

**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NUMBER 42782
CHEMICAL LIME COMPANY - NELSON LIME PLANT**

I. INTRODUCTION

This permit is the Title V Air Quality Permit renewal for the operation of a Lime Manufacturing Plant and a Limestone Processing Plant near Peach Springs, Arizona. This is a renewal of Air Quality Permit No. 1000045.

A. Company Information

Mailing Address: P.O. Box 370, Peach Springs, Arizona 86434

Facility Address: 2.5 Miles South of US 66, Mile Marker 112, Peach Springs, AZ 86434 (Approximately six miles east of Peach Springs, Arizona in Yavapai County)

B. Attainment Classification

The Peach Springs area is designated as Attainment or unclassifiable for all criteria pollutants.

II. PROCESS DESCRIPTION

A. Limestone Processing

This facility manufactures lime from limestone. The principal process and equipment of the facility are as follows: a quarry mining operation, a limestone crushing and screening operation, a limestone kiln feed system, a solid fuel handling system, two rotary lime kilns, front and back lime handling systems, a lime hydrator, diesel electric generators, fuel storage tanks, and other support operations and equipment. The basic processes in the production of lime are: (1) quarrying raw limestone; (2) preparing limestone for the kilns by crushing and sizing; (3) calcining the limestone; (4) processing the lime further by hydrating; and (5) miscellaneous transfer, storage, and handling operations. The principal air emissions from this facility are particulate matter, carbon monoxide, nitrogen oxides, and sulfur dioxide. Major air pollution control equipment to capture particulates includes negative pressure baghouses for Kiln 1 and Kiln 2, and a number of baghouses at other material drop points.

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

1. Quarry Operations

Quarry operations include (a) drilling and blasting to fracture the overburden and stone; (b) loading the limestone, waste rock and overburden to haul trucks; (c) hauling limestone to the primary crusher, the plaza (limestone stockpile area located

next to the primary crusher), or to the secondary blasting (for large rocks); (d) hauling overburden and waste rock to in-pit storage areas and the gravitational piles; and (e) hauling and transferring kiln dust and off-spec lime/hydrate from the lime manufacturing facility to in-pit storage areas.

Some overburden and waste rock is hauled to the gravitational piles. In the gravitational piles, dirt and other fine particles settle out in the upper sections of the pile, while the larger size stones accumulate at the edges of the lower sections. Small stones of acceptable limestone quality are collected as needed at the bottom of the gravitational piles, loaded into haul trucks, and transported to the crushing and screening plant.

2. Crushing and Screening

Limestone from the quarry is hauled to the crushing and screening plant where it is unloaded to either the dump hopper or on the plaza located to the northeast of the crusher. Limestone from the plaza is subsequently reclaimed via front-end loader and loaded into the dump hopper. 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 different screens in the crushing and screening plant to the chat silo. The chat is then either loaded onto trucks or stockpiled. The crushed limestone is conveyed to a kiln feed stockpile for use by the adjacent lime manufacturing operations. Kiln feed material and chat are also sold to various customers as needed, or used internally for gravel or road fill material. On occasion, off-spec limestone is processed through the crushing and screening plant.

B. Lime Manufacturing

The lime manufacturing equipment consists of two lime kilns and auxiliary equipment necessary for receiving crushed limestone, processing it through the lime kilns, and processing the lime kiln product. Operations include pre-kiln limestone handling, two lime kilns, post-kiln handling, a hydrator, two peak demand generators, truck and rail loadout facilities, and solid fuel handling. The lime kilns are used to convert crushed limestone (CaCO_3) into quicklime (CaO).

III. EMISSIONS

The facility is classified as a Major Source under the Title V program, pursuant to Arizona Administrative Code (A.A.C.) R18-2-101.64. The potential emission rates for PM₁₀, NO_x, SO₂, and CO are greater than the major source thresholds. Table 1 below shows the facility's potential emissions for criteria pollutants:

Table 1: Facility Wide Potential Emissions – Criteria Pollutants

Pollutant	Maximum Emissions (tpy)
PM	2,331
PM ₁₀	924

PM _{2.5}	360
NO _x	1,379
SO ₂	4,535
CO	674
VOC	9.9

Emissions of a single hazardous air pollutant (HAP), hydrogen chloride (HCl), exceed the major source threshold of 10 tons per year. Therefore, the facility is classified as a major source of HAPs. Estimated HCl emissions are 13.3 tons per year and total HAP emissions are estimated to be 16.3 tons per year.

IV. APPLICABLE REGULATIONS

Table 1. Listing of Applicable Requirements

Emission Units	Applicable Requirements	Comments
Limestone Crushing & Screening:	A.A.C. R18-2-702(B), A.A.C. R18-2-720(B) Except for Belt Conveyor 226 which is subject to 40 CFR 60.672(a)(1) and (2) and 672(b)	Subpart OOO applies to equipment manufactured after August 31, 1983.
Limestone Kiln Feed System:		
Limestone Kiln Feed System	A.A.C. R18-2-702(B) and 720 with the exception of Vibrating Screen 328 which is subject to OOO.	These equipment process limestone. They were all manufactured prior to August 31, 1983 (trigger date for NSPS Subpart OOO). Therefore, they are subject to Article 7 standards.
Rotary Kiln 1, Rotary Kiln 2, Contact Cooler 2-310, Contact cooler 1-310, Belt Conveyor 329, Weigh Belt Conveyor 303A, and Stone Bin 1-304.	40 CFR 63 Subpart AAAAA, A.A.C. R18-2-702(B) and 720.	This subpart applies to lime manufacturing facilities that are a major source of hazardous air pollutants. Chemical Lime Nelson is a major source of HAPs for HCL. The Subpart applies to each kiln and their associated coolers, and processed stone handling facilities. This Subpart applies in addition to A.A.C. R18-2-702(B) and 720.

Emission Units	Applicable Requirements	Comments
Solid Fuel Handling System	A.A.C. R18-2-702(B) and A.A.C. R18-2-716(B) and 40 CFR §60.252(c) for equipment built after October 24, 1974.	These units were built prior to October 24, 1974 (trigger date for NSPS Subpart Y). They are subject to Article 7 standards.
Kiln 1 System/Kiln 2 System:		
Kiln 1 and Kiln 2 System equipment not subject to A.A.C. R18-2-720.	A.A.C. R18-2-702(B) and 730(A)(1)	These are unclassified existing sources.
Front Lime Handling System (FLHS) and Back Lime Handling System (BLHS):	A.A.C. R18-2-702(B) and A.A.C. R18-2-730(A)(1)	Both lime handling systems process lime. NSPS Subpart OOO, A.A.C. R18-2-720, and A.A.C. R18-2-722 are applicable only to material sizing, conveying, and storing operations that process limestone.
BLHS Truck and Rail Loadout controlled by Baghouse DC 414.	40 CFR 64	This unit is subject to Title 40 Part 64: Compliance Assurance Monitoring (CAM). Applicability: 1) This unit is subject to the PM emission limit identified in Condition VII.B.1.b in Attachment "B" of the permit. 2) Unit uses a control device (DC 414) to achieve compliance with the PM emission limit. 3) The unit has pre-control emissions greater than 100 tons per year.
Hydrate System:		
Hydrate System	A.A.C. R18-2-702(B) and 720(B)	A.A.C. R18-2-720, Standards of Performance for Existing Lime Manufacturing Plants, stipulate the applicability to lime hydrators.
North Electric Generator, South Electric Generator, and Canyon Well Generator	A.A.C. R18-2-719(C)(1), 719(E), 719(F), 719(H), 719(I), 719(J), 40 CFR 60 Subpart IIII, 40 CFR 63 Subpart ZZZZ	Standards of Performance for Existing Stationary Rotating Machinery. NSPS for Compression Ignition Engines.

Emission Units	Applicable Requirements	Comments
		NESHAP Subpart ZZZZ applies to all engines.
Gasoline Storage Tank 11, Diesel Storage Tank 12, and Diesel Storage Tank for alternate operation	A.A.C. R18-2-710	
Fugitive Dust	A.A.C. R18-2-604, A.A.C. R18-2-605, A.A.C. R18-2-606, A.A.C. R18-2-607, A.A.C. R18-2-612	All of these operations are non-point sources, and are subject to the requirements of Article 6. The Permit also requires the facility to have a dust control plan which specifies what specific areas need to be cleaned and the control methods to be employed.

VI. PREVIOUS PERMITS AND CONDITIONS

Table 4 below outlines the permits that have been issued to the source. Table 5 cross references the previous permit conditions to determine if they are to be revised, kept, deleted or streamlined in the permit renewal. If a condition from the previous permit is deleted or if a new standard becomes applicable, comments are provided explaining the reasoning for the change.

Table 4. Previous Permits

Permit Issuance Date	Permit Number	Application Basis
6/28/2002	1000045	Operating Renewal Permit

Table 5: Previous Permit conditions

Permit condition Number	Determination				Comments
	Delete	Kept	Revise	Streamline	
Att A			X		Revised to reflect the most recent permitting language.
Att B: Section I			X		Revised to reflect the most recent permitting language.
Att B: Section II			X	X	This section has been revised to reflect the most recent permitting language.

Permit condition Number	Determination				Comments
	Delete	Kept	Revise	Streamline	
Att B: Section III			X		This Section has been revised to more accurately cover all emission sources.
Att B: Section IV			X	X	This Section has been revised to more accurately cover all emission sources.
Att B: Section V			X	X	This Section has been revised to more accurately cover all emission sources.
Att B: Section VI			X	X	Kiln 1 System/Kiln 2 System: this Section has been revised to more accurately cover all emission sources.
Att B: Section VII			X	X	Front and Back Lime Handling Section has been revised to more accurately cover all emission sources.
Att B: Section VIII			X	X	Hydrator Section has been revised to more accurately cover all emission sources.
Att B: Section IX	X				Miscellaneous Drop Points From Dust Bins and Conveyors Section has been deleted.
Att B: Section X			X	X	Diesel Generators Section has been revised to more accurately cover all emission sources.
Att B: Section XI			X	X	Fuel Storage Tanks Section has been revised to more accurately cover all emission sources.

VII. MONITORING AND RECORDKEEPING REQUIREMENTS

The following monitoring approaches have been prescribed in the permit:

A. Fugitive Dust Sources

Non-point sources are subject to the 40% opacity standard and other Article 6 requirements. Periodic monitoring for opacity entails a biweekly visible emissions survey in accordance with an ADEQ - approved observation plan, by a certified Method 9 observer. If the visible emissions survey indicates that the opacity may exceed the standard, the observer shall conduct a Method 9 observation and maintain records of the results. Any observed

exceedance of the opacity standard must be reported appropriately. This approach, termed the Visible Emission Observation Procedure, is defined in Condition I.H of Attachment B.

B. Kilns 1 and 2

Opacity is monitored by a Continuous Opacity Monitor (COM). One monitor has to be maintained on each stack. Kiln 1 and Kiln 2 are required to comply with a particulate emission standard. This permit requires CLC to perform a stack test every 5 years combined with monitoring stack gas opacity to fulfill the periodic monitoring requirements for particulate matter emissions.

C. Point Sources other than Kilns 1 and 2

The Control Device Monitoring and Maintenance Procedure is used as periodic monitoring for dust collectors. Proper maintenance of dust collectors is critical to ensure compliance with the particulate and opacity standards applicable to these point sources. CLC is required to implement the maintenance program on a monthly basis.

D. Compliance Assurance Monitoring (CAM)

This facility is subject to the requirements of 40 CFR 64 referred to as Compliance Assurance Monitoring (CAM). The plan requires the source to provide reasonable assurance of compliance with emission limits or standards for the anticipated range of operations at a pollutant specific emissions unit. CAM is not required for Kiln 1 or Kiln 2 since the kilns are subject to the MACT standard 40 CFR 63 Subpart AAAAA.

Quicklime Truck and Rail Loadout Facilities of the Back Lime Handling System

The CAM Plan for particulate matter for the truck and rail load out, which is controlled by a baghouse, is based on the following monitoring approach:

Primary Indicators

- i. Baghouse differential pressure.
- ii. Control device maintenance procedure.
- iii. Visible emissions observation procedure.

VIII. TESTING REQUIREMENTS

Performance tests for opacity and particulate matter (PM) are required at the stacks for Kilns 1 and 2 are required every 5 years. The stack testing must be conducted while combusting solid fuel. In addition, once during the permit term, CLC is required to test the the North and South Diesel Generators for nitrogen oxides.

Performance tests must be conducted at maximum possible capacity of each unit. However, based upon operational conditions, the company can request that the test be conducted at a lower rate. This request must be submitted to the Department as part of the Test Plan required in Condition XVIII of Attachment "A" and is subject to Department approval.

IX. LIST OF ABBREVIATIONS

A.A.C.	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
CO	Carbon Monoxide
COMs	Continuous Opacity Monitor
EPA	Environmental Protection Agency
HAPs	Hazardous Air Pollutants
IP	Installation Permit
NAA	Non Attainment Area
NO ₂	Nitrogen Oxide
NSR	New Source Review
OP	Operating Permit
PM	Particulate Matter
PM ₁₀	Particulate Matter Less Than 10 Microns
PTE	Potential to Emit
SO ₂	Sulfur Dioxide
tph	Tons per Hour
VOC	Volatile Organic Compound

X. Plant Schematics

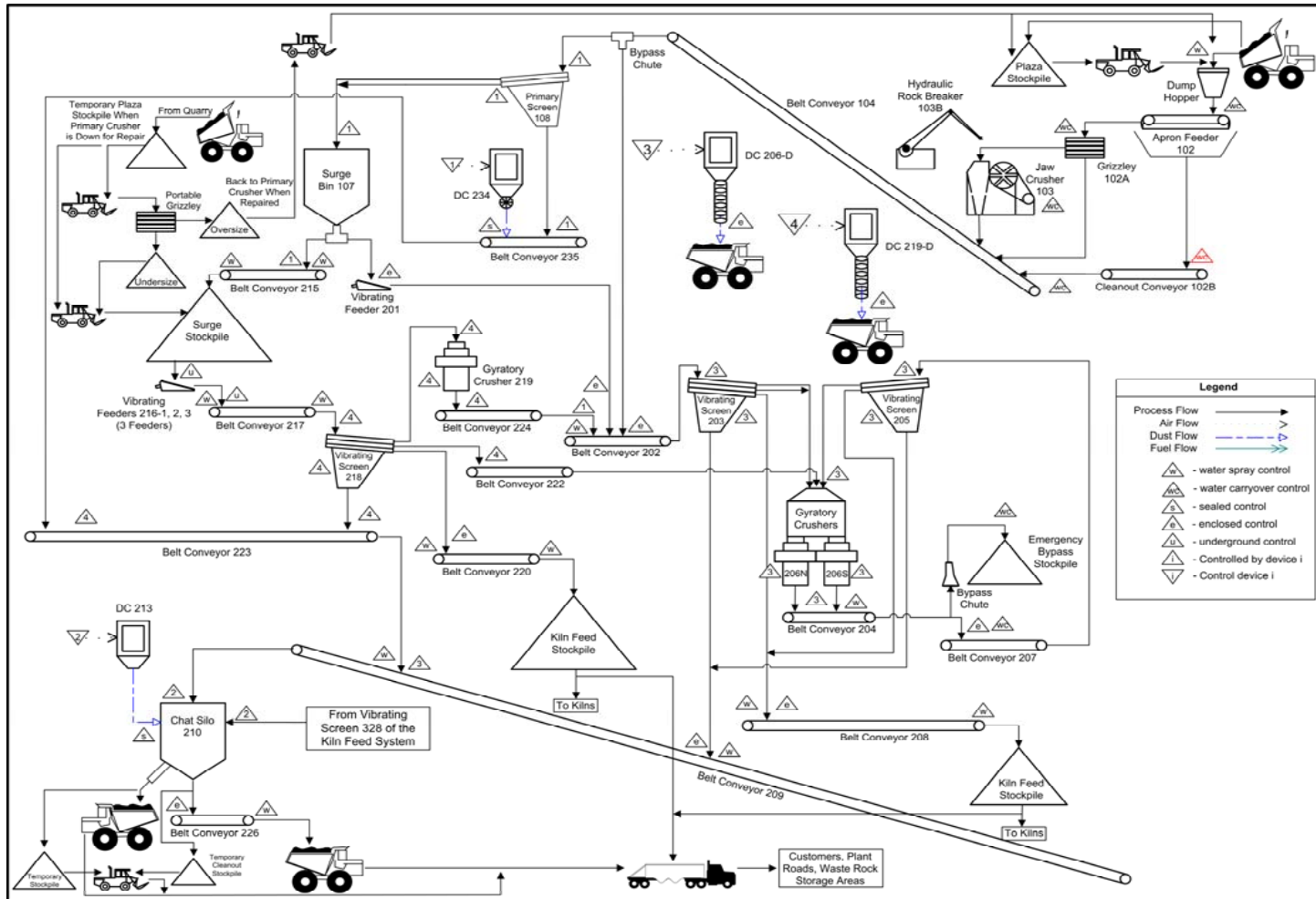


Figure 1: Process Flow Diagram for the Crushing and Screening Plant

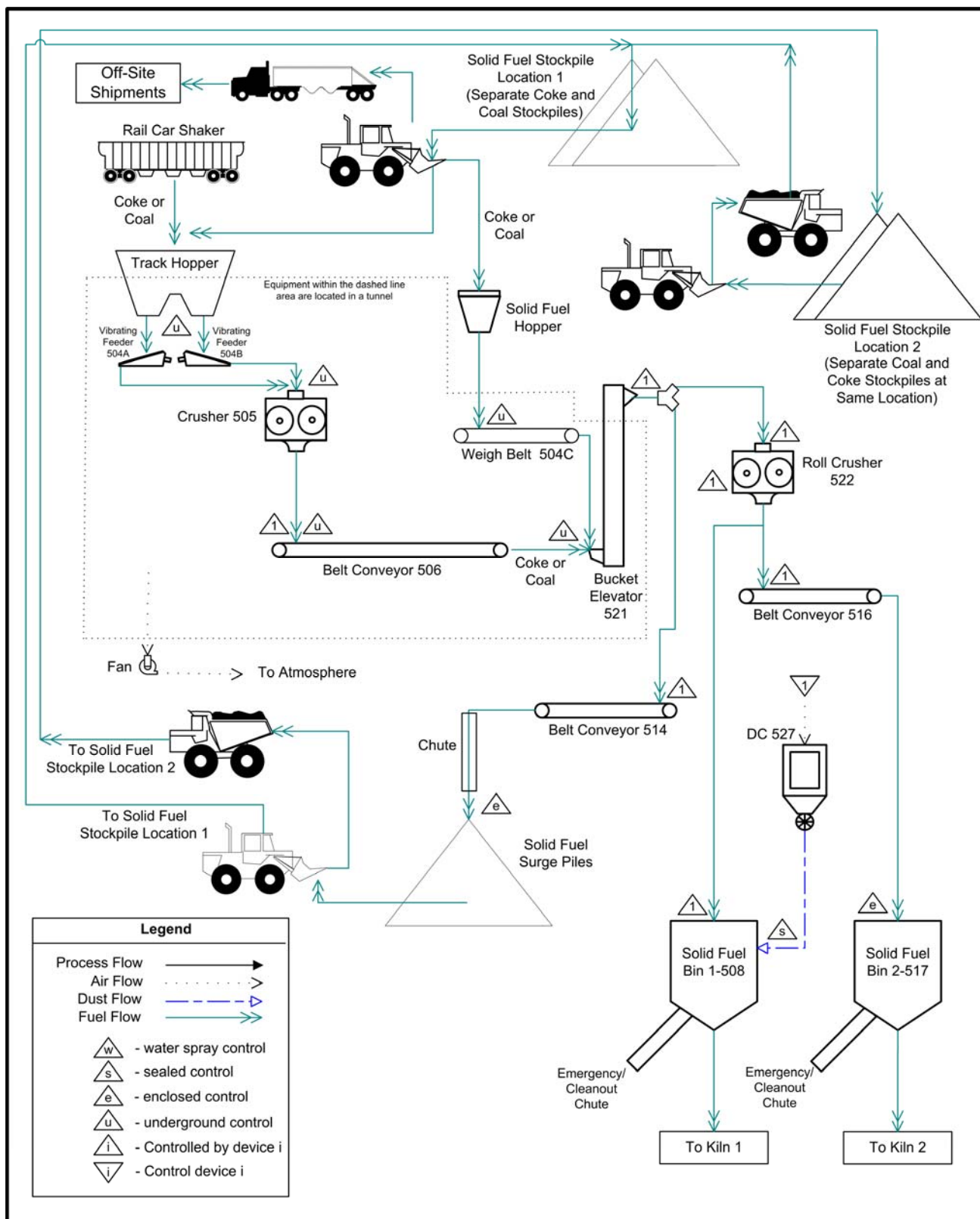


Figure 2: Process Flow Diagram for the Solid Fuel Handling System

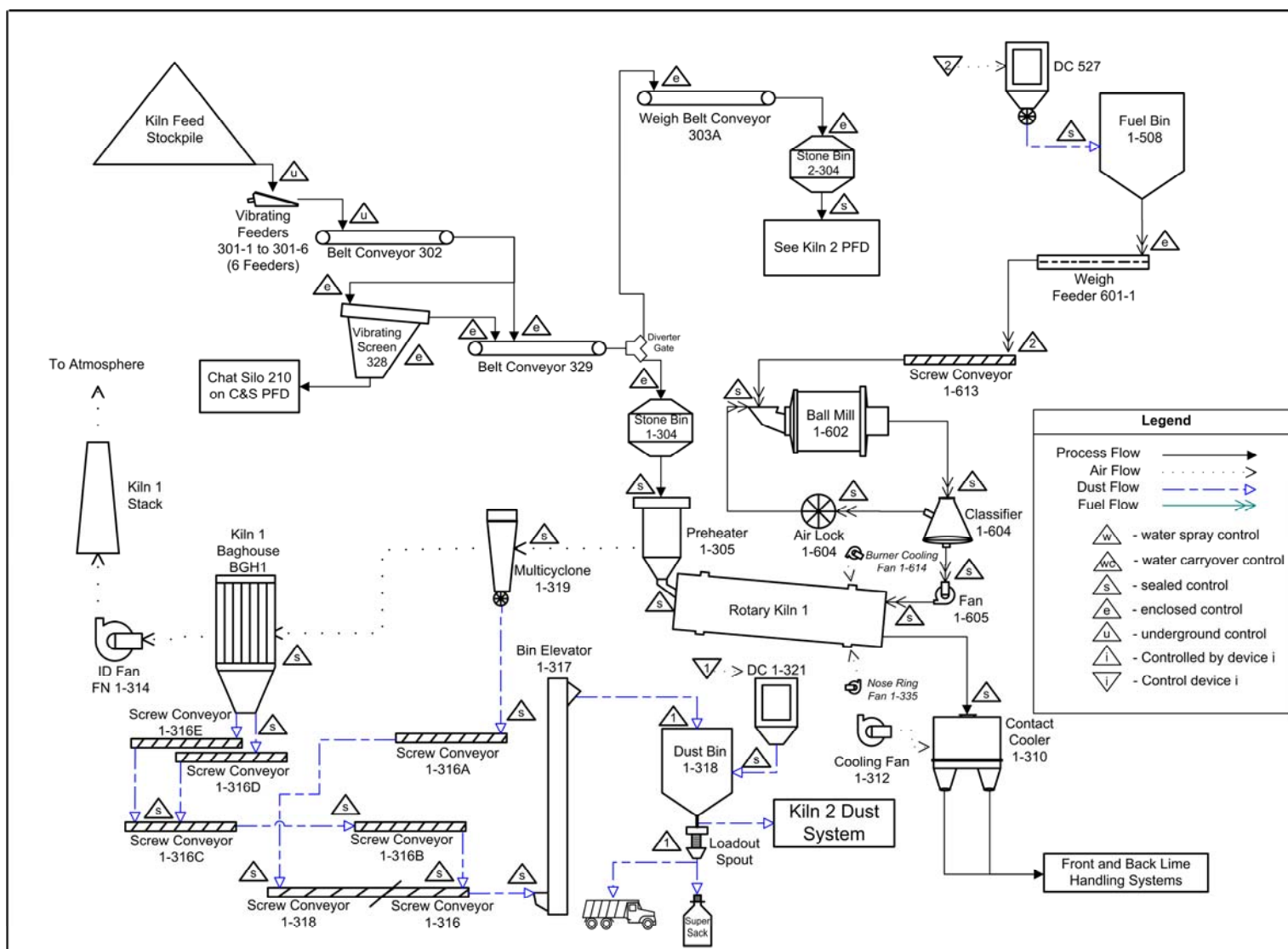


Figure 3: Process Flow Diagram for the Kiln 1 System

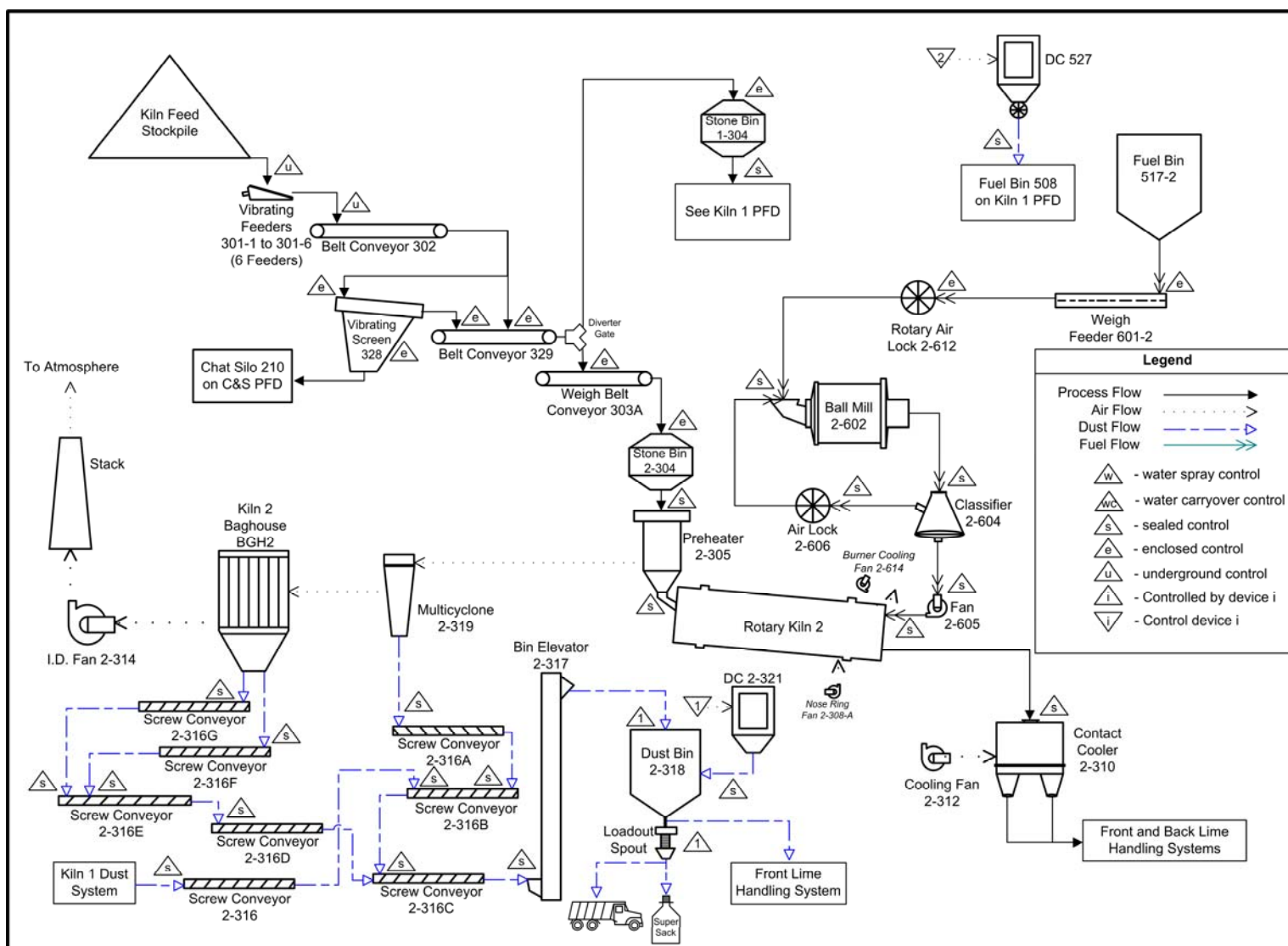
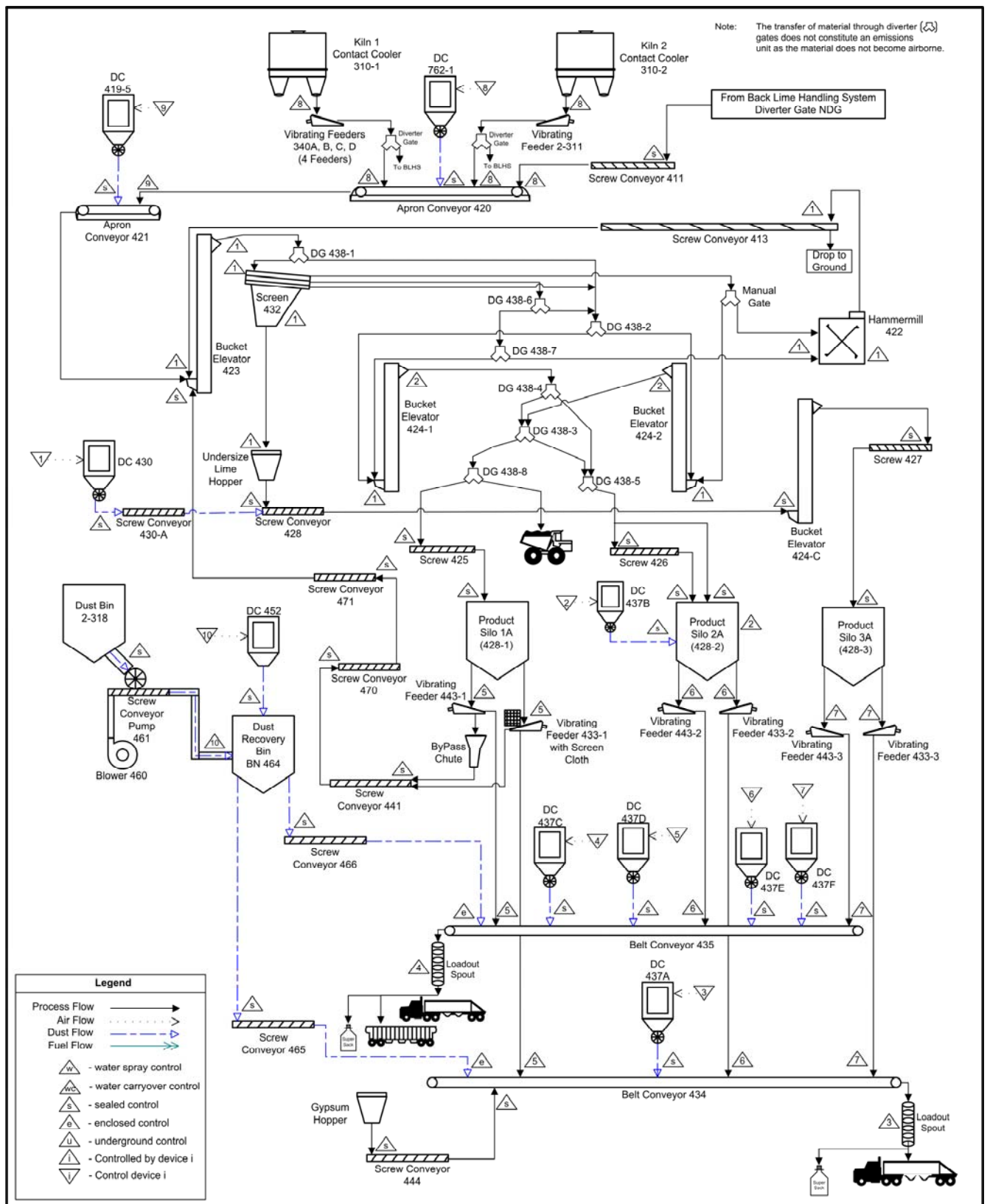


Figure 4: Process Flow Diagram for the Kiln 2 System



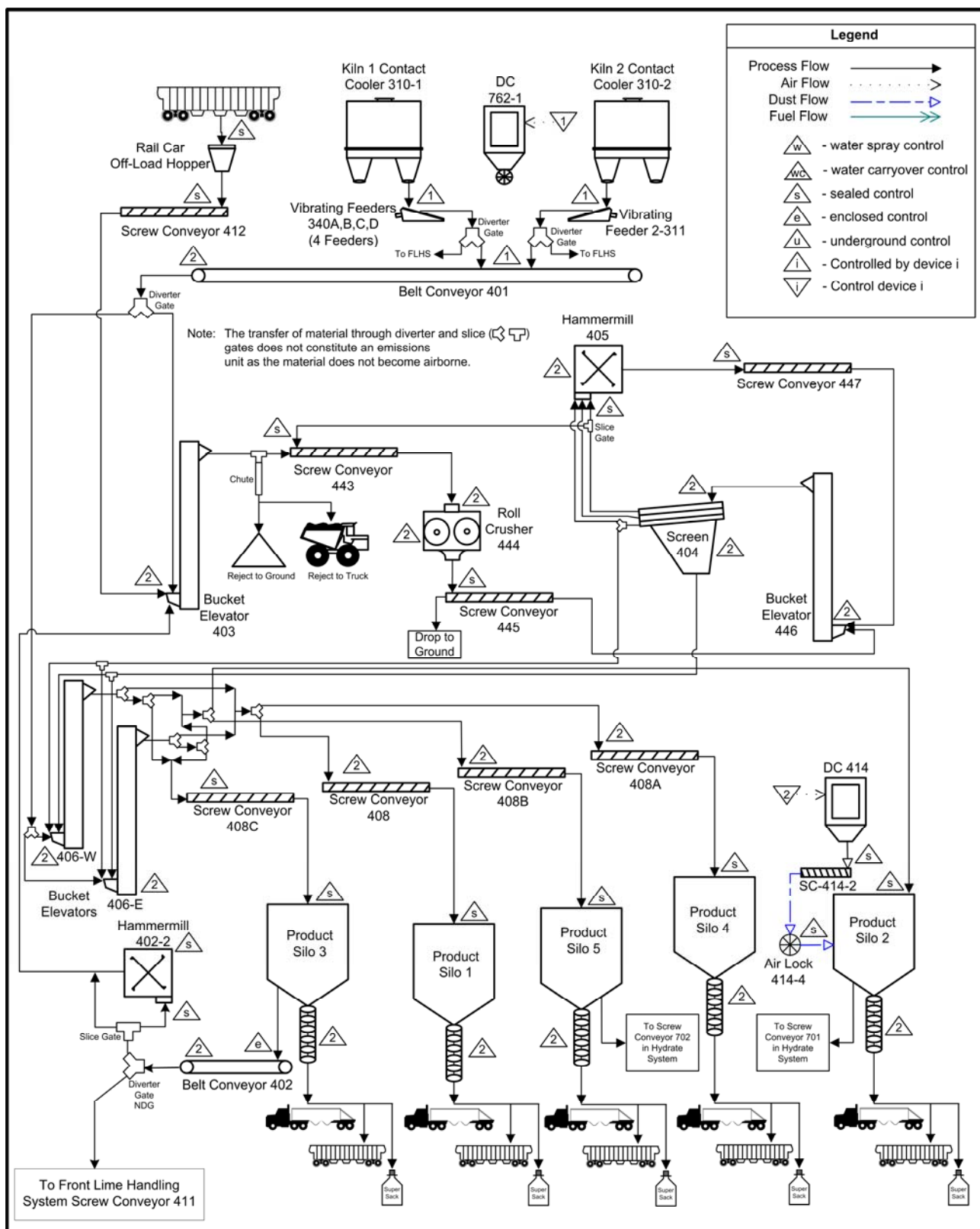


Figure 6: Process Flow Diagram for the Back Lime Handling System

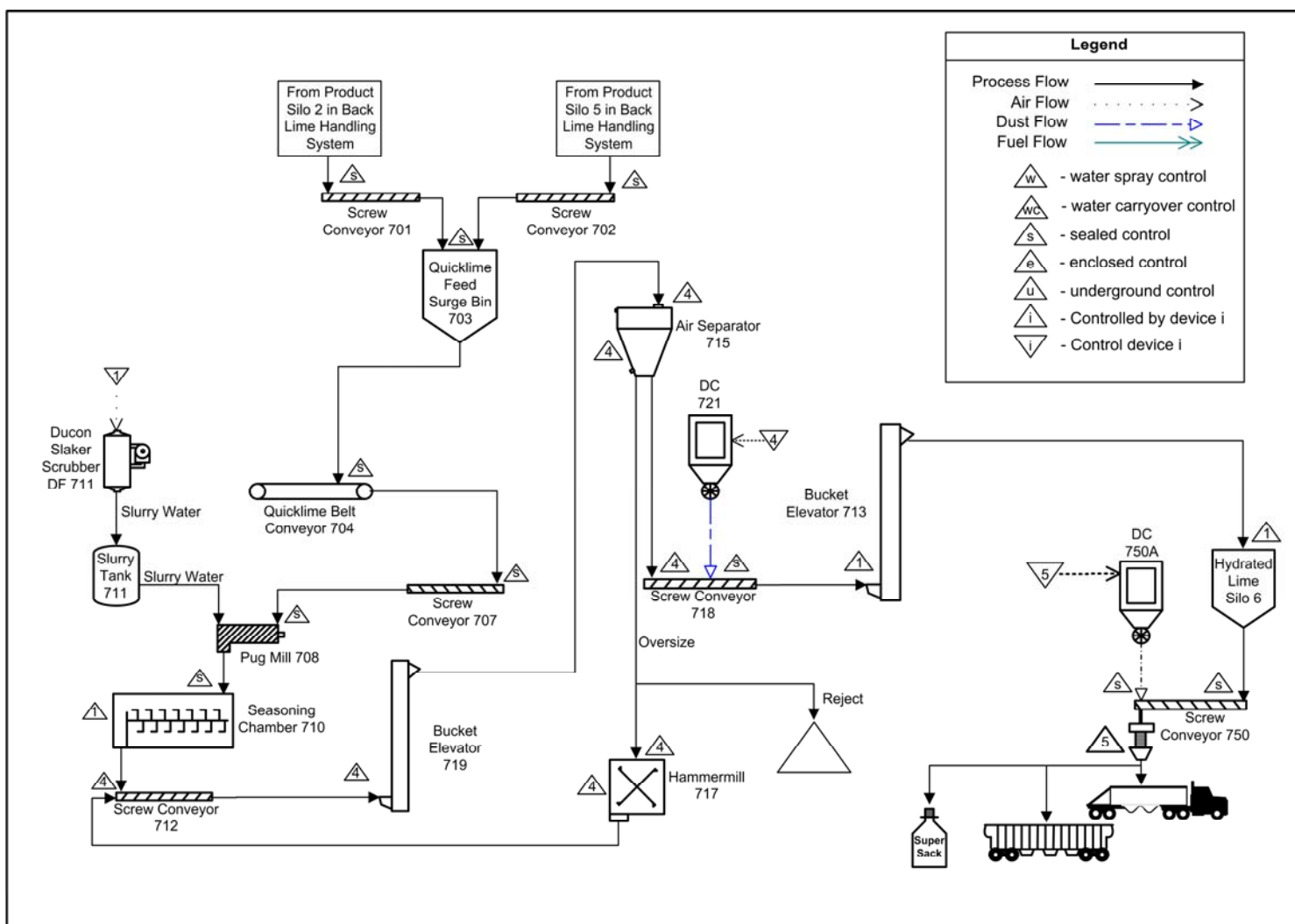


Figure 7: Process Flow Diagram for the Hydrator System