TECHNICAL REVIEW AND EVALUATION OF APPLICATION FOR CRUSHING AND SCREENING GENERAL PERMIT

I. INTRODUCTION

The Crushing and Screening General Permit is a permit for a facility class (crushing and screening plants) that contains 10 or more facilities that are similar in nature, have substantially similar emissions, and would be subject to the same or substantially similar requirements. The General Permit will last for 5 years from the date of its issuance. Equipment that is covered under the General Permit will be required to have an "Authorization to Operate" (ATO). The ATO will identify the piece of equipment by having the name of the manufacturer, date of manufacture, maximum capacity, and serial number or equipment number along with the hours of operation limitation.

This General Permit allows portable crushing and screening plants to move to other locations statewide. This General Permit also allows the Permittee to collocate a crushing and screening plant with a concrete batch plant.

The Department will notify the Permittee and other affected stakeholders if there is a change in attainment status affecting an area.

The Permittee that applies for an ATO under the general permit shall pay the Department a flat application fee of $500 with the submittal of the permit application. Permit applications and all transactions must be conducted through the web portal, myDEQ. The Permittee must also continue to pay, for each calendar year, the applicable administrative or inspection fees as described in the Arizona Administrative Code Title 18, Chapter 2, Article 5, Section 511 (A.A.C. R18-2-511).

II. PROCESS DESCRIPTION

A. Process Equipment

At most crushing and screening plant, aggregate material is transported from a nearby source of material by sauce truck or front-end loader, and fed into a feed hopper for processing. Material is typically conveyed by belt conveyer through a series of crushers intended to process the aggregate material to product specifications and shaker screens to separate the process material for recirculation or product storage.

At most concrete batch plants, a weigh hopper feeds sand, aggregate, cement, and water from storage silos into mixer trucks. The concrete is typically mixed on the way to the site where concrete is to be poured. At some plants, the concrete may also be manufactured in a central mix drum and transferred to a transport truck. In some cases, concrete is dry batched and prepared at a construction site. Raw material can be obtained for the plant from the collocated crushing and screening plant, or delivery by rail, truck, or barge. The cement is transferred to elevated storage silos pneumatically or by bucket elevator, while sand and aggregate and typically fed into feed hoppers and belt conveyers or by bucket elevator into elevated storage silos.

B. Control Devices

Particulate matter is the primary pollutant at crushing and screening plants. Sources of particulate matter from crushing and screening plants include belt conveyor material transfer points, crushers, and shaker screens. Control methods used to control emission of particulate matter at crushing and screening plants include baghouses, wet scrubbers, water sprays, and enclosures.

Particulate matter is also the primary pollutant at concrete batch plants that are permitted collocated with crushing and screening plants. Storage silos at concrete baghouses may be equipped with baghouses to control emission of particulate matter during silo loading. A significant source of emissions from concrete batch plants is the product loading point. Truck mix concrete batch plants collocated with crushing and screening plants are required to have a baghouse installed at the product loading point to qualify for coverage under the General Permit. Central mix concrete batch plants may also be equipped with baghouses to control emission of particulate matter. However, emissions from product loading points at central mix concrete batch plants have been determined to be sufficiently low enough to qualify for coverage under the General Permit regardless of the presence of a baghouse at the product loading point. All concrete batch plants are required to install a rubber sleeve at the product loading point to control emission of particulate matter.

Sources of fugitive dust emissions include loading/unloading of aggregate material, vehicle traffic, feed hopper loading, and wind erosion from storage piles and open areas. Fugitive dust emissions are controlled by application of water and/or chemical dust suppressants.

III. OPERATING LIMITATIONS

A. Production Throughput Limitation

The Crushing and Screening General Permit allows for statewide production limitations for the operating scenarios in Table 1 below. These throughput limitations are based on the results of a refined air dispersion modeling analysis conducted in order to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) statewide). A detailed description of the modeling analysis is presented in Section 0.

Table 1: Throughput Limitations

Operating Scenario	Throughput Limitation	
	PM_{10} Attainment	**PM_{10} Nonattainment**
Crushing and Screening Plant	5,000 tons per day	4,000 tons per day
Crushing and Screening Plant Collocated with Concrete Batch Plant	C&S: 5,000 tons per day CBP: 1,275 yd^3 per day	C&S: 4,000 tons per day CBP: 1,000 yd^3 per day

B. Truck Mix Concrete Batch Plant Baghouse Requirement

To qualify for coverage under the Crushing and Screening General Permit, the Permittee is required to operate a baghouse at the product loading station for co-located truck mix concrete batch plants.

C. Maricopa County Generator Horsepower Limitation

The Permittee shall not operate a non-certified generator rated cumulatively at 750-hoursepower or greater. A non-certified generator is any generator not certified to meet EPA Tier 1 emission standard or better in accordance with 40 CFR 89.112(a).

D. Prohibited Areas

The Permittee is not authorized to operate in areas of Pinal County designated non-attainment for $PM_{2.5}$. The Prohibited area can be found at http://gisweb.azdeq.gov/arcgis/emaps/?topic=nonattain by filtering for $PM_{2.5}$.

IV. APPLICABLE REGULATIONS

Table 1 identifies applicable regulations and verification as to why that standard applies. The table also contains a discussion of any regulations the emission unit is exempt from.

Table 1: Applicable Regulations

Unit	Control Device	Rule	Discussion
Crushing and Screening Plant	Baghouses, Wet Scrubbers, Spray Bars, Wet Suppressant, and Enclosures	Arizona Administrative Code (A.A.C.) R18-2-722 40 CFR (Code of Federal Regulations) 60 Subpart OOO	Crushing and screening plants constructed prior to August 31, 1983 are subject to Standards of Performance for Existing or Crushed Stone Processing Plants. Crushing and screening plants constructed after August 31, 1983 are subject to NSPS Subpart OOO.
Concrete Batch Plant	Baghouses, Sleeves, and Wet Suppressants	A.A.C. R18-2-702.B A.A.C. R18-2-723	Standards of Performance for Concrete Batch Plants and Fugitive Dust Sources.
Boilers < 10MMBtuh	None	A.A.C. R18-2-724 40 CFR 63 Subpart JJJJJJ	Standards of Performance for Fossil-Fuel Fired Industrial and Commercial Equipment. National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers is applicable to oil fired boilers.
Unclassified Sources, Vapor Generators, and Direct Fuel-Fired Equipment	None	A.A.C. R18-2-702.B.3 A.A.C. R18-2-730	Standards of Performance for Unclassified Sources. This section is for direct-fired equipment such as vapor generators and other unclassified emission sources.

Unit	Control Device	Rule	Discussion
Internal Combustion Engines	None	A.A.C. R18-2-719	Standards of Performance for Existing Stationary Rotation Machinery is applicable to existing engines. Not applicable to engines subject to 40 CFR 60 Subparts IIII or JJJJ
		40 CFR 60 Subpart IIII	New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines manufactured after April 1, 2006.
		40 CFR 60 Subpart JJJJ	New Source Performance Standards for Stationary Spark Ignition Internal Combustion Engines manufactured after July 1, 2008.
		40 CFR 63 Subpart ZZZZ	National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. Not applicable to engines subject to 40 CFR 60 Subparts IIII or JJJJ.
Fugitive Dust Sources	Water Trucks, Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2-702	These standards are applicable to all fugitive dust sources at the facility.
Abrasive Blasting	Wet blasting; Dust collecting equipment; Other approved methods	A.A.C. R-18-2-702 A.A.C. R-18-2-726	These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R-18-2-727	These standards are applicable to any spray painting operation.
Demolition/renovation Operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

Table 2 identifies applicable regulations when operating within Maricopa County and verification as to why that standard applies.

Table 2: Applicable Regulations for Maricopa County

Unit	Control Device	Rule	Discussion
Facility Wide Requirements	None	Maricopa County Rule 320 Maricopa County Rule 316	Odors and Gaseous Air Contaminants Requirements for Nonmetallic Mineral Processing operations within Maricopa County.
Crushing and Screening Plants	Spray Bars	Maricopa County Rule 316	Requirements for Nonmetallic Mineral Processing operations within Maricopa County.
Concrete Batch Plants	Baghouses, Rubber Sleeves, and Wet Suppressants	Maricopa County Rule 316	Requirements for Nonmetallic Mineral Processing operations within Maricopa County.
Internal Combustion Engines	None	Maricopa County Rule 324	Requirements for Stationary Reciprocating Internal Combustion Engines operating within Maricopa County.
Fugitive Dust	Water Trucks and Wet Suppressants	Maricopa County Rule 300 Maricopa County Rule 316	Visible emissions standards for operations with Maricopa County. Requirements for Nonmetallic Mineral Processing operations within Maricopa County.
Spray Coating Operations	Enclosures, Filtering System	Maricopa County Rule 315	Requirements for Spray Coating Operations within Maricopa County.
Abrasive Blasting	Confined Blasting, Wet Blasting, Vacuum Blasting, Emission Control System	Maricopa County Rule 312	Requirements for Abrasive Blasting operations within Maricopa County.

Table 3 identifies regulations applicable when operating in Pima County and verification as to why the standard applies.

Table 3: Applicable Regulations for Pima County

Unit	Control Device	Rule	Discussion
Crushing and Screening Plant	Spray Bars	Pima County Code (P.C.C.) 17.16.370	The regulations listed are applicable to crushing and screening plants located in Pima County.

Unit	Control Device	Rule	Discussion
Concrete Batch Plants	Emissions from silos are controlled by baghouses. Fugitive sources controlled by water spray and other reasonable precautions.	P.C.C. 17.16.380	The regulations listed are applicable to concrete batch plants located in Pima County.
Internal Combustion Engines	None	P.C.C. 17.16.340 P.C.C. 17.16.490	The regulation listed is applicable to all stationary gas turbines, oil-fired turbines and internal combustion engines. The regulations are identical to A.A.C. R18-2-719 so they have been streamlined into the facilitywide conditions.
Fugitive Dust/Other Specific Requirements	Water trucks, and wet suppressants	P.C.C. 17.16.040 P.C.C. 17.16.050 P.C.C. 17.16.060 P.C.C. 17.16.080 P.C.C. 17.16.090 P.C.C. 17.16.070 P.C.C. 17.16.100	The regulations listed are applicable to emissions produced from fugitive dust producing activities, vacant lots, open spaces, roads, streets, particulate materials and storage piles.

Table 4 identifies regulations applicable when operating in Pinal County and verification as to why that standard applies.

Table 4: Applicable Regulations for Pinal County

Unit	Control Device	Rule	Discussion
Fugitive Dust	Water trucks, and wet suppressants	Pinal Code 4-7-230.N Pinal Code 4-2-040 Pinal Code 4-2-050	The regulations listed are applicable to sources of fugitive dust emissions.

V. PREVIOUS PERMIT CONDITIONS

A. Changes to Current Renewal

Table 6 addresses the changes made to the sections and conditions from the previous Crushing and Screening General Permit.

Table 5: Previous Permit Conditions

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "A"		X		General Provisions: Revised to represent the most recent template language

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "B" Section II		X		Facility Wide Requirements: Revised to represent the most recent template language
Att. "B" Section III		X		Facility Wide Requirements: Revised to reflect current throughput limitations and operational requirements.
Att. "B" Section IV		X		Internal Combustion Engine (ICE) Non-NSPS Requirements: Revised to reflect the most recent regulatory language
Att. "B" Section VI		X		ICE NSPS Subpart IIII Requirements: Revised to reflect the most recent regulatory language
Att. "B" Section VII		X		ICE NSPS Subpart JJJJ Requirements: Revised to reflect the most recent regulatory language
Att. "B" Section VIII			X	Mobile Source Requirements: Removed from the permit language.
Att. "C"		X		Crushing and Screening Plant Requirements: Revised to reflect the most recent regulatory language
Att. "D"		X		Concrete Batch Plant Requirements: Revised to reflect the most recent regulatory language
Att. "E"		X		Maricopa County Operating Requirements: Revised to reflect the most recent regulatory language
Att. "F"		X		Pima County Operating Requirements: Revised to reflect the most recent regulatory language
Att. "G"		X		Pinal County Operating Requirements: Revised to reflect the most recent regulatory language
Appendix "B"	X			Map of Nonattainment Areas

VI. UPDATES TO PRODUCTION THROUGHPUT LIMITATIONS

The throughput limitations for the Crushing and Screening General Permit were revised to account for varying operating scenarios for product loading at collocated concrete batch plants, a revised approach determination of fugitive emissions from wind erosion, and updates to modeling protocols since the previously issued Crushing and Screening General Permit. The operating scenarios were evaluated for compliance with the NAAQS, and throughput limitations were evaluated to ensure that Class II permit applicability would be maintained. In this General Permit, collocated concrete batch plants are required to be either baghouse-controlled truck mix plants or central mix plants, as emissions of particulate matter from uncontrolled truck mix product loading points far exceed the alternative operating scenarios and led to difficulties ensuring compliance with the NAAQS statewide while providing sufficient throughput for operations.

VII. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

Table 7 below contains an inclusive but not an exhaustive list of the monitoring, recordkeeping and reporting requirements prescribed by the air quality permit. The table below is intended to provide insight to the public for how the Permittee is required to demonstrate compliance with the emission limits in the permit.

Table 7: Monitoring, Recordkeeping, and Reporting Requirements

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
pStatewide				Do not operate the equipment identified in the ATO for more than the number of annual hours limit specified in the ATO.	Maintain records of the operating hours of the equipment with an hourly restriction, records of the total daily throughput of material, records of the total daily production of the concrete batch plant in cubic yards per day. Keep a logbook of the updated emission calculations and make it available to inspectors upon request. Keep a log for each non-road engine, including the dates the engine is brought to and removed from the facility, and the make, model, serial number and capacity.	
	Internal Combustion	PM	$1.02Q^{0.769}$, Q is the heat input		Keep records of a current, valid purchase contract,	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
	Engine(S)-Non-NSPS		in million Btu per hour.		tariff sheet or transportation contract, including fuel lower heating value, and make them available to ADEQ upon request.	
		Opacity	40% (excluding the first 10 minutes from cold start)	Conduct quarterly periodic opacity monitoring for all engines except natural gas or propane engines.		
		SO_2	1.0 lb/MMBtu		For spark ignition (SI) engines, maintain records of the gas quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the gaseous fuel, specifying that the maximum total sulfur content of the fuel; for diesel engines, keep records of fuel supplier certifications or other documentation listing the sulfur content. Make the records available to ADEQ upon request.	Report to the Director any daily period when the fuel sulfur content exceeds 0.8%.
		HAPs (Emergency Engines)			Keep records of operation hours of the RICE recorded through the non-resettable hour meter,	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					including the date, start and stop times, hours spent for emergency operation, what classified the operation as emergency and how many hours are spent for non-emergency operation; keep records of the oil analysis parameters and the results, if any, and the oil changes for the engine; and keep records of the maintenance conducted on the engine.	
		HAPs (Non-Emergency Compression Ignition Engines)	Limit CO concentration in the engine exhaust to 49 ppmv at 15 percent O_2 for engines between 300-500 HP, and 23 ppmvd at 15 percent O_2 for engines greater than 500 HP, or reduce CO	For Engines greater than 500 HP, choose to use CEMS or CPMS for monitoring CO emissions. Conduct initial and subsequent performance test.	Keep a copy of each notification and report that was submitted to comply with 40 CFR 63 Subpart ZZZZ, records of the occurrence and duration of each malfunction of operation or the air pollution control and monitoring equipment, records of performance tests and performance evaluations, records of all required maintenance, records of actions taken	Submit all applicable notifications in 40 CFR 63.7(b) and (c), 63.8(e), (f)(4) and (f)(6), 63.9(b) through (e), and (g) and (h), a Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin; for engines greater than 300 HP required to conduct a performance test or initial compliance demonstration,

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			emissions by 70%.		during periods of malfunction, and records of continuous compliance.	submit a Notification of Compliance Status.
		HAPs (Non-Emergency Spark Ignition Engines)		Install and operate a CPMS to continuously monitor catalyst inlet temperature, and install equipment to automatically shut down the engine if the catalyst inlet temperature exceeds 1350 °F for 4SLB engine and/or 1250 °F for 4SRB engine. Conduct initial and subsequent performance test.	For each CEMS or CPMS, keep records described in 40 CFR 63.10(b)(2)(vi) through (xi), previous versions of the performance evaluation plan, requests for alternatives to the relative accuracy test for CEMS or CPMS. For engines less than 300 HP, 2SLB engines, 4 SRB (<500 HP) engines, and 4SLB (<500 HP) engines, and subject to management practices, keep records of the maintenance.	For engines greater than 300 HP and 4 SRB or 4 SLB engines greater than 500 HP, submit semi-annual compliance reports.
	Internal Combustion Engine(S) Subject to NSPS Subpart IIII		For non-emergency engines: depending on model year, displacement, and engine power, comply with the	For non-emergency engines: if an engine is equipped with a diesel particulate filter, install a backpressure monitor on the diesel particulate filter that notifies the Permittee when the high	For non-emergency engines: if an engine is equipped with a diesel particulate filter, shall keep records of any corrective action taken after the backpressure monitor has notified the Permittee that the high	For non-emergency engines: for an engine that is a pre-2007 model year > 175 hp and not certified, submit an initial notification as required in 40 CFR 60.7(a)(1).

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			applicable emission standards.	backpressure limit of the engine is approached.	backpressure limit of the engine is approached. For an engine that is a pre-2007 model year > 175 hp and not certified, keep records of all notifications submitted, maintenance conducted on the engine. If the engine is certified, keep documentation from the manufacturer, or if the engine is not certified, keep documentation that the engine meets the emission standards.	
			For fire pump engines, and emergency engines depending on the model year, displacement, brake horsepower, and modified or reconstructed emergency engines, comply with	Depending on model year, conduct performance tests and/or purchase certified engines.	Keep performance test results, records of engine manufacturer data and certification, and records of control device vendor data, as applicable. For an engine that is a pre-2007 model year > 175 hp and not certified, keep records of all notifications submitted, maintenance conducted on the engine. If the engine is certified, keep documentation from the manufacturer, or if the	For pre-2007 model year engines that are greater than 175 HP and are not certified, submit an initial notification as required in 40 CFR 60.7(a)(1).

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			the applicable emission standards.		engine is not certified, keep documentation that the engine meets the emission standards. If the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter, and records of the operation time of the engine and the reason the engine was in operation during that time. If the stationary CI internal combustion engine is equipped with a diesel particulate filter, keep records of any corrective action taken after the backpressure monitor has notified the Permittee that the high backpressure limit of the engine is approached.	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					Maintain monthly records of engine operation.	
	Internal Combustion Spark Ignition Engines Subject to 40 CFR 60 Subpart JJJJ		For stationary engines with a maximum engine power less than or equal to 19 KW (25 HP) manufactured on or after July 1, 2008, comply with the emission standards in 40 CFR 60.4231(a); stationary gasoline engines with a maximum engine power greater than 19 KW (25 HP) manufactured on or after January 1, 2009 comply with the emission standards in 40	Purchase an engine certified to the emission standards as applicable and control device according to the manufacturer's instructions. If not operate and maintain according to the manufacturer's instructions, comply with Condition VI.E.1.b.	Keep records of all notifications and all documentation supporting any notification, maintenance conducted on the engine. For certified engine, keep documentation from the manufacturer; for non-certified engine or a certified engine operating in a non-certified manner and subject to 40 CFR 60.4243(a)(2), keep documentation that the engine meets the emission standards. If the emergency stationary SI ICE ≥ 500 HP after July 1, 2010, or if 130 HP ≤ the emergency stationary SI ICE ≤ 500 HP on or after July 1, 2011, or if the 25 HP ≤ the emergency stationary SI ICE ≤ 130 HP manufactured on or after July 1, 2008, that do not	If operating a non-certified stationary SI ICE ≥ 500 HP to meet the emission standards in 40 CFR 60.4231, submit an initial notification as required in 40 CFR 60.7(a)(1). If operating an emergency stationary CI ICE > 100 HP or is contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in Conditions VI.E.4.a(2)(b) and (c), submit an annual report according to the requirements in Conditions VI.F.6.

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			CFR 60.4231(b); stationary rich burn engines with a maximum engine power greater than 19 KW (25 HP) manufactured on or January 1, 2009 that use LPG comply with the emission standards in 40 CFR 60.4231(c).		meet the applicable non-emergency engines standards, keep records of the hours of engine operation recorded through the non-resettable hour meter.	
			Non-emergency engines greater than 19 KW (25 HP) and less than 75 KW (100 HP) (except gasoline and rich burn engines that use LPG), comply with	Purchase a certified engine; if not, demonstrate compliance according to the performance testing requirements in 40 CFR 60.4244, as applicable, and according to Conditions VI.E.2.b.		

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			the emission standards for field testing in 40 CFR 1048.101(c); for the other stationary engines, comply with the emission standards listed in Condition VI.D.12.			
			For modified or reconstructed stationary engines, comply with Condition VI.D.10.	Purchase a certified engine, or demonstrate compliance according to the performance testing requirements in 40 CFR 60.4244, as applicable.		
	Fugitive Dust	PM	40% Opacity		A Method 9 observer is required to conduct a weekly survey of visible emissions. Maintain records of the dates when any of the reasonable precautions and	Record of the dates and types of dust control measures employed, and if applicable, the results of any Method 9 observations, and any corrective action taken to

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					control measures were adopted. Keep records of the explosive blasting information.	lower the opacity of any excess emissions.
	Abrasive Blasting	PM	20% Opacity			Record the date, duration and pollution control measures of any abrasive blasting project.
	Spray Painting	VOC	20% Opacity Control 96% of the overspray			Maintain records of the date, duration, quantity of paint used, any applicable MSDS, and pollution control measures of any spray painting project.
	Demolition/ Renovation	Asbestos				Maintain records of all asbestos related demolition or renovation projects including the "NESHAP Notification for Renovation and Demolition Activities" form and all supporting documents
	Crushing and Screening Plant Subject to NSPS	PM and Opacity	Crushers without capture systems: ≤ 15% (fugitive emissions, after August 31, 1983 and	Conduct monthly opacity monitoring. Monitor the daily process weight of sand, gravel or crushed stone produced. If a wet scrubber is used, monitor the scrubber	For facilities on or after April 22, 2008, record each periodic inspection required in a logbook and keep the logbook onsite and make it available to the Director upon request.	For all new facilities, submit a notification of the date construction or reconstruction no later than 30 days after; submit a notification of the actual initial startup date within 15 days after.

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			before April 22, 2008) ≤ 12% (fugitive emissions, on or after April 22, 2008)	accordingly and conduct initial performance test. If wet suppression is used perform monthly periodic inspections. If a baghouse is used for facilities on or after April 22, 2008, conduct quarterly 30-minute visible emissions inspections. Conduct initial performance test for all the applicable opacity and PM limits.		For existing facilities, submit a notification of any physical or operational change which may increase the emission rate of any air pollutant; a notification of the actual date of initial startup; for a combination of affected facilities begin actual initial startup on the same day, submit a single notification of startup within 15 days after. If a facility operates any wet and saturated material processing operation and subsequently processes unsaturated materials, submit a report of this change within 30 days. Submit written reports of the results of all performance tests.
			Crusher with capture systems: ≤ 10% (fugitive emissions), ≤ 7% (dry control device stack emissions), and ≤ 0.05 g/dsm^3 (stack emissions), after August 31, 1983 and before April 22, 2008 ≤ 7% (fugitive emissions, dry control device stack emissions) and 0.032 g/dsm^3			

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			(stack emissions), on or after April 22, 2008			
			Operations enclosed in a building: ≤ 7% (fugitive emissions) ≤ 7% or ≤ 0.05 g/dsm^3 (stack emissions), after August 31, 1983 and before April 22, 2008 ≤ 0.032 g/dsm^3 (stack emissions), on or after April 22, 2008			
	Crushing and Screening Plant Subject to Existing	PM	≤ 4.10P$^{0.67}$ (for process weight rate ≤ 60,000 lbs/hr) ≤ 55.0P$^{0.11}$– 40 (for process	Conduct monthly opacity monitoring. Install, calibrate, maintain, and operate monitoring devices to determine daily the	Maintain records of the daily production rate of gravel or crushed stone produced.	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
	Source Requirements		weight rate > 60,000 lbs/hr) P = process weight rate in tons/hr	process weight of sand, gravel or crushed stone produced. Monitor and record once per day the pressure drop (in inches of H_2O) across the baghouse.	Maintain logs of all maintenance activities performed on the baghouse.	
		Opacity	20%			
	Concrete Batch Plants	Opacity	20%	Conduct monthly opacity monitoring. Monitor and record once per day the pressure drop (in inches of H_2O) across the baghouse.	Maintain logs of all maintenance activities performed on the baghouse.	
	Boilers			Burn only natural gas, liquefied petroleum gas (butane or propane), on-specification used oil, or ultra-low sulfur diesel fuel in the boiler(s).	Maintain copies of the fuel analysis.	
		PM	$\leq 1.02Q^{0.769}$, Q = the heat input in MMBtu/hr		Keep records of fuel supplier certifications.	
		Opacity	15%	Conduct monthly opacity monitoring of visible emissions.		

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
		SO_2	≤ 1.0 lb/MMBtu.	Burn only ultralow sulfur fuel.		
		HAPs			Keep a copy of each notification and report that was submitted to comply with this 40 CFR 63 Subpart JJJJJJ and all documentation supporting any Initial Notification or Notification of Compliance Status, and records to document conformance with the work practices, and management practices.	Prepare by March 1 and submit upon request, a biennial compliance certification report.
	Direct-fired Equipment	PM	≤ $4.10P^{0.67}$ (for process weight rate ≤ 60,000 lbs/hr) ≤ $55.0P^{0.11}$ – 40 (for process weight rate > 60,000 lbs/hr) P = process weight rate in tons/hr			
		Opacity	20%			

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Maricopa County	Facility Wide	Opacity	20% for a period aggregating more than three minutes in any 60 minute period	Conduct a weekly monitoring of visible emissions	Keep for 5 years records of process and operational information required; maintain all the records in accordance with the approved O&M Plan; maintain a copy of all earth moving permits; and maintain a copy of the most recently approved Dust Control Plan on-site.	
	Crushing and Screening Plants	PM	Stack: 7% or .014 grains per dry standard cubic foot Fugitive: Transfer Point: 7% Crusher: 15% (or 12% for plants manufactured on or after April 22, 2008) Truck Dumping: 20%	Conduct soil moisture testing at the applicable frequency.	Maintain all records in accordance with soil moisture testing, the approved O&M Plan, and the Dust Control Plan.	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			Other Process Source: 10% (or 7% for plants manufactured on or after April 22, 2008)			
	Concrete Batch Plants	PM	Stack: 5% (or .01 gr/dscf for Silos installed after June 8, 2005) Fugitive: 10% (from process source, excluding truck dumping)		Maintain all records in accordance with the approved Dust Control Plan.	
	Internal Combustion Engines	Opacity	20%		Maintain a list of stationary RICE including: combustion type; manufacturer; model designation, rated bhp, serial number, and the location of each engine. Maintain records of the monthly and 12-month rolling total hours of operation for each	
			For non-emergency engines rated 250 bhp or greater: comply with the emission standards in Table 1 or Table 2 of			

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			Attachment "E" as applicable		stationary RICE, and monthly and annual hours of operation for reliability related activities and the number of operating hours for emergency use and an explanation for the emergency use. Maintain records of all stationary RICE maintenance (including the date when maintenance was performed and the maintenance procedures that were performed). Make one of the following where the stationary RICE is located: a. The manufacturer's written instructions for operations and maintenance of each stationary RICE; b. A written maintenance schedule; or c. A written maintenance plan. Maintain records of the type and amount of fuel purchased for use in the stationary RICE; and maintain records of the sulfur content of any fuel	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					that is used in the stationary RICE, excluding gasoline. For gasoline, maintain records that the fuel was purchased in the United States. If applicable, keep manufacturer's written instructions for operation and maintenance. If the manufacturer's written instructions are not available, keep a preventative maintenance plan. For each non-road engine, keep the make, model, serial number, and rated capacity (bhp hours); and the Date of each instance in which the engine is moved from its existing location, and the reason why the engine was moved; and the fuel type and sulfur content. Retain all records for 5 years.	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
	Fugitive Dust	Opacity	20%	Conduct a monthly visual survey of visible emissions. Conduct performance tests for soil stabilization and moisture content as required.	Keep records of the name of observer, date, time, and result of the visible emissions survey and observation. Maintain written records of all self-inspections of fugitive dust control measures implemented. Maintain records of all Basic Dust Control Training Class certifications on site. For visible emissions survey, if opacity < 20%, make a record of the location, date, and time of the observation, and the results of the Method 9 observation.	Submit a Dust Control Plan that includes all the information required in the permit, and submit a revised Dust Control Plan if applicable according to the permit. For visible emissions survey, if opacity ≥ 20%, report it as an excess emission.
	Abrasive Blasting	Opacity	20% (aggregating more than three minutes in any sixty-minute period)	Conduct visible emissions observations with Method 9 and other provisions in the permit.	Keep the records onsite that are applicable to all abrasive blasting operations, and reports, logs, and supporting documentation required. Maintain records of the Operation and Maintenance Plan for each	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
					emission control system used to control emissions.	
	Painting Operations	VOCs	Surface coating and architectural coating operations: comply with all the applicable requirements in Maricopa County rules 335 and 336. Spray Coating Operations: meet all the requirements in the permit.			
Pima County	Crushing and Screening Plant	PM	$\leq 3.59P^{0.62}$ (for process weight rate $\leq$ 60,000 lbs/hr) $\leq 17.31P^{0.16}$ (for process weight rate > 60,000 lbs/hr) P = process weight rate in tons/hr			
		Opacity	Comply with Table 1 of this Attachment			
	Concrete Batch Plant	Fugitive Emissions	Same as Fugitive Dust			
	Fugitive Dust	Opacity (point sources)	60% (Cold Diesel Engines the first 10 consecutive	Conduct weekly visible emissions observations by Method 9	Maintain the records of weekly visible emissions observations	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			minutes after starting up; Loaded Diesel Engines being accelerated under loa;d) 0 (Asbestos-Containing Operation); 20% (Other sources)			
		Opacity (non-point sources)	20% (Eastern Pima County, east of the eastern boundary of the Tohono O'Odham Reservations) 40% (all other areas of Pima County)	Conduct visible emissions observations by Reference Method 9	Maintain the records of weekly visible emissions observations.	
Pinal County	Fugitive Dust	Opacity	20% (from open areas/vacant lots, or unpaved lots greater than	Conduct visible emissions observations by Method 9.	Make a record of the control measures applied.	

Location	Emission Unit	Pollutant	Emission Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
			5000 square feet)			

VIII. AMBIENT AIR IMPACT ANALYSIS

A. Overview of Modeling Methodology

The Department performed a modeling analysis to determine throughput limits for Crushing & Screening (C&S) facilities under which compliance with the National Ambient Air Quality Standards (NAAQS) can be demonstrated using regulatory air quality models. Because particulate matter (PM) is the primary pollutant emitted from a C&S, the Department has established the maximum daily throughputs for C&S to protect the 24-hour standards for PM_{10} and $PM_{2.5}$.

In the modeling analysis, the Department estimated the emissions rates for individual operating processes based on the maximum daily throughputs in the previous C&S general permit (GP). These emission rates, along with other model inputs such as meteorology and source release parameters, were input into a regulatory air dispersion model. Representative background concentrations were added to modeled concentrations and the total concentrations were then compared to the NAAQS. If the total concentrations are below the NAAQS, the Department would retain the existing maximum daily throughputs. However, if the total concentrations are higher than the NAAQS, the Department would reduce the daily throughput limits until the total concentrations are below the NAAQS. Figure 1 shows the procedures.

The Department's analysis focused on three criteria pollutants – PM_{10}, $PM_{2.5}$ and NO_2. The Department does not present the modeling analysis for SO_2 and CO in this document because the modeled concentrations for the two pollutants were well below the NAAQS and they were not used to establish any permitting conditions for the C&S GP.

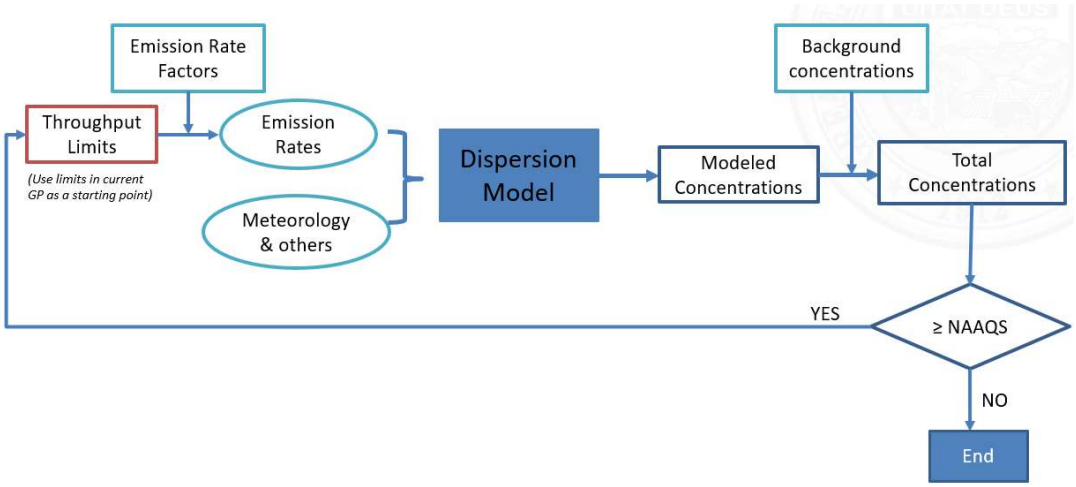


Figure 1 Flowchart for Determining Throughput Limits Using a Regulatory Dispersion Model

B. Updates in Comparison with the Previous GP Modeling

Compared to the previous modeling efforts for GP (dated April 24, 2017), this modeling analysis has made the following updates:

- Used the latest version of the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) modeling system;
- Used the most recent 5 years of meteorological data;
- Updated the emission rates for wind erosion; and

- Re-estimated background concentrations aligning with the EPA's Guideline on Air Quality Models (40 CFR Part 51 Appendix W).

Based on the modeled results, the Department is proposing the following daily throughput limits as presented in Table 6.

Table 6 Throughput limits for Crushing & Screening Plants

Facility	Throughput Limits for Demonstrating the Compliance with NAAQS	
	PM_{10} Attainment Area	**PM_{10} Non-attainment Area**
Stand-alone C&S	5,000 tons per day (tpd)	4,000 tpd
C&S with concrete batch plant (CBP)	C&S: 5,000 tpd CBP: 1,275 cubic yard (yd^3) per day	C&S: 4,000 tpd CBP: 1,000 yd^3 per day

Additionally, the Department requires that the following permitting conditions must be met:

- The applicable operating area shall exclude the West Central Pinal $PM_{2.5}$ nonattainment area (NAA);
- If operating in Maricopa County, the size of non-certified generator shall not exceed 750 horsepower (HP). A non-certified engine is any engine that does not meet at least a Tier 1 emission standard in accordance with 40 CFR 89.112(a);
- If a CBP is collocated with a C&S and the CBP has truck mixing operations, the truck loading point must be controlled by a dust capture system and baghouse. The use of a boot or skirt that surrounds the opening at the loading point only does not fall into the category of "Controlled".

C. Model Selection

The Department used the most recent version of AERMOD (version 21112) for this modeling analysis. AERMOD is the EPA's preferred near-field dispersion modeling system for a wide range of regulatory applications. The AERMOD modeling system includes four regulatory components:

- AERMOD: the dispersion model;
- AERMAP: the terrain processor for AERMOD;
- AERMET: the meteorological data processor for AERMOD; and
- BRIPPRIME: the building input processor

The Department did not use the terrain processor (AERMAP) and the building input processor (BRIPPRIME) for this modeling analysis because both of them require site-specific information. Moreover, the Department determined that an assumption of "Flat Terrain" was reasonable, since the emission sources of a C&S are mainly ground level sources or near ground sources and the worst-case impacts are expected to occur in or near the ambient area boundary.

The Department used AERMET (version 21112) to process the meteorological data collected from 11 Automated Surface Observing Stations (ASOS) across the State of Arizona and one station in California. For details, please see Section E.

D. Source Inputs

1. Emission Rates

Particulate Matter (PM) is the primary pollutant emitted from both a C&S and a CBP. If there are internal combustion engines (generators) or boilers within the facility, gaseous pollutants such as SO_2, NOx, and CO are also generated.

a. Emission Rate Factor

In general, the emissions were estimated according to latest AP-42 emission factors for concrete batching, crushing & screening, internal combustion engines, boilers, wind erosion, and unpaved roads. In particular, a consistent approach was developed for estimating $PM_{2.5}$ and PM_{10} emissions for batch drop operations and material transfer operations. This approach was based on AP-42 Section 13.2.4 Equation 1:

$$E = k(0.032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

E = emission factor (lb/ton);

k = particle size multiplier (dimensionless), 0.35 for PM_{10} and 0.053 for $PM_{2.5}$;

U = mean wind speed (miles per hour); and

M = material moisture content (%)

State-wide meteorological data sets were reviewed and a mean wind speed of 7.5 miles per hour was determined. Due to very limited data available for the parameter M, the moisture content was arbitrary set as 5% for controlled emissions.

b. Emission Inventory

The Department has developed an emission inventory for a C&S with an operating capacity of 325 tons per hour (tph) (Table 2). Note that this capacity was used for the convenience of emission estimation only, and it is not the maximum allowable throughput for the C&S GP. To model the operating capacity other than 325 tph, the emission rates listed in Table 2 were adjusted as discussed later (D.1.c). Table 3 lists the emission rates for all sources in the CBP, assuming an operating capacity of 1,275 yd^3 per day. Besides the sources above, emissions from unpaved roads and a large internal combustion engine (generator) were also modeled. The emission rates of pollutants from these sources are summarized in Table 4.

c. Modeled Emission Rates

24-hour $PM_{2.5}$ and PM_{10} standards

As indicated above, the Department estimated maximum hourly emission rates for C&S sources based on an operating capacity of 325 tph. If a C&S was modeled to run at a specific capacity (tons/day), the modeled hourly emission rates for applicable sources were adjusted by using Emission Rate Flag HROFDY in AERMOD:

$$HROFY = \frac{\text{modeled operating capacity (tons per day)}}{325 \text{ tons per hour} \times 24 \text{ hours}}$$

Many batch drop and material transfer operations in a C&S are not continuous and the emission sources are typically characterized as intermittent sources. The Emission Rate Flag approach substitutes an intermittent source with a continuous source that emits an identical amount of PM_{10} or $PM_{2.5}$ over a 24-hour time period. Such treatment should provide a reasonable approximation of 24-hour average impact.

1-hour standard for NO_2

Maximum hourly emission rates were modeled for comparisons to 1-hour standard for NO_2.

Annual standards

Conservatively, the Department used 24-hour average emission rates to model annual standards for $PM_{2.5}$, and the maximum hourly emission rates to model annual NO_2.

2. Sources Layout

The layout of C&S plants generally differs from one site to another. To simplify the modeling analysis, the Department developed a generic site plan for a C&S, stand-alone or collocated with a CBP, as shown in Figure 2 and Figure 3, respectively. The Department developed the layout of sources according to the site plans of several existing plants with necessary simplifications for modeling purposes.

3. Source Release Parameters

The emission sources, categorized by source type (release characteristics), are as follows:

a. Point Sources: cement silo, boiler, and generator;

b. Area Sources: aggregate storage pile wind erosion, sand storage pile wind erosion, combined transfer points in crushing & screening plants;

c. Volume Sources: crushing & screening operations, batch drop operations, material transfer operations, trucks/front-end loaders traveling on unpaved roads.

Tables 10-12 summarize the source release parameters used in the modeling analysis. The Department determined these parameters following the ADEQ air modeling guidelines as well as the methodology for modeling fugitive dust sources developed by National Stone, Sand & Gravel Association. The representative physical dimensions for stacks, crushers, screens, storage piles, hoppers, bins, silos, trucks, and front-end loaders were determined on the basis of actual measurements or testing data from three facilities in Maricopa County.

Table 7 Maximum Hourly Emission Rates for Crushing & Screening[1]

Area Source			
Source ID	*Source Description*	*$PM_{2.5}$ (g/s)*	*PM_{10} (g/s)*
CS_WEAS	Aggregate Storage Pile	5.55E-04	3.70E-03
CS_WEFS	Fines Storage Pile	1.25E-03	8.32E-03
CS_TRANS	Transfer and Drop points	1.51E-02	7.34E-02
Volume Sources			
Source ID	*Source Description*	*$PM_{2.5}$ (g/s)*	*PM_{10} (g/s)*
CS_PCRSH	Primary Crusher-Jaw	4.10E-03	2.22E-02
CS_SCR1	Screen #1	2.05E-03	3.03E-02
CS_SCR2	Screen #2	2.05E-03	3.03E-02
CS_FSCR	Fine Screen	4.55E-03	9.03E-02
CS_SCRSH	Secondary Crusher -Core	4.10E-03	2.22E-02
CS_TCRSH	Tertiary Crusher	4.10E-03	2.22E-02
CSLT01-28	C&S Loader Traffic	5.35E-03	5.35E-02

Table 8 Maximum Hourly Emission Rates for Concrete Batch Plant[2]

Point Sources				
Source ID	*Source Description*	*$PM_{2.5}$ (g/s)*	*PM_{10} (g/s)*	*NOx (g/s)*
CBP_CSTS	Cement Supplement Transfer to Cement Silo	1.84E-04	1.20E-03	-
CBP_CTCS	Cement Transfer to Cement Silo	8.40E-05	5.60E-04	-
CBP_BOIL	Boiler	1.17E-02	1.17E-02	1.80E-01
Area Sources				
Source ID	*Source Description*	*$PM_{2.5}$ (g/s)*	*PM_{10} (g/s)*	
CBP_WEAS	Aggregate Storage Pile	5.55E-04	3.70E-03	
CBP_WESS	Sand Storage Pile	3.12E-04	2.08E-03	
Volume Sources				
Source ID	*Source Description*	*$PM_{2.5}$ (g/s)*	*PM_{10} (g/s)*	

[1] Emission rates were estimated based on an operating capacity of 325 tph.
[2] Emission rates were estimated based on an operating capacity of 1,275 yd^3 per day.

CBP_ADGS	Aggregate Delivery to Ground Storage	4.98E-04	3.29E-03
CBP_SDGS	Sand Delivery to Ground Storage	3.81E-04	2.52E-03
CBP_ATC	Aggregate Transfer to Conveyor	4.98E-04	3.29E-03
CBP_STC	Sand Transfer to Conveyor	3.81E-04	2.52E-03
CBP_ATEB	Aggregate Transfer to Elevation Bins	4.98E-04	3.29E-03
CBP_STEB	Sand Transfer to Elevation Bins	3.81E-04	2.52E-03
CBP_WHL	Weigh Hopper Loading	3.98E-04	2.65E-03
CBP_TML	Truck Mix Loading (controlled)	1.56E-03	1.04E-02
CBPLT01-03	CBP Loader Traffic	1.76E-03	1.76E-02

Table 9 Emission Rates for Other Sources

Point Sources				
Source ID	*Source Description*	*$PM_{2.5}$ (g/s)*	*PM_{10} (g/s)*	*NOx (g/s)*
GEN_LAR (1000 hp)	Generator >= 600 hp	8.84E-02	8.84E-02	3.03E+00
GEN_LAR (750 hp)	Generator >= 600 hp	6.63E-02	6.63E-02	2.27E+00
Volume Sources				
Source ID	*Source Description*	*$PM_{2.5}$ (g/s)*	*PM_{10} (g/s)*	
TRUCK01-54	Truck Traffic	1.65E-02	1.65E-01	

Figure 2 Sources Layout of a Generic Crushing & Screening Plant (refer to Table 2 and Table 4 for detailed source descriptions)

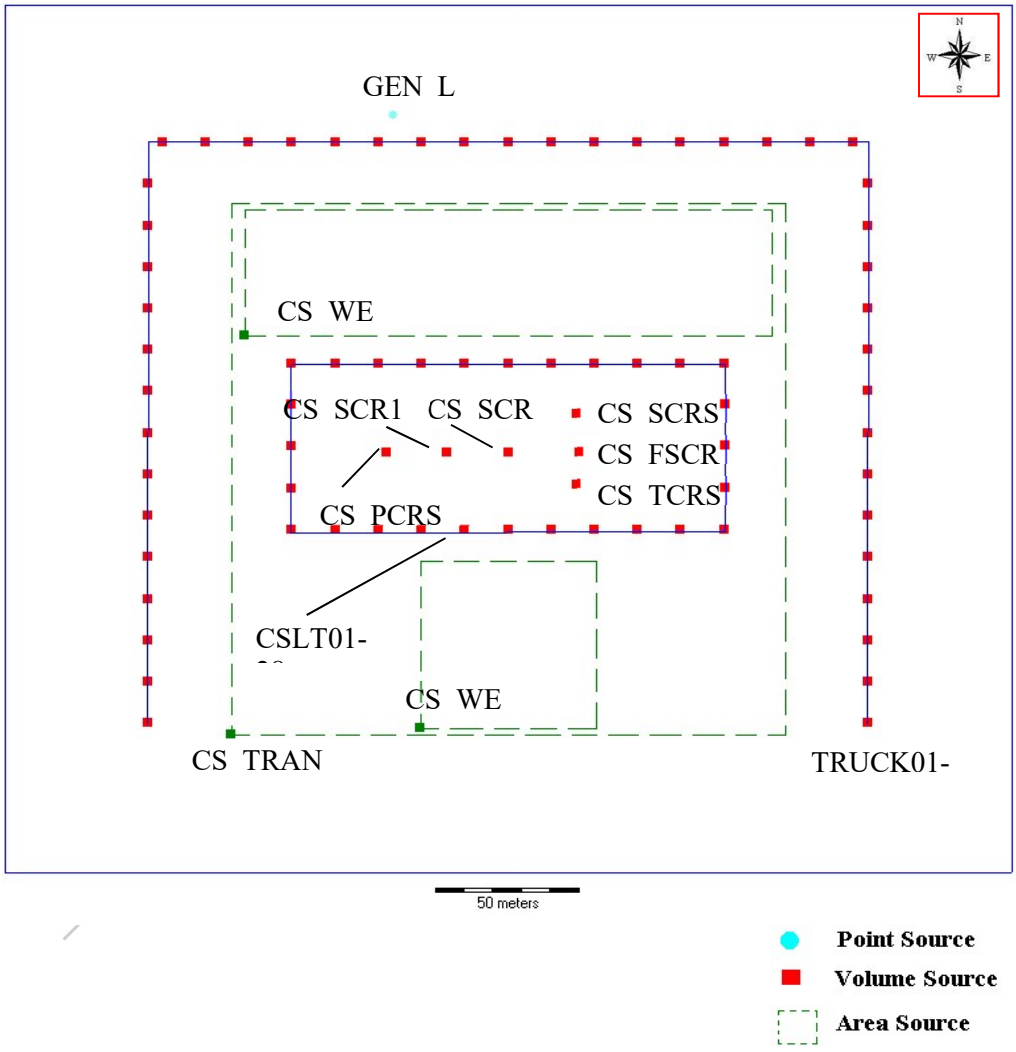


Figure 3 Sources Layout of a Generic Crushing and Screening Plant with a Concrete Batch Plant (refer to Tables 2-4 for detailed source descriptions)

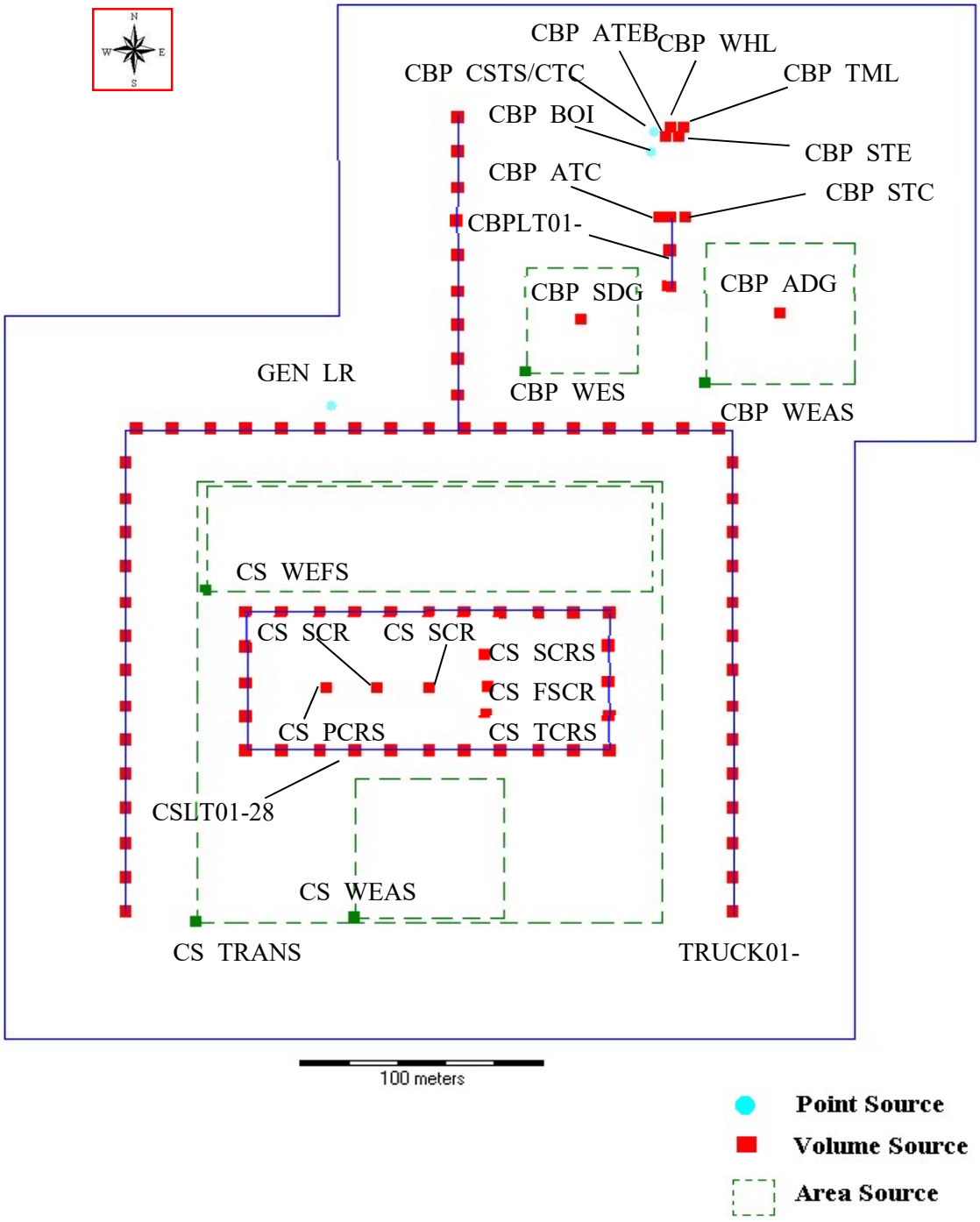


Table 10 Modeling Source Parameters for Crushing and Screening Plant

Area Source					
Source ID	*Source Description*	*Release Height (m)*	X-Length (m)	Y-Length (m)	Angel (degree)
CS_WEAS	Aggregate Storage Pile	1.83	60.96	60.96	0.00
CS_WEFS	Fines Storage Pile	1.83	182.88	45.72	0.00
CS_TRANS	Transfer Points	1.52	192.02	192.02	0.00

Volume Sources				
Source ID	*Source Description*	*Release Height (m)*	Initial Horizontal Dimensions (m)	Initial Vertical Dimensions (m)
CS_PCRSH	Primary Crusher-Jaw	5.18	0.43	2.41
CS_SCR1	Screen #1	7.62	0.85	3.54
CS_SCR2	Screen #2	7.62	0.85	3.54
CS_FSCR	Fine Screen	7.62	0.85	3.54
CS_SCRSH	Secondary Crusher -	7.62	0.37	3.54
CS_TCRSH	Tertiary Crusher	6.10	0.27	2.83
CSLT01-28	C&S Loader Traffic	3.00	7.00	2.80

Table 11 Modeling Source Parameters for Concrete Batch Plant

Point Sources					
Source ID	*Source Description*	*Release Height (m)*	*Stack Temperature (K)*	*Stack Velocity (m/s)*	*Stack Diameter (m)*
CBP_CSTS	Cement Supplement Transfer to Cement Silo	12.20	Ambient Temperature	4.00	0.32
CBP_CTCS	Cement Transfer to Cement Silo	12.20	Ambient Temperature	4.00	0.32
CBP_BOIL	Boiler	12.19	533.00	7.62	0.30
Area Sources					
Source ID	*Source Description*	*Release Height (m)*	*X-length*	*Y-length*	*Angel (degree)*
CBP_WEAS	Aggregate Storage Pile	1.83	60.96	60.96	0.00
CBP_WESS	Sand Storage Pile	1.83	45.72	45.72	0.00
Volume Sources					
Source ID	*Source Description*	*Release Height (m)*	*Initial Horizontal Dimensions (m)*	*Initial Vertical Dimensions (m)*	
CBP_ADGS	Aggregate Delivery to Ground Storage	6.17	1.60	2.20	
CBP_SDGS	Sand Delivery to Ground Storage	6.17	1.60	2.20	
CBP_ATC	Aggregate Transfer to Conveyor	3.51	0.85	0.43	
CBP_STC	Sand Transfer to Conveyor	3.51	0.85	0.43	
CBP_ATEB	Aggregate Transfer to Elevation Bins	8.08	0.71	0.43	
CBP_STEB	Sand Transfer to Elevation Bins	8.08	0.71	0.43	
CBP_WHL	Weigh Hopper Loading	4.72	0.85	0.14	
CBP_TML	Truck Mix Loading (controlled)	3.05	0.25	0.50	
CBPLT01-03	CBP Loader Traffic	3.00	7.00	2.80	

Table 12 Modeling Source Parameters for Other Sources

Point Sources					
Source ID	*Source Description*	*Release Height (m)*	*Stack Temperature (K)*	*Stack Velocity (m/s)*	*Stack Diameter (m)*
GEN_LAR	Generator >= 600 hp	5.00	750	75	0.22

Volume Sources				
Source ID	*Source Description*	*Release Height (m)*	Initial Horizontal Dimensions (m)	Initial Vertical Dimensions (m)
TRUCK01-54	Truck Traffic	3.00	7.00	2.80

E. Meteorological Data

The Department obtained meteorological data from the ASOS network. The ASOS station can utilize AERMINUTE to significantly reduce calm or missing hours, which is critical for modeling short-term standards. As shown in Table 8, nine meteorological data sets were used to represent the meteorological conditions for PM_{10} attainment areas and three meteorological data sets for PM_{10} NAA, respectively. Data are available for the five-year period of 2016 to 2020.

The Department processed the meteorological data using AERMET version 21112 and AERMINUTE version 15272 and AERSURFACE version 20060. Based on EPA's recommendations, a minimum wind speed threshold of 0.5 m/s was used to treat winds below the threshold as calms. Additionally, the Department has incorporated the ADJ_U* option in the meteorological data processing.

It should be addressed that the EPA overhauled the AERSURFACE tool. The previous version (13016) was limited to the use of the 1992 National Land Cover Database (NLCD) while the new version (20060) has the ability to process more recent NLCD products, including 2001, 2006, 2011, and 2016 land cover data. These updates to AERSURFACE may significantly influence the estimated surface characteristics parameters and thus modeled concentrations. Compared to the version 13016, as the Department found, the 20060 version may yield a lower surface roughness, resulting in a higher modeled concentration for the C&S GP modeling.

F. Receptor Grid

Receptors were spaced 25 meters along ambient air boundary (AAB) and 50 meters from AAB to 500 meters. Since the emission sources modeled are mainly ground level sources, the receptor network beginning at AAB and extending outward to one kilometer (km) is sufficiently large to identify the maximum impacts.

Table 13 Meteorological Data Sets used for AERMOD Modeling Analysis

Data Name	Surface Data	Upper Air Data	Data Period	County	For PM_{10} attainment areas or non-attainment areas?
Blythe, California	Blythe Airport	Las Vegas (KVEF)	01/01/2016-12/31/2020	La Paz[3]	Attainment
Flagstaff	Flagstaff Pulliam Airport	Flagstaff (KFGZ)	01/01/2016-12/31/2020	Coconino	Attainment
Kingman	Kingman Airport	Las Vegas (KVEF)	01/01/2016-12/31/2020	Mohave	Attainment
Nogales	Nogales International Airport	Tucson (KTUS)	01/01/2016-12/31/2020	Santa Cruz	Non-attainment
Tucson	Tucson International Airport	Tucson (KTUS)	01/01/2016-12/31/2020	Pima	Attainment
Page	Page Municipal Airport	Flagstaff (KFGZ)	01/01/2016-12/31/2020	Coconino	Attainment
Phoenix	Phoenix Sky Harbor International Airport	Tucson (KTUS)	01/01/2016-12/31/2020	Maricopa	Non-attainment
Prescott	Prescott Municipal Airport	Flagstaff (KFGZ)	01/01/2016-12/31/2020	Yavapai	Attainment
Safford	Safford Regional Airport	Tucson (KTUS)	01/01/2016-12/31/2020	Graham	Attainment
St Johns	St. Johns Industrial Air Park	Albuquerque (KABQ)	01/01/2016-12/31/2020	Apache	Attainment
Winslow	Winslow–Lindbergh Regional Airport	Albuquerque (KABQ)	01/01/2016-12/31/2020	Navajo	Attainment
Yuma	Yuma Marine Corps Air Station	Tucson (KTUS)	01/01/2016-12/31/2020	Yuma	Non-attainment

G. Background Concentrations

1. Background Concentration for PM_{10}

In the previous modeling for the C&S GP, the Department estimated the background concentrations for 24-hour average PM_{10} based on language in Paragraph 8.2.2(b) of 40 CFR Part 51 Appendix W (November 2005). Specifically, the Department determined the meteorological conditions accompanying the concentration of concern (wind over 15 miles per hour, sustained for 3 or more hours) and averaged all 24-hour average PM_{10} concentrations over the course of the last 3 years for days that were over that wind speed. Based on this approach, the background concentration that used for modeling in PM_{10} NAA was 58 micrograms per cubic meter ($\mu g/m^3$). For PM_{10} attainment areas the concentration was 26 $\mu g/m^3$. Using these concentrations allowed facilities covered under the C&S GP to operate statewide, including in Maricopa County.

On January 17, 2017, EPA published a final rule that revises 40 CFR Part 51 Appendix W. The final rule removed the language of averaging concentrations for meteorological conditions of concern when determining the background concentrations for shorter averaging periods. Instead, the final rule recommends the use of the current design value for the applicable NAAQS as the best starting point. Therefore, the Department re-examined the background concentrations for 24-hour PM_{10} to ensure that the

[3] Due to the proximity, the Blythe Airport data are used to represent the meteorological conditions in La Paz County.

background determinations for the C&S GP modeling are consistent with Federal regulation.

a. Overview of PM_{10} Background Concentrations in Arizona

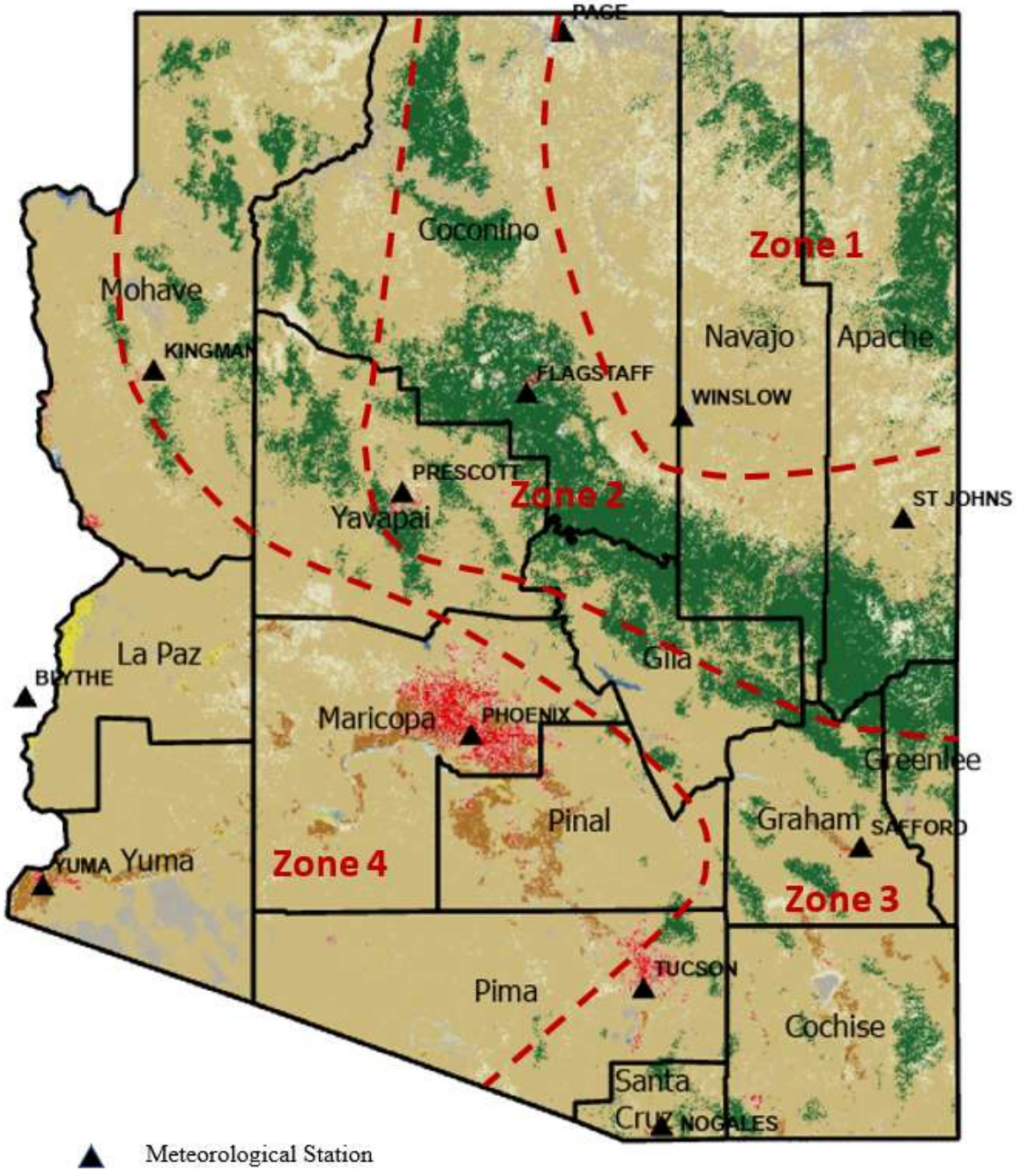
In Arizona, the PM_{10} monitoring data are strongly influenced by the climate, elevation and precipitation of the area where a monitoring station is located. Arizona has varied topographical areas and climate zones (Figure 3):

- Zone 1: A high plateau in the northeast, with elevations averaging between 5,000 and 7,000 feet above mean sea level. The plateau country receives approximately 10 inches of precipitation annually. Since vegetation on the plateau consists of sagebrush and native grasses, grazing is the primary land use. Higher ridges here are covered with junipers and pinon trees.
- Zone 2: A high mountainous region oriented southeast to northwest with maximum elevations between 9,000 and 12,000 feet. This region of the state averages between 25 and 30 inches of precipitation (rain plus snow water equivalence) annually. Within this region lies an unbroken stand of Ponderosa Pine.
- Zone 3: Low mountain ranges that form a transition zone between the high mountainous region and desert valleys in the southwestern portion of the state.
- Zone 4: Desert valleys in the southwestern portion of the state, with elevations as low as 100 feet above mean sea level. These desert valleys are an extension of the Sonoran Desert of Mexico. Annual precipitation is as low as three or four inches per year.

In general, Zone 2 has the lowest PM_{10} background concentration in Arizona, mainly due to high precipitation and heavy vegetation. On the contrary, Zone 4 has the highest background concentrations because of its desert nature. Indeed, many PM_{10} NAA in Arizona (Phoenix, West Pinal, Rillito and Yuma) are within Zone 4. The PM_{10} background concentrations in the transition Zone 3 are usually higher than those of Zone 2 but lower than those of Zone 4. Due to the lack of monitoring data, the background concentration for Zone 1 cannot be evaluated. However, the majority of Zone 1 are in tribal lands where the state GPs do not apply.

It should be addressed that an individual monitor is also strongly influenced by the degree of localized emissions of coarse particles. Therefore, even under the same climate zone, the monitoring concentrations from different monitors may vary significantly. Additionally, some areas such as Nogales and Yuma are impacted by international/interstate transport of emissions.

Figure 4 Arizona Climatological Zones



Zone 1: northeast high plateau

Zone 2: high mountains

Zone 3: low mountains and transition zone

Zone 4: southwest desert

b. PM_{10} NAA

The Department's analysis focused on Maricopa County as it is the most concentrated area for the C&S GPs, and also has been extensively monitored for PM_{10}. The Department selected a time period of 2017-2019 to estimate the PM_{10} background concentration. The 2020 data were not used because the lockdowns during 2020 pandemic may result in a biased estimate of air quality.

The Department used the following procedures to estimate the background concentration for Maricopa County:

- Obtained daily concentrations data for Years 2017, 2018 and 2019 from the EPA website: https://www.epa.gov/outdoor-air-quality-data;
- Calculated the 24-hour average monitoring concentration for each day by averaging the daily concentrations for 21 monitoring stations across Maricopa County;
- Removed the 24-hour average concentrations for days associated with unusual events or atypical conditions. Due to the arid nature of the state, Arizona is susceptible to both windblown dust events and smoke events from forest fire, both of which may qualify as unusual events or atypical conditions. Air quality monitoring data due to unusual events or atypical conditions must be excluded for the background determinations. The Department has identified the following unusual or atypical days:

  Year 2017: 9/7/2017, 10/21/2017;
  Year 2018: 1/9/2018, 4/12/2018, 4/19/2018, 7/8/2018, 7/9/2018, 7/21/2018, 7/30/2018, 8/2/2018, 8/7/2018, 8/8/2018;
  Year 2019: None.

- Selected the 2nd highest daily concentration for each year and then calculated the average concentration of the three years.

The calculated 24-hour average concentration was 86.5 µg/m^3. The Department rounded it up to 90 µg/m^3, which was used as the background concentration for PM_{10} NAA for the GP modeling purposes.

c. PM_{10} Attainment/Maintenance Areas

As previously discussed, the PM_{10} monitoring concentrations may vary significantly from one region to another. Upon reviewing the PM_{10} minoring data across the state, the Department determined that the Pima County monitoring data generally provide a reasonable estimation of the background concentrations for PM_{10} attainment/maintenance areas except two regions:

- Mohave Valley region; and
- High mountainous region in Coconino County and Yavapai County.

In general, the use of the Pima County monitoring data would underestimate the background concentrations for Mohave Valley region while overestimating the background concentrations in the high mountainous region

(such as Flagstaff and Prescott Valley) in Coconino County and Yavapai County.

Mohave Valley Region

The Mohave Valley region is located in climate Zone 4 and has experienced elevated PM_{10} concentrations. Historically the Bullhead City, Arizona area was designated as a moderate PM_{10} nonattainment area, and now the area is a PM_{10} maintenance area. The PM_{10} monitoring data collected at the Bullhead City monitoring site between 2017 and 2019 indicate that the average of the 2nd highest 24-hour concentrations over three years was 88 $\mu g/m^3$. Therefore, the Department used a background concentration of 88 $\mu g/m^3$ coupled with the Kingman Airport meteorological data to model the GPs in Mohave County.

High Mountainous Region in Coconino County and Yavapai County

The PM_{10} background concentrations in this region are relatively low as they are located in Zone 2. Currently there is no state operated monitor within this region. The Department reviewed the historical monitoring data (2011-2013) collected from the Prescott Valley PM_{10} monitor and the Flagstaff PM_{10} monitor. While both monitors were disactivated, it is expected that these historical data may still represent the current air quality in Prescott Valley and Flagstaff. The average of the 2nd highest 24-hour concentrations over three years was 29 $\mu g/m^3$ for Prescott Valley and 33 $\mu g/m^3$ for Flagstaff, respectively. Considering these data were not current, the Department used a background concentration of 40 $\mu g/m^3$ for this region with a sufficient safety margin.

Pima County and Remaining Areas

There are 9 active monitoring stations in Pima County. Since the Rillito monitor is located within the Rillito PM_{10} NAA, the Department focused on the monitoring data collected from the other 8 monitoring stations during 2017-2019. The Department calculated the 24-hour average monitoring concentration for each day by averaging the daily concentrations for these stations. The average of the 2nd highest 24-hour concentrations over three years was 59.3 $\mu g/m^3$. Therefore, the Department used a background concentration of 60 $\mu g/m^3$ for Pima County and remaining areas.

Table 14 summarizes the PM_{10} background concentrations used in the GP modeling analysis.

Table 14 PM_{10} Background Concentrations Used in the GP Modeling Analysis

Regions		PM_{10} Background Concentration ($\mu g/m^3$)	Notes
PM_{10} NAA		90	2017-2019 data from Maricopa County
PM_{10} Attainment /Maintenance Areas	Mohave Valley (Bullhead City)	88	2017-2019 data from Bullhead City
	High Mountainous Region in Coconino County and Yavapai County (Flagstaff, Prescott Valley)	40	2011-2013 data from Flagstaff/Prescott Valley with sufficient safety margin
	Remaining Areas	60	2017-2019 data from Pima County

2. Background Concentration for $PM_{2.5}$

The spatial variations of $PM_{2.5}$ are typically smaller compared to PM_{10} because the long atmospheric residence time of fine particles allows long-range transport and leads to more uniform mass concentrations. Based on the 2017-2019 monitoring data, the Department classified the state into three different zones.

a. West Central Pinal $PM_{2.5}$ NAA

A portion of the West Central Pinal $PM_{2.5}$ NAA was banned from the previous C&S GP because the monitoring data collected from the Cowtown monitor showed significant violation for $PM_{2.5}$ NAAQS, both annual and 24-hour standards. In 2016, Pinal County Air Quality Control District (PCAQCD) moved the Cowtown monitor to a new location (Hidden Valley) at Stanfield. The 2017-2019 data collected from the Hidden Valley monitor still show violation for both annual and 24-hour $PM_{2.5}$. Therefore, the Department is proposing to expand the prohibition area to the entire West Central $PM_{2.5}$ NAA.

b. PM_{10} NAA (Excluding the West Central Pinal $PM_{2.5}$ NAA)

While the 2017-2019 monitoring data in these areas show the compliance with the NAAQS for $PM_{2.5}$, the $PM_{2.5}$ concentrations in these areas are significantly higher than other areas in the state. The Department estimated the $PM_{2.5}$ background concentration for these areas by averaging the monitoring concentrations obtained from all monitors in Maricopa County, the Casa Grande monitor in Pinal County, the Nogales monitor in Santa Cruz, and the Yuma monitor in Yuma County.

c. Remaining areas

For the remaining areas, the Department estimated the background concentrations for $PM_{2.5}$ by averaging the monitoring concentrations obtained from the monitors in Pima County, Cochise County, and La Paz County.

Table 15 summarizes the $PM_{2.5}$ background concentrations used in the GP modeling analysis.

Table 15 $PM_{2.5}$ Background Concentrations Used in the GP Modeling Analysis

Areas	Averaging Period	Background Concentration ($\mu g/m^3$)	Source of Data	Note
West Central Pinal $PM_{2.5}$ NAA	--	--	--	Prohibited
PM_{10} NAA (excluding the West Central Pinal $PM_{2.5}$ NAA)	24-hour	21	https://www.epa.gov/outdoor-air-quality-data Monitors including: all monitors in Maricopa; Case Grande in Pinal County; Nogales in Santa Cruz County; and Yuma Supersite in Yuma County.	Average of the 98th percentile 24-hour values over 2017-2019
	Annual	7.9		Average of the annual values over 2017-2019
Other Areas	24-hour	12	https://www.epa.gov/outdoor-air-quality-data Monitors including: Children's Park and Orange Grove in Pima County; Douglas in Cochise County; Alamo Lake in La Paz County.	Average of the 98th percentile 24-hour values over 2017-2019
	Annual	5.4		Average of the annual values over 2017-2019

3. Background Concentration for NO_2

a. Background Concentration for One-Hour NO_2

There are very limited NO_2 monitoring sites in Arizona and nearly all monitoring sites are located in the Phoenix and Tucson metropolitan areas. To determine representative background concentrations for 1-hour NO_2, the modeling analysis has classified the state of Arizona into three areas: Phoenix metropolitan area; Tucson metropolitan area; and the remaining areas. Based on this classification, background concentrations were determined for the three areas separately.

The monitoring data collected from 6 monitors (Central Phoenix, JLG Supersite, West Phoenix, Diablo, Thirty-Third, Buckeye) during 2017-2019 were used to determine the background concentrations for Phoenix metropolitan area. The monitoring data collected from 2 monitors (Children's Park and 22nd & Craycroft) during 2017-2019 were used to determine the background concentrations for Tucson metropolitan area. The monitoring data collected from Deming, New Mexico were used for the background concentrations for the remaining areas, considering that the data should provide a representative or conservative estimate.

The modeling analysis used hour-of-day monitored background concentrations, which were determined as follows:

- For each of the three years under review, compiled all of the NO_2 concentrations by hour of day (1AM, 2AM, 3AM, etc) and calculated the 98 percentiles of NO_2 concentrations for each hour of the day;
- Calculated the background concentrations as the 3-year average of the 98 percentiles of concentrations for each hour of the day.

Table 16 provides the background concentrations for modeling 1-hour NO_2.

Table 16 One-Hour NO_2 Background Concentrations ($\mu g/m^3$)

	Phoenix Metropolitan Area	Tucson Metropolitan Area	Remaining Areas
HOUR 1	78.1	47.8	34.6
HOUR 2	72.8	43.4	32.1
HOUR 3	67.9	39.3	31.5
HOUR 4	65.7	38.6	29.6
HOUR 5	64.7	40.3	32.1
HOUR 6	68.0	42.9	34.0
HOUR 7	69.2	48.5	36.5
HOUR 8	71.3	51.0	34.0
HOUR 9	73.8	46.8	29.0
HOUR 10	73.1	39.6	18.3
HOUR 11	68.6	34.5	8.8
HOUR 12	60.4	27.6	5.7
HOUR 13	54.9	21.1	5.0
HOUR 14	52.3	18.1	4.4
HOUR 15	49.8	17.5	4.4

HOUR 16	49.6	20.1	5.0
HOUR 17	54.7	29.4	5.7
HOUR 18	71.1	47.1	16.4
HOUR 19	85.9	58.7	36.5
HOUR 20	87.7	62.6	46.0
HOUR 21	88.3	62.8	46.6
HOUR 22	87.3	61.1	45.4
HOUR 23	86.1	57.3	42.8
HOUR 24	82.7	53.7	38.4

b. Background Concentration for Annual NO_2

The Department selected the JLG Supersite Monitor in Maricopa County for determining the state-wide background concentrations for annual NO_2, considering that the data should provide a representative or conservative estimate. The highest annual concentration of NO_2 during 2017-2019 was approximately 30 $\mu g/m^3$.

H. NO_2 Modeling Methodology

1. One-Hour NO_2 Modeling

The Department employed the Plume Volume Molar Ratio Method (PVMRM) approach for modeling 1-hour NO_2:

- The in-stack ratios of NO_2/NOx for a generator and a boiler were assumed to be 10%.
- Hourly background ozone concentrations from the JLG Supersite monitor were used across the State, considering that the Phoenix ozone data should provide conservative estimate for areas other than Phoenix metropolitan Area.
- Because urban heat island affects Phoenix all year-round, the urban dispersion option was used for modeling the Phoenix metropolitan areas. Considering part of the urban area that will contribute to the urban heat island plume affecting the sources, the Department determined a population of 3,000,000 for input to AERMOD. The rural dispersion option is used for other areas.

NO_2 background concentrations as listed in Table 16 were directly input to the model with the HROFDY option.

2. Annual NO_2 Modeling

The Department used the NO_2/NOx ratio of 0.75 (annual national default) to estimate the annual ambient NO_2 concentrations. A background concentration of 30 $\mu g/m^3$ was added to the modeled concentration.

I. MODELED RESULTS

1. C&S Collocated with CBP

Tables 17-19 summarize the modeled results for the co-location of a C&S (5,000 tpd for PM_{10} attainment areas and 4,000 tpd for PM_{10} NAA) and a CBP (1,275 yd^3 per day for PM_{10} attainment areas and 1,000 yd^3 for PM_{10} NAA). Representative background

concentrations were added to modeled impacts and the total concentrations were then compared to the NAAQS. As shown in the tables, emissions from a C&S collocated with a CBP will not cause or contribute to a violation of the NAAQS.

The AERMOD modeling analysis also revealed that the modeled impacts from C&S plants were limited to near-field areas. All modeled maximum concentrations for all pollutants under varied meteorological conditions occurred in ambient area boundary.

Table 17 Modeled Results for $PM_{2.5}$ for C&S Collocated with CBP

Meteorological data sets	Modeled concentration (µg/m^3)		Background concentration (µg/m^3)		Total concentration (µg/m^3)		NAAQS (µg/^{3})
	24-hour	Annual	24-hour	Annual	24-hour	Annual	
Blythe	4.7	2.1	12	5.4	16.7	7.5	24-hour: 35 Annual: 12
Flagstaff	10.2	3.7	12	5.4	22.2	9.1	
Kingman	5.3	2.4	12	5.4	17.3	7.8	
Page	7.9	3.6	12	5.4	19.9	9.0	
Prescott	11.7	5.5	12	5.4	23.7	10.9	
Safford	5.4	2.2	12	5.4	17.4	7.6	
St Johns	7.4	3.4	12	5.4	19.4	8.8	
Tucson	5.7	3.2	12	5.4	17.7	8.6	
Winslow	7.1	3.0	12	5.4	19.1	8.4	
Nogales	6.8	4.0	21	7.9	27.8	11.9	
Phoenix	5.2	2.4	21	7.9	26.2	10.3	
Yuma	5.7	2.0	21	7.9	26.7	9.9	

Table 18 Modeled Results for 24-hour PM_{10} for C&S Collocated with CBP

Meteorological data sets	Modeled concentration (µg/m^3)	Background concentration (µg/m^3)	Total concentration (µg/m^3)	NAAQS (µg/m^3)
Blythe	48.3	60	108.3	150
Flagstaff	103.2	40	143.2	
Kingman	55.3	88	143.3	
Page	80.8	60	140.8	
Prescott	106.1	40	146.1	
Safford	54.0	60	114.0	
St Johns	75.9	60	135.9	
Tucson	54.3	60	114.3	
Winslow	71.6	60	131.6	
Nogales	59.8	90	149.8	
Phoenix	50.5	90	140.5	
Yuma	50.2	90	140.2	

Table 19 Modeled Results for NO_2 for C&S Collocated with CBP

Meteorological data sets	Modeled Concentration (µg/m³)		Background concentration (µg/m³)		Total concentration (µg/m³)		NAAQS (µg/m³)
	1-	Annual	1-hour	Annual	1-	Annual	
Blythe	186	16.0	See Table 11	30	186	46.0	1-hour: 189 Annual: 100
Flagstaff	162	25.1	See Table 11	30	162	55.1	
Kingman	174	24.1	See Table 11	30	174	54.1	
Page	105	7.5	See Table 11	30	105	37.5	
Prescott	99	8.3	See Table 11	30	99	38.3	
Safford	167	26.6	See Table 11	30	167	56.6	
St Johns	162	20.6	See Table 11	30	162	50.6	
Tucson	141	9.0	See Table 11	30	141	39.0	
Winslow	161	18.5	See Table 11	30	161	48.5	
Nogales	125	11.3	See Table 11	30	125	41.3	
Phoenix	167	7.7	See Table 11	30	167	37.7	
Yuma	153	11.7	See Table 11	30	153	41.7	

2. Stand Alone C&S

Tables 15-17 summarize the modeled results for a C&S with a throughput of 5,000 tpd located in a PM_{10} attainment areas and a C&S with a throughput of 4,000 tpd in a PM_{10} non-attainment area. As shown in the tables, emissions from a C&S will not cause or contribute to a violation of the NAAQS.

The AERMOD modeling analysis also revealed that the modeled impacts from C&S plants were limited to near-field areas. All modeled maximum concentrations for all pollutants under varied meteorological conditions occurred in ambient area boundary.

[4] Background concentrations have been included in the model runs. Therefore, the reported concentrations reflect the total concentrations of modeled concentrations plus background concentrations.

Table 20 Modeled Results for $PM_{2.5}$ for Stand Alone C&S

Meteorological data sets	Modeled concentration ($\mu g/m^3$)		Background concentration ($\mu g/m^3$)		Total concentration ($\mu g/m^3$)		NAAQS ($\mu g/m^3$)
	24-hour	Annual	24-hour	Annual	24-hour	Annual	
Blythe	4.4	2.0	12	5.4	16.4	7.4	24-hour: 35 Annual: 12
Flagstaff	9.5	3.4	12	5.4	21.5	8.8	
Kingman	4.8	2.2	12	5.4	16.8	7.6	
Page	7.3	3.1	12	5.4	19.3	8.5	
Prescott	9.3	5.0	12	5.4	21.3	10.4	
Safford	5.1	2.0	12	5.4	17.1	7.4	
St Johns	7.4	3.9	12	5.4	19.4	9.3	
Tucson	5.3	2.8	12	5.4	17.3	8.2	
Winslow	6.2	2.7	12	5.4	18.2	8.1	
Nogales	6.1	2.8	21	7.9	26.1	10.7	
Phoenix	5.0	2.1	21	7.9	25.0	10.0	
Yuma	5.1	1.5	21	7.9	25.1	9.4	

Table 21 Modeled Results for 24-hour PM_{10} for Stand Alone C&S

Meteorological data sets	Modeled concentration ($\mu g/m^3$)	Background concentration ($\mu g/m^3$)	Total concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)
Blythe	44.3	60	104.3	150
Flagstaff	96.4	40	136.4	
Kingman	49.2	88	137.2	
Page	73.8	60	133.8	
Prescott	84.8	40	124.8	
Safford	50.2	60	110.2	
St Johns	69.0	60	129.0	
Tucson	50.8	60	110.8	
Winslow	64.6	60	124.6	
Nogales	57.8	90	147.8	
Phoenix	46.5	90	136.5	
Yuma	45.3	90	135.3	

Table 22 Modeled Results for NO_2 for Stand Alone C&S

Meteorological data sets	Modeled concentration ($\mu g/m^3$)		Background concentration ($\mu g/m^3$)		Total concentration ($\mu g/m^3$)		NAAQS ($\mu g/m^3$)
	1-hour[5]	Annual	1-hour	Annual	1-hour	Annual	
Blythe	180	15.5	See Table	30	180	45.5	1-hour: 189 Annual: 100
Flagstaff	156	23.7	See Table	30	156	53.7	
Kingman	164	22.3	See Table	30	164	52.3	
Page	108	6.8	See Table	30	108	36.8	
Prescott	102	8.0	See Table	30	102	38.0	
Safford	159	25.1	See Table	30	159	55.1	
St Johns	150	18.5	See Table	30	150	48.5	
Tucson	144	8.3	See Table	30	144	38.3	
Winslow	153	17.0	See Table	30	153	47.0	
Nogales	118	10.1	See Table	30	118	40.1	
Phoenix	161	7.1	See Table	30	161	37.1	
Yuma	148	11.0	See Table	30	148	41.0	

[5] Background concentrations have been included in the model runs. Therefore, the reported concentrations reflect the total concentrations of modeled concentrations plus background concentrations.

IX. LIST OF ABBREVIATIONS

AAB ..... Process Area Boundary
A.A.C. ..... Arizona Administrative Code
ADEQ ..... Arizona Department of Environmental Quality
AERMAP ..... Terrain Processor for AERMOD
AERMINUTE ..... 1-minute ASOS Wind Data Processor for AERMOD
AERMOD ..... AMS/EPA Regulatory Model
AERMET ..... AERMOD Meteorological Preprocessor
AERSURFACE ..... Surface Characteristics Processor for AERMOD
AMS ..... American Meteorological Society
ASOS ..... Automated Surface Observing Stations
ATO ..... Authorization To Operate
BACT ..... Best Available Control Technology
BRIPPRIME ..... Building Input Processor for AERMOD
Btu ..... British Thermal Units
CBP ..... Concrete Batch Plant
CEMS ..... Continuous Emissions Monitoring System
CFR ..... Code of Federal Regulations
CO ..... Carbon Monoxide
C & S ..... Crushing and Screening
CPMS ..... Continuous Parametric Monitoring System
EPA ..... Environmental Protection Agency
°F ..... degrees Fahrenheit
g ..... Gram
GP ..... General Permit
gr/dscf ..... Grains per dry standard cubic foot
HAP ..... Hazardous Air Pollutant
HMAP ..... Hot Mix Asphalt Plant
HP ..... Horsepower
hr ..... Hour
K ..... Kelvin
Km ..... Kilometer
kW ..... Kilowatt
m ..... Meter
MMBtu ..... Metric Million British Thermal Unit
NAA ..... Nonattainment Area
NAAQS ..... National Ambient Air Quality Standard
NESHAP ..... National Emission Standards for Hazardous Air Pollutants
NLCD ..... National Land Cover Database
NO_X ..... Nitrogen Oxides
NO_2 ..... Nitrogen Dioxide
NSPS ..... New Source Performance Standards
PCAQCD ..... Pinal County Air Quality Control District
PM ..... Particulate Matter
PM_{10} ..... Particulate Matter no larger than 10 µm nominal aerodynamic diameter
$PM_{2.5}$ ..... Particulate Matter no larger than 2.5 µm nominal aerodynamic diameter
PTE ..... Potential to Emit

PVMRM..... Plume Volume Molar Ratio Method
RACT.....Reasonably Available Control Technology
RICE ..... Stationary Reciprocating Internal Combustion Engine
SIA.....Significant Impact Area
SIL .....Significant Impact Level
SO_2 ..... Sulfur Dioxide Significant Impact Levels
tpd ..... Tons per day
tph ..... Ton per Hour
TPY..... Tons per Year
VOC.....Volatile Organic Compound
µ ..... Micro
yd^3 .....Cubic Yards
yr ..... Year