HEARING OFFICER'S REPORT

TO:	The Honorable Shawn M. Garvin Cabinet Secretary, Department of Natural Resources and Environmental Control
FROM:	Lisa A. Vest Regulatory Specialist, Office of the Secretary Department of Natural Resources and Environmental Control
RE:	Natural Minor Permit Application of Walan Specialty Construction Products, LLC, pursuant to 7 DE Admin. Code 1102, to construct and operate a Granulated Blast Furnace Slag Grinding, Drying, and Processing Facility located at 501 Christiana Avenue, Wilmington, Delaware
DATE:	June 28, 2019

I. <u>BACKGROUND AND PROCEDURAL HISTORY:</u>

A public hearing was held on Tuesday, November 20, 2018, at 6:00 p.m. by the Department of Natural Resources and Environmental Control ("DNREC," "Department") at its office located at 391 Lukens Drive, New Castle, Delaware, to receive comment on the pending construction permit application of Walan Specialty Construction Products, LLC ("Walan," "Applicant"), pursuant to 7 DE Admin. Code 1102, to construct and operate a new facility to be located at 501 Christiana Avenue in Wilmington, Delaware. Specifically, Walan proposes to construct and operate a Granlated Blast Furnace Slag ("GBFS") grinding, drying, and processing facility, consisting of one (1) feed hopper, two (2) bucket elevators, two (2) 1,100 ton storage silos, one (1) mill used to dry and grind the unprocessed GBFS, and one (1) baghouse used for air pollution control and product recovery ("Application").

The Applicant's proposed project is subject to various state and federal regulatory requirements, including, but not limited to, Delaware's air quality regulations, as set forth in 7 DE Admin. Code 1100, *Air Quality Management Section.*

To provide clarity for the benefit of the hearing record ("Record"), it should be noted that a public hearing (concerning a prior permit application package submitted to the Department by Walan) was previously held by the Department on April 25, 2018. During the technical review of that application by the Department's Division of Air Quality ("DAQ"), some inconsistencies were noted with Walan's Environmental Applicant Background Statement. Specifically, the Applicant failed to include an accurate account of the compliance history for its facilities located in the Commonwealth of Pennsylvania, which operate under the name of Penn Mag, Inc. This rendered the information presented at the Department's April 25, 2018 public hearing defective. As a result, on August 28, 2018, Walan notified the Department of its withdrawal of that application (without prejudice). A new DAQ permit application package was submitted to the Department on October 19, 2018. The information contained in this Hearing Officer's Report ("Report") details the information generated as the result of the Record developed in this present matter, and is not a continuation of the prior hearing record arising from the previous public hearing of April 25, 2018.

The owner of this company (operating under the name "Penn Mag, Inc." in locations in Adrian, Pennsylvania, and Claysburg, Pennsylvania) has applied for a Natural Minor Permit, pursuant to 7 DE Admin. Code 1102, to construct and operate a GBFS grinding, drying, and processing facility here in Delaware, to be operated under Walan's name, as noted above. Pursuant to this Application, unprocessed GBFS material will be transported to the Walan facility via tarped trucks from offloading of ships docked at the Port of Wilmington. The trucks will travel from the Port on Christiana Avenue to the proposed facility at 501 Christiana Avenue, and will not travel near any residential areas during delivery.

Once received at Walan's proposed facility, the GBFS will be processed through a grinder (or grinding mill) with a natural gas fired heater for storage and eventual load-out into enclosed trucks through the use of dustless load-out chutes. The particulate matter emissions will be controlled by cartridge filters, which are used to capture any dust displaced from the enclosed trucks. The truck load-out area under the silos will be enclosed to help prevent any fugitive dust from escaping into the atmosphere.

As noted above, the Application submitted by Walan was received by the Department on October 19, 2018. Thereafter, the legal notice advertising the public hearing to be held in this matter was published in both the *Sunday News Journal* and the *Delaware State News* on October 28, 2018. The Department held its public hearing concerning this matter on November 20, 2018, which was attended not only by Department staff and representatives of the Applicant, but also by numerous members of the public. Comment was received from the public with regard to this Application, both at the time of the hearing and during the post-hearing period of this procedural matter. As a result of the public interest in this Application, and in response to requests made by the public for the Department to extend the public comment period, the Record remained open for receipt of comment through Monday, December 31, 2018. Proper notice of the hearing was provided as required by law.

II. SUMMARY OF THE PUBLIC HEARING RECORD:

The Record consists of the following documents: (1) a verbatim transcript; (2) ten documents representing the Department's Exhibits concerning this permitting matter, introduced by responsible DAQ staff at the public hearing held on November 20, 2018, and marked accordingly by this Hearing Officer as "Dept. Exh. 1-10"; (3) letter dated October 20, 2018, from Lee Jarmon, President, Overview Gardens Garfield Park Civic Association, Inc., introduced by

Mr. Jarmon at the time of the public hearing and marked as "Jarmon Exh. 1"; (4) brochure entitled, *Environmental Justice for Delaware,* distributed by Delaware Concerned Residents for Environmental Justice, introduced by Ken Dryden at the time of the public hearing and marked as "Dryden Exh. #1"; (5) amended Application package submitted on behalf of the Applicant by Duffield Associates, Inc., dated March 5, 2019; (6) Applicant's Responses to public comment received by the Department in this matter; and (7) Technical Response Memorandum ("TRM") package submitted to this Hearing Office through DAQ Management, including but not limited to, Angela D. Marconi, P.E., BCEE, Branch Manager, Engineering and Compliance Section, dated March 26, 2019. The Department's person primarily responsible for reviewing this application, Ms. Marconi, as referenced above, developed the Record with the relevant documents in the Department's files.

The Record generated in this matter indicates that numerous members of the public offered comments regarding this pending Application. These comments were made by citizens who are concerned about the air quality in New Castle County, and, specifically, the potential environmental (and human health) impacts of the Applicant's operations at its proposed facility in Wilmington, Delaware. Concerns were also raised by members of the public as to the Applicant's past environmental compliance history of the Penn Mag, Inc. facilities located in the Commonwealth of Pennsylvania, whether the Applicant had also applied for a Coastal Zone Permit from the Department, and whether the potential issuance of this permit by the Department to Walan would disregard Environmental Justice concerns of the surrounding communities along the Route 9 corridor in northern Delaware.

At the request of this Hearing Officer, the technical experts in the Department's DAQ prepared the aforementioned TRM to (1) specifically address the concerns associated with this Application, as set forth in the public comment received by the Department; (2) provide a formal regulatory review of the Applicant's proposed project; and (3) offer DAQ's conclusions and recommendations with regard to this Application for the benefit of the Record generated in this matter. In its TRM, the DAQ provides a summary of the public comment received in this matter, and provides specific responses to the same.

The TRM provides the DAQ's formal responses to the public comment received by the Department regarding matters specifically associated with the Application currently pending before the Secretary at this time. This TRM does not, however, address comments that pertain to matters outside the permitting authority of the DAQ, nor is it responsive to any comments that are not specifically related to this pending Application, which was the subject matter of the public hearing held by the Department on November 20, 2018.

I find that the DAQ's TRM offers a detailed review of all aspects of the Applicant's pending Application, addresses those concerns germane to the subject matter of the aforementioned public hearing, and responds to them in a balanced manner, accurately reflecting the information contained in the formal hearing record. Thus, the aforementioned TRM, with attachments, is attached hereto as Appendix "A" and expressly incorporated herein as such.

III. RECOMMENDED FINDINGS AND CONCLUSIONS:

The pending Application submitted to the Department by the Applicant in this matter is for a DAQ construction permit, pursuant to 7 DE Admin. Code 1102, to construct and operate a GBFS grinding, drying, and processing facility at 501 Christiana Avenue, Wilmington, Delaware. I find that the proposed project requires the Applicant to obtain a DAQ construction permit for the aforementioned project, to be constructed at the location noted above. I further find that the Applicant's proposed project is subject to various state and federal regulatory requirements, including, but not limited to, Delaware's air quality regulations, as set forth in 7 DE Admin. Code 1100, *Air Quality Management Section.*

In reviewing the applicable statutes and regulations, as well as weighing public benefits of this project against potential detriments, the Department's experts in the DAQ have concluded that the aforementioned project complies with all federal and state air pollution control laws and regulations. Should this Application be approved, the DAQ construction permit that would be issued by the Department would be reflective of the Application submitted, and would include the most stringent federal and state regulatory requirements applicable to the proposed facility.

In response to the above referenced comments received from the public in this matter, the Department has sought to minimize the impacts to the surrounding communities. To that end, the Department has made the following determinations:

1. In its evaluation of this project, DAQ reviewed local modeling of the emissions, and calculated emissions based on the potential to emit of the source (which is the worst-case emissions from the facility operating at full capacity). The Department calculates emissions estimates in tons per year. Those estimates are then compared to

the regulatory threshold values, to ensure that the concentration at the fence line will be at least 100 times lower than the Threshold Limit Value (the permissible worker exposure level). The classification of the source as either a major or minor source of emissions is based on the facility's potential to emit. Based on the potential to emit from the proposed facility, this source will be classified as a natural minor source.

2. At the time of the November 20, 2018 public hearing, the Applicant's representatives presented a detailed summary of the results of the cumulative impact on emissions. The predicted emissions from the source were then added to the pollutant concentration results from the 2016 DNREC Ambient Air Quality Report, and compared to the National Ambient Air Quality Standards. The nearest Federal Reference Method Ambient Air Quality Monitoring Station (from which the results were obtained) is located on Martin Luther King Boulevard in Wilmington, Delaware. The combined total emissions concentration were below the National Air Quality Health Standards, as established under the Federal Clean Air Act to protect public health and welfare.

3. Through the Department's use of air quality screening models, DAQ has verified the maximum downwind concentration to be well under the aforementioned Threshold Limit Value (which, again, is the permissible worker exposure level).

4. The proposed location of the facility at 501 Christiana Avenue, Wilmington, Delaware, will be northwest of Interstate 495, which is not physically located within Delaware's Coastal Zone. Thus, no Coastal Zone Permit is needed from the Department in this matter. Additionally, that location is an area zoned "W-1" (waterfront manufacturing), and thus the proposed use of the premises (e.g., for a GBFS grinding operation) is permitted, per Wilmington Code, Section 48-336(b)(1). It should be noted that such zoning determinations are made by the local government, and not by DAQ or the Department in general.

5. The Department will require installation of best available control technology at the proposed facility to minimize any offsite impact of particulate emissions, which will be generated by the source as a result of its drying and grinding operations. Additionally, DAQ has included a Fugitive Dust Control Plan as a condition in the permit, which will require adherence to the following best management practice protocols:

    - Maintenance of a neat and orderly work environment, both indoors and outdoors;
    - Prompt cleanup of any spilled GBFS material;
    - Maintenance of a neat and orderly storage of materials, including adding water (as needed) to any stockpiled material, and keeping the stockpiles and material delivery trucks tarped;
    - Limitation of the use of truck traffic to paved roadways and sweeping surfaces, and control of track activity by enforcing speed limits;

- Installation of curtain doors below the storage silos for the unloading of finished materials into enclosed trucks for delivery;
- Establishment of specified truck routes for the finished product (which will avoid residential areas);
- Employee training on the proposed use of fugitive dust control measures on an annual basis (or, on an as-needed basis, should facility procedures or operations change); and
- Daily routine inspections to identify any conditions which could lead to fugitive dust emissions and potential dust generating activities.

As a further clarification of the Record developed in this matter, this Order recognizes that, during DAQ's initial review of this Application, Walan indicated that the maximum throughput of material at its facility would be 262,800 tons per year of GBFS. In order to receive shipments of this material in the Port of Wilmington, Port Contractors requested an amendment to their permit to receive and classify this material under the "Class C" material category. Port Contractors indicated at that time that the total GBFS material received would be 150,000 tons per year, or, approximately three 50,000-ton shipments. This was inconsistent with what Walan had applied for in its Application. Additionally, in its revised Fugitive Dust Control Plan, the Applicant noted that the total throughput of GBFS would be 150,000 tons per year. In order to correct these discrepancies, Walan provided the Department with an amended Application on March 5, 2019, to accurately reflect the actual throughput requested as 150,000 tons per year (since this is an inherent constraint in what the Port Contractor is willing to accept).

The corrected Application submitted by Walan, as described above, does not require any further public notice, since the process emissions calculations in the original Application were based on the initially stated 262,800 maximum throughput, and the subsequent change to 150,000 tons per year maximum throughput will result in lower overall process emissions. The corrected Application also includes a reduction in height of the storage silos, since the City of Wilmington has a maximum height allowance, which the proposed silos in the initial application exceeded.

The Record developed in this matter indicates that the Department's experts have considered all statutes and regulations that govern projects such as this proposed GBFS facility, and have recommended issuance of the DAQ permit necessary for the same to the Applicant in this matter. I find and conclude that the Applicant has adequately demonstrated its compliance with all requirements of the statutes and regulations, as noted herein, and that the record supports approval of the Application submitted by Walan.

In conclusion, I recommend that a DAQ Regulation No. 1102 Natural Minor Permit, to construct and operate a GBFS facility at 501 Christiana Avenue, Wilmington, Delaware, consistent with the Record developed in this matter, be issued by the Department in the customary form, and with appropriate conditions.

Further, I recommend the Secretary adopt the following findings and conclusions:

1. The Department has jurisdiction under 7 *Del. C.* §§6003, 6004, 6006(4), and all other relevant statutory authority, to make a final determination on this Application after holding a public hearing, considering the public comments, and all information contained in the Record generated in this matter;

2. The Department provided proper public notice of the Application submitted by Walan, and of the public hearing held on Tuesday, November 20, 2018, and held said hearing to consider any public comment that may be offered on the Application, in a manner required by the law and regulations;

3. The Department considered all timely and relevant public comments in the Record, as established in the TRM provided by the Department's DAQ, which has now been expressly incorporated into the Record generated in this matter;

4. The Department has carefully considered the factors required to be weighed in issuing the permit required by this Application, and finds that the Record supports approval of the Application and the issuance of the construction permit associated with same;

5. The Department shall issue a DAQ Natural Minor Construction Permit, pursuant to 7 DE Admin. Code 1102, to Walan for the construction and operation of a GBFS grinding, drying, and processing facility at 501 Christiana Avenue, Wilmington, Delaware, consistent with the Record developed in this matter. Furthermore, said permit shall include all conditions as set forth in the Department's draft permit, to ensure that Delaware's environment and public health will be protected from harm;

6. The Department has an adequate Record for its decision, and no further public hearing is appropriate or necessary; and

7. The Department shall serve and publish its Order on its internet site, and shall provide legal notice of the Order in the same manner that the Department provided legal notice of the Application.

LISA A. VEST
Regulatory Specialist

\ahear\WALAN DAQ Construct Permit 2019

Attachment A: DAQ TRM (03/26/19)

APPENDIX “A”

EXHIBIT
Exh. #7 (LAV)

RECEIVED
APR 2 2019
DNREC
PUBLIC HEARING OFFICER

MEMORANDUM

TO: Lisa Vest
Hearing Officer

THROUGH: David Fees, P.E.
Division Director

Angela D. Marconi, P.E., BCEE
Program Manager

Karen Mattio, P.E.
Managing Engineer

FROM: Bradley A. Klotz
Environmental Engineer

SUBJECT: Technical Response Memorandum for Walan Specialty Construction Products, LLC's application to construct a facility, located at 501 Christiana Avenue.
Permit: APC-2019/0030-CONSTRUCTION

DATE: March 26, 2019

BACKGROUND

Lisa Vest, Public Hearing Officer, requested a Technical Response Memorandum (TRM) to provide expert technical assistance for the Hearing Officer's Report and recommendations to the Secretary with regard to the pending application for construction of a granulated blast furnace slag (GBFS) grinding facility in Wilmington, Delaware.

Detailed below are the Division of Air Quality's (DAQ) responses to the comments provided during the November 20, 2018 public hearing and prior to the December 31, 2018 closing of the administrative public hearing record for the Walan Specialty Construction Products LLC's proposed granulated blast furnace slag processing facility.

A public hearing was held on Walan Specialty Construction Products, LLC's April 25, 2018 previous application submittal. During DAQ's technical review of the permit application, there were some inconsistencies with the Environmental Applicant Background Statement, where the facility inadvertently failed to include an accurate account of the compliance history for their State of Pennsylvania facilities, operating under the name of Penn Mag, Inc. This rendered the information presented at the public hearing defective. Thus, on August 28, 2018, Walan Specialty Construction Products LLC notified the Department of its withdrawal of the application without prejudice. A new application was submitted to the Department on October 19, 2018 and information which follows details the information contained in this application.

The owner operates under the name Penn Mag, Inc. in locations in Adrian, Pennsylvania, and Claysburg, Pennsylvania. The company has applied for a permit to construct and operate a granulated blast furnace slag grinding operation at their new facility, under the name of Walan Specialty Construction Products, LLC. The slag material will be processed through a grinder or grinding mill with a natural gas fired heater for drying and associated baghouse, then conveyed via a bucket elevator to two (2) 1,100 ton storage silos for storage and eventual load-out into enclosed trucks to be transported off-site. The processed granulated blast furnace slag will be top loaded into enclosed trucks through the use of dustless load-out chutes and the particulate matter emissions will be controlled by cartridge filters which are used to capture any dust displaced from the enclosed trucks. The truck load-out area under the silos will be enclosed to help prevent any fugitive dust from escaping to the atmosphere.

REVIEW OF APPLICATION AND PUBLIC HEARING

The Division of Air Quality (DAQ) issued a public hearing notice on the Regulation No. 1102 Natural Minor Permit Application submitted by Walan Specialty Construction Products, LLC to construct a slag grinding, drying, and processing facility located at 501 Christiana Avenue, Wilmington, Delaware. The legal notice was published in the **Sunday News Journal** and the **Delaware State News** on Sunday, October 28, 2018. A public meeting was held on Tuesday, November 20, 2018 at 6pm at the DNREC – Division of Waste and Hazardous Substances Office, 391 Lukens Drive, New Castle, Delaware to receive comments on the application. The public notice period closed on December 31, 2018 in response to a request made at the public hearing for an extended public comment period.

On behalf of DNREC, Hearing Officer, Ms. Lisa Vest, conducted the public hearing. Prior to the public comments, the Division of Air Quality (DAQ) Environmental Engineer, Mr. Bradley A. Klotz presented the background information on air permitting actions that would be associated with the construction permit application.

Sharon Oras Morgan, Esquire, Fox Rothschild, LLP Attorneys at Law, and Richard Beringer, P.E., Senior Environmental Consultant, Duffield Associates Soil Water & the Environment, spoke on behalf of the company.

During the initial review of the permit application, the Company indicated that the maximum throughput of material would be 262,800 tons per year of granulated blast furnace slag. In order to receive shipments of this material in the Port of Wilmington, Port Contractors requested an amendment to their permit to receive and classify this material under the "Class C" material category. Port Contractors indicated that the total granulated blast furnace slag material received would be 150,000 tons per year or approximately three 50,000-ton shipments. This was inconsistent with what Walan applied for in their permit application. Additionally, in Walan's revised Fugitive Dust Control Plan, they mentioned that the total throughput of granulated blast furnace slag would be 150,000 tons per year. Walan has submitted an amended application to reflect the actual throughput they requested as 150,000 tons per year, since this is an inherent constraint in what Port Contractor's is willing to accept. The application will not require a new public notice since the process emissions calculations in the application were based on the 262,800 maximum throughput, and the change to the 150,000 tons per year maximum throughput will result in lower overall process emissions. Finally, the amended application will include a reduction in height of the storage silos since the City of Wilmington has a maximum height allowance, which the silos in the initial application exceeded. This reduction in height of the silos also requires Walan to perform a new air dispersion modeling analysis. The amended application was received via email on March 5, 2019.

The comments in the table below have been edited for clarity and brevity. Verbatim statements can be found in the Air Quality Hearing Transcript prepared by Wilcox & Fetzer, Ltd. Additionally, Walan Specialty Construction Products, LLC provided responses, via email dated January 18, 2019, to comments provided during the November 20, 2018 Public Hearing and prior to the December 31, 2018 close of the public record. The response document is attached for your reference.

General Public Comment Summary	DAQ Responses
LEE JARMON, PRESIDENT OF THE OVERVIEW GARDENS GARFIELD PARK CIVIC ASSOCIATION, INC. (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING): • Issuance of permit disregards Environmental Justice.	DNREC- Division of Air Quality (DAQ) is concerned about the needs of the community and we address Environmental Justice concerns primarily via outreach and communication. In evaluating the project, DAQ looks at local modeling of the emissions to ensure that the emissions will be 100x less than the Threshold Limit Value (TLV) [permissible worker exposure level] at the fence-line. The location of the facility complies with zoning requirements of the area. Please note that zoning determinations are made by local government, not by DAQ or DNREC.

General Public Comment Summary	DAQ Responses
• In layman terms, explain what tons of emissions means and what is the projected impact of emissions on the health of our residents of our communities when the emissions are combined with existing conditions.	The emissions are calculated based on the potential to emit of the source, which is the worst-case emissions from the facility operating at full capacity. The emissions estimates are calculated in tons per year and are compared to the regulatory threshold values to determine the classification of the source as a major or minor source of emissions. Based on the potential to emit from the proposed facility, the source will be classified as a natural minor source. During the public hearing, Walan Specialty Construction Products, LLC representatives presented a detailed summary of the results of the cumulative impact on emissions. The predicted emissions from the source were added to the pollutant concentration results obtained from the 2016 DNREC Ambient Air Quality Report and then compared to the National Ambient Air Quality Standards (NAAQS). The nearest Federal Reference Method Ambient Air Quality Monitoring Station, from which the results were obtained, is located in the City of Wilmington on Martin Luther King Boulevard. The combined total emissions concentration were below the National Air Quality Health Standards which were

General Public Comment Summary	DAQ Responses
• Mr. Jarmon submitted a hard copy of the "Opinion of the Court, United States District Court, District of New Jersey, Civil Action No. 01-720(FL W)"	established under the Federal Clean Air Act to protect public health and welfare. The legal opinion submitted was a matter before the State of New Jersey. DAQ does not make judgements on legal rulings.
JAMES JOHNSON, PRIVATE CITIZEN & FORMER STATE REPRESENTATIVE DISTRICT 16 **(ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING):** • Previous industries, which have chosen to locate operations in the Route 9 Corridor, and Southbridge Area, indicated that they would make certain provisions that would not cause any pollution in the area but had failed to do so. There has been progress in the past from previous conditions, but the community is tired of being dumped-on, and they would like Southbridge to be in the same condition as the riverfront.	The operating history of previous facilities located near the Route 9 corridor, and Southbridge Area should not be used as a measure to gauge future operations of new facilities which may be located in the area. Numerous measures will be employed by Walan Specialty Construction Products, LLC to minimize any offsite impact of emissions from facility operations. These measures include: state-of-the-art best available control technology to control particulate emissions from the drying and grinding operations; the implementation of best management practices in order to maintain a neat and orderly work environment - both indoors and outdoors; prompt cleanup of any spilled granulated blast furnace slag material; maintaining neat and orderly storage of materials - including adding water, as

General Public Comment Summary	DAQ Responses
	needed, to any stockpiled material and keeping the stockpiles and material delivery trucks tarped; controlling truck activity by enforcing speed limits; limiting use of truck traffic to paved roadways and sweeping surfaces; employing curtain doors below the storages silos for the unloading of finished materials into enclosed trucks for delivery; conducting employee training on the proper use of fugitive dust control measures on an annual or as needed basis should facility procedures or operations change; and performing daily routine inspections to identify any conditions which could lead to fugitive dust emissions and potential dust generating activities. Additionally, in response to community concerns, Walan Specialty Construction Products, LLC has agreed to modify the truck routes to eliminate traffic through residential areas.
• Requested that the hearing remain open for more public comment.	In response to numerous requests from community associations, environmental advocates, and members of the public who attended the November 20th, 2018 Public Hearing, the Department extended the public comment period on the company's permit application

General Public Comment Summary	DAQ Responses
	through close of business on December 31, 2018.
FRANKLIN D. COOKE, STATE REPRESENTATIVE-ELECT DISTRICT 16 (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING):	
• It's heavy industrial in this area, we are tired, we are in a cancer cluster. I'm saying to DNREC, and I told the Secretary: "We've been bamboozled. We've been led astray. We've been fooled on a lot of issues. We have no confidence in DNREC whatsoever…..I want to know how you're going to do the emissions, who they going to report to if it's coming in the air."	The proposed location of the facility is in an area zoned W-1 (waterfront manufacturing), and the proposed use of the premises for a granulated blast furnace slag grinding operation is permitted, per Wilmington City Code, Section 48-336(b)(1). ***[REFERENCE: March 6, 2018 letter from the City of Wilmington Department of Licenses & Inspection, signed by James G. DiPinto, Zoning Manager.]***
• Would like to have this postponed until we have a huge public meeting like they did with Gulftainer maybe at ILA's building where everybody can get a chance to speak, no time limit.	In addition to the Public Hearing held by DNREC on 11/20/2018, the Company and its representatives have performed outreach by meeting with nearby community organizations. DNREC heard the community concerns and has handled the application in accordance with all public comment requirements. The public comment period was extended until the close of business on 12/31/2018.
JOHN REESE, PORT CONTRACTORS (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING):	
I'm with Port Contractors and we'll be handling the material from Walan over to the new facility. I guess I	Mr. John Reese's comments have been

General Public Comment Summary	DAQ Responses
just want to say that a reputable Company that is will to come to Delaware to spend millions and millions of dollars, to invest millions and millions of dollars to bring material through the Port of Wilmington to produce a product that can be used by the local industry while generating new jobs for the area, I think it's a good thing for the port. I think it's a good thing for the City of Wilmington. And I think it's a good thing for the State.	noted in the record.
PAUL PEPE, KEYSTONE CEMENT COMPANY (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING): I'm the Mid-Atlantic Sales Director for Keystone Cement Company. And I was born, raised and live 53 years here in Delaware. But over the last 20 years in the construction industry, we've seen a utilization of more sustainable, more green materials. And the leader of that material that's being utilized is slag. Slag is a global, national and it's a local product. And there's really a need for additional production at this time. Within a hundred-mile radius right here in Wilmington, over a half million tons is used. Over 600,000 tons of slag is used every year for the last ten years. So this is not something that's new. And it's used on three things, on sustainable projects that need LEED certification; DOT – all the Department of Transportations utilize slag in Delaware, New Jersey, Pennsylvania and Maryland. It's not hazardous material, of course. And it's an enhancer for concrete, so all the concrete companies utilize slag to enhance their products to make it more durable, to make it more attractive for the end-user. Keystone Cement, we've been in business since 1928. So for the last 90 years, we've been selling cement in the State of Delaware. We're looking to partner with Walan as far as marketing the material. We realize to be a true cement supplier, we need dual products, which is straight cement and also slag.	Mr. Paul Pepe's comments have been noted in the record.
JOE CRUISE, GT USA WILMINGTON (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING): I formerly held the title of interim CEO through concession, concession negotiations with Diamond State Port Corporation. I'm now acting chief commercial officer. As many of you lnow, GT USA Wilmington signed a 50-year concession to manager and operate the Port of Wilmington and that we took over operations on October 3rd of this year. It's our goal to increase all commodity types and throughput though the Port of Wilmington, including drywall. This commodity represents new business. Based on volume predictions that I've seen in year one, it would immediately increase 700 man hours to port employees. By year three, up to 2,000 – or I'm sorry, over 2,000 man hours. It would also, due to the higher volume – our	Mr. Joe Cruise's comments have been noted in the record.

General Public Comment Summary	DAQ Responses
concession agreement, which is a public document, we pay the Diamond State Port Corporation a royalty payment based on the amount of volume that moves over the port. So the more volume that moves over the port would mean increased royalty payment to the DSPC. We will work with the chosen stevedore to make sure that the slag is moved in a safe and efficient manner in line with all federal, state and local regulations.	
ROBERT PALAIMA, DELAWARE RIVER STEVEDORES (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING): I'm with the Delaware River Stevedores. We're one of the stevedorian companies that work in the port. We employ members of the International Longshoremen's Association. And we would be one of the companies that would be handling the material off of the vessel in the port. We project that this, over a period of three years, that this activity would represent about 1600 gang hours of employment, which that translate to up to 20,000 man hours for the ILA over a three-year period. So in an era of tariffs and an era of uncertainties about commerce and business opportunities that don't always come along, we have faith that Walan is going to do a good job of protecting the material. We're going to try to do a good job taking it off the vessels. We're going to work with Walan, Port Contractors, we're going to work with Gulftainer and handle this material in a very careful and productive way.	Mr. Robert Palaima's comments have been noted in the record.
MARVIN THOMAS, MEMBER OF THE SOUTHBRIDGE CIVIC ASSOCIATION (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING): • The Delaware Department of Public Health has identified these communities near the proposed facility as cancer clusters.	The Division of Air Quality conducts thorough technical reviews of all permit applications to ensure that the proposed sources comply all State and Federal Air Quality Rules and Regulations in order to ensure

General Public Comment Summary	DAQ Responses
	compliance with all National Ambient Air Quality Standards (NAQQS).
• Not too many years ago approval was granted to operate a state-of-the-art food recycling plant, and the community was given assurances there would be no adverse health issues. For the first year there were no issue, but soon thereafter, things changed because the community was plagued daily with an unbearable odor in not just communities most close to the plant, but communities throughout the City of Wilmington. During a meeting at the Rosehill Community Center, former City Mayor Dennis Williams and former County Executive Tom Gordon gave support to the community and stated that the plant had to close.	The proposed location of the facility is in an area zoned W-1 (waterfront manufacturing), and the proposed use of the premises for a granulated blast furnace slag grinding operation is permitted, per Wilmington City Code, Section 48-336(b)(1).
MARY REED, PRESIDENT OF THE SOUTHBRIDGE CIVIC ASSOCIATION (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING): • Enough is enough. What is it going to do for my community, my low-income community, my predominately black community, my asthma cluster community, my community where there is a flood all of the time?	DNREC- Division of Air Quality (DAQ) is concerned about the needs of the community and we address Environmental Justice concerns primarily via outreach and communication. In evaluating the project, DAQ looks at local modeling of the emissions to ensure that the emissions will be 100x less than the Threshold Limit Value (TLV) [permissible worker exposure level] at the fence-line. The location of the facility complies with zoning requirements of the area. Please note that zoning determinations are made by local government, not by DAQ or

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	DNREC.
• The application does not say anything about Penn Mag, a Company that has been doing business for 30 years. How long has Walan Construction Company been doing business? They have two locations in Pennsylvania. How close are they to a residential area?	Walan Specialty Construction Products, LLC was incorporated in the State of Delaware on January 8, 2018. Walan Specialty Construction Products, LLC's corporate affiliate is Penn Mag, Inc. Penn Mag, Inc. has been in the mineral grinding business in the State of Pennsylvania since 1982, operating facilities in both Adrian and Claysburg, Pennsylvania. There is a relatively small residential development located approximately 1 mile from the Claysburg, Pennsylvania facility, and a small residential development located approximately ½ mile from the Adrian, Pennsylvania facility.
• Walan needs to explain to us in the event of a flood the drainage of this harmful product that's stored on the ground.	Walan Specialty Construction Products, LLC is required to submit site development plans which must include a Sediment & Stormwater Management Plan. Additionally, Walan Specialty Construction Products, LLC has committed to tarp all stockpiles of material onsite in addition to implementing a serious of measures which were included in the November 2018 Revised Fugitive Dust Control Plan included as part of the construction permit application.

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• Walan mentioned a cumulative impact study. Is that something that is available here tonight or can you direct us where we can find it?	During the public hearing, Walan Specialty Construction Products, LLC representatives presented a detailed summary of the results of the cumulative impact of emissions. The predicted emissions from the source were added to the pollutant concentration results obtained from the 2016 DNREC Air Quality Results Publication and then compared to the National Ambient Air Quality Standards (NAAQS). The nearest Federal Reference Method Ambient Air Quality Monitoring Station, from which the results were obtained, is located in the City of Wilmington on Martin Luther King Boulevard. The combined total emissions concentration were below the National Air Quality Health Standards, which were established under the Federal Clean Air Act to protect public health and welfare.
MARTIN WILLIS, RESIDENT OF NEW CASTLE (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING): • I would like to make a statement in favor of the Secretary granting Walan's request for an air permit based solely on my review of the 300-page application, which can be found online, and I wish everyone in this room would take the time to read it. The application is revealing, explanatory, provides information that is informative and interesting. The only air permit – not only is the air permit in my opinion good, but the community should be at ease about local truck	Mr. Martin Willis's comments have been noted in the record.

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routes and how the slag will arrive at the Port of Wilmington because they will use designated commercial road from the port to the facility to 495.	
• My question to DNREC is: What is the difference between a natural minor facility, a synthetic minor facility, and a major facility since this application is only asking for a minor facility?	**Natural Minor:** A natural minor source does not meet any of the applicability criteria specified for a major stationary source or a synthetic minor source *(see details that follow below)*. Generally, a natural minor source does not need to rely upon limitations (such as restrictions on hours of operation, fuel usage, air pollution control device removal efficiency, etc.) in calculating the potential to emit of the source. Even without these restrictions or limitations, the source does not trigger the major source threshold (from the Clean Air Act) or synthetic minor applicability criteria. **Synthetic Minor:** A facility has a potential to emit that is at or above major source emission thresholds, but they accept restrictions on emission rates, process controls, or other limitations in a permit order to operate below major source emission thresholds. **Synthetic Minor Source Applicability Criteria:** For New Castle County, the restrictions to be classified as a

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• In the application, there are seven emission points. One emission point, Emission Point 3, deals with the natural gas dryer. The questions I would ask is why there is no continuous monitoring on the stack? I would like to see that there be some kind of continuous monitoring on the Emission Point 3.	Synthetic Minor would require emission limitations on the potential to emit as follows: **VOC < 25 tons/years** **NO_X < 25 tons/years** **HAPs < 10 tons/year (individual)** **HAPs < 25 tons/year (aggregate)** **Major Source Thresholds:** A facility is considered a major source in New Castle County if it has the potential to emit equal to or greater than the emission rates as listed below: **VOC 25 tons/years** **NO_X 25 tons/years** **CO 100 tons/year** **SO_2 100 tons/year** **PM_{10} 100 tons/year** **HAPs 10 tons/year (individual);** **HAPs 25 tons/year (aggregate)** **Other 100 tons/year** Since the facility will not be classified as a major source of emissions, and there are no applicable Federal New Source Performance Standards (NSPS), which may otherwise require the installation of Continuous Emission Monitors (CEMS) [i.e. CEMS are not required for natural minor sources], it is deemed an acceptable methodology to

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	monitor emissions of combustion products via fuel usage and engineering calculations.
DIANA DIXON, RESIDENT OF NEW CASTLE (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING):	
• One of the things I wanted to ask: "You all submit an application for the emissions part, but what about the Coastal Zone? I heard Mr. Willis talk about the transportation part and how safe it would be. But wouldn't a Coastal Zone Permit have to be submitted for that or not?"	The proposed location of the facility is located outside of the Coastal Zone. Specifically, the facility location is to the west of Interstate 495 (I-495) which is the delineation line of the Coastal Zone It is unclear what Ms. Dixon is referencing. Page 43 of the application details the "Scope of Equipment and Service Supply" of the Ready2Grind Modular System for Grinding/Drying of the Granulated Blast Furnace Slag.
• Why is there no stack-sampling on page 43 of the application?	Depending upon the emissions profile of any new source, unless otherwise required by State or Federal Regulations, it is the Department's discretion as to whether to incorporate stack-sampling requirements in the construction and/or operating permits. The Division of Air Quality will require stack-sampling (in the form of a one time stack test) of the main baghouse unit for the company's Granulated Blast Furnace Slag Grinding (GBFS) operation.

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RENEE ANDERSON (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING): • I heard nothing about how – what the noise factor was. Is that part of your permit? Who pays attention to noise? Do you consider the amount of noise from the operations of the plant when the permit is written? • Also with the grinding operation and the drying operation, I did not hear anything in part of the presentation that talked about how loud it was and what kind of impact it was going to have or how many hours it was going to be operating.	Noise requirements are not included as a condition in air quality construction permits, but facilities must comply with the applicable regulations. The noise regulations are governed by **7 DE Admin. Code 1149**. Duffield Associates has provided the attached calculations demonstrating that that the noise will be below the regulatory requirements. Failure to comply with the regulations will require the company to reduce the noise and/or alter their operating schedule.
SHARON ORAS MORGAN, WALAN'S LEGAL COUNCIL (ORAL COMMENTS PROVIDED AT 11/20/2018 HEARING): • Walan would like to respond to the request to keep the record open. Insofar as DNREC is considering that, we would ask that it be limited to five business days.	The request to limit the time to five business days to keep the record open was taken under advisement and DNREC determined that the public comment period would remain open until the close of business on December 31, 2018.

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CORINA AMALFITANO (11/13/2018): I am unable to attend the public hearing however I would like to bring up that the American Lung Association has rating New Castle County a D in daily particulate matter/fine particle grade. I do not understand why any permits allowing further particulate matter would be considered. We need to reduce the particulate matter not increase it.	The area is zoned to allow for the proposed use of the premises for a granulated blast furnace slag grinding operation. The total particulate matter (PM) emissions comply with the NAAQS which were established under the Federal Clean Air Act to protect public health and welfare.
BRYON SHORT, DELAWARE CONTRACTORS ASSOCIATION (11/20/2018): These comments are offered on behalf of the Delaware Contractors Association in support of the Air Quality Construction Permit application submitted by WALAN Special Construction Products, LLC. The company proposed to construct and operate a facility near the Port of Wilmington that will grind granulated blast furnace slag (GGBFS) which is an additive in the manufacturing of concrete. The use of GGBFS has been demonstrated to increase the durability and strength of concrete and is now being required to be used in certain projects by regional Departments of Transportation, including the Delaware Department of Transportation. Currently, there is no Delaware source available to acquire the material. The addition of the WALAN facility in New Castle County could help reduce project costs and assist some DCA members in meeting highway and bridge construction standards and requirements. The presence of a local source of material should also help our membership succeed in acquiring projects, which in turn helps support the local labor force. We understand and expect that the proposed facility must meet stringent environmental standards that are designed to protect public health and the environment. Through the use of best available control technology and best management practices, it appears that WALAN's facility will meet regulatory requirements as a natural minor source of air emissions, most notable for particulate matter.	Mr. Bryon Short's comments have been noted in the record.

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We also believe that WALAN has demonstrated competence to construct and operate such a facility through its 30 years of successful operation of two mineral grinding facilities in western Pennsylvania. For these reasons we respectfully request DNREC's favorable consideration of this application.	
DARIUS J. BROWN, STATE SENATOR DISTRICT 2 (11/20/2018): I am writing this letter to express my opposition to Walan Specialty Construction Products' plan to build a grinding facility in the Southbridge neighborhood. The company plans to build a site where it can grind slag into powder and resell it as a cement additive.	The proposed location of the facility is in an area zoned W-1 (waterfront manufacturing), and the proposed use of the premises for a granulated blast furnace slag grinding operation is permitted as a matter of right, per Wilmington City Code, Section 48-336(b)(1). ***[REFERENCE: March 6, 2018 letter from the City of Wilmington Department of Licenses & Inspection, signed by James G. DiPinto, Zoning Manager.]***
Many residents of Southbridge, whom I represent as the Senator for the Second District, have expressed concern about potential negative health impacts should Walan move forward with its plan. Specifically, residents worry that both indoor and outdoor air quality will suffer as a result of the company's operations. Safety data sheets from the industry suggest that slag can damage lungs if breathed in, and that the particles may contain cancer-causing materials. Given these risks, and my constituents' concerns, I cannot support Walan's request for an air quality permit. I hope that you will help protect Southbridge by denying Walan Specialty Construction Products an air quality permit.	If the Secretary approves the permit, it will include the most stringent federal and state regulatory requirements, which would be applicable to the facility. The application requires the installation of best available control technology to minimize an offsite impact of particulate emissions, which will be generated by the source. In addition, the application includes a fugitive dust control plan *(see comment above –DAQ Response to JAMES*

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	JOHNSON comment), which will be included as a condition in the permit.
SANDRA SMITHERS (11/20/2018):	
1. What other two sites in the USA that process this material and what is the impact on the surrounding communities?	The other two (2) facilities which Penn Mag, Inc. own and operate are located in Claysburg and Adrian, Pennsylvania. The Adrian facility is an Iron Ore Grinding Plant, and the Claysburg facility is an Iron Chromite Grinding Plant. To the Department's knowledge there has been no adverse impact on the surrounding communities of the facilities.
2. What is the safety protocol for an accidental spill? What are the health implications for surrounding communities in the event of a spill?	Since the granulated blast furnace slag material is a non-hazardous sand-like material, in the event of a spill it can be cleaned-up utilizing normal measures such as sweeper, front-end loader, or a vacuum truck. Based on the emissions profile and the control technologies employed, the Department does not anticipate any adverse health impact on the surrounding communities.
3. Who shoulders the liability in the event of a spill that impacts the surrounding communities?	In the event of a spill, the Company will shoulder any/all responsibility if it impacts the surrounding community.

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FRED J. CROEN (11/21/2018): I attended last night's meeting and I wanted to write and comment on how well the meeting was managed. You and your staff are to be commended for a well run meeting. I think many of the concerns of residents was heard and those in favor of the permit being granted to Walan SCP, LLC also had a chance to voice their opinion and/or provide information germane to the decision before DNREC. As technical manager of cementitious materials for Keystone Cement Company, Bath, PA, I have seen demand for GGBFS grow rapidly over the 40 years I have been in the business. Today, demand exceeds world supply and the primary reason this is so is the 1 for 1 mitigation of greenhouse gas emissions that tend to offset CO_2 emissions resulting from the manufacturing of Portland cement. This proposed manufacturing facility, once producing at full capacity will eliminate CO_2 emissions of approximately 160,000 tons per year. As if this is not sufficient reason to embrace GGBFS technology, Slag makes good concrete better. It makes highways and bridges more durable and stronger, more resistant to the rigors of our environment. The use of GGBFS and other supplementary cements are mandated by the Federal government procurement policies in all Federally funded projects where such materials are available. I have known Anil Bhadsavle and Lisa Dharwadkar, principals of this new venture for the past several years. I have also acted as a slag consultant to Anil and together we did considerable research to assemble the right raw material sources and state-of-the-art process equipment capable of producing a quality finished product with the least possible environmental impact. Both Anil and Lisa are responsible owners and of good character. Thank you for the opportunity to voice my comments to support this permit application.	Mr. Fred J. Croen's comments have been noted in the record. If the Secretary approves the permit, it will include the most stringent federal and state regulatory requirements which would be applicable to the facility.
MARY ANN LEVAN (12/1/2018): My name is Mary Ann Levan, and I am a PhD soil scientist who lives in northern New Castle County. I am part of a group that has an interest in the Southbridge area of Wilmington.	Public files related to the Walan Specialty Construction Products, LLC construction permit application have

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I have offered to the group that I would provide technical background to them regarding the nature of the processes and permitting for the proposed Walan Products Plant. This way, they can have informed public content to submit within the timeline of the public comment period. Thank you for any files or publications or announcements that I can access to help this group understand the siting of the facility in the Southbridge neighborhood. I have contacted you, as you are listed as the DNREC Hearing Officer to contact regarding the public comments on this facility. If I should contact someone else for this information, please send me their contact information.	been posted on the Department's website and were made available for the public during the comment period. All comments received during the public hearing and public comment period are addressed in this report. It is noted that, other than Ms. Mary Ann Levan's request for any public files available, the Department has not received any formal comments on the application from Ms. Mary Ann Levan. If Ms. Mary Ann Levan requires any additional information DAQ would advise her to submit a FOIA request.
LUCY COMSTOCK-GAY, ANNE POWELL, JOHN POWELL (12/10/2018): WILLIE SCOTT (12/31/2018): I am in opposition to Walan Specialty Construction Products, LLC's proposal to build a slag grinding facility at 501 Christiana Ave. in Wilmington, DE.	
• The proposed facility is not in alignment with the community's desire to improve safety, health and viability of their neighborhood.	The application adequately addresses the public's safety and health as they relate to the applicable state and federal regulations.
• The community is working hard to recover from years of environmental abuse and the resulting health effects.	Walan Specialty Construction Products, LLC and commenters present at the public hearing detailed the beneficial economic impacts of the proposed

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• There is no significant economic benefit from this proposal. • The parent company (Penn Mag, Inc) has a poor history of environmental compliance with 2 violations for "failing to prevent emission of air pollution as defined in the PA Air Pollution Control Act," "failing to implement an Erosion and Sedimentation Plan," and in 2017 for "failure to use a format a process required by DEP for self-monitoring results." In their application, Penn Mag. Inc claims they have not had any violations. • Based on their environmental record, Penn Mag. Inc/Walan are not trusted operators and provide little confidence they would establish and maintain the systems and processes necessary for safe and compliant operation.	project on the local economy. Walan Specialty Construction Products, LLC addressed the past environmental compliance history of the Penn Mag, Inc. facilities located in the State of Pennsylvania in both the application and at the public hearing.
SHERRY MARSICO (12/10/2018): The South Wilmington community of Southbridge has worked for many years to improve the safety and viability of their neighborhood. This historically industrial area near the Christina River is burdened with contaminated brown field sites, suffers from frequent flooding and has experienced a higher rate of cancer than most communities in the Wilmington area. There is currently a proposal to build a steel furnace slag grinding facility in the area which at a minimum creates the potential for air (dust) and noise pollution. Additionally, the storage of slag material in a flood prone area near the river poses additional risks. The facility would only employ approximately 10 people and does not present any significant economic benefit to the area, and it is inconsistent with the Civic Association's desire to attract light non-polluting industries and businesses. Due to significant community and environmental advocacy groups' requests, DNREC has extended the open comment period until December 31st before considering the construction application. I am in opposition to Walan Specialty Construction Products, LLC's proposal to build a slag grinding facility at 501 Christiana Ave. in Wilmington, DE.	The application adequately addresses the public's health and safety as they relate to the applicable state and federal regulations. Walan Specialty Construction Products, LLC and commenters present at the public hearing detailed the beneficial economic impacts of the proposed project on the local economy. Walan Specialty Construction Products, LLC addressed the past environmental compliance history of the Penn Mag, Inc. facilities located in the State of Pennsylvania in both the application and at the public hearing.

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• The proposed facility is not in alignment with the community's desire to improve safety, health and viability of their neighborhood. • The community is working hard to recover from years of environmental abuse and the resulting health effects. • There is no significant economic benefit from this proposal. • The parent company (Penn Mag, Inc) has a poor history of environmental compliance with 2 violations for "failing to prevent emission of air pollution as defined in the PA Air Pollution Control Act," "failing to implement an Erosion and Sedimentation Plan," and in 2017 for "failure to use a format a process required by DEP for self-monitoring results." In their application, Penn Mag. Inc claims they have not had any violations. Based on their environmental record, Penn Mag. Inc/Walan are not trusted operators and provide little confidence they would establish and maintain the systems and processes necessary for safe and compliant operation.	
BRUCE DALLEO (12/11/2018): I ask that you oppose the proposal to build a slag grinding facility in Southbridge. This proposal is not suitable for the Southbridge community which is trying to clean up years of environmental impact from abusive companies in this area. As a resident of Wilmington, I ask that this project be stopped.	The application adequately addresses the public's health and safety as they relate to the applicable state and federal regulations.
RUSSEL ZERBO (12/12/2018): I would like to submit this comment on Regulation No. 1102 Natural Minor Permit Application submitted by Walan Specialty Construction Products, LLC. (Walan SCP). I am an Advocate at the Clean Air Council, a Philadelphia-based public health non-profit organization.	A coastal zone status decision is not required since the facility is not located within the Coastal Zone. The proposed location of the facility is located to the

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I would like to request a "coastal zone status decision" for Walan Specialty Construction Products' proposed industrial facility at 501 Christina Ave. "The Coastal Zone Act Program regulates existing heavy industrial activities, as well as new and existing manufacturing activities in Delaware's Coastal Zone." The map on the below page outlining Delaware's Coastal Zone clearly demonstrates that the coastal zone is directly adjacent to 501 Christina Ave. The map also clearly shows water formations technically outside of the coastal zone, but directly across from 501 Christina Ave. https://dnrec.alpha.delaware.gov/coastal-zone-act/ "Certain new activities, such as the bulk transfer of raw materials, are not allowed in the Coastal Zone, which runs the length of the state." In South Wilmington, the state uses Interstate 495 to designate coastal zones East of Route 9. 501 Christina Ave sits directly alongside Interstate 495. Given South Wilmington's, particularly the neighborhood of Southbridge's, Environmental Justice designation by the U.S. Environmental Protection Agency, this community is entitled to additional protections from environmental hazards. The EPA hosts this document from former Clean Air Council employee Saleem Chapman regarding the area's Environmental Justice designation and it's relationship to flooding in Southbridge: https://www.epa.gov/sites/production/files/2015-10/documents/5-_clean_air_council_chapman.pdf Because Interstate 495 is not an official border such as a municipal or county line, it's use as the border of Delaware's coastal zone should be slightly malleable given the current extenuating circumstances, which are: (1) Southbridge's Environmental Justice designation, (2) Southbridge's known high flood risk, (3) The Coastal Zone Program's prohibition of the "bulk transfer of raw materials" which Walan SCP's proposal qualifies as, in addition to being a manufacturing facility, (4) The immediate proximity of Walan SCP's proposal to Delaware's Coastal Zone, and (5) the water formations directly across the street from 501 Christina Drive.	west of Interstate 495 (I-495) which is the delineation line of the Coastal Zone requirements. If the proposed location of the facility was to the east of I-495, then it would be in the Coastal Zone, thereby subject to the Coastal Zone Act Requirements and a determination would be made by the Coastal Zone Program. Additionally, the proposed location of the facility is in an area zoned W-1 (waterfront manufacturing), and the proposed use of the premises for a granulated blast furnace slag grinding operation is permitted as a matter of right, per Wilmington City Code, Section 48-336(b)(1).

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501 Christina Ave should be included in Delaware's Coastal Zone and entitled to the protections therein. Your consideration of this comment is greatly appreciated.	
PKBLACKBUR@aol.com (12/12/2018): The south Wilmington community of Southbridge has worked for many years to improve the safety and viability of their neighborhood. This historically industrial area near the Christiana River is burdened with contaminated brown field sites, suffers from frequent flooding and has experienced a higher rate of cancer than most communities in the Wilmington area. Walan Specialty Construction is proposing to build a slag grinding facility along Christiana Avenue in the Southbridge Community. Penn Mag, Inc., the parent company which is headquartered in Armstrong County, Pennsylvania, has a very poor history of environmental compliance with two violations for "failing to prevent the emission of air pollution as defined in the Pa. Air Pollution Control Act," "failing to implement an Erosion and Sedimentation Plan," and in 2017 "failure to use a format a process required by DEP for self- monitoring results." In the application submitted by Penn Mag, I understand the company indicated no previous violations. Based on their environmental record, it would seem Penn Mag, Inc/ Walan are not trusted operators and provide little confidence they would establish and maintain the systems and processes necessary for safe and compliant operation. I suggest this matter be investigated further before any action is taken on the proposal. I also voice my concerns that this proposal is not in alignment with the planned efforts for the City of Wilmington presented by Mayor Purzycki during a recent strategic planning session. Finally, as I understand it, this proposition would bring a minimal number of jobs to the area, specifically 10, and would have no significant positive impact on the economy of the community or the City. I strongly oppose Walan Specialty Construction Products, LLC's proposal to build a slag grinding facility at 501 Christiana Ave. in Wilmington, Delaware.	The application adequately addresses the public's health and safety as they relate to the applicable federal and state regulations. Walan Specialty Construction Products, LLC addressed the past environmental compliance history of the Penn Mag, Inc. facilities located in the State of Pennsylvania in both the application and at the public hearing. Walan Specialty Construction Products, LLC and commenters present at the public hearing detailed the beneficial economic impacts of the proposed project on the local economy.

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ERIC MORRISON (12/13/2018): I am writing this email to let you know that I strongly oppose the proposal to build a steel furnace slag grinding facility in the Southbridge area. Residents have worked for many years to improve the safety and viability of their neighborhood, which is already burdened with contaminated Brownfield sites, suffers from frequent flooding, and has a higher rate of cancer than most Wilmington communities. The facility, at a minimum, will create air and noise pollution. Also, slag material storage in a flood-prone area near the river poses other environmental and health risks. And not just for residence of Southbridge or Wilmington, but for all Delawareans. The facility would only employ about ten people, and presents no significant economic benefit for the area. Furthermore, building the facility is inconsistent with the civic association's desire to attract light, non-polluting industries and businesses. I urge you, as a State public servant, to do what is right and wise for the environment and the residents of Southbridge, Wilmington, and all of Delaware, and firmly oppose the building of this facility.	The application adequately addresses the public's health and safety as they relate to the applicable state and federal regulations. Walan Specialty Construction Products, LLC and commenters present at the public hearing detailed the beneficial economic impacts of the proposed project on the local economy.
DWIGHT L. DAVIS (12/19/2018): I am a citizen of the State of Delaware and a resident of the City of Wilmington having information about family members who live in the Southbridge neighborhood. These senior citizens have various respiratory problems and are faced with emissions from the port and surrounding businesses. On about January of this year the State of Delaware entered into a 50 year lease agreement with Gulftainer Corporation to manage the Wilmington port. 20 plus years ago the Wilmington port was wholly owned by Wilmington Municipal Corporation until it was sold to the State of Delaware. The State of Delaware formed a management group called Diamond State Port corporation and in the enabling legislation left all environmental liability on the ground and in the ground to be carried on the City of Wilmington's financial statement.	The proposed location of the facility is in an area zoned W-1 (waterfront manufacturing), and the proposed use of the premises for a granulated blast furnace slag grinding operation is permitted as a matter of right, per Wilmington City Code, Section 48-336(b)(1).

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Recently, the Delaware General Assembly approved the 50 year management agreement while expanding the port to include the old Dupont Edgemoor site. This port expansion deal states that the ground and what's in the ground concerning environmental liability will remain on the city of Wilmington's financial statement. The two-partied agreement between the City of Wilmington and the State of Delaware has now become a three-partied agreement without any enabling resolution from the City of Wilmington in exchange for a 2.6 million dollar payoff. If there is as we anticipate an environmental crisis at the Wilmington port and or the Edgemoor site, what's in the air, the water and the ground may very well require mass evacuation in Southbridge, Edgemoor and all surrounding neighborhoods. The support for this project by Gulftainer LLC and those who are soliciting a community benefits agreement are all part and parcel of "Mission Creep". If we suddenly have another crisis closing 495 all diverted traffic entering would take route through Southbridge and the eastside of the city of Wilmington and up Northeast Blvd. The Southbridge community should be a part of the plans to establish safe, sanitary and decent housing along the waterway for all residents regardless of their economic status.	
LEE JARMON, PRESIDENT OF THE OVERVIEW GARDENS GARFIELD PARK CIVIC ASSOCIATION, INC. (12/30/2018): Following the public hearing held on November 20, 2018 in reference to the permit application submitted by Walan Specialty Construction Products, LLC to construct a slag grinding, drying and at the proposed processing facility at 501 Christiana Avenue Wilmington, Delaware I began to search for similar construction operations to help me better understand the negative environmental problems resulting from these operations. To my surprise I found the St. Lawrence Cement Company located in Camden, New Jersey. This company was issued a permit to operate **a Blast Furnace Slag Grinding Facility** in the Waterfront South neighborhood in Camden. More surprising in that the demographics, conditions negatively impact the environment and the health of residents in Camden are very much similar to that of our communities along	The legal opinion submitted was a matter before the State of New Jersey. DAQ does not make judgements on legal rulings.

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the Route 9 Corridor. There are several articles available in reference to the struggle of the residents along Waterfront South in Camden, New Jersey. These are the same struggles we face in our communities on a daily basis. I must remain hopeful that DNREC will recognize the injustice that has been done (and proposed) to communities and make a stand protect our communities from further devastation. I am attaching two documents for your review and information: (1) the first document shows action the community in Camden felt they needed to take for justice and (2) is a copy of the minutes from our All Civics Association Meeting held on October 24, 2018. **Page two (2)** shows the Civics Associations Presidents vote against Walan siting it's facility at 501 Christiana Avenue Wilmington, Delaware. Note: You can google **St. Lawrence Company in Camden, New Jersey** for more information.	
JAMES JOHNSON, FORMER STATE REPRESENTATIVE DISTRICT 16 (12/31/2018): I am writing to express my opposition to the Walan Specialty Construction Products, LLC, request for a permit to construct a slag grinding, drying, and processing facility at their 501 Christiana Avenue, Wilmington, Delaware facility. This permit will allow this processing facility to emit 1.037 lbs. /hr. and 2.59 tons/year Particulate Matter (PM10), 004 lb. /hr. and 0.10 ton/year Volatile Organic Compounds (VOCs), 0.724 lb. /hr. and 1.81 tons/year Nitrogen Oxide (NOX), 0.004 lb. /hr. and 0.011 ton/year Sulfur Dioxide (SO2), and 0.608 lb. /hr. and 1.52 tons/year Carbon Monoxide (CO). I am concerned the release of these elements will have a negative effect on the environment of the surrounding community and as well as increase the health risk of the local residents specially the young children. Walan has said the company will strictly follow DNREC's emissions standards. However, this doesn't calculate the cumulative effect of these products on an area already faced with more than its share of atmosphere and healthiness issues. The examples of the Peninsula Compost Company, the International Petroleum Corp which DNREC had to order to shut down along with the continued air quality complaints against the Diamond Material site and	The emissions profile from the proposed facility falls within the acceptable screen dispersion modeling criteria for use. The facility will employ state-of-the-art best available control technology to minimize any offsite impacts on the community. Additionally, the facility will be required to comply with the most stringent federal and state air quality regulations. Finally, it should be noted that the zoning for the proposed location of the facility allows for such industrial manufacturing sources.

General Public Comment Summary	DAQ Responses
the Croda Ethylene oxide leak, should make it clear that scrupulous care is needed for the examination of the Walan Specialty Construction Products application. I also submit that the government has failed this area far too long by allowing it to be a "dumping ground". This could not have been more evident than when 55,000-tons of dirt was stockpiled under the I-495 in Wilmington in 2014. DelDOT claimed in a civil complaint filed in Superior Court that it was "negligence" on the part of the four defendant companies that led to emergency bridge repairs, which snarled traffic for months along the key Northeast Corridor link. This incident was in almost the same address of 501 Christiana Avenue. The granting of this permit should be considered an affront to the several Brownfields Development Agreements (BDA) between DNREC and the Brownfields developers that have scheduled remedial activities in this community. As well as the $26.5 million South Wilmington Wetlands Project proposed to be built on 14 acres of contaminated, drained wetland southeast of Walnut and A streets. Finally, I should also mention how this decision will affect the public opinion on the integrity of DNREC. The people here already believe their well-being doesn't matter and whatever these companies want they will get regardless of the effect on the community. These are just some of the reasons for my opposition to this permit.	

RECOMMENDATIONS

DAQ has prepared the "Proposed" Permit: **APC-2019/0030-CONSTRUCTION** for the Department's review of comments, findings, and suggestions. DAQ will recommend submitting the completed permit and revised technical reference memorandum as part of the hearing record.

As noted on page 2 of this Technical Response Memorandum, an amended application was received via email on March 5, 2019. This amended application to reflects the actual throughput they requested as 150,000 tons per year, since this is an inherent constraint in what Port Contractor's is willing to accept. The application will not require a new public notice since the process emissions calculations in the application were based on the 262,800 maximum throughput, and the change to the 150,000 tons per year maximum throughput will result in lower overall process emissions. Finally, the amended application will include a reduction in height of the storage silos since the City of Wilmington has a maximum height allowance, which the silos in the initial application exceeded. This reduction in height of the silos also requires Walan to perform a new air dispersion modeling analysis.

The permit incorporates additional requirements under the Fugitive Dust Control Plan which WALAN voluntarially agreed to, including the tarping of storage piles located at the facility, the installation of curtains around the loadout area below the storage silos, and specified truck routes for the finished product which avoids residential areas.

I hope this information will assist you in reviewing the issues and making your recommendations to the Secretary of the Department of Natural Resources and Environmental Control. If you have any questions, please contact the Division at (302) 323-4542.

DF:ADM:KAM:BAK:bak
F:\EngAndCompliance\BAK\bak19022

pc: Dover File
Katayoun Pirestani, Phd.

Attachment: Walan's January 18, 2019 Response Document
March 5, 2019 Amended Construction Permit Application

DUFFIELD
ASSOCIATES
Soil, Water & the Environment

EXHIBIT
Exh. #6(LAV)

Duffield Associates, Inc.
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Wilmington, DE 19808
Phone: 302.239.6634
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duffnet.com

RESPONSE OF WALAN SPECIALTY CONSTRUCTION PRODUCTS LLC ("WALAN") TO PUBLIC COMMENTS TO MINOR AIR PERMIT APPLICATION SUBMITTED OCTOBER 18, 2018

This document provides WALAN's responses to comments provided during the November 20, 2018 Public Hearing and prior to December 31, 2018 while the administrative record for the hearing remained open. WALAN has addressed only those comments that pertain specifically to its proposed facility.

I. COMMENTS AT THE PUBLIC HEARING ON NOVEMBER 20, 2018 ("PUBLIC HEARING")

1. Lee Jarmon provided the following comments at the Public Hearing (and via letter dated October 20, 2018 [Jarmon Exhibit #1]) and additional comments to the Delaware Department of Natural Resources and Environmental Control (DNREC) via email dated December 30, 2018 with attachments.

COMMENTS:

a. *Opposition to permit due to disregard for environmental justice.*

b. *In layman terms, explain what tons of emissions mean and what is the projected impact of the emissions on the health of the residents of our communities when the emissions are combined with existing conditions?*

c. *Seeks relief under Title VI of the Civil Rights Act of 1964.*

RESPONSES:

a. As part of its effort to address comments and concerns of the public, WALAN participated in outreach meetings at: (i) the Oakmont Civic Association on October 8, 2018, (ii) the All Civic Association Meeting at Rosehill Community Center on October 24, 2018, and (iii) the ILA Townhall Meeting on December 8, 2018. WALAN responded to the questions posed during those meetings. Based on some concerns raised in those meetings, WALAN made and incorporated changes to the Application, which were reviewed at the Public Hearing. The Application and project are in accordance with applicable laws and regulations as addressed at those meetings, the Public Hearing, and in the Application.

b. In layman terms, federal and State of Delaware regulations require applicants for a permit to construct new sources of air emissions, to estimate the potential amount of substances that could be emitted to the atmosphere at a fixed location (stack) each year. In accordance with those regulations, substances are grouped as nitrogen oxides (NO_x), sulfur oxides (SO_x), volatile

organic substances (VOCs), carbon monoxide (CO), particulate matter (PM), particulate matter smaller than 10 micrometers in diameter (PM_{10}), particulate matter that is smaller than 2.5 micrometers in diameter ($PM_{2.5}$) and lead (Pb). The estimates of emissions are calculated assuming that the equipment will be operated at full capacity 24 hours per day for 365 days per year. Those estimated emissions are calculated in "tons of substance per year." These estimated emissions are known as the "potential to emit" values. The estimated tons per year are compared to regulatory threshold values established by US EPA to determine whether a proposed air emission source will be a major or minor source. Application requirements differ for major and minor proposed emission sources. The proposed WALAN facility will be a minor new source of emissions.

Based on the concerns expressed during the Oakmont Civic Association meeting on October 8, 2018, WALAN assessed the potential cumulative impact of its emissions. The cumulative impact information was included in the Application and was presented at the All Civic Association Meeting on October 24, 2018, the Public Hearing, and the ILA Townhall Meeting on December 8, 2018. The cumulative impact assessment indicated that if the WALAN facility was operated at full capacity, every hour of every day, and the emissions from that operation were added to the average concentration of substances in the local air, based on substance values as reported by DNREC for a local monitoring station located in Wilmington along Martin Luther King Boulevard, the cumulative substance concentrations in the local air would remain below the National Ambient Air Quality Standards (NAAQS). The NAAQS were established by US EPA to protect the health of all citizens, including those at greater risk such as children, elderly people and people with asthma.

c. Referenced in and provided as part of Mr. Jarmon's comment is a copy of a complaint ("Complaint") filed in 2001 in the U.S. District Court for the District of New Jersey ("Court") against the New Jersey Department of Environmental Protection (NJDEP). The Complaint challenges NJDEP's issuance of a construction permit to grind Granulated Blast Furnace Slag (GBFS) in Camden, New Jersey. The Complaint alleges, among other things, that NJDEP did not comply with the requirements of Title VI of the Civil Rights Act of 1964. NJDEP filed a Motion for Summary Judgment, which was granted by the Court in 2006. Attachment A is a copy of the Opinion of the Court, which addresses the Title VI claim and the reasons the Court ruled in favor of NJDEP and against the Plaintiffs. As a result of this Opinion, the Complaint was dismissed.

2. James Johnson provided the following comments at the Public Hearing and in a December 31, 2018 email to DNREC.

   COMMENTS:

   a. *Mr. Johnson made the request to allow the record to remain open for more public comment.*

   b. *Mr. Johnson expressed concern about increased health risk to local residents, especially young children. He further indicated that WALAN had not calculated the cumulative effect of emissions on the area.*

   RESPONSES:

   a. On November 28, 2018, DNREC issued a public notice extending the public comment period to December 31, 2018.

   b. WALAN did assess the potential cumulative health effect of its proposed emissions on young children, and on the area. As summarized in the response to a similar comment provided by Mr. Jarmon in Comment #1 above, the cumulative impact assessment indicated that if the WALAN facility was operated at full capacity, every hour of every day, and the emissions from that operation were added to the average concentration of substances in the local air, the cumulative substance concentrations in the local air would remain below NAAQS. NAAQS were established by the United States Environmental Protection Agency (US EPA) to protect the health of all citizens, including those at greater risk such as children, elderly people and people with asthma.

3. Franklin Cooke provided the following comments at the Public Hearing.

   COMMENT:

   a. *Provide an explanation on emissions and reporting.*

   b. *Requested postponement to afford opportunity for a community meeting at the ILA so all residents have the chance to speak and voice concerns.*

   RESPONSES:

   a. WALAN made a presentation and answered questions at the December 8, 2018, Town Hall meeting at the ILA building, located at 200 South Claymont Street, Wilmington, Delaware. WALAN addressed sources of emissions, and indicated that emissions reporting will take place as required under DNREC's regulations.

b. On November 28, 2018, DNREC issued a public notice extending the public comment period to December 31, 2018.

4. Marvin Thomas provided the following comments at the Public Hearing.

COMMENT:

Opposed to the project due to a quality of life issue.

RESPONSE:

The site is correctly zoned, with approved zoning for the proposed facility, and did not require changes as part of the Application. The emissions at the facility will fall well within the limits set by applicable regulations and standards, which are designed to be protective of human health.

5. Marie Reed provided the following comments at the Public Hearing.

COMMENT:

a. Opposed due to low income community, and health issues

b. Flood concerns and poor draining, brownfield concerns

c. Ms. Reed also expressed concern about material blowing in the wind.

RESPONSES:

a. The regulatory emissions standards that apply to the Application, were established to be protective of human health. As set forth in more detail in the Application, the emissions resulting from the grinding process will fall within NAAQS and DNREC regulations.

b. WALAN's site development plans will be reviewed and approved by the City of Wilmington, and if required, will comply with applicable stormwater management requirements pursuant to the City of Wilmington Department of Public Works Submission Guidelines and Checklist as follows:

"E. Sediment & Stormwater Management Plan: All land-disturbing activities exceeding 5,000 square feet in area within the city shall submit a sediment and stormwater management plan for review and approval by the Department of Public Works. All plans must be consistent with the Delaware Sediment and Stormwater Management Regulations and the Erosion and Sediment Control Handbook per Delaware Administrative Code Title 7, Division 5101."..

The facility being located on a site that was redeveloped under DNREC's Voluntary Cleanup Program ("VCP") will translate to new jobs in the State of Delaware, and will be conducted in accordance with applicable use restrictions under the VCP.

c. **WALAN has agreed to keep tarps on its stockpile of material at the site. This decision was made by WALAN in response to similar concerns expressed by Ms. Reed and others at the Oakmont Civic Association on October 8, 2018 and the All Civic Association Meeting on October 24, 2018. WALAN submitted a revised Fugitive Dust Control Plan to DNREC on November 19, 2018 memorializing its tarping decision. The revised Fugitive Dust Control Plan is part of the Application.**

6. Martin Willis provided the following comments at the Public Hearing.

COMMENT:

a. *Mr. Willis, a supporter for the company and initiative, asked for an explanation of the difference between a natural minor facility, synthetic facility, and a major facility.*

b. *Why is there no continuous monitoring system on the stack for gas emissions?*

RESPONSES:

a. **DNREC's website addresses this question as follows:**

"**Natural Minor:** A natural minor source does not meet any of the applicability criteria specified for a major stationary source or a synthetic minor source. Generally, a natural minor source does not need to rely upon limitations (such as restrictions on hours of operation, fuel usage, air pollution control device removal efficiency, etc.) in calculating the potential to emit of the source. Even without these restrictions or limitations the source still does not trigger major source or, therefore, synthetic minor applicability criteria.

Synthetic Minor: Your facility has a potential to emit that is at or above major source emission thresholds, but you accept restrictions on emission rates, process controls, or other limitations in a permit order to stay below major source emission thresholds.

Major Source: Your facility is considered major if you have the potential to emit equal to or greater than the emission rates listed in Attachment A, B, and/or C.

Sources that are considered major are subject to the permitting requirements of 7 **DE Admin. Code** 1125 and 7 **DE Admin. Code** 1130. 7 **DE Admin. Code** 1125, which is also generally referred to as New Source Review (NSR) and Prevention of Significant

Deterioration (PSD), is a preconstruction review program for major stationary sources of air pollution. Approval in the form of a permit is required prior to construction, reconstruction, or modification of emission units. 7 **DE Admin. Code** 1130, which is also generally referred to as the Title V Operating Permit Program, is an operating permit program for major sources. If you are subject to 7 **DE Admin. Code** 1125 and 7 **DE Admin. Code** 1130, the process to obtain a permit is more complex and therefore, more lengthy. If you have additional questions, contact Air Quality Management at (302) 739-9402 if you are in Kent or Sussex County or (302) 323-4542 if you are in New Castle County."

b. **Continuous Emissions Monitoring Systems (CEMS) are not required for natural minor emission sources. Emissions from natural minor sources generally are estimated from fuel consumption and throughput. Emissions testing to confirm emission estimates are performed as required by DNREC and its regulations.**

7. Kenneth Dryden and Octavia "Penny" Dryden provided the following comments at the Public Hearing.

COMMENTS:

a. *Opposed due to health concerns in the community and concerns with DNREC*

b. *What is the detriment of slag -- entire cumulative impact?*

RESPONSES:

a. & b. As stated above, WALAN conducted significant outreach to understand and respond to the public's concerns, including health concerns. That outreach included a meeting via teleconference between WALAN and Kenneth Dryden, Penny Dryden, and Gretchen Goldman, on December 7, 2018. As reflected in their email dated December 10, 2018 and attached hereto as Attachment B, WALAN sufficiently addressed those concerns.

8. Diane Dixon provided the following comments at the Public Hearing.

COMMENTS:

a. *Why hasn't WALAN applied for a Coastal Zone permit?*

b. *Concerns because of lack of mention of Penn Mag in the past, and because Penn Mag does not operate in a residential area.*

c. *Ms. Dixon does not want the facility in her back yard.*

d. Why is there no stack sampling on page 43 of the permit?

RESPONSES:

a. The Proposed facility would not be located within the Coastal Zone, as the zone is defined under Delaware's Coastal Zone Act.

b. Penn Mag, Inc.'s affiliation to WALAN is addressed in the Application.

c. The facility would not be located in a residentially zoned area and, as set forth in the Application and discussed at the Public Hearing, local residential areas will be well outside of the range of maximum concentration of emissions per air dispersion modeling results. The maximum dispersed substance concentrations have been added to local air monitoring results reported by the State of Delaware and then compared to NAAQS, which were established by the US EPA to protect human health, including the most sensitive segments of the population (including children, the elderly, and asthmatics). The comparisons indicate that local air quality will continue to meet NAAQS when WALAN's emissions are included.

d. Sampling will be performed as required by DNREC.

9. Renee Anderson provided the following comments at the Public Hearing.

COMMENTS:

a. What is the noise factor?

b. What are the hours of operation?

RESPONSE:

a. The noise emission is 85 (max) dB, measured 9.8 ft. around the mill. According to information published by Purdue University on its website, the noise level adjacent to a power mower is greater (approximately 96 dB), and the noise made by a household garbage disposal or a dishwasher would be less (approximately 80 dB).

b. Once the plant is constructed and operational, initial approximate operating hours will be:

Monday – Thursday (6am – 10pm)
Friday – (6am – 5pm)

To clarify, the regulations require estimates of emissions (potential to emit) based on 24 hours, 365 days per year (i.e., continuous) operation of the equipment as addressed in the Application.

II. WRITTEN COMMENTS SUBMITTED AS PART OF PUBLIC RECORD

10. State Senator Darius Brown provided the following written comment by letter dated November 20, 2018.

COMMENTS:

Senator Brown's submission outlines opposition due to residents' concerns for health impacts and air quality.

RESPONSE:

As set forth in Responses to Comments 1-9 above, WALAN has made a commitment to DNREC and the community to operate a facility in accordance with applicable laws and regulations – which were enacted to protect human health and the environment. WALAN also participated in comprehensive community outreach in order to listen to and respond to resident concerns. This outreach resulted in certain changes to the Application, which were presented at the Public Hearing and communicated to DNREC.

11. Franklin Cooke's email of November 20, 2018 to DNREC included the following comments:

COMMENTS:

a. *What other two sites in the USA process this material and what is the impact on the surrounding communities?*

b. *What is the safety protocol for an accident spill?*

c. *What are the health implications for surrounding communities in the event of a spill?*

d. *Who shoulders the liability in the event of a spill that impacts the surrounding communities?*

RESPONSES:

a. As addressed at the Public Hearing, WALAN does not have an understanding as to the two sites being referenced, as there are more than two facilities in the United States that process GBFS

b. An emergency response plan currently is being drafted, which will address, among other things, handling of spills. WALAN's proposed facility would

handle only nonhazardous material. GBFS is noncorrosive. It is not ignitable. And it is nonreactive. GBFS is a sand-like material; if it were to be spilled, it would be cleaned up by shovel, front-loader, or a vacuum truck. If dust suppression were required during cleanup, the sand material would be moistened with water.

c. **As a non-hazardous material, there are no known "chemical" hazard implications for the surrounding communities in the event of a spill. Non-hazardous dust generation can be suppressed by the addition of moisture.**

d. **Cleanup responsibilities will be addressed in the emergency response plan.**

12. Corina Amalfitano provided to DNREC an email on November 13, 2018 with the following comment:

COMMENT:

I am unable to attend the public hearing however, I would like to bring up that the American Lung Association has rated New Castle County a D in daily particulate matter/fine particle grade. I do not understand why any permits allowing further particulate matter would be considered. We need to reduce the particulate matter not increase it.

RESPONSE:

The PM emissions, as set forth in the Application, comply with NAAQS, standards which have been established to protect public health and are enforced by DNREC. WALAN will be required under its permit to comply with those standards.

13. Russell Zerbo email on December 12, 2018 to DNREC provided the following comments:

COMMENTS:

Advocate of Clean Air Council requests a "coastal zone status decision" for proposed facility. "Because the Interstate 495 is not an official border such as a municipal or county line, it's use as the border of Delaware's coastal zone should be slightly malleable given the current extenuating circumstances,..." Of note, bulk transfer of raw materials are not allowed in the Coastal Zone, which runs the length of the state.

RESPONSE:

The boundary of the Coastal Zone was established in written detail in the State of Delaware Coastal Zone Act (7 Del. C. 70). The facility is not located within the Coastal Zone as defined in the Coastal Zone Act; as such, the Coastal Zone Act does not apply to the facility. However, if the facility were to be located in the Coastal Zone, WALAN's facility would not engage in activity prohibited by the statute. Among other things, it would not meet the definition of "Heavy Industry", and will not perform "Bulk Transfers", as those activities are defined under the Coastal Zone Act.

14. Eric Morrison, Willie Scott, Deidra Dixon, P. Blackbur, Bruce Dalleo, John Powell, Sherry Marsico, Anne Powell, and Lucy Comstock-Gay provided the following comments to DNREC via email in December 2018:

COMMENTS:

a. *Opposition to Application due to safety, health and viability of community*

b. *Opposition to Penn Mag, Inc. due to poor history of environmental compliance*

c. *No economic benefit*

RESPONSE:

a. The Application addresses matters of safety and health as they relate to regulatory criteria, and demonstrates that the facility will be in compliance with those criteria. WALAN incorporates by reference its Response to Comments 1-13 above as well as the testimony of Mr. Jim Butler, Plant Supervisor for Penn Mag's Adrian, Pennsylvania facility, Mr. Evan Walter, Plant Supervisor for Penn Mag's Claysburg facility, Mr. Robert Palaima of Delaware River Stevedores, and Ron Kimoko Harris, Business Agent for International Longshoremen's Association, Local 1883 who spoke during the Public Hearing about health and safety topics. Their statements are captured in the transcript of the November 20, 2018 Public Hearing titled, "In The Matter Of: Department of Natural Resources & Environmental Control Walan Specialty Construction Production, LLC," prepared by Wilcox & Fetzer, Ltd.

b. Penn Mag's environmental compliance is addressed in the Application as required by DNREC.

c. Economic opportunities are also addressed in the Application, in the information presented by WALAN and others at the Public Hearing, as well as in written comments submitted for the Administrative Record supporting the project. Commenters speaking and/or writing about the beneficial economic impacts of the proposed facility included:

- **Bryon Short, Executive Vice President of the Delaware Contractors Association;**
- **Fred Coen, Technical Services Manager of Keystone Cement Company;**
- **Joe Cruise, Acting Chief Commercial Officer of GT USA;**
- **John Reese of Port Contractors; and**
- **Paul Pepe, Sales Director for Keystone Cement Company.**

Copies of the written comments submitted for the record are provided as Attachment C. The addition of a viable and necessary manufacturing facility to the Port of Wilmington area translates to improvement of economic conditions through the creation of new employment at the facility, and employment opportunities at the Port of Wilmington and local transportation companies.

Attachments:

Attachment A - Opinion of the Court, United States District Court, District of New Jersey, Civil Action No. 01-702 (FLW)

Attachment B – December 10, 2018 email Octavia Dryden to Lisa Dharwadkar

Attachment C – Comments addressing economic benefits

ATTACHMENT A

OPINION OF THE COURT

UNITED STATES DISTRICT COURT

DISTRICT OF NEW JERSEY

CIVIL ACTION NO. 01-702 (FLW)

NOT FOR PUBLICATION [306, 315]

UNITED STATES DISTRICT COURT
DISTRICT OF NEW JERSEY

SOUTH CAMDEN CITIZENS IN ACTION, BARBARA PFEIFFER, PHYLLIS HOLMES, LULA WILLIAMS, and SHARON CHRISTIE POTTER,

PLAINTIFFS,

v.

THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, BRADLEY CAMPBELL, Commissioner of the New Jersey Department of Environmental Protection, in his official capacity,

DEFENDANTS,

&

ST. LAWRENCE CEMENT CO., L.L.C.,

INTERVENOR DEFENDANT.

Civil Action No. 01-702 (FLW)

OPINION

APPEARANCES:

For Plaintiffs:
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&
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For Defendants New Jersey Department of Environmental Protection and Bradley Campbell, Commissioner of the New Jersey Department of Environmental Protection:
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WOLFSON, United States District Judge:

Plaintiffs South Camden Citizens in Action ("SCCIA"), Barbara Pfeiffer, Phyllis Holmes, Lula Williams and Sharon Christie Potter (collectively "Plaintiffs") allege that the Defendant New Jersey Department of Environmental Protection ("NJDEP" or "DEP"), and its former Commissioner, Robert Shinn, violated Section 601 of Title VI of the Civil Rights Act of 1964 by granting permits to Intervenor-Defendant St. Lawrence Cement Co. ("SLC") to construct and operate a granulated blast furnace slag grinding facility in the Waterfront South neighborhood in Camden, New Jersey. Plaintiffs also assert that SLC's operation of the Facility constitutes a private nuisance. All Defendants have moved for summary judgment on all claims. The issues before the Court are whether there are genuine issues of fact as to 1) whether SLC's facility unreasonably interferes with Plaintiffs' enjoyment and use of their homes and whether Plaintiffs can demonstrate that SLC, as opposed to other area industries, caused Plaintiffs' harm or nuisance, and 2) whether an invidious discriminatory purpose was a motiving factor in NJDEP's issuance of permits to SLC to operate its facility. This Court has jurisdiction pursuant to 28

U.S.C. §§ 1331, 1343, 1367. For the reasons stated below, SLC's motion for summary judgment is granted and the motion for summary judgment filed by NJDEP and former Commissioner Bradley Campbell is granted.

I. BACKGROUND[1]

A. The Parties

NJDEP is the department of the executive branch of state government that implements and enforces the environmental laws and regulations of the State of New Jersey. Second Am. Compl. ¶ 17. NJDEP receives financial assistance from the United States Environmental Protection Agency ("EPA") and operates an air quality permitting program to enforce the Clean Air Act, 42 U.S.C. § 7401 et seq. Id. ¶¶ 1-2. NJDEP's air quality permitting program is subject to Title VI of the Civil Rights Act of 1964. Id. ¶ 1. From 1994 to 2002, Robert C. Shinn, Jr. was the NJDEP Commissioner; Defendant Bradley Campbell became NJDEP Commissioner in 2002 and remained in that position until recently. Id. ¶ 18; NJDEP, Office of the Commissioner, available at http://www.state.nj.us/dep/commissioner (visited March 30, 2006).

SLC is a manufacturer of portland cement and cement products for use in concrete and other construction materials. Meadows Decl. at ¶ 2 As part of its business, SLC processes granulated blast furnace slag ("GBFS"), which is a sand-like byproduct of the steel-making industry that is added to cement. Id.

SCCIA is a community organization composed of and representing the interests of the

[1]This Court is aware that it may not rely solely on the parties' statements of undisputed facts, see Doeblers' Pennsylvania Hybrids, Inc. v. Doebler, No. 04-3848, 2006 WL 722156 at n.8 (3d Cir. Mar 23, 2006) (quoting Vermont Teddy Bear Co., Inc. v. 1-800 Beargram Co., 373 F.3d 241, 244 (2d Cir. 2004)), and, as a result, does so rarely and only when the underlying fact is undisputed.

residents of the Camden, New Jersey neighborhood known as Waterfront South. SCCIA's Second Am. Compl. ¶¶ 8-16. The individually named Plaintiffs, Lula Williams, Phyllis Holmes, Barbara Pfeiffer and Sharon Christie Potter, all live in the Waterfront South area, which constitutes U.S. Census Tract 6018. Id. ¶¶ 8-12, 20.

Based on 2000 U.S. Census data, Census Tract 6018 has 1,700 residents, 85.4% of whom are non-white minorities. U.S. Census Data. In 2000, the median household income of Waterfront South's residents was $22,147 and 33.8% of its residents lived below the poverty line. U.S. Census Data. By comparison, the state of New Jersey was 27.4% non-white, the median household income of its residents was $55,136, and 8.5% of New Jerseyans lived below the poverty line. Id.

At the time this lawsuit was filed, the Honorable Stephen Orlofsky of the United States District Court for the District of New Jersey, found that municipal or county facilities in or nearby the Waterfront South area included: (1) the Camden County Municipal Utilities Authority ("CCMUA") sewage treatment plant, which treated sewage for approximately 35 municipalities in Camden County; (2) the Camden County Resource Recovery facility, a trash-to-steam incinerator; and (3) the Camden Cogen Power Plant, a cogeneration facility, which was an industrial facility that converts waste energy to produce heat or electricity. South Camden Citizens in Action v. New Jersey Dept. of Environmental Protection, 145 F. Supp.2d 446, 459 (D.N.J. 2001).

Judge Orlofsky also found that: 1) industrial facilities located in or near Waterfront South included the Pneumo Abex Corporation, the G-P Gypsum Corporation, United Parcel Service, and the Coastal Eagle Point Oil Company Refinery; 2) there are two Superfund sites located in Waterfront South, including the Welsbach/General Gas Mantle site, which consisted of two abandoned factories and neighboring residential lots on Arlington Street and is contaminated with thorium and was discovered to be radioactive in 1981, and the Martin Aaron Drum Company site, which is located on Broadway. Id.

According to Judge Orlofsky's findings, NJDEP identified numerous known contaminated sites in the Waterfront South neighborhood, including: (1) Camden Iron & Metal, located at the intersection of Front and Atlantic Streets; (2) Conrail, located on Chelten Ave.; (3) Lectronic Research Laboratories, at 1423 Ferry St.; (4) Consolidated Chemx Corp., located at 4th and Jefferson Streets; (5) Camden Lime, located at the intersection of South Front and Atlantic Ave.; (6) Atlantic Industrial Tank, at 212 Mechanic Street. Fourteen of these sites are currently active in the NJDEP's site remediation program. Id. at 459-60. Judge Orlofsky found that NJDEP was aware of the concentration of contaminated sites in this area and that it dedicated a staff member to work directly with the City of Camden to facilitate clean-up and redevelopment, and found that there were numerous other industrial facilities in the Waterfront South area, including: (1) four scrap yards on or near Ferry Avenue; (2) Jen Cyn Industries: (3) Lambertsky Poultry; and (4) four automotive shops. Id. at 460. Later on in the litigation, SLC identified over thirty industrial facilities in the Camden area. See Background, § I (D) infra.

B. The Facility

On March 8, 1999, SLC entered into a lease with South Jersey Port Corporation ("SJPC"),[2] to lease 11.7 acres of land at Broadway Terminal, 2500 Broadway, Camden, NJ 08104,

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[2]The SJPC is a quasi-state agency of the State of New Jersey. N.J.S.A. § 12:11A-1. Upon its creation, the Legislature decided that the SJPC "should be vested with powers and responsibilities sufficient to fulfill not only its port development purposes but its financial obligations to the government and people of the State of New Jersey." Id. Since it was created in 1968, the SJPC has sought to develop, rehabilitate, and promote economic growth for the port

located within the Waterfront South neighborhood. Meadows Dep. Tr. at 71:10-73:12; Lease Agreement. SLC proposed to construct and operate a GBFS grinding facility at the Broadway Terminal site and intended to market the ground GBFS under the trade name GranCem®, which is used as an additive to strengthen portland cement. Meadows Decl. ¶ 3; Meadows Dep. Tr. at 23:13-26:25. SLC planned to import, by barge, and process approximately 850,000 tons of GBFS and 16,500 tons of gypsum annually. SCCIA, 145 F. Supp.2d at 453. Because the on-site Broadway port cannot accommodate the import barges, barges were to arrive and be offloaded at the Beckett Street Terminal. Id. Trucks would then transport the GBFS and gypsum three miles to the SLC facility, where they would be offloaded into large, open piles. Id. Front-end loaders would transfer the GBFS to a feed hopper. Id. From the feed hopper, the GBFS would be transported by conveyor belt to a vibrating screen, which sifts out oversize materials. Id. The remaining material would proceed via conveyor belt to the roller mill, where it would be heat dried and then ground into smaller particles. Id. The GGBFS would be stored in storage silos until it is transported out of the facility by truck. Id. Before processing, GBFS particles are the size and texture of beach sand. After processing, the ground GBFS ("GGBFS") material is the size and texture of powdered sugar. Id.

The primary pollutants to be produced by the SLC facility were to be emitted into the air. Id. These pollutants include particulate matter (dust), mercury, lead, manganese, nitrogen oxides, carbon monoxide, sulfur oxides, and volatile organic compounds. Id. at 453-54. The focus of SLC's application, and of the NJDEP's review, was on SLC's air permit applications because the

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districts in Camden and Salem New Jersey, and create jobs therein. Balzano Dep. Tr. at 11:14-25, 105:2-106:1.

most significant source of pollutants produced by the SLC facility was to be airborne emissions from stationary sources. Id. at 454. Air contaminant emissions would be generated at the following stages of GBFS processing: (1) fugitive dust emissions would be generated from the handling and movement of GBFS when it is offloaded from trucks, piled, and then placed in the hopper; (2) GBFS particles may be blown into the ambient air once on the conveyor belt; (3) various air pollutants would be produced during the heating and grinding processes; and (4) GGBFS emission may occur when the GGBFS is stored and offloaded for delivery off-site. Id. SLC sought to manage and minimize the air pollution by: (1) keeping the GBFS wet by spraying it with water while being offloaded, transported by truck, and piled, thereby minimizing fugitive emissions; (2) watering and sweeping the roads at the facility; (3) covering the vibrating screen and conveyor belts, thereby protecting the GBFS from the wind; (4) utilizing baghouse controls, which function like vacuum cleaners, to siphon off particles before discharging the exhaust stream from the roller mill into the atmosphere; (5) monitoring visible dust emissions pursuant to a dust management plan; and (6) monitoring the radioactivity levels of the raw materials. Id.

Trucks would be used to deliver the GBFS from the Beckett Street Port to the SLC facility, which is approximately three miles away. Id. Annually, there would be approximately 35,000 inbound delivery trucks arriving at the SLC facility and approximately 42,000 outbound delivery trucks departing from the SLC facility. Id. Inbound truck deliveries to the facility would occur about 80 days per year, with approximately 500 truck deliveries per day; outbound truck departures would occur approximately 225 days per year, with approximately 200 trucks departing per day. Id. The contemplated truck route would pass through residential areas of the Waterfront South community. Id. In response to community input, SLC modified the original truck delivery route to minimize the number of residential streets used by SLC-contracted delivery trucks. Id.

After executing the lease with the SJPC, SLC initiated the process of applying for the necessary construction and operating permits from the NJDEP. Meadows Decl. ¶¶ 11-12. SLC retained the services of environmental engineers and consultants to assist with the permitting process. Id. SLC's primary focus in the permitting process was to obtain air permits. Id. Air permits were necessary because the grinding process used by SLC creates, among other things, dust and particulate emissions, which are regulated by the state. Id. SLC began "pre-application" discussions with the NJDEP in March, 1999. Id. These discussions continued for five months and culminated in the formal submission of SLC's air permit applications to the NJDEP on August 5, 1999. Id.

According to the AIRnow website[3], particle pollution (also known as "particulate matter") in the air includes a mixture of solids and liquid droplets. Office of Air and Radiation, Particle Pollution and Your Health, (Sept. 2003), available at http://www.airnow.gov/index.cfm?action=particle.airborne (visited March 22, 2006). Some particles are emitted directly; others are formed in the atmosphere. Id. PM10 is defined as inhalable particulate matter with a diameter of 10 micrometers or less. They are referred to as "coarse dust particles" and can be found in wind-blown dust. Ten micrometers is smaller than the width of a single human hair. PM2.5 is fine particulate matter with a diameter of 2.5 micrometers or less, which is 40 times smaller than the average grain of table salt. They are referred to as "fine

[3]The U.S. EPA, National Oceanic & Atmospheric Organization, National Park Service, tribal, state, and local agencies developed the AIRNow website to provide the public with easy access to national air quality information. AIRnow, About AIRnow, available at http://www.airnow.gov/index.cfm?action=static.background (visited March 22, 2006).

particles" and can be found in smoke and haze. PM10 particles and smaller particles, such as PM2.5, pose great health problems because they are so small that they can get deep into people's lungs, and some may even get into people's bloodstreams. Id. Exposure to such particles can detrimentally affect both the lungs and heart. Id.

The Clean Air Act which was last amended in 1990, requires the United States Environmental Protection Agency ("EPA") to set National Ambient Air Quality Standards ("NAAQS") for pollutants considered harmful to public health and the environment. EPA, National Ambient Air Quality Standards, (Mar. 2006), available at http://www.epa.gov/air/criteria.html (visited March 23, 2006). The Clean Air Act established two types of national air quality standards. Id. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Id. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Id. Presently, the EPA has NAAQS in place for six principal pollutants, which are called "criteria" pollutants: Carbon Monoxide, Lead, Nitrogen Dioxide, Ozone, Sulfur Oxides, PM10 and PM2.5. Id.

While the EPA is responsible for establishing the NAAQS, states are charged under the Clean Air Act with the primary responsibility for implementing the NAAQS within their borders and monitoring compliance. 42 U.S.C. § 7407(a)("Each State shall have the primary responsibility for assuring air quality within the entire geographic area comprising such State by submitting an implementation plan for such State which will specify the manner in which national primary and secondary ambient air quality standards will be achieved and maintained within each air quality control region in such State."). States are required to develop state implementation plans which explain how they plan to measure and monitor pollutants, and to submit their SIPS to the EPA for approval. 42 U.S.C. § 7410.

C. Permit Applications

Based on its projected activities, SLC applied to various NJDEP offices for several different types of permits after executing the lease with the SJPC. Meadows Decl. ¶ 10; SCCIA, 145 F. Supp.2d at 454. SLC retained the services of environmental engineers and consultants to assist with the permitting process. Meadows Decl. ¶ 10. From SLC's perspective, the primary focus of the permitting process was to obtain air permits. Id. Air permits were necessary because the grinding process used by SLC creates, inter alia, dust and particulate emissions, which are regulated by the state. SCCIA, 145 F. Supp.2d at 454; Meadows Decl. at ¶¶ 10-12. SLC applied for: (1) a Waterfront Development Permit from the NJDEP Office of Sediment and Dredging Technology; (2) a Pollutant Discharge Elimination Permit from the NJDEP Water Quality Division; (3) several "general permits" governing handling and storage of materials; and (4) air quality permits for each of the five stationary emission sources SLC planned to operate, from the NJDEP Air Quality Permitting Program. SCCIA, 145 F. Supp.2d at 458.

The NJDEP Air Quality Permit Program Office is responsible for reviewing and approving permits for stationary sources of air pollutants. NJDEP, Air Quality Permitting Program, (Mar. 2006), available at http://www.nj.gov/dep/aqpp (visited March 30 2006). The requirements and the application process for air permits are set forth at N.J.A.C. tit. 7, § 7:27-8.1. SLC submitted its air permit applications to the NJDEP Air Quality Permit Program Office on August 5, 1999. The permit applications were several hundred pages long, and included narrative text, a site plan, diagrams of various parts of the facility, facility emission estimates for each of the emission stacks, and a list of applicable state and federal regulations.

SLC's permit application proposed that the facility could emit almost 60 tons per year of PM10. SCCIA Statement of Material Facts ¶ 103 (citing DEP Notice and Fact Sheet). SLC planned to operate the facility twenty four hours a day, 365 days a year, processing up to 848,771 tons of GBFS annually. Id. ¶ 104 (citing DEP Notice and Fact Sheet). The SLC operations would require 77,116 diesel truck trips per year to make deliveries or distributions of the facility's products. Id. ¶ 105 (citing DEP Notice and Fact Sheet).

With its application, SLC was required to submit an air dispersion modeling protocol. SCCIA, 145 F. Supp.2d at 458. The SLC air dispersion modeling proposal was based on an EPA-approved model which is capable of handling multiple layers of information. Id. Modeling is used to predict the environmental impact of a pollutant emission source, such as the proposed SLC facility, by estimating emission flow based on air patterns and other meteorological data. The results of the modeling are then compared to the NAAQS to determine whether a particular facility will cause or significantly contribute to a violation of the NAAQS. Id. NJDEP approved the modeling protocol selected by SLC. Id.

The NJDEP is required by law to apply the NAAQS established by the EPA in evaluating permit applications for facilities which, like the SLC's proposed facility, will emit air pollutants. See 42 U.S.C. §§ 7407(a), 7410, 7411. Therefore, when NJDEP evaluates a permit request it assesses whether the operation of a facility will cause or significantly contribute to a violation of the NAAQS. The EPA has also established Prevention of Significant Deterioration ("PSD") levels for some pollutants, including PM10. 40 C.F.R. 50.21. A PSD increment is the maximum increase in a pollutant's concentration that is allowed to occur above an earlier established baseline value as long as air concentrations stay below the standard. Id. The purpose of analyzing PSD increments is, among other things, to make sure that no particular facility can "consume" the entire concentration of a pollutant allowed from all sources, in combination, under the NAAQS. 42 U.S.C. §§ 7470, 7473. According to SLC, it demonstrated to NJDEP's satisfaction that it was within the twenty four hour and annual PSD increments for PM10. Air Dispersion Modeling Report.

The air dispersion modeling done by SLC primarily focused on its PM10 emissions. Id. The results of the modeling revealed that the PM10 emissions generated by the proposed SLC facility would not exceed the NAAQS for PM10 established by the EPA that were then in place. DEP did not investigate or analyze SLC's PM 2.5 emissions during the permit review. Id. According to SLC, it was unable to compare the facility's PM2.5 emissions with the NAAQS during the permitting process since "SLC could not have modeled for PM2.5 in compliance with EPA guidance because in 2000," neither the requisite "three years of PM2.5 monitoring data," "nor a PM2.5 source inventory was available for Camden." SLC's Statement of Material Facts ¶¶ 137-38 (citing Batterman Dep. Tr. at 105:13-105:19, 138:1-140:17, and Flaherty Report at 8-9).

In the course of its permit evaluation, SLC submitted to DEP an analysis of whether it was meeting state-of-the-art requirements, which included a cost analysis. SLC's Statement of Material Facts ¶ 157 (citing Trinkle Ex. 28-29; O'Sullivan Dep. Tr. at 52:25-53:17). SLC determined that it was too costly to cover its slag piles and fully enclose its operations; DEP accepted SLC's cost analysis. SCCIA's Statement of Material Facts ¶¶ 115-116 (citing Daly Dep. Tr. 76:14-78:10).

In a letter dated November 1, 1999, the NJDEP informed SLC that its application was "administratively complete." Letter from Iclal Atay to Denise Brubaker (Nov. 1, 1999), Trinkle Ex. 27. An application is designated as "administratively complete" when the applicant has submitted all of the information the NJDEP needs to review and evaluate the proposal and decide whether to permit the facility. Id. According to N.J.A.C. tit. 7, § 27-8.24, when an application is deemed "administratively complete" by the NJDEP, the applicant may commence construction on the proposed facility. The letter also set forth NJDEP's policy that if an applicant proceeds with construction of a proposed facility while awaiting review of its permit application, it does so at its own peril because the DEP could still deny the permit. Letter from Iclal Atay to Denise Brubaker (Nov. 1, 1999), Trinkle Ex. 27; Meadows Decl. ¶¶ 12-13. Upon receipt of NJDEP's letter indicating that its application was "administratively complete," SLC began construction of the proposed facility towards the end of 1999. Id. ¶ 14.

D. The Permit Process and Environmental Equity

In February 1998, the EPA published draft guidelines entitled "Title VI Interim Guidance on Environmental Justice" ("Interim Guidance"). Shinn Dep. Tr. 68:14-17. The Interim Guidance was "intended to provide a framework for the processing by EPA's Office of Civil Rights (OCR) of complaints filed under Title VI ... alleging discriminatory effects resulting from the issuance of pollution control permits by state and local governmental agencies that receive EPA funding." EPA, Interim Guidance for Investigating Title VI Administrative Complaints Challenging Permits, (Feb. 5, 1998) at 1, available at http://www.epa.gov/civilrights/docs/interim.pdf (visited March 14, 2006). As such, the Guidance outlined the specific steps that the OCR is to follow when processing Title VI complaints. Id. at 3.

As a result of the issuance of the Interim Guidance, a Federal Advisory Committee ("FACA") was convened by the EPA in which five states, including New Jersey, were chosen to participate. Shinn Dep. Tr. at 37:5-38:19. Commissioner Shinn served on FACA as New Jersey's representative, id., and stated that serving on the FACA "was quite an experience and certainly had an impact on my administration of dealing with permitting issues and environmental justice or environmental equity areas and just convinced me all the more that because of the density and the ethnic makeup of New Jersey we really needed to address that issue," id. at 38:11-19.

According to Commissioner Shinn, the Interim Guidance did not place any affirmative duties on NJDEP, and NJDEP was not required by Federal Law to implement or even follow the interim guidelines. Id. at 72:21-73:11. Nonetheless, in May 1998, NJDEP created an Environmental Equity Task Force ("Task Force"), Sondermeyer Dep. Tr. at 30:15-18, 110:4-6, "for the purpose of developing recommendations for an environmental equity policy and process," NJDEP Administrative Order 1998-15; Sondermeyer Dep. Tr. at 20:5-6. The Task Force produced a "Draft Environmental Policy" that Commissioner Shinn submitted to the EPA. Sondermeyer Dep. Tr. at 30:19-24.

On November 22, 1998, NJDEP and Commissioner Shinn, by Administrative Order #1998-15, created the Advisory Council on Environmental Equity ("Advisory Council") in order "to establish a permanent source of advice and counsel in recognition of state and federal concerns that minority and low-income populations may be experiencing a greater impact from pollution than other communities." NJDEP Administrative Order 1998-15. The Advisory Council consisted of thirty (30) individuals, including "[NJDEP] representatives, members of grass roots community-based organizations, academic and medical community groups, environmental groups, business representatives, and local officials." Id. Additionally, the Advisory Council was charged with "making recommendations to the Commissioner for strategies to promote environmental equity in New Jersey and for building partnerships and trust with [the] many diverse communities within [New Jersey]." Id. Furthermore, the Advisory Council was "to provide assistance during the implementation of [the] Environmental Equity policy and thereafter serve as [NJDEP's] principal advisory resource" for handling environmental equity concerns. Id.

By Administrative Order 1999-05, issued on April 27, 1999, Commissioner Shinn created the Office of Equal Opportunity, Contract Assistance, and Environmental Equity. NJDEP Administrative Order 1999-05. This new office was charged with the development and implementation of an environmental equity policy and procedures. Id. By Administrative Order 2000-01, issued on February 8, 2000, Commissioner Shinn established the DEP's environmental equity policy. NJDEP Administrative Order 2001-01. The Administrative Order served as a guide to NJDEP management and staff concerning environmental equity objectives and the implementation strategies that NJDEP would undertake in order to incorporate environmental equity considerations into its decisionmaking. Id. Administrative Order 2000-01 also directed the Advisory Council to serve as the Department's principal source of advice and counsel on environmental equity issues, assist with the Department's development of an Environmental Equity Policy, and incorporate environmental equity considerations into its permitting process. Id. Pursuant to these strategies, the NJDEP committed to: (1) work with the Advisory Council and permit applicants to identify mechanisms for community notification regarding application for new, modified, or renewal permits, as early as possible in the permit review process; (2) develop guidance for permit applicants for the administration of an effective environmental equity community outreach process; (3) establish a mechanism for community outreach at the earliest possible stage of the permit application process; (4) utilize technical screening tools such as the GIS and TRI to identify potential environmental equity issues at the earliest feasible stage of the permitting process; (5) participate in discussions among permit applicants and local community stakeholders and attempt, when possible, to include in permits conditions that the permit applicants and community stakeholders have agreed upon; (6) facilitate ADR between permit applicants and stakeholders in the case of disputes; (7) work with permit applicants to facilitate accessibility, understanding, and transfer of technical and scientific data to local communities; and (8) provide ongoing environmental equity training to appropriate NJDEP managers and staff. Id.

During the development of the Environmental Equity Policy, in November, 1998, the DEP was given a $100,000 grant by the EPA to implement a model program promoting environmental equity. Sondermeyer Dep. Tr. at 37:21-24; Leon Dep. Tr. at 44:21-46:22. New Jersey was one of only five states to receive such a grant from the EPA. Sondermeyer Dep. Tr. at 37:21-24. The EPA grant money was used primarily to develop a screening model to help the DEP identify potential areas of application for its future environmental equity process. Id. at 39:4-43:22.

Dr. Robert E. Hazen, one of NJDEP's scientists, was assigned by NJDEP to create the screening model and test the hypothesis that there was a difference in level of exposures to environmental hazards and air pollutants among different ethnic groups in New Jersey. Hazen Dep. Tr. at 30:1-20. As such, Dr. Hazen created the "screening element that could be incorporated into the DEP equity policy, which would show geographic sensitivity to equity issues." Id. at 56:16-19. According to Dr. Hazen, the NJDEP screening model is a combination of "ethnicity, geographical location and exposure to environmental agents, and it involves the combination of those three elements to determine if exposure to the agents is different by ethnicity," or, in other words, "whether there is a higher or lower exposure based on ethnicity." Id. at 29:4-16. Furthermore, the model "shows ... that census tracts with different portions in homogeneity of ethnic populations and different pollution burdens regionally can show differences." Id. at 108:5-9. In simpler terms, the model "show[s] that there is a difference in level of exposures among different ethnic and income groups." Id. at 108:15-20.

Dr. Hazen testified that statewide "African-Americans and Hispanic Americans ... had more than average exposure to air toxics." Id. at 47:22-24. Dr. Hazen also identified areas in the state where exposure to one ethnicity was at least three to four times as high as was exposure to another ethnicity, an area roughly two percent of the area of the state. Id. at 60:12-17, 61:14-16. Dr. Hazen also testified that as a result of the Court's Order that NJDEP "compile environmental exposures in Camden," he "analyzed, through a multiple source [model], air affect in Camden." Id. at 13:2-21. Using the screening model to determine where risk borne by people of color was above that borne by whites, Dr. Hazen found that roughly one-third of the state, including Camden, fit that pattern Id. at 63:5-16.

The screening model was intended to identify areas where an applicant proposing a new facility would be strongly encouraged by the DEP to voluntarily enter into a process to address potential environmental equity concerns. Sondermeyer Dep. Tr. at 95:2-96:22; Shinn Dep. Tr. at 59:7-62:17. The process developed by the DEP involved, among other things, community outreach and discussions, public meetings, and possible alternative dispute resolution. Sondermeyer Dep. Tr. at 89:3-90:5; Shinn Dep. Tr. at 198:22-200:13. DEP presented this process to the FACA in 1999. Sondermeyer Dep. Tr. at 30:19-24; Shinn Dep. Tr. at 69:4-70:11.

Although Dr. Hazen's screening model was developed and tested, it was never formally applied or used by NJDEP because the proposed rule was never adopted. Sondermeyer Dep. Tr. at 45:14-18; Shinn Dep. Tr. at 59:1-4; 66:13, 68:2-8.[4]

In a letter dated September 7, 1999, DEP informed SLC: "Due to the fact that St. Lawrence will be operating in an economically depressed area which has a substantial minority population, the Department will evaluate the need to conduct an environmental justice analysis." Letter from Ann Ryan to Denise Brubaker (Sept. 7, 1999), Pomar Ex. AA. Even before receiving that letter, however, in July 1999, shortly before it submitted its final air permit applications to NJDEP, SLC began to solicit support for the facility from the public and, specifically, residents of Waterfront South. Smith Decl. ¶¶ 2-4. SLC hired a local consultant, Morris Smith, Esq. ("Smith"), to manage its outreach and community involvement initiative. Id. ¶ 1. Smith arranged meetings between SLC representatives and residents, municipal officials, local business leaders

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[4]The process was formalized as a proposed rule on or about January 4, 2002. NJDEP's Statement of Material Facts (citing Shinn Dep. Tr. at 68:2-8). Gary Sondermeyer testified that "Commissioner Shinn want[ed] us to move as quickly as possible to the rule making" because "[h]e was very committed to the issue of environmental equity, and he wanted to see something substantive done that was more than just an internal agency policy statement. He wanted to see rules proposed and adopted so we could start to address the issue." Sondermeyer Dep. Tr. at 97:14-98:7. NJDEP's sought to have the EPA recognize the proposed state environmental equity program and rule as a viable alternative to the EPA interim guidance process. Shinn Dep. Tr. at 89:1-22. In fact, Commissioner Shinn envisioned a performance partnership agreement with the EPA, id. at 73:2-74:24.; specifically, he testified "we were [providing] an alternative and seeking endorsement for EPA to support a state initiative," id. at 73:10-11. The proposed rule, however, was never formally adopted by the New Jersey Department of Environmental Protection because Commissioner Campbell, who took office shortly thereafter, envisioned an interagency approach toward addressing issues of environmental equity. Id. at 66:4-13; Sondermeyer Dep. Tr. at 104:4-106:1. Commissioner Campbell's approach was eventually formalized in an Executive Order issued by Governor James McGreevy in February, 2004. N.J.A.C. Executive Order No. 96 (2004).

and community organizations in order for SLC to share information about the facility and obtain input from the community. Id. ¶¶ 2-4. SLC representatives held a "community support meeting" with members of SCCIA, in August, 1999, at the home of Rose Townsend, SCCIA's then-president, in order to obtain a letter of support for the SLC facility from SCCIA. Id. ¶¶ 5-6. Those who attended the meeting discussed the operation of the facility, the prospective employment of Waterfront South residents by SLC, and environmental issues relating to the facility. Id. ¶ 6. SCCIA convened a community meeting on September 22, 1999, at the Camden Fellowship House, to discuss the impact of the facility on the Waterfront South neighborhood. Id. ¶ 7. SCCIA scheduled no further meetings, and, as such, SLC created a community advisory committee. SCCIA, 145 F. Supp.2d at 456.

The "Community Advisory Panel" ("CAP") began meeting in January, 2000 at the SLC office. Id. This group met eighteen times between January, 2000 and October 31, 2000, when the final NJDEP permit was issued. Smith Decl. ¶ 10. The CAP created a "Technical Advisory Group" ("TAG") in order to provide CAP members and other interested parties with an "independent assessment of the environmental issues implicated by the Facility's operations." Id. ¶ 12. Members of the CAP nominated and selected technical experts to evaluate the impact of the proposed facility on traffic, air quality, storm water management, and health. Id. ¶ 13. SLC provided funding to contract technical experts selected by the CAP to perform independent evaluations. SCCIA, 145 F. Supp.2d at 456. The CAP selected: (1) Horner & Canter Associates ("Horner & Canter"), to study traffic issues; (2) Professor Ronald A. Chatterton ("Dr.Chatterton") of Villanova University to study water impact issues; and (3) Dr. Irwin Berlin ("Dr.Berlin") of Trinitas Hospital, to study health issues. Smith Decl. ¶ 15. In January, 2000, SCCIA decided not to participate in the CAP sponsored by SLC. Id. ¶ 9. Olga Pomar, Esq., attorney for Plaintiffs, however, attended several of the CAP meetings and participated in the nomination and final selection of Dr. Berlin, to perform the TAG health analysis, and Dr. Chatterton, to perform the TAG water impact analysis. Id. ¶ 16. At some point, though, SCCIA instructed Ms. Pomar to discontinue her participation in the CAP. Id. ¶ 16.

Dr. Berlin was concerned about SLC's potential for emitting PM 10 and PM 2.5. See, e.g., Meeting Minutes (Aug. 3, 2000), Trinkle Ex. 23. He also sought information from SLC about its anticipated percentage of PM 2.5 emissions, which had not been included in the permit application. Letter from Irwin Berlin to Morris Smith (June 20, 2000), Trinkle Ex. 25. SLC provided a memo to its CAP members, which states that the majority of the emissions from the plant are of ground product, and that the percentage of PM 2.5 within the PM 10 portion is approximately 50%. Response to CAP Questions, Pomar Ex. I. In a letter dated July 7, 2000, from Michael Davis, SLC's Camden Facility Manager, to Dr. Berlin, SLC addressed the facilities PM2.5 emissions:

> The NJDEP recommended that we use data from the Camden Lab PM10 monitoring station (located about 1 ½ miles from our facility) in support of the air permit compliance demonstration. In addition to the PM10 monitor, the station also has a monitor that reports 24 hour PM2.5 monitoring information.
>
> We had Malcolm Pirnie conduct a preliminary analysis of the PM2.5 emissions. The analysis indicated that the facility emissions, as estimated from on site sources, will be well within the USEPA proposed 24 hour PM2.5 standard. The analysis then looked at the impact of the facility combined with the background reading and nearby facilities contained in New Jersey and Pennsylvania emissions inventories. Since the inventory of nearby sources only provides information on their PM10 emissions, it was assumed that their PM10 emissions were equivalent to PM2.5 emission rates (a conservative, or health protective, assumption). Adding PM10 impacts from nearby sources, along with the monitored PM2.5 background concentration from the NJDEP Camden Lab Station, resulted in total impacts that

> were slightly above the proposed 65 [ug/meters cubed] standard. We believe that if actual PM2.5 emission rates were available for the offsite sources, the total emissions would be within the proposed PM2.5 standard.

Letter from Michael Davis to Irwin Berlin (July 7, 2000), Pomar Ex. G.

On July 25, 2000, the DEP published and distributed to the public, a notice, fact sheet, and five draft air quality permits to construct and certificates to operate, with proposed regulatory conditions, the proposed SLC facility. NJDEP's Statement of Facts ¶ 78 (citing Second Am. Compl.). NJDEP held the first public hearing regarding the draft permits on August 23, 2000. Id. ¶ 75 (citing Second Am. Compl.). At that time, the SLC plant was already largely constructed. SCCIA's Statement of Facts ¶ 128. Over 120 people attended the public hearing, at which residents of Waterfront South spoke, including Plaintiffs, Phyllis Holmes, Sharon Christie Potter, and Barbara Pfeiffer, and their counsel. Id. ¶ 129 (citing Public Hrg. Tr., Trinkle Ex. 32).

According to Commissioner Shinn, during the period of NJDEP's review of SLC's permit, NJDEP conducted a health risk study of Camden which showed that the addition of the SLC facility did not elevate the area's health risk. Shinn Dep. Tr. at 141:1-20. NJDEP discussed potential routes for trucks coming to and from the SLC facility with the Waterfront South community during the SLC permit review process, DEP Statement of Material Facts ¶ 81, but maintains that it never had the authority to consider truck routes and mobile sources in determining whether to issue permits for stationary sources, id. ¶ 82.

On October 4, 2000, Plaintiff SCCIA and other Waterfront South residents filed a request for a grievance hearing with DEP pursuant to 40 C.F.R. §7.90, alleging violations of the Title VI regulations with respect to DEP's evaluation of the SLC permits. SCCIA's Statement of Facts ¶ 133 (citing Compl.). NJDEP did not respond to the request or provide a hearing or other forum to address these concerns. Id. ¶ 134 (citing Lyons Dep. Tr.). On October 4, 2000, Plaintiff SCCIA and other individual complainants filed a complaint with the EPA alleging that DEP's permit process violated the EPA's Title VI regulations because the SLC facility would have a disparate adverse impact on the basis of race, color, and national origin. Id. ¶ 135 (citing EPA Administrative Compl., Pomar Ex. MM). On October 31, 2000, DEP released a response to the public comments, SLC Statement of Material Facts ¶¶ 169-70 (citing Hearing Officer's Report Responses to Public Comments on the Draft Air Permit, Trinkle Ex. 37), and issued five permits to construct and certificates to operate stationary emission sources at the SLC facility. DEP Statement of Material Facts ¶ 72 (citing Second Am. Compl. ¶ 82).

D. Procedural History

On February 13, 2001, the SCCIA Plaintiffs moved for a preliminary injunction and declaratory relief against the NJDEP Defendants. In their original verified Complaint, the SCCIA Plaintiffs alleged that the method the NJDEP used to evaluate and grant SLC's air emissions permits violated Title VI of the Civil Rights Act of 1964. Original Verified Compl. On February 22, 2001, Judge Orlofsky signed a consent order which permitted SLC to intervene as a defendant in this action. See Consent Order (Feb. 22, 2001). On April 19, 2001, Judge Orlofsky granted the SCCIA Plaintiffs' motion for a preliminary injunction and declaratory relief.

Five days later, on April 24, 2001, however, the United States Supreme Court decided the case of Alexander v. Sandoval, 532 U.S. 275 (2001), which effectively overruled Judge Orlofsky's decision. However, the SCCIA Plaintiffs argued that Judge Orlofksy's decision of April 19, 2001, which granted preliminary injunctive relief, could stand on alternative legal grounds. On April 26, 2001, Judge Orlofsky granted the SCCIA Plaintiffs' motion for leave to amend the complaint. On May 10, 2001, after considering the supplemental briefs filed by the parties, he issued a Supplemental Opinion and Order granting the SCCIA Plaintiffs preliminary injunctive and declaratory relief.

SLC appealed to the United States Court of Appeals for the Third Circuit, and on May 15, 2001, filed a motion to suspend or, in the alternative, to modify the preliminary injunction pending appeal, as well as a request for expedited review of the appeal. On May 29, 2001, NJDEP requested a stay of the remand process from the district court, but on June 4, 2001, the district court denied that request. NJDEP then made the same application to the Third Circuit on June 6, 2001, but the court denied its motion on June 11, 2001. On June 12, 2001, however, the Third Circuit granted SLC's request for expedited review, and on June 15, 2001, granted SLC's request to suspend the preliminary injunction pending appeal and SLC began operating the facility.

On December 17, 2001, in a divided two to one decision, the Third Circuit disagreed with the district court, and reversed the Court's Opinion and Order of May 10, 2001 that granted preliminary injunctive relief, and remanded the case for further proceedings. See South Camden Citizens in Action v. New Jersey Dep't of Envtl. Prot., 274 F.3d 771 (3d Cir.2001), cert. denied, 536 U.S. 939 (2002). The Supreme Court denied certiorari on June 24, 2002, see South Camden Citizens in Action v. New Jersey Dep't of Envtl. Prot., 536 U.S. 939 (2002).

Following the remand to the district court, the SCCIA Plaintiffs filed a motion for leave to file a Second Amended Complaint. In an Order dated November 19, 2002, Judge Orlofsky granted the SCCIA Plaintiffs' motion, and on November 26, 2002, the SCCIA Plaintiffs filed a Second Amended Complaint, which added Lula Williams and Sharon Christie Potter as plaintiffs, substituted as a defendant the then NJDEP Commissioner Bradley M. Campbell ("Commissioner Campbell"), for former NJDEP Commissioner Shinn, and added Counts Five and Six, which asserted claims of Private and Public Nuisance against SLC only. Accordingly, the SCCIA Plaintiffs asked the district court to grant declaratory relief in the form of rescinding the air permits and certificates which NJDEP issued to SLC, enjoining the NJDEP from taking further action which would facilitate the operation of SLC's cement grinding facility, and ordering the NJDEP to develop and adopt comprehensive protocols for reviewing permit applications that will prevent the granting of permits that have the effect of discriminating against persons on the basis of color, race, or national origin.

On January 31, 2001, both the NJDEP and SLC filed motions to dismiss the SCCIA Plaintiffs' Second Amended Complaint pursuant to Fed. R. Civ. P. 12(b)(6). By way of an Opinion dated April 16, 2003, the district court: (1) denied the NJDEP Defendants' motion to dismiss the First and Third Counts of the Second Amended Complaint, to the extent that they alleged that the NJDEP Defendants intentionally discriminated against the SCCIA Plaintiffs in violation of § 601 of Title VI of the Civil Rights Act of 1964, 42 U.S.C. § 2000d, as well as 42 U.S.C. § 1983 and the Equal Protection Clause of the Fourteenth Amendment; (2) granted the NJDEP Defendants' motion to dismiss the Second Count of the Second Amended Complaint, as well as that portion of the Third Count of the Second Amended Complaint which alleged a violation of § 602 of Title VI; (3) granted the NJDEP Defendants' motion to dismiss the Fourth Count of the Second Amended Complaint, which alleged that the NJDEP Defendants violated the Fair Housing Act, Title VIII of the Civil Rights Act of 1968, 42 U.S.C. §§ 3601 et seq.; (4) denied SLC's motion to dismiss the Fifth Count of the Second Amended Complaint, which alleged a claim of private nuisance; and (5) granted SLC's motion to dismiss the Sixth Count of the Second Amended Complaint, which alleged a claim of public nuisance.

On May 29, 2003, this case was reassigned from Judge Orlofsky to me. On July 23, 2003, SLC filed a Third Party Complaint seeking contribution from facilities in and around Waterfront South on Plaintiffs' private nuisance claim as a result of these facilities' alleged contribution to any nuisance that exists in the Waterfront South area. The parties named were: American Minerals, Astro Holdings, Inc., Camden Cogen, L.P., Camden County Energy Recovery Associates, L.P., Camden County Board of Chosen Freeholders, Camden County Municipal Utilities Authority, Camden International Commodities Terminal, L.L.C., Camden Iron and Metal, Inc., Central Medals, Inc., Colonial Processing, Inc., Comarco Quality Pork Products, Inc., Container Recyclers of Camden, Inc., Cresmont L.P., CSX Corporation, Express Equipment Rental, Co., Gloucester Refrigerated Warehouse, Inc., G-P Gypsum Corp., Harris-Camden Terminal Co., Holt Marine Terminals, Inc., Holt Oversight & Logical Techs., Inc., Jack Lambersky Poultry Co., Jen Cyn Enterprises, Inc., Joseph Oat & Sons, Inc., Mafco Worldwide Corp., Pneumo Abex Corp., R. Fanelle & Sons, Inc., Sanco Steel & Mfg., Inc., South Jersey Port Corporation, State Metals, Inc., Sunoco, Inc., Trans Ocean Maritime Services, Inc., Valero Refining Co.-New Jersey, ABC Corporations, and John Does.

Following motion practice on the Third Party Complaint, on December 19, 2003, Plaintiffs and SLC entered into a Stipulation and Consent Order which, inter alia provided:

> To the extent that the Plaintiffs seek relief, legal or equitable, against SLC based on the private nuisance claim set forth in the Fifth Count of their Second Amended Verified Complaint for Declaratory Judgment and Injunctive Relief (the "Second Amended Complaint"), such relief, legal or equitable, is only with regard to SLC's activities and the effect that SLC's activities have on the Plaintiffs. SLC is not

> responsible, and the Plaintiffs are not seeking to hold SLC responsible, for the activities or effects of other past or present operations in or about the Waterfront South neighborhood. Any liability on the part of SLC in this matter is therefore several rather than joint and several. This Stipulation and Consent Order applies solely to the claims currently pled against SLC.
>
> Although the Plaintiffs are seeking relief against SLC only with regard to SLC's activities and the effect that SLC's activities have on the Plaintiffs, the Plaintiffs acknowledge that they believe that there are other operations and entities that they believe contribute to the alleged environmental conditions in Waterfront South.
>
> SLC shall have the right to assert as a defense and to submit proofs and evidence at trial or any other further proceedings in this matter that the private nuisance and related damages alleged by the Plaintiffs in the Fifth Count of the Second Amended Complaint are a result of or caused by, in whole or in part, other operations or entities unrelated to SLC. Stipulation and Consent Order (Dec. 19, 2003)

On January 12, 2004, as a result of the Stipulation and Consent Order, this Court entered an Order providing, inter alia, that SLC's Third Party Complaint was dismissed without prejudice, and that all counter and cross-claims filed by entities named as third party defendants in SLC's Third Party Complaint were dismissed without prejudice.[5]

Discovery in this case was completed in May, 2005.[6] On May 27, 2005, after a number of

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[5]On May 6, 2004, Third Party Defendant CSX Corporation was dismissed from the case with prejudice.

[6]The parties have engaged in extensive fact discovery and have retained a number experts. The experts include:
1) Plaintiffs' expert, Dr. Stuart Batterman ("Dr. Batterman"), Associate Chair of the Department of Health Sciences of the School of Public Health at the University of Michigan, authored a report for Plaintiffs entitled "Analysis of Particulate Matter Concentrations and Health Impacts from a Granulated Blast Furnace Slag Grinding Facility and Associated Operations Located in Camden, New Jersey." According to Dr. Batterman, the purpose of his analysis was to "obtain an understanding [of] the major pollutants of concern emitted by the [SLC] facility and its operations, namely, PM10 and PM2.5, the attendant human health risks, and the characteristics of the potentially affected population." Batterman Report at 5.
2) Dr. Jeremy Mennis of the University of Colorado's Department of Geology is another one of

discovery motions had been filed and ruled upon by the Honorable Ann Marie Donio, U.S.M.J., SLC and NJDEP each filed a motion for summary judgment. By way of an Order dated June 3, 2005, this Court administratively terminated the motions and set forth a revised briefing schedule. SLC and NJDEP then re-filed their motions.

II. DISCUSSION

A. Summary Judgment Standard

Summary judgment is appropriate where there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law. Fed. R. Civ. P. 56; Celotex Corp. v. Catrett, 477 U.S. 317, 323 (1986). To avoid summary judgment the non-moving party must "go beyond the pleadings and by her own affidavits, or by the 'depositions, answers to interrogatories, and admissions on file,' designate 'specific facts showing that there is a genuine issue for trial.'" Celotex Corp., 477 U.S. at 324. A genuine issue of material fact is one that will permit a reasonable jury to return a verdict for the nonmoving party. Anderson v. Liberty Lobby,

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Plaintiffs' experts. He issued a report entitled "Race and Location and Regulation of Air Polluting Facilities in New Jersey," the purpose of which was to "investigate racial equity in the spatial distribution and regulatory enforcement of air polluting facilities in New Jersey." Mennis Report at 1. In his report, Dr. Mennis concluded that there is evidence "of racial inequality in the location and regulatory enforcement of [AIRS Facility Subsystem ("AFS") Facilities]." Id. at 7.
3) Dr. William Bowen prepared an expert report for SLC, the purpose of which was to provide his opinions concerning 1) the data and methodology employed by Dr. Mennis as set forth in his report and 2) "the extent to which, if at all, there is a substantial pattern of racial inequity in the environmental air permitting of facilities by NJDEP, and in NJDEP's regulatory enforcement of such facilities." Bowen Report at 1.
4) Glenn Hickerson of Environmental Research, Inc., prepared an "Aerial Photographic Analysis of Census Tract 6018" for SLC.
5) Paul Flaherty was retained by SLC to evaluate Dr. Batterman's work. Flaherty Report at 1-2.
6) Malcolm Pirnie prepared an "Air Dispersion Modeling Reprort" for SLC in December, 1999, before the initiation of any litigation.

Inc., 477 U.S. 242, 248 (1986). In evaluating the evidence, the Court must "view the inferences to be drawn from the underlying facts in the light most favorable to the [nonmoving] party." Curley v. Klem, 298 F.3d 271, 276-77 (3d Cir. 2002) (quoting Bartnicki v. Vopper, 200 F.3d 109, 114 (3d Cir. 1999)). Conclusory allegations do not meet the non-moving party's duty to set forth specific facts showing that a genuine issue of material fact exists and a reasonable factfinder could rule in its favor. Ridgewood Bd. of Ed. v. Stokley, 172 F.3d 238, 252 (3d Cir. 1999).

B. Private Nuisance

In their Second Amended Complaint, the Plaintiffs assert a private nuisance claim against SLC, alleging that "dust, soot, vapors and fumes," as well as "noise" and "vibration" from the Facility and diesel truck traffic associated with the Facility have "unreasonably interfered with the [P]laintiffs' use and enjoyment of their property." Second Am. Compl. ¶¶ 120-134. They allege that SLC's operations "intentionally and unreasonably interfere with plaintiffs' use and enjoyment of their property," "endanger the health and safety of plaintiffs, their children and their families," "loss of enjoyment of their homes, and diminution of value of their property." Id. ¶¶ 126-132.

On March 4, 2005, however, Plaintiffs and SLC entered into a limiting Stipulation and Consent Order, which, inter alia, provided:

> None of the Plaintiffs has asserted or will assert in this litigation a claim for any illness, disease, or condition that was allegedly caused or exacerbated in any way by SLC or SLC's operations.
>
> The Allegations of Increased Health Risk ... are made solely by Plaintiffs Barbara Pfeiffer, Sharon Potter, and Lula Williams. ... Plaintiffs Pfeiffer, Potter, and Williams each contends only that she is at greater risk of injury to health as a result of SLC or SLC's operations; she makes no claims for any illness, disease, or condition that was allegedly caused or exacerbated in any way by SLC or SLC's operations. Stipulation and Consent Order (Mar. 4, 2005).

Thus, in connection with Plaintiffs' private nuisance claim against SLC, no plaintiff is asserting a physical injury claim and only three individual plaintiffs are asserting claims of increased health risk.

"The essence of a private nuisance is an unreasonable interference with the use and enjoyment of land." Ruiz ex rel. Ruiz v. Kaprelian, 322 N.J. Super. 460, 472 (App. Div. 1999) (quoting Sans v. Ramsey Golf & Country Club, Inc., 29 N.J. 438, 448 (1959); accord Restatement (Second) Torts § 822 (1979)). Litigation of this type usually deals with the conflicting interests of property owners and the question of the reasonableness of the defendant's mode of use of his land. Sans, 29 N.J. at 448. The process of adjudication requires recognition of the reciprocal rights of each owner to reasonable use, and a balancing of the conflicting interests. Id. The utility of the defendant's conduct must be weighed against the quantum of harm to the plaintiffs. Id. The question is not simply whether a person is annoyed or disturbed, but whether the annoyance or disturbance arises from an unreasonable use of the neighbor's land or operation of his business. Id.

According to the Restatement of Torts, one is subject to liability for a private nuisance if, but only if, his conduct is a legal cause of an invasion of another's interest in the private use and enjoyment of land, and the invasion is either intentional and unreasonable, or unintentional and otherwise actionable under the rules controlling liability for negligent or reckless conduct, or for abnormally dangerous conditions or activities. Restatement (Second) Torts § 822 (1979). The conduct necessary to make the actor liable for a private nuisance may consist of an act or a failure to act under circumstances in which the actor is under a duty to take positive action to prevent or abate an interference. Id. § 824. An invasion is intentional if the actor purposely causes it or knows that the invasion is substantially certain to result from his conduct. Id. § 825. An intentional invasion of another's use is unreasonable if (a) the gravity of the harm outweighs the utility of the actor's conduct, or (b) the harm caused by the conduct is serious and the financial burden of compensating for this and similar harm to others would not make the continuation of the conduct not feasible. Id. § 826. Nuisances occasionally proceed from a malicious desire to do harm for its own sake, but more often they are intentional only in the sense that the defendant has created or continued the condition causing the nuisance with full knowledge that the harm to the plaintiff's interests is substantially certain to follow. Krauth v. Geller, 54 N.J. Super. 442, 452 (App. Div. 1959). Moreover, New Jersey courts, starting with Justice Nathan Jacobs' opinion in Hartman v. Brigantine, 23 N.J. 530, 534-35 (1957) have recognized that where a defendant's conduct gives rise to a continual invasion of neighboring property by way of dust, fumes and noise, such conduct may be tortious within the concept of nuisance.

Plaintiffs must establish that SLC's conduct is a legal cause of the harm allegedly caused. Proximate or legal causation is that combination of 'logic, common sense, justice, policy and precedent' that fixes a point in a chain of events, some foreseeable and some unforeseeable, beyond which the law will bar recovery." People Express Airlines, Inc. v. Consol. Rail Corp., 100 N.J. 246, 264 (1985) (citation and internal quotation omitted). Proximate cause has been defined as any cause which in the natural and continuous sequence, unbroken by an efficient intervening cause, produces the result complained of and without which the result would not have occurred. Kasper v. Board of Trustees of Teachers' Pension and Annuity Fund, 164 N.J. 564, 591 (2000)(internal quotations omitted). The issue of proximate cause "entails a consideration of public policy and fairness." Williamson v. Waldman, 150 N.J. 232, 245 (1997).

Ordinarily, issues of proximate cause are considered jury questions. Perez v. Wyeth Labs., Inc., 161 N.J. 1, 27 (1999). On occasion, however, a court may resolve that issue itself. Id. The Restatement (Second) of Torts states that courts may resolve for themselves the question of legal or proximate causation if they believe that a reasonable jury could not find such causation on the facts presented. Restatement (Second) of Torts § 435(2) (1965). Moreover, there is ample precedent in New Jersey authorizing courts to resolve the issue of proximate cause in any case in which reasonable minds could not differ on whether that element of the plaintiff's case has been established. Miller v. Estate of Sperling, 166 N.J. 370, 386 (2001)(citing Vega by Muniz v. Piedilato, 154 N.J. 496 (1998)).

Plaintiffs primarily rely upon their own statements and the work of their air modeling expert, Dr. Batterman, to establish their nuisance claim here. In that regard, the individual Plaintiffs have testified about the conditions at their homes before the SLC facility began operating and subsequent thereto. At her June 16, 2004 deposition, Plaintiff Lula Williams, a resident of Waterfront South, testified that there had been dust on her porch before SLC began operating its facility, but "[a]fter St. Lawrence came and set up, then we began to have the sand, the white on the porch," and that she "never had ... sand on [her] porch before St. Lawrence came." Williams Dep. Tr. (June 16, 2004) at 64:14-65:5. She also testified that there was sand inside her home, id. at 65:14-24, and, as a result, she had to "clean," "sweep" and "scrub" and "keep the windows closed," id. at 89:8-16. She also testified that SLC's trucks stopped coming by her house in April, 2004, id. at 59:2-5, 66:3-16, even though she later admitted that she did not know what SLC trucks looked like and her knowledge and understanding of which trucks were

SLC trucks was based solely on what someone from a SCCCIA meeting had told her. Id. at 82:1-84:17. When she was specifically asked about the basis of her belief that the sand in her house and on her porch was coming from SLC, Williams stated that she "believe[d] it's coming from St. Lawrence" "because we didn't have it before." Id. at 66:21-67:2. When she was asked if she was prepared to swear that the sand is coming from SLC, she answered, "You know what? Yes.... [because] the wind blow[s]" the sand from "that pile [that] is not covered up there." Id. at 70:18-71:11. She stated that she even gave a jar of the sand to someone with the Camden Alliance of Justice to get tested and analyzed, but had no documentation regarding the test and did not know when she would get the test results.[7] Id. at 68:4-70:2. Williams also testified that she bought her home for $14,000 in 1982 or 1983 and believed that she could sell it in June, 2004 for $35,000-$40,000. Id. at 139:3-19.

On July 5, 2004, Williams took a number of photographs. See Pls.' Ex. EE. At her July 7, 2004 deposition, Williams testified that the "photographs are showing the sand and dust on my porch," "the sand that is at [the] St. Lawrence cement place where the cement is not covered," and "where cement [is] on the ground and different areas ... where they say the cement doesn't blow." Williams Dep. Tr. (July 7, 2004) at 176:10-21. "I'm trying to show that it does." Id. at 176:21-22. Williams testified that sand on her porch came from SLC because "the trucks go right past there." Id. at 179:2-11. However, she readily admitted that she did not see sand actually fall off a truck and land on her porch, and explained that it "could be blown off [from the pile of sand] and fell down there too." Id. at 179:23-180:2.

[7]Plaintiffs never provided the results of any such test during the discovery period or during the pendency of these motions.

Plaintiff Sharon Christie Potter, also a resident of Waterfront South, testified at her deposition that as a result of SLC, there is "dust everywhere you go because of the big trucks that come through, but [she thought] it got worse as ... the plants ... like [SLC] came in and trucks started moving more..., [there] was more dust accumulation in the homes than ... before." Potter Dep. Tr. at 37:17-24. She stated that she and her family paint the inside of their house "every year because ... it seems like the house gets so dusty," id. at 51:19-21, 52:11-14, and has "gotten more dusty since [the SLC] plant" began operating, id. at 55:20-24. When she was asked if she blamed SLC for her need to paint, she answered "I blame it for some of the dirt. Some of the dirt is natural dirt, some of the dirt is from different plants....I know that it has gotten more dusty since that [SLC] plant has gotten there, but it's always been kind of like dusty." Id. at 55:11-24 (emphasis added). The dust that she attributes to "industry," as opposed to "normal dirt," comes from trucks driving on Fourth Street, and nothing else, according to Potter. Id. at 74:23-17. She made clear that she was "not saying that it's [only] St. Lawrence trucks" that cause the industry dust because "there are other companies back there that move on that road as well." Id. at 74:17-22. She could not swear that the trucks that drove by and created dust were SLC trucks or were headed to the SLC facility because she never followed one of the trucks. Id. at 120:8-130:1. She also testified that her children have "breathing problems," id. at 38:15-39:10, and that as a result of the dust coming from the SLC facility and her efforts "to keep the dust in moderation," she does not open her windows downstairs, id. at 73:23-74:12. However, the truck noise and vibration does not cause her to use her property differently. Id. at 73:9-22.

When Plaintiff Phyllis Holmes was asked at her deposition if SLC's operations have interfered with her enjoyment of her property, she explained that "sand [and] dust flying around" cause her eyes to "burn" and "scratch[]" when she is outside gardening or barbecuing, and might be making her cough, as well. Holmes Dep. Tr. at 70:21-73:16. She testified that because she does not have her windows open, she does not "get dust like a lot of people." Id. at 77:13-19. When she was asked if, other than her eyes, "how else if at all, does dust and sand from [SLC] interfere with the enjoyment of [her] land or [her] property," she answered, "[t]he only thing I can testify to is the fact that my eyes never bothered me before St. Lawrence moved into the community. That's the only thing I can testify to." Id. at 78:15-23. She also testified that she never saw sand flying from the SLC facility itself, although she had been on the property once and observed the property several times. Id. at 78:24-80:6. Furthermore, she testified that she was "not sure" if there were other industries in the area that produced sand or dust that flew around the neighborhood, but that she "imagine[d]" that there were. Id. at 85:17-24.

Plaintiff Barbara Pfeiffer lives on Fourth Street in the Waterfront South neighborhood. Pfeiffer Dep. Tr. (June 14, 2004) at 259:11-18. Pfeiffer testified on June 14, 2004 that when "big trucks" drive on Fourth Street she could hear them, feel their vibrations and smell their fumes while she was inside her home. Id. at 246:4-12. Pfeiffer stated that she knew what SLC trucks looked like because "they have arches[,] ... they're large," and "[t]hey're slag," id. at 264:5-24, and "guess[ed]" that she had seen them driving on Ferry Street near her home between twenty and thirty times, id. at 266:2-269:19. Pfeiffer also testified that she had dust in her house and that she "think[s] the St. Lawrence slag piles are a big source of dust." Id. at 303:11-24. However, she testified later that the dust she sees in her house was "soot," "city dust," and that it was not the color of SLC slag, and that, therefore, she did not believe that she had SLC's slag in her house. Id. at 307:5-12. At her July 14, 2004 deposition, Pfeiffer stated that the Plaintiffs' nuisance claim involved both visible and invisible dust, but that she "[could not] say that [she had] seen slag dust the way [her] friends see slag dust every single day." Id. at 329:13-18. She also testified that she believed that her walls and windows had been damaged from truck traffic and resulting vibrations, although she admitted that she had never had a professional examine either. Id. at 362:18-368:24.

Plaintiffs also utilize the expert report of Dr. Batterman in support of the increased health risk component of the nuisance claims of Plaintiffs Pfeiffer, Potter, and Williams.[8] Specifically, Dr. Batterman found that annual and twenty-four hour PM10 levels increased as a result of the SLC facility's operations. Batterman Report at 17-18. In that regard, Dr. Batterman concluded that "PM10 and PM2.5 emissions from the facility will increase risks of morbidity and mortality in the exposed population. These risks are judged to be significant, especially given the likely high rates of susceptible individuals in the area (high rates of asthma and [cardiovascular disease] are expected, high numbers of young and old, etc.); the likely poor access to quality health care in this poor and largely minority community; and the other existing environmental exposures that burden the community (PM from other sources, ozone, etc). " Id. at 18 (emphasis in original). He also made clear that "[g]iven the nature of air quality impacts, facility impacts are highest near the facility." Id.

SLC makes a number of arguments as to why it believes Plaintiffs' nuisance claims cannot survive summary judgment. It contends that Plaintiffs have "failed to present" any evidence as to

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[8]When there is an invasion of interests in the use and enjoyment of land constituting a private nuisance, the plaintiff may recover not only for harm arising from acts that affect the land itself and the comfortable enjoyment of it, but also for harm to members of her family and to her chattels. Restatement (Second) Torts § 821D (1979). However, in order for Plaintiffs to recover for health risk, they must first establish the underlying interference with the use and enjoyment of their land that gives rise to their alleged increased health risks.

"the amount of SLC's share of liability, if any, for the nuisance conditions allegedly affecting their properties." SLC's Reply Br. at 4. SLC also argues that by entering into the Stipulation and Consent Order of December 19, 2003, Plaintiffs "have assumed a very specific, additional burden with respect to the causation element of their nuisance claim." SLC's Moving Br. at 20.[9] SLC argues that as a result of the Stipulation and Consent Order, Plaintiffs have "obligated themselves to prove precisely that SLC's dust, soot, vapors, fumes, nose, and vibration are causing them damages and, if so, precisely what portion of those damages SLC is causing." Id. The issue here, however, is not whether Plaintiffs can prove "precisely" that SLC's activities are causing Plaintiffs damages and what portion of those damages SLC is causing, but indeed, whether Plaintiffs have any credible proof on these issues to create a triable issue.

At the summary judgment stage, the court's function is not to weigh the evidence and determine the truth of the matter, but rather to determine whether there is a genuine issue for trial. See Anderson, 477 U.S. at 249. Moreover, the Court must draw all justifiable inferences in favor of the non-moving party on summary judgment. Id. at 255. However, to the extent that Plaintiffs allege in their Second Amended Complaint that SLC's facility and trucks each are responsible for noise, vibration, and dirt giving rise to a nuisance, see Second Am. Compl. ¶¶ 123-125, at most, Plaintiffs have testified about sand, noise, vibrations, fumes and vapors coming from truck traffic and sand and dust coming from the Facility. They have not pointed to any evidence of soot, vapors, fumes, noise or vibrations coming from the Facility.

[9]The Stipulation and Consent Order provides that Plaintiffs are seeking relief only "with regard to SLC's activities and the effect that SLC's activities have on the Plaintiffs. SLC is not responsible, and the Plaintiffs are not seeking to hold SLC responsible, for the activities or effects of other past or present operations in or about the Waterfront South neighborhood." Stipulation and Consent Order (Dec. 19, 2003)

The issue here is causation, and Plaintiffs have made no effort to separate out the harm to their properties allegedly caused by SLC's operations from any nuisance caused by other industries in the area. Indeed, Williams and Potter testified that there had always been dust in their homes, before SLC even began operating. Potter and Pfeiffer testified that trucks other than SLC's drive through the area. Pfeiffer testified that she had city dust in her home that was not from SLC. Potter also testified that there exists natural dirt in her home, and that the industry dust and dirt in her home is a result of the trucks that drive in the area, of which some, but not all, are SLC's. Holmes testified that she imagined other area industries produced sand or dust. At best, Plaintiffs' testimony is that there is more dust, dirt, white sand and truck noise, vibrations and fumes since SLC began its operations but have not quantified or differentiated these alleged nuisances from other polluting sources. That is insufficient to withstand summary judgment. Moreover, even though discovery is complete, Plaintiffs have not submitted any expert reports, sampling, testing or monitoring that link an increase in dust, dirt, white sand and truck noise, vibrations and fumes to SLC's operations and/or trucking.

Furthermore, the individual Plaintiffs' testimony regarding the issue of causation is simply that SLC could be causing a nuisance, as evidenced by their testimony:

- Williams testified that she "believe[d] [the sand was] coming from St. Lawrence" "because we didn't have it before." Williams Dep. Tr. at 66:21-67:2. Williams also testified that she knew that the sand on her porch came from SLC because "the trucks go right past" id. at 179:2-11, but admitted that she never saw sand actually fall off an SLC truck and land on her porch, and explained that it "could be blown off [from the pile of sand] and fell down there too," id. at 179:23-180:2.

- Potter admitted that she did not know which plants were generating the dirt but that she "kn[e]w that it ha[d] gotten more dusty since that [SLC] plant has gotten there, but it's always been kind of like dusty." Potter Dep. Tr. at 55:11-24. She attributed the increase in dust to SLC's truck traffic and not the facility itself, but admitted that SLC's trucks were not the only trucks driving nearby, id. at 74:12-75:17, and could not swear that the trucks that drove by and created dust were SLC trucks or were headed to the SLC facility because she never followed one of the trucks, id. at 120:8-130:1.

- Holmes testified that "[t]he only thing [she could] testify to is the fact that [her] eyes never bothered [her] before St. Lawrence moved into the community." Id. at 78:15-23. However, she also testified that she never saw sand flying from the SLC facility itself, although she had been on the property once and observed the property several times, id. at 78:24-80:6, and that she was "not sure" if there were other industries in the area that produced sand or dust that flew around the neighborhood, but that she "imagine[d]" that there were, id. at 85:17-24.

- Pfeiffer testified that she believed that her walls and windows had been damaged from truck traffic and resulting vibrations, although she admitted that she had never had a professional examine either. Pfeiffer Dep. Tr. at 362:18-368:24.

It is clear, therefore, that Plaintiffs' testimony that SLC has legally or proximately caused an interference with their use and enjoyment of their property is conjectural and speculative; however, speculation and conjecture normally cannot create a material factual dispute. See Robertson v. Allied Signal, Inc., 914 F.2d 360, 382 n. 12 (3d Cir.1990); Fedorczyk v. Caribbean Cruise Lines, Ltd., 82 F.3d 69, 76 (3d Cir.1996) (affirming a district court's order granting summary judgment where the plaintiff failed to present sufficient evidence on the element of causation).[10]

Similarly, Dr. Batterman's expert report suffers from the same fatal flaws. For the purposes of this motion, SLC has accepted Dr. Batterman's findings as true, as does this Court. SLC Reply Br. at 7, n. 3. Dr. Batterman, who is not a doctor, but whose report is being used by three Plaintiffs as evidence of the increased health risk component of their nuisance claim, looks at Waterfront South as a whole and does not tie SLC's operations to those particular Plaintiffs'

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[10] Plaintiffs' conjecture extends to the alleged diminution of their property values as a result of SLC's activities. They have submitted no evidence from any real estate expert in support of those contentions.

homes. Indeed, Dr. Batterman performed no testing or monitoring of any kind at the properties of these three Plaintiffs. Thus, Batterman does not attempt to quantify or opine on the levels of particulate matter at the three Plaintiffs' residences. Furthermore, he is silent on the issue of the levels of particulate matter attributable to SLC, as opposed to that caused by the other industrial operations that Plaintiffs have acknowledged to exist and to cause such impacts. Therefore, Dr. Batterman's report is of no aid in apportioning the share of liability allegedly attributable to SLC as opposed to other area industries, nor is his report helpful in ascertaining the increased health risks of the three Plaintiffs who have asserted such a claim.[11]

As such, the Court, and not a jury, will resolve the proximate cause issue here because I find that reasonable minds could not differ that the proximate cause element of the Plaintiffs' case has not been established. See, e.g., Vega by Muniz, 154 N.J. 496. After extensive fact and expert discovery, Plaintiffs have produced no credible proofs of the harm or nuisance they suffered as a result of SLC's operations and they have failed to prove the causation element of their claim. Furthermore, they have made no effort to single out the nuisance at their properties allegedly caused by SLC as opposed to other area industries. This is a burden Plaintiffs willingly accepted by virtue of the Stipulation and Consent Order into which they entered with SLC on December 19, 2003. Accordingly, because Plaintiffs have failed to present facts sufficient to establish the existence of an element essential to their case on which they would bear the burden of proof at trial, the Court will grant summary judgment in favor of SLC. See Celotex Corp., 477 U.S. at 322-23 ("Rule 56(c) mandates the entry of summary judgment, after adequate time for discovery and

[11]Dr. Batterman did no analysis of the three specific Plaintiffs and their individual health, age and background factors as impacted by particulate matter--even at the levels he extrapolates exist in the area, generally.

upon motion, against a party who fails to make a showing sufficient to establish the existence of an element essential to that party's case, and on which that party will bear the burden of proof at trial.").

C. Discrimination

Plaintiffs maintain that NJDEP intentionally discriminated against them in violation of Title VI of the Civil Rights Act of 1964 when it issued the permits to SLC to operate its facility in the Waterfront South neighborhood of Camden, New Jersey. Title VI of the Civil Rights Act of 1964 provides:

> No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. 42 U.S.C. § 2000d.

The Supreme Court has held that Title VI "extends no further than the Fourteenth Amendment"[12] and prohibits only intentional discrimination. Alexander v. Sandoval, 532 U.S. 275, 280 (2001). Therefore, to recover under Title VI, Plaintiffs cannot assert only that NJDEP's issuance of the permit here has a disproportionate effect on certain minorities.[13] See, e.g., Stehney v. Perry, 101 F.3d 925, 937 (3d Cir. 1996)("[A] facially neutral policy does not violate equal protection solely because of disproportionate effects.").

"[A]n invidious discriminatory purpose may often be inferred from the totality of the

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[12]The Fourteenth Amendment of the United States Constitution forbids states from denying any person within their jurisdiction "equal protection of the laws," with the aim of ensuring equal treatment for members of disadvantaged groups. U.S. Constitution, Amend. XIV; Strauder v. State of W. Va., 100 U.S. 303 (1879).

[13]A disproportionate or disparate impact exists when the defendants' racially neutral practice detrimentally affects persons of a particular race to a greater extent than other races. Powell v. Ridge, 189 F.3d 387, 394 (3d Cir. 1999).

relevant facts, including the fact, if it is true, that the [policy] bears more heavily on one race than another." Washington v. Davis, 426 U.S. 229, 242 (1976). Indeed, a disparate impact may "demonstrate unconstitutionality because in various circumstances the discrimination is very difficult to explain on nonracial grounds." Id. Nevertheless, the Supreme Court has "not held that a law, neutral on its face and serving ends otherwise within the power of government to pursue, is invalid under the Equal Protection Clause simply because it may affect a greater proportion of one race than of another. Disproportionate impact is not irrelevant, but it is not the sole touchstone of an invidious racial discrimination forbidden by the Constitution." Id.

To prove intentional discrimination by facially neutral conduct, a plaintiff must show that the relevant decisionmaker (e.g., a state legislature) adopted the policy at issue " 'because of,' not merely 'in spite of,' its adverse effects upon an identifiable group." Personnel Administrator of Massachusetts v. Feeney, 442 U.S. 256, 279 (1979); accord Gen. Bldg. Contractors Assoc. v. Pennsylvania, 458 U.S. 375, 391 (1982). A plaintiff may do this by showing that the policy was "applied in a discriminatory manner" or that its adoption or use was motivated by discriminatory animus. See Yick Wo v. Hopkins, 118 U.S. 356, 373-34 (1886); Hunter v. Underwood, 471 U.S. 222, 233 (1985). A mere awareness of the consequences of an otherwise neutral action will not suffice. See Feeney, 442 U.S. at 277-78 (holding that state legislature did not intentionally discriminate against women by enacting laws that gave hiring preferences to veterans even though the legislature was undoubtedly aware that most veterans were men; the legislative history underlying these preferences showed that the legislature always intended to offer the veterans' preference for "any person"). Even deliberate indifference is not enough to justify relief under Title VI. Pryor v. National Collegiate Athletic Ass'n., 288 F.3d 548, 567-68 (3d Cir. 2002).

"Determining whether invidious discriminatory purpose was a motivating factor [in the adoption of a facially neutral policy] demands a sensitive inquiry into such circumstantial and direct evidence of intent as may be available." Village of Arlington Heights v. Metropolitan Housing Development Corp., 429 U.S. 252, 266 (1977); Hunt v. Cromartie, 526 U.S. 541, 546 (1999) (applying the Arlington Heights criteria to a voting district allegedly drawn along racial lines). Although considering evidence of impact would seem to contradict the principle that no claim for disparate impact lies under Title VI, the Supreme Court has more directly stated that the "important starting point" for assessing discriminatory purpose is the "impact of the official action" and "whether it bears more heavily on one race than another." Arlington Heights, 429 U.S. at 266; Reno v. Bossier Parish School Bd., 520 U.S. 471, 489 (1997). As the Court has explained, the "impact of an official action is often probative of why the action was taken in the first place since people usually intend the natural consequences of their actions." Id. at 487.

Other considerations relevant to the purpose inquiry include the "historical background of the ...decision; [t]he specific sequence of events leading up to the challenged decision; [d]epartures from the normal procedural sequence; ... [t]he legislative or administrative history, especially ... [any] contemporary statements by members of the decisionmaking body"; and the forseeability of any disparate impact of the action. Id.; Arlington Heights, 429 U.S. at 267-68; Feeney, 442 U.S. at 279 n.25. If Plaintiffs meet this threshold burden of establishing a discriminatory purpose based on race, the burden then shifts to NJDEP to show that the same decision would have resulted in the absence of a discriminatory animus. Id. at 271 n.21.

SCCIA has made a number of arguments in support of its contention that NJDEP's issuance of the permits here caused a disparate impact that, along with NJDEP's actions, establishes NJDEP's discriminatory intent.

1) Disparate Impact

The Supreme Court has made clear that the starting point for assessing discriminatory purpose is determining whether a disparate impact exists. Arlington Heights, 429 U.S. at 266. Here, according to Plaintiffs' expert, Dr. Batterman, the "population near the facility is disproportionately minority, although the population in ... Camden [County] and in NJ is not." Batterman Report at 9 (emphasis in original). Specifically, he found that within a half mile radius of the SLC facility, "the total minority fraction is 81.7%." Id. at 9. Dr. Jeremy Mennis, another one of Plaintiffs' experts, concluded that there is evidence "of racial inequality in the location and regulatory enforcement of [AIRS Facility Subsystem ("AFS") Facilities]." Mennis Report at 7.[14] He also concluded that AFS Facilities, which are essentially air polluting facilities, "tend to concentrate in poor, high percent minority neighborhoods with low educational attainment."[15] Id. Further, he concluded that "AFS facilities in areas with high percent minority are associated with higher rates of significant violation, lower rates of state administrative orders issued, and lower penalty amounts as compared to those facilities in areas with low percent

[14]NJDEP emphasizes that an "inequity" falls short of a "disparate" or "disproportionate" impact. NJDEP Reply Br. at 8.

[15] NJDEP also points out that, according to Dr. Mennis' report, census tracts located in New Jersey which contain AFS facilities are thirty three (33%) percent minority, while New Jersey census tracts which do not contain AFS facilities are thirty five (35%) percent minority. Mennis Report at 4. However, Plaintiffs maintain that the host tract analysis is the simplest and least accurate method for determining whether AFS facilities are located near areas with a higher minority population. Pls.' Opp. Br. at 36. Moreover, in Dr. Mennis' Certification, he explains, "[i]n plain terms, ... race is a significant predictor of the density of polluting facilities in New Jersey. Air polluting facilities tend to concentrate near high percent minority tracts." Mennis Cert. ¶ 8.

minority." Id.

Defendant NJDEP points out that at Dr. Mennis' deposition, when he was asked if it was his conclusion that "the DEP has intentionally discriminated," Dr. Mennis averred, "I don't have information about that." Mennis Dep. Tr. 105: 1-6. When Dr. Mennis was asked whether it was his "conclusion that the spatial distribution of AFS facilities was the result of intentional discrimination by [NJDEP]," he also conceded that he lacked information to answer the question. Id. at 105:7-13. When Dr. Mennis was asked if his "study does not allow one to draw any inferences of DEP['s] intent," he answered, "The study itself does not suggest intent by the DEP." Id. at 130:16-22. When Dr. Mennis was asked if "the study [he] did that led to [his] expert report in this case cannot pinpoint the causes of what [he] contend[s] is the racial inequity in AFS facility location and enforcement," he answered, "[n]ot by itself, no." Id. at 94:10-16.[16]

[16]NJDEP has cited South Bronx Coalition for Clean Air, Inc. v. Conroy et al., 20 F. Supp.2d 565, 572 (S.D.N.Y. 1998) (quoting Leon v. Murphy, 988 F.2d 303, 311 (2d Cir. 1993)), for the proposition that "Plaintiffs [cannot] simply rely on population statistics and 'general' or 'conclusory' allegations of discrimination." NJDEP's Reply Br. at 10. In South Bronx, Environmental organizations sued state and federal authorities and private companies to enjoin, under, inter alia, Title VI the state transportation authority's sale of a bus depot and plans for solid waste facility. 20 F. Supp.2d at 567-70. Specifically, the plaintiffs' Title VI claims were based on the allegation that the transportation authority in its role as the Long Island Railroad entered into certain agreements restricting the handling and transportation of solid waste in Queens and on Long Island and that the combination of the expansion of the waste transfer facility and the transportation authority's agreements restricting the transfer of solid waste on Long Island would create a situation in which minority residents of the Bronx suffered the noxious effects of garbage to a greater degree than the mostly white residents of Long Island. Id. at 571-72. The plaintiffs alleged that these actions were "part of a policy of the defendants ... to site obnoxious environmental activity only in minority neighborhoods and to exclude such activities from neighborhoods occupied by white residents of the State." Id. at 572. They further alleged that these actions were "deliberate" and "specifically designed to protect white residents." Id. According to the district court, the plaintiffs offered no other allegations in support of their intentional discrimination claim, and did "not even identif[y] the dates, or the specific terms of, the alleged agreements which form the basis of this claim." Citing Leon v. Murphy, 988 F.2d 303, 311 (2d Cir. 1993), the court explained that "[i]t is well established that a complaint

Plaintiffs have also identified the screening model created by Dr. Robert E. Hazen, one of NJDEP's scientists, see Background § I(D), supra, as evidence of a disparate impact. Dr. Hazen testified that as a result of Judge Orlofsky's Order that NJDEP "compile environmental exposures in Camden," he "analyzed, through a multiple source [model], air affect in Camden." Hazen Dep. Tr. at 13:2-21. Dr. Hazen found that in roughly one-third of the state, including Camden, the risk borne by people of color was above that borne by whites. Id. at 63:5-16.

In response, NJDEP points out that its environmental equity policy was merely "proposed," NJDEP's Reply Br. at 2, Hazen Dep. Tr. at 111:20, but never adopted or implemented by the DEP. Id. at 111:20. Furthermore, Dr. Hazen testified that when completed, the proposed screening model would act as a potential indicator or trigger in the environmental justice process, id. at 112:10-16, but was not intended to provide a conclusion as to whether an area was subject to environmental inequity. Id. Dr. Hazen conceded that the proposed model was only three-quarters complete when the DEP tested it on Camden, id. at 81:18-19, 106:11-17, and that "with incomplete data sets, it would be impossible to draw any conclusions which would reflect what might be the conclusions reached when the model was to be employed," id. at 116:15-19.[17]

The Court finds that the works of Dr. Mennis and Dr. Hazen are evidential that the

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containing only conclusory, vague, or general allegations of conspiracy to deprive a person of constitutional rights cannot withstand a motion to dismiss," (internal quotations omitted), and found that the plaintiffs offered only "general" and "conclusory" allegations. Thus, the district court dismissed their Title VI intentional discrimination claim.

[17]Plaintiffs also accuse NJDEP of burying Dr. Hazen's conclusions when it submitted the disparate impact study to the Court. Pls.'s Br. at 42. However, NJDEP maintains that its staff determined that because the model was not complete and was still being developed, that it would not be included in the study submitted. NJDEP's Reply Br. at 3; Hazen Dep. Tr. at 97:17-98:1.

environmental effects of locating the SLC facility at its present site potentially bear more heavily upon minority groups than non-minorities. However, since Plaintiffs' own expert, Dr. Mennis, testified that any disparate impact that exists does not, by itself, support a finding of a discriminatory purpose on the part of NJDEP, Mennis Dep. Tr. at 94:10-16, 130:16-22, Plaintiffs have, in effect, conceded that their case is not the rare case where "a clear pattern, unexplainable on grounds other than race" has emerged. Arlington Heights, 429 U.S. at 266. Therefore, this impact alone is not determinative, and the Court will proceed with the totality of circumstances approach outlined in Arlington Heights and look to other considerations relevant to the issue of whether NJDEP intentionally discriminated.

2) Causation

NJDEP contends that the Court must look behind the disparate impact Plaintiffs have alleged because Plaintiffs cannot establish that NJDEP's issuance of the permits here caused the impact. Indeed, Plaintiffs must establish that NJDEP issued the permits to SLC "because of, not merely in spite of its adverse effects upon" the minority population in Waterfront South." Feeney, 442 U.S. at 279 (internal quotations omitted). Specifically, NJDEP contends, "it is important to recognize that the DEP does not select sites for the location of facilities or other activities under its regulatory control, such as coastal wetland developments. As such, DEP did not select the location of the SLC facility in Waterfront South." NJDEP's Moving Br. at 36. NJDEP further explains: "SLC itself selected the facility's location with no input whatsoever from the DEP. As the regulator or reviewer of applications for environmental regulatory approvals, the DEP simply reviewed, and eventually issued, permits to SLC to operate at the location selected by the applicant." Id. NJDEP also suggests that "there did not appear to be any statutory or regulatory reason for the DEP to deny the permits to SLC. The SLC permit met the environmental regulations in place at the time." Id. According to NJDEP, "[t]here were many non-discriminatory reasons for SLC to choose that location." NJDEP's Moving Br. at 36, n.8.[18]

Plaintiffs, on the other hand, contend that this argument is meritless. In doing so, they cite to Judge Orlofky's Opinion in which he addressed whether the NJDEP's permitting process is causally linked to any resulting disparate impact:

> [A] review of the applicable regulations promulgated by the EPA clearly indicates that the EPA has determined that there is a causal connection between recipients' permitting practices and the distribution of polluting facilities, and enacted the implementing regulations to Title VI to ensure that recipients consider the potential disparate impact of their permitting decisions. See 40 C.F.R. § 7.10 et. seq. In other words, the EPA has acknowledged that because recipients are responsible for permitting, they are also responsible for considering the distribution of the facilities which they permit with respect to the classes protected by the Civil Rights Act of 1964. The regulations therefore support the conclusion that a recipient's permitting decisions are causally linked to the distribution of facilities as a matter of law. SLC ignores the fact that without receiving a permit from the NJDEP, none of the hundreds or thousands of business to which it refers may legally operate in the State of New Jersey. As I just explained, the EPA implicitly rejected SLC's contention that there is no causal connection between the distribution of facilities and the permitting process when it issued the implementing regulations to Title VI. I conclude that SLC's contention that the NJDEP's permitting practices are absolutely irrelevant to the siting of industrial facilities in New Jersey is illogical, and contradicted by the applicable Title VI regulations.
> SCCIA, F. Supp.2d at 494-95.

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[18]Specifically, NJDEP explains:

> The SLC facility is sited in an area that had been used predominantly for industrial purposes since the early 1900's. The property was previously used for an industrial purpose. Furthermore, because the SLC facility would receive its raw material by cargo ship, SLC sought to locate its facility in a deep water port area. In addition, the location is also close to many major roads which facilitate SLC's distribution of its finished product. NJDEP's Moving Br. at 36, n.8 (internal citations omitted).

I agree that even though NJDEP did not select Waterfront South as the location for the facility, that fact cannot alone cannot serve as a basis for granting summary judgment to NJDEP because of a lack of causation. However, Plaintiffs must still show that NJDEP issued the permits to SLC "because of, not merely in spite of its adverse effects upon" the minority population in Waterfront South," Feeney, 442 U.S. at 279 (internal quotations omitted). Therefore, this Court's inquiry must proceed to the other evidence Plaintiffs have set forth as establishing intentional discrimination on the part of NJDEP.

3) Historical Background

In Arlington Heights, the Supreme Court explained that "[t]he historical background of the decision" is one potential source of evidence of intent to discriminate, "particularly if [the history] reveals a series of official actions taken for invidious purposes." 429 U.S. at 267. Here, Plaintiffs argue that the work of Dr. Mennis shows that there exists a historical pattern of NJDEP's discriminatory granting of permits and discriminatory environmental enforcement.
Plaintiffs have cited to two cases in support of their contention that various alleged "historical patterns" can be properly considered under Arlington Heights' "historical background" factor.

First, Plaintiffs have cited to the dissent in a Fourth Circuit case, Williams v. Hansen, 326 F.3d 569, 585 (4th Cir. 2003) (2-1 decision) (King, dissenting),[19] in support of the proposition that Arlington Heights'"historical background factor requires a review of any history of discrimination by the decision maker or the represented jurisdiction." Pls.' Opp. Br. at 45 (emphasis in original); see Williams, 326 F.3d at 585 (King, dissenting) (the historical background factor "may take into account any history of discrimination by the decisionmaking body or the jurisdiction it

[19]Plaintiffs failed to identify in their brief that they were citing to a dissenting opinion.

represents")(citing to two other Fourth Circuit cases, Sylvia Devel. Corp. v. Calvert County, MD., 48 F.3d 810, 819 (4th Cir. 1995) and Talbert v. City of Richmond, 648 F.2d 925, 929 (4th Cir. 1981) in support of that proposition). This Court has further reviewed Sylvia Devel. Corp. and Talbert. In Sylvia Devel. Corp., the Fourth Circuit added "evidence of a 'consistent pattern' of actions by the decisionmaking body disparately impacting members of a particular class of persons" to the Arlington Heights list and made clear that such evidence "is probative of whether a decisionmaking body was motivated by a discriminatory intent"; the court cites Talbert for that proposition. Sylvia Devel. Corp., 48 F.3d at 819. Talbert involved a white police officer's allegation that the City of Richmond, Virginia denied him a promotion on the basis of his race. Talbert, 648 F.2d 925. Talbert was tried in the wake of Richmond Black Police Officers' Ass'n v. City of Richmond, 74-0267-R (E.D.Va., July 3, 1975), which was terminated by a consent decree reciting in part:

> The City of Richmond also denies that it has engaged in such racially discriminatory acts or practices, or pattern or practice, relating to employees of the Richmond Bureau of Police since the effective date of the 1972 Amendments to 42 U.S.C. § 2000e et seq. But while denying liability to the named plaintiffs and the plaintiff class, the defendants realize that certain past practices within the Bureau may have given rise to an inference of discrimination against black persons. The individual defendants and the City have made good faith efforts to rectify and prevent racial discrimination in employment in the Richmond Bureau of Police and since June 11, 1974, the percentage of black employees has substantially increased. The defendants state that for the purpose of avoiding any further inference of discrimination, the City of Richmond has heretofore taken certain steps to eliminate policies, practices and procedures which were possibly discriminatory or potentially discriminatory against black persons. Id. at 929-30.

NJDEP argues that Judge King's dissenting opinion in Williams and the cases upon which it relies have no bearing upon this case. Indeed, Williams is not binding upon this Court, and

Plaintiffs have not cited to a Third Circuit case standing for the same proposition. Furthermore, in Talbert,[20] the defendant City of Richmond conceded that prior discrimination had taken place. NJDEP has made no such concession, nor has the Court been made aware of any other court that has found that NJDEP has discriminated. However, the Court need not rely upon Williams, Sylvia Devel. Corp. or Talbert to determine whether it may consider if there is evidence of a historical pattern of NJDEP's discriminatory granting of permits. I need look no further than the Arlington Heights case.

In Arlington Heights, the plaintiff Metropolitan Housing Development Corp. ("MHDC"), a non-profit developer, contracted to purchase a tract within the Village of Arlington Heights (the "Village") in order to build racially integrated low and moderate income, multifamily housing. Arlington Heights, 429 U.S. 254-58. The property at issue was zoned single-family and MHDC sought to have the property rezoned to multifamily, but the Village denied the request. Id. at 258-59. The Village's apartment policy called for multifamily zoned property to serve as a buffer between single-family development and other incompatible land uses, such as commercial or manufacturing districts. However, the property at issue did not fit that requirement. Thus, in seeking to determine whether an invidious purpose existed on the part of the Village in denying the applicant's re-zoning request, the Supreme Court, inter alia, considered the history of the buffer policy and how it had been applied in the past. Id. at 270. Therefore, according to the

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[20]While Talbert is an employment case and Plaintiffs contend in broad brush fashion that NJDEP has discriminated on the basis of race in the employment context, Pls.' Opp. Br. at 45, n.19, discriminatory employment practices are not an issue here. Moreover, the basis for Plaintiffs' contention that NJDEP has engaged in discriminatory employment practices--Gary Sondermeyer's testimony that employment based civil rights complaints have been filed against the DEP--is hardly evidence of such discrimination.

process used by the Supreme Court in Arlington Heights, this Court may consider whether there is evidence that NJDEP has historically engaged in discriminatory permitting, which may bear on the issue of NJDEP's intent to discriminate in issuing the permit to SLC here.

Plaintiffs contend that their evidence of NJDEP's historical pattern of discriminatory permitting emanates from their expert, Dr. Mennis. However, according to Dr. Mennis' report, "[t]he first component of the analysis of AFS facility distribution compares the percent minority tracts that are located nearby AFS facilities with those that are not. ...Table 1 shows that tracts that host AFS facilities and those that do not have approximately the same percent minority population (33% and 35%, respectively)." Mennis Report at 2. It also reveals that all tracts in New Jersey are 34 percent minority. Id. at 4. Moreover, Tables 2 and 3 of Dr. Mennis' report reflect that the percentage of land area used for industrial uses and population density, which is simply a measure of persons per kilometer, can provide a greater degree of explanation with respect to the locations of New Jersey's permitted AFS facilities, than does the percent of minority population. Id. at 4-5.

Dr. Mennis' report is dated August 3, 2003, and he was deposed on April 13, 2005. On July 8, 2005, and admittedly in opposition to Defendants' motions here, Dr. Mennis authored a certification that characterized as "misleading" his own finding that "the percent minority of host tracts (33%) as compared to the percent minority of non-host tracts (35%) is relatively close." Mennis Cert. at 1-2, ¶¶ 5-6. He certifies that "although minorities in urban areas are often concentrated near hazardous facilities, this pattern may not be captured by looking only at the host tract" because, for one, "tracts vary greatly in size, typically being much larger in rural areas and smaller in more densely populated areas." Id. As such, he contends that his methods represented in Tables 2 and 3 of his report, which measure a tract's proximity to an AFS facility and calculate facility density, respectively, paint a better picture of hazardous facility location, id. at 1-3, ¶¶ 5-8, and reveal "that race is a significant predictor of the density of polluting facilities in New Jersey" because "[a]ir polluting facilities tend to concentrate near high percent minority tracts," id. at 2-3, ¶ 8. Plaintiffs cite to these two latter quotations from paragraph eight of Dr. Mennis' certification in support of their contention that "race plays such a significant role in DEP's facility permitting, as part of the pattern is unexplainable on grounds other than race." Pls.' Opp. Br. at 47.

In making such a contention, though, Plaintiffs have taken a significant conceptual leap. First, when Plaintiffs use the language "unexplainable on grounds other than race," Pls.' Opp. Br. at 47, they are evoking the language the Arlington Heights Court used to describe the rare case of Yick Wo v. Hopkins, 118 U.S. 356 (1886), in which "a clear pattern, unexplainable on grounds other than race, emerge[d] from the effect of the state action even when the governing legislation appears neutral on its face." Arlington Heights, 492 U.S. at 564. Yick Wo is a case growing out of the anti-Chinese crusade in San Francisco over one hundred years ago during which an ordinance had been passed by the city council requiring those who desired to engage in the laundry business to first obtain a permit from the board of supervisors of the city so to do. Yick Wo, 118 U.S. 356. It was admitted that such permission had been refused to every Chinese applicant and granted to every white person seeking the same. Id. There is no such admission of discrimination here. Dr. Mennis himself testified that any disparate impact that exists does not, by itself, support a finding of a discriminatory purpose on the part of NJDEP, and has said that other factors, such as, population density and industrial land use, can explain his results, as well. Mennis Dep. Tr. at 94:10-16, 130:16-22. Therefore, the "unexplainable on grounds other than race" language is inapplicable here.

Second, and more importantly, with regard to Dr. Mennis' data, there is no evidence presented by him or Plaintiffs as to when these facilities became located in these areas, what the racial composition was at the time of siting, and whether NJDEP permitting was involved. SLC's expert, Dr. William Bowen, pointed out that "under Dr. Mennis' research design in the analyses described in his Tables 1, 2 and 3, the data do not include any time-related information on whether particular residents or permitted facilities came first." Bowen Report at 5; SLC's Ex. 72. As such, Dr. Bowen concluded that "[i]t is therefore logically impossible to demonstrate on the basis of these data that the residents came before the facilities. This design therefore cannot logically support any inferences about any putative causes of any observed relationships." Id.

Moreover, Glenn Hickerson, SLC's aerial photography expert, stated that there is aerial photographic evidence that the SLC property, "as well as many other properties within [census tract] 6018 has been consistently used for industrial related purposes since at least 1940." Hickerson Report at 4; SLC's Ex. 69. He also stated that "Sanborn maps show that the [SLC] property has been used for industrial related purposes (large ship construction and major industrial transportation) since at least 1906." Id. Additionally, Joseph Balzano, who was "born and raised in the Waterfront South neighborhood" and has worked for the South Jersey Port Corporation and its predecessor since 1951, declared that the Waterfront South area was "historically developed to support the port's operations." Balzano Decl. ¶¶ 2, 7, SLC's Ex. 43. The fact that 1970 census statistics reveal that tract 6018 had a population of 3,693 persons, of whom 2,201 were "white" and 1,452 were "negro," see Hickerson Report at 4, SLC's Ex. 69, further clouds Plaintiffs' contentions of historical discrimination at this site.

Furthermore, the New Jersey Legislature did not even create the DEP until 1966, see State

v. Kadelak, N.J.Super. 349, 357 (App. Div. 1995), and thus any allegedly historical evidence of discriminatory siting decisions must be of recent vintage only. Yet, Plaintiffs have failed to parse out locations of polluting facilities pre-dating 1966. As such, Dr. Mennis' case report, deposition, and recently authored certification reveal nothing about any actual permitting decisions made by the DEP and Plaintiffs have failed to provide any nexus between their evidence of the locations of the polluting facilities and what they suggest are the underlying discriminatory permitting decisions by NJDEP. Plaintiffs are, in effect, asking the Court to assume that discriminatory permitting decisions occurred, which is something that the Court cannot do, especially in light of the undisputed evidence that 1) Tract 6018 has been used for industrial purposes for almost one hundred years; 2) the population of tract 6018 had more White residents than African-Americans in 1970; 3) the DEP began issuing permits like the one at issue here no earlier than 1966; 4) NJDEP has not conceded that it had discriminated in the past; and 5) there is no evidence of a finding of discrimination by any court or agency in the permitting context. Thus, Plaintiffs' evidence regarding the locations of polluting facilities in New Jersey shows, at most, a disparate impact and nothing linking the locations of the facilities to NJDEP's permitting decisions. Disparate impact alone is not evidence of intent to discriminate, see Sandoval, 532 U.S. at 280, and thus, Plaintiffs have failed to produce any evidence of a historical pattern of discriminatory permitting decisions on the part of NJDEP.

Plaintiffs also contend, however, that there exists a historical record of discriminatory environmental enforcement on the part of NJDEP. Plaintiffs have cited to Grosjean v. American Press Co., 297 U.S. 233, 245 (1936) for the proposition that "[d]iscriminatory purpose may be inferred when history reveals that the government uses a device that was traditionally used to target an identifiable group for unfair treatment." Pls.' Opp. Br. at 47. In Grosjean, newspaper publishers sued to enjoin the enforcement against them of a tax imposed upon newspapers with a circulation of 20,000 copies per week in Louisiana. Grosjean, 297 U.S. at 240-41. The United States Supreme Court invalidated the Louisiana tax as a result of the long recognized tradition of using such taxes to suppress political opposition in the press. Id. at 243-51. NJDEP argues that "Plaintiffs' argument that there is evidence of disparate enforcement by the Department is wholly irrelevant to their claim of discrimination in the review and issuance of the SLC permit ... and should not be considered during an Arlington Heights analysis."[21] NJDEP's Reply Br. at 15.

According to Plaintiffs, Dr. Mennis found that in New Jersey "polluting facilities in high percent minority areas are associated with significantly less enforcement actions and lower penalty amounts compared to facilities in low percent minority areas. He also found that facilities with significant violations are more likely to be in high percent minority areas." Pls.' Opp. Br. at 48 (internal citations omitted). Importantly, however, Plaintiffs have not alleged that NJDEP engaged in discriminatory enforcement with regard to SLC's facility. Since the issue here is whether the DEP's permitting decision regarding the SLC property was discriminatory, historical discriminatory enforcement, even if true, is of limited relevance to the Court's inquiry. Yet, the Court is not prepared to declare such evidence "wholly irrelevant," since it could be probative of a

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[21]Grosjean, to which Plaintiffs have cited, involved a tax against the press that was a traditionally recognized forms of discrimination. As early as 1644, John Milton had argued against such taxes by the British Parliament. Grosjean, 297 U.S. at 245. Despite the persistent search for new subjects of taxation, the Court noted that it was "not without significance that, with the single exception of the Louisiana statute, so far as [it could] discover, no state during the one hundred fifty years of our national existence has undertaken to impose a tax like that" in Grosjean. Id. at 250-51. Plaintiffs are hard pressed to argue that the discrimination which they assert occurred here is as embedded in jurisprudence as the doctrine against taxes of the press.

discriminatory animus on the part of the DEP if other evidence exists of discrimination in the permitting context, and specifically with regard to the SLC site. Here, the Court finds no such other evidence of discrimination in permitting.

Plaintiffs contend that another manner in which "to demonstrate a history of discriminatory intent is through evidence of actions taken by a decisionmaker to avoid or frustrate earlier efforts at non-discrimination." Pls.' Opp. Br. at 50. Specifically, Plaintiffs argue that NJDEP and its former Commissioner, Robert Shinn, undertook efforts "to avoid DEP's responsibilities under Title VI" by creating the Environmental Equity Policy in response to the EPA's Interim Guidance. Pls.' Opp. Br. at 50. First, they have identified a letter written in September 1998 by Commissioner Shinn to Robert Lanz, a Coca-Cola vice president, wherein, Shinn explained that the FACA task force "has been struggling since May to come up with an alternative to the EPA guidance that allows states more control over the process and have flexibility so that the process works along with the permitting process." Letter from Robert Shinn to Robert Lanz (Sept. 1998) at 1, Pls.' Ex. P. He also stated that the DEP has "been involved in working with a group of stakeholders from across New Jersey to develop a state alternative to the EPA guidance that emphasizes community outreach and a proactive approach to environmental equity." Id. As such, Shinn indicated that the DEP wanted to test "whether [its] approach is a workable alternative" and asked Lanz if Coca-Cola would serve as a pilot company upon which the DEP could test its approach since Coca-Cola was "in the process of applying for manufacturing permits in [Newark, New Jersey], a minority community in the state." Id. at 2.

Shinn's letter to Coca-Cola, as well as his deposition testimony, reveal that Shinn was concerned that the EPA's Title VI Interim Guidelines had "very negative implications ... upon

New Jersey," Letter from Robert Shinn to Robert Lanz (Sept. 1998) at 1, Pls.' Ex. P, because they had the potential to invalidate permits already issued by the DEP, which would cause "nightmar[ish]" "financial" and "legal" issues. Shinn Dep. Tr. at 77:22-78:6. Furthermore, he felt that the possibility of an EPA "override" of a permit would cause permitholders to lack confidence that they "really" possessed permits. Id. at 79:20-22. As such, he sought to create a "front end process," id. at 78:5-6, because "the sooner you start to talk about an issue of permit application[,] the sooner you are able to resolve it amicably. If you're at the tail end of the process, it's just a fight. So[,] [Shinn's] whole concept was driven by early participation, early discussion of the issues, some mitigation of some of the issues possible and rather than the permit invalidation at the end of the process," id. at 78: 14-25. Shinn hoped that pursuant to his policy, the EPA would "delegate" to NJDEP its authority to overturn an NJDEP permit and that NJDEP permits could not "be challenged" under "Title VI." Id. at 199:19-201:15. Shinn stated that his objective was not to "implement Title VI" but rather to create an "alternative" to the EPA policy and have the EPA "endorse[] and support" NJDEP's policy. Id. at 73:2-14.

Shinn also stated that he "felt [NJDEP] needed a policy because [there was] a high minority population throughout the state." Id. at 195:7-9. He made clear that he was "very aware of Camden," id. at 237:17, stated that the city had "had a tortured history," 114:16-17, and that it had been "through a tough[] economic cycle," id. at 114: 25-115:1. As such, Shinn thought of Camden as an area that was a "potential environmental justice site" and/or a "candidate for environmental equity confirmation" because of its low "per capita income," "unemployment," "substandard" housing, and "racial demographics." Id. at 124:25-126:20.

Plaintiffs have identified the testimony of Gary Sondermeyer, who managed the DEP senior managers and all day to day activities of DEP under Commissioner Shinn, as allegedly establishing Shinn's intent to evade Title VI obligations. Specifically, Plaintiffs point to Sondermeyer's statement that he "had been involved in the [Shinn] administration's efforts in the area of environmental equity" and that when Commissioner Campbell took over, he "very appropriately" "sought to move the issue in a different direction." Id. at 24:17-23. Indeed, Shinn's policy was never implemented by NJDEP. However, upon reviewing the entire transcript of Sondermeyer's testimony,[22] it is evident that Plaintiffs have taken his comments out of context and mischaracterized them. Sondermeyer testified to his belief that "Commissioner Shinn was extremely interested in the issue of environmental justice," id. at 27:5-6, and that he felt that Commissioner Campbell went in a different direction because he "wanted different people involved," id. at 24:22-23, and felt that Shinn's proposal was "overly procedural and not particularly substantive," id. at 104:10-12.

Plaintiffs have also characterized NJDEP's policy as:

> differ[ing] from coverage under Title VI in important respects and provid[ing] people of color with significantly fewer protections than the federal civil rights law as applied by EPA. First, it would have precluded a complaint at the end of the permit process. Second, unlike Title VI, the DEP process was voluntary for permit-seekers. On this point, Shinn overruled his own Advisory Council, which wanted the process mandatory. Third, under the program DEP had no ability to deny the permit, which Shinn knew Title VI had. Pls.' Opp. Br. at 53 (internal citations omitted).

Even assuming Plaintiffs' comparisons are accurate, Plaintiffs must demonstrate that NJDEP was attempting to evade civil rights protections and that its policies were grounded in discrimination.

Plaintiffs have cited to Griffin v. County School Board of Prince Edward County, 377 U.S.

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[22]On March 20, 2006, the Court emailed the parties and requested complete transcripts of Shinn and Sondermeyer's depositions.

218 (1964) in support of the proposition that "an attempt to weaken new and existing civil rights protections through seemingly neutral programs ... [is] evidence of invidious purpose." Pls.' Opp. Br. at 55. In Griffin, the district court had enjoined discriminatory practices in Prince Edward County, Virginia schools, required the County School Board to take 'immediate steps' toward admitting students without regard to race to the white high school, and required the Board to make plans for admissions to elementary schools without regard to race. Griffin, 377 U.S. at 222-23. As a result of the distict court's order, "Prince Edward's public schools were closed and private schools operated in their place with state and county assistance." Id. at 231. The Supreme Court ruled that "closing the Prince Edward schools and meanwhile contributing to the support of the private segregated white schools that took their place denied petitioners the equal protection of the laws." Id. at 232. While Plaintiffs characterized the closing of the public schools and operation of a white private school in Griffin as "seemingly neutral," Justice Black, writing for the United States Supreme Court, thought otherwise, and concluded that the aforementioned events occurred "for one reason, and one reason only: to ensure, through measures taken by the county and the State, that white and colored children in Prince Edward County would not, under any circumstances, go to the same school." Id. at 231. In contrast, the actions taken by NJDEP in connection with its efforts to achieve environmental equity and satisfy the goals of the EPA's Interim Guidance are "seemingly neutral."

Moreover, even if the DEP's policy was less stringent than that suggested by the EPA Interim Guidance, that would not cause Plaintiffs to prevail since the Interim Guidance makes clear that it "is intended to provide a framework for the processing by EPA's Office of Civil Rights" of Title VI complaints "alleging discriminatory effects resulting from the issuance of pollution control permits by state and local governmental agencies that receive EPA funding." EPA, Interim Guidance for Investigating Title VI Administrative Complaints Challenging Permits, (Feb. 5, 1998) at 1, available at http://www.epa.gov/civilrights/docs/interim.pdf (visited March 14, 2006). As such, the Guidance outlines the specific steps that the OCR is to follow when processing Title VI complaints. Id. at 3 (emphasis added). There is nothing within the Interim Guidance to suggest that NJDEP was required to adopt or follow it. The fact that NJDEP sought to create its own front end policy that would address environmental equity questions early on in the process rather than later, which still left open the possibility that permits it already issued could later be invalidated by the OCR or EPA, may be evidence that Shinn and the DEP sought to approach environmental justice differently, but it is not that they sought to evade it.[23] Indeed, the DEP policy would have addressed the issues of environmental equity before the lengthy permitting process had been completed, rather than later, as Plaintiffs would obviously prefer. Even when granting all inferences to Plaintiffs, there is no evidence of an effort on the part of Commissioner Shinn to evade environmental equity. Therefore, the Court finds that the DEP's work towards creating its own policy did not constitute avoidance or frustration of earlier efforts at non-discrimination. Thus, the Court finds that Plaintiffs have not shown that the historical background of the decision to issue the permits to SLC is evidence of NJDEP's intent to discriminate.

4) Sequence of Events Leading Up To the Issuance of the Permits and Departures From

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[23]The Interim Guidelines also provide: "The statements in this document are intended solely as guidance. This document is not intended, nor can it be relied upon, to create any rights enforceable by any party in litigation with the United States." EPA, Interim Guidance for Investigating Title VI Administrative Complaints Challenging Permits, (Feb. 5, 1998) at 11, available at http://www.epa.gov/civilrights/docs/interim.pdf (visited March 14, 2006).

the Normal Procedural Sequence

In Arlington Heights, the Supreme Court also explained that "[t]he specific sequence of events leading up the challenged decision" and "[d]epartures from the normal procedural sequence" "also may shed some light on the decisionmaker's purposes." 429 U.S. at 267. Plaintiffs contend that the "DEP's attempts to evade its Title VI obligations are ... also part of the sequence of events leading up to the SLC permitting decision that demonstrate discriminatory intent by DEP." Pls.' Opp. Br. at 56. Since the Court has already determined that there is no evidence that the DEP evaded any Title VI obligations, see Discussion supra § II(C)(3), this argument fails.

Plaintiffs also argue that DEP's "selective enforcement of New Jersey environmental law, in waiving of [N.J.A.C. § 7] permit fees to developments in Camden" is evidence of DEP's discriminatory intent pursuant to Arlington Heights' "sequence of events" and "departures" factors. Pls.' Opp. Br at 57-58, 63. However, Plaintiffs have not identified any evidence showing that NJDEP waived SLC's permit application fees here, and, in fact, NJDEP and SLC contend that NJDEP did not waive SLC's fees. SLC's Reply Br. at 21; NJDEP's Reply Br. at 17, n.10. While Commissioner Shinn testified that NJDEP waived permit fees for other Camden projects, such as the baseball stadium, aquarium, Admiral Wilson Boulevard improvements and the Battleship New Jersey, Shinn Dep. Tr. at 115:12-116:14, Plaintiffs have submitted no evidence that these projects caused any pollution.[24] Thus, these projects are not relevant to the inquiry here

[24]Plaintiffs' contentions that fees were waived in connection with these projects because of discrimination and not in order to improve economic conditions, and that the projects "caused increased development and increased traffic in this already overburdened area," Pls.' Opp. Br. at 58-59, are conclusory and unsupported by the evidence. Moreover, if this case were to proceed to the rebuttal stage, those contentions would surely be rebutted by evidence that NJDEP waived

and do not constitute evidence of discriminatory intent on the part of NJDEP.

Plaintiffs have also argued that DEP's "failure to conduct an environmental justice" or "environmental equity" analysis is indicative of discriminatory intent under Arlington Heights's "specific sequence of events" and "departure from normal procedure" factors because "DEP was well aware that Camden was both a community of color and a community overburdened by pollution." Pls.' Opp. Br. at 60, 62, 63. They also quote Judge Orlofsky's first Opinion in this case and argue that "[t]he fact that the District Court found, at the preliminary injunction stage, that DEP had violated [the] EPA's Title VI regulations indicates the presence of a triable issue of fact on whether the specific sequence of events leading up to DEP's decision is indicative of discriminatory intent." Id. at 62-63. Indeed, Judge Orlofsky held that "NJDEP and Commissioner Shinn [had] violated Title VI of the Civil Rights Act by failing to consider the potential adverse, disparate impact of the SLC facility's operation on individuals based on their race, color, or national origin, as part of the NJDEP's decision to permit SLC's proposed facility." South Camden Citizens in Action, 145 F. Supp.2d at 481. However, since Judge Orlofsky issued that Opinion, the United States Supreme Court issued its decision in Sandoval, in which it ruled that § 601 of Title VI does not itself prohibit actions that disparately impact racial groups and that related regulations that proscribe disparate impacts do not simply apply § 601. Sandoval, 532 U.S. at 280-85. Therefore, the Court ruled, the private cause of action available for enforcing § 601 does not extend to disparate impact regulations. Id. Since Plaintiffs' only remaining claim against NJDEP is for intentional discrimination pursuant to § 601 of Title VI, it is clear at this

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fees in those cases with the legitimate purpose of aiding in the revitalization of Camden and Camden's economy.

juncture that it no longer holds true that NJDEP and Commissioner Shinn violated Title VI of the Civil Rights Act solely by virtue of any failure to consider the potential adverse, disparate impact of the SLC facility's operation on minorities. Plaintiffs have not cited any legal authority that imposed this duty upon NJDEP.

The fact that Judge Orlofsky authored a new opinion to address Sandoval's effect on this case also belies Plaintiffs' contention that his finding at the preliminary injunction stage, which was made before Sandoval, creates a triable issue of fact at this time. Indeed, the Third Circuit has made clear that a grant of a preliminary injunction is irrelevant when the case reaches the summary judgment stage. Doeblers' Pennsylvania Hybrids, Inc., No. 04-3848, 2006 WL 722156 at *6 ("The District Court's earlier grant of a preliminary injunction, and this Court's affirmance thereto, is irrelevant to our review of the grant of summary judgment."). Moreover, the DEP points out that it conducted a health risk study which showed that the addition of the facility did not elevate the health risk, see Shinn Dep. Tr. at 141:1-20, and followed informal policies aimed at increasing Plaintiffs' participation in the environmental equity process including community outreach, public meetings and a formal public hearing, see O'Sullivan Dep. Tr. at 125:24-126:21. Therefore, the Court finds that DEP's failure to conduct an environmental justice or environmental equity analysis is not indicative of discriminatory intent on the part of NJDEP.

Additionally, Plaintiffs contend that "DEP did not require SLC to build its primary smokestack to [58.9 meters,] the height disclosed to the public and used in the air modeling by SLC and DEP." Pls.' Opp. Br. at 63-64. Rather, SLC built its stack 55.1 meters high. Id. at 64. Plaintiffs assert that "[t]his lower stack height increases the air pollution impact on the surrounding neighborhood" and argue that SLC's building thereof "creates a triable issue of fact as to whether or not its departure from such substantive requirements indicates intentional discrimination." Id. at 64. In response, NJDEP argues that while "SLC, due to an oversight, installed a stack smaller than that modeled, this fact does not constitute evidence of discrimination by the DEP or support a conclusion that race was a motivating factor in the DEP's decision to issue the SLC permits." NJDEP's Reply Br. at 17, n.9.

Paul Flaherty, SLC's air modeling expert, when asked if it is "generally true that the higher the stack, the less immediate local impact there is from emission source," answered that "[i]n a very general sense, yes...It depends on other factors beside the stack height, but stack height is significant." Flaherty Dep. Tr. at 93:20-25. Flaherty's testimony is less than convincing on the issue whether a 55.1 meter high stack causes more pollution in Waterfront South than a 58.9 meter high stack would have caused. Furthermore, Plaintiffs have not submitted any evidence as to what NJDEP has done in other situations or what it is supposed to do when a permit applicant has built a smokestack lower than it had disclosed to the public and used in air modeling. As such, since the Court is unaware what constitutes the usual and customary response in such situations, even when granting all inferences in favor of Plaintiff, I am unable to find that the fact that NJDEP did not require SLC to demolish its smokestack and build it 3.8 meters higher constitutes a departure from substantive requirements that is indicative of intentional discrimination.

5) Deliberate Indifference

While admitting that "deliberate indifference has been rejected as an independent theory of liability under Title VI," Plaintiffs argue that "it can be considered ... as evidence of discriminatory intent under the Arlington Heights administrative history proxy." Pls.' Opp. Br. at

64. Plaintiffs contend that "the deliberate indifference inquiry focuses on the fact that the entity charged with discrimination is vested with the authority and indeed, the obligation to address and rectify the harm caused by the actions of third parties. While the other inquiries focus on the affirmative actions of the agency, the deliberate indifference standard focuses on the agency's inaction – its sins of omission." Id. at 64-65 (emphasis in original) (internal citations omitted). Plaintiffs have cited Gebser v. Lago Vista Indep. School Dist., 524 U.S. 274, 290 (1998) in support of this proposition, as well as Bryant v. Indep. School Dist. No I-38 of Garvin County,OK, 334 F.3d 928, 933 (10th Cir. 2003)("[t]he choice not to act – despite knowledge of harm and a duty to address the harm– implicates intent"). Yet, SLC contends that "deliberate indifference has no part in an intentional discrimination analysis under Arlington Heights and its progeny." SLC's Reply Br. at 24. This Court agrees.

In Pryor v. NCAA, 288 F.3d 548 (3d Cir. 2002), the Third Circuit had to decide, inter alia, whether the plaintiffs stated a claim for purposeful, racial discrimination under Title VI by alleging that the National Collegiate Athletic Association adopted certain educational standards because of their adverse impact on black student athletes seeking college scholarships. In Pryor, the plaintiffs argued "that the NCAA was not just indifferent to [the] alleged disparate impact on black athletes; it was extremely indifferent to that impact even if it did not intend to discriminate." Id. at 567. In support of their argument, they cited several cases, including Gebser v. Lago Vista Indep. School Dist.,524 U.S. 274, 290 (1998) where "the Supreme Court held that a school or other entity covered by Title IX could incur liability under that civil rights law if an entity official 'with authority to take corrective action' (1) had 'actual notice' about another employee's sexual harassment of a student; and (2) after receiving actual notice, that official was still 'deliberately indifferent' to the intentional wrongdoing committed by the employee." Id. at 568. According to the Third Circuit in Pryor,

> [t]he problem with applying Gebser's "deliberately indifferent" standard to a Title VI purposeful-discrimination case is that that standard applies to one who sat by passively while another committed an intentional Title IX violation. Stated another way, the school in Gebser faced liability under Title IX not because it did anything intentionally wrong; it just sat by and did nothing at all. And again, in Alexander v. Sandoval, the Supreme Court held that an entity cannot incur liability under Title VI for anything short of intentional discrimination. So, if we accepted Plaintiffs' theory here, we would also have to cast the NCAA in the role of the Gebser school that committed a sin of omission, not a sin of commission. In so doing, we would effectively turn [Sandoval] on its head, along with its prohibition against imposing liability for anything short of purposeful discrimination. We have no authority to do so. Id.

Plaintiffs' citation to Bryant, in support of the proposition that the choice not to act – despite knowledge of harm and a duty to address the harm– implicates intent, is equally inapposite because it presupposes that an intentional act of wrongdoing occurred in the first instance. See Pryor, 288 F.3d at 568. Here, at least to the extent that they advance this alternative theory of relief, Plaintiffs do not claim that the DEP committed the purposeful discrimination required by Title VI and Sandoval; rather, they contend that the DEP acted with such disregard for Plaintiffs' civil rights that the disregard by itself is evidence of an intentional wrongdoing. If this Court accepted this theory, it would eviscerate the Supreme Court's ruling in Sandoval. Therefore, Plaintiffs' argument that the Court should consider NJDEP's deliberate indifference to the fact that new NAAQS[25] had been promulgated and to its "obligat[ion] to consider racially

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[25]The operating permits that NJDEP issued to SLC in 2000 required SLC to comply with the 1987 NAAQs. The 1987 NAAQs were the standards in effect when the NJDEP issued the permits. Plaintiffs contend that because new, more stringent NAAQs were promulgated in 1999, but not yet implemented in 2000 because they were challenged in litigation, NJDEP was on notice that the 1987 standards "were not adequately protective of public health," Pls.' Opp. Br. at 66, and that this notice is evidence of NJDEP's intent to discriminate. Even if the Court

discriminatory impacts," Pls.' Opp. Br. at 66, as evidence of NJDEP's intent to discriminate, is without merit.

6) Foreseeability and Totality of the Circumstances

Plaintiffs also contend that "foreseeability of and knowledge of discriminatory onus placed upon the complainants" is a factor that the Court may consider when determining whether NJDEP acted with discriminatory intent. Pls.' Opp. Br. at 71. In support of this proposition, Plaintiffs cite to Judge Orlofsky's most recent Opinion in this case, which in turn cited to Columbus Bd. of Ed. v. Penick, 443 U.S. 449 (1979). In Penick, students in the Columbus, Ohio, school system sued the Columbus Board of Education, alleging that the Board intentionally segregated the public schools based upon race. Penick, 443 U.S. at 449. The Court ruled in favor of the students, and, in doing so, stated that "actions having foreseeable and anticipated disparate impact are relevant evidence to prove the ultimate fact, forbidden purpose. Those cases do not forbid the foreseeable effects standard from being utilized as one of the several kinds of proofs from which an inference of segregative intent may be properly drawn." Id. at 464-65. The Penick court also noted, though, that "disparate impact and foreseeable consequences, without more, do not establish a constitutional violation." Id. at 464. As such, assuming, arguendo, that Plaintiffs are correct that "[t]he disparate impact of the SLC was clearly [foreseeable]" to Commissioner Shinn and NJDEP, Pls.' Opp. at 71, such a foreseeable impact is of no aid to Plaintiffs at this juncture because it, alone, is insufficient to establish a constitutional violation, Penick, 443 U.S. at 465, and this Court has found no other evidence of any intent to discriminate on the part of Shinn or

accepted Plaintiffs' deliberate indifference theory, I would still be unable to conclude that the fact that the DEP issued SLC's permits based upon the NAAQs that were in effect at that time is somehow evidence of discriminatory intent.

the DEP.

Even if the Court adds to the totality of the circumstances equation Plaintiffs' evidence of DEP's alleged historical discriminatory enforcement, the result is the same, because that evidence is also disparate impact evidence. Plaintiffs have no evidence of intent to discriminate specifically relating to NJDEP's issuance of SLC's permits. When the Court grants all inferences in favor of Plaintiffs, including evidence of potentially discriminatory enforcement and of a foreseeable disparate impact, Plaintiffs still fail to establish that NJDEP issued permits to SLC because of, not merely in spite of, its adverse effects upon the minority community of Waterfront South.[26] See Feeney, 442 U.S. at 279. Therefore, Plaintiffs' claim against NJDEP and its Commissioner pursuant to Section 601 of Title VI cannot survive summary judgment.

III. CONCLUSION

For the reasons set forth above, SLC's motion for summary judgment is granted and the motion for summary judgment filed by NJDEP and former Commissioner Bradley Campbell is granted.. An appropriate Order follows.

S/ Freda L. Wolfson
Honorable Freda L. Wolfson
United States District Judge

[26] I am constrained to note that the Plaintiffs in the Waterfront South area are unhappy, and deservedly so, with their continuing plight of being located in an area that is so historically suited to industrial facilities. However, their assault on the SLC permitting decisions on a constitutional basis simply does not carry the day. Instead, they should direct their efforts prospectively to the appropriate legislative and agency forums and work towards a sensible and meaningful environmental equity policy for the future.

ATTACHMENT B

DECEMBER 10, 2018 EMAIL

OCTAVIA DRYDEN TO LISA DHARWADKAR

From: Octavia Dryden <drydenp2015@gmail.com>
Date: December 10, 2018 at 7:59:57 PM EST
To: lisa.walanscp@gmail.com
Subject: Re: contact information

Lisa,
I hope you had safe travels back home. Thank you for being on the call to provide more detailed information to help us better understand Walan's operation proposed for the Christiana Avenue location in Wilmington. Based on the information provided by you and representatives of Walan, along with the expertise of Dr. Gretchen Goldman, Delaware Concerned Residents of EJ find:

1. Walan is a smaller operation and not one using the kind of chemicals that pose an explosion like the other petrochemical facilities around.
2. We share the community concern about truck traffic and dust. (Use of rail and truck helps)
3. Use of dust control efforts in the facility (baghouses and maintaining a moisture level) but not sure if there would still end up being nuisance dust levels.
4. Some concern about air pollutant hotspots that wouldn't be captured under the National Ambient Air Quality Standards. Familiar with the permitting process and the required modeling for that, which is different than the emissions communities are concerned about.

Should Walan be approved, DCR4EJ seeks:

-Walan, at all times, operate as Good Neighbor
-Ongoing communication with key staff at Walan and community to address community concerns relative to operation at Christiana location
-Walan support environmental justice efforts in surrounding communities

Again, we wish you success and look forward to working together in making our communities better.

Penny

ATTACHMENT C

COMMENTS ADDRESSING ECONOMIC BENEFITS

Klotz, Bradley A. (DNREC)

From: Bryon Short <bshort@e-dca.org>
Sent: Tuesday, November 20, 2018 9:47 AM
To: Vest, Lisa A. (DNREC)
Subject: WALAN Specialty Construction Products Air Quality Construction Permit Application

November 20 , 2018
Ms. Lisa Vest
Public Hearing Officer
Delaware Department of Natural Resources and Environmental Control
89 Kings Highway
Dover De 19901

RE: WALAN Specialty Construction Products Air Quality Construction Permit Application

Dear Ms. Vest:

These comments are offered on behalf of the Delaware Contractors Association in support of the Air Quality Construction Permit application submitted by WALAN Specialty Construction Products, LLC. The company proposes to construct and operate a facility near the Port of Wilmington that will grind granulated blast furnace slag (GGBFS) which is an additive in the manufacturing of concrete. The use of GGBFS has been demonstrated to increase the durability and strength of concrete and is now being required to be used in certain projects by regional Departments of Transportation, including the Delaware Department of Transportation.

Currently, there is no Delaware source available to acquire the material. The addition of the WALAN facility in New Castle County could help reduce project costs and assist some DCA members in meeting highway and bridge construction standards and requirements. The presence of a local source of material should also help our membership succeed in acquiring projects, which in turn helps support the local labor force.

We understand and expect that the proposed facility must meet stringent environmental standards that are designed to protect public health and the environment. Through the use of best available control technology and best management practices, it appears that WALAN's facility will meet regulatory requirements as a natural minor source of air emissions, most notably for particulate matter.

We also believe that WALAN has demonstrated competence to construct and operate such a facility through its 30 years of successful operation of two mineral grinding facilities in western Pennsylvania.

For these reasons we respectfully request DNREC's favorable consideration of this application.

Sincerely,

Bryon Short

Rick Beringer

From: Fred Croen <fcroen@elementia.com>
Sent: Wednesday, November 21, 2018 9:35 AM
To: lisa.vest@state.de.us
Subject: Walan Specialty Construction Products, LLC - Public Hearing November 20, 2018

Dear Ms. Vest

I attended last night's meeting and I wanted to write and comment on how well the meeting was managed. You and your staff are to be commended for a well run meeting. I think many of the concerns of residents was heard and those in favor of the permit being granted to Walan SCP, LLC also had a chance to voice their opinion and/or provide information germane to the decision before DNREC. As technical manager of cementitious materials for Keystone Cement Company, Bath, PA, I have seen demand for GGBFS grow rapidly over the 40 years I have been in the business. Today, demand exceeds world supply and the primary reason this is so is the 1 for 1 mitigation of greenhouse gas emissions that tend to offset CO^2 emissions resulting from the manufacturing of Portland cement. This proposed manufacturing facility, once producing at full capacity will eliminate CO^2 emissions of approximately 160,000 tons per year. As if this is not sufficient reason to embrace GGBFS technology, Slag makes good concrete better. It makes highways and bridges more durable and stronger, more resistant to the rigors of our environment. The use of GGBFS and other supplementary cements are mandated by the Federal government procurement policies in all Federally funded projects where such materials are available.

I have known Anil Bhadsavle and Lisa Dharwadkar, principals of this new venture for the past several years. I have also acted as a slag consultant to Anil and together we did considerable research to assemble the right raw material sources and state-of-the-art process equipment capable of producing a quality finished product with the least possible environmental impact. Both Anil and Lisa are responsible owners and of good character.

Thank you for the opportunity to voice my comments to support this permit application.

Best regards,

Fred J. Croen

Fred J. Croen
Technical Services Manager
Keystone Cement Company
(610) 844-4684

A Division of .....

elementia

Klotz, Bradley A. (DNREC)

From: Rick Beringer <rberinger@duffnet.com>
Sent: Friday, January 18, 2019 3:49 PM
To: Klotz, Bradley A. (DNREC); Mattio, Karen (DNREC); Marconi, Angela D. (DNREC)
Cc: Lisa Dharwadkar
Subject: WALAN Construction Permit Application - Response to Public Hearing Comments
Attachments: 8850ED.0119-WALAN RESPSONSE TO PUBLIC HEARING COMMENTS.pdf

Brad, Karen and Angela:

Please find the attached file that contains WALAN's response to comments made during the November 20, 2018 Public Hearing for the construction permit application or comments submitted to DNREC's Hearing Officer prior to December 31, 2018, while the Administrative Record was open. I will be sending you a hard copy of the response document by regular mail as well.

Rick

M. Richard Beringer, P.E., LEED AP
Principal/Senior Consultant

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EXHIBIT
Exh. #5 (IAV)

March 5, 2019

Mr. Bradley A. Klotz
State of Delaware
Department of Natural Resources
and Environmental Control
Division of Air Quality
100 West Water Street, Suite 6A
Dover, DE 19901

RE: Project No. 8850.ED
WALAN Specialty Construction Products, LLC
Air Permit Application Revisions
501 Christina Avenue
Wilmington, New Castle County, Delaware

Dear Mr. Klotz:

Please find the attached air permit application, dated October 2018 and revised on March 1, 2019. The revisions to the application primarily reflect a reduction in the proposed silo bin vent discharge height and the limited throughput of the facility. The limitation of throughput reduces forecasted annual emissions. The reduction in bin vent discharge height does not adversely impact local air quality.

The air permit application pertains to the granulated blast furnace slag (GBFS) grinding facility located in Wilmington, Delaware being proposed by WALAN Specialty Construction Products, LLC (WALAN). The revisions to the air permit application were made following the State of Delaware Department of Natural Resources and Environmental Control (DNREC)'s request to limit the planned annual facility throughput of GBFS to 150,000 tons per year and the applicant's request to lower the height of the product storage silos, which in turn lowers the planned discharge height of the silo bin vents.

The following changes were made to the original air permit application:

- AQM-1, item 28.2, Proposed Construction and Operating Schedule
- AQM-3.1, item 16.1, Stack Height Above Grade: changed the silo bin vent stack heights to 66 feet above grade.
- AQM-3.1, Supporting Information: Provided an updated Site Plan reflecting a relocating of the principal stationary operating equipment on site.
- AQM-3.7, item 18.1, Stack Height Above Grade: changed the silo bin vent stack heights to 66 feet above grade.
- AQM-3.7, Supporting Information: Provided an updated General Configuration of Storage Silos drawing provided by the manufacturer.

DUFFIELD ASSOCIATES
Soil, Water & the Environment

- AQM-4.6, Silo Bin Vents Baghouse Application, item 38.1, Stack Height Above Grade: changed the stack height for the silo bin vents to 66 feet above grade.
- AQM-5, Emissions Information Application and Emissions Calculations: updated application form and calculation tables to account for the limited throughput of 150,000 tons of GBFS per year.
- AQM-5, SCREEN3 Dispersion Modeling: Revised the model run for the Particulate Matter (PM) and PM10 emissions from the silo bin vents to account for the change in stack height from 85 to 66 feet above grade.

If you should have any questions regarding the revised air permit application, please contact M. Richard Beringer, P.E. of Duffield Associates at (302) 239-6634 or via electronic mail at rberinger@duffnet.com. On the behalf of WALAN, thank you for your prompt attention to the application. Duffield and WALAN look forward to receiving a copy of the draft construction permit.

Very truly yours,

DUFFIELD ASSOCIATES, INC.

M. Richard Beringer

M. Richard Beringer, P.E., LEED AP
Senior Environmental Consultant

MRB:bac
8850ED.0319-Revised Application Cover Letter

Enclosure: Air Permit Application for a Granulated Blast Furnace Slag (GBFS) Grinding Facility

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AIR PERMIT APPLICATION FOR A GRANULATED BLAST FURNACE SLAG (GBFS) GRINDING FACILITY

WALAN Specialty Construction Products, LLC
501 Christina Avenue
Wilmington, DE 19801

October 2018
(Revised March 1, 2019)

Prepared by:

Duffield Associates, Inc.
5400 Limestone Road
Wilmington, Delaware 19808

Project No. 8850.ED

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Soil, Water & the Environment

AQM-1
Administrative Information

Administrative Information

One original and one copy of All Application Forms Should Be Mailed To:
Division of Air Quality
100 West Water Street, Suite 6A
Dover, DE 19904

All Checks Should Be Made Payable To:
State of Delaware

Company and Site Information

1. Company Name: **WALAN Specialty Construction Products, LLC**
2. Company Mailing Address: **719 Tarrtown Road**
   City: **Adrian** State: **PA** Zip Code: **16210**
3. Site Name: **Walan Specialty Construction Products, LLC.**
4. Site Mailing Address: **501 Christina Avenue**
   (if different from above)
   City: **Wilmington** State: **DE** Zip Code: **19801**
5. Physical Location of Site: **501 Christina Avenue**
   (if different from above)
   City: **Wilmington** State: **DE** Zip Code: **19801**
6. Site Billing Address: **719 Tarrtown Road**
   (if different from above)
   City: **Adrian** State: **PA** Zip Code: **16210**
7. Air Quality Management Facility ID Number:
8. Site NAICS Code): **327992**
   (list all that apply
9. Site SIC Code: **3295**
   (list all that apply)
10. Site Location Coordinates: Latitude: 39 ° 43' 37" Longitude: 75 ° 32' 08"
11. Is the Facility New or Existing? ☒ NEW ☐ EXISTING

If the Facility is an Existing Facility, Complete the Rest of Question 11. If Not, Proceed to Question 12.

11.1. Does the Facility Have Active Air Permits? ☐ YES ☒ NO

12. Is this Application For New Equipment or a Modification to Existing Equipment?
    ☒ New Equipment
    ☐ Modification of Existing Equipment
    ☐ Other (Specify):

If the application is for the modification of existing equipment, complete the rest of Question 12. If not, proceed to Question 13.

Company and Site Information

12.1. Does the Equipment Have an Active Air Permit? ☐ YES ☐ NO

If the equipment has an active air permit, complete the rest of Question 12. If not, proceed to Question 13.

12.2. Permit Number of Existing Equipment:

13. Status of Equipment Being Applied For: ☒ Natural Minor Source ☐ Synthetic Minor Source ☐ Major Source ☐ Federally Enforceable Restrictions

14. Facility Status: ☒ Natural Minor Facility ☐ Synthetic Minor Facility ☐ Major Facility

If the facility is a Major Source, complete the rest of Question 14. If not, proceed to Question 15.

14.1. Responsible Official Name:

14.2. Responsible Official Title:

Contact Information

15. Name of Owner or Facility Manager: **Anil Bhadsavle**
16. Title of Owner or Facility Manager: **President**
17. Permit Contact Name: **M. Richard Beringer**
18. Permit Contact Title: **Senior Project Manager**
19. Permit Contact Telephone Number: **302-239-6634**
20. Permit Contact Fax Number: **302-239-8485**
21. Permit Contact E-Mail Address: **rberinger@duffnet.com**
22. Billing Contact Name: **Lisa Dharwadkar**
23. Billing Contact Title: **Vice President**
24. Billing Contact Telephone Number: **724-545-2300**
25. Billing Contact Fax Number:
26. Billing Contact E-Mail Address: **lisa.walanscp@gmail.com**

Proposed Construction and Operating Schedule

27. When Will the Proposed Construction/Installation/Modification Occur: 06/01/2019
28. Proposed Operating Schedule: **24** hours/day **7** days/week **52** weeks/year

28.1. Is There Any Additional Information Regarding the Operating Schedule? ☒ YES ☐ NO

If YES, complete the rest of Question 28. If NO, proceed to Question 29.

Proposed Construction and Operating Schedule

28.2. Describe the Additional Information: **The proposed operating schedule assumes the maximum continuous operation of the facility. However, the actual operating schedule will vary throughout the year depending on when GBFS is shipped to the Port of Wilmington and transported to the facility. Assuming the plant operates at maximum capacity with a projected throughput rate of 30 tons/hour, the maximum throughput is approximately 262,800 tons/year. It is anticipated that the facility will actually operate for 5,000 hours per year with a projected throughput rate of 30 tons/hour. Therefore, the projected amount of GBFS throughput will be approximately 150,000 tons/year. Due to the seasonal nature of the business, the number of trucks delivering material to the facility will range from approximately 8-24 per day, when a ship is being unloaded. A figure of the local route that trucks will take from the Port of Wilmington to the facility and to Interstate 495 is provided in AQM-1 Supporting Information. A figure of the truck route that will be taken from the facility to the principal customer as well as a figure identifying locations of potential customers in Pennsylvania, Delaware, New Jersey, and Maryland is provided in AQM-1 Supporting Information. Initially, one ship per year is anticipated. Up to three ships per year is anticipated in the future. A maximum range of 60,000 to 65,000 tons of GBFS will be stored at the facility at any given time and will accumulate as GBFS is transported to and stockpiled at the facility.**

Coastal Zone Information

29. Is the Facility Located in the Coastal Zone? ☐ YES ☒ NO

If the facility is located in the Coastal Zone complete the rest of Question 29. If not, proceed to Question 30.

29.1. Is a Coastal Zone Permit Required for Construction or Operation of the Source Being Applied for? ☐ YES ☒ NO

Attach a copy of the Coastal Zone Determination if it has not been previously submitted

If a Coastal Zone Permit is required complete the rest of Question 29. If not, proceed to Question 30.

29.2. Has a Coastal Zone Permit Been Issued? ☐ YES ☐ NO

Attach a copy of the Coastal Zone Permit if it has not been previously submitted

Local Zoning Information

30. Parcel Zoning: **W1, Waterfront Manufacturing (See Zoning Information)**

Attach Proof of Local Zoning if it has not been previously submitted

Application Information

31. Is the Appropriate Application Fee Attached? ☒ YES ☐ NO

32. Is the Advertising Fee Attached? ☒ YES ☐ NO

For help determining your application and advertising fees see:
http://www.dnrec.state.de.us/DNREC2000/Library/Fees/DE%20Permit%20Fees.htm

Attach the appropriate fees. Note that your Application will not be considered complete if the appropriate fees are not included.

33. Is a Cover Letter Describing the Process Attached? ☒ YES ☐ NO

Attach a brief cover letter describing your Application.

Application Information

If the Facility is a New Facility complete Question 34. If not, proceed to Question35.

34. Is a Copy of the Applicant Background Information Questionnaire on Record at the Department? ☐ YES ☒ NO

If NO, complete the rest of Question 34. If YES, process to Question 35.

34.1 Is a Copy of the Applicant Background Information Questionnaire Attached? ☒ YES ☐ NO

For a copy of the Applicant Background Information Questionnaire see
http://www.dnrec.delaware.gov/services/Documents/Chapter79Form.pdf

Attach a copy of the Applicant Background Information Questionnaire if applicable.

35. Check Which Application Forms are Attached:

☒ AQM-1
☒ AQM-2
☒ AQM-3.1
☐ AQM-3.2
☐ AQM-3.3
☐ AQM-3.4
☐ AQM-3.5
☐ AQM-3.6
☒ AQM-3.7
☐ AQM-3.8
☐ AQM-3.9
☐ AQM-3.10
☐ AQM-3.11
☐ AQM-3.12
☐ AQM-3.13
☐ AQM-3.14
☐ AQM-3.15
☐ AQM-4.1
☐ AQM-4.2
☐ AQM-4.3
☐ AQM-4.4
☐ AQM-4.5
☒ AQM-4.6
☐ AQM-4.7
☐ AQM-4.8
☐ AQM-4.9
☐ AQM-4.10
☐ AQM-4.11
☐ AQM-4.12
☒ AQM-5
☐ AQM-6

36. Check Which Documents are Attached:

☐ Coastal Zone Determination
☐ Coastal Zone Permit
☒ Proof of Local Zoning
☒ Application Fee
☒ Advertising Fee
☒ Applicant Background Information Questionnaire
☐ Claim of Confidentiality
☒ Manufacturer Specification(s)
☒ Material Safety Data Sheets (MSDSs)
☒ Supporting Calculations
☒ Descriptive Cover Letter
☒ Other (Specify): **Area map, aerial photo, site drawing, and equipment site drawing**

Confidentiality Information

37. Do You Consider Any of the Information Submitted With this Application Confidential? ☐ YES ☒ NO

For help on how to submit a confidentiality claim see
http://regulations.delaware.gov/register/december2011/final/15%20DE%20Reg%20864%2012-01-11.htm

If a Claim of Confidentiality is made it MUST meet the requirements of Section 6 of DNREC's Freedom of Information ("FOIA") Regulation at the time the Application is submitted.

Signature Block

DNREC – Division of Air Quality
Application to Construct, Operate, or Modify Stationary Sources

Signature Block

I, the undersigned, hereby certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all of its attachments as to the truth, accuracy, and completeness of this information. I certify based on information and belief formed after reasonable inquiry, the statements and information in this document are true, accurate, and complete. By signing this form, I certify that I have not changed, altered, or deleted any portions of this application. I acknowledge that I cannot commence construction, alteration, modification or initiate operation until I receive written approval (i.e. permit, registration, or exemption letter) from the Department. I acknowledge that I may be required to perform testing of the equipment to receive construction or operation approval, and that if I do not receive approval to construct or operate that I may appeal the decision.

Anil Bhadsavle, President
Owner or Operator

10/15/18
Date

Anil Bhadsavle
Signature of Owner or Operator

One Original and One Copy of All Application Forms Should Be Mailed To:
Division of Air Quality
100 W. Water Street, Suite 6A
Dover, Delaware 19904

All Checks Should Be Made Payable To:
State of Delaware

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AQM-1
Supporting Information

DUFFIELD ASSOCIATES
Soil, Water & the Environment

Site Location Map

Date: 10/2018	**Site Location Map**	DESIGNED BY: BNM	DUFFIELD ASSOCIATES Soil, Water & the Environment
SCALE: AS SHOWN		DRAWN BY: CSP	5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL. (302)239-6634 FAX (302)239-8485
PROJECT NO. 8850.ED		CHECKED BY: MRB	OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY
FIGURE 1		FILE: 8850.ED.mxd	EMAIL: DUFFIELD@DUFFNET.COM

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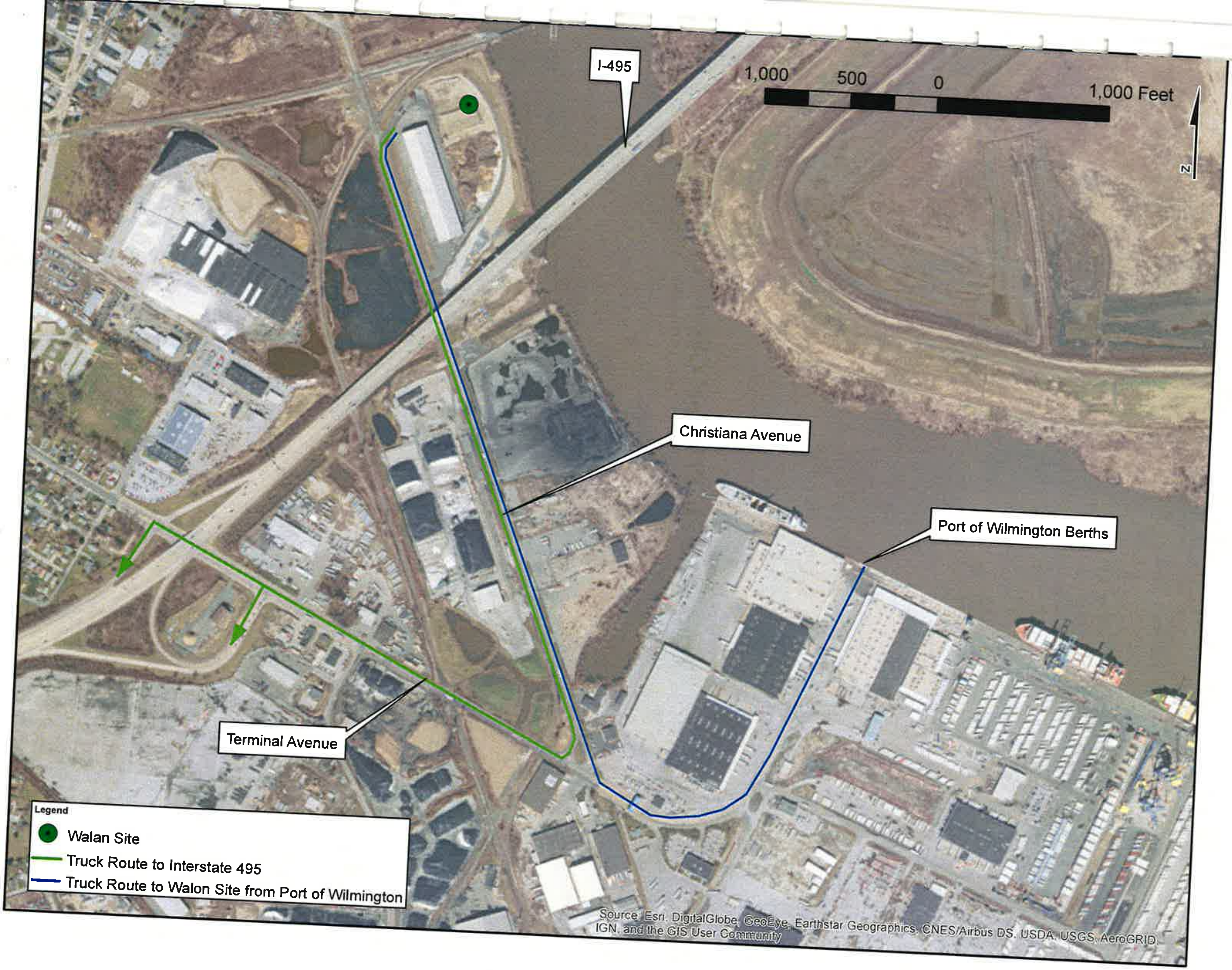
Soil, Water & the Environment

Local Truck Routes


I-495
1,000
500
0
1,000 Feet
N
Christiana Avenue
Port of Wilmington Berths
Terminal Avenue
Legend
Walan Site
Truck Route to Interstate 495
Truck Route to Walon Site from Port of Wilmington
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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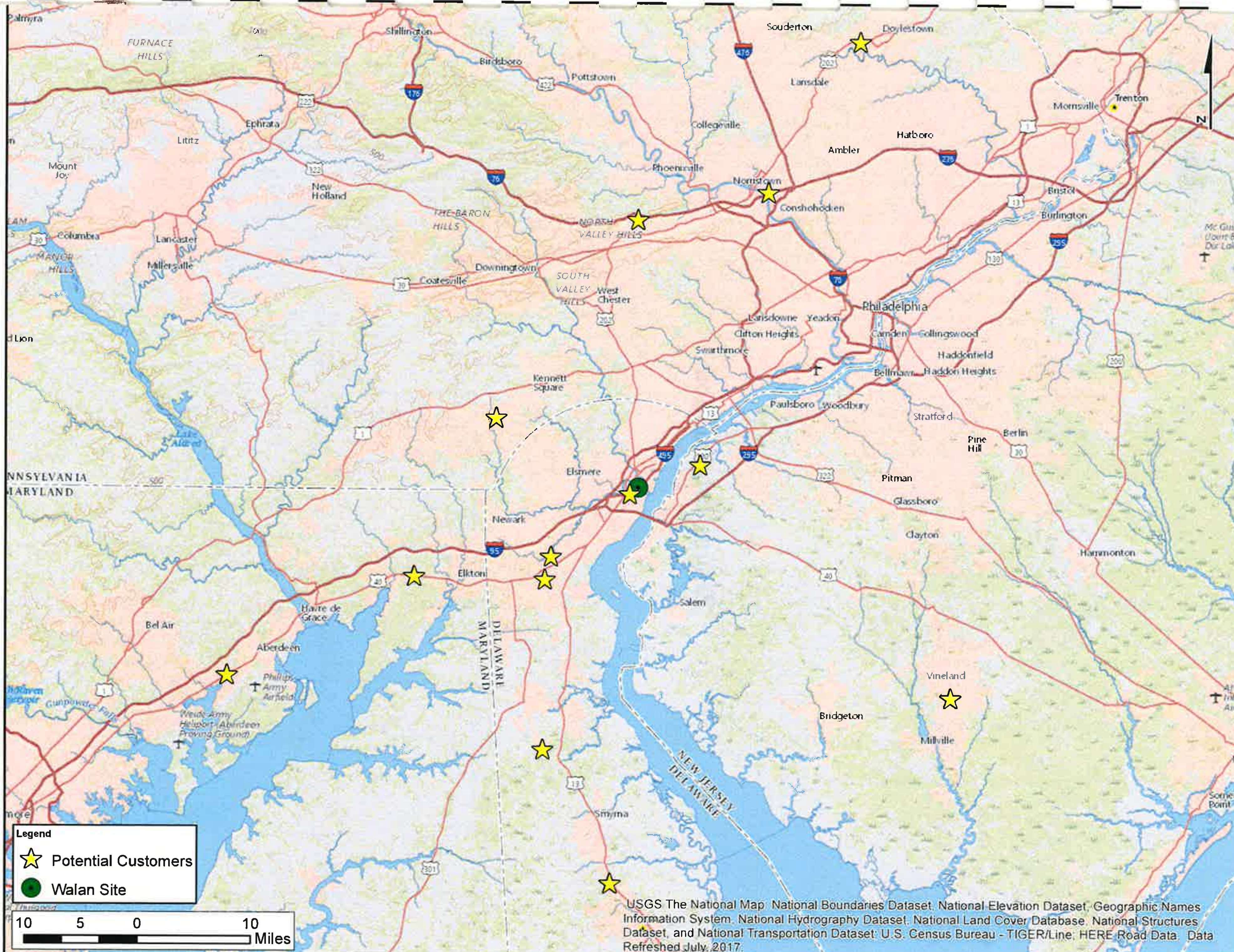
Soil, Water & the Environment

Truck Route to Principal Client

N
I-495
I-95
DE-1
US-40
Walther Road
Legend
Walan Site
Truck Route
1
0.5
0
1
Miles
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

DUFFIELD ASSOCIATES
Soil, Water & the Environment

Locations of Potential Future Customers


Legend
Potential Customers
Walan Site
10 5 0 10
Miles
Souderton
Doylestown
Lansdale
Trenton
Morrisville
Hatboro
Ambler
Collegeville
Phoenixville
Norristown
Conshohocken
Bristol
Burlington
Pottstown
Birdsboro
Shillington
Ephrata
Lititz
Mount Joy
New Holland
Columbia
Lancaster
Millersville
Downingtown
Coatesville
West Chester
Philadelphia
Lansdowne
Yeadon
Clifton Heights
Swarthmore
Camden
Collingswood
Haddonfield
Bellmawr
Haddon Heights
Kennett Square
Paulsboro
Woodbury
Stratford
Pine Hill
Berlin
Pitman
Glassboro
Clayton
Hammonton
Elsmere
Newark
Elkton
Salem
Havre de Grace
Bel Air
Aberdeen
Phillips Army Airfield
Vineland
Bridgeton
Millville
Smyrna
FURNACE HILLS
THE BARON HILLS
NORTH VALLEY HILLS
SOUTH VALLEY HILLS
MANOR HILLS
PENNSYLVANIA
MARYLAND
DELAWARE
MARYLAND
NEW JERSEY
DELAWARE
USGS The National Map: National Boundaries Dataset, National Elevation Dataset, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; U.S. Census Bureau - TIGER/Line; HERE Road Data. Data Refreshed July, 2017.

Zoning Information

City of Wilmington

MICHAEL S. PURZYCKI
Mayor

March 6, 2018

Mr. Ali Mirzakhalili, P.E.
DNREC Division of Air Quality
State Street Commons
100 West Water Street- Suite 6A
Dover, DE 19904

Re: 501 Christiana Avenue

Dear Mr. Mirzakhalili:

Please be advised that the subject property is located in an area zoned W-1 and that the proposed use of the premises for a granulated blast furnace slag grinding operation is permitted as a matter of right per Wilmington City Code section 48-336(b)(1).

If I can be of further assistance with this matter, please don't hesitate to call or write.

Respectfully,

James G. DiPinto
Zoning Manager
Department of Licenses & Inspection
(302)-576-3040
jdipinto@wilmingtonde.gov

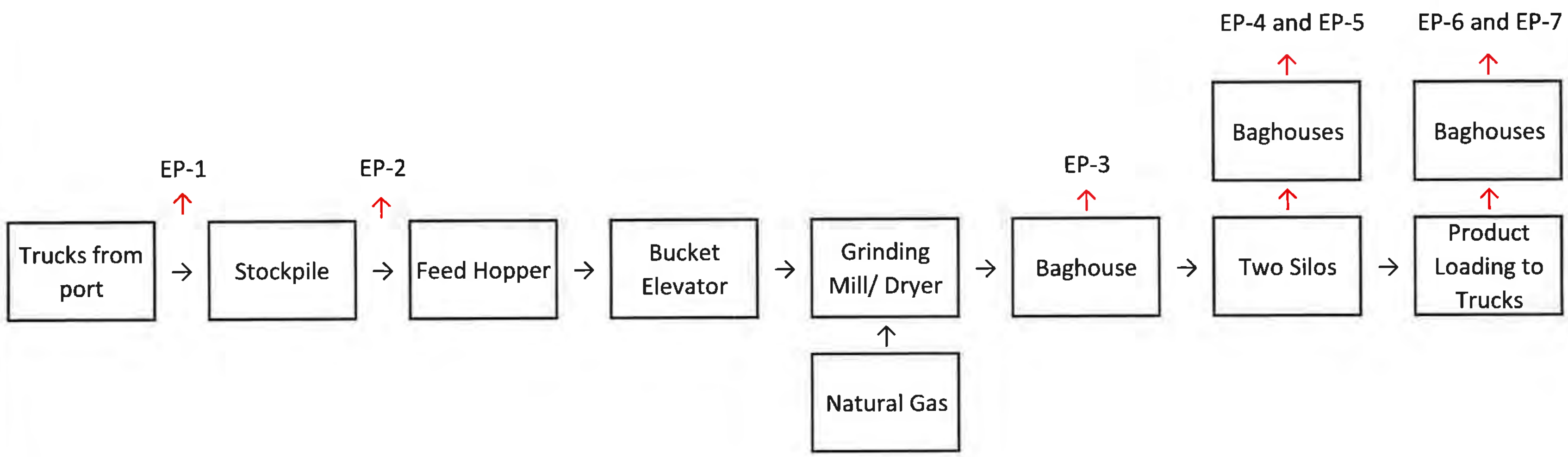
cc: Craig R. Holdefer

AQM-2
Process Flow Diagram

Process Flow Diagram

Sketch the Process Flow Diagram for the equipment or process being applied for. Include each emission unit and control device (even existing emission units that will not be modified by this application). You may identify each emission unit with a simple shape. Label each emission unit and control device with a unique identifier. Show the relationship between each emission unit and/or control device by drawing arrows between them to indicate the flow of air pollutants. List which application forms are included for each emission unit or control device below the shape representing each emission unit or control device . See http://www.delaware.gov/reg2/default.htm for example Process Flow Diagrams for common processes. If you already have a Process Flow Diagram for the equipment or process being applied for, you may attach it to the application instead of using this form.

See Process Flow Diagram attached



DATE: 10/2018	**Process Flow Diagram**	DRAWN BY: BNM	DUFFIELD ASSOCIATES Soil, Water & the Environment
PROJECT NO: 8850.ED	WALAN Specialty Construction Products, LLC	CHECKED BY: MRB	5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL (302)239-6634 FAX (302)239-8485
SHEET: FIGURE 2	Wilmington~Delaware	FILE: 8850.ED Process_Flow_Diagram.xlxs	OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY *EMAIL: DUFFIELD@DUFFNET.COM*

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AQM-3.1
Generic Process Equipment
Application

INTRODUCTION TO AQM-3.1: GENERIC PROCESS EQUIPMENT APPLICATION

Form AQM-3.1 provides general technical information and descriptions of the facility's processes. The form identifies the raw material inputs and products which are granulated blast furnace slag (GBFS) and ground granulated blast furnace slag (GGBFS), respectively. A material safety data sheet (MSDS) is provided for the GBFS which is representative of the product GGBFS given that the composition of the material is not altered during the grinding process. The stack information is included which summarizes the height and width of the baghouse and bin vent exhaust stacks, stack exit gas temperature and gas flow rate, and other parameters. All technical parameters can be found in the equipment information documents provided as supporting information in AQM-3.1, AQM-3.7, and AQM- 4.6. A glossary of technical terms used in this section is provided below.

Baghouse – an air pollution control device that separates particulates from exhaust gas and collects the separated particulates to keep them from being discharged to the atmosphere.

Actual Cubic Feet per Minute – (ACFM) a unit of volumetric flow that is provided by manufacturers of fans and compressors. The actual volumetric flow is determined with reference to inlet conditions of the gas.

Generic Process Equipment Application

If you are using this form electronically, press F1 at any time for help

General Information

1. Facility Name: **WALAN Specialty Construction Products, LLC**
2. Equipment ID Number: **GBFS Handling, Grinding and Storage**
3. Provide a brief description of Equipment or Process: **GBFS is received from the Port of Wilmington by truck, stockpiled, and fed by front-end loader, via a hopper, to the "Ready2Grind" grinding/drying equipment. The ground GBFS is fed by bucket elevator to two - 1,100 ton storage silos equipped with bin vents that remove particulates from the air. The fine dust particles are captured by a baghouse during grinding and drying. Finally, the ground GBFS is loaded into enclosed trucks through dustless loadout chutes controlled by cartridge filters.**
4. Manufacturer: **See supporting equipment information attached in AQM-4.6**
5. Model:
6. Serial Number:

Raw Material Information

7. Raw Materials Used in Process

If there are more than four Raw Materials used, attach additional copies of this page as needed.

	Raw Material Used	CAS Number	Usage Rate (include units)	MSDS Attached?
7.1.	**Granulated blast furnace slag (GBFS)**	**N/A**	**30 tons/hour**	☒ YES ☐ NO
7.2.				☐ YES ☐ NO
7.3.				☐ YES ☐ NO
7.4.				☐ YES ☐ NO

Attach a copy of all calculations made to support the data in the table above.
Attach a Material Safety Data Sheet (MSDS) for each Raw Material used.

Products Produced Information

8. Products Produced

If there are more than four Products Produced, attach additional copies of this page as needed.

	Product Produced	CAS Number	Production Rate (include units)	MSDS Attached?
8.1.	**Ground GBFS (GGBFS)**	**N/A**	**30 tons/hour**	☒ YES ☐ NO
8.2.				☐ YES ☐ NO
8.3.				☐ YES ☐ NO

Products Produced Information

8.4.			☐ YES ☐ NO

Attach a copy of all calculations made to support the data in the table above.
Attach a Material Safety Data Sheet (MSDS) for each Product Produced.

Byproducts Generated Information

9. Byproducts Generated

If there are more than four Byproducts Generated, attach additional copies of this page as needed.

	Byproduct Generated	CAS Number	Generation Rate (include units)	MSDS Attached?
9.1.				☐ YES ☐ NO
9.2.				☐ YES ☐ NO
9.3.				☐ YES ☐ NO
9.4.				☐ YES ☐ NO

Attach a copy of all calculations made to support the data in the table above.
Attach a Material Safety Data Sheet (MSDS) for each Byproduct Generated.

General Information

10. Manufacturer's Rated Capacity or Maximum Throughput of Equipment or Process: **30 tons/hour**

11. Describe Important Manufacturer Specifications and/or Operating Parameters for Equipment or Process: **The "Ready2Grind" system consists of one (1) feed hopper, two (2) bucket elevators, one (1) mill used to dry and grind the GBFS, and one (1) baghouse used for air pollution control and product recovery. The natural gas-fueled heater on the mill has a gas firing rate of 7,240 cubic ft/hour. The ground GBFS from the system is conveyed via a bucket elevator to two product silos controlled by bin vents where it is then loaded into enclosed trucks for shipment through dustless loadout chutes controlled by cartridge filters.**

Attach the Manufacturer's Specification Sheet(s) for the equipment or process.

Control Device Information

12. Is an Air Pollution Control Device Used? ☒ YES ☐ NO

If an Air Pollution Control Device is used, complete the rest of Question 12. If not, proceed to Question 13.

12.1. Is Knockout Used? ☐ YES ☒ NO

If YES, complete Form AQM-4.11 and attach it to this application.

12.2. Is a Settling Chamber Used? ☐ YES ☒ NO

If YES, complete Form AQM-4.10 and attach it to this application.

12.3. Is an Inertial or Cyclone Collector Used? ☐ YES ☒ NO

If YES, complete Form AQM-4.5 and attach it to this application.

Control Device Information

12.4. Is a Fabric Collector or Baghouse Used?	☒ YES ☐ NO
If YES, complete Form AQM-4.6 and attach it to this application.	
12.5. Is a Venturi Scrubber Used?	☐ YES ☒ NO
If YES, complete Form AQM-4.8 and attach it to this application.	
12.6. Is an Electrostatic Precipitator Used?	☐ YES ☒ NO
If YES, complete Form AQM-4.7 and attach it to this application.	
12.7. Is Adsorption Equipment Used?	☐ YES ☒ NO
If YES, complete Form AQM-4.2 and attach it to this application.	
12.8. Is a Scrubber Used?	☐ YES ☒ NO
If YES, complete Form AQM-4.4 and attach it to this application.	
12.9. Is a Thermal Oxidizer or Afterburner Used?	☐ YES ☒ NO
If YES, complete Form AQM-4.1 and attach it to this application.	
12.10. Is a Flare Used?	☐ YES ☒ NO
If YES, complete Form AQM-4.3 and attach it to this application.	
12.11. Is Any Other Control Device Used?	☐ YES ☒ NO
If YES, attach a copy of the control device Manufacturer's Specification Sheet(s).	
If any other control device is used, complete the rest of Question 12. If not, proceed to Question 13.	
12.12. Describe Control Device:	
12.13. Pollutants Controlled: ☐ VOCs ☐ HAPs ☐ PM ☐ PM_{10} ☐ $PM_{2.5}$ ☐ NO_X ☐ SO_X ☐ Metals ☐ Other (Specify):	
12.14. Control Device Manufacturer:	
12.15. Control Device Model:	
12.16. Control Device Serial Number:	
12.17. Control Device Design Capacity:	
12.18. Control Device Removal or Destruction Efficiency:	

Stack Information

13. How Does the Process Equipment Vent:
(check all that apply)
☐ Directly to the Atmosphere
☒ Through a Control Device Covered by Forms AQM-4.1 through 4.12
☐ Through Another Control Device Described on This Form

If any of the process equipment vents directly to the atmosphere or through another control device described on this form, proceed to Question 14. If the process equipment vents through a control device, provide the stack parameters on the control device form and proceed to Question 18.

14. Number of Air Contaminant Emission Points: **Seven**

If there are more than three Emission Points, attach additional copies of this page as needed.

Stack Information

For the first Emission Point

15. Emission Point Name: **EP-3 "Ready2Grind" Baghouse**

15.1. Stack Height Above Grade: **83 feet**

15.2. Stack Exit Diameter: **3 feet**
(Provide Stack Dimensions If Rectangular Stack)

15.3. Is a Stack Cap Present? ☐ YES ☒ NO

15.4. Stack Configuration: ☒ Vertical ☐ Horizontal ☐ Downward-Venting
(check all that apply) ☐ Other (Specify):

15.5. Stack Exit Gas Temperature: **204.8 °F**

15.6. Stack Exit Gas Flow Rate: **10,463 ACFM**

15.7. Distance to Nearest Property Line: **to the railroad tracks - about 125 feet**

15.8. Describe Nearest Obstruction: **Large 150' x 675' building to the west**

15.9. Height of Nearest Obstruction: **about 50 feet**

15.10. Distance to Nearest Obstruction: **about 235 feet**

15.11. Are Stack Sampling Ports Provided? ☐ YES ☒ NO

For the second Emission Point. If there is no second Emission Point, proceed to Question 18.

16. Emission Point Name: **EP-4 and EP-5 Silo Bin Vents with cartridge filters**

16.1. Stack Height Above Grade: **66 feet**

16.2. Stack Exit Diameter: **1.02 feet**
(Provide Stack Dimensions If Rectangular Stack)

16.3. Is a Stack Cap Present? ☐ YES ☒ NO

16.4. Stack Configuration: ☐ Vertical ☒ Horizontal ☐ Downward-Venting
(check all that apply) ☐ Other (Specify):

16.5. Stack Exit Gas Temperature: **Ambient °F**

16.6. Stack Exit Gas Flow Rate: **4000 ACFM**

16.7. Distance to Nearest Property Line: **about 50 feet**

16.8. Describe Nearest Obstruction: **Large 150' x 675' building to the west**

16.9. Height of Nearest Obstruction: **about 50 feet**

16.10. Distance to Nearest Obstruction: **about 325 feet**

16.11. Are Stack Sampling Ports Provided? ☐ YES ☒ NO

For the third Emission Point. If there is no third Emission Point, proceed to Question 18.

17. Emission Point Name: **EP-6 and EP-7 GGBFS Loadout Chutes - dustless loadout with cartridge filters**

17.1. Stack Height Above Grade: **about 22 feet**

17.2. Stack Exit Diameter: **0.667 feet**
(Provide Stack Dimensions If Rectangular Stack)

17.3. Is a Stack Cap Present? ☐ YES ☒ NO

17.4. Stack Configuration: ☒ Vertical ☐ Horizontal ☐ Downward-Venting

Stack Information

(check all that apply) ☐ Other (Specify):
17.5. Stack Exit Gas Temperature: **ambient °F**
17.6. Stack Exit Gas Flow Rate: **1400 ACFM**
17.7. Distance to Nearest Property Line: **about 50 feet**
17.8. Describe Nearest Obstruction: **Large 150' x 675' building to the west**
17.9. Height of Nearest Obstruction: **about 50 feet**
17.10. Distance to Nearest Obstruction: **about 325 feet**
17.11. Are Stack Sampling Ports Provided? ☐ YES ☒ NO

Monitoring Information

18. Will Emissions Data be Recorded by a Continuous Emission Monitoring System? ☐ YES ☒ NO
If Yes, attach a copy of the Continuous Emission Monitoring System Manufacturer's Specification Sheets
If YES, complete the rest of Question 18. If NO, proceed to Question 19.
18.1. Pollutants Monitored: ☐ VOCs ☐ HAPs ☐ PM ☐ PM_{10} ☐ $PM_{2.5}$ ☐ NO_X ☐ SO_X ☐ Metals ☐ Other (Specify):
18.2. Describe the Continuous Emission Monitoring System:
18.3. Manufacturer:
18.4. Model:
18.5. Serial Number:
18.6. Will Multiple Emission Units Be Monitored at the Same Point? ☐ YES ☐ NO
If YES, complete the rest of Question 18. If NO, proceed to Question 19.
18.7. Emission Units Monitored:
18.8. Will More Than One Emission Unit be Emitting From the Combined Point At Any Time? ☐ YES ☐ NO
If YES, complete the rest of Question 18. If NO, proceed to Question 19.
18.9. Emission Units Emitting Simultaneously:

Voluntary Emission Limitation Request Information

19. Are You Requesting Any Voluntary Emission Limitations to Avoid Major Source Status, Minor New Source Review, MACT, NSPS, etc.? ☐ YES ☒ NO
If YES, complete the rest of Question 19. If NO, proceed to Question 20.
19.1. Describe Any Requested Emission Limitations:

Voluntary Operating Limitation Request Information

20. Are You Requesting Any Voluntary Operating Limitations to Avoid Major Source Status, Minor New Source Review, MACT, NSPS, etc.?	☐ YES ☒ NO
If YES, complete the rest of Question 20. If NO, proceed to Question 21.	
20.1. Describe Any Requested Operating Limitations:	

Additional Information

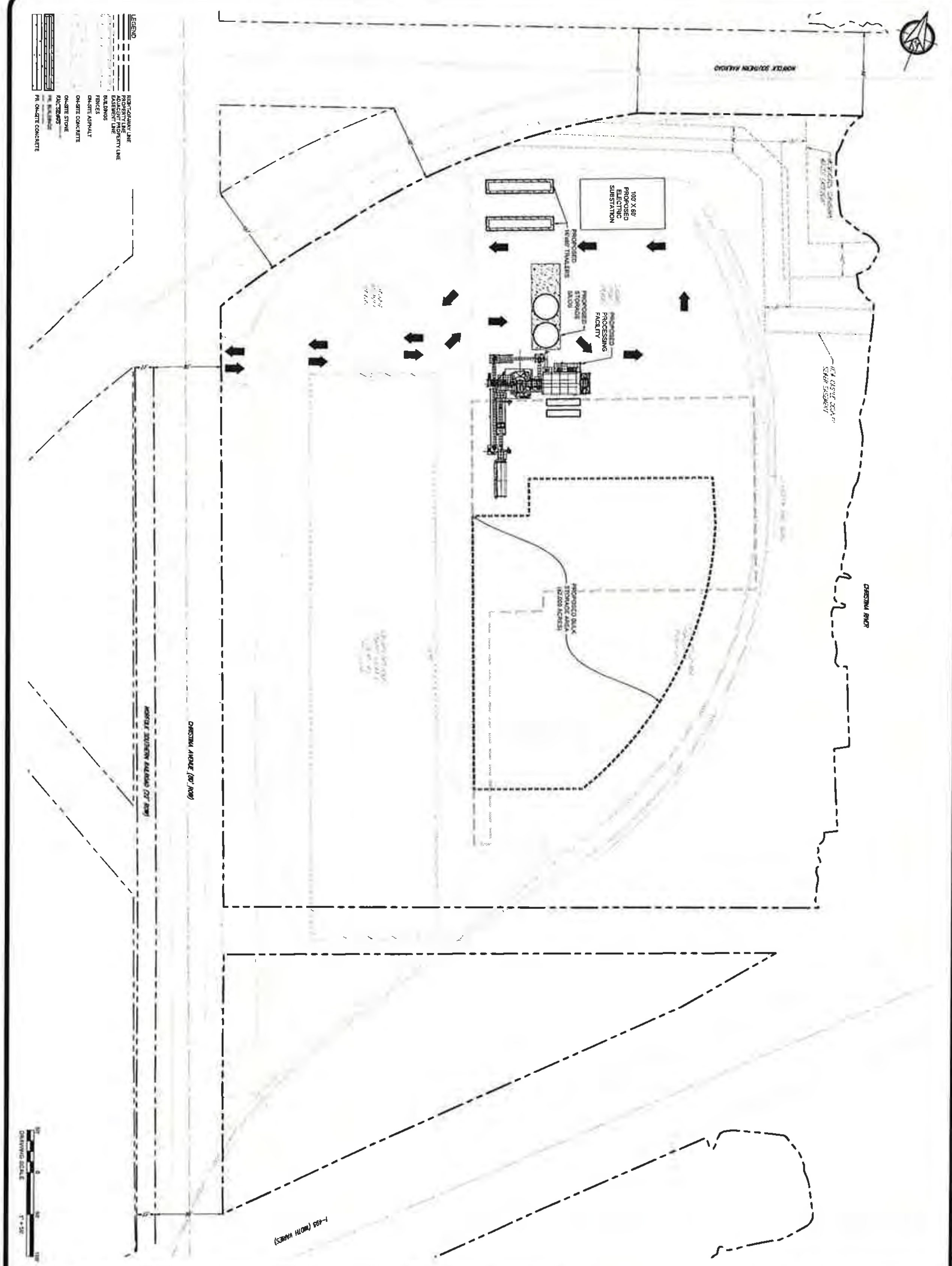
21. Is There Any Additional Information Pertinent to this Application?	☒ YES ☐ NO
If YES, complete the rest of Question 21.	
21.1. Describe: **About 80 - 85% of the exhaust gases passing through the grinder/dryer are recirculated.**	

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AQM-3.1
Supporting Information

DUFFIELD ASSOCIATES
Soil, Water & the Environment

Proposed Site Plan



SITE PLAN

PROPOSED PROCESS UNIT
PORT CONTRACTORS FACILITY
CITY OF WILMINGTON ~ NEW CASTLE COUNTY ~ DELAWARE

DATE: 29 JANUARY 2019
SCALE: 1" = 50'
PROJECT NO: 8850 GC
SHEET: 1 OF 2

APPLICANT: PENN MAG, INC.
719 TARRTOWN ROAD
ADRIAN, PA 16210
PHONE: (724) 545-2300

NO.	REVISION	DATE

DESIGNED BY: CMC
CHECKED BY: RJD
DRAWN BY: CMC
FILE NAME:

PRELIMINARY
NOT FOR
CONSTRUCTION

DUFFIELD ASSOCIATES
Soil, Water & the Environment

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PENNSYLVANIA AND NEW JERSEY
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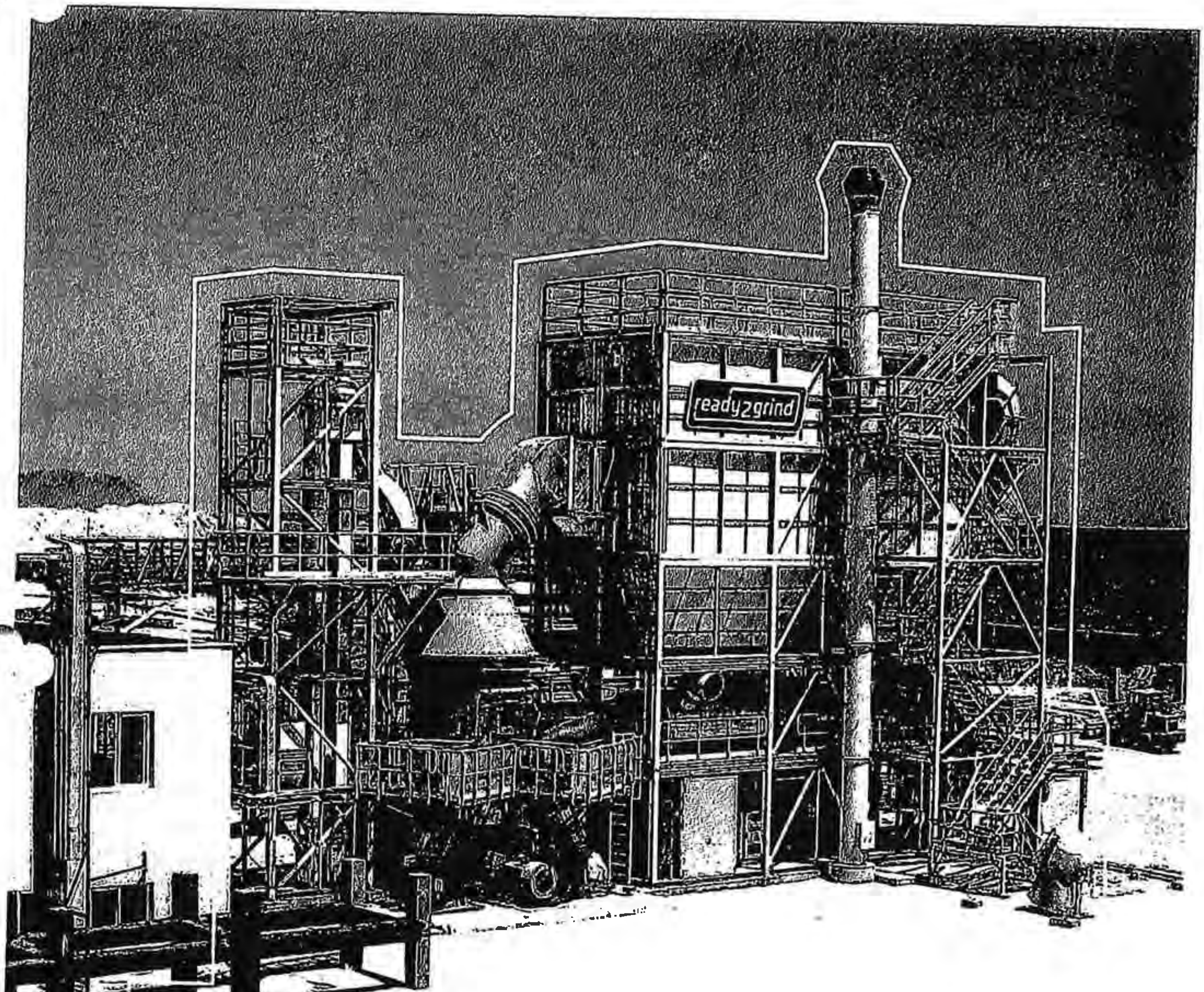
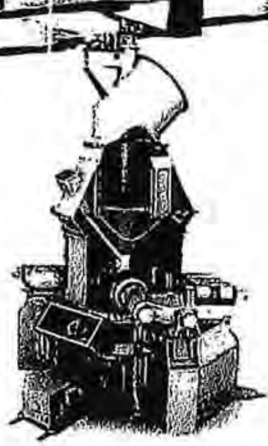
Ready2Grind Modular System for Grinding/Drying of GBFS Information

GEBR. PFEIFFER





ready2grind MODULAR SYSTEM

ready2grind

Pfeiffer's modular mill solution enables flexible use in any place, bringing cement producers closer to their customers. This compact system is suited to producing all types of cement - perfect for local cement producers and market entrants as well as for large construction companies aiming to expand their position by manufacturing cement on the spot.

The ingenious design allows the ready2grind plant to be transported and mounted fast and efficiently with manageable costs - making it the perfect concept to respond rapidly to the changing needs of the local cement markets.

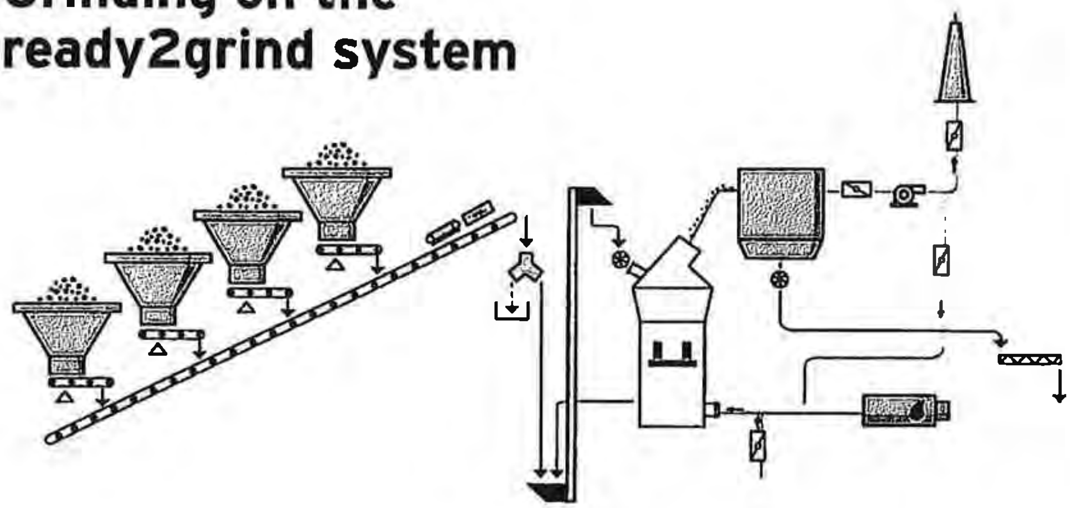
The advantages at one view:

» highest reliability, proven concept
» cost-efficient transportation in standard container dimensions
» rapid delivery, installation and commissioning
» highest operational availability with moderate investment
» immediate market entry, short amortization, reduced investment risk
» maximum flexibility, to react to changing market requirements at short notice

Features:

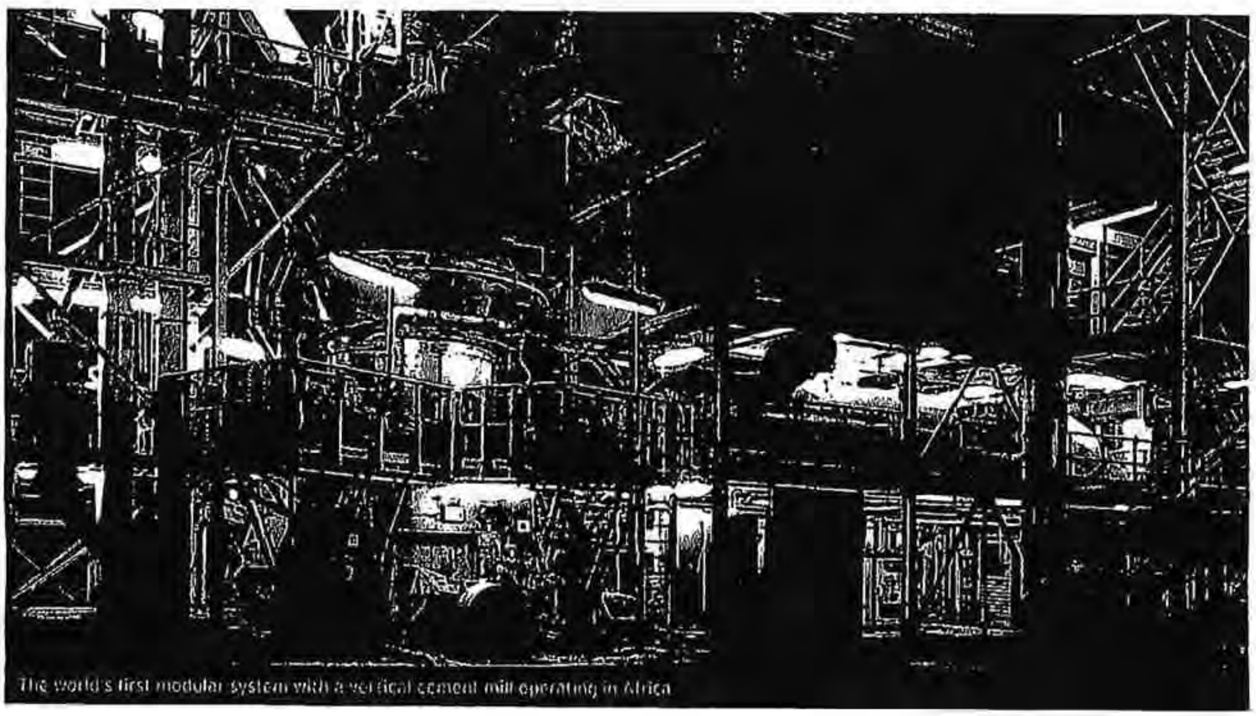
» cement of any desired type
» efficient VRM operation
» different plant sizes available
» compact modular design
» flexible feed system
» pre-assembled in standardized container dimensions
» perfect for small-scale production
» also available for other material such as limestone, gypsum, coal or similar

Grinding on the ready2grind system



With its extraordinarily compact and modular design, the ready2grind system is preassembled for transportation in standard container dimensions. The grinding process is the same as that of bigger Pfeiffer grinding plants. The above flow sheet shows the process of cement grinding as an example.

Clinker and additives are ground, dried, and classified in the Pfeiffer vertical mill. Product quality and fineness can be set within wide limits (up to 6,000 cm²/g Blaine). The ground and dried product is separated from the process gas in a filter for entire dust collection which is followed by a fan. Downstream of the fan, the volume flow is divided: part of it is returned to the mill while the remainder is evacuated through the exhaust gas chimney.



The world's first modular system with a vertical cement mill operating in Africa

GEBR. PFEIFFER

Proven mill technology for ambitious tasks

The design of the ready2grind system is based on the Pfeiffer vertical roller mill technology approved across the globe and on the decade-long experience in developing innovative mill technologies. The Pfeiffer vertical roller mill at the core of the ready2grind solution guarantees the highest level of operational reliability.

Benefits of Pfeiffer vertical roller mills:

- » lower electrical power consumption: up to 40 % compared to ball mills
- » few ancillaries required, little to no building volume compared to other systems
- » maximum availability: minimum maintenance downtime
- » very quick product change-over
- » low vibration level
- » grinding, drying and classifying, all in one machine

Standardized ready2grind systems for different throughput rates

GEBR. PFEIFFER ready2grind – performance table

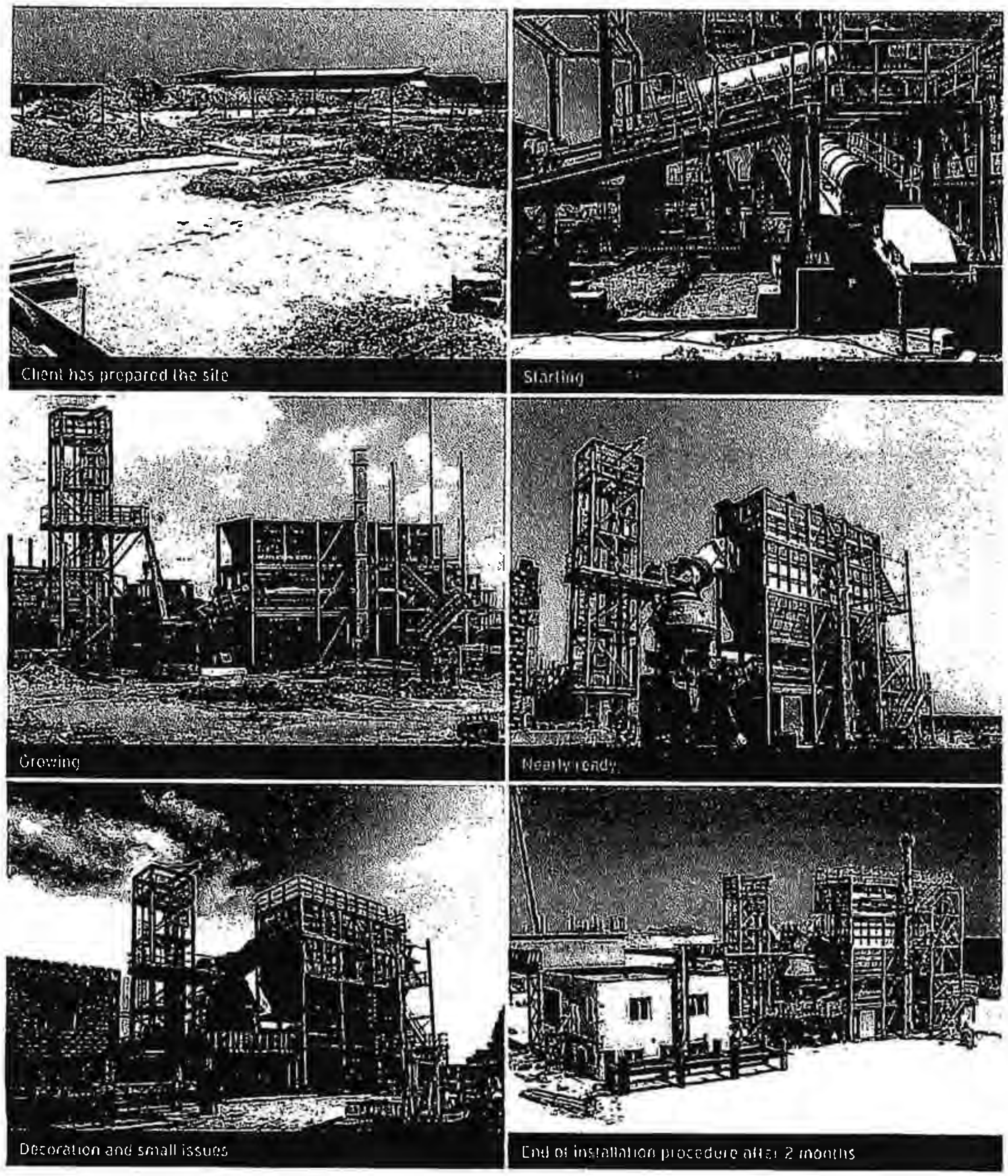
■ R2G 1800 C-4 / ■ R2G 2500 C-4

Product		Portland Cement CEM I		Limestone Cement CEM II / B - L		Ground granulated blast-furnace slag (GGBFS)	
Fineness acc. to Blaine		3300	4000	4000	5000	3800	4500
Grindability	kWh/t	18	22	15	19	23	27
Production rate	t/h	25 / 60	20 / 50	30 / 72	23 / 57	21 / 47	18 / 44
Max feed grain size	mm	35 / 50					
Approx. yearly production rate	t/a	up to 200,000 / up to 450,000					
Installed mill motor power	kW	560 / 1260					
Total installed power	kW	about 1200 / about 2300					

GEBR. PFEIFFER

The world's first modular system with a vertical cement mill has been operating since Feb. 2017.

Installation procedure



Client has prepared the site

Starting

Growing

Nearly ready

Decoration and small issues

End of installation procedure after 2 months

GEBR. PFEIFFER

SCOPE OF EQUIPMENT AND SERVICE SUPPLY

A. BASE PLANT MODULES

A. 1	Feed material dosing and feed hoppers
A. 2	Material feeding to mill
A. 3	Mill, classifier and ancillaries
A. 4	Process filter, hot gas generator and fan
A. 5	Electrical controls and drives

B. OPTIONAL EQUIPMENT MODULES

B. 1	Product transport and storage silos
B. 2	Packing and truck loading
B. 3	Bulk loading equipment
B. 4	Laboratory equipment
B. 5	Fuel storage
B. 6	Intermediate storage silos
B. 7	Transformer station

C. OPTIONAL SERVICE MODULES

C. 1	Operator training
C. 2	Maintenance training
C. 3	Service contracts

153.05.01EN

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MSDS for GBFS

Serial number:HNB053
Date created: 2015/1/1
Date of the latest revision:2017/1/1
Third edition

Safety Data Sheet

Section 1: Chemical Product and Company Information

1.1 Product name Granulated blast furnace slag

1.2 Company information

Manufacturer	(Chiba) Slag Dept, East Japan Works, JFE Steel Corporation
Address	Kawasaki-cho, 1-banchi, Chuo-ku, Chiba-city, Chiba, 210-0868, Japan
Seller and contact point	JFE Mineral Company, Ltd. Planning Dept. Iron and Steel Division
Address	5th Floor, Sumitomofudosan Shibakoen First Bldg, 8-2 Shiba, 3-chome Minato-ku, Tokyo 105-0014 Japan
Phone	+81-3-5445-5213
Fax	+81-3-5445-5222
Emergency contact	Planning Dept. Iron and Steel Division +81-3-5445-5213

1.3 Recommended use Raw material for cement industry, civil engineering

Section 2: Hazards Identification

2.1 GHS classification

This product does not meet the requirement for classification as physical and chemical, health and environmental hazards.

2.2 GHS label

Signal Words: No signal word

2.3 Other hazards

Dust of product can cause mechanical irritation to the eyes and respiratory system.
Leachate may show alkalinity of pH 9-11, after long-term contact with water.

Section 3: Composition and Information on Ingredients

3.1 Simple or Mixture Mixture compound

3.2 General or Chemical Name Blast furnace slag CAS No. 65996-69-2

3.3 Component and content

Granulated blast furnace slag is an amorphous substance, but the following materials may crystallize in a part.

Ingredient	Concentration (% in mass)	CAS No.
Melilite	Not Confirmed	-
Calcium silicate $CaO \cdot SiO_2$	Not Confirmed	1344-95-2

3.4 Hazardous component categorized in GHS

Not applicable

Section 4: First-aid Measures

If inhaled: Remove victim to fresh air. If you feel unwell, consult a physician

If on skin: Immediately wash with water

If in eyes: Immediately rinse with clean water. If irritation persists, consult an ophthalmologist.

If ingested: If you feel unwell, consult a physician.

Section 5: Fire-fighting Measures

This product is not flammable. Use fire foam, powder or carbon dioxide extinguishers in case of the risk of fire. Use proper protective equipments and clothes for extinction.

Section 6: Accidental Release Measures

This product is solid. Recover by sweeping and collecting. However, if dust occurs, wear proper protective equipments (e.g. protective gloves, glasses, masks, etc).

Take necessary measures if leachate from this product flows into surrounding water area (e.g. rivers, lakes etc) and its pH becomes higher.

Section 7: Handling and Storage

7.1 Handling

Secure ventilation in case of handling indoor.

Wear proper protective equipments to avoid the contact onto eyes and skin, etc.

Wash face, hands and mouth etc with clean water after handling.

7.2 Storage

Care should be made so that dust does not occur during storage.

Care should be made so that leachate does not directly flow into surrounding water area (e.g. rivers, lakes etc) because the leachate may show alkalinity.

Section 8: Exposure Control and Personal Protection

8.1 Control/ administrative exposure standards

Dust:	E=3.0mg/m^3 (without free silicic acid)

8.2 Threshold values (occupational exposure limits or biological exposure index)

Japan Society for Occupational Health (2015):	1 mg/m^3 (2-class dust, inhalable dust)
	4 mg/m^3 (2-class dust, total dust)

8.3 Protective equipments

Wear proper protective equipments (e.g. protective gloves, glasses, masks, etc) if generation of dust is concerned while handling.

8.4 Engineering measures and hygiene measures

Use ventilating equipment as appropriate to reduce the threshold value in case of handling indoor.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance:	Granulated, particle
Colour:	Ash white
Odour:	None
Melting point	1300 degree Celsius
PH:	Leachate may show alkalinity of pH 9-11, after long-term contact with water
Mass of unit volume:	1.3-1.9 t/m^3
Solubility:	Low with water

9.2 Others

Product may consolidate due to latent hydraulicity in case of long-term storage with the presence of moisture.

Section 10: Stability and Reactivity

This product is stable under normal storage and handling condition, and may consolidate in case of long-term storage with the presence of water.

Leachate may show alkalinity of pH 9-11, after long-term contact.

This product is not classified as metal corrosive substance using data on similar slag. The corrosion rate on metal surface of Aluminium and Steel test specimen exposed to Steelmaking slag were max 0.19 mm/year and 0.06 mm/year, respectively, not exceed 6.25 mm/year, when tested in accordance with immersion corrosion test of metal, the United Nations Manual of Tests and Criteria, part 3, section 37.

Section 11: Toxicological information

11.1 Information on toxicological effects

Dust of product can cause mechanical irritation to the eyes and respiratory system.

Leachate may show alkalinity of pH 9-11, after long-term contact.

Acute toxicity;	not classified (oral, dermal, inhalative)
Skin corrosion/irritation;	not classified
Serious eye damage/irritation;	not classified
Respiratory or skin sensitisation;	not classified
Germ cell mutagenicity;	classification not possible
Carcinogenicity;	classification not possible
Reproductive toxicity;	classification not possible
STOT-single exposure;	not classified
STOT-repeated exposure;	classification not possible
Aspiration hazard;	classification not possible

11.1.1 Acute toxicity:

Method: OECD Guideline 423
Species: Rat, Crl:CD(SD)
Routes of exposure: oral
Dose: 2000 mg/kg
Exposure time: 14 days
Results: LD50 > 2000 mg/kg NSR

Method: OECD Guideline 436
Species: Rat, Crl:CD(SD)
Routes of exposure: inhalative
Substance: Steelmaking slag
Dose: 5.9 mg/L
Exposure time: 4 hr
Results: LC50 (powder) (4h) > 5.9 mg/L NSR
Data on similar slag was used to classify criteria.

Method: OECD Guideline 402
Species: Rat, Crl:CD(SD)
Routes of exposure: dermal
Dose: 2000 mg/kg
Exposure time: 14 days
Results: LD50 > 2000 mg/kg NSR

No acute inhalative toxicity was expected according to the absence of industrial disease data.

11.1.2 Skin corrosion/irritation
Method: OECD Guideline 404
Species: Japanese white rabbit
Substance: Air-cooled blast furnace slag
Dose: 0.5 g
Exposure time: 1, 24, 48, 72 hr
Results: not irritant NSR
No irritant effect was expected according to the several rabbit experiment of Air-cooled BF slag in "ECHA CHEM", Information.

11.1.3 Serious eye damage/irritation
Method: OECD Guideline 405
Species: Japanese white rabbit
Substance: Air-cooled blast furnace slag
Dose: 0.1 g
Exposure time: 1, 24, 48, 72 hr
Results: not irritant NSR

No irritant effect was expected according to the several rabbit experiment of Air-cooled BF slag in "ECHA CHEM", Information.

11.1.4 Respiratory or skin sensitisation;
skin sensitisation
Method: OECD Guideline 406
Species: Dunkin-Hartley guinea pig
Substance: Blast furnace slag
Results: not sensitive ECHA

respiratory sensitisation
No respiratory sensitisation was expected according to the absence of industrial respiratory disease data. Respiratory sensitisation data was not available in animal experiment because of technically impossibility.

11.1.5 Germ cell mutagenicity;
Method: OECD Guideline 471
Species: *Salmonella typhimurium*, *Echerichia coli*
Substance: Blast furnace slag
Results: Negative in Ames tests, in vitro ECHA
Based on above data, the classification criteria are not met.

11.1.6 Carcinogenicity; no data available
Air-cooled BF slag was not specifically listed as carcinogens by the National Toxicology Program (NTP), the Occupational Safety and Health Administration (OSHA), or the International Agency for Research on Cancer (IARC).

11.1.7 Reproductive toxicity; no data available

11.1.8 Specific Target Organ Toxicity (STOT) -single exposure;

Method: OECD Guideline 423
Species: Rat, Crl:CD(SD)
Routes of exposure: oral
Dose: 2000 mg/kg
Exposure time: 14 days
Specific target organ: intrapleural organs, intraperitoneal organs
Results: No abnormalities were macroscopically observed at necropsy in any animals. NSR

Method: OECD Guideline 436
Species: Rat, Crl:CD(SD)
Routes of exposure: inhalative
Substance: Steelmaking slag
Dose: 5234 mg/m^3
Exposure time: 4 hr
Specific target organ: intrapleural organs, intraperitoneal organs
Results: No abnormalities were macroscopically observed at necropsy in any animals. NSR

Method: OECD Guideline 402
Species: Rat, Crl:CD(SD)
Routes of exposure: dermal
Dose: 2000 mg/kg
Exposure time: 14 days
Specific target organ: intrapleural organs, intraperitoneal organs
Results: No abnormalities were macroscopically observed at necropsy in any animals. NSR

11.1.9 Specific Target Organ Toxicity (STOT)-repeated exposure; no data available
No STOT was expected according to the absence of industrial disease data in specific organ.

11.1.10 Aspiration hazard; no data available
No aspiration hazard was expected according to the absence of industrial disease data.

Section 12: Ecological Information
12.1 Toxicity

Acute (short-term) toxicity;	not classified
Chronic (long-term) toxicity;	not classified as Category 1, 2, 3

12.1.1 Acute (short-term) toxicity;
Fish:
Method: OECD Guideline 203
Species: *Leuciscus idus*
Dose: 100 mg/l
Exposure time: 96 hr
Results: LC50 > 100 mg/l NSR

Crustacea:
Method: OECD Guideline 202
Species: *Daphnia magna*
Dose: 100 mg/l

Exposure time: 48 hr	
Results: EC50 > 100 mg/l	NSR

Algae:	
Method: OECD Guideline 201	
Species: *Pseudokirchneriella subcapitata*	
Dose: 1、10、100 mg/l	
Exposure time: 72 hr	
Results: EC50 > 100 mg/l	NSR

12.1.2 Chronic (long-term) toxicity;

Crustacea:	
Method: OECD Guideline 211	
Species: *Daphnia magna*	
Substance: Blast furnace slag	
Dose: 48, 153, 488, 1563, 5000 mL mg/l	
Exposure time: 21 d	
Results: NOEC = 1563 mg/l	ECHA

Algae:	
Method: OECD Guideline 201	
Species: *Pseudokirchneriella subcapitata*	
Dose: 1、10、100 mg/l	
Exposure time: 72 hr	
Results: NOEC = 100 mg/l	NSR

12.2 Persistence and degradability: not applicable
12.3 Bioaccumulative potential: no evidence for bioaccumulation potential.
12.4 Mobility in soil: no data available
12.5 Results of PBT and vPvB assessment: no data available.
12.6 Other adverse effects
Take necessary measures for the environment, because leachate may show alkali when this product contacts with water.
No negative ecological effects are expected according to the present state of knowledge.

Section 13: Disposal Considerations

The water that contains these products needs to be treated in accordance with related laws and standards (national, regional or local regulations).

Ask to certificated waste traders or local offices, and dispose appropriately in accordance with related laws and standards.

Section 14: Transport Information

14.1 International transport information	
United Nations Identification Number:	Not applicable
Marine pollutant:	Not applicable
14.2 Domestic transport information (Japan)	Not applicable
14.3 Guideline for emergency (Yellow-card) number	Not applicable
14.4 Specific measures for safe transport	

Make sure to prevent collapse of cargo piles.
Care should be made so that dust does not occur while transporting.
Pay attention to humidity and water leakage.

Section 15: Regulatory Information

Enforcement Order of the Industrial Safety and Health Law (Ordinance on Prevention of Hazards Due to Dust):	Dusty work
Pneumoconiosis Act:	Dusty work
Working Environment Measurement Act:	Specific dusty work

Section 16: Other Information

References

Japan Society for Occupational Health (2015) Recommendation of Occupational Exposure Limits

Chemical Risk Information Platform (CHRIP) (2015) Globally Harmonized System (GHS) Classification Database http://www.safe.nite.go.jp/ghs./list.html

ECHA: ECHA (European Chemicals Agency), website "ECHA CHEM", Information on Registered Substances (2015).

NSR: Nippon Slag Association Report of Air-cooled blast furnace slag and Steelmaking slag

DISCLAIMER

GBFS Specification and Analysis

ITOCHU

Japanese GBFS

Typical Spec

Item	Typical
CaO	38-45%
SiO_2	30-36%
Al_2O_3	12-18%
MgO	4-9%
MnO	1.5%max
FeO	1.5%max
TiO_2	2.0%max
T.S	1.3%max
Moisture Content	10%max
Basicity $(CaO+MgO+Al_2O_2)/SiO_2$	1.75min
Glass Content	95%min
Size Under 5mm	95%min

Result

We hereby certify that the average sample of the loaded cargo has been determined by the chemical analysis and test results are as follows:-

Results of Analysis & Test:

Item	Results (%)	Item	Results (%)
CaO:	40.9	Mn_2O_3: (convert MnO into Mn2O3)	0.13
SiO_2 :	34.9	Na_2O:	0.27
Al_2O_3 :	15.0	K_2O :	0.35
Fe_2O_3 :	0.77	TiO_2 :	0.68
MgO :	5.61	P_2O_5:	0.02
SO_3 :	0.14	LOI :	0.10
Moisture Contents :	5.3	Chloride:	Less than 0.01
Glass Content :	98.7	Sulfur:	0.84

Method : JIS R5202, R5211, A5011, Z2601 & Slag Industrial method.

JAPAN INSPECTION CO., LTD.

General Manager
for Marine Dept.

DNREC Permitting Determination Letter

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF WASTE AND HAZARDOUS SUBSTANCES
SOLID AND HAZARDOUS WASTE MANAGEMENT SECTION

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DOVER, DELAWARE 19901

TELEPHONE: (302) 739-9403
FAX: (302) 739-5060

February 28, 2018

Mr. Michael D. Logan, Vice President
Compliance Plus Services, Inc.
455 Business Center Drive, Suite 150
Horsham, PA 19044

Subject: Permitting Determination of Production of Ground Granulated Blast Furnace Slag
Reference: Walan Specialty Construction Products, LLC, File Code: 09.A

Dear Mr. Logan:

The Department is in receipt of your email dated February 16, 2018 and exhibits provided during our February 21, 2018 meeting, which were submitted on behalf of Walan Specialty Construction Products, LLC (Walan), regarding solid waste permitting requirements for its production of ground granulated blast furnace slag (GGBFS).

According to the information provided, the iron blast furnace slag is generated at the end of the iron ore processing, when it is separated from the iron and remaining waste stream. Once separated, the slag is rapidly quenched with fresh water and pelletized to produce a granular slag. As Walan explained during our meeting, the iron ore processing facility invests in equipment in order to produce the granular slag, which serves as a feedstock to Walan's operations. Walan proposes to grind the granular slag for use in concrete and as a replacement of Portland cement. In addition to replacing another ingredient, GGBFS adds structural benefits when used in concrete mixes.

While the Department has determined the slag is a solid waste, the granular slag has been determined to be a recycled product. Walan purchases the recycled product as a feedstock in its process. Therefore, on the basis of the information submitted by you and Walan, the SHWMS has determined that as described, Walan's activities do not require a Recycling Permit for its 501 Christiana Avenue operation in Wilmington. In the event Walan's operations are modified from those described in the information provided to the SHWMS by Walan or its representatives, Walan must immediately contact the SHWMS for a re-evaluation of this permitting decision.

If you have any questions, please feel free to contact Mindy Anthony at (302) 739-9403, option 8.

Sincerely,

Jason W. Sunde
Environmental Program Manager
Solid and Hazardous Waste Management Section

JWS:MBCA:cr
MBCA18005

cc: Anil G Bhadsavle, Penn Mag, Inc. (email only)
Lisa Bhadsavle Dharwadkar, Penn Mag, Inc. (email only)

Ground Granulated Blast Furnace Slag (GGBFS)
in
DelDOT Standard Specifications 2016

Ground Granulated Blast Furnace Slag (GGBFS)
in DelDOT Standard Specifications 2016

Since 1988, DelDOT has required that portland cement be blended with GGBFS or fly ash to combat Alkali-silica reaction (ASR). DelDOT's Standard Specifications 2016 specifically address and require GGBFS in the sections identified in the following table. Additionally, specific plans, invitations to bid, and mix design reviews contain separate requirements for the use of GGBFS, with the vast majority of portland cement mix designs approved by DelDOT containing 40-50% GGBFS.

Section	Specification
208.02 1047.01.1	Flowable Fill must contain a combination of portland cement, fine aggregate, water, air entraining admixtures, chemical admixtures, and/or GGBFS, fly ash.
501.02 501.03.1	Portland Cement Concrete Pavement (PCCP) mix designs, including GGBFS, must be submitted to Engineer for approval (specified in Section 1022 Concrete Production; Class B/SF for slip form paving and Class B for fixed form paving).
723.02	Concrete barriers must be constructed using a blended portland cement concrete with a minimum of 40% GGBFS.
1020.01	GGBFS must be Grade 100 or 120 and conform to AASHTO M 302.
1022.01 1022.03	Portland Cement Concrete mix designs, including GGBFS, must be submitted to Engineer for approval.
1022.03.3	Design must include ASR mitigation steps, including one or a combination of GGBFS, low alkali cement, blended hydraulic cement, silica fume, fly ash, or lithium admixture.
1022.06.5	Delivery time restrictions may be extended for portland cement blended with GGBFS (thus exceeding the time permitted for non-blended portland cement).

Engineering properties that make GGBFS beneficial in concrete mixtures include:

- Lower heat of hydration
- Slower strength gain providing better cold join control
- Requires less energy to produce than portland cement
- Resistant to sulfate and chloride
- Less porous
- Long-term cost savings due to better durability

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AQM-3.7
Storage Silo Application

INTRODUCTION TO AQM-3.7: SILO APPLICATION

Form AQM-3.7 provides technical information for two 1,100 ton storage silos that will store ground granulated blast furnace slag (GGBFS) prior to truck loading and distribution of the product. The two silos are fed GGBFS by a bucket elevators. A proposed silo drawing created by the manufacturer, Concrete Plants, Inc., is provided in the AQM-3.7 Supporting information section attached. A glossary of technical terms used in this section is provided below.

Baghouse – an air pollution control device that separates particulates from exhaust gas and collects the separated particulates to keep them from being discharged to the atmosphere.

Actual Cubic Feet per Minute – (ACFM) a unit of volumetric flow that is provided by manufacturers of fans and compressors. The actual volumetric flow is determined with reference to inlet conditions of the gas.

Silo Application

If you are using this form electronically, press F1 at any time for help

General Information

1. Facility Name: **WALAN Specialty Construction Products, LLC**
2. Equipment ID Number: **Two 1,100 Ton Storage Silos**
3. Manufacturer: **Concrete Plants, Inc.**
4. Model:
5. Serial Number:
6. Silo Type: ☒ Tower Silo
   ☐ Bunker Silo
   ☐ Other (Specify):
7. Number of Compartments in Silo: **One**
8. Material Stored in Silo:

If there are more than three Materials Stored in the Silo, attach additional copies of this page as needed

	Material	Material Density	Compartment Stored In
8.1.	**Ground granulated blast furnace slag (GGBFS)**	**175 tons/cubic foot**	
8.2.		**tons/cubic foot**	
8.3.		**tons/cubic foot**	

Attach a Material Safety Data Sheet (MSDS) for each Material Stored in the Silo.

9. Silo Storage Capacity: **1,100 tons**
10. Silo Loading Method: ☐ Pneumatic ☐ Hydraulic ☒ Mechanical ☐ Vacuum ☐ Other (Specify):
11. Maximum Rate of Silo Loading: **30 (projected) / 70 (max) tons/hour**
12. Is the Silo Equipped With a Pressure-Vacuum Relief Valve? ☐ YES ☒ NO

If YES, complete the rest of Question 12. If NO, proceed to Question 13.

12.1. Describe the Pressure Relief Valve Settings:

13. Is the Silo Equipped With a System That Prevents Overfilling? ☒ YES ☐ NO

If YES, complete the rest of Question 13. If NO, proceed to Question 14.

13.1. Describe the Overfilling Prevention System: **Level indicator used**

General Information

14. Is the Silo Equipped With a Silo Level Monitoring System? ☒ YES ☐ NO

If YES, complete the rest of Question 14. If NO, proceed to Question 15.

14.1. Type of Level Indicator: ☐ Point
☒ Continuous
☐ Other (Specify):

15. Is the Silo Equipped With a Power/Control Panel with a High Level Indicator? ☒ YES ☐ NO

Control Device Information

16. Is an Air Pollution Control Device Used? ☒ YES ☐ NO

If an Air Pollution Control Device is used, complete the rest of Question 16. If not, proceed to Question 17.

16.1. Is Knockout Used? ☐ YES ☒ NO

If YES, complete Form AQM-4.11 and attach it to this application.

16.2. Is a Settling Chamber Used? ☐ YES ☒ NO

If YES, complete Form AQM-4.10 and attach it to this application.

16.3. Is an Inertial or Cyclone Collector Used? ☐ YES ☒ NO

If YES, complete Form AQM-4.5 and attach it to this application.

16.4. Is a Fabric Collector or Baghouse Used? ☒ YES ☐ NO

If YES, complete Form AQM-4.6 and attach it to this application.

16.5. Is a Venturi Scrubber Used? ☐ YES ☒ NO

If YES, complete Form AQM-4.8 and attach it to this application.

16.6. Is an Electrostatic Precipitator Used? ☐ YES ☒ NO

If YES, complete Form AQM-4.7 and attach it to this application.

16.7. Is Any Other Control Device Used? ☐ YES ☒ NO

If YES, attach a copy of the Control Device Manufacturer's Specification Sheets.

If Any Other Control Device is used, complete the rest of Question 16. If not, proceed to Question 17.

16.8. Describe Control Device:

16.9. Pollutants Controlled: ☐ HAPs ☐ PM ☐ PM_{10} ☐ $PM_{2.5}$ ☐ Metals ☐ Other (Specify):

16.10. Control Device Manufacturer:

16.11. Control Device Model:

16.12. Control Device Serial Number:

16.13. Control Device Design Capacity:

16.14. Control Device Removal or Destruction Efficiency:

Stack Information

17. How Does the Process Equipment Vent:
(check all that apply)
☐ Directly to the Atmosphere
☒ Through a Control Device Covered by Forms AQM-4.1 through 4.12
☐ Through Another Control Device Described on This Form

If any of the process equipment vents directly to the atmosphere or through another control device described on this form, proceed to Question 18. If the process equipment vents through a control device, provide the stack parameters on the control device form (AQM-4 Series) and proceed to Question 19.

18. Emission Point Name: **EP-4 and EP-5**

18.1. Stack Height Above Grade: **66 feet**

18.2. Stack Exit Diameter: **1.02 feet**
(Provide Stack Dimensions If Rectangular Stack)

18.3. Is a Stack Cap Present? ☐ YES ☒ NO

18.4. Stack Configuration: ☐ Vertical ☒ Horizontal ☐ Downward-Venting
(check all that apply) ☐ Other (Specify):

18.5. Stack Exit Gas Temperature: **Ambient °F**

18.6. Stack Exit Gas Flow Rate: **4000 ACFM**

18.7. Distance to Nearest Property Line: **about 50 feet**

18.8. Describe Nearest Obstruction: **Large 150' x 675' building to the west**

18.9. Height of Nearest Obstruction: **about 50 feet**

18.10. Distance to Nearest Obstruction: **about 325 feet**

18.11. Are Stack Sampling Ports Provided? ☐ YES ☒ NO

Monitoring Information

19. Will Emissions Data be Recorded by a Continuous Emission Monitoring System? ☐ YES ☒ NO

If Yes, attach a copy of the Continuous Emission Monitoring System Manufacturer's Specification Sheets

If YES, complete the rest of Question 19. If NO, proceed to Question 20.

19.1. Pollutants Monitored: ☐ VOCs ☐ HAPs ☐ PM ☐ PM_{10} ☐ $PM_{2.5}$ ☐ NO_x ☐ SO_x ☐ Metals
☐ Other (Specify):

19.2. Describe the Continuous Emission Monitoring System:

19.3. Manufacturer:

19.4. Model:

19.5. Serial Number:

19.6. Will Multiple Emission Units Be Monitored at the Same Point? ☐ YES ☐ NO

If YES, complete the rest of Question 19. If NO, proceed to Question 20.

19.7. Emission Units Monitored:

Monitoring Information

19.8. Will More Than One Emission Unit be Emitting From the Combined Point At Any Time? ☐ YES ☐ NO

If YES, complete the rest of Question 19. If NO, proceed to Question 20.

19.9. Emission Units Emitting Simultaneously:

Visible Emissions Monitoring Information

20. Proposed Technique Used to Monitor Visible Emissions:
☐ Opacity Monitor (COM)
☐ Manual (Method 9)
☐ Manual (Method 22)
☒ Other (Describe): **Daily observation to determine presence or absence of visible emissions.**

If an Opacity Monitor (COM) is used, complete the rest of Question 20. If not, proceed to Question 21.

20.1. Describe the Continuous Opacity Monitoring System:

20.2. Manufacturer:

20.3. Model:

20.4. Serial Number:

21. Proposed Frequency of Opacity Monitoring:

Monitoring and Alarm Information

22. Are There Any Alarms You Would Like the Department to Consider When Drafting the Permit? ☐ YES ☒ NO

If YES, complete the rest of Question 22. If NO, proceed to Question 23.

22.1. Describe the System Alarm(s):

If there are more than five alarms, attach additional copies of this page as needed.

	Operating Parameter Monitored	Describe Alarm Trigger	Monitoring Device or Alarm Type	Does the Alarm Initiate an Automated Response?
22.1.1.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
22.1.2.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
22.1.3.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:

Monitoring and Alarm Information

22.1.4.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
22.1.5.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:

Voluntary Emission Limitation Request Information

23. Are You Requesting Any Voluntary Emission Limitations to Avoid Major Source Status, Minor New Source Review, MACT, NSPS, etc.? ☐ YES ☒ NO

If YES, complete the rest of Question 23. If NO, proceed to Question 24.

23.1. Describe Any Proposed Emission Limitations:

Voluntary Operating Limitation Request Information

24. Are You Requesting Any Voluntary Operating Limitations to Avoid Major Source Status, Minor New Source Review, MACT, NSPS, etc.? ☐ YES ☒ NO

If YES, complete the rest of Question 24. If NO, proceed to Question 25.

24.1. Describe Any Proposed Operating Limitations:

Additional Information

25. Is There Any Additional Information Pertinent to this Application? ☒ YES ☐ NO

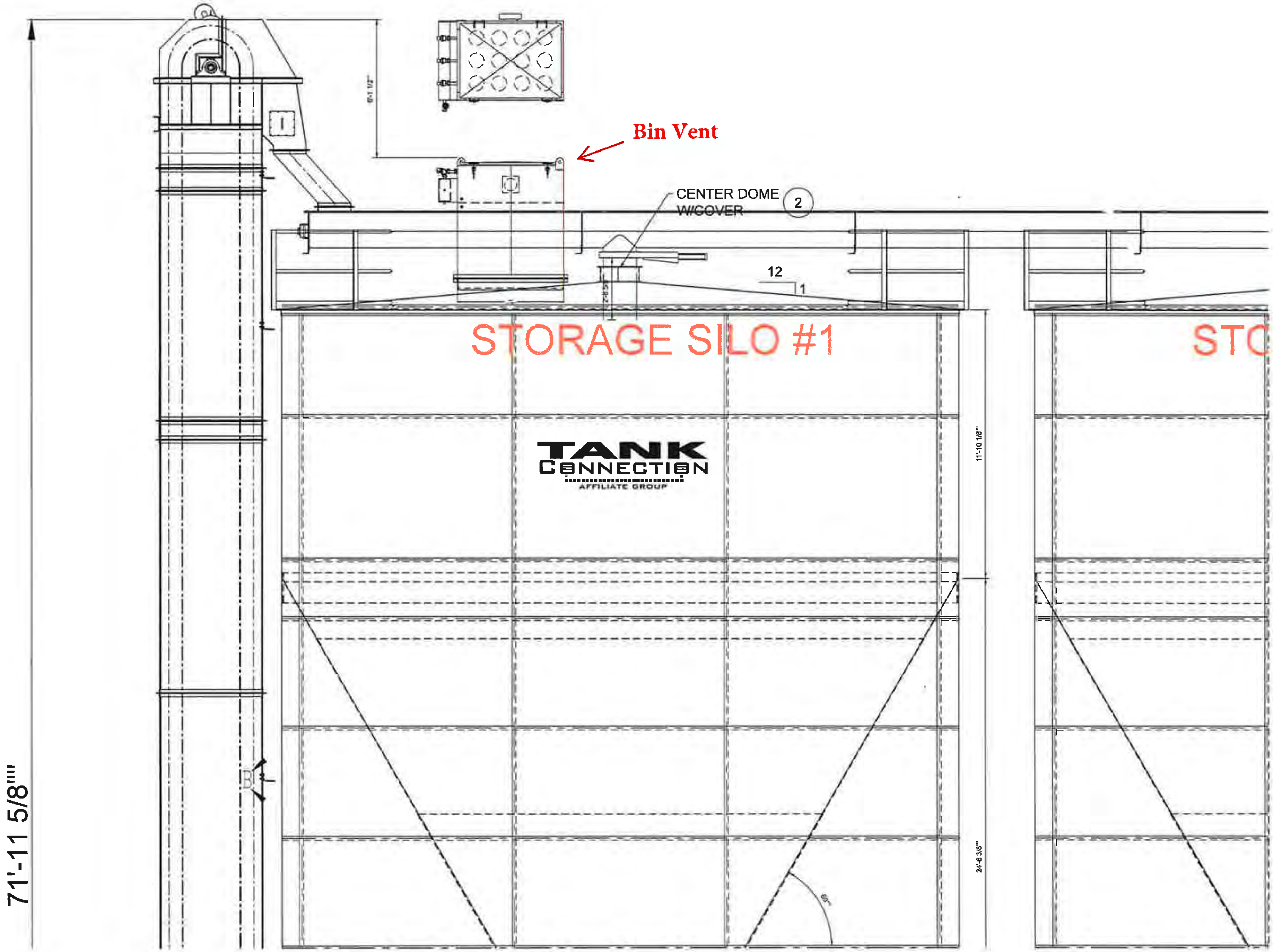
If YES, complete the rest of Question 25.

25.1. Describe: **Enclosed bucket elevator carrying GGBFS will be used to fill silos.**

AQM-3.7
Supporting Information

DUFFIELD ASSOCIATES
Soil, Water & the Environment

General Configuration of Storage Silos



71'-11 5/8""
6'-1 1/2"
Bin Vent
CENTER DOME
W/COVER
2
12
1
STORAGE SILO #1
11'-10 1/8"
24'-6 3/8"
STO

DUFFIELD ASSOCIATES
Soil, Water & the Environment

MSDS for GBFS

Serial number:HNB053
Date created: 2015/1/1
Date of the latest revision:2017/1/1
Third edition

Safety Data Sheet

Section 1: Chemical Product and Company Information

1.1 Product name Granulated blast furnace slag

1.2 Company information

Manufacturer (Chiba) Slag Dept, East Japan Works, JFE Steel Corporation
Address Kawasaki-cho, 1-banchi, Chuo-ku, Chiba-city, Chiba, 210-0868, Japan
Seller and contact point JFE Mineral Company, Ltd. Planning Dept. Iron and Steel Division
Address 5th Floor, Sumitomofudosan Shibakoen First Bldg, 8-2 Shiba, 3-chome Minato-ku, Tokyo 105-0014 Japan

Phone +81-3-5445-5213
Fax +81-3-5445-5222
Emergency contact Planning Dept. Iron and Steel Division +81-3-5445-5213

1.3 Recommended use Raw material for cement industry, civil engineering

Section 2: Hazards Identification

2.1 GHS classification

This product does not meet the requirement for classification as physical and chemical, health and environmental hazards.

2.2 GHS label

Signal Words: No signal word

2.3 Other hazards

Dust of product can cause mechanical irritation to the eyes and respiratory system.
Leachate may show alkalinity of pH 9-11, after long-term contact with water.

Section 3: Composition and Information on Ingredients

3.1 Simple or Mixture Mixture compound

3.2 General or Chemical Name Blast furnace slag CAS No. 65996-69-2

3.3 Component and content

Granulated blast furnace slag is an amorphous substance, but the following materials may crystallize in a part.

Ingredient	Concentration (% in mass)	CAS No.
Melilite	Not Confirmed	-
Calcium silicate $CaO \cdot SiO_2$	Not Confirmed	1344-95-2

3.4 Hazardous component categorized in GHS

Not applicable

Section 4: First-aid Measures

If inhaled: Remove victim to fresh air. If you feel unwell, consult a physician
If on skin: Immediately wash with water
If in eyes: Immediately rinse with clean water. If irritation persists, consult an ophthalmologist.

If ingested: If you feel unwell, consult a physician.

Section 5: Fire-fighting Measures

This product is not flammable. Use fire foam, powder or carbon dioxide extinguishers in case of the risk of fire. Use proper protective equipments and clothes for extinction.

Section 6: Accidental Release Measures

This product is solid. Recover by sweeping and collecting. However, if dust occurs, wear proper protective equipments (e.g. protective gloves, glasses, masks, etc).

Take necessary measures if leachate from this product flows into surrounding water area (e.g. rivers, lakes etc) and its pH becomes higher.

Section 7: Handling and Storage

7.1 Handling

Secure ventilation in case of handling indoor.

Wear proper protective equipments to avoid the contact onto eyes and skin, etc.

Wash face, hands and mouth etc with clean water after handling.

7.2 Storage

Care should be made so that dust does not occur during storage.

Care should be made so that leachate does not directly flow into surrounding water area (e.g. rivers, lakes etc) because the leachate may show alkalinity.

Section 8: Exposure Control and Personal Protection

8.1 Control/ administrative exposure standards

Dust: E=3.0mg/m^3 (without free silicic acid)

8.2 Threshold values (occupational exposure limits or biological exposure index)

Japan Society for Occupational Health (2015): 1 mg/m^3 (2-class dust, inhalable dust)
4 mg/m^3 (2-class dust, total dust)

8.3 Protective equipments

Wear proper protective equipments (e.g. protective gloves, glasses, masks, etc) if generation of dust is concerned while handling.

8.4 Engineering measures and hygiene measures

Use ventilating equipment as appropriate to reduce the threshold value in case of handling indoor.

Section 9: Physical and Chemical Properties

9.1 Information on basic physical and chemical properties

Appearance:	Granulated, particle
Colour:	Ash white
Odour:	None
Melting point	1300 degree Celsius
PH:	Leachate may show alkalinity of pH 9-11, after long-term contact with water
Mass of unit volume:	1.3-1.9 t/m^3
Solubility:	Low with water

9.2 Others

Product may consolidate due to latent hydraulicity in case of long-term storage with the presence of moisture.

Section 10: Stability and Reactivity

This product is stable under normal storage and handling condition, and may consolidate in case of long-term storage with the presence of water.

Leachate may show alkalinity of pH 9-11, after long-term contact.

This product is not classified as metal corrosive substance using data on similar slag. The corrosion rate on metal surface of Aluminium and Steel test specimen exposed to Steelmaking slag were max 0.19 mm/year and 0.06 mm/year, respectively, not exceed 6.25 mm/year, when tested in accordance with immersion corrosion test of metal, the United Nations Manual of Tests and Criteria, part 3, section 37.

Section 11: Toxicological information

11.1 Information on toxicological effects

Dust of product can cause mechanical irritation to the eyes and respiratory system.

Leachate may show alkalinity of pH 9-11, after long-term contact.

Acute toxicity;	not classified (oral, dermal, inhalative)
Skin corrosion/irritation;	not classified
Serious eye damage/irritation;	not classified
Respiratory or skin sensitisation;	not classified
Germ cell mutagenicity;	classification not possible
Carcinogenicity;	classification not possible
Reproductive toxicity;	classification not possible
STOT-single exposure;	not classified
STOT-repeated exposure;	classification not possible
Aspiration hazard;	classification not possible

11.1.1 Acute toxicity:

Method: OECD Guideline 423
Species: Rat, Crl:CD(SD)
Routes of exposure: oral
Dose: 2000 mg/kg
Exposure time: 14 days
Results: LD50 > 2000 mg/kg NSR

Method: OECD Guideline 436
Species: Rat, Crl:CD(SD)
Routes of exposure: inhalative
Substance: Steelmaking slag
Dose: 5.9 mg/L
Exposure time: 4 hr
Results: LC50 (powder) (4h) > 5.9 mg/L NSR
Data on similar slag was used to classify criteria.

Method: OECD Guideline 402
Species: Rat, Crl:CD(SD)
Routes of exposure: dermal
Dose: 2000 mg/kg
Exposure time: 14 days
Results: LD50 > 2000 mg/kg NSR

No acute inhalative toxicity was expected according to the absence of industrial disease data.

11.1.2 Skin corrosion/irritation
Method: OECD Guideline 404
Species: Japanese white rabbit
Substance: Air-cooled blast furnace slag
Dose: 0.5 g
Exposure time: 1, 24, 48, 72 hr
Results: not irritant NSR
No irritant effect was expected according to the several rabbit experiment of Air-cooled BF slag in "ECHA CHEM", Information.

11.1.3 Serious eye damage/irritation
Method: OECD Guideline 405
Species: Japanese white rabbit
Substance: Air-cooled blast furnace slag
Dose: 0.1 g
Exposure time: 1, 24, 48, 72 hr
Results: not irritant NSR

No irritant effect was expected according to the several rabbit experiment of Air-cooled BF slag in "ECHA CHEM", Information.

11.1.4 Respiratory or skin sensitisation;
skin sensitisation
Method: OECD Guideline 406
Species: Dunkin-Hartley guinea pig
Substance: Blast furnace slag
Results: not sensitive ECHA

respiratory sensitisation
No respiratory sensitisation was expected according to the absence of industrial respiratory disease data. Respiratory sensitisation data was not available in animal experiment because of technically impossibility.

11.1.5 Germ cell mutagenicity;
Method: OECD Guideline 471
Species: *Salmonella typhimurium*, *Echerichia coli*
Substance: Blast furnace slag
Results: Negative in Ames tests, in vitro ECHA
Based on above data, the classification criteria are not met.

11.1.6 Carcinogenicity; no data available
Air-cooled BF slag was not specifically listed as carcinogens by the National Toxicology Program (NTP), the Occupational Safety and Health Administration (OSHA), or the International Agency for Research on Cancer (IARC).

11.1.7 Reproductive toxicity; no data available

11.1.8 Specific Target Organ Toxicity (STOT) -single exposure;

Method: OECD Guideline 423
Species: Rat, Crl:CD(SD)
Routes of exposure: oral
Dose: 2000 mg/kg
Exposure time: 14 days
Specific target organ: intrapleural organs, intraperitoneal organs
Results: No abnormalities were macroscopically observed at necropsy in any animals. NSR

Method: OECD Guideline 436
Species: Rat, Crl:CD(SD)
Routes of exposure: inhalative
Substance: Steelmaking slag
Dose: 5234 mg/m^3
Exposure time: 4 hr
Specific target organ: intrapleural organs, intraperitoneal organs
Results: No abnormalities were macroscopically observed at necropsy in any animals. NSR

Method: OECD Guideline 402
Species: Rat, Crl:CD(SD)
Routes of exposure: dermal
Dose: 2000 mg/kg
Exposure time: 14 days
Specific target organ: intrapleural organs, intraperitoneal organs
Results: No abnormalities were macroscopically observed at necropsy in any animals. NSR

11.1.9 Specific Target Organ Toxicity (STOT)-repeated exposure; no data available
No STOT was expected according to the absence of industrial disease data in specific organ.

11.1.10 Aspiration hazard; no data available
No aspiration hazard was expected according to the absence of industrial disease data.

Section 12: Ecological Information
12.1 Toxicity

Acute (short-term) toxicity;	not classified
Chronic (long-term) toxicity;	not classified as Category 1, 2, 3

12.1.1 Acute (short-term) toxicity;
Fish:
Method: OECD Guideline 203
Species: *Leuciscus idus*
Dose: 100 mg/l
Exposure time: 96 hr
Results: LC50 > 100 mg/l NSR

Crustacea:
Method: OECD Guideline 202
Species: *Daphnia magna*
Dose: 100 mg/l

Exposure time: 48 hr
Results: EC50 > 100 mg/l NSR

Algae:
Method: OECD Guideline 201
Species: *Pseudokirchneriella subcapitata*
Dose: 1、10、100 mg/l
Exposure time: 72 hr
Results: EC50 > 100 mg/l NSR

12.1.2 Chronic (long-term) toxicity;
Crustacea:
Method: OECD Guideline 211
Species: *Daphnia magna*
Substance: Blast furnace slag
Dose: 48, 153, 488, 1563, 5000 mL mg/l
Exposure time: 21 d
Results: NOEC = 1563 mg/l ECHA

Algae:
Method: OECD Guideline 201
Species: *Pseudokirchneriella subcapitata*
Dose: 1、10、100 mg/l
Exposure time: 72 hr
Results: NOEC = 100 mg/l NSR

12.2 Persistence and degradability: not applicable
12.3 Bioaccumulative potential: no evidence for bioaccumulation potential.
12.4 Mobility in soil: no data available
12.5 Results of PBT and vPvB assessment: no data available.
12.6 Other adverse effects
Take necessary measures for the environment, because leachate may show alkali when this product contacts with water.
No negative ecological effects are expected according to the present state of knowledge.

Section 13: Disposal Considerations

The water that contains these products needs to be treated in accordance with related laws and standards (national, regional or local regulations).

Ask to certificated waste traders or local offices, and dispose appropriately in accordance with related laws and standards.

Section 14: Transport Information

14.1 International transport information

United Nations Identification Number:	Not applicable
Marine pollutant:	Not applicable
14.2 Domestic transport information (Japan)	Not applicable
14.3 Guideline for emergency (Yellow-card) number	Not applicable

14.4 Specific measures for safe transport

Make sure to prevent collapse of cargo piles.
Care should be made so that dust does not occur while transporting.
Pay attention to humidity and water leakage.

Section 15: Regulatory Information

Enforcement Order of the Industrial Safety and Health Law (Ordinance on Prevention of Hazards Due to Dust):	Dusty work
Pneumoconiosis Act:	Dusty work
Working Environment Measurement Act:	Specific dusty work

Section 16: Other Information

References

Japan Society for Occupational Health (2015) Recommendation of Occupational Exposure Limits

Chemical Risk Information Platform (CHRIP) (2015) Globally Harmonized System (GHS) Classification Database http://www.safe.nite.go.jp/ghs./list.html

ECHA: ECHA (European Chemicals Agency), website "ECHA CHEM", Information on Registered Substances (2015).

NSR: Nippon Slag Association Report of Air-cooled blast furnace slag and Steelmaking slag

DISCLAIMER

GBFS Specification and Analysis

Japanese GBFS

Typical Spec

Item	Typical
CaO	38-45%
SiO_2	30-36%
Al_2O_3	12-18%
MgO	4-9%
MnO	1.5%max
FeO	1.5%max
TiO_2	2.0%max
T.S	1.3%max
Moisture Content	10%max
Basicity $(CaO+MgO+Al_2O_2)/SiO_2$	1.75min
Glass Content	95%min
Size Under 5mm	95%min

Result

We hereby certify that the average sample of the loaded cargo has been determined by the chemical analysis and test results are as follows:-

Results of Analysis & Test:

Item	Results (%)	Item	Results (%)
CaO:	40.9	Mn_2O_3: (convert MnO into Mn2O3)	0.13
SiO_2 :	34.9	Na_2O:	0.27
Al_2O_3 :	15.0	K_2O :	0.35
Fe_2O_3 :	0.77	TiO_2 :	0.68
MgO :	5.61	P_2O_5:	0.02
SO_3 :	0.14	LOI :	0.10
Moisture Contents :	5.3	Chloride:	Less than 0.01
Glass Content :	98.7	Sulfur:	0.84

Method : JIS R5202, R5211, A5011, Z2601 & Slag Industrial method.

JAPAN INSPECTION CO., LTD.

General Manager
for Marine Dept.

DNREC Permitting Determination Letter

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF WASTE AND HAZARDOUS SUBSTANCES
SOLID AND HAZARDOUS WASTE MANAGEMENT SECTION

89 KINGS HIGHWAY
DOVER, DELAWARE 19901

TELEPHONE: (302) 739-9403
FAX: (302) 739-5060

February 28, 2018

Mr. Michael D. Logan, Vice President
Compliance Plus Services, Inc.
455 Business Center Drive, Suite 150
Horsham, PA 19044

Subject: Permitting Determination of Production of Ground Granulated Blast Furnace Slag
Reference: Walan Specialty Construction Products, LLC, File Code: 09.A

Dear Mr. Logan:

The Department is in receipt of your email dated February 16, 2018 and exhibits provided during our February 21, 2018 meeting, which were submitted on behalf of Walan Specialty Construction Products, LLC (Walan), regarding solid waste permitting requirements for its production of ground granulated blast furnace slag (GGBFS).

According to the information provided, the iron blast furnace slag is generated at the end of the iron ore processing, when it is separated from the iron and remaining waste stream. Once separated, the slag is rapidly quenched with fresh water and pelletized to produce a granular slag. As Walan explained during our meeting, the iron ore processing facility invests in equipment in order to produce the granular slag, which serves as a feedstock to Walan's operations. Walan proposes to grind the granular slag for use in concrete and as a replacement of Portland cement. In addition to replacing another ingredient, GGBFS adds structural benefits when used in concrete mixes.

While the Department has determined the slag is a solid waste, the granular slag has been determined to be a recycled product. Walan purchases the recycled product as a feedstock in its process. Therefore, on the basis of the information submitted by you and Walan, the SHWMS has determined that as described, Walan's activities do not require a Recycling Permit for its 501 Christiana Avenue operation in Wilmington. In the event Walan's operations are modified from those described in the information provided to the SHWMS by Walan or its representatives, Walan must immediately contact the SHWMS for a re-evaluation of this permitting decision.

If you have any questions, please feel free to contact Mindy Anthony at (302) 739-9403, option 8.

Sincerely,

Jason W. Sunde
Environmental Program Manager
Solid and Hazardous Waste Management Section

JWS:MBCA:cr
MBCA18005

cc: Anil G Bhadsavle, Penn Mag, Inc. (email only)
Lisa Bhadsavle Dharwadkar, Penn Mag, Inc. (email only)

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AQM-4.6
Baghouse Application

INTRODUCTION TO AQM-4.6

Three forms are provided in AQM-4.6 which provide technical information for the air pollution control devices that will be implemented in the grinding mill, two (2) storage silos, and 2 dustless loadout chutes. A traditional baghouse will be installed at the grinding mill which is designed to capture fugitive dust emitted during grinding. The 2 storage silos will be equipped with bin vents containing cartridge filters. This is another configuration of the traditional baghouse that captures fugitive dust that is released into the air during storage. The dustless loadout chutes that are used to load outgoing trucks with product are equipped with cartridge filters. Technical information for the air pollution control devices is attached in the supporting information sections of AQM-4.6. Below is a glossary of technical terms used in this section.

Baghouse – an air pollution control device that separates particulates from exhaust gas and collects the separated particulates to keep them from being discharged to the atmosphere.

Actual Cubic Feet per Minute – (ACFM) a unit of volumetric flow that is provided by manufacturers of fans and compressors. The actual volumetric flow is determined with reference to inlet conditions of the gas.

Pound-force per square inch – (psi) a unit of pressure that is the result of a force of one (1) pound-force applied to 1 square inch of area.

Permeability – a measurement of the ability of a porous material to allow a fluid to pass through it. Fabric permeability is reported in standard cubic feet per minute per square foot (scfm/ft^2) at a given pressure measured in inches of water.

DUFFIELD ASSOCIATES
Soil, Water & the Environment

MINOR NEW SOURCE REVIEW AND BEST AVAILABLE CONTROL TECHNOLOGY (BACT) ANALYSIS FOR A GRANULATED BLAST FURNACE SLAG (GBFS) GRINDING FACILITY

WALAN SPECIALTY CONSTRUCTION PRODUCTS, LLC
WILMINGTON, DELAWARE

October 2018

Prepared for:

State of Delaware
Department of Natural Resources
and Environmental Control
Division of Air Quality
100 West Water Street, Suite 6A
Dover, Delaware 19904

On behalf of:

WALAN Specialty Construction Products, LLC
501 Christina Avenue
Wilmington, Delaware 19801

Prepared by:

Duffield Associates, Inc.
5400 Limestone Road
Wilmington, Delaware 19808

Project No. 8850.ED

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FIGURES

Figure 1 – Site Location Sketch
Figure 2 – Process Flow Diagram

APPENDICES

Appendix A – EPA RBLC Search – Control Technology for Grinding/Drying Mill
Appendix B – EPA RBLC Search – Control Technology for Storage Silos
Appendix C – EPA RBLC Search – Control Technology for Truck Loading
Appendix D – AQM-5 (BACT Tables)

1.0 INTRODUCTION

This document summarizes a minor new source review (MNSR) for the proposed WALAN Specialty Construction Products, LLC (WALAN) that will be located at 501 Christina Avenue, in Wilmington, Delaware (see Figure 1). WALAN is proposing to develop, construct, and operate a Granulated Blast Furnace Slag (GBFS) Grinding Facility. The GBFS Grinding Facility will include a grinding mill/dryer, two product storage silos, and two truck loading chutes, each of which will be new sources of particulate matter (PM) emissions that require control per the State of Delaware and federal regulations. These pieces of equipment will emit particulate matter (PM) including particles less than or equal to 10 micrometers in aerodynamic diameter (PM_{10}) and particles less than or equal to 2.5 micrometers in aerodynamic diameter ($PM_{2.5}$).

In aggregate, these sources have the potential to emit particulate matter at a rate of more than 5 tons per year (tpy). As such, an MNSR to determine best available control technology (BACT) is required for each new source per 7 DE Admin. Code 1125 Section 4.1.4 for pollutants, including $PM_{2.5}$ and PM_{10}.

2.0 DESCRIPTION OF PROPOSED FACILITY

2.1 FACILITY DESCRIPTION, LOCATION MAPS, AND PLOT PLAN

As discussed in Section 1.0, the proposed GBFS Grinding Facility will be located at 501 Christina Avenue in Wilmington, Delaware. Figure 1 shows the site location within the State of Delaware and within the local area. Figure 2 shows the general process flow diagram for the GBFS Grinding Facility.

Major components of the GBFS Grinding Facility that will be discussed in this report will consist of:

- One grinding mill and dryer;
- Two ground GBFS storage silos; and
- Two truck loading chute systems

2.2 PROCESS DESCRIPTIONS

The grinding/drying mill reduces the GBFS materials to the necessary product size range. Fine dust particles carried by exhaust flow from the grind mill/dryer will be captured by an air pollution control device (APC) prior to discharge of the exhaust to the atmosphere. This APC must be BACT. The ground GBFS is fed by bucket elevator to two 1,100 ton storage silos. Air displaced by the ground GBFS will contain dust particles. The displaced air will be discharged to the atmosphere through a BACT APC. The ground GBFS in the silos will be loaded into enclosed trucks' compartments for delivery to customers. Air displaced from the enclosed truck compartments will contain dust particles. The displaced air will be discharged to the atmosphere through a BACT APC. See Figure 2 for the detailed process flow diagram.

3.0 CONTROL TECHNOLOGY ANALYSES

The proposed GBFS Grinding Facility is subject to review for PM, $PM_{2.5}$, and PM_{10} BACT to comply with minor new source review requirements of 7 DE Admin. Code 1125.

3.1 BEST AVAILABLE CONTROL TECHNOLOGY

3.1.1 Pollutant Applicability

Pursuant to 40 CFR 52.21(j)(2), an analysis of BACT is required for each pollutant source that has the potential to emit in significant amounts. In addition, BACT is also required for new minor source facilities in Delaware when a category of potential emissions exceed 5 tpy per 7 DE Admin. Code 1125 Section 4.1.4. The proposed GBFS Grinding Facility has the potential to emit PM/PM_{10}/$PM_{2.5}$ in amounts that will exceed 5 tpy. Therefore, PM/PM_{10}/$PM_{2.5}$ are addressed through this BACT analysis.

3.1.2 Methodology

BACT is defined in 7 DE Admin. Code 1125 Section 1.9, as:

> "…an emissions limitation (including a visible emissions standard) based on the maximum degree of reduction for each pollutant subject to regulation under CAA which would be emitted from any proposed major stationary source or major modification which the Department, on a case-by-case basis, takes into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 7 DE Admin. Code 1120 and 1121. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice or operation, and shall provide for compliance by means which achieve equivalent results."

The first step in the top-down BACT procedure is the identification of available control technologies. Alternatives considered included process designs and operating practices that reduce the formation of emissions, post-process exhaust controls that reduce emissions after they are formed, and combinations of these two control categories. Sources of information used to identify control alternatives include:

- EPA's RBLC database;
- Environmental Protection Agency Compilation of Air Pollutant Emissions Factors (EPA AP-42, 2003), Chapter 11: Mineral Products Industry, Section 11.19.2.1 for Crushed Stone Processing and Pulverized Mineral Processing, Section 11.12 for Concrete Batching, and Appendix B.2 Generalized Particle Size Distributions;
- Current Permit Application for Granular Blast Furnace Slag (GBFS) Grinding Facility;
- National Service Center for Environmental Publications (NSCEP) *Air Pollutant Control Techniques for Crushed and Broken Stone Industry*;
- Colinet, et, al., *Best Practices for Dust Control in Metal/Nonmetal Mining*, 2010.; and
- National Materials Advisory Board, *Pneumatic Dust Control in Grain Elevators: Guidelines for Design Operation and Maintenance*, 1982.

Following the identification of available control technologies, the next step in the analysis is to determine which technologies may be infeasible technically. The third step in the top-down BACT process is the ranking of the remaining technically feasible control technologies from high to low in order of control effectiveness. An assessment of energy, environmental, and economic impacts is then performed. If the most stringent or top control technology is selected, an assessment of energy and economic impacts is not required. The fifth and final step is the selection of a BACT emissions limitation or a design, equipment, work practice, operational standard, or combination thereof corresponding to the most stringent, technically feasible control technology that was not eliminated based on adverse energy, environmental, or economic grounds.

BACT analyses were performed for $PM/PM_{10}/PM_{2.5}$ for three different sources of emissions: the grinding/drying mill, the two silos used for storing the material, and the loading of the finished product into trucks. Sections 3.2.3 through 3.2.5 of this report will focus on the BACT analysis performed for each of these sources of emissions.

3.1.3 BACT Analysis for $PM/PM_{10}/PM_{2.5}$ from Grinding/Drying Mill

Operation of the grinding/drying mill will be a source of PM emissions. $PM/PM_{10}/PM_{2.5}$ emissions from operation of the grinding/drying mill will be the particles formed by grinding the GBFS. The more GBFS that is processed at one time, the greater amount of particulate matter that is emitted.

3.1.3.1 Potential Control Technologies for Grinding/Drying Mill PM

Fabric filters are a potential control technology for $PM/PM_{10}/PM_{2.5}$ emissions from grinding mills. Fabric filters control particulate matter emissions from the grinding operation by passing emissions through a flexible liner material prior to allowing emissions to be released to the environment. Fabric filters allow for constant effluent concentration with intermittent cleaning cycles to remove the filter cake and loosen particulates. The EPA's AP-42 has indicated fabric filters as a common and efficient control technology for crushed stone and pulverized mineral processing. In Appendix B.2 of the AP-42, the Generalized Particle Size Distribution, the fabric filter is shown to have an efficiency of 99% with particle size 0-2.5 micrometers and an efficiency of 99.5% with particle size 2.5-10 micrometers. The National Service Center for Environmental Publications' (NSCEP's) *Air Pollutant Control Techniques for Crushed and Broken Stone Industry* states that the fabric filter exhibits collection efficiencies in excess of 99% through the submicron particle range (1980).

Literary review of the EPA RACT/BACT/LAER Clearinghouse (RBLC) database revealed that the Rochester Metal Products Corporation uses a baghouse during their cooling and grinding operation (see Appendix A). The baghouse is synonymous to a fabric filter and, since this grinding operation is used for minerals of similar density, Duffield has determined that the control technology used would be comparable to that of the ground GBFS produced by the grinding/drying mill. Duffield did not find alternative control technologies to the fabric filter for this type of application or similar applications. Information regarding other control technology options during the GBFS grinding process were not found during Duffield's literary review. In this case, the fabric filter control technology for the grinding mill is the only known control technology and is the most effective. Since this control technology is also the BACT, a demonstration of infeasibility based on the criteria in subsection 4.3.1.4.3.1 through subsection 4.3.1.4.3.4 of the Delaware Division of Air Quality 7 Delaware Admin Code 1125 is not required.

3.1.4 BACT Analysis for $PM/PM_{10}/PM_{2.5}$ from Storage Silos

The transfer of product from the grinding mill to the two product storage silos will be a source of PM emissions. $PM/PM_{10}/PM_{2.5}$ emissions will result from the particles disturbed by the transfer of ground GBFS. The more ground GBFS that is transferred to the product storage silos at one time, the greater amount of PM that is emitted.

3.1.4.1 Potential Control Technologies for Product Storage Silo PM

A control technology commonly used with product storage in silos for mineral grinding facilities is the bin vent. The EPA AP-42 Section 11.12 for Concrete Batching states that the point source transfer of cement and pozzolan material to silos usually uses a fabric filter or "sock" as the control technology. Cement has a density of approximately 3.15 g/cm^3 while ground GBFS has a density of approximately 3.05 g/cm^3. Since these densities are similar, the control technologies for concrete batching can be seen as comparable to the control technologies used for the GBFS storage silos. The storage bin vents proposed for use by WALAN Specialty Construction Products, LLC are similar to the fabric filters used during concrete batching. Chapter 11 of AP-42, Mineral Products Industry, discusses the storage of dry rock in enclosed bins or silos which are vented to the atmosphere with fabric filters frequently used to control emissions (2006).

Literary review of the EPA RACT/BACT/LAER Clearinghouse (RBLC) database revealed the following about the control technologies used for product storage silos:

- Baghouse for Limestone/Dolomite Grinding Mill Bin Area
- Baghouse for Product Transfer, Processed Stone, Conveying at Kiln
- Fabric Filter for Limestone Storage Silos
- Baghouse Vent for Slag Mill Product Silo for Nucor Steel Louisiana Facility
- Enclosed Vent to a Dust Extraction System or Baghouse for truck/rail conveyor transfer tower; truck stations unloading to a truck hopper; and truck hopper unloading to the conveyor belts

The results found from the RBLC database search confirm that the bin vent is a common control technology used by mineral grinding facilities. See Appendix B for details regarding the above listed control technologies found through searching the RBLC database.

Information regarding other control technology options for the product storage silos were not found during Duffield's literary review. In this case, the bin/baghouse vent, fabric filter, and baghouse are synonymous terms for the same control technology. The bin vent control technology for the storage silos is the only known control technology and is the most effective. Since this control technology is also the BACT, a demonstration of infeasibility based on the criteria in subsection 4.3.1.4.3.1 through subsection 4.3.1.4.3.4 of the Delaware Division of Air Quality 7 Delaware Admin Code 1125 is not required.

3.1.5 BACT Analysis for PM/PM_{10}/$PM_{2.5}$ for Loading Trucks

The transfer of product from the product storage silos to trucks will be a source of PM emissions due to the disturbance of ground GBFS particles during transfer activities. The more ground GBFS that is transferred to the trucks at one time, the greater amount of particulate matter that is emitted.

3.1.5.1 Potential Control Technologies for PM Emissions Related to Truck Loading

AP-42 Section 11.12 for Concrete Batching mentions truck loading emissions as a fugitive emissions source depending on the moisture level which implies that no control technology is typically used when loading concrete into trucks/hoppers. *Best Practices for Dust Control in Metal/Nonmetal Mining* discusses packaging and bagging products for shipping using a dual bag nozzle system (Colinet, et al, 2010). This system has a bag clamp that reduces the blowback of material during bag filling. The inner nozzle is the normal fill nozzle and the outer nozzle is an air exhaust system which depressurizes the nozzle system to reduce the blowback of material into the bag, minimizing PM emissions. Though the final product of the GBFS Grinding Facility is being transferred to trucks and not bags, the function of this dual bag nozzle system is much like the loadout chute and cartridge filter proposed for controlling PM emissions during truck loading. The loadout chute and cartridge filter take what would be a fugitive source and create a point source of PM emissions. The truck is fully enclosed when the material is being transferred via the loadout chute and cartridge filter except for the hole at the top of the chute that is receiving materials.

Literary review of the EPA RACT/BACT/LAER Clearinghouse (RBLC) database revealed the following about the control technologies used during the transfer from product storage silos to trucks:

- Fabric filters for treating displaced air during the truck and rail loadout process for Mississippi Lime Company

Lime has a density of approximately 3.35 g/cm^3 which is similar to the approximate density of GBFS, 3.05 g/cm^3. Therefore, the control technology used for this portion of the lime manufacturing facility and the GBFS grinding facility are comparable.

Information regarding other control technology options for the transfer of the final product from the storage silos to trucks for a dry mineral grinding operation were not found during Duffield's literary review. In this case, the loadout chute with a cartridge filter control technology is the most effective control technology for the truck loading process. The loadout chute and cartridge filter combines the fabric filter with the nozzle system, both found through research as separate control technologies, which increases the PM reduction. Since this control technology is also the BACT, a demonstration of infeasibility based on the criteria in subsection 4.3.1.4.3.1 through subsection 4.3.1.4.3.4 of the Delaware Division of Air Quality 7 Delaware Admin Code 1125 is not required.

4.0 PROPOSED PM/PM10/PM2.5 BACT EMISSIONS LIMIT FOR GBFS GRINDING FACILITY OPERATIONS

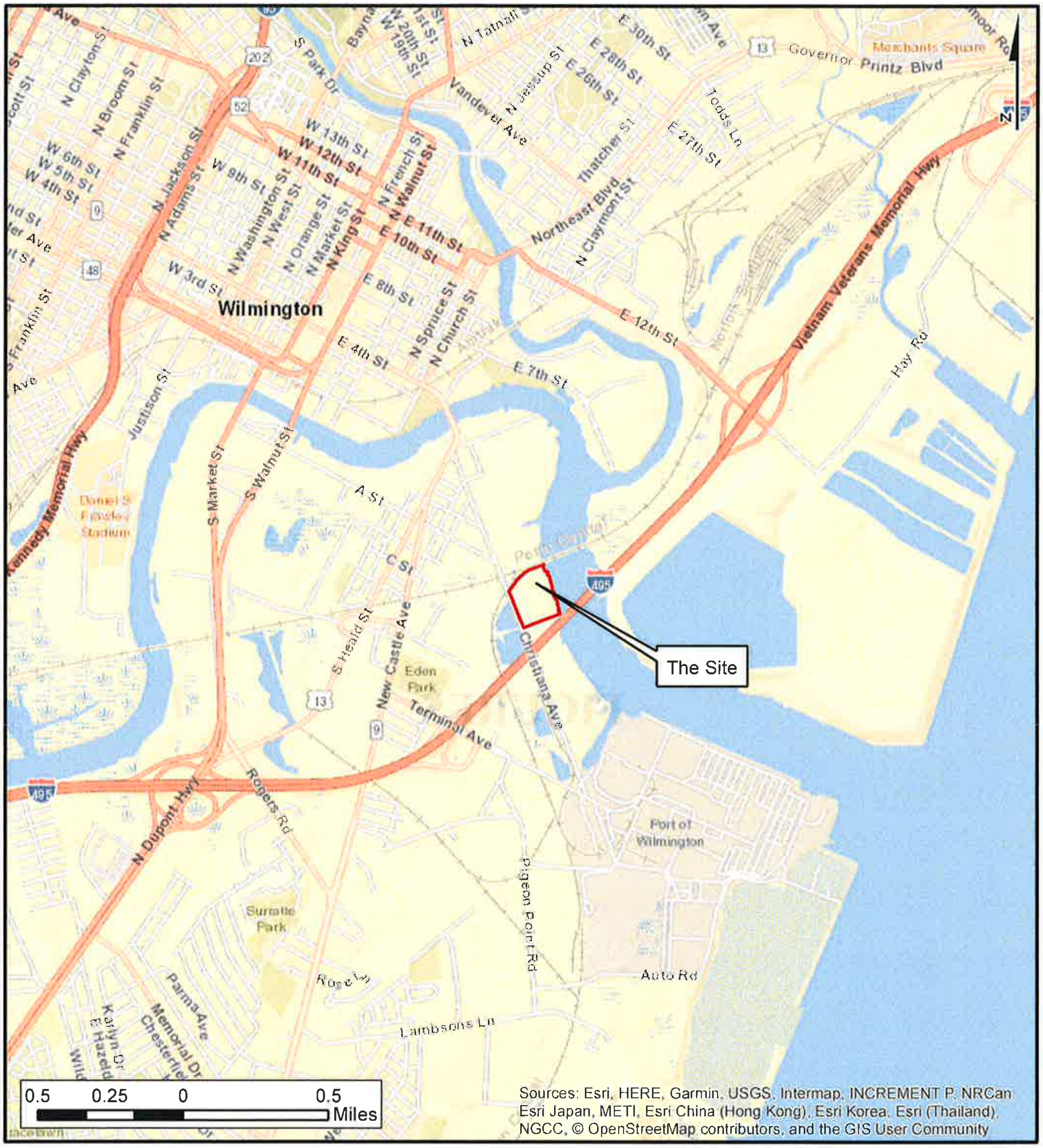
WALAN proposes to use fabric filters in a baghouse for the grinding mill exhaust, bin vents for the exhaust from each of the two product storage silos, and loadout chutes with cartridge filters for the exhaust associated with the transfer of the ground GBFS from the storage silos to the trucks as BACT for addressing PM/PM$_{10}$/PM$_{2.5}$ emissions. To view the estimated PM/PM$_{10}$/PM$_{2.5}$ emissions and the proposed emissions limits for each source, please see the Emissions Summary Table in AQM-5 (see Appendix D). The grinding/drying mill is Emission Point-3 (EP-3), loading of ground GBFS into the two storage silos is EP-4 & EP-5, and the loading of ground GBFS into enclosed trucks is EP-6 & EP-7.

5.0 SUMMARY OF PROPOSED EMISSIONS LIMITATIONS AND DEMONSTRATION OF COMPLIANCE

WALAN will comply with the BACT emissions limitations described in the AQM-5 (see Appendix D). Initial and periodic testing will take place at each emission point location associated with each BACT and documentation of daily operating conditions will be used to demonstrate compliance with the anticipated permit conditions.

DUFFIELD ASSOCIATES
Soil, Water & the Environment

FIGURES



Date: 10/2018

SCALE: AS SHOWN

PROJECT NO. 8850.ED

FIGURE 1

Site Location Map

DESIGNED BY: BNM

DRAWN BY: CSP

CHECKED BY: MRB

FILE: 8850.ED.mxd

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DUFFIELD ASSOCIATES
Soil, Water & the Environment

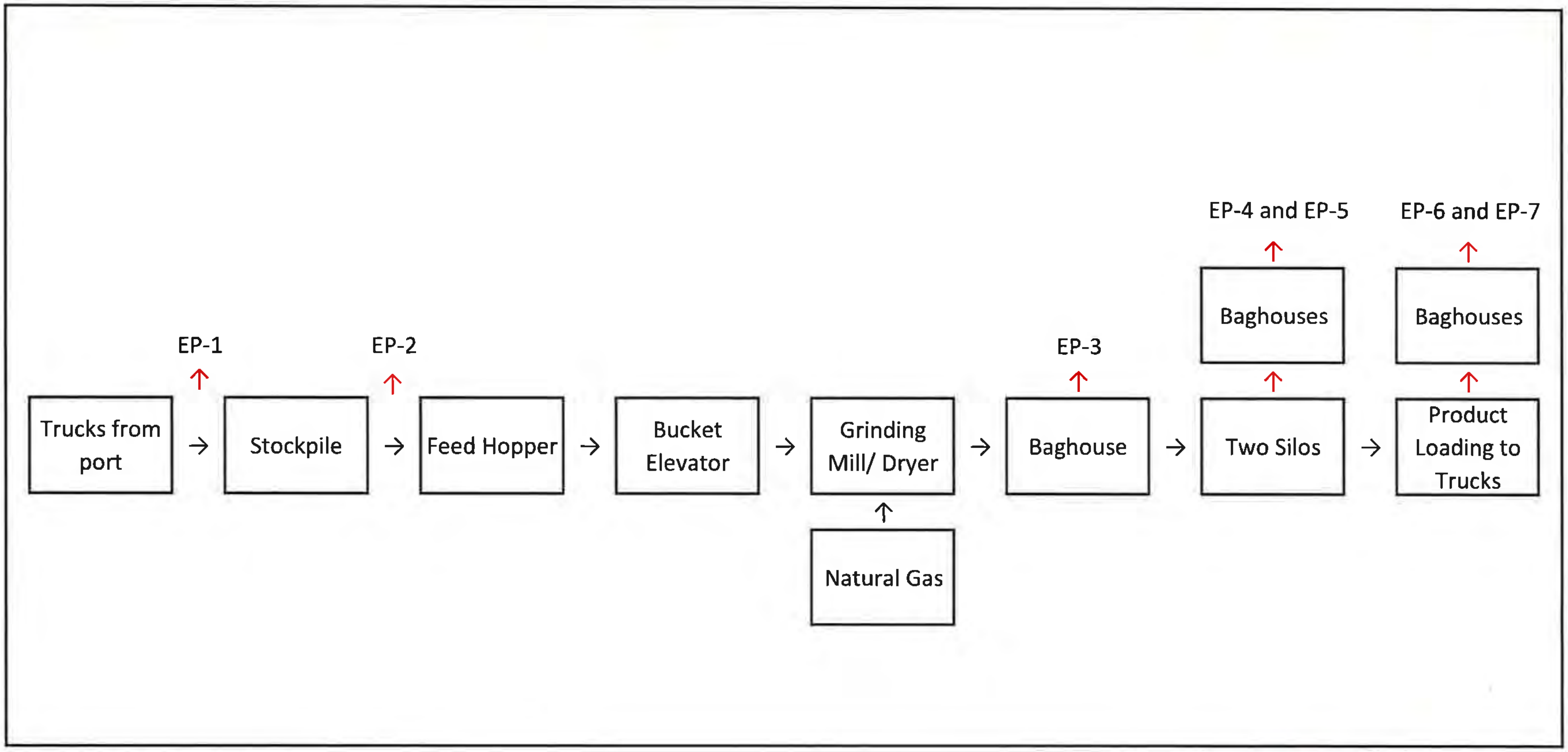
AQM-2
Process Flow Diagram

DNREC – Air Quality Management Section
Application to Construct, Operate, or Modify Stationary Sources

Process Flow Diagram

Sketch the Process Flow Diagram for the equipment or process being applied for. Include each emission unit and control device (even existing emission units that will not be modified by this application). You may identify each emission unit with a simple shape. Label each emission unit and control device with a unique identifier. Show the relationship between each emission unit and/or control device by drawing arrows between them to indicate the flow of air pollutants. List which application forms are included for each emission unit or control device below the shape representing each emission unit or control device . See http://www.delaware.gov/reg2/default.htm for example Process Flow Diagrams for common processes. If you already have a Process Flow Diagram for the equipment or process being applied for, you may attach it to the application instead of using this form.

See Process Flow Diagram attached



DATE: 10/2018	**Process Flow Diagram**	DRAWN BY: BNM	DUFFIELD ASSOCIATES Soil, Water & the Environment
PROJECT NO: 8850.ED	WALAN Specialty Construction Products, LLC	CHECKED BY: MRB	5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL. (302)239-6634 FAX (302)239-8485
SHEET: FIGURE 2	Wilmington~Delaware	FILE: 8850.ED Process_Flow_Diagram.xlxs	OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY *EMAIL: DUFFIELD@DUFFNET.COM*

APPENDIX A

EPA RBLC SEARCH – CONTROL TECHNOLOGY FOR GRINDING/DRYING MILL

Technology Transfer Network
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Pollutant Information

Click on the Process Information button to see more information about the process associated with this pollutant.
Or click on the Process List button to return to the list of processes.

RBLC Home | New Search | Search Results | Facility Information | Process List | Process Information | Pollutant Information

Help
FINAL

RBLC ID: IN-0147
Corporate/Company: ROCHESTER METAL PRODUCTS CORP.
Facility Name: ROCHESTER METAL PRODUCTS CORP.
Process: DISA 2 CASTING COOLING (EU-335) AND THE DISA 2 GRINDING (EU-433)

Pollutant: Particulate matter, filterable (FPM)
CAS Number: PM

Pollutant Group(s): Particulate Matter (PM),
Substance Registry System: Particulate matter, filterable (FPM)

Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible: A
P2/Add-on Description: BAGHOUSE (DC-12)

Test Method: Unspecified

EPA/OAR Methods | All Other Methods

Percent Efficiency: 0
Compliance Verified: Unknown
EMISSION LIMITS:
Case-by-Case Basis: OTHER CASE-BY-CASE
Other Applicable Requirements: N/A
Other Factors Influence Decision: Unknown
Emission Limit 1: 0.0030 GR/DSCF OF* 3 HRS
Emission Limit 2: 0.8400 LB/H 3 HRS
Standard Emission Limit: 0
COST DATA:
Cost Verified? No
Dollar Year Used in Cost Estimates:
Cost Effectiveness: 0 $/ton
Incremental Cost Effectiveness: 0 $/ton
Pollutant Notes: *OF EXHAUST AIR PSD BACT

APPENDIX B

EPA RBLC SEARCH – CONTROL TECHNOLOGY FOR STORAGE SILOS

Technology Transfer Network
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Process Information - Details

For information about the pollutants related to this process, click on the specific pollutant in the list below.

RBLC Home | New Search | Search Results | Facility Information | Process List | Process Information

Help

FINAL

RBLC ID: IN-0167
Corporate/Company: MAGNETATION LLC
Facility Name: MAGNETATION LLC
Process: LIMESTONE/DOLOMITE GRINDING MILL BIN AREA

Primary Fuel:
Throughput: 495.00 T/H
Process Code: 90.019

Pollutant Information - List of Pollutants

Help

Pollutant	Primary Emission Limit	Basis	Verified
Particulate matter, filterable (FPM)	0.0020 GR/DSCF	BACT-PSD	NO
Particulate matter, total < 10 µ (TPM10)	0.0020 GR/DSCF	BACT-PSD	NO
Particulate matter, total < 2.5 µ (TPM2.5)	0.0020 GR/DSCF	BACT-PSD	NO

Process Notes: CONSISTED IN ONE (1) LIMESTONE AND DOLOMITE GRINDING MILL BIN AREA IS ONE (1) ADDIDTIVE CONVEYOR, ONE (1) DOLOMITE GRINDING MILL BIN WITH A MAXIMUM CAPACITY OF 440 TONS, AND ONE (1) LIMESTONE GRINDING MILL BIN WITH A MAXIMUM CAPACITY OF 440 TONS, IDENTIFIED AS EU025B. USING BAGHOUSE CE023, EXHAUSTS INSIDE THE BUILDING AND ARE CONSIDERED AFFECTED FACILITIES.

Technology Transfer Network
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Pollutant Information

Click on the Process Information button to see more information about the process associated with this pollutant.
Or click on the Process List button to return to the list of processes.

RBLC Home | New Search | Search Results | Facility Information | Process List | Process Information | Pollutant Information

Help
FINAL

RBLC ID: OH-0321
Corporate/Company: MARTIN MARIETTA MAGNESIA SPECIALTIES, LLC
Facility Name: MARTIN MARIETTA MATERIALS
Process: PRODUCT TRANSFER, PROCESSED STONE, CONVEYING AT KILN

Pollutant: Visible Emissions (VE) **CAS Number:** VE

Pollutant Group(s): **Substance Registry System:** Visible Emissions (VE)

Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible: A
P2/Add-on Description: BAGHOUSE

Test Method: Unspecified EPA/OAR Methods | All Other Methods

Percent Efficiency:	0
Compliance Verified:	No
EMISSION LIMITS:	
Case-by-Case Basis:	BACT-PSD
Other Applicable Requirements:	SIP
Other Factors Influence Decision:	Unknown
Emission Limit 1:	20.0000 % OPACITY OF FUGITIVE DUST AS 3-MIN. AVG.
Emission Limit 2:	0
Standard Emission Limit:	0 % OPACITY AS 6-MIN. AVERAGE FROM BAGHOUSE
COST DATA:	
Cost Verified?	No
Dollar Year Used in Cost Estimates:	
Cost Effectiveness:	0 $/ton
Incremental Cost Effectiveness:	0 $/ton
Pollutant Notes:	BAGHOUSE STACK IS PRODUCT CONVEYOR STACK. FUGITIVE DUST IS FROM MATERIAL HANDLING OPERATIONS.

Technology Transfer Network
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Pollutant Information

Click on the Process Information button to see more information about the process associated with this pollutant.
Or click on the Process List button to return to the list of processes.

RBLC Home | New Search | Search Results | Facility Information | Process List | Process Information | Pollutant Information

Help
FINAL

RBLC ID: KY-0100
Corporate/Company: EAST KENTUCKY POWER COOPERATIVE, INC
Facility Name: J.K. SMITH GENERATING STATION
Process: LIMESTONE STORAGE SILOS

Pollutant: Particulate matter, filterable < 10 µ (FPM10)
CAS Number: PM

Pollutant Group(s): Particulate Matter (PM),
Substance Registry System: Particulate matter, filterable < 10 µ (FPM10)

Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible: A
P2/Add-on Description: FABRIC FILTER

Test Method: EPA/OAR Mthd 201 | EPA/OAR Methods | All Other Methods

Percent Efficiency: 0
Compliance Verified:
EMISSION LIMITS:
- **Case-by-Case Basis:** BACT-PSD
- **Other Applicable Requirements:** NSPS
- **Other Factors Influence Decision:** No
- **Emission Limit 1:** 0.0050 GR/DSCF 24 HR
- **Emission Limit 2:** 0.5100 LB/H (EACH) 24 HR
- **Standard Emission Limit:** 0

COST DATA:
- **Cost Verified?** No
- **Dollar Year Used in Cost Estimates:**
- **Cost Effectiveness:** 0 \$/ton
- **Incremental Cost Effectiveness:** 0 \$/ton
- **Pollutant Notes:** ALSO LISTED AS PM2.5 LIMIT.

Technology Transfer Network
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Pollutant Information

Click on the Process Information button to see more information about the process associated with this pollutant.
Or click on the Process List button to return to the list of processes.

RBLC Home | New Search | Search Results | Facility Information | Process List | Process Information | Pollutant Information

Help
FINAL

RBLC ID: IN-0166
Corporate/Company: INDIANA GASIFICATION, LLC
Facility Name: INDIANA GASIFICATION, LLC
Process: TRUCK/RAIL CONVEYOR TRANSFER TOWER; TRUCK STATIONS UNLOADING TO A TRUCK HOPPER; AND TRUCK HOPPER UNLOADING TO THE CONVEYOR BELTS

Pollutant: Particulate matter, filterable (FPM)
CAS Number: PM

Pollutant Group(s): Particulate Matter (PM),
Substance Registry System: Particulate matter, filterable (FPM)

Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible: A
P2/Add-on Description: ENCLOSED VENT TO A DUST EXTRACTION SYSTEM OR BAGHOUSE

Test Method: Unspecified — EPA/OAR Methods | All Other Methods

Percent Efficiency: 99.000
Compliance Verified:
EMISSION LIMITS:
- **Case-by-Case Basis:** BACT-PSD
- **Other Applicable Requirements:**
- **Other Factors Influence Decision:** No
- **Emission Limit 1:** 0.0030 GR/DSCF 3 HR AVE
- **Emission Limit 2:** 0
- **Standard Emission Limit:** 0

COST DATA:
- **Cost Verified?** No
- **Dollar Year Used in Cost Estimates:** 2012
- **Cost Effectiveness:** 28701 $/ton
- **Incremental Cost Effectiveness:** 0 $/ton
- **Pollutant Notes:** BAGHOUSE ACHIEVING 0.001 GR/DSCF NOT COST EFFECTIVE.

Technology Transfer Network
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Process Information - Details

For information about the pollutants related to this process, click on the specific pollutant in the list below.

RBLC Home | New Search | Search Results | Facility Information | Process List | Process Information

Help

FINAL

RBLC ID: LA-0239
Corporate/Company: CONSOLIDATED ENVIRONMENTAL MANAGEMENT INC
Facility Name: NUCOR STEEL LOUISIANA
Process: SLG-408 - SLAG MILL PRODUCT SILO BAGHOUSE VENT

Primary Fuel:
Throughput: 75.40 T/H
Process Code: 81.290

Pollutant Information - List of Pollutants

Help

Pollutant	Primary Emission Limit	Basis	Verified
Particulate matter, total (TPM)	0.7500 LB/H	BACT-PSD	YES

Process Notes: TOTAL THROUGHPUT 1.92 MILLION TONS PER YEAR

APPENDIX C

EPA RBLC SEARCH – CONTROL TECHNOLOGY FOR TRUCK LOADING

Technology Transfer Network
Clean Air Technology Center - RACT/BACT/LAER Clearinghouse

Pollutant Information

Click on the Process Information button to see more information about the process associated with this pollutant.
Or click on the Process List button to return to the list of processes.

RBLC Home | New Search | Search Results | Facility Information | Process List | Process Information | Pollutant Information

Help
FINAL

RBLC ID: IL-0117
Corporate/Company: MISSISSIPPI LIME COMPANY
Facility Name: MISSISSIPPI LIME COMPANY
Process: Truck and Rail Loadout

Pollutant: Particulate matter, filterable (FPM)
CAS Number: PM

Pollutant Group(s): Particulate Matter (PM),
Substance Registry System: Particulate matter, filterable (FPM)

Pollution Prevention/Add-on Control Equipment/Both/No Controls Feasible: A

P2/Add-on Description: Partial enclosure; fabric filters to treat displaced air during loadout; and loadout practices to minimize spillage.

Test Method: EPA/OAR Mthd 5 | EPA/OAR Methods | All Other Methods

Percent Efficiency: 0
Compliance Verified: No
EMISSION LIMITS:
- **Case-by-Case Basis:** BACT-PSD
- **Other Applicable Requirements:** SIP
- **Other Factors Influence Decision:** No
- **Emission Limit 1:** 0.0040 GR/SCF
- **Emission Limit 2:** 0
- **Standard Emission Limit:** 0

COST DATA:
- **Cost Verified?** No
- **Dollar Year Used in Cost Estimates:**
- **Cost Effectiveness:** 0 $/ton
- **Incremental Cost Effectiveness:** 0 $/ton
- **Pollutant Notes:** Opacity: 7%

APPENDIX D

AQM-5 (BACT TABLES)

AQM-5
Emissions Calculations

WALAN Specialty Construction Products, LLC
501 Christina Avenue, Wilmington, DE 19801
Emission Points Summary Table

Emission Point (1)	Description	Process	Maximum Annual GGBFS Throughput (Tons) (2)	Pollutants Emitted (3)
EP-1	Dust drop from trucks to stockpile (fugitive dust emissions)	Handling	262,800 / 150,000	PM
EP-2	Dust drop from front end loader into feed hopper (fugitive dust emissions)	Handling		PM
EP-3	Grinding mill (stack emissions)	Grinding		PM, PM10, PM2.5
	Integral Dryer (stack emissions)	Drying		PM2.5, NOx, SOx, CO, VOC
EP-4 and EP-5	Baghouses on two storage silos (stack emissions)	Storage		PM10, PM2.5
EP-6 and EP-7	Baghouses on two dustless loadout chutes (stack emissions)	Loadout		PM10, PM2.5

Notes:
(1) See process flow diagram
(2) The maximum GBFS throughput rate is 30 tons/hour. The facility has the potential to process GBFS three shifts per day, 365 days per year for a total of 8760 operational hours per year.
The actual annual throughput is expected to be 150,000 tons per year.
(3) Estimated particle sizes for GBFS range from 200 - 4750 microns. Emissions from material handling operations are expressed as PM only.

WALAN Specialty Construction Products, LLC
Handling Operations PM Emissions

EP-1 - Dust drops from trucks to stockpile									
Substance	**Moisture Content (%) *(a)***	**k *(b)***	**U (mph) *(c)***	**E (lb/ton) *(d)***	**Maximum Hourly Throughput (ton/hr) *(e)***	**Uncontrolled Hourly Emissions (lb/hr)**	**Controlled Hourly Emissions (lb/hr)**	**PTE (tons/year) *(f)***	**Projected Emissions (tons/year) *(f)***
PM	9	0.74	10.84	7.884E-04	30	2.365E-02	2.365E-02	1.036E-01	5.913E-02

EP-2 - Dust drops from stockpile to feed hopper									
Substance	**Moisture Content *(a)***	**k *(b)***	**U (mph) *(c)***	**E (lb/ton) *(d)***	**Maximum Hourly Throughput (ton/hr) *(e)***	**Uncontrolled Hourly Emissions (lb/hr)**	**Controlled Hourly Emissions (lb/hr)**	**PTE (tons/year) *(f)***	**Projected Emissions (tons/year) *(f)***
PM	9	0.74	10.84	7.884E-04	30	2.365E-02	2.365E-02	1.036E-01	5.913E-02

	Uncontrolled Hourly Emissions (lb/hr)	**Controlled Hourly Emissions (lb/hr)**	**PTE (tons/year) *(f)***	**Projected Emissions (tons/year) *(f)***
Total Emissions =	**0.047**	**0.047**	**0.207**	**0.118**

(a) Estimated moisture content of salt used for calculation.

(b) k = particle size multiplier for average particle diameter for PM < 30 microns

(c) U = Mean wind speed for Wilmington, DE (Source: www.usa.com/wilmington-de.htm)

(d) E = Emission factor. Equation provided below detailed in USEPA AP-42 Section 13.2.4 (Revised 11/06)

(e) Estimated GBFS throughput rate

(f) Potential To Emit was calculated assuming facility operates for 8760 hours/year at an annual throughput of 262,800 tons/year.

Projected emissions were calculated assuming the facility operates for 5000 hours/year at an annual throughput of 150,000 tons/year.

Operational flexibility allows the facility to operatre anytime during the week's two shifts. Actual operation schedule will likely be less.

Emission Factor Equation:

$$E = k\,(0.0032)\frac{(\frac{U}{5})^{1.3}}{(\frac{M}{2})^{1.4}}$$

Where:

E = Emission Factor (lb/ton)

k = particle size multiplier

U = mean wind speed (mph)

M = GBFS moisture content (%)

WALAN Specialty Construction Products, LLC

EP-3 - Emissions from GBFS Grinding

	Uncontrolled Emissions		Controlled Emissions			
Substance	**Emission Factor (lb/ton)** *(a)*	**Emissions Rate (lb/hr)** *(b)*	**Emission Factor (lb/ton)** *(c)*	**Emissions Rate (lb/hr)** *(b)*	**PTE (tons/year)** *(d)*	**Projected Emissions (tons/year)** *(d)*
PM	8.08	242.4	0.0404	1.212	5.309	3.030
PM10	6.78	203.4	0.0339	1.017	4.454	2.543
PM2.5	2.42	72.6	0.0121	0.363	1.590	0.908

Notes:

(a) Uncontrolled emission factors were calculated using the controlled emissions factors
and a baghouse removal efficiency of 99.5%

(b) Emission rates calculated using a maximum hourly GBFS throughput of 30 tons/hour

(c) Emission factors provided in AP-42, Table 11.19.2-4

(d) Potential To Emit was calculated assuming facility operates for 8760 hours/year at an annual throughput of 262,800 tons/year.
Projected emissions were calculated assuming the facility operates for 5000 hours/year at an annual throughput of 150,000 tons/year.

WALAN Specialty Construction Products, LLC
Emissions from Natural Gas Combustion

EP-3 - Natural gas-firing Air Heating Unit					
Substance	Emission Factor (lb/10^6 scf) *(a)*	Uncontrolled Hourly Emissions (lb/hr) *(b)*	Controlled Hourly Emissions (lb/hr) *(b)*	PTE (tons/year) *(c)*	Projected Emissions (tons/year) *(c)*
PM2.5	7.6	0.055	0.0003	0.0012	0.0007
CO	84	0.608	NA	2.664	1.520
NOx	100	0.724		3.171	1.810
SOx	0.6	0.004		0.019	0.011
VOC	5.5	0.040		0.174	0.100

Notes:

(a) Emissions factors taken from AP-42, Tables 1.4-1 and 1.4-2

(b) A maximum firing rate of 7,240 scf/ft2 for the natural gas fired burner was used in the calculation

A 99.5% removal efficiency of PM2.5 by the baghouse is assumed for calculations

(c) Potential To Emit was calculated assuming facility operates for 8760 hours/year at an annual throughput of 262,800 tons/year.

Projected emissions were calculated assuming the facility operates for 5000 hours/year at an annual throughput of 150,000 tons/year.

WALAN Specialty Construction Products, LLC
Storage Silos and Loadout PM Emissions

	EP-4 & EP-5 - Loading of GGBFS into Two Storage Silos (Baghouse)					
	Uncontrolled Emissions		Controlled Emissions			
Substance	Emission Factor (lb/ton) *(a)*	Emissions Rate (lb/hr) *(b)*	Emission Factor (lb/ton) *(a)*	Emissions Rate (lb/hr) *(b)*	PTE (tons/year) *(c)*	Projected Emissions (tons/year) *(c)*
PM	0.73	21.9	0.00099	0.0297	0.130	0.074
PM10	0.47	14.1	0.00034	0.0102	0.045	0.026

	EP-6 & EP-7 - Loading of GGBFS into Enclosed Trucks (Cartridge Filter)					
	Uncontrolled Emissions		Controlled Emissions			
Substance	Emission Factor (lb/ton) *(a)*	Emissions Rate (lb/hr) *(b)*	Emission Factor (lb/ton) *(a)*	Emissions Rate (lb/hr) *(b)*	PTE (tons/year) *(c)*	Projected Emissions (tons/year) *(c)*
PM	0.73	21.9	0.00099	0.0297	0.130	0.074
PM10	0.47	14.1	0.00034	0.0102	0.045	0.026

Total Emissions				
Substance	Uncontrolled Hourly Emissions (lb/hr)	Controlled Hourly Emissions (lb/hr)	PTE (tons/year) *(c)*	Projected Emissions (tons/year) *(c)*
PM	**43.8**	**0.059**	**0.260**	**0.149**
PM10	**28.2**	**0.020**	**0.089**	**0.051**

Notes:

(a) Emission rates calculated using a maximum hourly GBFS throughput of 30 tons/hour

(b) Emission factors for concrete batching - cement silo loading were used and are provided in AP-42, Table 11.19.2-4

The same emission factors were used for enclosed truck loading because it is a similar process

and any dust captured during loadout is vented through similar baghouses.

(c) Potential To Emit was calculated assuming facility operates for 8760 hours/year at an annual throughput of 262,800 tons/year.

Projected emissions were calculated assuming the facility operates for 5000 hours/year at an annual throughput of 150,000 tons/year.

WALAN Specialty Construction Products, LLC
Summary of Projected Emissions

Emission Point	PM			PM10			PM2.5		
	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)
EP-1, EP-2 - Material Handling	0.047	0.047	0.118						
EP-3 - Grinding	242.4	1.212	3.03	203.4	1.017	2.543	72.6	0.363	0.908
EP-3 - Drying							0.055	0.0003	0.0007
EP-4, EP-5, EP-6, EP-7 - GGBFS Storage and Loadout	43.8	0.059	0.149	28.2	0.02	0.051			
Total Emissions	**286.247**	**1.318**	**3.297**	**231.600**	**1.037**	**2.594**	**72.655**	**0.363**	**0.909**

WALAN Specialty Construction Products, LLC
Summary of Projected Emissions

Emission Point	SOx			NOx		
	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)
EP-1, EP-2 - Material Handling						
EP-3 - Grinding						
EP-3 - Drying	0.004	0.004	0.011	0.724	0.724	1.810
EP-4, EP-5, EP-6, EP-7 - GGBFS Storage and Loadout						
Total Emissions	**0.004**	**0.004**	**0.011**	**0.724**	**0.724**	**1.810**

Emission Point	CO			VOC		
	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)
EP-1, EP-2 - Material Handling						
EP-3 - Grinding						
EP-3 - Drying	0.608	0.608	1.520	0.04	0.04	0.100
EP-4, EP-5, EP-6, EP-7 - GGBFS Storage and Loadout						
Total Emissions	**0.608**	**0.608**	**1.520**	**0.040**	**0.040**	**0.100**

Table 11.19.2-3 (Metric Units). EMISSION FACTORS FOR PULVERIZED MINERAL PROCESSING OPERATIONS [a]

Source [b]	Total Particulate Matter	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Grinding (Dry) with Fabric Filter Control (SCC 3-05-038-11)	0.0202	D	0.0169	B	0.0060	B
Classifiers (Dry) with Fabric Filter Control (SCC 3-05-038-12)	0.0112	E	0.0052	E	0.0020	E
Flash Drying with Fabric Filter Control (SCC 3-05-038-35)	0.0134	C	0.0073	C	0.0042	C
Product Storage with Fabric Filter Control (SCC 3-05-38-13)	0.0055	E	0.0008	E	0.0003	E

a. Emission factors represent controlled emissions unless noted. Emission factors are in kg/Mg of material throughput.

b. Date from references 16 through 23

Table 11.19.2-4 (English Units). EMISSION FACTORS FOR PULVERIZED MINERAL PROCESSING OPERATIONS [a]

Source [b]	Total Particulate Matter	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Grinding (Dry) with Fabric Filter Control (SCC 3-05-038-11)	0.0404	D	0.0339	B	0.0121	B
Classifiers (Dry) with Fabric Filter Control (SCC 3-05-038-12)	0.0225	E	0.0104	E	0.0041	E
Flash Drying with Fabric Filter Control (SCC 3-05-038-35)	0.0268	C	0.0146	C	0.0083	C
Product Storage with Fabric Filter Control (SCC 3-05-038-13)	0.0099	E	0.0016	E	0.0006	E

a. Emission factors represent controlled emissions unless noted. Emission factors are in lb/Ton of material throughput.

b. Data from references 16 through 23

TABLE 11.12-2 (ENGLISH UNITS)
EMISSION FACTORS FOR CONCRETE BATCHING [a]

Source (SCC)	Uncontrolled				Controlled			
	Total PM	Emission Factor Rating	Total PM_{10}	Emission Factor Rating	Total PM	Emission Factor Rating	Total PM_{10}	Emission Factor Rating
Aggregate transfer [b] (3-05-011-04,-21,23)	0.0069	D	0.0033	D	ND		ND	
Sand transfer [b] (3-05-011-05,22,24)	0.0021	D	0.00099	D	ND		ND	
Cement unloading to elevated storage silo (pneumatic)[c] (3-05-011-07)	0.73	E	0.47	E	0.00099	D	0.00034	D
Cement supplement unloading to elevated storage silo (pneumatic)[d] (3-05-011-17)	3.14	E	1.10	E	0.0089	D	0.0049	E
Weigh hopper loading [e] (3-05-011-08)	0.0048	D	0.0028	D	ND		ND	
Mixer loading (central mix)[f] (3-05-011-09)	0.572 or Eqn. 11.12-1	B	0.156 or Eqn. 11.12-1	B	0.0184 or Eqn. 11.12-1	B	0.0055 or Eqn. 11.12-1	B
Truck loading (truck mix)[g] (3-05-011-10)	1.118	B	0.310	B	0.098 or Eqn. 11.12-1	B	0.0263 or Eqn. 11.12-1	B
Vehicle traffic (paved roads)	See AP-42 Section 13.2.1, Paved Roads							
Vehicle traffic (unpaved roads)	See AP-42 Section 13.2.2, Unpaved Roads							
Wind erosion from aggregate and sand storage piles	See AP-42 Section 13.2.5, Industrial Wind Erosion							

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b]		CO	
	Emission Factor (lb/10^6 scf)	Emission Factor Rating	Emission Factor (lb/10^6 scf)	Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from lb/10^6 scf to kg/10^6 m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from lb/10^6 scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_x emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_x emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6 m^3$, multiply by 16. To convert from $lb/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6 scf] = (3.67)(CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, 4.2×10^4 $lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2.
Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AQM-4.6
Baghouse - Grinding/Drying

Baghouse Application

If you are using this form electronically, press F1 at any time for help

General Information

1.	Facility Name: **WALAN Specialty Construction Products, LLC**
2.	Equipment ID Number: **EP-3 Grinding Mill with Integral Heater**
3.	Manufacturer: **Redecam**
4.	Model: **2 DPZ 60x10/7-W**
5.	Serial Number: **N/A**
6.	Is the Baghouse Insulated? ☒ YES ☐ NO
7.	Design Minimum Operating Temperature: **203 °F**
8.	Design Maximum Operating Temperature: **257 °F**
9.	Are Temperature Controls Provided? ☐ YES ☒ NO
	If Yes, complete the rest of Question 9. If no, proceed to Question 10.
9.1.	Describe the Temperature Controls:
10.	Air Flow Through Baghouse: ☐ Forced ☒ Induced ☐ Other (Specify):
11.	Direction of Flow Through Filters: ☐ Inside Out ☒ Outside In
12.	Particulate Removal Efficiency: **99.9+** %

Attach the Manufacturer's Specification Sheet for the Baghouse and Particle Size Removal Efficiency Curve and basis of determination.

Compartment Information

13.	Number of Compartments: **Two**
14.	Number of Filters (Bags) Per Compartment: **600**
15.	Can the Compartments be Isolated for Replacement or Repair? ☐ YES ☒ NO

Gas Stream Information

16.	Maximum Inlet Volumetric Gas Flow Rate: **design value with 80-85% recirculated - 48,144 acfm at 204.8 °F**
17.	Maximum Outlet Volumetric Gas Flow Rate: **stack exhaust gas - 10,463 acfm at 204.8 °F**
18.	Dew Point at Maximum Moisture Content of Gas: **123.8 °F**

Gas Stream Information

19. pH of Gas Handled: **N/A**

20. Dust Characteristics: (Check All That Apply)
- ☐ Sticky
- ☐ Wet
- ☐ Corrosive
- ☒ Dry
- ☐ Other (Specify):

Contaminant Information

21. Percent of Each Contaminant in the Waste Gas and Removal Efficiency

If more than five Contaminants are present, attach additional copies of this page as needed.

	Contaminant Name	Contaminant CAS Number	Percent of Waste Gas	Removal Efficiency
21.1.	**GGBFS**	**N/A**	**100 %**	**99.9+ %**
21.2.			%	%
21.3.			%	%
21.4.			%	%
21.5.			%	%

Fabric Filter (Bag) Information

22. Fabric Type:
- ☐ Felted
- ☒ Woven
- ☐ Felted-Woven
- ☐ Membrane
- ☐ PTFE Membrane
- ☐ Sintered Metal
- ☐ Ceramic Cartridge
- ☐ Other (Specify):

23. Fabric Material: **Polyester/Acrylic**

24. Maximum Continuous Filter Operating Temperature: **257 °F**

25. Clean Fabric Permeability: **29.53** scfm/ft^2 at ΔP **N/A** inches of water

26. Fabric Filter (Bag) Diameter or Width: **5 inches**

27. Fabric Filter (Bag) Length: **22.9 feet**

28. Effective Area Per Filter: **30 square inches**

29. Minimum Effective Air to Cloth Ratio: Operating = 0.73 **feet/min**

30. Maximum Effective Air to Cloth Ratio: 1.15 **feet/min**

31. Design Pressure Drop Across Baghouse: 6.02 **inches water**

32. Describe Determining Factor Fabric Filter Changing/Replacement: **Vendor recommendations are followed. The company's other facilities operating in PA have implemented an effective baghouse maintenance plan as follows: (1) Baghouse, filters, and cages are inspected every 3 months by the plant foreman for the first 6 months; (2) After 6 months, the baghouse, filters, and cages are inspected monthly; and (3) Bags and cages are changed when required following inspection (typically 8-12 months).**

Attach the Manufacturer's Specification Sheet for the Fabric Filters (Bags).

Filter Cleaning Information

33. Filter Cleaning Method: ☐ Manual Cleaning ☐ Mechanical Shakers ☐ Pneumatic Shakers ☐ Bag Collapse ☐ Sonic Cleaning ☐ Reverse Air Flow ☐ Reverse Air Jet ☒ Pulse Jet ☐ Other (Specify):

If Reverse Air Jet or Pulse Jet is used, complete the rest of Question 33. If not, proceed to Question 34.

33.1. Air Pressure: 80 **psi**

33.2. Describe How Air Is Supplied to System: **WALAN Specialty Construction Products, LLC compressors will supply air with an air pressure regulator group to the air collectors located on the platforms on the filter roof. The connection is made through pneumatic valves to the ramps. Ramps blow the compressed air inside each bag and the pressure wave caused by the double ejection system causes both a sudden shake of the bag and an air flow in the opposite direction. The two combined effects cause the crumbling of the dust layer deposited on the bags and the dust falls into the hopper.**

34. Describe How Filter Cleaning Is Initiated: ☐ Manual ☐ Timer ☒ Pressure Drop ☐ Other (Specify):

Hopper Information

35. Is the Hopper Heated? ☐ YES ☒ NO

36. Is there a Hopper Vibrator? ☐ YES ☒ NO

37. Describe How Collected Material is Treated or Disposed of: **Collected material is considered product and is fed via a bucket elevator to the two 1,100 ton product storage silos.**

Stack Information

38. Emission Point Name: **EP-3**

38.1. Stack Height Above Grade: **83 feet**

38.2. Stack Exit Diameter: **3 feet**
(Provide Stack Dimensions If Rectangular Stack)

38.3. Is a Stack Cap Present? ☐ YES ☒ NO

38.4. Stack Configuration: ☒ Vertical ☐ Horizontal ☐ Downward-Venting ☐ Other (Specify):
(check all that apply)

38.5. Stack Exit Gas Temperature: **204.8 °F**

38.6. Stack Exit Gas Flow Rate: **10,463 ACFM**

38.7. Distance to Nearest Property Line: **about 125 feet**

38.8. Describe Nearest Obstruction: **Large 150' x 675' building to the west**

38.9. Height of Nearest Obstruction: **about 50 feet**

Stack Information	
38.10. Distance to Nearest Obstruction: **about 265 feet**	
38.11. Are Stack Sampling Ports Provided?	☐ YES ☒ NO

Monitoring and Alarm Information

39.	Are There Any Alarms You Would Like the Department to Consider When Drafting the Permit?		☐ YES ☒ NO	
If YES, complete the rest of Question 39. If NO, proceed to Question 40.				
39.1.	Describe the System Alarm(s):			
If there are more than five alarms, attach additional copies of this page as needed.				
	Operating Parameter Monitored	**Describe Alarm Trigger**	**Monitoring Device or Alarm Type**	**Does the Alarm Initiate an Automated Response?**
39.1.1.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.2.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.3.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.4.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.5.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:

Additional Information

40.	Is There Any Additional Information Pertinent to this Application?	☐ YES ☒ NO
If YES, complete the rest of Question 40.		

Additional Information

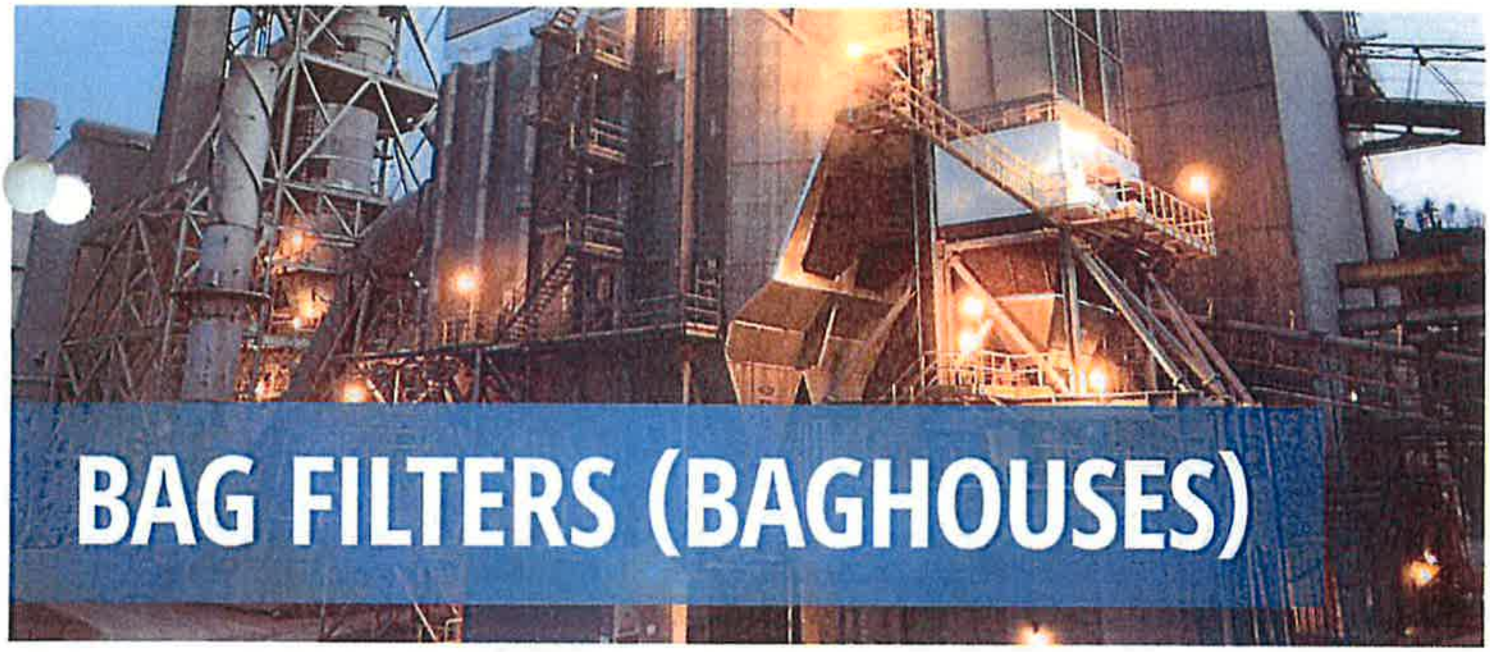
40.1. Describe:

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AQM-4.6
Baghouse - Grinding/drying
Supporting Information

DUFFIELD ASSOCIATES
Soil, Water & the Environment

Grinding Operation Baghouse Technical Information



BAG FILTERS (BAGHOUSES)

Bag Filters (baghouses) have been our core product for over 30 years. With our own proprietary technology, our Bag Filters offer the highest particulate removal efficiency on the market, far exceeding the most stringent emissions regulations worldwide. Our secret has been to constantly evolve with technology and search for improvements to provide our customers with optimum air filtration solutions.

WHY CHOOSE OUR BAG FILTERS?

Innovative solutions

Our persistent R&D has led to innovations such as our Dual- and Multi-Input Integrated Systems, saving CAPEX and space.

Unsurpassed filtration

Our Bag Filters can far exceed the strictest regulations and can remove more fine and ultra-fine particulates than any other on the market.

Incomparable life expectancy

We have Bag Filters that were installed over 25 years ago that still achieve the strictest emission requirements today.

Guaranteed casing tightness

Our SPS bag fixation system ensures 100% casing tightness, meaning no dust leakages.

Reduced energy costs

Redecam's Bi-Jet Bag Cleaning System reduces your system's compressed air usage by up to 40%, lowering energy costs.

High temperature capacity

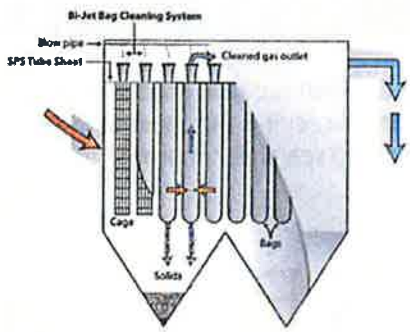
We offer Extreme High Temperature Bag Filters which can withstand temperatures of up to 1000°C (1832°F).

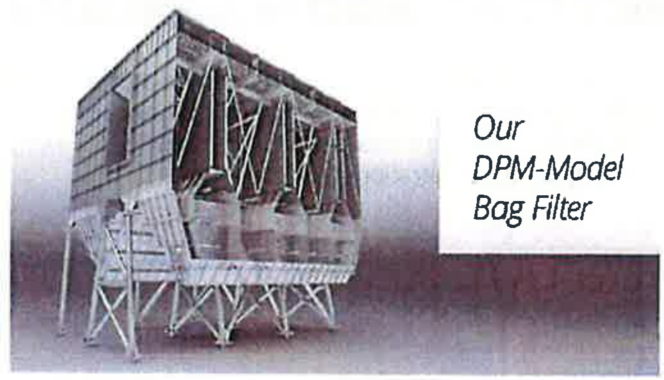
REDECAM GROUP

BAG FILTERS: MODELS AND UNIQUE FEATURES

We offer a wide variety of Bag Filters and Nuisance Filters to suit any **flow** rate and dust burden. All models feature our innovative SPS bag fixation system and our Bi-Jet Bag Cleaning System, ensuring optimal air filtration and lower operating costs (SPS and Bi-Jet are optional on Nuisance Filters). All of our models are also available as retrofits, upgrades or transformations. Among our most popular models are our DPD- and DPM-Model Bag Filters.

Please visit the Products section of our website at **www.redecam.com** for information about our other Bag Filter models.





We offer multiple Bag Filter models for flow rates from 10,000 m^3 to 3,000,000 m^3 (353,000 ft^3 to 105,000,000 ft^3) and for dust loads of 1 g to 1 kg (0.035 oz to 35 oz).

Our DPD-Model Bag Filter

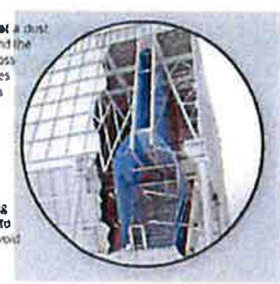
DPD-Model Bag Filters are suited for high flow rates (above 1.5 million m^3/hr or 883,000 ACFM) and medium inlet dust burden applications (up to 200 g/Nm^3 or 0.087 gr/ft^3). Examples include installations with 3 fan kiln circuits, clinker coolers or our Dual-Input Integrated System, as well as solutions in large power plants or integrating flue gas treatment.

This model has compartments placed in pairs on either side of a large central duct. The central duct contains separate ducts for the inlet (dirty) gas and the outlet (clean) gas.

The baffles (pipes and perforated plates) are specially designed for each project to ensure the ideal permeability and orientation in order to obtain a uniform gas velocity throughout each pair of compartments. As particles are captured they enter hoppers through isolation dampers, designed to provide superior airflow control in severe environments.

DPM-Model Bag Filters are suitable for high flow rates (above 1.5 million m^3/hr or 883,000 ACFM) and high inlet dust burden applications (up to 1000 g/Nm^3 or 0.44 gr/ft^3). Examples include installations with 2-fan kiln systems, in cement mills or on separators. In such cases, there is a need for efficient dust pre-separation to reduce the dust burden reaching the bags.

A wide central hopper is used to decrease the axial gas velocity so that a dust pre-dropping action takes place. Suitable baffles between the gas inlet and the central hopper ensure a uniform gas flow and velocity across the hopper cross section. Indeed the gas, after being largely pre-separated of its dust, rises up in the central hopper and passes through **our unique Distribution Screen**, which acts as another dust separator. This screen disperses the gas/dust evenly throughout the filter bag compartments, resulting in a highly efficient process. This translates into a lower pressure drop, fewer cleaning cycles, a longer bag lifetime and significant compressed air savings, meaning lower energy consumption.



While the air-to-cloth ratio is of utmost importance **for DPM-Model Bag** Filters, the can velocity has no impact on the design **since the gas flow to bags is horizontal. Access is made on one side of the bags** in order to avoid **the gas rising after mixing with the dropping dust.**

OUR EXTREME HIGH TEMPERATURE BAG FILTER

This new technology extends our air pollution control offering, as our Extreme High Temperature Bag Filter (EHT-Bag Filter) can remove both solids and tars while withstanding temperatures of up to 850°C (1562°F). It can even treat peak temperatures of **up to 1000°C** (1832°F).

Our EHT-Bag Filters are therefore ideal for the Oil & Gas industry and offer benefits for certain applications in the Cement, Metals & Mining and Waste-to-Energy & Biomass Power industries. Equipped with ceramic catalytic candles, our EHT-Bag Filters can be paired with our full flue gas treatment (FGT) system – whether to treat acid gases, mercury and metals or NO_x – or all of these pollutants.

Our Extreme High Temperature Bag Filters can withstand temperatures of up to 1000°C (1832°F)

ADVANTAGES OF OUR EXTREME HIGH TEMPERATURE BAG FILTER:

1. **Optimal performance.** Our filters can achieve near zero emission levels.
2. **Lower CAPEX & OPEX.** There's no need for further cooling systems, as the bags can withstand such high temperatures.
3. **Saves on energy costs.** It is possible to recover heat by installing a waste heat recovery system downstream of the EHT-Bag Filter.
4. **Safe.** Our special filter bags are non-flammable and 100% spark resistant.
5. **Easy installation and maintenance.** Our outer and inner collar sealing sets have readjustable bayonet locks and are flexible.

The design of our EHT-Bag Filter is not unlike our regular Bag Filters, but the filter material and the sealing technology are very different. The filters in the EHT-Bag Filter are rigid with a consistency like cardboard, and they don't need a cage inside as they are self-supporting.

IDEAL APPLICATIONS FOR OUR EHT-BAG FILTER:

Oil & Gas industry (gasification)

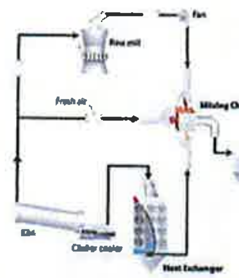
Cement industry (clinker cooler)

Biomass and WTE (incineration)

Metals & Mining (aluminum calcination, melting process and separation of precious metals)

OUR DUAL- AND MULTI-INPUT INTEGRATED SYSTEMS

Amongst our innovations are systems in which **one Redecam Bag Filter** is used to dedust gases from **two or more** process or unit points to save our clients significant space and CAPEX. Our Dual-Input Integrated System, developed for the cement industry, uses one Bag Filter to dedust both the kiln & raw mill and the clinker cooler. For the Metals & Mining and Oil & Gas industries, we created Multi-Input Integrated Systems, which collect flows from several process points or units and converge them into one Bag Filter (ex: converging the gases from the Electric Arc Furnace or another primary hot source with gases from a secondary cold source into one baghouse).



One of several possible configurations for our Dual-Input Integrated System

OUR SPECIALIZED RETROFIT & TRANSFORMATION SOLUTIONS

Redecam is a market leader in carrying out retrofit and transformation solutions: they are among our specialties. Many existing bag filters and electrostatic precipitators (ESPs) have become obsolete, either due to their age or their lower performance than current standards require. However in several cases, existing bag filters can be upgraded or retrofitted (taking out what's inside, keeping the casing and installing new Redecam components inside).

Transformations are also possible. This means changing an existing ESP into a Bag Filter, or vice-versa.

Advantages:

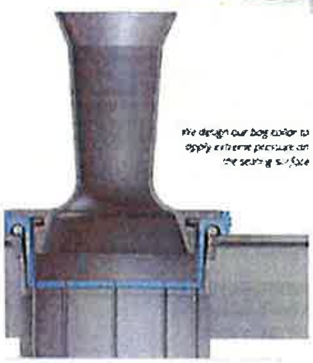
1. Lower CAPEX than replacing with a new model
2. Emissions can be reduced to well under the world's strictest emissions limits
3. Transformations can be made within the existing footprint
4. Minimal ductwork modifications/additions
5. Reuse of existing ancillary equipment

OUR SPS BAG FIXATION SYSTEM

Continuous laboratory tests and on-site work experience inspired us to develop the most advanced, user friendly and efficient bag fixation system on the market: our Simple Pressure System (SPS). Our SPS guarantees that the tightness of the casing between the dusty and clean sides is 100% effective.

To prevent dust leakage at weak points, we increased the contact surface area of the bag against the tube sheet by extending and contouring the tube sheet opening. The surface contact is therefore not limited to the pure thickness (typically 4 mm or 5/32") of the plate, but is extended to the entire internal surface of the drawn hole (around 18 mm or 45/64").

Our Simple Pressure System offers quick and easy installation



We design our bag collar to apply extreme pressure on the sealing surface

We increased the pressure of the bag collar on the drawn edge of the tube sheet hole, firmly securing the bag's cloth. The collar is also designed to take advantage of the temperature: the tube sheet is carbon steel and the collar is in aluminum, resulting in extreme pressure being generated on the sealing surface.

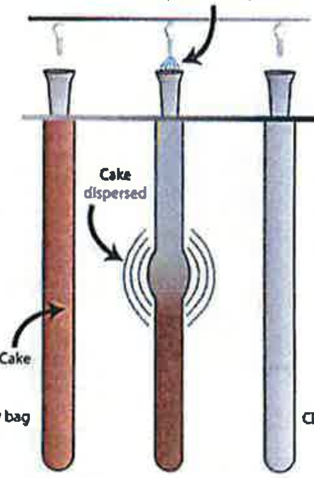
Other advantages to our SPS:

1. Bag installation and removal is simple and quick
2. No risk of bags falling during installation or maintenance
3. Bags cannot drop into the hopper thanks to the ring in solid steel embedded at the top of each bag

OUR BI-JET BAG CLEANING SYSTEM

Our Bi-jet Bag Cleaning System increases the volume of air that is forced into the bag inlet, while reducing the consumption of compressed air. How? We use a Dual Venturi arrangement: one pipe is located downstream of the nozzle and the other, above the bag inlet. This system minimizes the dispersion of compressed air during the injection phase, thus increasing the volume of air forced into the bag. In turn, this reduces the quantity of air needed to pulsate the bag and achieves a higher flow velocity than in systems equipped with one Venturi.

Redecam offers both online and offline/semi-offline cleaning systems. We recommend our online system for most customers as it provides less stress on mechanical devices (since its compartments do not close during cleaning operations) and consequently reduces power consumption. Our online system maintains both a constant pressure across the filter and a constant dust flow toward the dust discharge system. Compared to an offline filter that operates at the same air-to-cloth ratio, a filter cleaned with an online process has less cloth surface area.



Our Dual Venturi arrangement optimizes the pressure for bag cleaning, reducing costs

Redecam recommends offline (or semi-offline) cleaning filters for certain applications: when the dust contains very high quantities of fine particulates or if the filter does not act simply as a dust collector, but as a reactor as well, using its bags as a reaction layer.

Our specially designed nozzle creates an intense air jet, concentrating the air flow into the bag and reducing the amount of compressed air required

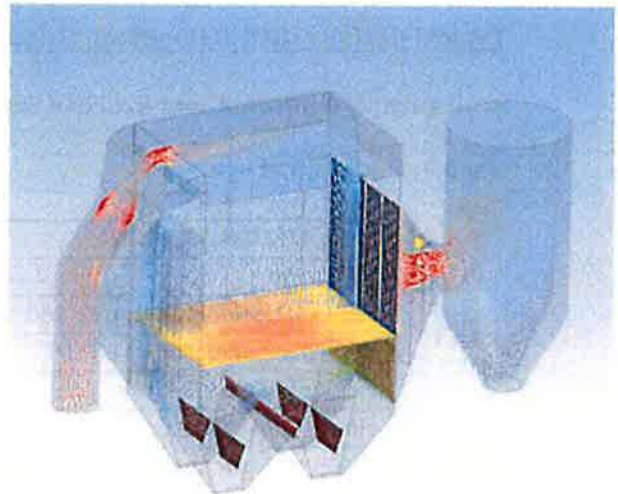
DESIGN & MODELLING

DESIGN PARAMETERS

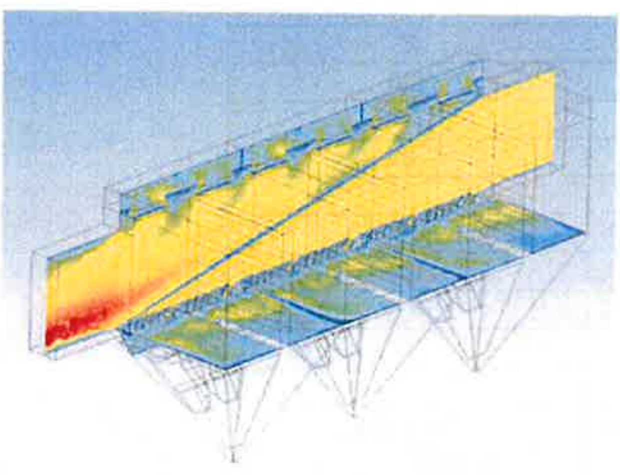
Your process parameters are key in selecting an appropriate Bag Filter design. Our engineering team has 30+ years of experience in surveying the output and needs of various plants, and will study yours to find an appropriate solution to reach your desired emissions reductions.

To determine the appropriate filter size, we must study the air-to-cloth ratio and can velocity. An appropriate air-to-cloth ratio is required to avoid high-speed impact of dust particles against the cloth, as this leads to early bag replacement.

To optimize the can velocity in the Bag Filter compartments, the distance between bags in each row as well as between the rows is calculated and defined for each specific case. These considerations are also used to determine the most suitable bag length and the number of compartments needed.



We develop the highest quality air pollution control products available.



MODELLING

We use Ansys's Fluent software to accurately design and study every solution. This allows us to engineer and analyze each system's broad physical capabilities, optimize the fluid dynamics and study the efficiency of pollutants removal. When a computerized simulation is not sufficient, we undertake a physical simulation on a 1:7 scale in our Milan workshop.

Redecam offers a comprehensive portfolio of air filtration, flue gas treatment (FGT), gas conditioning and transportation, handling & storage products. Please contact us to see how we can take care of all your air pollution control needs.

REDECAM GROUP

Visit our website to learn more at **www.redecam.com** or scan this code:

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TYPICAL DESIGN FOR THE GPINC "READY2GRIND" SYSTEM

Typical design GBFS Handling, Grinding, Storage and Loadout

- **Equipment information: Process Baghouse Filter**

Vendor: Redecam

MECHANICAL DESIGN		
Filter type		2 DPZ 60x10/7-W
Housing design pressure @ 150 °C	daPa	-1200
Type of construction		welded
Housing width	mm	6.932
Housing length	mm	11.944
Clean gas chamber height	mm	850
Hopper type		Trough
Hopper face angle	°	61
Number of compartments		2
Excludable compartments		no
Compartment width	mm	2.284
Compartment lenght	mm	11.944
Gas flow distribution at bag contact		double
CLEANING SYSTEM		
Type of cleaning system		on-line
Cleaning valves		
Valve size		2"
Total valves quantity		120
Quantity of valves each compartment		60
Quantity of bags each valve		10
Compressed air		
Normal compressed air consumption	Nm3/h	70
Maximum compressed air consumption	Nm3/h	174
Compressed air pressure at our mains	bar(g)	5,5
BAGS & CAGES		
Bags		
Fixation system		Snap-ring
Bag material		Polyester/Acrylic
Bag specific weight - nominal	g/m2	600
Treatment		Hydro-Oil Repellent Treatment
Max. operating temperature	°C	125
Bags nominal diameter	mm	127
Bags nominal length	mm	7.000

Total bags quantity		1.200
Cloth area	m2	3.351
Rows of bags per compartment		60
Number of bags per compartment		600
Cages		
Quantity of cage split		2
Number of vertical wires of the cages		12

Fan Specifications

Fan type: VR53S0mH1AK2000

General description			Surface [m²]	Mass [kg]
1	fan with back blade with cleaning opening with condensate drain with suction box with cleaning opening with condensate drain coupling with protection Primary drive motor assembly test run			7.677
2	primary drive			4.200
3	accessories			
3.1	Kompensatoren S1 material three layer PU/Glastextile - PTFE - PTFE/Glastextil A: 1888mm, B: 1048mm, EH: 300mm flow plate material 1.0038 mobile flange material 1.0038			133
3.2	Kompensatoren VD material three layer PU/Glastextile - PTFE - PTFE/Glastextil A: 1580mm, B: 780mm, EH: 200mm flow plate material 1.0038 mobile flange material 1.0038			97
3.3	vibration control VIBREX VIB 5.762 I 2-channel vibration control, 10 m			
3.4	heat control 2 x Pt100, 4-way conductor, with Transmitter E+H TMT 182, 4-			
3.5	Set Anchor bolts			
3.6	additional price flender arpex with spacer			
	Sum			12.107

REDECAM GROUP	Job Nr.	C118016	
	Date	15-Jun-18	
	Client	Gebr. Pfeiffer Inc.	
	Plant	Penn Mag Inc. - Wilmington (USA)	
BAG FILTER DATA SHEET	Item	Mill Bag Filter	
PROCESS DATA			
Operating condition		Operating	Design
Gas flow at the filter inlet @ 0 °C	Nm^3/h	99.573	146.950
Gas flow at the filter inlet	Am^3/h	146.614	232.000
Gas temperature at the filter inlet	°C	95	120
Gas static pressure at filter inlet	mbar	-45	-50
Air-to-cloth ratio	$m^3/m^2/min$	0,73	1,15
Air-to-cloth ratio (N-1)	$m^3/m^2/min$	Not possible	Not possible
Can velocity	m/s	0,74	1,16
Flange-to-flange pressure drop (estimated)	mbar	12	16
Dust load			
Inlet dust load	g/Nm^3	301	374
Inlet dust load	g/Am^3	205	237
Outlet dust load	mg/Nm^3	10	10
Recovered dust	kg/h	30.000	55.000
MECHANICAL DESIGN			
Filter type		2 DPZ 60x10/7-W	
Housing design pressure @ 150 °C	mbar	-120	
Type of construction		welded	
Housing width	mm	6.932	
Housing length	mm	11.944	
Clean gas chamber height	mm	850	
Hopper type		Trough	
Hopper face angle	°	61	
Number of compartments		2	
Excludable compartments		no	
Compartment width	mm	2.284	
Compartment lenght	mm	11.944	
Gas flow distribution at bag contact		double	
CLEANING SYSTEM			
Type of cleaning system		on-line	
Cleaning valves			
Valve size		2"	
Total valves quantity		120	
Quantity of valves each compartment		60	
Quantity of bags each valve		10	
Compressed air			
Normal compressed air consumption	Nm^3/h	70	
Maximum compressed air consumption	Nm^3/h	174	
Compressed air pressure at our mains	bar(g)	5,5	
BAGS & CAGES			
Bags			
Fixation system		Snap-ring	
Venturi		no	
Bag material		Polyester/Acrylic	
Bag specific weight - nominal	g/m^2	600	
Treatment		Hydro-Oil Repellent Treatment	
Max. operating temperature	°C	125	
Bags nominal diameter	mm	127	
Bags nominal length	mm	7.000	
Total bags quantity		1.200	
Cloth area	m^2	3.351	
Rows of bags per compartment		60	
Number of bags per compartment		600	
Cages			
Cage material		Painted Carbon Steel	
Quantity of cage split		2	
Number of vertical wires of the cages		12	

GEBR. PFEIFFER

Penn Mag Inc. – Wilmington (USA)

Mill Bag Filter
Bag Filter Functional Description

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1 FOREWORD

This specification concerns the control of the part of plants supplied by Redecam, focused on the filter operations; this document is intended as a guideline to the system, for all the aspects connected to the control and the safe operation of the plant.

This document has to be integrated with:

- Client's safety procedures
- Client's requirements
- Local operators' practise and procedures
- Process specifications pertinent to areas out of Redecam scope
- Client operative specification

This document shall be read in conjunction with the following documents:

- C118016-1BF1_BF-A5-01 – Bag filter P&ID
- C118016-1AA1_AA-L1-02 – Set points, thresholds and timers list

All the values included in this document, as temperatures, pressures and positions, have to be considered as indicative; details at regard will be delivered separately.

2 BAG FILTER OVERVIEW

The bag filter is designed to remove the particulate content from the flue gases.

A proper tuning of the cleaning system of the filter allows a high filtration efficiency, through the generation of a dust layer on the bags (the "dust cake"), with an acceptable filter pressure drop.
The bag filter is made of the following main items:

1. **Inlet Duct**: distributing and equalizing the flue gases going to the bags.

2. **Filtering bags**: the upper end rests on the bag holding plate through a special sealing system, while the surface is supported by a metal cage located inside the bag. The gas coming from the inlet duct goes through the bag and deposits particulate on the bag external surface; a pneumatic cleaning system removes the dust from the bags, and let it fall in the hoppers.

3. **Hoppers**: hoppers collect the dust falling from the bags. Each hopper can be equipped with a pneumatic operated valve that is used to isolate the filter section, in case the filter is divided in compartments. Hoppers are designed to ensure a proper gas distribution and approach to the bags, in order to limit the upward gas velocity and avoid in the same time dust bridges in the bottom.

4. **Clean gas box (Plenum)**: the clean gas comes out from the upper part of the bag, and reaches the output duct. In case the filter is divided in compartments, each section can be isolated by suitable outlet valves, same we have at the inlet. The distribution ramps of the compressed air used for cleaning are inside the plenum as well.

5. **Bags Cleaning System:** the pressure wave caused by the double ejection system causes both a sudden shake of the bag, and an air flow in the direction opposite to the filtering one. The two combined effects cause the crumbling of the dust layer deposited on the bags and its fall into the hopper.
   The system is composed by:

   - ✓ Air supply with air pressure regulator group
   - ✓ Air collectors, located on the platforms on the filter roof, connected through pneumatic valves to the ramps.
   - ✓ Ramps which blow the compressed air inside each bag.

6. **Control and Cleaning Panel (BF.C):** it sequentially commands the opening of the pneumatic valves, by means of pilot solenoid valves boxes, to supply the compressed air necessary to clean the filter bags. It processes and transmits some operation data (bags differential pressure, gas temperature, filter diagnostic etc.) to the MAIN PLC or Main Control System of the plant.

7. **Outlet Duct**: it collects the gas coming from the filtering bags and directs it to the ID fans

3 DEFINITIONS

TRANSIENTS

Transient is typical a sudden change in the system operation parameters (pressures, temperatures, mass velocities etc.) which shall be kept under control. A transient can be programmed or can happen independently from the operator will.

The following are the typical transients for the installation:

- **Mill start-up**
- **Mill shut down**

When a transient is not foreseen (black-out, fan trip, material feeding cut-off, etc.) can generate dangerous situation for the installation, the so called “emergencies”.

EMERGENCIES

Whenever the system operating parameters (pressures, temperatures, mass velocities etc.) cannot be kept under control the system is in “emergency”.

Most common emergencies are the following:

- **Power Black out**
- **Compressed air failure**
- **Fan trip**

ANOMALOUS SITUATIONS

Sometimes, one or more parameters can be temporarily out of their normal range. However they can be quickly corrected through a suitable action before the situation becomes dangerous. We can speak in these cases of "anomalous situations".

Most common anomalous situations are:

- **High filter temperature**
- **High bags differential pressure**
- **Low compressed air pressure**
- **Hopper blocking**

In these conditions dedicated safety procedure shall be executed to protect the installation.

Auxiliary pieces of equipment failures can cause anomalous situations, but these cases are out of the aim of this document.

4 INSTRUMENT LIST

The instruments listed below are those strictly necessary to control all regulation loops described in this paper; fittings and components such as hand operated valves not involved in the plant control have been omitted.

Equipment/instrument	*Code*	*Description*
Pressure Switch	1BF1.PSL3001	Cleaning Compressed Air Pressure Switch
Diff. Pressure Transmitter	1BF1.DPT1001	Bag Filter Differential Pressure Transmitter
Pressure Transmitters	1BF1.PT1001 (*) 1BF1.PT1002 (*)	Bag Filter Inlet Pressure Transmitter Bag Filter Outlet Pressure Transmitter
Temperature Transmitters	1BF1.TT1001 (*) 1BF1.TT1002 (*)	Bag Filter Inlet Temperature Transmitters Bag Filter Outlet Temperature Transmitter
Triboelectric Probe	1BF1.AT1001	Bag Filter Dust Analyzer
Level Switches	1BF1.LSH1103-1 1BF1.LSH1203-1	Hopper Level Switches
Speed Switches	1BF1.SSL1104 (*) 1BF1.SSL1204 (*) 1BF1.SSL1301 (*) 1BF1.SSL1302 (*) 1BF1.SSL1303 (*)	Screw Conveyor SC1104 (*A59-SC01*) Speed Switch Screw Conveyor SC1204 (*A59-SC02*) Speed Switch Screw Conveyor SC1301 (*A59-SC03*) Speed Switch Rotary Valve SC1302 (*A59-RF01*) Speed Switch Screw Conveyor SC1303 (*A59-SC04*) Speed Switch
ID Fan	(*)	Bag Filter ID Fan

(*) out of Redecam scope of supply

5 CONTROLS

During the normal functioning of the installation there will be two type of regulation:

- **Automatic**: the stop/start commands, open/close and the control loops depend from the process parameters
- **Manual**: the stop/start commands, open/close and the activation/deactivation of the control loops are given by the operators and can be independent from the process parameters

For each equipment, a selector Manual/Automatic shall be realized on the supervisor page permitting the operator to choose the preferred regulating mode.

Normally the manual conduct of the installation is necessary during the start-up and shut-down procedure and in some critical conditions.

To ensure stability to operations, pressure and temperature at BF inlet should be kept under constant watch in order to avoid big fluctuations of these parameters.

Methods to adjust these values are out of REDECAM scope of supply.

6 SPECIAL CONDITIONS

In special conditions, as transients between modes, start-up and stop of parts of the plant suitable procedures must be active.

Temperature, pressure and time values given in the following procedures are based upon previous experiences; for a complete list of all of them from the commissioning phase to the final setting, you can refer to the document C118016-1AA1_AA-L1-02. These values can be subject of corrections afterwards, according to the experience on site. Operators should be particularly careful during the first start up and ready to change any parameter, if necessary.

6.1 Mill Start-Up

At the mill start-up, nothing changes in the described procedures, the temperature control at the bag filter is always active.

6.2 Mill Shut-Down

An unexpected mill shut-down can be normally due to either problems at the mill feeding system, or to trips at the fan or the mill motor.

In such conditions, the temperatures at the bag filter can raise suddenly. All the actions described are the same than the ordinary loops and safety procedures, but some of them can be anticipated, for further safety.

7 SAFETY AUTOMATIC ACTIONS

7.1 High Filter Temperature

The meaning of the bag house inlet and outlet temperature is different:

- The inlet temperature is not directly related to the bags' temperature, because the casing inertia is big and can dump high but short temperature spikes.
- The bag filter outlet temperature is very close to the bags' temperature. If it exceeds the set point, the bags are in a dangerous situation.

For the maximum protection, all the actions will be connected to the maximum temperature at inlet and outlet of the bag filter (*), and we'll call it TBF.

- When TBF exceeds a set value **TBFA**, a warning signal shall be displayed.
- If TBF exceeds the first threshold **TBFH**, alarm signal will rise. The system is not in real danger, but very close to it. Human intervention is required to decrease the temperature.
- If in any condition TBF reaches **TBFHH**, the **BF Fan shall be stopped and the related safety procedure will start**.
- At the opposite, if the temperature at BF inlet has become lower than **TBFL**, the normal controls can be reset.
- The peak conditions (T above TBFH) should not be reached more than 15'/day, otherwise the emergency stop will be requested anyway. An automatic counter should memorize what time TBF lays above TBFH during the last 24h, actuating emergency procedure if it reaches 15min: this info should be displayable.

**Bag Filter inlet and outlet temperature transmitters are out of REDECAM scope of supply.*

7.2 High Bags Differential Pressure

When **1BF1.DPT1001**, is higher than a first threshold (**DPBFH**) an alarm will be displayed ("HIGH DP ON FILTER BAGS") and the following actions shall be taken from the operator:

- Decrease the gas flow to the filter
- Check of the bag filter cleaning system (compressed air pressure, etc.)

If **1BF1.DPT1001** is higher than a second threshold (**DPBFHH**) an alarm will be displayed ("VERY HIGH DP ON FILTER BAGS") and the following actions shall be taken:

- **BF Fan shall be stopped and the related safety procedure will start**
- Filter shall be cleaned without gas stream
- Bag filter condition/status has to be checked

7.3 Low Compressed Air Pressure

If the compressed air pressure **1BF1.PSL3001** is lower than a settable threshold (**PAL**), then an alarm is generated ("LOW COMPRESSED AIR PRESSURE") and the following actions shall be taken from the operator:

- Check of the bag filter cleaning system (regular shooting of the valves, broken valves etc.)
- Check of the compressed air feeding (air leakages, possible overconsumption of other users etc.)
- Lowering of the bags cleaning frequency (manually decreasing the number of cycle/hour, if the Fixed Cleaning Cycle is selected, or by increasing the Δp setpoint, if the Variable Cleaning Cycle is selected)

7.4 Hopper Blocking

The filter dust disposal is based upon a couple of screw conveyors **1BF1.SC1104** and **1BF1.SC1204** in parallel downward the two hoppers banks, followed by one collecting screw conveyor **1BF1.SC1301,** a rotary valve **1BF1.RV1302** and another screw conveyor **1BF1.SC1303**.

- In case the level sensor **1BF1.LSH1103-1** or **1BF1.LSH1203-1** is activated, an alarm shall be displayed ("HIGH LEVEL ON BF HOPPER"). A programmable timer will start. The system will keep working till the timer expires or the LSH alarm condition subsides. If the timer expires with the LSH alarm condition still active the **BF Fan shall be stopped and the related safety procedure will start**
- A motion detector unit detects unexpected transport stoppage of the related transport device (either screw conveyor or rotary valve). In case of unexpected stoppage, all the transports above the failed item shall be stopped

8 EMERGENCIES

8.1 Power Blackout

In case of a black out, the system has to secure the bag house.

The fresh air damper (if any) will be open and the BF Fan will keep the air draft for some time due to its mechanical inertia.

8.2 Compressed Air Failure

In case of compressed air failure, the filter cleaning will be out of service. If the bag differential pressure will become higher than **DPBFHH**, the related safety procedure will start and will require the fan stop.

8.3 ID Fan Trip

In case of BF ID Fan Trip, dust transport shall keep running till bag filter cleaning is deactivated.

9 CLEANING SYSTEM OPERATING PRINCIPLES – PROCESS FILTERS

9.1 Remote or Local Control

The BF.C can be controlled either in REMOTE or in LOCAL mode.

REMOTE mode is the default operational working mode, in which only the MAIN PLC can give the "start" or "stop" to the BF.C.

In this mode, the control on cleaning parameters by local push buttons is disabled.

LOCAL mode shall be used only during maintenance to check in front of the panel all the filter features by trained operator.

LOCAL mode could be MANUAL (for instance, the cleaning cycle is stopped; the energization of single solenoid valves can be done by individual selection), or AUTOMATIC (in which the cleaning cycle sequence is still provided by BF.C, but started by local push button and not by the MAIN PLC).

9.2 Cleaning Modes and Cycles

The sequence of actions that take place during the bags cleaning can change depending on the presence of dusty gas flow towards the bags or not.

- ON-LINE cleaning is defined when the cleaning happens while the gas is streaming into the whole Bag filter.
- OFF-LINE cleaning (NOT APPLICABLE) cleaning is defined when the cleaning happens while the bag is not interested by the dirty gas stream (inlet-outlet dampers closed). This mode is possible only when the filter is divided in compartments excludible at both inlet and outlet.
- SEMI OFF-LINE cleaning (NOT APPLICABLE) cleaning is defined when only the outlet dampers are closed. This mode is possible when the filter is divided in compartments excludible at least at the outlet.

In all cleaning modes, the operator can select between three different cleaning control strategies:

- FIXED CYCLE
- FIXED ON-OFF CYCLE
- VARIABLE CYCLE

Each cleaning mode and cycle type is described here below.

9.2.1 FIXED CYCLE

In this configuration the system works at constant cleaning frequency, stated by the operator.

The operator defines how many times the cleaning cycle should be performed every hour (cycles/h). So the BF.C calculates the time between two consecutive valves excitations of the automatic cleaning sequence.

In any case the cleaning frequency cannot be higher than a maximum value or lower than a minimum value, both settable into the BF.C (see par. 9.2.4).

The following parameters can be set:

	Parameter	Default value
a	Number of cycles/hour (set-point)	4

Parameter a) is usually adjustable by the client's operators. A first reference for commissioning can be the guaranteed value or the filter datasheet value.

9.2.2 FIXED CYCLE ON-OFF

In this configuration the system works at constant cleaning frequency, stated by the operator.

The operator defines how many times the cleaning cycle should be performed every hour. So the BF.C calculates the time between two consecutive valves excitations of the automatic cleaning sequence.

Unlike the previous mode, the cleaning cycle will be activated when bags differential pressure is higher than the value set as start cleaning pressure. The cleaning cycle will be deactivated when bags differential pressure results lower than the value set as end cleaning pressure.

The following parameters can be set:

	Parameter	Default value
a	Start cleaning pressure	15 mbar
b	End cleaning pressure	5 mbar

9.2.3 VARIABLE CYCLE

The operator sets this feature if he wants to keep a defined filter bags differential pressure (set-point value).

The system reads the filter Δp each xx seconds (adjustable time), and compares the measured value with the setpoint value.

When the measured Δp is inside a deadband (adjustable) with respect to the setpoint, the cleaning frequency remains the last one achieved during operation.

If the measured Δp is higher, the system reduce the time between two consecutive valves excitations by an adjustable percentage. It does the opposite in case the measured Δp is lower.

The operator sets also a minimum and a maximum possible cleaning frequency, according to the same criteria described for fixed cycle (see par. 9.2.4).

The following parameters can be set:

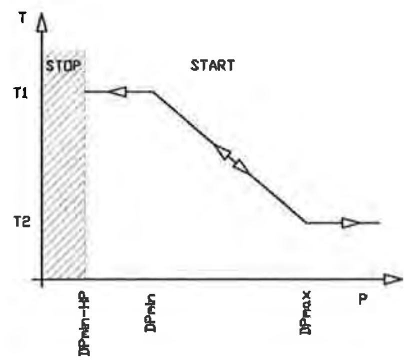
	Parameter	Default value
a	Δp set-point	12 mbar
b	Δp allowed variability range or deadband	± 0.3 mbar
c	Δp checking frequency	20 s
d	Percent variation of the pause time between two shots	3 %

Parameter a) is usually adjustable by the client's operators. A first reference for commissioning can be the guaranteed value or the filter datasheet value.

Parameters b), c) and d) have to be properly tuned during commissioning by Redecam.

Parameter c) in particular must be set considering the number of valves, the actual cleaning frequency and the consequent response time of the system.

b), c) and d) can be adjusted by the client's operators accessing to the system through password.



9.2.4 COMMON ON-LINE CLEANING PARAMETERS

The following parameters are not depending on the cycle modes, and are always valid:

	Parameter	Default value	
a	Maximum number of cycles/hour	10	
b	Minimum number of cycles/hour	2/shift	
c	Compressed air pressure in the collectors	5 bar	
d	Opening time of the valves	2"	Min 100 ms

Parameter a) (max cleaning frequency) is determined case by case depending on the compressed air supply capacity or on the process.

Parameter b) (min cleaning frequency) is driven in principle by the necessity to avoid a sudden and unpredictable discharge by gravity of a huge amount of dust into the transports below the filter, so is depending on the dust quality and on the dust load at the filter inlet. A minimum of one cycle per shift is advisable.

Default value of parameter c) is depending on the bag material (usually max 3.5 bar for fiberglass bags, up to 5.5 bar for other materials). This parameter is regulated acting manually on the pressure regulator at the inlet of the system.

Parameters a) and b) can be modified by client through password.

Parameter d) can be modified only by Redecam on client's demand.

9.2.5 ΔP MEASUREMENT

Unless asked otherwise by the client, as standard the reference Δp for the variable cycle regulation is the flange-to-flange pressure drop of the filter, measured through a dedicated sensor.

Specific configurations coming from "out of standard" filter arrangements have to be discussed case by case.

In case the Δp signal is lost, an alarm is generated.

9.2.6 CLEANING SEQUENCE

The bags cleaning cycle will be performed according to the following logics:

- Petra Cement Plant bag filter is equipped with 4 compressed air collectors, each one consisting of 30 valves.
- The xx valve (xx goes from 1 to 30) is shot simultaneously on each collector.
- On the same collector valves are shot sequentially from valve n.1 to valve n.30.
- It is strongly recommended to draw the scheme of compartments, collectors and valves in order to be sure of the correspondence between logic sequence, P&ID, electrical and mechanical installation.

9.3 Switching from Variable to Fixed Cycle in Emergency

The fixed or variable cleaning condition could be set both from MAIN PLC and on the BF.C.

In case of lost communication between MAIN PLC and BF.C a switch to fixed cleaning cycles condition is mandatory:

- if the BF.C is programmed to recognize the lost of communication, it will automatically switch to the fixed cleaning cycle condition keeping as set-point the last value of cycles per hour and displaying an alarm condition on its screen. An operator will be sent to check if the switch is occurred.
- if the BF.C is not programmed to recognize the lost of communication, an operator has to verify the problem and manually switch to the fixed cleaning cycle condition.

9.4 Bags cleaning after plant shutdown

When the plant is stopped, it can be decided if it is necessary to clean the bags in offline after stop, or to stop immediately the cleaning. The choice is depending on the kind of process, on the quality of the dust, the duration of the outage and the actual conditions of the bags.

A specific functionality is foreseen to cover this need.

When this functionality is enabled:

- the filter cleaning is switched automatically from Variable cycle to Fixed cycle, with a cleaning frequency that must be set by the operator
- the stop of the cleaning is delayed for a settable number of cycles after the stop of the line
- the stop of the dust transports below the filter is also delayed for a settable time after the stop of the cleaning system

9.5 Cleaning system diagnostic

During the cleaning cycle, we have the following alarm functions related to the cleaning system:

- Broken bag n. *xx*

Default values given in the following sections are only indicative. They have to be adjusted by Redecam during commissioning.

9.5.1 BROKEN BAG N. XX

This alarm arrives if, within the time of 1 s (set point) by the opening of the valve, a peak or increase on the dust emission measurement is detected. Emission measurement is done by a triboelectric probe usually installed in the filter outlet duct and connected to the panel.

This alarm must be reset with dedicated "Reset" in the supervision. For alarm transmission, the verification on the same valve will have to be repeated with negative results for at least 3 times consecutively (set point). The "broken bag detection" function can be disabled by supervision.

The valve corresponding to the identified faulty bag will be skipped by the successive cleaning cycles (this function can be disabled on client's demand).

It is anyway recommended to check and replace at the soonest the broken bag in order to avoid further damages to the filter.

Moreover, since the probe is subject to easy fouling and consequent drift of the signal, a threshold is foreseen, above which it is necessary to clean up the probe (always switch off the probe!). An alarm warn the operator about this issue.

Alarm	Settable parameters	Default value
Broken bag n. *xx*	Waiting time from valve opening command	1 s
	Probe fouling threshold	XX mA
	N. of verifications before alarm transmission	3

10 START-UP AND SHUT-DOWN PROCEDURES

This document concerns the start-up procedure of the parts of plant supplied by Redecam.

This document is intended as a guideline to the start-up; details can change depending on the actual contingencies.

10.1 Preliminary Operations

All the plant shall be successfully tested without material (i.e. cold commissioning completed, including check of the start-up sequences and interlocks, and filter solenoid valves correct operation).

Fluorescent powder test must have been successfully performed to the filter.

All tools and all foreign objects must have been removed from all plant machines.

All BF manholes and doors must be closed.

BF protection by fresh air damper (if any) must be active.

Compressed air must be available.

10.2 Start-up Procedure

STEP 0 – PRE-COATING

Start Dust Transport.

If after a settable time the equipment is not detected "IN OPERATION", an alarm shall be generated and the starting sequence shall be interrupted.

Perform bags pre-coating procedure (*refer to Doc. C118016-1BF1_BF-SR-02*).

At the end of pre-coating, the plant configuration is the following:

- Filter fan in operation indicatively at 50% speed
- Dust transport in operation
- BF cleaning deactivated

STEP 1 – MILL START UP

Once pre-coating is completed, the cement mill can be started up.

STEP 2 – START OF THE BAGS CLEANING

Open the manual valves for air supply of the bag filter compressed air manifolds.

The bag filter cleaning system can be activated in Manual Mode with cleaning set point at 4 cycles/h.

Cleaning air pressure can be set at 5 bar.

STEP 3 – BAGS CLEANING IN VARIABLE MODE

Once stable operating conditions have been reached, filter cleaning in Variable Mode can be started.

10.3 Shut-down Procedure

In case of voluntary shutdown of the line, the customer's mill shutdown procedure takes place.

The stop of the bag filter cleaning is delayed for a settable number of cycles after the line stop.

Dust transport can be stopped once bag filter cleaning is deactivated.

KAYSER®
A. KAYSER TEXTILE FILTERMEDIEN GmbH u. Co. KG

Technical data sheet

Article :	5038203	series **SPEZIAL**
Type of filtermedia :	*KYS- needlefelt*	*PES-PAN/PES-PAN*
Fibre : fibre web	*Polyester - Polyacrylnitril, homopolymer*	
scrim	*Polyester - Polyacrylnitril, homopolymer*	
Treatment :	*BS001*	*heat set*
	BS006	*hydrophobic and oleophobic*
	BS041	*singed, glazed*
Weight [g/m²] : EN 12127	*600*	
Air permeability [l/(dm²*min)] EN ISO 9237	*90*	
Thickness [mm] : DIN 53855	*2,6*	
Tensile strength [daN/5cm], elongation at break [%] : vertical	*110*	*20*
ISO 13934-1 horizontal	*135*	*30*
Shrinkage [%] : at 125 °C Kayser-factory specification 001, 10/02	*< 1*	
Heat resistance [°C]: permanent	*125*	
peak	*140*	

All technical data are approximate values. Normal tolerances and technical modifications are kept in reserve.

Preliminary Signals List

Tag No,	Code	Designation: Used for Machinery / Equipment	Designation: Location	Device (What)	Measurement: Unit (Phys)	Measurement: Span min.	Measurement: Span max.	Limit	Function	I/O PLC	I/O PLC	Comment
Legend:	Limit values will be confirmed during commissioning											
511-BF01 L01:PLS	LSA	bag filter		fill level measurement				:H	alarm & stop of mill fan		DI	
511-BF01 P01:PLS	PSA	bag filter		pressure measurement	bar	0.2	6	:L	alarm		DI	
511-BF01 P02:H	PDA	bag filter		differential pressure measurement	mbar	-10	100	:H	alarm	-	value calculated in PLC	
511-BF01 P02:PV	PDA	bag filter		differential pressure measurement	mbar	-10	100		analog value	4...20mA	AI	
511-BF01 X01:PLS	XS	bag filter		signal				:H	remote start	NO contact	DI	
511-BF01 X02:RM	XS	bag filter		signal				:H	local/remote mode	NO contact	DO	
511-BF01.X03:RDY	XS	bag filter		signal				:H	control board ready - alarm	NC contact	DO	
511-BF01 X04:D	XS	bag filter		signal				:H	run	NO contact	DO	
511-FV01 X01:X	XS	dedusting filter discharge (511-BF01)		limit position				:L		NO contact	DI	
511-FV01 Y01:Y	YS	dedusting filter discharge (511-BF01)		limit position				:H		NO contact	DI	
511-HP01 W01:PV	WISAC	bin	load cell	signal	t/h	0	18.8		analog value	4...20mA	AI	
511-HP01.W01:N	WISAC	bin	load cell	signal	t/h	0	18.8	:LL	stop weigh belt feeder	-	value calculated in PLC	
511-HP01.W01:L	WISAC	bin	load cell	signal	t/h	0	18.8	:L	alarm at 10% of level	-	value calculated in PLC	
511-HP01.W01:M	WISA	bin	load cell	signal	t/h	0	18.8	:HH	stop filling	-	value calculated in PLC	
511-HP01.W01:H	WISAC	bin	load cell	signal	t/h	0	18.8	:H	alarm at 80% of level	-	value calculated in PLC	
531-BC01 D01:F	ZS	feed belt	belt misalignment switch	limit position				:H	stop of drive	changeover contact	DI	
531-BC01 D02:F	ZS	feed belt	belt misalignment switch	limit position				:H	stop of drive	changeover contact	DI	
531-BC01 D03:F	ZS	feed belt	belt misalignment switch	limit position				:H	stop of drive	changeover contact	DI	
531-BC01 D04:F	ZS	feed belt	belt misalignment switch	limit position				:H	stop of drive	changeover contact	DI	
531-BC01.D05:F	ZS	feed belt	belt misalignment switch	limit position				:H	stop of drive	changeover contact	DI	
531-BC01 D06:F	ZS	feed belt	belt misalignment switch	limit position				:H	stop of drive	changeover contact	DI	
531-BC01 R01:ILK	HS	feed belt		emergency stop				:H	stop of drive	changeover contact	DI	
531-BC01 R02:ILK	HS	feed belt		emergency stop				:H	stop of drive	changeover contact	DI	
531-BC01.R03:ILK	HS	feed belt		emergency stop				:H	stop of drive	changeover contact	DI	
531-BC01.R04:ILK	HS	feed belt		emergency stop				:H	stop of drive	changeover contact	DI	
531-BC01.S01:PLS	SSA	feed belt		standstill monitoring	Hz			:L	alarm & stop of drive	NO contact	DI	
531-BC01.S02:PV	SIC	feed belt	frequency converter	speed measurement	1/min				analog value	4...20mA	AI	
531-BC01.S03:SP	SETPOINT	feed belt	frequency converter	speed control	1/min				analog value	4...20mA	AO	input by operator in DCS
531-BC01.T01:PLS	TS	feed belt	drive, winding	temperature measurement	°C	0	150	:H	stop of drive	NC contact	DI	evaluation in frequency converter
531-MS01 X01:GR	XS	magnet separator		signal				:H	remote control	NO contact	DO	
531-MS01 X02:D	XS	magnet separator		signal				:H	start electromanet	NO contact	DO	
531-MS01.X03:PLS	XSA	magnet separator		signal				:H	overload relay	NO contact	DI	
531-MS01.X04:PLS	XSA	magnet separator		signal				:H	rotation monitoring	NO contact	DI	
531-MT01.X01:ERR	XSA	metal detector	control	signal				:H	error alarm	NO contact	DI	
531-MT01.X02:PLS	XSA	metal detector	control	signal				:H	metal detected	NO contact	DI	
531-MW01 V01:D	ZS	material gate	solenoid valve	actuator				:H	divert raw material	NC contact	DO	
531-MW01 X01:X	XS	material gate		limit position				:L	changeover to reject receptacle	NO contact	DI	
531-MW01.Y01:Y	XS	material gate		limit position				:H	changeover to mill	NO contact	DI	
531-WF01.D01:F	ZS	weigh belt feeder	belt misalignment switch	limit position				:H	alarm	NC contact	DI	
531-WF01.D02:F	ZS	weigh belt feeder	belt misalignment switch	limit position				:H	alarm	NC contact	DI	
531-WF01.S01:PV	SSA	weigh belt feeder		standstill monitoring	Hz				analog value	4...20mA	AI	
531-WF01.W01:PV	WISA	weigh belt feeder	load cell	signal					analog value	4...20mA	AI	
531-WF01 X01:SP	XS	weigh belt feeder	weighing electronic	signal					setpoint to weigh feeder (%)	Profinet	BUS	
531-WF01 X02:D	XS	weigh belt feeder	weighing electronic	signal				:H	reset signal to clear stored and actual errors	Profinet	BUS	
531-WF01 X03:D	XS	weigh belt feeder	weighing electronic	signal				:H	quantity counter B print/clear	Profinet	BUS	
531-WF01.X04:GR	XS	weigh belt feeder	weighing electronic	signal				:H	remote start (static contact)	Profinet	BUS	
531-WF01.X05:GR	XS	weigh belt feeder	weighing electronic	signal				:H	switch to remote mode	Profinet	BUS	
531-WF01.X06:PV	XS	weigh belt feeder	weighing electronic	signal					capacity (kg/h)	Profinet	BUS	
531-WF01.X07:PV	XS	weigh belt feeder	weighing electronic	signal					counter A (kg)	Profinet	BUS	
531-WF01 X08:PV	XS	weigh belt feeder	weighing electronic	signal					counter B (kg)	Profinet	BUS	

Tag No.	Code	Designation: Used for Machinery / Equipment	Designation: Location	Device (What)	Measurement: Unit (Phys)	Measurement: Span min.	Measurement: Span max.	Limit	Function	I/O PLC	I/O PLC	Comment
Legend:	Limit values will be confirmed during commissioning											
531-WF01 X09:PLS	XS	weigh belt feeder	weighing electronic	signal				:H	difference between set point and actual capacity it out of limit	Profinet	BUS	
531-WF01 X10:PLS	XS	weigh belt feeder	weighing electronic	signal				:H	tare or test procedure is currently active	Profinet	BUS	
531-WF01 X11:W	XS	weigh belt feeder	weighing electronic	signal				:H	warning (sum signal)	Profinet	BUS	
531-WF01 X12:F	XS	weigh belt feeder	weighing electronic	signal				:H	fault (system not operational)	Profinet	BUS	
531-WF01 X13:PLS	XS	weigh belt feeder	weighing electronic	signal				:H	conveying system stopped (inversely usable as belt runs)	Profinet	BUS	
531-WF01 X14:PLS	XS	weigh belt feeder	weighing electronic	signal				:H	no product at load measurement system	Profinet	BUS	
531-WF01 X15:PLS	XS	weigh belt feeder	weighing electronic	signal				:H	load at g3 < min limit	Profinet	BUS	
531-WF01 X16:PLS	XS	weigh belt feeder	weighing electronic	signal				:H	load at g3 > max limit	Profinet	BUS	
531-WF01 X17:PLS	XS	weigh belt feeder	weighing electronic	signal				:H	belt mis run left	Profinet	BUS	
531-WF01 X18:PLS	XS	weigh belt feeder	weighing electronic	signal				:H	belt mis run right	Profinet	BUS	
531-WF01 X19:PLS	XS	weigh belt feeder	weighing electronic	signal				:H	load cell mV fault channel 0	Profinet	BUS	
531-WF01 X20:PV	XS	weigh belt feeder	weighing electronic	signal					load (%)	Profinet	BUS	
531-WF01 X21:PV	XS	weigh belt feeder	weighing electronic	signal					speed (%)	Profinet	BUS	
531-WP01 S01:PV	SIC	grinding aid pump	frequency converter	speed measurement	%	0	100		analog value	4...20mA	AI	
531-WP01 S02:SP	SETPOINT	grinding aid pump	frequency converter	speed control	%				analog value	4...20mA	AO	input by operator in DCS
531-WP01 T01:M	TS	grinding aid pump	drive, winding	temperature measurement	°C	0	150	:H	stop of drive		-	evaluation in frequency converter
531-WP01 T02:H	TSA	grinding aid pump	stator protector	temperature measurement	°C	0	100	x + 5 :H	alarm	-	value calculated in PLC	x: maximum temperature of medium in summer
531-WP01 T02:M	TSA	grinding aid pump	stator protector	temperature measurement	°C	0	100	x + 10 :HH	stop of drive	-	value calculated in PLC	x: maximum temperature of medium in summer
531-WP01 T02:PV	TSA	grinding aid pump	stator protector	temperature measurement	°C	0	100		analog value	4...20mA	AI	
551-HG01 X01:D	XS	hot gas generator	burner	return signal				:H	enabling burner start	Profinet	BUS	DO
551-HG01 X02:D	XS	hot gas generator	burner	return signal				:H	enabling burner start local	Profinet	BUS	DO
551-HG01 X03:RDY	XS	hot gas generator	burner	return signal				:H	burner ready for operation	Profinet	BUS	DI
551-HG01 X04:PLS	XS	hot gas generator	burner	return signal				:H	burner operation with gas	Profinet	BUS	DI
551-HG01 X05:PLS	XS	hot gas generator	burner	return signal				:H	breaking watching control voltage	Profinet	BUS	DI
551-HG01 X06:PLS	XS	hot gas generator	burner	return signal				:H	Max. temperature limiter 1	Profinet	BUS	DI
551-HG01 X07:PLS	XS	hot gas generator	burner	return signal				:H	Max. temperature limiter 2	Profinet	BUS	DI
551-HG01 X08:PLS	XS	hot gas generator	burner	return signal				:H	burner fault	Profinet	BUS	DI
551-HG01 X09:PLS	XS	hot gas generator	burner	return signal				:H	fault mixed air fan	Profinet	BUS	DI
551-HG01 X10:PLS	XS	hot gas generator	burner	return signal				:H	emergency stop button activated	Profinet	BUS	DI
551-HG01 X11:PLS	XS	hot gas generator	burner	return signal				:H	collective fault	Profinet	BUS	DI
551-HG01 X12:PLS	XS	hot gas generator	burner	return signal				:H	emergency stop escape door panel	Profinet	BUS	DI
551-HG01 X13:PV	ZIRQ	hot gas generator	load position	position monitoring	%	0	100		analog value	Profinet	BUS	AI
551-HG01 X14:PV	XI	hot gas generator	hot gas temperature	temperature measurement	°C	0	400		temperature at mill outlet	Profinet	BUS	AI
551-HG01 X15:SP	XI	hot gas generator	burner	return signal					external setpoint 0-400°C	Profinet	BUS	AO
561-1U10 X01:RDY	XS	mill fan drive	frequency converter	signal					ready - relay	Profinet	BUS	
561-1U10 X02:R	XS	mill fan drive	frequency converter	signal					running	Profinet	BUS	
561-1U10 X03:F	XS	mill fan drive	frequency converter	signal					fault	Profinet	BUS	
561-1U10 X04:PV	XI	mill fan drive	frequency converter	signal					reference voltage	Profinet	BUS	
561-1U10 X05:SP	XI	mill fan drive	frequency converter	signal					speed reference	Profinet	BUS	
561-1U10 X06:PV	XI	mill fan drive	frequency converter	signal					speed	Profinet	BUS	
561-1U10 X07:PV	XI	mill fan drive	frequency converter	signal					current	Profinet	BUS	
561-1U10 X08:D	XS	mill fan drive	frequency converter	signal					start / stop	Profinet	BUS	
561-1U10 X09:D	XS	mill fan drive	frequency converter	signal					forward / reverse	Profinet	BUS	
561-1U10 X10:D	XS	mill fan drive	frequency converter	signal					reset	Profinet	BUS	
561-1U10 X11:D	XS	mill fan drive	frequency converter	signal					ACC / DEC time set	Profinet	BUS	

Legend:	Limit values will be confirmed during commissioning											
Tag No.	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-1U10.X12:D	XS	mill fan drive	frequency converter	signal					constant speed 1	Profinet	BUS	
561-1U10.X13:D	XS	mill fan drive	frequency converter	signal					digitalinterlock	Profinet	BUS	
561-1U10.X14:RDY	XS	mill fan drive	frequency converter	signal					ready	Profinet	BUS	
561-1U10.X15:R	XS	mill fan drive	frequency converter	signal					running	Profinet	BUS	
561-1U20.X01:RDY	XS	mill main drive	frequency converter	signal					ready - relay	Profinet	BUS	
561-1U20.X02:R	XS	mill main drive	frequency converter	signal					running	Profinet	BUS	
561-1U20.X03:F	XS	mill main drive	frequency converter	signal					fault	Profinet	BUS	
561-1U20.X04:PV	XI	mill main drive	frequency converter	signal					reference voltage	Profinet	BUS	
561-1U20.X05:SP	XI	mill main drive	frequency converter	signal					spedd reference	Profinet	BUS	
561-1U20.X06:PV	XI	mill main drive	frequency converter	signal					speed	Profinet	BUS	
561-1U20.X07:PV	XI	mill main drive	frequency converter	signal					current	Profinet	BUS	
561-1U20.X08:D	XS	mill main drive	frequency converter	signal					start / stop	Profinet	BUS	
561-1U20.X09:D	XS	mill main drive	frequency converter	signal					forward / reverse	Profinet	BUS	
561-1U20.X10:D	XS	mill main drive	frequency converter	signal					reset	Profinet	BUS	
561-1U20.X11:D	XS	mill main drive	frequency converter	signal					ACC / DEC time set	Profinet	BUS	
561-1U20.X12:D	XS	mill main drive	frequency converter	signal					constant speed 1	Profinet	BUS	
561-1U20.X13:D	XS	mill main drive	frequency converter	signal					digitalinterlock	Profinet	BUS	
561-1U20.X14:RDY	XS	mill main drive	frequency converter	signal					ready	Profinet	BUS	
561-1U20.X15:R	XS	mill main drive	frequency converter	signal					running	Profinet	BUS	
561-1Z10.T01:H	TISA	mill fan motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-1Z10.T01:M	TISA	mill fan motor	winding	temperature measurement	°C	0	...	160 :HH	stop of drive	-	value calculated in PLC	
561-1Z10.T01:PV	TISA	mill fan motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z10.T02:H	TISA	mill fan motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-1Z10.T02:M	TISA	mill fan motor	winding	temperature measurement	°C	0	...	160 :HH	stop of drive	-	value calculated in PLC	
561-1Z10.T02:PV	TISA	mill fan motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z10.T03:H	TISA	mill fan motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-1Z10.T03:M	TISA	mill fan motor	winding	temperature measurement	°C	0	...	160 :HH	stop of drive	-	value calculated in PLC	
561-1Z10.T03:PV	TISA	mill fan motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z10.T04:H	TISA	mill fan motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-1Z10.T04:PV	TISA	mill fan motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z10.T04:M	TISA	mill fan motor	winding	temperature measurement	°C	0	...	160 :HH	stop of drive	-	value calculated in PLC	
561-1Z10.T05:PV	TISA	mill fan motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z10.T05:M	TISA	mill fan motor	winding	temperature measurement	°C	0	...	160 :HH	stop of drive	-	value calculated in PLC	
561-1Z10.T05:H	TISA	mill fan motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-1Z10.T06:M	TISA	mill fan motor	winding	temperature measurement	°C	0	...	160 :HH	stop of drive	-	value calculated in PLC	
561-1Z10.T06:PV	TISA	mill fan motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z10.T06:H	TISA	mill fan motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-1Z10.T07:PV	TISA	mill fan motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z10.T07:M	TISA	mill fan motor	bearing	temperature measurement	°C	0	...	90 :HH	stop of drive	-	value calculated in PLC	
561-1Z10.T07:H	TISA	mill fan motor	bearing	temperature measurement	°C	0	...	85 :H	alarm	-	value calculated in PLC	
561-1Z10.T08:PV	TISA	mill fan motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z10.T08:M	TISA	mill fan motor	bearing	temperature measurement	°C	0	...	90 :HH	stop of drive	-	value calculated in PLC	
561-1Z10.T08:H	TISA	mill fan motor	bearing	temperature measurement	°C	0	...	85 :H	alarm	-	value calculated in PLC	
561-1Z20.T01:M	TISA	mill main motor	winding	temperature measurement	°C	0	...	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-1Z20.T01:H	TISA	mill main motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-1Z20.T01:PV	TISA	mill main motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z20.T02:PV	TISA	mill main motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z20.T02:M	TISA	mill main motor	winding	temperature measurement	°C	0	...	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-1Z20.T02:H	TISA	mill main motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-1Z20.T03:PV	TISA	mill main motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-1Z20.T03:H	TISA	mill main motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-1Z20.T03:M	TISA	mill main motor	winding	temperature measurement	°C	0	...	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-1Z20.T04:M	TISA	mill main motor	winding	temperature measurement	°C	0	...	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-1Z20.T04:H	TISA	mill main motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	

Legend:	Limit values will be confirmed during commissioning											
Tag No,	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-1Z20.T04:PV	TISA	mill main motor	winding	temperature measurement	°C	0	_		analog value	4...20mA	AI	
561-1Z20.T05:M	TISA	mill main motor	winding	temperature measurement	°C	0	_	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-1Z20.T05:PV	TISA	mill main motor	winding	temperature measurement	°C	0	_		analog value	4...20mA	AI	
561-1Z20.T05:H	TISA	mill main motor	winding	temperature measurement	°C	0	_	130 :H	alarm	-	value calculated in PLC	
561-1Z20.T06:H	TISA	mill main motor	winding	temperature measurement	°C	0	_	130 :H	alarm	-	value calculated in PLC	
561-1Z20.T06:M	TISA	mill main motor	winding	temperature measurement	°C	0	_	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-1Z20.T06:PV	TISA	mill main motor	winding	temperature measurement	°C	0	_		analog value	4...20mA	AI	
561-1Z20.T07:M	TISA	mill main motor	bearing	temperature measurement	°C	0	_	90 :HH	stop of mill main drive	-	value calculated in PLC	
561-1Z20.T07:H	TISA	mill main motor	bearing	temperature measurement	°C	0	_	85 :H	alarm	-	value calculated in PLC	
561-1Z20.T07:PV	TISA	mill main motor	bearing	temperature measurement	°C	0	_		analog value	4...20mA	AI	
561-1Z20.T08:H	TISA	mill main motor	bearing	temperature measurement	°C	0	_	85 :H	alarm	-	value calculated in PLC	
561-1Z20.T08:M	TISA	mill main motor	bearing	temperature measurement	°C	0	_	90 :HH	stop of mill main drive	-	value calculated in PLC	
561-1Z20.T08:PV	TISA	mill main motor	bearing	temperature measurement	°C	0	_		analog value	4...20mA	AI	
561-1Z20.T09:PV	TISA	mill main motor	bearing	temperature measurement	°C	0	_		analog value	4...20mA	AI	
561-1Z20.T09:H	TISA	mill main motor	bearing	temperature measurement	°C	0	_	85 :H	alarm	-	value calculated in PLC	
561-1Z20.T09:M	TISA	mill main motor	bearing	temperature measurement	°C	0	_	90 :HH	stop of mill main drive	-	value calculated in PLC	
561-1Z20.T10:M	TISA	mill main motor	bearing	temperature measurement	°C	0	_	90 :HH	stop of mill main drive	-	value calculated in PLC	
561-1Z20.T10:PV	TISA	mill main motor	bearing	temperature measurement	°C	0	_		analog value	4...20mA	AI	
561-1Z20.T10:H	TISA	mill main motor	bearing	temperature measurement	°C	0	_	85 :H	alarm	-	value calculated in PLC	
561-2N01 F01:PV	FIRCA	ducting after filter	control loop D	flow measurement	m^3/h	0	4000 00		analog value	4...20mA (HART)	AI	with local display: characteristic curve (measuring): square root
561-2N01.F01:L	FIRCA	ducting after filter	control loop D	flow measurement	m^3/h	0	4000	:L	alarm	-	value calculated in PLC	-
561-2NCM.N01:PV	SIR	gearbox		acceleration sensor						2...20 mA to CMS	-	to CMS
561-2NCM N02:PV	SIR	gearbox		acceleration sensor						2...20 mA to CMS	-	to CMS
561-2NCM N03:PV	SIR	gearbox		acceleration sensor						2...20 mA to CMS	-	to CMS
561-2NCM N04:PV	SIR	gearbox		acceleration sensor						2...20 mA to CMS	-	to CMS
561-2NCM.N05:PV	SIR	gearbox		acceleration sensor						2...20 mA to CMS	-	to CMS
561-2NCM.N06:PV	SIR	gearbox		Vibration Velocity Sensor						2...20 mA to CMS	-	to CMS
561-2NCM.N07:PV	SIR	gearbox		Vibration Velocity Sensor						2...20 mA to CMS	-	to CMS
561-2NCM S01:PV	SIR	gearbox		speed measurement						0...20mA	-	to CMS
561-2NCM S02:PV	SIR	gearbox		speed measurement						0...20mA	-	to CMS
561-BC01.D01:F	ZS	feed belt	belt misalignment switch	limit position				:H	stop of drive	changeover contact	DI	
561-BC01.D02:F	ZS	feed belt	belt misalignment switch	limit position				:H	stop of drive	changeover contact	DI	
561-BC01.R01:ILK	HS	feed belt		emergency stop				:H	stop of drive	changeover contact	DI	
561-BC01.R02:ILK	HS	feed belt		emergency stop				:H	stop of drive	changeover contact	DI	
561-BC01.S01:PLS	SSA	feed belt		standstill monitoring	Hz			:L	alarm & stop of drive	NO contact	DI	
561-BC01.S02:PV	SIC	feed belt		speed measurement	1/min				analog value	4...20mA	AI	
561-BC01.T01:PLS	TS	feed belt	drive, winding	temperature measurement	°C	0	150	:H	stop of drive	NC contact	-	evaluation in frequency converter
561-BC02.D01:F	ZS	feed belt	belt misalignment switch	limit position				:H	stop of drive	changeover contact	DI	
561-BC02.D02:F	ZS	feed belt	belt misalignment switch	limit position				:H	stop of drive	changeover contact	DI	
561-BC02.R01:ILK	HS	feed belt		emergency stop				:H	stop of drive	changeover contact	DI	
561-BC02.R02:ILK	HS	feed belt		emergency stop				:H	stop of drive	changeover contact	DI	
561-BC02.S01:PLS	SSA	feed belt		standstill monitoring	Hz			:L	alarm & stop of drive	NO contact	DI	
561-BE01.I01:M	IISA	bucket elevator	MCC	current measurement	A			:HH	stop of drive	-	value calculated in PLC	
561-BE01.I01:PV	IISA	bucket elevator	MCC	current measurement	A				analog value	4...20mA	AI	
561-BE01.I01:H	IISA	bucket elevator	MCC	current measurement	A			:H	alarm	-	value calculated in PLC	
561-BE01.L01:PLS	LSA	bucket elevator	monitoring of spillage at bucket elevator foot	fill level measurement				:H	stop of drive	NC contact	DI	
561-BE01.S01:PLS	SSA	bucket elevator		standstill monitoring	1/min			20 :L	stop of drive	NC contact	DI	
561-BE01.S02:PLS	SSA	bucket elevator		standstill monitoring	1/min			2 :H	stop of drive	NC contact	DI	
561-BE01.S03:PLS	SSA	bucket elevator		standstill monitoring	1/min			:L	stop of drive	NC contact	DI	
561-BF10.L01:PLS	LSA	bag filter		fill level measurement				:H	alarm & stop of mill fan	changeover contact	DI	

Legend: Limit values will be confirmed during commissioning

Tag No,	Code	Designation: Used for Machinery / Equipment	Designation: Location	Device (What)	Measurement: Unit (Phys)	Span min.	Span max.	Limit	Function	I/O PLC	I/O PLC	Comment
561-BF10 L02:PLS	LSA	bag filter		fill level measurement				:H	alarm & stop of mill fan	changeover contact	DI	
561-BF10 P01:PLS	PSA	bag filter	compressed air supply	pressure measurement	bar	0.2	6	:L		changeover contact	DI	
561-BF10 P02:H	PDSA	bag filter		differential pressure measurement	mbar	-10	100			-	value calculated in PLC	
561-BF10 P02:PV	PDSA	bag filter		differential pressure measurement	mbar	-10	100		analog value	4...20mA	AI	
561-BF10 X01:PLS	XS	bag filter	control	signal					start	NC contact	DI	
561-BF10 X02:D	XS	bag filter	control	signal					run	NC contact	DO	
561-BF10 X03:D	XS	bag filter	control	signal					alarm	NO contact	DO	
561-FA01 I01:L	IISA	seal air fan	MCC	current measurement	A	0	...	:L	stop of classifier and mill	-	value calculated in PLC	switching point about 25% below nominal current of motor, precise setting during commissioning
561-FA01 I01:H	IISA	seal air fan	MCC	current measurement	A	0	...	:H	stop of classifier and mill	-	value calculated in PLC	switching point about 25% above nominal current of motor, precise setting during commissioning
561-FA01 I01:PV	IISA	seal air fan	MCC	current measurement	A	0	...		analog value	4...20mA	AI	
561-FA01 P01:PV	PISA	seal air ducting	grinding roller 1	pressure measurement	mbar	0	100		analog value	4...20mA	AI	
561-FA01 P01:L	PISA	seal air ducting	grinding roller 1	pressure measurement	mbar	0	100	:L	0.7 x preset pressure = alarm	-	value calculated in PLC	preset pressure to be determined during commissioning
561-FA01 P01:N	PISA	seal air ducting	grinding roller 1	pressure measurement	mbar	0	100	:LL	0.5 x preset pressure = stop of classifier & mill	-	value calculated in PLC	preset pressure to be determined during commissioning
561-FA01 P02:PV	PISA	seal air ducting	grinding roller 2	pressure measurement	mbar	0	100		analog value	4...20mA	AI	
561-FA01 P02:N	PISA	seal air ducting	grinding roller 2	pressure measurement	mbar	0	100	:LL	0.5 x preset pressure = stop of classifier & mill	-	value calculated in PLC	preset pressure to be determined during commissioning
561-FA01 P02:L	PISA	seal air ducting	grinding roller 2	pressure measurement	mbar	0	100	:L	0.7 x preset pressure = alarm	-	value calculated in PLC	preset pressure to be determined during commissioning
561-FA01 P03:N	PISA	seal air ducting	grinding roller 3	pressure measurement	mbar	0	100	:LL	0.5 x preset pressure = stop of classifier & mill	-	value calculated in PLC	preset pressure to be determined during commissioning
561-FA01 P03:L	PISA	seal air ducting	grinding roller 3	pressure measurement	mbar	0	100	:L	0.7 x preset pressure = alarm	-	value calculated in PLC	preset pressure to be determined during commissioning
561-FA01 P03:PV	PISA	seal air ducting	grinding roller 3	pressure measurement	mbar	0	100		analog value	4...20mA	AI	
561-FA01 P04:L	PISA	seal air ducting	grinding roller 4	pressure measurement	mbar	0	100	:L	0.7 x preset pressure = alarm	-	value calculated in PLC	preset pressure to be determined during commissioning
561-FA01 P04:PV	PISA	seal air ducting	grinding roller 4	pressure measurement	mbar	0	100		analog value	4...20mA	AI	
561-FA01 P04:N	PISA	seal air ducting	grinding roller 4	pressure measurement	mbar	0	100	:LL	0.5 x preset pressure = stop of classifier & mill	-	value calculated in PLC	preset pressure to be determined during commissioning
561-FA01 T01:PLS	TS	seal air fan	winding	temperature measurement	°C			:H	stop of drive		-	evaluation by customer
561-FN10 N01:PV	N	mill fan	vibration at locating bearing	vibration measurement	mm/s	0	20			mm/s	-	vertical vibration velocity sensor: evaluation in vibrocontrol
561-FN10 N02:PV	N	mill fan	vibraion at mobile bearing	vibration measurement	mm/s	0	20			mm/s	-	vertical vibration velocity sensor: evaluation in vibrocontrol
561-FN10 T01:H	TISA	mill fan	bearing	temperature measurement	°C	-20	160	95 :H	alarm	-	value calculated in PLC	

Legend:	Limit values will be confirmed during commissioning												
Tag No,	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-FN10.T01:PV	TISA	mill fan	bearing	temperature measurement	°C	-20	160		analog value	4...20mA	AI	
561-FN10.T01:M	TISA	mill fan	bearing	temperature measurement	°C	-20	160	115 :HH	stop of drive	-	value calculated in PLC	
561-FN10.T02:PV	TISA	mill fan	bearing	temperature measurement	°C	-20	160		analog value	4...20mA	AI	
561-FN10.T02:H	TISA	mill fan	bearing	temperature measurement	°C	-20	160	95 :H	alarm	-	value calculated in PLC	
561-FN10.T02:M	TISA	mill fan	bearing	temperature measurement	°C	-20	160	115 :HH	stop of drive	-	value calculated in PLC	
561-FN10.X01:RDY	XSA	mill fan	vibration measuring device	signal				:H	Vibrocontrol ready for operation (OK relay - sensor 1)	NO contact	DI	
561-FN10.X02:PLS	XSA	mill fan	vibration measuring device	signal				:H	alarm - sensor 1	NC contact	DI	
561-FN10.X03:RDY	XSA	mill fan	vibration measuring device	signal				:H	Vibrocontrol ready for operation (OK relay - sensor 2)	NO contact	DI	
561-FN10.X04:PLS	XSA	mill fan	vibration measuring device	signal				:H	alarm - sensor 2	NC contact	DI	
561-FN10.X05:PV	XIR	mill fan	vibration measuring device	signal	mm/s	0	20		analog value	4...20mA	AI	
561-FN10.X05:H	XIR	mill fan	vibration measuring device	signal	mm/s	0	20	4.5 :H	alarm	-	value calculated in PLC	
561-FN10.X05:M	XIR	mill fan	vibration measuring device	signal	mm/s	0	20	7.1 :HH	stop of drive	-	value calculated in PLC	
561-FN10.X06:H	XIR	mill fan	vibration measuring device	signal	mm/s	0	20	4.5 :H	alarm	-	value calculated in PLC	
561-FN10.X06:M	XIR	mill fan	vibration measuring device	signal	mm/s	0	20	7.1 :HH	stop of drive	-	value calculated in PLC	
561-FN10.X06:PV	XIR	mill fan	vibration measuring device	signal	mm/s	0	20		analog value	4...20mA	AI	
561-FV02.Z01:PLS	ZSA	two-flap gate lock		standstill monitoring				:L	alarm	NO contact	DI	
561-GB01.N01:PV	N	mill	gearbox base plate	vibration measurement	mV/mm/s					mV	-	vertical vibration velocity sensor: evaluation in vibrocontrol
561-GB01.T01:PV	TIS	gearbox	gearbox sump	temperature measurement	°C	0	200		analog value	4...20mA	AI	
561-GB01.T01:M	TIS	gearbox	gearbox sump	temperature measurement	°C	0	200	20 :HH	stop of cartridge heaters (2.6/1 - 2.6/4)	-	value calculated in PLC	
561-GB01.T01:L	TIS	gearbox	gearbox sump	temperature measurement	°C	0	200	15 :L	start of cartridge heaters (2.6/1 - 2.6/4)	-	value calculated in PLC	
561-GB01.T01:H	TIS	gearbox	gearbox sump	temperature measurement	°C	0	200	5 :H	release start of LP pump (3.2) and cartridge heater (2.6/1 - 2.6/4)	-	value calculated in PLC	
561-GB01.T02:HH	TIRSA	gearbox	segmented thrust bearing	temperature measurement	°C	0	200	70 :HH	alarm	-	value calculated in PLC	
561-GB01.T02:H	TIRSA	gearbox	segmented thrust bearing	temperature measurement	°C	0	200	15 :H	release start mill main drive	-	value calculated in PLC	
561-GB01.T02:M	TIRSA	gearbox	segmented thrust bearing	temperature measurement	°C	0	200	75 :HHH	stop of mill main drive	-	value calculated in PLC	
561-GB01.T02:PV	TIRSA	gearbox	segmented thrust bearing	temperature measurement	°C	0	200		analog value	4...20mA	AI	
561-GB01.T03:PV	TIRSA	gearbox	segmented thrust bearing sump	temperature measurement	°C	0	200		analog value	4...20mA	AI	
561-GB01.T03:M	TIRSA	gearbox	segmented thrust bearing sump	temperature measurement	°C	0	200	65 :HH	stop of mill main drive	-	value calculated in PLC	
561-GB01.T03:H	TIRSA	gearbox	segmented thrust bearing sump	temperature measurement	°C	0	200	60 :H	alarm	-	value calculated in PLC	
561-GB01.T04:PLS	TSA	gearbox	cartridge heater	temperature measurement	°C	0	140	40 :H	stop of cartridge heaters (2.6/1 - 2.6/4)	NO contact	DI	
561-GB01.T05:H	TS	mill maintenance drive	winding	temperature measurement	°C			:H	stop of maintenance drive		2), DI	included in maintenance drive, evaluation in customer's MCC
561-GB01.X01:RDY	XS	mill	vibration measuring device	vibration measurement				:H	Vibrocontrol ready for operation (OK relay)	NO contact	DI	
561-GB01.X02:PLS	NSA	mill	vibration measuring device	vibration measurement	mm/s	0	10	:HH	preset value + 0.8 mm/s = stop of mill main drive	NC contact	DI	preset value to be determined during commissioning
561-GB01.X03:PLS	NSA	mill	vibration measuring device	vibration measurement	mm/s	0	10	:H	preset value + 0.5 mm/s = alarm	NC contact	DI	preset value to be determined during commissioning
561-GB01.X04:PV	NIR	mill	vibration measuring device	vibration measurement	mm/s	0	10		analog value	4...20mA	AI	
561-GB01.Z01:PLS	ZS	mill maintenance drive	chain	position monitoring				:H	release start mill main drive	NC contact	DI	
561-HS01.L01:PLS	LSA	hydraulic tension system	oil tank	fill level measurement	mm	0	390	205 :L	alarm	NC contact	-	
561-HS01.L02:PLS	LSA	hydraulic tension system	oil tank	fill level measurement	mm	0	390	266 :LL	no start release for mill main drive and oil pump (50)	NC contact	-	

Tag No,	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
Legend:		Limit values will be confirmed during commissioning										
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-HS01.P01:PLS	PDA	hydraulic tension system	filter contamination indication	differential pressure measurement	bar			:H	alarm	NC contact	-	
561-HS01.P02:PLS	PDA	hydraulic tension system	filter contamination indication	differential pressure measurement	bar			:H	alarm	NC contact	-	
561-HS01.P03:LL	PIRCSA	hydraulic tension system	operating pressure - tensioning grinding rollers 1/3	pressure measurement	bar	0	450	:LL	alarm	-	-	
561-HS01.P03:H	PIRCSA	hydraulic tension system	operating pressure - tensioning grinding rollers 1/3	pressure measurement	bar	0	450	:H	stop of oil pump (50)	-	-	
561-HS01.P03:L	PIRCSA	hydraulic tension system	operating pressure - tensioning grinding rollers 1/3	pressure measurement	bar	0	450	:L	start of oil pump (50)	-	-	
561-HS01.P03:N	PIRCSA	hydraulic tension system	operating pressure - tensioning grinding rollers 1/3	pressure measurement	bar	0	450	:LLL	stop of mill main drive	-	-	
561-HS01.P04:L	PIRCSA	hydraulic tension system	operating pressure - tensioning grinding rollers 2/4	pressure measurement	bar	0	450	:L	start of oil pump (50)	-	-	
561-HS01.P04:N	PIRCSA	hydraulic tension system	operating pressure - tensioning grinding rollers 2/4	pressure measurement	bar	0	450	:LLL	stop of mill main drive	-	-	evaluation at SUB-PLC
561-HS01.P04:LL	PIRCSA	hydraulic tension system	operating pressure - tensioning grinding rollers 2/4	pressure measurement	bar	0	450	:LL	alarm	-	-	
561-HS01.P04:H	PIRCSA	hydraulic tension system	operating pressure - tensioning grinding rollers 2/4	pressure measurement	bar	0	450	:H	stop of oil pump (50)	-	-	
561-HS01.P05:M	PIRSA	hydraulic tension system	lifting pressure grinding roller 1	pressure measurement	bar	0	450	:HHH	stop of oil pump (50)	-	-	
561-HS01.P05:L	PIRSA	hydraulic tension system	lifting pressure grinding roller 1	pressure measurement	bar	0	450	:L	changeover to tensioning mode after lowering of grinding rollers	-	-	
561-HS01.P05:H	PIRSA	hydraulic tension system	lifting pressure grinding roller 1	pressure measurement	bar	0	450	:H	stop of oil pump (50), lifting in maintenance operation	-	-	
561-HS01.P05:HH	PIRSA	hydraulic tension system	lifting pressure grinding roller 1	pressure measurement	bar	0	450	:HH	stop of oil pump (50), lifting in maintenance operation	-	-	
561-HS01.P06:M	PIRSA	hydraulic tension system	lifting pressure grinding roller 2	pressure measurement	bar	0	450	:HHH	stop of oil pump (50)	-	-	
561-HS01.P06:L	PIRSA	hydraulic tension system	lifting pressure grinding roller 2	pressure measurement	bar	0	450	:L	changeover to tensioning mode after lowering of grinding rollers	-	-	
561-HS01.P06:H	PIRSA	hydraulic tension system	lifting pressure grinding roller 2	pressure measurement	bar	0	450	:H	stop of oil pump (50), lifting in maintenance operation	-	-	
561-HS01.P06:HH	PIRSA	hydraulic tension system	lifting pressure grinding roller 2	pressure measurement	bar	0	450	:HH	stop of oil pump (50), lifting in maintenance operation	-	-	
561-HS01.P07:H	PIRSA	hydraulic tension system	lifting pressure grinding roller 3	pressure measurement	bar	0	450	:H	stop of oil pump (50), lifting in maintenance operation	-	-	
561-HS01.P07:M	PIRSA	hydraulic tension system	lifting pressure grinding roller 3	pressure measurement	bar	0	450	:HHH	stop of oil pump (50)	-	-	
561-HS01.P07:L	PIRSA	hydraulic tension system	lifting pressure grinding roller 3	pressure measurement	bar	0	450	:L	changeover to tensioning mode after lowering of grinding rollers	-	-	
561-HS01.P07:HH	PIRSA	hydraulic tension system	lifting pressure grinding roller 3	pressure measurement	bar	0	450	:HH	stop of oil pump (50), lifting in maintenance operation	-	-	
561-HS01.P08:M	PIRSA	hydraulic tension system	lifting pressure grinding roller 4	pressure measurement	bar	0	450	:HHH	stop of oil pump (50)	-	-	
561-HS01.P08:HH	PIRSA	hydraulic tension system	lifting pressure grinding roller 4	pressure measurement	bar	0	450	:HH	stop of oil pump (50), lifting in maintenance operation	-	-	
561-HS01.P08:H	PIRSA	hydraulic tension system	lifting pressure grinding roller 4	pressure measurement	bar	0	450	:H	stop of oil pump (50), lifting in maintenance operation	-	-	
561-HS01.P08:L	PIRSA	hydraulic tension system	lifting pressure grinding roller 4	pressure measurement	bar	0	450	:L	changeover to tensioning mode after lowering of grinding rollers	-	-	
561-HS01.P09:H	PIRCSA	hydraulic tension system	lifting pressure	pressure measurement	bar	0	450	:H	stop of oil pump (400)	-	-	
561-HS01.X01:WD	XS	hydraulic tension system	SUB-PLC	signal				:H	watchdog PROFIBUS: cyclic pulses	Profinet	BUS	2s="1", 2s="0"; no pulses = alarm
561-HS01.X02:D	XS	hydraulic tension system	SUB-PLC	signal				:H	alarm reset at Sub-PLC	Profinet	BUS	pulse 3s; 0-1-0
561-HS01.X03:W	XS	hydraulic tension system	SUB-PLC	signal				:H	start "start-up warning"	Profinet	BUS	"1" = on; "0" = off
561-HS01.X04:R	XS	hydraulic tension system	SUB-PLC	signal				:H	oil supply (group 40) is running	Profinet	BUS	

Legend: **Limit values will be confirmed during commissioning**

Tag No.	Code	Designation: Used for Machinery / Equipment	Designation: Location	Device (What)	Measurement: Unit (Phys)	Measurement: Span min.	Measurement: Span max.	Limit	Function	I/O PLC	I/O PLC	Comment
561-HS01.X05:R	XS	hydraulic tension system	SUB-PLC	signal				:H	mill main drive is running	Profinet	BUS	"1" = on; "0" = off
561-HS01.X06:D	XS	hydraulic tension system	SUB-PLC	signal				:H	start "lower the grinding rollers"	Profinet	BUS	pulse 3s; 0-1-0
561-HS01.X07:D	XS	hydraulic tension system	SUB-PLC	signal				:H	start/stop hydraulic tension system (group 50)	Profinet	BUS	"1" = start; "0" = stop
561-HS01.X08:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	watchdog PROFIBUS: cyclic pulses	Profinet	BUS	2s="1", 2s="0"; no pulses = stop of mill main drive
561-HS01.X09:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	fuse of control voltage tripped 24VDC	Profinet	BUS	"1"= OK; "0"=fault; stop of mill main drive
561-HS01.X10:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	fuse of valve voltage tripped at Sub-PLC cabinet	Profinet	BUS	"1"= OK; "0"=fault; stop of mill main drive
561-HS01.X11:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	emergency stop activated	Profinet	BUS	"1"= OK; "0"=fault; stop of mill main drive
561-HS01.X12:W	XS	hydraulic tension system	SUB-PLC	signal				:H	start-up warning running	Profinet	BUS	"1"=on; "0"=off"
561-HS01.X13:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	Sub-PLC in automatic mode	Profinet	BUS	"1"=auto mode
561-HS01.X14:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	Sub-PLC in manual mode	Profinet	BUS	"1"= manually
561-HS01.X15:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	maintenance mode selected	Profinet	BUS	
561-HS01.X16:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	collective alarm at Sub-PLC	Profinet	BUS	"1"= OK; "0"=fault
561-HS01.X17:RDY	XS	hydraulic tension system	SUB-PLC	signal				:H	SUB-PLC ready for operation	Profinet	BUS	"1"= ready
561-HS01.X18:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	grinding rollers are lowered	Profinet	BUS	
561-HS01.X19:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	grinding rollers are lifted	Profinet	BUS	
561-HS01.X20:R	XS	hydraulic tension system	SUB-PLC	signal				:H	group 50 is running	Profinet	BUS	"1"=running; "0"=not running
561-HS01.X21:R	XS	hydraulic tension system	SUB-PLC	signal				:H	lowering the grinding rollers active and mill main drive running	Profinet	BUS	("1"=lowering active); indication
561-HS01.X22:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	tensioning pressure 1+3 P1<MIN while lowering	Profinet	BUS	"1"=OK; "0"=alarm, stop of mill main drive
561-HS01.X23:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	tensioning pressure 2+4 P2<MIN while lowering	Profinet	BUS	"1"=OK; "0"=alarm, stop of mill main drive
561-HS01.X24:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	fuse of control voltage tripped 230VAC	Profinet	BUS	"1"= OK; "0"=fault; stop of mill main drive
561-HS01.X25:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	tensioning pressure 1+3 P1<MIN during grinding operation	Profinet	BUS	"1"=OK; "0"=alarm
561-HS01.X26:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	tensioning pressure 2+4 P2<MIN during grinding operation	Profinet	BUS	"1"=OK; "0"=alarm
561-HS01.X27:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	tensioning pressure 1+3 P1<MIN MIN during grinding operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X28:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	tensioning pressure 2+4 P2<MIN MIN during grinding operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X29:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lifting pressure roller 1 P3>MAX MAX MAX	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X30:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lifting pressure roller 2 P4>MAX MAX MAX	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X31:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lifting pressure roller 3 P5>MAX MAX MAX	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X32:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lifting pressure roller 4 P6>MAX MAX MAX	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X33:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	rollers are lifted longer than 1 hour	Profinet	BUS	
561-HS01.X34:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	plug for normal operation missing -X31B	Profinet	BUS	stop of mill main drive
561-HS01.X35:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	oil level > MIN	Profinet	BUS	"1"=OK; "0"=alarm; alarm
561-HS01.X36:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	oil level > MIN MIN	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive

Legend:	Limit values will be confirmed during commissioning											
Tag No,	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-HS01.X37:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	differential pressure filter >= MAX	Profinet	BUS	"1"=OK; "0"=alarm; alarm
561-HS01.X38:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	grinding roller 1: stop lifting; emergency stop	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X39:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	grinding roller 2: stop lifting; emergency stop	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X40:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	grinding roller 3: stop lifting; emergency stop	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X41:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	grinding roller 4: stop lifting; emergency stop	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X42:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 1: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X43:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 1: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X44:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 2: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X45:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 2: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X46:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 3: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X47:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 3: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X48:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 4: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X49:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 4: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X50:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 1: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X51:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 1: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X52:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 2: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X53:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 2: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X54:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 3: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X55:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 3: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X56:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 4: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X57:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 4: NOT in position mill operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X58:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 1: position mill operation (indication limit)	Profinet	BUS	
561-HS01.X59:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 1: position service mode (indication limit)	Profinet	BUS	
561-HS01.X60:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 1: position mill operation (indication limit)	Profinet	BUS	
561-HS01.X61:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 1: position service mode (indication limit)	Profinet	BUS	

Legend:	Limit values will be confirmed during commissioning											
Tag No.	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-HS01.X62:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 2: position mill operation (indication limit)	Profinet	BUS	
561-HS01.X63:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 2: position service mode (indication limit)	Profinet	BUS	
561-HS01.X64:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 2: position mill operation (indication limit)	Profinet	BUS	
561-HS01.X65:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 2: position service mode (indication limit)	Profinet	BUS	
561-HS01.X66:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 3: position mill operation (indication limit)	Profinet	BUS	
561-HS01.X67:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 3: position service mode (indication limit)	Profinet	BUS	
561-HS01.X68:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 3: position mill operation (indication limit)	Profinet	BUS	
561-HS01.X69:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 3: position service mode (indication limit)	Profinet	BUS	
561-HS01.X70:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 4: position mill operation (indication limit)	Profinet	BUS	
561-HS01.X71:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 4: position service mode (indication limit)	Profinet	BUS	
561-HS01.X72:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 4: position mill operation (indication limit)	Profinet	BUS	
561-HS01.X73:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 4: position service mode (indication limit)	Profinet	BUS	
561-HS01.X74:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 1 (cylinder bottom): position mill operation (indication limit)	Profinet	BUS	
561-HS01.X75:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 1 (cylinder bottom): position service mode (indication limit)	Profinet	BUS	
561-HS01.X76:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 2 (cylinder bottom): position mill operation (indication limit)	Profinet	BUS	
561-HS01.X77:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 2 (cylinder bottom): position service mode (indication limit)	Profinet	BUS	
561-HS01.X78:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 3 (cylinder bottom): position mill operation (indication limit)	Profinet	BUS	
561-HS01.X79:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 3 (cylinder bottom): position service mode (indication limit)	Profinet	BUS	

Legend:	Limit values will be confirmed during commissioning											
Tag No.	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-HS01 X80:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 4 (cylinder bottom): position mill operation (indication limit)	Profinet	BUS	
561-HS01 X81:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 4 (cylinder bottom): position service mode (indication limit)	Profinet	BUS	
561-HS01 X82:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 1 (cylinder rod side): position mill operation (indication limit)	Profinet	BUS	
561-HS01 X83:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 1 (cylinder rod side): position service mode (indication limit)	Profinet	BUS	
561-HS01 X84:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 2 (cylinder rod side): position mill operation (indication limit)	Profinet	BUS	
561-HS01 X85:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 2 (cylinder rod side): position service mode (indication limit)	Profinet	BUS	
561-HS01 X86:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 3 (cylinder rod side): position mill operation (indication limit)	Profinet	BUS	
561-HS01 X87:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 3 (cylinder rod side): position service mode (indication limit)	Profinet	BUS	
561-HS01 X88:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 4 (cylinder rod side): position mill operation (indication limit)	Profinet	BUS	
561-HS01.X89:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 4 (cylinder rod side): position service mode (indication limit)	Profinet	BUS	
561-HS01 X90:R	XS	hydraulic tension system	SUB-PLC	signal				:H	hydraulic pump running	Profinet	BUS	"1" = on; "0" = off; display
561-HS01.X91:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	fault hydraulic pump	Profinet	BUS	"1"= OK; "0"=fault; stop of mill main drive
561-HS01 X92:R	XS	hydraulic tension system	SUB-PLC	signal				:H	flushing pump running	Profinet	BUS	"1"=on; "0"=off"; display
561-HS01 X93:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	fault flushing pump	Profinet	BUS	
561-HS01 X94:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (140.3)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X96:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (130.2)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X97:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (130.3)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X98:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (130.4)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X99:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (131.1)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X100:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (131.2)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X101:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (140.1)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X102:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (140.2)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X103:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (360.1)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X104:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (360.2)	Profinet	BUS	"1"=open; "0"=closed
561-HS01.X105:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (360.3)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X106:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	solenoid valve open (360.4)	Profinet	BUS	"1"=open; "0"=closed
561-HS01 X107:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	maintenance operation: plug is plugged	Profinet	BUS	"1"= plugged
561-HS01 X108:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 1: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive

Legend:	Limit values will be confirmed during commissioning											
Tag No.	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-HS01 X109:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 1: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X110:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 2: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X111:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 2: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X112:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 3: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X113:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 3: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X114:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 4: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X115:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	lock swing out grinding roller 4: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X116:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 1: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X117:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 1: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X118:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 2: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X119:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 2: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X120:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 3: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X121:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 3: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X122:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 4: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X123:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	shut off grinding roller 4: NOT in position maintenance operation	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X124:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	roller 1 maintenance operation: NOT in position "swung out"	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X125:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	roller 2 maintenance operation: NOT in position "swung out"	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X126:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	roller 3 maintenance operation: NOT in position "swung out"	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X127:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	roller 4 maintenance operation: NOT in position "swung out"	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X128:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	rollers unequal during lowering (1+3)	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X129:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	rollers unequal during lowering (2+4)	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01 X130:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	pressure measurement tensioning pressure - P > MAX MAX grinding rollers 1+3	Profinet	BUS	"1"=OK; "0"=alarm;

Legend:	Limit values will be confirmed during commissioning											
Tag No,	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-HS01.X131:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	pressure measurement tensioning pressure - P > MAX MAX grinding rollers 2+4	Profinet	BUS	"1"=OK; "0"=alarm;
561-HS01.X132:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	pressure measurement tensioning pressure - wire-break grinding rollers 1+3	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X133:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	pressure measurement tensioning pressure - wire-break grinding rollers 2+4	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X134:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	pressure measurement lifting pressure - wire-break roller 1	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X135:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	pressure measurement lifting pressure - wire-break roller 2	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X136:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	pressure measurement lifting pressure - wire-break roller 3	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X137:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	pressure measurement lifting pressure - wire-break roller 4	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X138:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	position measurement - wire-break cylinder 1	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X139:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	position measurement - wire-break cylinder 2	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X140:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	position measurement - wire-break cylinder 3	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.X141:PLS	XS	hydraulic tension system	SUB-PLC	signal				:H	position measurement - wire-break cylinder 4	Profinet	BUS	"1"=OK; "0"=alarm; stop of mill main drive
561-HS01.Z01:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 1	limit position				:H	stop lifting grinding roller 1	NO contact	-	evaluation at SUB-PLC
561-HS01.Z02:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 2	limit position				:H	stop lifting grinding roller 2	NO contact	-	evaluation at SUB-PLC
561-HS01.Z03:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 3	limit position				:H	stop lifting grinding roller 3	NO contact	-	evaluation at SUB-PLC
561-HS01.Z04:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 4	limit position				:H	stop lifting grinding roller 4	NO contact	-	evaluation at SUB-PLC
561-HS01.Z05:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 1, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z06:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 1, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z07:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 2, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z08:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 2, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z09:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 3, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z10:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 3, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z11:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 4, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z12:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 4, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z13:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 1, bottom, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z14:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 1, bottom, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z15:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 2, bottom, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z16:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 2, bottom, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z17:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 3, bottom, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z18:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 3, bottom, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z19:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 4, bottom, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01.Z20:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 4, bottom, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC

Legend: Limit values will be confirmed during commissioning

Tag No.	Code	Designation: Used for Machinery / Equipment	Designation: Location	Designation: Device (What)	Measurement: Unit (Phys)	Measurement: Span min.	Measurement: Span max.	Limit	Function	I/O PLC	I/O PLC	Comment
561-HS01 Z21:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 1, rod side, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01 Z22:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 1, rod side, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01 Z23:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 2, rod side, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01 Z24:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 2, rod side, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01 Z25:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 3, rod side, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01 Z26:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 3, rod side, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01 Z27:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 4, rod side, ball cock	limit position				:H	release grinding operation	NO contact	-	evaluation at SUB-PLC
561-HS01 Z28:PLS	ZS	hydraulic tension system	hydraulic tension cylinder 4, rod side, ball cock	limit position				:H	release maintenance operation	NO contact	-	evaluation at SUB-PLC
561-HS01 Z29:PLS	ZS	hydraulic tension system	flushing pump	limit position				:H	open	NO contact	-	evaluation at SUB-PLC
561-HS01 Z30:PLS	ZS	hydraulic tension system	flushing pump	limit position				:H	close	NO contact	-	evaluation at SUB-PLC
561-HS01 Z31:HH	ZISA	hydraulic tension system	roller arm 1	position measurement	mm	-135	240	:HH	stop lifting 1	-	-	evaluation at SUB-PLC
561-HS01 Z31:HHHH	ZISA	hydraulic tension system	roller arm 1	position measurement	mm	-135	240	:HHHH	stop lifting 2	-	-	evaluation at SUB-PLC
561-HS01 Z31:H	ZISA	hydraulic tension system	roller arm 1	position measurement	mm	-135	240	:H	alarm	-	-	evaluation at SUB-PLC
561-HS01 Z31:M	ZISA	hydraulic tension system	roller arm 1	position measurement	mm	-135	240	:HHHHH	grinding roller swung out	-	-	evaluation at SUB-PLC
561-HS01 Z31:L	ZISA	hydraulic tension system	roller arm 1	position measurement	mm	-135	240	:L	alarm	-	-	evaluation at SUB-PLC
561-HS01 Z31:HHH	ZISA	hydraulic tension system	roller arm 1	position measurement	mm	-135	240	:HHH	raised and secured	-	-	evaluation at SUB-PLC
561-HS01 Z32:M	ZISA	hydraulic tension system	roller arm 2	position measurement	mm	-135	240	:HHHHH	grinding roller swung out	-	-	evaluation at SUB-PLC
561-HS01 Z32:HHH	ZISA	hydraulic tension system	roller arm 2	position measurement	mm	-135	240	:HHH	raised and secured	-	-	evaluation at SUB-PLC
561-HS01 Z32:L	ZISA	hydraulic tension system	roller arm 2	position measurement	mm	-135	240	:L	alarm	-	-	evaluation at SUB-PLC
561-HS01 Z32:H	ZISA	hydraulic tension system	roller arm 2	position measurement	mm	-135	240	:H	alarm	-	-	evaluation at SUB-PLC
561-HS01 Z32:HH	ZISA	hydraulic tension system	roller arm 2	position measurement	mm	-135	240	:HH	stop lifting 1	-	-	evaluation at SUB-PLC
561-HS01 Z32:HHHH	ZISA	hydraulic tension system	roller arm 2	position measurement	mm	-135	240	:HHHH	stop lifting 2	-	-	evaluation at SUB-PLC
561-HS01 Z33:HH	ZISA	hydraulic tension system	roller arm 3	position measurement	mm	-135	240	:HH	stop lifting 1	-	-	evaluation at SUB-PLC
561-HS01 Z33:H	ZISA	hydraulic tension system	roller arm 3	position measurement	mm	-135	240	:H	alarm	-	-	evaluation at SUB-PLC
561-HS01 Z33:L	ZISA	hydraulic tension system	roller arm 3	position measurement	mm	-135	240	:L	alarm	-	-	evaluation at SUB-PLC
561-HS01 Z33:HHHH	ZISA	hydraulic tension system	roller arm 3	position measurement	mm	-135	240	:HHHH	stop lifting 2	-	-	evaluation at SUB-PLC
561-HS01 Z33:M	ZISA	hydraulic tension system	roller arm 3	position measurement	mm	-135	240	:HHHHH	grinding roller swung out	-	-	evaluation at SUB-PLC
561-HS01 Z33:HHH	ZISA	hydraulic tension system	roller arm 3	position measurement	mm	-135	240	:HHH	raised and secured	-	-	evaluation at SUB-PLC
561-HS01 Z34:H	ZISA	hydraulic tension system	roller arm 4	position measurement	mm	-135	240	:H	alarm	-	-	evaluation at SUB-PLC
561-HS01 Z34:M	ZISA	hydraulic tension system	roller arm 4	position measurement	mm	-135	240	:HHHHH	grinding roller swung out	-	-	evaluation at SUB-PLC
561-HS01 Z34:L	ZISA	hydraulic tension system	roller arm 4	position measurement	mm	-135	240	:L	alarm	-	-	evaluation at SUB-PLC
561-HS01 Z34:HHHH	ZISA	hydraulic tension system	roller arm 4	position measurement	mm	-135	240	:HHHH	stop lifting 2	-	-	evaluation at SUB-PLC
561-HS01 Z34:HH	ZISA	hydraulic tension system	roller arm 4	position measurement	mm	-135	240	:HH	stop lifting 1	-	-	evaluation at SUB-PLC
561-HS01 Z34:HHH	ZISA	hydraulic tension system	roller arm 4	position measurement	mm	-135	240	:HHH	raised and secured	-	-	evaluation at SUB-PLC
561-IJ01 F01:PV	FICSA	water injection	water ducting	flow measurement	m^3/h	0	5		analog value	4...20mA (HART)	AI	
561-IJ01 F01:L	FICSA	water injection	water ducting	flow measurement	m^3/h	0	5	0.1 :L	stop of water injection pump	-	value calculated in PLC	
561-IJ01 P01:PLS	PA	water injection	water ducting	pressure measurement	bar	0.6	10	1 :L	alarm	NC contact	DI	
561-IJ01 P02:PLS	PA	water injection	pressed air ducting	pressure measurement	bar	0.6	10	3 :L	alarm	NC contact	DI	
561-IJ01 V01:D	ZS	water injection (water)	solenoid valve	actuator				:H	spray water into the table	NC contact	DO	
561-IJ01 V02:D	ZS	water injection (air)	solenoid valve	actuator				:H	spray water into the table	NC contact	DO	
561-LD01 T01:PLS	TS	damper in recirculating air ducting	winding	temperature measurement	°C	0	...	:H	stop of drive	NC contact	DI	
561-LD01 X01:PLS	XS	damper in recirculating air ducting	motor	torque measurement	Nm			Mmax	stop of drive while opening	NC contact	DI	
561-LD01 X02:PLS	XS	damper in recirculating air ducting	motor	torque measurement	Nm			Mmax :L	stop of drive while closing	NO contact	DI	
561-LD01 X03:X	ZS	damper in recirculating air ducting	damper	limit position				closed	stop of drive while closing	NO contact	DI	
561-LD01 Y01:Y	ZS	damper in recirculating air ducting	damper	limit position				opened	stop of drive while opening	NO contact	DI	
561-LD01 Z01:PLS	ZS	damper in recirculating air ducting	motor	limit position				opened	stop of drive while opening	NC contact	DI	

Legend:	Limit values will be confirmed during commissioning												
Tag No,	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-LD01.Z02:X	ZS	damper in recirculating air ducting	motor	limit position				closed	stop of drive while closing	NO contact	DI	
561-LD01.Z03:PV	ZIC	damper in recirculating air ducting	motor	position monitoring	%	0	100		analog value	4...20mA	AI	
561-LD02.T01:PLS	TS	damper	winding	temperature measurement	°C	0	...	:H	stop of drive	NC contact	DI	
561-LD02.X01:PLS	XS	damper	motor	torque measurement	Nm			Mmax	stop of drive while opening	NC contact	DI	
561-LD02.X02:PLS	XS	damper	motor	torque measurement	Nm			Mmax :L	stop of drive while closing	NO contact	DI	
561-LD02.X03:X	ZS	damper	damper	limit position				closed	stop of drive while closing	NO contact	DI	
561-LD02.Y01:Y	ZS	damper	damper	limit position				opened	stop of drive while opening	NO contact	DI	
561-LD02.Z01:PLS	ZS	damper	motor	limit position				opened	stop of drive while opening	NC contact	DI	
561-LD02.Z02:X	ZS	damper	motor	limit position				closed	stop of drive while closing	NO contact	DI	
561-LD02.Z03:PV	ZIC	damper	motor	position monitoring	%	0	100		analog value	4...20mA	AI	
561-LQ0A.L01:PLS	LSA	classifier gearbox	oil tank	fill level measurement	mm			:L	stop of classifier drive	NO contact	DI	with 2 relay contacts
561-LQ0A.P01:PLS	PDA	classifier gearbox	filter contamination indication	differential pressure measurement	bar	0	16	2 :H	alarm	NC contact	DI	
561-LQ0A.T01:PV	TISA	classifier gearbox		temperature measurement	°C	-50	150		analog value	4...20mA	AI	
561-LQ0A.T01:M	TISA	classifier gearbox		temperature measurement	°C	-50	150	100	stop of classifier drive	-	value calculated in PLC	
561-LQ0A.T01:HH	TISA	classifier gearbox		temperature measurement	°C	-50	150	90 :HH	alarm	-	value calculated in PLC	
561-LQ0A.T01:H	TISA	classifier gearbox		temperature measurement	°C	-50	150	65 :H	start of oil pump & cooling air fan	-	value calculated in PLC	
561-LQ0A.T01:L	TISA	classifier gearbox		temperature measurement	°C	-50	150	55 :L	stop of oil pump, stop of cooling air fan	-	value calculated in PLC	
561-LQ0A.T01:N	TISA	classifier gearbox		temperature measurement	°C	-50	150	-20 :LL	alarm & classifier drive cannot be started	-	value calculated in PLC	
561-LQ0B.F01:PLS	FISA	central lubrication of classifier shaft	grease flow to classifier shaft	flow measurement	imp			:L	alarm	NO contact	DI	-
561-LQ0B.L01:PLS	LSA	central lubrication of classifier shaft	grease level in receptacle	fill level measurement	mm	0	300	:L	alarm	NO contact	DI	-
561-LQ01.F01:PLS	FISA	gear oil supply	ducting	flow measurement	l/min	40	350	250 :L	alarm	NO contact	DI	with local display
561-LQ01.F02:PLS	FISA	gear oil supply	ducting	flow measurement	l/min	40	350	220 :LL	stop of mill main drive	NO contact	DI	with local display
561-LQ01.P01:PLS	PDA	gear oil supply	filter contamination indication	differential pressure measurement	bar	0	2.5	2 :H	alarm	NC contact	DI	with local display. Upon alarm, clean filter.
561-LQ01.P02:PLS	PDA	gear oil supply	filter contamination indication	differential pressure measurement	bar	0	2.5	2 :H	alarm	NC contact	DI	with local display. Upon alarm, clean filter.
561-LQ01.P03:PV	PISA	gear oil supply	after cooler	pressure measurement	bar	0	16		analog value	4...20mA	AI	
561-LQ01.P03:N	PISA	gear oil supply	after cooler	pressure measurement	bar	0	16	0.5 :LL	stop of mill main drive	4...20mA	value calculated in PLC	
561-LQ01.P03:L	PISA	gear oil supply	after cooler	pressure measurement	bar	0	16	0.8 :L	alarm	4...20mA	value calculated in PLC	
561-LQ01.T01:L	TIRSA	gear oil supply	after cooler	temperature measurement	°C	0	200	40 :L	stop of cooling air fan (3.3)	-	value calculated in PLC	
561-LQ01.T01:M	TIRSA	gear oil supply	after cooler	temperature measurement	°C	0	200	60 :HHH	alarm	-	value calculated in PLC	
561-LQ01.T01:HH	TIRSA	gear oil supply	after cooler	temperature measurement	°C	0	200	45 :HH	start of cooling air fan (3.3)	-	value calculated in PLC	
561-LQ01.T01:PV	TIRSA	gear oil supply	after cooler	temperature measurement	°C	0	200		analog value	4...20mA	AI	
561-LQ01.T01:M	TIRSA	gear oil supply	after cooler	temperature measurement	°C	0	200	65	stop of mill main drive	-	value calculated in PLC	
561-LQ01.T01:H	TIRSA	gear oil supply	after cooler	temperature measurement	°C	0	200	30 :H	release of filter contamination indication (3.4)	-	value calculated in PLC	
561-LQ02.F01:PV	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 1	flow measurement	l/min	4	36		analog value	4...20mA	AI	with evaluation device and local display
561-LQ02.F01:L	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 1	flow measurement	l/min	4	36	10 :L	alarm	-	value calculated in PLC	-
561-LQ02.F01:N	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 1	flow measurement	l/min	4	36	8.4 :LL	stop of mill main drive	-	value calculated in PLC	-
561-LQ02.F02:N	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 2	flow measurement	l/min	4	36	8.4 :LL	stop of mill main drive	-	value calculated in PLC	-
561-LQ02.F02:L	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 2	flow measurement	l/min	4	36	10 :L	alarm	-	value calculated in PLC	-
561-LQ02.F02:PV	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 2	flow measurement	l/min	4	36		analog value	4...20mA	AI	with evaluation device and local display
561-LQ02.F03:N	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 3	flow measurement	l/min	4	36	8.4 :LL	stop of mill main drive	-	value calculated in PLC	-

Legend: Limit values will be confirmed during commissioning

Tag No,	Code	Designation		Device (What)	Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location		Unit (Phys)	Span min.	Span max.					
561-LQ02.F03:PV	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 3	flow measurement	l/min	4	36		analog value	4...20mA	AI	with evaluation device and local display
561-LQ02.F03:L	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 3	flow measurement	l/min	4	36	10 :L	alarm	-	value calculated in PLC	-
561-LQ02.F04:PV	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 4	flow measurement	l/min	4	36		analog value	4...20mA	AI	with evaluation device and local display
561-LQ02.F04:L	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 4	flow measurement	l/min	4	36	10 :L	alarm	-	value calculated in PLC	-
561-LQ02.F04:N	FIRSA	circulating oil lubrication for grinding rollers	grinding roller 4	flow measurement	l/min	4	36	8.4 :LL	stop of mill main drive	-	value calculated in PLC	-
561-LQ02.L01:N	LISA	circulating oil lubrication for grinding rollers	oil tank	fill level measurement	mm	45	520	410 :LL	stop of mill main drive & oil pump (80)	-	value calculated in PLC	
561-LQ02.L01:PV	LISA	circulating oil lubrication for grinding rollers	oil tank	fill level measurement	mm	45	520		analog value	4...20mA	AI	
561-LQ02.L01:L	LISA	circulating oil lubrication for grinding rollers	oil tank	fill level measurement	mm	45	520	340 :L	alarm	-	value calculated in PLC	
561-LQ02.L01:H	LISA	circulating oil lubrication for grinding rollers	oil tank	fill level measurement	mm	45	520	250 :H	release start of oil pump (80)	-	value calculated in PLC	
561-LQ02.P01:PLS	PDA	circulating oil lubrication for grinding rollers	filter	differential pressure measurement	bar	0	...	:H	alarm	NC contact	DI	
561-LQ02.P02:PV	PSA	circulating oil lubrication for grinding rollers	grinding rollers 1-4	pressure measurement	bar	0	10		analog value	4...20mA	AI	
561-LQ02.P02:L	PSA	circulating oil lubrication for grinding rollers	grinding rollers 1-4	pressure measurement	bar	0	10	1 :L	alarm	-	value calculated in PLC	
561-LQ02.T01:PLS	TS	circulating oil lubrication for grinding rollers	oil tank	temperature measurement	°C	0	100	70 :H	stop of heating (50)	NC contact	DI	
561-LQ02.T02:H4	TIRSA	circulating oil lubrication for grinding rollers	oil tank	temperature measurement	°C	0	150	65 :H4	start of cooler	-	value calculated in PLC	
561-LQ02.T02:H5	TIRSA	circulating oil lubrication for grinding rollers	oil tank	temperature measurement	°C	0	150	110 :H5	alarm	-	value calculated in PLC	
561-LQ02.T02:N	TIRSA	circulating oil lubrication for grinding rollers	oil tank	temperature measurement	°C	0	150	50 :LL	start of heating (50)	-	value calculated in PLC	
561-LQ02.T02:HH	TIRSA	circulating oil lubrication for grinding rollers	oil tank	temperature measurement	°C	0	150	50 :HH	release start mill main drive	-	value calculated in PLC	
561-LQ02.T02:L	TIRSA	circulating oil lubrication for grinding rollers	oil tank	temperature measurement	°C	0	150	60 :L	stop of cooler	-	value calculated in PLC	
561-LQ02.T02:HHH	TIRSA	circulating oil lubrication for grinding rollers	oil tank	temperature measurement	°C	0	150	55 :HHH	stop of heating (50)	-	value calculated in PLC	
561-LQ02.T02:M	TIRSA	circulating oil lubrication for grinding rollers	oil tank	temperature measurement	°C	0	150	120 :H6	stop of mill main drive	-	value calculated in PLC	
561-LQ02.T02:PV	TIRSA	circulating oil lubrication for grinding rollers	oil tank	temperature measurement	°C	0	150		analog value	4...20mA	AI	
561-LQ02.T02:H	TIRSA	circulating oil lubrication for grinding rollers	oil tank	temperature measurement	°C	0	150	40 :H	release start of oil pump (80)	-	value calculated in PLC	
561-LQ02.T03:PV	TISA	circulating oil lubrication for grinding rollers	grinding roller 1	temperature measurement	°C	0	150		analog value	4...20mA	AI	
561-LQ02.T03:H	TISA	circulating oil lubrication for grinding rollers	grinding roller 1	temperature measurement	°C	0	150	25 :H	release fill level monitoring	-	value calculated in PLC	
561-LQ02.T03:HH	TISA	circulating oil lubrication for grinding rollers	grinding roller 1	temperature measurement	°C	0	150	50 :HH	release of flow monitor (370.1)	-	value calculated in PLC	
561-LQ02.T03:M	TISA	circulating oil lubrication for grinding rollers	grinding roller 1	temperature measurement	°C	0	150	110 :HHHH	stop of mill main drive	-	value calculated in PLC	
561-LQ02.T03:HHH	TISA	circulating oil lubrication for grinding rollers	grinding roller 1	temperature measurement	°C	0	150	90 :HHH	alarm	-	value calculated in PLC	

Legend:	Limit values will be confirmed during commissioning											
Tag No.	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-LQ02.T04:H	TISA	circulating oil lubrication for grinding rollers	grinding roller 2	temperature measurement	°C	0	150	25 :H	release fill level monitoring	-	value calculated in PLC	
561-LQ02.T04:PV	TISA	circulating oil lubrication for grinding rollers	grinding roller 2	temperature measurement	°C	0	150		analog value	4...20mA	AI	
561-LQ02.T04:M	TISA	circulating oil lubrication for grinding rollers	grinding roller 2	temperature measurement	°C	0	150	110 :HHHH	stop of mill main drive	-	value calculated in PLC	
561-LQ02.T04:HH	TISA	circulating oil lubrication for grinding rollers	grinding roller 2	temperature measurement	°C	0	150	50 :HH	release of flow monitor (370 2)	-	value calculated in PLC	
561-LQ02.T04:HHH	TISA	circulating oil lubrication for grinding rollers	grinding roller 2	temperature measurement	°C	0	150	90 :HHH	alarm	-	value calculated in PLC	
561-LQ02.T05:HHH	TISA	circulating oil lubrication for grinding rollers	grinding roller 3	temperature measurement	°C	0	150	90 :HHH	alarm	-	value calculated in PLC	
561-LQ02.T05:PV	TISA	circulating oil lubrication for grinding rollers	grinding roller 3	temperature measurement	°C	0	150		analog value	4...20mA	AI	
561-LQ02.T05:HH	TISA	circulating oil lubrication for grinding rollers	grinding roller 3	temperature measurement	°C	0	150	50 :HH	release of flow monitor (370 3)	-	value calculated in PLC	
561-LQ02.T05:H	TISA	circulating oil lubrication for grinding rollers	grinding roller 3	temperature measurement	°C	0	150	25 :H	release fill level monitoring	-	value calculated in PLC	
561-LQ02.T05:M	TISA	circulating oil lubrication for grinding rollers	grinding roller 3	temperature measurement	°C	0	150	110 :HHHH	stop of mill main drive	-	value calculated in PLC	
561-LQ02.T06:H	TISA	circulating oil lubrication for grinding rollers	grinding roller 4	temperature measurement	°C	0	150	25 :H	release fill level monitoring	-	value calculated in PLC	
561-LQ02.T06:PV	TISA	circulating oil lubrication for grinding rollers	grinding roller 4	temperature measurement	°C	0	150		analog value	4...20mA	AI	
561-LQ02.T06:HHH	TISA	circulating oil lubrication for grinding rollers	grinding roller 4	temperature measurement	°C	0	150	90 :HHH	alarm	-	value calculated in PLC	
561-LQ02.T06:M	TISA	circulating oil lubrication for grinding rollers	grinding roller 4	temperature measurement	°C	0	150	110 :HHHH	stop of mill main drive	-	value calculated in PLC	
561-LQ02.T06:HH	TISA	circulating oil lubrication for grinding rollers	grinding roller 4	temperature measurement	°C	0	150	50 :HH	release of flow monitor (370 4)	-	value calculated in PLC	
561-LQ02.X01:PLS	XS	circulating oil lubrication for grinding rollers	local service operation	switch signal				:H	remote operation	NC contact	DI	
561-LQ02.X02:PLS	XS	circulating oil lubrication for grinding rollers	local service operation	switch signal				:H	flushing	NO contact	DI	
561-LQ02.X03:PLS	XS	circulating oil lubrication for grinding rollers	local service operation	switch signal				:H	fill or empty	NO contact	DI	
561-LQ02.X04:RDY	XS	circulating oil lubrication for grinding rollers	local service operation	switch signal				:H	ready for local operation/start oil pump (80)	NO contact	DI	
561-LQ02.X05:RDY	XS	circulating oil lubrication for grinding rollers	local service operation	return signal				:H	ready for local operation/heating (50) in operation		DO	
561-LQ02.X06:RDY	XS	circulating oil lubrication for grinding rollers	local service operation	return signal				:H	ready for local operation/oil pump (80) ready for operation		DO	
561-LQ02.Z01:PLS	ZSA	circulating oil lubrication for grinding rollers	ball cock	limit position				opened :H	release start of mill main drive & oil pump (80)	NO contact	DI	alarm: when ball cock is not open
561-RF01.S01:PLS	SSA	rotary feeder		standstill monitoring	Imp/min	0.1	1000	:L	alarm & stop of drive	NO contact	DI	
561-RF01.T01:PLS	TS	rotary feeder	winding	temperature measurement	°C	0		:H	stop of drive		-	evaluation in customer's MCC
561-RM01.P01:L	PIRCSA	ducting ahead mill	control loop C	pressure measurement	mbar	-40	5	:L	alarm	-	value calculated in PLC	-
561-RM01.P01:M	PIRCSA	ducting ahead mill	control loop C	pressure measurement	mbar	-40	5	0 :HH	stop of mill main drive	-	value calculated in PLC	-
561-RM01.P01:H	PIRCSA	ducting ahead mill	control loop C	pressure measurement	mbar	-40	5	-2 :H	alarm	-	value calculated in PLC	-
561-RM01.P01:PV	PIRCSA	ducting ahead mill	control loop C	pressure measurement	mbar	-40	5		analog value	4...20mA (HART)	AI	with local display: characteristic curve (measuring): linear

Legend:	Limit values will be confirmed during commissioning											
Tag No.	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-RM01.P02:PV	PIRC	after classifier		pressure measurement	mbar	-100	0		analog value	4...20mA (HART)	AI	with local display: characteristic curve (measuring): linear
561-RM01 P03:PV	PIRC	after mill		pressure measurement	mbar	-60	0		analog value	4...20mA (HART)	AI	with local display: characteristic curve (measuring): linear
561-RM01.T01:H	TIRSA	ducting ahead mill	ahead mill	temperature measurement	°C	0	350	:H	alarm	-	value calculated in PLC	
561-RM01.T01:PV	TIRSA	ducting ahead mill	ahead mill	temperature measurement	°C	0	350		analog value	4...20mA (HART)	AI	
561-RM01.T01:M	TIRSA	ducting ahead mill	ahead mill	temperature measurement	°C	0	350	:HH	stop hot gas generator	-	value calculated in PLC	
561-RM01.T02:H	TIRCSA	ducting after mill	control loop A	temperature measurement	°C	0	200	:H	alarm & open fresh air damper	-	value calculated in PLC	
561-RM01.T02:PV	TIRCSA	ducting after mill	control loop A	temperature measurement	°C	0	200		analog value	4...20mA (HART)	AI	
561-RM01 T02:M	TIRCSA	ducting after mill	control loop A	temperature measurement	°C	0	200	:HH	(after 4-20 min, 120°C) stop of mill main drive	-	value calculated in PLC	-
561-RM01 T02:L	TIRCSA	ducting after mill	control loop A	temperature measurement	°C	0	200	:L	no start release for mill main drive	-	value calculated in PLC	
561-SR01.T01:PV	TISA	classifier motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-SR01.T01:H	TISA	classifier motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-SR01.T01:M	TISA	classifier motor	winding	temperature measurement	°C	0	...	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-SR01 T02:M	TISA	classifier motor	winding	temperature measurement	°C	0	...	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-SR01 T02:H	TISA	classifier motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-SR01.T02:PV	TISA	classifier motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-SR01 T03:PV	TISA	classifier motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-SR01.T03:H	TISA	classifier motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-SR01.T03:M	TISA	classifier motor	winding	temperature measurement	°C	0	...	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-SR01.T04:H	TISA	classifier motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-SR01.T04:PV	TISA	classifier motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-SR01.T04:M	TISA	classifier motor	winding	temperature measurement	°C	0	...	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-SR01.T05:M	TISA	classifier motor	winding	temperature measurement	°C	0	...	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-SR01.T05:PV	TISA	classifier motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-SR01.T05:H	TISA	classifier motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-SR01.T06:PV	TISA	classifier motor	winding	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-SR01 T06:M	TISA	classifier motor	winding	temperature measurement	°C	0	...	160 :HH	stop of mill main drive	-	value calculated in PLC	
561-SR01.T06:H	TISA	classifier motor	winding	temperature measurement	°C	0	...	130 :H	alarm	-	value calculated in PLC	
561-SR01.T07:M	TISA	classifier motor	bearing	temperature measurement	°C	0	...	90 :HH	stop of mill main drive	-	value calculated in PLC	
561-SR01.T07:H	TISA	classifier motor	bearing	temperature measurement	°C	0	...	85 :H	alarm	-	value calculated in PLC	
561-SR01.T07:PV	TISA	classifier motor	bearing	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-SR01 T08:H	TISA	classifier motor	bearing	temperature measurement	°C	0	...	85 :H	alarm	-	value calculated in PLC	
561-SR01 T08:PV	TISA	classifier motor	bearing	temperature measurement	°C	0	...		analog value	4...20mA	AI	
561-SR01 T08:M	TISA	classifier motor	bearing	temperature measurement	°C	0	...	90 :HH	stop of mill main drive	-	value calculated in PLC	
561-SR01.T09:M	TISA	classifier shaft	top bearing 1	temperature measurement	°C	0	200	90 :HH	alarm & stop of classifier drive	-	value calculated in PLC	
561-SR01.T09:PV	TISA	classifier shaft	top bearing 1	temperature measurement	°C	0	200		analog value	4...20mA	AI	
561-SR01.T09:H	TISA	classifier shaft	top bearing 1	temperature measurement	°C	0	200	80 :H	alarm	-	value calculated in PLC	
561-SR01.T10:H	TISA	classifier shaft	top bearing 2	temperature measurement	°C	0	200	80 :H	alarm	-	value calculated in PLC	
561-SR01.T10:M	TISA	classifier shaft	top bearing 2	temperature measurement	°C	0	200	90 :HH	alarm & stop of classifier drive	-	value calculated in PLC	
561-SR01.T10:PV	TISA	classifier shaft	top bearing 2	temperature measurement	°C	0	200		analog value	4...20mA	AI	
561-SR01.T11:M	TISA	classifier shaft	lower bearing 1	temperature measurement	°C	0	200	130 :HH	alarm & stop of classifier drive	-	value calculated in PLC	
561-SR01.T11:H	TISA	classifier shaft	lower bearing 1	temperature measurement	°C	0	200	110 :H	alarm	-	value calculated in PLC	
561-SR01.T11:PV	TISA	classifier shaft	lower bearing 1	temperature measurement	°C	0	200		analog value	4...20mA	AI	
561-SR01.X01:RDY	XS	classifier drive	frequency converter	signal					ready - relay	Profinet	BUS	
561-SR01.X02:R	XS	classifier drive	frequency converter	signal					running	Profinet	BUS	
561-SR01.X03:F	XS	classifier drive	frequency converter	signal					fault	Profinet	BUS	
561-SR01.X04:PV	XI	classifier drive	frequency converter	signal					reference voltage	Profinet	BUS	
561-SR01.X05:SP	XI	classifier drive	frequency converter	signal					spedd reference	Profinet	BUS	
561-SR01.X06:PV	XI	classifier drive	frequency converter	signal					speed	Profinet	BUS	

Legend:	Limit values will be confirmed during commissioning												
Tag No,	Code	Designation			Measurement			Limit	Function	I/O PLC	I/O PLC	Comment
		Used for Machinery / Equipment	Location	Device (What)	Unit (Phys)	Span min.	Span max.					
561-SR01.X07:PV	XI	classifier drive	frequency converter	signal					current	Profinet	BUS	
561-SR01.X08:D	XS	classifier drive	frequency converter	signal					start / stop	Profinet	BUS	
561-SR01.X09:D	XS	classifier drive	frequency converter	signal					forward / reverse	Profinet	BUS	
561-SR01.X10:D	XS	classifier drive	frequency converter	signal					reset	Profinet	BUS	
561-SR01.X11:D	XS	classifier drive	frequency converter	signal					ACC / DEC time set	Profinet	BUS	
561-SR01.X12:D	XS	classifier drive	frequency converter	signal					constant speed 1	Profinet	BUS	
561-SR01.X13:D	XS	classifier drive	frequency converter	signal					digitalinterlock	Profinet	BUS	
561-SR01.X14:RDY	XS	classifier drive	frequency converter	signal					ready	Profinet	BUS	
561-SR01.X15:R	XS	classifier drive	frequency converter	signal					running	Profinet	BUS	
561-WP01.S01:PV	SIC	water injection, pump	frequency converter	speed measurement	%	0	100		analog value	4...20mA	AI	
561-WP01.S02:SP	SETPOINT	water injection, pump	frequency converter	speed control	%				analog value	4...20mA	AO	input by operator in DCS
561-WP01.T01:PLS	TS	water injection, pump	drive, winding	temperature measurement	°C	0	150	:H	stop of water injection pump		-	evaluation in frequency converter
561-WP01.T02:M	TSA	water injection, pump	stator protector	temperature measurement	°C	0	100	x + 10	stop of water injection pump	-	value calculated in PLC	-
561-WP01.T02:H	TSA	water injection, pump	stator protector	temperature measurement	°C	0	100	x + 5 :H	alarm	-	value calculated in PLC	-
561-WP01.T02:PV	TSA	water injection, pump	stator protector	temperature measurement	°C	0	100		analog value	4...20mA	AI	x: maximum temperature of medium in summer
591-RF01.S01:PLS	SSA	rotary feeder		standstill monitoring	imp/min	0	150	:L	alarm & stop of drive		DI	
591-SC0A.S01:PLS	SSA	screw conveyor		standstill monitoring	imp/min	0	150	:L	alarm & stop of drive		DI	
591-SC0B.S01:PLS	SSA	screw conveyor		standstill monitoring	imp/min	0	150	:L	alarm & stop of drive		DI	
591-SC01.S01:PLS	SSA	screw conveyor		standstill monitoring	imp/min	0	150	:L	alarm & stop of drive		DI	
M31-TK01.L01:H	LISA	water injection	tank	fill level measurement				:H	stop filling	-	value calculated in PLC	
M31-TK01.L01:L	LISA	water injection	tank	fill level measurement				:L	start of filling	-	value calculated in PLC	
M31-TK01.L01:PV	LISA	water injection	tank	fill level measurement					analog value	4...20mA (HART)	AI	
M31-TK01.L01:N	LISA	water injection	tank	fill level measurement				:LL	stop of water injection pump	-	value calculated in PLC	
M31-TK01.V01:D	ZS	water injection, filling of water tank	solenoid valve	actuator				:H	fill the tank with water	NC contact	DO	

DUFFIELD ASSOCIATES
Soil, Water & the Environment

Compressed Air Consumption Data Sheet

REDECAM GROUP

Customer	GEBR. Pfeiffer Inc.	Rev.	0
Plant	Penn Mag Inc.	Date	15/06/2018
Location	Wilmington (USA)	Author	BRL
Job	C118016	Checked	MEA
Doc.	1BF1_AC-CC-01	Approved	MEA

COMPRESSED AIR CONSUMPTION

Description	Fluid	Flow [Nm3/h]	Operative pressure [bar(g)]	Flow @ Operative Pressure [Am3/h]	Remarks
Cleaning System	Compressed air	174	5,50	32,00	T = 40°C
TOTAL CONSUMPTION		174	5,50	32,00	T = 40°C
DESIGN (20% margin)		**209**	**5,50**	38,00	T = 40°C

COMPRESSOR SIZING		Remarks
Suggested compressor capacity [FAD]	261 m3/h	Compressed air delivery @ 7,5 bar(g)
		F.A.D. corrected for T=35°C, Hr=100%, h=340m

Auxiliars: Dryer, Pre/Post-filtration to reach Dew Point -20°C and Dust/Oil Requirements.
Refer to the below "Compressed Air Quality Requirments"

COMPRESSED AIR QUALITY REQUIREMENTS

	Filter CLASS
Particle Content	1
Water Content	2
Oil Content	1

DIN ISO 8573-1:2010

Class	Solid Particles: Maximum number of particles per m³ (d = particle size in µm) 0.1<d≤0.5	0.5<d≤1.0	1.0<d≤5.0	Water: Pressure Dew Point °C	°F	Oil (Aerosol, liquid and vapor) mg/m³	ppm w/w
0	As specified by equipment user or supplier and more stringent than class 1						
1	≤20,000	≤400	≤10	≤ -70	-94	≤ 0.01	≤ 0.008
2	≤400,000	≤6,000	≤100	≤ -40	-40	≤ 0.1	≤ 0.08
3	-	≤90,000	≤1,000	≤ -20	-4	≤ 1	≤ 0.8
4	-	-	≤10,000	≤ +3	38	≤ 5	≤ 4
5	-	-	≤100,000	≤ +7	45	-	-

Process Balance Sheet

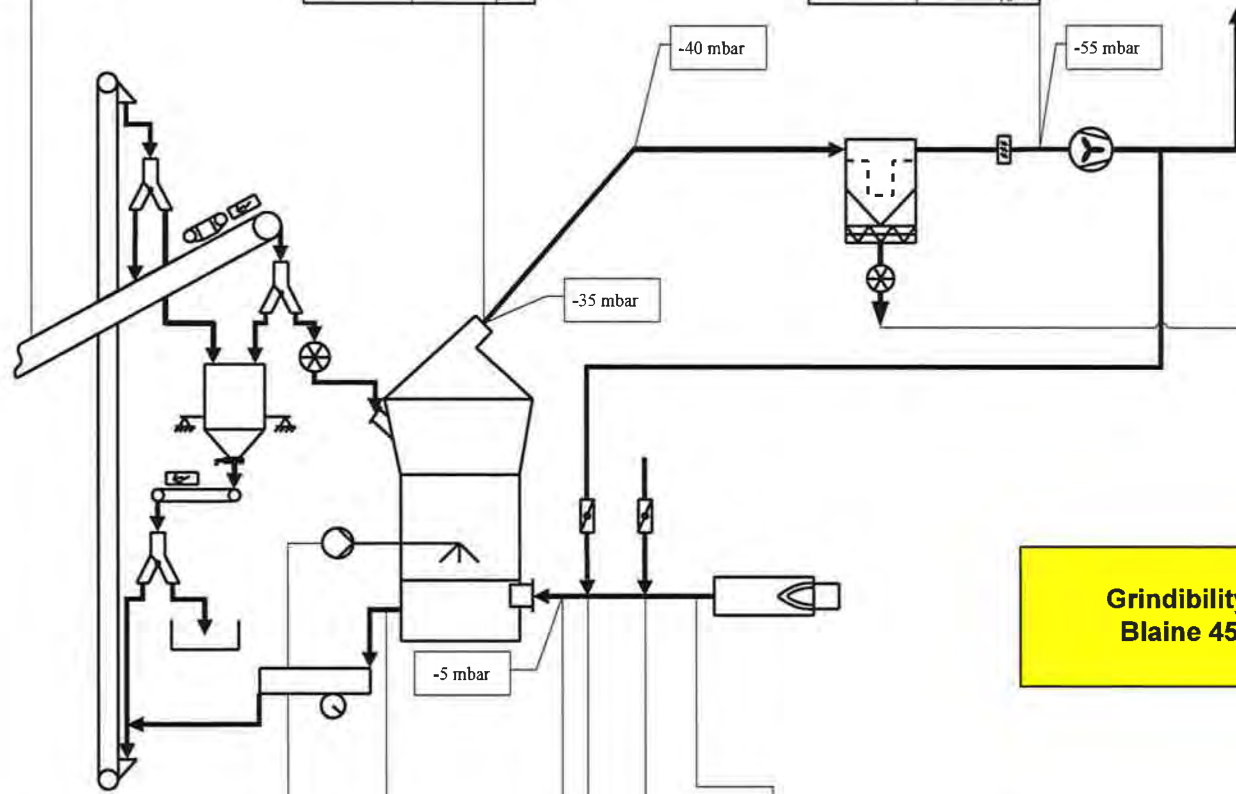
feed material		
temperature	10	°C
feed rate	31,63	t/h
moisture	6	%

classifier exhaust gas		
temperature	95	°C
gas flow	99573	nm³/h
gas flow	148796	m³/h
dust content	202	g/m³

gas fan inlet		
temperature	95	°C
gas flow	99573	nm³/h
gas flow	152125	m³/h
dust content	0	g/m³

exhaust gas		
temperature	96	°C
gas flow	17776	nm³/h
gas flow	25599	m³/h
heat flow	2,3	GJ/h
dust content	14	mg/m³
water content	70,94	g/m³
dew point	51	°C

finished product		
product	30	t/h
dust	0	t/h
moisture	0,9	%
heat flow	2,3	GJ/h
fineness	5000	cm²/g



Grindibility 28 kWh/t
Blaine 4500 ASTM

water injection		
temperature	5	°C
water rate	0	t/h

rejected material		
feed rate	15	t/h

mill inlet		
temperature	141	°C
gas flow	87862	nm³/h
gas flow	143007	m³/h
heat flow	16,8	GJ/h

recirculated gas		
temperature	96	°C
gas flow	81797	nm³/h
gas flow	117796	m³/h
heat flow	10,5	GJ/h

fresh air		
temperature	5	°C
gas flow	0	nm³/h

hot gas generator		
temperature	700	°C
gas flow	6065	nm³/h
heat flow	6,2	GJ/h
heat power	1733,6	kW

client: Wilmington, DE, USA

MVR 2500 C-4

material: Hochofenschlacke Granuliert

GEBR. PFEIFFER Progress is our tradition

file-name: 00119/483460-1503

	date	name
draw	03.04.18	bha
edit		

designation: balance sheet

AQM-4.6
Baghouses (Bin Vents) - Storage Silos

Baghouse Application

If you are using this form electronically, press F1 at any time for help

General Information

1.	Facility Name: **WALAN Specialty Construction Products, LLC**	
2.	Equipment ID Number: **Bin Vents on Two Storage Silos**	
3.	Manufacturer: **C&W Manufacturing and Sales Company**	
4.	Model: **CP-4000S**	
5.	Serial Number: **N/A**	
6.	Is the Baghouse Insulated?	☐ YES ☒ NO
7.	Design Minimum Operating Temperature: **ambient °F**	
8.	Design Maximum Operating Temperature: **ambient °F**	
9.	Are Temperature Controls Provided?	☐ YES ☒ NO
If Yes, complete the rest of Question 9. If no, proceed to Question 10.		
9.1.	Describe the Temperature Controls:	
10.	Air Flow Through Baghouse:	☐ Forced ☒ Induced ☐ Other (Specify):
11.	Direction of Flow Through Filters:	☐ Inside Out ☒ Outside In
12.	Particulate Removal Efficiency: **99.9+** %	

Attach the Manufacturer's Specification Sheet for the Baghouse and Particle Size Removal Efficiency Curve and basis of determination.

Compartment Information

13.	Number of Compartments: **1**	
14.	Number of Filters (Bags) Per Compartment: **12 cartridge filters**	
15.	Can the Compartments be Isolated for Replacement or Repair?	☐ YES ☒ NO

Gas Stream Information

16.	Maximum Inlet Volumetric Gas Flow Rate: **4000 acfm at ambient °F**
17.	Maximum Outlet Volumetric Gas Flow Rate: **4000 acfm at ambient °F**
18.	Dew Point at Maximum Moisture Content of Gas: **N/A °F**

Gas Stream Information

19. pH of Gas Handled: **N/A**

20. Dust Characteristics: (Check All That Apply)
- ☐ Sticky
- ☐ Wet
- ☐ Corrosive
- ☒ Dry
- ☐ Other (Specify):

Contaminant Information

21. Percent of Each Contaminant in the Waste Gas and Removal Efficiency

If more than five Contaminants are present, attach additional copies of this page as needed.

	Contaminant Name	Contaminant CAS Number	Percent of Waste Gas	Removal Efficiency
21.1.	**GGBFS**	**N/A**	**100 %**	**99.9+ %**
21.2.			%	%
21.3.			%	%
21.4.			%	%
21.5.			%	%

Fabric Filter (Bag) Information

22. Fabric Type:
- ☐ Felted
- ☐ Woven
- ☐ Felted-Woven
- ☐ Membrane
- ☐ PTFE Membrane
- ☐ Sintered Metal
- ☐ Ceramic Cartridge
- ☒ Other (Specify): **"spunbond"**

23. Fabric Material: **Polyester (Innovative Filtration Technology - FM0105)**

24. Maximum Continuous Filter Operating Temperature: **265 °F**

25. Clean Fabric Permeability: **18-26** scfm/ft^2 at ΔP **0.5** inches of water

26. Fabric Filter (Bag) Diameter or Width: **8 inches**

27. Fabric Filter (Bag) Length: **39 inches**

28. Effective Area Per Filter: **52.5 square inches**

29. Minimum Effective Air to Cloth Ratio: 6.35 **feet/min**

30. Maximum Effective Air to Cloth Ratio: 6.35 **feet/min**

31. Design Pressure Drop Across Baghouse: 6.0 **inches water**

32. Describe Determining Factor Fabric Filter Changing/Replacement: **Follow manufacturer's recommendations**

Attach the Manufacturer's Specification Sheet for the Fabric Filters (Bags).

Filter Cleaning Information

33. Filter Cleaning Method: ☐ Manual Cleaning ☐ Mechanical Shakers ☐ Pneumatic Shakers ☐ Bag Collapse ☐ Sonic Cleaning ☐ Reverse Air Flow ☐ Reverse Air Jet ☒ Pulse Jet ☐ Other (Specify):

If Reverse Air Jet or Pulse Jet is used, complete the rest of Question 33. If not, proceed to Question 34.

33.1. Air Pressure: N/A **psi**

33.2. Describe How Air Is Supplied to System: **WALAN Specialty Construction Products, LLC compressors will supply air with an air pressure regulator group to the air collectors located on the platforms on the filter roof. The connection is made through pneumatic valves to the ramps.**

34. Describe How Filter Cleaning Is Initiated: ☐ Manual ☒ Timer ☐ Pressure Drop ☐ Other (Specify):

Hopper Information

35. Is the Hopper Heated? ☐ YES ☒ NO

36. Is there a Hopper Vibrator? ☐ YES ☒ NO

37. Describe How Collected Material is Treated or Disposed of: **Material is recycled as product back into two stoarage silos.**

Stack Information

38. Emission Point Name: **EP-4 and EP-5**

38.1. Stack Height Above Grade: **66 feet**

38.2. Stack Exit Diameter: **1.02 feet**
(Provide Stack Dimensions If Rectangular Stack)

38.3. Is a Stack Cap Present? ☐ YES ☒ NO

38.4. Stack Configuration: ☐ Vertical ☒ Horizontal ☐ Downward-Venting ☐ Other (Specify):
(check all that apply)

38.5. Stack Exit Gas Temperature: **ambient °F**

38.6. Stack Exit Gas Flow Rate: **4000 ACFM**

38.7. Distance to Nearest Property Line: **about 50 feet**

38.8. Describe Nearest Obstruction: **Large 150' x 675' building to the west**

38.9. Height of Nearest Obstruction: **about 50 feet**

38.10. Distance to Nearest Obstruction: **about 325 feet**

Stack Information

38.11. Are Stack Sampling Ports Provided? ☐ YES ☒ NO

Monitoring and Alarm Information

39. Are There Any Alarms You Would Like the Department to Consider When Drafting the Permit? ☐ YES ☒ NO

If YES, complete the rest of Question 39. If NO, proceed to Question 40.

39.1. Describe the System Alarm(s):

If there are more than five alarms, attach additional copies of this page as needed.

	Operating Parameter Monitored	**Describe Alarm Trigger**	**Monitoring Device or Alarm Type**	**Does the Alarm Initiate an Automated Response?**
39.1.1.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.2.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.3.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.4.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.5.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:

Additional Information

40. Is There Any Additional Information Pertinent to this Application? ☐ YES ☒ NO

If YES, complete the rest of Question 40.

40.1. Describe:

AQM-4.6
Baghouses (Bin Vents)
Supporting Information

DUFFIELD ASSOCIATES
Soil, Water & the Environment

C&W Manufacturing and Sales Company - Cartridge Plus CP-Series Silo Dust Collectors Information

Cartridge Pulse

CP- Series Silo Dust Collectors

Silo Collectors

Central Collectors

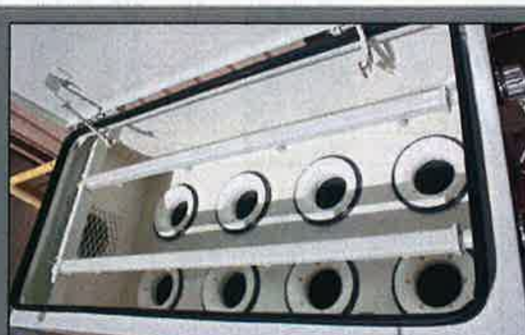
Silo Saver Systems

Transfer Packages

Slump Master 3

Sampling of Silo Collectors: CP-1335S, CP-2000S, CP-2665S, CP-3335S CP-4000S

Weigh Batcher - CP-35



Interior of CP-2665S (formerly called CP-305)

C&W Manufacturing and Sales Co.
1-800-880-DUST
www.cwmfg.com

C&W
Manufacturing and Sales
1 (800) 880-3878

C&W
Manufacturing and Sales

CP-Series
Silo Dust Collectors

General Information

C&W's CP-Series of Silo Dust Collectors offer you Pulse-Jet Technology combined with our cartridge filters to provide a highly effective, yet inexpensive solution for dust control. Our CP Silo Collectors are engineered by dust control specialists with careful attention to efficiency and user-friendliness. Also, available are weigh batcher collectors and round silo collectors.

Benefits	Features:
Easy to Maintain	Tool-less Exchange of Filter Media
	Top Entry for Clean Side Filter Exchange
Efficiency	99.99% Filtration Efficiency*
Efficiency, Compact	Vertical, Wide-Pleat Cartridges
Performance	Inlet Air Regulator and Moisture Separator
	Test Ports for Monitoring Filter Media
Reliable, Easy to Operate	Solid State Adjustable Timers w/ LED Display
Long-Lasting, Durable	12 Gauge, Heavy Duty Steel Construction

Options

- Flow Sensor Switch
- Pressure Switch for Automatic Cleaning
- Mini-helic Gauge
- Custom Designs and Sizes
- Silo Anti-Overfill System
- Special Mounting Flange for Adapting to Existing Flange
- Blower Packages, Standard or Custom-Built
- Special Filter Media
- Pressure Relief Valves and Bin Indicators

Most Popular add-on:

Flow switch: Detects the flow of air through the silo and turns the cleaning cycle on while silo is being filled. When the flow of material into the silo stops, unit automatically turns the cleaning cycle off.

Specs

Specifications	CP-35	CP-70	CP-88	CP-1335S	CP-2000S	CP-2665S
Total Filtration Area (sq. ft.)	45	90	90	210	315	420
Number of Cartridges	2	4	4	4	6	8
Ait to Cloth Ratio	4.78	4.78	4.78	6.36	6.35	6.35
Cartridge Size	8" x 19"	8"x19"	8" x 19"	8" x 39"	8" x 39"	8" x 39
Static Pressure Drop	6" W.C.	6" W.C.	6" W.C.	6" W.C.	6" W.C.	6" W.C.
Compressed Air Req.	2	2	2	2	2	3
CFM Recommended	216	432	432	1335	2000	2665
Min. Design Efficiency*	99.99%	99.99%	99.99%	99.99%	99.99%	99.99%
Cleaning Mechanism	Pulse Jet	Pulse Jet	Pulse Jet	Pulse Jet	Pulse Jet	Pulse Jet

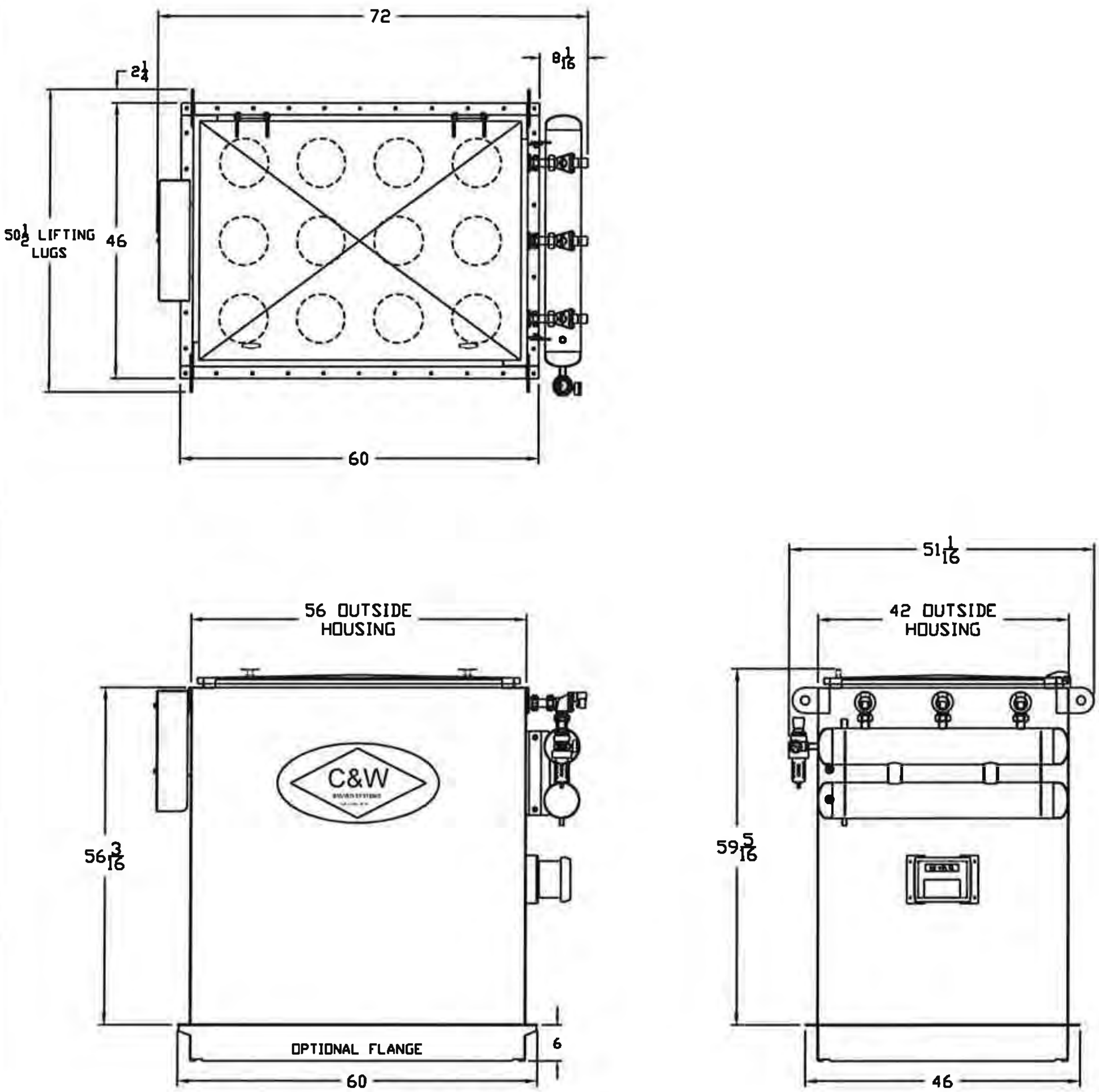
Specifications	CP-3335S	CP-4000S	CP-5000S
Total Filtration Area (sq. ft.)	525	630	787.5
Number of Cartridges	10	12	15
Air to Cloth Ratio	6.35	6.35	6.35
Cartridge Size	8" x 39"	8" x 39"	8" x 39"
Static Pressure Drop	6" W.C.	6" W.C.	6" W.C.
Compressed Air Required	4	5	5
CFM Recommended	3335	4000	5000
Min. Design Efficiency*	99.99%	99.99%	99.99%
Cleaning Mechanism	Pulse Jet	Pulse Jet	Pulse Jet

* At Standard Test Conditions

Galvanized or Stainless Steel units are available for specialized applications.

C&W Manufacturing
P.O. Box 908
Crowley, Texas 76036
1-800-880-DUST
www.cwmfg.com

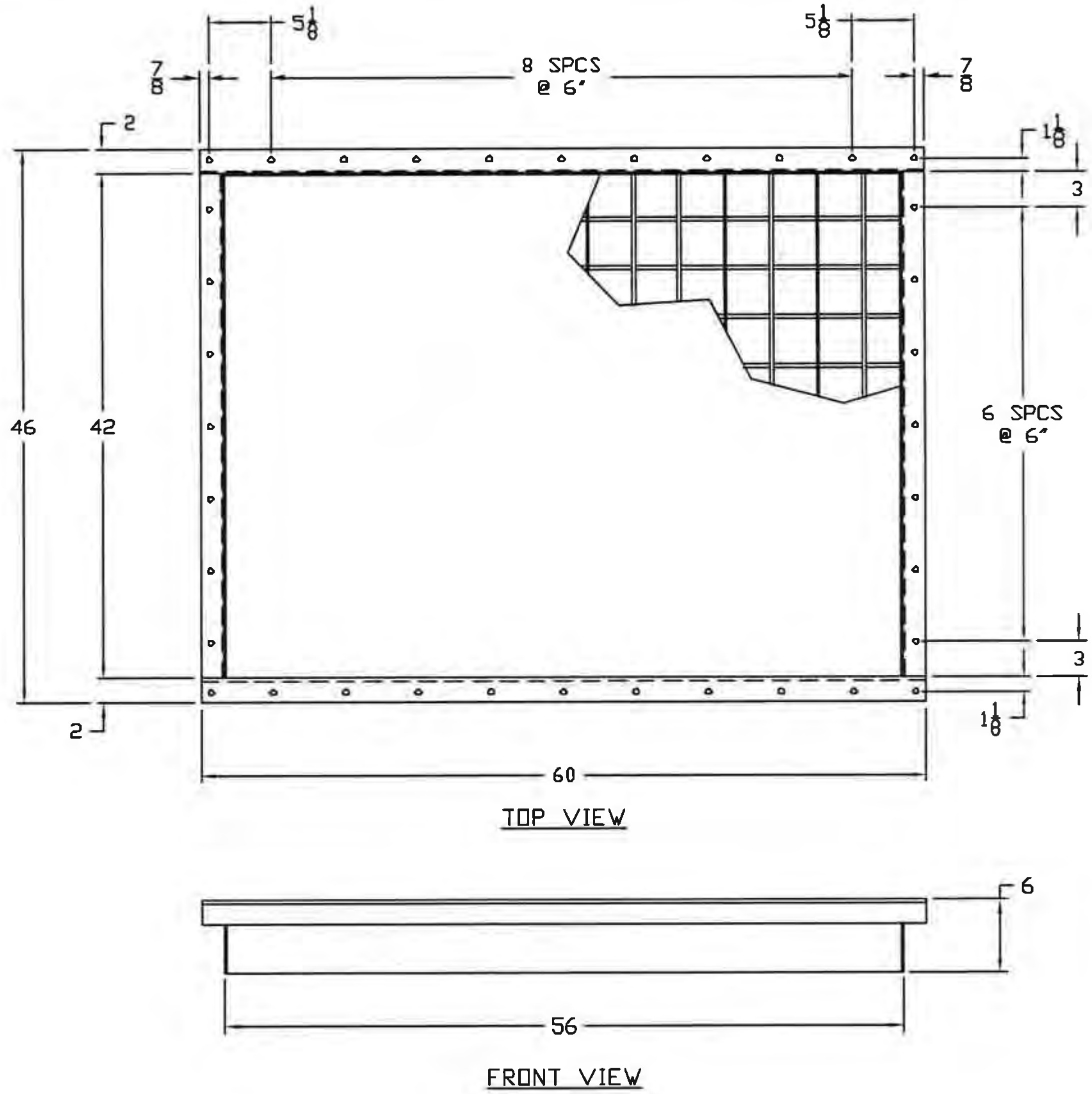
DRAW/NEWEST/GA/CP-4000S



CP-4000 SILO CARTRIDGE PULSE JET COLLECTOR
GENERAL ARRANGEMENT

C & W MFG. & SALES CO.
6933 SHELMOR RD.
ALVARADO, TX 76009 (817)790-5000

DRAW/FOUNDATION/FLANGE-CP-450



CP-300, CP-450-1239, CP-760 MOUNT FLANGE ASSY

C & W MFG. & SALES CO.
6933 SHELMOR RD.
ALVARADO, TX 76009 (817)790-5000

iFIL

Innovative Filtration Technology

iFIL USA, LLC
USA Manufacturing & Sales Division

1801 W Vine Street
Harrisonville, MO 64701
USA

Main: 816-380-8066
Fax: 888-849-1362

Technical Data Sheet

Filter media:	**FM0103**
Construction:	100% Polyester spunbond media with point bond finish
Color:	White
Weight:	7.7 oz/yd^2 (260 g/m^2)
Thickness:	0.024 inch (0.66 mm)
Permeability:	18 – 26 ft^3/ft^2/min @ 1/2" H_2O – ASTM D 737 9.1 – 13.2 cm^3/cm^2/sec @ 125 Pa – ASTM D 737 86 – 125 l/dm^2/min @ 200 Pa – DIN 53887
Max. Operating Temperature:	265°F (130°C)
Tensile Strength:	200 lbs/2-in. strip (91 kg/5 cm strip) – MD 125 lbs/2-in. strip (57 kg/5 cm strip) – CMD
Mullen Strength:	350 lbs/in^2 (24.6 kg/cm^2)
Dust Release Properties:	Very good
Filtration Efficiency:	> 99.9 % for particle size range between 0.2 μ- 2.0 μ
BGIA-Filter Class:	"M" – per Test Method: DIN EN 60335–2–69
FDA conformity:	FDA - 21 CFR 177.1630 30.31 LFGB

AQM-4.6
Cartridge Filters - Dustless Loadout Chutes for Truck Loading

DNREC – Division of Air Quality
Application to Construct, Operate, or Modify Stationary Sources

Baghouse Application

If you are using this form electronically, press F1 at any time for help

General Information

1.	Facility Name: **WALAN Specialty Construction Products, LLC**
2.	Equipment ID Number: **Cartridge Filters for Two Dustless Loadout Chutes**
3.	Manufacturer: **DCL, Inc.**
4.	Model: **Compact Filter Module (CFM) - Model CFM330**
5.	Serial Number: **N/A**
6.	Is the Baghouse Insulated? ☐ YES ☒ NO
7.	Design Minimum Operating Temperature: **ambient °F**
8.	Design Maximum Operating Temperature: **ambient °F**
9.	Are Temperature Controls Provided? ☐ YES ☒ NO
If Yes, complete the rest of Question 9. If no, proceed to Question 10.	
9.1.	Describe the Temperature Controls:
10.	Air Flow Through Baghouse: ☐ Forced ☒ Induced ☐ Other (Specify):
11.	Direction of Flow Through Filters: ☐ Inside Out ☒ Outside In
12.	Particulate Removal Efficiency: **99.9+ %**
Attach the Manufacturer's Specification Sheet for the Baghouse and Particle Size Removal Efficiency Curve and basis of determination.	

Compartment Information

13.	Number of Compartments: **1**
14.	Number of Filters (Bags) Per Compartment: **Seven (model TL-DCL) cartridge filters**
15.	Can the Compartments be Isolated for Replacement or Repair? ☐ YES ☒ NO

Gas Stream Information

16.	Maximum Inlet Volumetric Gas Flow Rate: **1400 acfm at ambient °F**
17.	Maximum Outlet Volumetric Gas Flow Rate: **1400 acfm at ambient °F**
18.	Dew Point at Maximum Moisture Content of Gas: **N/A °F**

Gas Stream Information

19. pH of Gas Handled: **N/A**

20. Dust Characteristics: (Check All That Apply)
- ☐ Sticky
- ☐ Wet
- ☐ Corrosive
- ☒ Dry
- ☐ Other (Specify):

Contaminant Information

21. Percent of Each Contaminant in the Waste Gas and Removal Efficiency

If more than five Contaminants are present, attach additional copies of this page as needed.

	Contaminant Name	Contaminant CAS Number	Percent of Waste Gas	Removal Efficiency
21.1.	**GGBFS**	**N/A**	**100 %**	**99.9+** %
21.2.			**%**	%
21.3.			**%**	%
21.4.			**%**	%
21.5.			**%**	%

Fabric Filter (Bag) Information

22. Fabric Type:
- ☐ Felted
- ☐ Woven
- ☐ Felted-Woven
- ☐ Membrane
- ☐ PTFE Membrane
- ☐ Sintered Metal
- ☐ Céramic Cartridge
- ☒ Other (Specify): **"spunbond" polyester**

23. Fabric Material: **Polyester**

24. Maximum Continuous Filter Operating Temperature: **180 °F**

25. Clean Fabric Permeability: **15-30** scfm/ft^2 at ΔP **0.5** inches of water

26. Fabric Filter (Bag) Diameter or Width: **8 inches**

27. Fabric Filter (Bag) Length: **22 inches**

28. Effective Area Per Filter: **48.4 square feet**

29. Minimum Effective Air to Cloth Ratio: 4.3:1 **feet/min**

30. Maximum Effective Air to Cloth Ratio: 4.3:1 **feet/min**

31. Design Pressure Drop Across Baghouse: NA **inches water**

32. Describe Determining Factor Fabric Filter Changing/Replacement: **Follow manufactuers recommendations**

Attach the Manufacturer's Specification Sheet for the Fabric Filters (Bags).

Filter Cleaning Information

33. Filter Cleaning Method: ☐ Manual Cleaning ☐ Mechanical Shakers ☐ Pneumatic Shakers ☐ Bag Collapse ☐ Sonic Cleaning ☐ Reverse Air Flow ☐ Reverse Air Jet ☒ Pulse Jet ☐ Other (Specify):

If Reverse Air Jet or Pulse Jet is used, complete the rest of Question 33. If not, proceed to Question 34.

33.1. Air Pressure: 80-100 **psi**

33.2. Describe How Air Is Supplied to System: **WALAN Specialty Construction Products, LLC compressors will supply air with an air pressure regulator group to the air collectors located on the platforms on the filter roof. The connection is made through pneumatic valves to the ramps.**

34. Describe How Filter Cleaning Is Initiated: ☐ Manual ☒ Timer ☐ Pressure Drop ☐ Other (Specify):

Hopper Information

35. Is the Hopper Heated? ☐ YES ☒ NO

36. Is there a Hopper Vibrator? ☐ YES ☒ NO

37. Describe How Collected Material is Treated or Disposed of: **Material is recycled into loadout chute as product.**

Stack Information

38. Emission Point Name: **EP-6 and EP-7**

38.1. Stack Height Above Grade: **22 feet**

38.2. Stack Exit Diameter: **0.667 feet**
(Provide Stack Dimensions If Rectangular Stack)

38.3. Is a Stack Cap Present? ☐ YES ☒ NO

38.4. Stack Configuration: ☐ Vertical ☒ Horizontal ☐ Downward-Venting ☐ Other (Specify):
(check all that apply)

38.5. Stack Exit Gas Temperature: **ambient °F**

38.6. Stack Exit Gas Flow Rate: **1400 ACFM**

38.7. Distance to Nearest Property Line: **about 50 feet**

38.8. Describe Nearest Obstruction: **Large 150' x 675' building to the west**

38.9. Height of Nearest Obstruction: **about 50 feet**

38.10. Distance to Nearest Obstruction: **about 325 feet**

Stack Information

38.11. Are Stack Sampling Ports Provided? ☐ YES ☒ NO

Monitoring and Alarm Information

39. Are There Any Alarms You Would Like the Department to Consider When Drafting the Permit? ☐ YES ☒ NO

If YES, complete the rest of Question 39. If NO, proceed to Question 40.

39.1. Describe the System Alarm(s):

If there are more than five alarms, attach additional copies of this page as needed.

	Operating Parameter Monitored	**Describe Alarm Trigger**	**Monitoring Device or Alarm Type**	**Does the Alarm Initiate an Automated Response?**
39.1.1.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.2.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.3.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.4.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:
39.1.5.			☐ Visual ☐ Auditory ☐ Automatic (Remote Monitoring) ☐ Other	☐ NO ☐ YES Describe:

Additional Information

40. Is There Any Additional Information Pertinent to this Application? ☐ YES ☒ NO

If YES, complete the rest of Question 40.

40.1. Describe:

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AQM-4.6
Cartridge Filters
Supporting Information

DUFFIELD ASSOCIATES
Soil, Water & the Environment

DCL, Inc. - Model CFM330 Dustless Loadout Chute Manifold with TL-DCL Pleated Cartridge Filters Information

Dust Control and Loading Systems Inc

Leaders in Innovative Bulk Loading Systems Design

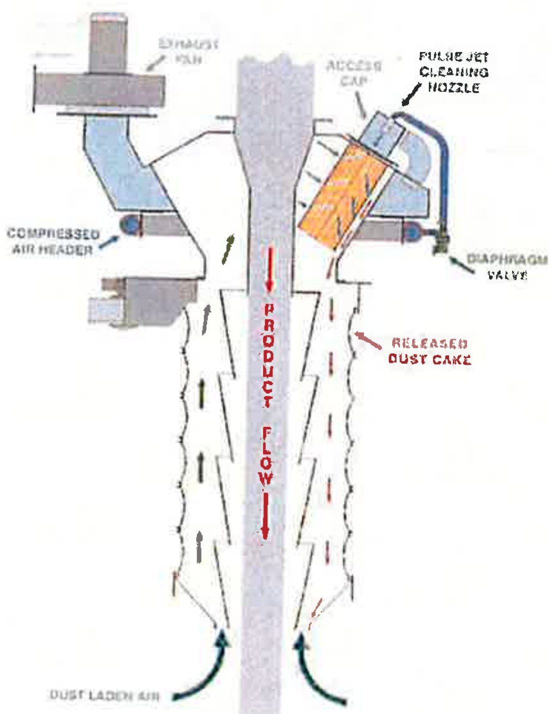
Loading Spouts

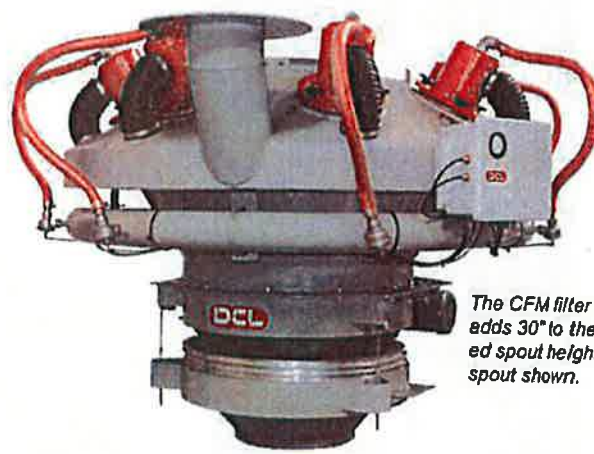
LOADING SPOUTS

EV enclosed vehicle or OV open vehicle spouts provide excellent dust free loading performance for trucks and railcars. DCL has incoporated 20 years of experience in bulk loading of dry materials into this new service friendly retractable spout design. The low profile feature makes this spout the best choice when faced with limited space conditions.

Model EV24 loading spout shown in retracted position.

- Easy access to drive components.
- Three cable hoist system providing maximum spout stability.
- Shipped completely assembled and tested.
- Slack cable and drive limits factory set.
- Internal stacking product flow control cones are constructed from urethane, AR steel or optional stainless steel.
- Wide selection of flexible outer spout sleeve materials for high and low temperature applications provided with heavy duty aluminum stacking type support rings.
- EV enclosed vehicle or OV open vehicle discharge configuration.
- Vertical travels up to 18 feet.
- Loading capacities of up to 450 cu ft/min of fine aerated materials.
- Collar style dust outlet for connection to a free standing dust collector or vent through frame configuration for connection to an inline filter module.





The CFM filter module adds 30" to the retracted spout height. UN800 spout shown.

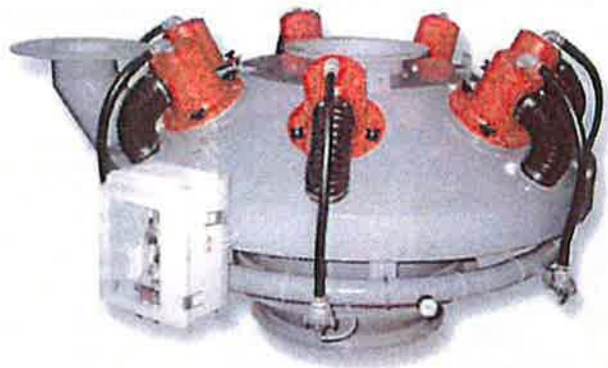
SPOUT / CFM COMBINATION

DCL's new Compact Filter Module provides the industries lowest profile filter/loading spout combination. The CFM filter module can be used inline with loading spouts for dust control during the loading of dry, dusty materials into open or enclosed vehicles. The dust collected is re-entrained with the material being loaded which makes the CFM Filter Module an ideal and cost effective package. When comparing the new design of the CFM filter module to free standing units, the savings in space and money become apparent with the elimination of expensive duct work, discharge air locks and hopper discharge systems. For detailed CFM specifications see flier PUBc-0609-DCFM.

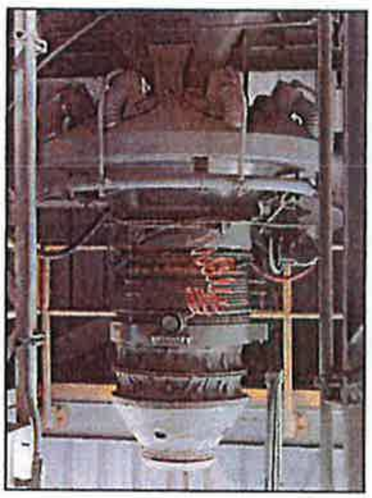
Compact Filter Module

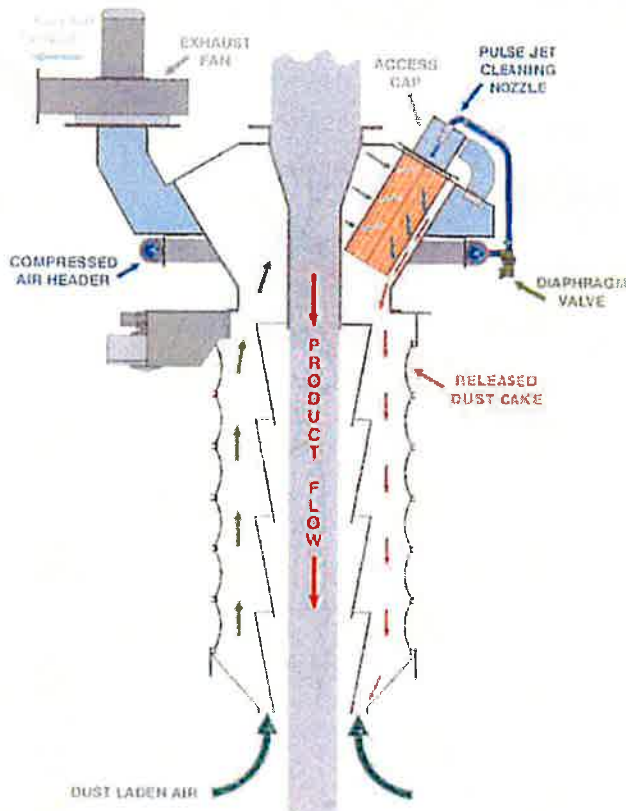
APPLICATION

The Compact Filter Module is ideal for use inline at any bulk material transfer point requiring dust control. It's low profile configuration also makes the CFM the best choice for inline filteration when intergraded with a DCL Loading Spout. The flow tube can be eliminated making this unit suitable as a bin vent for any tight headroom conditions.



When used as an inline filter, product flows through a central flow tube while isolated from the upward dust entrained airflow. The collected dust is deposited back to the material being handled making the Compact Filter Module an ideal cost effective package especially when compared to a free standing dust collector utilizing duct work, discharge air lock, and often a means to convey the dust back to the system.

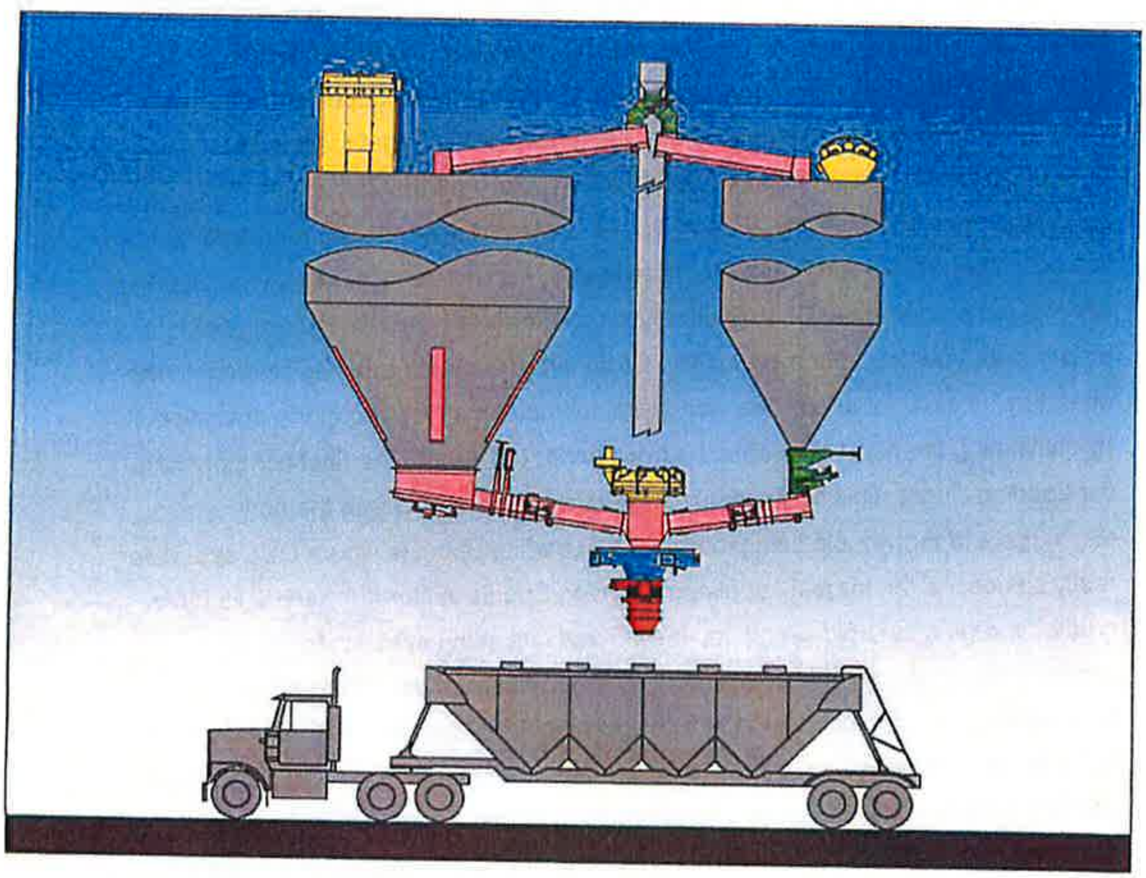




FEATURES

The exhaust fan can be directly mounted to the assembly eliminating the need for a remote fan placement. The unique design provides internal velocities that are lower than what is normally expected from conventional designs resulting in less load on the filtration media. The filter elements are automatically cleaned during operation with a conventional 80 PSI pulse jet system. The unit can be provided with a final clean feature that is activated at the end of each loading cycle fully cleaning all elements, eliminating residuals.

DUST CONTROL AND LOADING SYSTEMS
(https://www.dclinc.com/)

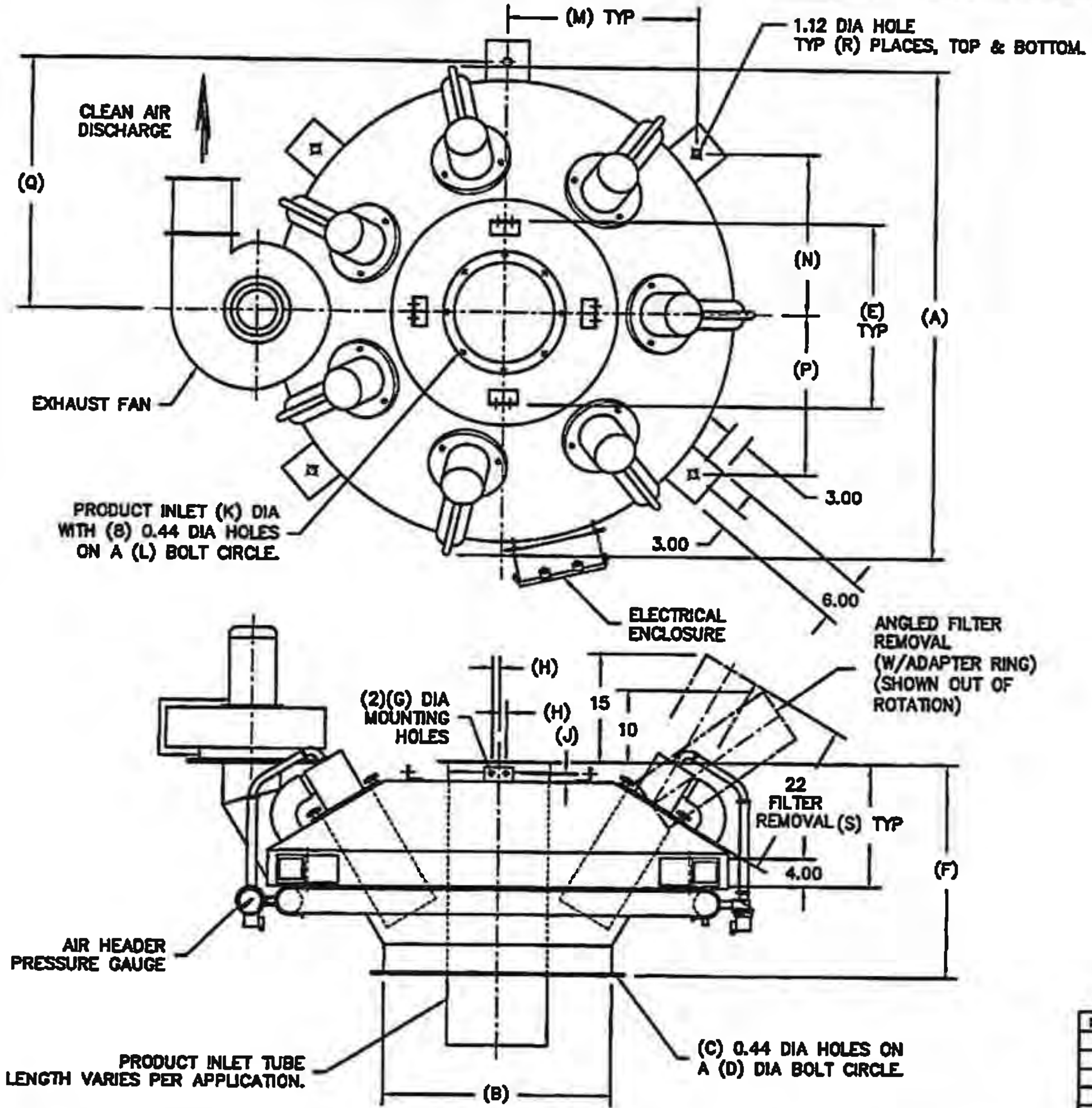


TRUCK LOADING

There are two major variables to truck loading, open and enclosed. The choice between the two is determined by what product you're loading and what type of truck. For example loading a tanker truck with cement varies from loading aggregates into a gravel train truck. The enclosed tanker already has a contained area and it's a matter of removing air inside the tanker that is displaced by the product being loaded. With an open style truck the Loading Spout must create its own containment. This is done by using a barrier skirt at the discharge of the Loading Spout. You must still remove the displaced air but the discharge skirt is a much smaller area than the inside of a tanker.

Providing a loading system to meet your needs encompasses moving product from your storage area (silo, dome, flat bottom storage) to the truck. A series of flow aids for your storage can be provided by DCL with our Fluidized Bin bottom or Fluidized Air Pads. The next critical component is the control valves. Whether it is maintenance, complete on/off, or portioning flow control we offer the complete line. Should you need to divert flow we also offer diverters and triverters. Actual conveying of material can be done with Air gravity conveyors (airslide) for powders or drag, screw or belt conveyors for other materials. DCL manufactures the Air Gravity conveyors but for other choices we have close partnerships with manufactures in the industry. Loading systems require dust control. Achieved by In-line collectors (CFM – compact filter modules) or bag house style collectors. Both offered and produced by DCL. Loading Spout Positioners provide flexibility and efficiency to your load out system. The Positioner moves the Loading Spout into the operators' desired location. This works well to improve the speed of the operation by eliminating the need to re-spot the truck under the spout. The final component is the Loading Spout. This component bridges the distance between the conveyor discharge and the vehicle being loaded. The Loading Spout is where DCL expertise really shines. As the largest supplier of Loading Spouts in North America we have created a reputation of knowing application and designing systems to accommodate the toughest challenges. Each terminal is unique in its layout, functionality, and product being loaded. Low height, multiple sizes of vehicles, and hatch location of vehicles require a supplier that understands what it takes to meet you goals. Remember DCL offers full controls of load out systems and can offer any degree of automation you desire. Ask about our SmartLoader and learn ways you can outperform your competitors.

MODEL	EST WGT	# FILTER	CLOTH AREA	FILTER LGTH	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S
CFM155	520 LB*	4	156 SQ FT	18.00	64.00	24.00	12	25.88	22.13	30.00	0.56	1.00	1.13	14.00	16.00	19.94	–	23.75	31.06	3	17.31
CFM195	520 LB*	5	195 SQ FT	18.00	64.00	24.00	12	25.88	22.13	30.00	0.56	1.00	1.13	14.00	16.00	19.94	–	23.75	31.08	3	17.31
CFM270	700 LB*	7	273 SQ FT	18.00	68.00	32.00	12	34.00	30.00	30.00	0.56	1.00	1.13	14.00	16.00	26.81	22.50	22.50	–	4	17.38
CFM330	700 LB*	7	329 SQ FT	22.00	68.00	32.00	12	34.00	30.00	30.00	0.56	1.00	1.13	14.00	16.00	26.81	22.50	22.50	–	4	17.38
CFM470	1600 LB*	10	470 SQ FT	22.00	90.00	38.00	16	40.00	45.00	43.00	0.69	3.00	2.00	16.00	18.00	31.81	31.81	31.81	–	4	22.75
CFM660	1600 LB*	14	658 SQ FT	22.00	100.00	C/F	C/F	C/F	50.00	54.50	0.75	7.00	2.00	C/F	C/F	C/F	C/F	C/F	C/F	C/F	C/F



GENERAL NOTES:

ALL INDUSTRIAL VOLTAGES AVAILABLE FOR ELECTRICAL COMPONENTS.

PREWIRING OF ELECTRICAL COMPONENTS TO CFM HOUSING JUNCTION BOX OPTIONAL.

ELECTRICAL ENCLOSURES NEMA 4 STANDARD. NEMA 4X, 7, AND 9 OPTIONAL.

METAL SURFACES ARE POWER TOOL CLEANED, PRIMED, AND FINISHED WITH INDUSTRIAL ENAMEL.

AIR REQUIREMENTS FOR COMPRESSED AIR HEADER ARE (16) CFM @ (80–100) PSI.

SPECIFICATIONS AND/OR DIMENSIONAL DATA ARE SUBJECT TO CHANGE. CONSULT DCL FOR CERTIFIED DRAWINGS.

C/F = CONSULT FACTORY

*ESTIMATED WEIGHTS DO NOT INCLUDE EXHAUST FAN, OPTIONAL EQUIPMENT OR ELECTRICAL COMPONENTS.

REV	DATE	BY
D	02-20-12	TLC
C	04-23-02	JNM
B	09-28-00	JNM
A	10-16-97	JNM

DCL SPECIALISTS IN ADVANCED DESIGN LOADING SYSTEMS

SCALE NONE
DRAWN BY JNM
CHECKED BY ENG
DATE 03-04-97

TITLE CFM COMPACT FILTER MODULE

CFM-10001

DATA SHEET

TL-DCL – Pleated Filter Element

Top load style pleated filter element (PFE).*
Unique, aerodynamically designed high-flow orifice develops 30% more cleaning energy.**
Fits DCL Compact Filter Module (CFM) and Ventilation Module (VMV & VML) designs.

Standard Configuration

- Molded top boot and bottom puck made from bright white soft polyurethane eliminates metal end caps, making the filter intrinsically safe, with no possibility of isolated metal components.
- Molded top features a unique molded in place gasket design that eliminates separate glued-in-place gaskets.
- Polyurethane, polypropylene core and polyester components are safe for food contact (Per FDA 21 CFR 177).
- 3.89" (99-mm) inner core diameter
- 1.89" (48-mm) nominal pleat depth
- Standard Pleat Count – 90 Pleats
- Polypropylene Inner Core
- Standard design rated to 180°F operating temperature.

Configuration Options

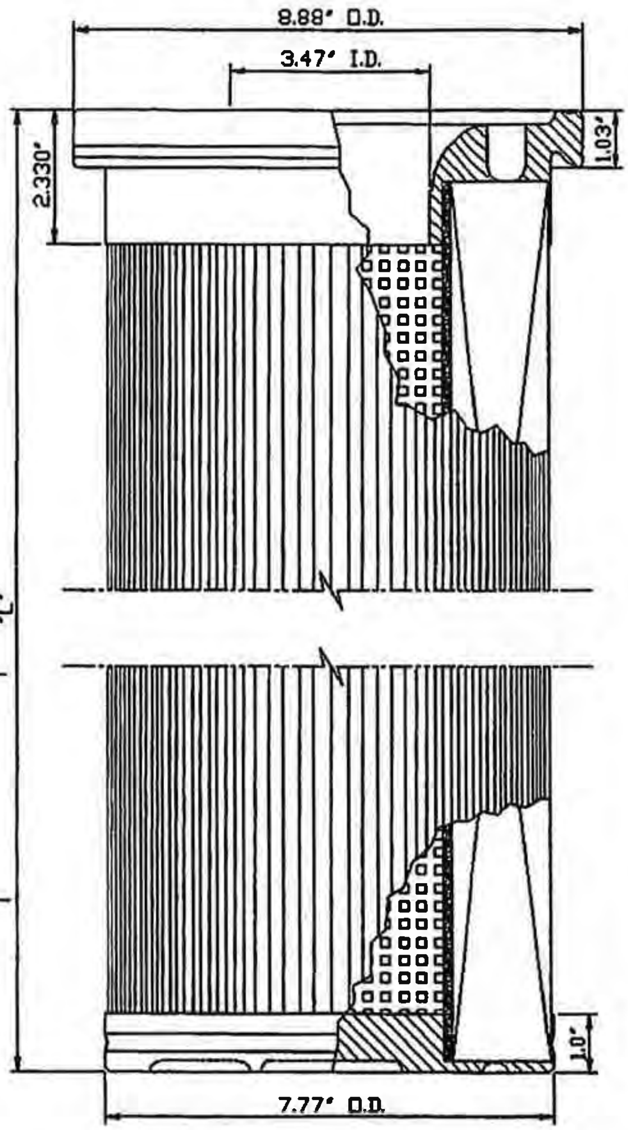
- ***Free Flow bottom design*** available in 45 pleat count
- Galvanized and SS Perforated Metal (Spiral Formed) – For temperatures >180°F and for high pressure / vacuum applications.
- Grounded designs (with conductive media, metal core and stainless steel ground wire).

Filter Media

- Base filter media: 100% spunbond polyester (SBPE)
- Filtration Efficiency: > 99.9 % for particle size range between 0.2 μ - 2.0 μ - BGIA Dust Class "M" rating
- Weight: 8.0 oz/yd2 (260 g/m2)
- Permeability: 15-30 acfm Frazier permeability at 0.5" w.g. dP
- Mullenburst Stength: 350 psi

Media Designation	Media Description
FM0103	100% spunbond polyester (SBPE)
FM0105	100% SBPE with hydrophobic & oliophobic finish
FM0109	100% SBPE with conductive grid
FM0203	100% SBPE with ePTFE membrane
FM0209	100% SBPE with conductive grid & ePTFE membrane

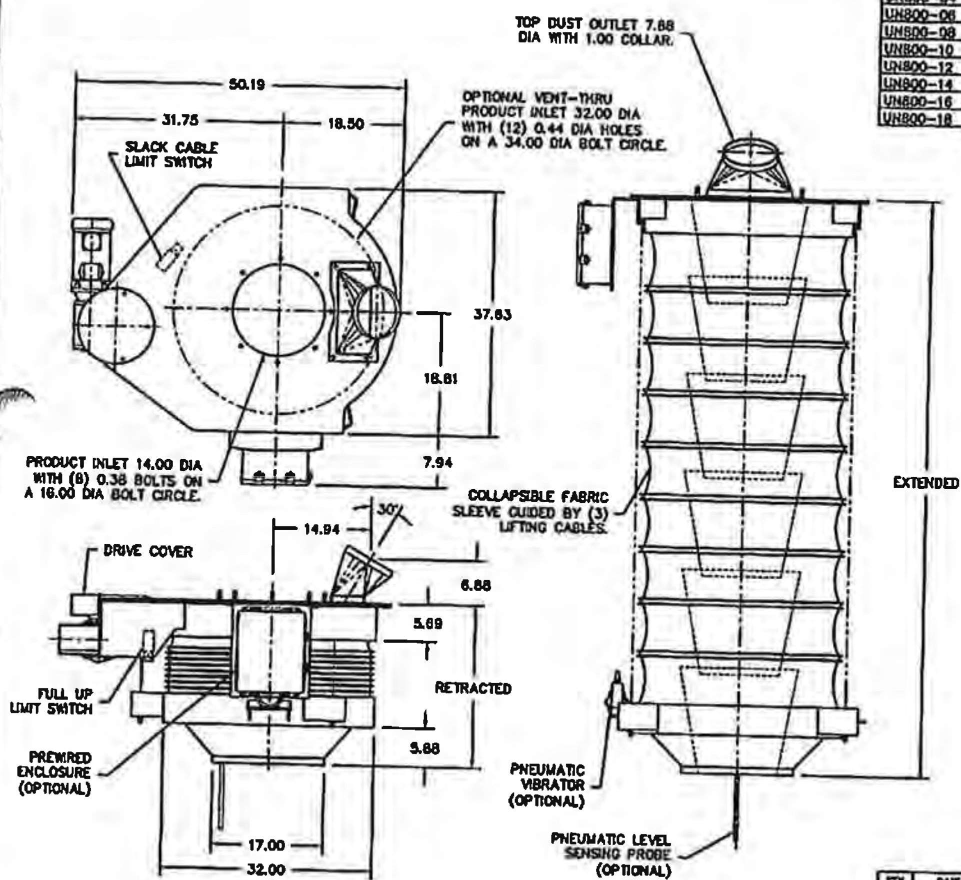
Overall Length "L"	Filter Area (sf) @ 90 pleats	No. of Straps
18.0"	39.0	1
22.0"	48.4	1
26.0"	57.8	1



*U.S. Patent No. D 626,208 & Patent Pending
**Confirmed by independent 3rd party testing

DCL, Inc. • 08660 Ance Road Charlevoix, Michigan 49720 • United States
(800) 748-0563 • (231) 547-5600
http://www.dclinc.com/

MODEL	TRAVEL	RETR	EXTD	URE WGT	STL WGT	URE HP	STL HP
UN800-02	24.00	18.75	42.75	543 LB	586 LB	1 HP/B	1 HP/B
UN800-04	48.00	21.50	69.50	576 LB	662 LB	1 HP/B	1 HP/B
UN800-06	72.00	24.50	96.50	609 LB	738 LB	1 HP/B	1 HP/B
UN800-08	88.00	27.00	123.00	646 LB	817 LB	1 HP/B	1 HP/B
UN800-10	120.00	28.38	148.38	673 LB	887 LB	1 HP/B	1.5 HP/B
UN800-12	144.00	31.13	175.13	706 LB	943 LB	1 HP/B	1.5 HP/B
UN800-14	168.00	33.88	201.88	743 LB	1022 LB	1 HP/B	2 HP/B
UN800-16	192.00	36.63	228.63	777 LB	1099 LB	1 HP/B	1.5 HP/D
UN800-18	216.00	38.00	254.00	804 LB	1147 LB	1.5 HP/B	1.5 HP/D



GENERAL NOTES:

LOADING CAPACITY: 450 CFM
AVERAGE AIR WITHDRAWAL: 1400 TO 1800 CFM
LIFTING SPEED: 16 FPM AVG

ALL INDUSTRIAL VOLTAGES ARE AVAILABLE FOR ELECTRICAL COMPONENTS.

PREWIRING OF ELECTRICAL COMPONENTS TO SPOUT FRAME JUNCTION BOX OPTIONAL.

ELECTRICAL ENCLOSURES NEMA 4 STANDARD. NEMA 4X, 7, AND 9 OPTIONAL.

COLLAPSIBLE FABRIC SLEEVE CAN BE CONSTRUCTED OF URETHANE/NYLON, HYPALON/NYLON, OR A NUMBER OF OTHER FABRICS. SLEEVES COME STANDARD WITH ALUMINUM OUTER AND INNER RINGS.

METAL SURFACES ARE POWER TOOL CLEANED, PRIMED, AND FINISHED WITH INDUSTRIAL ENAMEL.

LOADING CAPACITY LISTED IS APPROXIMATE AND BASED ON FREE FLOWING PRODUCTS. CONSULT DCL FOR ACTUAL REQUIREMENTS.

AIR WITHDRAWAL REQUIREMENTS ARE AVERAGE. CONSULT DCL FOR FINAL RECOMMENDATIONS.

CONE CONSTRUCTION NOTES: CONTAINED INNER DESIGN STANDARD WITH 0.13 AR STEEL AND 0.13 304 OR 316 STAINLESS STEEL. OTHER MATERIALS AVAILABLE TO SUIT APPLICATION.

SPECIFICATIONS AND/OR DIMENSIONAL DATA ARE SUBJECT TO CHANGE. CONSULT DCL FOR CERTIFIED DRAWINGS.

OPTIONS:

150# INLET FLANGE. ADDS 3.00 TO RETRACTED HEIGHT.

LEVEL SENSORS: TILT PROBE, RF PROBE, CAPACITANCE PROBE, PNEUMATIC PROBE.

PNEUMATIC VIBRATOR KIT REQUIRES (40) CFM @ (80) PSI.

REV	DATE	BY
D	09-25-07	JKM
C	10-06-03	JKM
B	04-23-02	JKM
A	09-26-00	JKM

DCL SPECIALISTS IN ADVANCED DESIGN LOADING SYSTEMS

DRAWN BY JKM | SCALE NONE | CHECKED BY ENG | DATE 01-04-95

TITLE: UN800 LOADING SPOUT (EV STYLE)

UN800-10001

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AQM-5

EMISSIONS INFORMATION

INTRODUCTION TO AQM-5: EMISSIONS CALCULATIONS

Form AQM-5 of the air permitting application is designed to summarize the pollutants that will be emitted from facility operations and the rates at which they will be emitted. All calculations used to present the amount of pollutants emitted from each emissions point within the process are provided following the AQM-5 form. All calculations of emissions were based on emission factors published in the Environmental Protection Agency (EPA) AP-42: Compilation of Air Emissions Factors. These emissions factors are provided in tables which are attached with the emission calculations tables. A glossary of DNREC-provided definitions for terms used in this section is provided below.

carbon dioxide - (CO2) gas which is naturally present in the atmosphere as part of Earth's carbon cycle; primary greenhouse gas emitted through human activities, such as fossil fuel combustion.

carbon monoxide - (CO) a colorless, odorless gas that can be harmful when inhaled in large amounts; may be created by vehicles or machinery that burn fossil fuels.

ground level ozone - (O3) main ingredient in "smog" created by chemical reactions between nitrogen oxides and volatile organic compounds in the presence of sunlight; may come from reactions of pollutants emitted by cars, power plants, industrial boilers, refineries, chemical plants, etc.

lead - (Pb) a naturally-occurring element found in the earth's crust; can be toxic to humans and animals; most exposure to lead is from human activities including the use of fossil fuels, industrial facilities, and past use of lead paint in homes.

nitrogen dioxide - (NO2) a group of highly reactive gases caused primarily by the burning of fuel from vehicles, power plants, and off-road equipment; component of acid rain; contributes to haze; contributes to nutrient pollution in water.

particulate matter - a mixture of solid particles and liquid droplets found in the air; measured as PM10: particles with diameters of 10 micrometers and smaller, or PM2.5: fine particles with diameters of 2.5 micrometers and smaller; may contribute to health effects when inhaled.

sulfur dioxide - (SO2) a group of gases caused largely by fossil fuel combustion at power plants and other industrial facilities; may be caused naturally by volcanic eruptions.

volatile organic compound – (VOC) gases emitted from certain solids or liquids; include a variety of chemicals made up of organic compounds from paints, wood preservatives, aerosols, cleaners, fuels, pesticides, etc.

Source of definitions: DNREC: Environmental Perspectives Air Quality Glossary

COMPARISON OF EMISSIONS WITH NAAQS AND WILMINGTON AIR QUALITY

As a result of the Clean Air Act, the EPA created the National Ambient Air Quality Standards (NAAQS) which set standard levels for pollutants considered harmful to public health and the environment. These standards levels have two categories. Primary standards are set to protect public health which includes sensitive populations such as asthmatics, children, and the elderly. The secondary standards provide protection to the wellbeing of the public and environment which includes the prevention of damage to animals, crops, buildings, and vegetation. There are six principal pollutants that the NAAQS provide standards for, which are known as "criteria air pollutants". The six criteria air pollutants are Carbon Monoxide (CO), Lead (Pb), Nitrogen Dioxide (NO_2), Ozone (O_3), Particle Pollution (PM), and Sulfur Dioxide (SO_2). The following is a table summarizing the NAAQS.

National Ambient Air Quality Standards

	Primary Standards		**Secondary Standards**		
Pollutant	**Level**	**Averaging Time**	**Level**	**Averaging Time**	**Form**
Carbon Monoxide (CO)	9 ppm (10 mg/m3)	8 hours	None		Not to be exceeded more than once per year
	35 ppm (40 mg/m3)	1 hour			
Lead (Pb)	0.15 µg/m3	Rolling 3-Month Average	Same as Primary		Not to be exceeded
	1.5 µg/m3	Quarter average	Same as Primary		
Nitrogen Dioxide (NO2)	53 ppb	1 year	Same as Primary		Annual mean
	100 ppb	1 hour	None		98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
Particulate Matter (PM10)	150 µg/m3	24 hours	Same as Primary		Not to be exceeded more than once per year on average over 3 years
Particulate Matter (PM2.5)	12.0 µg/m3	1 year	15.0 µg/m3	1 year	Annual mean, averaged over 3 years
	35 µg/m3	24 hours	Same as Primary		98th percentile, averaged over 3 years
Ozone (O3)	75 ppb (2008 std)	8 hours	Same as Primary		
	70 ppb	8 hours	Same as Primary		Annual 4th - highest daily maximum 8-hour concentration, averaged over 3 years
Sulfur Dioxide (SO2)	75 ppb	1 hour	0.5 ppm	3 hours	Primary : 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
					Secondary : Not to be exceeded more than once per year

Source: EPA Criteria Air Pollutants NAAQS Table

The SCREEN3 air dispersion model was used to create a simple dispersion model of substance concentrations emitted from the GGBFS grinding facility. The results of the SCREEN3 dispersion model for each emission are provided in AQM-5 Emissions Calculations. The model calculates the maximum concentrations in micrograms per cubic meter at a certain distance from the point source, with the point source being the stack exhausts. Input data for the model, including emissions rates, stack parameters, and exhaust gas flow rates, is detailed in the air permit application. The annual air quality monitoring results from the MLK monitoring station in Wilmington, Delaware, published by DNREC in 2016, and are also used for comparison with the facility's emissions. The Total Pollutant Concentrations are the additions of the 2016 air quality monitoring results in Wilmington with the modeled emitted pollutant concentrations from the facility. The table comparing the facility's emissions, NAAQS, and MLK air quality results is provided below.

WALAN Specialty Construction Products, LLC
Emissions Comparison Table

Substance	Emission Point	Calculated total substance concentration (ug/m3) (a)	Wilmington MLK 2016 Air Quality Monitoring Results (ug/m3) (c)	Total Substance Concentration (ug/m3)	NAAQS Primary Standards (ug/m3) (b)	NAAQS Secondary Standards (ug/m3)
PM10	EP-3 - Grinding Baghouse	5.469	14.2	20.86	150	Same as primary
	EP-4 & EP-5 - Silo Bin Vents	0.1650				
	EP-6 and EP-7 - Loadout Chutes	1.029				
PM2.5	EP-3 - Grinding Baghouse	1.953	9.2	11.16	12	15
	EP-3 - Drying Emissions	0.0055			35	
SOx (SO2)	EP-3 - Drying Emissions	0.0073	13.1	13.11	196.5	1310
NOx (NO2)	EP-3 - Drying Emissions	1.329	22.56	23.89	188	None
CO	EP-3 - Drying Emissions	1.111	1832	1833.11	40000	None
					10000	

Notes:

a) Total substance concentration in micrograms per cubic meter (ug/m3) were calculated using the Screen3 dispersion modeling program.

Models were created for each emissions stack.

The maximum 1-hour concentrations from the model were used in the comparison.

b) Refer to the NAAQS summary table. Averaging times vary for both Primary and Secondary standards.

c) NO2 Results reported in annual arithmetic means in ppb and converted to ug/m3

CO Results reported in maximum ppm and converted to ug/m3

PM2.5 Results reported in a 3-year average of annual averages ug/m3

PM10 Results reported as an annual average in ug/m3

SO2 Results reported as the annual 99th percentile 1-hour average in ppb and converted to ug/m3

d) Lead (Pb) and Ozone (O3) are criteria air pollutants that are not included in comparison.

Total Particulate Matter (PM) and volatile organic compounds (VOC) are modeled for dispersion, but are not included in the comparison.

DNREC – Division of Air Quality
Application to Construct, Operate, or Modify Stationary Sources)

Emissions Information Application

If you are using this form electronically, press F1 at any time for help

Process Information

1.	Number of Individual Pieces of Process Equipment in Process:	**Six: Feed hopper, two bucket elevators, grinder/dryer, two silos**
2.	Number of Individual Control Devices in Process:	**Five dust collectors: grinding, two silos, two dustless loadouts**

Emissions Information for First Emission Point/Stack

3. Emission Point Name: **EP-1 & EP-2 - Fugitive GBFS Handling**

4. Equipment ID Number for all Process Equipment and Control Devices Venting Through Emission Point/Stack:

5. Pollutant Emissions

If more than 15 pollutants are emitted at this Emission Point/Stack, attach additional copies of this page as needed.

	Pollutant Name (Specify VOCs and HAPs Individually in 5.10 through 5.18)	CAS Number (Not required for 5.1 through 5.10)	Maximum Uncontrolled Emission Rate at Design Capacity	Maximum Controlled Emission Rate at Design Capacity	Annual Potential to Emit (PTE)	Requested Permitted Annual Emissions
5.1.	Particulate Matter (PM)		**0.047 lbs/hour**	**0.047 lbs/hour**	**0.207** tons/year	**0.118** tons/year
5.2.	PM_{10}		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
5.3.	$PM_{2.5}$		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
5.4.	Sulfur Oxides (SO_x)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
5.5.	Nitrogen Oxides (NO_x)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
5.6.	Carbon Monoxide (CO)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
5.7.	Total Volatile Organic Compounds (VOCs)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
5.8.	Total Hazardous Air Pollutants (HAPs)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year

Emissions Information for First Emission Point/Stack

5.9.	CO_2		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
5.10.	CO_{2e}		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
5.11.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
5.12.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
5.13.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
5.14.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
5.15.			**lbs/hour**	**lbs/hour**	tons/year	tons/year

6. Provide Any Additional Information Necessary to Understanding the Emission Rates Provided Above:

Attach the Basis of Determination or Calculations for each Emission Rate provided above.

Emissions Information for Second Emission Point/Stack

7. Emission Point Name: **EP-3 - GBFS Drying**

8. Equipment ID Number for all Process Equipment and Control Devices Venting Through Emission Point/Stack: **2**

9. Pollutant Emissions

If more than 15 pollutants are emitted at this Emission Point/Stack, attach additional copies of this page as needed.

	Pollutant Name (Specify VOCs and HAPs Individually in 9.10 through 9.18)	CAS Number (Not required for 9.1 through 9.10)	Maximum Uncontrolled Emission Rate at Design Capacity	Maximum Controlled Emission Rate at Design Capacity	Annual Potential to Emit (PTE)	Requested Permitted Annual Emissions
9.1.	Particulate Matter (PM)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
9.2.	PM_{10}		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
9.3.	$PM_{2.5}$		**0.055 lbs/hour**	**0.0003 lbs/hour**	**0.0012** tons/year	**0.0007** tons/year

Emissions Information for Second Emission Point/Stack

9.4.	Sulfur Oxides (SO_X)		**0.004 lbs/hour**	**0.004 lbs/hour**	**0.019** tons/year	**0.011** tons/year
9.5.	Nitrogen Oxides (NO_X)		**0.724 lbs/hour**	**0.724 lbs/hour**	**3.171** tons/year	**1.810** tons/year
9.6.	Carbon Monoxide (CO)		**0.608 lbs/hour**	**0.608 lbs/hour**	**2.664** tons/year	**1.520** tons/year
9.7.	Total Volatile Organic Compounds (VOCs)		**0.040 lbs/hour**	**0.040 lbs/hour**	**0.174** tons/year	**0.100** tons/year
9.8.	Total Hazardous Air Pollutants (HAPs)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
9.9.	CO_2		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
9.10.	CO_{2e}		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
9.11.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
9.12.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
9.13.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
9.14.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
9.15.			**lbs/hour**	**lbs/hour**	tons/year	tons/year

10. Provide Any Additional Information Necessary to Understanding the Emission Rates Provided Above:

Attach the Basis of Determination or Calculations for each Emission Rate provided above.

Emissions Information for Third Emission Point/Stack

11. Emission Point Name: **EP-3 - GBFS Grinding**

12. Equipment ID Number for all Process Equipment and Control Devices Venting Through Emission Point/Stack: **2**

13. Pollutant Emissions

If more than 15 pollutants are emitted at this Emission Point/Stack, attach additional copies of this page as needed.

Emissions Information for Third Emission Point/Stack

	Pollutant Name (Specify VOCs and HAPs Individually in 13.10 through 13.18)	CAS Number (Not required for 13.1 through 13.10)	Maximum Uncontrolled Emission Rate at Design Capacity	Maximum Controlled Emission Rate at Design Capacity	Annual Potential to Emit (PTE)	Requested Permitted Annual Emissions
13.1.	Particulate Matter (PM)		**242.4 lbs/hour**	**1.212 lbs/hour**	**5.309** tons/year	**3.030** tons/year
13.2.	PM_{10}		**203.4 lbs/hour**	**1.017 lbs/hour**	**4.454** tons/year	**2.543** tons/year
13.3.	$PM_{2.5}$		**72.6 lbs/hour**	**0.363 lbs/hour**	**1.590** tons/year	**0.908** tons/year
13.4.	Sulfur Oxides (SO_X)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
13.5.	Nitrogen Oxides (NO_X)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
13.6.	Carbon Monoxide (CO)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
13.7.	Total Volatile Organic Compounds (VOCs)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
13.8.	Total Hazardous Air Pollutants (HAPs)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
13.9.	CO_2		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
13.10.	CO_{2e}		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
13.11.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
13.12.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
13.13.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
13.14.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
13.15.			**lbs/hour**	**lbs/hour**	tons/year	tons/year

14. Provide Any Additional Information Necessary to Understanding the Emission Rates Provided Above:

Attach the Basis of Determination or Calculations for each Emission Rate provided above.

Emissions Information for Fourth Emission Point/Stack

15. Emission Point Name: **EP-4, EP-5, EP-6, & EP-7 - GGBFS Storage and Loadout**

16. Equipment ID Number for all Process Equipment and Control Devices Venting Through Emission Point/Stack:

17. Pollutant Emissions

If more than 15 pollutants are emitted at this Emission Point/Stack, attach additional copies of this page as needed.

	Pollutant Name (Specify VOCs and HAPs Individually in 17.10 through 17.18)	CAS Number (Not required for 17.1 through 17.10)	Maximum Uncontrolled Emission Rate at Design Capacity	Maximum Controlled Emission Rate at Design Capacity	Annual Potential to Emit (PTE)	Requested Permitted Annual Emissions
17.1.	Particulate Matter (PM)		**43.8 lbs/hour**	**0.059 lbs/hour**	**0.260** tons/year	**0.149** tons/year
17.2.	PM_{10}		**28.2 lbs/hour**	**0.020 lbs/hour**	**0.089** tons/year	**0.051** tons/year
17.3.	$PM_{2.5}$		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
17.4.	Sulfur Oxides (SO_X)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
17.5.	Nitrogen Oxides (NO_X)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
17.6.	Carbon Monoxide (CO)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
17.7.	Volatile Organic Compounds (VOCs)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
17.8.	Total Hazardous Air Pollutants (HAPs)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
17.9.	CO_2		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
17.10.	CO_{2e}		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
17.11.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
17.12.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
17.13.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
17.14.			**lbs/hour**	**lbs/hour**	tons/year	tons/year
17.15.			**lbs/hour**	**lbs/hour**	tons/year	tons/year

Emissions Information for Fourth Emission Point/Stack

18. Provide Any Additional Information Necessary to Understanding the Emission Rates Provided Above:

Attach the Basis of Determination or Calculations for each Emission Rate provided above.

If there are more than four Emission Points/Stacks, attach additional copies of this form as needed.

Overall Process Emissions

19. Pollutant Emissions

If more than 15 pollutants are emitted from this Process, attach additional copies of this page as needed.

	Pollutant Name (Specify VOCs and HAPs Individually in 19.10 through 19.18)	CAS Number (Not required for 19.1 through 19.10)	Maximum Uncontrolled Emission Rate at Design Capacity	Maximum Controlled Emission Rate at Design Capacity	Annual Potential to Emit (PTE)	Requested Permitted Annual Emissions
19.1.	Particulate Matter (PM)		**286.247 lbs/hour**	**1.318 lbs/hour**	**5.776** tons/year	**3.297** tons/year
19.2.	PM_{10}		**231.600 lbs/hour**	**1.037 lbs/hour**	**4.543** tons/year	**2.594** tons/year
19.3.	$PM_{2.5}$		**72.655 lbs/hour**	**0.366 lbs/hour**	**1.591** tons/year	**0.909** tons/year
19.4.	Sulfur Oxides (SO_x)		**0.004 lbs/hour**	**0.004 lbs/hour**	**0.019** tons/year	**0.011** tons/year
19.5.	Nitrogen Oxides (NO_x)		**0.724 lbs/hour**	**0.724 lbs/hour**	**3.171** tons/year	**1.810** tons/year
19.6.	Carbon Monoxide (CO)		**0.608 lbs/hour**	**0.608 lbs/hour**	**2.664** tons/year	**1.520** tons/year
19.7.	Total Volatile Organic Compounds (VOCs)		**0.040 lbs/hour**	**0.040 lbs/hour**	**0.174** tons/year	**0.100** tons/year
19.8.	Total Hazardous Air Pollutants (HAPs)		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
19.9.	CO_2		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
19.10.	CO_{2e}		**N/A lbs/hour**	**N/A lbs/hour**	**N/A** tons/year	**N/A** tons/year
19.12.			**lbs/hour**	**lbs/hour**	tons/year	tons/year

Overall Process Emissions

19.13.		lbs/hour	lbs/hour	tons/year	tons/year
19.14.		lbs/hour	lbs/hour	tons/year	tons/year
19.15.		lbs/hour	lbs/hour	tons/year	tons/year

20. Provide Any Additional Information Necessary to Understanding the Emission Rates Provided Above:

Attach the Basis of Determination or Calculations for each Emission Rate provided above.

Minor New Source Review Information

21. Does the Process Have the Potential to Emit More Than Five Tons Per Year of Any Pollutant? ☒ YES ☐ NO

22. Is the Source New or Existing? ☒ NEW ☐ EXISTING
See Question 11 of AQM-1

If the Process has the Potential to Emit more than five tons per year of any pollutant, and is a New Source, a Control Technology Analysis pursuant to Regulation No. 1125 Section 4 must be conducted and attached to this application.

Major New Source Review Information

23. Does the Process Have the Potential to Emit More Than the Significance Level for Any Pollutant? *(Check All That Apply)*

☐ Greater Than 25 Tons Per Year of Particulate Matter (PM)
☐ Greater Than 15 Tons Per Year of PM_{10}
☐ Greater Than 10 Tons Per Year of $PM_{2.5}$
☐ Greater Than 40 Tons Per Year of Sulfur Dioxide(SO_2)
☐ Greater Than 25 Tons Per Year of Nitrogen Oxides (NO_X) in New Castle and Kent County
☐ Greater Than 100 Tons Per Year of Nitrogen Oxides (NO_X) in Sussex County
☐ Greater Than 100 Tons Per Year of Carbon Monoxide (CO)
☐ Greater Than 25 Tons Per Year of Total Volatile Organic Compounds (VOCs) in New Castle and Kent County
☐ Greater Than 50 Tons Per Year of Total Volatile Organic Compounds (VOCs) in Sussex County
☐ Greater Than 75,000 Tons Per Year of Equivalent Carbon Dioxide (CO_{2e})

If the Process has the Potential to Emit greater than any of the amounts listed above 7 DE Admin. Code 1125 Sections 2 and/or 3 apply. Contact the Department at (302) 323-4542 or (302) 739-9402 for additional information

Additional Information

24. Is There Any Additional Information Pertinent to this Application? ☐ YES ☒ NO

If YES, complete the rest of Question 24.

24.1. Describe:

DUFFIELD ASSOCIATES
Soil, Water & the Environment

AQM-5
Emissions Calculations

WALAN Specialty Construction Products, LLC
501 Christina Avenue, Wilmington, DE 19801
Emission Points Summary Table

Emission Point (1)	Description	Process	Maximum Annual GGBFS Throughput (Tons) (2)	Pollutants Emitted (3)
EP-1	Dust drop from trucks to stockpile (fugitive dust emissions)	Handling	262,800 / 150,000	PM
EP-2	Dust drop from front end loader into feed hopper (fugitive dust emissions)	Handling		PM
EP-3	Grinding mill (stack emissions)	Grinding		PM, PM10, PM2.5
	Integral Dryer (stack emissions)	Drying		PM2.5, NOx, SOx, CO, VOC
EP-4 and EP-5	Baghouses on two storage silos (stack emissions)	Storage		PM10, PM2.5
EP-6 and EP-7	Baghouses on two dustless loadout chutes (stack emissions)	Loadout		PM10, PM2.5

Notes:
(1) See process flow diagram
(2) The maximum GBFS throughput rate is 30 tons/hour. The facility has the potential to process GBFS three shifts per day, 365 days per year for a total of 8760 operational hours per year.
The actual annual throughput is expected to be 150,000 tons per year.
(3) Estimated particle sizes for GBFS range from 200 - 4750 microns. Emissions from material handling operations are expressed as PM only.

WALAN Specialty Construction Products, LLC
Handling Operations PM Emissions

EP-1 - Dust drops from trucks to stockpile									
Substance	**Moisture Content (%) *(a)***	**k *(b)***	**U (mph) *(c)***	**E (lb/ton) *(d)***	**Maximum Hourly Throughput (ton/hr) *(e)***	**Uncontrolled Hourly Emissions (lb/hr)**	**Controlled Hourly Emissions (lb/hr)**	**PTE (tons/year) *(f)***	**Projected Emissions (tons/year) *(f)***
PM	9	0.74	10.84	7.884E-04	30	2.365E-02	2.365E-02	1.036E-01	5.913E-02

EP-2 - Dust drops from stockpile to feed hopper									
Substance	**Moisture Content *(a)***	**k *(b)***	**U (mph) *(c)***	**E (lb/ton) *(d)***	**Maximum Hourly Throughput (ton/hr) *(e)***	**Uncontrolled Hourly Emissions (lb/hr)**	**Controlled Hourly Emissions (lb/hr)**	**PTE (tons/year) *(f)***	**Projected Emissions (tons/year) *(f)***
PM	9	0.74	10.84	7.884E-04	30	2.365E-02	2.365E-02	1.036E-01	5.913E-02

	Uncontrolled Hourly Emissions (lb/hr)	**Controlled Hourly Emissions (lb/hr)**	**PTE (tons/year) *(f)***	**Projected Emissions (tons/year) *(f)***
Total Emissions =	**0.047**	**0.047**	**0.207**	**0.118**

(a) Estimated moisture content of salt used for calculation.

(b) k = particle size multiplier for average particle diameter for PM < 30 microns

(c) U = Mean wind speed for Wilmington, DE (Source: www.usa.com/wilmington-de.htm)

(d) E = Emission factor. Equation provided below detailed in USEPA AP-42 Section 13.2.4 (Revised 11/06)

(e) Estimated GBFS throughput rate

(f) Potential To Emit was calculated assuming facility operates for 8760 hours/year at an annual throughput of 262,800 tons/year.

Projected emissions were calculated assuming the facility operates for 5000 hours/year at an annual throughput of 150,000 tons/year.

Operational flexibility allows the facility to operatre anytime during the week's two shifts. Actual operation schedule will likely be less.

Emission Factor Equation:

$$E = k\,(0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

Where:

E = Emission Factor (lb/ton)

k = particle size multiplier

U = mean wind speed (mph)

M = GBFS moisture content (%)

WALAN Specialty Construction Products, LLC
EP-3 - Emissions from GBFS Grinding

	Uncontrolled Emissions		Controlled Emissions			
Substance	**Emission Factor (lb/ton)** *(a)*	**Emissions Rate (lb/hr)** *(b)*	**Emission Factor (lb/ton)** *(c)*	**Emissions Rate (lb/hr)** *(b)*	**PTE (tons/year)** *(d)*	**Projected Emissions (tons/year)** *(d)*
PM	8.08	242.4	0.0404	1.212	5.309	3.030
PM10	6.78	203.4	0.0339	1.017	4.454	2.543
PM2.5	2.42	72.6	0.0121	0.363	1.590	0.908

Notes:

(a) Uncontrolled emission factors were calculated using the controlled emissions factors and a baghouse removal efficiency of 99.5%

(b) Emission rates calculated using a maximum hourly GBFS throughput of 30 tons/hour

(c) Emission factors provided in AP-42, Table 11.19.2-4

(d) Potential To Emit was calculated assuming facility operates for 8760 hours/year at an annual throughput of 262,800 tons/year.
Projected emissions were calculated assuming the facility operates for 5000 hours/year at an annual throughput of 150,000 tons/year.

WALAN Specialty Construction Products, LLC
Emissions from Natural Gas Combustion

EP-3 - Natural gas-firing Air Heating Unit					
Substance	**Emission Factor (lb/10^6 scf)** *(a)*	**Uncontrolled Hourly Emissions (lb/hr)** *(b)*	**Controlled Hourly Emissions (lb/hr)** *(b)*	**PTE (tons/year)** *(c)*	**Projected Emissions (tons/year)** *(c)*
PM2.5	7.6	0.055	0.0003	0.0012	0.0007
CO	84	0.608	NA	2.664	1.520
NOx	100	0.724		3.171	1.810
SOx	0.6	0.004		0.019	0.011
VOC	5.5	0.040		0.174	0.100

Notes:

(a) Emissions factors taken from AP-42, Tables 1.4-1 and 1.4-2

(b) A maximum firing rate of 7,240 scf/ft2 for the natural gas fired burner was used in the calculation

A 99.5% removal efficiency of PM2.5 by the baghouse is assumed for calculations

(c) Potential To Emit was calculated assuming facility operates for 8760 hours/year at an annual throughput of 262,800 tons/year.

Projected emissions were calculated assuming the facility operates for 5000 hours/year at an annual throughput of 150,000 tons/year.

WALAN Specialty Construction Products, LLC
Storage Silos and Loadout PM Emissions

	EP-4 & EP-5 - Loading of GGBFS into Two Storage Silos (Baghouse)					
	Uncontrolled Emissions		Controlled Emissions			
Substance	Emission Factor (lb/ton) *(a)*	Emissions Rate (lb/hr) *(b)*	Emission Factor (lb/ton) *(a)*	Emissions Rate (lb/hr) *(b)*	PTE (tons/year) *(c)*	Projected Emissions (tons/year) *(c)*
PM	0.73	21.9	0.00099	0.0297	0.130	0.074
PM10	0.47	14.1	0.00034	0.0102	0.045	0.026

	EP-6 & EP-7 - Loading of GGBFS into Enclosed Trucks (Cartridge Filter)					
	Uncontrolled Emissions		Controlled Emissions			
Substance	Emission Factor (lb/ton) *(a)*	Emissions Rate (lb/hr) *(b)*	Emission Factor (lb/ton) *(a)*	Emissions Rate (lb/hr) *(b)*	PTE (tons/year) *(c)*	Projected Emissions (tons/year) *(c)*
PM	0.73	21.9	0.00099	0.0297	0.130	0.074
PM10	0.47	14.1	0.00034	0.0102	0.045	0.026

Total Emissions				
Substance	Uncontrolled Hourly Emissions (lb/hr)	Controlled Hourly Emissions (lb/hr)	PTE (tons/year) *(c)*	Projected Emissions (tons/year) *(c)*
PM	**43.8**	**0.059**	**0.260**	**0.149**
PM10	**28.2**	**0.020**	**0.089**	**0.051**

Notes:

(a) Emission rates calculated using a maximum hourly GBFS throughput of 30 tons/hour

(b) Emission factors for concrete batching - cement silo loading were used and are provided in AP-42, Table 11.19.2-4

The same emission factors were used for enclosed truck loading because it is a similar process

and any dust captured during loadout is vented through similar baghouses.

(c) Potential To Emit was calculated assuming facility operates for 8760 hours/year at an annual throughput of 262,800 tons/year.

Projected emissions were calculated assuming the facility operates for 5000 hours/year at an annual throughput of 150,000 tons/year.

WALAN Specialty Construction Products, LLC
Summary of Projected Emissions

Emission Point	PM			PM10			PM2.5		
	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)
EP-1, EP-2 - Material Handling	0.047	0.047	0.118						
EP-3 - Grinding	242.4	1.212	3.03	203.4	1.017	2.543	72.6	0.363	0.908
EP-3 - Drying							0.055	0.0003	0.0007
EP-4, EP-5, EP-6, EP-7 - GGBFS Storage and Loadout	43.8	0.059	0.149	28.2	0.02	0.051			
Total Emissions	**286.247**	**1.318**	**3.297**	**231.600**	**1.037**	**2.594**	**72.655**	**0.363**	**0.909**

WALAN Specialty Construction Products, LLC
Summary of Projected Emissions

Emission Point	SOx			NOx		
	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)
EP-1, EP-2 - Material Handling						
EP-3 - Grinding						
EP-3 - Drying	0.004	0.004	0.011	0.724	0.724	1.810
EP-4, EP-5, EP-6, EP-7 - GGBFS Storage and Loadout						
Total Emissions	**0.004**	**0.004**	**0.011**	**0.724**	**0.724**	**1.810**

Emission Point	CO			VOC		
	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)	Uncontrolled (lb/hr)	Controlled (lb/hr)	Projected Emissions (tons/year)
EP-1, EP-2 - Material Handling						
EP-3 - Grinding						
EP-3 - Drying	0.608	0.608	1.520	0.04	0.04	0.100
EP-4, EP-5, EP-6, EP-7 - GGBFS Storage and Loadout						
Total Emissions	**0.608**	**0.608**	**1.520**	**0.040**	**0.040**	**0.100**

Table 11.19.2-3 (Metric Units). EMISSION FACTORS FOR PULVERIZED MINERAL PROCESSING OPERATIONS [a]

Source [b]	Total Particulate Matter	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Grinding (Dry) with Fabric Filter Control (SCC 3-05-038-11)	0.0202	D	0.0169	B	0.0060	B
Classifiers (Dry) with Fabric Filter Control (SCC 3-05-038-12)	0.0112	E	0.0052	E	0.0020	E
Flash Drying with Fabric Filter Control (SCC 3-05-038-35)	0.0134	C	0.0073	C	0.0042	C
Product Storage with Fabric Filter Control (SCC 3-05-38-13)	0.0055	E	0.0008	E	0.0003	E

a. Emission factors represent controlled emissions unless noted. Emission factors are in kg/Mg of material throughput.

b. Date from references 16 through 23

Table 11.19.2-4 (English Units). EMISSION FACTORS FOR PULVERIZED MINERAL PROCESSING OPERATIONS [a]

Source [b]	Total Particulate Matter	EMISSION FACTOR RATING	Total PM-10	EMISSION FACTOR RATING	Total PM-2.5	EMISSION FACTOR RATING
Grinding (Dry) with Fabric Filter Control (SCC 3-05-038-11)	0.0404	D	0.0339	B	0.0121	B
Classifiers (Dry) with Fabric Filter Control (SCC 3-05-038-12)	0.0225	E	0.0104	E	0.0041	E
Flash Drying with Fabric Filter Control (SCC 3-05-038-35)	0.0268	C	0.0146	C	0.0083	C
Product Storage with Fabric Filter Control (SCC 3-05-038-13)	0.0099	E	0.0016	E	0.0006	E

a. Emission factors represent controlled emissions unless noted. Emission factors are in lb/Ton of material throughput.

b. Data from references 16 through 23

TABLE 11.12-2 (ENGLISH UNITS)
EMISSION FACTORS FOR CONCRETE BATCHING [a]

Source (SCC)	Uncontrolled				Controlled			
	Total PM	Emission Factor Rating	Total PM_{10}	Emission Factor Rating	Total PM	Emission Factor Rating	Total PM_{10}	Emission Factor Rating
Aggregate transfer [b] (3-05-011-04,-21,23)	0.0069	D	0.0033	D	ND		ND	
Sand transfer [b] (3-05-011-05,22,24)	0.0021	D	0.00099	D	ND		ND	
Cement unloading to elevated storage silo (pneumatic)[c] (3-05-011-07)	0.73	E	0.47	E	0.00099	D	0.00034	D
Cement supplement unloading to elevated storage silo (pneumatic)[d] (3-05-011-17)	3.14	E	1.10	E	0.0089	D	0.0049	E
Weigh hopper loading [e] (3-05-011-08)	0.0048	D	0.0028	D	ND		ND	
Mixer loading (central mix)[f] (3-05-011-09)	0.572 or Eqn. 11.12-1	B	0.156 or Eqn. 11.12-1	B	0.0184 or Eqn. 11.12-1	B	0.0055 or Eqn. 11.12-1	B
Truck loading (truck mix)[g] (3-05-011-10)	1.118	B	0.310	B	0.098 or Eqn. 11.12-1	B	0.0263 or Eqn. 11.12-1	B
Vehicle traffic (paved roads)	See AP-42 Section 13.2.1, Paved Roads							
Vehicle traffic (unpaved roads)	See AP-42 Section 13.2.2, Unpaved Roads							
Wind erosion from aggregate and sand storage piles	See AP-42 Section 13.2.5, Industrial Wind Erosion							

Table 1.4-1. EMISSION FACTORS FOR NITROGEN OXIDES (NO_x) AND CARBON MONOXIDE (CO) FROM NATURAL GAS COMBUSTION[a]

Combustor Type (MMBtu/hr Heat Input) [SCC]	NO_x[b] Emission Factor (lb/10^6 scf)	NO_x[b] Emission Factor Rating	CO Emission Factor (lb/10^6 scf)	CO Emission Factor Rating
Large Wall-Fired Boilers (>100) [1-01-006-01, 1-02-006-01, 1-03-006-01]				
Uncontrolled (Pre-NSPS)[c]	280	A	84	B
Uncontrolled (Post-NSPS)[c]	190	A	84	B
Controlled - Low NO_x burners	140	A	84	B
Controlled - Flue gas recirculation	100	D	84	B
Small Boilers (<100) [1-01-006-02, 1-02-006-02, 1-03-006-02, 1-03-006-03]				
Uncontrolled	100	B	84	B
Controlled - Low NO_x burners	50	D	84	B
Controlled - Low NO_x burners/Flue gas recirculation	32	C	84	B
Tangential-Fired Boilers (All Sizes) [1-01-006-04]				
Uncontrolled	170	A	24	C
Controlled - Flue gas recirculation	76	D	98	D
Residential Furnaces (<0.3) [No SCC]				
Uncontrolled	94	B	40	B

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. To convert from lb/10^6 scf to kg/10^6 m^3, multiply by 16. Emission factors are based on an average natural gas higher heating value of 1,020 Btu/scf. To convert from lb/10^6 scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. SCC = Source Classification Code. ND = no data. NA = not applicable.

[b] Expressed as NO_2. For large and small wall fired boilers with SNCR control, apply a 24 percent reduction to the appropriate NO_x emission factor. For tangential-fired boilers with SNCR control, apply a 13 percent reduction to the appropriate NO_x emission factor.

[c] NSPS=New Source Performance Standard as defined in 40 CFR 60 Subparts D and Db. Post-NSPS units are boilers with greater than 250 MMBtu/hr of heat input that commenced construction modification, or reconstruction after August 17, 1971, and units with heat input capacities between 100 and 250 MMBtu/hr that commenced construction modification, or reconstruction after June 19, 1984.

TABLE 1.4-2. EMISSION FACTORS FOR CRITERIA POLLUTANTS AND GREENHOUSE GASES FROM NATURAL GAS COMBUSTION[a]

Pollutant	Emission Factor ($lb/10^6$ scf)	Emission Factor Rating
CO_2[b]	120,000	A
Lead	0.0005	D
N_2O (Uncontrolled)	2.2	E
N_2O (Controlled-low-NO_X burner)	0.64	E
PM (Total)[c]	7.6	D
PM (Condensable)[c]	5.7	D
PM (Filterable)[c]	1.9	B
SO_2[d]	0.6	A
TOC	11	B
Methane	2.3	B
VOC	5.5	C

[a] Reference 11. Units are in pounds of pollutant per million standard cubic feet of natural gas fired. Data are for all natural gas combustion sources. To convert from $lb/10^6$ scf to $kg/10^6\ m^3$, multiply by 16. To convert from $lb/10^6$ scf to lb/MMBtu, divide by 1,020. The emission factors in this table may be converted to other natural gas heating values by multiplying the given emission factor by the ratio of the specified heating value to this average heating value. TOC = Total Organic Compounds. VOC = Volatile Organic Compounds.

[b] Based on approximately 100% conversion of fuel carbon to CO_2. $CO_2[lb/10^6\ scf] = (3.67)\ (CON)(C)(D)$, where CON = fractional conversion of fuel carbon to CO_2, C = carbon content of fuel by weight (0.76), and D = density of fuel, $4.2 \times 10^4\ lb/10^6$ scf.

[c] All PM (total, condensible, and filterable) is assumed to be less than 1.0 micrometer in diameter. Therefore, the PM emission factors presented here may be used to estimate PM_{10}, $PM_{2.5}$ or PM_1 emissions. Total PM is the sum of the filterable PM and condensible PM. Condensible PM is the particulate matter collected using EPA Method 202 (or equivalent). Filterable PM is the particulate matter collected on, or prior to, the filter of an EPA Method 5 (or equivalent) sampling train.

[d] Based on 100% conversion of fuel sulfur to SO_2.
Assumes sulfur content is natural gas of 2,000 grains/10^6 scf. The SO_2 emission factor in this table can be converted to other natural gas sulfur contents by multiplying the SO_2 emission factor by the ratio of the site-specific sulfur content (grains/10^6 scf) to 2,000 grains/10^6 scf.

DUFFIELD ASSOCIATES
Soil, Water & the Environment

SCREEN3 Dispersion Modeling Results

EP3 grinding PM

10/10/18
16:00:03

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 13043 ***

EP3 grinding PM

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =     0.152700
   STACK HEIGHT (M)         =      25.2980
   STK INSIDE DIAM (M)      =       0.9144
   STK EXIT VELOCITY (M/S)=         7.5195
   STK GAS EXIT TEMP (K)    =     369.1500
   AMBIENT AIR TEMP (K)     =     293.0000
   RECEPTOR HEIGHT (M)      =       0.0000
   URBAN/RURAL OPTION       =        URBAN
   BUILDING HEIGHT (M)      =       0.0000
   MIN HORIZ BLDG DIM (M)   =       0.0000
   MAX HORIZ BLDG DIM (M)   =       0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

   STACK EXIT VELOCITY WAS CALCULATED FROM
   VOLUME FLOW RATE =    10463.000     (ACFM)

BUOY. FLUX =    3.180 M**4/S**3;  MOM. FLUX =    9.381 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	320.0	69.68	1.32	1.30	NO
100.	5.081	1	2.5	2.9	800.0	43.05	31.78	25.67	NO
200.	6.469	3	1.5	1.8	480.0	53.55	43.10	40.81	NO
300.	6.041	4	1.5	1.9	480.0	52.26	46.01	40.96	NO
400.	5.626	4	1.0	1.3	320.0	65.75	60.54	54.16	NO
500.	4.808	4	1.0	1.3	320.0	65.75	73.94	66.29	NO
600.	4.595	6	1.0	1.3	10000.0	58.35	60.02	36.08	NO
700.	4.650	6	1.0	1.3	10000.0	58.35	68.71	40.24	NO
800.	4.510	6	1.0	1.3	10000.0	58.35	77.17	44.17	NO
900.	4.282	6	1.0	1.3	10000.0	58.35	85.42	47.91	NO
1000.	4.023	6	1.0	1.3	10000.0	58.35	93.45	51.47	NO
1100.	3.761	6	1.0	1.3	10000.0	58.35	101.27	54.88	NO
1200.	3.511	6	1.0	1.3	10000.0	58.35	108.91	58.14	NO
1300.	3.279	6	1.0	1.3	10000.0	58.35	116.37	61.28	NO
1400.	3.065	6	1.0	1.3	10000.0	58.35	123.66	64.31	NO
1500.	2.871	6	1.0	1.3	10000.0	58.35	130.79	67.23	NO
1600.	2.695	6	1.0	1.3	10000.0	58.35	137.76	70.06	NO
1700.	2.535	6	1.0	1.3	10000.0	58.35	144.58	72.80	NO
1800.	2.390	6	1.0	1.3	10000.0	58.35	151.27	75.46	NO
1900.	2.259	6	1.0	1.3	10000.0	58.35	157.82	78.04	NO
2000.	2.139	6	1.0	1.3	10000.0	58.35	164.25	80.56	NO
2100.	2.030	6	1.0	1.3	10000.0	58.35	170.56	83.01	NO
2200.	1.930	6	1.0	1.3	10000.0	58.35	176.75	85.40	NO

2300.	1.839	6	1.0	1.3	10000.0	58.35	182.83	87.73	NO
2400.	1.755	6	1.0	1.3	10000.0	58.35	188.81	90.02	NO
2500.	1.677	6	1.0	1.3	10000.0	58.35	194.68	92.25	NO
2600.	1.606	6	1.0	1.3	10000.0	58.35	200.46	94.44	NO
2700.	1.540	6	1.0	1.3	10000.0	58.35	206.15	96.58	NO
2800.	1.478	6	1.0	1.3	10000.0	58.35	211.75	98.68	NO
2900.	1.421	6	1.0	1.3	10000.0	58.35	217.26	100.75	NO
3000.	1.368	6	1.0	1.3	10000.0	58.35	222.69	102.77	NO
3500.	1.150	6	1.0	1.3	10000.0	58.35	248.70	112.40	NO
4000.	0.9894	6	1.0	1.3	10000.0	58.35	273.04	121.32	NO
4500.	0.8664	6	1.0	1.3	10000.0	58.35	295.97	129.66	NO
5000.	0.7697	6	1.0	1.3	10000.0	58.35	317.68	137.52	NO
5500.	0.6917	6	1.0	1.3	10000.0	58.35	338.34	144.98	NO
6000.	0.6277	6	1.0	1.3	10000.0	58.35	358.06	152.08	NO
6500.	0.5743	6	1.0	1.3	10000.0	58.35	376.96	158.88	NO
7000.	0.5290	6	1.0	1.3	10000.0	58.35	395.11	165.40	NO
7500.	0.4902	6	1.0	1.3	10000.0	58.35	412.61	171.69	NO
8000.	0.4566	6	1.0	1.3	10000.0	58.35	429.50	177.76	NO
8500.	0.4273	6	1.0	1.3	10000.0	58.35	445.84	183.63	NO
9000.	0.4014	6	1.0	1.3	10000.0	58.35	461.69	189.32	NO
9500.	0.3785	6	1.0	1.3	10000.0	58.35	477.07	194.85	NO
10000.	0.3579	6	1.0	1.3	10000.0	58.35	492.03	200.22	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

186.	6.524	3	1.5	1.8	480.0	53.55	40.50	38.26	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

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***************************************
*** SUMMARY OF SCREEN MODEL RESULTS ***
***************************************
```

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	6.524	186.	0.

```
***************************************************
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
***************************************************
```

EP3 grinding PM2.5

10/10/18
15:19:07

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EP3 grinding PM2.5

```
SIMPLE TERRAIN INPUTS:
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =    0.457000E-01
   STACK HEIGHT (M)         =      25.2980
   STK INSIDE DIAM (M)      =       0.9144
   STK EXIT VELOCITY (M/S)=         7.5195
   STK GAS EXIT TEMP (K)    =     369.1500
   AMBIENT AIR TEMP (K)     =     293.0000
   RECEPTOR HEIGHT (M)      =       0.0000
   URBAN/RURAL OPTION       =        URBAN
   BUILDING HEIGHT (M)      =       0.0000
   MIN HORIZ BLDG DIM (M)   =       0.0000
   MAX HORIZ BLDG DIM (M)   =       0.0000
```

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 10463.000 (ACFM)

BUOY. FLUX = 3.180 M**4/S**3; MOM. FLUX = 9.381 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	320.0	69.68	1.32	1.30	NO
100.	1.521	1	2.5	2.9	800.0	43.05	31.78	25.67	NO
200.	1.936	3	1.5	1.8	480.0	53.55	43.10	40.81	NO
300.	1.808	4	1.5	1.9	480.0	52.26	46.01	40.96	NO
400.	1.684	4	1.0	1.3	320.0	65.75	60.54	54.16	NO
500.	1.439	4	1.0	1.3	320.0	65.75	73.94	66.29	NO
600.	1.375	6	1.0	1.3	10000.0	58.35	60.02	36.08	NO
700.	1.392	6	1.0	1.3	10000.0	58.35	68.71	40.24	NO
800.	1.350	6	1.0	1.3	10000.0	58.35	77.17	44.17	NO
900.	1.282	6	1.0	1.3	10000.0	58.35	85.42	47.91	NO
1000.	1.204	6	1.0	1.3	10000.0	58.35	93.45	51.47	NO
1100.	1.126	6	1.0	1.3	10000.0	58.35	101.27	54.88	NO
1200.	1.051	6	1.0	1.3	10000.0	58.35	108.91	58.14	NO
1300.	0.9813	6	1.0	1.3	10000.0	58.35	116.37	61.28	NO
1400.	0.9174	6	1.0	1.3	10000.0	58.35	123.66	64.31	NO
1500.	0.8593	6	1.0	1.3	10000.0	58.35	130.79	67.23	NO
1600.	0.8065	6	1.0	1.3	10000.0	58.35	137.76	70.06	NO
1700.	0.7587	6	1.0	1.3	10000.0	58.35	144.58	72.80	NO
1800.	0.7154	6	1.0	1.3	10000.0	58.35	151.27	75.46	NO
1900.	0.6760	6	1.0	1.3	10000.0	58.35	157.82	78.04	NO
2000.	0.6402	6	1.0	1.3	10000.0	58.35	164.25	80.56	NO
2100.	0.6075	6	1.0	1.3	10000.0	58.35	170.56	83.01	NO
2200.	0.5776	6	1.0	1.3	10000.0	58.35	176.75	85.40	NO

2300.	0.5503	6	1.0	1.3	10000.0	58.35	182.83	87.73	NO
2400.	0.5251	6	1.0	1.3	10000.0	58.35	188.81	90.02	NO
2500.	0.5020	6	1.0	1.3	10000.0	58.35	194.68	92.25	NO
2600.	0.4806	6	1.0	1.3	10000.0	58.35	200.46	94.44	NO
2700.	0.4608	6	1.0	1.3	10000.0	58.35	206.15	96.58	NO
2800.	0.4424	6	1.0	1.3	10000.0	58.35	211.75	98.68	NO
2900.	0.4254	6	1.0	1.3	10000.0	58.35	217.26	100.75	NO
3000.	0.4095	6	1.0	1.3	10000.0	58.35	222.69	102.77	NO
3500.	0.3443	6	1.0	1.3	10000.0	58.35	248.70	112.40	NO
4000.	0.2961	6	1.0	1.3	10000.0	58.35	273.04	121.32	NO
4500.	0.2593	6	1.0	1.3	10000.0	58.35	295.97	129.66	NO
5000.	0.2303	6	1.0	1.3	10000.0	58.35	317.68	137.52	NO
5500.	0.2070	6	1.0	1.3	10000.0	58.35	338.34	144.98	NO
6000.	0.1879	6	1.0	1.3	10000.0	58.35	358.06	152.08	NO
6500.	0.1719	6	1.0	1.3	10000.0	58.35	376.96	158.88	NO
7000.	0.1583	6	1.0	1.3	10000.0	58.35	395.11	165.40	NO
7500.	0.1467	6	1.0	1.3	10000.0	58.35	412.61	171.69	NO
8000.	0.1367	6	1.0	1.3	10000.0	58.35	429.50	177.76	NO
8500.	0.1279	6	1.0	1.3	10000.0	58.35	445.84	183.63	NO
9000.	0.1201	6	1.0	1.3	10000.0	58.35	461.69	189.32	NO
9500.	0.1133	6	1.0	1.3	10000.0	58.35	477.07	194.85	NO
10000.	0.1071	6	1.0	1.3	10000.0	58.35	492.03	200.22	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

186.	1.953	3	1.5	1.8	480.0	53.55	40.50	38.26	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1.953	186.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

EP3 grinding PM10

10/10/18
15:17:00

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 13043 ***

EP3 grinding PM10

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =     0.128000
   STACK HEIGHT (M)         =      25.2980
   STK INSIDE DIAM (M)      =       0.9144
   STK EXIT VELOCITY (M/S)=         7.5195
   STK GAS EXIT TEMP (K)    =     369.1500
   AMBIENT AIR TEMP (K)     =     293.0000
   RECEPTOR HEIGHT (M)      =       0.0000
   URBAN/RURAL OPTION       =        URBAN
   BUILDING HEIGHT (M)      =       0.0000
   MIN HORIZ BLDG DIM (M) =         0.0000
   MAX HORIZ BLDG DIM (M) =         0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

   STACK EXIT VELOCITY WAS CALCULATED FROM
   VOLUME FLOW RATE =    10463.000      (ACFM)

BUOY. FLUX =     3.180 M**4/S**3;  MOM. FLUX =     9.381 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	320.0	69.68	1.32	1.30	NO
100.	4.259	1	2.5	2.9	800.0	43.05	31.78	25.67	NO
200.	5.423	3	1.5	1.8	480.0	53.55	43.10	40.81	NO
300.	5.064	4	1.5	1.9	480.0	52.26	46.01	40.96	NO
400.	4.716	4	1.0	1.3	320.0	65.75	60.54	54.16	NO
500.	4.030	4	1.0	1.3	320.0	65.75	73.94	66.29	NO
600.	3.852	6	1.0	1.3	10000.0	58.35	60.02	36.08	NO
700.	3.898	6	1.0	1.3	10000.0	58.35	68.71	40.24	NO
800.	3.781	6	1.0	1.3	10000.0	58.35	77.17	44.17	NO
900.	3.590	6	1.0	1.3	10000.0	58.35	85.42	47.91	NO
1000.	3.372	6	1.0	1.3	10000.0	58.35	93.45	51.47	NO
1100.	3.153	6	1.0	1.3	10000.0	58.35	101.27	54.88	NO
1200.	2.943	6	1.0	1.3	10000.0	58.35	108.91	58.14	NO
1300.	2.748	6	1.0	1.3	10000.0	58.35	116.37	61.28	NO
1400.	2.570	6	1.0	1.3	10000.0	58.35	123.66	64.31	NO
1500.	2.407	6	1.0	1.3	10000.0	58.35	130.79	67.23	NO
1600.	2.259	6	1.0	1.3	10000.0	58.35	137.76	70.06	NO
1700.	2.125	6	1.0	1.3	10000.0	58.35	144.58	72.80	NO
1800.	2.004	6	1.0	1.3	10000.0	58.35	151.27	75.46	NO
1900.	1.893	6	1.0	1.3	10000.0	58.35	157.82	78.04	NO
2000.	1.793	6	1.0	1.3	10000.0	58.35	164.25	80.56	NO
2100.	1.702	6	1.0	1.3	10000.0	58.35	170.56	83.01	NO
2200.	1.618	6	1.0	1.3	10000.0	58.35	176.75	85.40	NO

EP3 grinding PM10

2300.	1.541	6	1.0	1.3	10000.0	58.35	182.83	87.73	NO
2400.	1.471	6	1.0	1.3	10000.0	58.35	188.81	90.02	NO
2500.	1.406	6	1.0	1.3	10000.0	58.35	194.68	92.25	NO
2600.	1.346	6	1.0	1.3	10000.0	58.35	200.46	94.44	NO
2700.	1.291	6	1.0	1.3	10000.0	58.35	206.15	96.58	NO
2800.	1.239	6	1.0	1.3	10000.0	58.35	211.75	98.68	NO
2900.	1.191	6	1.0	1.3	10000.0	58.35	217.26	100.75	NO
3000.	1.147	6	1.0	1.3	10000.0	58.35	222.69	102.77	NO
3500.	0.9642	6	1.0	1.3	10000.0	58.35	248.70	112.40	NO
4000.	0.8294	6	1.0	1.3	10000.0	58.35	273.04	121.32	NO
4500.	0.7263	6	1.0	1.3	10000.0	58.35	295.97	129.66	NO
5000.	0.6452	6	1.0	1.3	10000.0	58.35	317.68	137.52	NO
5500.	0.5798	6	1.0	1.3	10000.0	58.35	338.34	144.98	NO
6000.	0.5262	6	1.0	1.3	10000.0	58.35	358.06	152.08	NO
6500.	0.4814	6	1.0	1.3	10000.0	58.35	376.96	158.88	NO
7000.	0.4434	6	1.0	1.3	10000.0	58.35	395.11	165.40	NO
7500.	0.4109	6	1.0	1.3	10000.0	58.35	412.61	171.69	NO
8000.	0.3828	6	1.0	1.3	10000.0	58.35	429.50	177.76	NO
8500.	0.3582	6	1.0	1.3	10000.0	58.35	445.84	183.63	NO
9000.	0.3365	6	1.0	1.3	10000.0	58.35	461.69	189.32	NO
9500.	0.3172	6	1.0	1.3	10000.0	58.35	477.07	194.85	NO
10000.	0.3000	6	1.0	1.3	10000.0	58.35	492.03	200.22	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

186.	5.469	3	1.5	1.8	480.0	53.55	40.50	38.26	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	5.469	186.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

10/10/18
15:21:41

```
 ***   SCREEN3 MODEL RUN   ***
 *** VERSION DATED 13043 ***

EP drying PM2.5

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =    0.128500E-03
   STACK HEIGHT (M)         =      25.2980
   STK INSIDE DIAM (M)      =       0.9144
   STK EXIT VELOCITY (M/S)=         7.5195
   STK GAS EXIT TEMP (K)    =     369.1500
   AMBIENT AIR TEMP (K)     =     293.0000
   RECEPTOR HEIGHT (M)      =       0.0000
   URBAN/RURAL OPTION       =        URBAN
   BUILDING HEIGHT (M)      =       0.0000
   MIN HORIZ BLDG DIM (M)   =       0.0000
   MAX HORIZ BLDG DIM (M)   =       0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

   STACK EXIT VELOCITY WAS CALCULATED FROM
   VOLUME FLOW RATE =    10463.000      (ACFM)

BUOY. FLUX =    3.180 M**4/S**3;  MOM. FLUX =    9.381 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	320.0	69.68	1.32	1.30	NO
100.	0.4276E-02	1	2.5	2.9	800.0	43.05	31.78	25.67	NO
200.	0.5444E-02	3	1.5	1.8	480.0	53.55	43.10	40.81	NO
300.	0.5084E-02	4	1.5	1.9	480.0	52.26	46.01	40.96	NO
400.	0.4735E-02	4	1.0	1.3	320.0	65.75	60.54	54.16	NO
500.	0.4046E-02	4	1.0	1.3	320.0	65.75	73.94	66.29	NO
600.	0.3867E-02	6	1.0	1.3	10000.0	58.35	60.02	36.08	NO
700.	0.3913E-02	6	1.0	1.3	10000.0	58.35	68.71	40.24	NO
800.	0.3795E-02	6	1.0	1.3	10000.0	58.35	77.17	44.17	NO
900.	0.3604E-02	6	1.0	1.3	10000.0	58.35	85.42	47.91	NO
1000.	0.3385E-02	6	1.0	1.3	10000.0	58.35	93.45	51.47	NO
1100.	0.3165E-02	6	1.0	1.3	10000.0	58.35	101.27	54.88	NO
1200.	0.2955E-02	6	1.0	1.3	10000.0	58.35	108.91	58.14	NO
1300.	0.2759E-02	6	1.0	1.3	10000.0	58.35	116.37	61.28	NO
1400.	0.2580E-02	6	1.0	1.3	10000.0	58.35	123.66	64.31	NO
1500.	0.2416E-02	6	1.0	1.3	10000.0	58.35	130.79	67.23	NO
1600.	0.2268E-02	6	1.0	1.3	10000.0	58.35	137.76	70.06	NO
1700.	0.2133E-02	6	1.0	1.3	10000.0	58.35	144.58	72.80	NO
1800.	0.2012E-02	6	1.0	1.3	10000.0	58.35	151.27	75.46	NO
1900.	0.1901E-02	6	1.0	1.3	10000.0	58.35	157.82	78.04	NO
2000.	0.1800E-02	6	1.0	1.3	10000.0	58.35	164.25	80.56	NO
2100.	0.1708E-02	6	1.0	1.3	10000.0	58.35	170.56	83.01	NO
2200.	0.1624E-02	6	1.0	1.3	10000.0	58.35	176.75	85.40	NO

EP3 drying PM2.5

2300.	0.1547E-02	6	1.0	1.3	10000.0	58.35	182.83	87.73	NO
2400.	0.1477E-02	6	1.0	1.3	10000.0	58.35	188.81	90.02	NO
2500.	0.1411E-02	6	1.0	1.3	10000.0	58.35	194.68	92.25	NO
2600.	0.1351E-02	6	1.0	1.3	10000.0	58.35	200.46	94.44	NO
2700.	0.1296E-02	6	1.0	1.3	10000.0	58.35	206.15	96.58	NO
2800.	0.1244E-02	6	1.0	1.3	10000.0	58.35	211.75	98.68	NO
2900.	0.1196E-02	6	1.0	1.3	10000.0	58.35	217.26	100.75	NO
3000.	0.1151E-02	6	1.0	1.3	10000.0	58.35	222.69	102.77	NO
3500.	0.9680E-03	6	1.0	1.3	10000.0	58.35	248.70	112.40	NO
4000.	0.8326E-03	6	1.0	1.3	10000.0	58.35	273.04	121.32	NO
4500.	0.7291E-03	6	1.0	1.3	10000.0	58.35	295.97	129.66	NO
5000.	0.6477E-03	6	1.0	1.3	10000.0	58.35	317.68	137.52	NO
5500.	0.5821E-03	6	1.0	1.3	10000.0	58.35	338.34	144.98	NO
6000.	0.5282E-03	6	1.0	1.3	10000.0	58.35	358.06	152.08	NO
6500.	0.4833E-03	6	1.0	1.3	10000.0	58.35	376.96	158.88	NO
7000.	0.4452E-03	6	1.0	1.3	10000.0	58.35	395.11	165.40	NO
7500.	0.4125E-03	6	1.0	1.3	10000.0	58.35	412.61	171.69	NO
8000.	0.3843E-03	6	1.0	1.3	10000.0	58.35	429.50	177.76	NO
8500.	0.3596E-03	6	1.0	1.3	10000.0	58.35	445.84	183.63	NO
9000.	0.3378E-03	6	1.0	1.3	10000.0	58.35	461.69	189.32	NO
9500.	0.3185E-03	6	1.0	1.3	10000.0	58.35	477.07	194.85	NO
10000.	0.3012E-03	6	1.0	1.3	10000.0	58.35	492.03	200.22	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

186.	0.5490E-02	3	1.5	1.8	480.0	53.55	40.50	38.26	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.5490E-02	186.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

EP3 drying SOx

10/10/18
15:23:13

```
 ***   SCREEN3 MODEL RUN   ***
 *** VERSION DATED 13043 ***

EP3 drying SOx

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =    0.171360E-03
   STACK HEIGHT (M)         =     25.2980
   STK INSIDE DIAM (M)      =      0.9144
   STK EXIT VELOCITY (M/S)=        7.5195
   STK GAS EXIT TEMP (K)    =    369.1500
   AMBIENT AIR TEMP (K)     =    293.0000
   RECEPTOR HEIGHT (M)      =      0.0000
   URBAN/RURAL OPTION       =       URBAN
   BUILDING HEIGHT (M)      =      0.0000
   MIN HORIZ BLDG DIM (M) =        0.0000
   MAX HORIZ BLDG DIM (M) =        0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

   STACK EXIT VELOCITY WAS CALCULATED FROM
   VOLUME FLOW RATE =    10463.000     (ACFM)

BUOY. FLUX =    3.180 M**4/S**3;  MOM. FLUX =     9.381 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	320.0	69.68	1.32	1.30	NO
100.	0.5702E-02	1	2.5	2.9	800.0	43.05	31.78	25.67	NO
200.	0.7260E-02	3	1.5	1.8	480.0	53.55	43.10	40.81	NO
300.	0.6779E-02	4	1.5	1.9	480.0	52.26	46.01	40.96	NO
400.	0.6314E-02	4	1.0	1.3	320.0	65.75	60.54	54.16	NO
500.	0.5396E-02	4	1.0	1.3	320.0	65.75	73.94	66.29	NO
600.	0.5156E-02	6	1.0	1.3	10000.0	58.35	60.02	36.08	NO
700.	0.5218E-02	6	1.0	1.3	10000.0	58.35	68.71	40.24	NO
800.	0.5061E-02	6	1.0	1.3	10000.0	58.35	77.17	44.17	NO
900.	0.4806E-02	6	1.0	1.3	10000.0	58.35	85.42	47.91	NO
1000.	0.4515E-02	6	1.0	1.3	10000.0	58.35	93.45	51.47	NO
1100.	0.4221E-02	6	1.0	1.3	10000.0	58.35	101.27	54.88	NO
1200.	0.3940E-02	6	1.0	1.3	10000.0	58.35	108.91	58.14	NO
1300.	0.3679E-02	6	1.0	1.3	10000.0	58.35	116.37	61.28	NO
1400.	0.3440E-02	6	1.0	1.3	10000.0	58.35	123.66	64.31	NO
1500.	0.3222E-02	6	1.0	1.3	10000.0	58.35	130.79	67.23	NO
1600.	0.3024E-02	6	1.0	1.3	10000.0	58.35	137.76	70.06	NO
1700.	0.2845E-02	6	1.0	1.3	10000.0	58.35	144.58	72.80	NO
1800.	0.2682E-02	6	1.0	1.3	10000.0	58.35	151.27	75.46	NO
1900.	0.2535E-02	6	1.0	1.3	10000.0	58.35	157.82	78.04	NO
2000.	0.2400E-02	6	1.0	1.3	10000.0	58.35	164.25	80.56	NO
2100.	0.2278E-02	6	1.0	1.3	10000.0	58.35	170.56	83.01	NO
2200.	0.2166E-02	6	1.0	1.3	10000.0	58.35	176.75	85.40	NO

EP3 drying SOx

2300.	0.2063E-02	6	1.0	1.3	10000.0	58.35	182.83	87.73	NO
2400.	0.1969E-02	6	1.0	1.3	10000.0	58.35	188.81	90.02	NO
2500.	0.1882E-02	6	1.0	1.3	10000.0	58.35	194.68	92.25	NO
2600.	0.1802E-02	6	1.0	1.3	10000.0	58.35	200.46	94.44	NO
2700.	0.1728E-02	6	1.0	1.3	10000.0	58.35	206.15	96.58	NO
2800.	0.1659E-02	6	1.0	1.3	10000.0	58.35	211.75	98.68	NO
2900.	0.1595E-02	6	1.0	1.3	10000.0	58.35	217.26	100.75	NO
3000.	0.1536E-02	6	1.0	1.3	10000.0	58.35	222.69	102.77	NO
3500.	0.1291E-02	6	1.0	1.3	10000.0	58.35	248.70	112.40	NO
4000.	0.1110E-02	6	1.0	1.3	10000.0	58.35	273.04	121.32	NO
4500.	0.9723E-03	6	1.0	1.3	10000.0	58.35	295.97	129.66	NO
5000.	0.8637E-03	6	1.0	1.3	10000.0	58.35	317.68	137.52	NO
5500.	0.7763E-03	6	1.0	1.3	10000.0	58.35	338.34	144.98	NO
6000.	0.7044E-03	6	1.0	1.3	10000.0	58.35	358.06	152.08	NO
6500.	0.6444E-03	6	1.0	1.3	10000.0	58.35	376.96	158.88	NO
7000.	0.5937E-03	6	1.0	1.3	10000.0	58.35	395.11	165.40	NO
7500.	0.5501E-03	6	1.0	1.3	10000.0	58.35	412.61	171.69	NO
8000.	0.5124E-03	6	1.0	1.3	10000.0	58.35	429.50	177.76	NO
8500.	0.4795E-03	6	1.0	1.3	10000.0	58.35	445.84	183.63	NO
9000.	0.4505E-03	6	1.0	1.3	10000.0	58.35	461.69	189.32	NO
9500.	0.4247E-03	6	1.0	1.3	10000.0	58.35	477.07	194.85	NO
10000.	0.4017E-03	6	1.0	1.3	10000.0	58.35	492.03	200.22	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

186.	0.7321E-02	3	1.5	1.8	480.0	53.55	40.50	38.26	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.7321E-02	186.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

EP3 drying NOx

10/10/18
15:24:40

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 13043 ***

EP3 drying NOx

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =    0.311000E-01
   STACK HEIGHT (M)         =     25.2980
   STK INSIDE DIAM (M)      =      0.9144
   STK EXIT VELOCITY (M/S)=        7.5195
   STK GAS EXIT TEMP (K)    =    369.1500
   AMBIENT AIR TEMP (K)     =    293.0000
   RECEPTOR HEIGHT (M)      =      0.0000
   URBAN/RURAL OPTION       =        URBAN
   BUILDING HEIGHT (M)      =      0.0000
   MIN HORIZ BLDG DIM (M) =        0.0000
   MAX HORIZ BLDG DIM (M) =        0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

   STACK EXIT VELOCITY WAS CALCULATED FROM
   VOLUME FLOW RATE =    10463.000      (ACFM)

BUOY. FLUX =     3.180 M**4/S**3;  MOM. FLUX =     9.381 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	320.0	69.68	1.32	1.30	NO
100.	1.035	1	2.5	2.9	800.0	43.05	31.78	25.67	NO
200.	1.318	3	1.5	1.8	480.0	53.55	43.10	40.81	NO
300.	1.230	4	1.5	1.9	480.0	52.26	46.01	40.96	NO
400.	1.146	4	1.0	1.3	320.0	65.75	60.54	54.16	NO
500.	0.9793	4	1.0	1.3	320.0	65.75	73.94	66.29	NO
600.	0.9358	6	1.0	1.3	10000.0	58.35	60.02	36.08	NO
700.	0.9470	6	1.0	1.3	10000.0	58.35	68.71	40.24	NO
800.	0.9186	6	1.0	1.3	10000.0	58.35	77.17	44.17	NO
900.	0.8722	6	1.0	1.3	10000.0	58.35	85.42	47.91	NO
1000.	0.8194	6	1.0	1.3	10000.0	58.35	93.45	51.47	NO
1100.	0.7661	6	1.0	1.3	10000.0	58.35	101.27	54.88	NO
1200.	0.7151	6	1.0	1.3	10000.0	58.35	108.91	58.14	NO
1300.	0.6678	6	1.0	1.3	10000.0	58.35	116.37	61.28	NO
1400.	0.6243	6	1.0	1.3	10000.0	58.35	123.66	64.31	NO
1500.	0.5848	6	1.0	1.3	10000.0	58.35	130.79	67.23	NO
1600.	0.5489	6	1.0	1.3	10000.0	58.35	137.76	70.06	NO
1700.	0.5163	6	1.0	1.3	10000.0	58.35	144.58	72.80	NO
1800.	0.4868	6	1.0	1.3	10000.0	58.35	151.27	75.46	NO
1900.	0.4600	6	1.0	1.3	10000.0	58.35	157.82	78.04	NO
2000.	0.4357	6	1.0	1.3	10000.0	58.35	164.25	80.56	NO
2100.	0.4134	6	1.0	1.3	10000.0	58.35	170.56	83.01	NO
2200.	0.3931	6	1.0	1.3	10000.0	58.35	176.75	85.40	NO

EP3 drying NOx

2300.	0.3745	6	1.0	1.3	10000.0	58.35	182.83	87.73	NO
2400.	0.3574	6	1.0	1.3	10000.0	58.35	188.81	90.02	NO
2500.	0.3416	6	1.0	1.3	10000.0	58.35	194.68	92.25	NO
2600.	0.3270	6	1.0	1.3	10000.0	58.35	200.46	94.44	NO
2700.	0.3136	6	1.0	1.3	10000.0	58.35	206.15	96.58	NO
2800.	0.3011	6	1.0	1.3	10000.0	58.35	211.75	98.68	NO
2900.	0.2895	6	1.0	1.3	10000.0	58.35	217.26	100.75	NO
3000.	0.2787	6	1.0	1.3	10000.0	58.35	222.69	102.77	NO
3500.	0.2343	6	1.0	1.3	10000.0	58.35	248.70	112.40	NO
4000.	0.2015	6	1.0	1.3	10000.0	58.35	273.04	121.32	NO
4500.	0.1765	6	1.0	1.3	10000.0	58.35	295.97	129.66	NO
5000.	0.1568	6	1.0	1.3	10000.0	58.35	317.68	137.52	NO
5500.	0.1409	6	1.0	1.3	10000.0	58.35	338.34	144.98	NO
6000.	0.1278	6	1.0	1.3	10000.0	58.35	358.06	152.08	NO
6500.	0.1170	6	1.0	1.3	10000.0	58.35	376.96	158.88	NO
7000.	0.1077	6	1.0	1.3	10000.0	58.35	395.11	165.40	NO
7500.	0.9984E-01	6	1.0	1.3	10000.0	58.35	412.61	171.69	NO
8000.	0.9300E-01	6	1.0	1.3	10000.0	58.35	429.50	177.76	NO
8500.	0.8702E-01	6	1.0	1.3	10000.0	58.35	445.84	183.63	NO
9000.	0.8176E-01	6	1.0	1.3	10000.0	58.35	461.69	189.32	NO
9500.	0.7708E-01	6	1.0	1.3	10000.0	58.35	477.07	194.85	NO
10000.	0.7290E-01	6	1.0	1.3	10000.0	58.35	492.03	200.22	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

186.	1.329	3	1.5	1.8	480.0	53.55	40.50	38.26	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1.329	186.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

EP3 drying CO

10/10/18
15:25:48

```
 ***   SCREEN3 MODEL RUN   ***
 *** VERSION DATED 13043 ***

EP3 drying CO

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =     0.260000E-01
   STACK HEIGHT (M)         =      25.2980
   STK INSIDE DIAM (M)      =       0.9144
   STK EXIT VELOCITY (M/S)=        7.5195
   STK GAS EXIT TEMP (K)    =     369.1500
   AMBIENT AIR TEMP (K)     =     293.0000
   RECEPTOR HEIGHT (M)      =       0.0000
   URBAN/RURAL OPTION       =        URBAN
   BUILDING HEIGHT (M)      =       0.0000
   MIN HORIZ BLDG DIM (M)   =       0.0000
   MAX HORIZ BLDG DIM (M)   =       0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

   STACK EXIT VELOCITY WAS CALCULATED FROM
   VOLUME FLOW RATE =    10463.000      (ACFM)

BUOY. FLUX =     3.180 M**4/S**3;  MOM. FLUX =     9.381 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF     0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	320.0	69.68	1.32	1.30	NO
100.	0.8651	1	2.5	2.9	800.0	43.05	31.78	25.67	NO
200.	1.102	3	1.5	1.8	480.0	53.55	43.10	40.81	NO
300.	1.029	4	1.5	1.9	480.0	52.26	46.01	40.96	NO
400.	0.9580	4	1.0	1.3	320.0	65.75	60.54	54.16	NO
500.	0.8187	4	1.0	1.3	320.0	65.75	73.94	66.29	NO
600.	0.7823	6	1.0	1.3	10000.0	58.35	60.02	36.08	NO
700.	0.7917	6	1.0	1.3	10000.0	58.35	68.71	40.24	NO
800.	0.7679	6	1.0	1.3	10000.0	58.35	77.17	44.17	NO
900.	0.7291	6	1.0	1.3	10000.0	58.35	85.42	47.91	NO
1000.	0.6850	6	1.0	1.3	10000.0	58.35	93.45	51.47	NO
1100.	0.6405	6	1.0	1.3	10000.0	58.35	101.27	54.88	NO
1200.	0.5979	6	1.0	1.3	10000.0	58.35	108.91	58.14	NO
1300.	0.5583	6	1.0	1.3	10000.0	58.35	116.37	61.28	NO
1400.	0.5219	6	1.0	1.3	10000.0	58.35	123.66	64.31	NO
1500.	0.4889	6	1.0	1.3	10000.0	58.35	130.79	67.23	NO
1600.	0.4589	6	1.0	1.3	10000.0	58.35	137.76	70.06	NO
1700.	0.4317	6	1.0	1.3	10000.0	58.35	144.58	72.80	NO
1800.	0.4070	6	1.0	1.3	10000.0	58.35	151.27	75.46	NO
1900.	0.3846	6	1.0	1.3	10000.0	58.35	157.82	78.04	NO
2000.	0.3642	6	1.0	1.3	10000.0	58.35	164.25	80.56	NO
2100.	0.3456	6	1.0	1.3	10000.0	58.35	170.56	83.01	NO
2200.	0.3286	6	1.0	1.3	10000.0	58.35	176.75	85.40	NO

2300.	0.3131	6	1.0	1.3	10000.0	58.35	182.83	87.73	NO
2400.	0.2987	6	1.0	1.3	10000.0	58.35	188.81	90.02	NO
2500.	0.2856	6	1.0	1.3	10000.0	58.35	194.68	92.25	NO
2600.	0.2734	6	1.0	1.3	10000.0	58.35	200.46	94.44	NO
2700.	0.2622	6	1.0	1.3	10000.0	58.35	206.15	96.58	NO
2800.	0.2517	6	1.0	1.3	10000.0	58.35	211.75	98.68	NO
2900.	0.2420	6	1.0	1.3	10000.0	58.35	217.26	100.75	NO
3000.	0.2330	6	1.0	1.3	10000.0	58.35	222.69	102.77	NO
3500.	0.1959	6	1.0	1.3	10000.0	58.35	248.70	112.40	NO
4000.	0.1685	6	1.0	1.3	10000.0	58.35	273.04	121.32	NO
4500.	0.1475	6	1.0	1.3	10000.0	58.35	295.97	129.66	NO
5000.	0.1310	6	1.0	1.3	10000.0	58.35	317.68	137.52	NO
5500.	0.1178	6	1.0	1.3	10000.0	58.35	338.34	144.98	NO
6000.	0.1069	6	1.0	1.3	10000.0	58.35	358.06	152.08	NO
6500.	0.9778E-01	6	1.0	1.3	10000.0	58.35	376.96	158.88	NO
7000.	0.9007E-01	6	1.0	1.3	10000.0	58.35	395.11	165.40	NO
7500.	0.8347E-01	6	1.0	1.3	10000.0	58.35	412.61	171.69	NO
8000.	0.7775E-01	6	1.0	1.3	10000.0	58.35	429.50	177.76	NO
8500.	0.7275E-01	6	1.0	1.3	10000.0	58.35	445.84	183.63	NO
9000.	0.6835E-01	6	1.0	1.3	10000.0	58.35	461.69	189.32	NO
9500.	0.6444E-01	6	1.0	1.3	10000.0	58.35	477.07	194.85	NO
10000.	0.6095E-01	6	1.0	1.3	10000.0	58.35	492.03	200.22	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

186.	1.111	3	1.5	1.8	480.0	53.55	40.50	38.26	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1.111	186.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

EP3 drying VOCs

10/10/18
16:29:25

*** SCREEN3 MODEL RUN ***
*** VERSION DATED 13043 ***

EP3 drying VOCs

SIMPLE TERRAIN INPUTS:

SOURCE TYPE	=	POINT
EMISSION RATE (G/S)	=	0.171360E-02
STACK HEIGHT (M)	=	25.2980
STK INSIDE DIAM (M)	=	0.9144
STK EXIT VELOCITY (M/S)	=	7.5195
STK GAS EXIT TEMP (K)	=	369.1500
AMBIENT AIR TEMP (K)	=	293.0000
RECEPTOR HEIGHT (M)	=	0.0000
URBAN/RURAL OPTION	=	URBAN
BUILDING HEIGHT (M)	=	0.0000
MIN HORIZ BLDG DIM (M)	=	0.0000
MAX HORIZ BLDG DIM (M)	=	0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

STACK EXIT VELOCITY WAS CALCULATED FROM
VOLUME FLOW RATE = 10463.000 (ACFM)

BUOY. FLUX = 3.180 M**4/S**3; MOM. FLUX = 9.381 M**4/S**2.

*** FULL METEOROLOGY ***

****
*** SCREEN AUTOMATED DISTANCES ***
****

*** TERRAIN HEIGHT OF 0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	320.0	69.68	1.32	1.30	NO
100.	0.5702E-01	1	2.5	2.9	800.0	43.05	31.78	25.67	NO
200.	0.7260E-01	3	1.5	1.8	480.0	53.55	43.10	40.81	NO
300.	0.6779E-01	4	1.5	1.9	480.0	52.26	46.01	40.96	NO
400.	0.6314E-01	4	1.0	1.3	320.0	65.75	60.54	54.16	NO
500.	0.5396E-01	4	1.0	1.3	320.0	65.75	73.94	66.29	NO
600.	0.5156E-01	6	1.0	1.3	10000.0	58.35	60.02	36.08	NO
700.	0.5218E-01	6	1.0	1.3	10000.0	58.35	68.71	40.24	NO
800.	0.5061E-01	6	1.0	1.3	10000.0	58.35	77.17	44.17	NO
900.	0.4806E-01	6	1.0	1.3	10000.0	58.35	85.42	47.91	NO
1000.	0.4515E-01	6	1.0	1.3	10000.0	58.35	93.45	51.47	NO
1100.	0.4221E-01	6	1.0	1.3	10000.0	58.35	101.27	54.88	NO
1200.	0.3940E-01	6	1.0	1.3	10000.0	58.35	108.91	58.14	NO
1300.	0.3679E-01	6	1.0	1.3	10000.0	58.35	116.37	61.28	NO
1400.	0.3440E-01	6	1.0	1.3	10000.0	58.35	123.66	64.31	NO
1500.	0.3222E-01	6	1.0	1.3	10000.0	58.35	130.79	67.23	NO
1600.	0.3024E-01	6	1.0	1.3	10000.0	58.35	137.76	70.06	NO
1700.	0.2845E-01	6	1.0	1.3	10000.0	58.35	144.58	72.80	NO
1800.	0.2682E-01	6	1.0	1.3	10000.0	58.35	151.27	75.46	NO
1900.	0.2535E-01	6	1.0	1.3	10000.0	58.35	157.82	78.04	NO
2000.	0.2400E-01	6	1.0	1.3	10000.0	58.35	164.25	80.56	NO
2100.	0.2278E-01	6	1.0	1.3	10000.0	58.35	170.56	83.01	NO
2200.	0.2166E-01	6	1.0	1.3	10000.0	58.35	176.75	85.40	NO

2300.	0.2063E-01	6	1.0	1.3	10000.0	58.35	182.83	87.73	NO
2400.	0.1969E-01	6	1.0	1.3	10000.0	58.35	188.81	90.02	NO
2500.	0.1882E-01	6	1.0	1.3	10000.0	58.35	194.68	92.25	NO
2600.	0.1802E-01	6	1.0	1.3	10000.0	58.35	200.46	94.44	NO
2700.	0.1728E-01	6	1.0	1.3	10000.0	58.35	206.15	96.58	NO
2800.	0.1659E-01	6	1.0	1.3	10000.0	58.35	211.75	98.68	NO
2900.	0.1595E-01	6	1.0	1.3	10000.0	58.35	217.26	100.75	NO
3000.	0.1536E-01	6	1.0	1.3	10000.0	58.35	222.69	102.77	NO
3500.	0.1291E-01	6	1.0	1.3	10000.0	58.35	248.70	112.40	NO
4000.	0.1110E-01	6	1.0	1.3	10000.0	58.35	273.04	121.32	NO
4500.	0.9723E-02	6	1.0	1.3	10000.0	58.35	295.97	129.66	NO
5000.	0.8637E-02	6	1.0	1.3	10000.0	58.35	317.68	137.52	NO
5500.	0.7763E-02	6	1.0	1.3	10000.0	58.35	338.34	144.98	NO
6000.	0.7044E-02	6	1.0	1.3	10000.0	58.35	358.06	152.08	NO
6500.	0.6444E-02	6	1.0	1.3	10000.0	58.35	376.96	158.88	NO
7000.	0.5937E-02	6	1.0	1.3	10000.0	58.35	395.11	165.40	NO
7500.	0.5501E-02	6	1.0	1.3	10000.0	58.35	412.61	171.69	NO
8000.	0.5124E-02	6	1.0	1.3	10000.0	58.35	429.50	177.76	NO
8500.	0.4795E-02	6	1.0	1.3	10000.0	58.35	445.84	183.63	NO
9000.	0.4505E-02	6	1.0	1.3	10000.0	58.35	461.69	189.32	NO
9500.	0.4247E-02	6	1.0	1.3	10000.0	58.35	477.07	194.85	NO
10000.	0.4017E-02	6	1.0	1.3	10000.0	58.35	492.03	200.22	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

186.	0.7321E-01	3	1.5	1.8	480.0	53.55	40.50	38.26	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.7321E-01	186.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

02/28/19
11:03:21

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 13043 ***

EP4 and EP5: Storage Silos PM Emissions

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =    0.374200E-02
   STACK HEIGHT (M)         =      20.1168
   STK INSIDE DIAM (M)      =       0.3109
   STK EXIT VELOCITY (M/S)=      24.8676
   STK GAS EXIT TEMP (K)   =     293.0000
   AMBIENT AIR TEMP (K)     =     293.0000
   RECEPTOR HEIGHT (M)      =       0.0000
   URBAN/RURAL OPTION       =        URBAN
   BUILDING HEIGHT (M)      =       0.0000
   MIN HORIZ BLDG DIM (M)  =       0.0000
   MAX HORIZ BLDG DIM (M)  =       0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX =    0.000 M**4/S**3;  MOM. FLUX =   14.943 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	320.0	41.00	1.84	1.83	NO
100.	0.3980	3	1.5	1.7	480.0	33.56	21.91	20.37	NO
200.	0.4164	4	1.0	1.2	320.0	39.59	31.29	27.76	NO
300.	0.4786	6	1.0	1.2	10000.0	30.73	31.33	20.16	NO
400.	0.4472	6	1.0	1.2	10000.0	30.73	40.97	25.48	NO
500.	0.3790	6	1.0	1.2	10000.0	30.73	50.30	30.39	NO
600.	0.3164	6	1.0	1.2	10000.0	30.73	59.35	34.95	NO
700.	0.2659	6	1.0	1.2	10000.0	30.73	68.13	39.23	NO
800.	0.2263	6	1.0	1.2	10000.0	30.73	76.65	43.26	NO
900.	0.1952	6	1.0	1.2	10000.0	30.73	84.95	47.07	NO
1000.	0.1705	6	1.0	1.2	10000.0	30.73	93.02	50.69	NO
1100.	0.1505	6	1.0	1.2	10000.0	30.73	100.88	54.14	NO
1200.	0.1342	6	1.0	1.2	10000.0	30.73	108.55	57.45	NO
1300.	0.1207	6	1.0	1.2	10000.0	30.73	116.03	60.63	NO
1400.	0.1094	6	1.0	1.2	10000.0	30.73	123.34	63.68	NO
1500.	0.9988E-01	6	1.0	1.2	10000.0	30.73	130.48	66.63	NO
1600.	0.9169E-01	6	1.0	1.2	10000.0	30.73	137.47	69.48	NO
1700.	0.8463E-01	6	1.0	1.2	10000.0	30.73	144.31	72.24	NO
1800.	0.7848E-01	6	1.0	1.2	10000.0	30.73	151.00	74.92	NO
1900.	0.7309E-01	6	1.0	1.2	10000.0	30.73	157.57	77.53	NO
2000.	0.6833E-01	6	1.0	1.2	10000.0	30.73	164.01	80.06	NO
2100.	0.6411E-01	6	1.0	1.2	10000.0	30.73	170.32	82.52	NO
2200.	0.6034E-01	6	1.0	1.2	10000.0	30.73	176.52	84.93	NO
2300.	0.5696E-01	6	1.0	1.2	10000.0	30.73	182.61	87.28	NO
2400.	0.5390E-01	6	1.0	1.2	10000.0	30.73	188.60	89.57	NO

2500.	0.5114E-01	6	1.0	1.2	10000.0	30.73	194.48	91.82	NO
2600.	0.4863E-01	6	1.0	1.2	10000.0	30.73	200.26	94.01	NO
2700.	0.4634E-01	6	1.0	1.2	10000.0	30.73	205.95	96.17	NO
2800.	0.4424E-01	6	1.0	1.2	10000.0	30.73	211.56	98.28	NO
2900.	0.4231E-01	6	1.0	1.2	10000.0	30.73	217.07	100.35	NO
3000.	0.4053E-01	6	1.0	1.2	10000.0	30.73	222.51	102.38	NO
3500.	0.3340E-01	6	1.0	1.2	10000.0	30.73	248.53	112.04	NO
4000.	0.2832E-01	6	1.0	1.2	10000.0	30.73	272.89	120.99	NO
4500.	0.2454E-01	6	1.0	1.2	10000.0	30.73	295.83	129.35	NO
5000.	0.2161E-01	6	1.0	1.2	10000.0	30.73	317.56	137.23	NO
5500.	0.1929E-01	6	1.0	1.2	10000.0	30.73	338.22	144.70	NO
6000.	0.1741E-01	6	1.0	1.2	10000.0	30.73	357.95	151.82	NO
6500.	0.1586E-01	6	1.0	1.2	10000.0	30.73	376.85	158.63	NO
7000.	0.1455E-01	6	1.0	1.2	10000.0	30.73	395.01	165.16	NO
7500.	0.1344E-01	6	1.0	1.2	10000.0	30.73	412.51	171.46	NO
8000.	0.1248E-01	6	1.0	1.2	10000.0	30.73	429.41	177.53	NO
8500.	0.1165E-01	6	1.0	1.2	10000.0	30.73	445.75	183.41	NO
9000.	0.1092E-01	6	1.0	1.2	10000.0	30.73	461.60	189.11	NO
9500.	0.1027E-01	6	1.0	1.2	10000.0	30.73	476.98	194.64	NO
10000.	0.9700E-02	6	1.0	1.2	10000.0	30.73	491.94	200.02	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

315.	0.4804	6	1.0	1.2	10000.0	30.73	32.89	21.04	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.4804	315.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

EP4 and EP5 silo storage PM10

02/28/19
11:18:29

```
 ***   SCREEN3 MODEL RUN   ***
 *** VERSION DATED 13043 ***

EP4 and EP5 Storage Silos PM10 Emissions

SIMPLE TERRAIN INPUTS:
   SOURCE TYPE              =        POINT
   EMISSION RATE (G/S)      =     0.128500E-02
   STACK HEIGHT (M)         =      20.1168
   STK INSIDE DIAM (M)      =       0.3109
   STK EXIT VELOCITY (M/S)=       24.8676
   STK GAS EXIT TEMP (K)    =     293.0000
   AMBIENT AIR TEMP (K)     =     293.0000
   RECEPTOR HEIGHT (M)      =       0.0000
   URBAN/RURAL OPTION       =        URBAN
   BUILDING HEIGHT (M)      =       0.0000
   MIN HORIZ BLDG DIM (M) =         0.0000
   MAX HORIZ BLDG DIM (M) =         0.0000

THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.


BUOY. FLUX =    0.000 M**4/S**3;  MOM. FLUX =   14.943 M**4/S**2.

*** FULL METEOROLOGY ***

**********************************
*** SCREEN AUTOMATED DISTANCES ***
**********************************

*** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.1	320.0	41.00	1.84	1.83	NO
100.	0.1367	3	1.5	1.7	480.0	33.56	21.91	20.37	NO
200.	0.1430	4	1.0	1.2	320.0	39.59	31.29	27.76	NO
300.	0.1644	6	1.0	1.2	10000.0	30.73	31.33	20.16	NO
400.	0.1536	6	1.0	1.2	10000.0	30.73	40.97	25.48	NO
500.	0.1301	6	1.0	1.2	10000.0	30.73	50.30	30.39	NO
600.	0.1086	6	1.0	1.2	10000.0	30.73	59.35	34.95	NO
700.	0.9131E-01	6	1.0	1.2	10000.0	30.73	68.13	39.23	NO
800.	0.7772E-01	6	1.0	1.2	10000.0	30.73	76.65	43.26	NO
900.	0.6703E-01	6	1.0	1.2	10000.0	30.73	84.95	47.07	NO
1000.	0.5854E-01	6	1.0	1.2	10000.0	30.73	93.02	50.69	NO
1100.	0.5169E-01	6	1.0	1.2	10000.0	30.73	100.88	54.14	NO
1200.	0.4610E-01	6	1.0	1.2	10000.0	30.73	108.55	57.45	NO
1300.	0.4146E-01	6	1.0	1.2	10000.0	30.73	116.03	60.63	NO
1400.	0.3758E-01	6	1.0	1.2	10000.0	30.73	123.34	63.68	NO
1500.	0.3430E-01	6	1.0	1.2	10000.0	30.73	130.48	66.63	NO
1600.	0.3149E-01	6	1.0	1.2	10000.0	30.73	137.47	69.48	NO
1700.	0.2906E-01	6	1.0	1.2	10000.0	30.73	144.31	72.24	NO
1800.	0.2695E-01	6	1.0	1.2	10000.0	30.73	151.00	74.92	NO
1900.	0.2510E-01	6	1.0	1.2	10000.0	30.73	157.57	77.53	NO
2000.	0.2347E-01	6	1.0	1.2	10000.0	30.73	164.01	80.06	NO
2100.	0.2202E-01	6	1.0	1.2	10000.0	30.73	170.32	82.52	NO
2200.	0.2072E-01	6	1.0	1.2	10000.0	30.73	176.52	84.93	NO
2300.	0.1956E-01	6	1.0	1.2	10000.0	30.73	182.61	87.28	NO
2400.	0.1851E-01	6	1.0	1.2	10000.0	30.73	188.60	89.57	NO

EP4 and EP5 silo storage PM10

2500.	0.1756E-01	6	1.0	1.2	10000.0	30.73	194.48	91.82	NO
2600.	0.1670E-01	6	1.0	1.2	10000.0	30.73	200.26	94.01	NO
2700.	0.1591E-01	6	1.0	1.2	10000.0	30.73	205.95	96.17	NO
2800.	0.1519E-01	6	1.0	1.2	10000.0	30.73	211.56	98.28	NO
2900.	0.1453E-01	6	1.0	1.2	10000.0	30.73	217.07	100.35	NO
3000.	0.1392E-01	6	1.0	1.2	10000.0	30.73	222.51	102.38	NO
3500.	0.1147E-01	6	1.0	1.2	10000.0	30.73	248.53	112.04	NO
4000.	0.9726E-02	6	1.0	1.2	10000.0	30.73	272.89	120.99	NO
4500.	0.8426E-02	6	1.0	1.2	10000.0	30.73	295.83	129.35	NO
5000.	0.7422E-02	6	1.0	1.2	10000.0	30.73	317.56	137.23	NO
5500.	0.6625E-02	6	1.0	1.2	10000.0	30.73	338.22	144.70	NO
6000.	0.5979E-02	6	1.0	1.2	10000.0	30.73	357.95	151.82	NO
6500.	0.5445E-02	6	1.0	1.2	10000.0	30.73	376.85	158.63	NO
7000.	0.4996E-02	6	1.0	1.2	10000.0	30.73	395.01	165.16	NO
7500.	0.4614E-02	6	1.0	1.2	10000.0	30.73	412.51	171.46	NO
8000.	0.4286E-02	6	1.0	1.2	10000.0	30.73	429.41	177.53	NO
8500.	0.4000E-02	6	1.0	1.2	10000.0	30.73	445.75	183.41	NO
9000.	0.3750E-02	6	1.0	1.2	10000.0	30.73	461.60	189.11	NO
9500.	0.3528E-02	6	1.0	1.2	10000.0	30.73	476.98	194.64	NO
10000.	0.3331E-02	6	1.0	1.2	10000.0	30.73	491.94	200.02	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

315.	0.1650	6	1.0	1.2	10000.0	30.73	32.89	21.04	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	0.1650	315.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

EP6 and EP7 loadout chutes PM

10/10/18
15:57:28

```
 ***   SCREEN3 MODEL RUN   ***
 *** VERSION DATED 13043 ***

EP6 & EP7 loadout chutes PM

 SIMPLE TERRAIN INPUTS:
    SOURCE TYPE              =        POINT
    EMISSION RATE (G/S)      =     0.374200E-02
    STACK HEIGHT (M)         =       6.7056
    STK INSIDE DIAM (M)      =       0.2033
    STK EXIT VELOCITY (M/S)=        20.3543
    STK GAS EXIT TEMP (K)    =     293.0000
    AMBIENT AIR TEMP (K)     =     293.0000
    RECEPTOR HEIGHT (M)      =       0.0000
    URBAN/RURAL OPTION       =        URBAN
    BUILDING HEIGHT (M)      =       0.0000
    MIN HORIZ BLDG DIM (M) =         0.0000
    MAX HORIZ BLDG DIM (M) =         0.0000

 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

    STACK EXIT VELOCITY WAS CALCULATED FROM
    VOLUME FLOW RATE =    1400.0000      (ACFM)

 BUOY. FLUX =     0.000 M**4/S**3;  MOM. FLUX =     4.281 M**4/S**2.

 *** FULL METEOROLOGY ***

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF     0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	19.12	1.31	1.29	NO
100.	2.613	6	1.0	1.0	10000.0	14.21	11.00	7.76	NO
200.	2.390	6	1.0	1.0	10000.0	14.21	21.28	14.20	NO
300.	1.479	6	1.0	1.0	10000.0	14.21	31.26	20.05	NO
400.	0.9806	6	1.0	1.0	10000.0	14.21	40.91	25.39	NO
500.	0.7006	6	1.0	1.0	10000.0	14.21	50.25	30.31	NO
600.	0.5298	6	1.0	1.0	10000.0	14.21	59.31	34.89	NO
700.	0.4181	6	1.0	1.0	10000.0	14.21	68.09	39.17	NO
800.	0.3409	6	1.0	1.0	10000.0	14.21	76.62	43.20	NO
900.	0.2850	6	1.0	1.0	10000.0	14.21	84.92	47.02	NO
1000.	0.2432	6	1.0	1.0	10000.0	14.21	92.99	50.64	NO
1100.	0.2109	6	1.0	1.0	10000.0	14.21	100.86	54.10	NO
1200.	0.1854	6	1.0	1.0	10000.0	14.21	108.52	57.41	NO
1300.	0.1649	6	1.0	1.0	10000.0	14.21	116.01	60.59	NO
1400.	0.1480	6	1.0	1.0	10000.0	14.21	123.32	63.65	NO
1500.	0.1340	6	1.0	1.0	10000.0	14.21	130.46	66.60	NO
1600.	0.1222	6	1.0	1.0	10000.0	14.21	137.45	69.45	NO
1700.	0.1121	6	1.0	1.0	10000.0	14.21	144.29	72.21	NO
1800.	0.1035	6	1.0	1.0	10000.0	14.21	150.99	74.89	NO
1900.	0.9593E-01	6	1.0	1.0	10000.0	14.21	157.55	77.50	NO
2000.	0.8934E-01	6	1.0	1.0	10000.0	14.21	163.99	80.03	NO
2100.	0.8353E-01	6	1.0	1.0	10000.0	14.21	170.31	82.50	NO
2200.	0.7838E-01	6	1.0	1.0	10000.0	14.21	176.51	84.90	NO

EP6 and EP7 loadout chutes PM

2300.	0.7378E-01	6	1.0	1.0	10000.0	14.21	182.60	87.25	NO
2400.	0.6965E-01	6	1.0	1.0	10000.0	14.21	188.58	89.55	NO
2500.	0.6593E-01	6	1.0	1.0	10000.0	14.21	194.47	91.79	NO
2600.	0.6257E-01	6	1.0	1.0	10000.0	14.21	200.25	93.99	NO
2700.	0.5950E-01	6	1.0	1.0	10000.0	14.21	205.94	96.14	NO
2800.	0.5671E-01	6	1.0	1.0	10000.0	14.21	211.55	98.25	NO
2900.	0.5415E-01	6	1.0	1.0	10000.0	14.21	217.06	100.33	NO
3000.	0.5180E-01	6	1.0	1.0	10000.0	14.21	222.50	102.36	NO
3500.	0.4244E-01	6	1.0	1.0	10000.0	14.21	248.53	112.02	NO
4000.	0.3584E-01	6	1.0	1.0	10000.0	14.21	272.88	120.97	NO
4500.	0.3094E-01	6	1.0	1.0	10000.0	14.21	295.83	129.33	NO
5000.	0.2719E-01	6	1.0	1.0	10000.0	14.21	317.55	137.22	NO
5500.	0.2422E-01	6	1.0	1.0	10000.0	14.21	338.21	144.69	NO
6000.	0.2183E-01	6	1.0	1.0	10000.0	14.21	357.94	151.80	NO
6500.	0.1985E-01	6	1.0	1.0	10000.0	14.21	376.84	158.61	NO
7000.	0.1819E-01	6	1.0	1.0	10000.0	14.21	395.01	165.15	NO
7500.	0.1678E-01	6	1.0	1.0	10000.0	14.21	412.51	171.44	NO
8000.	0.1558E-01	6	1.0	1.0	10000.0	14.21	429.40	177.52	NO
8500.	0.1453E-01	6	1.0	1.0	10000.0	14.21	445.75	183.39	NO
9000.	0.1361E-01	6	1.0	1.0	10000.0	14.21	461.59	189.09	NO
9500.	0.1280E-01	6	1.0	1.0	10000.0	14.21	476.98	194.63	NO
10000.	0.1208E-01	6	1.0	1.0	10000.0	14.21	491.94	200.01	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

131.	2.997	6	1.0	1.0	10000.0	14.21	14.31	9.88	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	2.997	131.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

EP6 and EP7 loadout chutes PM10

10/10/18
15:38:16

```
 ***  SCREEN3 MODEL RUN  ***
 *** VERSION DATED 13043 ***

EP6 & EP7 GGBFS loadout chutes PM10

 SIMPLE TERRAIN INPUTS:
    SOURCE TYPE              =        POINT
    EMISSION RATE (G/S)      =    0.128500E-02
    STACK HEIGHT (M)         =       6.7056
    STK INSIDE DIAM (M)      =       0.2033
    STK EXIT VELOCITY (M/S)=        20.3543
    STK GAS EXIT TEMP (K)    =     293.0000
    AMBIENT AIR TEMP (K)     =     293.0000
    RECEPTOR HEIGHT (M)      =       0.0000
    URBAN/RURAL OPTION       =        URBAN
    BUILDING HEIGHT (M)      =       0.0000
    MIN HORIZ BLDG DIM (M) =         0.0000
    MAX HORIZ BLDG DIM (M) =         0.0000

 THE REGULATORY (DEFAULT) MIXING HEIGHT OPTION WAS SELECTED.
 THE REGULATORY (DEFAULT) ANEMOMETER HEIGHT OF 10.0 METERS WAS ENTERED.

    STACK EXIT VELOCITY WAS CALCULATED FROM
    VOLUME FLOW RATE =   1400.0000     (ACFM)

 BUOY. FLUX =    0.000 M**4/S**3;  MOM. FLUX =    4.281 M**4/S**2.

 *** FULL METEOROLOGY ***

 **********************************
 *** SCREEN AUTOMATED DISTANCES ***
 **********************************

 *** TERRAIN HEIGHT OF    0. M ABOVE STACK BASE USED FOR FOLLOWING DISTANCES ***
```

DIST (M)	CONC (UG/M**3)	STAB	U10M (M/S)	USTK (M/S)	MIX HT (M)	PLUME HT (M)	SIGMA Y (M)	SIGMA Z (M)	DWASH
1.	0.000	1	1.0	1.0	320.0	19.12	1.31	1.29	NO
100.	0.8974	6	1.0	1.0	10000.0	14.21	11.00	7.76	NO
200.	0.8207	6	1.0	1.0	10000.0	14.21	21.28	14.20	NO
300.	0.5078	6	1.0	1.0	10000.0	14.21	31.26	20.05	NO
400.	0.3367	6	1.0	1.0	10000.0	14.21	40.91	25.39	NO
500.	0.2406	6	1.0	1.0	10000.0	14.21	50.25	30.31	NO
600.	0.1819	6	1.0	1.0	10000.0	14.21	59.31	34.89	NO
700.	0.1436	6	1.0	1.0	10000.0	14.21	68.09	39.17	NO
800.	0.1171	6	1.0	1.0	10000.0	14.21	76.62	43.20	NO
900.	0.9787E-01	6	1.0	1.0	10000.0	14.21	84.92	47.02	NO
1000.	0.8350E-01	6	1.0	1.0	10000.0	14.21	92.99	50.64	NO
1100.	0.7242E-01	6	1.0	1.0	10000.0	14.21	100.86	54.10	NO
1200.	0.6367E-01	6	1.0	1.0	10000.0	14.21	108.52	57.41	NO
1300.	0.5661E-01	6	1.0	1.0	10000.0	14.21	116.01	60.59	NO
1400.	0.5083E-01	6	1.0	1.0	10000.0	14.21	123.32	63.65	NO
1500.	0.4602E-01	6	1.0	1.0	10000.0	14.21	130.46	66.60	NO
1600.	0.4196E-01	6	1.0	1.0	10000.0	14.21	137.45	69.45	NO
1700.	0.3850E-01	6	1.0	1.0	10000.0	14.21	144.29	72.21	NO
1800.	0.3553E-01	6	1.0	1.0	10000.0	14.21	150.99	74.89	NO
1900.	0.3294E-01	6	1.0	1.0	10000.0	14.21	157.55	77.50	NO
2000.	0.3068E-01	6	1.0	1.0	10000.0	14.21	163.99	80.03	NO
2100.	0.2868E-01	6	1.0	1.0	10000.0	14.21	170.31	82.50	NO
2200.	0.2691E-01	6	1.0	1.0	10000.0	14.21	176.51	84.90	NO

EP6 and EP7 loadout chutes PM10

2300.	0.2534E-01	6	1.0	1.0	10000.0	14.21	182.60	87.25	NO
2400.	0.2392E-01	6	1.0	1.0	10000.0	14.21	188.58	89.55	NO
2500.	0.2264E-01	6	1.0	1.0	10000.0	14.21	194.47	91.79	NO
2600.	0.2149E-01	6	1.0	1.0	10000.0	14.21	200.25	93.99	NO
2700.	0.2043E-01	6	1.0	1.0	10000.0	14.21	205.94	96.14	NO
2800.	0.1947E-01	6	1.0	1.0	10000.0	14.21	211.55	98.25	NO
2900.	0.1860E-01	6	1.0	1.0	10000.0	14.21	217.06	100.33	NO
3000.	0.1779E-01	6	1.0	1.0	10000.0	14.21	222.50	102.36	NO
3500.	0.1457E-01	6	1.0	1.0	10000.0	14.21	248.53	112.02	NO
4000.	0.1231E-01	6	1.0	1.0	10000.0	14.21	272.88	120.97	NO
4500.	0.1063E-01	6	1.0	1.0	10000.0	14.21	295.83	129.33	NO
5000.	0.9337E-02	6	1.0	1.0	10000.0	14.21	317.55	137.22	NO
5500.	0.8318E-02	6	1.0	1.0	10000.0	14.21	338.21	144.69	NO
6000.	0.7495E-02	6	1.0	1.0	10000.0	14.21	357.94	151.80	NO
6500.	0.6816E-02	6	1.0	1.0	10000.0	14.21	376.84	158.61	NO
7000.	0.6247E-02	6	1.0	1.0	10000.0	14.21	395.01	165.15	NO
7500.	0.5764E-02	6	1.0	1.0	10000.0	14.21	412.51	171.44	NO
8000.	0.5349E-02	6	1.0	1.0	10000.0	14.21	429.40	177.52	NO
8500.	0.4989E-02	6	1.0	1.0	10000.0	14.21	445.75	183.39	NO
9000.	0.4673E-02	6	1.0	1.0	10000.0	14.21	461.59	189.09	NO
9500.	0.4394E-02	6	1.0	1.0	10000.0	14.21	476.98	194.63	NO
10000.	0.4147E-02	6	1.0	1.0	10000.0	14.21	491.94	200.01	NO

MAXIMUM 1-HR CONCENTRATION AT OR BEYOND 1. M:

131.	1.029	6	1.0	1.0	10000.0	14.21	14.31	9.88	NO

DWASH= MEANS NO CALC MADE (CONC = 0.0)
DWASH=NO MEANS NO BUILDING DOWNWASH USED
DWASH=HS MEANS HUBER-SNYDER DOWNWASH USED
DWASH=SS MEANS SCHULMAN-SCIRE DOWNWASH USED
DWASH=NA MEANS DOWNWASH NOT APPLICABLE, X<3*LB

****
*** SUMMARY OF SCREEN MODEL RESULTS ***
****

CALCULATION PROCEDURE	MAX CONC (UG/M**3)	DIST TO MAX (M)	TERRAIN HT (M)
SIMPLE TERRAIN	1.029	131.	0.

****
** REMEMBER TO INCLUDE BACKGROUND CONCENTRATIONS **
****

DUFFIELD ASSOCIATES
Soil, Water & the Environment

Fugitive Dust Control Plan

DUFFIELD ASSOCIATES
Soil, Water & the Environment

FUGITIVE DUST CONTROL PLAN

Walan Specialty Construction Products, LLC.

Granulated Blast Furnace Slag Grinding Facility
501 Christina Avenue
Wilmington, DE 19801

October 2018

Prepared by:

Duffield Associates, Inc.
5400 Limestone Road
Wilmington, Delaware 19808

Project No. 8850.ED

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Figure 1: Site Location Map

Figure 2: Site Plan

Figure 3: Process Flow Diagram

1.0 INTRODUCTION

This Fugitive Dust Control Plan (the "Plan") has been prepared for use at the WALAN Specialty Construction Products, LLC. (WALAN) Granulated Blast Furnace Slag Grinding Facility (GBFS Grinding Facility or Facility), to be located at 501 Christina Avenue Wilmington, Delaware 19801. A few outdoor activities at the Facility will have potential to generate fugitive dust emissions, since most of the operations at the Facility are enclosed and dust (particulate matter) is controlled by air pollution control devices. The Plan describes the GBFS Grinding Facility operations and the associated dust management practices that will be implemented to prevent and/or control potential fugitive particulate emissions.

The Plan includes the following:

- Potential sources of fugitive dust,
- management procedures that are used to minimize fugitive dust emissions,
- Use of a visual inspection program to monitor material handling areas and process equipment,
- Procedures for the implementation of corrective action measures to be taken in the event of excessive fugitive dust emissions, and
- A list of sources and areas to be monitored for visible emissions and accumulation of material in open areas.

2.0 GENERAL OVERVIEW OF OPERATIONS

Provided below is a general overview of the GBFS Grinding Facility operations as well as onsite features and equipment that are relevant to this Fugitive Dust Control Plan.

2.1 Facility Description

The GBFS Grinding Facility will be located at 501 Christina Avenue, Wilmington, Delaware. The Facility will be constructed and will be operated at the rear of the property, behind an existing warehouse and adjacent to Christina River. The Facility is located in area zoned for waterfront manufacturing, which is appropriate for the intended use. The Facility will be approximately 0.7 miles north of the Port of Wilmington, where GBFS will be imported for delivery to the Facility. Access to Interstate 495 is close by, which initially will be the principal transportation route taken by trucks delivering finished product to customers. The Facility is also located adjacent to a freight railroad, which may be utilized in the future for finished product delivery to customers.

A Site Location Map is included as Figure 1 that shows the general area where the Facility is located. In addition, a Facility Site Plan is included as Figure 2. The Facility Site Plan depicts the location of Facility operating areas including the GBFS stockpiles, feed hopper, grinding operation, storage silos and loadout area.

The onsite roadways shown on the Facility Site Plan are utilized for truck traffic.

2.2 Description of Operations

Trucks will transport GBFS material to the Facility from ships unloaded at the Port of Wilmington. The GBFS is anticipated to arrive with moisture contents ranging from approximately 8 to10 percent (%). The GBFS received will be stockpiled and then placed in the feed hopper servicing the grinding operation. The GBFS will be conveyed to a bucket elevator and then fed to the grinder which will grind and dry the GBFS.

Once processed through the grinder, the ground GBFS (GGBFS) will be conveyed via a bucket elevator to two 1,100 ton silos for storage and eventual loading into enclosed hopper trucks via loadout chutes. PM emissions will be controlled by cartridge filters which are used to capture dust displaced from the enclosed trucks. The truck loadout area under the silos will be enclosed to help prevent any fugitive dust from escaping to the atmosphere.

As shown in Figure 2, truck traffic will enter the Facility on the northern end of the property. The delivery trucks will proceed to the stockpile areas and deposit GBFS. Trucks arriving at the site to receive finished product will also enter at the northern end and proceed to the silo storage area for loadout. All trucks will exit the property from the northern end.

The level of production at the Facility operation will be seasonal, with more demand for product occurring during spring, summer and fall than during the winter months, leading to an anticipated lower level of operation in the winter months. The Facility is expected to increase production over years of operation and is anticipated to process up to 150,000 tons of GBFS per year at full operation. A process flow diagram that summarizes the process and highlights points of emissions is shown in Figure 3.

3.0 DUST EMISSIONS SOURCES/FACTORS

Potential dust emission sources and the factors that can influence dust emissions at the Facility are presented in this section. Sources of dust primarily are limited to outdoor emissions. Outdoor fugitive dust emissions are defined as those emissions occurring outside the buildings and not associated with a stack (point) discharge. The potential dust emission sources and factors that are addressed for this Facility include:

- On-site roadways (when vehicles are moving on them),
- Unloading of delivery trucks
- GBFS Stockpiles (drying of material and wind)
- GBFS transfers from stockpiles to feed hopper (height of drop and dry material)

3.1 On-site Roadways

The on-site roadways will consist of both paved and unpaved areas. Paved and unpaved roadways can generate fugitive dust from vehicle traffic that disturbs fine particulate matter deposited on the paved surface, causing the particles to become airborne. Sources of potential dust from paved and unpaved surfaces at the Facility include: (1) tracking of mud and dirt from unpaved surfaces; (2) spillage of GBFS onto the road surfaces; and (3) deposition of dust from other sources, on- and off-site. Sources of dust from paved and unpaved surfaces are mainly due to truck traffic and equipment movement. Dust generation will be influenced by the number of trucks entering and exiting the Facility and the truck travel speed.

Due to the highly industrialized location of the Facility and paved public roads at the entrance to the Facility, it is expected that the trucks entering the Facility will not be tracking soil onto the site. Additionally, the GBFS Grinding Facility's interior traffic management controls are intended to minimize the truck and equipment cross traffic and avoid drag-out from areas where GBFS is stored and loaded.

3.2 Unloading of Transport Trucks

As mentioned above, GBFS will be transported from the Port of Wilmington to the GBFS stockpile areas. There is a potential for the creation of fugitive dust when the trucks dump the GBFS onto the stockpiles. The amount of fugitive dust that may be generated depends upon the particle sizes of the delivered GBFS, the moisture content of the GBFS, and weather conditions.

3.3 GBFS Stockpiles

Windblown dust can be generated from stockpiled material which is dependent upon the particle size of the stockpiled GBFS and moisture content of the material. The amount of time when the stockpile is being disturbed, either during loading or unloading, will also influence windblown dust generation.

3.4 Feed Hopper/Conveyor/Transfer System

Dust may be generated when a front end loader is used to load GBFS into a hopper that feeds the grinding/drying mill because the material is being dropped a short distance. The conveyor and bucket elevator used to feed the material to the grinding/drying mill will be enclosed and will not generate fugitive dust.

3.5 Weather Conditions

Variables that influence dust emissions include, but may not be limited to, weather conditions. Dry, windy conditions would tend to increase the potential for dust emissions from potential fugitive emission sources.

3.6 Moisture Content of the GBFS and Particle Size

The moisture content of the GBFS is a significant factor that could affect fugitive dust emissions at the Facility. The lower the moisture content of the GBFS, the more likely it will be to generate dust. To minimize the potential for fugitive dust emissions, GBFS will be received at the Facility with a moisture content of 8% to 10%. The moisture in the GBFS creates surface tension between particles causing them to attract to one another, essentially "clumping up". This condition reduces the potential for fugitive dust generation. Due to the moisture content being 8% to 10% and the particle size of the GBFS being greater than 200 microns, there is a limited potential for the creation of fugitive dust during the handling and stockpiling.

4.0 FUGITIVE DUST CONTROL MEASURES

The GBFS Grinding Facility will employ various fugitive dust control measures to control the generation and dispersion of fugitive dust from the Facility. Facility personnel will monitor weather conditions and site operations for conditions that could lead to fugitive dust generation. The potential for fugitive dust emissions can vary based on humidity, air and ground temperatures, and wind direction and speed while site operations, as discussed above, have the potential to increase the risk of fugitive dust emissions by disturbing materials on road surfaces or disturbing the GBFS stockpile.

The following practices will be employed by the GBFS Grinding Facility to minimize dust emissions:

4.1 Unloading of Transport Trucks

Fugitive dust emissions will be controlled during the unloading and stockpiling of GBFS. The material will have a moisture content of approximately 8% to 10% which will reduce the potential for fugitive dust emissions. The unloading and stockpiles will be visually monitored daily for any signs of drying and dust release. If necessary to inhibit visible dust emissions, site personnel will add water to the stockpiled material to reduce the potential for fugitive emissions.

4.2 Feed Hopper and Conveying System

The movement and deposition of stockpiled GBFS in the feed hopper could be a source of fugitive emissions. To mitigate fugitive dust generation, the moisture content of the GBFS will be kept moist. Keeping the moist reduces the potential for fugitive dust emissions. Facility personnel will monitor the loading and conveying process. If visible dust generation is apparent, the water will be added to the stockpile to moisten the GBFS. In addition, the drop height when GBFS is deposited into the feed hopper will be kept to a minimum to minimize spillage of material and decrease the potential for dust release due to physical disturbances.

4.3 Roadway Emissions

The following measures will be employed to control the fugitive dust from Facility roadways:

- The beds of all delivery trucks entering and exiting the Facility will be tarped to reduce the generation of fugitive dust from the trucks and to limit the potential for unintended spillage of material on public and Facility roads.
- Truck traffic will be limited to paved road surfaces. A typical traffic pattern is illustrated in Figure 2.
- The Facility roadways will be cleaned on an as needed basis, using a street sweeper to remove materials that might become fugitive dust.
- Facility-wide vehicle speed limits will be enforced to reduce the potential for fugitive dust generation.

4.4 Preventative Maintenance Program

All equipment will be inspected and maintained to ensure proper system performance. Facility operations and equipment will be inspected visually on a daily basis.

4.5 Best Management Practices

Best management practices will be followed as a preventive measure to minimize the potential for creating fugitive dust. These practices includes good housekeeping. Good housekeeping is essentially the maintenance of a clean and orderly work environment which reduces the possibility of accidents and dust emissions.

Elements of good housekeeping practices include:

- Maintaining neat and orderly work areas, both indoors and outdoors;
- Maintaining neat and orderly storage of materials;
- Cleaning-up spilled GBFS promptly;

- Using a street sweeper on an as needed basis to remove materials that may become dust from paved roads; and
- Providing training to employees about good housekeeping practices.

4.6 Employee Training

Employee training will be provided to all GBFS Grinding Facility operations personnel. Training will consist of a review of Facility procedures and operations, including review of this Plan, instruction on the proper use of fugitive dust control measures at the site, and a review of the relevant procedures following adoption of any new control measures, when needed. Training will be conducted on an annual basis and as needed when Facility procedures and operations are changed. If problematic incidents occur, or occur with increasing frequency, training will be provided more frequently to better inform and prepare Facility personnel.

The objective of the training is to ensure that the Facility is under constant observation by knowledgeable personnel. Employees will be trained to inspect and identify conditions that could lead to fugitive dust emissions and be able to implement correct procedures to mitigate those conditions when necessary.

4.7 Routine Inspection Programs

Daily inspections will be conducted to identify conditions that could lead to fugitive dust emissions and potential dust generating activities as part of the regular inspection program for the Facility on operating days. Results of the inspections will be documented on a daily record keeping report form and will be made available to the Delaware Department of Natural Resources and Environmental Control (DNREC) upon request.

5.0 RECORDKEEPING

A copy of this Fugitive Dust Control Plan will be maintained at the Facility at all times. Completed daily record keeping report forms will be maintained at the Facility for a minimum of five years and will be made available to DNREC personnel upon request as discussed above.

6.0 PLAN REVIEW

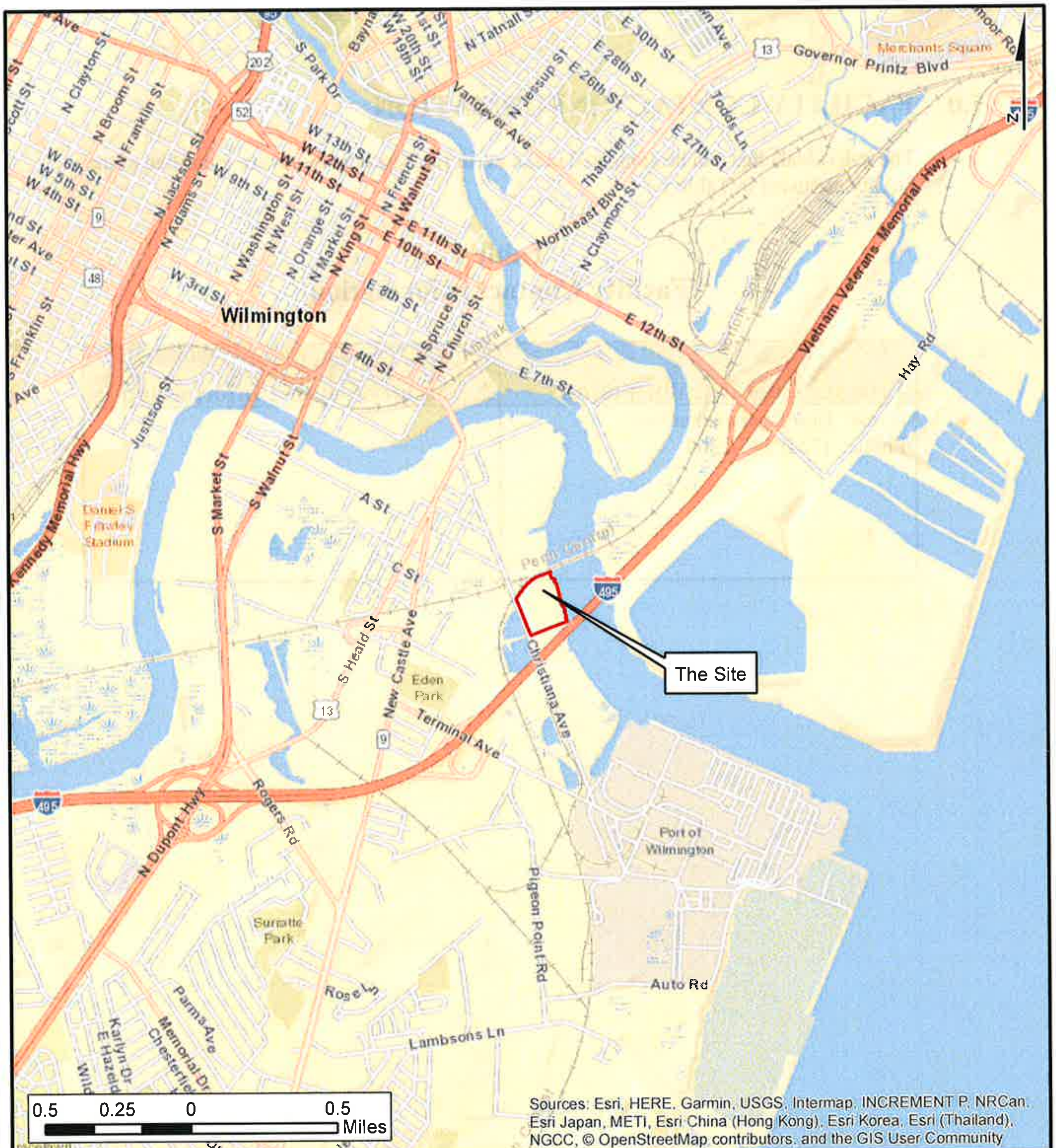
The Plan will be reviewed periodically and updated as needed. Updates will occur at a minimum, when: controls identified in this Plan do not adequately control fugitive dust generation, potential sources of fugitive dust change, fugitive dust control measures change, or Facility operating procedures are modified or revised.

7.0 FACILITY CONTACT INFORMATION

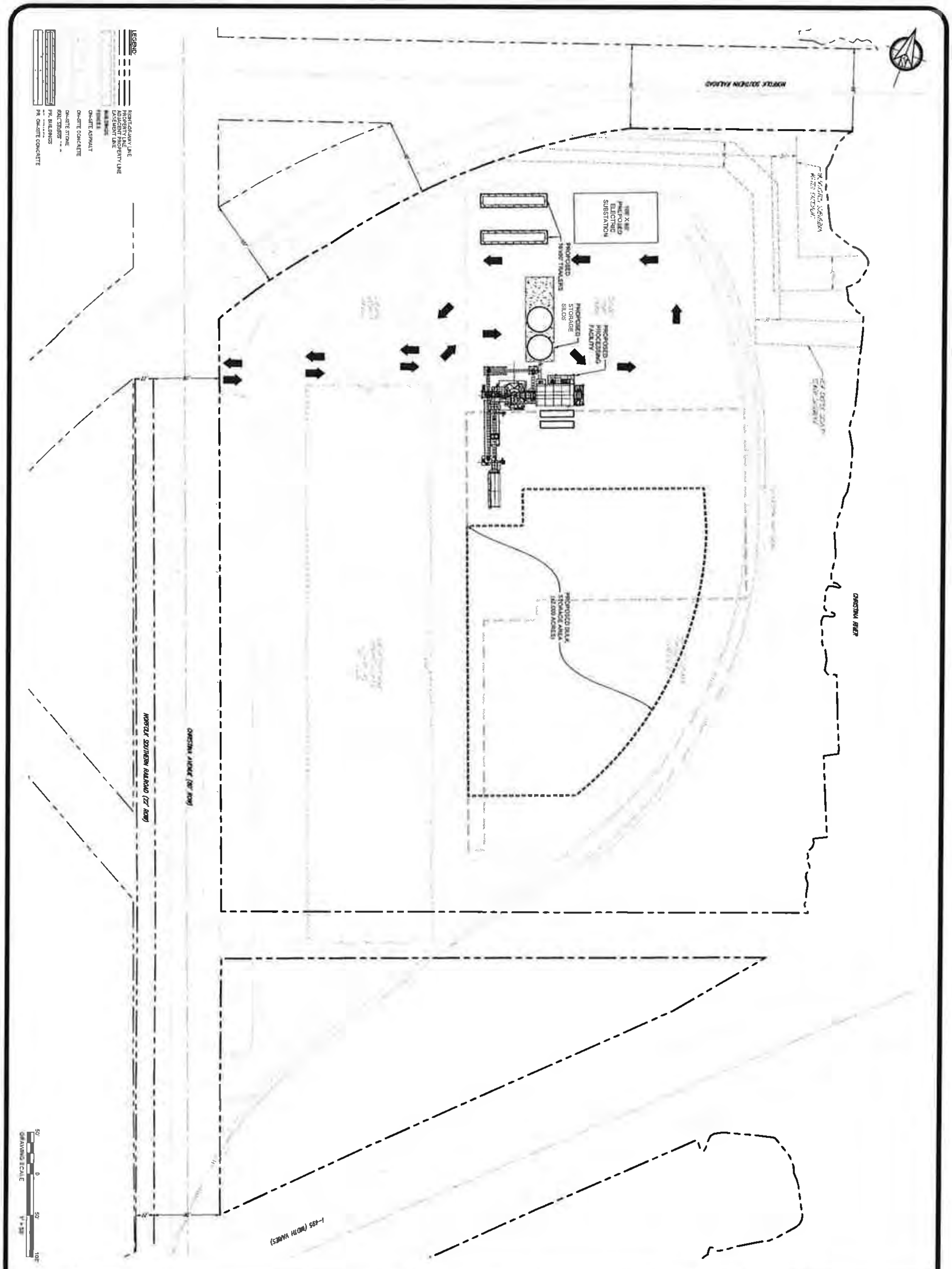
The individuals that can be contacted in the event fugitive dust issues are identified at the facility are listed in Table 1.

Table 1
Facility Contact Information

Primary Contact Information	Secondary Contact Information
Name: Lisa Dharwadkar Phone: (724) 545-2300	



Date: 10/2018	**Site Location Map**	DESIGNED BY: BNM	DUFFIELD ASSOCIATES Soil, Water & the Environment
SCALE: AS SHOWN		DRAWN BY: CSP	5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL. (302)239-6634 FAX (302)239-8485
PROJECT NO. 8850.ED		CHECKED BY: MRB	OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY
FIGURE 1		FILE: 8850.ED.mxd	EMAIL: DUFFIELD@DUFFNET.COM



DATE:	29 JANUARY 2019	
SCALE:	1" = 50'	
PROJECT NO	8850 GC	
SHEET:	1 OF 2	

SITE PLAN

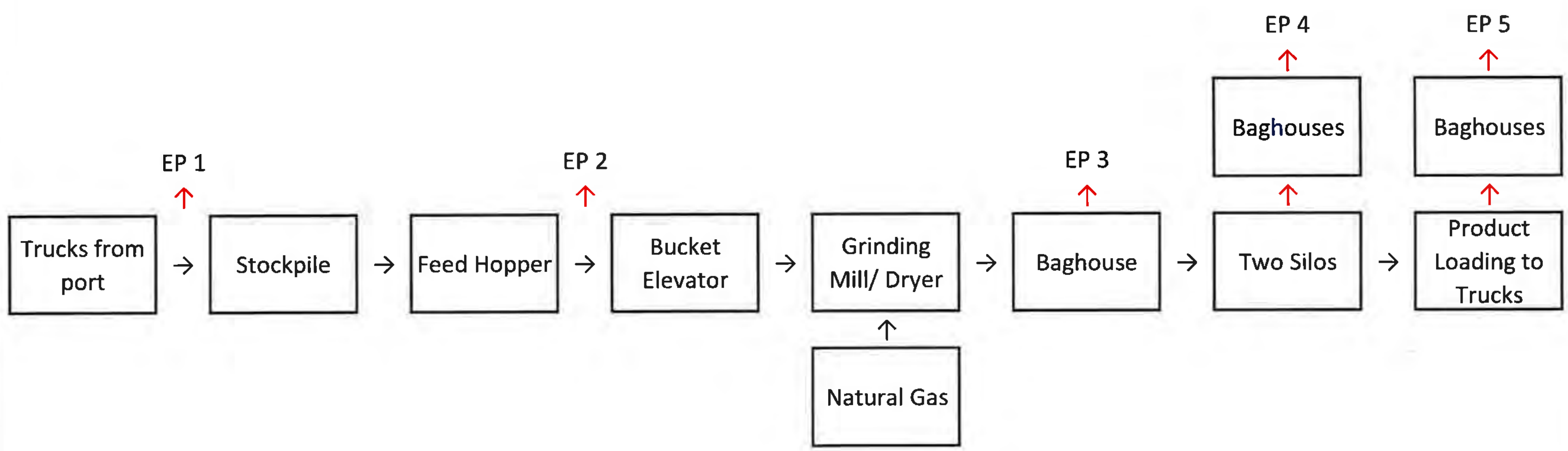
PROPOSED PROCESS UNIT
PORT CONTRACTORS FACILITY
CITY OF WILMINGTON ~ NEW CASTLE COUNTY ~ DELAWARE

APPLICANT: PENN MAR, INC.
719 TARRTOWN ROAD
ADRIAN, PA 16210
PHONE: (724) 545-2300

No.	REVISION	DATE	DESIGNED BY:	CHECKED BY:
			CMC	RJD
			DRAWN BY:	FILE NAME:
			CMC	8850-GC-Site.dwg

PRELIMINARY
NOT FOR
CONSTRUCTION

DUFFIELD ASSOCIATES
Soil, Water & the Environment
5400 LIMESTONE ROAD
WILMINGTON, DE 19808-1232
TEL 302 239 6634
FAX 302 239 8485
OFFICES IN DELAWARE, MARYLAND, PENNSYLVANIA AND NEW JERSEY
WEB: HTTP://DUFFNET.COM
E-MAIL: DUFFIELD@DUFFNET.COM



DATE: 10/2018	**Process Flow Diagram**	DRAWN BY: BNM	DUFFIELD ASSOCIATES Soil, Water & the Environment
PROJECT NO: 8850.ED	Walan Specialty Construction Products, LLC	CHECKED BY: MRB	5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL (302)239-6634 FAX (302)239-8485
SHEET: FIGURE 2	Wilmington~Delaware	FILE: 8850.ED Process_Flow_Diagram.xlxs	OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY *EMAIL: DUFFIELD@DUFFNET.COM*

ENVIRONMENTAL PERMIT APPLICATION BACKGROUND STATEMENT

DELAWARE DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL ("DNREC")

ENVIRONMENTAL PERMIT APPLICATION BACKGROUND STATEMENT

Pursuant to 7 Del. C. Chapter 79

FILING STATUS:

This Background Statement is being filed with DNREC because:

☒ 1. It is an initial application for a new permit (or permits) and the applicant or applicant company has not held a permit issued by DNREC for a period of 5 or more years [See 7 Del. C. § 7902(a) and (b)];

☐ 2. It is required on an annual basis because the applicant or applicant company has been designated a chronic violator pursuant to 7 Del. C. § 7904 [See 7 Del. C. § 7902(a)(7) and (b)(2)]; or

☐ 3. It is required on an annual basis as the applicant or applicant company has been found guilty, pled guilty or no contest to any crime involving violation of environmental standards which resulted in serious physical injury or serious harm to the environment as defined in 7 Del. C. § 7902(c) [See 7 Del. C. § 7902(a)(7) and (b)(2)].

APPLICANT OR APPLICANT COMPANY'S NAME OR COMPANY'S NAME FILING STATEMENT	WALAN Specialty Construction Products, LLC
DATE OF APPLICATION OR DATE OF STATEMENT	October 15, 2018
PERMIT(S) BEING APPLIED FOR OR STATEMENT FOR FILING STATUSES 2 OR 3	☒ **Permit Type(s)** Natural Minor Source Air Permit ☐ **Statement for filing Statuses 2 or 3—If filing under these statuses, attach a statement of the date of designation as Chronic Violator or the date of Conviction/Plea.**
OTHER DNREC PERMITS HELD	☒ **N/A – No other permits held with DNREC** ☐ **List of all DNREC permits currently held with dates of issuance and expiration attached.**

Environmental Permit Application Background Statement

Please note: Companies filing statements pursuant to Chapter 79 have the right to identify information to be afforded confidential status pursuant to 7 Del. C. § 7903(b) and the requirements set forth in Section 6, "Requests for Confidentiality" of the DNREC *Freedom of Information Act Regulation*.

PROVIDING ALL OF THE INFORMATION REQUESTED IN THIS FORM SATISFIES THE REQUIREMENTS OF 7 DEL. C. CHAPTER 79 ("ENVIRONMENTAL PERMIT APPLICATION BACKGROUND STATEMENT") UNLESS THE DELAWARE DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL ("DNREC") OR THE DELAWARE DEPARTMENT OF JUSTICE DETERMINES THAT ADDITIONAL SUBMISSIONS ARE NECESSARY. FAILURE TO PROVIDE THE INFORMATION REQUESTED OR PROVIDING ERRONEOUS INFORMATION IS GROUNDS FOR DENYING OR REVOKING AN ENVIRONMENTAL PERMIT/APPROVAL/LICENSE, AND FOR CIVIL AND/OR CRIMINAL PENALTIES.

A. **(Authority – 7 Del. C. § 7902(a)(1&2) & § 7905)** Attach a complete list (full names) of all current members of the applicant company's board of directors, all current corporate officers, all persons owning more than 20% of the applicant's stock or other resources, all subsidiary/affiliated companies with type of business performed, street addresses, all parent companies with addresses, all companies with which the applicant's company shares two or more members of the board of directors, and the name(s) of the person(s) serving as the applicant's local chief operating officer(s) with respect to each facility covered by the permit in question or for the statement required for filing Statuses 2 or 3. [Note: For companies that do not have a *facility* located in Delaware, no listing for the local chief operating officer(s) is required].

- ☐ Information attached
- ☒ Information attached, except for local chief operating officer as there is no facility located in the State of Delaware.

B. **(Authority - 7 Del. C. § 7905)** Please check one of the following selections below, showing type of ownership for the applicant or applicant/statement company:

☐	Proprietorship	List the state, county, book record and page number where the certificate is found (Attach hereto).
☐	Partnership	List the state, county, book record and page number where the certificate is found (Attach hereto).
☒	Corporation (LLCs included)	List the city, state, date of incorporation, corporation file number, current corporate standing, registered agent, and address of the registered agent (Attach hereto).
☐	Municipality	
☐	Public Institution/ Government Agency	
☐	Other	______________________

C. **(Authority - 7 <u>Del</u>. <u>C</u>. § 7902(a)(3) & § 7905)** Have any of the following been issued to or agreed to by the applicant or applicant/statement company, any employee, person, entity, or subsidiary/affiliated company, specified in response to Item A, for violation of any environmental statute, regulation, permit, license, approval, or order, regardless of the state in which it occurred, during the five years prior to the date of this application/statement

OFFENSE	YES	NO
Notice of Violation(s)	x	
Administrative Order(s)		x
Administrative Penalty(ies)		x
Civil Action(s)		x
Civil Penalty(ies)		x
Civil and/or Administrative Settlement Agreement(s)		x
Permit/License/Approval Revocation		x
Arrest(s)		x
Conviction(s)		x
Criminal Penalty(ies)		x
Criminal Plea Bargain		x

D. **(Authority - 7 Del. C. § 7902(a)(3), (a)(4) & § 7905)** If you answered "yes" to any of the actions listed in Item C above for the applicant or applicant company or any other person identified in Item A, attach a description of the incidents or events leading to the issuance of each action, regardless of the state in which it occurred, for the 5 years prior to the date of the statement, and the disposition of each action, what state the action/offense occurred in, and any actions that have been taken to correct the violations that led to such enforcement action.

☐ N/A

☒ Information attached

E. **(Authority - 7 Del. C. § 7902(a)(5) & § 7905)** Attach a description of any felony or other criminal conviction for a crime involving harm to the environment or violation of environmental standards of any person or entity identified in Item A above that resulted in a fine greater than $1,000 or a sentence longer than 7 days, regardless of whether such fine or sentence was suspended.

☒ N/A

☐ Description attached

F. **(Authority - 7 Del. C. § 7902(a)(6) & § 7905)** Attach copies of any and all settlements of environmental claims involving the applicant, associated with actions identified in response to Item D above, whether or not such settlements were based on agreements where the applicant did not admit liability for the action.

☒ N/A

☐ Information attached

Items for Filing Statuses 2 or 3 Only

G. (Authority - 7 Del. C. § 7902(a)(7) and § 7905) If the applicant or applicant/statement company has been found guilty, pled guilty or no contest, to any crime involving violation of environmental standards which resulted in serious physical injury or serious harm to the environment attach a summary of the events involved and a copy of the disposition of the action (*See 7 Del. C. § 7902(c) for definitions of "serious physical injury" or "serious harm to the environment" before answering this question.*)

☒ N/A

☐ Yes – Information Attached.

H. (Authority - 7 Del. C. § 7902(a)(8)) – If the applicant or applicant/statement company has been designated a chronic violator under 7 Del. C. § 7904, a detailed written report from an independent inspector who has inspected the applicant's premises for the purpose of detecting potential safety and environmental hazards to employees and the surrounding community. The Secretary may waive the duty to submit a detailed written report upon a showing of good cause by the applicant. A showing by the applicant that the acts which caused it to be designated as a chronic violator did not jeopardize public health shall constitute "good cause" under this paragraph.

I. (Authority - 7 Del. C. § 7902(a)(7)) – If the applicant or applicant/statement company has been designated a chronic violation under § 7904 of this Title, ***OR*** has been found guilty or pled no contest to any crime involving violation of environmental standards which resulted in serious physical injury or serious harm to the environment, a statement made under oath by the applicant or applicant/statement company's local chief operating officer with respect to the facilities covered by the permit, stating that: (a) disclosures made by the applicant/reporting company under federal and state environmental statutes and regulations during the preceding calendar year have been, to the chief operating officer's knowledge, complete and accurate, and (b) that the facility has implemented policies, programs, procedures, standards or systems reasonably designated, in light of the size, scope, and nature of facility operations to detect deter and promptly correct any noncompliance with state environmental statutes and regulations. The statement filed pursuant to this paragraph shall include an acknowledgement by the affiant that intentionally false statements submitted in compliance with this paragraph constitute criminal perjury as defined at 11 Del. C. §§1221-1222.

STATE OF DELAWARE – DEPT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL

ENVIRONMENTAL PERMIT BACKGROUND STATEMENT

CERTIFICATION

I HEREBY CERTIFY THAT I HAVE READ THE PRECEEDING SUBMISSION, HAVE PROVIDED ALL OF THE INFORMATION REQUESTED, AND THAT ALL OF THE INFORMATION PROVIDED IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

SIGNATURE—APPLICANT OR OFFICER OF APPLICANT / STATEMENT COMPANY

DATE: October 15, 2018

NAME: Lisa Dharwadkar Bhadsavle

TITLE: Vice President

COMPANY NAME: WALAN Specialty Construction Products, LLC

ADDRESS: 501 Christiana Avenue
Wilmington, DE 19801

TELEPHONE: 724-545-2300

FAX NUMBER:

REGISTERED AGENT NAME: N/A

ADDRESS:

TELEPHONE:

FAX NUMBER:

SWORN TO AND SUBSCRIBED BEFORE ME THIS 15 **DAY OF** October, 2018.

Mandy Lynn Wrighter
NOTARY PUBLIC SIGNATURE (SEAL)

Mandy Lynn Wrighter
PRINTED NAME OF NOTARY PUBLIC

Pennsylvania / Armstrong
STATE / COUNTY

MY COMMISSION EXPIRES ON: 02/09/2020

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
MANDY LYNN WRIGHTER, Notary Public
Kittanning Boro, Armstrong County
My Commission Expires Feb. 9, 2020
MEMBER PENNSYLVANIA ASSOCIATION OF NOTARIES

jmb:20-24.doc/Rev. 8/2012

APPLICATION OF WALAN SPECIALTY CONSTRUCTION PRODUCTS, LLC

APPLICATION OF WALAN SPECIALTY CONSTRUCTION PRODUCTS, LLC

WALAN Specialty Construction Products, LLC (WALAN), through its affiliate, Penn Mag, Inc. (Penn Mag) filed an Application for a Natural Minor Air Permit with the Department of Natural Resources and Environmental Control on December 5, 2017 (Initial Application). The Initial Application was amended by WALAN on January 29, 2018, to include corporate information about WALAN. A public hearing on the Initial Application was held on April 25, 2018. Thereafter, WALAN became aware that certain information in the Initial Application and Public Hearing presentation was incorrect. WALAN withdrew the Initial Application by letter dated August 28, 2018 (see Attachment A).

WALAN is filing the subject Application on this 16th day of October, 2018 (Application). The information that differs from the Initial Application is as follows:

1. Corporate information. Attachment A to the Environmental Permit Application Background Statement (Background Statement) has been revised to provide additional and updated information about WALAN and affiliated companies.

2. Violations. Section C of the Background Statement in the initial Application was completed with assistance of an environmental consultant, based upon WALAN's belief that neither WALAN nor its affiliates were determined to have violated a statute. On July 20, 2018, DNREC asked WALAN about Pennsylvania Department of Environmental Protection (DEP) Violation ID dated April 11, 2017 (See Attachment B). WALAN explained to DNREC that Penn Mag did submit to DEP the required self-monitoring results referenced in Attachment B. Penn Mag was unaware at that time that DEP had commenced use of an electronic system that did not recognize Penn Mag's submission. Penn Mag corrected this administrative error to the satisfaction of DEP. WALAN did not consider Attachment B to be a violation within the meaning of Section C of the Background Statement as Penn Mag made the submission manually, there was no involvement of any release into the environment, and no penalties were assessed. Upon receiving feedback from DNREC on the Initial Application, WALAN retained a new environmental consultant, as well as legal counsel, to assist in the preparation and submission of this Application, including the Background Statement.

3. Presentation slide on compliance with Pennsylvania Air Quality regulations. WALAN used a slide presentation at the April 25, 2018 public hearing. The Background slide, attached as Attachment C, states that "we (meaning Penn Mag) have been in full compliance with PA State Air Quality regulations." At the July 20, 2018 meeting with DNREC, WALAN was asked about the violation attached as Attachment C. The violation was not recalled by Penn Mag at the time the Background slide was prepared and discussed at the public hearing. Penn Mag addressed the violation to the satisfaction of DEP. As part of this Application, WALAN acknowledges this oversight, and retracts the statement made in the Background slide as being unintentionally incorrect. A revised presentation will be discussed at the public hearing on this Application.

5. Fugitive Dust Control Plan –More specificity and detail has been added to the Application

6. Truck routes – See Drawings attached to Application.

OTHER ITEMS

1. WALAN notes that it is contemplating the use of rail transportation at the facility. Information in this regard is still in the process of being developed and therefore is not included in the Application. Once those plans have been finalized WALAN intends to reach out to DNREC as appropriate.

2. WALAN has contacted the City of Wilmington, New Castle County, State of Delaware elected officials, and a number of local civic associations leaders, listed on attachment D. WALAN is engaged in ongoing discussions with these officials and leaders about the project, and has asked for their assistance in reaching out to local civic groups to schedule question and answer meetings regarding the project. WALAN intends for these outreach meetings to occur prior to the scheduled date for the permit hearing being requested.

ATTACHMENT A
Applicant Background Statement
October 12, 2018

1. Applicant company – **WALAN Specialty Construction Products, LLC, a Delaware limited liability company**

Current Board of Directors: Anil Bhadsavle

Current Corporate Officers: Anil Bhadsavle, President; Lisa Bhadsavle Dharwadkar, Treasurer and Vice-President; Mona Bhadsavle Conn, Secretary

Anil Bhadsavle owns 20% or more of the membership interests of WALAN

2. Subsidiary/affiliated company – **Penn Mag, Incorporated, a Pennsylvania corporation.** This is a mineral/material grinding business with two locations in Pennsylvania – 1. Adrian, 2. Claysburg. Penn Mag's business in Adrian, PA is grinding of Iron Ore. The business at the Claysburg, PA location is grinding of Chrome Ore.

Address: 719 Tarrtown Road, Adrian PA 16210

3. Subsidiary/affiliated company – **Anil, Inc., a Pennsylvania corporation.** Anil, Inc. is the parent corporation of Penn Mag, Incorporated, and has been a holding company since inception.

Address: 719 Tarrtown Road, Adrian, PA 16210

4. Subsidiary/affiliated company – **GrayCo, LLC, a Pennsylvania limited liability company.** This company engages in the business of assembly of electric controls.

Address: 487 Montgomery Road, Kittanning, PA 16201

Exhibit A

Fox Rothschild LLP
ATTORNEYS AT LAW

Citizens Bank Center
919 N. Market Street
Suite 300
Wilmington, DE 19899-2323
Tel (302) 654-7444 Fax (302) 656-8920
www.foxrothschild.com

SHARON ORAS MORGAN
Direct No: 302.622.4246
Email: SMorgan@FoxRothschild.com

August 28, 2018

Valerie S. Edge, Esquire
Delaware Department of Justice
102 West Water Street
Dover, Delaware 19904

Re: Walan Specialty Construction Products, LLC

Dear Valerie:

As you know, this firm represents Walan Specialty Construction Products, LLC ("Walan") with respect to its Natural Minor Permit Application with DNREC submitted on December 5, 2017 ("Application"). Walan submits this letter as notification to DNREC of its withdrawal, without prejudice, of the Application. Additionally, Walan is requesting a meeting with you and your client to discuss a proposed path forward.

By way of brief background, a public hearing on the Application was held on April 25, 2018. Thereafter, your client reached out to Walan to request a meeting, which took place on July 20, 2018. At that time DNREC addressed the compliance history of an entity related to Walan which, to the extent required, was inadvertently not included in the Background Statement submitted by Walan in connection with the Application, and that it rendered the information presented at the public hearing as defective. Walan was told by DNREC during that meeting that the Application was incomplete and inaccurate, and that Walan needed to determine whether it intended to move forward with the Application and, if so, a decision needed to be made as to the best path for correcting the record, including whether or not to schedule another public hearing.

On July 24, 2018, Mike Logan of Compliance Plus, on behalf of Walan, called and emailed (see attached) your client to advise that Walan intended to proceed with its Application and to take steps necessary to make the necessary corrections, and requested guidance on next steps. Walan did not receive a response. As you may recall, you and I spoke on a couple of occasions regarding

Fox Rothschild LLP
ATTORNEYS AT LAW

the Application. On August 14, 2018, I received your email, attached, advising that DNREC at that time required no additional information from Walan, nor did it contemplate an additional public hearing.

During our subsequent telephone conversation on or about August 22, 2018, on this matter and Walan's intention to correct the Application and record, you indicated that the record is closed.

Walan subsequently retained Duffield Associates as its new consultant. Rick Beringer reached out to your client yesterday to discuss Walan's withdrawal of the Application. After a series of calls among Duffield, my client, and your client, Walan was informed that withdrawal of the Application would not make a difference as DNREC intends to proceed with its recommendation that the Application be denied.

Walan is unclear on the applicable procedures here, in light of DNREC's indication that Walan can neither correct the record nor withdraw the Application, which seems to be at odds with our reading of 7 DEL. ADMIN. CODE § 1102-3.2 (2006), addressing an applicant's obligation to supplement the record as necessary to provide corrections or relevant information. As such, Walan is not clear on how it can comply with this section in light of indications of a closed record. There does not appear to be any provision prohibiting withdrawal of the Application. Accordingly, Walan is hereby withdrawing its Application (including all supporting documents), without prejudice.

Walan is committed to continue cooperating in good faith with DNREC, and would like to be able to proceed on the best path forward. To that end, we are requesting a meeting with you and your client at the earliest opportunity.

We look forward to hearing from you.

Very truly yours,

Sharon Oras Morgan

Sharon Oras Morgan

Enclosures

ACTIVE\62323423.v1-8/28/18

Attachment 1

From: "Michael D. Logan" <mlogancps@aol.com>
Date: July 24, 2018 at 5:59:50 PM EDT
To: "'Marconi, Angela D. \(DNREC\)'" <Angela.Marconi@state.de.us>
Cc: "'Klotz, Bradley A. \(DNREC\)'" <Bradley.Klotz@state.de.us>, "'Craig Holdefer'" <choldefer@cps-2comply.com>, <lisa@pennmag.com>, "'Anil Bhadsavle'" <anilbhadsavle@yahoo.com>
Subject: RE: Walan - Proposed Meeting

Hello Angela,

Pursuant to my voicemail message that I left for you earlier today, I had just wanted to reach out to you, on behalf of Walan Construction Specialty Products, LLC, to confirm that the company wishes to continue and proceed with the air permit application process.

Accordingly, I would like to confirm with you what additional information we would need to submit to properly correct/amend the record to allow us to re-public notice the application. We are also interested in requesting that the Department include a pre-emptive public hearing schedule with any subsequent renotification in this matter.

Again, we appreciate the Department's continued assistance and efforts in this matter.

Mike

MICHAEL D. LOGAN
Vice President,
Environmental Services

COMPLIANCE PLUS SERVICES, INC.
www.cps-2comply.com

455 BUSINESS CENTER DRIVE, SUITE 250
HORSHAM, PA 19044
USA

215.734.1414
215.431.8085
215.734.1424
mlogan@CPS-2comply.com

From: Michael D. Logan <mlogancps@aol.com>
Sent: Friday, July 20, 2018 5:34 PM
To: 'Marconi, Angela D. (DNREC)' <Angela.Marconi@state.de.us>
Cc: 'Klotz, Bradley A. (DNREC)' <Bradley.Klotz@state.de.us>; 'Craig Holdefer' <choldefer@cps-2comply.com>; 'lisa@pennmag.com' <lisa@pennmag.com>; 'Anil Bhadsavle' <anilbhadsavle@yahoo.com>
Subject: RE: Walan - Proposed Meeting

Angela,

Thank you for meeting with us this morning to review the issues related to the public hearing review for the Walan facility.

As we had indicated, we are reviewing the information that you provided and investigating the facility records regarding the matters discussed. We will get back to you shortly to address Walan's response and intended path forward.

If you need anything else from us in the interim, please do not hesitate to contact me. We appreciate your time and attention in this matter. Have a good weekend.

Mike

MICHAEL D. LOGAN
Vice President,
Environmental Services

COMPLIANCE PLUS SERVICES, INC.
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455 BUSINESS CENTER DRIVE, SUITE 250
HORSHAM, PA 19044
USA

215.734.1414
215.431.8085
215.734.1424
mlogan@CPS-2comply.com

From: Marconi, Angela D. (DNREC) <Angela.Marconi@state.de.us>
Sent: Thursday, July 19, 2018 8:07 AM
To: 'MIchael D. Logan' <mlogancps@aol.com>
Cc: Klotz, Bradley A. (DNREC) <Bradley.Klotz@state.de.us>; 'Craig Holdefer' <choldefer@cps-2comply.com>; lisa@pennmag.com; 'Anil Bhadsavle' <anilbhadsavle@yahoo.com>
Subject: RE: Walan - Proposed Meeting

Thanks Mike,

We'll see you at 9 in the Grantham office.

-Angela

From: MIchael D. Logan [mailto:mlogancps@aol.com]
Sent: Wednesday, July 18, 2018 3:38 PM
To: Marconi, Angela D. (DNREC)
Cc: Klotz, Bradley A. (DNREC); 'Craig Holdefer'; lisa@pennmag.com; 'Anil Bhadsavle'
Subject: Walan - Proposed Meeting

Hi Angela,

Pursuant to our discussions earlier today, we were able to confirm that our client is available to meet this Friday, July 20, 2018. If possible, we would like to meet in the morning, perhaps at 9 am if that works for you. Please let me know.

If you need us to bring along any information to be prepared to review at the meeting, please let me know and we will prepare accordingly. Thank you for reaching out and have a good rest of the day.

Mike

MICHAEL D. LOGAN
Vice President,
Environmental Services

COMPLIANCE PLUS SERVICES, INC.
www.cps-2comply.com

455 BUSINESS CENTER DRIVE,
SUITE 250
HORSHAM, PA 19044
USA

215.734.1414
215.431.8085
215.734.1424
mlogan@CPS-2comply.com

Attachment 2

From: Edge, Valerie (DOJ) <Valerie.Edge@state.de.us>
Sent: Tuesday, August 14, 2018 3:12 PM
To: Morgan, Sharon Oras <SMorgan@foxrothschild.com>
Cc: Marconi, Angela D. (DNREC) <Angela.Marconi@state.de.us>; Klotz, Bradley A. (DNREC) <Bradley.Klotz@state.de.us>
Subject: [EXT] RE: Walan Specialty Construction Products, LLC

Sharon,

I spoke with Angela Marconi, and Air Quality Management has determined that the appropriate next step is for it to do the technical response document that was requested by the hearing officer, rather than attempting to change the process mid-stream by re-noticing a new hearing. Thus, it is my understanding that AQM does not believe it requires further information at the time. Further, AQM does not yet know when that technical response document would be provided to the hearing officer, or when the hearing officer might make her recommendation to the Secretary.

Val

Valerie Edge
Deputy Attorney General
Delaware Department of Justice
102 W. Water Street
Dover, DE 19904
Email: valerie.edge@state.de.us
Phone: 302-739-4636
Direct Dial: 302-257-3219

Privileged & Confidential
Attorney Client/Work Product

From: Morgan, Sharon Oras [mailto:SMorgan@foxrothschild.com]
Sent: Monday, August 13, 2018 3:26 PM
To: Edge, Valerie (DOJ) <Valerie.Edge@state.de.us>
Subject: RE: Walan Specialty Construction Products, LLC

Thanks!

Sharon Morgan
Office Managing Partner
Fox Rothschild LLP
Citizens Bank Center
919 North Market Street, Suite 300
Wilmington, DE 19899-2323
(302) 622-4246 - direct
(302) 656-8920- fax
SMorgan@foxrothschild.com
www.foxrothschild.com

From: Edge, Valerie (DOJ) <Valerie.Edge@state.de.us>
Sent: Monday, August 13, 2018 3:22 PM
To: Morgan, Sharon Oras <SMorgan@foxrothschild.com>
Subject: [EXT] RE: Walan Specialty Construction Products, LLC

Hi Sharon,

I am sorry to have not gotten back to you sooner. I will check with Angela about the follow up information, but I just got back from a meeting with her on a different subject and anticipate that she is driving right now. I hope to get back to you shortly.

Val

Valerie Edge
Deputy Attorney General
Delaware Department of Justice
102 W. Water Street
Dover, DE 19904
Email: valerie.edge@state.de.us
Phone: 302-739-4636
Direct Dial: 302-257-3219

Privileged & Confidential
Attorney Client/Work Product

From: Morgan, Sharon Oras [mailto:SMorgan@foxrothschild.com]
Sent: Monday, August 13, 2018 1:21 PM
To: Edge, Valerie (DOJ) <Valerie.Edge@state.de.us>
Subject: Walan Specialty Construction Products, LLC

Hi, Valerie. I wanted to follow up on our recent discussions about Walan Specialty Construction Products, LLC. Please let me know whether you have had an opportunity to speak with your client about next steps on this matter. If you believe it would be helpful to have a follow up meeting on this, please let me know.

Additionally, I was hoping you can give me some direction on communications between our clients. I understand that there was some discussion between Angela and my client (and Mike Logan of Compliance Plus) regarding providing DNREC with follow up information on the issues discussed on July 20, 2018. Should Mike reach out to Angela, should I provide information to you directly, and/or should we hold off until we received further feedback from your client? Your guidance would be appreciated so that we ensure we are being responsive and communicating through the proper channels.

Thanks, I look forward to hearing from you.

Sharon Morgan
Office Managing Partner
Fox Rothschild LLP
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Exhibit B

eFACTS on the Web
DEP Information
About DEP
Contact Us
DEP Home
Search eFACTS
Authorization Search
Client Search
Facility Search
Inspection Search
Mammography Search
Name Search
Pollution Prevention
Sites by County/Municipality
Site Search
Reports
Emission Summary
Facility Emissions
Other Sites
eMapPA
eNotice
EPA ECHO
EPA Envirofacts
Permits, Licensing, and Certification
The PA Code

Violation Details for Inspection ID: 2611128

Facility: PENN MAG INC (671416)
Program: WPC NPDES

Disclaimer: The dollar amounts listed below are for the entire related enforcement, and may encompass many sites/facilities. The *Total Amount Collected* may or may not be related to the *Penalty Amount Assessed*, depending on how your program or regional office records payments in eFACTS. Questions regarding payments or penalties should be directed to the eFACTS Help Desk at:

(717) 705-3760 or mailto:ep-efactshelpdesk.team@pa.gov

Violation ID	Date	Violation Description
790699	04/11/2017	NPDES - Failure to use a form or process required by DEP for self-monitoring results
		Resolution: Corrected/Abated
		PA Code Legal Citation: 25 Pa. Code 92a.61(g) : PA Code Website
		Violation Type: Administrative
		Related Enforcements
		Please note: the following related enforcement data is accumulated from possibly many different sites/facilities that may be unrelated to the facility for this inspection. Enforcement ID: 355251 Enforcement Type: Notice of Violation Date Executed: 04/11/2017 Taken Against: PENN MAG INC On Appeal? N Enforcement Status: Comply/Closed # of Violations Addressed by this Enforcement and Penalty Action (possibly from many facilities): 1 Penalty Final Date: Penalty Amount Assessed: Total Amount Due: Total Amount Collected: Penalty Status:

Exhibit C

Background

- **For over 30 years, we have been in the mineral grinding business and in full compliance with PA State Air Quality regulations**
  - In operation since 1982, we have an iron ore grinding plant in Adrian, PA, servicing large clients across the globe.
  - In operation since 1987, is an iron chromite grinding plant in Claysburg, PA
  - We always perform with consideration for the health and safety of our employees, partners and customers.

- **Our future in Wilmington**
  - Various state Department of Transportations (DOTs) are beginning to require GGBFS as Cement Additive in DOT funded projects
  - Ground Granulated Blast Furnace Slag represents the best alternative to lowering emissions of an industry that will experience a substantial growth within the construction building sector of our economy.

- eFACTS on the Web
- DEP Information
  - About DEP
  - Contact Us
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- Search eFACTS
  - Authorization Search
  - Client Search
  - Facility Search
  - Inspection Search
  - Mammography Search
  - Name Search
  - Pollution Prevention
  - Sites by County/Municipality
  - Site Search
- Reports
  - Emission Summary
  - Facility Emissions
- Other Sites
  - eMapPA
  - eNotice
  - EPA ECHO
  - EPA Envirofacts
  - Permits, Licensing, and Certification
  - The PA Code

Violation Details for Inspection ID: 1783378

Facility: PENN MAG INC/ADRIAN (514433)
Program: Air Quality

Disclaimer: The dollar amounts listed below are for the entire related enforcement, and may encompass many sites/facilities. The *Total Amount Collected* may or may not be related to the *Penalty Amount Assessed*, depending on how your program or regional office records payments in eFACTS. Questions regarding payments or penalties should be directed to the eFACTS Help Desk at:

(717) 705-3768 or mailto:ep-efactshelpdeskteam@pa.gov

Violation ID	Date	Violation Description
561113	07/17/2009	Construction, Modification, Reactivation and Operation of Sources, Operating Permit Requirements, Compliance requirements. A person may not cause or permit the operation of a source subject to this article unless the source and air cleaning devices identified in the application for the plan approval and operating permit and the plan approval issued to the source are operated and maintained in accordance with specifications in the application and conditions in the plan approval and operating permit issued by the Department. A person may not cause or permit the operation of an air contamination source subject to this chapter in a manner inconsistent with good operating practices.

Resolution: Corrected/Abated
Legal Citation: 25 Pa Code 127.444 : PA Code Website
Violation Type: Environmental Health & Safety

Related Enforcements

Please note: the following related enforcement data is accumulated from possibly many different sites/facilities that may be unrelated to the facility for this inspection.

Enforcement ID: 245369
Enforcement Type: Notice of Violation
Date Executed: 03/25/2009
Taken Against: PENN MAG INC
On Appeal? N
Enforcement Status: Comply/Closed
Penalty Final Date:
Penalty Amount Assessed:
Total Amount Due:
Total Amount Collected:
Penalty Status:
# of Violations Addressed by this Enforcement and Penalty Action (possibly from many facilities): 2

Please note: the following related enforcement data is accumulated from possibly many different sites/facilities that may be unrelated to the facility for this inspection.

Enforcement ID: 250135
Enforcement Type: Consent Assessment of Civil Penalty
Date Executed: 09/15/2009
Taken Against: PENN MAG INC
On Appeal? N
Enforcement Status: Comply/Closed
Penalty Final Date: 10/28/2009
Penalty Amount Assessed: 3000
Total Amount Due: 0
Total Amount Collected: 3000
Penalty Status: Completed
# of Violations Addressed by this Enforcement and Penalty Action (possibly from many facilities): 2

Violation ID	Date	Violation Description
561117	07/17/2009	General provisions; Prohibition of air pollution. Failure to prevent the emission of air pollution, as defined in the PA Air Pollution Control Act.

Resolution: Corrected/Abated
Legal Citation: 25 Pa Code 121.7 : PA Code Website
Violation Type: Environmental Health & Safety

Related Enforcements

Please note: the following related enforcement data is accumulated from possibly many different sites/facilities that may be unrelated to the facility for this inspection.

Enforcement ID: 245368
Enforcement Type: Notice of Violation
Date Executed: 03/25/2009
Taken Against: PENN MAG INC
On Appeal? N
Enforcement Status: Comply/Closed
Penalty Final Date:
Penalty Amount Assessed:
Total Amount Due:
Total Amount Collected:
Penalty Status:
# of Violations Addressed by this Enforcement and Penalty Action (possibly from many facilities): 2

Please note: the following related enforcement data is accumulated from possibly many different sites/facilities that may be unrelated to the facility for this inspection.

Enforcement ID: 250135
Enforcement Type: Consent Assessment of Civil Penalty
Date Executed: 09/15/2009
Taken Against: PENN MAG INC
On Appeal? N
Enforcement Status: Comply/Closed
Penalty Final Date: 10/28/2009
Penalty Amount Assessed: 3000
Total Amount Due: 0
Total Amount Collected: 3000
Penalty Status: Completed
# of Violations Addressed by this Enforcement and Penalty Action (possibly from many facilities): 2

Exhibit D

WALAN Outreach Efforts

Wilmington City Council – Michelle Harlee
New Castle County Council – Penrose Hollins
State Representative James "JJ" Johnson
State Senator Margaret Rose Henry

New Castle County Council – Jea Street

Oakmont Civic Association
Simonds Gardens Civic Association
Castle Hills Civic Association
Minquadale Civic Association
All Civic Association

Dunlieth Civic Association
Rosehill Civic Association
Southbridge Civic Association
Eden and Hamilton Park Civic Association

MEMORANDUM

TO: Angela D. Marconi, P.E., BCEE ADM

THROUGH: Karen A. Mattio, P.E. KAM

FROM: Bradley A. Klotz BAK

SUBJECT: WALAN Specialty Construction Products, LLC
Permit: APC-2019/0030-CONSTRUCTION
Granulated Blast Furnace Slag Grinding, Drying, and Processing Facility

DATE: March 26, 2019

BACKGROUND

WALAN Specialty Construction Products, LLC submitted a construction permit application on October 19, 2018 for the construction of a slag grinding, drying, and processing facility consisting of 1 (one) feed hopper, two (2) bucket elevators, two (2) 1,100 ton storage silos, one (1) mill used to dry and grind the Granulated Blast Furnace Slag (GBFS), and one (1) baghouse used for air pollution control and product recovery. The owner operates under the name Penn Mag, Inc. in locations in Adrian, Pennsylvania, and Claysburg, Pennsylvania. The heater on the mill will have a natural gas firing rate of 7,240 ft^3/hour. The ground GBFS from the system will be conveyed via bucket elevator to 2 (two) product storage silos controlled by bin vents where it will then be loaded into enclosed trucks for shipment through dustless load-out chutes controlled by cartridge filters. Unprocessed GBFS material will be transported to the facility via tarped trucks from offloading of ships docked at the Port of Wilmington. The trucks will travel from the Port on Christiana Avenue to the facility at 501 Christiana Avenue and will not travel near any residential areas during delivery. Out bound trucks from the facility will be enclosed bulk transport trucks and will travel on major highways to final market locations which will most likely be cement manufacturing plants in the Mid-Atlantic Region where the GBFS will be blended with manufactured Portland Cement. Specific routes for outbound trucks have been established and were included in the application to avoid residential areas. Additionally, WALAN Specialty Construction Products, LLC submitted a Fugitive Dust Control Plan with their application, the requirements of which are incorporated, by reference, in the attached construction permit.

A brief background to note. A public hearing was held on WALAN Specialty Construction Products, LLC 's April 25, 2018 previous application submittal. During DAQ's technical review of the permit application, there were some inconsistencies with the Environmental Applicant Background Statement, where the facility inadvertently failed to include an accurate account of the compliance history for their State of Pennsylvania facilities, operating under the name of Penn Mag, Inc. This rendered the information presented at the public hearing defective. Thus, on August 28, 2018, WALAN Specialty Construction Products LLC notified the Department of its withdrawal of the application without prejudice. A new application was submitted to the Department on October 19, 2018 and information which follows details the information contained in this application.

The Company did not request confidentiality.

The Company is not located within the Coastal Zone since the proposed facility will be northwest of Interstate 495 and out of the coastal zone area, thus no Coastal Zone Permit is needed.

The property is zoned W-1 (waterfront manufacturing district), by the City of Wilmington Department of Licenses & Inspection. The classification provides areas where manufacturing and heavy industrial uses are well established and where there are suitable sites for such use served by rail, water, and highway networks. The March 6, 2018 Zoning Letter from the City of Wilmington indicates that the proposed use of the premises for the granulated slag grinding operation is permitted as a matter of right per the Wilmington City Code section 48-336(b)(1).

An Applicant Background questionnaire for the proposed facility was submitted by the Company with the application.

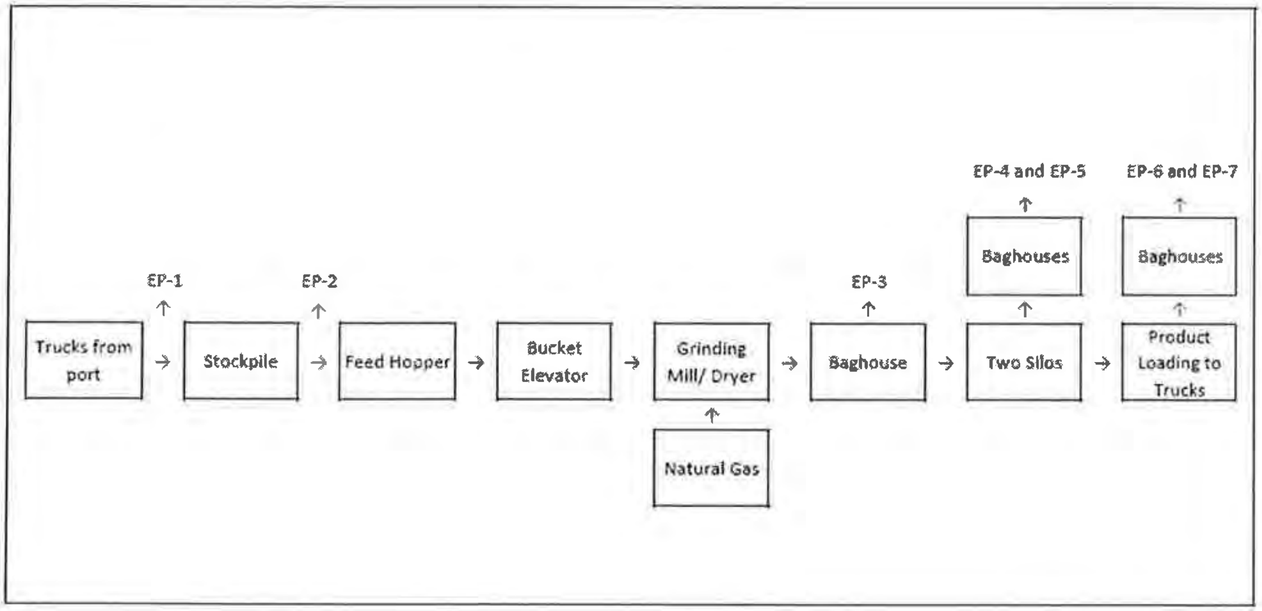
TECHNICAL INFORMATION

GBFS will be received from the Port of Wilmington by truck where it will be stockpiled at the facility's location at 501 Christiana Avenue, fed by front-end loader via a hopper to the "Ready2Grind" grinding/drying equipment and associated baghouse which has a 99.5% removal efficiency. GBFS is an additive in the manufacturing of concrete, the use of which has been demonstrated to increase the durability and strength of concrete and is now being required to be used in certain projects by regional Departments of Transportation, including the Delaware Department of Transportation. When the material is ground into fine particles and dried, the fine particulate emissions will be captured by a baghouse and then the processed material will be fed via a bucket elevator to two (2) 1,100 ton storage silos which will be equipped with bin vents. The ground GBFS will then be loaded into enclosed trucks through dustless load-out chutes which will be controlled by cartridge filters.

The potential to emit was calculated assuming no control equipment and continuous operation at 8,760 hours/year. The below Potential to Emit Table has been included for reference. The requested permitted emissions are based on the inherent constraint that the Port of Wilmington will receive three (3) 50,000-ton shipments or 150,000 tons of raw GBFS material per year for processing at the WALAN facility.

Emission Points Summary Table

Emission Point	Description	Process	Maximum Annual GBFS Throughput (tons)	Pollutants
EP-1	Dust Drop from Trucks to Stockpile (fugitive)	Handling	150,000	PM
EP-2	Dust Drop from Front End Loader into Feed Hopper (fugitive)	Handling		PM
EP-3	Grinding Mill (stack)	Grinding		PM, PM_{10}, $PM_{2.5}$
	Integral Dryer (stack)	Drying		$PM_{2.5}$, NO_X, CO, SO_X, VOC
EP-4 and EP-5	Baghouses (Bin Vents) on Two (2) 1,100 Ton Storage Silos (stack)	Storage		PM_{10}, $PM_{2.5}$
EP-6 and EP-7	Baghouse (Cartridge Filters) on Two (2) Dustless Loadout Chutes	Loadout		PM_{10}, $PM_{2.5}$



Potential to Emit and Permit Emission Limits

Emissions from Natural Gas Combustion for Emission Point (EP-3) - Dryer					
Pollutant	Emission Factor(A) ($lb/10^6$ Scf)	Uncontrolled Hourly Emissions(B) (lb/hr)	Controlled Hourly Emissions(B) (lb/hr)	Annual PTE(C) (tons/yr)	Requested Permitted(C) (tons/yr)
NO_x	100	0.724	N/A	3.171	1.810
CO	84	0.608	N/A	2.664	1.520
SO_x	0.6	0.004	N/A	0.019	0.011
VOC	5.5	0.040	N/A	0.174	0.100
$PM_{2.5}$	7.6	0.055	0.0003	0.0012	0.0007

Notes:

(A): AP-42, Tables 1.4-1 & 1.4-2

(B): Maximum firing rate of 7,240 Scf/ft2 for NG.

(C): Potential to Emit based on 8,760 hrs/yr at annual throughput of 262,800 TPY or 30 tons/hr; Requested Permitted Emission based on 5,000 hrs/yr at annual throughput of 150,000 TPY.

Emissions from Granulated Blast Furnace Slag Grinding for Emission Point (EP-3) - Grinder						
	Uncontrolled		Controlled			
Pollutant	Emission Factor(A) (lb/ton)	Emission Rate(B) (lb/hr)	Emission Factor(C) (lb/ton)	Emission Rate(B) (lb/hr)	Annual PTE(D) (tons/yr)	Requested Permitted(D) (tons/yr)
PM	8.08	242.4	0.0404	1.212	5.309	3.030
PM_{10}	6.78	203.4	0.0339	1.017	4.454	2.543
$PM_{2.5}$	2.42	72.6	0.0121	0.363	1.590	0.908

Notes:

(A): Uncontrolled emission factors calculated using controlled emission factors and baghouse removal efficiency of 99.5%

(B): Emission rates calculated based on maximum hourly GBFS throughput of 30 ton/hr.

(C): AP-42, Table 11.19.2-4.

(D): Potential to Emit based on 8,760 hrs/yr at annual throughput of 262,800 TPY or 30 tons/hr; Requested Permitted Emission based on 5,000 hrs/yr at annual throughput of 150,000 TPY.

Particulate matter emission concentration downstream of the "Ready2Grind" Baghouse can be calculated by using the emission rates (after the baghouse) and the volume flow rate for the "Ready2Grind" Baghouse.

The particulate matter concentration downstream of the "Ready2Grind" Baghouse is calculated as follows:

"Ready2Grind" Baghouse

$$\left(1.212\,\frac{\text{lb}}{\text{hr}}\right) \text{x} \left(\frac{1\text{ hr}}{60\text{mins}}\right) \text{x} \left(1\,\frac{\text{min}}{10{,}463\text{ ft3}}\right) \text{x} \left(7{,}000\,\frac{\text{gr}}{\text{lb}}\right) = 0.013514\ \text{gr/ft}^3$$

This calculated particulate emission concentration is in compliance with the restriction of 0.2 grains per standard cubic foot listed in 7 **DE Admin. Code** 1105, Section 2.0.

Emissions from Two 1,100 Ton Storage Silos (EP-4 & EP-5) – Bin Vents						
	Uncontrolled		Controlled			
Pollutant	Emission Factor(A) (lb/ton)	Emission Rate(B) (lb/hr)	Emission Factor(A) (lb/ton)	Emission Rate(B) (lb/hr)	Annual PTE(C) (tons/yr)	Requested Permitted(C) (tons/yr)
PM	0.73	21.9	0.00099	0.0297	0.130	0.074
PM_{10}	0.47	14.1	0.00034	0.0102	0.045	0.026

Emissions from Dustless Loadout Chute Manifolds with two (2) Cartridge Filters (EP-6 & EP-7) – Enclosed Truck Loadout						
	Uncontrolled		Controlled			
Pollutant	Emission Factor(A) (lb/ton)	Emission Rate(B) (lb/hr)	Emission Factor(A) (lb/ton)	Emission Rate(B) (lb/hr)	Annual PTE(C) (tons/yr)	Requested Permitted(C) (tons/yr)
PM	0.73	21.9	0.00099	0.0297	0.130	0.074
PM_{10}	0.47	14.1	0.00034	0.0102	0.045	0.026

Total Emissions (EP-4, EP-5, EP-6, & EP-7) – Storage & Loadout				
Pollutant	Uncontrolled (lb/hr)	Controlled (lb/hr)	Annual PTE(C) (tons/yr)	Requested Permitted(C) (tons/yr)
PM	43.8	0.059	0.260	0.149
PM_{10}	28.2	0.020	0.089	0.051

Notes:

(A):. AP-42, Table 11.19.2-4.

(B): Emission rates calculated based on maximum hourly GBFS throughput of 30 ton/hr

(C): Potential to Emit based on 8,760 hrs/yr at annual throughput of 262,800 TPY or 30 tons/hr; Requested Permitted Emission based on 5,000 hrs/yr at annual throughput of 150,000 TPY.

The two (2) storage silos are vented to C&W Manufacturing and Sales Company Model CP-4000S Bin Vents with a manufacturer specified volume flow rate of 4,000 acfm. The particulate matter emission concentration at the exit of the bin vents on the storage silos can be calculated by using the emission rates (after the bin vents) and the volume flow rate for the bin vents.

Thus, the particulate matter concentration at the exit of the bin vents on the storage silos is calculated as follows:

Storage Silos Bin Vents

$$\left(0.0297\,\frac{\text{lb}}{\text{hr}}\right) \text{x} \left(\frac{1\text{ hr}}{60\text{mins}}\right) \text{x} \left(1\,\frac{\text{min}}{4{,}000\text{ ft3}}\right) \text{x} \left(7{,}000\,\frac{\text{gr}}{\text{lb}}\right) = 8.6625 \text{ x } 10^{-4}\text{ gr/ft}^3$$

This calculated particulate emission concentration is in compliance with the restriction of 0.2 grains per standard cubic foot listed in 7 **DE Admin. Code** 1105, Section 2.0.

The dustless loadout chute manifolds are vented to two (2) TL-DCL Pleated Cartridges with a manufacturer specified volume flow rate of 1,400 acfm. The particulate matter emission concentration at the exit of the cartridge filters on the dustless loadout chute manifolds can be calculated by using the emission rates (after the cartridge filters) and the volume flow rate for the cartridge filters.

Thus, the particulate matter concentration at the exit of the cartridge filters on the dustless loadout chute manifolds is calculated as follows:

Cartridge Filters

$$\left(0.0297\,\frac{\text{lb}}{\text{hr}}\right) \text{x} \left(\frac{1\text{ hr}}{60\text{mins}}\right) \text{x} \left(1\,\frac{\text{min}}{1{,}400\text{ ft3}}\right) \text{x} \left(7{,}000\,\frac{\text{gr}}{\text{lb}}\right) = 2.475 \text{ x } 10^{-3}\text{ gr/ft}^3$$

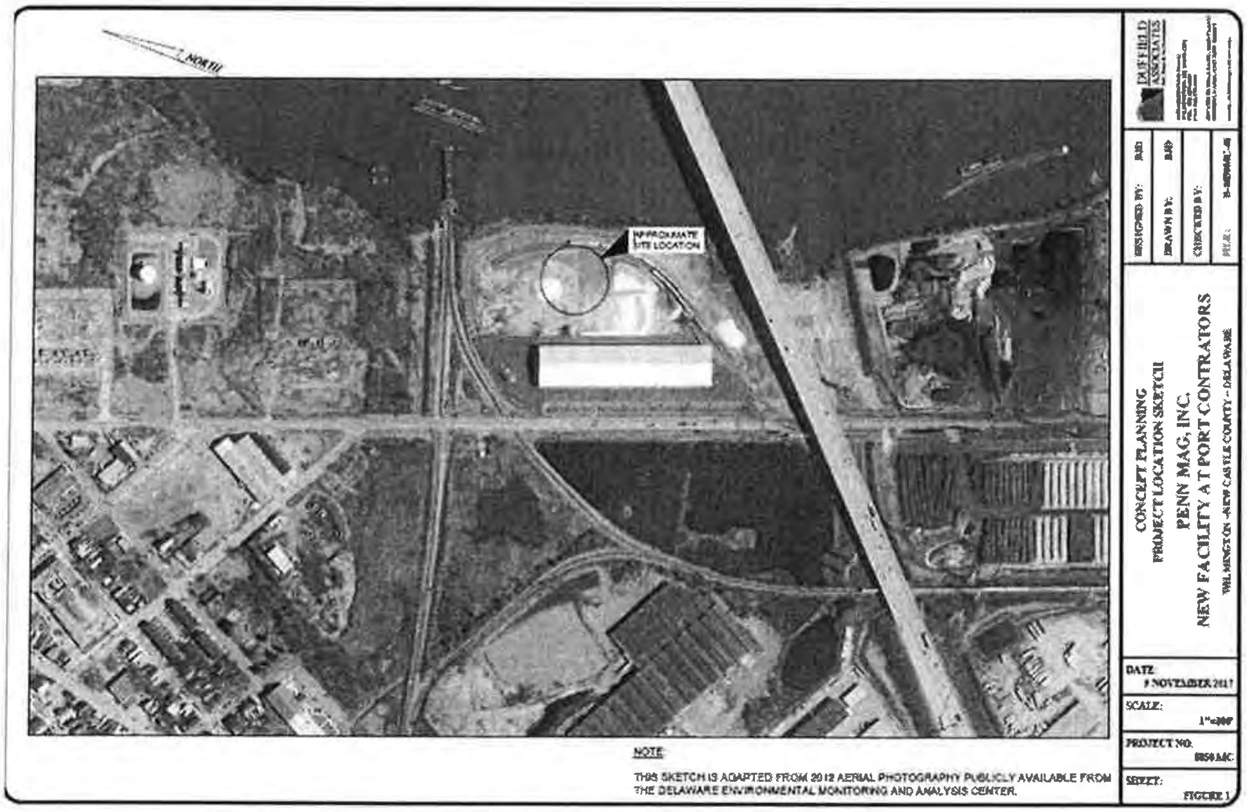
This calculated particulate emission concentration is in compliance with the restriction of 0.2 grains per standard cubic foot listed in 7 **DE Admin. Code** 1105, Section 2.0.

Potential to Emit and Permit Emission Limits

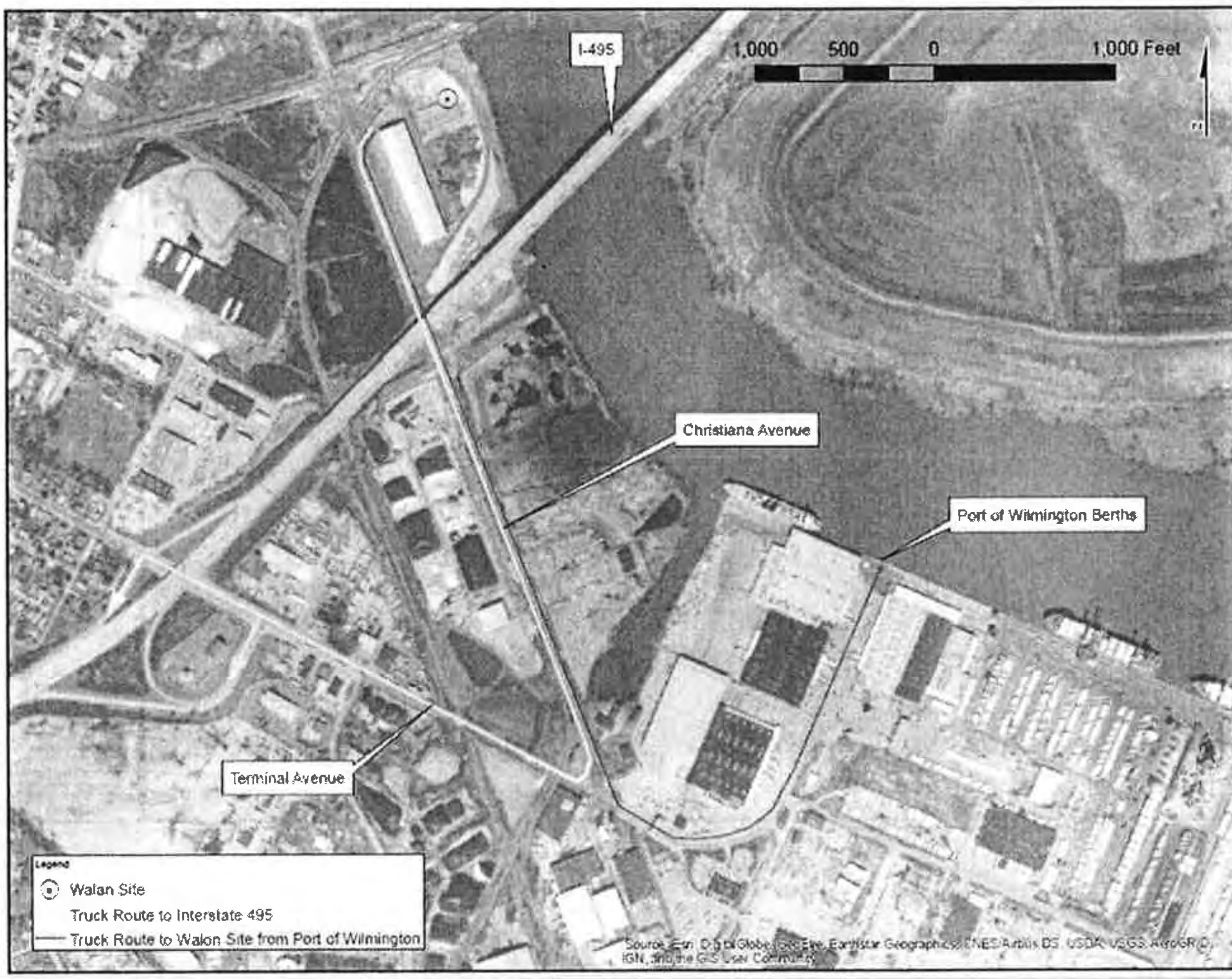
Overall Facility-Wide Process Emissions				
Pollutant	**Uncontrolled (lb/hr)**	**Controlled (lb/hr)**	**Annual PTE (tons/yr)**	**Requested Permitted (tons/yr)**
PM	286.247	1.318	5.776	3.297
PM_{10}	231.600	1.037	4.543	2.594
$PM_{2.5}$	72.655	0.366	1.591	0.909
SO_X	0.004	0.004	0.019	0.011
NO_X	0.724	0.724	3.171	1.810
CO	0.608	0.608	2.664	1.520
VOC	0.040	0.040	0.174	0.100

*Note: The Requested Permitted Emissions are based on the facility's proposed maximum annual hourly limitation of 5,000 hours of operation/year, which equates to 30 tons/hour or 150,000 tons/year.

Proposed Site Location Map



Local Truck Routes



***Note: The truck routes avoid residential areas.**

Fugitive Dust Plan

The application included a Fugitive Dust Control Plan since process operations at the facility will have the potential to generate fugitive dust emissions and will be located near a community that has concerns about dust emissions. The Fugitive Dust Control Plan has been incorporated by reference in the permit under Condition 3.2 and ***"Attachment A"***. Any future revisions to the Fugitive Dust Control Plan must be submitted to the Division of Air Quality (DAQ) for review and approval. There are numerous measures which will be employed by WALAN to minimize any offsite impact of emissions from facility operations. These measures include the following:

- The implementation of best management practices in order to maintain a neat and orderly work environment - both indoors and outdoors;
- The prompt cleanup of any spilled granulated blast furnace slag material;
- Maintaining neat and orderly storage of materials - including adding water, as needed, to any stockpiled material and keeping the stockpiles and material delivery trucks tarped;
- Facility roadways will be cleaned on an as needed basis, using a street sweeper to remove materials that might become fugitive dust;
- Controlling truck activity by enforcing speed limits;
- Limiting use of truck traffic to paved roadways and sweeping surfaces;
- Employing curtain doors below the storages silos for the unloading of finished materials into enclosed trucks for delivery;
- All equipment will be inspected and maintained to ensure proper system performance and the facility operations and equipment will be visually inspected on a daily basis;
- Conducting employee training on the proper use of fugitive dust control measures on an annual or as needed basis should facility procedures or operations change;
- Performing daily routine inspections to identify any conditions which could lead to fugitive dust emissions and potential dust generating activities; and
- The plan will be reviewed periodically and updated as needed. Updates will occur at a minimum, when: controls identified in the plan do not adequately control fugitive dust generation, potential sources of fugitive dust change, fugitive dust control measures change, or operating procedures at the facility are modified or revised.

AERSCREEN Modeling

Table 1: "Ready2Grind" Baghouse (EP-3 - Grinding) Stack Parameters

Stack Parameters	"Ready2Grind" Baghouse
Emission rate (lb/hr)	1.212
Stack Height (ft)	66'
Stack Diameter (ft)	1.02'
Gas Exit Temp (°F)	204.8
Ambient Temp (°F)	68
Exhaust Gas Flow (ACFM)	10463

Table 2: C&W Manufacturing & Sales Company Model No. CP-4000S Bin Vent Stack Parameters

Stack Parameters	Model No. CP-4000S
Emission rate (lb/hr)	0.0297
Stack Height (ft)	66′
Stack Diameter (ft)	1.02′
Gas Exit Temp (°F)	68
Ambient Temp (°F)	68
Exhaust Gas Flow (ACFM)	4000

Table 3: TL-DCL Pleated Cartridge Filters Model No. CFM330 Stack Parameters

Stack Parameters	TL-DCL Pleated Cartridge Filters
Emission rate (lb/hr)	0.0297
Stack Height (ft)	22′
Stack Diameter (ft)	0.667′
Gas Exit Temp (°F)	68
Ambient Temp (°F)	68
Exhaust Gas Flow (ACFM)	1400

Table 4: AERSCREEN Modeling Results

Emission Source	Air Pollutants	Emission Rate (lb/hr)	$MDC_{8\text{-hr}}$ (μg/m³)	TLV (mg/m³)	$MDC_{8\text{-hr}}$ (mg/m³)	TLV:MDC	Distance (m)
"Ready2Grind" Baghouse **(EP-3)** Grinding	PM	1.212	4.5668	3	0.004567	657	186
	PM_{10}	1.017	3.8283	10	0.003828	2612	186
	$PM_{2.5}$	0.363	1.3671	10	0.001367	7315	186
"Ready2Grind" Baghouse **(EP-3)** Drying	NO_X	0.724	0.9303	1.6	0.0009303	1720	186
	CO	0.608	0.7777	28.61	0.0007777	36788	186
	SO_X	0.004	0.0051247	0.654	0.000005124	127635	186
	$PM_{2.5}$	0.055	0.003843	10	0.000003843	2602134	186
	VOC	0.040	0.05124	1.6	0.000051247	31222	186
Bin Vent Model No. CP-4000S **(EP-4, EP-5)** Silos	PM	0.0297	0.33628	3	0.00033628	8921	315
	PM_{10}	0.0102	0.1155	10	0.0001155	86580	315
TL-DCL Pleated Cartridge Filters **(EP-6, EP-7)** Loadout	PM	0.0297	2.0979	3	0.0020979	1430	131
	PM_{10}	0.0102	0.7203	10	0.0007203	13883	131

As **Table 4** above indicates, the baghouse/bin vents/cartridge filters meet the Department's requirement of having TLV:MDC>100 for all air pollutants.

REGULATORY REVIEW

☐ 7 **DE Admin. Code** 1102: Permits
The granulated blast furnace slag processing facility has the potential to emit more than 10 lbs/day of emissions thus needs to be permitted.

☐ 7 **DE Admin. Code** 1104: Particulate Emissions from Fuel Burning Equipmentt
The provisions of this regulation do not apply to the equipment or operations since they are controlled by 7 DE Admin. Code 1105.

☐ 7 **DE Admin. Code** 1105: Particulate Emissions from Industrial Process Operations
The Company is subject to the following emissions limit from industrial process operations Section 2.1, "No person shall cause or allow particulate emissions into the atmosphere from any source not provided for in subsequent sections of this Regulation in excess of 0.2 grains per standard cubic foot."

Controlled PM concentration from dust collectors/baghouses are as follows:

Baghouse Identification	Particulate Matter Concentration (gr/ft^3)
"Ready2Grind" (EP-3, Grinding)	1.3514×10^{-2}
C&W Manufacturing & Sales Company Model CP-4000s Bin Vents (EP-4, & EP-5)	8.6625×10^{-4}
TL-DCL Pleated Cartridges for Dustless Load Chute (EP-6, & EP-7)	2.4750×10^{-3}

See particulate matter emission calculations detailed above.

☐ 7 **DE Admin. Code** 1114: Visible Emissions
Visible emissions from the plant will not exceed 20% opacity for an aggregate of more than three (3) minutes in any one (1) hour, or more than fifteen (15) minutes in any twenty-four (24) hour period. Condition 4.3.1 of the permit requires daily observance for the presence or absence of visible emission for at least five (5) minutes while equipment is operating. Conditions 5.2.2 & 5.7 requires records be kept in accordance with Conditions 4.3.2 & 4.3.4. This will satisfy compliance with 7 **DE Admin. Code** 1114.

☐ 7 **DE Admin. Code** 1119: Control of Odorous Air Contaminants
The facility is subject to control all odorous air contaminates (Section 2.1). Condition 2.7 satisfies this requirement.

☐ 7 **DE Admin. Code** 1120: New Source Performance Standards
This regulation is not applicable as the granulated slag processing plant does not meet any of the categories in this regulation.

☐ 7 **DE Admin. Code** 1124: Control of Volatile Organic Compound Emissions
This regulation is not applicable as the limestone processing plant does not emit VOCs in excess of 15 pounds per day.

☐ 7 **DE Admin. Code** 1125: Requirements for Preconstruction Review
Sections 2 and 3 of this regulation (Major New Source Review) does not apply as the plant is not a major source of air contaminants as demonstrated in PTE table on page 6 above. Section 4 is Minor New Source Review for which the facility would be applicable if annual PM emissions are more than 5 tons. The facility's potential to emit for PM for the granulated blast furnace slag process operating at 8,760 hrs/yr is 5.776 TPY, which is greater than the 5 TPY threshold. For this reason, the facility was asked to perform an MNSR BACT Analysis for PM. The BACT Analysis indicated that a baghouse is BACT for similar particulate emission sources. It should be noted, however, that the requested permitted emissions for the facility are based on 5,000 hrs/yr at annual throughput of 150,000 TPY of GBFS.

☐ 7 **DE Admin. Code** 1130: Title V State Operating Permit Program
This facility is below major source thresholds for all major pollutants and is not subject to any section of **7 DE Admin. Code** 1130.

☐ 7 **DE Admin. Code** 1138: Emission Standards for HAPs for Source Categories
This regulation is not applicable because there are no Hazardous Air Pollutant (HAP) emissions from the facility.

☐ 7 **DE Admin. Code** 1149: Regulations Governing the Control of Noise
This regulation is applicable to this facility because the facility will be a source of noise generated from process operations.

Section 6.1: No person(s) shall operate or cause to be operated any stationary source of sound in such a manner as to create a 24-hour equivalent A-weighted sound level which exceeds the Le_g limits set forth for the receiving land use category in Table 1 when measured at the point of complaint origination within the property boundary of the receiving land use. Any exceedance of these values constitute a noise disturbance.

Table 1 – Sound Levels by Receiving Land Uses, L, a (24) dBA				
Emitter(s)	**Receptor C**	**Receptor B**	**Receptor A 7am-10pm**	**Receptor A 10pm-7am**
A	65	65	65	55
B	75	75	65	55
C	85	75	65	55

This regulation requires that the sound pressure level for sounds emitted by the equipment at the facility be less than 65 decibels (dB) from 7am-10pm and less than 55 dB from 10pm-7am. The nearest Class A properties are located approximately 1,800 feet from the WALAN facility. The grinding mill is reported to produce a sound pressure level of 86 dB at a distance of 9.8 feet from the mill. The calculations detailed below indicate that the sound pressure level will be approximately 40 dB (actual – 39.72 dB) at a distance of 1,800 feet from the mill. Additionally, the 65 dB sound pressure will be achieved at a distance of approximately 310 feet from the mill. Both distances are less than the distance between the proposed mill and the railroad track adjoining the property where the WALAN facility will be located. Therefore, the WALAN facility will comply with the requirements of this regulation.

WALAN Sound Calculations:
Assume equal sound propagation in all directions.

$$L2 = L1 - |20\, X \log\left(\frac{r1}{r2}\right)|$$

Based on inverse square law:

$$L2 = L1 - |10\, x \log\left(\frac{r1}{r2}\right) \text{^}2|$$

Thus,

$$r2 = r1\ x\ 10^\wedge[\frac{|L1-L2|}{20}]$$

or,

$$r1 = \{(r2)/[10^\wedge(|L1\text{-}L2|/20)$$

Where:

L_1 = sound pressure @ r_1 (dB)
L_2 = sound pressure level @ r_2 (dB)
r_1 = distance from source of sound (ft)
r_2 = distance from source of sound (ft)

Known:

L_1 = 85 dB
r_1 = 9.8 ft
r_2 = distance to nearest residents = 1,800 ft

Find: L_2 = ?

$$L2 = L1 - |10\ x \log\left(\frac{r1}{r2}\right)^\wedge 2|$$

$$L2 = 85 - |10\ x \log\left(\frac{9.8}{1800}\right)^\wedge 2|$$

$\underline{\mathbf{L2 = 39.72\ dB}}$

Since L_2 < 65 dB and L_2 < 55 dB, the facility complies with Reg. 1149, Section 6.1

@L2 = 65 dB
Find r_2 = ?

$$r2 = 9.8\ x\ 10^\wedge(\frac{|85-65|}{20})$$

$\underline{\mathbf{r2 = 98\ ft}}$

Since r_2 < 1,800 ft, the facility complies with Reg. 1149, Section 6.1

@ L_2 = 55 dB
Find r_2 = ?

$$r2 = 9.8\ x\ 10^\wedge(\frac{|85-55|}{20})$$

$\underline{\mathbf{r2 = 309.9\ ft}}$

Since r_2 < 1,800 ft, the facility complies with Reg. 1149, Section 6.1

Recommendations

The Division of Air Quality (DAQ) issued a public hearing notice on the Regulation No. 1102 Natural Minor Permit Application submitted by WALAN Specialty Construction Products, LLC to construct a slag grinding, drying, and processing facility located at 501 Christiana Avenue, Wilmington, Delaware. The legal notice was published in the **Sunday News Journal** and the **Delaware State News** on Sunday, October 28, 2018. A public meeting was held on Tuesday, November 20, 2018 at 6pm at the DNREC – Division of Waste and Hazardous Substances Office, 391 Lukens Drive, New Castle, Delaware to receive comments on the application. The public notice period closed on December 31, 2018 in response to a request made at the public hearing for an extended public comment period. All public comments were addressed in DAQ's response document, dated March 26, 2019. It is recommended that the attached Construction Permit: **APC-2019/0030-CONSTRUCTION** be issued since the proposed project and attached permit comply with all applicable zoning requirements and federal and state air pollution control laws and regulations.

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pc: Dover File

DATE

Permit: APC-2019/0030-CONSTRUCTION

Walan Specialty Construction Products, LLC
Granulated Blast Furnace Slag (GBFS) Grinding, Drying, and Processing Facility

Walan Specialty Construction Products, LLC
501 Christiana Avenue
Wilmington, Delaware 19801

ATTENTION: Anil Bhadsavle
President

Dear Mr. Anil Bhadsavle:

Pursuant to 7 **DE Admin. Code** 1102, Section 2, approval of the Department of Natural Resources and Environmental Control (the Department) is hereby granted for the construction of a Granulated Blast Furnace Slag (GBFS) Grinding, Drying, and Processing Facility consisting of 1 (one) feed hopper, two (2) bucket elevators, one (1) Redecam Model 2 DPZ 60x10/7-W Grinding Mill with Integral/Heater and associated baghouse, two (2) 1,100 ton Concrete Plants, Inc Storage Silos with two (2) associated C&W Manufacturing and Sales Company Model CP-4000S Bin Vents, and two (2) Compact Filter Module (CFM) – Module CFM-330 Dustless Loadout Chute Manifolds with two (2) associated TL-DCL Pleated Cartridge Filters located at the Walan Specialty Construction Products, LLC facility at 501 Christiana Avenue, Wilmington, Delaware in accordance with the application and revised application submitted on Form Nos. AQM-1 and AQM-2, AQM-3.1, AQM-3.7, AQM-4.6, and AQM-5 dated October 15, 2018 signed by Anil Bhadsavle, President, letters dated October 18, 2018 and March 5, 2019 signed by M. Richard Beringer, P.E., LEED AP, Senior Environmental Consultant, Duffield Associates, Fugitive Dust Study – Revision 1 Submittal, dated November 15, 2018, Fugitive Dust Study – Revision 2 Submittal, dated November 19, 2018, Fugitive Dust Study – Revision 3 Submittal, dated April 2, 2019, and City of Wilmington Zoning Letter dated March 6, 2018 signed by James G. DiPinto, Zoning Manager.

This permit is issued subject to the following conditions:

1. General Provisions

1.1 This permit expires on DATE. If the equipment covered by this permit will not be constructed by DATE a request to extend this construction permit must be submitted by DATE.

1.2 The project shall be constructed in accordance with the application described above. If any changes are necessary, revised plans must be submitted and supplemental approval issued prior to actual construction.

1.3 Representatives of the Department may, at any reasonable time, inspect this facility.

1.4 This permit may not be transferred to another location or to another piece of equipment or process.

1.5 This permit may not be transferred to another person, owner, or operator unless the transfer has been approved in advance by the Department. Approval (or disapproval) of the permit transfer will be provided by the Department in writing. A request for a permit transfer shall be received by the Department at least thirty (30) days before the date of the requested permit transfer. This request shall include:

1.5.1 Signed letters from each person stating the permit transfer is agreeable to each person; and

1.5.2 An Applicant Background Information Questionnaire pursuant to 7 Del C, Chapter 79 if the person receiving the permit has not been issued any permits by the Department in the previous five (5) years.

1.6 The applicant shall, upon completion of the construction, installation, or alteration, request in writing that the Department grant approval to operate.

1.6.1 A separate application to operate pursuant to 7 **DE Admin. Code** 1102 does not need to be submitted to the Department for the equipment or process covered by this construction permit. Upon a satisfactory demonstration by an on-site inspection that the equipment or process complies with all of the terms and conditions of this permit, the Department shall issue a 7 **DE Admin. Code** 1102 Operating Permit for this equipment or process.

1.6.2 The applicant shall notify the Department sufficiently in advance of the demonstration and shall obtain the Department's prior concurrence of the operating factors, time period, and other pertinent details relating to the demonstration.

1.6.3 The provisions of 7 **DE Admin. Code** 1102 Sections 2.1 and 11.3 shall not apply to the operation of equipment or processes for the purposes of initially demonstrating satisfactory performance to the Department following construction, installation, modification, or alteration of the equipment or processes.

1.7 The owner or operator shall not initiate construction, install, or alter any equipment or facility or air contaminant control device which will emit or prevent the emission of an air contaminant prior to submitting an application to the Department pursuant to 7 **DE Admin. Code** 1102, and, when applicable 7 **DE Admin. Code** 1125, and receiving approval of such application from the Department; except as exempted in 7 **DE Admin. Code** 1102 Section 2.2.

2. Emission Limitations

2.1 Air contaminant emission levels from shall not exceed those specified in 7 **DE Admin. Code** 1102 and the following:

2.1.1 **Emission Point (EP-3) – Granulated Blast Furnace Slag Drying**

2.1.1.1 Nitrogen Oxide (NO_X) Emissions
NO_X emissions shall not exceed 0.724 pound per hour and 1.810 tons per twelve month rolling period;

2.1.1.2 Carbon Monoxide (CO) Emissions
CO emissions shall not exceed 0.608 pound per hour and 1.520 tons per twelve month rolling period;

2.1.1.3 Sulfur Dioxide (SO_x) Emissions
SO_2 emissions shall not exceed 0.004 pounds per hour and 0.011 ton per twelve month rolling period;

2.1.1.4 Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$) Emissions
$PM_{2.5}$ emissions shall not exceed 0.0003 pound per hour and 0.0007 ton per twelve month rolling period; and

2.1.1.5 Volatile Organic Compound (VOC) Emissions
VOC emissions shall not exceed 0.040 pound per hour and 0.100 ton per twelve month rolling period.

2.1.2 **Emission Point (EP-3) – Granulated Blast Furnace Slag Grinding**

2.1.2.1 Particulate Matter (PM) Emissions
PM emissions shall not exceed 1.212 pounds per hour and 3.030 tons per twelve month rolling period; and

2.1.2.2 Particulate Matter (PM) Emissions
0.2 grains per standard cubic foot of exhaust air from the baghouse vent; and

2.1.2.3 Particulate Matter Less Than 10 Microns (PM_{10}) Emissions
PM_{10} emissions shall not exceed 1.017 pounds per hour and 2.543 tons per twelve month rolling period; and

2.1.2.4 Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$) Emissions
$PM_{2.5}$ emissions shall not exceed 0.363 pound per hour and 0.908 ton per twelve month rolling period.

2.1.3 **Emission Points (EP-4, EP-5, EP-6, & EP-7) – Granulated Blast Furnace Slag Storage and Loadout**

2.1.3.1 Particulate Matter (PM) Emissions
PM emissions shall not exceed 0.059 pound per hour and 0.149 ton per twelve month rolling period; and

2.1.3.2 Particulate Matter (PM) Emissions
0.2 grains per standard cubic foot of exhaust air from the baghouse vent; and

2.1.3.3 Particulate Matter Less Than 10 Microns (PM_{10}) Emissions
PM_{10} emissions shall not exceed 0.020 pound per hour and 0.051 ton per twelve month rolling period.

2.1.4 **Emission Points (EP-1, EP-2, EP-3, EP-4, EP-5, EP-6, & EP-7) – Facility-Wide**

2.1.4.1 Particulate Matter (PM) Emissions
PM emissions shall not exceed 1.318 pounds per hour and 3.297 tons per twelve month rolling period; and

2.1.4.2 Particulate Matter Less Than 10 Microns (PM_{10}) Emissions
PM_{10} emissions shall not exceed 1.037 pounds per hour and 2.594 tons per twelve month rolling period; and

2.1.4.3 Particulate Matter Less Than 2.5 Microns ($PM_{2.5}$) Emissions
$PM_{2.5}$ emissions shall not exceed 0.366 pound per hour and 0.909 ton per twelve month rolling period.

2.1.4.4 Nitrogen Oxide (NO_X) Emissions
NO_X emissions shall not exceed 0.724 pound per hour and 1.810 tons per twelve month rolling period;

2.1.4.5 Carbon Monoxide (CO) Emissions
CO emissions shall not exceed 0.608 pound per hour and 1.520 tons per twelve month rolling period;

2.1.4.6 Sulfur Dioxide (SO_x) Emissions
SO_2 emissions shall not exceed 0.004 pounds per hour and 0.011 ton per twelve month rolling period; and

2.1.4.7 Volatile Organic Compound (VOC) Emissions
VOC emissions shall not exceed 0.040 pound per hour and 0.100 ton per twelve month rolling period.

2.2 No person shall cause or allow the emission of visible air contaminants and/or smoke from a stationary or mobile source, the shade or appearance of which is greater than twenty (20%) percent opacity for an aggregate of more than three (3) minutes in any one (1) hour or more than fifteen (15) minutes in any twenty-four (24) hour period. ***(Facility-Wide)***

2.7 Odors from this source shall not be detectable beyond the plant property line in sufficient quantities such as to cause a condition of air pollution.

3. Operational Limitations

3.1 The owner or operator shall comply with the following operational limits:

3.1.1 The dryer shall combust only natural gas and shall operate no more than 5,000 hours per twelve (12) month rolling period.

3.1.2 The facility shall have a maximum material throughput of no more than 150,000 tons of Granulated Blast Furnace Slag (GBFS) per twelve (12) month rolling period.

3.1.3 The operating schedule shall not exceed 5,000 hours per twelve (12) month rolling period.

3.1.4 The process equipment shall not be operated unless all associated control devices are operating properly.

3.1.5 The pressure differential across the filter bags in the Redecam Model 2 DPZ 60x10/7-W Baghouse shall be maintained at or below 6 inches of water column with the lower range to be determined during the construction to operation inspection.

3.1.6 The pressure differential across the filter bags in the Model No. CP-4000S Bin Vents shall be maintained at or below 6 inches of water column with the lower range to be determined during the construction to operation inspection.

3.1.7 The baghouses shall be operated with functional differential pressure gauges.

3.2 The Granulated Blast Furnace Slag Grinding (GBFSG) Facility Operations shall be in accordance with the procedures outlined in ***"Attachment A" - Fugitive Dust Control Plan, Revised April 2, 2019*** and all subsequent Department-Approved Revisions. Any changes to the Fugitive Dust Control Plan must be submitted to the Department for review and approval.

3.3 Fugitive emissions shall not be emitted in such quantities as to cause or create a condition of air pollution from material-handling operations, the stockpiling of materials, or vehicular traffic entering or leaving the facility.

3.4 No person shall cause or allow stockpiling or other storage of material or transport to or from a storage facility in such a manner as may cause a condition of air pollution.

3.5 The operator shall maintain best practices to minimize particulate matter emissions during outdoor material storage and transfer operations.

3.6 The facility shall develop a routine maintenance plan in accordance with the recommendations of the manufacturer of the baghouse/dust collectors. If recommendations of the manufacturer cannot be obtained, the Company shall develop a maintenance plan based on industry standards and/or the recommendations of other baghouse maintenance experts.

3.7 The owner or operator shall follow the manufacturer's maintenance schedule and procedures to assure that the baghouse and dust collectors serviceable components are well maintained.

3.8 At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate the facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

3.9 All structural and mechanical components of the equipment or process covered by this Permit shall be maintained in proper operating condition.

4. Testing and Monitoring Requirements

4.1 Within ninety (90) days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial startup of such facility, the owner or operator shall conduct performance test(s) of the Ready2Grind Baghouse (**EP-3**) and furnish the Department with a written report of the results of such performance test(s) in accordance with the following general provisions:

4.1.1 One (1) original and one (1) copy of the test protocol shall be submitted a minimum of forty-five (45) days in advance of the tentative test date to the address in Condition 6.3. The tests shall be conducted in accordance with the State of Delaware and Federal requirements.

4.1.2 The test protocol shall be approved by the Department prior to initiating any testing. Upon approval of the test protocol, the Company shall schedule the compliance demonstration with the Source Testing Engineer. The Department must observe the test for the results to be considered for acceptance.

4.1.3 The final results of the testing shall be submitted to the Department within sixty (60) days of the test completion. One (1) original and one (1) copy of the test report shall be submitted to the addresses below:

Original to:
Engineering & Compliance Branch
Attn: Permitting Engineer
State Street Commons
100 W. Water Street, Suite 6A
Dover, DE 19904

One (1) Copy to:
Engineering & Compliance Branch
Attn: Source Testing Engineer
715 Grantham Lane
New Castle, DE 19720

4.1.4 The final report of the results must meet the following requirements to be considered valid:

4.1.4.1 The full report shall include the emissions test report (including raw data from the test) as well as a summary of the results and a statement of compliance or non-compliance with permit conditions;

4.1.4.2 Summary of Results and Statement of Compliance or Non-Compliance
The owner or operator shall supplement the report from the emissions testing firm with a summary of results that includes the following information:

4.1.4.2.1 A statement that the owner or operator has reviewed the report from the emissions testing firm and agrees with the findings.

4.1.4.2.2 Permit number(s) and condition(s) which are the basis for the compliance evaluation.

4.1.4.2.3 Summary of results with respect to each permit condition.

4.1.4.2.4 Statement of compliance or non-compliance with each permit condition.

4.2 The Company shall inspect the dust filters according to the manufacturer recommendations.

4.3 The owner or operator shall perform the following visible emission testing:

4.3.1 The Company shall conduct qualitative stack observations of the operation for visible emissions (excluding water vapor) and observations of the equipment and surrounding area for material leaks and spills. This shall be done on a ***daily basis*** by conducting a site walk around the emission units once per day. The observation of visible emissions or leaks and spills shall require prompt corrective action(s). Visible emission observations shall be for no less than 5 minutes in duration. Compliance with this condition shall be demonstrated by the maintenance of a bound log of all EPA Reference Method 22 visible emissions observations which must include the date of the quarterly visible emissions observations and any corrective action(s) taken. If visible emissions are noted, at any time, the Company shall conduct visual emissions observations at fifteen-second intervals for a period of not less than thirty (30) minutes except that the observations may be discontinued whenever a violation of the standard is recorded. The additional procedures, qualification and testing to be used for visually determining the opacity shall be those specified in Section 2 and 3 (except Section 2.5 and the second sentence of Section 2.4) of EPA Reference Method 9 set forth in appendix A, 40 CFR Part 60, revised July 1, 1982. Additionally, if visible emissions are observed, the facility shall take appropriate actions to correct the problem as soon as possible. After corrective action(s) is/are taken, the owner or operator shall observe visible emissions while the equipment is next operated or tested. If visible emissions still persist, these steps (observe, correct, document) shall be repeated until visible emissions are not observed.

4.3.2 For the daily EPA Reference Method 22 visible emissions observations, it is necessary that the observer is educated on the general procedures for determining the presence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects on visibility of emissions caused by background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor).

4.3.3 Conduct an initial EPA Reference Method 9 (40 CFR 60, Appendix A-4) performance test according to Condition 4.3.4 at the time of the performance test(s) of the Ready2Grind Baghouse (**EP-3**) required under Condition 4.1 and semi-annually thereafter.

4.3.4 The owner or operator shall use EPA Reference Method 9 of Appendix A-4, with the following additions:

4.3.4.1 The minimum distance between the observer and the emission source shall be 4.57 meters (15 feet).

4.3.4.2 The observer shall, when possible, select a position that minimizes interference from other fugitive emission sources (e.g. road dust). The required observer position relative to the sun (Method 9 of Appendix A-4, Section 2.1) must be followed.

4.3.4.3 The duration of the EPA Reference Method 9 (40 CFR 60, Appendix A-4) observations must be 30 minutes (five 6-minute averages).

5. Record Keeping Requirements

5.1 The owner or operator shall maintain all records necessary for determining compliance with this permit in a readily accessible location for five (5) years and shall make these records available to the Department upon written or verbal request

5.2 The following information shall be recorded, initialed, and maintained in a log:

5.2.1 The daily pressure drop readings, as measured across the inlet and outlet ductwork of each baghouse whenever the equipment is in operation.

5.2.2 All observations of visible emissions made according to Condition 4.3.1. Corrective action reports for visible emissions shall include the date, and corrective action(s) taken.

5.2.3 All inspections done, including the person doing the inspection, the date of the inspection, and the findings.

5.2.4 All maintenance performed on the dust control filters, including maintenance performed in response to troubleshooting or inspections.

5.2.5 The occurrence and duration of any malfunction of each baghouse.

5.2.6 Any period the baghouses are non-operational, with beginning of down time, end of downtime and reason for downtime.

5.2.7 Bag or filter replacement in each baghouse.

5.2.8 Hours of plant operation.

5.3 The Company shall keep vendor documents describing the removal efficiency for all filters used in the baghouses.

5.4 The total hours of operation for each month and the cumulative twelve month rolling period shall be calculated and recorded within 15 days of the end of each calendar month.

5.5 The total Granulated Blast Furnace Slag (GBFS) processed for each month and the cumulative twelve month rolling period shall be calculated and recorded within 15 days of the end of each calendar month.

5.6 The company shall keep manufacturer documents describing the recommended maintenance and differential pressure range for the baghouses.

5.7 The owner or operator shall maintain a log of all visible emissions observations, as required by Condition 4.3, and any/all corrective action(s) pursuant to Condition 4.3.1. Corrective action(s) shall include the date, location of the deviation and corrective action(s) taken.

5.8 The owner or operator shall maintain a copy of the results of any and all visible emissions observations performed in accordance with Condition 4.3.1 of this permit. If Reference Method 9 from 40 CFR 60, Appendix A is employed, a record of the certification of the observer shall also be maintained with the results of the observation. Records of the corrective actions taken in accordance with Condition 4.3.1 shall also be maintained.

5.9 The rolling twelve (12) month total emissions shall be calculated for the baghouse and dust collectors and recorded each month in a log for each of the following pollutants.

5.9.1 Particulate Matter (PM) Emissions;

5.9.2 Particulate Matter Less Than 10 Microns (PM_{10}) Emissions; and

5.9.3 Particulate Matter Less Than 2.5 Microns_($PM_{2.5}$) Emissions;

5.10 The Facility-Wide rolling twelve (12) month totals shall be calculated and recorded each month in a log for each of the following items:

5.10.1 Particulate Matter (PM) Emissions;

5.10.2 Particulate Matter Less Than 10 Microns (PM_{10}) Emissions;

5.10.3 Particulate Matter Less Than 2.5 Microns_($PM_{2.5}$) Emissions;

5.10.5 Nitrogen Oxide (NO_x) Emissions;

5.10.6 Carbon Monoxide (CO) Emissions;

5.10.4 Sulfur Oxides (SO_x) Emissions; and

5.10.7 Total Volatile Organic Compounds (VOC) Emissions.

6. Reporting Requirements

6.1 Emissions in excess of any permit condition or emissions which create a condition of air pollution shall be reported to the Department immediately upon discovery by calling the Environmental Emergency Notification and Complaint number, (800) 662-8802.

6.2 In addition to complying with Condition 6.1 of this permit, any reporting required by 7 **DE Admin. Code** 1203 "**Reporting of a Discharge of a Pollutant or an Air Contaminant**", and any other reporting requirements mandated by the State of Delaware, the owner or operator shall, for each occurrence of excess emissions, within thirty (30) calendar days of becoming aware of such occurrence, supply the Department in writing with the following information:

6.2.1 The name and location of the facility;

6.2.2 The subject source(s) that caused the excess emissions;

6.2.3 The time and date of the first observation of the excess emissions;

6.2.4 The cause and expected duration of the excess emissions;

6.2.5 For sources subject to numerical emission limitations, the estimated rate of emissions (expressed in the units of the applicable emission limitation) and the operating data and calculations used in determining the magnitude of the excess emissions; and

6.2.6 The proposed corrective actions and schedule to correct the conditions causing the excess emissions.

6.3 One original and one copy of all required reports shall be sent to the address below:

Division of Air Quality
State Street Commons
100 W. Water Street, Suite 6A
Dover, DE 19904

7. Administrative Conditions

7.1 This permit shall be made available on the premises.

7.2 Failure to comply with the provisions of this permit may be grounds for suspension or revocation.

Sincerely,

Angela D. Marconi, P.E., BCEE
Program Manager
Engineering & Compliance Branch

ADM:KAM:BAK:bak
F:\EngAndCompliance\BAK\bak19026

pc: Dover File
Bradley A. Klotz
Karen A. Mattio, P.E.

"APPENDIX A"

Fugitive Dust Control Plan

DUFFIELD ASSOCIATES
Soil, Water & the Environment

FUGITIVE DUST CONTROL PLAN

Walan Specialty Construction Products, LLC.

Granulated Blast Furnace Slag Grinding Facility
501 Christina Avenue
Wilmington, DE 19801

Revised April 2, 2019

Prepared by:

Duffield Associates, Inc.
5400 Limestone Road
Wilmington, Delaware 19808

Project No. 8850.ED

DUFFIELD ASSOCIATES
Soil, Water & the Environment

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1.0 INTRODUCTION

This Fugitive Dust Control Plan (the "Plan") has been prepared for use at the WALAN Specialty Construction Products, LLC. (WALAN) Granulated Blast Furnace Slag Grinding Facility (GBFS Grinding Facility or Facility), to be located at 501 Christina Avenue Wilmington, Delaware 19801. A few outdoor activities at the Facility will have potential to generate fugitive dust emissions, since most of the operations at the Facility are enclosed and dust (particulate matter) is controlled by air pollution control devices. The Plan describes the GBFS Grinding Facility operations and the associated dust management practices that will be implemented to prevent and/or control potential fugitive particulate emissions. This third revision to the Plan adds water spraying on paved and unpaved surfaces within the facility during dry weather conditions to suppress dust generation.

The Plan includes the following:

- Potential sources of fugitive dust,
- Management procedures that are used to minimize fugitive dust emissions,
- Use of a visual inspection program to monitor material handling areas and process equipment,
- Procedures for the implementation of corrective action measures to be taken in the event of excessive fugitive dust emissions, and
- A list of sources and areas to be monitored for visible emissions and accumulation of material in open areas.

2.0 GENERAL OVERVIEW OF OPERATIONS

Provided below is a general overview of the GBFS Grinding Facility operations as well as onsite features and equipment that are relevant to this Fugitive Dust Control Plan.

2.1 Facility Description

The GBFS Grinding Facility will be located at 501 Christina Avenue, Wilmington, Delaware. The Facility will be constructed and will be operated at the rear of the property, behind an existing warehouse and adjacent to the Christina River. The Facility is located in area zoned for waterfront manufacturing, which is appropriate for the intended use. The Facility will be approximately 0.7 miles north of the Port of Wilmington, where GBFS will be imported for delivery to the Facility. Access to Interstate 495 is close by, which initially will be the principal transportation route taken by trucks delivering finished product to customers. The Facility is also located adjacent to a freight railroad, which may be utilized in the future for finished product delivery to customers.

A Site Location Map is included as Figure 1 that shows the general area where the Facility is located. In addition, a Facility Site Plan is included as Figure 2. The Facility Site Plan depicts the location of Facility operating areas including the GBFS stockpile, feed hopper, grinding operation, storage silos and loadout area. The onsite roadways shown on the Facility Site Plan are utilized for truck traffic.

2.2 Description of Operations

Trucks will transport GBFS material to the Facility from ships unloaded at the Port of Wilmington. The GBFS is anticipated to arrive with moisture contents ranging from approximately 8 to10 percent (%). The GBFS received will be stockpiled and then placed in the feed hopper servicing the grinding operation. The GBFS will be conveyed to a bucket elevator and then fed to the grinder which will grind and dry the GBFS.

Once processed through the grinder, the ground GBFS (GGBFS) will be conveyed via a bucket elevator to two silos for storage and eventual loading into enclosed hopper trucks via loadout chutes. PM emissions will be controlled by cartridge filters which are used to capture dust displaced from the enclosed trucks. The truck loadout area under the silos will be enclosed to help prevent fugitive dust from escaping to the atmosphere.

As shown in Figure 2, truck traffic will enter the Facility on the northern end of the property. The delivery trucks will proceed to the stockpile areas and deposit GBFS. Trucks arriving at the site to receive finished product will also enter at the northern end and proceed to the silo storage area for loadout. All trucks will exit the property from the northern end.

The level of production at the Facility will be seasonal, with more demand for product occurring during spring, summer, and fall than during the winter months, leading to an anticipated lower level of operation in the winter months. The Facility is expected to increase production over years of operation and is anticipated to process up to 150,000 tons of GBFS per year at full operation. A process flow diagram that summarizes the process and highlights points of emissions is shown in Figure 3.

3.0 DUST EMISSIONS SOURCES/FACTORS

Potential dust emission sources and the factors that can influence dust emissions at the Facility are presented in this section. Sources of dust primarily are limited to outdoor emissions. Outdoor fugitive dust emissions are defined as those emissions occurring outside the buildings and not associated with a stack (point) discharge. The potential dust emission sources and factors that are addressed for this Facility include:

- On-site roadways (when dust is present),
- Paved and unpaved areas during dry weather conditions,
- Unloading of delivery trucks
- GBFS Stockpile (drying of material and wind)
- GBFS transfers from stockpile to feed hopper (height of drop and dry material)
- Truck loading tunnels located beneath each of the two silos

3.1 On-site Roadways

The on-site roadways will consist of both paved and unpaved areas. Paved and unpaved roadways can generate fugitive dust from vehicle traffic, wind and other disturbances of fine particulate matter, causing the particles to become airborne. Sources of potential dust from paved and unpaved surfaces at the Facility include: (1) tracking of mud and dirt from unpaved surfaces; (2) drying of mud (soil) on unpaved and paved surfaces; (3) spillage of GBFS onto the road surfaces; and (4) deposition of dust from other sources, on- and off-site. Sources of dust from paved and unpaved surfaces are mainly due to vehicle traffic and equipment movement. Dust generation will be influenced by the number of vehicles moving within the Facility, vehicle travel speed and weather conditions.

Due to the highly industrialized location of the Facility and paved public roads at the entrance to the Facility, it is expected that vehicles entering the Facility will not be tracking soil onto the site. Additionally, the GBFS Grinding Facility's interior traffic management controls are intended to minimize the truck and equipment cross traffic and avoid drag-out from areas where GBFS is stored and loaded.

3.2 Unloading of Transport Trucks

As mentioned above, GBFS will be transported from the Port of Wilmington to the GBFS stockpile area. There is a potential for the creation of fugitive dust when the trucks dump the GBFS onto the stockpile. The amount of fugitive dust that may be generated depends upon the particle sizes of the delivered GBFS, the moisture content of the GBFS, and weather conditions.

3.3 GBFS Stockpile

Windblown dust can be generated from stockpiled material which is dependent upon the particle size of the stockpiled GBFS and moisture content of the material. The amount of time when the stockpile is being disturbed, either during loading or unloading, will also influence windblown dust generation.

3.4 Feed Hopper/Conveyor/Transfer System

Dust may be generated when a front end loader is used to load GBFS into a hopper that feeds the grinding/drying mill because the material is being dropped a short distance. The conveyor and bucket elevator used to feed the material to the grinding/drying mill will be enclosed and will not generate fugitive dust.

3.5 Weather Conditions

Variables that influence dust emissions include, but may not be limited to, weather conditions. Dry, windy conditions would tend to increase the potential for dust emissions from potential fugitive emission sources.

3.6 Moisture Content of the GBFS and Particle Size

The moisture content of the GBFS is a significant factor that could affect fugitive dust emissions at the Facility. The lower the moisture content of the GBFS, the more likely it will be to generate dust. To minimize the potential for fugitive dust emissions, GBFS will be received at the Facility with a moisture content of 8% to 10%. The moisture in the GBFS creates surface tension between particles causing them to attract to one another, essentially "clumping up". This condition reduces the potential for fugitive dust generation. Due to the moisture content being 8% to 10% and the particle size of the GBFS being greater than 200 microns, there is a limited potential for the creation of fugitive dust during the handling and stockpiling.

3.7 Truck Tunnels under Silos

Dustless loading systems and closed hopper trailers will be used to control dust generation as GGBFS is transferred from the storage silos to the truck trailers. However, there is potential that wind blowing through the loading tunnels could generate dust.

4.0 FUGITIVE DUST CONTROL MEASURES

The GBFS Grinding Facility will employ various fugitive dust control measures to control the generation and dispersion of fugitive dust from the Facility. Facility personnel will monitor weather conditions and site operations for conditions that could lead to fugitive dust generation. The potential for fugitive dust emissions can vary based on humidity, air and ground temperatures, and wind direction and speed while site operations, as discussed above, have the potential to increase the risk of fugitive dust emissions by disturbing materials on ground surfaces or disturbing the GBFS stockpile.

The following practices will be employed by the GBFS Grinding Facility to minimize dust emissions:

4.1 Unloading of Transport Trucks

Fugitive dust emissions will be controlled during the unloading and stockpiling of GBFS. The material will have a moisture content of approximately 8% to 10% which will reduce the potential for fugitive dust emissions. The unloading and stockpile will be visually monitored daily for any signs of drying and dust release.

4.2 Stockpile Practices

After the stockpile of GBFS is created, the pile will be covered by weighted tarps to help maintain the moisture content of the pile and to reduce the surface area where wind could mobilize GBFS. While material is being added or removed, tarping will be removed from the working face of the stockpile. During those periods, the stockpile will be monitored visually for signs of drying and dust generation. If necessary to inhibit visible dust emissions, site personnel will add water to the working face of the stockpiled material to reduce the potential for fugitive dust emissions.

4.3 Feed Hopper and Conveying System

The movement and deposition of stockpiled GBFS in the feed hopper could be a source of fugitive emissions. To mitigate fugitive dust generation, the GBFS will be kept moist. Keeping the GBFS moist reduces the potential for fugitive dust emissions. Facility personnel will monitor the loading and conveying process. If visible dust generation is apparent, the water will be added to the stockpile to moisten the GBFS. In addition, the drop height when GBFS is deposited into the feed hopper will be kept to a minimum to minimize spillage of material and decrease the potential for dust release due to physical disturbances.

4.4 Silo Tunnels

Overlapping vertical strips (curtains) will be hung at the entrance and exit of the two silo tunnels where truck trailers are loaded with GGBFS. The strips will dampen wind velocities through the tunnels and help suppress the potential for dust generation in the tunnels.

4.5 Roadway Emissions

The following measures will be employed to control the fugitive dust from Facility roadways:

- Beds of all delivery trucks entering and exiting the Facility will be tarped to reduce the generation of fugitive dust from the trucks and to limit the potential for unintended spillage of material on public and Facility roads.
- Truck traffic will be limited to paved road surfaces. A typical traffic pattern is illustrated in Figure 2.

- Facility roadways will be cleaned on an as needed basis, using a street sweeper to remove materials that might become fugitive dust.
- Facility paved and unpaved surfaces will be sprayed with water as needed to suppress dust generation.
- Facility-wide vehicle speed limits will be enforced to reduce the potential for fugitive dust generation.

4.6 Preventative Maintenance Program

All equipment will be inspected and maintained to ensure proper system performance. Facility operations and equipment will be inspected visually on a daily basis.

4.7 Best Management Practices

Best management practices will be followed as a preventive measure to minimize the potential for creating fugitive dust. These practices includes good housekeeping. Good housekeeping is essentially the maintenance of a clean and orderly work environment which reduces the possibility of accidents and dust emissions.

Elements of good housekeeping practices include:

- Maintaining neat and orderly work areas, both indoors and outdoors;
- Maintaining neat and orderly storage of materials;
- Cleaning-up spilled GBFS promptly;
- Using a street sweeper on an as needed basis to remove materials that may become dust from paved roads;
- Using water sprays to paved and unpaved areas during dry weather conditions to suppress dust generation; and
- Providing training to employees about good housekeeping practices.

4.8 Employee Training

Employee training will be provided to all GBFS Grinding Facility operations personnel. Training will consist of a review of Facility procedures and operations, including review of this Plan, instruction on the proper use of fugitive dust control measures at the site, and a review of the relevant procedures following adoption of any new control measures, when needed. Training will be conducted on an annual basis and as needed when Facility procedures and operations are changed. If problematic incidents occur, or occur with increasing frequency, training will be provided more frequently to better inform and prepare Facility personnel.

The objective of the training is to ensure that the Facility is under constant observation by knowledgeable personnel. Employees will be trained to inspect and identify conditions that could lead to fugitive dust emissions and be able to implement correct procedures to mitigate those conditions when necessary.

4.9 Routine Inspection Programs

Daily inspections will be conducted to identify conditions that could lead to fugitive dust emissions and potential dust generating activities as part of the regular inspection program for the Facility on operating days. Results of the inspections will be documented on a daily record keeping report form and will be made available to the Delaware Department of Natural Resources and Environmental Control (DNREC) upon request.

5.0 RECORDKEEPING

A copy of this Fugitive Dust Control Plan will be maintained at the Facility at all times. Completed daily record keeping report forms will be maintained at the Facility for a minimum of five years and will be made available to DNREC personnel upon request as discussed above.

6.0 PLAN REVIEW

The Plan will be reviewed periodically and updated as needed. Updates will occur at a minimum, when: controls identified in this Plan do not control fugitive dust generation adequately, potential sources of fugitive dust change, fugitive dust control measures change, or Facility operating procedures are modified or revised.

7.0 FACILITY CONTACT INFORMATION

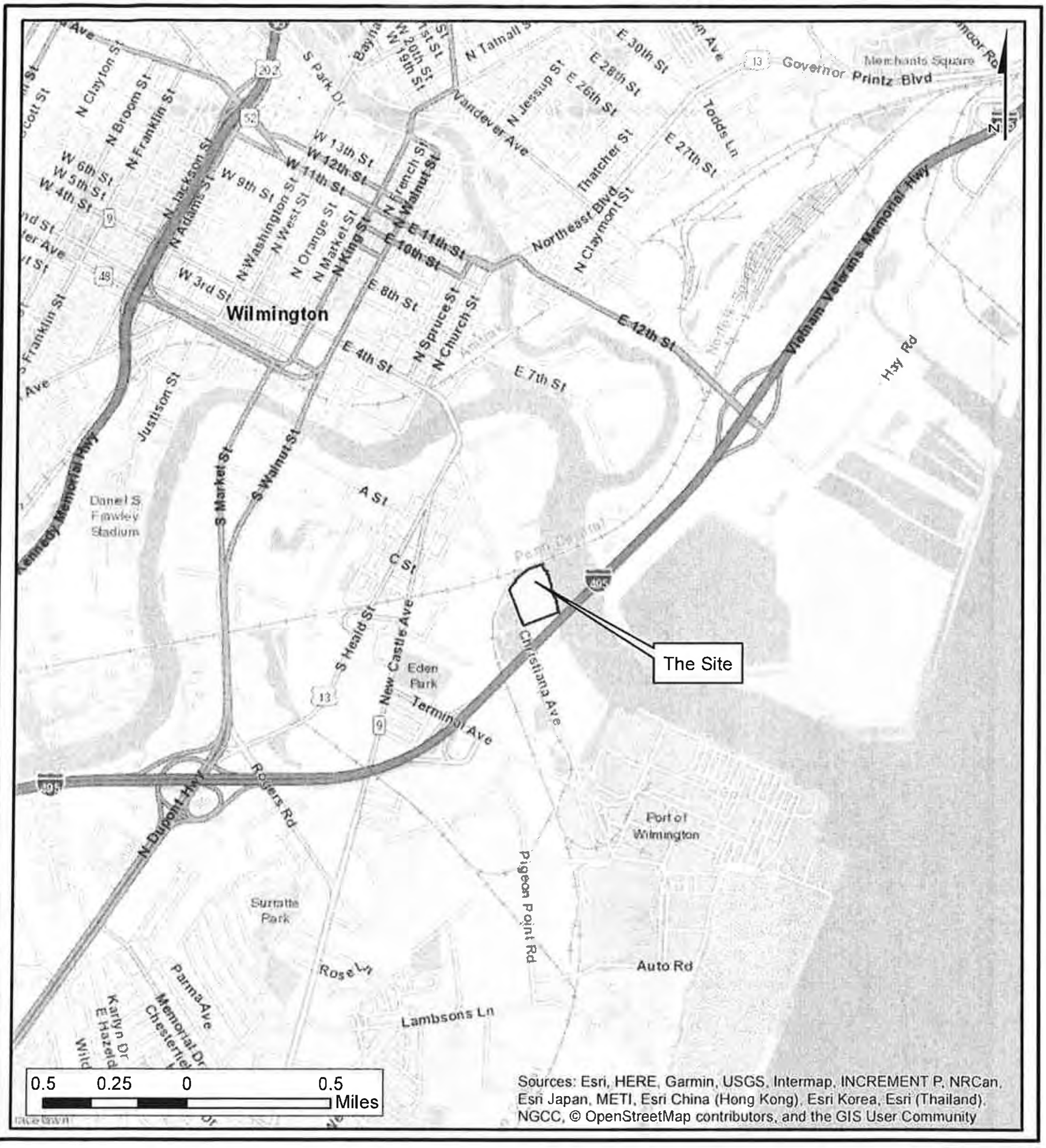
The individuals that can be contacted in the event fugitive dust issues are identified at the facility are listed in Table 1.

Table 1
Facility Contact Information

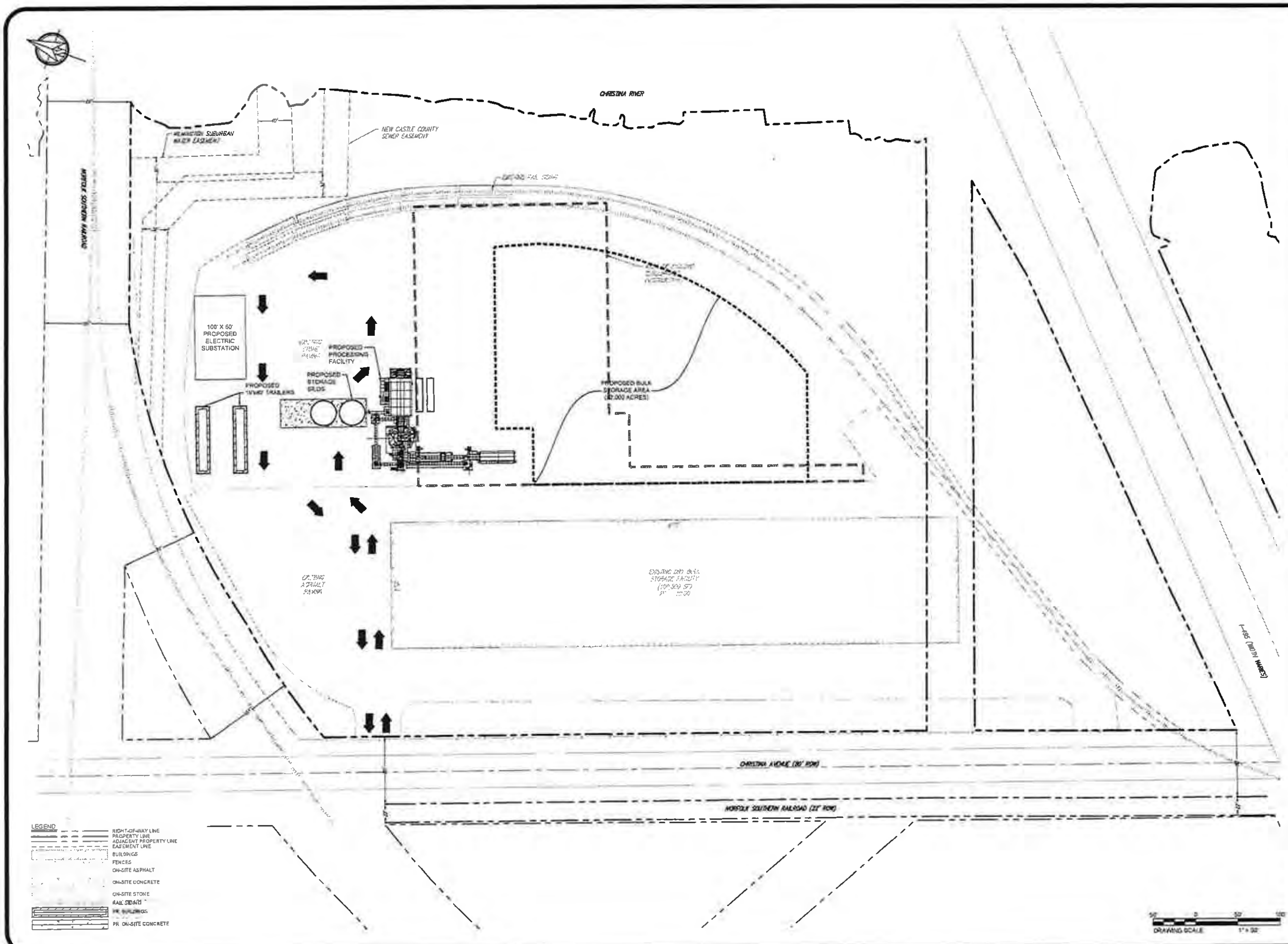
Primary Contact Information	Secondary Contact Information
Name: Lisa Dharwadkar Phone: (724) 545-2300	

8850ED.0419-WalanFugitive Dust Control Plan (April 2 2019 Rev)

FIGURES



Date: 10/2018	**Site Location Map**	DESIGNED BY: BNM	DUFFIELD ASSOCIATES Soil, Water & the Environment
SCALE: AS SHOWN		DRAWN BY: CSP	5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL. (302)239-6634 FAX (302)239-8485
PROJECT NO. 8850.ED		CHECKED BY: MRB	OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY
FIGURE 1		FILE: 8850.ED.mxd	EMAIL: DUFFIELD@DUFFNET.COM



DUFFIELD ASSOCIATES

5400 LIMESTONE ROAD
WILMINGTON, DE 19808-1232
TEL. 302 239 6634
FAX 302 239 8485

OFFICES IN DELAWARE, MARYLAND, PENNSYLVANIA AND NEW JERSEY

E-MAIL: DUFFIELD@DUFFNET.COM

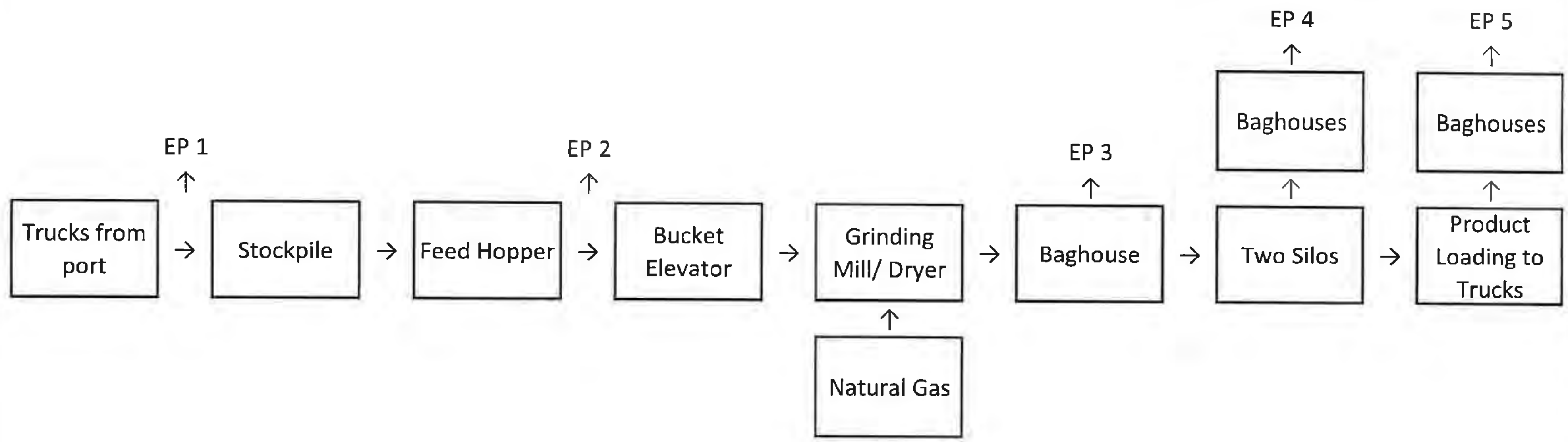
PRELIMINARY
NOT FOR
CONSTRUCTION

SITE PLAN

PROPOSED PROCESS UNIT
PORT CONTRACTORS FACILITY

CITY OF WILMINGTON ~ NEW CASTLE COUNTY ~ DELAWARE

DATE:	29 JANUARY 2019
SCALE	1" = 50'
PROJECT NO	8850 GC
SHEET	1 OF 2



DATE: 10/2018	**Process Flow Diagram**	DRAWN BY: BNM	DUFFIELD ASSOCIATES Soil, Water & the Environment
PROJECT NO: 8850.ED	Walan Specialty Construction Products, LLC	CHECKED BY: MRB	5400 LIMESTONE ROAD WILMINGTON, DE 19808-1232 TEL. (302)239-6634 FAX (302)239-8485
SHEET: FIGURE 2	Wilmington~Delaware	FILE: 8850 ED.Process_Flow_Diagram.xlxs	OFFICES IN PENNSYLVANIA, SOUTHERN DELAWARE, MARYLAND AND NEW JERSEY *EMAIL: DUFFIELD@DUFFNET.COM*