Edw. C. Levy Co.

Permit To Install Application

Support Document

Green Circle Cement Grinding Plant

March 2023

Permit To Install Application

Support Document

Green Circle Cement Grinding Plant

March 2023

Prepared By:
Arcadis of Michigan, LLC
28550 Cabot Drive, Suite 500
Novi
Michigan 48377
Phone: 248 994 2240

Prepared For:
Edw. C. Levy Co.
9300 Dix Ave.
Dearborn, MI 48120

Our Ref:
30125868

Liz Carson, P.E.
Principal Engineer

Raga Kalapati
Senior Environmental Engineer

Justin Uhall
Project Environmental Specialist

Contents

Tables

Figures

Appendices

Introduction

The Edw. C. Levy Co. (Levy) is proposing to construct a new facility (Green Circle Cement Grinding Plant) at 8941 West Jefferson Avenue in Detroit, Michigan (Figure 1). The facility will occupy approximately 5.4 acres of the 8941 West Jefferson Avenue property (Figure 2). As shown on Figure 2, Superior Materials will lease a portion of the 8941 property to continue their existing ready-mix concrete plant operations. Superior Materials is fully independent of Levy and the proposed Green Circle Cement Grinding Plant.

The proposed Green Circle Cement Grinding Plant will produce ground granulated blast furnace slag (GGBFS), which is a replacement for Portland cement. Levy is submitting this Permit to Install (PTI) application for the proposed installation of a 315,000 tons per year (tpy) granulated blast furnace slag grinding plant. The PTI application form (EQP 5615E) for the proposed new equipment, as signed by a Levy responsible official, is provided in Appendix A.

1 Process Description

Levy is proposing to install a state-of-the-art cement grinding plant to produce zero carbon GGBFS. A brief description of the process is provided in the following sections and simple process flow diagram (PFD) is provided in Appendix B.

Raw Material Receiving:

The raw material, wet granulated blast furnace slag with an average moisture content of eight (8) percent, will be transported to the facility via covered side-dump trucks. The side-dump trucks will be unloaded into a surface feeder and conveyed to the top of the Wet Slag Building via an enclosed elevator. From the elevator, the material is sent through a magnetic separator and transferred to the wet slag bin via conveyors. The raw material unloading station is enclosed on three sides, with openings at either end for the trucks to pull in and out. Since the receiving area is not fully enclosed, a small amount of fugitive dust may be generated during unloading.

The facility driveway and plant roadways will be paved and there will be no stockpiles of granulated blast furnace slag at the facility.

Wet Slag Building:

From the magnetic separator the wet slag enters the Wet Slag Building and is transferred into the wet slag bin into one of two (2) weigh feeders. From there the material can be sent to the slag dryer or sent directly to the slag grinding mill building. The conveyors and transfer points within the Wet Slag Building are covered/enclosed except for one conveyor transfer point. Fugitive dust from that transfer point will be released inside the building and then to the atmosphere via the building's general ventilation.

Slag Dryer:

From the Wet Slag Building, the slag is dried in a 21.6 MMBtu/hr. natural gas fired dryer. The dryer is equipped with a low NOx burner and particulate emissions are controlled by a bag filter. Upon exiting the slag dyer there is one conveyor transfer point which is outdoors and not fully enclosed. There will be a small amount of fugitive dust from that transfer point.

Dry Slag Building:

After the slag is dried at the slag dryer, the material is transferred to the dry slag building and is sent through an elevator, another magnetic separator, and a weigh feeder. All particulate matter emissions within this building are controlled via two bag filters. After exiting the Dry Slag Building there is one conveyor transfer point which is outdoors and not fully enclosed. There will be a small amount of fugitive dust from that transfer point.

Grinding Mill Building:

Material from the dry slag building (or the wet slag conveyor) is conveyed to the Grinding Mill Building where it enters the ball mill and is ground to the appropriate size. Emissions from the ball mill are controlled via a bag filter. From the ball mill, the ground material is sent through a magnetic separator, High Efficiency separator, air slide conveyors, and an elevator. All process equipment in this building is vented to one of four bag filters.

Material Loadout:

Finally, the processed material is sent to the four (4) finished product storage silos (Silos 1-4), where the final product can be loaded into trucks and transported offsite.

In addition to the four finished product silos there are an additional four (4) silos (Silos 5-8) which are owned and operated by Levy and used to store cement products. These silos are loaded via truck.

Particulate matter emissions from the eight (8) silos are controlled via two bag filters. Silos 1,2,5 and 6 share a bag filter and Silos 3, 4, 7, and 8 share a bag filter. All eight (8) silos share the same product loadout equipment which is controlled via an additional bag filter. It was assumed that the capture efficiency of the product loadout bag filter is 99%, with 1% emitted as fugitive dust. The eight (8) silos, truck loadout equipment, and three (3) bag filters are currently present on the site (from past operations) and will be utilized for the new facility.

2 Regulatory Discussion

2.1 Federal Air Quality Regulations

2.1.1 New Source Performance Standards

The New Source Performance Standards (NSPS) are federal standards under the Clean Air Act (CAA) that apply to newly constructed sources or subject sources undergoing major modifications. A summary of potentially applicable NSPSs is provided below.

Subpart LL - Standards for Metallic Mineral Processing Plants.

The proposed Green Circle Cement Grinding Plant is not considered a metallic mineral processing plant under NSPS, Subpart LL – Standards for Metallic Mineral Processing Plants. According to 40 CFR 60.381 Metallic mineral processing plant means any combination of equipment that produces metallic mineral concentrates from ore. As the proposed Green Circle Cement Grinding Plant is not processing metallic mineral concentrates from ore, it is not subject to Subpart LL.

Subpart OOO – Nonmetallic Mineral Processing Plants

The proposed Green Circle Cement Grinding Plant is not subject to NSPS Subpart OOO, NSPS for Nonmetallic Mineral Processing Plants. Nonmetallic mineral processing plants are defined to be "any combination of equipment that is used to crush or grind any nonmetallic mineral..." 40 C.F.R. 60.671. Since slag is not a nonmetallic mineral, any plant dedicated to processing slag does not meet the definition of a nonmetallic mineral processing plant.

2.1.2 New Source Performance Standards

The National Emission Standards for Hazardous Air Pollutants (NESHAP) are federal standards under the Clean Air Act (CAA) that apply to categories of equipment and processes that may emit hazardous air pollutants (HAP). There are no NESHAPs applicable to the proposed Green Circle Cement Grinding Plant.

2.1.3 Prevention of Significant Deterioration / Non-Attainment New Source Review

The proposed facility is located in a portion of Wayne County designated as nonattainment for ozone and sulfur dioxide (SO_2); therefore, SO_2 and the ozone precursors, Nitrogen Oxides (NOx) and Volatile Organic Compounds (VOC), are regulated under Nonattainment New Source Review (NSR). The remaining regulated NSR pollutants

(CO, PM_{10}, and $PM_{2.5}$) are regulated under Prevention of Significant Deterioration (PSD) requirements. The proposed facility will not result in a major source under the PSD or nonattainment NSR programs. The facility-wide potential to emit (PTE) is shown in Table 1 below.

Table 1 Facility-Wide Potential to Emit

Regulated NSR Pollutant	PSD or Non-Attainment NSR Major Source Threshold (tons/year)[1]	Title V Major Source Thresholds	Facility-Wide Emissions (ton/year)[2,3]	Facility-Wide Emissions Including Fugitive Dust (tons/year)[4]
CO	250	100	7.79	7.79
NO_x	100	100	4.64	4.64
SO_2	100	100	0.06	0.06
VOC	100	100	0.51	0.51
$PM_{2.5}$	250	100	2.33	2.41
PM_{10}	250	100	4.66	5.00
Ind HAP/Total HAPs[5]	-	10/25	0.18	0.18

[1] Proposed Green Circle Cement Grinding Plant is located in a portion of Wayne County which is non-attainment for Ozone and SO_2.

[2] Facility-wide emissions are based on a proposed feed slag throughput limitation of 315,000 tons slag per year (See Section 4.1).

[3] Fugitive dust emissions from transfer points and roadways are not included in the NSR applicability analysis since the proposed operations are not described in the list of 28 NSR Source Categories.

[4] Fugitive dust emissions were calculated for travel on paved roadways using AP-42 guidance from Chapter 13.2. Additional detail is provided in Section 4.2.

[5] HAP emissions were calculated based on the PM emission rate and the weight-percentage of HAP present in the slag (based on analytical data). Additional detail is provided in Appendix D, Table 7.

2.1.4 Title V Permitting Regulations

The Title V regulations require that sources with potential to emit greater than 100 tons per year for a criteria pollutant obtain a Title V operating permit. As shown in Table 1, the potential to emit from the proposed Green Circle Cement Grinding Plant including controls and proposed permit limits are less than 100 tons per year and, therefore, Title V requirements are not applicable.

2.2 Federal Air Quality Regulations

Table 2 summarizes the potentially applicable Michigan Air Pollution Control Rules. Each of the following air emission rules and its potential applicability to the facility is discussed below.

Table 2 Michigan Air Pollution Control Rules

Citation	Description
R 336.1201	State rule that gives the Department authority to issue a permit to install.
R 336.1224	State rule that requires Best Available Control Technology for toxics (T-BACT) be applied to sources emitting air toxics and requires that emissions from the process meet the allowed impact levels.
R 336.1225	State rule that requires TAC emissions to result in maximum ambient impacts compliant with a health-based screening level.
R 336.1301-1374	State rule that sets emission limitations and prohibitions for particulate matter.
R 336.1401-1407	State rule that sets SO2 emission limits.
R 336.1801	Nitrogen oxide emission limits for stationary internal combustion engines.
EGLE AQD-22	Modeling Requirements for Criteria Pollutants.

2.2.1 Rule 201 – Permit to Install (PTI)

New, modified, relocated, or reconstructed sources of air pollutants are required to obtain a PTI prior to construction, unless they qualify for an exemption from permitting under regulations R 336.1278 through R 336.1291. The proposed Green Circle Cement Grinding Plant is subject to the requirement to obtain a PTI.

2.2.2 Rule 224 through 232 – Toxic Air Contaminant (TAC) Requirements

Emissions of TACs are covered under regulations R 336.1224 through R 336.1232. These regulations establish a two-part program to address TAC emissions. The first component of this program is the requirement to apply the Best Available Control Technology for Toxics (TBACT). The TBACT requirement exempts volatile organic TAC emissions that comply with BACT for VOCs. Likewise, particulate TAC emissions that comply with BACT for particulates are also exempt from the TBACT requirement.

The slag processing operation is exempt from TBACT requirements because its PM emissions will be controlled via wet suppression and bag filters, which will meet PM BACT. There are no organic TACs emitted from the slag processing operation.

The second component of the TAC program is the requirement to comply with compound-specific health-based screening levels. The TACs analysis for proposed Green Circle Cement Grinding Plant is completed in Section 5 of this report and demonstrates that each TAC emission rate is either below the exemption thresholds in Rule 224 or complies with the health-based screening levels.

2.2.3 Rules 301 through 374 – Particulate Matter Emission Limits and Prohibitions

Rule 301 – Optical Density of Particulate Emissions

Based on Rule 301, visible emissions must meet a limit of 20 percent opacity over a 6-minute period, except for one 6-minute period per hour of not more than 27 percent opacity. The proposed Green Circle Cement Grinding Plant will meet this requirement. The slag processing operation emissions will be controlled via bag filters and paved roadways will be controlled via wet suppression.

Rule 331 – Process Weight Rates

R 336.1331(1)(e) sets emission limitations for particulate matter from equipment based on process weight rates. Particulate emissions from the proposed Green Circle Cement Grinding Plant will meet the Rule 331 requirements.

Rule 374 - Particulate Matter Contingency Measures

Rule 374 requires particulate matter contingency measures if "Upon a formal determination and written notification by the Department or the United States Environmental Protection Agency that an ambient air quality monitor located within the area defined in table 37 has recorded a violation of the national ambient air quality standards for particulate matter with an aerodynamic diameter less than 10 microns (PM-10)". These contingency measures are for stricter controls on fugitive dust and particulate matter. This requirement applies as the proposed Green Circle Cement Grinding Plant is within the area in Table 37 and has an applicable SIC code.

Fugitive Dust Control Program

Facilities located within the areas identified in Table 36 of Rule 371 are covered under the State of Michigan State Implementation Plan (SIP). On June 11, 1993 the Michigan Department of Natural Resources (MDNR) submitted a plan, with revisions submitted on April 7, 1994 and October 14, 1994 for the purpose of bringing about the attainment of the National Ambient Air Quality Standards for particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM) in the Wayne County moderate PM nonattainment area. A Fugitive Dust Fugitive Dust Control Program for the proposed Green Circle Cement Grinding Plant is provided in Appendix C.

2.2.4 Rule 401-407 – Emission Limitations – Sulfur Bearing Compounds

Rule 402 sets limits for emissions of SO_2 from fuel-burning equipment at a stationary source other than power plants. Under Rule 402, fuel burning equipment at a stationary source located in Wayne County (other than a power plant) must burn fuel that complies with the sulfur content and SO_2 concentration limits of Table 43.

Rule 407(a) limits of SO_2 from sources located in Wayne County to 300 parts per million by volume or less corrected to 50% excess air. The proposed Green Circle Cement Grinding Plant will operate a natural gas-powered slag dryer, which will comply with the Rule 401-407 standards.

2.2.5 Rule 801 – 834 – Emission of Oxides of Nitrogen

Rules 801 through 834 outline requirements related to NO_x emissions. The proposed Green Circle Cement Grinding Plant will operate one (1) natural gas fired slag dryer. The dryer does not have the potential to emit more than 25 tons of NO_x each ozone control period nor does it have a maximum rated heat input capacity of more than 250 million Btu per hour. The maximum rated heat input capacity of the dryer is 21.6 million Btu per hour. Therefore, the proposed Green Circle Cement Grinding Plant will not be subject to the standards outlined in Rule 801 – 834.

2.2.6 EGLE Policy Memo AQD-22: Modeling Requirements for Criteria Pollutants

The proposed Green Circle Cement Grinding Plant emissions were compared to the corresponding Significant Emission Rates (SER) (from AQD-22). As shown in the Table 3 below and according to AQD-22, dispersion modeling for PM-10 and PM2.5 is required. Air dispersion modeling is discussed further in Section 7.

Table 3 AQD-22 Modeling Determination

Regulated NSR Pollutant	SER (tons/year)	Total Project Emissions (tons/year)[1]	% of SER	% of SER Requiring Modeling	Modeling Required Based on AQD-22
CO	100	7.79	8%	100%	No
NO_x	40	4.64	12%	25%	No
SO_2	40	0.06	0.2%	25%	No
$PM_{2.5}$	10	2.41	24%	25%	Yes
PM_{10}	15	5.00	33%	25%	Yes

3 Control Technology Analysis

The paved roadways at the Green Circle Cement Grinding Plant will be controlled with water spray systems and Levy will maintain a fugitive dust control plan for reduction of dust and particulate matter emissions (Appendix C). The combination of the water spray and other operational measures that are within the facilities fugitive dust control program is considered best available control technology for this type of operation. There are no unpaved roads at the facility.

The majority of the slag processing operations at the Green Circle Cement Grinding Plant are controlled by bag filters, see Appendix B for equipment that is controlled by bag filters.

4 Emissions Summary and Calculations

The potential to emit from the Green Circle Cement Grinding Plant will primarily consist of particulate matter from the processing of the slag through feeders, mills, separators, screens, and conveyors and products of combustion from the natural gas fired slag dryer. There will also be fugitive dust from conveyor transfer points, raw material loading/unloading and paved roadways.

The potential to emit calculations are provided in Appendix D. A facility-wide potential to emit summary is provided in Appendix D, Table 1. A description of the process and the methodologies for the calculations are shown below.

4.1 Point Source Emissions

The proposed Green Circle Cement Grinding Plant will process a maximum of 315,000 tons of granulated blast furnace slag per year with a processing rate of 45 tons per hour. This correlates to a maximum finished product throughput of 250,000 tons per year of GGBFS. Emissions were calculated as described in the sections below.

Slag Processing

The majority of the facility's slag processing equipment is controlled via bag filters. Particulate emissions from slag processing operations which are vented to bag filters are calculated using the outlet dust loading guarantee provided by the manufacturer (See Appendix E). Calculations assume a maximum air flow rate from the bag filter and 8,760 hours of operation. PM_{10} and $PM_{2.5}$ emissions were estimated based on particle size distribution analysis for the granulated blast furnace slag and finished product (GGBFS).

Emissions calculations for the bag filters are provided in Appendix D, Table 4.

Slag Dryer

The Green Circle Cement Grinding Plant will operate one natural gas fired, 21.6 MMBtu/hour slag dryer. Emissions from the slag dryer are calculated using emission factors from the United States Environmental Protection Agency (USEPA) AP-42, Chapter 1, Section 4 (July 1998). Emission factors for NO_x and CO are for a small (< 100 MMBtu/hr.) low-NO_x burner heater. Per manufacturer specifications, NO_x emissions from the dryer will meet a 30 ppm (at 3% O_2) standard. The USEPA AP-42 emission factor for low NOx burners was conservatively used. Emissions calculations from the slag dyer are provided in Appendix D, Table 3.

4.2 Fugitive Emissions

While fugitive particulate emissions are not point sources for permitting, potential fugitive particulate emissions were evaluated sitewide to confirm that the facility is below Title V source thresholds. Potential fugitive emissions were considered from transfer points, loading of materials, and paved roadways. Fugitive emissions from roadways are controlled in accordance with the Fugitive Dust Plan in Appendix C.

Slag Processing – Conveyor Transfer Points

Particulate matter emissions from conveyor transfer points were calculated using emission factors from the USEPA's AP-42 Table 11.19.2-2 (Crushed Stone Processing and Pulverized Mineral Processing, Version 8/2004) for conveyor transfer points. Potential annual PM emissions for transfer points are calculated using the potential hourly emission rate based on the limited maximum production of 315,000 tons of feed slag per year. Emission calculations for the conveyor transfer points are provided in Appendix D, Table 2.

Paved Roadways

Particulate emissions from roadways were calculated using equations found in USEPA's AP-42, Chapter 13, Section 2.1 – Paved Roads. Water application will be used as dust suppression. Emissions calculations from the roadways are provided in Appendix D, Table 5.

Material Loading

The raw material, wet granulated blast furnace slag with an average moisture content of eight (8) percent, is transported to the facility via covered side-dump trucks and unloaded at the raw material unloading station which is enclosed on three sides.

Finished product is stored in Silos 1 through 4 and cement products (from St. Mary's Cement) are stored in Silos 5 through 8. All eight (8) silos share a common product loadout system. Loadout emissions are controlled by a bag filter (see Appendix D, Table 4), with an estimated capture efficiency of 99%.

Particulate emissions from raw material (wet slag) loading and finished product loadout emissions were calculated using equations found in AP-42, Chapter 13, Section 2.4 – Aggregate Handling and Storage Piles. Emissions calculations from loading emissions are provided in Appendix D, Tables 6.1 and 6.2.

5 Air Toxics Analysis

An air quality impact analysis was conducted to ensure that toxic air contaminant (TAC) emissions from the proposed Green Circle Cement Grinding Plant do not exceed their corresponding health-based screening levels pursuant to Rule 225.

TAC emission rates were calculated based on 2018 analytical testing of the granulated blast furnace slag that is currently processed at Levy Plant 6 (and will be processed at the Green Circle Cement Grinding plant) and the calculated PM emission rates. As the test is a comprehensive scan of many metals, any metals that are below detection levels are not included in this analysis.

Emissions of calcium and iron would be in the form of calcium carbonate, calcium hydroxide, calcium oxide, calcium silicate, calcium sulfate and iron oxide. These compounds are not considered TACs under Rule 120(f), Definition of Toxic Air Contaminants.

Emissions for the other compounds were calculated using the average concentration from multiple samples tested multiplied by the PM emission rate for the process as shown in Appendix D, Table 7. TACs not included on Table 20 of Rule 226, are not carcinogens, and have emission rates below 0.14 lbs./hour and 10 lbs./month and were determined to be exempt per Rule 226(a) from the Health Based Screening Analysis (Appendix D, Table 7).

The emissions of the remaining TACs were then compared to the Rule 227(a) Allowable Emission Rate (AER), as shown in Appendix D. All remaining TACs are below their respective AER.

6 Proposed Permit Limits

Levy proposes to limit the slag feed throughput of the proposed Green Circle Cement Grinding Plant to 315,000 tons per year. Levy will track the amount of slag processed monthly and calculate the annual throughput.

7 Air Dispersion Modeling

This section provides a discussion of the model selection, land use classification, receptor grid specifications, meteorological data set, Good Engineering Practice (GEP) stack height analysis, building downwash parameters, and the source input data that was used in the analysis.

7.1 Model Selection

The dispersion model created by the American Meteorological Society (AMS) and the USEPA AMS/EPA Regulatory Model (AERMOD, version 22112) was used to predict potential ambient concentrations from the proposed project. AERMOD is the recommended model in USEPA's Guideline on Air Quality Models, GAQM (40 CFR Part 51, Appendix W). The GAQM recommends the use of AERMOD to account for a number of operating and modeling conditions, i.e., multiple sources and source types, urban/rural areas, building downwash, and short-term (1-hour) to annual averaging periods.

AERMOD is a steady-state plume model that incorporates air dispersion based on planetary boundary layer turbulence structure and scaling concepts, including treatment of both surface and elevated sources. Several model operation and input parameters are specified to customize the dispersion calculations to best approximate actual site aerodynamic conditions. The model options and input parameters that was used for this analysis are discussed in further detail below.

The AERMOD Modeling System includes preprocessor programs AERSURFACE (20060), AERMET (22112), and AERMAP (20060) to create the required input files for meteorology and receptor terrain elevations. The regulatory default options in AERMOD were selected for this analysis. Specifically, these options direct AERMOD to use:

- The elevated terrain algorithms requiring input of terrain height data for receptors and emission sources;
- Stack tip downwash (building downwash automatically overrides);
- The calms processing routines;
- Buoyancy-induced dispersion; and
- The missing meteorological data processing routines.

7.2 Meteorological Data

EGLE provided model ready meteorological data sets for use with AERMOD. The AERMOD-ready meteorological data was processed with AERMET using most recent 1-minute ASOS and hourly meteorological data set (years 2017-2021) for the Detroit Metropolitan Wayne County Airport surface station and radiosonde data from the upper air station.

7.3 Receptor Grids

Coarse and fine grid receptors grids were used to evaluate potential impacts. Receptors begin at the facility's boundary. The receptor spacing from the facility boundary is as follows:

- Inner grid: 25-meter spacing out to a distance of 500 meters;
- Second grid: 100-meter spacing out to a distance of 1.5 kilometers;

- Third grid: 500-meter spacing out to approximately 3 kilometers; and
- Fourth grid: 1,000-meter spacing out to a distance of 5 kilometers.

Receptors were placed along the property boundary at intervals of 25 meters. The receptor coordinates are specified in the Universal Transverse Mercator (UTM) coordinate system, North American Datum (NAD) 1983, Zone 17, consistent with the emission source coordinate system. All receptors were modeled at ground-level. Terrain elevations for the receptor locations were obtained from National Elevation Dataset (NED) digitized terrain data available from the United States Geological Survey (USGS). The NED data is processed using USEPA's AERMAP utility. AERMOD incorporates EPA's AERMAP terrain processor to account for the actual terrain elevations across the study area. The AERMAP utility extracts elevations from the USGS National Elevation Dataset (NED) files available for the study area in 1/3arc-sec (approximately 10 meter) resolution, GeoTIFF format. 1-degree NED was used to fill in any missing elevations from the processed 1/3arc-sec NED.

7.4 Good Engineering Practice Stack Height and Building Downwash

Prior to modeling, each emission point stack height must be evaluated relative to what is considered Good Engineering Practice (GEP) stack height, identified in federal regulation 40 CFR 51. GEP stack height is a measure for evaluating whether nearby buildings and outlying topography significantly affect the air dispersion patterns from the modeled source, resulting in conditions of aerodynamic downwash, including building cavity and wake effects. The building cavity is a region of turbulent, re-circulating airflow which extends downwind a distance of approximately three building heights from the structure. The building wake is a turbulent zone that extends from the cavity zone to a downwind distance of approximately ten building heights from the structure. If a pollutant plume is entrained within these regions, nearby impact concentrations or deposition rates can be higher than in the absence of such effects.

The formula for GEP stack height is given as:

- HGEP = HB + 1.5LB where:
- HGEP = formula GEP stack height;
- HB = the building's height above stack base; and
- LB = the lesser of the building's height or maximum projected width.

As a part of this dispersion modeling analysis, the USEPA-approved Building Profile Input Program – Prime (BPIPPRM) is used for comparing the actual stack height with its GEP stack height. If the actual stack height occurs below the GEP height, the BPIP program calculates the appropriate direction-specific building dimensions for each wind direction (10-degree increments). This information is used by AERMOD to calculate the effects of the site-specific building downwash (cavity and wake effects) on ambient concentrations and the overall dispersion of the subject plume. The BPIP-Prime input and output files (i.e., output and summary files) are provided with the modeling files.

7.5 Source Input Data

The AERMOD air dispersion model program requires the input of certain site-specific data to produce results that are representative of the actual site conditions. These data include emission rate, stack height, stack diameter, exhaust gas temperature and velocity, as well as location on coordinate system (typically either Universal Transverse Mercator (UTM) or site-specific coordinates). The modeling domain is located in the Detroit urban area therefore, the urban dispersion option was used in AERMOD (population set to 624,177). Tables 4 and 5 provide the point source and volume source input parameter and emission rates used in the modeling.

Table 4 Point Source Stack Parameters and Emission Rates

Model ID	Source Description	UTM Easting	UTM Northing	Stack Height	Stack Diameter	Exhaust Temperature	Exit Flow Rate	PM10 Emission Rate		PM2.5 Emission Rate	
		m	m	m	m	K	m/s	g/s	g/s (annual)[1]	g/s	g/s (annual)[1]
541-BF1	Dryer Dedusting Bag House	325047.95	4683629.3	48.00	0.96	573.15	9.98	0.021	0.021	0.021	0.021
561-BF1	Mill Vent Bag Filter	325093.7	4683616.2	33.74	1.4	423.15	10.11	0.0016	0.0016	0.0016	0.0016
561-BF2	Separator Vent Bag Filter	325088.64	4683630	26.92	1.05	423.15	9.62	0.040	0.040	0.016	0.016
561-BF3	Mill Auxiliary Equipment Vent Bag Filter	325062.73	4683632.4	31.18	0.52	Ambient	9.81	0.010	0.010	0.004	0.004
591-BF1	Dedusting Bag Filter Product Air Slide	325097.18	4683624.8	22.15	0.23	Ambient	10.03	0.002	0.002	0.0008	0.0008
DC1	Silo baghouse	325112.8	4683651.3	27.13	0.44	Ambient	22.46	0.020	0.020	0.008	0.008
DC2	Silo baghouse	325099.71	4683636.2	27.13	0.44	Ambient	22.46	0.020	0.020	0.008	0.008
DC3	Loadout baghouse	325119.78	4683655.4	26.97	0.35	Ambient	24.87	0.015	0.015	0.006	0.006

Notes:

1. Annual source emission rates are averaged over 8,760 hours per year and entered in the model for estimating PM10 and PM2.5 annual impacts.

Table 5 Volume Source Stack Parameters and Emission Rates

Model ID	Description	Length of the Side (m)	Height of the source (m)	Initial Lateral Dimension (m)	Initial Vertical Dimension (m)	Release Height (m)	PM10 Emission Rate		PM2.5 Emission Rate	
							g/s	g/s (annual)[1]	g/s	g/s (annual)[1]
DRY_BC	Exterior transfer point Dryer to 541-BC1	1.22	5.00	0.28	2.33	2.5	2.61E-04	2.08E-04	7.43E-05	5.92E-05
DRY_BC2	Exterior transfer point feeder to 541-BC2	1.22	5.00	0.28	2.33	2.5	2.61E-04	2.08E-04	7.43E-05	5.92E-05
WF2_BC1	Exterior transfer point 551-WF2 to 551-BC1	1.22	54.2	0.28	25.21	13.2	2.61E-04	2.08E-04	7.43E-05	5.92E-05
541BF2_3	Dryer dedusting bagfilter stacks 541BF2, 541BF3 venting inside the building	1.52	48.2	0.35	22.44	48.2	1.30E-04	1.30E-04	1.30E-04	1.30E-04
RAWUNLD1, RAWUNLD2	Raw material unloading	4.57	4.57	1.06	2.13	2.3	2.89E-03	6.93E-04	4.36E-04	1.05E-04
LOADOUT	Product loadout fugitives	0.61	24.7	0.14	11.48	4.6	3.53E-04	2.27E-04	5.42E-05	3.40E-05
561 BF4	Dedusting Bag Filter for Reject Iron Bin - venting inside the building	1.52	27	0.35	12.56	27	2.02E-03	2.02E-03	8.06E-04	8.06E-04
SLINE1	Finished product delivery	8.44	6.011	3.93	2.8	3.01	7.94E-03	6.05E-03	1.89E-03	1.51E-03
SLINE2	Raw material delivery	8.44	6.011	3.93	2.8	3.01	2.39E-03	3.02E-03	6.05E-04	7.43E-04

Notes:

1. Annual source emission rates are averaged over 8,760 hours per year and entered in the model for estimating PM10 and PM2.5 annual impacts.

7.6 Modeling Methodology

7.6.1 Significant Impact Analysis Modeling

The emission sources at the proposed facility are modeled for PM_{10} and $PM_{2.5}$, and the predicted net ambient air concentrations are compared with the PSD Class II significant impact levels (SILs). If the predicted net impacts are less than the SILs, no further air dispersion modeling is required. If predicted net impacts exceed the SILs, further air dispersion modeling is required to demonstrate that the new source will not cause or contribute to a violation of the NAAQS and that predicted concentrations will meet the PSD Class II Increments.

Results of the SILs analysis for PM10 and PM2.5 are provided in Table 6 below.

Table 6 SIL Modeling Results for PM-10 and PM-2.5

Regulated NSR Pollutant	Averaging Period	Model Predicted Impact (ug/m^3)	SIL (ug/m^3)
PM_{10}	24-hour	21.57	5
$PM_{2.5}$	24-hour	6.05	1.2
	Annual	1.07	0.2

As seen in Table 6, the ambient impacts for PM10 and PM2.5 exceed their SILs and therefore, further analysis to show compliance with NAAQS and PSD Class II increments is required. The PM_{10} and $PM_{2.5}$ emissions from the proposed source are modeled in combination with the existing increment consuming emission sources in the vicinity and compared to the PSD Class II increments. For NAAQS analysis, the predicted impacts from the facility and existing sources are combined with the representative background concentration and compared to the standard. Only the receptors predicting concentrations greater than their respective SILs in the significance analysis are included in the NAAQS and PSD Class II increments modeling. Receptor data is provided electronically along with the model input/output files.

7.7 Background Air Quality

EGLE and EPA maintain monitors that continually measure concentrations of regulated air pollutants. The data collected from these monitors provide locally representative air quality measurements. Table 7 provides the background concentrations used with the NAAQS analysis. These background concentrations were provided by EGLE to use for the facility modeling.

Table 7 Background Concentrations Used in NAAQS Analysis

Pollutant	Averaging Period	Background Monitoring Station Description	Background Value (ug/m^3)
PM_{10}	24-hour	Allen Park	32

Pollutant	Averaging Period	Background Monitoring Station Description	Background Value (ug/m^3)
$PM_{2.5}$	24-hour		23.7
	Annual		8.9

7.8 Existing Source Inventory

Existing source inventory used for the cumulative impact analysis was provided by EGLE. Separate inventories were provided for $PM_{2.5}$ and PM_{10}. The existing source inventory is provided in Appendix F. Per EGLE's instructions, there are no increment consuming sources in the area to include for PSD Class II increment modeling. In addition, Levy uses Silos 5-8 to store finished cement products on an as-needed basis. These silos were previously used for the same purpose by Superior Materials, who historically had operations at this location. Therefore, emissions from Silos 5-8 (controlled by bag filters DC-1 and DC-2), truck load out emissions (controlled by bag filter DC-3) and the paved road emissions associated with Silos 5-8 truck loading were added to the NAAQS and increment modeling as an existing source. Emissions from the DC-1, DC-2, and DC-3 are already factored in Levy's loadout bag filter emission calculations because the emissions methodology was based on maximum flowrate of the bag filter.

7.9 NAAQS and PSD Class II Increment Results

The results of the NAAQS analysis and PSD class II increment analysis for PM_{10} and $PM_{2.5}$ are provided in Tables 8 and 9. Based on Table 8, the total impacts from Levy (proposed and existing Superior Materials loadout operations) and existing sources provided by EGLE combined with the background concentrations are below the pollutant's NAAQS. Therefore, the facility will comply with NAAQS.

Table 8 PM_{10} and $PM_{2.5}$ NAAQS Results

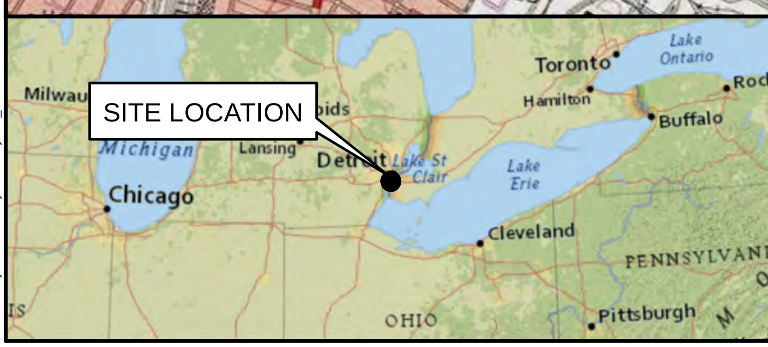
Regulated NSR Pollutant	Averaging Period	Model Predicted Impact (ug/m^3)	Background Concentrations (ug/m^3)	Total Impacts (ug/m^3)	NAAQS (ug/m^3)
PM_{10}	24-hour (highest 2nd high)	21.98	32	53.98	150
$PM_{2.5}$	24-hour (8th high)	5.09	23.7	28.79	35
	Annual Average (5-yr)	1.63	8.9	10.53	12

As indicated in Section 7.8, there are no increment consuming sources to include for PSD increment modeling. Only emissions from existing emissions from Silo's 5-8 were included in the increment modeling. Based on Table 9, the facility will comply with PSD Class II increments.

Table 9 PM_{10} and $PM_{2.5}$ PSD Class II increment Results

Regulated NSR Pollutant	Averaging Period	Model Predicted Impact (ug/m^3)	PSD Class II Increments (ug/m^3)
PM_{10}	24-hour (highest 2nd high)	20.77	30
	Maximum Annual Average (Max over 5 years)	4.02	17
$PM_{2.5}$	24-hour (highest 2nd high)	6.14	9
	Maximum Annual Average (Max over 5years)	1.1	4

Figures



GREEN CIRCLE CEMENT GRINDING PLANT
8941 WEST JEFFERSON AVENUE
DETROIT, MICHIGAN

SITE LOCATION MAP

ARCADIS

FIGURE
1

CITY: NOVI, MI DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
D:\GIS\Project Files\LevyLite\LevyLite_SiteLocation.mxd PLOTTED: 2/17/2023 12:18:22 PM BY: TYarbrough

LEGEND

PROPOSED PLANT AREA

SUPERIOR MATERIALS LEASE PROPERTY

GREEN CIRCLE CEMENT GRINDING PLANT
8941 WEST JEFFERSON AVENUE
DETROIT, MICHIGAN

SITE LAYOUT MAP

ARCADIS

FIGURE
2

CITY: NOVI, MI DIV: ENV DB: TRY PIC: PM: TM: TR: PROJECT NUMBER: COORDINATE SYSTEM: NAD 1983 StatePlane Michigan South FIPS 2113 Feet Intl
D:\GIS\Project Files\LevyLite\LevyLite SiteLayout.mxd PLOTTED: 2/17/2023 12:28:37 PM BY: TYarbrough

Appendix A

Permit to Install Application

EGLE

MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY

PERMIT TO INSTALL APPLICATION

For authority to install, construct, reconstruct, relocate, or modify process, fuel-burning or refuse burning equipment and/or control equipment. Permits to install are required by administrative rules pursuant to Section 5505 of 1994 PA

FOR EGLE USE
APPLICATION NUMBER

Please type or print clearly. The "Application Instructions" and "Information Required for an Administratively Complete Permit to Install Application" are available on the Air Quality Division (AQD) Permit Web Page.
Please call the AQD at 517-899-6252. if you have not been contacted within 15 days of your application submittal.

1. FACILITY CODES: State Registration Number (SRN) and North American Industry Classification System (NAICS)
SRN: | | | | | | NAICS: 3 2 7 9 9 2

2. APPLICANT NAME: (Business License Name of Corporation, Partnership, Individual Owner, Government Agency)
Edw. C. Levy Co.

3. APPLICANT ADDRESS: (Number and Street)
9300 Dix Avenue
MAIL CODE:

CITY: (City, Village or Township)	STATE:	ZIP CODE:	COUNTY:
Dearborn	MI	48120	Wayne

4. EQUIPMENT OR PROCESS LOCATION: (Number and Street – if different than Item 3)
Green Circle Cement Grinding Plant - 8941 West Jefferson

CITY: (City, Village or Township)	ZIP CODE:	COUNTY:
Detroit	MI	48209

5. GENERAL NATURE OF BUSINESS:
Slag Processing

6. EQUIPMENT OR PROCESS DESCRIPTION: (A Description MUST Be Provided Here. Include Emission Unit IDs. Attach additional sheets if necessary; number and date each page of the submittal.)
The Edw. C. Levy Co. (Levy) is proposing to construct a new facility (Green Circle Cement Grinding Plant) at 8941 West Jefferson Avenue in Detroit, Michigan. The facility will occupy approximately 5.4 acres of the 8941 West Jefferson Avenue property. The proposed Green Circle Cement Grinding Plant will produce green cement, ground granulated blast furnace slag (GGBFS), which is a replacement for Portland cement. Levy is submitting this Permit to Install (PTI) application for the proposed installation of a 315,000 tons per year (tpy) granulated blast furnace slag grinding plant.

7. REASON FOR APPLICATION: (Check all that apply.)
- [x] INSTALLATION / CONSTRUCTION OF NEW EQUIPMENT OR PROCESS
- [ ] RECONSTRUCTION / MODIFICATION / RELOCATION OF EXISTING EQUIPMENT OR PROCESS – **DATE INSTALLED:**
- [ ] OTHER – DESCRIBE

8. IF THE EQUIPMENT OR PROCESS THAT WILL BE COVERED BY THIS PERMIT TO INSTALL (PTI) IS CURRENTLY COVERED BY ANY ACTIVE PERMITS, LIST THE PTI NUMBER(S): Not Applicable

9. DOES THIS FACILITY HAVE AN EXISTING RENEWABLE OPERATING PERMIT (ROP)? [x] NOT APPLICABLE [ ] PENDING APPLICATION [ ] YES
PENDING APPLICATION OR ROP NUMBER:

10. AUTHORIZED EMPLOYEE:	TITLE:	PHONE NUMBER: (Include Area Code)
Thomas E. Green, PE	Director, Environmental Health and Safety	(313)690-0139
SIGNATURE: Thomas E Green	DATE: 3/6/2023	E-MAIL ADDRESS: tgreen@edwclevy.net

11. CONTACT: (If different than Authorized Employee. The person to contact with questions regarding this application)	PHONE NUMBER: (Include Area Code)
CONTACT AFFILIATION:	E-MAIL ADDRESS:

12. IS THE CONTACT PERSON AUTHORIZED TO NEGOTIATE THE TERMS AND CONDITIONS OF THE PERMIT TO INSTALL? [x] YES [ ] NO

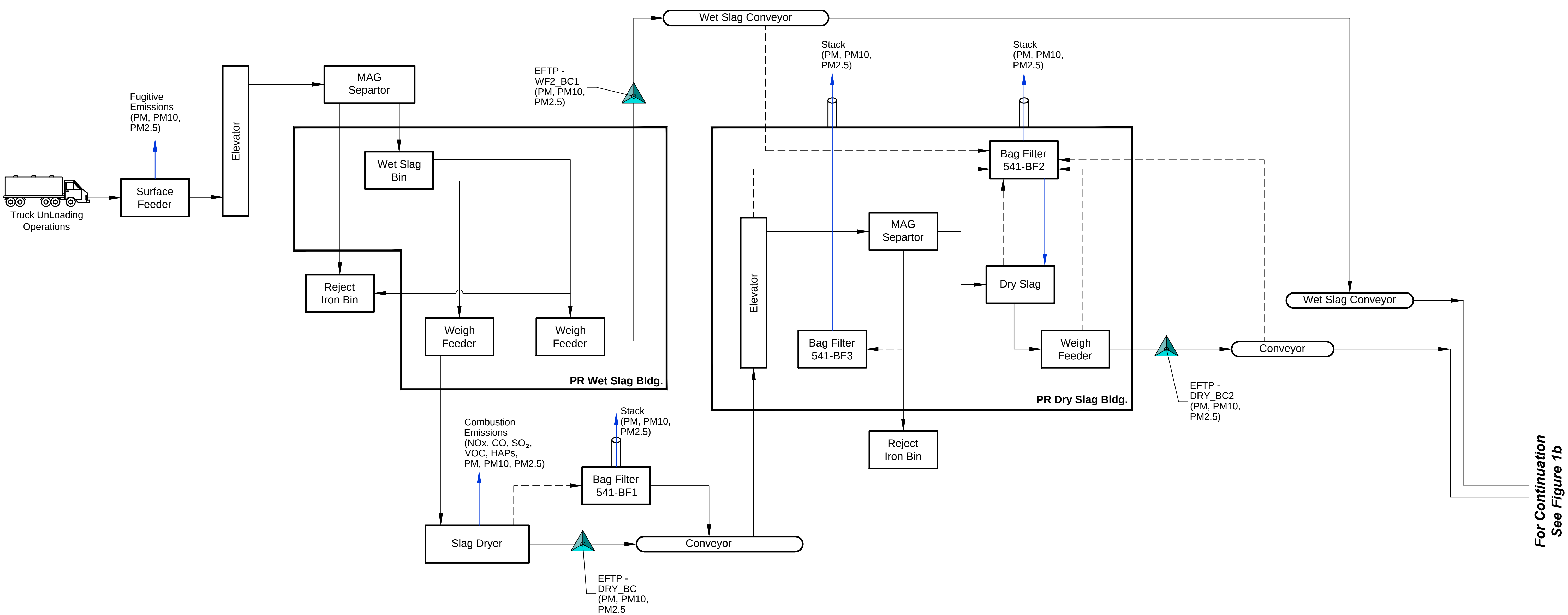
FOR EGLE USE ONLY - DO NOT WRITE BELOW

DATE OF RECEIPT OF ALL INFORMATION REQUIRED BY RULE 203:	PERMIT NUMBER:
DATE PERMIT TO INSTALL APPROVED:	SIGNATURE:
DATE APPLICATION / PTI VOIDED:	SIGNATURE:
DATE APPLICATION DENIED:	SIGNATURE:

A PERMIT CERTIFICATE WILL BE ISSUED UPON APPROVAL OF A PERMIT TO INSTALL

Appendix B

Process Flow Diagram



Legend:

Stack Emission to Atmosphere

Building Stack

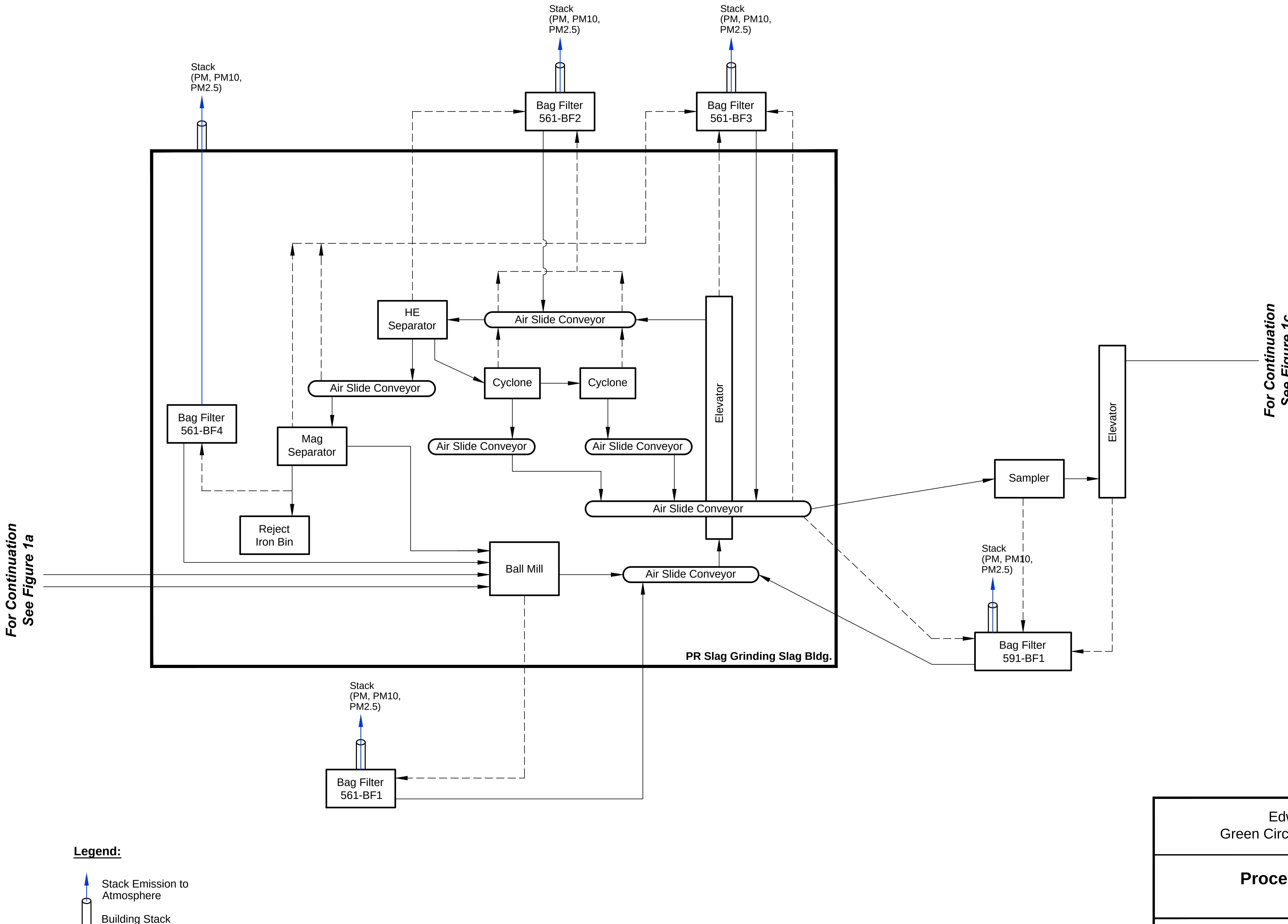
Exterior Fugitive Transfer Point (EFTP)

Edward C. Levy Co.
Green Circle Cement Grinding Plant

Process Flow Diagram
February 2023

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1a

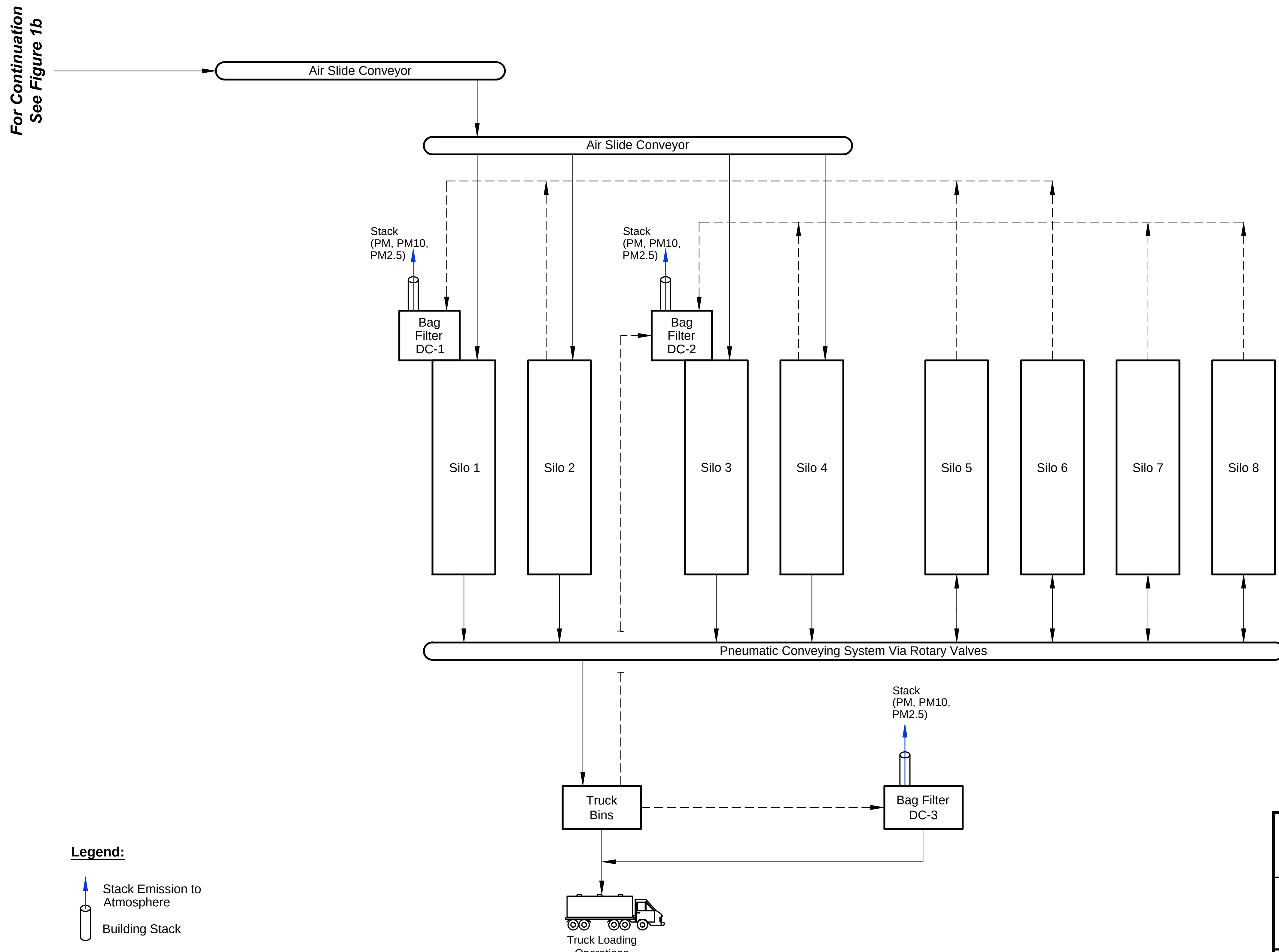


Edward C. Levy Co.
Green Circle Cement Grinding Plant

Process Flow Diagram
February 2023

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1b



Edward C. Levy Co.
Green Circle Cement Grinding Plant

Process Flow Diagram
February 2023

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1c

CITY:(Reqd) DIV/GROUP:(Reqd) DB:(Reqd) LD:(Opt) PIC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ON=*;OFF=*REF*
D:_Arcadis\Air Services\Levy\GCCGP\Levy_GCCGP_PFD.dwg LAYOUT: 1C SAVED: 2/17/2023 2:06 PM ACADVER: 21.0S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ---- PLOTTED: 2/17/2023 2:07 PM BY: BERRY, WAYNE

Appendix C

Fugitive Dust Plan

Green Circle Cement Grinding Plant
Fugitive Dust Control Plan

I. Plant – Exterior Transfer Points

(a) There are conveyor transfer points which will emit fugitive particulate emissions. The drop distance at each transfer point throughout the plant shall be reduced to the minimum the equipment can achieve.

(b) Spilled material under conveyors will be attended to on an ongoing basis.

II. Truck Traffic

(a) On-site vehicles shall be loaded to prevent their contents from dropping, leaking, blowing or otherwise escaping.

III. Site Roadways

(a) All roadways at the facility are paved. The dust on the site roadways shall be controlled by applications of water.

(b) All paved roadways and the plant yards shall be swept as needed between water applications.

(c) Any material spillage on roads shall be cleaned up as needed.

Appendix D

Emission Calculations

Edw. C. Levy Co. - Green Circle Cement Grinding Plant
Slag Processing Plant
Table 1: Project Emissions Summary

Emission Unit	Emissions (tons per year)							
	NOx	CO	PM	PM_{10}	$PM_{2.5}$	SO2	VOC	HAPS
Bag Filter Emissions	-	-	13.02	3.90	1.61	-	-	-
Fugitive Dust - Transfer Points	-	-	0.07	0.02	0.01	-	-	-
Fugitive Dust - Paved Roads	-	-	1.61	0.32	0.08	-	-	-
Raw Material Loading and Product Load Out	-	-	-	0.06	0.01	-	-	-
Slag Dryer Emissions	4.64	7.79	0.70	0.70	0.70	0.06	0.51	0.18
TOTAL	**4.64**	**7.79**	**15.40**	**5.00**	**2.41**	**0.06**	**0.51**	**0.18**

Notes:

[1] Emissions are based on 315,000 tons of feed slag per year and 250,000 tons of finished product per year.

Edw. C. Levy Co. - Green Circle Cement Grinding Plant
Slag Processing Plant
Table 2: Potential to Emit - Transfer Points

Operating Data

Max Hourly Material Throughput: 45 tons slag per hour
Annual Throughput: 315,000 tons slag per year

Equipment Type	Number of units/ transfer points	Emission Factors (lb/ton)[1,2]			Total PM		PM10		PM2.5	
		Total PM	PM10	PM2.5	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Conveyor Transfer Points	3	0.00014	0.000046	0.000013	0.02	0.07	0.01	0.02	0.0018	0.01
				Total	**0.02**	**0.07**	**0.01**	**0.02**	**0.00**	**0.01**

[1] Emission factors from USEPA's AP-42 Table 11.19.2-2 (Crushed Stone Processing and Pulverized Mineral Processing) Version 8/2004. Controlled emission factors were used to account for the high moisture content of the raw material and covered conveyors.
[2] Particulate matter is the only pollutant emitted from the process of physically sizing and sorting slag.

Example Calculation:
PM from Transfer Points:
315,000 tons slag per year x 0.00014 lb/ton x 3 units x (1 ton / 2,000 lbs) = 0.07 tons per year

Edw. C. Levy Co. - Green Circle Cement Grinding Plant
Slag Processing Plant
Table 3: Potential to Emit - Slag Dryer

Heater Rating	21.6	MMBtu/hr
Operating Hours	8760	hours/year
Fuel Heat Value	1020	Btu/SCF

Pollutant	Emission Factor (lb/MMCF)[1]	lb/hr	tpy
VOC	5.5	0.12	0.51
NO_x	50	1.06	4.64
CO	84	1.78	7.79
PM	7.6	0.16	0.70
PM_{10}	7.6	0.16	0.70
$PM_{2.5}$	7.6	0.16	0.70
SO_2	0.6	0.01	0.06

Notes:

[1] Emission Factors are from AP-42, Chapter 1, Section 4 (July 1998). Emission factors for NOx and CO are for small a (< 100 MMBtu/hr) low-NOx burner heater. Emission estimates for NOx are conservative as the dryer will meet 30 ppm NOx @ 3% O2, based on manufacturer specifications.

Pollutant	CAS	Emission Factor (lb/MMcf)	HAP?	lb/hr	tpy
Formaldehyde	50-00-0	7.50E-02	Y	1.59E-03	0.01
Benzo(a)pyrene	50-32-8	1.20E-06	Y	2.54E-08	1.11E-07
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	Y	2.54E-08	1.11E-07
3-Methylchloranthrene	56-49-5	1.80E-06	Y	3.81E-08	1.67E-07
Benz(a)anthracene	56-55-3	1.80E-06	Y	3.81E-08	1.67E-07
7,12-Dimethylbenz(a)anthracene	57-97-6	1.60E-05	Y	3.39E-07	1.48E-06
Benzene	71-43-2	2.10E-03	Y	4.45E-05	1.95E-04
Ethane	74-84-0	3.10E+00	N	0.07	0.29
Propane	74-98-6	1.60E+00	N	0.03	0.15
Acenaphthene	83-32-9	1.80E-06	Y	3.81E-08	1.67E-07
Phenanathrene	85-01-8	1.70E-05	Y	3.60E-07	1.58E-06
Fluorene	86-73-7	2.80E-06	Y	5.93E-08	2.60E-07
Naphthalene	91-20-3	6.10E-04	Y	1.29E-05	5.66E-05
2-Methylnaphthalene	91-57-6	2.40E-05	Y	5.08E-07	2.23E-06
Butane	106-97-8	2.10E+00	N	0.04	0.19
Toluene	108-88-3	3.40E-03	Y	7.20E-05	3.15E-04
Pentane	109-66-0	2.60E+00	N	0.06	0.24
Hexane	110-54-3	1.80E+00	Y	0.04	0.17
Anthracene	120-12-7	2.40E-06	Y	5.08E-08	2.23E-07
Pyrene	129-00-0	5.00E-06	Y	1.06E-07	4.64E-07
Benzo(g,h,i)perylene	191-24-2	1.20E-06	Y	2.54E-08	1.11E-07
Indeno(1,2,3-cd)pyrene	193-39-5	1.80E-06	Y	3.81E-08	1.67E-07
Benzo(b)fluoranthene	205-99-2	1.80E-06	Y	3.81E-08	1.67E-07
Fluoranthene	206-44-0	3.00E-06	Y	6.35E-08	2.78E-07
Benzo(k)fluoranthene	207-08-9	1.80E-06	Y	3.81E-08	1.67E-07
Acenaphthylene	208-96-8	1.80E-06	Y	3.81E-08	1.67E-07
Chrysene	218-01-9	1.80E-06	Y	3.81E-08	1.67E-07
Lead	7439-92-1	5.00E-04	Y	1.06E-05	4.64E-05
Manganese	7439-96-5	3.80E-04	Y	8.05E-06	3.52E-05
Mercury	7439-97-6	2.60E-04	Y	5.51E-06	2.41E-05
Molybdenum	7439-98-7	1.10E-03	N	2.33E-05	1.02E-04
Nickel	7440-02-0	2.10E-03	Y	4.45E-05	1.95E-04
Arsenic	7440-38-2	2.00E-04	Y	4.24E-06	1.86E-05
Barium	7440-39-3	4.40E-03	N	9.32E-05	4.08E-04
Beryllium	7440-41-7	1.20E-05	Y	2.54E-07	1.11E-06
Cadmium	7440-43-9	1.10E-03	Y	2.33E-05	1.02E-04
Chromium	7440-47-3	1.40E-03	Y	2.96E-05	1.30E-04
Cobalt	7440-48-4	8.40E-05	Y	1.78E-06	7.79E-06
Copper	7440-50-8	8.50E-04	N	1.80E-05	7.88E-05
Vanadium	7440-62-2	2.30E-03	N	4.87E-05	2.13E-04
Zinc	7440-66-6	2.90E-02	N	6.14E-04	2.69E-03
Selenium	7782-49-2	2.40E-05	Y	5.08E-07	2.23E-06
Dichlorobenzene	25321-22-6	1.20E-03	Y	2.54E-05	1.11E-04
			Total HAPs	0.04	0.18

Edw. C. Levy Co. - Green Circle Cement Grinding Plant
Slag Processing Plant
Table 4 : Potential to Emit - Bag Filters

Equipment Designation	Description	Flow Rate [1] m^3/hr	Inlet Dust Load [2] gram/m^3	Outlet Dust Load [2] mg/m^3	PM - Controlled Emissions			PM_{10} - Controlled Emissions[4]			$PM_{2.5}$ - Controlled Emissions[5]		
					lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy	lb/hr	lb/yr	tpy
541-BF1	Dryer Dedusting Bag House	26,000	50	8	0.5	4017.0	2.0	0.01	52.2	0.03	0.006	52.2	0.03
541-BF3	Dedusting Bag Filter for Reject Iron Bin	1,500	50	8	0.0	231.8	0.1	0.0003	3.0	0.002	0.0003	3.0	0.002
541-BF2	Dedusting Bag Filter for Dry Slag Bin	3,000	50	8	0.1	463.5	0.2	0.001	6.0	0.003	0.001	6.0	0.003
561-BF1	Mill Vent Bag Filter	56,000	50	8	1.0	8652.0	4.3	0.013	112.5	0.1	0.01	112.5	0.06
561-BF4	Dedusting Bag Filter for Reject Iron Bin	1,500	50	8	0.0	231.8	0.1	0.016	139.3	0.1	0.006	55.8	0.03
561-BF2	Separator Vent Bag Filter	30,000	50	8	0.5	4635.0	2.3	0.32	2786.6	1.4	0.127	1116.1	0.6
561-BF3	Mill Auxiliary Equipment Vent Bag Filter	7,500	50	8	0.1	1158.8	0.6	0.08	696.6	0.3	0.032	279.0	0.1
591-BF1	Dedusting Bag Filter Product Air Slide	1,500	50	8	0.0	231.8	0.1	0.02	139.3	0.1	0.006	55.8	0.03
DC-1	Silo Dust Collector 1	12,233	50	10	0.3	2362.5	1.2	0.16	1420.3	0.7	0.065	568.9	0.3
DC-2	Silo Dust Collector 2	12,233	50	10	0.3	2362.5	1.2	0.16	1420.3	0.7	0.065	568.9	0.3
DC-3	Product Loadout Dust Collector 3	8,792	50	10	0.2	1698.0	0.8	0.12	1020.9	0.5	0.047	408.9	0.2
Total		**161,758**			**3.0**	**26044.5**	**13.0**	**0.9**	**7797.1**	**3.9**	**0.4**	**3227.1**	**1.6**

Notes:

[1] Flow rates represent the maximum capacity of control device, from manufacturer specification datasheets.

[2] Inlet and outlet dust loading are from manufacturer specification datasheets.

[3] Annual emissions are calculated assuming 8,760 hours of operation.

[4] It was estimated that 1.3% of the total PM is PM_{10} for dust collectors which are controlling raw material slag operations (541-BF1, 541-BF3, 541-BF2 and 561-BF1). This is based on slag particle size distribution reports(report numbers 83220781-02 and 83220780-02) provided by Levy. These reports show a maximum of 1.3% passing through the 325 mesh (44 microns) which was conservatively used to estimate the percent which is 10 microns of less. For dust collectors handling finished product (561-BF4, 561-BF2, 561-BF3, 591-BF1, DC-1, DC-2, and DC-3), it was estimated that 60.12% of the total PM is PM_{10} based on the maximum 10 micron result from the finished product particle size distribution reports (report numbers 018TC020 and 018TC021) provided by Levy.

[5] It was estimated that 1.3% of the total PM is PM2.5 for dust collectors which are controlling raw material slag operations (541-BF1, 541-BF3, 541-BF2 and 561-BF1). This is based on slag particle size distribution reports(report numbers 83220781-02 and 83220780-02) provided by Levy. These reports show a maximum of 1.3% passing through the 325 mesh (44 microns) which was conservatively used to estimate the percent which is 2.5 microns of less. For dust collectors handling finished product (561-BF4, 561-BF2, 561-BF3, 591-BF1, DC-1, DC-2, and DC-3), it was estimated that 24.08% of the total PM is PM2.5 based on the maximum 2.6 micron result from the finished product particle size distribution reports (report numbers 018TC020 and 018TC021) provided by Levy.

Edw. C. Levy Co. - Green Circle Cement Grinding Plant
Slag Processing Plant
Table 5 - Potential to Emit - Paved Roadways

								Resuspended PM From Roadway										
								Emission Factor for Daily Basis			Emission Factor for hourly Basis							
Vehicle Type	Estimated Average Travel Length Round Trip	Particle Size Multiplier PM [2]	Particle Size Multiplier PM-10 [2]	Particle Size Multiplier PM-2.5 [2]	Average Vehicle Weight	Silt Loading[1]	Average Days of Rain	PM Emission Factor[2]	PM-10 Emission Factor[2]	PM-2.5 Emission Factor[2]	PM Emission Factor[2]	PM-10 Emission Factor[2]	PM-2.5 Emission Factor[2]	Potential Daily Vehicle Throughput[3]		Potential Annual Vehicle Throughput[3]		
	miles	lb/VMT	lb/VMT	lb/VMT	tons	g/sq.m	#	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	lb/VMT	# veh	VMT	# veh	VMT	
Slag Side Dump Trailer (loaded)	0.055	0.011	0.0022	0.00054	102	9.7	136	8.846	1.769	0.434	5.393	1.079	0.265	24	1	6600	361	Based on 24 inbound trips
Slag Side Dump Trailer (empty)	0.070	0.011	0.0022	0.00054	52	9.7	136	4.460	0.892	0.219	2.719	0.544	0.133	24	2	6600	459	Based on 24 outbound trips
Pneumatic Hauler (loaded) - (Silos 1-4)	0.078	0.011	0.0022	0.00054	102	9.7	136	8.824	1.765	0.433	5.380	1.076	0.264	40	3	6820	530	Based on 40 inbound trips
Pneumatic Hauler (empty) - (Silos 1-4)	0.194	0.011	0.0022	0.00054	52	9.7	136	4.438	0.888	0.218	2.706	0.541	0.133	40	8	6820	1322	Based on 40 outbound trips
Pneumatic Hauler (loaded) - (Silos 5-8)	0.078	0.011	0.0022	0.00054	102	9.7	136	8.824	1.765	0.433	5.380	1.076	0.264	1	0.1	200	16	Based on 1 inbound trip
Pneumatic Hauler (empty) - (Silos 5-8)	0.194	0.011	0.0022	0.00054	52	9.7	136	4.438	0.888	0.218	2.706	0.541	0.133	1	0.2	200	39	Based on 1 outbound trip

Notes:

[1] Table 13.2.1-3 (Typical Silt Content and Loading Values for Paved Roads at Industrial Facilities) was used in this calculation. The "Iron and Steel Production" silt loading was selected as it was the most representative.

[2] Emission Factors were calculated using USEPA's AP-42 Section 13.2.1 (1/11) Equation Numbers 2 and 3:
E = [(k) x (sL)^0.91 x (W)^1.02] x (1-(P/4N)) (eqn 2)
E = [(k) x (sL)^0.91 x (W)^1.02] x (1-(1.2*P/N)) (eqn 3)
Where:
E = particulate emission factors (having units matching the units of k)
k = particle size multiplier (from Table 13.2-1.1)
sL = road surface silt loading (from Table 13.2.1-3, see Note 1 below)
W = average weight (tons) of the vehicles traveling the road
P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period; 136 days based on NOAA Climate data through 2020 for Detroit, MI
N = number of days in the averaging period (365 for annual)
VMT = vehicle mile traveled

[3] Current and projected number of trucks provided by Levy. Silos 1-4 store Levy's finished product (Green Circle Cement) and Silos 5-8 store cement products. Silos 5-8 are only loaded/unloaded intermittently - a maximum of 1 vehicle per day.

[4] Emissions are based on a control efficiency of 80% for flushing with water, from Table 2.1.1-3 of the Ohio Reasonably Available Control Measures (RACM) for Fugitive Dust document.

Vehicle Type	Control Efficiency	Controlled - Potential Annual Emissions (ton/yr)			Controlled - Potential Hourly Emissions lb/hr)		
	%	PM	PM-10	PM-2.5	PM	PM-10	PM-2.5
Slag Side Dump Trailer (loaded)	80	0.32	0.06	0.02	0.06	0.01	0.003
Slag Side Dump Trailer (empty)	80	0.20	0.04	0.01	0.04	0.01	0.002
Pneumatic Hauler (loaded) - (Silos 1-4)	80	0.47	0.09	0.02	0.14	0.03	0.007
Pneumatic Hauler (empty) - (Silos 1-4)	80	0.59	0.12	0.03	0.17	0.03	0.009
Pneumatic Hauler (loaded) - (Silos 5-8)	80	0.01	0.00	0.00	0.00	0.00	0.000
Pneumatic Hauler (empty) - (Silos 5-8)	80	0.02	0.00	0.00	0.00	0.00	0.000
Total		**1.61**	**0.32**	**0.08**	**0.42**	**0.08**	**0.02**

Edw. C. Levy Co. - Green Circle Cement Grinding Plant
Slag Processing Plant
Table 6.1: Potential to Emit - Fugitive Dust from Finished Product Load Out Operations

Truck loading of finished product is controlled by bag filter DC-3 which has an estimated capture efficiency of 99%. Therefore, the fugitive emissions from loading were calculated using AP-42, Chapter 13, Section 2.4 – Aggregate Handling and Storage Piles, as outlined below.

$$E = k(0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

where: E = particulate emission factor (in units of lb/ton),
k = particle size multiplier (dimensionless),
U = mean wind speed (miles per hour (mph)), and
M = material moisture content (%).

Assume:

Particle Size	k (See Note 1)	U (mph) (See Note 2)	M (%) (See Note 3)	**E (lb/ton material handled)**
PM10	0.35	8.18	0.92	0.0063
PM2.5	0.05	8.18	0.92	0.0010

Assume maximum finished product throughp	250,000	tons/year
	45	ton/hr
	99%	Capture Efficiency

PM_{10} Emissions = E × maximum throughput
= 0.0028 lb/hr
= 16 lbs/year
= ***0.01 tons/year***

$PM_{2.5}$ Emissions = E × maximum throughput
= 0.00043 lb/hr
= 2 lbs/year
= ***0.0012 tons/year***

Notes:

1) PM_{10} and $PM_{2.5}$ size range used for selecting Particle Size Multiplier, k from Aerodynamic Particle Size Multiplier Table in AP-42 13.2.4.
2) Mean Wind Speed based on NOAA NCEI Global Historical Climatology Network - Daily, Version 3 (https://www.ncei.noaa.gov/access/search/data-search/daily-summaries) data for Detroit City Airport from 12/1/2015 thru 11/30/2020.
3) Moisture content, M, obtained from AP-42 Table 13.2.4-1 for Slag material from the Iron and Steel Production industry.
4) Based on a maximum unloading throughput of 45 tons/hr and 250,000 tons per year.
5) Emissions from loading operations are controlled by a bag filter. The emissions represented in this table only reflect the uncaptured fugitive particulate emissions.

Edw. C. Levy Co. - Green Circle Cement Grinding Plant
Slag Processing Plant
Table 6.2: Potential to Emit - Fugitive Dust from Raw Material Loading

Raw slag is delivered to the site via truck and unloaded. Emissions from raw material unloading were calculated using AP-42, Chapter 13, Section 2.4 – Aggregate Handling and Storage Piles, as outlined below.

$$E = k(0.0032)\frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

where: E = particulate emission factor (in units of lb/ton),
k = particle size multiplier (dimensionless),
U = mean wind speed (miles per hour (mph)), and
M = material moisture content (%).

Assume:

Particle Size	k (See Note 1)	U (mph) (See Note 2)	M (%) (See Note 3)	**E** **(lb/ton material handled)**
PM10	0.35	8.18	8	0.0003
PM2.5	0.053	8.18	8	0.0000

Assume maximum slag throughput = 315,000 tons/year
300 ton/hr

PM10 Emissions = E × maximum throughput
= 0.09 lb/hr
= 96 lbs/year
= ***0.05 tons/year***

PM2.5 Emissions = E × maximum throughput
= 0.014 lb/hr
= 15 lbs/year
= ***0.01 tons/year***

Notes:

1) PM-10 and PM-2.5 size range used for selecting Particle Size Multiplier, k from Aerodynamic Particle Size Multiplier Table in AP-42 13.2.4.
2) Mean Wind Speed based on NOAA NCEI Global Historical Climatology Network - Daily, Version 3 (https://www.ncei.noaa.gov/access/search/data-search/daily-summaries) data for Detroit City Airport from 12/1/2015 thru 11/30/2020.
3) Moisture content, M, obtained from AP-42 Table 13.2.4-1 for Slag material from the Iron and Steel Production industry.
4) Based on an unloading throughput of 300 tons/hr and 315,000 tons per year.

Edw. C. Levy Co. - Green Circle Cement Grinding Plant
Slag Processing Plant
Table 7: Green Circle Cement Grinding Plant TAC Review Applicability - Plant and Fugitive Emissions

Calculation Method: AP-42 13.2.4 Aggregate Handling and Storage Piles - Predictive Emission Factor Eqs.	CAS No.	Carcinogen?	HAP?	Listed in R226 Table 20?	Chemical Concentration [(1)(2)] (mg/kg)	All Processing Equipment and Fugitive Emissions		Meets Rule 226(a) Exemption?	Notes
						Monthly ER [(3)] (lbs/month)	Hourly ER (lb/hr)		
Aluminum (Al)	7429905	N	N	N	51100	111.9457	1.45E-04	N	Not Included in TAC Analysis - Not a Carcinogen, HAP, in the Air Toxics Table or R226 Table 20 Constituent.
Antimony (Sb)	7440360	N	Y	Y	13	0.0278	3.60E-08	N	
Arsenic (As)	7440382	Y	Y	N	3	0.0067	8.73E-09	N	
Barium (Ba)	7440393	N	N	Y	5160	11.3041	1.46E-05	N	
Beryllium (Be)	7440417	Y	Y	N	9	0.0191	2.47E-08	N	
Cadmium (Cd)	7440439	Y	Y	N	5	0.0113	1.46E-08	N	
Calcium (Ca)	7440702	N	N	N	295000	646.2618	8.36E-04	N	Not Included in TAC Analysis - Not a Carcinogen, HAP, in the Air Toxics Table or R226 Table 20 Constituent.
Chromium (Cr)	7440473	N	Y	N	54	0.1192	1.54E-07	Y	Exempt Per Rule 226 (a)
Cobalt (Co)	7440484	Y	Y	Y	7	0.0163	2.11E-08	N	
Copper (Cu)	7440508	N	N	N	13	0.0291	3.77E-08	Y	Exempt Per Rule 226 (a)
Iron (Fe)	7439896	N	N	N	3460	7.5799	9.81E-06	Y	Exempt Per Rule 226 (a)
Lead (Pb)	7439921	N	Y	N	0	0.0002	2.86E-10	Y	Exempt Per Rule 226 (a)
Magnesium (Mg)	7439954	N	N	N	55800	122.2421	1.58E-04	N	
Manganese (Mn)	7439965	N	Y	Y	3170	6.9446	8.99E-06	N	
Molybdenum (Mo)	7439987	N	N	N	2	0.0045	5.78E-09	Y	Exempt Per Rule 226 (a)
Nickel (Ni)	7440020	Y	Y	N	4	0.0085	1.10E-08	N	
Potassium (K)	7440097	N	N	N	4460	9.7706	1.26E-05	Y	Not Included in TAC Analysis - Not a Carcinogen, HAP, in the Air Toxics Table or R226 Table 20 Constituent.
Selenium (Se)	7782492	N	Y	Y	7	0.0156	2.01E-08	N	
Silver (Ag)	7440224	N	N	N	8	0.0175	2.26E-08	Y	Exempt Per Rule 226 (a)
Sodium (Na)	7440235	N	N	N	3140	6.8789	8.90E-06	Y	Exempt Per Rule 226 (a)
Sulfur (S)	7704349	N	N	N	12500	27.3840	3.54E-05	N	
Thallium (Tl)	7440280	N	N	Y	0	0.0002	2.58E-10	N	
Titanium (Ti)	7440326	N	N	N	4700	10.2964	1.33E-05	N	
Vanadium (V)	7440622	N	N	N	68	0.1479	1.91E-07	Y	Exempt Per Rule 226 (a)
Zinc (Zn)	7440666	N	N	N	21	0.0462	5.98E-08	Y	Exempt Per Rule 226 (a)
Total HAPs						777.15	0.001		

Notes:

(1) Chemical concentrations based on results of 2018 ICP Total Metals analysis of blast furnace slag from Plant 6.

(2) Half of the detection limit is used for calculating in the average concentration when a chemical was non-detect in a lab sample.

(3) Monthly and hourly chemical emission rates are based on a 315,000 tons per year material throughput. The following equations are used to calculate the emission rates:

$$\text{Monthly ER (lb/month)} = \text{Chemical Concentration (mg/kg)} \times \frac{1}{1{,}000{,}000} \times \text{Annual PM PTE (ton/yr)} \times \frac{2000 \text{ lb}}{\text{ton}} \times \frac{1 \text{ year}}{12 \text{ months}}$$

$$\text{Hourly ER (lb/hr)} = \text{Chemical Concentration (mg/kg)} \times \frac{1}{1{,}000{,}000} \times \text{Hourly PM PTE (lb/hr)}$$

Where PM Emissions are:

	lb/year	lb/hr
Transfer Points	132	0.02
BAGFILTERs	26045	2.97
Loading Operatior	96	0.09
Load Out Operatic	16	0.00
Total	**26288.62**	**3.09**

(4) Chemicals not exempt from TAC review pursuant to Rule 226(a) are evaluated using Rule 227(1)(a) method.

Exemption Limits: < 10 lb/month AND < 0.14 lb/hr

TOXIC AIR CONTAMINANTS
Allowable Emission Rate Methodology - Rule 227(1)(a)

Facility Name:	Edw. C. Levy Co. - Green Circle Cement Grinding Plant	**Facility Address:**	8941 West Jefferson Avenue in Detroit, Michigan

		Screening Level						Allowable Emission Rate (AER)						Proposed Emission Rate (ER)							Is Proposed Emission Rate less than AER?					
								1st ITSL		2nd ITSL		IRSL / SRSL														
Chemical Name	**CAS No.**	**1st ITSL µg/m³**	**1st ITSL Avg Time**	**2nd ITSL µg/m³**	**2nd ITSL Avg Time**	**IRSL / SRSL µg/m³ (annual Avg)**	**AQD Footnote(s)**	**Max lbs per hour**	**lbs per month, 24-hr, 8-hr or 1-hr**	**Max lbs per hour**	**lbs per month, 24-hr, 8-hr or 1-hr**	**Max lbs per hour**	**lbs per month**	**Max Hourly ER lbs/hour**	**Rate (1st ITSL)**	**1st ITSL Rate Units**	**Rate (2nd ITSL)**	**2nd ITSL Rate Units**	**Rate (IRSL)**	**IRSL / SRSL Rate Units**	**1st ITSL Max Hourly Rate**	**1st ITSL ER**	**2nd ITSL Max Hourly Rate**	**2nd ITSL ER**	**IRSL Max Hourly Rate**	**IRSL ER**
antimony	7440360	0.2	annual					0.108	8					3.60E-08	2.63E-05	lbs/month					yes	yes				
arsenic	7440382					0.0002						0.0001	0.008	8.73E-09					6.37E-06	lbs/month					yes	yes
barium and soluble barium compounds	7440393	5	8 hr				35	0.1	0.1					1.46E-05	0.000117	lbs/8-hr					yes	yes				
beryllium	7440417	0.02	24 hr			0.0004		0.001	0.0024			0.0002	0.016	2.47E-08	5.92E-07	lbs/24-hr			1.8E-05	lbs/month	yes	yes			yes	yes
cadmium	7440439					0.0006						0.0003	0.024	1.46E-08					1.06E-05	lbs/month					yes	yes
cobalt and cobalt compounds that rele	7440484	0.2	8 hr			0.0001	42	0.004	0.004			7E-05	0.0052	2.11E-08	1.69E-07	lbs/8-hr			1.54E-05	lbs/month	yes	yes			yes	yes
magnesium	7439954	100	8 hr				38	2	2					1.58E-04	0.001265	lbs/8-hr					yes	yes				
manganese and manganese compound	7439965	0.3	annual				29	0.162	12					8.99E-06	0.006559	lbs/month					yes	yes				
nickel	7440020					0.006						0.0032	0.24	1.10E-08					8.03E-06	lbs/month					yes	yes
selenium and inorganic selenium comp	7782492	2	8 hr				34	0.04	0.04					2.01E-08	1.61E-07	lbs/8-hr					yes	yes				
sulfur (elemental)	7704349						26							3.54E-05												
thallium and thallium compounds	7440280	0.1	annual	0.2	8 hr			0.054	4	0.004	0.004			2.58E-10	1.88E-07	lbs/month	2.06E-09	lbs/8-hr			yes	yes	yes	yes		
Titanium	7440326	24	8 hr					0.48	0.48					1.33E-05	0.000107	lbs/8-hr					yes	yes				

% of AER					
Turn values red if they are greater than:				100%	
1st ITSL Max Hourly Rate	**1st ITSL ER**	**2nd ITSL Max Hourly Rate**	**2nd ITSL ER**	**IRSL Max Hourly Rate**	**IRSL ER**
0.0%	0.0%				
				0.0%	0.1%
0.0%	0.1%				
0.0%	0.0%			0.0%	0.1%
				0.0%	0.0%
0.0%	0.0%			0.0%	0.3%
0.0%	0.1%				
0.0%	0.1%				
				0.0%	0.0%
0.0%	0.0%				
0.0%	0.0%	0.0%	0.0%		
0.0%	0.0%				

Appendix E

Manufacturer Specification Sheets

NFM National FILTER Media

<u>NFM's ePTFE POLYESTER FELT FILTER BAGS</u>
<u>PERFORMANCE GUARANTEE</u>
<u>PROVISIONS - 04/16/2021</u>

Customer: E. Levy
Reference: New PJFF Brandenburg, KY

For the new ePTFE Polyester Felt Filter Bags supplied by National Filter Media (NFM), we offer a workmanship and material compliance warranty, as follows:

- NFM PJFF style Filter Bags of thirty-six (36) months of life time for Style #0513. The outlet emissions through the needle felt filter bags will be </= 8 mg/m^3.

The warranty is valid and applicable in accordance with the various baghouses are operating within 98% of design relability. Gas stream temperatures do not exceed, as follows:

- NFM Style #0513 </= 275ºF/130ºC.

The warranty is subject to the following conditions being met:

1) Initial installation of NFM filter bags and hardware shall be correctly installed by NFM approved contractor. Warranty is applicable to filter bags installed by Levy personnel pursuant to NFM procedures.

2) This warranty specifically excludes damaged to filter bags caused by fire and embers. Damage beyond normal conditions(i.e. hopper buildup, airflow erosion).

3) Levy to submit one (1) used filter bag every twelve (12) months for examine and autopsy. Results will be shared amongst each party.

4) Monitoring and operational data (i.e. temperature and differentential pressures, fuel sources) for the process and baghouses during the warranty period shall be available to NFM in the event of any warranty claim.

5) NFM personnel or their designates shall be allowed to observe and evaluate the process and baghouse system in case of any warranty claim. Failed bags shall also be provided as needed in case of any claim.

Remedies:

1) If the new filter bags fail to meet the warranty, the product(s) will be replaced with product(s) that are equal in quality and value, or credit value towards an upgraded variation.NFM reserves the right to inspect the bags and baghouse prior to replacement. Bags will be replaced on a one-for-one basis. Maximum warranty exposure will not exceed the original contract value.

2) NFM reserves the right to inspect non-conforming or prematurely failed (as defined as holes or tears) filter bags, filter bags which have not failed, the baghouse and operating data prior to replacement. NFM inspections will not adversely impact plant operations.

3) NFM warranty will not cover any consequental or inconsequental damages, loss of profit or any other indirect claims not specifically outlined above.

Appendix F

Existing Source Inventory

Appendix F: Existing Emission Inventory

SRN	COMPANY	ADDRESS	CITY	ZIP	COUNTY	POL	Facility Emissions (lb/hr)	(tpy)	TYPE	ZONE	UTM EAST	UTM NORTH	Local X Coord (meters)	Local Y Coord (meters)	Source Dist. (km)	Stack Information Hgt. (ft)	Dia (inches)	Dia (ft)	Temp (deg F)	Flow (ACFM)	Velocity (m/s)	Discharge Type
A7809	U S STEEL GREAT LAKES WORKS	1 QUALITY DR	ECORSE	48229	WAYNE	**PM25**	8.71	38.14	NAAQS	17	326,000	4,683,000	922	-581	1.1	90.3	88.6	7.38	350.8	60,574	7.19	Vertical
A8640	Cleveland-Cliffs Steel Corporation Dearborn Works	4001 MILLER ROAD	DEARBORN	48120	WAYNE	**PM25**	73.51	321.97	NAAQS	17	321,500	4,685,500	-3,578	1,919	4.1	201.2	198.5	16.54	259.2	815,448	19.27	Vertical
A8648	FORD MOTOR CO ROUGE COMPLEX	3001 MILLER RD	DEARBORN	48121	WAYNE	**PM25**	2.69	11.80	NAAQS	17	321,801	4,686,168	-3,277	2,587	4.2	75.0	53.0	4.42	290.0	63,370	21.01	Vertical
A9831	MARATHON PETROLEUM COMPANY LP	1001 S Oakwood	DETROIT	48217	WAYNE	**PM25**	12.82	56.15	NAAQS	17	322,000	4,683,150	-3,078	-431	3.1	185.8	82.4	6.87	528.9	100,680	15.72	Vertical
B2103	GLWA Water Resource Recovery Facility	9300 W. JEFFERSON AVE	DETROIT	48209	WAYNE	**PM25**	2.80	12.28	NAAQS	17	324,500	4,683,200	-578	-381	0.7	75.0	53.0	4.42	290.0	63,370	21.01	Vertical
B2169	CARMEUSE LIME, INC	25 MARION AVENUE	RIVER ROUGE	48218	WAYNE	**PM25**	23.5	102.7	NAAQS	17	324,525	4,682,560	-553	-1,021	1.2	120.0	108.0	9.00	300.0	255,376	20.45	Vertical
B3567	SAINT MARY'S CEMENT	9333 DEARBORN STREET	DETROIT	48209	WAYNE	**PM25**	20.5	89.9	NAAQS	17	323,850	4,683,450	-1,228	-131	1.2	105.0	80.0	6.67	325.0	166,527	15.00	vertical
M4547	FRITZ PRODUCTS	255 MARION AVENUE	RIVER ROUGE	48218	WAYNE	**PM25**	3.2	14.0	NAAQS	17	325,300	4,682,200	222	-1,381	1.4	45.3	24.0	2.00	1300.0	10,000	16.17	vertical
N2155	FCA US, LLC	2101 CONNER STREET	DETROIT	48215	WAYNE	**PM25**	9.7	42.4	NAAQS	17	337,881	4,693,044	12,803	9,463	15.9	74.4	50.2	4.18	275.1	58,260	21.57	Vertical
N6631	DEARBORN INDUSTRIAL GENERATION	2400 MILLER RD	DEARBORN	48121	WAYNE	**PM25**	10.43	45.67	NAAQS	17	322,513	4,685,652	-2,565	2,071	3.3	160.1	185.7	15.47	276.4	957,467	25.86	Vertical
P0408	EES COKE BATTERY LLC	1400 Zug Island Road	RIVER ROUGE	48209	WAYNE	**PM25**	96.32	421.88	NAAQS	17	325,917	4,683,144	839	-437	0.9	196.0	239.2	19.93	867.7	457,484	7.45	Vertical
A7809	U S STEEL GREAT LAKES WORKS	1 QUALITY DR	ECORSE	48229	WAYNE	**PM10**	15.71	68.82	NAAQS	17	326,000	4,683,000	922	-581	1.1	124.4	100.1	8.34	309.9	162,965	15.15	Vertical
A8640	Cleveland-Cliffs Steel Corporation Dearborn Works	4001 MILLER ROAD	DEARBORN	48120	WAYNE	**PM10**	86.20	377.54	NAAQS	17	321,500	4,685,500	-3,578	1,919	4.1	191.0	186.3	15.52	257.8	744,656	19.98	Vertical
A9831	MARATHON PETROLEUM COMPANY LP	1300 S FORT STREET	DETROIT	48217	WAYNE	**PM10**	47.2	206.6	NAAQS	17	322,000	4,683,150	-3,078	-431	3.1	170.0	58.5	4.88	436.0	100,000	27.22	Vertical
B2103	GLWA Water Resource Recovery Facility	9300 W. JEFFERSON AVE	DETROIT	48209	WAYNE	**PM10**	4.30	18.82	NAAQS	17	324,500	4,683,200	-578	-381	0.7	97.0	66.0	5.50	229.1	118,840	25.45	Vertical
B2169	CARMEUSE LIME, INC	25 MARION AVENUE	RIVER ROUGE	48218	WAYNE	**PM10**	23.5	102.7	NAAQS	17	324,525	4,682,560	-553	-1,021	1.2	120.0	108.0	9.00	300.0	255,376	20.39	Vertical
B2814	DETROIT EDISON COMPANY	541 MADISON AVENUE	DETROIT	48226	WAYNE	**PM10**	21.8	95.5	NAAQS	17	331,560	4,689,140	6,482	5,559	8.5	130.0	100.0	8.33	260.0	266,141	24.79	vertical
B3567	SAINT MARY'S CEMENT	9333 DEARBORN STREET	DETROIT	48209	WAYNE	**PM10**	20.5	89.9	NAAQS	17	323,850	4,683,450	-1,228	-131	1.2	130.0	100.0	8.33	260.0	266,141	24.79	vertical
N6631	DEARBORN INDUSTRIAL GENERATION	2400 MILLER ROAD	DEARBORN	48121	WAYNE	**PM10**	26.9	118.0	NAAQS	17	322,513	4,685,652	-2,565	2,071	3.3	60.0	213.0	17.75	1073.0	2,297,909	47.17	Vertical
P0408	EES COKE BATTERY LLC	1400 Zug Island Road	RIVER ROUGE	48209	WAYNE	**PM10**	120.28	526.81	MAERS20	17	325,917	4,683,144	839	-437	0.9	185.7	207.0	17.25	776.6	387,323	8.42	Vertical

Arcadis of Michigan, LLC
28550 Cabot Drive, Suite 500
Novi
Michigan 48377
Phone: 248 994 2240

www.arcadis.com