

**TECHNICAL SUPPORT DOCUMENT
CALPORTLAND COMPANY – RILLITO CEMENT PLANT
AIR QUALITY PERMIT NO.47259**

I. INTRODUCTION

Permit No. 47259 is a Title V renewal permit for Permit No. M190310P1-00 issued to CalPortland Company (previously Arizona Portland Cement Company) for the continued operation of a limestone quarry, a Portland cement manufacturing plant, and a rock and stone aggregate plant in Rillito, Arizona.

This Technical Support Document (TSD) pertains to the existing plant operations (Kilns 1-4). This permit also includes the requirements for Kiln 6 project from Significant Permit Revision No. 38592, issued on December 16, 2008. The TSD for the Significant Permit Revision No. 38592 is attached for reference.

A. Company Information

Facility Name: CalPortland Company
Facility Address: 11115 N. Casa Grande Highway
Rillito, Pima County, Arizona 85654
Mailing Address: P.O. Box 338
Rillito, AZ 85654

B. Attainment Classification

The facility is located in an area that is classified as nonattainment with respect to particulate matter with aerodynamic diameter less than 10 microns (PM₁₀) and is either classified attainment or unclassifiable with respect to all remaining criteria pollutants.

C. Learning Sites Evaluation

In accordance with ADEQ's "Environmental Permits and Approvals Near Learning Sites" Policy, the Department is required to evaluate 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 at 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.

The Department identified 4 learning sites within two miles of the facility.

The facility had previously conducted a comprehensive dispersion modeling analysis as part of RIMOD 3 expansion project in the late 1990s for the existing configuration which demonstrated compliance with all applicable thresholds.

The facility was issued a significant permit revision (Permit Number 38592) on December 16, 2008, for construction of the Kiln 6 (K6) Project. As this project was a major modification subject to PSD review with respect to SO₂ emissions increases, the Permittee had conducted a comprehensive ambient air quality impact analysis as part of the permit application for the project. The analysis demonstrated compliance with the National Ambient Air Quality Standards (NAAQS) and PSD increments.

The Permittee had also conducted a dispersion modeling analysis in 2005 in order to demonstrate compliance with the Arizona Ambient Air Quality Guidelines (AAAQG) as a part of K6 project. The modeled impacts from the plant were below all the AAAQG guidelines.

II. BACKGROUND INFORMATION

The Permittee was issued Permit Number M190310P1-00, a Class I Operating Permit, on October 7, 2003. The facility was issued a significant revision, Permit Number 38592 on December 16, 2008, for construction of the "Kiln 6 Project," a major modification of the existing major stationary source. Those conditions will be considered an alternate operating scenario and are contained in Attachment "D" of this permit. The requirements in Attachment "D" will become applicable on the earlier of the first calendar day when the Kiln 6 production rate exceeds 6,480 tons of cement clinker, or on the 180th day following initial firing of fuel in Kiln 6.

III. FACILITY DESCRIPTION

The existing facility includes a limestone quarry, a Portland cement manufacturing plant, and a rock and stone aggregate plant. The existing Portland cement plant includes four cement kilns and clinker coolers, with a total clinker production capacity of 264 tons per hour, and ancillary equipment for fuel receiving and handling, feed materials receiving and handling, clinker grinding, and Portland cement manufacturing and shipping.

The facility was issued a significant permit revision No. 38952 on December 16, 2008, for the construction of the Kiln 6 Project. The project, when implemented, will have following major changes to the Portland cement manufacturing plant:

- A new pyroprocessing system featuring a dry process, preheater/precalciner kiln with in-line raw mill, tire-derived fuel firing system, clinker cooler, and air pollution control systems. The new pyroprocessing line will have a clinker production capacity of 300 tons per hour, approximately 14 percent more than the total capacity of the four existing kilns;
- Revisions to the rail unloading, handling, and storage facilities for coal and petroleum coke;
- New solid fuel grinding system;
- Expanded and upgraded facilities for raw materials storage and reclaim, milling, and homogenizing;
- Expanded and upgraded facilities for clinker storage and handling;
- Expanded and upgraded facilities for cement milling, storage, and handling; and
- A new diesel-powered emergency generator.

The utilization of the quarry will increase as a result of the Kiln 6 Project, but no physical or operational changes will be made to the quarry equipment. The Kiln 6 Project will not have any effect on the rock and stone aggregate plant.

The Permittee is required to permanently cease operation of Kilns 1, 2, 3, and 4 on or before the date Kiln 6 becomes operational.

IV. EMISSIONS

The potential to emit of the criteria pollutants for the existing operations are provided in Table 1 below. Emissions estimates subsequent to the K6 Project implementation are available in the attached Technical Support Document for the significant Permit revision number 38592.

TABLE 1: POTENTIAL EMISSIONS FROM EXISTING FACILITY

Pollutant	Emissions* (Tons per year)
PM	3,150.27
PM ₁₀	2,202.57
NO _x	5,199.37
CO	5,156.03
SO ₂	10,849.43
VOC	13.99
Fluorides	0.96
Lead	0.03
Sulfuric Acid Mist	2.29
Total HAPs	55.71

*Emission numbers are referenced from the permit renewal application.

V. COMPLIANCE HISTORY

There have been seven Air Quality cases associated with this facility since 2001. There have been eighty-three facility inspections and forty file reviews of this facility since October of 1994. The details of the violations are as following:

1. Case Number 4638 (25795)

A Notice of Violation was issued to APCC-Rillito on May 10, 2001, for one alleged permit violation based on an inspection performed on April 24, 2001 (Inspection ID: 25582). ADEQ personnel conducted a formal visual emission observation of coal conveyor belt section R6BC-2 to R6BC-3, utilizing EPA Reference Method 9, and observed over a six minute period, an average opacity of 39%. The facility's deadlines for compliance were May 22 and June 14, 2001. A response was received from the facility on June 15, 2001, and the case was closed on July 3, 2001, but violations from this case were resolved under Consent Judgment Docket No. CV2006-016354.

2. Case Number 23682

A Notice of Violation was issued to APCC-Rillito on January 14, 2003, for one alleged violation based on a January 13, 2003, file review (Inspection ID: 31993). As referenced in R18-2-312(B), the Arizona Testing Manual as per Section 1.4.3 requires submittal of final test reports to ADEQ within four weeks of completion of the test. During file review, it was observed that ADEQ had not received the final performance test report conducted on November 17, 2002. The facility's deadline to achieve compliance was January 23, 2003. A response letter was received on January 17, 2003, fulfilling the compliance conditions, and the NOV was closed on February 11, 2003. The case was later resolved under Consent Judgment Docket No. CV2006-016354.

3. Case Number 23730

A Notice of Violation was issued for one alleged violation based on a January 15, 2003, file review (Inspection ID: 32044). According to the factual description of the violation, the Permittee reportedly failed a test for dioxins/furans completed November 17, 2002. The Permittee subsequently conducted a second test in December 2002. The second test results were reported to ADEQ and showed that the NESHAP for dioxins and furans was exceeded. The facility's deadline to achieve compliance was January 31, 2003. A response letter was received on January 21, 2003 and March 31, 2003, and the NOV was closed on May 27, 2003. The case was later resolved under Consent Judgment Docket No. CV2006-016354.

4. Case Number 25292

A Notice of Violation was issued to APCC on May 28, 2003, for four alleged permit violations based on an inspection conducted on March 25, 2003 (Inspection ID: 35443). The violations are as follows:

1. Pursuant to 40 CFR Part 63, Subpart LLL promulgated on June 14, 2002, APCC was required to install, calibrate, maintain, and continuously operate and continuously monitor and record the temperature of the exhaust gases from the kilns. APCC failed to provide records demonstrating that 40 CFR 63.1350(f)(1) was implemented for the period of June 14, 2002, through November 4, 2002, as required in Subpart LLL of 40 CFR, Part 63.
2. Failure to calculate the 3-hour rolling average temperature from the average of 180 successive one-minute average temperatures as required by 40 CFR 63.1350(f)(3). According to the factual description of the violation, APCC provided one-minute temperature profiles from November 5, 2002, through January 26, 2003, and not the three hour rolling average as required.
3. APCC failed to submit an annual compliance certification for calendar year 2002.
4. According to the factual description of the violation, during the inspection conducted on March 25, 2003, several manometer gauges on baghouse H5-5 were found to be no longer filled with fluid. This violation was documented during a previous inspection on April 24, 2001. If permanently installed, the gauges must be maintained and operated at all times during the operation of the process unit served by the baghouse.

The facility's deadline for achieving compliance was June 27, 2003. A response was received from the facility on June 16, 2003. The case was later resolved under Consent Judgment Docket No. CV2006-016354.

5. Case Number 28002

A Notice of Violation was issued to APCC on December 11, 2003, for three alleged permit violations based on a file review conducted on December 10, 2003 (Inspection ID: 43273). The violations are as follows:

1. Failure to submit a plan to continuously monitor, during daylight hours, visible emissions across the property boundary line with the Rillito Community within

60 days of the issuance of the permit, and failure to submit a permit revision application. According to the factual description of the violation, this APC permit was issued on October 7, 2003. The plan and permit revision were therefore due on December 6, 2003.

2. Failure to submit a revised Phase I Dust Control Plan within 60 days of the issuance of this permit. According to the factual description of the violation, the plan and permit revision, due on December 6, 2003, had not been received prior to the compliance date.
3. Failure to submit a visual observation plan to be approved by the Department within 30 days of the issuance of this permit. According to the factual description of the violation, this plan was due by November 6, 2003, but was not submitted until November 20, 2003.

The facility's deadline for achieving compliance was December 27, 2003. Compliance was achieved on December 22, 2003, and the case was subsequently closed. The violations from this case were later resolved under Consent Judgment Docket No. CV2006-016354.

6. Case Number 32857

A Notice of Violation was issued to APCC on October 28, 2004 for four alleged permit violations based on an inspection conducted on June 3, 2004 (Inspection ID: 50899). The violations are as follows:

1. Failure to comply with a National Emissions Standard for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry. According to the factual description of the violation, the average of the three runs for performance testing of Kilns 1, 2, and 3 on June 2-3, 2004, by EPA Reference Method 23, indicated 0.22 ng TEQ/dscm dioxins/furans (D/F), which was in excess of the 0.20 ng TEQ/dscm standard for D/F.
2. Failure to provide ADEQ with a detailed written notification of air emissions in excess of an applicable emission limitation within 72 hours of telephonic notification. According to the factual description of the violation, ADEQ did not receive a written notification within 72 hours after the July 13, 2004, telephonic notification of the June 2-3, 2004, test results indicating emissions in excess of the D/F standard from Kilns 1, 2 and 3.
3. Kilns 2 and 3 were operated in excess of the established temperature limits on June 2 and 3, 2004. During the June 2-3, 2004, EPA Reference Method 23 performance tests, Kiln 2 was operated with an average inlet temperature of 720 degrees F, and Kiln 3 was operated with an average inlet temperature of 705 degrees F. The applicable temperature limits established during testing on February 28, 2003, were 619 degrees F for Kiln 2 and 646 degrees F for Kiln 3. APCC did not qualify for the exemption from the requirement to operate above established temperature limits as specified in 40 CFR 63.1349(e)(3)(i) and Attachment "B," Section V.A.5.a(3)(a) because the written notifications (test plans and testing schedules) for D/F testing received by ADEQ on March 1 and 26 and April 6 and 15, 2004, failed to include the operational changes which resulted in the elevated temperatures described above.

4. Failure to include in a compliance certification report submitted to ADEQ an identification of each deviation from compliance with terms or conditions of an air quality control permit. According to the factual description of the violation, the semi-annual compliance certification report received by ADEQ, dated August 13, 2004, failed to indicate the deviation in compliance with permit condition Attachment "B," Section V.A.1.d, for operation of Kilns 1, 2, and 3 on June 2 and 3, 2004 (emissions in excess of the D/F standard).

The facility's deadline for achieving compliance was December 1, 2004. A response was received from the facility on November 19, 2004. This case was later resolved under Consent Judgment CV2006-016354.

7. Case Number 33475

A Notice of Violation was issued to APCC on December 8, 2004, for three alleged violations based on an inspection conducted on August 24, 2004 (Inspection ID: 52711). The significant violations are as follows:

1. During the inspection on August 24, 2004, the six minute opacity average of fugitive dust coming off this drop point of an unmarked Belt Conveyor connected to the B9-DC5 Dust Collector was 25.2 percent. This was above the 20 percent limit referenced in the permit.
2. During the inspection on August 24, 2004, the six minute opacity average of fugitive dust coming off the drop point of the B6-BC1 Belt Conveyor was 33.9 percent. This is in excess of the 20 percent opacity limit.
3. Failure to clearly mark all equipment covered by the permit with serial number or other equipment number that is also listed in the permit to identify that piece of equipment. According to the factual description of the violation, during the August 24, 2004, inspection of the B9 Screen building, the inspection team could not clearly identify the process and dust control equipment associated with the "Stacker/Reclaimer and Storage Area" and with the "Raw Feed Materials to Rock Storage" list of equipment as identified in the equipment list of the permit.

The facility's deadlines to achieve compliance were February 9 and April 10, 2005. The facility responded on February 1 and April 11 and 12, 2005. Compliance was documented and the NOV was closed on May 18, 2005. The case was closed on October 12, 2006, and the violations from this case were resolved under Consent Judgment Docket No. CV2006-016354.

Consent Judgment Docket No. CV2006-016354

All the above cases resulted in a complaint and consent judgment being filed against Arizona Portland Cement Co. for allegations contained in the Notices of Violation associated with these cases and any alleged violations of A.R.S. Title 49, Chapters 2 and 3, and regulations promulgated thereunder.

On December 27, 2006, Arizona Portland Cement Co. paid a civil penalty of \$300,000. Additionally, Consent Judgment Docket No. CV2006-016354 required the facility to perform various Supplementary Environmental Projects (SEPs) in the community of Rillito which amounted to \$89,000.

VI. APPLICABLE REGULATIONS

The Permittee has identified the applicable regulations that apply to each unit in its permit application. The following table summarizes the findings of the Department with respect to the regulations that are applicable to each emissions unit. Previous permit conditions are discussed under Section VI of this technical review document.

Applicable Regulations

Unit ID	Control Equipment	Applicable Regulations	Verification
Twin Peaks Rock Crushing and Screening plant Quarry and Limestone Processing Portable screen when used for screening gypsum/limestone.	Dust collectors water sprays	A.A.C. R18-2-702 and -722, Arizona SIP R9-3-522.A NSPS 40 CFR 60 Subpart OOO	The affected facilities are subject to Arizona SIP R9-3-522/ A.A.C R18-2-722. Particulate matter (PM) process weight rate equations in the Arizona SIP are more stringent than the A.A.C. Thus these are applicable to the equipment constructed prior to 1983. NSPS 40 CFR 60 Subpart OOO is applicable to the equipment constructed after 1983.
Coal Mill System	Dust collectors	Arizona SIP R9-3-516.A.2 A.A.C. R18-2-702.B.1 40 CFR 63 Subpart LLL	Portions of the coal mill system are subject to Arizona SIP R9-3-516/ A.A.C R18-2-716. PM process weight rate equations in the Arizona SIP are more stringent than the A.A.C. Thus these are applicable to the equipment constructed prior to October 28, 1974, and not modified after October 27, 1974. The opacity limit in A.A.C. R18-2-702.B.1 is also applicable to this equipment. As per 40 CFR 63.1340(b)(7), conveying system transfer points from the mill to the kiln are subject to NESHAPS requirements under 40 CFR 63 Subpart LLL. Additionally, as per 40 CFR 63.1356(b), these conveying system transfer points are exempt from any otherwise applicable new source performance standard contained in 40 CFR 60 Subpart Y.

Unit ID	Control Equipment	Applicable Regulations	Verification
Kilns 1-3, and In-line Kiln-4/Raw Mill, Clinker Coolers	Dust collectors	40 CFR 63 Subpart LLL Arizona SIP R9-3-505 40 CFR 60 Subpart F	<p>Kilns and clinker coolers are subject to Arizona SIP R9-3-505. Facilities constructed after August 17, 1971 are subject to 40 CFR 60 Subpart F.</p> <p>The facility is a major source of Hazardous Air Pollutant (HAP) emissions. Thus Kilns 1-3, and In-line Kiln-4/Raw Mill and Clinker Coolers are also subject to NESHAPS requirements under 40 CFR 63 Subpart LLL.</p> <p>As per 40 CFR 63.1356(a), affected sources subject to the provisions of 40 CFR Subpart LLL are exempt from any otherwise applicable new source performance standard contained in 40 CFR 60 Subpart F.</p>
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 Arizona SIP R9-3-505 40 CFR 64 (CAM)	<p>These facilities are subject to Arizona SIP R9-3-505/ A.A.C R18-2-705. For facilities constructed prior to August 17, 1971, Arizona SIP R9-3-505 is applicable as it is more stringent than A.A.C R18-2-705.</p> <p>The facility is a major source of Hazardous Air Pollutant (HAP) emissions. The facility is, therefore, subject to NESHAPS requirements under 40 CFR 63 Subpart LLL.</p> <p>40 CFR 60 Subpart F is applicable to any facility constructed after August 17, 1971. However, as per 40 CFR 63.1356(a), affected sources subject to the provisions of 40 CFR Subpart LLL are exempt from any otherwise applicable new source performance standard contained in 40 CFR 60 Subparts F or OOO.</p> <p>40 CFR 64 Compliance Assurance Monitoring (CAM) requirements are applicable to various emission units as the potential pre-control particulate matter emissions for these units are greater than 100 tons/year.</p>

Unit ID	Control Equipment	Applicable Regulations	Verification
Natural Gas-fired Auxiliary engines	None	A.A.C. R18-2-719	Existing stationary rotating machinery is subject to requirements under A.A.C. R18-2-719. The engines are not subject to NSPS Subpart JJJJ because it was constructed prior to July 1, 2008 . 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 does not have to meet the requirements of 40 CFR §63 Subpart ZZZZ (40 CFR §63.6590(b)(3)).
Natural Gas-fired Heaters and Boilers	None	A.A.C. R18-2-724 40 CFR 60 Subpart Dc	The natural gas-fired heaters and boilers are subject to the requirements under A.A.C. R18-2-724. Heater D4-RM1-HTR (75 MMBtu per hour) is not subject to NSPS requirements under 40 CFR 60 Subpart Dc as this is a process heater.
Diesel and used oil storage tanks Portable screen when used for screening iron/clinkers	None	A.A.C. R18-2-730	These requirements are applicable to unclassified sources.
Fugitive dust sources	Water and other reasonable precautions	A.A.C. R18-2, Article 6 A.A.C. R18-2-702	These are applicable to fugitive dust sources at the facility.
Mobile sources	Water Sprays/Water Truck for dust control	A.A.C. R18-2, Article 8	This Article is applicable to mobile sources which either move while emitting air contaminants or are frequently moved during the course of their utilization but are not classified as motor vehicles, agricultural vehicles, or agricultural equipment used in normal farm operations.
Spray Painting	N/A	A.A.C. R18-2-702.B A.A.C. R-18-2-727	These standards are applicable to any spray painting operation.

Unit ID	Control Equipment	Applicable Regulations	Verification
Abrasive Blasting	Wet blasting, Dust collecting equipment or other approved methods	A.A.C. R-18-2-702.B A.A.C. R-18-2-726	These standards are applicable to any abrasive blasting operation.
Demolition or Renovation Operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.

VII. PREVIOUS PERMITS AND PERMIT CONDITIONS

The following Section discusses the previous permit conditions and their treatment with respect to the renewal permit. The TSD for the Permit No. 38592 discusses in details the issues related to the revision, and is incorporated as a part of this permit by reference.

A. PREVIOUS PERMITS

Table 3: PREVIOUS PERMITS

Permit #	Issue Date	Application Basis
M190310P1-00	October 7, 2003	Title V Renewal Permit
33464	March 29, 2005	Minor Permit Revision
39066	January 31, 2007	Significant Permit Revision
43448	August 29, 2007	Minor Permit Revision
31767*	February 12, 2008	Significant Permit Revision
38592	December 16, 2008	Significant Permit Revision
49991	December 16, 2009	Minor Permit Revision
50408	December 16, 2009	Minor Permit Revision

* Under appeal

B. PREVIOUS PERMIT CONDITIONS

1. Operating Permit No. M190310P1-00

Table-4

Condition # in permit nos. M190310P1-00	Determination				Comments
	Delete	Kept	Revise	Streamline	
Attachment A			x		This Attachment has been revised and most recent Attachment "A" is used for this permit.
Attachment B					
Condition I.A		x			This requirement for compliance certification is relocated as Condition I.B.
Condition I.C		x			This requirement for Method 9 observer is relocated as Condition I.A.
Condition I.D.1		x			The Pima county requirements for visible emissions are relocated under Condition II.B.2.
Condition I.D.2		x			The requirements for visible emissions monitoring are relocated as Condition II.C.1.
Condition I.E		x			The Visible Emissions Observation requirements are relocated under Condition II.C.2.
Condition I.F	x				This Condition describing various definitions is deleted. These are included in the specific permit conditions, wherever necessary.
Condition I.G through I.M			x		The general NESHAP requirement applicable to K1-K4 facility are relocated Section II of Attachment "C".
Section II		x			This Section for "Open Areas, Roadways/Streets, Material handling, storage Piles" is renamed as "Fugitive Dust Sources" Section of Attachment "B".
Sections III/VII			x		The requirements for quarry, lime stone and material handling are moved to Section III of Attachment "C".

Condition # in permit nos. M190310P1-00	Determination				Comments
	Delete	Kept	Revise	Streamline	
Section IV			x		The requirements for Coal Mill system are moved to Section IV of Attachment "C". As dust collectors H3-K4-DC1 and DC2 are subject to NESHAP requirements, these are exempt from NSPS requirements. Hence, this Section is revised to remove NSPS requirements, and include NESHAP requirements.
Section V		x			The requirements for Kilns 1-4, and Clinker coolers are moved to section V of Attachment "C".
Sections VI and VIII		x			The requirements for all affected sources (except Kilns and clinker coolers) subject to 40 CFR 63 Subpart LLL are moved to Section VI of Attachment "C"
Section IX			x		The requirements for boilers and heaters are moved to Section IV of Attachment "B".
Section X		x			The Section for "Secondary Materials Utilization Procedures and Fuels" is moved to Section VII of Attachment "C".
Section XI			x		The ambient monitoring requirements are updated to reflect the latest ADEQ/EPA guidance documents, and are relocated under Section X of Attachment "B".
Section XII			x		This Section for Gasoline Storage Tank is revised to include all applicable requirements under A.A.C. 18-2-710, and is relocated under Section VI of Attachment "B".
Section XIII		x			The equipment is now moved to Attachment "E" of the permit.
Section XIV	x				The road diagram is not required in the permit. This is now included in the recordkeeping requirements of the permit.

2. Significant Permit Revision No. 31767

Condition # in permit nos.	Determination				Comments
	Delete	Kept	Revise	Streamline	
M190310P1-00					
Condition I.D.2.a of Attachment "B"		x			The visible emissions monitoring requirements are now located under Condition II.C.1.a of Attachment "B".

3. Significant Permit Revision No. 38592

Condition # in permit nos.	Determination				Comments
	Delete	Kept	Revise	Streamline	
M190310P1-00					
Attachment "E"		x			The requirements for K6 significant permit revision are now located under Attachment "D" of the permit.

4. Significant Permit Revision No. 39066

Condition # in permit nos.	Determination				Comments
	Delete	Kept	Revise	Streamline	
M190310P1-00					
Attachment "D"		x			The requirements for Twin Peak Rock crushing and screening plant are now located under Section III of Attachment "B".

5. Minor Permit Revision No. 43448

Condition # in permit nos.	Determination				Comments
	Delete	Kept	Revise	Streamline	
M190310P1-00					
Appendix "A" to Attachment "B"		x			The Section "Alternate Raw Material Screening for Dioxins, Furans and Precursors" is moved to Section X of Attachment "C".

6. Minor Permit Revision No. 49991

Condition # in permit nos.	Determination				Comments
	Delete	Kept	Revise	Streamline	
M190310P1-00					
Condition XV.A		x			Portable Grizzly Screen, when used for processing gypsum/limestone, shall follow the requirements under Section III.B of Attachment "B".

Condition # in permit nos.	Determination				Comments
	Delete	Kept	Revise	Streamline	
M190310P1-00					
Condition XV.B		x			The requirements for portable grizzly screen, when used for processing iron/clinkers, are relocated under Section VIII of Attachment "B".

7. Minor Permit Revision No. 50408

Condition # in permit nos.	Determination				Comments
	Delete	Kept	Revise	Streamline	
M190310P1-00					
Section XVI	x				The requirements for the gasoline dispensing facility are deleted as these are applicable only to area source of HAPs.

VIII. MONITORING, RECORDKEEPING, REPORTING AND TESTING REQUIREMENTS

A. Rock Crushing and Screening Operations

A certified EPA Reference Method 9 observer is required to conduct a monthly survey of visible emissions emanating from the affected sources. If the opacity of the emissions observed appears to exceed the standard, the observer must conduct a certified EPA Reference Method 9 observation. If the observation results in a Method 9 opacity reading in excess of the opacity standards, the Permittee must report this to ADEQ as excess emission, and initiate appropriate corrective action to reduce the opacity. The Permittee is required to keep records of the initial survey, any EPA Reference Method 9 observations performed and the corrective action performed.

B. Quarry, Limestone and other Material Handling Operations (Kiln Feed Silos, Proportioning Silos, Bagging System, Bulk Loading and Unloading systems and Transfer points)

- The Permittee must conduct a monthly 1-minute visible emissions test of the affected source in accordance with Method 22 of appendix A to 40 CFR part 60. If visible emissions are observed during any Method 22 test, the Permittee must conduct a 6-minute test of opacity in accordance with Method 9 of Appendix A to 40 CFR Part 60. The Method 9 test must begin within one hour of any observation of visible emissions.

If no visible emissions are observed in six consecutive monthly tests for an affected source, the Permittee may decrease the frequency of testing from monthly to semi-annually for that affected source. If no visible emissions are observed during the semi-annual test for an affected source, the Permittee may decrease the frequency of testing from semi-annually to annually for that affected source. If visible emissions are observed during any semi-annual or annual test, the Permittee must resume testing of that affected source on a monthly basis and maintain that schedule until no visible emissions are observed in six consecutive monthly tests.

2. The Permittee is required to conduct performance tests for opacity on all dust collectors once during the permit term in accordance with EPA Reference Method 9 of 40 CFR Part 60, Appendix A.
3. The Permittee is required to conduct one performance test once during the permit term for particulate matter emissions on some collectors in accordance with EPA Reference Method 5 of 40 CFR 60, Appendix A.

C. Coal Mill System

1. The Permittee must conduct a monthly 1-minute visible emissions test of the affected sources in the coal mill system in accordance with Method 22 of appendix A to 40 CFR Part 60. If visible emissions are observed during any Method 22 test, the Permittee must conduct a 6-minute test of opacity in accordance with Method 9 of Appendix A to 40 CFR part 60. The Method 9 test must begin within one hour of any observation of visible emissions.

If no visible emissions are observed in six consecutive monthly tests for an affected source, the Permittee may decrease the frequency of testing from monthly to semi-annually for that affected source. If no visible emissions are observed during the semi-annual test for an affected source, the Permittee may decrease the frequency of testing from semi-annually to annually for that affected source. If visible emissions are observed during any semi-annual or annual test, the Permittee must resume testing of that affected source on a monthly basis and maintain that schedule until no visible emissions are observed in six consecutive monthly tests.

2. The Permittee is required to conduct EPA Reference Method 9 performance test for opacity on the dust collectors once in the permit term.

D. Kilns and Clinker Coolers

1. The Permittee is required to operate continuous opacity monitoring systems (COMS) to continuously monitor the opacity of visible emissions from each kiln stack, and clinker cooler No. 4 stack. The Permittee is required to perform daily visual opacity observation from each stack of clinker coolers 1, 2 and 3 in accordance with the procedures of EPA Reference Method 9 of 40 CFR 60, Appendix A. The Method 9 test must be conducted while each cooler is operating at the representative performance conditions. The duration of the Method 9 test must be at least 30 minutes each day.
2. The Permittee is required to install a particulate matter continuous emission monitoring system (PM CEMS) to measure the particulate matter discharged to the atmosphere from Kilns 1, 2, 3, and Kiln 4 in-line kiln/raw mill. Until such time that a PM CEMS is installed, the Permittee must evaluate opacity measurements from the COMS on a 2-hour rolling average. If the 2-hour rolling average opacity exceeds 15 percent, the Permittee must investigate within 24 hours, and initiate corrective action, if required, as soon as practicable to avert or minimize possible exceedances of the particulate matter standards. The Permittee is required to maintain a record of 2-hour rolling average opacity measurements, and of any corrective actions taken.
3. The Permittee is required to continuously monitor and record the temperature of the exhaust gases from Kilns 1, 2, 3 and Kiln 4 in-line kiln/ raw mill at the inlet

to, or upstream of, the particulate matter control devices to demonstrate control of dioxins/furans emissions.

4. The Permittee is required to operate continuous emission monitoring systems to measure carbon monoxide (CO) and nitrogen oxides (NO_x) mass emissions from Kilns 1, 2, 3 and Kiln 4 in-line kiln/raw mill.
5. To demonstrate compliance with the particulate matter and opacity standards, the Permittee is required to perform annual performance tests in accordance with test methods and procedures under 40 CFR § 63.1349(b)(1) on all kilns and clinker coolers.
6. To demonstrate compliance with the dioxins/furans emission standard, the Permittee is required to perform EPA Reference Method 23 performance test once every 30 months. The Permittee is required to determine the applicable temperature limit for each kiln in accordance with test methods and procedures under 40 CFR § 63.1349(b)(3).
7. To demonstrate compliance with the SO₂ emission standard, the Permittee is required to perform annual EPA Reference Method 6 performance test on all kilns.

E. Raw Mills and Finish Mills

1. The Permittee is required to monitor opacity of emissions from the raw mills and finish mills by conducting daily visual emissions observations in accordance with the procedures of EPA Reference Method 22 of 40 CFR 60, Appendix A for six minutes. If visible emissions are observed during any EPA Reference Method 22 visible emissions test, the Permittee is required to initiate, within one-hour, the corrective actions specified in the Operation and Maintenance Plan. Within 24 hours of the end of the EPA Reference Method 22 test in which visible emissions were observed, the Permittee must conduct a follow-up Method 22 test of each stack from which visible emissions were observed during the previous Method 22 test. If visible emissions are observed during the follow-up Method 22 test from any stack from which visible emissions were observed during the previous Method 22 test, the Permittee must conduct a visual opacity test of each stack from which emissions were observed during the follow-up Method 22 test in accordance with Method 9 of Appendix A to 40 CFR Part 60. The duration of the Method 9 test must be 30 minutes.
2. To demonstrate compliance with the opacity standards, the Permittee is required to perform annual EPA Method 9 performance tests on all affected sources in accordance with 40 CFR § 63.1349(b)(2).
3. To demonstrate compliance with the particulate matter standards, the Permittee is required to perform EPA Method 5 performance tests on dust collectors H2-DC2, C2-DC3, D4-DC2, D4-DC1, F2-DC4, AC-DC1, CM-DC17, D2-DC4.

F. Fugitive Dust Sources

1. Property Boundary Visible Emissions Monitoring
 - a. Property Boundary Line with the Rillito Community: The Permittee is required to install, and operate, during daylight hours, cameras for

monitoring and recording visible emissions across the property boundary line with the Rillito Community.

- b. For all property boundary lines other than the property boundary line with the Rillito Community, the Permittee is required to conduct a daily visible emissions survey during daylight hours in accordance with EPA Reference Method 22. If visible emissions related to the Permittee's operations are observed to cross a property boundary line, the Permittee must report the emissions using the excess emission reporting procedures.
2. A certified EPA Reference Method 9 observer is required to conduct a monthly survey of visible emissions emanating from nonpoint sources and, where applicable, fugitive emissions from a central lookout station or multiple observation points, as appropriate, in accordance with the Visible Emissions Observation Plan. If the opacity of the emissions observed appears to exceed the standard, the observer must conduct a certified EPA Reference Method 9 observation. If the observation results in a Method 9 opacity reading in excess of the opacity standards, the Permittee must report this to ADEQ as excess emission, and initiate appropriate corrective action to reduce the opacity. The Permittee must conduct another method 9 observation within 48 hours of taking the corrective action. The Permittee is required to keep records of the initial survey, any EPA Reference Method 9 observations performed and the corrective action performed.

G. Ambient PM₁₀ and Meteorological Monitoring

The Permittee is required to operate and maintain the ambient PM₁₀ particulate samplers at the existing Rillito Northwest (NW) monitoring site (8840 W. Robinson St. Rillito, AZ 85653), and the meteorological sensors at the existing Rillito Southeast (SE) monitoring site. The Permittee is required to use EPA approved samplers. The list of EPA approved samplers is available at:

<http://www.epa.gov/ttn/amtic/files/ambient/criteria/reference-equivalent-methods-list.pdf>

IX. COMPLIANCE ASSURANCE MONITORING (CAM) (40 CFR 64)

- A. 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:
 1. The unit is subject to an emission limit or standard for the applicable regulated air pollutant;
 2. The unit uses a control device to achieve compliance with the emission limit or standard; and
 3. 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 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 (“large” PSEUs), the Permittee shall collect four or more data values equally spaced over each hour. For all other PSEUs (“small” PSEUs), the monitoring shall include some data collection at least once per 24-hour period. All the affected PSEUs at CalPortland’s Rillito plant have post control emission below the major source threshold and therefore require data collection once in 24-hour period.

B. Monitoring Approach

The following dust collectors are used as the control devices for controlling the emissions of particulate matter (both PM and PM₁₀) for the units subject to CAM requirements:

AC-DC1, BL-DC1, BL-DC2, BL-DC3, BL-DC4, BL-DC6, BL-DC7, BL-SB5-DC1, BL-SB5-DC2, BL-SB5-DC3, AC-BE2-DC, F2-PS-DC1, F2-PS-DC2, F2-PS-DC3, F3-KS-DC1, CM-DC8, CM-DC9, CM-DC10, CM-DC11, CM-DC12, CM-DC14, CM-DC15, CM-DC16 and CM-DC17

The monitoring approach for the dust collectors is detailed below.

Indicator	Visible emissions
Indicator Range	No visible emissions.
Measurement approach	Visible emissions from the control device exhaust will be monitored daily using EPA Reference Method 22. Bags, seals, and baghouse compartments shall be inspected annually for each baghouse.
QA/QC practices and criteria	Operate and maintain the control device in a manner consistent with good air pollution control practice.
Excursion Range	Any opacity observed during the visible emission survey. Any bags or seals in poor condition, or accumulation of dust in the baghouse compartment during annual inspection.

X. LIST OF ABBREVIATIONS

- AAAQG..... Arizona Ambient Air Quality Guideline
- A.A.C..... Arizona Administrative Code
- ADEQ.....Arizona Department of Environmental Quality
- AQD..... Air Quality Division
- AQG.....Air Quality Guidelines
- Btu/ft³..... British Thermal Units per Cubic Foot
- CO..... Carbon Monoxide
- CO₂.....Carbon Dioxide

DEGF	Degrees Fahrenheit
DEGK	Degrees Kelvin
FERC	Federal Energy Regulatory Commission
ft	Feet
g	Grams
HAP	Hazardous Air Pollutant
hp	Horsepower
hr	Hour
IC	Internal Combustion
lb	Pound
m	Meter
MMBtu	Million British Thermal Units
$\mu\text{g}/\text{m}^3$	Microgram per Cubic Meter
MMCFD	Million Cubic Feet Per Day
NAAQS	National Ambient Air Quality Standard
NO_x	Nitrogen Oxide
NO_2	Nitrogen Dioxide
O_3	Ozone
Pb	Lead
PM	Particulate Matter
PM_{10}	Particulate Matter Nominally less than 10 Micrometers
Psia	Pounds per square Inch (absolute)
PTE	Potential-to-Emit
s	Seconds
SO_2	Sulfur Dioxide
TPY	Tons per Year
TSP	Total Suspended Particulate
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
yr	year

**TECHNICAL REVIEW AND EVALUATION FOR
ARIZONA PORTLAND CEMENT COMPANY
AIR QUALITY PERMIT NO. 38592
(ATTACHMENT-SIGNIFICANT REVISION TO OPERATING PERMIT NO. M190310P1-00)**

I. INTRODUCTION

Arizona Portland Cement Company and other subsidiaries of California Portland Cement Company own and operate a limestone quarry, a Portland cement manufacturing plant, and a rock and stone aggregate plant in Rillito, Arizona.

Company Information

Facility Name: Arizona Portland Cement Company

Facility Address: 11115 N. Casa Grande Highway
Rillito, Pima County, Arizona 85654

Mailing Address: P.O. Box 338
Rillito, AZ 85654

The Permittee was issued Permit Number M190310P1-00, a Class I operating permit, on October 7, 2003. The present application for a significant permit revision was received on December 14, 2005. The proposed significant revision, Permit Number 38592, will provide for the construction of the "Kiln 6 Project," a major modification of the existing major stationary source. The new conditions will be considered an alternate operating scenario and will be contained in Attachment "E" to the Operating Permit. The requirements in Attachment "E" will become applicable on the earlier of the first calendar day when the Kiln 6 production rate exceeds 6,480 tons of cement clinker, or on the 180th day following initial firing of fuel in Kiln 6.

The existing major source is located in an area that is classified as nonattainment with respect to particulate matter with aerodynamic diameter less than 10 microns ("PM-10") and is either classified attainment or unclassifiable with respect to all remaining criteria pollutants.

II. FACILITY DESCRIPTION

A. EXISTING FACILITY

The existing major stationary source includes a limestone quarry, a Portland cement manufacturing plant, and a rock and stone aggregate plant. The existing Portland cement plant includes four cement kilns and clinker coolers, with a total clinker production capacity of 264 tons per hour, and ancillary equipment for fuel receiving and handling, feed materials receiving and handling, clinker grinding, and Portland cement manufacturing and shipping.

The existing source has the potential to emit several regulated air pollutants at rates exceeding the major source thresholds at A.A.C. R18-2-101(64)(b)(i) and R18-2-401(9). Therefore, the facility is classified as a major source as defined in A.A.C. R18-2-101(64) and is a major stationary source for the purposes of A.A.C. R18-2-403 and -406.

B. PROPOSED MODIFICATION

The present significant permit revision application is for the construction of the Kiln 6 Project. This proposed project involves significant changes to the Portland cement manufacturing plant,

including the following major items:

- A new pyroprocessing system featuring a dry process, preheater/precalciner kiln with in-line raw mill, tire-derived fuel firing system, clinker cooler, and air pollution control systems. The new pyroprocessing line will have a clinker production capacity of 300 tons per hour, approximately 14 percent more than the total capacity of the four existing kilns;
- Revisions to the rail unloading, handling, and storage facilities for coal and petroleum coke;
- New solid fuel grinding system;
- Expanded and upgraded facilities for raw materials storage and reclaim, milling, and homogenizing;
- Expanded and upgraded facilities for clinker storage and handling;
- Expanded and upgraded facilities for cement milling, storage, and handling; and
- A new Diesel-powered emergency generator.

The utilization of the quarry will increase as a result of the Kiln 6 Project, but no physical or operational changes will be made to the quarry equipment. The Kiln 6 Project will not have any effect on the rock and stone aggregate plant.

Additional detail regarding the proposed modification is provided in Section 2.0 of the December 2005 permit application.

III. EMISSIONS

The proposed Kiln 6 Project will result in a net increase in PM-10 emissions of 45.8 tons per year (“tpy”), in excess of the PM-10 significant level of 15 tpy as defined at A.A.C. R18-2-101(106)(a). Therefore, the proposed modification is a major modification with respect to PM-10 emissions pursuant to the Nonattainment New Source Review (NNSR) rule at A.A.C. R18-2-403(A).

The proposed Kiln 6 Project will result in a net increase in SO₂ emissions of 127.2 tpy, in excess of the SO₂ significant level of 40 tpy as defined at A.A.C. R18-2-101(106)(a). Therefore, the proposed modification is a major modification with respect to SO₂ emissions pursuant to the Prevention of Significant Deterioration (PSD) rule at A.A.C. R18-2-406(A). In addition, because the project will result in a significant increase in PM-10 emissions, the project is considered a major modification under the PSD rule with respect to PM-2.5 emissions.¹ Net emissions increases of all other regulated air pollutants are less than the corresponding significant levels.

The emissions increases from the proposed Kiln 6 Project and the new facility-wide potential to emit are summarized in Table 1. Detailed documentation of the emissions calculations and net emissions increase determinations is provided in the December 2005 permit application and in the April 2007 supplement to the permit application.

TABLE 1: EMISSIONS CHANGES FROM KILN 6 PROJECT

Pollutant	Net Emissions Increase or Decrease	Potential to Emit
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¹ PM-2.5 is a criteria pollutant, and the proposed project site is in an area designated as unclassifiable/attainment with respect to the PM-2.5 National Ambient Air Quality Standard, so PM-2.5 is a regulated pollutant under the PSD rule. Pending further rulemaking, the Department and the U.S. EPA are implementing applicable new source review requirements for PM-10 emissions as a surrogate for PM-2.5 emissions.

PM-10	45.8	482.3
SO ₂	127.2	186.4
NO _x	-1,674.1	2,302.4
CO	-762.0	3,783.7
VOC	35.4	42.6
Fluorides	0.4	0.95
PM	-2.8	936.9
Lead	0.0	0.03
Sulfuric Acid Mist	0.9	2.3

IV. APPLICABLE REGULATIONS

A. APPLICABILITY SUMMARY

Table 2 summarizes the findings of the Department with respect to the applicability or non-applicability of specific regulations to emission units proposed to be constructed or modified as part of the Kiln 6 Project.

TABLE 2: REGULATORY ANALYSIS

Unit ID	Regulation(s)	Applicable? (Y/N)	Verification
Entire Project	PSD A.A.C R18-2-406	Y	Project will result in significant net emissions increases of SO ₂ and PM-10 (as surrogate for PM-2.5). Project will not result in significant net emissions increases of other PSD regulated pollutants. See Table 1.
	NNSR A.A.C R18-2-403	Y	Project will result in significant net emissions increase of PM-10.
Kiln 6	New Source Performance Standards (NSPS) A.A.C R18-2-901	N	Unit is subject to 40 CFR 63 subpart LLL and is exempt from NSPS pursuant to 40 CFR § 63.1356(a).

Unit ID	Regulation(s)	Applicable? (Y/N)	Verification
	National Emission Standards for Hazardous Air Pollutants (NESHAP) for Portland Cement Manufacturing A.A.C. R18-2-1101(B)(50)	Y	The Permittee has indicated that the facility is a major source of Hazardous Air Pollutant (HAP) emissions and that Kiln 6 and the raw mill will comprise an in-line kiln/raw mill under 40 CFR § 63.1341. The facility is subject to applicable emission standards for new inline kiln/raw mills at major sources.
	Compliance Assurance Monitoring 40 CFR 64	Y	The kiln is subject to PM-10 emission limits, uses a control device to comply with those limits, and has the uncontrolled potential to emit PM-10 in amounts greater than 100 tons per year.
Raw Mill	NESHAP for Portland Cement Manufacturing A.A.C. R18-2-1101(B)(50)	Y	The Permittee has indicated that Kiln 6 and the raw mill will comprise an in-line kiln/raw mill under 40 CFR § 63.1341. Accordingly, the raw mill is prohibited from operating independently of the kiln and is not subject to the separate standards for raw mills and raw material dryers.
Clinker Cooler	NESHAP for Portland Cement Manufacturing A.A.C. R18-2-1101(B)(50)	Y	Facility meets the definition of a clinker cooler under 40 CFR § 63.1341.
	Compliance Assurance Monitoring 40 CFR 64	Y	The kiln is subject to PM-10 emission limits, uses a control device to comply with those limits, and has the uncontrolled potential to emit PM-10 in amounts greater than 100 tons per year.
Finish Mills, Raw Material and Clinker Storage and Handling, Bulk Unloading and Loading, and Bagging Systems	NESHAP for Portland Cement Manufacturing A.A.C. R18-2-1101(B)(50)	Y	Several facilities within the cement plant meet the affected source definitions under 40 CFR §§ 63.1340 and 63.1341.
Coal Preparation Plant	New Source Performance Standards (NSPS) for Coal Preparation Plants A.A.C R18-2-901(32)	Y	The Permittee has indicated that both coal mills and several coal conveying systems will be modified, constructed, or reconstructed. Coal mills use heated air to dry the coal and are considered thermal dryers under 40 CFR § 60.251.
Quarry and Limestone Processing	NSPS for Nonmetallic Mineral Processing Plants A.A.C R18-2-901(66)	N	No new, modified, or reconstructed limestone crushers, grinding mills, screening operations, bucket elevators, belt conveyors, bagging operations, storage bins, or enclosed truck or railcar loading stations.

Unit ID	Regulation(s)	Applicable? (Y/N)	Verification
	A.A.C R18-2-702(B)(1)	Y	Equipment is subject to the generally applicable opacity emission standard because it is not subject to any other opacity standard.
	P.C.C. § 17.16.370.B.1	Y	Limestone processing equipment includes rock crushers, screens, conveyors and conveyor transfer points, stackers, reclaimers, and rock storage piles.
Emergency Generator	NSPS for Stationary Compression Ignition Internal Combustion Engines 40 CFR 60 subpart IIII	Y	Unit is an emergency engine and an affected facility and must meet emission specifications for CO, PM, and total NO _x plus nonmethane hydrocarbons.
	NESHAP for Stationary Reciprocating Internal Combustion Engines 40 CFR 63 subpart ZZZZ	Y	Engine meets the applicability criteria but is subject only to recordkeeping requirements because it is an emergency engine.

B. PSD APPLICABILITY

As provided by A.A.C. R18-2-306.01, the Permittee has voluntarily proposed several emission limits and operational requirements that have the effect of constraining the emissions increases from the Kiln 6 project. As a result, the project will not cause significant emissions increases and will not be subject to applicable requirements under the PSD program with respect to emissions of NO_x, PM, CO, or VOC. The Permittee's PSD applicability analysis for these pollutants is presented in Section 6.0 of the December 2005 Class I permit application. These "synthetic minor" permit terms include the following:

- The existing Kilns 1-4, associated Clinker Coolers, and numerous other emissions units are required to shut down concurrently with the Kiln 6 project. These emissions units are currently authorized to operate under Sections I through VIII of Attachment "B" of the Class I Permit Number M190310P1-00. The shutdown requirements are effected in the permit by superseding those sections; only the emissions units that are authorized to continue to operate are carried forward into the new Attachment "E."
- The production of cement clinker in Kiln 6 is limited to 2.3 million tons per year.
- The Kiln 6 Stack will be limited to emission rates of 28.03 lbs of PM-10 per hour; 2,245.5 tons of NO_x per year; 3,680 tons of CO per year; and 44.25 tons of VOC per year.²
- All baghouses and dust collectors other than the Kiln 6 baghouse will be limited to a PM-10 emission rate of 0.005 grains per dry standard cubic foot and to corresponding limits on mass emission rate.
- The operations at the quarry, including the number of blasts, the use of explosives, and the amount of limestone quarried, are subject to enforceable

² These mass emission limits are enforceable only in terms of mass emission rate, regardless of clinker production rate. For reference purposes, the Department notes that, assuming constant operation at the allowable clinker production rate of 2.3 million tons per year, these emission rates are equivalent to 0.11 lb of PM-10, 1.95 lbs of NO_x, 3.2 lbs of CO, and 0.04 lb of VOC per ton of clinker produced. At lower clinker production rates, the allowable emissions per ton of clinker are higher.

limits.

- The Permittee is required to implement an improved dust control plan, sufficient to ensure a minimum 85 percent control efficiency for PM and PM-10 emissions from unpaved roads.

V. CONTROL TECHNOLOGY DETERMINATIONS

A. Best Available Control Technology (BACT) for SO₂ Emissions

As noted in Section III, the Kiln 6 project is a major modification subject to PSD review with respect to SO₂ emissions increases. Pursuant to A.A.C. R18-2-406(A)(2), for a major modification, BACT is required for “each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of operation in the unit.” This includes the new Kiln 6 inline kiln/raw mill and the new emergency generator.

1. SO₂ BACT Analysis for Kiln 6 Inline Kiln/Raw Mill

The Permittee submitted an SO₂ BACT analysis for Kiln 6 in its April 2007 supplement to the Class I permit application. The Department concurs with this analysis, including the Permittee’s conclusion that BACT is an SO₂ emission limit of 0.16 lb per ton of clinker, based on a 30-day rolling average. This BACT determination is based on the following key points:

- The SO₂ emissions are primarily dependent on the sulfur content of the feed materials and on the inherent SO₂ removal in the raw mill.
- SO₂ emissions from Kiln 6 will be higher than those from the existing Kiln 4 because a smaller fraction of the exhaust gas from the kiln and preheater will be routed through the raw mill.
- The raw mill does not operate continuously.
- The continuously achievable SO₂ emission limit, based on feed material sulfur content and SO₂ removal in the raw mill, is 0.16 lb per ton of clinker, as determined on a 30-day rolling average.
- Additional SO₂ control could be achieved with a flue gas desulfurization system, but the SO₂ emission reductions achievable with such technology are outweighed by the adverse environmental, energy, and economic impacts.

2. SO₂ BACT Analysis for Emergency Generator

The Permittee submitted an SO₂ BACT analysis for the Diesel-powered emergency generator internal combustion engine in its April 2007 supplement to the Class I permit application. The Department concurs with this analysis, including the Permittee’s conclusion that BACT is a fuel specification requiring the use of fuel meeting the requirements of 40 CFR § 80.510(b), including a sulfur limit of 15 parts per million by weight.

B. Lowest Achievable Emission Rate (LAER) for PM-10 Emissions

As noted in Section III, the Kiln 6 project is a major modification subject to NNSR with respect to PM-10 emissions increases. Pursuant to A.A.C. R18-2-403(A)(1), LAER is required for each proposed emissions unit at which a net emissions increase in the pollutant would occur as a result of a physical change or change in the method of

operation in the unit. This includes the new Kiln 6 inline kiln/raw mill; numerous dust collectors serving the limestone processing, coal preparation, and cement plant operations; fugitive emission sources associated with materials handling; and the new emergency generator.

1. PM-10 LAER Analysis for Kiln 6 Inline Kiln/Raw Mill

The Permittee submitted a PM-10 LAER analysis for Kiln 6 in its December 2005 Class I permit application. The Department concurs with this analysis, including the Permittee's conclusion that LAER is a PM-10 emission limit of 0.008 grain per dry standard foot of exhaust gas. This emission rate is more stringent than any emission limitation achieved in practice or contained in a State Implementation Plan for any similar source.

2. PM-10 LAER Analysis for Clinker Cooler

The Permittee submitted a PM-10 LAER analysis for the new Clinker Cooler in its December 2005 Class I permit application. The Department concurs with this analysis, including the Permittee's conclusion that LAER is a PM-10 emission limit of 0.005 grain per dry standard foot of exhaust gas. This emission rate is more stringent than any emission limitation achieved in practice or contained in a State Implementation Plan for any similar source.

Of particular note with regard to the Clinker Cooler LAER analysis is the Permittee's evaluation of ventless Clinker Cooler technology as documented in the April 2007 supplement to the Class I permit application. The Department requested that the Permittee perform this evaluation pursuant to a comment from U.S. EPA during its review of the Kiln 6 permit application. The Permittee concluded, and the Department concurs, that the emissions limitations achievable with this technology do not represent LAER. This conclusion is based primarily on the fact that the California facility using ventless clinker cooler technology does not achieve more stringent emission limitations than that proposed by the Permittee. The filterable PM emission limit for that facility's combined exhaust, through which both the kiln and the clinker cooler are exhausted, is equal to approximately 0.25 lb per ton of clinker produced. The limits for the kiln and clinker cooler being installed as part of the proposed Kiln 6 project are equal to approximately 0.12 lb per ton of clinker produced, including both filterable and condensable PM-10. In addition, the ventless clinker cooler system is not technically feasible for the proposed Kiln 6 without significantly redefining the design of the process.

3. PM-10 LAER Analysis for Materials Handling Dust Collectors

The Permittee submitted a PM-10 LAER analysis for the new and modified non-fugitive materials handling sources in its December 2005 Class I permit application. The Department concurs with this analysis, including the Permittee's conclusion that LAER for each of these units is a PM-10 emission limit of 0.005 grain per dry standard foot of exhaust gas. This emission rate is more stringent than any emission limitation achieved in practice or contained in a State Implementation Plan for any similar sources.

4. PM-10 LAER Analysis for Materials Handling Fugitive Dust

The Permittee submitted a PM-10 LAER analysis for the new and modified

equipment for handling of solid fuels that will emit fugitive dust in an August 29, 2007, supplement to its Class I permit application. The Department concurs with this analysis, including the Permittee's conclusion that LAER for these activities is the use of water sprays to keep the material sufficiently moist. The Department is not aware of any more stringent emission limitation achieved in practice or contained in a State Implementation Plan for any similar sources.

5. PM-10 LAER Analysis for Emergency Generator

The Permittee submitted a PM-10 LAER analysis for the Diesel-powered emergency generator internal combustion engine in its April 2007 supplement to the Class I permit application. The Department concurs with this analysis, including the Permittee's conclusion that LAER is a PM-10 emission limit of 0.20 grams per kilowatt-hour, determined in accordance with the certification requirements at 40 CFR § 60.4202.

VI. EMISSIONS OFFSET REQUIREMENTS

As noted in Section III, the Kiln 6 project is a major modification subject to NNSR with respect to PM-10 emissions increases. Pursuant to A.A.C. R18-2-403(A)(3) and R18-2-404, PM-10 emission reductions meeting certain criteria are required to be obtained as a condition of the Class I permit. As described more fully in the December 2005 Class I permit application and the April 2007 supplement to that application, the PM-10 emissions increases from the Kiln 6 project are 294.3 tons per year. The emissions offset and net air quality benefit requirements are met using emission reductions totaling 298.9 tons per year, determined as follows:

- 249.2 tons per year from emissions decreases occurring at the Arizona Portland Cement plant as a result of the Kiln project, primarily involving shutdown of existing equipment; and
- 49.7 tons per year from emissions decreases achieved by Arizona Portland Cement Company by installing gates to preclude public vehicle access to a segment of the unpaved road crossing the facility's property.

VII. ALTERNATIVES ANALYSIS

As noted in Section III, the Kiln 6 project is a major modification subject to NNSR with respect to PM-10 emissions increases. Pursuant to A.A.C. R18-2-403(B), the Permittee performed an analysis of alternative sites, sizes, production processes, and environmental control techniques for the proposed Kiln 6 project. This analysis is presented in Section 6.0 of the April 2007 supplement to the Class I permit application. The Department has reviewed this analysis and has determined that the benefits of the project significantly outweigh the environmental and social costs imposed as a result of its plant's modification at its existing location. Of particular importance in the Department's determination are the following key points:

- The proposed modification of the existing plant will result in substantial reductions in NO_x and CO emissions. If the proposed Kiln 6 were sized differently or located at a different site, these emission reductions at the Rillito site would likely not be realized.
- The proposed Kiln 6 inline kiln/raw mill will use state-of-the-art technology for Portland cement production, and no known alternative production process would have less environmental impact.

VIII. STATEWIDE COMPLIANCE CERTIFICATION

As noted in Section III, the Kiln 6 project is a major modification subject to NNSR with respect

to PM-10 emissions increases. Pursuant to A.A.C. R18-2-403(A)(2), the Permittee is required to demonstrate that all existing major sources owned or operated by the Permittee, or any entity controlling, controlled by, or under common control with the Permittee, in Arizona are in compliance with, or on a schedule of compliance for, all conditions contained in permits of each of the sources and all other applicable emission limitations and standards under the Act and under A.A.C. title 18, chapter 2. Section 4.3 of the April 2007 supplement to the Class I permit application stated that the Rillito facility is the only existing major source in Arizona owned or operated by the Permittee, or any entity controlling, controlled by, or under common control with the Permittee. APCC certified that it is currently in compliance with all applicable requirements as identified in its Title V permit. In 2003, EPA issued a Notice of Violation (NOV) to the Permittee for violations of applicable state implementation plan requirements. The NOV has not yet been closed. A schedule of compliance is not required in this significant revision to Operating Permit No. M190310P1-00 under A.A.C. R18-2-403(A)(2) to address any issues in the NOV.

IX. MONITORING AND RECORDKEEPING REQUIREMENTS

A. KILN 6 INLINE KILN/RAW MILL

1. Portland Cement NESHAP

As noted in Table 2, the inline kiln/raw mill is an affected source under the NESHAP for Portland cement plants, subpart LLL of 40 CFR part 63. This rule, as all NESHAP regulations promulgated after 1990, includes monitoring and recordkeeping requirements that satisfy the enhanced monitoring requirements of the 1990 Clean Air Act Amendments. The NESHAP monitoring and recordkeeping requirements included in the permit, as required by A.A.C. R18-2-306(A)(3) and R18-2-306(A)(4), include the following:

- Continuous opacity monitoring system, operated in accordance with Performance Specification 1 in appendix B to 40 CFR part 60. This system is used to determine continuous compliance with the NESHAP opacity limit of 20 percent;
- Continuous emission monitoring system for total hydrocarbon emissions, operated in accordance with Performance Specification 8a in appendix B to 40 CFR part 60. This system is used to determine continuous compliance with the NESHAP total hydrocarbon concentration limit of 20 parts per million by volume, dry basis, corrected to 7 percent oxygen;
- Continuous monitoring of the temperature of the exhaust gases at the inlet to, or upstream of, the Kiln 6 baghouse. This temperature monitoring device is used to determine continuous compliance with temperature limits that serve as surrogates for the NESHAP dioxin/furan emission limit. The temperature limits are established based on the baghouse inlet temperature during successful dioxin/furan performance testing;
- Bag leak detection system for the Kiln 6 baghouse. This monitoring is used, in conjunction with other recordkeeping described below, to determine continuous compliance with the NESHAP mercury emission standard of 41 micrograms per dry standard cubic meter, corrected to 7 percent oxygen. It should be noted that the bag leak detection system is not directly required by the subpart LLL regulation; instead, subpart LLL requires compliance with the baghouse monitoring requirements in the NESHAP for control devices, subpart SS of 40 CFR part 63, but that rule does not specify monitoring for baghouses. A bag leak detection system

was proposed by the Permittee, pursuant to 40 CFR § 63.995(c), and was subsequently approved by the Department;

- Recordkeeping for fly ash derivation. This recordkeeping, including certification from the supplier of each shipment of fly ash received, is required to demonstrate continuous compliance with the conditional prohibition on burning any fly ash that is derived from a source in which the use of activated carbon, or any other sorbent, is used as a method of mercury emissions control. The NESHAP permits the use of such fly ash only if the Permittee makes a demonstration that such use will not increase mercury emissions above the level achieved without such fly ash; and
- Operations and maintenance plan. This plan is required to include adequate procedures for proper operation and maintenance of the affected source and air pollution control devices in order to meet the NESHAP emission limits and operating limits.

2. Other Requirements

In addition to the NESHAP monitoring and recordkeeping requirements, the permit also includes monitoring and recordkeeping requirements sufficient to ensure continuous compliance with the limits established pursuant to PSD and NNSR program requirements as described in Sections V and XI herein, and voluntarily accepted “synthetic minor” emission limits as described in Section IV.B herein. These requirements include the following:

- Continuous monitoring of kiln feed rate to determine continuous compliance with the daily and annual clinker production rates;
- Continuous emission rate monitoring system for SO₂, to determine continuous compliance with the SO₂ BACT limit;
- Continuous emission rate monitoring systems for CO, VOC, and NO_x, to determine continuous compliance with the synthetic minor limits;
- Bag leak detection system for the Kiln 6 baghouse. This monitoring is the basis for the Compliance Assurance Monitoring plan submitted by the Permittee for determining continuous compliance with the BACT, LAER, and dispersion modeling based PM-10 emission limits.

B. CLINKER COOLER

The Clinker Cooler monitoring and recordkeeping requirements included in the permit include the following:

- Continuous opacity monitoring system, operated in accordance with Performance Specification 1 in appendix B to 40 CFR part 60. This system is used to determine continuous compliance with the NESHAP opacity limit of 10 percent;
- Bag leak detection system for the Clinker Cooler baghouse. This monitoring is the basis for the Compliance Assurance Monitoring plan submitted by the Permittee for determining continuous compliance with the BACT, LAER, and dispersion modeling based PM-10 emission limits;
- Operations and maintenance plan. This plan is required to include adequate procedures for proper operation and maintenance of the affected source and air pollution control devices in order to meet the NESHAP emission limits and operating limits.

C. FINISH MILLS

The permit includes the following monitoring and recordkeeping requirements for finish mills:

- Bag leak detection systems, used to determine continuous compliance with the NESHAP opacity limit of 10 percent and the BACT, LAER, and dispersion modeling based PM-10 emission limits; and
- Operations and maintenance plan. This plan is required to include adequate procedures for proper operation and maintenance of the affected source and air pollution control devices in order to meet the NESHAP emission limits and operating limits.

D. PORTLAND CEMENT PLANT STORAGE BINS, CONVEYING SYSTEM TRANSFER POINTS, BAGGING SYSTEMS, BULK UNLOADING SYSTEMS, AND BULK LOADING SYSTEMS

The permit includes the following monitoring and recordkeeping requirements for the materials handling operations within the Portland cement plant:

- Bag leak detection systems for certain dust collectors. These systems will be used to determine continuous compliance with the NESHAP opacity limit of 10 percent and the BACT, LAER, and dispersion modeling based PM-10 emission limits; and
- For all dust collectors not equipped with bag leak detection systems, continuous monitoring of pressure drop across the dust collector in conjunction with periodic visible emissions observations in order to determine continuous compliance with the NESHAP opacity limit of 10 percent and the BACT, LAER, and dispersion modeling based PM-10 emission limits; and
- Operations and maintenance plan. This plan is required to include adequate procedures for proper operation and maintenance of the affected source and air pollution control devices in order to meet the NESHAP emission limits and operating limits.

E. MATERIALS HANDLING IN THE QUARRY AND LIMESTONE PROCESSING PLANT

The permit includes the following monitoring and recordkeeping requirements for the quarrying and limestone materials handling operations:

- Daily recording of the number of blasts performed in the quarry, the amount of limestone quarried, and the amount of explosive used, in order to determine continuous compliance with the operational limits on these parameters;
- Continuous monitoring of pressure drop across all dust collectors. This monitoring is used to determine continuous compliance with the BACT, LAER, and dispersion modeling based PM-10 emission limits; and
- Periodic visible emissions observations. These observations are used to determine continuous compliance with the process weight rate based PM emission limits under the Pima County Code; and the opacity limits for existing sources under Article 7.

F. MATERIALS HANDLING IN THE COAL PREPARATION PLANT

The permit includes the following monitoring and recordkeeping requirements for the

coal preparation plant:

- Continuous monitoring of exhaust gas temperature at the exit of each coal mill, upstream of the coal mill dust collectors. This monitoring is required by the NSPS for coal preparation plants because the coal mills are considered thermal dryers under that regulation;
- Continuous monitoring of pressure drop across all dust collectors. This monitoring is used to determine continuous compliance with the BACT, LAER, and dispersion modeling based PM-10 emission limits;
- Periodic visible emissions observations. These observations are used to determine continuous compliance with the process weight rate based PM emission limits under the Pima County Code and the opacity limits for existing sources under the NSPS for coal preparation plants.

G. EMERGENCY GENERATOR

The permit includes the following monitoring and recordkeeping requirements for the emergency generator:

- Continuous monitoring of the operating hours of the emergency generator, using a non-resettable hour meter. This monitoring is used to determine continuous compliance with the operational limits voluntarily accepted by the Permittee in order to qualify the emergency generator internal combustion engine as an emergency engine under the applicable NSPS and NESHAP, subpart IIII of 40 CFR part 60 and subpart ZZZZ of 40 CFR part 63;
- Daily records of the type, quantity, and sulfur content of fuel used. These records are used to determine continuous compliance with the BACT and NSPS fuel restrictions; and
- Daily visible emissions observations for each day on which the generator operates, other than emergency operation. These observations are used to determine continuous compliance with the opacity limit under Article 7.

X. PERFORMANCE TESTING REQUIREMENTS

A. KILN 6 INLINE KILN/RAW MILL

1. Portland Cement NESHAP

As noted in Table 2, the inline kiln/raw mill is an affected source under the NESHAP for Portland cement plants, subpart LLL of 40 CFR part 63. The NESHAP performance testing is required to be performed within 60 days after achieving the maximum production rate at which the affected source will be operated, or within 180 days after initial startup, whichever is earlier. The NESHAP performance testing requirements included in the permit, as required by A.A.C. R18-2-306(A)(3), include the following:

- Performance testing for PM emissions using EPA Reference Method 5, with separate tests run with and without the raw mill in operation;
- Performance testing for opacity of visible emissions, based on the data gathered by the continuous opacity monitoring system described in Section IX.A.1 herein, concurrent with the PM performance tests described above;
- Performance testing for dioxin/furan emissions using EPA Reference Method 23, with separate tests run with and without the raw mill in

operation. This testing is required to be repeated once every thirty months;

- Performance testing for total hydrocarbons emissions, using the data gathered by the total hydrocarbon continuous emission monitoring system described in Section IX.A.1 herein, with separate tests run with and without the raw mill in operation; and
- Performance testing for mercury emissions using either EPA Reference Method 29 or ASTM Method D6784-02, with separate tests run with and without the raw mill in operation.

2. Other Requirements

In addition to the NESHAP performance testing requirements, the permit also requires performance testing to demonstrate compliance with the PM-10 emission limits established pursuant to PSD and NNSR program requirements as described in Sections V and XI herein. Separate tests are required to be run with and without the raw mill in operation. This testing, as the NESHAP performance testing, is required to be performed once within 60 days after achieving the maximum production rate at which the affected source will be operated, or within 180 days after initial startup, whichever is earlier. Testing is required to be repeated annually. The Permittee has several options for the test methods to be used:

- EPA Reference Methods 5 or 201a for filterable PM emissions, plus;
- EPA Reference Method 202 or EPA Other Test Method 28 (OTM-28) for condensable PM-10 emissions.

B. CLINKER COOLER

1. Portland Cement NESHAP

The NESHAP performance testing is required to be performed within 60 days after achieving the maximum production rate at which the affected source will be operated, or within 180 days after initial startup, whichever is earlier. The permit includes the following NESHAP performance testing requirements:

- Performance testing for PM emissions using EPA Reference Method 5, with separate tests run with and without the raw mill in operation; and
- Performance testing for opacity of visible emissions, based on the data gathered by the continuous opacity monitoring system described in Section IX.B herein, concurrent with the PM performance tests described above.

2. Other Requirements

In addition to the NESHAP performance testing requirements, the permit also requires performance testing to demonstrate compliance with the PM-10 emission limits established pursuant to PSD and NNSR program requirements as described in Sections V and XI herein. This testing, as the NESHAP performance testing, is required to be performed once within 60 days after achieving the maximum production rate at which the affected source will be operated, or within 180 days after initial startup, whichever is earlier. Testing is required to be repeated annually. The Permittee has several options for the test methods to be used:

- EPA Reference Methods 5 or 201a for filterable PM emissions, plus;
- EPA Reference Method 202 or EPA Other Test Method 28 (OTM-28) for condensable PM-10 emissions.

C. PORTLAND CEMENT PLANT FINISH MILLS, STORAGE BINS, CONVEYING SYSTEM TRANSFER POINTS, BAGGING SYSTEMS, BULK UNLOADING SYSTEMS, AND BULK LOADING SYSTEMS

The permit includes the following performance testing requirements for the finish mills and materials handling operations within the Portland cement plant:

- Initial performance testing for opacity of visible emissions, using EPA Reference Method 9, to demonstrate compliance with the NESHAP opacity limits. This performance testing is required to be performed within 60 days after achieving the maximum production rate at which the affected source will be operated, or within 180 days after initial startup, whichever is earlier. The 180-day deadline applies to the Method 9 performance test pursuant to 40 CFR §§ 63.7(a)(2)(ii) and 63.1349(b)(2).
- Performance testing for PM emissions, using EPA Reference Method 5, to demonstrate compliance with the PM emission limits required under BACT, LAER, and dispersion modeling requirements. This testing is required to be performed once within 60 days after achieving the maximum production rate at which the affected source will be operated, or within 180 days after initial startup, whichever is earlier. In addition, if there are three years or more remaining in the term of the Class I permit at the time the initial testing is performed, the permit requires that this performance testing be repeated once during the permit term, not more than 12 months prior to permit expiration.

D. MATERIALS HANDLING IN THE QUARRY AND LIMESTONE PROCESSING PLANT

The permit includes performance testing requirements for each dust collector associated with the limestone processing plant in order to determine compliance with the BACT, LAER, and dispersion modeling based PM-10 emission limits and the process weight rate based PM emission limits under the Pima County Code. The testing is required to be conducted in accordance with EPA Reference Methods 1-4, plus EPA Reference Method 5 for PM. The Permittee has the option using the Method 5 test results to demonstrate compliance with the PM-10 emission limits, or conducting separate tests using EPA Reference Methods 201 or 201a for filterable PM-10 emissions. Because the limestone processing operations occur at ambient temperatures, no condensible particulate matter is expected and no testing for that fraction is required.

For each dust collector, the testing is required to be performed within 60 days after achieving the maximum production rate at which the affected facility will be operated, or within 180 days after initial startup, whichever is earlier.

E. MATERIALS HANDLING IN THE COAL PREPARATION PLANT

The permit includes performance testing requirements for each dust collector and each conveyor transfer point associated with the coal preparation plant in order to determine compliance with the PM emission limits required under BACT, LAER, NSPS, and dispersion modeling requirements. The testing is required to be conducted in accordance with EPA Reference Methods 1-5 for PM and EPA Reference Method 9 for opacity. The

initial testing is required to be performed within 60 days after achieving the maximum production rate at which the affected facility will be operated, or within 180 days after initial startup, whichever is earlier. If there are three years or more remaining in the term of the Class I permit at the time the initial testing is performed, the permit requires that the performance testing be repeated once during the permit term, not more than 12 months prior to permit expiration.

XI. PSD AIR QUALITY IMPACTS ANALYSIS

As noted in Section III, the Kiln 6 project is a major modification subject to PSD review with respect to SO₂ emissions increases. Accordingly, the Permittee conducted an ambient air quality impact analysis as required by A.A.C. R18-2-406(A)(5) and R18-2-407. This analysis was submitted as part of the April 2007 supplement to the Class I permit application. As detailed below, the Department has reviewed this analysis and concurs with the Permittee's conclusions.

A. GROWTH ANALYSIS

Pursuant to A.A.C. R18-2-407(I), the Permittee was required to perform an analysis of general commercial, residential, industrial, and other growth associated with the proposed modification. The projected growth is required to be considered in other portions of the the ambient air quality impact analysis, as described below. The Permittee submitted, in Section 8.3.5 of the April 2007 supplement to the Class I permit application, a brief analysis showing that the Kiln 6 Project will not require any additional employees over the current workforce to operate the cement plant. Because no additional workforce is needed, there will be no associated growth.

B. DEMONSTRATION OF COMPLIANCE WITH AMBIENT STANDARDS

The Permittee conducted dispersion modeling analyses in order to demonstrate compliance with the National Ambient Air Quality Standards (NAAQS) and PSD increments. The results of this analysis were submitted in the December 2005 permit application and in Section 8 of the April 2007 supplement to the permit application. The Department has reviewed this analysis and has determined that it was performed in accordance with Section 5.0 of the Department's "Air Dispersion Modeling Guidelines for Arizona Air Quality Permits."

1. Model Description and Data Processing

Based on recommendations from the Department, the Permittee's dispersion modeling analysis used U.S. EPA's refined model ISCPRIME (version 04269) with the regulatory default option set. This option requires the use of terrain elevation data, stack-tip downwash, sequential date checking, and does not permit the use of the model in the SCREEN mode. In the regulatory default mode, pollutant half life or decay options are not employed. The non-guideline model OBODM (Open Burning/Open Detonation Model) was also used to assess impacts from Quarry blasting.

Receptor density was adequate to demonstrate assessment of maximum concentrations. Receptor elevations were calculated from USGS DEM data.

2. Emission and Stack Data

Table 3a presents a summary of the modeled emission rates and stack parameters for each major point source. Additionally there were over 90 baghouse emission

points modeled for PM-10 emissions throughout the facility, having a total maximum hourly emission rate of 42 lbs/hour. Numerous area and volume sources were also included to portray various handling and haul road emissions. These are summarized in Table 3b.

The Permittee's dispersion modeling analysis included a Good Engineering Practice (GEP) stack height analysis. The latest version of U.S. EPA's BPIP-PRIME program was used to calculate GEP stack heights. The GEP heights were compared to actual stack heights to demonstrate compliance with the stack height regulations codified at 40 CFR part 51. For any stack that was calculated to be less than GEP height, the BPIP downwash parameters were included in the ISCPRIME analysis.

TABLE 3a: MAJOR POINT SOURCE MODELING PARAMETERS

Stack ID	Stack Height (m)	Exit T (k)	Exit velocity (m/s)	Exit Diam (m)	SO ₂ Emissions (lb/hr)	NO ₂ Emissions (lb/hr)	CO Emissions (lbs/hr)	PM-10 Emissions (lbs/hr)
H5GB	39.624	477.59	14.578	4.877	53.02	512.0159	167.57	28.0279
HEATBOIL	12.192	533	7.831	0.152	0.0004	0.0651	0.0069	0.0048
DFH1	1.83	Ambient	Horizontal	0.001	0.0009	0.1587	0.017	0.0119
DFH2	1.83	Ambient	Horizontal	0.001	0.0009	0.1587	0.017	0.0119
D5PC	40.54	366.48	20.3	1.22	0.0063	1.1112	0.117	1.22
DGEN	2.438	814.82	155.61	0.67	0.0002	0.5794	1.21	0.5540
POO	2.438	814.82	155.61	0.67	0.0002	0.0000	NA	NA

TABLE 3b: SUMMARY OF FUGITIVE EMISSIONS

	PM-10 Emissions TPY	PM-10 Emissions lbs/hr
Area Sources	4.3	2962
Volume Sources	162	148
Total	166.3	3,110

3. Ambient Background Concentration Data

Ambient background concentrations are added to the maximum modeled concentrations to determine compliance with the NAAQS. In Arizona, ambient monitoring is conducted by a number of governmental agencies and regulated industries. As recommended by the Department's Modeling Guidelines, the Permittee's NAAQS demonstration used background air quality concentrations that were derived from the latest three years of available monitoring data from the nearest representative monitoring stations for CO, SO₂, and NO₂. The selected background concentrations are presented in Table 4.

A refined method was used to calculate the PM-10 ambient background data,

based upon the daily monitored values. The procedure used to determine the background 24-hour average PM-10 concentration for the NAAQS modeling, as approved by the Department, added modeled impacts to day-specific background concentrations measured at the Pima County DEQ's Tangerine monitoring station. The day-specific 24-hour average PM-10 background concentrations were determined as either the monitored value for that specific day, or the greater of the two surrounding monitored values. The value listed in Table 4 below is the maximum day-specific ambient PM-10 background value used.

TABLE 4: AMBIENT BACKGROUND CONCENTRATIONS

Pollutant	Station	Background Conc. ($\mu\text{g}/\text{m}^3$)	NAAQS ($\mu\text{g}/\text{m}^3$)
NO ₂ Annual ($\mu\text{g}/\text{m}^3$)	Pima Co	32.3	100
PM-10 24-hr ($\mu\text{g}/\text{m}^3$)	Tangerine	81	150
PM-10 Annual ($\mu\text{g}/\text{m}^3$)	Tangerine	19	50
SO ₂ 3-hr ($\mu\text{g}/\text{m}^3$)	Pima Co	26.2	1,300
SO ₂ 24-hr ($\mu\text{g}/\text{m}^3$)	Pima Co	10.5	365
SO ₂ Annual ($\mu\text{g}/\text{m}^3$)	Pima Co	4.0	80
CO 1-hr ($\mu\text{g}/\text{m}^3$)	Pima Co	4,923	40,000
CO 8-hr ($\mu\text{g}/\text{m}^3$)	Pima Co	2,176	10,000

4. Modeling Results

The NAAQS modeling results for the facility are presented in Table 5a. The total modeled impacts (modeled concentrations plus background concentrations) are less than the corresponding NAAQS.

PSD Class II SO₂ Increment modeling was performed. The project impacts were above the significant impact levels (SIL's) for the 3-hr and 24-hr SO₂ averaging intervals, therefore cumulative SO₂ PSD increment consumption modeling was performed. The Significant Impact Area was less than two kilometers from the plant. Since there are no major SO₂ PSD sources within 50 km of the APCC Rillito cement plant, only the Permittee's sources were included in the SO₂ Class II PSD increment analysis.

Table 5b shows that maximum predicted impacts are below PSD Class II increment levels.

TABLE 5A: NAAQS MODELING RESULTS

Pollutant	Averaging Interval	NAAQS ($\mu\text{g}/\text{m}^3$)	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)		Exceeds NAAQS
			Source Only	Including Background	
NO ₂	Annual	100	4.97	37.3	No
SO ₂	3-Hour	1300	95.7	121.7	No
	24-Hour	365	17.1	27.1	No
	Annual	80	0.4	4.4	No
PM-10	24-Hour ¹	150	126.2	135.2	No
	Annual	50	26.5	45.5	No
CO	1-Hour	40,000	3,209	8,133	No
	8-Hour	10,000	493	2,669	No

¹ – The maximum values shown are the source-only predicted concentration impact

and the total predicted concentration corresponding to the day with the highest sixth high. As described in Section XI.B.3, day-specific ambient 24-hour background PM-10 concentration values were used in the NAAQS analysis.

TABLE 5B: PSD CLASS II INCREMENT MODELING RESULTS

Pollutant	Averaging Interval	PSD Increment ($\mu\text{g}/\text{m}^3$)	Maximum Modeled Concentration ($\mu\text{g}/\text{m}^3$)		SIA (km)	SIL ($\mu\text{g}/\text{m}^3$)
			Source Only ¹	Including PSD Inventory ²		
SO ₂	3-Hour	512	35.7	34.4	1.2	25
	24-Hour	91	8.8	6.0	1.4	5
	Annual	20	0.4	NA	NA	1

¹ – Highest concentration

² – High second-highest

5. Class I PSD Increment

The Permittee's facility is located within 200 kilometers of seven Class I areas. Because the proposed major modification will result in a significant net increase in SO₂ emissions, the Permittee performed an analysis to demonstrate that the project would not cause or contribute to a violation of a PSD Class I increment in any of these areas. This analysis is documented in Section 8.4 of the April 2007 supplement to the permit application of PSD. The Class I areas evaluated are as follows:

- Saguaro National Park
- Chiricahua Wilderness Area
- Chiricahua National Monument
- Galiuro National Monument
- Mount Baldy Wilderness Area
- Sierra Ancha Wilderness Area
- Superstition Wilderness Area

Because the boundary of Saguaro National Park is within 50 kilometers of the Permittee's facility, the ISCPRIME model was used to determine air quality impacts at that park. All other Class I areas are greater than 50 kilometers, and have been modeled using the CALPUFF air quality model, with three years of MM5 gridded data (2002-2004).

Modeling demonstrated that the Class I SO₂ SIL for the 3-hour and 24-hour averaging periods were exceeded at the nearby Saguaro National Park western unit. No other SIL's were reached at any other Class I. Table 6 lists the significant Impact Results for PSD Class I SO₂ Increment analysis.

Therefore, cumulative modeling analyses were done using all PSD increment consuming sources in the Saguaro National Park western unit. Sulfur dioxide emission sources within 300 km of the Saguaro National Park western unit were evaluated initially to determine the sources to include in the cumulative Class I increment modeling. These source data were incorporated from Maricopa County, Pinal County, Pima County, NEI, and the New Mexico Environment Department's databases. Based on guidance from the National Park Service, only sources with an SO₂ emission rate, in tons per year that exceeded 0.8 times the distance from the Saguaro National Park western unit, in kilometers were included in the modeling.

Cumulative PSD increment results show impacts to be less than the Class I PSD Increment levels, as shown in Table 7.

TABLE 6: CLASS I SO₂ INCREMENT SIL RESULTS

Area	Averaging Period	Maximum	SIL (µg/m ³) ⁽²⁾	Above SIL?
Chiricahua WA	3-hour	0.060	1.0	No
	24-hour	0.019	0.2	No
	Annual	0.001	0.1	No
Chiricahua NM	3-hour	0.045	1.0	No
	24-hour	0.012	0.2	No
	Annual	0.001	0.1	No
Galiuro WA	3-hour	0.239	1.0	No
	24-hour	0.056	0.2	No
	Annual	0.006	0.1	No
Mt. Baldy WA	3-hour	0.023	1.0	No
	24-hour	0.004	0.2	No
	Annual	0.000	0.1	No
Sierra Ancha WA	3-hour	0.062	1.0	No
	24-hour	0.010	0.2	No
	Annual	0.001	0.1	No
Superstition WA	3-hour	0.147	1.0	No
	24-hour	0.033	0.2	No
	Annual	0.002	0.1	No
Saguaro NP West	3-hour	11.06	1.0	Yes
	24-hour	1.90	0.2	Yes
	Annual	0.09	0.1	No
Saguaro NP East	3-hour	0.98	1.0	No
	24-hour	0.16	0.2	No
	Annual	0.02	0.1	No

TABLE 7: CLASS I INCREMENT SO₂ IMPACTS AT SAGUARO NP

Pollutant	Averaging Interval	PSD Class I Increment (µg/m ³)	Maximum Modeled Concentration (µg/m ³)	
			Plant Only ¹	Including PSD Inventory ²
SO ₂	3-Hour	25	11.1	10.1
	24-Hour	5	1.9	1.4

¹ – Highest concentration

² – High second-highest

G. SOILS, VEGETATION, AND VISIBILITY IMPACTS ANALYSIS

Pursuant to A.A.C. R18-2-407(A)(1), the Permittee performed an analysis of the project's impacts on soils and vegetation in the vicinity of the project site. This analysis included dispersion modeling with ISCPRIME and showed that maximum predicted impacts for SO₂ were less than six percent of the EPA's screening threshold values for sensitive species. The analysis is presented in detail in Section 8.3.4 of the April 2007 supplement to the Class I permit application. The Department has reviewed this analysis and agrees with the Permittee's conclusions. In particular, the Department notes that the Permittee's analysis was conservative, as it did not take into account the significant NO_x emission reductions to be achieved, and the resultant benefits in terms of synergistic impacts of SO₂ and NO_x ambient concentrations.

XII. CLASS I AREA IMPACTS ANALYSIS

The Permittee submitted Class I Air Quality Related Values (AQRV) impact analyses in its April 2007 supplement to the permit application. This analysis included assessment of both visibility and deposition impacts. This analysis is reviewed by the Federal Land Manager (FLM) responsible for each affected Class I areas, in this case the U.S. Forest Service and the National Park Service. The Department transmitted the Class I permit application, including the Class I AQRV impact analyses, to the FLM agencies and to date has not received any comments indicating concerns regarding adverse impacts on any AQRV's.

XIII. ARIZONA AMBIENT AIR QUALITY GUIDELINES (AAAQG)

The Permittee conducted a dispersion modeling analysis in order to demonstrate compliance with the AAAQG and submitted the results of this analysis as Appendix G to the December 2005 permit application. The Department has reviewed this analysis, has determined that it was performed in accordance with Section 5.0 of the Department's "Air Dispersion Modeling Guidelines for Arizona Air Quality Permits."

The AAAQG modeling results are presented in Table 8. The modeled impacts from the plant were below all the AAAQG threshold levels. Therefore, the Department has concluded that the Permittee's AAAQG modeling results are acceptable.

TABLE 8: AAAQG MODELING RESULTS

	Modeled Ambient Concentration (µg/m ³)			AAAQG (µg/m ³)		
	Annual	24-Hour	1-Hour	Annual	24-Hour	1-Hour
Acetaldehyde	3.24E-05	7.80E-04	4.45E-03	5.00E-01	1.40E+03	2.30E+03
Aluminum	6.00E-04	1.44E-02	8.24E-02	--	1.50E+02	4.50E+02
Ammonia	2.29E-02	5.52E-01	3.15E+00	--	1.40E+02	--
Arsenic	7.98E-06	1.92E-04	1.10E-03	2.00E-04	7.30E-02	2.80E-01
Barium	2.12E-03	5.12E-02	2.92E-01	--	4.00E+00	1.5-E+01
Benzene	4.03E-03	9.71E-02	5.54E-01	1.40E-01	5.10E+01	6.30E+02
Benz(a)anthracene	2.44E-07	5.88E-06	3.35E-05	5.70E-04	2.10E-02	7.90E-02
Benzo(a)pyrene	1.56E-08	3.76E-07	2.15E-06	5.70E-04	2.10E-01	7.90E-01
Beryllium	1.60E-05	3.84E-04	2.19E-03	5.00E-04	1.60E-02	6.00E-02
Cadmium	4.36E-05	1.05E-03	6.00E-03	2.90E-04	1.10E-01	1.70E+00
Chlorobenzene	3.15E-04	7.57E-03	4.32E-02	--	2.56E+03	
Chromium	8.10E-06	1.95E-04	1.11E-03	--	3.80E+00	1.10E+01
Copper	6.82E-05	1.64E-03	9.38E-03	--	7.50E-01	2.30E+00

	Modeled Ambient Concentration ($\mu\text{g}/\text{m}^3$)			AAAQG ($\mu\text{g}/\text{m}^3$)		
	Annual	24-Hour	1-Hour	Annual	24-Hour	1-Hour
Ethylbenzene	6.82E-04	1.64E-02	9.37E-02	--	3.50E+03	4.50E+03
Formaldehyde	2.05E-02	4.94E-01	2.82E+00	8.00E-02	1.20E+01	2.00E+01
Hydrogen Chloride	4.75E-02	1.14E+00	6.52E+00	7.00E+00	5.60E+01	2.10E+02
Hydrogen Fluoride	3.16E-03	7.61E-02	4.35E-01	--	1.88E+02	5.63E+02
Iron	5.99E-04	1.44E-02	8.24E02	--	4.00E+01	8.30E+01
Manganese	3.14E-02	7.56E-01	4.31E+00	--	8.00E+00	2.50E+01
Mercury	1.81E-05	4.35E-04	2.48E-03	--	4.00E-01	1.50E+00
Methylene Chloride	1.83E-04	4.40E-03	2.51E-02	5.60E+00	2.00E+03	7.60E+03
Molybdenum	1.25E-05	3.02E-04	1.72E-03	--	4.00E-01	8.30E+01
Naphthalene	5.94E-04	1.43E-02	8.16E-02	--	4.00E+02	6.30E+02
Nickel	2.15E-05	5.18E-04	2.96E-03	4.00E-03	1.50E+00	5.70E+00
Pentachlorophenol	1.56E-05	3.76E-04	2.15E-03	--	4.00E+00	1.30E+01
Phenol	1.21E-04	2.91E-03	1.66E-02	--	1.50E+02	3.20E+02
Polychlorinated Biphenyls	4.22E-06	1.02E-04	5.80E-04	6.10E-04	7.90E-02	3.00E-01
Selenium	1.60E-05	3.84E-04	2.19E-03	--	1.60E+00	6.00E+00
Silver	1.40E-05	3.37E-05	1.92E-04	--	7.90E-02	3.00E-01
Sulfuric Acid Mist	4.54E-03	1.09E-01	6.24E-01	--	7.50E+00	2.25E+1
2,3,7,8-Tetrachlorodibenzo-p-dioxin	5.30E-09	1.28E-07	7.28E-07	2.40E-05	1.10E-02	4.30E-02
Thallium	1.24E-05	2.98E-04	1.70E-03	--	7.90E-01	3.00E+00
Toluene	8.46E-04	2.04E-02	1.16E-01	--	3.00E+03	4.70E+03
m- & p-Xylenes	3.10E-04	7.47E-03	4.26E-02	--	3.50E+03	5.50E+03
O-Xylenes	1.36E-04	3.28E-03	1.87E-02	--	3.50E+03	5.50E+03
Xylenes	4.46E-04	1.07E-02	6.13E-02	--	3.50E+03	5.50E+03
Zinc (Total Dust)	1.57E-03	3.79E-02	2.16E-01	--	8.00E-01	3.00E+02