9. Title of Preparer: Consultant
10. Print Name of Preparer: Ricardo Flores		11. Date Signed: 08/21/2014
12. Phone # of Preparer: (714) 916-4953	13. Fax # of Preparer: (714) 362-9085	14. Email of Preparer: rflores@associatesenvironmental.com

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND ANY ATTACHMENTS WITH FORM 400-A.

[4] Table 1 – Regulated Substances List and Threshold Quantities for Accidental Release Prevention can be found in the Instructions for Form 400-CEQA.

Associates Environmental

Section 3

Form 400-E-1a
(Three Dust Collector Forms)

South Coast Air Quality Management District

Form 400-E-1a
Particulate Matter Control
Fabric Filter (Baghouse)/Cartridge Collector

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator That Appears On Permit): Chandler Aggregates, Inc.

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 177101

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 10000 Nichols Road, Lake Elsinore, CA 92532

(●) Fixed Location ( ) Various Locations

Section B - Equipment Description (Complete Part I or Part II)

Equipment

Manufacturer: Donaldson Torit

Model No.: DLM V30/15F

Part I: For Fabric Filters

Bag Material

( ) Nomex® ( ) Nylon (●) Polyester ( ) Acrylics ( ) Fiber Glass ( ) Cotton ( ) Teflon®
( ) PFTE Membrane Laminated ( ) Textratex® ( ) Other

Bag Dimensions

Number of Bags: 20 Bag Length: 4.9167 sq. ft. Bag Diameter: 1.667 ft.
Total Filter Area: 323 sq. ft. Designed Air to Filter Ratio: 8 : 1

Part II: For Cartridge Filters

Cartridge Dimensions

Number of Cartridges: Total Filter Area: sq. ft. Designed Air to Filter Ratio: : 1
Size of Each Cartridge: Diameter ft. Length ft.
Material:

Section C - Device And Method

Dust Collection Device

( ) Pneumatic ( ) Drag Conveyor (●) Closed Container
( ) Rotary Airlock Values ( ) Double Dump
( ) Screw Conveyors ( ) Manual Discharge Device: ( ) Slide Gate ( ) Hinged Doors or Drawers

Cleaning Method

(●) Pulse Jet ( ) Reverse Air (If Reverse Air, Is it: ( ) Online or ( ) Offline)
( ) Mechanical Shaker ( ) Other

Blower

Blower Horsepower: 7.5 H.P. Design Flow Rate: 2500 SCFM
Draft: ( ) Forced ( ) Induced

Design Criteria

Baghouse Configuration: ( ) Positive Pressure (●) Negative Pressure

Pre-Treatment Device

☐ Cyclone ☐ Precooler ☐ Preheater ☐ Knock-Out Chamber ☐ HEPA ☒ None

Post-Treatment Device

☐ HEPA ☐ Afterburner ☐ Other:

South Coast Air Quality Management District

Form 400-E-1a
Particulate Matter Control
Fabric Filter (Baghouse)/Cartridge Collector

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Section D - Process Stream Characteristics

Brief Description Of Process

Please include a process flow diagram and engineering drawing of the filter system and material processed. In the space provided, indicate what equipment is vented to the baghouse and how waste material is handled and disposed.

Dust Collector will vent the cone crusher (CC1). Please refer to Appendix A for a flow diagram.

Particulate Size Distribution Data

Micron Range	Particle Size Distribution (Wt%)	Manufacturer's Guaranteed Removal Efficiency For Each Micron Range (%)
0.5 - 1.0		
1.0 - 5.0		
5 - 10		
10 - 20		
Over 20		

Flow Data

Gas Stream Temperature: _____ °F

Pressure Drop Range: **High** _____ in. H_2O **Low** _____ in. H_2O

Inlet Flow Rate: _____ ACFM

Moisture Content: _____ grams of water/cubic feet (ft^3) of dry air

Dew Point Temperature of Process Stream: _____ °F

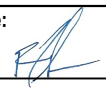
Operating Schedule

Normal:	10	hours/day	5	days/week	52 weeks/yr
Maximum:	24	hours/day	7	days/week	52 weeks/yr

Section E - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature:  **Date:** 08/21/2014

Title: Consultant **Company Name:** AssociatesEnvironmental

Name: Ricardo Flores

Phone #: (714) 916-4953 **Fax #:** (714) 362-9085

Email: rflores@associatesenvironmental.com

Contact Info

Name: Ricardo Flores

Title: Consultant **Company Name:** AssociatesEnvironmental

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South Coast Air Quality Management District

Form 400-E-1a
Particulate Matter Control
Fabric Filter (Baghouse)/Cartridge Collector

This form must be accompanied by a completed Application for a Permit to Construct/Operate - Forms 400-A, Form 400-CEQA, and Form 400-PS.

Mail To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765-0944
Tel: (909) 396-3385
www.aqmd.gov

Section A - Operator Information

Facility Name (Business Name of Operator That Appears On Permit): Chandler Aggregates, Inc.

Valid AQMD Facility ID (Available On Permit Or Invoice Issued By AQMD): 177101

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site): 10000 Nichols Road, Lake Elsinore, CA 92532

(●) Fixed Location ( ) Various Locations

Section B - Equipment Description (Complete Part I or Part II)

Equipment

Manufacturer: Donaldson Torit

Model No.: DLM V30/15F

Part I: For Fabric Filters

Bag Material

( ) Nomex® ( ) Nylon (●) Polyester ( ) Acrylics ( ) Fiber Glass ( ) Cotton ( ) Teflon®
( ) PFTE Membrane Laminated ( ) Textratex® ( ) Other

Bag Dimensions

Number of Bags: 20 Bag Length: 4.9167 sq. ft. Bag Diameter: 1.667 ft.
Total Filter Area: 323 sq. ft. Designed Air to Filter Ratio: 8 : 1

Part II: For Cartridge Filters

Cartridge Dimensions

Number of Cartridges: Total Filter Area: sq. ft. Designed Air to Filter Ratio: : 1
Size of Each Cartridge: Diameter ft. Length ft.
Material:

Section C - Device And Method

Dust Collection Device

( ) Pneumatic ( ) Drag Conveyor (●) Closed Container
( ) Rotary Airlock Values ( ) Double Dump
( ) Screw Conveyors ( ) Manual Discharge Device: ( ) Slide Gate ( ) Hinged Doors or Drawers

Cleaning Method

(●) Pulse Jet ( ) Reverse Air (If Reverse Air, Is it: ( ) Online or ( ) Offline)
( ) Mechanical Shaker ( ) Other

Blower

Blower Horsepower: 7.5 H.P. Design Flow Rate: 2500 SCFM
Draft: ( ) Forced ( ) Induced

Design Criteria

Baghouse Configuration: ( ) Positive Pressure (●) Negative Pressure

Pre-Treatment Device

☐ Cyclone ☐ Precooler ☐ Preheater ☐ Knock-Out Chamber ☐ HEPA ☒ None

Post-Treatment Device

☐ HEPA ☐ Afterburner ☐ Other:

South Coast Air Quality Management District

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Section D - Process Stream Characteristics

Brief Description Of Process

Please include a process flow diagram and engineering drawing of the filter system and material processed. In the space provided, indicate what equipment is vented to the baghouse and how waste material is handled and disposed.

Dust Collector will vent the cone crusher (CC2). Please refer to Appendix A for a flow diagram.

Particulate Size Distribution Data

Micron Range	Particle Size Distribution (Wt%)	Manufacturer's Guaranteed Removal Efficiency For Each Micron Range (%)
0.5 - 1.0		
1.0 - 5.0		
5 - 10		
10 - 20		
Over 20		

Flow Data

Gas Stream Temperature: _____ °F

Pressure Drop Range: **High** _____ in. H_2O **Low** _____ in. H_2O

Inlet Flow Rate: _____ ACFM

Moisture Content: _____ grams of water/cubic feet (ft^3) of dry air

Dew Point Temperature of Process Stream: _____ °F

Operating Schedule

Normal:	10	hours/day	5	days/week	52 weeks/yr
Maximum:	24	hours/day	7	days/week	52 weeks/yr

Section E - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature:  **Date:** 08/21/2014

Title: Consultant **Company Name:** AssociatesEnvironmental

Name: Ricardo Flores

Phone #: (714) 916-4953 **Fax #:** (714) 362-9085

Email: rflores@associatesenvironmental.com

Contact Info

Name: Ricardo Flores

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South Coast Air Quality Management District

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(●) Fixed Location ( ) Various Locations

Section B - Equipment Description (Complete Part I or Part II)

Equipment

Manufacturer: Donaldson Torit

Model No.: DLM V30/15F

Part I: For Fabric Filters

Bag Material

( ) Nomex® ( ) Nylon (●) Polyester ( ) Acrylics ( ) Fiber Glass ( ) Cotton ( ) Teflon®
( ) PFTE Membrane Laminated ( ) Textratex® ( ) Other _____

Bag Dimensions

Number of Bags: 20 Bag Length: 4.9167 sq. ft. Bag Diameter: 1.667 ft.
Total Filter Area: 323 sq. ft. Designed Air to Filter Ratio: 8 : 1

Part II: For Cartridge Filters

Cartridge Dimensions

Number of Cartridges: _____ Total Filter Area: _____ sq. ft. Designed Air to Filter Ratio: _____ : 1
Size of Each Cartridge: Diameter _____ ft. Length _____ ft.
Material:

Section C - Device And Method

Dust Collection Device

( ) Pneumatic ( ) Drag Conveyor (●) Closed Container
( ) Rotary Airlock Values ( ) Double Dump
( ) Screw Conveyors ( ) Manual Discharge Device: ( ) Slide Gate ( ) Hinged Doors or Drawers

Cleaning Method

(●) Pulse Jet ( ) Reverse Air (If Reverse Air, Is it: ( ) Online or ( ) Offline)
( ) Mechanical Shaker ( ) Other _____

Blower

Blower Horsepower: 7.5 H.P. Design Flow Rate: 2500 SCFM
Draft: ( ) Forced ( ) Induced

Design Criteria

Baghouse Configuration: ( ) Positive Pressure (●) Negative Pressure

Pre-Treatment Device

☐ Cyclone ☐ Precooler ☐ Preheater ☐ Knock-Out Chamber ☐ HEPA ☒ None

Post-Treatment Device

☐ HEPA ☐ Afterburner ☐ Other: _____

South Coast Air Quality Management District

Form 400-E-1a
Particulate Matter Control
Fabric Filter (Baghouse)/Cartridge Collector

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Section D - Process Stream Characteristics

Brief Description Of Process

Please include a process flow diagram and engineering drawing of the filter system and material processed. In the space provided, indicate what equipment is vented to the baghouse and how waste material is handled and disposed.

Dust Collector will vent the jaw crusher (JC1). Please refer to Appendix A for a flow diagram.

Particulate Size Distribution Data

Micron Range	Particle Size Distribution (Wt%)	Manufacturer's Guaranteed Removal Efficiency For Each Micron Range (%)
0.5 - 1.0		
1.0 - 5.0		
5 - 10		
10 - 20		
Over 20		

Flow Data

Gas Stream Temperature: _____ °F

Pressure Drop Range: **High** _____ in. H_2O **Low** _____ in. H_2O

Inlet Flow Rate: _____ ACFM

Moisture Content: _____ grams of water/cubic feet (ft^3) of dry air

Dew Point Temperature of Process Stream: _____ °F

Operating Schedule

Normal: 10 hours/day 5 days/week 52 weeks/yr

Maximum: 24 hours/day 7 days/week 52 weeks/yr

Section E - Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

Preparer Info

Signature: **Date:** 08/21/2014

Title: Consultant **Company Name:** AssociatesEnvironmental

Name: Ricardo Flores

Phone #: (714) 916-4953 **Fax #:** (714) 362-9085

Email: rflores@associatesenvironmental.com

Contact Info

Name: Ricardo Flores

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Associates Environmental

Section 4

General Information

Application for a Permit to Operate
for a Stationary Crushing & Screening Plant

General Information:

Applicant: Chandler Aggregates, Inc.

Mailing Address: P.O. Box 78450
Corona, CA 92877

Equipment Location: 10000 Nichols Road
Lake Elsinore, CA 92532
Please refer to Appendix A for a site map of the facility.

Process Description: The proposed crushing & screening plant will be used to crush and screen aggregate, which may include sand, rock, or gravel.

Please Refer to Appendix B for a flow diagram of the Crushing & Screening Plant.

A loader with a Tier 4i engine will be used to feed the plant. The engine is manufactured by Caterpillar, Model C13, rated 406 hp with family name DCPXL12.5HPB.

The stationary Crushing & Screening plant will be connected to the grid.

Operating Schedule: Maximum - 24 hours per day
7 days per week
52 weeks per year

Typical - 10 hours per day
5 days per week
52 weeks per year

Production: Maximum - 500 TPH
4,999 TPD
149,970 TPM

Equipment List:

Unit	Equipment Description
F-1	Receiving Hopper w/Vibrating Grizzly Feeder
JC-1	Jaw Crusher, Cedar Rapids, 30” x 42”, 150 hp
S-1	Screen, SCR, 8’ x 20’, 40 hp
S-2	Screen, JCI, 8’ x 20’, 40 hp
S-3	Screen, JCI, 6’ x 16’, 40 hp
CC-1	Cone Crusher, Telesmith, J-15347, 300hp
CC-2	Cone Crusher, Symons, 200 HP
C-1	Belt Conveyor, 36”W x 50’L, 15 hp
C-2	Belt Conveyor, 48”W x 40'L, 75 hp
C-3	Belt Conveyor, 48”W x 24'L, 20 hp
C-4	Belt Conveyor, 48”W x 50'L, 15 hp
C-5	Belt Conveyor, 42"W x 50'L, 15 hp
C-6	Belt Conveyor, 42"W x 50'L, 15 hp
C-7	Belt Conveyor, 42"W x 50'L, 15 hp
C-7a	Belt Conveyor, 42”W x 50’L, 15 hp
C-8	Belt Conveyor, 42"W x 50'L, 15 hp
C-9	Belt Conveyor, 42"W x 50'L, 15 hp
C-9a	Belt Conveyor, 42"W x 50'L, 15 hp
C-10	Belt Conveyor, 42"W x 50'L, 15 hp
C-11	Belt Conveyor, 42"W x 50'L, 15 hp
C-12	Belt Conveyor, 42"W x 50'L, 15 hp
C-13	Belt Conveyor, 42"W x 50'L, 15 hp
C-14	Belt Conveyor, 42"W x 50'L, 15 hp
C-15	Belt Conveyor, 42"W x 50'L, 15 hp
C-16	Belt Conveyor w/hopper, 48”W x 24’L, 20 hp
C-17	Belt Conveyor, 42"W x 50'L, 15 hp
C-18	Belt Conveyor w/hopper, 48”W x 24’L, 20 hp
RS-1	Radial Stacker, 36"W x 120'L, 50 hp
RS-2	Radial Stacker, 36"W x 120'L, 50 hp
RS-3	Radial Stacker, 42"W x 100'L, 50 hp
RS-4	Radial Stacker, 36"W x 120'L, 50 hp
RS-5	Radial Stacker, 36"W x 120'L, 50 hp
BH-1	Baghouse #1, Torit/Donaldson, DLMV 30/15F
BH-2	Baghouse #2, Torit/Donaldson, DLMV 30/15F
BH-3	Baghouse #3, Torit/Donaldson, DLMV 30/15F

The equipment list provided represents the maximum number of components that could be utilized by the Crushing & Screening plant. In some instances the plant may operate with fewer pieces of equipment.

Associates Environmental

Section 5

Criteria Pollutant Emission Calculations

Emission Calculations:

Below are the estimated PM10 emissions from the crushing & screening plant. Emission factors were obtained from AP-42, Table 11.19.2-2 to estimate the aggregate PM10 emissions (Please Refer to Appendix C). Since wet suppression will be utilized, a 95% control can be applied to the uncontrolled PM10 emission factors. Additionally, baghouses will be utilized to vent the crushers in the system. The proposed baghouses can reduce PM10 emissions by 99% (Please refer to Appendix D for specifications on the baghouses). We have also presented emission estimates from the utilization of the loader to feed the plant. The emissions from the loader engine are estimated based on the California Air Resources Board's (CARB) Executive Order emission factors (Please refer to Appendix E), except for SOx which is obtained from AP42, Chapter 3.4, Table 3.4-1. Based on the proposed equipment and the proposed monthly production limit, the following emission calculations represent the equipment's maximum hourly and daily emissions, the 30 day average emissions and the average annual emissions.

Crushing & Screening Plant

Processed Material	500	tons/hr
	4,999	tons/day
	149,970	tons/month
	1,799,640	tons/yr

Hourly Emissions

Source	Production (tons/hr)	x	Uncontrolled[1] PM10 Emission Factor (lbs/ton)	x	Control Efficiency (%)		=	PM10 Emissions (lbs/hr)
Loader to Vibrating Grizzly Feeder w/Hopper F1	500		0.0011		95%			0.03
VGF F1 to Jaw Crusher JC1	500		0.0011		95%			0.03
Jaw Crusher JC1	250		0.0054		99%	^		0.01
Jaw Crusher JC1 to Belt Conveyor C1	250		0.0011		99%	^		0.00
VGF F1 to Belt Conveyor C1	250		0.0011		95%			0.01
Belt Conveyor C1 to Belt Conveyor C2	500		0.0011		95%			0.03
Belt Conveyor C2 to Screen S1	500		0.0011		95%			0.03
Screen S1	500		0.0087		95%			0.22
Screen S1 to Belt Conveyor C3	200		0.0011		95%			0.01
Belt Conveyor C3 to Belt Conveyor C4	200		0.0011		95%			0.01
Belt Conveyor C4 to Radial Stacker RS1	200		0.0011		95%			0.01
Radial Stacker RS1 to Storage Pile	200		0.0011		95%			0.01
Screen S1 to Belt Conveyor C5	300		0.0011		95%			0.02
Belt Conveyor 5 to Cone Crusher CC1	350		0.0011		95%			0.02
Cone Crusher CC1	350		0.0054		99%	^		0.02
Cone Crusher CC1 to Belt Conveyor C6	350		0.0011		99%	^		0.00
Belt Conveyor C6 to Belt Conveyor C7	350		0.0011		95%			0.02
Belt Conveyor C7 to Belt Conveyor C7a	350		0.0011		95%			0.02
Belt Conveyor C7a to Screen S2	350		0.0011		95%			0.02

Screen S2	350	0.0087	95%		0.15
Screen S2 to Belt Conveyor C8	50	0.0011	95%		0.00
Belt Conveyor C8 to Belt Conveyor C9	50	0.0011	95%		0.00
Belt Conveyor C9 to Belt Conveyor C9a	50	0.0011	95%		0.00
Belt Conveyor C9a to Belt Conveyor C5	50	0.0011	95%		0.00
Loader to Belt Conveyor w/ Hopper C16	0	0.0011	95%		0.00
Belt Conveyor C16 to Belt Conveyor C6	0	0.0011	95%		0.00
Screen S2 to Belt Conveyor C10	100	0.0011	95%		0.01
Belt Conveyor C10 to Radial Stacker RS2	100	0.0011	95%		0.01
Radial Stacker RS2 to Storage Pile	100	0.0011	95%		0.01
Screen S-2 to Belt Conveyor C11	200	0.0011	95%		0.01
Belt Conveyor C11 to Cone Crusher CC2	200	0.0011	95%		0.01
Cone Crusher CC2	200	0.0054	99%	^	0.01
Cone Crusher CC2 to Belt Conveyor C12	200	0.0011	99%	^	0.00
Belt Conveyor C12 to Screen S3	200	0.0011	95%		0.01
Loader to Belt Conveyor w/ Hopper C18	0	0.0011	95%		0.00
Belt Conveyor C18 to Belt Conveyor C12	0	0.0011	95%		0.00
Screen S3	200	0.0087	95%		0.09
Screen S3 to Belt Conveyor C13	50	0.0011	95%		0.00
Belt Conveyor C13 to Radial Stacker RS3	50	0.0011	95%		0.00
Radial Stacker RS3 to Storage Pile	50	0.0011	95%		0.00
Screen S3 to Belt Conveyor C14	50	0.0011	95%		0.00
Belt Conveyor C14 to Radial Stacker RS4	50	0.0011	95%		0.00
Radial Stacker RS4 to Storage Pile	50	0.0011	95%		0.00
Screen S3 to Belt Conveyor C15	50	0.0011	95%		0.00
Belt Conveyor C15 to Radial Stacker RS5	50	0.0011	95%		0.00
Radial Stacker RS5 to Storage Pile	50	0.0011	95%		0.00
Screen S3 to Belt Conveyor C17	50	0.0011	95%		0.00
Belt Conveyor C17 to Storage Pile	50	0.0011	95%		0.00
				Total	0.861

[1]Obtained from AP42 Chapter 11.19.2, Table 11.19.2-2.

^Controlled by 99% efficient baghouse

Daily Emissions

Source	Production (tons/day)	x	Uncontrolled[1] PM10 Emission Factor (lbs/ton)	x	Control Efficiency (%)		=	PM10 Emissions (lbs/day)
Loader to Vibrating Grizzly Feeder w/Hopper F1	4,999		0.0011		95%			0.27
VGF F1 to Jaw Crusher JC1	4,999		0.0011		95%			0.27
Jaw Crusher JC1	2,500		0.0054		99%	^		0.13
Jaw Crusher JC1 to Belt Conveyor C1	2,500		0.0011		99%	^		0.03
VGF F1 to Belt Conveyor C1	2499.5		0.0011		95%			0.14
Belt Conveyor C1 to Belt Conveyor C2	4999		0.0011		95%			0.27
Belt Conveyor C2 to Screen S1	4999		0.0011		95%			0.27
Screen S1	4999		0.0087		95%			2.17
Screen S1 to Belt Conveyor C3	1999.6		0.0011		95%			0.11
Belt Conveyor C3 to Belt Conveyor C4	1999.6		0.0011		95%			0.11
Belt Conveyor C4 to Radial Stacker RS1	1999.6		0.0011		95%			0.11
Radial Stacker RS1 to Storage Pile	1999.6		0.0011		95%			0.11
Screen S1 to Belt Conveyor C5	2999.4		0.0011		95%			0.16
Belt Conveyor 5 to Cone Crusher CC1	3499.3		0.0011		95%			0.19
Cone Crusher CC1	3499.3		0.0054		99%	^		0.19
Cone Crusher CC1 to Belt Conveyor C6	3499.3		0.0011		99%	^		0.04
Belt Conveyor C6 to Belt Conveyor C7	3499.3		0.0011		95%			0.19
Belt Conveyor C7 to Belt Conveyor C7a	3499.3		0.0011		95%			0.19
Belt Conveyor C7a to Screen S2	3499.3		0.0011		95%			0.19
Screen S2	3499.3		0.0087		95%			1.52
Screen S2 to Belt Conveyor C8	499.9		0.0011		95%			0.03
Belt Conveyor C8 to Belt Conveyor C9	499.9		0.0011		95%			0.03
Belt Conveyor C9 to Belt Conveyor C9a	499.9		0.0011		95%			0.03
Belt Conveyor C9a to Belt Conveyor C5	499.9		0.0011		95%			0.03
Loader to Belt Conveyor w/ Hopper C16	0		0.0011		95%			0.00
Belt Conveyor C16 to Belt Conveyor C6	0		0.0011		95%			0.00

Screen S2 to Belt Conveyor C10	999.8	0.0011	95%		0.05
Belt Conveyor C10 to Radial Stacker RS2	999.8	0.0011	95%		0.05
Radial Stacker RS2 to Storage Pile	999.8	0.0011	95%		0.05
Screen S-2 to Belt Conveyor C11	1999.6	0.0011	95%	^	0.11
Belt Conveyor C11 to Cone Crusher CC2	1999.6	0.0011	95%	^	0.11
Cone Crusher CC2	1999.6	0.0054	99%		0.11
Cone Crusher CC2 to Belt Conveyor C12	1999.6	0.0011	99%		0.02
Belt Conveyor C12 to Screen S3	1999.6	0.0011	95%		0.11
Loader to Belt Conveyor w/ Hopper C18	0	0.0011	95%		0.00
Belt Conveyor C18 to Belt Conveyor C12	0	0.0011	95%		0.00
Screen S3	1999.6	0.0087	95%		0.87
Screen S3 to Belt Conveyor C13	499.9	0.0011	95%		0.03
Belt Conveyor C13 to Radial Stacker RS3	499.9	0.0011	95%		0.03
Radial Stacker RS3 to Storage Pile	499.9	0.0011	95%		0.03
Screen S3 to Belt Conveyor C14	499.9	0.0011	95%		0.03
Belt Conveyor C14 to Radial Stacker RS4	499.9	0.0011	95%		0.03
Radial Stacker RS4 to Storage Pile	499.9	0.0011	95%		0.03
Screen S3 to Belt Conveyor C15	499.9	0.0011	95%		0.03
Belt Conveyor C15 to Radial Stacker RS5	499.9	0.0011	95%		0.03
Radial Stacker RS5 to Storage Pile	499.9	0.0011	95%		0.03
Screen S3 to Belt Conveyor C17	499.9	0.0011	95%		0.03
Belt Conveyor C17 to Storage Pile	499.9	0.0011	95%		0.03
			Total Emissions, lbs/day		8.61
			Hours/day		24
			Average Hourly Emissions, lbs/hr		0.36

[1]Obtained from AP42 Chapter 11.19.2, Table 11.19.2-2.

^Controlled by 99% efficient baghouse

30 Day Average Emissions

Source	Production (tons/month)	x	Uncontrolled[1] PM10 Emission Factor (lbs/ton)	x	Control Efficiency (%)		=	PM10 Emissions (lbs/mo)
Loader to Vibrating Grizzly Feeder w/Hopper F1	149,970		0.0011		95%			8.25
VGF F1 to Jaw Crusher JC1	149,970		0.0011		95%			8.25
Jaw Crusher JC1	74,985		0.0054		99%	^		4.05
Jaw Crusher JC1 to Belt Conveyor C1	74,985		0.0011		99%	^		0.82
VGF F1 to Belt Conveyor C1	74,985		0.0011		95%			4.12
Belt Conveyor C1 to Belt Conveyor C2	149,970		0.0011		95%			8.25
Belt Conveyor C2 to Screen S1	149,970		0.0011		95%			8.25
Screen S1	149,970		0.0087		95%			65.24
Screen S1 to Belt Conveyor C3	59,988		0.0011		95%			3.30
Belt Conveyor C3 to Belt Conveyor C4	59,988		0.0011		95%			3.30
Belt Conveyor C4 to Radial Stacker RS1	59,988		0.0011		95%			3.30
Radial Stacker RS1 to Storage Pile	59,988		0.0011		95%			3.30
Screen S1 to Belt Conveyor C5	89,982		0.0011		95%			4.95
Belt Conveyor 5 to Cone Crusher CC1	104,979		0.0011		95%			5.77
Cone Crusher CC1	104,979		0.0054		99%			5.67
Cone Crusher CC1 to Belt Conveyor C6	104,979		0.0011		99%			1.15
Belt Conveyor C6 to Belt Conveyor C7	104,979		0.0011		95%			5.77
Belt Conveyor C7 to Belt Conveyor C7a	104,979		0.0011		95%			5.77
Belt Conveyor C7a to Screen S2	104,979		0.0011		95%			5.77
Screen S2	104,979		0.0087		95%			45.67
Screen S2 to Belt Conveyor C8	14,997		0.0011		95%			0.82
Belt Conveyor C8 to Belt Conveyor C9	14,997		0.0011		95%			0.82
Belt Conveyor C9 to Belt Conveyor C9a	14,997		0.0011		95%			0.82
Belt Conveyor C9a to Belt Conveyor C5	14,997		0.0011		95%			0.82
Loader to Belt Conveyor w/ Hopper C16	0		0.0011		95%			0.00
Belt Conveyor C16 to Belt Conveyor C6	0		0.0011		95%	^		0.00

Screen S2 to Belt Conveyor C10	29,994	0.0011	95%	^	1.65
Belt Conveyor C10 to Radial Stacker RS2	29,994	0.0011	95%		1.65
Radial Stacker RS2 to Storage Pile	29,994	0.0011	95%		1.65
Screen S-2 to Belt Conveyor C11	59,988	0.0011	95%		3.30
Belt Conveyor C11 to Cone Crusher CC2	59,988	0.0011	95%		3.30
Cone Crusher CC2	59,988	0.0054	99%		3.24
Cone Crusher CC2 to Belt Conveyor C12	59,988	0.0011	99%		0.66
Belt Conveyor C12 to Screen S3	59,988	0.0011	95%		3.30
Loader to Belt Conveyor w/ Hopper C18	0	0.0011	95%		0.00
Belt Conveyor C18 to Belt Conveyor C12	0	0.0011	95%		0.00
Screen S3	59,988	0.0087	95%		26.09
Screen S3 to Belt Conveyor C13	14,997	0.0011	95%		0.82
Belt Conveyor C13 to Radial Stacker RS3	14,997	0.0011	95%		0.82
Radial Stacker RS3 to Storage Pile	14,997	0.0011	95%		0.82
Screen S3 to Belt Conveyor C14	14,997	0.0011	95%	^	0.82
Belt Conveyor C14 to Radial Stacker RS4	14,997	0.0011	95%	^	0.82
Radial Stacker RS4 to Storage Pile	14,997	0.0011	95%		0.82
Screen S3 to Belt Conveyor C15	14,997	0.0011	95%		0.82
Belt Conveyor C15 to Radial Stacker RS5	14,997	0.0011	95%		0.82
Radial Stacker RS5 to Storage Pile	14,997	0.0011	95%		0.82
Screen S3 to Belt Conveyor C17	14,997	0.0011	95%		0.82
Belt Conveyor C17 to Storage Pile	14,997	0.0011	95%		0.82
			Total 30 DA Emissions, lbs/month		258.17
			Days per Month, days/month		30
			30 DA Emissions, lbs/day		8.61

[1]Obtained from AP42 Chapter 11.19.2, Table 11.19.2-2.

^Controlled by 99% efficient baghouse

Annual Emissions

Source	Production (tons/yr)	x	Uncontrolled[1] PM10 Emission Factor (lbs/ton)	x	Control Efficiency (%)	=	PM10 Emissions (lbs/yr)
Loader to Vibrating Grizzly Feeder w/Hopper F1	1,799,640		0.0011		95%		98.98
VGF F1 to Jaw Crusher JC1	1,799,640		0.0011		95%		98.98
Jaw Crusher JC1	899,820		0.0054		99%		48.59
Jaw Crusher JC1 to Belt Conveyor C1	899,820		0.0011		99%		9.90
VGF F1 to Belt Conveyor C1	899,820		0.0011		95%		49.49
Belt Conveyor C1 to Belt Conveyor C2	1,799,640		0.0011		95%		98.98
Belt Conveyor C2 to Screen S1	1,799,640		0.0011		95%		98.98
Screen S1	1,799,640		0.0087		95%		782.84
Screen S1 to Belt Conveyor C3	719,856		0.0011		95%		39.59
Belt Conveyor C3 to Belt Conveyor C4	719,856		0.0011		95%		39.59
Belt Conveyor C4 to Radial Stacker RS1	719,856		0.0011		95%		39.59
Radial Stacker RS1 to Storage Pile	719,856		0.0011		95%		39.59
Screen S1 to Belt Conveyor C5	1,079,784		0.0011		95%		59.39
Belt Conveyor 5 to Cone Crusher CC1	1,259,748		0.0011		95%		69.29
Cone Crusher CC1	1,259,748		0.0054		99%		68.03
Cone Crusher CC1 to Belt Conveyor C6	1,259,748		0.0011		99%		13.86
Belt Conveyor C6 to Belt Conveyor C7	1,259,748		0.0011		95%		69.29
Belt Conveyor C7 to Belt Conveyor C7a	1,259,748		0.0011		95%		69.29
Belt Conveyor C7a to Screen S2	1,259,748		0.0011		95%		69.29
Screen S2	1,259,748		0.0087		95%		547.99
Screen S2 to Belt Conveyor C8	179,964		0.0011		95%		9.90
Belt Conveyor C8 to Belt Conveyor C9	179,964		0.0011		95%		9.90
Belt Conveyor C9 to Belt Conveyor C9a	179,964		0.0011		95%		9.90
Belt Conveyor C9a to Belt Conveyor C5	179,964		0.0011		95%		9.90
Loader to Belt Conveyor w/ Hopper C16	0		0.0011		95%		0.00
Belt Conveyor C16 to Belt Conveyor C6	0		0.0011		95%		0.00

Screen S2 to Belt Conveyor C10	359,928	0.0011	95%	19.80
Belt Conveyor C10 to Radial Stacker RS2	359,928	0.0011	95%	19.80
Radial Stacker RS2 to Storage Pile	359,928	0.0011	95%	19.80
Screen S-2 to Belt Conveyor C11	719,856	0.0011	95%	39.59
Belt Conveyor C11 to Cone Crusher CC2	719,856	0.0011	95%	39.59
Cone Crusher CC2	719,856	0.0054	99%	38.87
Cone Crusher CC2 to Belt Conveyor C12	719,856	0.0011	99%	7.92
Belt Conveyor C12 to Screen S3	719,856	0.0011	95%	39.59
Loader to Belt Conveyor w/ Hopper C18	0	0.0011	95%	0.00
Belt Conveyor C18 to Belt Conveyor C12	0	0.0011	95%	0.00
Screen S3	719,856	0.0087	95%	313.14
Screen S3 to Belt Conveyor C13	179,964	0.0011	95%	9.90
Belt Conveyor C13 to Radial Stacker RS3	179,964	0.0011	95%	9.90
Radial Stacker RS3 to Storage Pile	179,964	0.0011	95%	9.90
Screen S3 to Belt Conveyor C14	179,964	0.0011	95%	9.90
Belt Conveyor C14 to Radial Stacker RS4	179,964	0.0011	95%	9.90
Radial Stacker RS4 to Storage Pile	179,964	0.0011	95%	9.90
Screen S3 to Belt Conveyor C15	179,964	0.0011	95%	9.90
Belt Conveyor C15 to Radial Stacker RS5	179,964	0.0011	95%	9.90
Radial Stacker RS5 to Storage Pile	179,964	0.0011	95%	9.90
Screen S3 to Belt Conveyor C17	179,964	0.0011	95%	9.90
Belt Conveyor C17 to Storage Pile	179,964	0.0011	95%	9.90

Total Annual Emissions, lbs/yr 3,098.08

[1]Obtained from AP42 Chapter 11.19.2, Table 11.19.2-2.

^Controlled by 99% efficient baghouse

Loader IC Engine Calculations

Maximum Operating Schedule:

	Horsepower	kw	Tier
Loader, Caterpillar C13 Engine	406	303	4i

Emission Factors

Engine Family Name: DCPXL12.5HPB

Emissions are calculated emissions based on CARB's Executive Order certification rates (Please refer to Appendix E).

	NO_x g/kw-hr	CO g/kw-hr	VOC g/kw-hr	PM_{10} g/kw-hr	SO_x g/hp-hr
Loader, Caterpillar C13 Engine	1.60	1.40	0.05	0.002	0.01

Note: Emission factors in green are in grams/bhp-hr

Emission Factors, lbs/gal

	NO_x lbs/gal	CO lbs/gal	VOC lbs/gal	PM_{10} lbs/gal	SO_x lbs/gal
Loader, Caterpillar C13 Engine	4.89E-02	4.28E-02	1.53E-03	6.12E-05	1.68E-04

Assumptions:

Fuel Consumption Rate:	21.83	gal/hr
	218.27	gal/day
	6,548	gal/mo
	78,576	gal/yr

Hourly Emissions

Loader, Caterpillar C13 Engine

	NO_x lbs/hr	CO lbs/hr	VOC lbs/hr	PM_{10} lbs/hr	SO_x lbs/hr
Loader, Caterpillar C13 Engine	1.07	0.93	0.03	1.34E-03	3.68E-03

Maximum Daily Emissions

Loader, Caterpillar C13 Engine

Pollutant	Fuel Consumption Rate (gal/day)	÷	Emission Factor (lbs/gal)	=	Daily Emissions (lbs/day)
NO_x	218.27		4.89E-02		10.68
CO	218.27		4.28E-02		9.35
VOC	218.27		1.53E-03		0.33
PM_{10}	218.27		6.12E-05		0.01
SO_x	218.27		1.68E-04		0.04

30 Day Average Emissions

Loader, Caterpillar C13 Engine

Pollutant	Fuel Consumption Rate (gal/mo)	x	Emission Factor (lbs/gal)	=	Monthly Emissions (lbs/mo)	÷	30 Day Average (days/mo)	=	30 DA Emissions (lbs/day)
NO_x	6,548		4.89E-02		320.45		30		10.68
CO	6,548		4.28E-02		280.39		30		9.35
VOC	6,548		1.53E-03		10.01		30		0.33
PM_{10}	6,548		6.12E-05		0.40		30		0.01
SO_x	6,548		1.68E-04		1.10		30		0.04

Annual Emissions

Pollutant	Fuel Consumption Rate (gal/yr)	x	Emission Factor (lbs/gal)	=	Annual Emissions (lbs/yr)	(tons/yr)
NO_x	78,576		4.89E-02		3,845.36	1.92
CO	78,576		4.28E-02		3,364.69	1.68
VOC	78,576		1.53E-03		120.17	0.06
PM_{10}	78,576		6.12E-05		4.81	0.00
SO_x	78,576		1.68E-04		13.23	0.01

Associates Environmental

Section 6

Regulatory Analysis

Regulatory Analysis:

Rule 212 – Standards for Approving Permits and Issuing Public Notice

Rule 212(c)(1) requires any new or modified permit unit, source under Regulation XX, or equipment under Regulation XXX that may emit air contaminants located within 1000 feet from the outer boundary of a school be responsible for the distribution of a public notice according to Rule 212(d).

Since the equipment will not be located within 1000 feet of a school, no public notification is required.

Rule 212(c)(2) requires new or modified sources subject to Regulation XIII, RECLAIM facilities, or Outer Continental Shelf (OCS) facilities located within 25 miles of the State's seaward boundary and for which the District has been designated as the corresponding onshore area (COA), which undergo construction or modifications resulting in an emissions increase exceeding any of the daily maximums specified as follows:

Air Contaminant	Maximum Daily Emissions - Calculated (lbs/day)	Maximum Daily Emissions - Allowed (lbs/day)
PM10	8.61	30

The emissions from the new equipment are below this level, therefore it will operate in compliance with the rule.

Rule 212(c)(3) requires any new or modified permit unit, source under Regulation XX, or equipment under Regulation XXX with increases in emissions of toxic air contaminants, for which the Executive Officer has made a determination that a person may be exposed to an MICR to one in a million (facilities with multiple permitted units) or ten in a million (facilities with a single permit unit) would require notification.

Since the equipment will not process any materials with toxics, no notification is required.

Rule 401 – Visible Emissions

Rule 401 requires that no person shall discharge into the atmosphere from any single source of emission whatsoever any air contaminant for a period or periods aggregating more than three minutes in any one hour which is:

A) As dark or darker in shade as that designated No. 1 on the Ringelmann Chart, as published by the United States Bureau of Mines; or
B) Of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke described in subparagraph A).

Since the equipment will utilize wet suppression, and dust collectors on the crushers, compliance with this rule is expected.

Rule 402 – Nuisance

A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property.

Since the equipment will utilize wet suppression, and dust collectors on the crushers, compliance with this rule is expected.

Rule 403 – Fugitive Dust

No person shall cause or allow the emissions of fugitive dust from any active operation, open storage pile, or disturbed surface area such that:

A) the dust remains visible in the atmosphere beyond the property line of the emission source; or
B) the dust emission exceeds 20 percent opacity (as determined by the appropriate test method included in the Rule 403 Implementation Handbook), if the dust emission is the result of movement of a motorized vehicle.

No person shall conduct active operations without utilizing the applicable best available control measures included in Table 1 of this Rule to minimize fugitive dust emissions from each fugitive dust source type within the active operation.

No person shall cause or allow PM10 levels to exceed 50 micrograms per cubic meter when determined, by simultaneous sampling, as the difference between upwind and downwind samples collected on high-volume particulate matter samplers or other U.S. EPA-approved equivalent method for PM10 monitoring. If sampling is conducted, samplers shall be:

A) Operated, maintained, and calibrated in accordance with 40 Code of Federal Regulations (CFR), Part 50, Appendix J, or appropriate U.S. EPA-published documents for U.S. EPA-approved equivalent method(s) for PM10.
B) Reasonably placed upwind and downwind of key activity areas and as close to the property line as feasible, such that other sources of fugitive dust between the sampler and the property line are minimized.

No person shall allow track-out to extend 25 feet or more in cumulative length from the point of origin from an active operation. Notwithstanding the preceding, all track-out from an active operation shall be removed at the conclusion of each workday or evening shift.

No person shall conduct an active operation with a disturbed surface area of five or more acres, or with a daily import or export of 100 cubic yards or more of bulk material without utilizing at least one of the measures listed in subparagraphs (d)(5)(A) through (d)(5)(E) at each vehicle egress from the site to a paved public road.

A) Install a pad consisting of washed gravel (minimum-size: one inch) maintained in a clean condition to a depth of at least six inches and extending at least 30 feet wide and at least 50 feet long.
B) Pave the surface extending at least 100 feet and at least 20 feet wide.
C) Utilize a wheel shaker/wheel spreading device consisting of raised dividers (rails, pipe, or grates) at least 24 feet long and 10 feet wide to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.
D) Install and utilize a wheel washing system to remove bulk material from tires and vehicle undercarriages before vehicles exit the site.
E) Any other control measures approved by the Executive Officer and the U.S. EPA as equivalent to the actions specified in subparagraphs (d)(5)(A) through (d)(5)(D).Rule 403 prohibits particulate emissions of fugitive dust from transport, handling or storage activity in quantities such that the dust remains visible in the air beyond the facility's property boundary. The rule requires that the facility control

potential sources of fugitive dust through the implementation of Best Management Practices (BMPs). The facility will not conduct an active operation with a disturbed surface area of five acres or more or with a daily import or export of more of 100 cubic yards or more of bulk material. The facility will be in compliance with the fugitive dust requirements.

Through the implementation of the best available control measures the project site will be in compliance with the requirements of this rule.

Rule 404 – Particulate Matter - Concentration

Rule 404 limits the concentration of particulate matter that can be emitted as a function of the concentration at standard conditions. Below is the calculated maximum concentration versus the allowable concentration specified in Table 404(a).

Source	Volume Discharged Calculated as Dry Gas at Standard Conditions (cubic feet per minute)	Calculated^ Concentration of Air Contaminants in Discharged Gas Calculated as Dry Gas at Standard Conditions (grains per cubic foot)	Maximum Concentration of Air Contaminants Allowed in Discharged Gas Calculated as Dry Gas at Standard Conditions (grains per cubic foot)
JC1 Baghouse Stack	2,500	0.00139	0.1334
CC1 Baghouse Stack	2,500	0.00194	0.1334
CC2 Baghouse Stack	2,500	0.00111	0.1334

^gr/dscf = (lbs/hr 2.2 x 7000 gr/lb)/(scfm x 60 min/hr)

Where:

Lbs/hr = PM emission rate out the stack
scfm = baghouse exhaust flow rate at standard conditions

JC1 gr/dscf = (0.0135 lbs PM_{10}/hr x 2.2 x 7000 gr/lb)/(2,500 scfm x 60 min/hr) = 0.00139

The baghouses will be in compliance with the air contaminant discharge rule limitation.

Rule 405 – Solid Particulate Matter - Weight

A person shall not discharge into the atmosphere from any source, solid particulate matter including lead and lead compounds in excess of the rate shown in Table 405(a).

Source	Process Weight per Hour (lbs/hour)	Calculated^ Maximum Discharge Rate Allowed for Solid Particulate Matter (Aggregate Discharge from all Points of Process) (lbs/hour)	Maximum Discharge Rate Allowed for Solid Particulate Matter (Aggregate Discharge from all Points of Process) (lbs/hour)
Crushing and Screening Plant	1,000,000	1.89	29.35

^PM, lb/hr = PM10 lbs/hr x 2.2 (PM/PM10 ratio)

PM, lbs/hr = 0.861 lbs PM10/hr x 2.2 = 1.89

The plant will operate in compliance with the particulate matter discharge rule limitation.

Rule 1157 – PM10 Emission Reductions From Aggregate and Related Operations

The purpose of this rule is to reduce PM10 emissions from aggregate and related operations.

The plant will implement the applicable sections of Rule 1157 to ensure compliance with the rule.

Rule 1303 – New Source Review Requirements

Rule 1303(a) - Best Available Control Technology (BACT)

The Executive Officer or designee shall deny the Permit to Construct for any relocation or for any new or modified source which results in an emission increase of any nonattainment air contaminant, any ozone depleting compound, or ammonia, unless BACT is employed for the new or relocated source or for the actual modification to an existing source.

The facility is proposing to utilize a baghouse to vent each of the crushers and will utilize wet suppression on the remainder of the plant, therefore satisfying the BACT requirement.

Rule 1303(b)(1) - Modeling

Rule 1303(b)(1) requires a screening analysis in accordance with Appendix "A", Table A-1. Table A-1 specifies that non-combustion sources shall not exceed the following emission rate: 0.41 pounds per hour for PM_{10}. Below is a summary of the calculated emissions versus the allowable emissions specified in Table A-1.

System	Pollutant	Average Calculated Emissions (lbs/hr)	Allowable Emissions (lbs/hr)
Crushing Plant	PM_{10}	0.36	0.41

The emissions from the equipment are below this level therefore satisfying the screening analysis.

Rule 1303(b)(2) - Emission Offsets

Rule 1303(b)(2) requires that PM_{10}, NO_x, SO_x and VOC emissions in excess of 8,000 pounds per year be offset at a ratio of 1.2 to 1 through the purchase of Emission Reduction Credits (ERCs). Below is a summary of the 30 Day Average (30 DA) emissions against the offset threshold.

Pollutant	Crushing Plant, A/N: 562763 (lbs/day)	Crushing & Screening Plant (lbs/day)	Total Emissions (lbs/day)	Offset Limit (lbs/day)
PM_{10}	0.64	8.61	9.25	22.00
NO_x	--	--	0.00	22.00
SO_x	--	--	0.00	22.00
VOC	--	--	0.00	22.00

Since the emissions from the equipment are below the offset threshold, no offsets are required.

Rule 1401 – New Source Review of Toxic Air Contaminants

Rule 1401 establishes limits for Maximum Individual Cancer Risk (MICR), cancer burden and non-cancer acute and chronic Hazard Index (HI) from new permit units relocations or modifications to existing permit units that emit toxic air contaminants. The Rule establishes allowable risks for permit units requiring new permits pursuant to Rule 201 and Rule 203. No materials containing toxics will be processed by the screening plant, therefore in compliance with Rule 1401.

A loader will be used to feed aggregate to the plant. In the past the SCAQMD has evaluated the toxic emissions from the loader against Rule 1401. It is our belief that the loader should not be evaluated against Rule 1401. Rule 1401 is intended to evaluate permitted sources. The only permitted source is the plant (and baghouses). Rule 219(a) provides mobile sources an exemption from permitting. We understand that Rule 219(s)(2) may void the exemption if it triggers the Rule 1401 thresholds, however no permits have been required of mobile sources. CARB has adopted in the California Code of Regulations Title 13, Article 4.8, Chapter 9, Section 2449-2449.3 requirements which regulate the emissions from off-road diesel fired mobile sources. Additionally, mobile sources fall outside of the District's jurisdiction (except offset requirements for in-plant vehicles) and are regulated by state and federal agencies that establish the air pollution emission standards for vehicles and the fuel they run on.

Associates Environmental

Section 7

Permit Description and Conditions

Permit Description and Conditions:

Equipment Description:

Crushing and Screening Plant, consisting of:

Unit	Equipment Description
F-1	Receiving Hopper w/Vibrating Grizzly Feeder
JC-1	Jaw Crusher, Cedar Rapids, 30” x 42”, 150 hp
S-1	Screen, SCR, 8’ x 20’, 40 hp
S-2	Screen, JCI, 8’ x 20’, 40 hp
S-3	Screen, JCI, 6’ x 16’, 40 hp
CC-1	Cone Crusher, Telesmith, J-15347, 300hp
CC-2	Cone Crusher, Symons, 200 HP
C-1	Belt Conveyor, 36”W x 50’L, 15 hp
C-2	Belt Conveyor, 48”W x 40'L, 75 hp
C-3	Belt Conveyor, 48”W x 24'L, 20 hp
C-4	Belt Conveyor, 48”W x 50'L, 15 hp
C-5	Belt Conveyor, 42"W x 50'L, 15 hp
C-6	Belt Conveyor, 42"W x 50'L, 15 hp
C-7	Belt Conveyor, 42"W x 50'L, 15 hp
C-7a	Belt Conveyor, 42”W x 50’L, 15 hp
C-8	Belt Conveyor, 42"W x 50'L, 15 hp
C-9	Belt Conveyor, 42"W x 50'L, 15 hp
C-9a	Belt Conveyor, 42"W x 50'L, 15 hp
C-10	Belt Conveyor, 42"W x 50'L, 15 hp
C-11	Belt Conveyor, 42"W x 50'L, 15 hp
C-12	Belt Conveyor, 42"W x 50'L, 15 hp
C-13	Belt Conveyor, 42"W x 50'L, 15 hp
C-14	Belt Conveyor, 42"W x 50'L, 15 hp
C-15	Belt Conveyor, 42"W x 50'L, 15 hp
C-16	Belt Conveyor w/hopper, 48”W x 24’L, 20 hp
C-17	Belt Conveyor, 42"W x 50'L, 15 hp
C-18	Belt Conveyor w/hopper, 48”W x 24’L, 20 hp
RS-1	Radial Stacker, 36"W x 120'L, 50 hp
RS-2	Radial Stacker, 36"W x 120'L, 50 hp
RS-3	Radial Stacker, 42"W x 100'L, 50 hp
RS-4	Radial Stacker, 36"W x 120'L, 50 hp
RS-5	Radial Stacker, 36"W x 120'L, 50 hp

Permit Conditions:

1) Operation of this equipment shall be conducted in accordance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2) This equipment shall be properly maintained and kept in good operating condition at all times.

3) The total amount of material processed shall not exceed 149,970 tons in any one calendar month.

4) The equipment shall not be operated unless the crushers are vented to air pollution control equipment which is in full use and which has been issued a permit by the executive officer.

5) Material charged and material processed shall be kept sufficiently moist to minimize fugitive dust emissions.

6) Records shall be maintained to demonstrate compliance with the above conditions. The records shall be kept for at least two years and made available to District personnel upon request.

Baghouse #1:

Air Pollution Control Equipment Consisting of:

1. Baghouse, Donaldson Torit, Model No. DLM V30/15F, with 20 filter bags each, 1'-8" DIA. X 4'-11" L., Pulse Jet Cleaning
2. Exhaust system with one 7.5 H.P. blower venting a cone crusher CC1

Permit Conditions:

1) Operation of this equipment shall be conducted in accordance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2) This equipment shall be properly maintained and kept in good operating condition at all times.

3) Dust collected shall be discharged into enclosed containers or returned to process and shall not be handled in a manner that may result in the re-release of collected materials to the atmosphere.

4) A mechanical gauge shall be installed so as to indicate, in inches of water, the static pressure differential across the exhaust filters.

5) The baghouse shall comply with the requirements of Rule 1155.

Baghouse #2:

Air Pollution Control Equipment Consisting of:

1. Baghouse, Donaldson Torit, Model No. DLM V30/15F, with 20 filter bags each, 1'-8" DIA. X 4'-11" L., Pulse Jet Cleaning
2. Exhaust system with one 7.5 H.P. blower venting a cone crusher CC2

Permit Conditions:

1) Operation of this equipment shall be conducted in accordance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2) This equipment shall be properly maintained and kept in good operating condition at all times.

3) Dust collected shall be discharged into enclosed containers or returned to process and shall not be handled in a manner that may result in the re-release of collected materials to the atmosphere.

4) A mechanical gauge shall be installed so as to indicate, in inches of water, the static pressure differential across the exhaust filters.

5) The baghouse shall comply with the requirements of Rule 1155.

Baghouse #3:

Air Pollution Control Equipment Consisting of:

1. Baghouse, Donaldson Torit, Model No. DLM V30/15F, with 20 filter bags each, 1'-8" DIA. X 4'-11" L., Pulse Jet Cleaning
2. Exhaust system with one 7.5 H.P. blower venting a jaw crusher JC1

Permit Conditions:

1) Operation of this equipment shall be conducted in accordance with all data and specifications submitted with the application under which this permit is issued unless otherwise noted below.

2) This equipment shall be properly maintained and kept in good operating condition at all times.

3) Dust collected shall be discharged into enclosed containers or returned to process and shall not be handled in a manner that may result in the re-release of collected materials to the atmosphere.

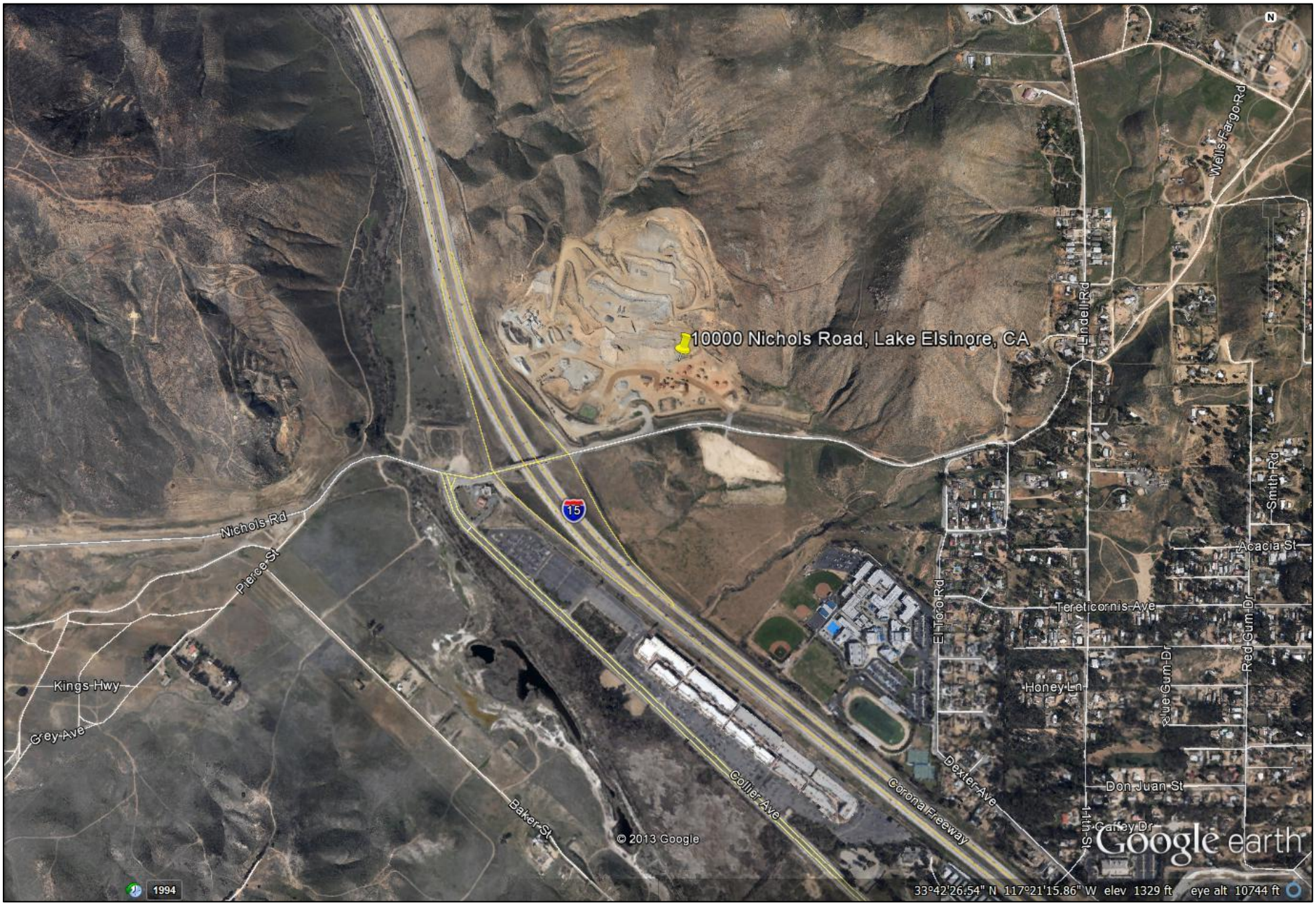
4) A mechanical gauge shall be installed so as to indicate, in inches of water, the static pressure differential across the exhaust filters.

5) The baghouse shall comply with the requirements of Rule 1155.

Associates Environmental

Appendix A

Site Map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Nichols Rd
Pierce St
Kings Hwy
Grey Ave
Baker St
Collier Ave
Corona Freeway
Dexter Ave
Don Juan St
Gafley Dr
14th St
Honey Ln
Tereticornis Ave
Acacia St
Red Gum Dr
Blue Gum Dr
Smith Rd
Elliott Rd
Lindell Rd
Wells Fargo Rd
15
N
© 2013 Google
Google earth
1994
33°42'26.54" N 117°21'15.86" W elev 1329 ft eye alt 10744 ft

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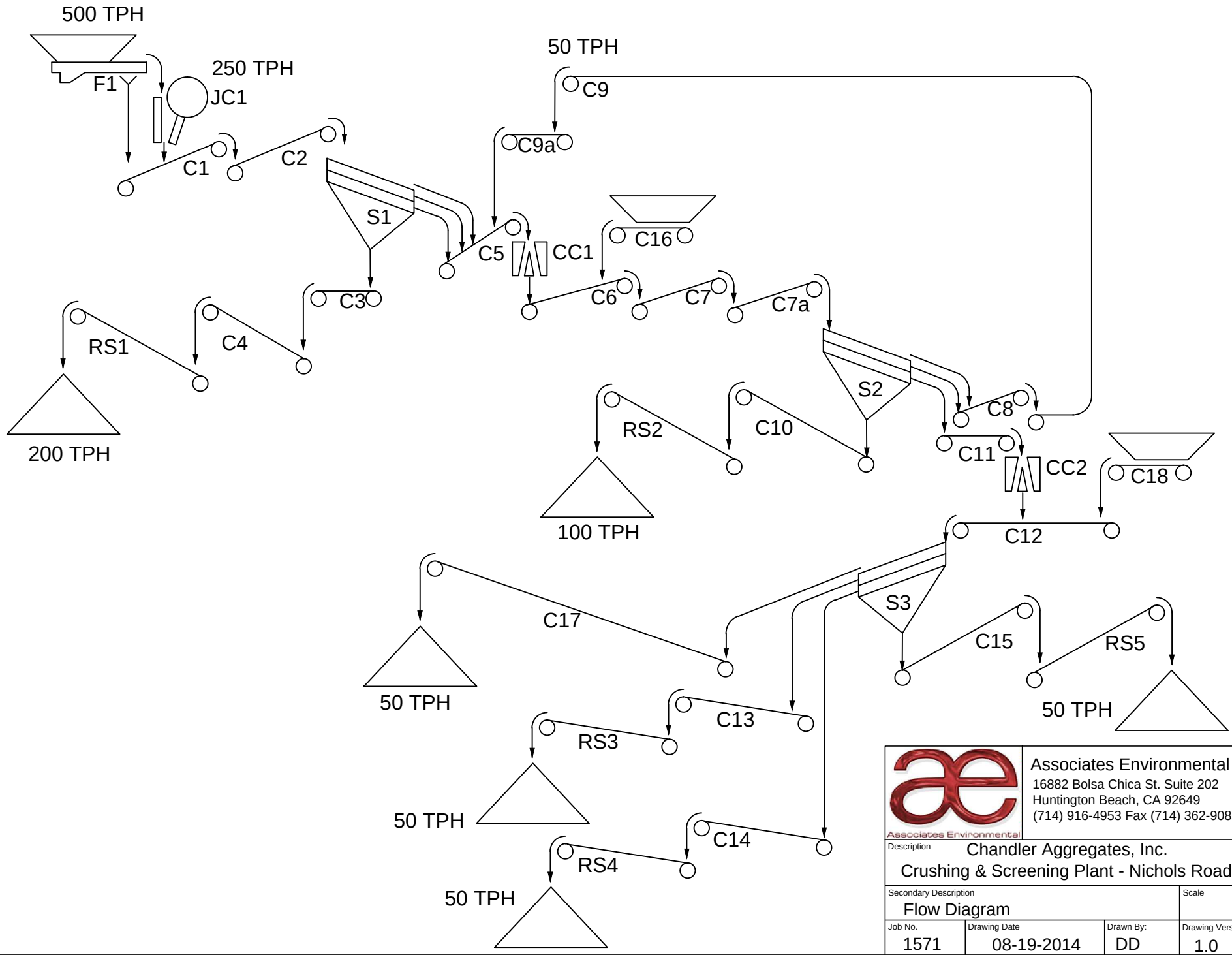
Appendix B

Crushing & Screening Plant Flow Diagram



Associates Environmental
16882 Bolsa Chica St. Suite 202
Huntington Beach, CA 92649
(714) 916-4953 Fax (714) 362-9085

Description: Chandler Aggregates, Inc. Crushing & Screening Plant - Nichols Road			
Secondary Description: Flow Diagram			Scale:
Job No.: 1571	Drawing Date: 08-19-2014	Drawn By: DD	Drawing Version: 1.0

Associates Environmental

Appendix C

AP-42 Chapter 11.12.2, Table 11.12.2-2

11.19.2 Crushed Stone Processing and Pulverized Mineral Processing

11.19.2.1 Process Description [24, 25]

Crushed Stone Processing

Major rock types processed by the crushed stone industry include limestone, granite, dolomite, traprock, sandstone, quartz, and quartzite. Minor types include calcareous marl, marble, shell, and slate. Major mineral types processed by the pulverized minerals industry, a subset of the crushed stone processing industry, include calcium carbonate, talc, and barite. Industry classifications vary considerably and, in many cases, do not reflect actual geological definitions.

Rock and crushed stone products generally are loosened by drilling and blasting and then are loaded by power shovel or front-end loader into large haul trucks that transport the material to the processing operations. Techniques used for extraction vary with the nature and location of the deposit. Processing operations may include crushing, screening, size classification, material handling and storage operations. All of these processes can be significant sources of PM and PM-10 emissions if uncontrolled.

Quarried stone normally is delivered to the processing plant by truck and is dumped into a bin. A feeder is used as illustrated in Figure 11.19.2-1. The feeder or screens separate large boulders from finer rocks that do not require primary crushing, thus reducing the load to the primary crusher. Jaw, impactor, or gyratory crushers are usually used for initial reduction. The crusher product, normally 7.5 to 30 centimeters (3 to 12 inches) in diameter, and the grizzly throughs (undersize material) are discharged onto a belt conveyor and usually are conveyed to a surge pile for temporary storage or are sold as coarse aggregates.

The stone from the surge pile is conveyed to a vibrating inclined screen called the scalping screen. This unit separates oversized rock from the smaller stone. The undersized material from the scalping screen is considered to be a product stream and is transported to a storage pile and sold as base material. The stone that is too large to pass through the top deck of the scalping screen is processed in the secondary crusher. Cone crushers are commonly used for secondary crushing (although impact crushers are sometimes used), which typically reduces material to about 2.5 to 10 centimeters (1 to 4 inches). The material (throughs) from the second level of the screen bypasses the secondary crusher because it is sufficiently small for the last crushing step. The output from the secondary crusher and the throughs from the secondary screen are transported by conveyor to the tertiary circuit, which includes a sizing screen and a tertiary crusher.

Tertiary crushing is usually performed using cone crushers or other types of impactor crushers. Oversize material from the top deck of the sizing screen is fed to the tertiary crusher. The tertiary crusher output, which is typically about 0.50 to 2.5 centimeters (3/16th to 1 inch), is returned to the sizing screen. Various product streams with different size gradations are separated in the screening operation. The products are conveyed or trucked directly to finished product bins, to open area stock piles, or to other processing systems such as washing, air separators, and screens and classifiers (for the production of manufactured sand).

Some stone crushing plants produce manufactured sand. This is a small-sized rock product with a maximum size of 0.50 centimeters (3/16 th inch). Crushed stone from the tertiary sizing screen is sized in a vibrating inclined screen (fines screen) with relatively small mesh sizes.

Oversized material is processed in a cone crusher or a hammermill (fines crusher) adjusted to produce small diameter material. The output is returned to the fines screen for resizing.

In certain cases, stone washing is required to meet particulate end product specifications or demands.

Pulverized Mineral Processing

Pulverized minerals are produced at specialized processing plants. These plants supply mineral products ranging from sizes of approximately 1 micrometer to more than 75 micrometers aerodynamic diameter. Pharmaceutical, paint, plastics, pigment, rubber, and chemical industries use these products. Due to the specialized characteristics of the mineral products and the markets for these products, pulverized mineral processing plants have production rates that are less than 5% of the production capacities of conventional crushed stone plants. Two alternative processing systems for pulverized minerals are summarized in Figure 11-19.2-2.

In dry processing systems, the mineral aggregate material from conventional crushing and screening operations is subject to coarse and fine grinding primarily in roller mills and/or ball mills to reduce the material to the necessary product size range. A classifier is used to size the ground material and return oversized material that can be pulverized using either wet or dry processes. The classifier can either be associated with the grinding operation, or it can be a stand-alone process unit. Fabric filters control particulate matter emissions from the grinding operation and the classifier. The products are stored in silos and are shipped by truck or in bags.

In wet processing systems, the mineral aggregate material is processed in wet mode coarse and fine grinding operations. Beneficiation processes use flotation to separate mineral impurities. Finely ground material is concentrated and flash dried. Fabric filters are used to control particulate matter emissions from the flash dryer. The product is then stored in silos, bagged, and shipped.

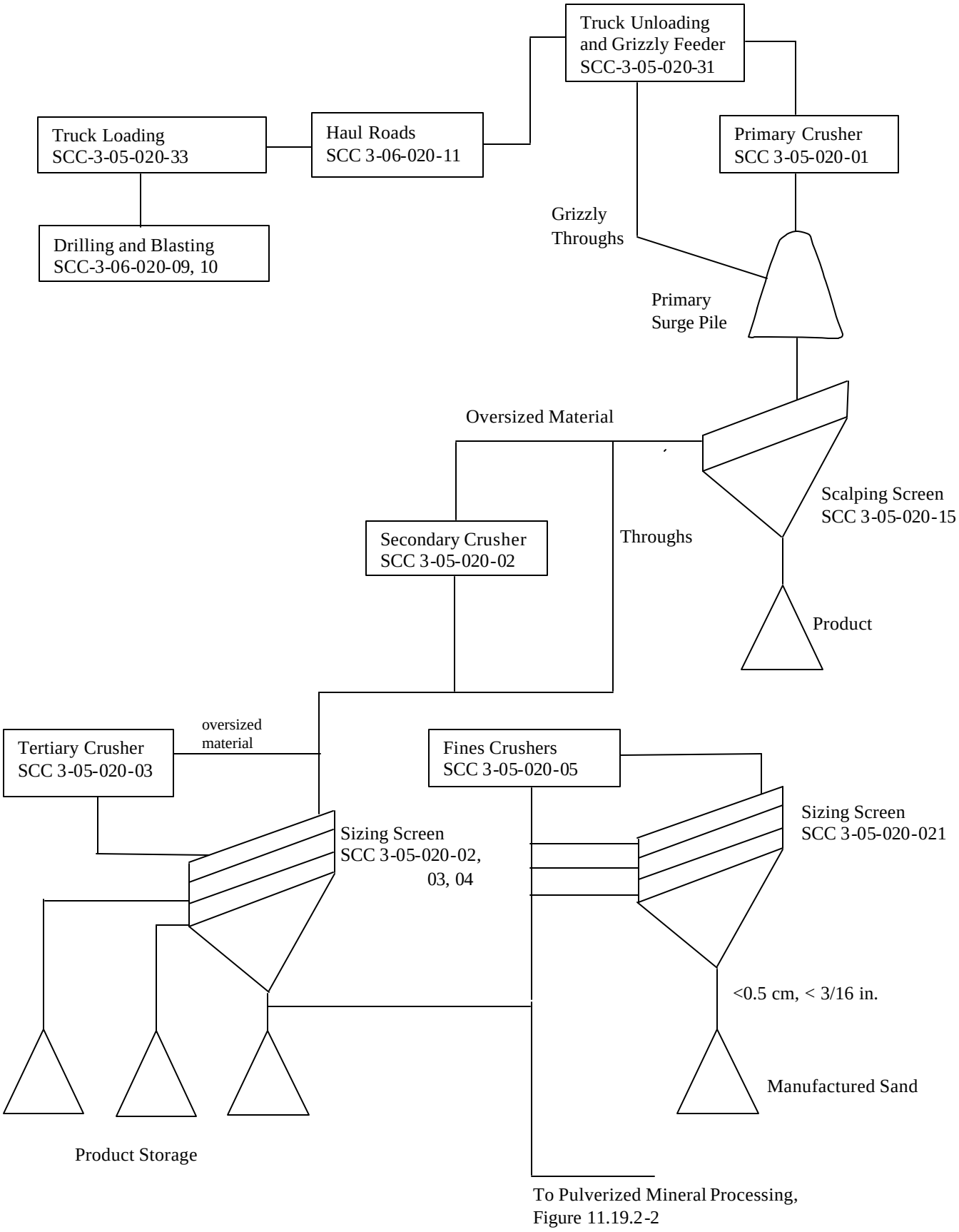


Figure 11.19.2-1. Typical stone processing plant

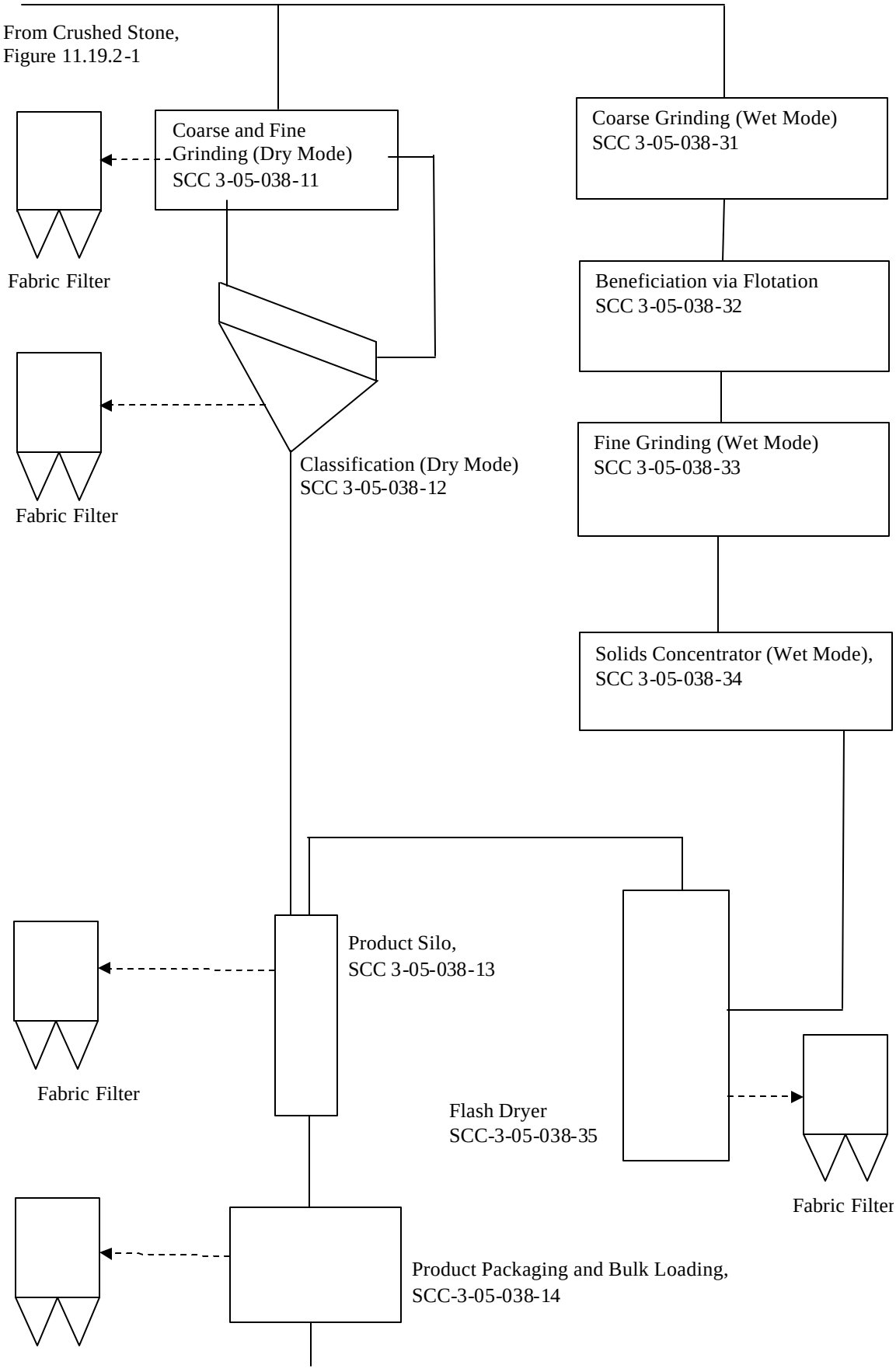


Figure 11.19.2-2 Flowchart for Pulverized Mineral Processing

11.19.2.2 Emissions and Controls [10, 11, 12, 13, 14, and 26]

Crushed Stone Processing

Emissions of PM, PM-10, and PM-2.5 occur from a number of operations in stone quarrying and processing. A substantial portion of these emissions consists of heavy particles that may settle out within the plant. As in other operations, crushed stone emission sources may be categorized as either process sources or fugitive dust sources. Process sources include those for which emissions are amenable to capture and subsequent control. Fugitive dust sources generally involve the reentrainment of settled dust by wind or machine movement. Emissions from process sources should be considered fugitive unless the sources are vented to a baghouse or are contained in an enclosure with a forced-air vent or stack. Factors affecting emissions from either source category include the stone size distribution and the surface moisture content of the stone processed, the process throughput rate, the type of equipment and operating practices used, and topographical and climatic factors.

Of graphical and seasonal factors, the primary variables affecting uncontrolled PM emissions are wind and material moisture content. Wind parameters vary with geographical location, season, and weather. It can be expected that the level of emissions from unenclosed sources (principally fugitive dust sources) will be greater during periods of high winds. The material moisture content also varies with geographical location, season, and weather. Therefore, the levels of uncontrolled emissions from both process emission sources and fugitive dust sources generally will be greater in arid regions of the country than in temperate ones and greater during the summer months because of a higher evaporation rate.

The moisture content of the material processed can have a substantial effect on emissions. This effect is evident throughout the processing operations. Surface wetness causes fine particles to agglomerate on or to adhere to the faces of larger stones, with a resulting dust suppression effect. However, as new fine particles are created by crushing and attrition and as the moisture content is reduced by evaporation, this suppressive effect diminishes and may disappear. Plants that use wet suppression systems (spray nozzles) to maintain relatively high material moisture contents can effectively control PM emissions throughout the process. Depending on the geographical and climatic conditions, the moisture content of mined rock can range from nearly zero to several percent. Because moisture content is usually expressed on a basis of overall weight percent, the actual moisture amount per unit area will vary with the size of the rock being handled. On a constant mass-fraction basis, the per-unit area moisture content varies inversely with the diameter of the rock. The suppressive effect of the moisture depends on both the absolute mass water content and the size of the rock product. Typically, wet material contains >1.5 percent water.

A variety of material, equipment, and operating factors can influence emissions from crushing. These factors include (1) stone type, (2) feed size and distribution, (3) moisture content, (4) throughput rate, (5) crusher type, (6) size reduction ratio, and (7) fines content. Insufficient data are available to present a matrix of rock crushing emission factors detailing the above classifications and variables. Available data indicate that PM-10 and PM-2.5 emissions from limestone and granite processing operations are similar. Therefore, the emission factors developed from the emissions data gathered at limestone and granite processing facilities are considered to be representative of typical crushed stone processing operations. Emission factors for filterable PM, PM-10, and PM-2.5 emissions from crushed stone processing operations are presented in Tables 11.19.2-1 (Metric units) and 11.19.2-2 (English units.)

Table 11.19.2-1 (Metric Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (kg/Mg)[a]

Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Secondary Crushing (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Tertiary Crushing (SCC 3-050030-03)	0.0027[d]	E	0.0012[o]	C	ND[n]	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0006[d]	E	0.00027[p]	C	0.00005[q]	E
Fines Crushing (SCC 3-05-020-05)	0.0195[e]	E	0.0075[e]	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0015[f]	E	0.0006[f]	E	0.000035[q]	E
Screening (SCC 3-05-020-02, 03)	0.0125[c]	E	0.0043[l]	C	ND	
Screening (controlled) (SCC 3-05-020-02, 03)	0.0011[d]	E	0.00037[m]	C	0.000025[q]	E
Fines Screening (SCC 3-05-020-21	0.15[g]	E	0.036[g]	E	ND	
Fines Screening (controlled) (SCC 3-05-020-21)	0.0018[g]	E	0.0011[g]	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0015[h]	E	0.00055[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00007[i]	E	2.3×10^{-5}[i]	D	6.5×10^{-6}[q]	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		4.0×10^{-5}[j]	E	ND	
Truck Unloading - Fragmented Stone (SCC 3-05-020-31)	ND		8.0×10^{-6}[j]	E	ND	
Truck Unloading - Conveyor, crushed stone (SCC 3-05-020-32)	ND		5.0×10^{-5}[k]	E	ND	

a. Emission factors represent uncontrolled emissions unless noted. Emission factors in kg/Mg of material throughput. SCC = Source Classification Code. ND = No data.

b. Controlled sources (with wet suppression) are those that are part of the processing plant that employs current wet suppression technology similar to the study group. The moisture content of the study group without wet suppression systems operating (uncontrolled) ranged from 0.21 to 1.3 percent, and the same facilities operating wet suppression systems (controlled) ranged from 0.55 to 2.88 percent. Due to carry over of the small amount of moisture required, it has been shown that each source, with the exception of crushers, does not need to employ direct water sprays. Although the moisture content was the only variable measured, other process features may have as much influence on emissions from a given source. Visual observations from each source under normal operating conditions are probably the best indicator of which emission factor is most appropriate. Plants that employ substandard control measures as indicated by visual observations should use the uncontrolled factor with appropriate control efficiency that best reflects the effectiveness of the controls employed.

c. References 1, 3, 7, and 8

d. References 3, 7, and 8

e. Reference 4

f. References 4 and 15

g. Reference 4

h. References 5 and 6

i. References 5, 6, and 15

j. Reference 11

k. Reference 12

l. References 1, 3, 7, and 8

m. References 1, 3, 7, 8, and 15

n. No data available, but emission factors for PM-10 for tertiary crushers can be used as an upper limit for primary or secondary crushing

o. References 2, 3, 7, 8

p. References 2, 3, 7, 8, and 15

q. Reference 15

r. PM emission factors are presented based on PM-100 data in the Background Support Document for Section 11.19.2

s. Emission factors for PM-30 and PM-50 are available in Figures 11.19.2-3 through 11.19.2-6.

Table 11.19.2-2 (English Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (lb/Ton)[a]

Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Secondary Crushing (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Tertiary Crushing (SCC 3-050030-03)	0.0054[d]	E	0.0024[o]	C	ND[n]	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0012[d]	E	0.00054[p]	C	0.00010[q]	E
Fines Crushing (SCC 3-05-020-05)	0.0390[e]	E	0.0150[e]	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0030[f]	E	0.0012[f]	E	0.000070[q]	E
Screening (SCC 3-05-020-02, 03)	0.025[c]	E	0.0087[l]	C	ND	
Screening (controlled) (SCC 3-05-020-02, 03)	0.0022[d]	E	0.00074[m]	C	0.000050[q]	E
Fines Screening (SCC 3-05-020-21)	0.30[g]	E	0.072[g]	E	ND	
Fines Screening (controlled) (SCC 3-05-020-21)	0.0036[g]	E	0.0022[g]	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0030[h]	E	0.00110[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00014[i]	E	4.6×10^{-5}[i]	D	1.3×10^{-5}[q]	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		8.0×10^{-5}[j]	E	ND	
Truck Unloading -Fragmented Stone (SCC 3-05-020-31)	ND		1.6×10^{-5}[j]	E	ND	
Truck Unloading - Conveyor, crushed stone (SCC 3-05-020-32)	ND		0.00010[k]	E	ND	

a. Emission factors represent uncontrolled emissions unless noted. Emission factors in lb/Ton of material of throughput. SCC = Source Classification Code. ND = No data.

b. Controlled sources (with wet suppression) are those that are part of the processing plant that employs current wet suppression technology similar to the study group. The moisture content of the study group without wet suppression systems operating (uncontrolled) ranged from 0.21 to 1.3 percent, and the same facilities operating wet suppression systems (controlled) ranged from 0.55 to 2.88 percent. Due to carry over of the small amount of moisture required, it has been shown that each source, with the exception of crushers, does not need to employ direct water sprays. Although the moisture content was the only variable measured, other process features may have as much influence on emissions from a given source. Visual observations from each source under normal operating conditions are probably the best indicator of which emission factor is most appropriate. Plants that employ substandard control measures as indicated by visual observations should use the uncontrolled factor with an appropriate control efficiency that best reflects the effectiveness of the controls employed.

c. References 1, 3, 7, and 8

d. References 3, 7, and 8

e. Reference 4

f. References 4 and 15

g. Reference 4

h. References 5 and 6

i. References 5, 6, and 15

j. Reference 11

k. Reference 12

l. References 1, 3, 7, and 8

m. References 1, 3, 7, 8, and 15

n. No data available, but emission factors for PM-10 for tertiary crushers can be used as an upper limit for primary or secondary crushing

o. References 2, 3, 7, 8

p. References 2, 3, 7, 8, and 15

q. Reference 15

r. PM emission factors are presented based on PM-100 data in the Background Support Document for Section 11.19.2

s. Emission factors for PM-30 and PM-50 are available in Figures 11.19.2-3 through 11.19.2-6.

.

Emission factor estimates for stone quarry blasting operations are not presented because of the sparsity and unreliability of available tests. While a procedure for estimating blasting emissions is presented in Section 11.9, Western Surface Coal Mining, that procedure should not be applied to stone quarries because of dissimilarities in blasting techniques, material blasted, and size of blast areas. Emission factors for fugitive dust sources, including paved and unpaved roads, materials handling and transfer, and wind erosion of storage piles, can be determined using the predictive emission factor equations presented in AP-42 Section 13.2.

The data used in the preparation of the controlled PM calculations was derived from the individual A-rated tests for PM-2.5 and PM-10 summarized in the Background Support Document. For conveyor transfer points, the controlled PM value was derived from A-rated PM-2.5, PM-10, and PM data summarized in the Background Support Document.

The extrapolation line was drawn through the PM-2.5 value and the mean of the PM-10 values. PM emission factors were calculated for PM-30, PM-50, and PM-100. Each of these particle size limits is used by one or more regulatory agencies as the definition of total particulate matter. The graphical extrapolations used in calculating the emission factors are presented in Figures 11.19.2-3, -4, -5, and -6.

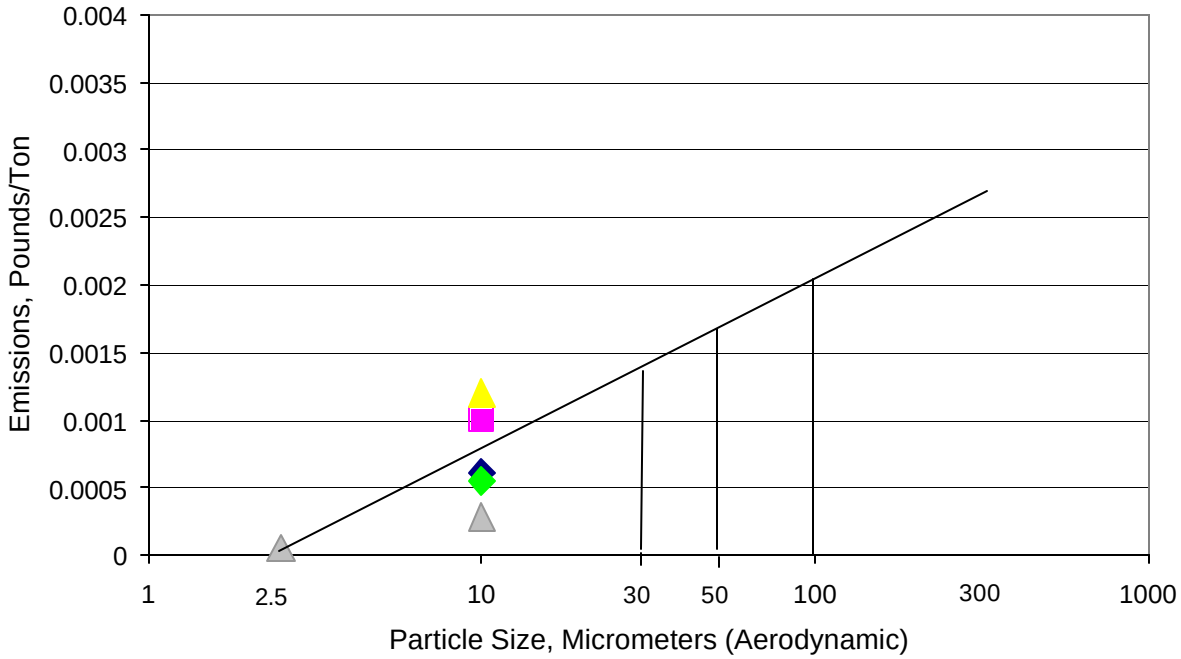


Figure 11-19-3. PM Emission Factor Calculation, Screening (Controlled)

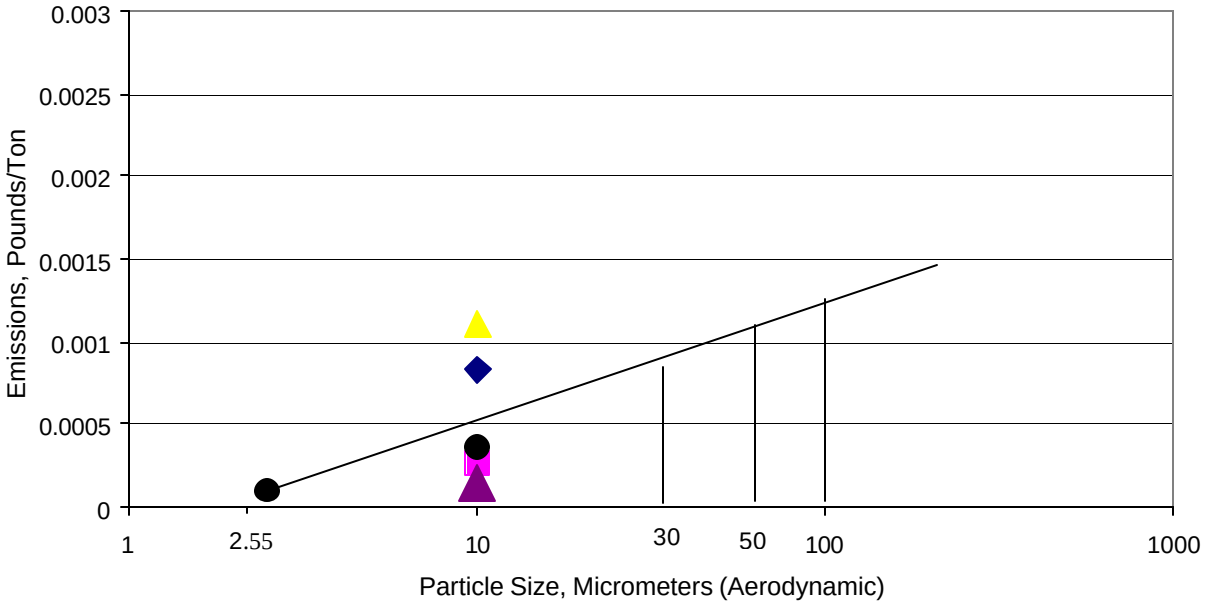


Figure 11.19-4. PM Emission Factor Calculation, Tertiary Crushing (Controlled)

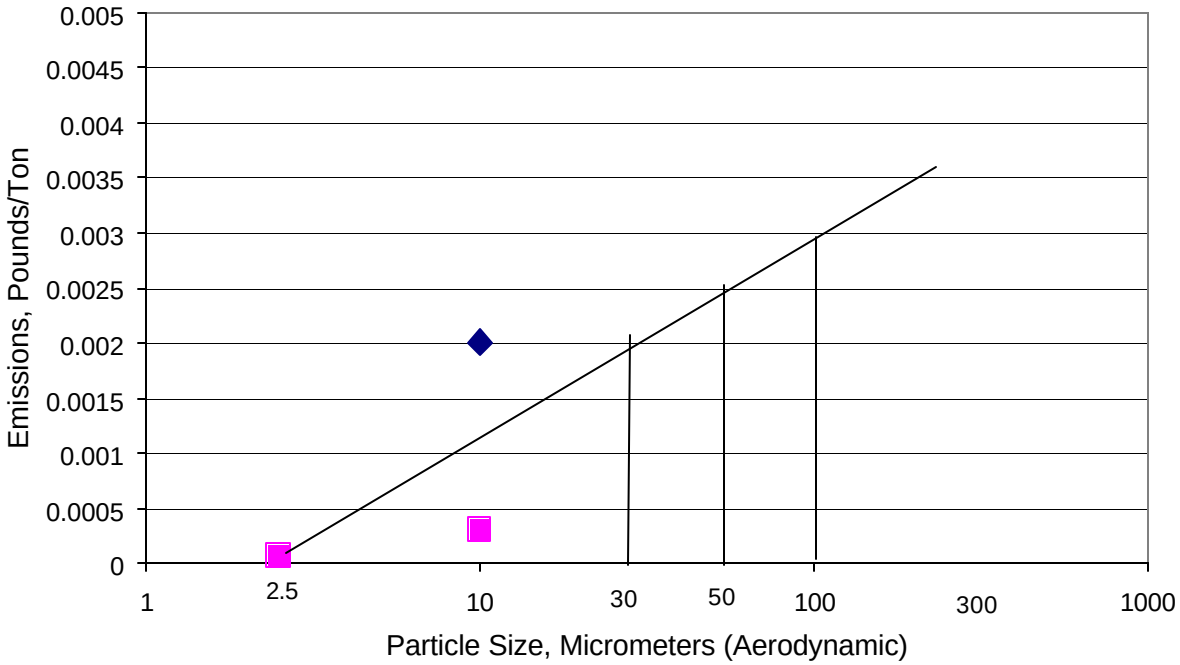


Figure 11-19.5. PM Emission Factor Calculation, Fines Crushing (Controlled)

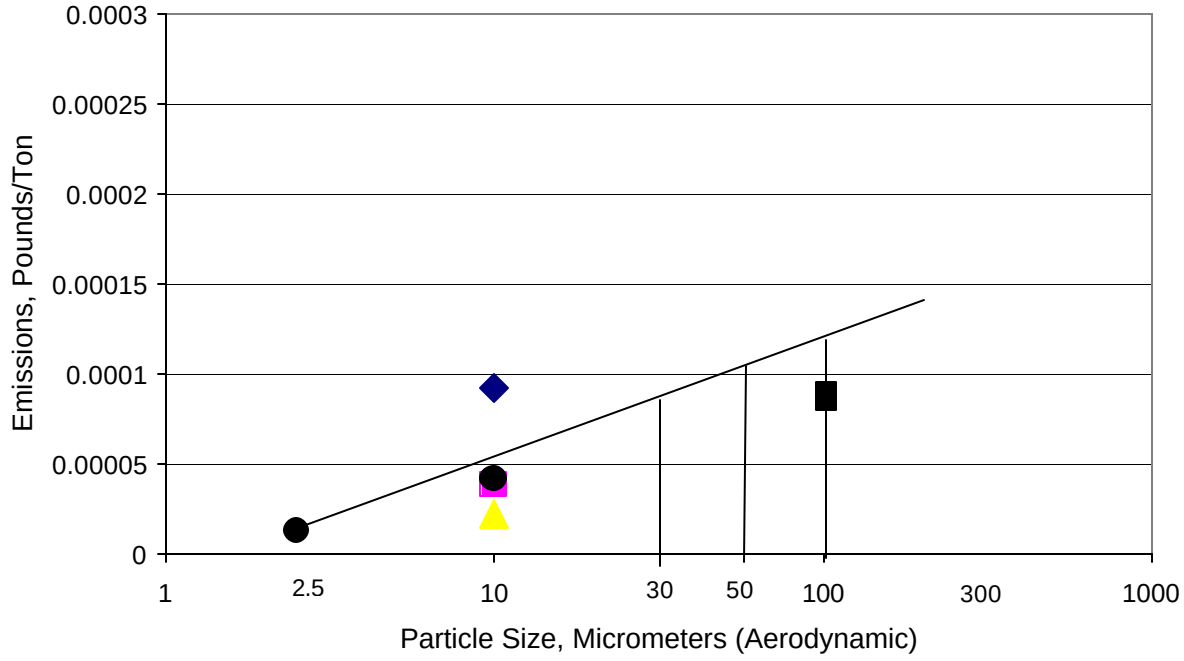


Figure 11.19-6. PM Emission Factor Calculation, Conveyor Transfer Points (Controlled)

The uncontrolled PM emission factors have been calculated from the controlled PM emission factors calculated in accordance with Figures 11.19.2-3 through 11.19.2-6. The PM-10 control efficiencies have been applied to the PM controlled emission factor data to calculate the uncontrolled PM emission rates.

Screening PM-10

Controlled = 0.00073 Lbs./Ton.

Uncontrolled = 0.00865 Lbs./Ton.

Efficiency = 91.6%

Tertiary Crushing PM-10

Controlled = 0.00054

Uncontrolled = 0.00243

Efficiency = 77.7%

Fines Crushing PM-10:

Controlled = 0.0012

Uncontrolled = 0.015

Efficiency = 92.0%

Conveyor Transfer Points PM-10

Controlled = 0.000045

Uncontrolled = 0.0011

Efficiency = 95.9%

The uncontrolled total particulate matter emission factor was calculated from the controlled total particulate matter using Equation 1:

$$\text{Uncontrolled emission factor} = \frac{\text{Controlled total particulate emission factor}}{(100\% - \text{PM-10 Efficiency }\%)/100\%}$$

Equation 1

The Total PM emission factors calculated using Figures 11.19.2-3 through 11.19.2-6 were developed because (1) there are more A-rated test data supporting the calculated values and (2) the extrapolated values provide the flexibility for agencies and source operators to select the most appropriate definition for Total PM. All of the Total PM emission factors have been rated as E due to the limited test data and the need to estimate emission factors using extrapolations of the PM-2.5 and PM-10 data.

Pulverized Mineral Processing

Emissions of particulate matter from dry mode pulverized mineral processing operations are controlled by pulse jet and envelope type fabric filter systems. Due to the low-to-moderate gas temperatures generated by the processing equipment, conventional felted filter media are used. Collection efficiencies for fabric filter-controlled dry process equipment exceed 99.5%. Emission factors for pulverized mineral processing operations are presented in Tables 11.19.2-3 and 11.19.2-4.

Table 11.19.2-3 (Metric Units). EMISSION FACTORS FOR PULVERIZED MINERAL PROCESSING OPERATIONS [a]

Source [b]	Total Particulate Matter	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Grinding (Dry) with Fabric Filter Control (SCC 3-05-038-11)	0.0202	D	0.0169	B	0.0060	B
Classifiers (Dry) with Fabric Filter Control (SCC 3-05-038-12)	0.0112	E	0.0052	E	0.0020	E
Flash Drying with Fabric Filter Control (SCC 3-05-038-35)	0.0134	C	0.0073	C	0.0042	C
Product Storage with Fabric Filter Control (SCC 3-05-38-13)	0.0055	E	0.0008	E	0.0003	E

a. Emission factors represent controlled emissions unless noted. Emission factors are in kg/Mg of material throughput.

b. Date from references 16 through 23

Table 11.19.2-4 (English Units). EMISSION FACTORS FOR PULVERIZED MINERAL PROCESSING OPERATIONS [a]

Source [b]	Total Particulate Matter	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Grinding (Dry) with Fabric Filter Control (SCC 3-05-038-11)	0.0404	D	0.0339	B	0.0121	B
Classifiers (Dry) with Fabric Filter Control (SCC 3-05-038-12)	0.0225	E	0.0104	E	0.0041	E
Flash Drying with Fabric Filter Control (SCC 3-05-038-35)	0.0268	C	0.0146	C	0.0083	C
Product Storage with Fabric Filter Control (SCC 3-05-038-13)	0.0099	E	0.0016	E	0.0006	E

a. Emission factors represent controlled emissions unless noted. Emission factors are in lb/Ton of material throughput.

b. Data from references 16 through 23

References for Section 11.19.2[1]

1. J. Richards, T. Brozell, and W. Kirk, *PM-10 Emission Factors for a Stone Crushing Plant Deister Vibrating Screen*, EPA Contract No. 68-Dl-0055, Task 2.84, U. S. Environmental Protection Agency, Research Triangle Park, NC, February 1992.

2. J. Richards, T. Brozell, and W. Kirk, *PM-10 Emission Factors for a Stone Crushing Plant Tertiary Crusher*, EPA Contract No. 68-D1-0055, Task 2.84, U. S. Environmental Protection Agency, Research Triangle Park, NC, February 1992.

3. W. Kirk, T. Brozell, and J. Richards, *PM-10 Emission Factors for a Stone Crushing Plant Deister Vibrating Screen and Crusher*, National Stone Association, Washington DC, December 1992.

4. T. Brozell, J. Richards, and W. Kirk, *PM-10 Emission Factors for a Stone Crushing Plant Tertiary Crusher and Vibrating Screen*, EPA Contract No. 68-DO-0122, U. S. Environmental Protection Agency, Research Triangle Park, NC, December 1992.

5. T. Brozell, *PM-10 Emission Factors for Two Transfer Points at a Granite Stone Crushing Plant*, EPA Contract No. 68-DO-0122, U. S. Environmental Protection Agency, Research Triangle Park, NC, January 1994.

6. T. Brozell, *PM-10 Emission Factors for a Stone Crushing Plant Transfer Point*, EPA Contract No. 68-DO-0122, U. S. Environmental Protection Agency, Research Triangle Park, NC, February 1993.

7. T. Brozell and J. Richards, *PM-10 Emission Factors for a Limestone Crushing Plant Vibrating Screen and Crusher for Bristol, Tennessee*, EPA Contract No. 68-D2-0163, U. S. Environmental Protection Agency, Research Triangle Park, NC, July 1993.

8. T. Brozell and J. Richards, *PM-10 Emission Factors for a Limestone Crushing Plant Vibrating Screen and Crusher for Marysville, Tennessee*, EPA Contract No. 68-D2-0163, U. S. Environmental Protection Agency, Research Triangle Park, NC, July 1993.

9. *Air Pollution Control Techniques for Nonmetallic Minerals Industry*, EPA-450/3-82-014, U. S. Environmental Protection Agency, Research Triangle Park, NC, August 1982.

10. *Review Emission Data Base and Develop Emission Factors for the Construction Aggregate Industry*, Engineering-Science, Inc., Arcadia, CA, September 1984.

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12. T. R. Blackwood *et al., Source Assessment: Crushed Stone*, EPA-600/2-78-004L, U. S. Environmental Protection Agency, Washington, DC, May 1978.

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[1] References 1 through 23 are identical to References 1 through 23 in the Background Support Document for AP-42, Section 11.19-2.

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23. Air Quality Technical Services. *Performance Testing for Flash Dryer #3, Omya, Inc. Plant in Florence, Vermont,* September 2000.

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Associates Environmental

Appendix D

Baghouse Specifications

Donaldson®
Torit®

DALAMATIC®
DUST COLLECTORS

DURA-LIFE™
Twice The Life Filter Bags

PROVEN PERFORMANCE, COMPACT DESIGN

The versatile Donaldson® Torit® Dalamatic series of dust collectors deliver a powerful solution for nearly any dust filtration application. These collectors come in two models: the Dalamatic Cased (DLMC) is a stand alone collector that can be ducted to many different applications; the Dalamatic Insertable (DLMV) is a versatile collector that can be inserted into various applications, such as bins, silos, bunkers, storage vessels or transfer points. Both models are continuous-duty dust collectors designed to handle the most difficult product recovery applications.

The Dalamatic Features:

- **CONTINUOUS COLLECTION**
  Provides continuous filtration of high dust concentrations at high filtration velocities and constant levels of resistance in almost any industry and application.
- **COMPACT DESIGN**
  Unique modular design allows for installation in the most space restricted areas. Envelope-shaped bags maximize the amount of media in a given space and allow for increased space between bags, minimizing the chances of bridging.
- **DURA-LIFE™ BAG FILTERS**
  Provide better surface loading and better pulse cleaning reducing maintenance and operating costs.
- **VERSATILITY**
  A full range of sizes and types of bags are available for a wide variety of dust collection applications.
- **10-YEAR WARRANTY**

DLMC 3/7/15

SIMPLY THE BEST

DUST COLLECTORS AVAILABLE
with Dura-Life™ Twice the Life Bag Filters

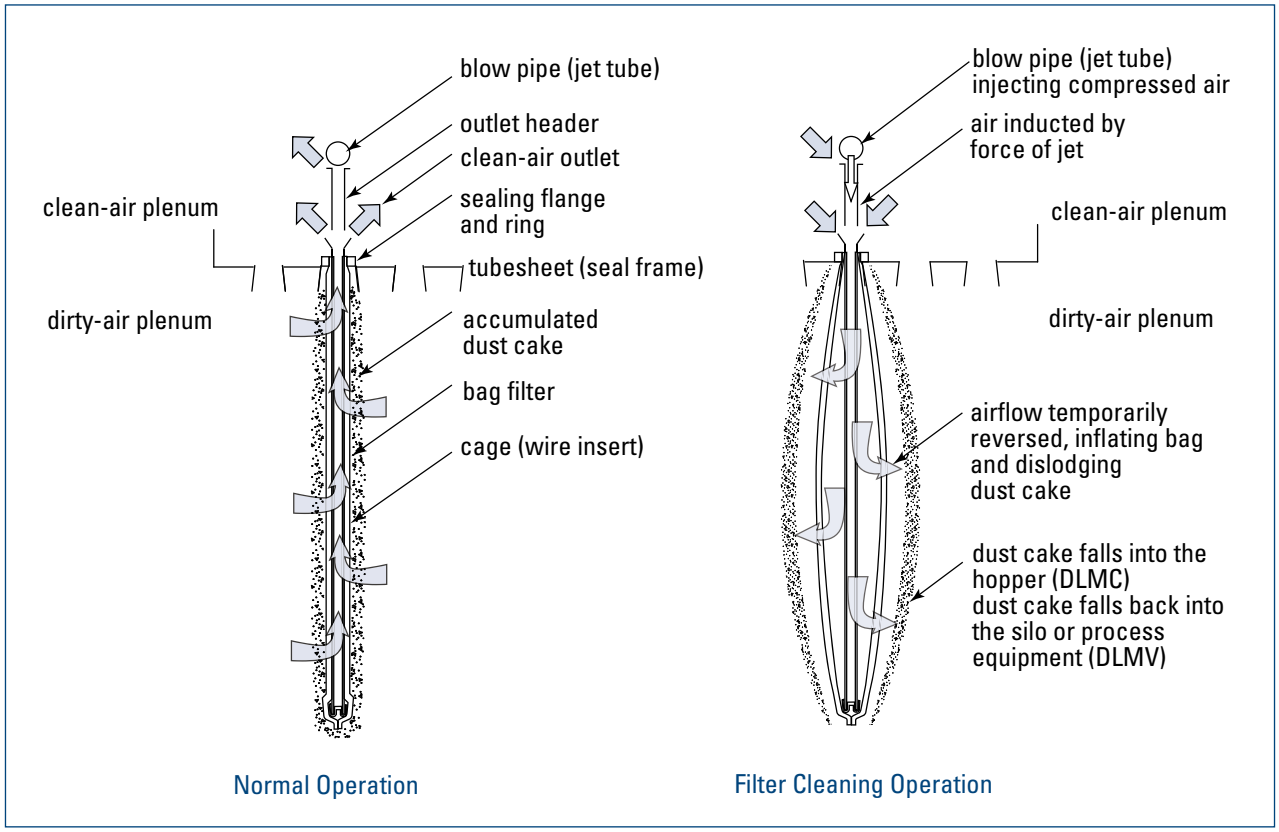
FLEXIBLE, EFFECTIVE FILTER MEDIA

UNIQUE BAG DESIGN

The Dalamatic advantage is found in the breakthrough technology of Dura-Life bag filters in an envelope shape. The envelope shape provides greater movement of the bag to dislodge more challenging dust cakes during filter pulsing.

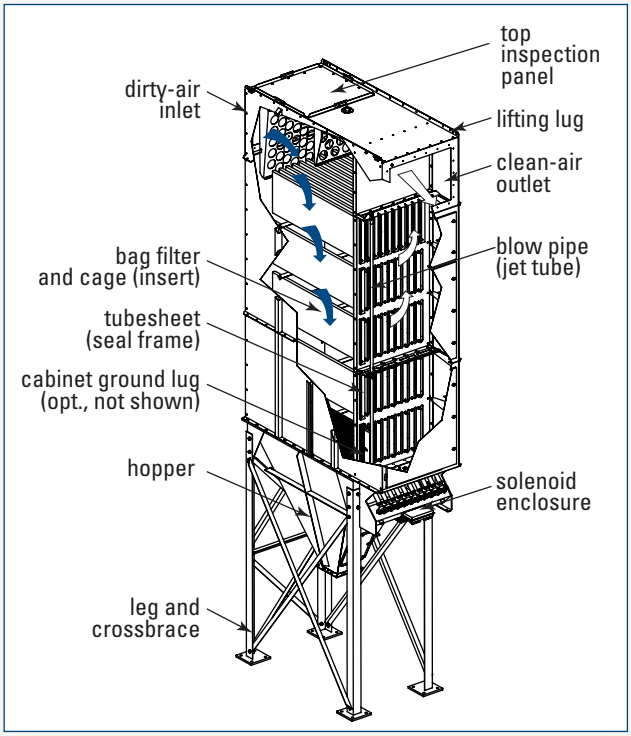
- Dust accumulates on the outer surface of the filter bag as air penetrates the media.
- The blowpipe (jet tube) injects a burst of compressed air into the bag filter.
- Airflow is then briefly reversed, inflating the bag filter and dislodging dust.
- The dislodged dust cake falls into the collection hopper for final removal or directly back in the process. The envelope-shaped bag filter, which is mounted on a unique wire frame, ensures optimum airflow and thorough cleaning.

DLMV 45/15

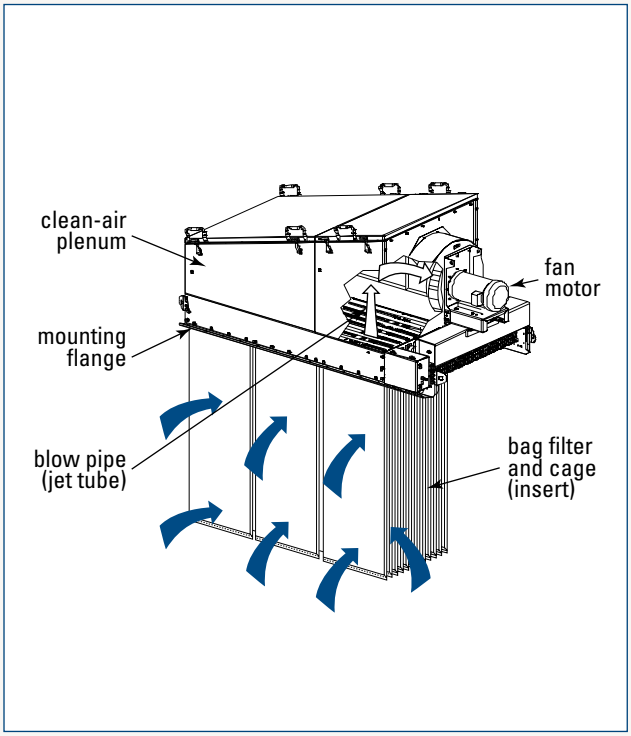


PRINCIPLES OF FILTRATION

SIZES & OPERATIONS



NORMAL OPERATION FOR MODELS DLMC



NORMAL OPERATION FOR MODELS DLMV

DALAMATIC CASED (DLMC)

- Envelope-shaped bags provide maximum filter area per given space and ensure efficient cleaning
- Air volumes range from 1500 to 85,000 cfm
- Modular design gives dimensional and capacity flexibility
- Downward airflow pattern minimizes dust re-entrainment
- Side doors provide easy, clean side access to filters.
- Standard leg pack meets IBC 2003 requirements

DALAMATIC INSERTABLE (DLMV)

- Five configurations to suit most process applications
- Uses positive pressure of the conveying air or can be fan powered for pneumatic conveying applications
- Bags can be installed hanging vertically, horizontally or any angle in between
- Can be inserted into hood enclosures at belt transfer points, bucket elevator casings, ribbon blenders and receiving hoppers for clamshell unloaders
- Insertable approach reduces or eliminates ducting costs; minimized ducting can also result in reduced energy costs

DURA-LIFE™ — A TECHNOLOGY BREAKTHROUGH FOR BAG USERS

STANDARD IN ALL DONALDSON TORIT DALAMATIC BAGHOUSE COLLECTORS

Traditional 16 oz. polyester bags are produced with a needling process that creates larger pores where dust can embed into the fabric, inhibiting cleaning and reducing bag life. Dura-Life bags are engineered with a unique hydroentanglement process that uses water to blend the fibers. This process provides a more uniform material with smaller pores, better surface loading, and better cleaning. These advantages provide twice the operating life before bags need to be replaced due to high pressure drop. Longer life from Dura-Life bags lowers maintenance and operating costs and raises baghouse dust collection to a whole new level.

Dura-Life Bag-Clean Air Side
(300x)

Polyester Bag-Clean Air Side
(300x)

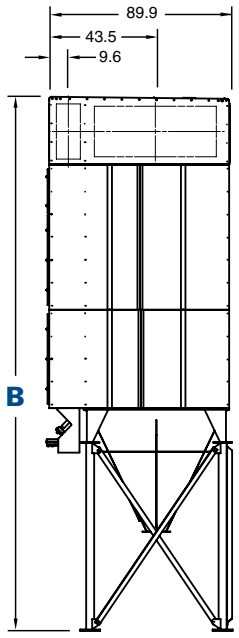
These photos were taken with a scanning electron microscope of bag media used in a collector that was filtering fly ash. The bags were removed after 2,700 hours of use. Air-to-media ratio was 4.5 to 1. Pressure drop was 6 in. on polyester bags and 2 in. on Dura-Life.

DURA-LIFE BAGS PROVIDE BIG BENEFITS

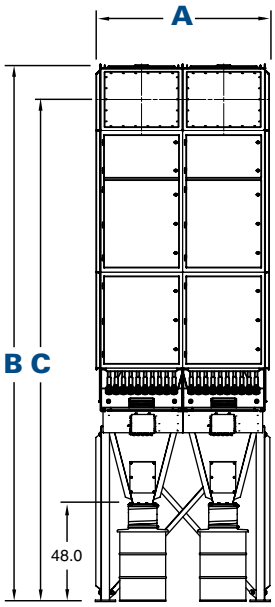
Dura-Life technology provides better surface loading and better pulse cleaning, resulting in:

- Two to three times longer bag life
- Energy savings due to lower pressure drop
- Reduced replacement bag costs due to fewer bag changeouts
- Reduced maintenance and operating costs due to fewer bag changeouts
- 30% fewer emissions based on EPA tests

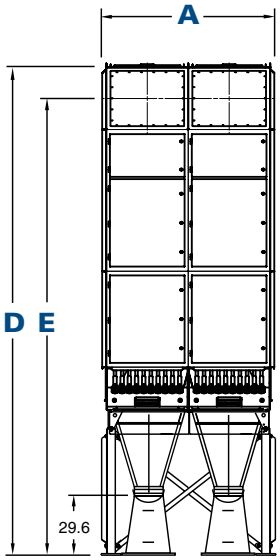
CASED DIMENSIONS & SPECIFICATIONS



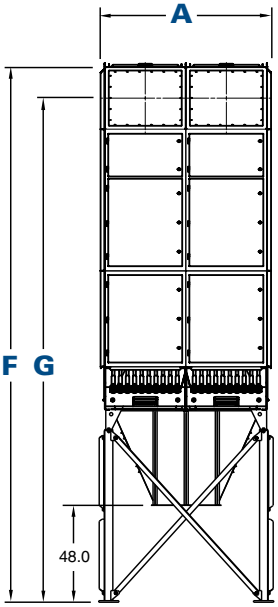
Side View
Pyramid Hopper
(2/5/15 Model)



Pyramid Hopper*
(2/5/15 Model)



UMA Hopper
(2/5/15 Model with
4 cu. ft. Bins)



Trough Hopper
(2/5/15 Model)

DLMC Model	Nominal Airflow Range (cfm)**	Cloth Area (ft^2)	No. of Banks	No. of Tiers	No. of Bags	No. of Valves	Shipping Weight (lbs)		
							With Pyramid Hopper	With Hopper for UMA 4 cu. ft. Bin	With Trough Hopper
1/2/15	1,290 - 3,550	323	1	2	20	10	2,810	2,630	N/A
1/3/15	1,940 - 5,335	485	1	3	30	10	3,147	2,971	N/A
1/4/15	2,580 - 7,095	645	1	4	40	10	3,705	3,600	N/A
2/2/15	2,580 - 7,095	645	2	2	40	20	4,220	3,495	4,100
1/5/15	3,240 - 8,910	810	1	5	50	10	4,130	3,950	N/A
2/3/15	3,880 - 10,670	970	2	3	60	20	4,890	4,750	4,910
1/7/15	4,520 - 12,430	1,130	1	7	70	10	5,300	5,100	N/A
2/4/15	5,160 - 14,190	1,290	2	4	80	20	6,100	5,800	5,960
3/3/15	5,815 - 15,990	1,454	3	3	90	30	7,100	6,740	6,700
2/5/15	6,480 - 17,820	1,620	2	5	100	20	7,065	6,770	6,940
2/6/15	7,750 - 21,315	1,938	2	6	120	20	8,015	7,720	7,890
3/5/15	9,690 - 26,650	2,423	3	5	150	30	9,950	9,590	9,545
2/8/15	10,335-28,420	2,584	2	8	160	20	9,550	9,255	9,420
3/6/15	11,625 - 31,975	2,907	3	6	180	30	11,360	11,000	10,955
4/5/15	12,920 - 35,530	3,230	4	5	200	40	12,670	12,185	11,862
3/7/15	13,565 - 37,310	3,392	3	7	210	30	12,470	12,110	12,065
3/8/15	15,500 - 42,635	3,876	3	8	240	30	13,595	13,235	13,200
4/8/15	20,670 - 56,845	5,168	4	8	320	40	17,765	17,280	16,960

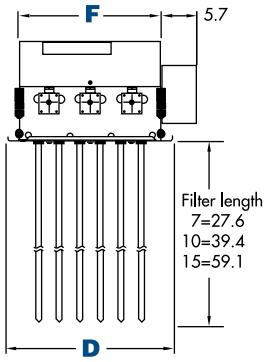
* With optional 55-gallon drum adapter (drum not included).
** Based on clean filters.

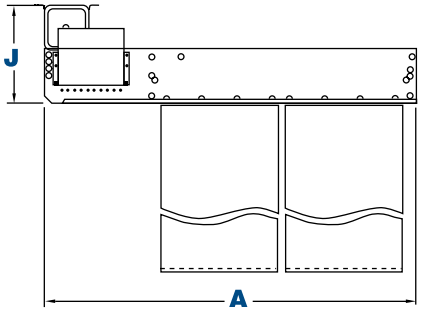
CASED DIMENSIONS & SPECIFICATIONS

	Dimensions (inches)						
		Pyramid		UMA		Trough	
DLMC Model	A	B	C	D	E	F	G
1/2/15	45.5	175.7	162.7	151.9	138.9	N/A	N/A
1/3/15	45.5	198.5	185.5	174.7	161.7	N/A	N/A
1/4/15	45.5	238.2	216.8	214.4	193.0	N/A	N/A
1/5/15	45.5	263.0	241.6	239.2	217.8	N/A	N/A
1/7/15	45.5	308.7	287.3	284.9	263.5	N/A	N/A
2/2/15	85.0	175.7	162.7	151.9	138.9	169.7	156.7
2/3/15	85.0	198.5	185.5	174.7	161.7	192.5	179.5
2/4/15	85.0	238.2	216.8	214.4	193.0	232.8	210.7
2/5/15	85.0	263.0	241.6	239.2	217.8	257.0	235.6
2/6/15	85.0	285.9	264.4	262.1	240.7	279.8	258.4
2/8/15	85.0	331.5	310.1	307.7	286.3	325.5	304.1
3/3/15	124.4	198.5	185.5	174.4	138.9	192.5	179.5
3/5/15	124.4	263.0	241.6	239.2	217.8	257.0	235.6
3/6/15	124.4	285.9	264.4	262.1	240.7	279.8	258.4
3/7/15	124.4	308.7	287.3	284.9	263.5	302.7	281.2
3/8/15	124.4	331.5	310.1	307.7	286.3	325.5	304.1
4/5/15	166.4	263.1	241.6	239.2	217.8	257.0	235.6
4/8/15	166.4	331.5	310.1	307.7	286.3	325.5	304.1

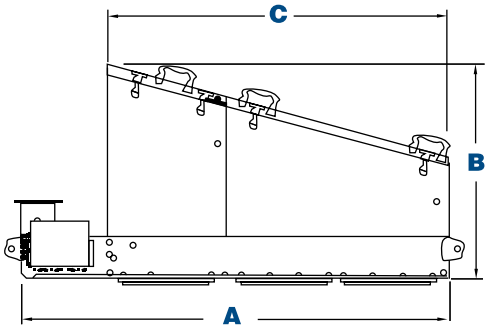
DLMC Operating Conditions	Standard	Optional
Seismic Spectral Acceleration	S_S = 1.5 & S_1 = 0.6	–
Wind Load Rating (mph)	90	–
Housing Rating (“wg)	0-20	21-45
Compressed Air Required (psig)	55-90	–
Temperature Range	15°F to 140°F	140°F to 400°F

INSERTABLE DIMENSIONS & SPECIFICATIONS

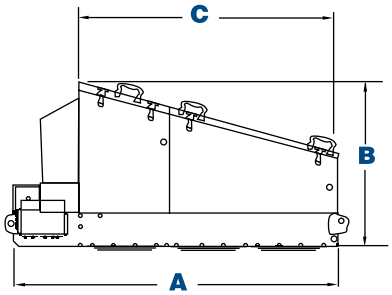




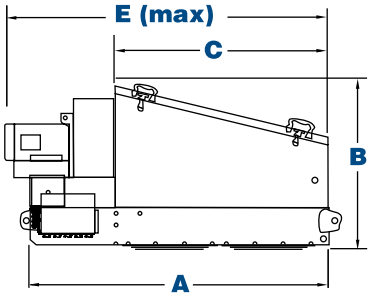
DLMV Type B
Basic filter for pressure systems located indoors.



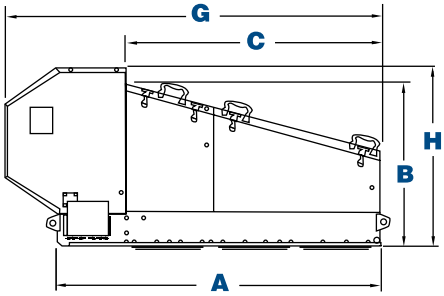
DLMV Type H
(Type B plus exit header)
Filter with exit header for connection to a fan or discharge ducting. The filter is weatherproof and suitable for indoor and outdoor application.



DLMV Type W
(Type H plus weather cowl)
Filter with a weather cowl for pressure systems where the filter is located outdoors or exposed to adverse conditions.



DLMV Type F
(Type H plus integral fan)
Weatherproof filter fitted with an integral fan for negative pressure applications.



DLMV Type FAD
(Type F plus acoustic diffuser)
Weatherproof filter fitted with an integral fan and acoustic diffuser for quiet operation.

DLMV Model	No. of Banks	Dimensions (inches)								
		A	B	C	D	E	F	G	H	J
4/7, 6/10, 9/15	6	38.3	36.8	33.8	27.5	43.1	29.1	57.4	43.3	14.7
7/7, 10/10, 15/15	10	38.3	36.8	33.8	43.3	43.1	39.8	57.4	43.3	14.7
8/7, 12/10, 18/15	12	62.2	36.8	44.5	27.6	64.0	29.1	71.6	43.3	15.7
14/7, 20/10	20	62.3	36.8	44.5	43.3	67.0	39.8	71.7	43.3	15.8
30/15	20	62.3	37.6	44.5	43.3	68.4	39.8	71.7	43.3	15.8
21/7, 30/10, 45/15	30	85.9	42.9	68.1	43.3	93.1	39.8	100.0	46.8	15.8
60/15	40	112.2	42.9	88.8	43.3	113.3	39.8	120.7	46.8	15.8

INSERTABLE DIMENSIONS & SPECIFICATIONS

DLMV Model	Nominal Airflow Range (cfm)*	Cloth Area (ft^2)	4:1 cfm	6:1 cfm	8:1 cfm	No. of Valves	Fan	Motor (hp)	Shipping Weight (lbs)				
									Type B	Type H	Type W	Type F	Type FAD
4/7	215 - 555	43	172	258	344	3	F1	1	231	320	331	430	523
6/10	320 - 830	64	256	384	512	3	F1	1	251	340	351	450	543
7/7	375 - 975	75	300	450	600	5	F1 K3	1 2	353	474	485	584 595	688 699
8/7	430 - 1,115	86	344	516	688	6	F1 K3	1 2	375	518	529	628 640	727 739
9/15	485 - 1,260	97	388	582	776	3	F1 K3	1 2	273	362	373	472 483	565 576
10/10	540 - 1,400	108	432	648	864	5	F1 K3	1 2	386	507	519	617 628	721 732
12/10	645 - 1,675	129	516	774	1,032	6	K3 K5	2 3	414	558	569	679 712	778 811
14/7	750 - 1,950	150	600	900	1,200	5	K3 K5	2 3	606	794	805	915 948	1025 1058
15/15	805 - 2,090	161	644	966	1,288	5	K3 K5	2 3	423	545	556	666 699	770 803
18/15	970 - 2,520	194	776	1,164	1,552	6	K3 K5 K7	2 3 5	459	602	613	723 756 833	822 855 932
20/10	1,075 - 2,795	215	860	1,290	1,720	5	K3 K5 K7	2 3 5	672	860	871	981 1,014 1,091	1,091 1,124 1,201
21/7	1,130 - 2,935	226	904	1,356	1,808	10	K3 K5 K7	2 3 5	794	1,058	1,080	1,179 1,213 1,290	1,307 1,341 1,418
30/10	1,615 - 4,195	323	1,292	1,938	2,584	10	K5 K7 K10	3 5 7.5	893	1,157	1,179	1,312 1,389 1,561	1,440 1,517 1,689
30/15	1,615 - 4,195	323	1,292	1,938	2,584	10	K5 K7 K10	3 5 7.5	750	935	946	1,089 1,168 1,321	1,199 1,278 1,431
45/15	2,420 - 6,290	484	1,936	2,904	3,872	10	K7 K10 K11	5 7.5 10	1,003	1,268	1,290	1,499 1,671 1,758	1,627 1,799 1,886
60/15	3,230 - 8,395	646	2,584	3,876	5,168	10	K11	10	1,323	1,878	1,900	2,374	2,506

DLMV Operating Conditions	Standard	Optional
Pressure Limits	Type B, W and H: -16 "wg Type F: As fan performance curves from shut-off to ambient pressure	–
Compressed Air Required (psig)	65-90	–
Temperature Range	14°F to 140°F	140°F to 250°F (not Type F)

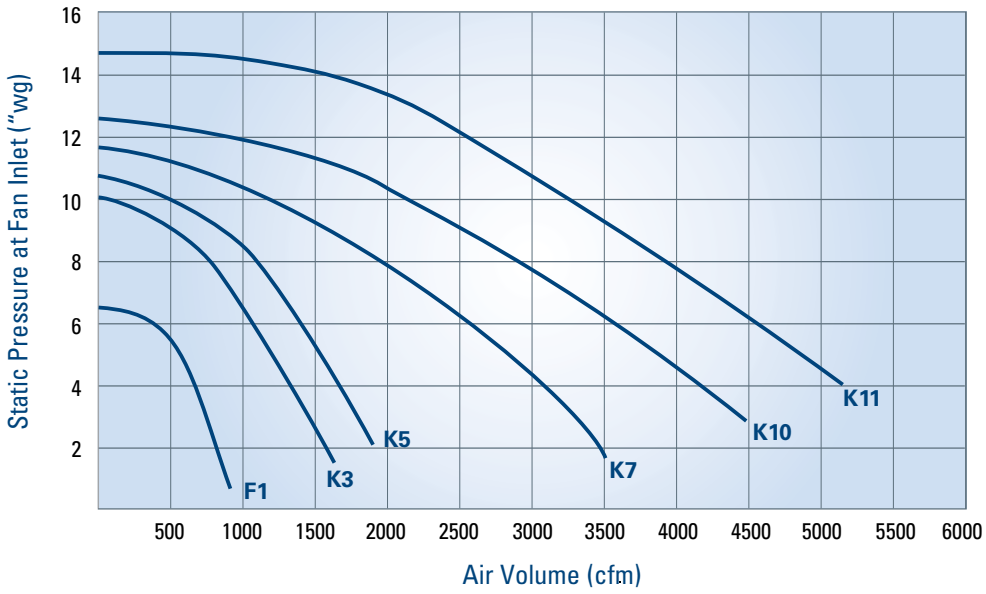
* Based on clean filters.

INSERTABLE PERFORMANCE SELECTIONS

TO SELECT THE MOST SUITABLE FAN FOR YOUR APPLICATIONS

- Determine the air volume flow (cfm) needed to give effective venting and dust control
- Estimate pressure or suction (“wg) in the housing in which the dust filter is inserted
- Assess the operational pressure drop (“wg) across the clean side and dirty side of the filtering element – usually between 2 to 4 “wg
- The sum of 2 and 3 gives the pressure (“wg) required for fan selection purposes
- Consult graph for fan performance available

Fan Performance Curve



INSERTABLE WEIGHTED SOUND PRESSURE LEVELS

All readings were taken in semi-reverberant surroundings 3’3” radius from the equipment housing and 5’3” above base level, using a precision sound level meter and octave filter.

	F1 (1 hp)	K3 (2 hp)	K5 (3 hp)	K7 (5 hp)	K10 (7.5 hp)	K11 (10 hp)
With acoustic diffuser*	76 dB(A)	73 dB(A)	74 dB(A)	76 dB(A)	79 dB(A)**	84 dB(A)
Without acoustic diffuser	91 dB(A)	89 dB(A)	92 dB(A)	93 dB(A)	94 dB(A)	97 dB(A)

Noise measurements of installed equipment may vary due to site conditions.
* These measurements refer to standard outlet position.
** Estimated data.

STANDARD FEATURES & AVAILABLE OPTIONS

DALAMATIC CASED (DLMC)

Collector Design	Std	Opt
Mild Steel Construction	✗	
Horizontal Clean-Side Bag Removal	✗	
Rear Dirty-Air Plenum Access Door		✗
High Temperature Construction		✗
Stainless Steel Construction		✗
Mountable Fan		✗
Ladders, Cages, & Platform Assemblies (OSHA compliant)		✗
Bags & Cages		
Dura-Life Twice the Life Polyester Felt Bags	✗	
Quick-Release Filter Clamps		✗
Variety of Bag Media Options		✗
Anti-Static Bag Filters		✗
Paint System		
Powder-Coated Polyester Textured Finish	✗	
Blue Exterior Finish Coating Meets 250-Hour Salt Spray Corrosion Protection Test	✗	
Hostile Environment Paint		✗
Custom Colors		✗
Hopper Design		
Pyramid Hoppers	✗	
Trough Hoppers	✗	
2 and 3 Bank Single-Outlet Hopper	✗	
UMA Hopper		✗
Support Structure		
Standard Leg Pack	✗	
Leg Extensions		✗
Electrical Controls, Gauges & Enclosures		
Solid-State Control Panels and Valves in NEMA 4 Encl.	✗	
Solid-State Control Panels and Valves in NEMA 9 Encl.		✗
Control Panels and Valves with Heater in NEMA 9 Encl.		✗
Magnehelic®* Gauge		✗
Solenoid Enclosure NEMA 9		✗
Photohelic®* Gauge		✗
Delta P Control, Delta P Plus Control		✗
Compressed Air Filter and Regulator		✗
Safety Features		
Sprinkler Pack		✗
Explosion Vents		✗
Warranty		
10-Year Warranty	✗	

DALAMATIC INSERTABLE (DLMV)

Collector Design	Std	Opt
Mild Steel Construction	✗	
Horizontal or Vertical Bag Removal	✗	
High Temperature Construction		✗
Stainless Steel Construction		✗
Acoustic Diffuser Silencers		✗
Fans (AMCA "C" Rated) and Motors**		✗
Bags & Cages		
Dura-Life Twice the Life Polyester Felt Bags	✗	
Clean-Side Bag Removal	✗	
Quick-Release Filter Clamps		✗
Variety of Bag Media Options		✗
Anti-Static Bag Filters		✗
Oleophobic Bag Filters		✗
Paint System		
Powder-Coated Polyester Texture	✗	
Blue Exterior Finish Coating Meets 250-Hour Salt Spray Corrosion Protection Test	✗	
Hostile Environment Paint		✗
Custom Colors		✗
Support Structure		
Vertical or Horizontal Upstands		✗
Electrical Controls, Gauges & Enclosures		
Solid-State Control Panels and Valves in NEMA 4 Encl.	✗	
Solid-State Control Panels and Valves in NEMA 9 Encl.		✗
Control Panels and Valves with Heater in NEMA 9 Encl.		✗
Magnehelic®* Gauge		✗
Solenoid Enclosure NEMA 9		✗
Photohelic®* Gauge		✗
Delta P Control, Delta P Plus Control		✗
Compressed Air Filter and Regulator		✗
Safety Features		
Explosion Proof Motors		✗
Warranty		
10-Year Warranty	✗	

* Magnehelic and Photohelic are registered trademarks of Dwyer Instruments, Inc.

** All 60 Hz motors 1HP and above are compliant with EISA.

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Dalamatic Brochure (04/11)

Associates Environmental

Appendix E

CARB Executive Order U-R-001-0455

California Environmental Protection Agency AIR RESOURCES BOARD	CATERPILLAR INC.	EXECUTIVE ORDER U-R-001-0455 New Off-Road Compression-Ignition Engines

Pursuant to the authority vested in the Air Resources Board by Sections 43013, 43018, 43101, 43102, 43104 and 43105 of the Health and Safety Code; and

Pursuant to the authority vested in the undersigned by Sections 39515 and 39516 of the Health and Safety Code and Executive Order G-02-003;

IT IS ORDERED AND RESOLVED: That the following compression-ignition engines and emission control systems produced by the manufacturer are certified as described below for use in off-road equipment. Production engines shall be in all material respects the same as those for which certification is granted.

MODEL YEAR	ENGINE FAMILY	DISPLACEMENT (liters)	FUEL TYPE	USEFUL LIFE (hours)
2013	DCPXL12.5HPB	12.5	Diesel	8000

SPECIAL FEATURES & EMISSION CONTROL SYSTEMS	TYPICAL EQUIPMENT APPLICATION
Electronic Direct Injection, Turbocharger, Charge Air Cooler, Oxidation Catalyst, Engine Control Module, Exhaust Gas Recirculation, Periodic Trap Oxidizer	Loader, Tractor, Excavator, Agriculture Combine, Commercial Equipment

The engine models and codes are attached.

The following are the exhaust certification standards (STD), or family emission limit(s) (FEL) as applicable, and certification levels (CERT) for hydrocarbon (HC), oxides of nitrogen (NOx), or non-methane hydrocarbon plus oxides of nitrogen (NMHC+NOx), carbon monoxide (CO), and particulate matter (PM) in grams per kilowatt-hour (g/kw-hr), and the opacity-of-smoke certification standards and certification levels in percent (%) during acceleration (Accel), lugging (Lug), and the peak value from either mode (Peak) for this engine family (Title 13, California Code of Regulations, (13 CCR) Section 2423):

RATED POWER CLASS	EMISSION STANDARD CATEGORY		EXHAUST (g/kw-hr)					OPACITY (%)		
			HC	NOx	NMHC+NOx	CO	PM	ACCEL	LUG	PEAK
130 ≤ kW ≤ 560	Interim Tier 4/ ALT NOx	STD	0.19	2.0	N/A	3.5	0.02	N/A	N/A	N/A
		FEL	N/A	1.8	N/A	N/A	0.01	N/A	N/A	N/A
		CERT	0.05	1.6	--	1.4	0.002	--	--	--

BE IT FURTHER RESOLVED: That the family emission limit(s) (FEL) is an emission level declared by the manufacturer for use in any averaging, banking and trading program and in lieu of an emission standard for certification. It serves as the applicable emission standard for determining compliance of any engine within this engine family under 13 CCR Sections 2423 and 2427.

BE IT FURTHER RESOLVED: That for the listed engine models, the manufacturer has submitted the information and materials to demonstrate certification compliance with 13 CCR Section 2424 (emission control labels), and 13 CCR Sections 2425 and 2426 (emission control system warranty).

Engines certified under this Executive Order must conform to all applicable California emission regulations.

This Executive Order is only granted to the engine family and model-year listed above. Engines in this family that are produced for any other model-year are not covered by this Executive Order.

Executed at El Monte, California on this 27 day of July 2012.

Annette Hebert, Chief
Mobile Source Operations Division

ATTACHMENT 1 OF 1

Engine Model Summary Template

U-R-001-0455

7/19/2012

Engine Family	1.Engine Code	2.Engine Model	3.BHP@RPM (SAE Gross)	4.Fuel Rate: mm/stroke @ peak HP (for diesel only)	5.Fuel Rate: (lbs/hr) @ peak HP (for diesels only)	6.Torque @ RPM (SEA Gross)	7.Fuel Rate: mm/stroke@peak torque	8.Fuel Rate: (lbs/hr)@peak torque	9.Emission Control Device Per SAE J1930
DCPXL12.5HPB	Cert Test 1	C13	500@1900	275	175	1738@1500	337	170	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	Cert Test 2	C13	503@1500	334	169	NA	NA	NA	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	1 - 500/1900	C13	500@1900	279	178	1735@1500	342	173	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	2 - 425/1800	C13	371@1870	209	132	1345@1650	260	144	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	3 - 425/1800	C13	371@1870	217	136	1345@1650	262	145	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	4 - 402/1600	C13	280@2200	159	118	1529@1300	297	159	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	5 - 443/1900	C13	443@1900	242	155	1509@1400	293	138	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	6 - 475/2100	C13	207@2300	117	90	1603@1400	313	147	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	7 - 520/2100	C13	226@2300	121	93	1755@1400	344	162	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	8 - 408/1700	C13	323@2100	183	129	1555@1300	296	129	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	9 - 385/2100	C13	167@2300	107	83	1300@1400	257	130	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	10 - 415/2100	C13	180@2300	108	84	1401@1400	275	130	DFI,TC,ECM,CAC,EGR,PTOX,OC
DCPXL12.5HPB	11 - 440/2100	C13	191@2300	210	102	1485@1400	295	143	DFI,TC,ECM,CAC,EGR,PTOX,OC

APPENDIX 3.4:

AERMOD LST OUTPUTS

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.1.0
** Lakes Environmental Software Inc.
** Date: 7/12/2016
** File: C:\Users\hqureshi\Desktop\Nichols Mine\9600_Modeling Files\LSTs\LSTCO\LSTCO.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc
   MODELOPT DFAULT CONC
   AVERTIME 1 8
   URBANOPT 2100516
   POLLUTID CO
   RUNORNOT RUN
   ERRORFIL LSTCO.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   467190.199  3730371.004      488.240
   LOCATION AREA1        AREA       466898.710  3730070.010      400.230
** DESCRSRC Asphalt Batch Plant
** Source Parameters **
   SRCPARAM PAREA1       5.958E-07     5.000        72
   AREAVERT PAREA1       467190.199 3730371.004 467293.010 3730368.225
   AREAVERT PAREA1       467329.133 3730364.057 467377.760 3730359.889
   AREAVERT PAREA1       467419.440 3730339.049 467462.509 3730302.926
   AREAVERT PAREA1       467484.739 3730276.529 467494.464 3730261.246
   AREAVERT PAREA1       467506.968 3730237.628 467518.083 3730209.841
   AREAVERT PAREA1       467519.472 3730180.665 467519.472 3730137.595
   AREAVERT PAREA1       467515.304 3730109.808 467513.915 3730094.526
   AREAVERT PAREA1       467515.304 3730073.686 467520.862 3730059.792
   AREAVERT PAREA1       467529.198 3730036.173 467531.976 3730029.227
   AREAVERT PAREA1       467533.366 3730026.448 467543.091 3730013.944
   AREAVERT PAREA1       467548.648 3730006.997 467562.542 3729990.325
   AREAVERT PAREA1       467570.878 3729981.989 467579.214 3729970.874
   AREAVERT PAREA1       467615.337 3729945.866 467625.062 3729934.752
   AREAVERT PAREA1       467634.787 3729930.584 467651.460 3729925.026
   AREAVERT PAREA1       467666.742 3729918.080 467693.140 3729909.743
   AREAVERT PAREA1       467711.201 3729902.797 467745.935 3729895.850
   AREAVERT PAREA1       467770.943 3729886.125 467787.615 3729876.399
   AREAVERT PAREA1       467807.066 3729862.506 467816.791 3729848.613
   AREAVERT PAREA1       467822.348 3729827.772 467826.516 3729816.658
   AREAVERT PAREA1       467823.738 3729788.871 467823.738 3729777.756
   AREAVERT PAREA1       467801.508 3729776.367 467773.721 3729776.367
   AREAVERT PAREA1       467733.431 3729779.146 467676.468 3729780.535
   AREAVERT PAREA1       467615.337 3729793.039 467579.214 3729802.764
   AREAVERT PAREA1       467529.198 3729816.658 467509.747 3729834.719
   AREAVERT PAREA1       467456.952 3729919.469 467347.194 3730005.608
   AREAVERT PAREA1       467372.202 3730107.030 467373.592 3730132.038
   AREAVERT PAREA1       467363.866 3730143.152 467349.973 3730159.825
```

```
   AREAVERT PAREA1       467343.026 3730173.718 467334.690 3730190.390
   AREAVERT PAREA1       467326.354 3730205.673 467313.850 3730225.123
   AREAVERT PAREA1       467299.957 3730247.353 467295.789 3730269.582
   AREAVERT PAREA1       467284.674 3730280.697 467281.895 3730295.980
   AREAVERT PAREA1       467280.506 3730304.316 467276.338 3730315.431
   AREAVERT PAREA1       467270.781 3730319.599 467265.223 3730326.545
   AREAVERT PAREA1       467262.445 3730336.271 467256.887 3730340.439
   AREAVERT PAREA1       467252.719 3730344.607 467245.772 3730348.775
   AREAVERT PAREA1       467234.658 3730355.721 467213.818 3730361.279
   SRCPARAM AREA1        0.000200756     5.000    84.396    84.396     0.000
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED LSTCO.rou
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE ..\elsi8.sfc
   PROFFILE ..\elsi8.PFL
   SURFDATA 3190 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 8 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST LSTCO.AD\01H1GALL.PLT 31
   PLOTFILE 8 ALL 1ST LSTCO.AD\08H1GALL.PLT 32
   SUMMFILE LSTCO.sum
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
```

```
 ME W531     103       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                  ***
   15:53:09

   PAGE   1
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for     2 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2100516.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  CO

 **Model Calculates  2 Short Term Average(s) of:   1-HR   8-HR

 **This Run Includes:      2 Source(s);       1 Source Group(s); and      13 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      2 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  14134

 **Output Options Selected:
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
```

m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 406.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.5 MB of RAM.

**Detailed Error/Message File: LSTCO.err

**File for Summary of Results: LSTCO.sum

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** AREA SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	COORD (SW CORNER) X (METERS)	COORD (SW CORNER) Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	X-DIM OF AREA (METERS)	Y-DIM OF AREA (METERS)	ORIENT. OF AREA (DEG.)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
AREA1	0	0.20076E-03	466898.7	3730070.0	400.2	5.00	84.40	84.40	0.00	0.00	YES	

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	LOCATION OF AREA Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.59580E-06	467190.2	3730371.0	488.2	5.00	72	0.00	YES	

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs

```
 -----------                                          ----------


  ALL        PAREA1      , AREA1       ,
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   15:53:09

   PAGE   5
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN


                                                    *** SOURCE IDs DEFINED AS URBAN SOURCES ***

  URBAN ID   URBAN POP                                    SOURCE IDs
  --------   ---------                                    ----------


             2100516.   PAREA1      , AREA1       ,
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   15:53:09

   PAGE   6
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                                       *** DISCRETE CARTESIAN RECEPTORS ***
                                                     (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                                  (METERS)

     ( 467947.5, 3729755.6,     421.4,     635.0,       0.0);        ( 467906.6, 3729686.7,     415.2,     635.0,
     0.0);
     ( 467907.9, 3729662.2,     415.8,     635.0,       0.0);        ( 467904.1, 3729595.3,     416.0,     635.0,
     0.0);
     ( 467931.8, 3729591.9,     416.4,     635.0,       0.0);        ( 467691.8, 3729489.4,     409.9,     635.0,
     0.0);
     ( 467579.1, 3729454.4,     408.0,     635.0,       0.0);        ( 467520.1, 3729393.7,     406.4,     635.0,
     0.0);
     ( 467463.7, 3729319.4,     402.9,     635.0,       0.0);        ( 467650.0, 3729387.7,     407.4,     635.0,
     0.0);
     ( 467709.8, 3729097.2,     398.4,     635.0,       0.0);        ( 467824.3, 3728994.7,     397.2,     635.0,
     0.0);
     ( 467904.6, 3729541.5,     415.3,     635.0,       0.0);

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   15:53:09

   PAGE   7
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                                      *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                                       (1=YES; 0=NO)

            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
```

LSTCO

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54,   3.09,   5.14,   8.23, 10.80,

**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\elsi8.sfc   Met Version: 14134
Profile file: ..\elsi8.PFL
Surface format: FREE

Profile format: FREE

Surface station no.:   3190   Upper air station no.:   3190
Name: UNKNOWN   Name: UNKNOWN
Year: 2008   Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	284.2	5.5
08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	0.54	999.00	999.	-9.0	283.8	5.5
08	01	01	1	09	27.2	-9.000	-9.000	-9.000	60.	-999.	-99999.0	0.23	1.00	0.33	999.00	999.	-9.0	285.9	5.5
08	01	01	1	10	74.6	-9.000	-9.000	-9.000	157.	-999.	-99999.0	0.23	1.00	0.25	999.00	999.	-9.0	288.1	5.5
08	01	01	1	11	107.4	-9.000	-9.000	-9.000	375.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	289.9	5.5
08	01	01	1	12	122.7	-9.000	-9.000	-9.000	578.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	289.9	5.5
08	01	01	1	13	121.3	-9.000	-9.000	-9.000	714.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	291.4	5.5

```
 08 01 01   1 14  102.1 -9.000 -9.000 -9.000  763. -999. -99999.0  0.23   1.00   0.23  999.00  999.   -9.0  292.0
5.5
 08 01 01   1 15   65.8 -9.000 -9.000 -9.000  792. -999. -99999.0  0.23   1.00   0.27  999.00  999.   -9.0  291.4
5.5
 08 01 01   1 16   16.0 -9.000 -9.000 -9.000  798. -999. -99999.0  0.23   1.00   0.36  999.00  999.   -9.0  290.4
5.5
 08 01 01   1 17 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   0.63  999.00  999.   -9.0  288.8
5.5
 08 01 01   1 18 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  287.5
5.5
 08 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  286.4
5.5
 08 01 01   1 20 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  285.4
5.5
 08 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
5.5
 08 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
 08 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
 08 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  282.5
5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 08 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 08 01 01 01    9.1 1 -999.  -99.00  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   15:53:09

   PAGE   9
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL
 ***
                                 INCLUDING SOURCE(S):     PAREA1      , AREA1       ,

                                          *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                      ** CONC OF CO       IN MICROGRAMS/M**3                          **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)  Y-COORD (M)        CONC
(YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -
        467947.51   3729755.56      141.92026  (09071202)               467906.64   3729686.69      140.06253
(10062420)
        467907.93   3729662.23      137.23065  (12091006)               467904.07   3729595.30      131.40273
(10071502)
        467931.75   3729591.89      128.05289  (10071502)               467691.85   3729489.42      138.94785
(10110322)
        467579.06   3729454.38      145.21081  (12081105)               467520.10   3729393.71      135.23844
(12082103)
        467463.70   3729319.37      109.98226  (11090704)               467649.98   3729387.73      124.18320
(12081105)
        467709.79   3729097.21       74.69153  (12091321)               467824.29   3728994.67       63.63993
(12081306)
        467904.62   3729541.54      125.23160  (09092302)

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                     ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
```

*** THE 1ST HIGHEST 8-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***

INCLUDING SOURCE(S): PAREA1 , AREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
467947.51	3729755.56	42.72745	(11121424)	467906.64	3729686.69	44.10383	(11110808)
467907.93	3729662.23	44.00151	(11110808)	467904.07	3729595.30	39.89277	(12080424)
467931.75	3729591.89	38.57331	(12080424)	467691.85	3729489.42	54.26354	(11101524)
467579.06	3729454.38	70.08884	(12121508)	467520.10	3729393.71	69.77911	(12121508)
467463.70	3729319.37	54.54383	(12120424)	467649.98	3729387.73	59.44704	(12121508)
467709.79	3729097.21	34.32037	(12121508)	467824.29	3728994.67	29.96529	(12121508)
467904.62	3729541.54	37.58957m	(12071724)				

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS 145.21081	ON 12081105:	AT (467579.06, 3729454.38, 408.00, 635.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

LSTCO
*** THE SUMMARY OF HIGHEST 8-HR RESULTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	70.08884	ON 12121508: AT (467579.06, 3729454.38, 408.00, 635.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc ***
07/12/16
*** AERMET - VERSION 14134 *** *** ***
15:53:09

PAGE 13
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 1916 Informational Message(s)

A Total of 43848 Hours Were Processed

A Total of 10 Calm Hours Identified

A Total of 1906 Missing Hours Identified (4.35 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
ME W531 103 MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for SURFDATA

****
*** AERMOD Finishes Successfully ***
****

**
****
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.1.0
** Lakes Environmental Software Inc.
** Date: 7/12/2016
** File: C:\Users\hqureshi\Desktop\Nichols Mine\9600_Modeling Files\LSTs\LSTNO2\LSTNO2.ADI
**
****
**
**
****

```
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc
   MODELOPT CONC OLM
   AVERTIME 1 ANNUAL
   URBANOPT 2100516
   POLLUTID NO2
   RUNORNOT RUN
** NO2 Conversion Options
   NO2STACK 0.100
   NO2EQUIL 0.900
** Hourly Ozone Data File: C:\Users\hqureshi\Desktop\Nichols Mine\9600_Modeling
Files\LSTs\LSTNO2\..\PERI_Ozone\O3PERI2008.prn
   OZONEFIL ..\PERI_Ozone\O3PERI2008.prn PPB
   ERRORFIL LSTNO2.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   467190.199  3730371.004      488.240
   LOCATION AREA1        AREA       466898.710  3730070.010      400.230
** Source Parameters **
   SRCPARAM PAREA1       1.1851E-06     5.000        72
   AREAVERT PAREA1       467190.199 3730371.004 467293.010 3730368.225
   AREAVERT PAREA1       467329.133 3730364.057 467377.760 3730359.889
   AREAVERT PAREA1       467419.440 3730339.049 467462.509 3730302.926
   AREAVERT PAREA1       467484.739 3730276.529 467494.464 3730261.246
   AREAVERT PAREA1       467506.968 3730237.628 467518.083 3730209.841
   AREAVERT PAREA1       467519.472 3730180.665 467519.472 3730137.595
   AREAVERT PAREA1       467515.304 3730109.808 467513.915 3730094.526
   AREAVERT PAREA1       467515.304 3730073.686 467520.862 3730059.792
   AREAVERT PAREA1       467529.198 3730036.173 467531.976 3730029.227
   AREAVERT PAREA1       467533.366 3730026.448 467543.091 3730013.944
   AREAVERT PAREA1       467548.648 3730006.997 467562.542 3729990.325
   AREAVERT PAREA1       467570.878 3729981.989 467579.214 3729970.874
   AREAVERT PAREA1       467615.337 3729945.866 467625.062 3729934.752
   AREAVERT PAREA1       467634.787 3729930.584 467651.460 3729925.026
   AREAVERT PAREA1       467666.742 3729918.080 467693.140 3729909.743
   AREAVERT PAREA1       467711.201 3729902.797 467745.935 3729895.850
   AREAVERT PAREA1       467770.943 3729886.125 467787.615 3729876.399
   AREAVERT PAREA1       467807.066 3729862.506 467816.791 3729848.613
   AREAVERT PAREA1       467822.348 3729827.772 467826.516 3729816.658
   AREAVERT PAREA1       467823.738 3729788.871 467823.738 3729777.756
   AREAVERT PAREA1       467801.508 3729776.367 467773.721 3729776.367
   AREAVERT PAREA1       467733.431 3729779.146 467676.468 3729780.535
   AREAVERT PAREA1       467615.337 3729793.039 467579.214 3729802.764
   AREAVERT PAREA1       467529.198 3729816.658 467509.747 3729834.719
   AREAVERT PAREA1       467456.952 3729919.469 467347.194 3730005.608
   AREAVERT PAREA1       467372.202 3730107.030 467373.592 3730132.038
   AREAVERT PAREA1       467363.866 3730143.152 467349.973 3730159.825
   AREAVERT PAREA1       467343.026 3730173.718 467334.690 3730190.390
   AREAVERT PAREA1       467326.354 3730205.673 467313.850 3730225.123
   AREAVERT PAREA1       467299.957 3730247.353 467295.789 3730269.582
   AREAVERT PAREA1       467284.674 3730280.697 467281.895 3730295.980
   AREAVERT PAREA1       467280.506 3730304.316 467276.338 3730315.431
   AREAVERT PAREA1       467270.781 3730319.599 467265.223 3730326.545
   AREAVERT PAREA1       467262.445 3730336.271 467256.887 3730340.439
   AREAVERT PAREA1       467252.719 3730344.607 467245.772 3730348.775
```

```
   AREAVERT PAREA1       467234.658 3730355.721 467213.818 3730361.279
   SRCPARAM AREA1        0.0000387698     5.000    84.396    84.396     0.000
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED LSTNO2.rou
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE ..\elsi8.sfc
   PROFFILE ..\elsi8.PFL
   SURFDATA 3190 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 406.0 METERS
   STARTEND 2008 1 1 1 2008 12 31 24
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST LSTNO2.AD\01H1GALL.PLT 31
   PLOTFILE ANNUAL ALL LSTNO2.AD\AN00GALL.PLT 32
   SUMMFILE LSTNO2.sum
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            3 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 CO W271      31       COCARD: O3FILE w/o O3VALs; full conv for hrs with miss O3
 CO W361      31       COCARD: Multiyear PERIOD/ANNUAL values for NO2/SO2 require MULTYEAR Opt
 ME W531     108       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************
```

```
**MODELOPTs:   NonDFAULT CONC      ELEV      OLM       URBAN

                                        ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for     2 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2100516.0 ;  Urban Roughness Length =  1.000 m

**Model Allows User-Specified Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Ozone Limiting Method (OLM) Used for NO2 Conversion
            with an Equilibrium NO2/NOx Ratio of  0.900 and
            with NO OLMGROUPs
         7. Urban Roughness Length of 1.0 Meter Used.

**Other Options Specified:
         TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  NO2

**Note that special processing requirements apply for the 1-hour NO2 NAAQS - check available guidance.
   Model will process user-specified ranks of daily maximum 1-hour values averaged across the number of years
modeled.
   For annual NO2 NAAQS modeling, the multi-year maximum of PERIOD values can be simulated using the MULTYEAR
keyword.
   Multi-year PERIOD and 1-hour values should only be done in a single model run using the MULTYEAR option with a
   single multi-year meteorological data file using STARTEND keyword.

**Model Calculates  1 Short Term Average(s) of:   1-HR
     and Calculates ANNUAL Averages

**This Run Includes:      2 Source(s);       1 Source Group(s); and      13 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      2 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)


**This Run Includes OZONE    Values for a Single Sector
             HOURLY OZONE    Values are Available

**Model Set To Continue RUNning After the Setup Testing.
```

 **The AERMET Input Meteorological Data Version Date: 14134

 **Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ; Decay Coef. =   0.000   ; Rot. Angle
=   0.0
                  Emission Units = GRAMS/SEC   ; Emission Rate Unit Factor =
0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =   3.5 MB of RAM.

 **Detailed Error/Message File: LSTNO2.err

 **File for Summary of Results: LSTNO2.sum

 **MODELOPTs: NonDFAULT CONC   ELEV   OLM   URBAN

*** AREA SOURCE DATA ***

              NUMBER EMISSION RATE COORD (SW CORNER) BASE   RELEASE X-DIM   Y-DIM   ORIENT.   INIT.
URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC   X   Y   ELEV.   HEIGHT OF AREA   OF AREA   OF AREA   SZ
SOURCE SCALAR VARY
     ID   CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)   (DEG.) (METERS)
        BY
 -
- - - - - - - - - -

 AREA1   0   0.38770E-04 466898.7 3730070.0   400.2   5.00   84.40   84.40   0.00   0.00
YES

 **MODELOPTs: NonDFAULT CONC   ELEV   OLM   URBAN

*** AREAPOLY SOURCE DATA ***

              NUMBER EMISSION RATE   LOCATION OF AREA BASE   RELEASE NUMBER   INIT.   URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC   X   Y   ELEV.   HEIGHT OF VERTS.   SZ   SOURCE SCALAR VARY
     ID   CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS)   (METERS)   BY
 -
- - - - - -

 PAREA1   0   0.11851E-05 467190.2 3730371.0   488.2   5.00   72   0.00   YES

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	PAREA1 , AREA1 ,

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
2100516.	PAREA1 , AREA1 ,	

*** IN-STACK NO2 RATIOS FOR OLM/PVMRM OPTIONS ***

SOURCE_ID	NO2_RATIO	SOURCE_ID	NO2_RATIO	SOURCE_ID	NO2_RATIO	SOURCE_ID	NO2_RATIO
PAREA1	0.100	AREA1	0.100				

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(467947.5,	3729755.6,	421.4,	635.0,	0.0);	(467906.6,	3729686.7,	415.2,	635.0,	0.0);
(467907.9,	3729662.2,	415.8,	635.0,	0.0);	(467904.1,	3729595.3,	416.0,	635.0,	0.0);
(467931.8,	3729591.9,	416.4,	635.0,	0.0);	(467691.8,	3729489.4,	409.9,	635.0,	0.0);
(467579.1,	3729454.4,	408.0,	635.0,	0.0);	(467520.1,	3729393.7,	406.4,	635.0,	0.0);
(467463.7,	3729319.4,	402.9,	635.0,	0.0);	(467650.0,	3729387.7,	407.4,	635.0,	0.0);

LSTCO
(467709.8, 3729097.2, 398.4, 635.0, 0.0); (467824.3, 3728994.7, 397.2, 635.0, 0.0);
(467904.6, 3729541.5, 415.3, 635.0, 0.0);

**MODELOPTs: NonDFAULT CONC ELEV OLM URBAN

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1
```

METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2008 1 1 1
AND END DATE: 2008 12 31 24

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

**MODELOPTs: NonDFAULT CONC ELEV OLM URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\elsi8.sfc Met Version: 14134
Profile file: ..\elsi8.PFL
Surface format: FREE

Profile format: FREE

Surface station no.: 3190 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2008 Year: 2008

First 24 hours of scalar data
YR MO DY JDY HR H0 U* W* DT/DZ ZICNV ZIMCH M-O LEN Z0 BOWEN ALBEDO REF WS WD HT REF TA HT

```
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - -
 08 01 01   1 01 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
 5.5
 08 01 01   1 02 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
 5.5
 08 01 01   1 03 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
 5.5
 08 01 01   1 04 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.8
 5.5
 08 01 01   1 05 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.8
 5.5
 08 01 01   1 06 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.8
 5.5
 08 01 01   1 07 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
 5.5
 08 01 01   1 08 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   0.54  999.00  999.   -9.0  283.8
 5.5
 08 01 01   1 09   27.2 -9.000 -9.000 -9.000   60. -999. -99999.0  0.23   1.00   0.33  999.00  999.   -9.0  285.9
 5.5
 08 01 01   1 10   74.6 -9.000 -9.000 -9.000  157. -999. -99999.0  0.23   1.00   0.25  999.00  999.   -9.0  288.1
 5.5
 08 01 01   1 11  107.4 -9.000 -9.000 -9.000  375. -999. -99999.0  0.23   1.00   0.23  999.00  999.   -9.0  289.9
 5.5
 08 01 01   1 12  122.7 -9.000 -9.000 -9.000  578. -999. -99999.0  0.23   1.00   0.22  999.00  999.   -9.0  289.9
 5.5
 08 01 01   1 13  121.3 -9.000 -9.000 -9.000  714. -999. -99999.0  0.23   1.00   0.22  999.00  999.   -9.0  291.4
 5.5
 08 01 01   1 14  102.1 -9.000 -9.000 -9.000  763. -999. -99999.0  0.23   1.00   0.23  999.00  999.   -9.0  292.0
 5.5
 08 01 01   1 15   65.8 -9.000 -9.000 -9.000  792. -999. -99999.0  0.23   1.00   0.27  999.00  999.   -9.0  291.4
 5.5
 08 01 01   1 16   16.0 -9.000 -9.000 -9.000  798. -999. -99999.0  0.23   1.00   0.36  999.00  999.   -9.0  290.4
 5.5
 08 01 01   1 17 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   0.63  999.00  999.   -9.0  288.8
 5.5
 08 01 01   1 18 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  287.5
 5.5
 08 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  286.4
 5.5
 08 01 01   1 20 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  285.4
 5.5
 08 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
 5.5
 08 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
 5.5
 08 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
 5.5
 08 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  282.5
 5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 08 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 08 01 01 01    9.1 1 -999.  -99.00  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc              ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   16:26:58

   PAGE  10
 **MODELOPTs:   NonDFAULT CONC      ELEV      OLM       URBAN

                  *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   1 YEARS FOR SOURCE GROUP: ALL
```

***
INCLUDING SOURCE(S): PAREA1 , AREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
467947.51	3729755.56	1.23612	467906.64	3729686.69	1.59003
467907.93	3729662.23	1.53975	467904.07	3729595.30	1.42384
467931.75	3729591.89	1.30884	467691.85	3729489.42	1.57086
467579.06	3729454.38	1.61171	467520.10	3729393.71	1.53788
467463.70	3729319.37	1.35983	467649.98	3729387.73	1.38658
467709.79	3729097.21	0.89567	467824.29	3728994.67	0.75729
467904.62	3729541.54	1.31363			

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc *** 07/12/16
*** AERMET - VERSION 14134 *** *** *** 16:26:58

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**MODELOPTs: NonDFAULT CONC ELEV OLM URBAN

*** THE 1ST-HIGHEST MAX DAILY 1-HR AVERAGE CONCENTRATION VALUES AVERAGED OVER 1 YEARS FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , AREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
467947.51	3729755.56	37.79015	467906.64	3729686.69	33.07342
467907.93	3729662.23	31.22943	467904.07	3729595.30	26.44058
467931.75	3729591.89	26.48066	467691.85	3729489.42	24.33332
467579.06	3729454.38	24.92642	467520.10	3729393.71	23.19199
467463.70	3729319.37	18.99042	467649.98	3729387.73	21.48656
467709.79	3729097.21	12.87815	467824.29	3728994.67	11.24432
467904.62	3729541.54	23.74667			

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc *** 07/12/16
*** AERMET - VERSION 14134 *** *** *** 16:26:58

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**MODELOPTs: NonDFAULT CONC ELEV OLM URBAN

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

NETWORK GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	1.61171 AT (467579.06, 3729454.38, 408.00, 635.00, 0.00)	DC
	2ND HIGHEST VALUE IS	1.59003 AT (467906.64, 3729686.69, 415.21, 635.00, 0.00)	DC
	3RD HIGHEST VALUE IS	1.57086 AT (467691.85, 3729489.42, 409.87, 635.00, 0.00)	DC
	4TH HIGHEST VALUE IS	1.53975 AT (467907.93, 3729662.23, 415.79, 635.00, 0.00)	DC
	5TH HIGHEST VALUE IS	1.53788 AT (467520.10, 3729393.71, 406.39, 635.00, 0.00)	DC
	6TH HIGHEST VALUE IS	1.42384 AT (467904.07, 3729595.30, 416.00, 635.00, 0.00)	DC
	7TH HIGHEST VALUE IS	1.38658 AT (467649.98, 3729387.73, 407.39, 635.00, 0.00)	DC
	8TH HIGHEST VALUE IS	1.35983 AT (467463.70, 3729319.37, 402.91, 635.00, 0.00)	DC
	9TH HIGHEST VALUE IS	1.31363 AT (467904.62, 3729541.54, 415.26, 635.00, 0.00)	DC
	10TH HIGHEST VALUE IS	1.30884 AT (467931.75, 3729591.89, 416.40, 635.00, 0.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc *** *** 07/12/16
*** AERMET - VERSION 14134 *** *** *** 16:26:58

**MODELOPTs: NonDFAULT CONC ELEV OLM URBAN

*** THE SUMMARY OF MAXIMUM 1ST-HIGHEST MAX DAILY 1-HR RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

NETWORK GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	37.79015 AT (467947.51, 3729755.56, 421.44, 635.00, 0.00)	DC
	2ND HIGHEST VALUE IS	33.07342 AT (467906.64, 3729686.69, 415.21, 635.00, 0.00)	DC
	3RD HIGHEST VALUE IS	31.22943 AT (467907.93, 3729662.23, 415.79, 635.00, 0.00)	DC
	4TH HIGHEST VALUE IS	26.48066 AT (467931.75, 3729591.89, 416.40, 635.00, 0.00)	DC
	5TH HIGHEST VALUE IS	26.44058 AT (467904.07, 3729595.30, 416.00, 635.00, 0.00)	DC
	6TH HIGHEST VALUE IS	24.92642 AT (467579.06, 3729454.38, 408.00, 635.00, 0.00)	DC

```
          7TH HIGHEST VALUE IS      24.33332 AT (  467691.85,  3729489.42,   409.87,   635.00,    0.00)  DC

          8TH HIGHEST VALUE IS      23.74667 AT (  467904.62,  3729541.54,   415.26,   635.00,    0.00)  DC

          9TH HIGHEST VALUE IS      23.19199 AT (  467520.10,  3729393.71,   406.39,   635.00,    0.00)  DC

         10TH HIGHEST VALUE IS      21.48656 AT (  467649.98,  3729387.73,   407.39,   635.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                    ***
   16:26:58

   PAGE  14
 **MODELOPTs:   NonDFAULT CONC      ELEV      OLM       URBAN

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            3 Warning Message(s)
 A Total of          215 Informational Message(s)

 A Total of         8784 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of          212 Missing Hours Identified (  2.41 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 CO W271      31       COCARD: O3FILE w/o O3VALs; full conv for hrs with miss O3
 CO W361      31       COCARD: Multiyear PERIOD/ANNUAL values for NO2/SO2 require MULTYEAR Opt
 ME W531     108       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

    ***********************************
    *** AERMOD Finishes Successfully ***
    ***********************************
**
****************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.1.0
** Lakes Environmental Software Inc.
** Date: 7/12/2016
** File: C:\Users\hqureshi\Desktop\Nichols Mine\9600_Modeling Files\LSTs\LSTPM10\LSTPM10.ADI
**
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
```

```
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc
   MODELOPT DFAULT CONC
   AVERTIME 24 ANNUAL
   URBANOPT 2100516
   POLLUTID PM_10
   RUNORNOT RUN
   ERRORFIL LSTPM10.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   467190.199  3730371.004      488.240
   LOCATION AREA1        AREA       466898.710  3730070.010      400.230
** DESCRSRC Asphalt Batch Plant
** Source Parameters **
   SRCPARAM PAREA1       1.9302E-07     0.000        72     1.000
   AREAVERT PAREA1       467190.199 3730371.004 467293.010 3730368.225
   AREAVERT PAREA1       467329.133 3730364.057 467377.760 3730359.889
   AREAVERT PAREA1       467419.440 3730339.049 467462.509 3730302.926
   AREAVERT PAREA1       467484.739 3730276.529 467494.464 3730261.246
   AREAVERT PAREA1       467506.968 3730237.628 467518.083 3730209.841
   AREAVERT PAREA1       467519.472 3730180.665 467519.472 3730137.595
   AREAVERT PAREA1       467515.304 3730109.808 467513.915 3730094.526
   AREAVERT PAREA1       467515.304 3730073.686 467520.862 3730059.792
   AREAVERT PAREA1       467529.198 3730036.173 467531.976 3730029.227
   AREAVERT PAREA1       467533.366 3730026.448 467543.091 3730013.944
   AREAVERT PAREA1       467548.648 3730006.997 467562.542 3729990.325
   AREAVERT PAREA1       467570.878 3729981.989 467579.214 3729970.874
   AREAVERT PAREA1       467615.337 3729945.866 467625.062 3729934.752
   AREAVERT PAREA1       467634.787 3729930.584 467651.460 3729925.026
   AREAVERT PAREA1       467666.742 3729918.080 467693.140 3729909.743
   AREAVERT PAREA1       467711.201 3729902.797 467745.935 3729895.850
   AREAVERT PAREA1       467770.943 3729886.125 467787.615 3729876.399
   AREAVERT PAREA1       467807.066 3729862.506 467816.791 3729848.613
   AREAVERT PAREA1       467822.348 3729827.772 467826.516 3729816.658
   AREAVERT PAREA1       467823.738 3729788.871 467823.738 3729777.756
   AREAVERT PAREA1       467801.508 3729776.367 467773.721 3729776.367
   AREAVERT PAREA1       467733.431 3729779.146 467676.468 3729780.535
   AREAVERT PAREA1       467615.337 3729793.039 467579.214 3729802.764
   AREAVERT PAREA1       467529.198 3729816.658 467509.747 3729834.719
   AREAVERT PAREA1       467456.952 3729919.469 467347.194 3730005.608
   AREAVERT PAREA1       467372.202 3730107.030 467373.592 3730132.038
   AREAVERT PAREA1       467363.866 3730143.152 467349.973 3730159.825
   AREAVERT PAREA1       467343.026 3730173.718 467334.690 3730190.390
   AREAVERT PAREA1       467326.354 3730205.673 467313.850 3730225.123
   AREAVERT PAREA1       467299.957 3730247.353 467295.789 3730269.582
   AREAVERT PAREA1       467284.674 3730280.697 467281.895 3730295.980
   AREAVERT PAREA1       467280.506 3730304.316 467276.338 3730315.431
   AREAVERT PAREA1       467270.781 3730319.599 467265.223 3730326.545
   AREAVERT PAREA1       467262.445 3730336.271 467256.887 3730340.439
   AREAVERT PAREA1       467252.719 3730344.607 467245.772 3730348.775
   AREAVERT PAREA1       467234.658 3730355.721 467213.818 3730361.279
   SRCPARAM AREA1        0.000055628     5.000    84.395    84.395     0.000
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
```

```
**
**
RE STARTING
   INCLUDED LSTPM10.rou
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE ..\elsi8.sfc
   PROFFILE ..\elsi8.PFL
   SURFDATA 3190 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 24 1ST
** Maximum Annual Average POST files for Each Met Year
   POSTFILE ANNUAL ALL PLOT LSTPM10.AD\ANNUAL_G001.PLT 31
** Auto-Generated Plotfiles
   PLOTFILE 24 ALL 1ST LSTPM10.AD\24H1GALL.PLT 32
   PLOTFILE ANNUAL ALL LSTPM10.AD\AN00GALL.PLT 33
   SUMMFILE LSTPM10.sum
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W531     103       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc                ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                  ***
   16:01:28

   PAGE   1
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

- - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   -- DEPOSITION LOGIC --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION. DRYDPLT = F
 **Model Uses NO WET DEPLETION. WETDPLT = F

 **Model Uses URBAN Dispersion Algorithm for the SBL for   2 Source(s),
   for Total of   1 Urban Area(s):
   Urban Population =   2100516.0 ; Urban Roughness Length = 1.000 m

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of: PM_10

 **Model Calculates 1 Short Term Average(s) of: 24-HR
     and Calculates ANNUAL Averages

 **This Run Includes: 2 Source(s);   1 Source Group(s); and   13 Receptor(s)

                with: 0 POINT(s), including
                           0 POINTCAP(s) and   0 POINTHOR(s)
                 and: 0 VOLUME source(s)
                 and: 2 AREA type source(s)
                 and: 0 LINE source(s)
                 and: 0 OPENPIT source(s)

 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date: 14134

 **Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ; Decay Coef. =   0.000   ; Rot. Angle
=   0.0
                  Emission Units = GRAMS/SEC   ; Emission Rate Unit Factor =
0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =   3.5 MB of RAM.

 **Detailed Error/Message File: LSTPM10.err

*** AREA SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	COORD (SW CORNER) X (METERS)	COORD (SW CORNER) Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	X-DIM OF AREA (METERS)	Y-DIM OF AREA (METERS)	ORIENT. OF AREA (DEG.)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
AREA1	0	0.55628E-04	466898.7	3730070.0	400.2	5.00	84.39	84.39	0.00	0.00	YES	

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	LOCATION OF AREA Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.19302E-06	467190.2	3730371.0	488.2	0.00	72	1.00	YES	

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	PAREA1 , AREA1 ,

LSTCO
*** SOURCE IDs DEFINED AS URBAN SOURCES ***

```
  URBAN ID   URBAN POP                                  SOURCE IDs
  --------   ---------                                  ----------


             2100516.   PAREA1      , AREA1       ,
```


**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

```
    ( 467947.5, 3729755.6,     421.4,     635.0,       0.0);        ( 467906.6, 3729686.7,     415.2,     635.0,
    0.0);
    ( 467907.9, 3729662.2,     415.8,     635.0,       0.0);        ( 467904.1, 3729595.3,     416.0,     635.0,
    0.0);
    ( 467931.8, 3729591.9,     416.4,     635.0,       0.0);        ( 467691.8, 3729489.4,     409.9,     635.0,
    0.0);
    ( 467579.1, 3729454.4,     408.0,     635.0,       0.0);        ( 467520.1, 3729393.7,     406.4,     635.0,
    0.0);
    ( 467463.7, 3729319.4,     402.9,     635.0,       0.0);        ( 467650.0, 3729387.7,     407.4,     635.0,
    0.0);
    ( 467709.8, 3729097.2,     398.4,     635.0,       0.0);        ( 467824.3, 3728994.7,     397.2,     635.0,
    0.0);
    ( 467904.6, 3729541.5,     415.3,     635.0,       0.0);
```


**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

```
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1
```

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,
♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc ***
07/12/16
*** AERMET - VERSION 14134 *** *** ***
16:01:28

PAGE 8
**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\elsi8.sfc Met Version: 14134
Profile file: ..\elsi8.PFL
Surface format: FREE

Profile format: FREE

Surface station no.: 3190 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2008 Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	284.2	5.5
08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	0.54	999.00	999.	-9.0	283.8	5.5
08	01	01	1	09	27.2	-9.000	-9.000	-9.000	60.	-999.	-99999.0	0.23	1.00	0.33	999.00	999.	-9.0	285.9	5.5
08	01	01	1	10	74.6	-9.000	-9.000	-9.000	157.	-999.	-99999.0	0.23	1.00	0.25	999.00	999.	-9.0	288.1	5.5
08	01	01	1	11	107.4	-9.000	-9.000	-9.000	375.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	289.9	5.5
08	01	01	1	12	122.7	-9.000	-9.000	-9.000	578.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	289.9	5.5
08	01	01	1	13	121.3	-9.000	-9.000	-9.000	714.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	291.4	5.5
08	01	01	1	14	102.1	-9.000	-9.000	-9.000	763.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	292.0	5.5
08	01	01	1	15	65.8	-9.000	-9.000	-9.000	792.	-999.	-99999.0	0.23	1.00	0.27	999.00	999.	-9.0	291.4	5.5
08	01	01	1	16	16.0	-9.000	-9.000	-9.000	798.	-999.	-99999.0	0.23	1.00	0.36	999.00	999.	-9.0	290.4	5.5
08	01	01	1	17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	0.63	999.00	999.	-9.0	288.8	5.5
08	01	01	1	18	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	287.5	5.5
08	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	286.4	5.5
08	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	285.4	

```
5.5
08 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
5.5
08 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  282.5
5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 08 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 08 01 01 01    9.1 1 -999.  -99.00  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc                ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   16:01:28

   PAGE   9
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                   *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR SOURCE GROUP: ALL
 ***
                                  INCLUDING SOURCE(S):     PAREA1      , AREA1       ,

                                           *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                       ** CONC OF PM_10    IN MICROGRAMS/M**3                          **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)   Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 - - - - - - - -
         467947.51    3729755.56        0.69079                      467906.64    3729686.69        0.89274

         467907.93    3729662.23        0.89411                      467904.07    3729595.30        0.91093

         467931.75    3729591.89        0.85180                      467691.85    3729489.42        1.41760

         467579.06    3729454.38        1.77585                      467520.10    3729393.71        1.87020

         467463.70    3729319.37        1.72171                      467649.98    3729387.73        1.50413

         467709.79    3729097.21        1.08065                      467824.29    3728994.67        0.89886

         467904.62    3729541.54        0.91506

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc                ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   16:01:28

   PAGE  10
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                              *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL
 ***
                                  INCLUDING SOURCE(S):     PAREA1      , AREA1       ,

                                           *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                       ** CONC OF PM_10    IN MICROGRAMS/M**3                          **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)  Y-COORD (M)        CONC
```

```
(YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -
       467947.51   3729755.56       5.44726  (11111524)               467906.64   3729686.69       6.31950
(11110824)
       467907.93   3729662.23       6.16708  (11110824)               467904.07   3729595.30       5.25790
(11110824)
       467931.75   3729591.89       5.20474  (11110824)               467691.85   3729489.42       7.31181m
(11101524)
       467579.06   3729454.38       9.28171  (12070724)               467520.10   3729393.71       9.98325
(12070724)
       467463.70   3729319.37       7.94090  (12120424)               467649.98   3729387.73       7.80013
(12070724)
       467709.79   3729097.21       5.15824  (12120424)               467824.29   3728994.67       4.34600
(12120424)
       467904.62   3729541.54       5.71180m (12012324)
```

```
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc                ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   16:01:28

   PAGE  11
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM_10    IN MICROGRAMS/M**3                         **


NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE
GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- -

ALL       1ST HIGHEST VALUE IS       1.87020 AT (  467520.10,  3729393.71,   406.39,   635.00,    0.00)  DC

          2ND HIGHEST VALUE IS       1.77585 AT (  467579.06,  3729454.38,   408.00,   635.00,    0.00)  DC

          3RD HIGHEST VALUE IS       1.72171 AT (  467463.70,  3729319.37,   402.91,   635.00,    0.00)  DC

          4TH HIGHEST VALUE IS       1.50413 AT (  467649.98,  3729387.73,   407.39,   635.00,    0.00)  DC

          5TH HIGHEST VALUE IS       1.41760 AT (  467691.85,  3729489.42,   409.87,   635.00,    0.00)  DC

          6TH HIGHEST VALUE IS       1.08065 AT (  467709.79,  3729097.21,   398.41,   635.00,    0.00)  DC

          7TH HIGHEST VALUE IS       0.91506 AT (  467904.62,  3729541.54,   415.26,   635.00,    0.00)  DC

          8TH HIGHEST VALUE IS       0.91093 AT (  467904.07,  3729595.30,   416.00,   635.00,    0.00)  DC

          9TH HIGHEST VALUE IS       0.89886 AT (  467824.29,  3728994.67,   397.24,   635.00,    0.00)  DC

         10TH HIGHEST VALUE IS       0.89411 AT (  467907.93,  3729662.23,   415.79,   635.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc                ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   16:01:28
```

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	9.98325	ON 12070724: AT (467520.10, 3729393.71, 406.39, 635.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc *** 07/12/16
*** AERMET - VERSION 14134 *** *** *** 16:01:28

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 1916 Informational Message(s)

A Total of 43848 Hours Were Processed

A Total of 10 Calm Hours Identified

A Total of 1906 Missing Hours Identified (4.35 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
ME W531 103 MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for SURFDATA

****
*** AERMOD Finishes Successfully ***
****

**
****
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.1.0
** Lakes Environmental Software Inc.
** Date: 7/12/2016
** File: C:\Users\hqureshi\Desktop\Nichols Mine\9600_Modeling Files\LSTs\LST PM25\LST PM25.ADI
**

```
****************************************
**
**
****************************************
** AERMOD Control Pathway
****************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc
   MODELOPT DFAULT CONC
   AVERTIME 24 ANNUAL
   URBANOPT 2100516
   POLLUTID PM_2.5
   RUNORNOT RUN
   ERRORFIL "LST PM25.err"
CO FINISHED
**
****************************************
** AERMOD Source Pathway
****************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   467190.199  3730371.004      488.240
   LOCATION AREA1        AREA       466898.710  3730070.010      400.230
** DESCRSRC Asphalt Batch Plant
** Source Parameters **
   SRCPARAM PAREA1       7.1748E-08     0.000        72     1.000
   AREAVERT PAREA1       467190.199 3730371.004 467293.010 3730368.225
   AREAVERT PAREA1       467329.133 3730364.057 467377.760 3730359.889
   AREAVERT PAREA1       467419.440 3730339.049 467462.509 3730302.926
   AREAVERT PAREA1       467484.739 3730276.529 467494.464 3730261.246
   AREAVERT PAREA1       467506.968 3730237.628 467518.083 3730209.841
   AREAVERT PAREA1       467519.472 3730180.665 467519.472 3730137.595
   AREAVERT PAREA1       467515.304 3730109.808 467513.915 3730094.526
   AREAVERT PAREA1       467515.304 3730073.686 467520.862 3730059.792
   AREAVERT PAREA1       467529.198 3730036.173 467531.976 3730029.227
   AREAVERT PAREA1       467533.366 3730026.448 467543.091 3730013.944
   AREAVERT PAREA1       467548.648 3730006.997 467562.542 3729990.325
   AREAVERT PAREA1       467570.878 3729981.989 467579.214 3729970.874
   AREAVERT PAREA1       467615.337 3729945.866 467625.062 3729934.752
   AREAVERT PAREA1       467634.787 3729930.584 467651.460 3729925.026
   AREAVERT PAREA1       467666.742 3729918.080 467693.140 3729909.743
   AREAVERT PAREA1       467711.201 3729902.797 467745.935 3729895.850
   AREAVERT PAREA1       467770.943 3729886.125 467787.615 3729876.399
   AREAVERT PAREA1       467807.066 3729862.506 467816.791 3729848.613
   AREAVERT PAREA1       467822.348 3729827.772 467826.516 3729816.658
   AREAVERT PAREA1       467823.738 3729788.871 467823.738 3729777.756
   AREAVERT PAREA1       467801.508 3729776.367 467773.721 3729776.367
   AREAVERT PAREA1       467733.431 3729779.146 467676.468 3729780.535
   AREAVERT PAREA1       467615.337 3729793.039 467579.214 3729802.764
   AREAVERT PAREA1       467529.198 3729816.658 467509.747 3729834.719
   AREAVERT PAREA1       467456.952 3729919.469 467347.194 3730005.608
   AREAVERT PAREA1       467372.202 3730107.030 467373.592 3730132.038
   AREAVERT PAREA1       467363.866 3730143.152 467349.973 3730159.825
   AREAVERT PAREA1       467343.026 3730173.718 467334.690 3730190.390
   AREAVERT PAREA1       467326.354 3730205.673 467313.850 3730225.123
   AREAVERT PAREA1       467299.957 3730247.353 467295.789 3730269.582
   AREAVERT PAREA1       467284.674 3730280.697 467281.895 3730295.980
   AREAVERT PAREA1       467280.506 3730304.316 467276.338 3730315.431
   AREAVERT PAREA1       467270.781 3730319.599 467265.223 3730326.545
   AREAVERT PAREA1       467262.445 3730336.271 467256.887 3730340.439
   AREAVERT PAREA1       467252.719 3730344.607 467245.772 3730348.775
   AREAVERT PAREA1       467234.658 3730355.721 467213.818 3730361.279
```

```
   SRCPARAM AREA1        0.0000536217     5.000    84.396    84.396     0.000
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED "LST PM25.rou"
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE ..\elsi8.sfc
   PROFFILE ..\elsi8.PFL
   SURFDATA 3190 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 24 1ST
** Maximum Annual Average POST files for Each Met Year
   POSTFILE ANNUAL ALL PLOT "LST PM25.AD\ANNUAL_G001.PLT" 31
** Auto-Generated Plotfiles
   PLOTFILE 24 ALL 1ST "LST PM25.AD\24H1GALL.PLT" 32
   PLOTFILE ANNUAL ALL "LST PM25.AD\AN00GALL.PLT" 33
   SUMMFILE "LST PM25.sum"
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W531     103       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc               ***
    07/12/16
```

```
**MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                   ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for     2 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =   2100516.0 ;  Urban Roughness Length =  1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM_2.5

**Model Calculates  1 Short Term Average(s) of:  24-HR
    and Calculates ANNUAL Averages

**This Run Includes:      2 Source(s);       1 Source Group(s); and      13 Receptor(s)

              with:      0 POINT(s), including
                         0 POINTCAP(s) and      0 POINTHOR(s)
               and:      0 VOLUME source(s)
               and:      2 AREA type source(s)
               and:      0 LINE source(s)
               and:      0 OPENPIT source(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ;  Decay Coef. =    0.000     ;  Rot. Angle
=     0.0
```

                Emission Units = GRAMS/SEC   ; Emission Rate Unit Factor =
0.10000E+07
                Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =   3.5 MB of RAM.

 **Detailed Error/Message File: LST PM25.err

 **File for Summary of Results: LST PM25.sum

 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** AREA SOURCE DATA ***

              NUMBER EMISSION RATE COORD (SW CORNER) BASE   RELEASE X-DIM   Y-DIM   ORIENT.   INIT.
URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC   X   Y   ELEV.   HEIGHT OF AREA   OF AREA   OF AREA   SZ
SOURCE SCALAR VARY
     ID   CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)   (DEG.) (METERS)
        BY
 -
- - - - - - - - -

 AREA1   0   0.53622E-04 466898.7 3730070.0   400.2   5.00   84.40   84.40   0.00   0.00
YES

 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** AREAPOLY SOURCE DATA ***

              NUMBER EMISSION RATE   LOCATION OF AREA BASE   RELEASE NUMBER   INIT.   URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC   X   Y   ELEV.   HEIGHT OF VERTS.   SZ   SOURCE SCALAR VARY
     ID   CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS)   (METERS)   BY
 -
- - - - - -

 PAREA1   0   0.71748E-07 467190.2 3730371.0   488.2   0.00   72   1.00   YES

 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID   SOURCE IDs
 -----------   ----------

  ALL   PAREA1   , AREA1   ,

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**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID   URBAN POP   SOURCE IDs
--------   ---------   ----------

2100516.   PAREA1   , AREA1   ,

♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc   ***
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**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(467947.5, 3729755.6,   421.4,   635.0,   0.0);   (467906.6, 3729686.7,   415.2,   635.0,
0.0);
(467907.9, 3729662.2,   415.8,   635.0,   0.0);   (467904.1, 3729595.3,   416.0,   635.0,
0.0);
(467931.8, 3729591.9,   416.4,   635.0,   0.0);   (467691.8, 3729489.4,   409.9,   635.0,
0.0);
(467579.1, 3729454.4,   408.0,   635.0,   0.0);   (467520.1, 3729393.7,   406.4,   635.0,
0.0);
(467463.7, 3729319.4,   402.9,   635.0,   0.0);   (467650.0, 3729387.7,   407.4,   635.0,
0.0);
(467709.8, 3729097.2,   398.4,   635.0,   0.0);   (467824.3, 3728994.7,   397.2,   635.0,
0.0);
(467904.6, 3729541.5,   415.3,   635.0,   0.0);

♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc   ***
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**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc *** 07/12/16
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\elsi8.sfc Met Version: 14134
Profile file: ..\elsi8.PFL
Surface format: FREE

Profile format: FREE

Surface station no.: 3190 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2008 Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	284.2	5.5
08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	0.54	999.00	999.	-9.0	283.8	5.5
08	01	01	1	09	27.2	-9.000	-9.000	-9.000	60.	-999.	-99999.0	0.23	1.00	0.33	999.00	999.	-9.0	285.9	5.5
08	01	01	1	10	74.6	-9.000	-9.000	-9.000	157.	-999.	-99999.0	0.23	1.00	0.25	999.00	999.	-9.0	288.1	5.5
08	01	01	1	11	107.4	-9.000	-9.000	-9.000	375.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	289.9	5.5
08	01	01	1	12	122.7	-9.000	-9.000	-9.000	578.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	289.9	5.5
08	01	01	1	13	121.3	-9.000	-9.000	-9.000	714.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	291.4	5.5
08	01	01	1	14	102.1	-9.000	-9.000	-9.000	763.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	292.0	5.5
08	01	01	1	15	65.8	-9.000	-9.000	-9.000	792.	-999.	-99999.0	0.23	1.00	0.27	999.00	999.	-9.0	291.4	5.5
08	01	01	1	16	16.0	-9.000	-9.000	-9.000	798.	-999.	-99999.0	0.23	1.00	0.36	999.00	999.	-9.0	290.4	

```
 5.5
 08 01 01   1 17 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   0.63  999.00  999.   -9.0  288.8
 5.5
 08 01 01   1 18 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  287.5
 5.5
 08 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  286.4
 5.5
 08 01 01   1 20 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  285.4
 5.5
 08 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
 5.5
 08 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
 5.5
 08 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
 5.5
 08 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  282.5
 5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 08 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 08 01 01 01    9.1 1 -999.  -99.00  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc              ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   16:16:45

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 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                   *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR SOURCE GROUP: ALL
 ***
                                  INCLUDING SOURCE(S):     PAREA1      , AREA1       ,

                                           *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                       ** CONC OF PM_2.5   IN MICROGRAMS/M**3                          **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)   Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 - - - - - - - -
         467947.51    3729755.56        0.56724                     467906.64    3729686.69        0.71828

         467907.93    3729662.23        0.72446                     467904.07    3729595.30        0.75501

         467931.75    3729591.89        0.70983                     467691.85    3729489.42        1.27458

         467579.06    3729454.38        1.64323                     467520.10    3729393.71        1.75030

         467463.70    3729319.37        1.61908                     467649.98    3729387.73        1.38889

         467709.79    3729097.21        1.01054                     467824.29    3728994.67        0.83869

         467904.62    3729541.54        0.77369

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc              ***
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 *** AERMET - VERSION  14134 ***   ***                                                                   ***
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 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                              *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL
```

***
INCLUDING SOURCE(S): PAREA1 , AREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
467947.51	3729755.56	4.80496	(11111524)	467906.64	3729686.69	5.66386	(11110824)
467907.93	3729662.23	5.59745	(11110824)	467904.07	3729595.30	4.86703	(11110824)
467931.75	3729591.89	4.81378	(11110824)	467691.85	3729489.42	6.93242m	(11101524)
467579.06	3729454.38	8.94680	(12070724)	467520.10	3729393.71	9.62338	(12070724)
467463.70	3729319.37	7.62956	(12120424)	467649.98	3729387.73	7.51765	(12070724)
467709.79	3729097.21	4.92825	(12120424)	467824.29	3728994.67	4.18526	(12070724)
467904.62	3729541.54	5.35305m	(12012324)				

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc *** 07/12/16
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

NETWORK GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	1.75030 AT (467520.10, 3729393.71, 406.39, 635.00, 0.00)	DC
	2ND HIGHEST VALUE IS	1.64323 AT (467579.06, 3729454.38, 408.00, 635.00, 0.00)	DC
	3RD HIGHEST VALUE IS	1.61908 AT (467463.70, 3729319.37, 402.91, 635.00, 0.00)	DC
	4TH HIGHEST VALUE IS	1.38889 AT (467649.98, 3729387.73, 407.39, 635.00, 0.00)	DC
	5TH HIGHEST VALUE IS	1.27458 AT (467691.85, 3729489.42, 409.87, 635.00, 0.00)	DC
	6TH HIGHEST VALUE IS	1.01054 AT (467709.79, 3729097.21, 398.41, 635.00, 0.00)	DC
	7TH HIGHEST VALUE IS	0.83869 AT (467824.29, 3728994.67, 397.24, 635.00, 0.00)	DC
	8TH HIGHEST VALUE IS	0.77369 AT (467904.62, 3729541.54, 415.26, 635.00, 0.00)	DC
	9TH HIGHEST VALUE IS	0.75501 AT (467904.07, 3729595.30, 416.00, 635.00, 0.00)	DC
	10TH HIGHEST VALUE IS	0.72446 AT (467907.93, 3729662.23, 415.79, 635.00, 0.00)	DC

```
 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc               ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                       ***
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 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                                    *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***


                                          ** CONC OF PM_2.5   IN MICROGRAMS/M**3                          **

                                                             DATE
          NETWORK
GROUP ID                          AVERAGE CONC     (YYMMDDHH)             RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)
 OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - -

ALL      HIGH   1ST HIGH VALUE IS       9.62338  ON 12070724: AT (  467520.10,  3729393.71,   406.39,   635.00,
0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc               ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                       ***
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 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of         1916 Informational Message(s)

 A Total of        43848 Hours Were Processed

 A Total of           10 Calm Hours Identified

 A Total of         1906 Missing Hours Identified (  4.35 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W531     103       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

    ************************************
    *** AERMOD Finishes Successfully ***
    ************************************
```

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.1.0
** Lakes Environmental Software Inc.
** Date: 7/12/2016
** File: C:\Users\hqureshi\Desktop\Nichols Mine\9600_Modeling Files\LSTs\Mitigated\LSTCO\LSTCO.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc
   MODELOPT DFAULT CONC
   AVERTIME 1 8
   URBANOPT 2100516
   POLLUTID CO
   RUNORNOT RUN
   ERRORFIL LSTCO.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   467190.199  3730371.004      488.240
   LOCATION AREA1        AREA       466898.710  3730070.010      400.230
** DESCRSRC Asphalt Batch Plant
** Source Parameters **
   SRCPARAM PAREA1       6.8021E-07     5.000        72
   AREAVERT PAREA1       467190.199 3730371.004 467293.010 3730368.225
   AREAVERT PAREA1       467329.133 3730364.057 467377.760 3730359.889
   AREAVERT PAREA1       467419.440 3730339.049 467462.509 3730302.926
   AREAVERT PAREA1       467484.739 3730276.529 467494.464 3730261.246
   AREAVERT PAREA1       467506.968 3730237.628 467518.083 3730209.841
   AREAVERT PAREA1       467519.472 3730180.665 467519.472 3730137.595
   AREAVERT PAREA1       467515.304 3730109.808 467513.915 3730094.526
   AREAVERT PAREA1       467515.304 3730073.686 467520.862 3730059.792
   AREAVERT PAREA1       467529.198 3730036.173 467531.976 3730029.227
   AREAVERT PAREA1       467533.366 3730026.448 467543.091 3730013.944
   AREAVERT PAREA1       467548.648 3730006.997 467562.542 3729990.325
   AREAVERT PAREA1       467570.878 3729981.989 467579.214 3729970.874
   AREAVERT PAREA1       467615.337 3729945.866 467625.062 3729934.752
   AREAVERT PAREA1       467634.787 3729930.584 467651.460 3729925.026
   AREAVERT PAREA1       467666.742 3729918.080 467693.140 3729909.743
   AREAVERT PAREA1       467711.201 3729902.797 467745.935 3729895.850
   AREAVERT PAREA1       467770.943 3729886.125 467787.615 3729876.399
   AREAVERT PAREA1       467807.066 3729862.506 467816.791 3729848.613
   AREAVERT PAREA1       467822.348 3729827.772 467826.516 3729816.658
   AREAVERT PAREA1       467823.738 3729788.871 467823.738 3729777.756
   AREAVERT PAREA1       467801.508 3729776.367 467773.721 3729776.367
   AREAVERT PAREA1       467733.431 3729779.146 467676.468 3729780.535
   AREAVERT PAREA1       467615.337 3729793.039 467579.214 3729802.764
   AREAVERT PAREA1       467529.198 3729816.658 467509.747 3729834.719
   AREAVERT PAREA1       467456.952 3729919.469 467347.194 3730005.608
   AREAVERT PAREA1       467372.202 3730107.030 467373.592 3730132.038
   AREAVERT PAREA1       467363.866 3730143.152 467349.973 3730159.825
```

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   AREAVERT PAREA1       467343.026 3730173.718 467334.690 3730190.390
   AREAVERT PAREA1       467326.354 3730205.673 467313.850 3730225.123
   AREAVERT PAREA1       467299.957 3730247.353 467295.789 3730269.582
   AREAVERT PAREA1       467284.674 3730280.697 467281.895 3730295.980
   AREAVERT PAREA1       467280.506 3730304.316 467276.338 3730315.431
   AREAVERT PAREA1       467270.781 3730319.599 467265.223 3730326.545
   AREAVERT PAREA1       467262.445 3730336.271 467256.887 3730340.439
   AREAVERT PAREA1       467252.719 3730344.607 467245.772 3730348.775
   AREAVERT PAREA1       467234.658 3730355.721 467213.818 3730361.279
   SRCPARAM AREA1        0.0000733309     5.000    84.396    84.396     0.000
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED LSTCO.rou
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE ..\..\elsi8.sfc
   PROFFILE ..\..\elsi8.PFL
   SURFDATA 3190 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   RECTABLE 8 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST LSTCO.AD\01H1GALL.PLT 31
   PLOTFILE 8 ALL 1ST LSTCO.AD\08H1GALL.PLT 32
   SUMMFILE LSTCO.sum
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
```

```
 ME W531     103       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   16:52:22

   PAGE   1
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                           ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses URBAN Dispersion Algorithm for the SBL for     2 Source(s),
   for Total of    1 Urban Area(s):
   Urban Population =   2100516.0 ;  Urban Roughness Length =  1.000 m

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.
         6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  CO

 **Model Calculates  2 Short Term Average(s) of:   1-HR   8-HR

 **This Run Includes:      2 Source(s);       1 Source Group(s); and      13 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      2 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  14134

 **Output Options Selected:
          Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
          Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
```

m for Missing Hours
b for Both Calm and Missing Hours

**Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) = 406.00 ; Decay Coef. = 0.000 ; Rot. Angle = 0.0
Emission Units = GRAMS/SEC ; Emission Rate Unit Factor = 0.10000E+07
Output Units = MICROGRAMS/M**3

**Approximate Storage Requirements of Model = 3.5 MB of RAM.

**Detailed Error/Message File: LSTCO.err

**File for Summary of Results: LSTCO.sum

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** AREA SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	COORD (SW CORNER) X (METERS)	COORD (SW CORNER) Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	X-DIM OF AREA (METERS)	Y-DIM OF AREA (METERS)	ORIENT. OF AREA (DEG.)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
AREA1	0	0.73331E-04	466898.7	3730070.0	400.2	5.00	84.40	84.40	0.00	0.00	YES	

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	LOCATION OF AREA Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.68021E-06	467190.2	3730371.0	488.2	5.00	72	0.00	YES	

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs

```
 -----------                                          ----------


  ALL        PAREA1      , AREA1       ,
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   16:52:22

   PAGE   5
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN


                                                 *** SOURCE IDs DEFINED AS URBAN SOURCES ***

  URBAN ID   URBAN POP                                 SOURCE IDs
  --------   ---------                                 ----------


            2100516.   PAREA1      , AREA1       ,
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   16:52:22

   PAGE   6
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                                    *** DISCRETE CARTESIAN RECEPTORS ***
                                                  (X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
                                                                (METERS)

    ( 467947.5, 3729755.6,     421.4,     635.0,       0.0);        ( 467906.6, 3729686.7,     415.2,     635.0,
    0.0);
    ( 467907.9, 3729662.2,     415.8,     635.0,       0.0);        ( 467904.1, 3729595.3,     416.0,     635.0,
    0.0);
    ( 467931.8, 3729591.9,     416.4,     635.0,       0.0);        ( 467691.8, 3729489.4,     409.9,     635.0,
    0.0);
    ( 467579.1, 3729454.4,     408.0,     635.0,       0.0);        ( 467520.1, 3729393.7,     406.4,     635.0,
    0.0);
    ( 467463.7, 3729319.4,     402.9,     635.0,       0.0);        ( 467650.0, 3729387.7,     407.4,     635.0,
    0.0);
    ( 467709.8, 3729097.2,     398.4,     635.0,       0.0);        ( 467824.3, 3728994.7,     397.2,     635.0,
    0.0);
    ( 467904.6, 3729541.5,     415.3,     635.0,       0.0);

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   16:52:22

   PAGE   7
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                                   *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                                     (1=YES; 0=NO)

           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
           1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
```

LSTCO

```
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
          1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1

              NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA
FILE.


                              *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                          (METERS/SEC)

                                              1.54,   3.09,   5.14,   8.23,  10.80,
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                      ***
   07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                       ***
   16:52:22

   PAGE   8
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   ..\..\elsi8.sfc                                                                  Met Version:
14134
   Profile file:   ..\..\elsi8.PFL
   Surface format: FREE

   Profile format: FREE

   Surface station no.:     3190                  Upper air station no.:     3190
                 Name: UNKNOWN                                    Name: UNKNOWN
                 Year:   2008                                     Year:   2008

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA
  HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - -
 08 01 01   1 01 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
  5.5
 08 01 01   1 02 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
  5.5
 08 01 01   1 03 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
  5.5
 08 01 01   1 04 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.8
  5.5
 08 01 01   1 05 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.8
  5.5
 08 01 01   1 06 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.8
  5.5
 08 01 01   1 07 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
  5.5
 08 01 01   1 08 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   0.54  999.00  999.   -9.0  283.8
  5.5
 08 01 01   1 09   27.2 -9.000 -9.000 -9.000   60. -999. -99999.0  0.23   1.00   0.33  999.00  999.   -9.0  285.9
  5.5
 08 01 01   1 10   74.6 -9.000 -9.000 -9.000  157. -999. -99999.0  0.23   1.00   0.25  999.00  999.   -9.0  288.1
  5.5
 08 01 01   1 11  107.4 -9.000 -9.000 -9.000  375. -999. -99999.0  0.23   1.00   0.23  999.00  999.   -9.0  289.9
  5.5
 08 01 01   1 12  122.7 -9.000 -9.000 -9.000  578. -999. -99999.0  0.23   1.00   0.22  999.00  999.   -9.0  289.9
  5.5
 08 01 01   1 13  121.3 -9.000 -9.000 -9.000  714. -999. -99999.0  0.23   1.00   0.22  999.00  999.   -9.0  291.4
  5.5
```

```
08 01 01   1 14  102.1 -9.000 -9.000 -9.000  763. -999. -99999.0  0.23   1.00   0.23  999.00  999.   -9.0  292.0
5.5
08 01 01   1 15   65.8 -9.000 -9.000 -9.000  792. -999. -99999.0  0.23   1.00   0.27  999.00  999.   -9.0  291.4
5.5
08 01 01   1 16   16.0 -9.000 -9.000 -9.000  798. -999. -99999.0  0.23   1.00   0.36  999.00  999.   -9.0  290.4
5.5
08 01 01   1 17 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   0.63  999.00  999.   -9.0  288.8
5.5
08 01 01   1 18 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  287.5
5.5
08 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  286.4
5.5
08 01 01   1 20 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  285.4
5.5
08 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
5.5
08 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  282.5
5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 08 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 08 01 01 01    9.1 1 -999.  -99.00  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   16:52:22

   PAGE   9
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                             *** THE   1ST HIGHEST  1-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL
 ***
                                 INCLUDING SOURCE(S):     PAREA1      , AREA1       ,

                                          *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                      ** CONC OF CO       IN MICROGRAMS/M**3                          **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)  Y-COORD (M)        CONC
(YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -
        467947.51   3729755.56       58.56626  (09071202)               467906.64   3729686.69       55.79916
(10062420)
        467907.93   3729662.23       53.83304  (12091006)               467904.07   3729595.30       50.01371
(10071502)
        467931.75   3729591.89       49.08913  (10071502)               467691.85   3729489.42       50.91129
(10110322)
        467579.06   3729454.38       53.07270  (12081105)               467520.10   3729393.71       49.41519
(12082103)
        467463.70   3729319.37       40.19002  (11090704)               467649.98   3729387.73       45.43178
(12081105)
        467709.79   3729097.21       27.37778  (12091321)               467824.29   3728994.67       23.41310
(12081306)
        467904.62   3729541.54       47.17684  (09092302)

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc                     ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                    ***
```

*** THE 1ST HIGHEST 8-HR AVERAGE CONCENTRATION VALUES FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , AREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
467947.51	3729755.56	18.48569	(11121424)	467906.64	3729686.69	19.28902	(10113008)
467907.93	3729662.23	17.86647	(10113008)	467904.07	3729595.30	15.98637	(12080424)
467931.75	3729591.89	15.54323	(12080424)	467691.85	3729489.42	20.59104	(11101524)
467579.06	3729454.38	25.99178	(12121508)	467520.10	3729393.71	25.66754	(12121508)
467463.70	3729319.37	20.11414	(12120424)	467649.98	3729387.73	22.21287	(12121508)
467709.79	3729097.21	12.87091	(12120424)	467824.29	3728994.67	11.23147	(12121508)
467904.62	3729541.54	14.98892m	(12071724)				

*** THE SUMMARY OF HIGHEST 1-HR RESULTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	58.56626	ON 09071202: AT (467947.51, 3729755.56, 421.44, 635.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

LSTCO
*** THE SUMMARY OF HIGHEST 8-HR RESULTS ***

** CONC OF CO IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	25.99178	ON 12121508: AT (467579.06, 3729454.38, 408.00, 635.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR
♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTCO\LSTCO.isc ***
07/12/16
*** AERMET - VERSION 14134 *** *** ***
16:52:22

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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 1916 Informational Message(s)

A Total of 43848 Hours Were Processed

A Total of 10 Calm Hours Identified

A Total of 1906 Missing Hours Identified (4.35 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
ME W531 103 MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for SURFDATA

****
*** AERMOD Finishes Successfully ***
****

**
****
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.1.0
** Lakes Environmental Software Inc.
** Date: 7/12/2016
** File: C:\Users\hqureshi\Desktop\Nichols Mine\9600_Modeling Files\LSTs\Mitigated\LSTNO2\LSTNO2.ADI
**
****
**
**
****

```
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc
   MODELOPT CONC OLM
   AVERTIME 1 ANNUAL
   URBANOPT 2100516
   POLLUTID NO2
   RUNORNOT RUN
** NO2 Conversion Options
   NO2STACK 0.100
   NO2EQUIL 0.900
** Hourly Ozone Data File: C:\Users\hqureshi\Desktop\Nichols Mine\9600_Modeling
Files\LSTs\Mitigated\LSTNO2\..\..\PERI_Ozone\O3PERI2008.prn
   OZONEFIL ..\..\PERI_Ozone\O3PERI2008.prn PPB
   ERRORFIL LSTNO2.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   467190.199  3730371.004      488.240
   LOCATION AREA1        AREA       466898.710  3730070.010      400.230
** Source Parameters **
   SRCPARAM PAREA1       2.075E-07     5.000        72
   AREAVERT PAREA1       467190.199 3730371.004 467293.010 3730368.225
   AREAVERT PAREA1       467329.133 3730364.057 467377.760 3730359.889
   AREAVERT PAREA1       467419.440 3730339.049 467462.509 3730302.926
   AREAVERT PAREA1       467484.739 3730276.529 467494.464 3730261.246
   AREAVERT PAREA1       467506.968 3730237.628 467518.083 3730209.841
   AREAVERT PAREA1       467519.472 3730180.665 467519.472 3730137.595
   AREAVERT PAREA1       467515.304 3730109.808 467513.915 3730094.526
   AREAVERT PAREA1       467515.304 3730073.686 467520.862 3730059.792
   AREAVERT PAREA1       467529.198 3730036.173 467531.976 3730029.227
   AREAVERT PAREA1       467533.366 3730026.448 467543.091 3730013.944
   AREAVERT PAREA1       467548.648 3730006.997 467562.542 3729990.325
   AREAVERT PAREA1       467570.878 3729981.989 467579.214 3729970.874
   AREAVERT PAREA1       467615.337 3729945.866 467625.062 3729934.752
   AREAVERT PAREA1       467634.787 3729930.584 467651.460 3729925.026
   AREAVERT PAREA1       467666.742 3729918.080 467693.140 3729909.743
   AREAVERT PAREA1       467711.201 3729902.797 467745.935 3729895.850
   AREAVERT PAREA1       467770.943 3729886.125 467787.615 3729876.399
   AREAVERT PAREA1       467807.066 3729862.506 467816.791 3729848.613
   AREAVERT PAREA1       467822.348 3729827.772 467826.516 3729816.658
   AREAVERT PAREA1       467823.738 3729788.871 467823.738 3729777.756
   AREAVERT PAREA1       467801.508 3729776.367 467773.721 3729776.367
   AREAVERT PAREA1       467733.431 3729779.146 467676.468 3729780.535
   AREAVERT PAREA1       467615.337 3729793.039 467579.214 3729802.764
   AREAVERT PAREA1       467529.198 3729816.658 467509.747 3729834.719
   AREAVERT PAREA1       467456.952 3729919.469 467347.194 3730005.608
   AREAVERT PAREA1       467372.202 3730107.030 467373.592 3730132.038
   AREAVERT PAREA1       467363.866 3730143.152 467349.973 3730159.825
   AREAVERT PAREA1       467343.026 3730173.718 467334.690 3730190.390
   AREAVERT PAREA1       467326.354 3730205.673 467313.850 3730225.123
   AREAVERT PAREA1       467299.957 3730247.353 467295.789 3730269.582
   AREAVERT PAREA1       467284.674 3730280.697 467281.895 3730295.980
   AREAVERT PAREA1       467280.506 3730304.316 467276.338 3730315.431
   AREAVERT PAREA1       467270.781 3730319.599 467265.223 3730326.545
   AREAVERT PAREA1       467262.445 3730336.271 467256.887 3730340.439
   AREAVERT PAREA1       467252.719 3730344.607 467245.772 3730348.775
```

```
   AREAVERT PAREA1       467234.658 3730355.721 467213.818 3730361.279
   SRCPARAM AREA1        0.0000144318     5.000    84.396    84.396     0.000
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED LSTNO2.rou
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE ..\..\elsi8.sfc
   PROFFILE ..\..\elsi8.PFL
   SURFDATA 3190 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 406.0 METERS
   STARTEND 2008 1 1 1 2008 12 31 24
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
** Auto-Generated Plotfiles
   PLOTFILE 1 ALL 1ST LSTNO2.AD\01H1GALL.PLT 31
   PLOTFILE ANNUAL ALL LSTNO2.AD\AN00GALL.PLT 32
   SUMMFILE LSTNO2.sum
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            3 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 CO W271      31       COCARD: O3FILE w/o O3VALs; full conv for hrs with miss O3
 CO W361      31       COCARD: Multiyear PERIOD/ANNUAL values for NO2/SO2 require MULTYEAR Opt
 ME W531     108       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

 **********************************
 *** SETUP Finishes Successfully ***
 **********************************
```

```
**MODELOPTs:   NonDFAULT CONC      ELEV      OLM       URBAN

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for     2 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =   2100516.0 ;  Urban Roughness Length =  1.000 m

**Model Allows User-Specified Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Ozone Limiting Method (OLM) Used for NO2 Conversion
           with an Equilibrium NO2/NOx Ratio of  0.900 and
           with NO OLMGROUPs
        7. Urban Roughness Length of 1.0 Meter Used.

**Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  NO2

**Note that special processing requirements apply for the 1-hour NO2 NAAQS - check available guidance.
  Model will process user-specified ranks of daily maximum 1-hour values averaged across the number of years
modeled.
  For annual NO2 NAAQS modeling, the multi-year maximum of PERIOD values can be simulated using the MULTYEAR
keyword.
  Multi-year PERIOD and 1-hour values should only be done in a single model run using the MULTYEAR option with a
  single multi-year meteorological data file using STARTEND keyword.

**Model Calculates  1 Short Term Average(s) of:   1-HR
    and Calculates ANNUAL Averages

**This Run Includes:      2 Source(s);       1 Source Group(s); and      13 Receptor(s)

              with:      0 POINT(s), including
                         0 POINTCAP(s) and      0 POINTHOR(s)
               and:      0 VOLUME source(s)
               and:      2 AREA type source(s)
               and:      0 LINE source(s)
               and:      0 OPENPIT source(s)


**This Run Includes OZONE    Values for a Single Sector
            HOURLY OZONE    Values are Available

**Model Set To Continue RUNning After the Setup Testing.
```

 **The AERMET Input Meteorological Data Version Date: 14134

 **Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ; Decay Coef. =   0.000   ; Rot. Angle
=   0.0
                  Emission Units = GRAMS/SEC   ; Emission Rate Unit Factor =
0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =   3.5 MB of RAM.

 **Detailed Error/Message File: LSTNO2.err

 **File for Summary of Results: LSTNO2.sum

 **MODELOPTs: NonDFAULT CONC   ELEV   OLM   URBAN

*** AREA SOURCE DATA ***

              NUMBER EMISSION RATE COORD (SW CORNER) BASE   RELEASE X-DIM   Y-DIM   ORIENT.   INIT.
URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC   X   Y   ELEV.   HEIGHT OF AREA   OF AREA   OF AREA   SZ
SOURCE SCALAR VARY
     ID   CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)   (DEG.) (METERS)
        BY
 -
- - - - - - - - - -

 AREA1   0   0.14432E-04 466898.7 3730070.0   400.2   5.00   84.40   84.40   0.00   0.00
YES

 **MODELOPTs: NonDFAULT CONC   ELEV   OLM   URBAN

*** AREAPOLY SOURCE DATA ***

              NUMBER EMISSION RATE   LOCATION OF AREA BASE   RELEASE NUMBER   INIT.   URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC   X   Y   ELEV.   HEIGHT OF VERTS.   SZ   SOURCE SCALAR VARY
     ID   CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS)   (METERS)   BY
 -
- - - - - -

 PAREA1   0   0.20750E-06 467190.2 3730371.0   488.2   5.00   72   0.00   YES

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID   SOURCE IDs
-----------   ----------

 ALL   PAREA1   , AREA1   ,

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

 URBAN ID   URBAN POP   SOURCE IDs
 --------   ---------   ----------

            2100516.   PAREA1   , AREA1   ,

*** IN-STACK NO2 RATIOS FOR OLM/PVMRM OPTIONS ***

SOURCE_ID   NO2_RATIO   SOURCE_ID   NO2_RATIO   SOURCE_ID   NO2_RATIO   SOURCE_ID   NO2_RATIO

PAREA1   0.100   AREA1   0.100

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

    (467947.5, 3729755.6,   421.4,   635.0,   0.0);   (467906.6, 3729686.7,   415.2,   635.0,
    0.0);
    (467907.9, 3729662.2,   415.8,   635.0,   0.0);   (467904.1, 3729595.3,   416.0,   635.0,
    0.0);
    (467931.8, 3729591.9,   416.4,   635.0,   0.0);   (467691.8, 3729489.4,   409.9,   635.0,
    0.0);
    (467579.1, 3729454.4,   408.0,   635.0,   0.0);   (467520.1, 3729393.7,   406.4,   635.0,
    0.0);
    (467463.7, 3729319.4,   402.9,   635.0,   0.0);   (467650.0, 3729387.7,   407.4,   635.0,
    0.0);

```
                                                       LSTCO
     ( 467709.8, 3729097.2,     398.4,     635.0,       0.0);        ( 467824.3, 3728994.7,     397.2,     635.0,
     0.0);
     ( 467904.6, 3729541.5,     415.3,     635.0,       0.0);
```

```
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc                  ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   16:33:25

   PAGE   8
 **MODELOPTs:   NonDFAULT CONC      ELEV      OLM       URBAN

                                            *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                               (1=YES; 0=NO)

            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1

                       METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2008   1  1  1
                                                             AND END DATE: 2008  12 31 24

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA
FILE.


                                  *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                          (METERS/SEC)

                                                 1.54,   3.09,   5.14,   8.23,  10.80,
```

```
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc                  ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   16:33:25

   PAGE   9
 **MODELOPTs:   NonDFAULT CONC      ELEV      OLM       URBAN

                                    *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   ..\..\elsi8.sfc                                                                 Met Version:
14134
   Profile file:   ..\..\elsi8.PFL
   Surface format: FREE

   Profile format: FREE

   Surface station no.:     3190                 Upper air station no.:     3190
                  Name: UNKNOWN                                 Name: UNKNOWN
                  Year:   2008                                  Year:   2008

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA
  HT
```

- -
- - -

```
08 01 01   1 01 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
5.5
08 01 01   1 02 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 03 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 04 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.8
5.5
08 01 01   1 05 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.8
5.5
08 01 01   1 06 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.8
5.5
08 01 01   1 07 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 08 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   0.54  999.00  999.   -9.0  283.8
5.5
08 01 01   1 09   27.2 -9.000 -9.000 -9.000   60. -999. -99999.0  0.23   1.00   0.33  999.00  999.   -9.0  285.9
5.5
08 01 01   1 10   74.6 -9.000 -9.000 -9.000  157. -999. -99999.0  0.23   1.00   0.25  999.00  999.   -9.0  288.1
5.5
08 01 01   1 11  107.4 -9.000 -9.000 -9.000  375. -999. -99999.0  0.23   1.00   0.23  999.00  999.   -9.0  289.9
5.5
08 01 01   1 12  122.7 -9.000 -9.000 -9.000  578. -999. -99999.0  0.23   1.00   0.22  999.00  999.   -9.0  289.9
5.5
08 01 01   1 13  121.3 -9.000 -9.000 -9.000  714. -999. -99999.0  0.23   1.00   0.22  999.00  999.   -9.0  291.4
5.5
08 01 01   1 14  102.1 -9.000 -9.000 -9.000  763. -999. -99999.0  0.23   1.00   0.23  999.00  999.   -9.0  292.0
5.5
08 01 01   1 15   65.8 -9.000 -9.000 -9.000  792. -999. -99999.0  0.23   1.00   0.27  999.00  999.   -9.0  291.4
5.5
08 01 01   1 16   16.0 -9.000 -9.000 -9.000  798. -999. -99999.0  0.23   1.00   0.36  999.00  999.   -9.0  290.4
5.5
08 01 01   1 17 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   0.63  999.00  999.   -9.0  288.8
5.5
08 01 01   1 18 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  287.5
5.5
08 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  286.4
5.5
08 01 01   1 20 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  285.4
5.5
08 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
5.5
08 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  282.5
5.5


First hour of profile data
YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
08 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
08 01 01 01    9.1 1 -999.  -99.00  -999.0   99.0  -99.00  -99.00

F indicates top of profile (=1) or below (=0)
```

♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc   ***
07/12/16
*** AERMET - VERSION 14134 ***   ***   ***
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**MODELOPTs: NonDFAULT CONC   ELEV   OLM   URBAN

*** THE ANNUAL AVERAGE CONCENTRATION   VALUES AVERAGED OVER   1 YEARS FOR SOURCE GROUP: ALL

***
INCLUDING SOURCE(S): PAREA1 , AREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
467947.51	3729755.56	0.27685	467906.64	3729686.69	0.35506
467907.93	3729662.23	0.34751	467904.07	3729595.30	0.33176
467931.75	3729591.89	0.30715	467691.85	3729489.42	0.42265
467579.06	3729454.38	0.47586	467520.10	3729393.71	0.47740
467463.70	3729319.37	0.43256	467649.98	3729387.73	0.40630
467709.79	3729097.21	0.27730	467824.29	3728994.67	0.23229
467904.62	3729541.54	0.31530			

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc *** 07/12/16
*** AERMET - VERSION 14134 *** *** *** 16:33:25

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**MODELOPTs: NonDFAULT CONC ELEV OLM URBAN

*** THE 1ST-HIGHEST MAX DAILY 1-HR AVERAGE CONCENTRATION VALUES AVERAGED OVER 1 YEARS FOR SOURCE GROUP: ALL ***
INCLUDING SOURCE(S): PAREA1 , AREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)	Y-COORD (M)	CONC
467947.51	3729755.56	11.10375	467906.64	3729686.69	10.28672
467907.93	3729662.23	9.83341	467904.07	3729595.30	8.93120
467931.75	3729591.89	8.81339	467691.85	3729489.42	8.98580
467579.06	3729454.38	9.26839	467520.10	3729393.71	8.62236
467463.70	3729319.37	7.06143	467649.98	3729387.73	7.97390
467709.79	3729097.21	4.73434	467824.29	3728994.67	4.10828
467904.62	3729541.54	8.22377			

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc *** 07/12/16
*** AERMET - VERSION 14134 *** *** *** 16:33:25

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**MODELOPTs: NonDFAULT CONC ELEV OLM URBAN

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

NETWORK GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	0.47740 AT (467520.10, 3729393.71, 406.39, 635.00, 0.00)	DC
	2ND HIGHEST VALUE IS	0.47586 AT (467579.06, 3729454.38, 408.00, 635.00, 0.00)	DC
	3RD HIGHEST VALUE IS	0.43256 AT (467463.70, 3729319.37, 402.91, 635.00, 0.00)	DC
	4TH HIGHEST VALUE IS	0.42265 AT (467691.85, 3729489.42, 409.87, 635.00, 0.00)	DC
	5TH HIGHEST VALUE IS	0.40630 AT (467649.98, 3729387.73, 407.39, 635.00, 0.00)	DC
	6TH HIGHEST VALUE IS	0.35506 AT (467906.64, 3729686.69, 415.21, 635.00, 0.00)	DC
	7TH HIGHEST VALUE IS	0.34751 AT (467907.93, 3729662.23, 415.79, 635.00, 0.00)	DC
	8TH HIGHEST VALUE IS	0.33176 AT (467904.07, 3729595.30, 416.00, 635.00, 0.00)	DC
	9TH HIGHEST VALUE IS	0.31530 AT (467904.62, 3729541.54, 415.26, 635.00, 0.00)	DC
	10TH HIGHEST VALUE IS	0.30715 AT (467931.75, 3729591.89, 416.40, 635.00, 0.00)	DC

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc *** *** 07/12/16

*** AERMET - VERSION 14134 *** *** *** 16:33:25

**MODELOPTs: NonDFAULT CONC ELEV OLM URBAN

*** THE SUMMARY OF MAXIMUM 1ST-HIGHEST MAX DAILY 1-HR RESULTS AVERAGED OVER 1 YEARS ***

** CONC OF NO2 IN MICROGRAMS/M**3 **

NETWORK GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	11.10375 AT (467947.51, 3729755.56, 421.44, 635.00, 0.00)	DC
	2ND HIGHEST VALUE IS	10.28672 AT (467906.64, 3729686.69, 415.21, 635.00, 0.00)	DC
	3RD HIGHEST VALUE IS	9.83341 AT (467907.93, 3729662.23, 415.79, 635.00, 0.00)	DC
	4TH HIGHEST VALUE IS	9.26839 AT (467579.06, 3729454.38, 408.00, 635.00, 0.00)	DC
	5TH HIGHEST VALUE IS	8.98580 AT (467691.85, 3729489.42, 409.87, 635.00, 0.00)	DC
	6TH HIGHEST VALUE IS	8.93120 AT (467904.07, 3729595.30, 416.00, 635.00, 0.00)	DC

```
          7TH HIGHEST VALUE IS       8.81339 AT (  467931.75,  3729591.89,   416.40,   635.00,    0.00)  DC

          8TH HIGHEST VALUE IS       8.62236 AT (  467520.10,  3729393.71,   406.39,   635.00,    0.00)  DC

          9TH HIGHEST VALUE IS       8.22377 AT (  467904.62,  3729541.54,   415.26,   635.00,    0.00)  DC

         10TH HIGHEST VALUE IS       7.97390 AT (  467649.98,  3729387.73,   407.39,   635.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTNO2\LSTNO2.isc                    ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                    ***
   16:33:25

   PAGE  14
 **MODELOPTs:   NonDFAULT CONC      ELEV      OLM       URBAN

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            3 Warning Message(s)
 A Total of          215 Informational Message(s)

 A Total of         8784 Hours Were Processed

 A Total of            3 Calm Hours Identified

 A Total of          212 Missing Hours Identified (  2.41 Percent)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 CO W271      31       COCARD: O3FILE w/o O3VALs; full conv for hrs with miss O3
 CO W361      31       COCARD: Multiyear PERIOD/ANNUAL values for NO2/SO2 require MULTYEAR Opt
 ME W531     108       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

    ***********************************
    *** AERMOD Finishes Successfully ***
    ***********************************
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.1.0
** Lakes Environmental Software Inc.
** Date: 7/12/2016
** File: C:\Users\hqureshi\Desktop\Nichols Mine\9600_Modeling Files\LSTs\Mitigated\LSTPM10\LSTPM10.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
```

```
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc
   MODELOPT DFAULT CONC
   AVERTIME 24 ANNUAL
   URBANOPT 2100516
   POLLUTID PM_10
   RUNORNOT RUN
   ERRORFIL LSTPM10.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   467190.199  3730371.004      488.240
   LOCATION AREA1        AREA       466898.710  3730070.010      400.230
** DESCRSRC Asphalt Batch Plant
** Source Parameters **
   SRCPARAM PAREA1       1.5551E-07     0.000        72     1.000
   AREAVERT PAREA1       467190.199 3730371.004 467293.010 3730368.225
   AREAVERT PAREA1       467329.133 3730364.057 467377.760 3730359.889
   AREAVERT PAREA1       467419.440 3730339.049 467462.509 3730302.926
   AREAVERT PAREA1       467484.739 3730276.529 467494.464 3730261.246
   AREAVERT PAREA1       467506.968 3730237.628 467518.083 3730209.841
   AREAVERT PAREA1       467519.472 3730180.665 467519.472 3730137.595
   AREAVERT PAREA1       467515.304 3730109.808 467513.915 3730094.526
   AREAVERT PAREA1       467515.304 3730073.686 467520.862 3730059.792
   AREAVERT PAREA1       467529.198 3730036.173 467531.976 3730029.227
   AREAVERT PAREA1       467533.366 3730026.448 467543.091 3730013.944
   AREAVERT PAREA1       467548.648 3730006.997 467562.542 3729990.325
   AREAVERT PAREA1       467570.878 3729981.989 467579.214 3729970.874
   AREAVERT PAREA1       467615.337 3729945.866 467625.062 3729934.752
   AREAVERT PAREA1       467634.787 3729930.584 467651.460 3729925.026
   AREAVERT PAREA1       467666.742 3729918.080 467693.140 3729909.743
   AREAVERT PAREA1       467711.201 3729902.797 467745.935 3729895.850
   AREAVERT PAREA1       467770.943 3729886.125 467787.615 3729876.399
   AREAVERT PAREA1       467807.066 3729862.506 467816.791 3729848.613
   AREAVERT PAREA1       467822.348 3729827.772 467826.516 3729816.658
   AREAVERT PAREA1       467823.738 3729788.871 467823.738 3729777.756
   AREAVERT PAREA1       467801.508 3729776.367 467773.721 3729776.367
   AREAVERT PAREA1       467733.431 3729779.146 467676.468 3729780.535
   AREAVERT PAREA1       467615.337 3729793.039 467579.214 3729802.764
   AREAVERT PAREA1       467529.198 3729816.658 467509.747 3729834.719
   AREAVERT PAREA1       467456.952 3729919.469 467347.194 3730005.608
   AREAVERT PAREA1       467372.202 3730107.030 467373.592 3730132.038
   AREAVERT PAREA1       467363.866 3730143.152 467349.973 3730159.825
   AREAVERT PAREA1       467343.026 3730173.718 467334.690 3730190.390
   AREAVERT PAREA1       467326.354 3730205.673 467313.850 3730225.123
   AREAVERT PAREA1       467299.957 3730247.353 467295.789 3730269.582
   AREAVERT PAREA1       467284.674 3730280.697 467281.895 3730295.980
   AREAVERT PAREA1       467280.506 3730304.316 467276.338 3730315.431
   AREAVERT PAREA1       467270.781 3730319.599 467265.223 3730326.545
   AREAVERT PAREA1       467262.445 3730336.271 467256.887 3730340.439
   AREAVERT PAREA1       467252.719 3730344.607 467245.772 3730348.775
   AREAVERT PAREA1       467234.658 3730355.721 467213.818 3730361.279
   SRCPARAM AREA1        8.5576E-06     5.000    84.395    84.395     0.000
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
```

```
**
**
RE STARTING
   INCLUDED LSTPM10.rou
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE ..\..\elsi8.sfc
   PROFFILE ..\..\elsi8.PFL
   SURFDATA 3190 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 24 1ST
** Maximum Annual Average POST files for Each Met Year
   POSTFILE ANNUAL ALL PLOT LSTPM10.AD\ANNUAL_G001.PLT 31
** Auto-Generated Plotfiles
   PLOTFILE 24 ALL 1ST LSTPM10.AD\24H1GALL.PLT 32
   PLOTFILE ANNUAL ALL LSTPM10.AD\AN00GALL.PLT 33
   SUMMFILE LSTPM10.sum
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W531     103       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc                ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                  ***
   16:09:51

   PAGE   1
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

- - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   -- DEPOSITION LOGIC --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION. DRYDPLT = F
 **Model Uses NO WET DEPLETION. WETDPLT = F

 **Model Uses URBAN Dispersion Algorithm for the SBL for   2 Source(s),
   for Total of   1 Urban Area(s):
   Urban Population =   2100516.0 ; Urban Roughness Length = 1.000 m

 **Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

 **Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of: PM_10

 **Model Calculates 1 Short Term Average(s) of: 24-HR
     and Calculates ANNUAL Averages

 **This Run Includes: 2 Source(s);   1 Source Group(s); and   13 Receptor(s)

                with: 0 POINT(s), including
                           0 POINTCAP(s) and   0 POINTHOR(s)
                 and: 0 VOLUME source(s)
                 and: 2 AREA type source(s)
                 and: 0 LINE source(s)
                 and: 0 OPENPIT source(s)

 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date: 14134

 **Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

 **NOTE: The Following Flags May Appear Following CONC Values: c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs: Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ; Decay Coef. =   0.000   ; Rot. Angle
=   0.0
                  Emission Units = GRAMS/SEC   ; Emission Rate Unit Factor =
0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =   3.5 MB of RAM.

 **Detailed Error/Message File: LSTPM10.err

*** AREA SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	COORD (SW CORNER) X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	X-DIM OF AREA (METERS)	Y-DIM OF AREA (METERS)	ORIENT. OF AREA (DEG.)	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
AREA1	0	0.85576E-05	466898.7	3730070.0	400.2	5.00	84.39	84.39	0.00	0.00	YES	

*** AREAPOLY SOURCE DATA ***

SOURCE ID	NUMBER PART. CATS.	EMISSION RATE (GRAMS/SEC /METER**2)	LOCATION OF AREA X (METERS)	Y (METERS)	BASE ELEV. (METERS)	RELEASE HEIGHT (METERS)	NUMBER OF VERTS.	INIT. SZ (METERS)	URBAN SOURCE	EMISSION RATE SCALAR VARY BY
PAREA1	0	0.15551E-06	467190.2	3730371.0	488.2	0.00	72	1.00	YES	

*** SOURCE IDs DEFINING SOURCE GROUPS ***

SRCGROUP ID	SOURCE IDs
ALL	PAREA1 , AREA1 ,

LSTCO
*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID   URBAN POP   SOURCE IDs
--------   ---------   ----------

2100516.   PAREA1   , AREA1   ,

♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc   ***
07/12/16
*** AERMET - VERSION 14134 ***   ***   ***
16:09:51

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**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(467947.5, 3729755.6,   421.4,   635.0,   0.0);   (467906.6, 3729686.7,   415.2,   635.0,
0.0);
(467907.9, 3729662.2,   415.8,   635.0,   0.0);   (467904.1, 3729595.3,   416.0,   635.0,
0.0);
(467931.8, 3729591.9,   416.4,   635.0,   0.0);   (467691.8, 3729489.4,   409.9,   635.0,
0.0);
(467579.1, 3729454.4,   408.0,   635.0,   0.0);   (467520.1, 3729393.7,   406.4,   635.0,
0.0);
(467463.7, 3729319.4,   402.9,   635.0,   0.0);   (467650.0, 3729387.7,   407.4,   635.0,
0.0);
(467709.8, 3729097.2,   398.4,   635.0,   0.0);   (467824.3, 3728994.7,   397.2,   635.0,
0.0);
(467904.6, 3729541.5,   415.3,   635.0,   0.0);

♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc   ***
07/12/16
*** AERMET - VERSION 14134 ***   ***   ***
16:09:51

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**MODELOPTs: RegDFAULT CONC   ELEV   URBAN

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA
FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,
♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc ***
07/12/16
*** AERMET - VERSION 14134 *** *** ***
16:09:51

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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\elsi8.sfc Met Version:
14134
Profile file: ..\..\elsi8.PFL
Surface format: FREE

Profile format: FREE

Surface station no.: 3190 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2008 Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	284.2	5.5
08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	0.54	999.00	999.	-9.0	283.8	5.5
08	01	01	1	09	27.2	-9.000	-9.000	-9.000	60.	-999.	-99999.0	0.23	1.00	0.33	999.00	999.	-9.0	285.9	5.5
08	01	01	1	10	74.6	-9.000	-9.000	-9.000	157.	-999.	-99999.0	0.23	1.00	0.25	999.00	999.	-9.0	288.1	5.5
08	01	01	1	11	107.4	-9.000	-9.000	-9.000	375.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	289.9	5.5
08	01	01	1	12	122.7	-9.000	-9.000	-9.000	578.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	289.9	5.5
08	01	01	1	13	121.3	-9.000	-9.000	-9.000	714.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	291.4	5.5
08	01	01	1	14	102.1	-9.000	-9.000	-9.000	763.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	292.0	5.5
08	01	01	1	15	65.8	-9.000	-9.000	-9.000	792.	-999.	-99999.0	0.23	1.00	0.27	999.00	999.	-9.0	291.4	5.5
08	01	01	1	16	16.0	-9.000	-9.000	-9.000	798.	-999.	-99999.0	0.23	1.00	0.36	999.00	999.	-9.0	290.4	5.5
08	01	01	1	17	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	0.63	999.00	999.	-9.0	288.8	5.5
08	01	01	1	18	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	287.5	5.5
08	01	01	1	19	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	286.4	5.5
08	01	01	1	20	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	285.4	

```
5.5
08 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
5.5
08 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
5.5
08 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  282.5
5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 08 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 08 01 01 01    9.1 1 -999.  -99.00  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc                ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   16:09:51

   PAGE   9
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                   *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR SOURCE GROUP: ALL
 ***
                                  INCLUDING SOURCE(S):     PAREA1      , AREA1       ,

                                           *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                       ** CONC OF PM_10    IN MICROGRAMS/M**3                          **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)   Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 - - - - - - - -
         467947.51    3729755.56        0.21484                      467906.64    3729686.69        0.29394

         467907.93    3729662.23        0.28880                      467904.07    3729595.30        0.27561

         467931.75    3729591.89        0.25350                      467691.85    3729489.42        0.31925

         467579.06    3729454.38        0.34872                      467520.10    3729393.71        0.34547

         467463.70    3729319.37        0.30952                      467649.98    3729387.73        0.29855

         467709.79    3729097.21        0.20055                      467824.29    3728994.67        0.16884

         467904.62    3729541.54        0.26007

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc                ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   16:09:51

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 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                              *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL
 ***
                                  INCLUDING SOURCE(S):     PAREA1      , AREA1       ,

                                           *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                       ** CONC OF PM_10    IN MICROGRAMS/M**3                          **

      X-COORD (M)  Y-COORD (M)        CONC     (YYMMDDHH)              X-COORD (M)  Y-COORD (M)        CONC
```

```
(YYMMDDHH)
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -
        467947.51   3729755.56        1.32882  (11111524)                467906.64   3729686.69        1.44308
(11110824)
        467907.93   3729662.23        1.33102  (11110824)                467904.07   3729595.30        1.03046
(11110824)
        467931.75   3729591.89        1.02450  (11110824)                467691.85   3729489.42        1.29451m
(11092424)
        467579.06   3729454.38        1.42829  (12070724)                467520.10   3729393.71        1.53581
(12070724)
        467463.70   3729319.37        1.24923  (12120424)                467649.98   3729387.73        1.20143
(12070724)
        467709.79   3729097.21        0.84203  (12120424)                467824.29   3728994.67        0.73789
(12120424)
        467904.62   3729541.54        1.04695m (12012324)

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc                ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                     ***
   16:09:51

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 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                       *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   5 YEARS ***


                                        ** CONC OF PM_10    IN MICROGRAMS/M**3                         **


NETWORK
GROUP ID                        AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE
GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- -

ALL       1ST HIGHEST VALUE IS       0.34872 AT (  467579.06,  3729454.38,   408.00,   635.00,    0.00)  DC

          2ND HIGHEST VALUE IS       0.34547 AT (  467520.10,  3729393.71,   406.39,   635.00,    0.00)  DC

          3RD HIGHEST VALUE IS       0.31925 AT (  467691.85,  3729489.42,   409.87,   635.00,    0.00)  DC

          4TH HIGHEST VALUE IS       0.30952 AT (  467463.70,  3729319.37,   402.91,   635.00,    0.00)  DC

          5TH HIGHEST VALUE IS       0.29855 AT (  467649.98,  3729387.73,   407.39,   635.00,    0.00)  DC

          6TH HIGHEST VALUE IS       0.29394 AT (  467906.64,  3729686.69,   415.21,   635.00,    0.00)  DC

          7TH HIGHEST VALUE IS       0.28880 AT (  467907.93,  3729662.23,   415.79,   635.00,    0.00)  DC

          8TH HIGHEST VALUE IS       0.27561 AT (  467904.07,  3729595.30,   416.00,   635.00,    0.00)  DC

          9TH HIGHEST VALUE IS       0.26007 AT (  467904.62,  3729541.54,   415.26,   635.00,    0.00)  DC

         10TH HIGHEST VALUE IS       0.25350 AT (  467931.75,  3729591.89,   416.40,   635.00,    0.00)  DC


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc                ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                     ***
   16:09:51
```

*** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

** CONC OF PM_10 IN MICROGRAMS/M**3 **

GROUP ID	AVERAGE CONC	DATE (YYMMDDHH)	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	NETWORK OF TYPE	GRID-ID
ALL	HIGH 1ST HIGH VALUE IS	1.53581	ON 12070724: AT (467520.10, 3729393.71, 406.39, 635.00, 0.00)	DC	

*** RECEPTOR TYPES: GC = GRIDCART
GP = GRIDPOLR
DC = DISCCART
DP = DISCPOLR

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LSTPM10\LSTPM10.isc *** 07/12/16
*** AERMET - VERSION 14134 *** *** *** 16:09:51

*** Message Summary : AERMOD Model Execution ***

--------- Summary of Total Messages --------

A Total of 0 Fatal Error Message(s)
A Total of 1 Warning Message(s)
A Total of 1916 Informational Message(s)

A Total of 43848 Hours Were Processed

A Total of 10 Calm Hours Identified

A Total of 1906 Missing Hours Identified (4.35 Percent)

******** FATAL ERROR MESSAGES ********
*** NONE ***

******** WARNING MESSAGES ********
ME W531 103 MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for SURFDATA

****
*** AERMOD Finishes Successfully ***
****

**
****
**
** AERMOD Input Produced by:
** AERMOD View Ver. 9.1.0
** Lakes Environmental Software Inc.
** Date: 7/12/2016
** File: C:\Users\hqureshi\Desktop\Nichols Mine\9600_Modeling Files\LSTs\Mitigated\LST PM25\LST PM25.ADI
**

```
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc
   MODELOPT DFAULT CONC
   AVERTIME 24 ANNUAL
   URBANOPT 2100516
   POLLUTID PM_2.5
   RUNORNOT RUN
   ERRORFIL "LST PM25.err"
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION PAREA1       AREAPOLY   467190.199  3730371.004      488.240
   LOCATION AREA1        AREA       466898.710  3730070.010      400.230
** DESCRSRC Asphalt Batch Plant
** Source Parameters **
   SRCPARAM PAREA1       3.6019E-08     0.000        72     1.000
   AREAVERT PAREA1       467190.199 3730371.004 467293.010 3730368.225
   AREAVERT PAREA1       467329.133 3730364.057 467377.760 3730359.889
   AREAVERT PAREA1       467419.440 3730339.049 467462.509 3730302.926
   AREAVERT PAREA1       467484.739 3730276.529 467494.464 3730261.246
   AREAVERT PAREA1       467506.968 3730237.628 467518.083 3730209.841
   AREAVERT PAREA1       467519.472 3730180.665 467519.472 3730137.595
   AREAVERT PAREA1       467515.304 3730109.808 467513.915 3730094.526
   AREAVERT PAREA1       467515.304 3730073.686 467520.862 3730059.792
   AREAVERT PAREA1       467529.198 3730036.173 467531.976 3730029.227
   AREAVERT PAREA1       467533.366 3730026.448 467543.091 3730013.944
   AREAVERT PAREA1       467548.648 3730006.997 467562.542 3729990.325
   AREAVERT PAREA1       467570.878 3729981.989 467579.214 3729970.874
   AREAVERT PAREA1       467615.337 3729945.866 467625.062 3729934.752
   AREAVERT PAREA1       467634.787 3729930.584 467651.460 3729925.026
   AREAVERT PAREA1       467666.742 3729918.080 467693.140 3729909.743
   AREAVERT PAREA1       467711.201 3729902.797 467745.935 3729895.850
   AREAVERT PAREA1       467770.943 3729886.125 467787.615 3729876.399
   AREAVERT PAREA1       467807.066 3729862.506 467816.791 3729848.613
   AREAVERT PAREA1       467822.348 3729827.772 467826.516 3729816.658
   AREAVERT PAREA1       467823.738 3729788.871 467823.738 3729777.756
   AREAVERT PAREA1       467801.508 3729776.367 467773.721 3729776.367
   AREAVERT PAREA1       467733.431 3729779.146 467676.468 3729780.535
   AREAVERT PAREA1       467615.337 3729793.039 467579.214 3729802.764
   AREAVERT PAREA1       467529.198 3729816.658 467509.747 3729834.719
   AREAVERT PAREA1       467456.952 3729919.469 467347.194 3730005.608
   AREAVERT PAREA1       467372.202 3730107.030 467373.592 3730132.038
   AREAVERT PAREA1       467363.866 3730143.152 467349.973 3730159.825
   AREAVERT PAREA1       467343.026 3730173.718 467334.690 3730190.390
   AREAVERT PAREA1       467326.354 3730205.673 467313.850 3730225.123
   AREAVERT PAREA1       467299.957 3730247.353 467295.789 3730269.582
   AREAVERT PAREA1       467284.674 3730280.697 467281.895 3730295.980
   AREAVERT PAREA1       467280.506 3730304.316 467276.338 3730315.431
   AREAVERT PAREA1       467270.781 3730319.599 467265.223 3730326.545
   AREAVERT PAREA1       467262.445 3730336.271 467256.887 3730340.439
   AREAVERT PAREA1       467252.719 3730344.607 467245.772 3730348.775
   AREAVERT PAREA1       467234.658 3730355.721 467213.818 3730361.279
```

```
   SRCPARAM AREA1        8.2478E-06     5.000    84.396    84.396     0.000
   URBANSRC ALL
   SRCGROUP ALL
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
**
**
RE STARTING
   INCLUDED "LST PM25.rou"
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
   SURFFILE ..\..\elsi8.sfc
   PROFFILE ..\..\elsi8.PFL
   SURFDATA 3190 2008
   UAIRDATA 3190 2008
   SITEDATA 99999 2008
   PROFBASE 406.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 24 1ST
** Maximum Annual Average POST files for Each Met Year
   POSTFILE ANNUAL ALL PLOT "LST PM25.AD\ANNUAL_G001.PLT" 31
** Auto-Generated Plotfiles
   PLOTFILE 24 ALL 1ST "LST PM25.AD\24H1GALL.PLT" 32
   PLOTFILE ANNUAL ALL "LST PM25.AD\AN00GALL.PLT" 33
   SUMMFILE "LST PM25.sum"
OU FINISHED


  *** Message Summary For AERMOD Model Setup ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of            0 Informational Message(s)


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
 ME W531     103       MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for      SURFDATA

 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************
```

```
**MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                                          ***     MODEL SETUP OPTIONS SUMMARY       ***
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - -

**Model Is Setup For Calculation of Average CONCentration Values.

  --  DEPOSITION LOGIC  --
**NO GAS DEPOSITION Data Provided.
**NO PARTICLE DEPOSITION Data Provided.
**Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
**Model Uses NO WET DEPLETION.  WETDPLT  =  F

**Model Uses URBAN Dispersion Algorithm for the SBL for     2 Source(s),
  for Total of    1 Urban Area(s):
  Urban Population =   2100516.0 ;  Urban Roughness Length =  1.000 m

**Model Uses Regulatory DEFAULT Options:
        1. Stack-tip Downwash.
        2. Model Accounts for ELEVated Terrain Effects.
        3. Use Calms Processing Routine.
        4. Use Missing Data Processing Routine.
        5. No Exponential Decay.
        6. Urban Roughness Length of 1.0 Meter Assumed.

**Other Options Specified:
        TEMP_Sub - Meteorological data includes TEMP substitutions

**Model Assumes No FLAGPOLE Receptor Heights.

**The User Specified a Pollutant Type of:  PM_2.5

**Model Calculates  1 Short Term Average(s) of:  24-HR
    and Calculates ANNUAL Averages

**This Run Includes:      2 Source(s);       1 Source Group(s); and      13 Receptor(s)

               with:      0 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:      0 VOLUME source(s)
                and:      2 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 OPENPIT source(s)


**Model Set To Continue RUNning After the Setup Testing.

**The AERMET Input Meteorological Data Version Date:  14134

**Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs Tables of Highest Short Term Values by Receptor (RECTABLE Keyword)
         Model Outputs External File(s) of Concurrent Values for Postprocessing (POSTFILE Keyword)
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)
         Model Outputs Separate Summary File of High Ranked Values (SUMMFILE Keyword)

**NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                               m for Missing Hours
                                                               b for Both Calm and Missing Hours

**Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =   406.00 ;  Decay Coef. =    0.000     ;  Rot. Angle
=     0.0
```

                Emission Units = GRAMS/SEC   ; Emission Rate Unit Factor =
0.10000E+07
                Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =   3.5 MB of RAM.

 **Detailed Error/Message File: LST PM25.err

 **File for Summary of Results: LST PM25.sum

♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc   ***
    07/12/16
 *** AERMET - VERSION 14134 ***   ***   ***
   16:22:46

   PAGE   2
 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

                                                *** AREA SOURCE DATA ***

              NUMBER EMISSION RATE COORD (SW CORNER) BASE   RELEASE X-DIM   Y-DIM   ORIENT.   INIT.
URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC   X   Y   ELEV.   HEIGHT OF AREA   OF AREA   OF AREA   SZ
SOURCE SCALAR VARY
     ID   CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)   (DEG.) (METERS)
        BY
 -
- - - - - - - - - -

 AREA1   0   0.82478E-05 466898.7 3730070.0   400.2   5.00   84.40   84.40   0.00   0.00
YES
♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc   ***
    07/12/16
 *** AERMET - VERSION 14134 ***   ***   ***
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 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

                                             *** AREAPOLY SOURCE DATA ***

              NUMBER EMISSION RATE   LOCATION OF AREA BASE   RELEASE NUMBER   INIT.   URBAN EMISSION RATE
   SOURCE   PART. (GRAMS/SEC   X   Y   ELEV.   HEIGHT OF VERTS.   SZ   SOURCE SCALAR VARY
     ID   CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS)   (METERS)   BY
 -
- - - - - -

 PAREA1   0   0.36019E-07 467190.2 3730371.0   488.2   0.00   72   1.00   YES
♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc   ***
    07/12/16
 *** AERMET - VERSION 14134 ***   ***   ***
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 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

                                        *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID   SOURCE IDs
 -----------   ----------

  ALL   PAREA1   , AREA1   ,
♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc   ***

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*** AERMET - VERSION 14134 *** *** ***
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** SOURCE IDs DEFINED AS URBAN SOURCES ***

URBAN ID	URBAN POP	SOURCE IDs
	2100516.	PAREA1 , AREA1 ,

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc ***
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*** AERMET - VERSION 14134 *** *** ***
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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** DISCRETE CARTESIAN RECEPTORS ***
(X-COORD, Y-COORD, ZELEV, ZHILL, ZFLAG)
(METERS)

(467947.5, 3729755.6, 421.4, 635.0, 0.0); (467906.6, 3729686.7, 415.2, 635.0, 0.0);
(467907.9, 3729662.2, 415.8, 635.0, 0.0); (467904.1, 3729595.3, 416.0, 635.0, 0.0);
(467931.8, 3729591.9, 416.4, 635.0, 0.0); (467691.8, 3729489.4, 409.9, 635.0, 0.0);
(467579.1, 3729454.4, 408.0, 635.0, 0.0); (467520.1, 3729393.7, 406.4, 635.0, 0.0);
(467463.7, 3729319.4, 402.9, 635.0, 0.0); (467650.0, 3729387.7, 407.4, 635.0, 0.0);
(467709.8, 3729097.2, 398.4, 635.0, 0.0); (467824.3, 3728994.7, 397.2, 635.0, 0.0);
(467904.6, 3729541.5, 415.3, 635.0, 0.0);

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc ***
07/12/16
*** AERMET - VERSION 14134 *** *** ***
16:22:46

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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
(1=YES; 0=NO)

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1

NOTE: METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA FILE.

*** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
(METERS/SEC)

1.54, 3.09, 5.14, 8.23, 10.80,

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc *** *** 07/12/16
*** AERMET - VERSION 14134 *** *** *** 16:22:46

**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

Surface file: ..\..\elsi8.sfc Met Version: 14134
Profile file: ..\..\elsi8.PFL
Surface format: FREE

Profile format: FREE

Surface station no.: 3190 Upper air station no.: 3190
Name: UNKNOWN Name: UNKNOWN
Year: 2008 Year: 2008

First 24 hours of scalar data

YR	MO	DY	JDY	HR	H0	U*	W*	DT/DZ	ZICNV	ZIMCH	M-O LEN	Z0	BOWEN	ALBEDO	REF WS	WD	HT	REF TA	HT
08	01	01	1	01	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	284.2	5.5
08	01	01	1	02	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	03	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	04	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	05	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	06	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.8	5.5
08	01	01	1	07	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	1.00	999.00	999.	-9.0	283.1	5.5
08	01	01	1	08	-999.0	-9.000	-9.000	-9.000	-999.	-999.	-99999.0	0.23	1.00	0.54	999.00	999.	-9.0	283.8	5.5
08	01	01	1	09	27.2	-9.000	-9.000	-9.000	60.	-999.	-99999.0	0.23	1.00	0.33	999.00	999.	-9.0	285.9	5.5
08	01	01	1	10	74.6	-9.000	-9.000	-9.000	157.	-999.	-99999.0	0.23	1.00	0.25	999.00	999.	-9.0	288.1	5.5
08	01	01	1	11	107.4	-9.000	-9.000	-9.000	375.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	289.9	5.5
08	01	01	1	12	122.7	-9.000	-9.000	-9.000	578.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	289.9	5.5
08	01	01	1	13	121.3	-9.000	-9.000	-9.000	714.	-999.	-99999.0	0.23	1.00	0.22	999.00	999.	-9.0	291.4	5.5
08	01	01	1	14	102.1	-9.000	-9.000	-9.000	763.	-999.	-99999.0	0.23	1.00	0.23	999.00	999.	-9.0	292.0	5.5
08	01	01	1	15	65.8	-9.000	-9.000	-9.000	792.	-999.	-99999.0	0.23	1.00	0.27	999.00	999.	-9.0	291.4	5.5
08	01	01	1	16	16.0	-9.000	-9.000	-9.000	798.	-999.	-99999.0	0.23	1.00	0.36	999.00	999.	-9.0	290.4	

```
 5.5
 08 01 01   1 17 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   0.63  999.00  999.   -9.0  288.8
 5.5
 08 01 01   1 18 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  287.5
 5.5
 08 01 01   1 19 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  286.4
 5.5
 08 01 01   1 20 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  285.4
 5.5
 08 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  284.2
 5.5
 08 01 01   1 22 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
 5.5
 08 01 01   1 23 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  283.1
 5.5
 08 01 01   1 24 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.23   1.00   1.00  999.00  999.   -9.0  282.5
 5.5


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 08 01 01 01    5.5 0 -999.  -99.00   284.3   99.0  -99.00  -99.00
 08 01 01 01    9.1 1 -999.  -99.00  -999.0   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc               ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                    ***
   16:22:46

   PAGE   9
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                   *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR SOURCE GROUP: ALL
 ***
                                  INCLUDING SOURCE(S):     PAREA1      , AREA1       ,

                                           *** DISCRETE CARTESIAN RECEPTOR POINTS ***

                                       ** CONC OF PM_2.5   IN MICROGRAMS/M**3                          **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)   Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
 - - - - - - - -
         467947.51    3729755.56        0.10881                     467906.64    3729686.69        0.14158

         467907.93    3729662.23        0.14147                     467904.07    3729595.30        0.14303

         467931.75    3729591.89        0.13350                     467691.85    3729489.42        0.21614

         467579.06    3729454.38        0.26775                     467520.10    3729393.71        0.28069

         467463.70    3729319.37        0.25791                     467649.98    3729387.73        0.22697

         467709.79    3729097.21        0.16225                     467824.29    3728994.67        0.13507

         467904.62    3729541.54        0.14269

♀ *** AERMOD - VERSION  15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc               ***
    07/12/16
 *** AERMET - VERSION  14134 ***   ***                                                                    ***
   16:22:46

   PAGE  10
 **MODELOPTs:   RegDFAULT CONC      ELEV      URBAN

                               *** THE   1ST HIGHEST 24-HR AVERAGE CONCENTRATION   VALUES FOR SOURCE GROUP:  ALL
```

***
INCLUDING SOURCE(S): PAREA1 , AREA1 ,

*** DISCRETE CARTESIAN RECEPTOR POINTS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)	X-COORD (M)	Y-COORD (M)	CONC	(YYMMDDHH)
467947.51	3729755.56	0.83654	(11111524)	467906.64	3729686.69	0.96469	(11110824)
467907.93	3729662.23	0.93688	(11110824)	467904.07	3729595.30	0.79262	(11110824)
467931.75	3729591.89	0.78487	(11110824)	467691.85	3729489.42	1.09163m	(11101524)
467579.06	3729454.38	1.37623	(12070724)	467520.10	3729393.71	1.48022	(12070724)
467463.70	3729319.37	1.17903	(12120424)	467649.98	3729387.73	1.15662	(12070724)
467709.79	3729097.21	0.76767	(12120424)	467824.29	3728994.67	0.64846	(12120424)
467904.62	3729541.54	0.85679m	(12012324)				

♀ *** AERMOD - VERSION 15181 *** *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc *** 07/12/16
*** AERMET - VERSION 14134 *** *** *** 16:22:46

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**MODELOPTs: RegDFAULT CONC ELEV URBAN

*** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER 5 YEARS ***

** CONC OF PM_2.5 IN MICROGRAMS/M**3 **

NETWORK GROUP ID	AVERAGE CONC	RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)	OF TYPE GRID-ID
ALL	1ST HIGHEST VALUE IS	0.28069 AT (467520.10, 3729393.71, 406.39, 635.00, 0.00)	DC
	2ND HIGHEST VALUE IS	0.26775 AT (467579.06, 3729454.38, 408.00, 635.00, 0.00)	DC
	3RD HIGHEST VALUE IS	0.25791 AT (467463.70, 3729319.37, 402.91, 635.00, 0.00)	DC
	4TH HIGHEST VALUE IS	0.22697 AT (467649.98, 3729387.73, 407.39, 635.00, 0.00)	DC
	5TH HIGHEST VALUE IS	0.21614 AT (467691.85, 3729489.42, 409.87, 635.00, 0.00)	DC
	6TH HIGHEST VALUE IS	0.16225 AT (467709.79, 3729097.21, 398.41, 635.00, 0.00)	DC
	7TH HIGHEST VALUE IS	0.14303 AT (467904.07, 3729595.30, 416.00, 635.00, 0.00)	DC
	8TH HIGHEST VALUE IS	0.14269 AT (467904.62, 3729541.54, 415.26, 635.00, 0.00)	DC
	9TH HIGHEST VALUE IS	0.14158 AT (467906.64, 3729686.69, 415.21, 635.00, 0.00)	DC
	10TH HIGHEST VALUE IS	0.14147 AT (467907.93, 3729662.23, 415.79, 635.00, 0.00)	DC

 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc   ***
    07/12/16
 *** AERMET - VERSION 14134 ***   ***   ***
   16:22:46

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 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

                                          *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

                                    ** CONC OF PM_2.5   IN MICROGRAMS/M**3   **

                                                 DATE
          NETWORK
GROUP ID   AVERAGE CONC   (YYMMDDHH)   RECEPTOR (XR, YR, ZELEV, ZHILL, ZFLAG)
 OF TYPE GRID-ID
- -
- - - - - - - -

ALL   HIGH   1ST HIGH VALUE IS   1.48022 ON 12070724: AT (467520.10, 3729393.71,   406.39,   635.00,
0.00) DC

 *** RECEPTOR TYPES: GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
♀ *** AERMOD - VERSION 15181 ***   *** C:\Lakes\AERMOD View\NicholsMine\LST PM25\LST PM25.isc   ***
    07/12/16
 *** AERMET - VERSION 14134 ***   ***   ***
   16:22:46

   PAGE 13
 **MODELOPTs: RegDFAULT CONC   ELEV   URBAN

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of   0 Fatal Error Message(s)
 A Total of   1 Warning Message(s)
 A Total of   1916 Informational Message(s)

 A Total of   43848 Hours Were Processed

 A Total of   10 Calm Hours Identified

 A Total of   1906 Missing Hours Identified (4.35 Percent)

    ******** FATAL ERROR MESSAGES ********
               *** NONE ***

    ********   WARNING MESSAGES   ********
 ME W531   103   MEOPEN: CAUTION! Met Station ID Missing from SURFFILE for   SURFDATA

    ****
    *** AERMOD Finishes Successfully ***
    ****

APPENDIX 3.5:

ASPHALT BATCH PLANT EMISSIONS

Associates Environmental

Comparison of Uncontrolled and Controlled Hot Mix Asphalt Plant Emissions

Covering:

Nichols Road Partners, LLC
24890 Maitri Road
Corona, CA 90717

Prepared For:

Nichols Road Partners, LLC
P.O. Box 78450
Corona, CA 92877

Prepared by:

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16882 Bolsa Chica Street, Suite 202
Huntington Beach, CA 92649

Project No: 440

Associates Environmental

TABLE OF CONTENTS

Attachments

Appendices

Introduction:

Nichols Road Partners, LLC is proposing to install a Hot Mix Asphalt (HMA) Plant at its Nichols Road location. Nichols Road Partners, LLC has requested that Associates Environmental (AE) prepare an evaluation which compares emissions from the following two scenarios:

- Scenario One: An uncontrolled (or modestly controlled) HMA Plant, relying largely on default EPA emission factors and uncontrolled PM_{10} values.
- Scenario Two: An HMA Plant subject to Best Available Control Technology (BACT), which the facility will be required to implement upon receiving permits to operate from the South Coast Air Quality Management District (SCAQMD).

Assumptions and Emission Factors:

Associates Environmental developed a general plant layout and flow diagram as presented in Appendix A. Six emission sources related to the operation of the HMA Plant were considered:

- Cold Feed System
- Asphalt Drum Dryer
- Asphalt Silo Loading
- Asphalt Load Out
- Hot Oil Heater
- Asphalt Oil Storage Tank

PM_{10} emissions from the Cold Feed System were estimated using emission factors obtained from the Environmental Protection Agency's AP-42, Chapter 11.19.2, Table 11.19.2-2 (see Appendix B). The difference in the uncontrolled and controlled scenarios was the use of water sprays in the controlled scenario.

Emissions from the Asphalt Drum Dryer, Silo Loading and Asphalt Load Out uncontrolled scenario were estimated using emission factors obtained from the document, "Hot Mix Asphalt Plants Emission Estimation Report, EPA-454/R-00-019, December, 2000". Table 2: Estimated Annual Emissions for a Typical Drum Mix HMA Facility (see Appendix C). For the controlled scenario, emissions from the HMA Plant were estimated based on source test results for a similar facility operating in the SCAQMD (see Appendix D). Controlled PM_{10} and VOC emissions from the Silo Loading and Asphalt Load Out sources were calculated by applying a control factor corresponding to the use of a SCAQMD-required blue smoke control system.

Emissions from the Hot Oil Heater are minimal and are estimated to be identical in the uncontrolled and controlled scenarios. VOC emissions from the Asphalt Oil Storage Tank were calculated using EPA's TANKS 4.0.9d program (see Appendix E). Controlled VOC emissions from the Asphalt Oil Storage Tank were calculated by applying a control factor corresponding to the use of a SCAQMD-required condenser.

Assumptions related to asphalt production are as follows:

- Maximum Hourly Production: 300 tons
- Maximum Daily Production: 2,000 tons
- Maximum Annual Production: 330,000 tons

Emissions Calculation Summaries:

Scenario One uncontrolled emissions are presented in the following table. Calculations supporting the Scenario One uncontrolled emissions summary are included as Attachment 1.

Asphalt Plant Summary: Scenario One - Uncontrolled Emissions

Hourly Emissions

Source	PM10 (lbs/hr)	NOx (lbs/hr)	VOC (lbs/hr)	CO (lbs/hr)	SOx (lbs/hr)
Cold Feed System	4.389	--	--	--	--
Asphalt Drum Dryer	6.900	7.80	9.60	39.00	1.02
Asphalt Silo Loading	0.176	--	3.66	0.35	--
Asphalt Load Out	0.157	--	1.17	0.40	--
Hot Oil Heater	0.009	0.03	0.01	0.37	0.00
Asphalt Oil Storage Tank	--	--	0.00	--	--
Total	11.630	7.830	14.440	40.124	1.021

Daily Emissions

Source	PM10 (lbs/day)	NOx (lbs/day)	VOC (lbs/day)	CO (lbs/day)	SOx (lbs/day)
Cold Feed System	27.075	--	--	--	--
Asphalt Drum Dryer	46.000	52.00	64.00	260.00	6.80
Asphalt Silo Loading	1.172	--	24.37	2.36	--
Asphalt Load Out	1.044	--	7.82	2.70	--
Hot Oil Heater	0.176	0.60	0.16	7.31	0.01
Asphalt Oil Storage Tank	--	--	4.75	--	--
Total	75.467	52.600	101.109	272.369	6.814

Annual Emissions

Source	PM10 (tons/yr)	NOx (tons/yr)	VOC (tons/yr)	CO (tons/yr)	SOx (tons/yr)	CO2e (mtons/yr)
Cold Feed System	2.234	--	--	--	--	--
Asphalt Drum Dryer	3.795	4.29	5.28	21.45	0.56	7,005.50
Asphalt Silo Loading	0.097	--	2.01	0.19	--	--
Asphalt Load Out	0.086	--	0.65	0.22	--	--
Hot Oil Heater	0.032	0.11	0.03	1.32	0.00	458.54
Asphalt Oil Storage Tank	--	--	0.39	--	--	--
Total	6.243	4.398	8.358	23.183	0.564	7,464.05

Scenario Two controlled emissions are presented in the following table. Calculations supporting the Scenario Two controlled emissions summary are included as Attachment 2.

Asphalt Plant Summary: Scenario Two - Controlled Emissions

Hourly Emissions

Source	PM10 (lbs/hr)	NOx (lbs/hr)	VOC (lbs/hr)	CO (lbs/hr)	SOx (lbs/hr)
Cold Feed System	0.353	--	--	--	--
Asphalt Drum Dryer	1.373	2.85	1.26	13.07	0.62
Asphalt Silo Loading	0.018	--	0.37	0.35	--
Asphalt Load Out	0.016	--	0.12	0.40	--
Hot Oil Heater	0.009	0.03	0.01	0.37	0.00
Asphalt Oil Storage Tank	--	--	0.00	--	--
Total	1.768	2.877	1.760	14.192	0.621

Daily Emissions

Source	PM10 (lbs/day)	NOx (lbs/day)	VOC (lbs/day)	CO (lbs/day)	SOx (lbs/day)
Cold Feed System	2.056	--	--	--	--
Asphalt Drum Dryer	9.153	18.98	8.41	87.12	4.14
Asphalt Silo Loading	0.117	--	2.44	2.36	--
Asphalt Load Out	0.104	--	0.83	2.70	--
Hot Oil Heater	0.176	0.60	0.16	7.31	0.01
Asphalt Oil Storage Tank	--	--	0.48	--	--
Total	11.606	19.584	12.316	99.487	4.150

Annual Emissions

Source	PM10 (tons/yr)	NOx (tons/yr)	VOC (tons/yr)	CO (tons/yr)	SOx (tons/yr)	CO2e (mtons/yr)
Cold Feed System	0.170	--	--	--	--	--
Asphalt Drum Dryer	0.755	1.57	0.69	7.19	0.34	7,005.50
Asphalt Silo Loading	0.010	--	0.20	0.19	--	--
Asphalt Load Out	0.009	--	0.07	0.22	--	--
Hot Oil Heater	0.032	0.11	0.03	1.32	0.00	458.54
Asphalt Oil Storage Tank	--	--	0.04	--	--	--
Total	0.975	1.674	1.032	8.920	0.344	7,464.05

Associates Environmental

Section 1

Uncontrolled Emissions Calculations

Hot Mix Asphalt Plant: Cold Feed System Uncontrolled Emission Calculations

Below are the estimated PM10 emissions from the aggregate/RAP systems. Emissions factors were obtained from AP-42, Table 11.19.2-2 to estimate the PM10 emissions.

Maximum Asphalt Processed 300 tons/hr
2,000 tons/day
330,000 tons/yr

Hourly Emissions

Description	Material	Production (tons/hr)	x	AP-42 PM10 Emission Factor (lbs/tons)	x	=	PM10 Emissions (lbs/hr)
Bins Feeding	Aggregate	142.50		0.0011			0.16
Conveyors BF1 - BF5	Aggregate	142.50		0.0011			0.16
Conveyor CC	Aggregate	142.50		0.0011			0.16
Scalping Screen	Aggregate	142.50		0.0087			1.24
Conveyor BC1	Aggregate	142.50		0.0011			0.16
Bins Feeding	RAP	142.50		0.0011			0.16
Conveyors RF1 - RF2	RAP	142.50		0.0011			0.16
Conveyor RCC	RAP	142.50		0.0011			0.16
Conveyor RC1	RAP	142.50		0.0011			0.16
2-Deck Screen	RAP	142.50		0.0087			1.24
HSI Crusher	RAP	142.50		0.0024			0.34
Conveyor RC2	RAP	142.50		0.0011			0.16
Conveyor RC3	RAP	142.50		0.0011			0.16
						Total	4.39 lbs/hr

Emission factors obtained from AP42 Chapter 11.19.2, Table 11.19.2-2.

Daily Emissions

Description	Material	Production (tons/day)	x	AP42 PM10 Emission Factor (lbs/tons)	x	=	PM10 Emissions (lbs/day)
Bins Feeding	Aggregate	1,425.00		0.0011			1.57
Conveyors BF1 - BF5	Aggregate	1,425.00		0.0011			1.57
Conveyor CC	Aggregate	1,425.00		0.0011			1.57
Scalping Screen	Aggregate	1,425.00		0.0087			12.40
Conveyor BC1	Aggregate	1,425.00		0.0011			1.57
Bins Feeding	RAP	475.00		0.0011			0.52
Conveyors RF1 - RF2	RAP	475.00		0.0011			0.52
Conveyor RCC	RAP	475.00		0.0011			0.52
Conveyor RC1	RAP	475.00		0.0011			0.52
2-Deck Screen	RAP	475.00		0.0087			4.13
HSI Crusher	RAP	475.00		0.0024			1.14
Conveyor RC2	RAP	475.00		0.0011			0.52
Conveyor RC3	RAP	475.00		0.0011			0.52
						Total	27.08 lbs/day

Emission factors obtained from AP42 Chapter 11.19.2, Table 11.19.2-2.

Annual Emissions

Description	Material	Production (tons/yr)	x	AP42 PM10 Emission Factor (lbs/tons)	x	=	PM10 Emissions (lbs/yr)
Bins Feeding	Aggregate	235,125		0.0011			258.64
Conveyors BF1 - BF5	Aggregate	235,125		0.0011			258.64
Conveyor CC	Aggregate	235,125		0.0011			258.64
Scalping Screen	Aggregate	235,125		0.0087			2045.59
Conveyor BC1	Aggregate	235,125		0.0011			258.64
Bins Feeding	RAP	78,375		0.0011			86.21
Conveyors RF1 - RF2	RAP	78,375		0.0011			86.21
Conveyor RCC	RAP	78,375		0.0011			86.21
Conveyor RC1	RAP	78,375		0.0011			86.21
2-Deck Screen	RAP	78,375		0.0087			681.86
HSI Crusher	RAP	78,375		0.0024			188.10
Conveyor RC2	RAP	78,375		0.0011			86.21
Conveyor RC3	RAP	78,375		0.0011			86.21
						Total	4,467.38
							2.23 tons/yr

Emission factors obtained from AP42 Chapter 11.19.2, Table 11.19.2-2.

Hot Mix Asphalt Emissions: Uncontrolled Asphalt Drum Dryer, Silo Loading and Asphalt Load Out Emissions

Burner Rating	120	mmBTU/hr
Natural Gas Heating Value	1,050	mmBTU/mmcf
Asphalt Temperature	325	°F
Natural Gas	0.114	mmcf/hr
	0.762	mmcf/day
	125.714	mmcf/yr

					Emission Factor*	Cyclone	Baghouse	Emissions		
Source	(ton/hr)	(tons/day)	(tons/yr)	Pollutant	(lbs/ton)	Control Efficiency	Control Efficiency	(lbs/hr)	Maximum (lbs/day)	(tons/yr)
Parallel Flow Drum Mixer, 120 mBtu/hr, Fired on Natural Gas	300	2,000	330,000	PM_{10}	0.0230	50%	99.0%	6.90	46.00	3.80
				VOC	0.0320	0%	95.0%	9.60	64.00	5.28
				NOx	0.0260	0%	0.0%	7.80	52.00	4.29
				CO	0.1300	0%	0.0%	39.00	260.00	21.45
				SO_2	0.0034	0%	0.0%	1.02	6.80	0.56

*From Hot Mix Asphalt Plants Emission Estimation Report, EPA-454/R-00-019, December, 2000.

					Emission Factor	Conversion Factor		Emissions		
Description	(mmcf/hr)	(mmcf/day)	(mmcf/yr)	Pollutant	(kg/mmBTU)	(mmBTU/mmcf)	GWP	(mtons/hr)	Maximum (mtons/day)	(mtons/yr)
Parallel Flow Drum Mixer, 120 mBtu/hr, Fired on Natural Gas	0.1143	0.7619	125.71	CO2	53.02	1050	1	6.36	42.42	6,998.64
				CH4	1.00E-03	1050	21	0.00	0.02	2.77
				N2O	1.00E-04	1050	310	0.00	0.02	4.09
									TOTAL	7,005.50

					Emission	Blue Smoke Fiber Bed Filter	Emissions		
Source	(ton/hr)	(tons/day)	(tons/yr)	Pollutant	Factor (lbs/ton)	Control Efficiency	(lbs/hr)	Maximum (lbs/day)	(tons/yr)
Silo Loading	300	2,000	330,000	PM-10	0.00059	0%	0.18	1.17	0.10
				CO	0.00118	0%	0.35	2.36	0.19
				VOCs	0.01219	0%	3.66	24.37	2.01

					Emission	Blue Smoke Fiber Bed Filter	Emissions		
Source	(ton/hr)	(tons/day)	(tons/yr)	Pollutant	Factor (lbs/ton)	Control Efficiency	(lbs/hr)	Maximum (lbs/day)	(tons/yr)
Plant Load Out	300	2,000	330,000	PM-10	0.00052	0%	0.16	1.04	0.09
				CO	0.00135	0%	0.40	2.70	0.22
				VOCs	0.00391	0%	1.17	7.82	0.65

Hot Oil Heater Emissions

Burner Rating	1.2	mmBTU/hr
Natural Gas Heating Value	1,020	mmBTU/mmcf
Natural Gas	0.0012	mmcf/hr
	0.0235	mmcf/day
	0.7059	mmcf/month
	8.4706	mmcf/yr

Description	(mmcf/hr)	(mmcf/day)	(mmcf/yr)	Pollutant	Emission Factor (lbs/mmcf)	Control Efficiency	Emissions (lbs/hr)	Emissions Maximum (lbs/day)	Emissions (tons/yr)
Hot Oil Heater, CEI-2400G, 1.2 mBtu/hr, Fired on Natural Gas	0.0012	0.0235	8.47	NO_x	25.52	0%	0.03	0.60	0.11
				CO	310.69	0%	0.37	7.31	1.32
				SO_2	0.6	0%	0.00	0.01	0.00
				VOC	7	0%	0.01	0.16	0.03
				PM10	7.5	0%	0.01	0.18	0.03

Description	(mmcf/hr)	(mmcf/day)	(mmcf/yr)	Pollutant	Emission Factor (kg/mmBTU)	Conversion Factor (mmBTU/mmcf)	GWP	Emissions (mtons/hr)	Emissions Maximum (mtons/day	Emissions (mtons/yr)
Hot Oil Heater, CEI-2400G, 1.2 mBtu/hr, Fired on Natural Gas	0.0012	0.0235	8.47	CO2	53.02	1020	1	0.06	1.27	458.09
				CH4	1.00E-03	1020	21	0.00	0.00	0.18
				N2O	1.00E-04	1020	310	0.00	0.00	0.27
									TOTAL	458.54

Asphalt Oil Storage Tank Emissions: Uncontrolled

Assumptions

Asphalt Oil % in mix:	5.0%	
Total Oil Used	16,500	tons/yr
Hot Oil Density	9.174	lbs/gal
Total Oil Used	3,597,122	gal/yr
Tank Capacity	30,000	gal
Turnovers	119.9041	per year (assumed 50% went though each tank)

Emissions

Working Loss	541.33	lbs/yr
Breathing Loss	242.66	lbs/yr
Total	783.98	lbs/yr per tank
Condenser Control	0%	
Controlled Emissions	783.9831	lbs/yr
Hourly Emissions	0.002376	lbs/hr
Maximum Daily Emissions	4.751413	lbs/day

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Section 2

Controlled Emissions Calculations

Hot Mix Asphalt Plant: Cold Feed System Controlled Emission Calculations

Below are the estimated PM10 emissions from the aggregate/RAP systems. Emissions factors were obtained from AP-42, Table 11.19.2-2 to estimate the PM10 emissions.

Maximum Asphalt Processed 300 tons/hr
2,000 tons/day
330,000 tons/yr

Hourly Emissions

Description	Material	Production (tons/hr)	x	AP42^ PM10 Emission Factor (lbs/tons)	x	=	PM10 Emissions (lbs/hr)
Bins Feeding	Aggregate	142.50		0.000046			0.01
Conveyors BF1 - BF5	Aggregate	142.50		0.000046			0.01
Conveyor CC	Aggregate	142.50		0.000046			0.01
Scalping Screen	Aggregate	142.50		0.00074			0.11
Conveyor BC1	Aggregate	142.50		0.000046			0.01
Bins Feeding	RAP	142.50		0.000046			0.01
Conveyors RF1 - RF2	RAP	142.50		0.000046			0.01
Conveyor RCC	RAP	142.50		0.000046			0.01
Conveyor RC1	RAP	142.50		0.000046			0.01
2-Deck Screen	RAP	142.50		0.00074			0.11
HSI Crusher	RAP	142.50		0.00054			0.08
Conveyor RC2	RAP	142.50		0.000046			0.01
Conveyor RC3	RAP	142.50		0.000046			0.01
						Total	0.35 lbs/hr

^Control emission factors utilized for water control. Emission factors obtained from AP42 Chapter 11.19.2, Table 11.19.2-2. Please Refer to Appendix B.

Daily Emissions

Description	Material	Production (tons/day)	x	AP42^ PM10 Emission Factor (lbs/tons)	x	=	PM10 Emissions (lbs/day)
Bins Feeding	Aggregate	1,425.00		0.000046			0.07
Conveyors BF1 - BF5	Aggregate	1,425.00		0.000046			0.07
Conveyor CC	Aggregate	1,425.00		0.000046			0.07
Scalping Screen	Aggregate	1,425.00		0.00074			1.05
Conveyor BC1	Aggregate	1,425.00		0.000046			0.07
Bins Feeding	RAP	475.00		0.000046			0.02
Conveyors RF1 - RF2	RAP	475.00		0.000046			0.02
Conveyor RCC	RAP	475.00		0.000046			0.02
Conveyor RC1	RAP	475.00		0.000046			0.02
2-Deck Screen	RAP	475.00		0.00074			0.35
HSI Crusher	RAP	475.00		0.00054			0.26
Conveyor RC2	RAP	475.00		0.000046			0.02
Conveyor RC3	RAP	475.00		0.000046			0.02
						Total	2.06 lbs/day

^Control emission factors utilized for water control. Emission factors obtained from AP42 Chapter 11.19.2, Table 11.19.2-2. Please Refer to Appendix B.

Annual Emissions

Description	Material	Production (tons/yr)	x	AP42^ PM10 Emission Factor (lbs/tons)	x	=	PM10 Emissions (lbs/yr)
Bins Feeding	Aggregate	235,125		0.000046			10.82
Conveyors BF1 - BF5	Aggregate	235,125		0.000046			10.82
Conveyor CC	Aggregate	235,125		0.000046			10.82
Scalping Screen	Aggregate	235,125		0.00074			173.99
Conveyor BC1	Aggregate	235,125		0.000046			10.82
Bins Feeding	RAP	78,375		0.000046			3.61
Conveyors RF1 - RF2	RAP	78,375		0.000046			3.61
Conveyor RCC	RAP	78,375		0.000046			3.61
Conveyor RC1	RAP	78,375		0.000046			3.61
2-Deck Screen	RAP	78,375		0.00074			58.00
HSI Crusher	RAP	78,375		0.00054			42.32
Conveyor RC2	RAP	78,375		0.000046			3.61
Conveyor RC3	RAP	78,375		0.000046			3.61
						Total	339.21
							0.17 tons/yr

^Control emission factors utilized for water control. Emission factors obtained from AP42 Chapter 11.19.2, Table 11.19.2-2. Please Refer to Appendix B.

Hot Mix Asphalt Emissions: Controlled Asphalt Drum Dryer, Silo Loading and Asphalt Load Out Emissions

Burner Rating	120	mmBTU/hr
Natural Gas Heating Value	1,050	mmBTU/mmcf
Asphalt Temperature	325	°F

Natural Gas	0.11428571	mmcf/hr
	0.76190476	mmcf/day
	125.714286	mmcf/yr

Source	(ton/hr)	(tons/day)	(tons/yr)	Pollutant	Emission Factor* (lbs/ton)	Cyclone Control Efficiency	Baghouse Control Efficiency	Emissions (lbs/hr)	Emissions Maximum (lbs/day)	Emissions (tons/yr)
Parallel Flow Drum Mixer, 120 mBtu/hr, Fired on Natural Gas	300	2,000	330,000	PM_{10}	0.0046	50%	99.0%	1.37	9.15	0.76
				VOC	0.0042	0%	95.0%	1.26	8.41	0.69
				NOx	0.0095	0%	0.0%	2.85	18.98	1.57
				CO	0.0436	0%	0.0%	13.07	87.12	7.19
				SO_2	0.0021	0%	0.0%	0.62	4.14	0.34

*Emission Factors are taken from a source test performed on a similar facility.

Description	(mmcf/hr)	(mmcf/day)	(mmcf/yr)	Pollutant	Emission Factor (kg/mmBTU)	Conversion Factor (mmBTU/mmcf)	GWP	Emissions (mtons/hr)	Emissions Maximum (mtons/day)	Emissions (mtons/yr)
Parallel Flow Drum Mixer, 120 mBtu/hr, Fired on Natural Gas	0.1143	0.7619	125.71	CO2	53.02	1050	1	6.36	42.42	6,998.64
				CH4	1.00E-03	1050	21	0.00	0.02	2.77
				N2O	1.00E-04	1050	310	0.00	0.02	4.09
									TOTAL	7,005.50

Source	(ton/hr)	(tons/day)	(tons/yr)	Pollutant	Emission Factor (lbs/ton)	Blue Smoke Fiber Bed Filter Control Efficiency	Emissions (lbs/hr)	Emissions Maximum (lbs/day)	Emissions (tons/yr)
Silo Loading	300	2,000	330,000	PM-10	0.00059	90%	0.02	0.12	0.01
				CO	0.00118	0%	0.35	2.36	0.19
				VOCs	0.01219	90%	0.37	2.44	0.20

Source	(ton/hr)	(tons/day)	(tons/yr)	Pollutant	Emission Factor (lbs/ton)	Blue Smoke Fiber Bed Filter Control Efficiency	Emissions (lbs/hr)	Emissions Maximum (lbs/day)	Emissions (tons/yr)
Plant Load Out	300	2,000	330,000	PM-10	0.00052	90%	0.02	0.10	0.01
				CO	0.00135	0%	0.40	2.70	0.22
				VOCs	0.00416	90%	0.12	0.83	0.07

Hot Oil Heater Emissions

Burner Rating	1.2	mmBTU/hr
Natural Gas Heating Value	1020	mmBTU/mmcf
Natural Gas	0.0012	mmcf/hr
	0.0235	mmcf/day
	0.7059	mmcf/month
	8.4706	mmcf/yr

Description	(mmcf/hr)	(mmcf/day)	(mmcf/yr)	Pollutant	Emission Factor (lbs/mmcf)	Control Efficiency	Emissions (lbs/hr)	Emissions Maximum (lbs/day)	Emissions (tons/yr)
Hot Oil Heater, CEI-2400G, 1.2 mBtu/hr, Fired on Natural Gas	0.0012	0.0235	8.47	NO_x	25.52	0%	0.03	0.60	0.11
				CO	310.69	0%	0.37	7.31	1.32
				SO_2	0.6	0%	0.00	0.01	0.00
				VOC	7	0%	0.01	0.16	0.03
				PM10	7.5	0%	0.01	0.18	0.03

Description	(mmcf/hr)	(mmcf/day)	(mmcf/yr)	Pollutant	Emission Factor (kg/mmBTU)	Conversion Factor (mmBTU/mmcf)	GWP	Emissions (mtons/hr)	Emissions Maximum (mtons/day	Emissions (mtons/yr)
Hot Oil Heater, CEI-2400G, 1.2 mBtu/hr, Fired on Natural Gas	0.0012	0.0235	8.47	CO2	53.02	1020	1	0.06	1.27	458.09
				CH4	1.00E-03	1020	21	0.00	0.00	0.18
				N2O	1.00E-04	1020	310	0.00	0.00	0.27
									TOTAL	458.54

Asphalt Oil Storage Tank Emissions: Controlled

Assumptions

Asphalt Oil % in mix:	5.0%	
Total Oil Used	16,500	tons/yr
Hot Oil Density	9.174	lbs/gal
Total Oil Used	3,597,122	gal/yr
Tank Capacity	30,000	gal
Turnovers	119.9041	per year

Emissions

Working Loss	541.33	lbs/yr
Breathing Loss	242.66	lbs/yr
Total	783.98	lbs/yr
Condenser Control	90%	
Controlled Emissions	78.40	lbs/yr
Hourly Emissions	0.000238	lbs/hr
Maximum Daily Emissions	0.475141	lbs/day

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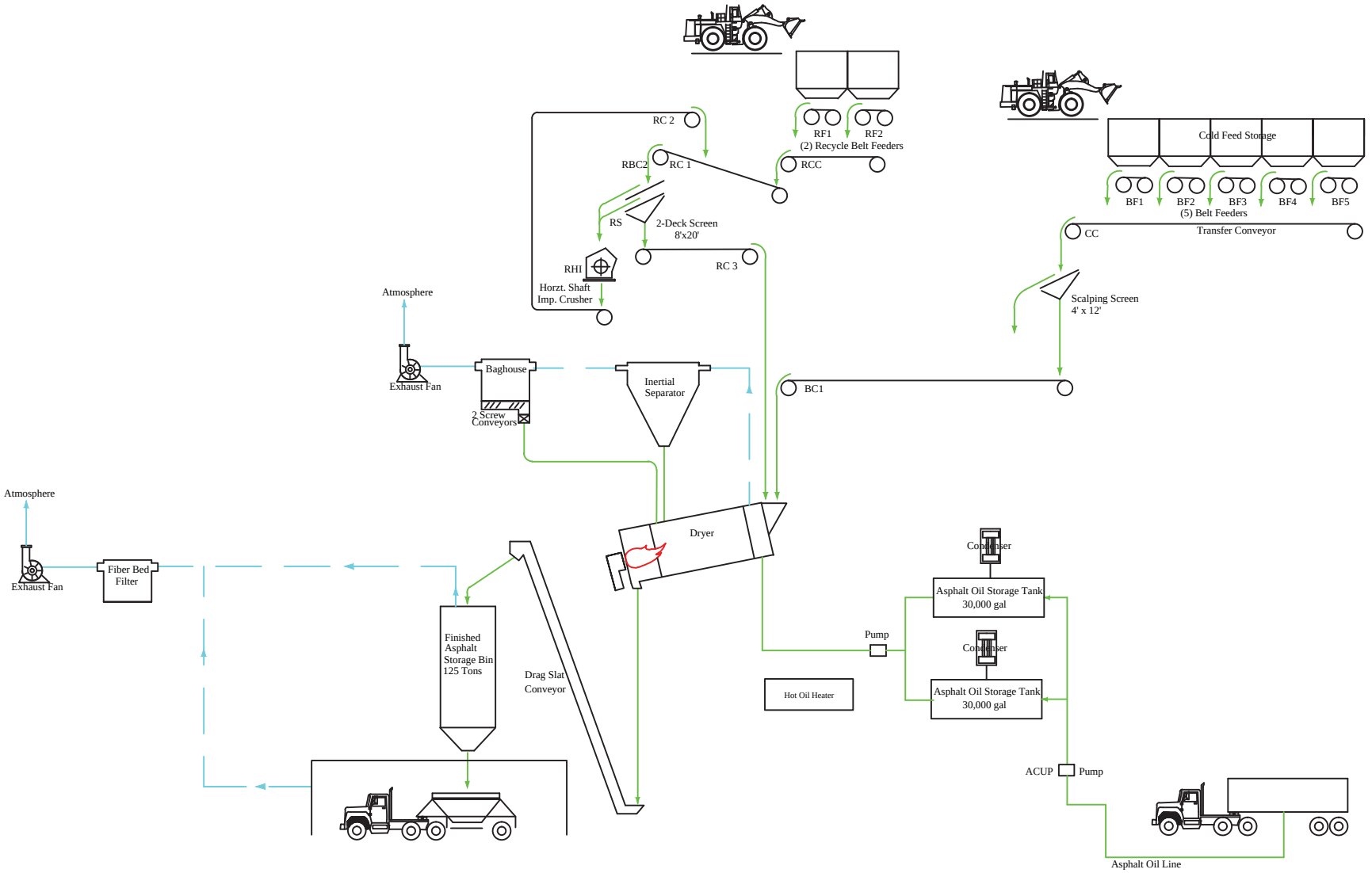
Appendix A

Flow Diagram



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16882 Bolsa Chica St. Suite 202
Huntington Beach, CA 92649
(714) 916-4953 Fax (714) 362-9085

Description			
Secondary Description: Flow Diagram			Scale
Job No.	Drawing Date	Drawn By: RF	Drawing Version 1.0

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Appendix B

AP-42, Chapter 11.19.2, Table 11.19.2-2

Table 11.19.2-2 (English Units). EMISSION FACTORS FOR CRUSHED STONE PROCESSING OPERATIONS (lb/Ton)[a]

Source [b]	Total Particulate Matter [r,s]	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Primary Crushing (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Primary Crushing (controlled) (SCC 3-05-020-01)	ND		ND[n]		ND[n]	
Secondary Crushing (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Secondary Crushing (controlled) (SCC 3-05-020-02)	ND		ND[n]		ND[n]	
Tertiary Crushing (SCC 3-050030-03)	0.0054[d]	E	0.0024[o]	C	ND[n]	
Tertiary Crushing (controlled) (SCC 3-05-020-03)	0.0012[d]	E	0.00054[p]	C	0.00010[q]	E
Fines Crushing (SCC 3-05-020-05)	0.0390[e]	E	0.0150[e]	E	ND	
Fines Crushing (controlled) (SCC 3-05-020-05)	0.0030[f]	E	0.0012[f]	E	0.000070[q]	E
Screening (SCC 3-05-020-02, 03)	0.025[c]	E	0.0087[l]	C	ND	
Screening (controlled) (SCC 3-05-020-02, 03)	0.0022[d]	E	0.00074[m]	C	0.000050[q]	E
Fines Screening (SCC 3-05-020-21)	0.30[g]	E	0.072[g]	E	ND	
Fines Screening (controlled) (SCC 3-05-020-21)	0.0036[g]	E	0.0022[g]	E	ND	
Conveyor Transfer Point (SCC 3-05-020-06)	0.0030[h]	E	0.00110[h]	D	ND	
Conveyor Transfer Point (controlled) (SCC 3-05-020-06)	0.00014[i]	E	4.6×10^{-5}[i]	D	1.3×10^{-5}[q]	E
Wet Drilling - Unfragmented Stone (SCC 3-05-020-10)	ND		8.0×10^{-5}[j]	E	ND	
Truck Unloading -Fragmented Stone (SCC 3-05-020-31)	ND		1.6×10^{-5}[j]	E	ND	
Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32)	ND		0.00010[k]	E	ND	

a. Emission factors represent uncontrolled emissions unless noted. Emission factors in lb/Ton of material of throughput. SCC = Source Classification Code. ND = No data.

b. Controlled sources (with wet suppression) are those that are part of the processing plant that employs current wet suppression technology similar to the study group. The moisture content of the study group without wet suppression systems operating (uncontrolled) ranged from 0.21 to 1.3 percent, and the same facilities operating wet suppression systems (controlled) ranged from 0.55 to 2.88 percent. Due to carry over of the small amount of moisture required, it has been shown that each source, with the exception of crushers, does not need to employ direct water sprays. Although the moisture content was the only variable measured, other process features may have as much influence on emissions from a given source. Visual observations from each source under normal operating conditions are probably the best indicator of which emission factor is most appropriate. Plants that employ substandard control measures as indicated by visual observations should use the uncontrolled factor with an appropriate control efficiency that best reflects the effectiveness of the controls employed.

c. References 1, 3, 7, and 8

d. References 3, 7, and 8

e. Reference 4

f. References 4 and 15

g. Reference 4

h. References 5 and 6

i. References 5, 6, and 15

j. Reference 11

k. Reference 12

l. References 1, 3, 7, and 8

m. References 1, 3, 7, 8, and 15

n. No data available, but emission factors for PM-10 for tertiary crushers can be used as an upper limit for primary or secondary crushing

o. References 2, 3, 7, 8

p. References 2, 3, 7, 8, and 15

q. Reference 15

r. PM emission factors are presented based on PM-100 data in the Background Support Document for Section 11.19.2

s. Emission factors for PM-30 and PM-50 are available in Figures 11.19.2-3 through 11.19.2-6.

Note: Truck Unloading - Conveyor, crushed stone (SCC 3-05-020-32) was corrected to Truck Loading - Conveyor, crushed stone (SCC 3-05-020-32). October 1, 2010.

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Appendix C

Hot Mix Asphalt Plants Emission Estimate Report

United States
Environmental Protection
Agency

Office Of Air Quality
Planning And Standards
Research Triangle Park, NC 27711

EPA-454/R-00-019
December 2000

Air

HOT MIX ASPHALT PLANTS

EMISSION ASSESSMENT REPORT

TABLE 2. ESTIMATED ANNUAL EMISSIONS FOR A TYPICAL DRUM MIX HMA FACILITY[a]

Pollutant	Annual emissions by source, pounds per year									
	Mobile sources (diesel exhaust)	Material handling and road dust	No. 2 fuel oil-fired dryer[b]	Natural gas-fired dryer[c]	Load-out[d]	Silo filling[e]	Asphalt storage[f]	Yard[g]	Total[h] (oil-fired)	Total[h] (gas-fired)
Criteria air pollutants										
Particulate matter less than 10 micrometers (PM-10)	220	26,000	4,600	4,600	104	117			31,000	31,000
Volatile organic compounds (VOC)	190		6,400	6,400	782	2,440	64	220	10,000	10,000
Carbon monoxide (CO)	1,200		26,000	26,000	270	236	6	72	28,000	28,000
Sulfur dioxide (SO_2)	26		2,200	680					2,200	710
Nitrogen oxides (NO_x)	560		11,000	5,200					12,000	5,800
Hazardous air pollutants (HAPs)										
Polycyclic aromatic hydrocarbons (PAHs)	0.13		176	37	4.0	5.8	0.12		190	50
Phenol					0.80				0.80	0.80
Volatile HAPs	6.6		1,560	1,020	12.4	31	140	3.3	1,800	1,200
Metal HAPs			19	16					19	16
Total HAPs[h]	6.7		1,800	1,100	17	37	140	3.3	2,000	1,300

[a] Based on an annual HMA production rate of 200,000 tons per year.
[b] Between 10 and 30 percent of the HMA is produced using fuel oil.
[c] Between 70 and 90 percent of the HMA is produced using natural gas.
[d] Loading of HMA into haul trucks
[e] Filling of temporary storage silo prior to load-out.
[f] Includes emissions from oil-fired hot oil heaters.
[g] Fugitive emissions from loaded trucks prior to departure to the job site.
[h] Total expressed using two significant figures.

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Appendix D

Hot Mix Asphalt Plant Source Test Report

SUMMARY OF SOURCE TEST RESULTS

BAGHOUSE EXHAUST

Sample Location RUN #	Outlet 1	Outlet 2	Outlet 3	Outlet 4	Averages
CONSTITUENT					
Oxides of Nitrogen					
ppmv	13.6	-	14.6	12.5	*13.6*
ppmv @ 3% O2	27	-	28	23	*26*
lb/hr	2.91	-	3.05	2.45	*2.80*
Carbon Monoxide					
ppmv	113	-	98	95	*102*
ppmv @ 3% O2	227	-	189	177	*198*
lb/hr	14.71	-	12.47	11.36	*12.85*
Oxygen, %	12.0	11.6	11.6	11.3	*11.7*
Stack Flowrate, dscfm	29416	28773	27019	28403	*28403*
Moisture, %	23.6	24.0	24.1	-	*23.9*
Total Particulate					
gr/dscf	0.0039	0.0052	0.0077	-	*0.0056*
lb/hr	0.98	1.29	1.79	-	*1.35* ÷ 295 TPH = 4.57E-3 lb/T
Sulfur Dioxide					
ppmv	9.1	6.7	8.2	-	*8.0*
lb/hr	0.72	0.52	0.60	-	*0.61* ÷ 295 TPH = 2.06E-3 lb/T
Total Nonmethane Hydrocarbons					
ppmv, as CH4	24	9	19	-	*17*
ppmv @ 3% O2, as CH4	48	17	35	-	*33*
lb/hr, as CH4	1.79	0.63	1.29	-	*1.24* ÷ 295 TPH = 4.20E-3 lb/T
Total Production Rate, TPH	299	287	300	-	*295*
RAP Production, TPH	94.9	71.3	82.3	-	*82.8*

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Indentification and Physical Characteristics

Identification

User Identification:	T1
City:	Corona
State:	California
Company:	Mayhew Aggregates & Mine Reclamation
Type of Tank:	Horizontal Tank
Description:	Asphalt Oil Tank

Tank Dimensions

Shell Length (ft):	51.00
Diameter (ft):	10.00
Volume (gallons):	30,000.00
Turnovers:	119.90
Net Throughput(gal/yr):	3,597,122.00
Is Tank Heated (y/n):	Y
Is Tank Underground (y/n):	N

Paint Characteristics

Shell Color/Shade:	Aluminum/Specular
Shell Condition	Good

Breather Vent Settings

Vacuum Settings (psig):	0.00
Pressure Settings (psig)	0.00

Meterological Data used in Emissions Calculations: Los Angeles AP, California (Avg Atmospheric Pressure = 14.67 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

T1 - Horizontal Tank
Corona, California

Mixture/Component	Month	Daily Liquid Surf. Temperature (deg F) Avg.	Min.	Max.	Liquid Bulk Temp (deg F)	Vapor Pressure (psia) Avg.	Min.	Max.	Vapor Mol. Weight.	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
Ashpalt Oil	All	350.00	300.00	400.00	350.00	0.1805	0.0532	0.5309	84.0000			0.00	

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

T1 - Horizontal Tank
Corona, California

Annual Emission Calcaulations	
Standing Losses (lb):	242.6563
Vapor Space Volume (cu ft):	2,551.2934
Vapor Density (lb/cu ft):	0.0017
Vapor Space Expansion Factor:	0.1565
Vented Vapor Saturation Factor:	0.9544
Tank Vapor Space Volume:	
Vapor Space Volume (cu ft):	2,551.2934
Tank Diameter (ft):	10.0000
Effective Diameter (ft):	25.4889
Vapor Space Outage (ft):	5.0000
Tank Shell Length (ft):	51.0000
Vapor Density	
Vapor Density (lb/cu ft):	0.0017
Vapor Molecular Weight (lb/lb-mole):	84.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.1805
Daily Avg. Liquid Surface Temp. (deg. R):	809.6700
Daily Average Ambient Temp. (deg. F):	62.9500
Ideal Gas Constant R (psia cuft / (lb-mol-deg R)):	10.731
Liquid Bulk Temperature (deg. R):	809.6700
Tank Paint Solar Absorptance (Shell):	0.3900
Daily Total Solar Insulation Factor (Btu/sqft day):	1,594.0000
Vapor Space Expansion Factor	
Vapor Space Expansion Factor:	0.1565
Daily Vapor Temperature Range (deg. R):	100.0000
Daily Vapor Pressure Range (psia):	0.4777
Breather Vent Press. Setting Range(psia):	0.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.1805
Vapor Pressure at Daily Minimum Liquid Surface Temperature (psia):	0.0532
Vapor Pressure at Daily Maximum Liquid Surface Temperature (psia):	0.5309
Daily Avg. Liquid Surface Temp. (deg R):	809.6700
Daily Min. Liquid Surface Temp. (deg R):	759.6700
Daily Max. Liquid Surface Temp. (deg R):	859.6700
Daily Ambient Temp. Range (deg. R):	14.8500
Vented Vapor Saturation Factor	
Vented Vapor Saturation Factor:	0.9544
Vapor Pressure at Daily Average Liquid: Surface Temperature (psia):	0.1805
Vapor Space Outage (ft):	5.0000
Working Losses (lb):	541.3268
Vapor Molecular Weight (lb/lb-mole):	84.0000
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	0.1805
Annual Net Throughput (gal/yr.):	3,597,122.0000
Annual Turnovers:	119.9041
Turnover Factor:	0.4169
Tank Diameter (ft):	10.0000
Working Loss Product Factor:	1.0000
Total Losses (lb):	783.9832

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

T1 - Horizontal Tank
Corona, California

	Losses(lbs)		
Components	Working Loss	Breathing Loss	Total Emissions
Ashpalt Oil	541.33	242.66	783.98

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Appendix E

EPA TANKS 4.09d Report