



**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT No. 97314**

I. INTRODUCTION

This Class I renewal permit is for the continued operation of Phoenix Cement Company's (PCC) Portland cement manufacturing facility in Clarkdale, AZ. Permit No. 97314 renews and supersedes Permit No. 69780.

A Class I permit is required because the facility's potential to emit for particulate matter (PM), nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), and hazardous air pollutants (HAPs) are greater than the major source thresholds. Permit No. 69780 had an expiration date of July 17, 2023, and the application for this permit renewal was submitted on January 5, 2023. This submission met the permit condition requiring that a complete and timely application be submitted by the Permittee at least six (6) months, but no earlier than eighteen (18) months, prior to the expiration date of the current permit.

A. Company Information

Facility Name: Phoenix Cement Company

Mailing Address: P.O. Box 428
Clarkdale, Arizona 86324

Facility Location: 601 North Cement Plant Road
Clarkdale, Yavapai County, Arizona 86324

B. Attainment Classification

This facility is located in Yavapai County which is designated as attainment or unclassified for all criteria pollutants.

II. PROCESS DESCRIPTION

A. Process Equipment

At the PCC facility, cement is produced from various types of rock, including limestone, volcanic ash, and mill scale. First, limestone and other types of rock are blasted and transported by haul trucks from the quarry to the primary crusher or to stockpiles. Crushed rock is routed to surge piles for subsequent transfer to the secondary crusher. The secondary crusher is used in conjunction with feeders and screens to further reduce the size of the rock before it is sent to the raw mill storage bays.

The crushed rock is conveyed from the storage bays to the raw mill for grinding via the rock bin, elevator, and separator. Meal-size material from the raw mill is transported to the blending system which is composed of two blending silos and one homogenizing silo. The in-line raw mill applies residual heat from the pre-heater flue whereas the existing separator and raw mill each have a dryer that supplies heated air. From the blending system, the meal is pumped via the alleviator into a bin from which the meal is discharged into the kiln.

The Portland cement manufacturing process consists of a state-of-the-art rotary kiln (Kiln 4) equipped with a five-stage, suspension pre-heater and in-line calciner. This system transforms the raw mix into clinker. The chemical reactions and physical processes that constitute the transformation are quite complex, but they can be conceptually divided into four stages, as a function of the location and temperature in the rotary kiln.

- Evaporation of uncombined water from raw materials as material temperature increases to 212 °F;
- Dehydration, as the material temperature increases from 212 °F to approximately 800°F to form oxides of silicon, aluminum, and iron;
- Calcination, during which carbon dioxide (CO₂) is evolved, between 1,650 °F and 1,800°F to form free lime (CaO); and
- Reaction of the oxides in the burning zone of the rotary kiln to form cement clinker at temperatures of approximately 2,750 °F.

The indirect-fired modern kiln burns a blend of coal and pet-coke. Coal and pet-coke are stored in separate piles from which each is conveyed into a shared crusher for crushing. The crushed coal or coke is sent to either coal bin or pet-coke bin that feeds a coal roller mill in certain blend ratio. The milled fuel blend is then sent to one of the two pulverized fuel bins for storage before being air-conveyed into the burning zone of the kiln.

Clinker discharges from the kiln into a clinker cooler. Clinker is removed from the clinker cooler by drag chains and moveable grates onto a common conveyor belt that transports it to two clinker storage domes.

B. Control Devices

Air pollution control devices at PCC include baghouses and dust collectors on various equipment throughout the facility to minimize PM emissions, and a selective non-catalytic reduction (SNCR) is used to minimize NO_x emissions from the kiln.

III. COMPLIANCE HISTORY

PCC received five (5) full inspections during the permit term. PCC also submitted ten (10) semiannual compliance certifications, and eight (8) excess emissions reports. No cases were generated in response to excess emissions reports submitted by PCC.

The results of performance tests conducted during the permit term are detailed in Table 1 below.

Table 1: Performance Test Results

Emission Unit	Pollutant	Date(s) of Test	Results of Performance Test	Limit	Pass/Fail
Coal Mill and Kiln	Hg	03/13/2019-03/14/2019	0.0189 lb/MMton Clinker	55 lb/MMton Clinker	Pass
Coal Mill and Kiln	HCl	03/13/2019-03/14/2019	0.67 ppm _{dv} @7% O ₂	3 ppm _{dv} @7% O ₂	Pass
Clinker Cooler	PM	3/20/2019	0.0013 lb/ton clinker	0.07 lb/ton clinker	Pass
Kiln (Raw Mill On)	Dioxins/Furans	05/21/2019-05/24/2019	0.00092 ng/dscm TEQ	0.20 ng/dscm TEQ	Pass
Kiln (Raw Mill Off)	Dioxins/Furans	05/21/2019-05/24/2019	0.00436 ng/dscm TEQ	0.20 ng/dscm TEQ	Pass
Clinker Cooler	PM	05/21/2019 & 05/23/2019	0.0074 lb/ton clinker	0.07 lb/ton clinker	Pass
Clinker Cooler	PM	5/28/2020	0.0138 lb/ton clinker	0.07 lb/ton clinker	Pass
Clinker Cooler	PM	1/26/2021	0.0063 lb/ton clinker	0.07 lb/ton clinker	Pass
Clinker Cooler	PM	06/28/2021-06/29/2021	0.0075 lb/ton clinker	0.07 lb/ton clinker	Pass
Kiln (Raw Mill On)	Dioxins/Furans	09/01/2021-09/03/2021	0.0003 ng/dscm TEQ	0.20 ng/dscm TEQ	Pass
Kiln (Raw Mill Off)	Dioxins/Furans	09/01/2021-09/03/2021	0.004 ng/dscm TEQ	0.20 ng/dscm TEQ	Pass
Coal Mill	THC	08/31/2021 – 09/01/2021	8.6 ppm _{vd} @7% O ₂	24 ppm _{vd} @7% O ₂	Pass
Kiln (Raw Mill On)	PM	03/09/2022-03/10/2022	0.0037 lb/ton clinker	0.07 lb/ton clinker	Pass
Kiln (Raw Mill Off)	PM	03/09/2022-03/10/2022	0.0143 lb/ton clinker	0.07 lb/ton clinker	Pass
Clinker Cooler	PM	08/09/2022-08/10/2022	0.0044 lb/ton clinker	0.07 lb/ton clinker	Pass

IV. EMISSIONS

The facility's potential to emit (PTE) was calculated based on EPA's Compilation of Air Pollution Emission Factors (AP-42 Sections 11.6, 11.9, 11.19.2, 13.2.1, 13.2.2, 13.2.4) for PM_{2.5}, and facility-wide emission limits for NO_x, PM, PM₁₀, CO, CO₂, and VOCs.

This facility is a categorical source as listed in the Arizona Administrative Code (A.A.C.)R18-2-101.23 and thus, the PTE includes fugitive emissions as well. The facility has a PTE more than the major thresholds of PM, PM₁₀, PM_{2.5}, NO_x, CO, SO₂, and HAPs.

The facility's PTE is provided in Table 2 below:

Table 2: Potential to Emit (tpy)

Pollutant	PTE
NO _x	3,271*
PM	773*
PM ₁₀	460*
PM _{2.5}	275
CO	764*
SO ₂	401*
VOC	41.5*

*Facility-Wide Emission Limit.

V. MINOR NEW SOURCE REVIEW (NSR)

Minor new source review is required if the emissions of any physical change or change in the method of an operation of an emission unit or stationary source results in an increase in emissions of any regulated minor NSR pollutant by an amount equal to or greater than the permitting exemption threshold (PET). As shown in Table 2 above, the emission increases resulting from this renewal permit are all below the permitting exemption thresholds, so minor NSR is not triggered at this time.

VI. VOLUNTARILY ACCEPTED EMISSION LIMITATIONS AND STANDARDS

The permit contains the following voluntary emission limitations and standards:

As part of PCC's Kiln 4 modernization project during Significant Permit Revision No. 35426 issued on January 31, 2007, PCC incorporated the following facility-wide emission limits. PCC has voluntarily accepted these following emission and operation limitations in order to avoid triggering Prevention of Significant Deterioration (PSD) requirements. The appropriate monitoring, recordkeeping, and reporting requirements were included to ensure that the voluntarily accepted emission limitations and standards are met.

Facility-Wide Emission Limits (rolling 12-month total):

- PM: 773 tons per year
- PM₁₀: 460 tons per year
- SO₂: 401 tons per year
- NO_x: 3,271 tons per year
- CO: 764 tons per year
- VOC: 41.5 tons per year

Kiln 4/In-Line Raw Mill and Coal Mill Emission Limits (rolling 12-month total):

- NO_x: 3,240 tons per year

- CO: 698 tons per year
- SO₂: 400 tons per year

Kiln 4/In-Line Raw Mill and Coal Mill Emission Limits (rolling 8-hour average):

- CO: 2.0 pounds per ton of clinker (lb/ton)

Quarry Explosives Usage:

- 1,473 tons per year (rolling 12-month total);
- 113 tons per calendar day; and
- 50 tons per hour

Fuel Usage:

- Up to 100 percent heat input from coal, #2 fuel oil, or natural gas
- Up to 100 percent heat input from pet-coke

VII. APPLICABLE REGULATIONS

Table 4 and Table 4 identify applicable regulations and verification as to why that standard applies for the Portland cement plant affected sources and other sources at PCC. The tables also contain a discussion of any regulations the emission units are exempt from.

Table 3: Applicable Regulations for Portland Cement Plant Affected Sources

Unit & Year	Construction Commencement Date	Control Device	Rule	Discussion
Kiln 4 (2002)	Before June 16, 2008	SNCR, Baghouses, Dust Collectors	40 CFR Part 63 Subpart LLL	40 CFR Part 63 Subpart LLL is applicable to Portland Cement manufacturing facilities.
			40 CFR Part 60 Subpart F	40 CFR Part 60 Subpart F is applicable to Portland Cement manufacturing facilities as well, but the construction of the Kiln at PCC commenced before June 16, 2008, and PCC is in compliance with the more stringent standards under 40 CFR Part 63 Subpart LLL, so the less stringent standards regulated under 40 CFR Part 60 Subpart F are not applicable per 40 CFR 63.1356 and 40 CFR 60.62(d). A comparison of the applicable potentially overlapping emissions limits can be found in Table 5 to show that PCC is in compliance with the more stringent standards.

Unit & Year	Construction Commencement Date	Control Device	Rule	Discussion
Clinker Cooler (2002)	Before June 16, 2008	Baghouses, Dust Collectors	40 CFR Part 63 Subpart LLL	40 CFR Part 63 Subpart LLL is applicable to Portland Cement manufacturing facilities.
			40 CFR Part 60 Subpart F	40 CFR Part 60 Subpart F is applicable to Portland Cement manufacturing facilities as well, but the construction of the Clinker Cooler at PCC commenced before June 16, 2008, and PCC is in compliance with the more stringent standards under 40 CFR Part 63 Subpart LLL, so the less stringent standards regulated under 40 CFR Part 60 Subpart F are not applicable per 40 CFR 63.1356 and 40 CFR 60.62(d). A comparison of the applicable potentially overlapping emissions limits can be found in Table 5 to show that PCC is in compliance with the more stringent standards.
Raw Mill (2002)	Before June 16, 2008	Baghouses, Dust Collectors	40 CFR Part 63 Subpart LLL 40 CFR Part 60 Subpart F	40 CFR Part 63 Subpart LLL and 40 CFR Part 60 Subpart F are both applicable to Portland Cement manufacturing facilities, and the emission limits from these two subparts for this unit are the same. To be consistent with the other cement plant emission units, the emission limit from 40 CFR Part 63 Subpart LLL was incorporated into the permit. A comparison of the applicable potentially overlapping emissions limits can be found in Table 5 to show that the emission limits from 40 CFR Part 63 Subpart LLL and 40 CFR Part 60 Subpart F for this unit are the same.

Unit & Year	Construction Commencement Date	Control Device	Rule	Discussion
Finish Mill systems (2002)	Before June 16, 2008	Baghouses, Dust Collectors	40 CFR Part 63 Subpart LLL 40 CFR Part 60 Subpart F	40 CFR Part 63 Subpart LLL and 40 CFR Part 60 Subpart F are both applicable to Portland Cement manufacturing facilities, and the emission limits from these two subparts for this unit are the same. To be consistent with the other cement plant emission units, the emission limit from 40 CFR Part 63 Subpart LLL was incorporated into the permit. A comparison of the applicable potentially overlapping emissions limits can be found in Table 5 to show that the emission limits from 40 CFR Part 63 Subpart LLL and 40 CFR Part 60 Subpart F for this unit are the same.
Coal Mill (2002)	Before June 16, 2008	Baghouses, Dust Collectors	40 CFR Part 63 Subpart LLL 40 CFR Part 60 Subpart F	40 CFR Part 63 Subpart LLL and 40 CFR Part 60 Subpart F are both applicable to Portland Cement manufacturing facilities, and the emission limits from these two subparts for this unit are the same. To be consistent with the other cement plant emission units, the emission limit from 40 CFR Part 63 Subpart LLL was incorporated into the permit. A comparison of the applicable potentially overlapping emissions limits can be found in Table 5 to show that the emission limits from 40 CFR Part 63 Subpart LLL and 40 CFR Part 60 Subpart F for this unit are the same.

Table 4: Applicable Regulations

Unit	Control Device	Rule	Discussion
In-line Kiln-4/Raw Mill, Clinker Coolers, Finish Mills, Raw Material and Clinker Storage and Handling, Bulk Unloading and Loading, and Bagging Systems	Dust collectors	40 CFR 63 Subpart LLL 40 CFR 60 Subpart F	<p>The facility is a major source of Hazardous Air Pollutant (HAP) emissions and is subject to NESHAP requirements under 40 CFR 63 Subpart LLL.</p> <p>Facilities constructed after August 17, 1971 are subject to 40 CFR 60 Subpart F.</p> <p>As per 40 CFR 63.1356, affected sources subject to the provisions of 40 CFR Subpart LLL are exempt from the otherwise applicable new source performance standards contained in 40 CFR 60 Subpart F, as the requirements under 40 CFR 63 Subpart LLL are more stringent.</p>
Quarry and raw material storage and handling	Dust collectors water sprays	A.A.C. R18-2-722 40 CFR Part 60 Subpart OOO	<p>For the equipment constructed prior to August 31, 1983, A.A.C R18-2-722 and 702 are applicable.</p> <p>NSPS 40 CFR Part 60 Subpart OOO is applicable to equipment constructed after August 31, 1983.</p>

Unit	Control Device	Rule	Discussion
Coal Preparation Plant	Dust collectors	<p>A.A.C. R18-2-702 A.A.C. R18-2-716</p> <p>40 CFR Part 63 Subpart LLL</p> <p>40 CFR 60 Subpart Y</p>	<p>Other equipment in the coal preparation plant are subject to Arizona A.A.C R18-2-716 if these are constructed prior to October 28, 1974.</p> <p>Since the coal mill uses kiln exhaust gases, this is considered inline coal mill and subject to NESHAP standards 40 CFR 63 subpart LLL as per 40 CFR 63.1340(b)(1). Also, as per 40 CFR 63.1340(b)(7), each conveying system transfer point associated with coal preparation used to convey coal from the mill to the kiln is subject to 40 CFR 63 Subpart LLL.</p> <p>The equipment constructed and modified after October 28, 1974 are subject to 40 CFR 60 Subpart Y.</p>
Natural Gas Engine	N/A	40 CFR Part 60 Subpart JJJJ	NSPS Subpart JJJJ is applicable to emergency spark ignition (SI) internal combustion engines (ICE) engines with a maximum power greater than 25 hp and manufactured after January 1, 2009. This emergency SI ICE meets the above specifications. Therefore, NSPS Subpart JJJJ is applicable.

Unit	Control Device	Rule	Discussion
Diesel Engine	N/A	<p>A.A.C. R18-2-702 A.A.C. R18-2-719</p> <p>40 CFR Part 63 Subpart ZZZZ</p>	<p>Existing stationary rotating machinery is subject to requirements under A.A.C. R18-2-719.</p> <p>The engine is not subject to NSPS Subpart III because it was constructed prior to April 1, 2006.</p> <p>The National Emission Standard for Hazardous Air Pollutants (NESHAP) Subpart ZZZZ is applicable to reciprocating internal combustion engines (RICE) located at major and area sources of HAPs. Existing emergency stationary RICE greater than 500 HP and constructed before December 19, 2002 do not have to meet the requirements of 40 CFR §63 Subpart ZZZZ (40 CFR §63.6590(b)(3)).</p>
Gasoline Storage Tanks	N/A	<p>A.A.C. R18-2-702 A.A.C. R18-2-710</p>	These requirements are applicable to existing storage tanks vessels for Petroleum Liquids.
Diesel Storage Tanks	N/A	<p>A.A.C. R18-2-702 A.A.C. R18-2-730</p>	These requirements are applicable to unclassified sources. Diesel fuel is not a “petroleum liquid” as defined in A.A.C. R-18-2-701.29. Therefore, R18-2-710 is not applicable.
Natural Gas-fired furnace and cooling towers	N/A	<p>A.A.C. R18-2-702 A.A.C. R18-2-730</p>	These requirements are applicable to unclassified sources.
Quarry and raw material storage and handling	Dust collectors water sprays	<p>A.A.C. R18-2-702 A.A.C. R18-2-722</p> <p>40 CFR Part 60 Subpart OOO</p>	<p>For the equipment constructed prior to August 31, 1983, A.A.C R18-2-722 and 702 are applicable.</p> <p>NSPS 40 CFR Part 60 Subpart OOO is applicable to equipment constructed after August 31, 1983.</p>

Unit	Control Device	Rule	Discussion
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. R18-2-702 A.A.C. R18-2-726	These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R18-2-727	These standards are applicable to any spray painting operation.
Demolition/renovation Operations	N/A	A.A.C. R18-2-1101.A.12	This standard is applicable to any asbestos related demolition or renovation operations.

A comparison of potentially overlapping emissions limits under 40 CFR Part 63 Subpart LLL and 40 CFR Part 60 Subpart F, and the emission limits PCC complies with are shown in Table 5. It can be seen that PCC is in compliance with the more stringent emission limits under these two subparts.

Table 5: Comparison of Potentially Overlapping Emissions Limits under 40 CFR Part 63 Subpart LLL and 40 CFR Part 60 Subpart F

Unit	Pollutants	NSPS Subpart F Limits*	NESHAP Subpart LLL Limits	Permitted Emission Limit or Standard
Kiln	PM	0.30 pounds per ton of feed (existing)	0.07 lb/ton clinker	0.07 pounds per ton of clinker
	Opacity	20% (exempt if uses CPMS) (only existing)	N/A	Exempt (PCC has CPMS)
Clinker Cooler	PM	0.10 lb per ton of feed (existing)	0.07 lb/ton clinker	0.07 pounds per ton of clinker
	Opacity	10% (exempt if uses CPMS) (only existing)	N/A	Exempt (PCC has CPMS)
Any affected facility other than the kiln and clinker cooler (including raw or finish mill)	Opacity	10% (this limit is for existing and new equipment)	10% (this limit is for existing and new raw or finish mill)	10% for all other affected equipment

* For emission limits under NSPS Subpart F, "existing" means construction commenced on or before June 16, 2008, and "new" means construction commenced after June 16, 2008.

VIII. PREVIOUS PERMIT REVISIONS AND CONDITIONS

A. Previous Permit Revisions

No permit revisions were made to Permit No. 69780 during the previous permit term.

B. Changes to Current Renewal

Table 6 addresses the changes made to the sections and conditions from Permit No. 69780.

Table 6: Previous Permit Conditions

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "A"		X		General Provisions: Revised to represent the most recent template language.
Att. "B" Section I		X		Facility-Wide Requirements: Revised to represent the most recent template language.
Att. "B" Section II		X		Facility-Wide Limitations: Updated citations for various conditions.
Att. "B" Section III		X		National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements: Updated to the most recent language in 40 CFR Part 63 Subpart LLL and corrected citations and references.
Att. "B" Section III.F.1.a		X		National Emission Standards for Hazardous Air Pollutants (NESHAP) Requirements: Removed the Clinker Cooler Stack S-402 from the permit condition as a CPMS is used to demonstrate compliance with the PM limit.
Att. "B" Section VII	X			Spark Ignition Emergency Generator Requirements: PCC is proposing to install a natural gas fired emergency generator subject to NSPS JJJJ. These requirements were added as part of the renewal.
Att. "B" Section IX			X	Mobile Source Requirements: The mobile source requirements have been removed from the air quality permit.
Att. "B" Section IX.C.5		X		Gasoline Storage Tanks: Updated citation.
Att. "B" Section X		X		Diesel Storage Tanks: Updated to conditions to match regulatory requirements.
Att. "B" Section XI		X		Fugitive Dust Requirements: Revised to represent the most recent template language.

Section No.	Determination			Comments
	Added	Revised	Deleted	
Att. "C"		X		Equipment List: Revised to reflect the most recent equipment operating at the facility and to include equipment information provided and corrected references to applicable sections.

IX. MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

Table 7 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. Records are required be kept for a minimum of 5 years as outlined in Section XII of Attachment “A” of the permit.

Table 7: Permit No. 97314

Emission Unit	Pollutant/ Process	Emission/ Operating Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Facility-Wide	PM	773 tons per year as a rolling 12-month total	Conduct performance testing annually, once every 2 years, or once every five years depending on the test location.	Calculate and record, the rolling 12-month rolling total of emission total in tons.	Report excess emissions and deviations if applicable.
	PM ₁₀	460 tons per year as a rolling 12-month total	Conduct performance testing on an annual, once every 2 years, or once every five years depending on the test location.	Calculate and record, the rolling 12-month rolling total of emission total in tons.	Report excess emissions and deviations if applicable.
	SO ₂	401 tons per year as a rolling 12-month total	Operate continuous emission monitoring systems (CEMS) to monitor emissions.	Calculate and record, the rolling 12-month rolling total of emission total in tons.	Report excess emissions and deviations if applicable.
	NO _x	3,271 tons per year as a rolling 12-month total	Operate CEMS to monitor emissions.	Calculate and record, the rolling 12-month rolling total of emission total in tons.	Report excess emissions and deviations if applicable.

Emission Unit	Pollutant/ Process	Emission/ Operating Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
	CO	764 tons per year as a rolling 12-month total	Operate CEMS to monitor emissions.	Calculate and record, the rolling 12-month rolling total of emission total in tons.	Report excess emissions and deviations if applicable.
	VOCs	41.5 tons per year as a rolling 12-month total	N/A	Calculate and record, the rolling 12-month rolling total of emission total in tons.	Report excess emissions and deviations if applicable.
	Clinker Production	None	N/A	Record the hourly clinker produced in tons.	N/A
Kiln 4/In-Line Raw Mill and Coal Mill Emission Limits	SO ₂	400 tons per year as a rolling 12-month total	Operate CEMS to monitor emissions.	Calculate and record, the rolling 12-month rolling total of emission total in tons.	Report excess emissions and deviations if applicable.
	NO _x	3,240 tons per year as a rolling 12-month total	Operate CEMS to monitor emissions.	Calculate and record, the rolling 12-month rolling total of emission total in tons.	Report excess emissions and deviations if applicable.
	CO	698 tons per year as a rolling 12-month total of 2.0 lb/ton clinker (rolling 8-hour average)	Operate CEMS to monitor emissions.	Calculate and record, the rolling 12-month rolling total of emission total in tons. Calculate and record, at the end of each hour, rolling 8-hour average CO emissions in pounds per ton of clinker.	Report excess emissions and deviations if applicable.

Emission Unit	Pollutant/ Process	Emission/ Operating Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Quarry Blasting	Blasting	1,473 tons per year as a rolling 12-month total 113 tons per calendar day 15 tons per hour	N/A	Keep records of quarry explosives discharged each hour and each day.	Report excess emissions and deviations if applicable.
Kiln	PM	0.07 lbs/ton-clinker	Install, calibrate, operate and maintain PM continuous parametric monitoring systems (PM CPMS). Conduct performance testing annually.	Keep data and test reports for continuous monitoring.	Submit performance test report accordingly.
	Dioxins/ Furans	0.20 ng/dscm (TEQ) @7% O ₂ , or 0.40 ng/dscm @7% O ₂ if PM control device inlet temperature ≤ 400 °F	Calibrate, maintain, and operate a continuous monitoring system (CMS) to record the temperature of the exhaust gases. Conduct performance testing between 29 and 31 calendar months after the previous performance test.	Maintain all records required by 40 CFR 63.10(c).	Submit performance test report accordingly.

Emission Unit	Pollutant/ Process	Emission/ Operating Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
	THC/ VOCs	24 ppmvd	Calibrate, maintain, and operate a continuous emission monitoring system (CEMS).	Keep data and test reports for continuous monitoring.	Report excess emissions and deviations if applicable.
	HCl	3 ppmvd @7% O ₂	Install, operate, and maintain and quality assure a HCl CEMS.	Keep data and test reports for continuous monitoring.	Report excess emissions and deviations if applicable.
	Mercury	55 lbs/MM tons-clinker	install and operate a mercury CEMS.	Keep data and test reports for continuous monitoring.	Report excess emissions and deviations if applicable.
	NO _x	2.12 lbs/ton clinker (rolling 30- kiln operating day average) or 810 tons per year as a rolling 12- month total	Operate CEMS to monitor emissions.	Calculate and record, the rolling 12-month rolling total of emission total in tons.	Report excess emissions and deviations if applicable.
Clinker Cooler	PM	0.07 lbs/ton- clinker	Install, calibrate, operate and maintain PM CPMS. Conduct performance testing annually.	Keep data and test reports for continuous monitoring.	Report excess emissions and deviations if applicable.
Raw Material Dryer	THC	24 ppmvd	Calibrate, maintain, and operate a continuous emission monitoring system (CEMS).	Keep data and test reports for continuous monitoring.	Report excess emissions and deviations if applicable.
Raw or Finish mill	Opacity	10 percent	Conduct daily visible emissions observations.	Keep records of visible emission observations.	Report excess emissions and deviations if applicable.

Emission Unit	Pollutant/ Process	Emission/ Operating Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Quarry and Raw Material Crushing, Screening and Sweetening Operations (subject to state regulations)	Opacity	20 percent	Conduct bi-weekly visible emissions observations.	Keep records of visible emission observations.	Report excess emissions and deviations if applicable.
Quarry and Raw Material Crushing, Screening and Sweetening Operations (subject to NSPS OOO) - Commenced construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008	Opacity	Crushers: 15 percent Other affected facility fugitives: 10 percent Control device stacks: 7 percent	Conduct bi-weekly visible emissions observations.	Keep records of visible emission observations.	Report excess emissions and deviations if applicable.

Emission Unit	Pollutant/ Process	Emission/ Operating Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Quarry and Raw Material Crushing, Screening And Sweetening Operations (subject to NSPS OOO) - Commenced construction, modification, or reconstruction after August 31, 1983, but before April 22, 2008	PM	0.05 g/dscm	Conduct performance testing as applicable.	Maintain records of performance tests.	Report excess emissions and deviations if applicable.
Quarry and Raw Material Crushing, Screening And Sweetening Operations (subject to NSPS OOO) - Commenced construction, modification, or reconstruction on or after April 22, 2008	PM	0.032 g/dscm	Conduct performance testing as applicable.	Maintain records of performance tests.	Report excess emissions and deviations if applicable.
Coal Preparation Operations	Opacity	20%	Conduct periodic bi-weekly visible emissions observations.	Keep records of visible emission observations.	Report excess emissions and deviations if applicable.

Emission Unit	Pollutant/ Process	Emission/ Operating Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
CI Engines (subject to state regulations)	PM	40% opacity – for any period greater than 10 seconds	Conduct periodic opacity monitoring on a monthly basis.	Maintain records of the lower heating value of the fuel.	Report all 6-minute periods which the opacity exceeded 15%.
	SO ₂	1.0 lb/MMBtu	N/A	Record the daily sulfur content of the fuel used in the engines.	Report to the Director any daily period which the sulfur content exceeds 0.8%.
SI Engine (subject to NSPS JJJ)	NO _x	2.0 g/HP-hr	N/A	Maintenance conducted on the engine and documentation from the manufacturer that the engine is certified to meet the emission standard.	Report excess emissions and deviations if applicable.
	CO	4.0 g/HP-hr	N/A	Maintenance conducted on the engine and documentation from the manufacturer that the engine is certified to meet the emission standard.	Report excess emissions and deviations if applicable.
	VOCs	1.0 g/HP-hr	N/A	Maintenance conducted on the engine and documentation from the manufacturer that the engine is certified to meet the emission standard.	Report excess emissions and deviations if applicable.
Cooling Towers	Opacity	20%	Conduct monthly visual survey of visible emissions	Keep records of visible emissions observations	Report excess emissions and deviations if applicable.

Emission Unit	Pollutant/ Process	Emission/ Operating Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Gasoline Storage and Dispensing	Opacity	20%	Conduct monthly visual survey of visible emissions	Keep records of visible emissions observations	Report excess emissions and deviations if applicable.
Diesel Storage and Dispensing	Opacity	20%	Conduct monthly visual survey of visible emissions	Keep records of visible emissions observations	Report excess emissions and deviations if applicable.
Fugitive Dust	PM	40% Opacity	A Method 9 observer is required to conduct a bi-weekly survey of visible emissions.	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 lower the opacity of any excess emissions.	Report excess emissions and deviations if applicable.
Abrasive Blasting	PM	20% Opacity	N/A	Record the date, duration and pollution control measures of any abrasive blasting project.	If applicable report activities in semi-annual reports.
Spray Painting	VOCs	20% Opacity Control 96% of the overspray	N/A	Maintain records of the date, duration, quantity of paint used, any applicable SDS, and pollution control measures of any spray painting project.	If applicable report activities in semi-annual reports.

Emission Unit	Pollutant/ Process	Emission/ Operating Limit	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements
Demolition/ Renovation	Asbestos	N/A	N/A	Maintain records of all asbestos related demolition or renovation projects including the “NESHAP Notification for Renovation and Demolition Activities” form and all supporting documents	If applicable report activities in semi-annual reports.

X. COMPLIANCE ASSURANCE MONITORING (CAM)

The CAM rule applies to pollutant-specific emission units (PSEU) at a major Title V source if the unit meets all of the following criteria:

- A. The unit is subject to an emission limit or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under paragraph (b)(1) of 40 CFR 64.2;
- B. The unit uses a control device to achieve compliance with the emission limit or standard; and
- C. The unit has "potential pre-control device emissions" of the applicable regulated air pollutant equal to or greater than 100% of the amount (tons/year) required for a source to be classified as a major source. "Potential pre-control device emissions" means potential to emit (PTE, as defined in Title V) except emissions reductions achieved by the applicable control device are not taken into account.

The general purpose of monitoring required by the CAM rule is to assure compliance with emission standards by ensuring that control devices meet and maintain the assumed control efficiencies. Compliance is ensured through requiring monitoring of the operation and maintenance of the control equipment and, if applicable, operating conditions of the pollutant-specific emissions unit. For the PSEUs that have post control potential to emit equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source, for each parameter monitored, the facility shall collect four or more data values equally spaced over each hour. Such units are defined as "large" PSEUs. For all other PSEUs ("small" PSEUs), the monitoring shall include some data collection at least once per 24-hour period.

40 CFR 64.2(b)(1)(i) exempts emissions units that are subject to Section 111 or 112 standards that were promulgated after November 15, 1990, since those standards have been designed with monitoring that provides a reasonable assurance of compliance. With respect to PM emissions limitations or standards, all of the emissions units at the facility that use a control device (and have a potential pre-control device emissions amount over 100 tons per hour are applicable to 40 CFR Part 63, Subpart LLL, which was last amended after November 15, 1990.

The kiln has emissions with NO_x emissions at potential pre-control device emissions levels above 100 tpy and is using a control device to achieve compliance with an emission limitation or standard. Regional Haze Requirements per 40 CFR Part 52.145(K) are contained within the permit that include a NO_x emissions limitation and continuous emission monitoring system (CEMS) requirements. There are currently NO_x CEMS installed on the kiln stack (DC-431) and the coal mill stack (DC-453). Therefore, CAM requirements are exempted under 40 CFR 64.2(b)(1).

There are no units in which CO, SO₂, or VOC are applicable to CAM requirements as they do not meet the criteria outlined above. Furthermore, CO and SO₂ CEMS installed on the kiln stack (DC-431) and the coal mill stack (DC-453). Therefore, CAM requirements do not apply for CO, SO₂, or VOC for any emission units.

Therefore, CAM is not applicable to any emission units at PCC.

XI. LEARNING SITE EVALUATION

In accordance with ADEQ’s Environmental Permits and Approvals near Learning Sites Policy, the Department is required to conduct an evaluation to determine if any nearby learning sites would be adversely impacted by the facility. Learning sites consist of all existing public schools, charter schools and private schools the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

This renewal will not result in any increase in emissions. Therefore, the facility is exempt from the learning sites evaluations.

XII. ENVIRONMENTAL JUSTICE ANALYSIS

The EPA (Environmental Protection Agency) defines Environmental Justice (EJ) to include the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and polices. The goal of completing an EJ assessment in permitting is to provide an opportunity for overburdened populations or communities to allow for meaningful participation in the permitting process. Overburdened is used to describe the minority, low-income, tribal and indigenous populations or communities that potentially experience disproportionate environmental harms and risks due to exposures or cumulative impacts or greater vulnerability to environmental hazards.

This renewal will not result in any increase in emissions or any additional impacts.

XIII. AMBIENT AIR IMPACT ANALYSIS

There are no emission increases resulting from this renewal permit, therefore an ambient air impact analysis is not required for this renewal permit.

XIV. LIST OF ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
A.R.S.	Arizona Revised Statutes
BACT	Best Available Control Technology
Btu	British Thermal Units
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
EPA	Environmental Protection Agency
°F	degrees Fahrenheit
ft	Feet
g	Gram
HAPs	Hazardous Air Pollutants
hp	Horsepower

hr Hour
IC Internal Combustion
kW Kilowatt
lb Pound
MACT Maximum Achievable Control Technology
NAAQS National Ambient Air Quality Standard
NESHAP National Emission Standards for Hazardous Air Pollutants
NO_x Nitrogen Oxides
NO₂ Nitrogen Dioxide
NSPS New Source Performance Standards
PC Portland Cement
PCC Phoenix Cement Company
PM Particulate Matter
PET Permitting Exemption Threshold
PM10 Particulate Matter less than 10 µm nominal aerodynamic diameter
PM2.5 Particulate Matter less than 2.5 µm nominal aerodynamic diameter
PSD Prevention of Significant Deterioration
SDS Safety Data Sheet
TEQ Toxicity Equivalency
PTE Potential to Emit
SNCR Selective Non-Catalytic Reduction
SO₂ Sulfur Dioxide Significant Impact Levels
TPY Tons per Year
VOC Volatile Organic Compound
yr Year