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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-1303G
Plant ID No.:	061-00003
Applicant:	Greer Limestone Company
Facility Name:	Masontown Limestone Processing Plant
Location:	Masontown, Monongalia County
SIC/NAICS Code:	1422/212312
Application Type:	Modification
Received Date:	November 6, 2015
Engineer Assigned:	Joe Kessler
Fee Amount:	$2,000
Date Received:	November 6, 2015
Complete Date:	January 5, 2016
Due Date:	April 4, 2016
Applicant's Ad Date:	December 10, 2015
Newspaper:	*The Dominion Post*
UTM's:	598.895 km Easting • 4,381.173 km Northing • Zone 17
Latitude/Longitude:	39.57249/-79.84700
Description:	Greer is proposing to add, replace, and refurbish three (3) screens at the facility. Additionally, Greer is requesting, after having conducted a facility-wide inventory of on-site equipment and material throughputs, the after-the fact revision of the permit with various emission units that were not previously permitted and revising the facility's configuration and throughputs based on the facility as currently operated.

Greer Limestone Company's (Greer) Masontown Limestone Processing Plant was originally permitted on April 25, 1984 (R13-0746). After that, the expanding facility received several additional permits that were jointly applicable to the facility (R13-1022 and R13-1074). On January 22, 1991, Permit Number R13-1303 was issued and has been subsequently administratively updated (R13-1303A through R13-1303D) four times since that date. R13-1303C was issued as a consolidation permit and superceded all the other permits. Permit Applications R13-1303E and R13-1303F were withdrawn prior to issuance.

DESCRIPTION OF PROCESS/MODIFICATIONS

Existing Facility

The Masontown Limestone Processing Plant is a typical large non-metallic mineral precessing plant that has been in operation (along with the adjacent quarry) at the site (in one form or another) since 1914. As currently configured, the facility is classified into five (5) processes: No. 1 Mill System, the Crusher Run System, No. 2 Mill System, the Sand System, and the Bradley Mill System. The existing facility uses baghouses, enclosures, and water sprays to control the numerous particulate matter sources. Due to the confusing history of the air permitting of this facility (and the numerous changes now incorporated into the permit application evaluated herein), it is difficult to determine the maximum permitted throughputs or configuration of the current facility. However, based on information in the current permit (R13-1303G), the existing maximum throughputs of the various sections of the facility are given in the following table:

Table 1: Existing Facility Throughput Limits

Section	Maximum Throughput	
	TPH	TPY
No. 1 Mill System	No Limit	No Limit
Crusher Run System	400	800,000
No. 2 Mill System	1,300	1,825,000
Sand System	150	900,000
Bradley Mill System	35	210,000

Proposed Modifications

Greer is now proposing to add, replace, and refurbish three (3) screens at the facility:

- Replace Screen No. 2 (SC-153, No. 2 Mill) with a new Allis Chalmers 8'x20' screen;
- Existing Screen No. 2 (currently SC-153) will be refurbished and used to replace Screen No. 1 (SC-152, No. 2 Mill); and
- Deister Screen SC-231 (Sand Plant) will be replaced with a refurbished pre-2009 screen.

Additionally, after having conducted a facility-wide inventory of on-site equipment and material throughputs, Greer is also proposing the updating of the permit with various units that were not previously permitted (after-the-fact) and revising the facility configuration and throughputs based on the facility as currently operated. The new post-modification maximum throughputs of the various sections of the facility (measured at the specified emission units) are given in the following table:

Table 2: Proposed Post-Modification Facility Throughput Limits

Plant	Throughput Limit		Emission Units
	TPH	TPY	
No. 1 Mill	1,500	3,299,700	BC-2
	600	1,147,500	SC-404
Old Crusher Run	330	631,125	BC-6A
No. 2 Mill	1,350	2,581,875	BC-2A
Sand Plant	150	430,313	BC-C2A
Bradley Mill	50	430,313	BCBM-1

Post-Modification Facility Description

A lengthy and detailed post-modification process description is given in Attachment G of permit application.

SITE INSPECTION

On June 26, 2012, a site inspection of the Masontown Limestone Processing Plant was conducted by Mr. Brian Tephabock of the DAQ Compliance/Enforcement (C/E) Section. This inspection found the facility be "Status 30 - In Compliance."

AIR EMISSIONS AND CALCULATION METHODOLOGIES

Greer included in Attachment N of the permit application post-modification air emissions calculations for the equipment and processes at the Masontown Limestone Processing Plant. The following will summarize the calculation methodologies used by Greer to calculate the post-modification PTE of the facility.

Material Handling

Emissions from material handling operations (material transfer points, crushing and screening not controlled by a baghouse, haulroad traffic, storage piles, etc.) were calculated using the appropriate sections of AP-42 (AP-42 is a database of emission factors maintained by USEPA) or as established as reasonable in the G-40C General Permit guidance. Variables within the emission factor equations, including applicable particulate matter control devices, were based on guidance provided by DAQ or on reasonable values of anticipated inherent material properties. Maximum hourly and annual emission rates were based on the maximum hourly design and limited annual throughputs of the specific equipment, as applicable. The following table details the source of the particulate matter emission factors for each material handling source.

Table 3: Material Handling PM Emission Factor Sources

Emission Source	Emission Factor(s)	Emission Factor Source	Comments
Transfer Points	0.0037 lb-PM/ton 0.0018 lb-PM_{10}/ton 0.0003 lb-$PM_{2.5}$/ton	AP-42, Section 13.2.4 (11/06)	Emission factor calculation includes limestone moisture content (2.0%) and average wind speed (7 mph).
Primary Crushing (w/ out baghouse)	0.002 lb-PM/ton-crushed 0.001 lb-PM_{10}/ton-crushed 0.0001 lb-$PM_{2.5}$/ton-crushed	WV G-40C General Permit Guidance	G-40C Guidance based on primarily emission factors given in AP-42 Section 11.19. $PM_{2.5}$ factor based on k factor from Section 13.2.4.
Secondary & Tertiary Crushing (w/ out baghouse)	0.0054 lb-PM/ton-crushed 0.0024 lb-PM_{10}/ton-crushed 0.0004 lb-$PM_{2.5}$/ton-crushed	WV G-40C General Permit Guidance	G-40C Guidance based on primarily emission factors given in AP-42 Section 11.19. $PM_{2.5}$ factor based on k factor from Section 13.2.4.
Baghouses	Various	Subpart OOO Standard	PM emissions based on applicable outlet grain loading limit in Subpart OOO. $PM_{2.5}$ and PM_{10} emissions scaled based on k factor from AP-42 Section Section 13.2.4.
Stockpile Erosion	10.70 lb-PM/day/acre 5.06 lb-PM_{10}/day/acre 0.77 lb-$PM_{2.5}$/day/acre	WV G-40C General Permit Guidance	G-40C Guidance based on emission factor given in Air Pollution Engineering Manual © 1992 pp. 136 & References. Includes material silt content (8%), number of precipitation days (157), and percent time wind speed exceeds 12 mph (20%). $PM_{2.5}$ and PM_{10} emissions scaled based on k factor from AP-42, Section 13.2.4.
Unpaved Haulroads & Mobile Work Areas	6.72 - 11.64 lb-PM/VMT 1.98 - 3.43 lb-PM_{10}/VMT 0.20 - 0.34 lb-$PM_{2.5}$/VMT	AP-42 Section 13.2.2 (11/06)	Based on mean truck/endloader weights (28 - 95 tons), percent silt in road surface (10%), and number of precipitation days (157).

Unless otherwise noted in the above table, the above emission factors represent uncontrolled emissions. For calculating controlled emissions, Greer applied, where applicable, control efficiencies to the uncontrolled emissions. The control efficiencies were generally taken from WV G-40C General Permit Guidance.

Emergency Generator

Emissions from the existing old grandfathered 4-stroke Cummins Model GGMB emergency generator were based on AP-42, Section 3.2. As the air/fuel ration was not known, Greer calculated the potential emissions based on the worst-case emission factors for a 4-Stroke engine (either lean or rich burn). Maximum hourly emissions were based on a calculated heat input of 0.34 mmBtu/hr and annual emissions were based on the unit operating a maximum of 500 hours per year.

Emissions Summary

Based on the above, the post-modification PTE of the Masontown Limestone Processing Plant is given in the following table:

Table 4: Facility-Wide Post-Modification PTE

Source	PM		PM_{10}		$PM_{2.5}$	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
No. 1 Mill	88.05	94.64	40.17	43.26	6.03	6.49
No. 2 Mill	30.50	43.60	14.52	20.76	2.18	3.11

Source	PM		PM_{10}		$PM_{2.5}$	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
Sand Plant	15.31	48.66	7.29	23.17	1.09	3.48
Bradley Mill	1.84	7.34	0.88	3.50	0.13	0.52
Stockpiles	8.03	35.15	3.82	16.74	0.57	2.51
Haulroads	118.29	113.12	34.86	33.33	3.52	3.36
Point Sources	135.70	194.24	62.86	90.69	9.43	13.60
Fugitive Sources	126.32	148.27	38.68	50.07	4.09	5.87
Facility Total →	***262.02***	***342.51***	***101.54***	***140.76***	***13.52***	***19.47***

(1) Does not include the minor amounts of pollutants associated with the emergency generator. These emissions are given under 4.1.9. of the draft permit.

Based on the confusing nature of the changes at the facility, it is not possible to reasonably and accurately determine the change in annual facility-wide PTE as a result of the after-the-fact and other modifications evaluated herein.

REGULATORY APPLICABILITY

The Masontown Limestone Processing Plant is subject to the following substantive state and federal air quality rules and regulations: 45CSR7, 45CSR13, and 40 CFR 60, Subpart OOO. The following will discuss the potential or actual regulatory applicability of rules to the emission units located at the facility.

45CSR7: To Prevent and Control Particulate Air Pollution from Manufacturing Process Operations

45CSR7 has three substantive requirements potentially applicable to the particulate matter-generating operations at the modified Masontown Limestone Processing Plant. These are the opacity requirements under Section 3, the mass emission standards under Section 4, and the fugitive emission standards under Section 5. Each of these sections will be discussed below.

45CSR7 Opacity Standards - Section 3

Section 3.1 sets an opacity limit of 20% on the limestone processing and handling equipment. As shown in Attachment I of the permit application (as incorporated in Table 1.0 of the draft permit), the limestone processing and handling equipment uses enclosures, baghouses, and water sprays to mitigate the emissions of particulate matter. These measures should, if maintained and operated correctly, allow the equipment and processes to operate in compliance with the 20% opacity limit.

45CSR7 Weight Emission Standards - Section 4

Section 4.1 of 45CSR7 requires that each manufacturing process source operation or duplicate source operation meet a maximum allowable "stack" particulate matter limit based on the weight of material processed through the source operation. As the limit is defined as a "stack" limit, the only applicable emission units (defined as a type 'a' sources) are those that vent to the baghouses. As all baghouses have a emission limit based on the outlet grain loading standard in 40 CFR 60, Subpart OOO, and the applicable emission units have high process weight rates, the emission units venting to them will easily meet the Section 4.1 standard.

45CSR7 Fugitive Emissions - Section 5

Sections 5.1 and 5.2 of Rule 7 states that each manufacturing process or storage structure must include a system to minimize the emissions of fugitive particulate matter. The use of various controls (where reasonable) on material transfer points, the use of a water truck on the haulroads, and the management of on-storage pile activity is considered a reasonable system of minimizing the emissions of fugitive particulate matter at the facility.

45CSR13: Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation

The proposed modifications of the Masontown Limestone Processing Plant have a (reasonably estimated) potential to increase particulate matter in excess of six (6) lbs/hour and ten (10) TPY of a regulated pollutant and, therefore, pursuant to §45-13-2.24, the changes are defined as a "modification" under 45CSR13. Pursuant to §45-13-5.1, "[n]o person shall cause, suffer, allow or permit the construction . . . and operation of any stationary source to be commenced without . . . obtaining a permit to construct." Therefore, Greer is required to obtain a permit under 45CSR13 for the modifications discussed herein.

As required under §45-13-8.3, Greer placed a Class I legal advertisement in a "newspaper of *general circulation* in the area where the source is . . . located." The ad ran on December 10, 2015 in *The Dominion Post* and the affidavit of publication for this legal advertisement was submitted on December 17, 2015.

45CSR14: Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration - (NON APPLICABILITY)

The Masontown Limestone Processing Plant is located in Monongalia County, WV. Monongalia County is classified as "in attainment" with all National Ambient Air Quality Standards and, therefore, as the facility is not a "listed source" under §45-14-2.43, the individual major source applicability threshold for all pollutants is 250 TPY. The calculation of facility-wide PTE to compare with this threshold does not include, pursuant to §45-14-2.43(e), fugitive emissions (defined at the Masontown Limestone Processing Plant as emissions generated from haulroads and stockpiles). As given in Table 4, the post-modification facility-wide PTE (excluding fugitive emissions) of the modified facility is less than 250 TPY. Therefore, the facility is not defined as a "major stationary source" under 45CSR14 and the rule does not apply.

45CSR30: Requirements for Operating Permits

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The Masontown Limestone Processing Plant, as limited by the draft permit, does not have a potential-to-emit of any regulated pollutant above any threshold listed under §45-30-2.26 and clarified (fugitive policy) under 45CSR30b that would define the facility as "major" under 45CSR30. However, as the facility is subject to a New Source Performance Standard (NSPS) - 40 CFR 60, Subpart OOO - pursuant to 45CSR30, the facility is subject to Title V. Non-major sources subject to Title V, pursuant to DAQ policy, are deferred from having to submit a Title V application.

40 CFR 60, Subpart OOO: Standards of Performance for Nonmetallic Mineral Processing Plants

Subpart OOO contains requirements relating to the performance of non-metallic mineral processing plants. The Masontown Limestone Processing Plant contains equipment that is applicable to Subpart OOO. The following discusses the substantive applicable requirements of Subpart OOO relating to the plant.

Subpart OOO Applicability - Section §60.670

Pursuant to §60.670, affected facilities under Subpart OOO include "each crusher, grinding mill, screening operation, bucket elevator, belt conveyor, bagging operation, storage bin, enclosed truck or railcar loading station" located at a "fixed or portable nonmetallic mineral processing plant[s]." "Non-metallic processing plant" is defined as "any combination of equipment that is used to crush or grind any nonmetallic mineral wherever located." The definition of "non-metallic mineral" includes limestone. Therefore, Subpart OOO will be applicable to the limestone handling operations at the Masontown Limestone Processing Plant.

Subpart OOO Standard for Particulate Matter - Section §60.672

Section §60.672 sets the following particulate matter standards for affected facilities under Subpart OOO:

Table 5: Subpart OOO Emission Standards

Reference	Affected Facility	Stack Emissions	
		Mass (gr/dscf)[1]	Opacity (%)
Table 2	Affected Facilities with Capture Systems (before April 22, 2008)	0.022	7
	Affected Facilities with Capture Systems (after April 22, 2008)	0.014	n/a
Table 3	Affected Facilities (non-crushers) w/out Capture Systems (before April 22, 2008)	n/a	10
	Affected Facilities (non-crushers) w/out Capture Systems (after April 22, 2008)	n/a	7

Reference	Affected Facility	Stack Emissions	
		Mass (gr/dscf)[1]	Opacity (%)
Table 3	Crushers without Capture System (before April 22, 2008)	n/a	15
	Crushers without Capture System (after April 22, 2008)	n/a	12
§60.672(d)	Truck Dumping	n/a	n/a
§60.672(e)	Affected Facilities inside a Building	Must meet Table 2 or Table 3 limits or building openings/vents must meet:	
	Building Openings	n/a	7
	Building Vents	Table 2 Limits	n/a
§60.672(f)	Enclosed Storage Bins w/ Baghouse	n/a	7

(1) Mass emission standard represents filterable emissions only (compliance test requires use of Method 5 or Method 17).

Greer has proposed particulate matter controls to minimize any potential fugitive emissions and comply with the requirements of Subpart OOO. It is important to note that the baghouse BH-145 which controls the proposed new screen SC-153 will be subject to the lower outlet baghouse limit. All other screens, including those refurbished at the facility, have been determined (based on information submitted by Greer) to be subject to the pre-2008 limits.

Subpart OOO Monitoring of Operations - Section §60.674

Section §60.674 requires monitoring for sources that control particulate matter with wet scrubbers. Greer has not proposed use of a wet scrubber for control of particulate matter in the limestone handling operations.

Subpart OOO Test Method and Procedures - Section §60.675

Section §60.675 outlines the test methods and procedures to determine initial compliance with the standards noted above including the use of Method 9 to determine compliance with the opacity limits. Greer will be required to follow these requirements to determine initial compliance with the emission standards.

Subpart OOO Reporting and Record-keeping - Section §60.676

Section §60.51a outlines the reporting and record-keeping requirements required to be followed to be in compliance with Subpart OOO. Greer will be required to follow these requirements.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the proposed Masontown Limestone Processing Plant and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x),

Ozone, Particulate Matter (PM_{10} and $PM_{2.5}$), and Sulfur Dioxide (SO_2). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY. No non-criteria regulated pollutants should be emitted, in any substantive amounts, from the Masontown Limestone Processing Plant.

AIR QUALITY IMPACT ANALYSIS

The estimated maximum emissions of the Masontown Limestone Processing Plant are less than applicability thresholds that would define the facility as "major" under 45CSR14 and, therefore, no air quality impacts modeling analysis was required. Additionally, based on the nature and location of the proposed source, an air quality impacts modeling analysis was not required under §45-13-7.

MONITORING, COMPLIANCE DEMONSTRATIONS, REPORTING, AND RECORDING OF OPERATIONS

The following substantive monitoring, compliance demonstration, and reporting, record-keeping requirements (MRR) are required in the draft permit:

- For the purposes of demonstrating continuous compliance with maximum throughput limitations set forth in 4.1.3. of the draft permit, Greer shall be required to monitor and record the monthly and rolling twelve month throughput of each material specified under Table 4.1.3. at the identified emission unit. For the purposes of demonstrating compliance with the maximum usage limits set forth in 4.1.9. of the draft permit, Greer shall be required to maintain monthly and rolling twelve month records of the hours of operation of the emergency generator;

- For the purpose of determining compliance with the fugitive dust control methods established in 4.1.8. of the draft permit, Greer shall be required to maintain a monthly record of the amount of water applied to the haulroads and plant areas by the water truck. Records shall be maintained on site for a period of five (5) years. Certified copies of these records shall be made available to the Director or his/her duly authorized representative upon request;

- Dust collector maintenance records shall maintained on site for a period of five (5) years. Certified copies of these records shall be made available to the Director or his/her duly authorized representative upon request; and

- All dust collector malfunctions must be documented in writing and records of these malfunctions maintained on site for a period of 5 years. At minimum the following information must be documented for each malfunction:

  a. The identity of the dust collector involved.
  b. The cause of malfunction.
  c. Steps taken to:
     (1) correct the malfunction.
     (2) minimize emissions during malfunction.
  d. The duration of the malfunction in hours.
  e. The estimated increase in emissions during the malfunction.
  f. Any changes/modifications made to equipment and/or procedures that will help prevent future recurrence of the malfunction.

PERFORMANCE TESTING OF OPERATIONS

The following substantive performance testing is required in the draft permit:

- During the performance testing required for BH-145 under §60.675 of Subpart OOO, Greer shall be required to determine the mass emission rates of PM, PM_{10}, and $PM_{2.5}$ from BH-145 so as to determine compliance with the emission limitations given under 4.1.4. of the draft permit. This performance test shall be conducted in accordance with 3.3. of the draft permit.

CHANGES TO PERMIT R13-1303D

Permit Number R13-1303G was completely re-written and uses the new boilerplate. It is completely different than R13-1303G.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that compliance with all applicable state and federal air quality regulations will be achieved. Therefore, I recommend to the Director the issuance of a Permit Number R13-1303G to Greer Limestone Company for the proposed modification of the Masontown Limestone Processing Plant located in Masontown, Monongalia County, WV.

Joe Kessler, PE
Engineer

2/17/16
Date