

TECHNICAL SUPPORT DOCUMENT

TECHNICAL INFORMATION PRESENTED IN REVIEW OF AN
APPLICATION FOR A Part 70 OPERATING PERMIT

SUBMITTED BY:

Trinity Consultants
9777 Ridge Drive, Suite 380
Lenexa, KS 66219

FOR:

Lhoist North America of Arizona

LOCATION:

12101 North Las Vegas Boulevard
Las Vegas, Nevada 89165

Part 70 Operating Permit Number: 3
(Revision)

Prepared by:

Scott Chappell

Clark County Department of Air Quality

October 17, 2016

TABLE OF CONTENTS

I. ACRONYMS	3
II. SOURCE INFORMATION	4
A. General	4
B. Executive Summary	4
C. Current Permitting Action	5
III. EMISSION INFORMATION	9
IV. PTE AND NEI	10
V. PRODUCTION LIMITS	11
VI. REVIEW OF APPLICABLE REGULATIONS	12
VII. CONTROL TECHNOLOGY	12
VIII. MONITORING	13
IX. TESTING	13
X. PUBLIC NOTICE	13
XI. INCREMENT	13
XII. PERMIT SHIELD	14
XIII. CALCULATIONS	14

I. Acronyms

Table III-1: Acronym List

Acronym	Term
ANFO	Ammonium Nitrate Fuel Oil
AQR	Clark County Air Quality Regulations
ATC	Authority to Construct
CAAA	Clean Air Act, as amended
CEMS	Continuous Emissions Monitoring System
CFC	Chlorofluorocarbon
CFR	United States Code of Federal Regulations
CO	Carbon Monoxide
COMS	Continuous Opacity Monitoring System
DAQEM	Clark County Department of Air Quality & Environmental Management
DLN	Dry Low-NO _x
dscfm	Dry Standard Cubic Feet per Minute
EPA	United States Environmental Protection Agency
EU	Emission Unit
HAP	Hazardous Air Pollutant
HHV	Higher Heating Value
HP	Horse Power
kW	kilowatt
MMBtu	Millions of British Thermal Units
M/N	Model Number
NAICS	North American Industry Classification System
NO _x	Nitrogen Oxides
NRS	Nevada Revised Statutes
OP	Operating Permit
PM ₁₀	Particulate Matter less than 10 microns
ppm	Parts per Million
PTE	Potential to Emit
QA/AC	Quality Assurance/Quality Control
RATA	Relative Accuracy Test Audits
RMP	Risk Management Plan
SCC	Source Classification Codes
scf	Standard Cubic Feet
SIC	Standard Industrial Classification
SIP	State Implementation Plan
S/N	Serial Number
SO _x	Sulfur Oxides
TCS	Toxic Chemical Substance
VOC	Volatile Organic Compound

II. Source Information

A. General

Preparer: Scott Chappell
Date: December 21, 2015
Company: Lhoist North America of Arizona
Submitter: Trinity Consultants
Source: 3
Hydrographic Area: 216
Subject: Lhoist North America -Apex Plant
 12101 North Las Vegas Boulevard
 Las Vegas, Nevada 89165
 T18S, R63E, Sections 23 and 26

B. Executive Summary

Lhoist North America of Arizona (LNA) is manufacturer of lime and lime products and is located approximately twenty miles north of the City of Las Vegas, Nevada. The mining and processing operations are situated in hydrographic area 216 (Garnet Valley), a section of the Apex Valley Airshed. The legal description of the source location is: portions of T18S, R63E, Sections 23 and 26 in Apex Valley, County of Clark, State of Nevada. The source falls under SIC Code 3274: Lime Manufacturing, and NAICS Code 327410: Lime Manufacturing.

Garnet Valley is designated as attainment area for ozone (regulated through NO_x and VOC), PM₁₀, CO, and SO_x. LNA Apex Plant is a categorical source, as defined by AQR 12.2.2(j)(12). LNA Apex Plant is a major stationary source for PM₁₀, NO_x, CO, SO_x, and HAP (HCl), and a minor source for VOC pollutants. The source is also identified as a major source for greenhouse gases. The Apex operation includes mining and excavating, limestone handling and processing, solid fuel handling, lime storage silos, fuel storage tanks, and truck and railcar loading and transporting. Four rotary lime kilns are utilized to convert limestone to quicklime. These kilns can be fired by coal, coke, or natural gas.

Table II-B-1 summarizes the source PTE for each regulated air pollutant for all emission units addressed by this Part 70 Operating Permit.

Table II-B-1: Source PTE (tons per year)

PM ₁₀	PM _{2.5}	NO _x	CO	SO _x	VOC	HAP	Lead (Pb)
327.99	195.16	1,899.90	972.03	1,647.59	8.46	22.95	Not Determined

C. Current Permitting Action

The Title V Operating Permit renewal was issued to the source on December 16, 2011. Shortly after that date, the Permittee filed an appeal with the Clark County Air Pollution Control Hearing Board (APCHB). A number of hearings were conducted over the 2012 calendar year and the decisions of the APCHB were subsequently incorporated into the Title V Operating Permit that was issued on February 27, 2015. Since the December 16, 2011 operating permit, thirteen applications for minor revisions were submitted to Air Quality. All of these applications have been combined for this permitting action.

For clarification purposes, the content of each application is listed separately, starting with the oldest. Only new and modified emission units, as identified in Table III-1, are addressed within this document.

1. Application submitted on August 12, 2011

Although this application was submitted prior to the issuance date of the Title V permit, it was not included in the final version that was issued in December, 2011. The reason for this is due to the fact that the review process for the Title V Permit had been initiated prior to receiving the application.

The August, 2011, application made a request to add a portable transloader to load limestone chat into trucks for off-site transport. This operation is implemented as an alternate operating scenario to the existing portable screening plant. The two operations shall not operate simultaneously. As a result, there is no increase in the plant-wide PTE for any regulated pollutant.

The new chat transloading process adds one diesel-powered generator and one conveyor belt to the list of emission units. These are identified as EUs: TL201 and TL202.

2. Application Submitted on April 9, 2012

This application made a request to revise the mining operation to remove the blasting limitation of 80 blasts per year. The Permittee agreed to work within the established annual PTE limitation, as calculated using 80 blasts. As a result, there is no increase in plant-wide PTE associated with this revision.

The Permittee acknowledged that the annual PTE for EU: Q103 was based on 80 blasts per year with a “typical” blast surface area of 65,000 square feet per blast. With this application they asserted that a typical blast area does not exist and that an annual limit of 80 blasts would be detrimental to the overall plant operation. They further argued that such a limit could, under certain circumstances, result in a plant shutdown due to a lack of material to be processed.

3. Application Submitted on July 3, 2012

This application requested to increase the total volume of coal that can be consumed on an annual basis and to increase the coal storage area. These increases are necessary due to the fact that the heating value for the coal being purchased is ten percent lower than coal previously consumed at the facility. The lower heat value requires a higher consumption rate to achieve the same end result.

There are increases in PM_{2.5} and PM₁₀ emissions associated with these changes (storage and handling emissions). However, the PTE for combustion pollutants is not affected by this revision. This is due to the fact that on all previous permitting actions the PTE for these pollutants was calculated using a combination of both fuel consumption and limestone production rates. The production limestone remains unchanged with this revision and the fuel consumption rates (in tons) used to calculate the PTE in previous actions is greater than the proposed increases with this application.

4. Application Submitted on August 8, 2012

This application was comprised of multiple actions, including removal of existing equipment, addition of new equipment, and corrections to various inaccuracies. These changes are itemized in the Table II-C-1.

Table II-C-1: Changes Requested in 08/08/2012 Application

EU	Description of Action
D208	Correction of inaccurate silo descriptors.
K408	Correction of inaccurate description of process. The bin identified as K4-BN-338 is incorrect. This process actually consists of four “dribble bins”, with a reduced throughput and an equivalent reduction of PTE. The emission unit identifier remains unchanged.
K410	The description of this process has been revised. The throughputs and PTE remain unchanged.
K418	The dust transfer and load out process (K4-PM-514) have been removed, reducing PTE for K418.
L208	The description for the control methods for Silos 8 and 10 are inverted. There are no changes to throughputs or PTE.
L208	Baghouse DC-35 is being replaced with DC-37. The lower flow rate of DC-37 reduces PTE.
L209	The throughput for SC-36 is reduced, with an equivalent reduction in PTE for EU: L209.
L224	This process has been removed.
PL106	New screw conveyor added.
O110	New emergency generator added.

5. Supplemental Application Submitted October 1, 2012

This application corrected flow rates for selected baghouses, based on stack testing that was conducted on June 10 - 12, 2012. The new flow rates, for all baghouses, were greater than the flow rates on the Title V permit. There are increases in PTE for PM₁₀ and PM_{2.5} associated with these changes.

6. Supplemental Application Submitted November 1, 2012

This application requested a permit shield. The Permittee decided to forego the implementation of a permit shield with this permitting action. Instead, this issue will be addressed in the application for Title V renewal, which is due for submittal no later than June, 2016.

7. Notification Submitted on April 29, 2013

The Permittee submitted a notification for a planned replacement of two vibrating screens identified as EUs: P106 and P107 with two identical units. The manufacturer of the new screen was provided along with model and serial numbers. However, since the make, model and serial numbers were not provided as part of the Title V permit, there was no reason to update the permit. The existing emission unit identifiers remain unchanged for the new screens.

It was determined that the changes proposed by this application are applicable to Section 502(b)(10), as defined in 40 CFR Part 70.2. As a result, the application was processed under those guidelines.

8. Application Submitted on June 27, 2013

An ATC application was submitted which requested to increase the annual limits for mining, ANFO blasting agent, and haul road mileage. These increases are necessary to remove overburden material to reach new mining reserves. The plant processes and production of finished material are unaffected by these changes.

The application also included new calculations for unpaved haul roads, based on a silt content of 3 percent, and defined a specific limitation for the total surface area that can be blasted on an annual basis.

An ATC was issued from this application on January 16, 2014.

9. Application Submitted on November 14, 2013

This application requested to add one conveyor belt to the Dolomite Handling System. This conveyor will bypass the bucket elevator (EU: D105) and will only be used when the bucket elevator is taken offline for routine maintenance. The new conveyor belt will deliver chat directly to a new stockpile, to be located in close proximity to the existing chat stockpile. A loader will transport material from the new pile to the existing pile.

By definition, this new process is an alternate operating scenario (AOS). Under normal circumstances, the emissions associated with an AOS are not considered to be increased PTE. However, these changes necessitate an increase to the storage pile area as well as VMT increases associated with transporting the chat material from one

location to another. The emissions from these activities are not related to the process that is being substituted when the AOS is in operation. As a result, the PTE associated with the storage and transporting of chat are included as an NEI.

10. Application Submitted on February 25, 2014

This application consisted of a notification that all of the emission units that were modified in accordance with the ATC issued on January 16, 2014, had been implemented. There were no other changes or modifications requested with this application.

11. Application submitted on August 25, 2014

With this application, the Permittee made a request to replace the dust collector identified as DC-30 with a larger unit, to be identified as DC-30N. This new dust collector will service the Kiln 4 operation. In addition, one new screw conveyor, identified as SC-4029 is being added to the South Lime Handling operation and two new dust collectors, identified as K2-DC-505N and K2-DC-506S are being added to the Kiln 2 operation. There are minor increases to PM_{2.5} and PM₁₀ associated with this revision.

12. Application Submitted on February 17, 2015

The Permittee has been utilizing Kiln 2 solely for the production of high-calcium lime. This application made a request to convert Kiln 2 to a “swing-kiln” to produce both high-calcium lime and dolomitic lime. This conversion requires the addition of one new conveyor belt and five screw conveyors. There are also throughput increases associated with emission units P115, K110, K114, L206, D101, D104, D104a, and D105. The new throughputs result in an increase in particulate emissions.

13. Application Submitted on April 20, 2015

This application consisted of two components. The first section contained comments from the Permittee following their review of the draft permit. All of the comments were incorporated into the draft permit and TSD. The second section of the application consisted of an updated request for a permit shield. As stated under Item 6, the implementation of a permit shield will not be addressed with this permitting action.

III. Emission Information

Emission Units, Throughputs, and PTE

Table III-1: New and Modified Emission Units

EU	Description	SCC
Application Submitted 08/12/2011		
TL201 ^N	Hopper Loading and Unloading	30501607
	Conveyor Belt to Truck	30501607
TL203 ^N	Diesel-Powered Generator; 31 hp	20100102
V02 ^M , V03 ^M , & V05 ^M	Haul Roads; Alternate VMT included with EUs: V02, V03, and V05	30502504
Application Submitted 07/03/2012		
A01 ^M	Open Storage Areas	30502507
See Listing →	Solid Fuel Handling (EUs: F101, F104, F112, F114, F116, F118, F122, F125, F131, and F132) ^M	30300309
V01 ^M	Unpaved Haul Roads	30502504
Application Submitted 08/08/2012		
K408 ^M	Dribble Chute Bins (4) and Dribble Chute Bin Load Out (4) – Kiln 4	30501615
K418 ^M	Dust Transfer – Kiln 4	30501615
L208 ^M	Bin Feeding – South Lime Transfer	30501613
L209 ^M	Lime Transfer – South Lime Transfer	30501615
PL106 ^N	Screw Conveyor – Lime Screening System	30501615
O110 ^N	Emergency Generator; Diesel; Rental; Shall not Exceed 302 hp.	20100102
Supplemental Application Submitted 10/01/2012		
LO101 ^M	Lime Transfer/Lime Load Out	30501615
LO104 ^M	Lime Transfer/Lime Load Out	30501615
LO106 ^M	Lime Transfer/Lime Load Out	30501615
LO109 ^M	Lime Transfer/Lime Load Out	30501615
LO114 ^M	Lime Transfer/Lime Load Out	30501615
LO117 ^M	Lime Transfer/Lime Load Out	30501615
PL104 ^M	Lime Transfer/Lime Load Out	30501615
S101 ^M	Lime Transfer/Bin Feeding	30501615
S102 ^M	Lime Transfer	30501615
Application Submitted June 27, 2013		
Q101 ^M	Mining Ore and Removing Overburden	30501650
Q103 ^M	Blasting (Surface Area)	30501650
V01 – V06 ^M	Haul Roads	30502504
Application Submitted November 14, 2013		
D106 ^N	Emergency Conveyor; Loader Loading; Loader Unloading	30502505
A01 ^M	Storage Piles	30502507
V01 ^M	Haul Road; Unpaved	30502504
Application Submitted August 25, 2014		
K204 ^M	Lime Transfer	30501615
K404 ^M	Lime Transfer	30501615
L201 ^N	Screw Conveyor SC-4029	30501615
Application Submitted February 17, 2015		
P115 ^M	Open Stone Transfer Point	30501607
K110 ^M	Dust Transfer	30501615
K110a ^N	Dust Transfer	30501615
K114 ^M	Bin Feeding	30501613

EU	Description	SCC
L206 ^M	Lime Transfer	30501615
D101 ^M , D104 ^M , D104a ^M , and D105 ^M	Open Stone Transfer Point	30501607
D104b ^N	Open Stone Transfer Point	30501607

The 'N' and 'M' superscripts refer to new and modified units for this permitting action.

IV. PTE and NEI

Table IV-1: PTE for New and Modified Emission Units (tons per year)

EU	Rating	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	HAP
Application Submitted 08/12/2011								
TL201 ¹	750,000 tons/yr	0.42	0.12	0	0	0	0	0
TL202 ¹	2,500 hrs/yr	0.03	0.03	0.35	0.09	0.08	0.10	0.01
Application Submitted 07/03/2012								
A01	0.13 Acres	0.42	0.06	0	0	0	0	0
F101, F104, F112, F114, F116, F118, F122, F125, F131, and F132	3,248,932 tons/year	5.54	1.15	0	0	0	0	0
V01	2,070 VMT/yr	0.36	0.04	0	0	0	0	0
Application Submitted 08/08/2012								
K408	4,375 tons/yr	1.88	0.29	0	0	0	0	0
K418	3,327 tons/yr	0.01	0.01	0	0	0	0	0
L208	121,750 tons/yr	0.57	0.30	0	0	0	0	0
L209	121,750 tons/yr	0.33	0.09	0	0	0	0	0
PL106	0.59 tons/yr	0.01	0.01	0	0	0	0	0
O110	302 hp	0.17	0.17	2.34	0.50	0.15	0.19	0.01
Supplemental Application Submitted 10/01/2012								
LO101	66,409 tons/yr	1.63	1.16	0	0	0	0	0
LO104	132,818 tons/yr	1.63	1.16	0	0	0	0	0
LO106	175,909 tons/yr	1.63	1.16	0	0	0	0	0
LO109	109,500 tons/yr	1.63	1.16	0	0	0	0	0
LO114	132,818 tons/yr	1.63	1.16	0	0	0	0	0
LO117	132,818 tons/yr	1.63	1.16	0	0	0	0	0
PL104	109,500 tons/yr	2.39	1.67	0	0	0	0	0
S101	180,000 tons/yr	5.37	3.81	0	0	0	0	0
S102	180,000 tons/yr	2.74	1.95	0	0	0	0	0
Application Submitted 06/27/2013								
Q101	8,294,600 tons/yr	42.30	6.22	0	0	0	0	0
Q103 (Blasting Area)	5,200,000 ft ² /yr	4.81	0.72	0	0	0	0	0
Q103 (ANFO)	2,100 tons/yr	0	0	17.85	70.35	3.15	0	0
V01 through V06	510,190 VMT/yr	37.95	4.36	0	0	0	0	0
Application Submitted 11/14/2013								
D106 ¹	11,670 tons/yr	0.01	0.01	0	0	0	0	0
A01	0.25 Acres	0.09	0.01	0	0	0	0	0
VPW	9 VMT/yr	0.01	0.01	0	0	0	0	0
Application Submitted 08/25/2014								
K204	219,000 tons/yr	0.63	0.44	0	0	0	0	0
K404	475,000 tons/yr	1.39	0.98	0	0	0	0	0
L201	1,000 tons/yr	0.01	0.01	0	0	0	0	0

EU	Rating	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	HAP
Application Submitted 02/17/2015								
P115	1,279,259 tons/yr	0.06	0.02	0	0	0	0	0
K110	26,049 tons/yr	0.04	0.01	0	0	0	0	0
K110a	13,140 tons/yr	0.01	0.01	0	0	0	0	0
K114	32,619 tons/yr	1.53	1.08	0	0	0	0	0
L206	1,095,750 tons/yr	7.64	5.42	0	0	0	0	0
D101	466,816 tons/yr	0.27	0.08	0	0	0	0	0
D104	466,816 tons/yr	0.18	0.01	0	0	0	0	0
D104a	443,475 tons/yr	0.01	0.01	0	0	0	0	0
D105	23,341 tons/yr	0.01	0.01	0	0	0	0	0
D104b	221,738 tons/yr	0.01	0.01	0	0	0	0	0

¹Alternate scenario. PTE values do not increase existing emission limits.

Table IV-2: NEI (tons per year)

Description	PM ₁₀	PM _{2.5}	NO _x	CO	SO ₂	VOC	HAP
Title V Renewal (12/16/2011)	338.09	197.23	1,892.12	947.21	1,646.39	8.34	22.94
Current Permitting Action	327.16	200.40	1,899.98	972.48	1,647.94	8.54	22.95
Total NEI	-10.93	3.17	7.86	25.27	1.55	0.20	0.01
Minor NSR Significant Levels: AQR 12.1.5(d)	7.5	5	20	50	20	20	

V. Production Limits

1. The Permittee shall limit mining operations to a maximum of 8,294,600 tons per any consecutive twelve month period (EU: Q101).
2. The Permittee shall limit blasting operations, using ammonium nitrate fuel oil (ANFO), to a maximum of 2,100 tons per any consecutive twelve month period (EU: Q103).
3. The Permittee shall limit the blasting surface area to 5,200,000 square feet per any consecutive twelve month period (EU: Q103).
4. The Permittee shall limit the combined annual VMT for all haul roads to a maximum of 510,196 miles (EU: VPW).
5. The Permittee shall limit the throughput of the Chat Transloader Operation to 750,000 tons per any consecutive twelve month period (EU: TL201).
6. The Permittee shall not operate the portable screening plant and the transloader operation simultaneously (EU: TL201).
7. The Permittee shall limit operation of the 31 hp chat transloader generator to 2,500 hours per any consecutive twelve month period (EU. TL 202).

8. The Permittee shall not operate the 31 hp chat transloader (EU: TL202) and the 218 hp portable screening generator (EU: SP7) simultaneously.
9. The Permittee shall limit the throughputs in Kiln 1 to a maximum of 109,500 tons per any consecutive twelve month period.
10. The Permittee shall limit the throughputs in Kiln 2 to a maximum of 109,500 tons per any consecutive twelve month period.
11. The Permittee shall limit solid fuel handling and processing to a maximum of 600,631 tons per any consecutive twelve month period.
12. The Permittee shall limit dolomite handling and processing to a maximum of 466,816 tons per any consecutive twelve month period.
13. The Permittee shall limit the lime handling (north) to a maximum of 458,644 tons per any consecutive twelve month period.
14. The Permittee shall limit the lime handling (south) to a maximum of 1,095,750 tons per any consecutive twelve month period.
15. The Permittee shall limit the accumulated stockpile areas to a maximum of 49 acres (EU: A01). [AQR 12.5.2.6]

VI. Review of Applicable Regulations

1. Pursuant to Section 43 of the AQR, this facility shall be operated in a manner such that odors will not cause a nuisance
2. Pursuant to Section 25 of the AQR, any upset/breakdown or malfunction which causes emissions of regulated air pollutants in excess of any limits set by the AQR shall be reported to the Control Officer, by phone, within twenty four (24 hours) hours of the time the Permittee learns of the event.
3. The source is subject to the requirements of 40 CFR 60, Subpart IIII: *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.*
4. The source is subject to the requirements of 40 CFR 60, Subpart HH: *Standards of Performance for Lime Manufacturing Plant.*
5. The Source is subject to the requirements of 40 CFR 60, Subpart OOO: *Standards of Performance for Nonmetallic Mineral Processing Plants.*
6. The source is subject to the requirements of 40 CFR 63, Subpart AAAAA: *National Emission Standards for Hazardous Air Pollutants for Lime Manufacturing Plants.*

VII. Control Technology

The NEI for all regulated pollutants is below the minor source significant levels, as defined in AQR 12.5.1(d). As a result, a top-down RACT analysis is not triggered. All BACT requirements established with previous permitting actions remain enforceable.

VIII. Monitoring

1. The Permittee shall conduct a monthly visual emissions check for visible emissions from the facility while it is in operation.
2. The Permittee shall conduct quarterly sampling of paved and unpaved roads for silt loading content.
3. The Permittee shall conduct visual inspections of each operating baghouse, at intervals not to exceed two weeks, to ensure that there are no fugitive emissions and that opacity limits are not exceeded.
4. The Permittee shall conduct a monthly inspection of the following for each baghouse that operated during the prior month: (a) recording of the differential pressure across each baghouse except DC-01, DC-02, DC-03 and K4-DC-316; (b) verification of the pulse timing sequence; (c) inspection of the baghouse seals, cleaning system, and fan; and (d) external inspection of the hopper, ducting, and shell. If the inspection shows that maintenance is necessary, the Permittee shall schedule and complete such maintenance within ten working days.
5. The Permittee shall operate each generator with a nonresettable hour meter (EUs: 0110 and TL202).

IX. Testing

No performance testing requirements have been identified for this permitting action.

X. Public Notice

Public notice requirements have not been triggered.

XI. Increment

Lhoist North America is a major source in the Hydrographic Area 216 (Garnet Valley). Permitted emission units include four kilns, lime mining and processing. Since minor source baseline dates for PM₁₀ (December 31, 1980), NO₂ (January 24, 1991) and SO₂ (December 31, 1980) have been triggered, Prevention of Significant Deterioration (PSD) increment analysis is required.

Air Quality modeled the source using AERMOD to track the increment consumption. The average of 2013 and 2014 actual emissions were used in the model. Stack data submitted by the applicant were used in the model. Five years (1999 to 2003) of meteorological data from the McCarran station and Desert Rock station were used in the model. United States Geological Survey (USGS) National Elevation Dataset (NED) terrain data was used to calculate elevations. Table XI-1 shows the location of the maximum impact and the potential PSD increment consumed by the source at that location. The impacts are below the PSD increment limits.

Table XI-1: PSD Increment Consumption

Pollutant	Averaging Period	PSD Increment Consumption by the Source ($\mu\text{g}/\text{m}^3$)	a. Location of Maximum Impact	
			UTM X (m)	UTM Y (m)
SO ₂	3-hour	44.42 ¹	688200	4026100
SO ₂	24-hour	11.73 ¹	688138	4026345
SO ₂	Annual	0.29	688024	4025572
PM ₁₀	24-hour	10.22 ¹	687092	4024661
PM ₁₀	Annual	3.20	687092	4024661
NO _x	Annual	4.84	688152	4026131

¹ Second High Concentration

XII. Permit Shield

Source requested permit shield with the revision application. Air Quality asked for further support documents for each standards the shield is requested for. On February 8, 2016, the source withdrew its request for permit shield during this revision process and expressed its intend to address during the forthcoming renewal.

XIII. Calculations

A. Application Submitted August 12, 2011

Table XII-A-1: PTE for Diesel Engine – Chat Process (Alternate Scenario)

EU#	TL202	Pollutants	Emission Factor (lb/hp-hr) ¹	PTE	
				lb/hr	ton/yr
Make:		PM ₁₀	9.00E-04	0.03	0.03
Model:		PM _{2.5}	9.00E-04	0.03	0.03
S/N:		NO _x	8.91E-03	0.28	0.35
Horsepower:	31	CO	2.43E-03	0.08	0.09
Hours/Day:	24	SO _x	2.05E-03	0.06	0.08
Hours/Year	2,500	VOC	2.51E-03	0.08	0.10
		HAP	4.52E-05	0.01	0.01

¹Emission factors from manufacturer's data and AP-42

Table XII-A-2: PTE for Haul Roads – Chat Process (Alternate Scenario)

Description	VMT/hr	VMT/yr	EF		CF	PTE (lbs/hr)		PTE (tons/yr)	
			PM _{2.5}	PM ₁₀		PM _{2.5}	PM ₁₀	PM _{2.5}	PM ₁₀
Haul Roads; Unpaved	3.28	7,528	0.27	2.94	0.1	0.09	0.96	0.10	1.11
Haul Roads; Paved	2	4,545	lbs/VMT	lbs/VMT	0.02	0.01	0.12	0.01	0.13
Total						0.10	1.08	0.11	1.23

B. Application Submitted July 3, 2012

Table XII-B-1: PTE from New Haul Road

EU	Description	Annual VMT	EF (lbs/VMT)		CF	PTE (tons/year)	
			PM _{2.5}	PM ₁₀		PM _{2.5}	PM ₁₀
V01	Haul Road to be Added to EU: V01	2,070	0.35	3.46	0.1	0.04	0.36

Emission Factor Equation (used in Table XII-B-1): $E = k(s/12)^a (W/3)^b \times ((365-P)/365)$
Where:

E = lbs/VMT

s = Silt Content (%); [3% used for this calculation]

W = Mean Vehicle Weight (tons); [10 tons used for this calculation]

P = Average Number of Days with Precipitation [28 days used for this calculation]

k = Constant: 0.15 (for PM₁₀); 0.15 (for PM_{2.5})

a = Constant: 0.9 (for PM_{2.5} and PM₁₀)

b = Constant: 0.45 (for PM_{2.5} and PM₁₀)

Table XII-B-2: PTE from Stockpile

EU	Description	Area	EF (lbs/acre-day)		CF ¹	PTE (tons/year)	
			PM _{2.5}	PM ₁₀		PM _{2.5}	PM ₁₀
A01	Stockpile; Coal	1.13 Acres	0.954	6.3	0.327	0.06	0.42

¹CF equates to 67.3% control efficiency

C. Application Submitted August 8, 2012

Table XII-C-1: PTE from Diesel Engine

EU#	O110	Pollutants	Emission Factor (lb/hp-hr) ¹	PTE	
Make:				lb/hr	ton/yr
Model:		PM ₁₀	2.20E-03	0.66	0.17
		PM _{2.5}	2.20E-03	0.66	0.17
S/N:		NO _x	3.10E-02	9.36	2.34
Horsepower:	302	CO	6.68E-03	2.02	0.50
Hours/Day:	24	SO _x	2.05E-03	0.62	0.15
Hours/Year	500	VOC	2.51E-03	0.76	0.19
		HAP	4.52E-05	0.01	0.01

¹Emission factors from AP-42

D. Supplemental Application Submitted October 1, 2012

Table XI-D-1: PTE from Baghouses

Baghouse Identification	Associated EU	Flow Rate		Outlet PM ₁₀ Loading (grains/dscf)	PTE (tons/year)	
		acfm	dscfm		PM _{2.5}	PM ₁₀
DC-8001	S101	15,442	14,303	0.0100	3.79	5.37
DC-8002	S102	2,631	2,437	0.0100	0.65	0.91
DC-8003	S102	2,631	2,437	0.0100	0.65	0.91
DC-8004	S102	2,631	2,437	0.0100	0.65	0.91
DC-5001	LO104	4,690	4,344	0.0100	1.16	1.63
DC-5002	LO106	4,690	4,344	0.0100	1.16	1.63
DC-5003	LO109	4,690	4,344	0.0100	1.16	1.63
DC-5004	LO114	4,690	4,344	0.0100	1.16	1.63
DC-5005	LO117	4,690	4,344	0.0100	1.16	1.63
DC-5007	LO101	4,690	4,344	0.0100	1.16	1.63
D-DC-4217	PL104	6,714	6,215	0.0100	1.65	2.33

The PTE in Table XI-D-1 is calculated using the following equation:

$$\text{PM}_{10} \text{ PTE (tons/yr)} = \frac{\text{flow rate (dscfm)} * \text{grain loading (gr/dscf)} * (8760 \text{ hrs/yr})}{7,000 \text{ grains/lb} * 2,000 \text{ lbs/ton}}$$

E. Application for ATC Submitted June 27, 2013

Table XI-E-1: PTE from Haul Roads

EU	Source Description	VMT/yr	lb/VMT		CF	PTE (tons/yr)	
			PM _{2.5}	PM ₁₀		PM _{2.5}	PM ₁₀
VPW	Quarry Loader (Stone, Overburden)	14,587	0.21	2.08	0.10	0.15	1.52
	70T Rock Trucks (Kiln Stone) North Pit to LNA Plant	3,679	0.18	1.77	0.10	0.03	0.33
	70T Rock Trucks (Kiln Stone) North East Pit to LNA Plant	46,370	0.18	1.77	0.10	0.42	4.10
	70T Rock Trucks (Kiln Stone) Vegas Pit to LNA Plant	14,595	0.18	1.77	0.10	0.13	1.29
	70T Rock Trucks (Overburden) North East Pit to North Dump	124,217	0.18	1.77	0.10	1.12	10.99
	70T Rock Trucks (Overburden) North Pit to North Dump	9,810	0.18	1.77	0.10	0.09	0.87
	70T Rock Trucks (Kiln Stone) Central Pit to Plant	3,010	0.18	1.77	0.10	0.03	0.27
	70T Rock Trucks (Overburden) Central Pit to North Dump	9,109	0.18	1.77	0.10	0.08	0.81
	70T Rock Trucks (Overburden) Vegas Pit to Reno Dump	65,453	0.18	1.77	0.10	0.59	5.79
	70T Rock Trucks (Kiln Stone) Dolo Pit to LNA Plant	8,010	0.18	1.77	0.10	0.07	0.71
	70T Rock Trucks (Overburden) Dolo Pit to Central Dump	30,949	0.18	1.77	0.10	0.28	2.74
	6Yd Dump Trucks (Chat Lime Waste, Lime Dust and Solid Fuel Waste)	83,427	0.08	0.82	0.10	0.33	3.42

EU	Source Description	VMT/yr	lb/VMT		CF	PTE (tons/yr)	
			PM _{2.5}	PM ₁₀		PM _{2.5}	PM ₁₀
VPW (cont)	LNA Plant to North Dump						
	Blade	1,000	0.09	0.94	0.10	0.01	0.05
	Water Trucks	14,692	0.10	1.03	0.10	0.07	0.76
	Coal Trucks - From CLC Scale to Highway	992	0.04	0.17	1	0.02	0.08
	Bulk Trucks - From CLC to Highway	5,785	0.04	0.17	1	0.12	0.49
	Portable Screening Product Trucks - Aggregate Plant Scale to Exit	9,091	0.04	0.17	1	0.18	0.77
	Portable Screening Product Trucks – Chat Pile to Aggregate Plant Scale	13,636	0.11	1.08	0.02	0.01	0.15
	6Yd Dump Trucks (Chat, Lime Waste, Lime Dust and Solid Fuel Waste) - CLC Plant to North Dump	8,630	0.02	0.09	1	0.09	0.39
	Water Trucks	1,632	0.04	0.16	1	0.03	0.13
	Coal Trucks	1,745	0.07	0.27	1	0.06	0.24
	Maintenance Vehicles - Plant Activity	3,265	0.01	0.03	1	0.02	0.05
	Plant Pickups - Plant Activity	1,072	0.01	0.02	1	0.01	0.01
	Utility Loaders - Plant Activity	1,741	0.02	0.10	1	0.02	0.09
	Utility Equipment - Plant Activity	1,741	0.01	0.05	1	0.01	0.04
	Bulk Trucks - Plant Activity	15,273	0.04	0.17	1	0.31	1.30
	Plant Loaders – Solid Fuel	818	0.14	1.38	0.10	0.01	0.06
	Maintenance Vehicles – Plant Activity	2,177	0.05	0.50	0.10	0.01	0.05
	Plant Pickups – Plant Activity	9,811	0.04	0.40	0.10	0.02	0.20
	Utility Loaders – Plant Activity	435	0.08	0.84	0.10	0.01	0.02
	Utility Equipment – Plant Activity	435	0.06	0.62	0.10	0.01	0.01
Dozer	3,000	0.15	1.48	0.10	0.02	0.22	
TOTAL		510,187				4.36	37.95

F. Application Submitted on November 14, 2013

Table XI-F-1: PTE Increase from New Haul Road

EU	Description	Annual VMT	EF (lbs/VMT)		CF	PTE (tons/year)	
			PM _{2.5}	PM ₁₀		PM _{2.5}	PM ₁₀
VPW	Haul Road to be Added to EU: VPW	9	0.35	3.46	0.1	0.01	0.01

Emission Factor Equation (used in Table XI-F-1): $E = k(s/12)^a (W/3)^b \times ((365-P)/365)$

Where:

E = lbs/VMT

s = Silt Content (%); [3% used for this calculation]

W = Mean Vehicle Weight (tons); [10 tons used for this calculation]

P = Average Number of Days with Precipitation [28 days used for this calculation]

k = Constant: 0.15 (for PM₁₀); 0.15 (for PM_{2.5})

a = Constant: 0.9 (for PM_{2.5} and PM₁₀)

b = Constant: 0.45 (for PM_{2.5} and PM₁₀)

G. Application Submitted August 25, 2014

Table XI-G-1: PTE from New Baghouses

Baghouse Identification	Associated EU	Flow Rate		Outlet PM ₁₀ Loading (grains/dscf)	PTE (tons/year)	
		acfm	dscfm		PM _{2.5}	PM ₁₀
DC-30N	K404	8,000	7,425	0.005	0.98	1.39
K2-DC-505N	K204	1,200	1,114	0.015	0.44	0.63
K2-DC-506S	K204	1,200	1,114	0.015	0.44	0.63

The PTE in Table XI-G-1 is calculated using the following equation:

$$\text{PM}_{10} \text{ PTE (tons/yr)} = \frac{\text{flow rate (dscfm)} * \text{grain loading (gr/dscf)} * (8760 \text{ hrs/yr})}{7,000 \text{ grains/lb} * 2,000 \text{ lbs/ton}}$$