



**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NO. 63592**

Lhoist North America- Nelson Lime plant

I. INTRODUCTION

This Class I renewal permit is issued to Lhoist North America of Arizona, Inc., the Permittee, for continued operation of its limestone processing and lime manufacturing plant located approximately six miles east of Peach Springs in Yavapai County, Arizona. This permit renews and supersedes Permit No. 42782

A. Company Information

1. Facility Name: Lhoist North America – Nelson Lime Plant
2. Facility Location: 2.5 miles S of Route 66, Mile Marker 112
Peach Springs, Yavapai County, AZ 86434
3. Mailing Address: P.O. Box 370
Peach Springs, AZ 86434

B. Attainment Classification

The facility is located in an area classified as attainment or unclassifiable for all criteria pollutants.

II. PROCESS DESCRIPTION

A. Limestone Processing

The limestone processing operations consist of three (3) quarries, a crushing and screening plant, and auxiliary operations. The limestone processing operations produce crushed and sized limestone for the adjacent lime manufacturing operations, and crushed and sized limestone products for aggregate sales.

1. Quarry operations

Quarry operations include drilling and blasting to fracture the overburden and stone; Breaking apart extra-large boulders left-over from the blasting with a rock hammer; Loading and hauling the limestone to the primary crusher, overburden and waste rock to in-pit storage areas and to gravitational piles and hauling and transferring off-spec limestone (chat) and waste (dirt and dust) from the crushing and screening plant to in-pit storage areas; and hauling and transferring kiln dust, off-spec limestone, off-spec lime and off-spec hydrate from the lime manufacturing facility to in-pit storage areas.

2. Crushing and Screening Operation

The crushing and screening plant processes the limestone through a series of crushers and screens in order to reduce the size of the rock, and to separate out the very fine material (chat) and remove it from the system. The chat is conveyed from four (4) different screens in the crushing and screening plant to the chat silo. The chat is then loaded into haul trucks and stockpiled for sale. The chat is also used as quarry backfill, to build quarry safety berms or to build and maintain haul roads. The crushed limestone is conveyed to a kiln feed stockpile for use by the adjacent lime manufacturing operations. Kiln feed material is also occasionally sold or used onsite for gravel or road fill material.

B. Lime Manufacturing Operations

The lime manufacturing equipment consists of two (2) lime kilns that convert crushed limestone (CaCO_3) into quicklime (CaO), along with auxiliary processing equipment. Operations include pre-kiln limestone handling, kiln operations, post-kiln lime handling, a lime hydrator, truck and rail loadout facilities, and solid fuel handling.

Crushed limestone produced by the crushing and screening operations is stored in kiln feed stockpiles. The crushed limestone is reclaimed from the stockpiles is transferred to the two stone bins that feed the two lime Kilns 1 and 2. The rated design capacity of Kiln 1 is 800 tons per day and Kiln 2 is 1000 tons per day. The lime product from the kilns is cooled within a contact cooler and is then sent to either the Front Lime Handling System (FLHS) or the Back Lime Handling System (BLHS) for processing and storage. Both kilns are capable of burning coal, petroleum coke, diesel, on-spec used fuel oil, or any combination of such fuels.

Particulate emissions from each kiln are controlled with a multicyclone and negative pressure baghouse.

The lime kiln dust (LKD) is transported to the kiln dust storage area in the quarry, or loaded into super sacks or trucks/rail cars for sale, or mixed with the lime product.

The facility also produces hydrated lime by pulverizing quicklime and mixing it with water.

III. EMISSIONS

Potential-to-Emit (PTE) for the facility, based on the emission calculations spreadsheets provided as a part of permit application, is provided in Table 1 below. PTE for all criteria pollutants except VOCs is greater than 100 tons per year. Therefore, the facility is classified as a major source as defined in A.A.C. R18-2-101(75), and requires a Class I permit pursuant to A.A.C. R18-302.B.1.a.

Table 1: Potential Emissions

Pollutant	Emissions (tons per year)
PM	1,248
PM ₁₀	489
PM _{2.5}	173
NO _x	1,847
CO	530
SO ₂	3,691
VOC	7.6
Total HAPs	9.52
HCl	8.26
CO _{2e}	924,267

IV. APPLICABLE REGULATIONS

Table 2 displays the applicable requirements with an explanation of why the requirement is applicable.

Table 2: Verification of Applicable Regulations

Unit	Control Device	Rule	Discussion
Limestone Crushing and Screening, and Limestone Kiln feed system	Dust collectors, water sprays	A.A.C. R18-2-702 A.A.C. R18-2-720 40 CFR 60 Subpart OOO	A.A.C. R18-2-720 is applicable to limestone crushing and screening operations. New Source Performance Standards (NSPS) 40 CFR 60 Subpart OOO is applicable to limestone crushing and screening equipment installed after 1983.
Solid Fuel Handling System	Dust collector	A.A.C. R18-2-702 A.A.C. R18-2-716 40 CFR 60 Subpart Y	Standards of Performance for Existing Coal Preparation Plants A.A.C. R18-2-716 is applicable to Solid Fuel Handling System equipment constructed prior to October 24, 1974. New Source Performance Standards (NSPS) 40 CFR 60 Subpart Y applicable to equipment installed after October 24, 1974.

Unit	Control Device	Rule	Discussion
Process Stone Handling (PSH) operations, Rotary Kilns, Contact Coolers	Multicyclones, baghouses	A.A.C. R18-2-720 A.A.C. R18-2-730 40 CFR 63 Subpart AAAAA 40 CFR 52.145(i)	<p>Rotary kilns and coolers are subject to Standards of Performance for Existing Lime Manufacturing Plants under A.A.C. R18-2-720. PSH operations are not subject to A.A.C. R18-2-720. Therefore, A.A.C. R18-2-730, Standards for Unclassified sources are applicable these operations.</p> <p>Also, National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements under 40 CFR 63 Subpart AAAAA for lime manufacturing facilities are applicable as the facility is major source of HAPs emissions. NESHAP standards are more stringent than the A.A.C. standards.</p> <p>Lime Kilns 1 and 2 are also subject to EPA Regional Haze Federal Implementation Plan requirements under 40 CFR 52.145(i) for NOx and SO₂.</p>
Front Lime Handling System (FLHS) and Back Lime Handling System (BLHS)	Dust collectors	A.A.C. R18-2-702 A.A.C. R18-2-730	NSPS Subpart OOO and A.A.C. R18-2-720, are applicable only to material sizing, conveying, and storing operations that process limestone. As these systems process lime, these requirements are not applicable. Thus requirements for unclassified sources under A.A.C. R18-2-730 are applicable to lime handling operations.
Hydrate System	Dust Collectors, scrubber	.A.C. R18-2-702 A.A.C. R18-2-720	The Hydrate System is subject to Standards of Performance for Existing Lime Manufacturing Plants under A.A.C. R18-2-720.

Unit	Control Device	Rule	Discussion
Pony Engines and Detroit Diesel Emergency Fire Pump Engine	N/A	A.A.C. R18-2-719 40 CFR 63 Subpart ZZZZ	These engines are not subject to NSPS Standards under 40 CFR 60 Subpart IIII as these are manufactured prior to April 1, 2006. Thus, these engines are subject to Standards of Performance for Existing Stationary Rotating Machinery under A.A.C R18-2-719 These engines are also subject to NESHAP standards under 40 CFR 63 Subpart ZZZZ.
125kW Canyon Well Generator engine	N/A	40 CFR Subpart IIII	The engines built after 2006 are subject to NSPS Standards under 40 CFR Subpart IIII. These engines comply with NESHAP standards under 40 CFR 63 Subpart ZZZZ by complying with the requirements under 40 CFR Subpart IIII.
Gasoline Storage Tank	N/A	A.A.C. R18-2-710	The gasoline storage tank is subject to requirements for Standards of Performance for Existing Storage Vessels for Petroleum Liquids under A.A.C R18-2-710.
Diesel Storage Tanks	N/A	A.A.C. R18-2-730	As defined in A.A.C. R18-2-701.37, diesel fuel is not a petroleum liquid, and thus not subject to requirements for petroleum liquids under A.A.C R18-2-710. These tanks also do not meet the applicability requirements for 40 CFR 60 Subpart Kb. Hence these tanks are subject to standards for unclassified sources A.A.C. R18-2-730.
Hot Water Pressure Washer	N/A	A.A.C. R18-2-724	Standards of Performance for Fossil-fuel Fired Industrial and Commercial Equipment under A.A.C. R18-2-724 are applicable to Hot Water Pressure Washer. NESHAP requirements under 40 CFR 63 Subpart DDDDD are not applicable to hot water heaters less than 1.6 MMBtu/hr.
Fugitive dust sources	Water Trucks Dust Suppressants	A.A.C. R18-2 Article 6 A.A.C. R18-2-702	These standards are applicable to all fugitive dust sources at the facility.

Unit	Control Device	Rule	Discussion
Abrasive Blasting	Wet blasting; Dust collecting equipment; Other approved methods	A.A.C. R-18-2-702 A.A.C. R-18-2-726	These standards are applicable to any abrasive blasting operation.
Spray Painting	Enclosures	A.A.C. R18-2-702 A.A.C. R-18-2-727	This standard is applicable to any spray painting operation.
Demolition/renovation operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.
Mobile sources	None	A.A.C. R18-2-801	These are applicable to off-road mobile sources, which either move while emitting air pollutants or are frequently moved during the course of their utilization.

V. PREVIOUS PERMIT CONDITIONS

The following Section discusses the previous permit conditions with respect to this renewal permit.

A. PREVIOUS PERMITS

Table 3: PREVIOUS PERMITS

Permit #	Issue Date	Application Basis
42782	August 8, 2011	Title V Renewal Permit
55424	February 16, 2012	Minor Permit Revision
55836	May 1, 2012	Minor Permit Revision
56183	November 14, 2012	Minor Permit Revision
57066	February 4, 2013	Minor Permit Revision
56890	April 1, 2013	Minor Permit Revision
57864	August 16, 2013	Minor Permit Revision
63488	April 12, 2016	Minor Permit Revision

- B. Table 4 below illustrates if a section in Permit No. 42782 (as amended by subsequent permit revisions above) was revised, kept, or deleted.

Table 3: Permit No. 42782

Section No.	Determination			Comments
	Revised	Keep	Delete	
Attachment "A"	x			General Provisions - Revised to represent most recent template language.
Attachment "B"				
Condition I.A	x			This opacity monitoring requirement is revised to include Alternate Method-082 (Digital Camera Operating Technique)
Conditions I.B and D		x		This Installation Permit requirement for maintaining equipment in good working conditions is retained.
Conditions I.C and I.I			x	These A.A.C. R18-2-730 requirements are delated as these are not applicable facility-wide. These are specifically addressed in Sections subject to requirements for Unclassified sources.
Conditions I.E, G and H		x		The facility-wide requirements for Dust Control Plan, Control Device Maintenance Procedure and Visible Emissions Observation Procedure are retained.
Condition I.F		x		This requirement for submission of all monitoring and reporting activities is retained.
Condition I.J			x	Alternate Operating Scenario for Crusher 206 is no longer necessary and hence deleted.
Section II		x		The requirements for Crushing and Screening plant and Kiln Feed equipment subject to A.A.C. R18-2-720 are retained.
Section III	x			The requirements for Crushing and Screening plant and Kiln Feed equipment subject to 40 CFR 60 Subpart OOO are revised to delete requirements for equipment built after 2008 as the facility has no such equipment. Also Condition IV.B.3 is revised to include additional requirements for Method 9 test from 40 CFR 60 Subpart OOO.
Section IV		x		The requirements for Solid Fuel Handling equipment subject to A.A.C. R18-2-716 are retained.

Section No.	Determination			Comments
	Revised	Keep	Delete	
Section V	x			The requirements for Solid Fuel Handling equipment subject to NSPS standards under 40 CFR 60 Subpart Y are retained. Condition V.B.3 is revised to include additional requirements for Method 9 test from 40 CFR 60 Subpart Y.
Section VI	x			The requirements for Kilns 1 and 2 systems and associated stone handling facilities are retained. Applicable emissions standards for lime plants from A.A.C. R18-2-720 and performance test method from 40 CFR 63 Subpart AAAA are included.
Section VII		x		The requirements for Front Lime Handling System (FLHS), the Back Lime Handling System (BLHS), and the Kiln 1 and Kiln 2 Dust Handling System are retained.
Section VIII	x			The requirements for Hydrator System are revised to include performance test requirements for DF 711 stack.
Section IX and X	x			Requirements for existing diesel engines are revised to include most recent NESHAP requirements for 40 CFR 63 Subpart ZZZZ. Also, requirements for the North and South Generator sets are deleted as these are no longer there.
Section XI	x			The requirements for new engine are revised to include most recent requirements under NSPS 40 CFR 60 Subpart III.
Section XII	x			This Section is revised to as A.A.C R18-2-710 is applicable only to gasoline storage tank. A separate Section is created for Diesel tanks. Also, 40 CFR 60 Subpart Kb requirements are deleted as these are not applicable to any of these tanks.
Section XIII			x	The compliance assurance monitoring (CAM) requirements are deleted as no emission unit in lime handling and load out facilities has pre-control emissions greater than 100 tons per year.
Section XIV		x		Fugitive dust requirements are retained.
Section XV		x		Mobile source requirements are retained.
Section XVI		x		The requirements for other periodic activities are retained.
Section XVII		x		The requirements for hot water pressure washer are retained.

VI. MONITORING REQUIREMENTS

A. Kilns 1 and 2 and Associated Process Stone Handling (PSH) Operations

1. The Permittee is required to inspect each capture/collection and closed vent system at least once each calendar year and record the results of the inspection.
2. The Permittee is required to maintain, and operate continuous opacity monitoring systems (COMS) at the Kiln 1 stack and the Kiln 2 stack to monitor and record the opacity of the gases discharged from each kiln at all times when the kiln is in operation.
3. For PSH operations, the Permittee is required to conduct a monthly 1-minute visible emissions (VE) observations of each emission unit while the affected source is in operation. If no VE are observed in 6 consecutive month checks, the Permittee may decrease the frequency of VE checking from monthly to semi-annually; if VE are observed during any semiannual observation, the Permittee must resume VE observations on a monthly basis, and maintain that schedule until no VE observations are observed in 6 consecutive monthly observations. If no VE are observed during the semi-annual observation, the Permittee may decrease observations from semi-annually to annually. If VE are observed during any annual check, the Permittee is required to resume VE observations on a monthly basis, and maintain that schedule until no VE observations are observed in 6 consecutive monthly observations.
4. EPA Regional Haze Federal Implementation Plan (FIP)

The Permittee is currently required to comply with the SO₂ emission limitations and will be required to comply with the NO_x emission limitations no later than September 4, 2017. The Permittee is required to install, operate and maintain Continuous Emission Monitoring System (CEMS) for NO_x and SO₂ to demonstrate compliance with the emission limitations.

B. Emission Sources other than Kilns

1. The Permittee is required to conduct a Visible Emissions Observation Procedure as per the approved Visual Observation Plan once every two weeks to monitor emissions from the affected emission units. If the observer sees a plume from a source that on an instantaneous basis appears to exceed the applicable opacity standard, then the observer is required to take a six-minute Method 9 observation of the plume. The Permittee is required to keep records of the name of the observer, the time, date, and location of the observation and the results of all surveys, observations, and any corrective action taken to lower the opacity of any emission point.
2. The Permittee is required to conduct a Control Device Monitoring and Maintenance Procedure once every month for the baghouses.

VII. TESTING REQUIREMENTS

The Permittee shall conduct performance tests once in every 5 years for particulate matter emissions and opacity for the kilns. The tests shall be conducted within 5 years following the

previous performance test.

VIII. COMPLIANCE HISTORY

Since issuance of Permit No. 42782 on October 13, 2011, twenty one (21) inspections (file reviews, report reviews, facility inspections, and test report reviews) have been conducted to ensure compliance with applicable permit conditions. No case of violation was generated as result of these inspections/report reviews.

IX. LIST OF ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AQD	Air Quality Division
BLHS	Back Lime Handling System
CAM	Compliance Assurance Monitoring
CEMS	Continuous Emission Monitoring System
CFR	Code of Federal Regulations
CO	Carbon Monoxide
COMS	Continuous Opacity Monitoring System
FIP	Federal Implementation Plan
FLHS	Front Lime Handling System
DEGK	Degrees Kelvin
GHG	Greenhouse Gases
HAP	Hazardous Air Pollutant
HCl	Hydrogen Chloride
NAAQS	National Ambient Air Quality Standard
NESHAP	National Emission Standards for Hazardous Air Pollutants
NSPS	New Source Performance Standards
NO _x	Nitrogen Oxide
PM	Particulate Matter
PM _{2.5}	Particulate Matter Nominally less than 2.5 Micrometers
PM ₁₀	Particulate Matter Nominally less than 10 Micrometers
PSH	Process Stone Handling
PTE	Potential-to-Emit
SO ₂	Sulfur Dioxide
TPY	Tons per Year
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound
yr	Year