Louisville Metro Air Pollution Control District
701 West Ormsby Avenue, Suite 303
Louisville, Kentucky 40203-3137

September 30, 2019

Title V Statement of Basis

Source: Carbide Industries, LLC
4400 Bells Lane
Louisville, KY 40211

Owner: Carbide Industries, LLC
4400 Bells Lane
Louisville, KY 40211

Application Documents:	See Table 8	**Administratively Complete:**	12 Sept 2018
Draft Permit:	08 June 2019	**Proposed Permit:**	13 August 2019
Permitting Engineer:	Shannon Hosey	**Permit Number:**	O-0001-19-V
Plant ID: 0001	**SIC:** 2869	**NAICS:**	325188

Introduction:

This permit will be issued pursuant to: (1) Regulation 2.16, (2) Title 40 of the Code of Federal Regulations Part 70, and (3) Title V of the Clean Air Act Amendments of 1990. Its purpose is to identify and consolidate existing District and Federal air requirements and to provide methods of determining continued compliance with these requirements.

This permit action renews the Title V Operating Permit.

Jefferson County is classified as an attainment area for lead (Pb), nitrogen dioxide (NO_2), carbon monoxide (CO), particulate matter less than 10 microns (PM_{10}), and particulate matter less than 2.5 microns ($PM_{2.5}$). Jefferson County is classified as a nonattainment area for ozone (O_3). This facility is located in the portion of Jefferson County that is an attainment area for sulfur dioxide (SO_2).

Permit Application Type:

☐ Initial issuance

Permit Revision
- ☐ Administrative
- ☐ Minor
- ☐ Significant

☒ Permit renewal

Compliance Summary:

☒ Compliance certification signed
☐ Source is out of compliance
☐ Compliance schedule included
☒ Source is operating in compliance

I Source Information

1. Product Description: Carbide Industries, LLC manufactures calcium carbide in a semi-closed electric submerged-arc furnace.

2. Process Description: The company receives coke and lime by both rail-car and truck. These raw materials are processed and reacted in a 50 MW electric-arc furnace to produce calcium carbide. The calcium carbide is then processed and packaged for sale. Waste material is reacted on-site to produce acetylene gas which is burned in a flare. The calcium hydroxide residue from acetylene production is stored in large open pits on the site.

3. Site Determination: There are no other facilities that are contiguous or adjacent to this facility.

4. Emission Unit Summary:

Emission Unit	Equipment Description
U1- Lime Handling System	Receives lime shipments and conveys to storage
U2 – Coke Handling System	Receives coke shipments and conveys to storage
U3 – Charge Mix and Furnace	Transfers lime and coke from storage, mixes these components in desired proportions, and transfers the mix to the furnace. Removes product from furnace
U4 – Primary Crushing	Receives product from furnace operation. Begins crushing of raw calcium carbide, sorts crushed product, and routes it for further processing
U5 – Pack and Screen	Provides additional crushing and sorting of carbide and routes to appropriate packaging stations
U6 – Back End – Final Processing	Provides final processing for certain products and handles waste materials collected from baghouses
U7 – Desulphurization Operations	Blends calcium carbide with other materials to produce the desulphurization product and packages this product
U8 – Wet Generator	Completes processing of waste material collected in U6 by reacting this waste with water to produce acetylene gas
U9 – Dry Generator	Historic equipment retained by the plant but no longer in service
U10 – Acetylene Compression and Purification	Historic equipment retained by the plant but no longer in service
U11 – Fuel Storage	Gasoline storage for in-plant vehicles
U12 – Gas-Fired Boiler	Natural gas-fired boiler for building heat
U13 – Storm Water Neutralization	Facility for reducing the pH of storm-water runoff before release to storm water sewers
U14 – Tote Reconditioning	Facility for repainting of steel containers used to transport product
IA1 – Parts Cleaners	Two (2) cold solvent parts cleaners

5. **Fugitive Sources:** Fugitive emissions of VOCs and HAPs from Emission Points subject to 40 CFR Part 60 Subpart VV - Standards of Performance for Equipment Leaks of VOC in Synthetic Organic Chemical Manufacturing. Additional fugitive sources of PM subject to APCD Regulation 1.14.

6. **Permit Revisions:**

Revision No.	Permit No.	Issue Date	Public Notice Date	Change Type	Change Scope	Description
Initial	140-97-TV	09/28/01	12/24/00	Initial	Entire Permit	Initial Permit Issuance
1	140-97-TV (R1)	02/09/03	NA	Admin	Cover Page	Changed name of company, owner, and responsible official
2	140-97-TV (R2)	02/05/14	12/20/13	Renewal	Entire Permit	Title V Renewal Application Incorporating: • Construction Permit 101-05-C: Pneumatic transfer system • Construction Permit 102-05-C: Five new bin vent filters • Construction Permit 103-05-C: Coke storage bins, screen, and weigh belt • Construction Permit 104-05-C: Pneumatic transfer system Permit • Construction Permit 105-05-C: Fines storage bin and truck loading station • Construction Permit 101-07-C: Acetylene flare • RO Change 07/20/2007 & 12/03/2008 • Construction Permit 32752-11-C: Electric Arc Furnace Replacement
NA	O-0001-19-V	09/30/19	06/08/19	Renewal	Entire Permit	Title V Permit Renewal

7. **Permit Renewal-Related Documents**

Document Number	Date Received	Description
00094007	08/28/2018	Title V Renewal Application

8. Emission Summary:

Pollutant	District Calculated Actual Emissions (tpy) 2017 Data	Pollutant that triggered Major Source Status (based on PTE)
CO	439.13	Yes
NO_x	12.61	No
SO_2	6.83	No
PM_{10}	116.64	Yes
VOC	362.34	Yes
Total HAPs	0.28	No
Single HAP > 1 tpy	All individual HAPs < 1 tpy	No

9. Applicable Requirements:

[ ] PSD	[X] 40 CFR 60	[X] SIP	[X] 40 CFR 63
[ ] NSR	[ ] 40 CFR 61	[X] District-Origin	[ ] Other

10. Referenced MACT Federal Regulations:

40 CFR 63, Subpart YYYYYY – National Emission Standards for Hazardous Air Pollutants for Area Sources: Ferroalloy Production Facilities

11. Referenced non-MACT Federal Regulations:

40 CFR 60, Subpart Z - Standards of Performance for Ferroalloy Production Facilities

40 CFR 60, Subpart VV – Standards of Performance for Equipment Leaks of VOC in Synthetic Organic Chemical Manufacturing

II Regulatory Analysis

1. Acid Rain Requirements: Carbide Industries, LLC is not subject to the Acid Rain Program.

2. Stratospheric Ozone Protection Requirements: Title VI of the CAAA regulates ozone depleting substances and requires a phase-out of their use. This rule applies to any facility that manufactures, sells, distributes, or otherwise uses any of the listed chemicals. Carbide Industries, LLC does not manufacture, sell, or distribute any of the listed chemicals. The source's use of listed chemicals is that in fire extinguishers, chillers, air conditioners and other HVAC equipment.

3. **Prevention of Accidental Releases 112(r):** Carbide Industries, LLC does not manufacture, process, use, store, or otherwise handle one or more of the regulated substances listed in 40 CFR Part 68, Subpart F, and District Regulation 5.15, Chemical Accident Prevention Provisions, in a quantity in excess of the corresponding specified threshold amount.

4. **40 CFR Part 64 Applicability Determination:** Carbide Industries, LLC is not subject to 40 CFR Part 64 - *Compliance Assurance Monitoring for Major Stationary Sources*.

5. **Basis of Regulation Applicability**

a. **Plantwide**

i. Carbide Industries, LLC is a potential major source for the pollutant VOC, CO and PM_{10}. Regulation 2.16 – *Title V Operating Permits* establishes requirements for major sources.

ii. Regulations 5.00 5.20, 5.21, and 5.23 (STAR Program) establishes requirements for environmental acceptability of toxic air contaminants (TACs) and the requirement to comply with all applicable emission standards.

iii. Regulation 2.16, section 4.1.9.1 and 4.1.9.2 requires monitoring and record keeping to ensure ongoing compliance with the terms and conditions of the permit. The owner or operator shall maintain all the required records for a minimum of 5 years and make the records readily available to the District upon request.

iv. Regulation 6.43 establishes VOC emission limits for specific plants to effect a 15% county-wide VOC emission reduction from a 1990 baseline, as required by section 182(b)(1) of the Clean Air Act. Section 9 of the regulation sets a limit on VOC emissions of 6,400 pounds per day from the facility.

v. Carbide Industries, LLC submitted the TAC Environmental Acceptability (EA) Demonstration to the District on February 13, 2016 and January 9, 2016. Compliance with the STAR EA Goals was demonstrated in the source's EA Demonstrations. Based on SCREEN3 air modeling, the maximum off-site R_C and R_{NC} for all process/process equipment is less than 1.0. The source has demonstrated compliance with the EA Goals for each TAC. The company used uncontrolled potential for their model, therefore they do not have to have limits in their permit.

Emission Point	TAC	Risk (EAG_C)		HQ (EAG_{NC})	
		Non-Adjusted	Industrial	Non-Adjusted	Industrial
		$EAG_C \leq 1.0$	$EAG_C \leq 10.0$	$EAG_{NC} \leq 1.0$	$EAG_{NC} \leq 3.0$
U4-U8	Arsenic and arsenic compounds	0.2083	0.7997	0.0032	0.0123
U3	Benz[a]anthracene	0.0091	0.0423	-	-
U3	Benzo[a]pyrene	0.00091	0.392	-	-
U3	Indeno[1,2,3-cd]pyrene	0.0091	0.0423	-	-
U3	Benzo[b]fluoranthene	0.0091	0.0423	-	-
U3	Benzo[j]fluoranthene	0.0091	0.0423	-	-
U3	Benzo[k]fluoranthene	0.0091	0.0423	-	-
Plantwide R_C for all Processes:		0.2547 (≤ 7.5)	1.4032 (≤ 75)		
R_{NC} for all Processes:				Arsine 0.0032	Arsine 0.0123

Regulation	Basis for Applicability
1.14	Control of Fugitive Particulate Emissions
2.05	Prevention of Significant Deterioration of Air Quality
5.00	Establishes definitions of terms used in the Strategic Toxic Air Reduction Program
5.01	Establishes general provisions for process equipment from which a toxic air contaminant is or may be emitted
5.02	Adopts and Incorporates by Reference of National Emission Standards for Hazardous Air Pollutants
5.15	Chemical Accident Prevention Provisions
5.20	Establishes the methodology for determining the benchmark ambient concentration of a toxic air contaminant
5.21	Establishes the criteria for determining the environmental acceptability of emissions of toxic air contaminants
5.22	Establishes the procedures for determining the maximum ambient concentration of a toxic air contaminant
5.23	Establishes categories of toxic air contaminants
6.09	Applies to each process operation that is not otherwise regulated by any other portion of Regulation 6 and was in existence or had a construction permit issued by the District by September 1, 1976
6.10	Provides for the control of emissions from process gas streams at existing facilities.
6.13	Applies to each affected facility which means each storage vessel for volatile organic compounds which was in being or commenced construction, modification, or reconstruction on or before April 19, 1972, and that has a storage capacity greater than 250

Regulation	Basis for Applicability
	gallons and true vapor pressure of the VOCs as stored equal to or greater than 78 mm Hg (15 psia)
6.15	Applies to the transfer of volatile organic compounds from transport vehicle tanks into storage tanks at service stations and the equipment involved therein
6.18	Applies to cold cleaners
6.43	Volatile Organic Compound Emission Reduction Requirements
7.06	Applies to each indirect heat exchanger having input capacity of more than one million BTU per hour commenced after September 1, 1976
7.08	Applies to equipment installed after September 1, 1976 subject to the PM emission standard
7.09	Provides for the control of emissions in new process gas streams.
7.59	Applies to a coating line located at job shops and original equipment manufacturing industries that applies coatings on a metal substrate and commenced on or after May 20, 1981
40 CFR 60 Subpart A	General Provisions
40 CFR 60 Subpart Z	Standards of Performance for Ferroalloy Production Facilities
40 CFR 60 Subpart VV	Standards of Performance for Equipment Leaks of VOC in Synthetic Organic Chemical Manufacturing
40 CFR 63 Subpart A	Regulates specific categories of stationary sources that emit (or have the potential to emit) one or more hazardous air pollutants
40 CFR 63 Subpart YYYYYY	National Emission Standards for Hazardous Air Pollutants for Area Sources: Ferroalloys Production Facilities – using calcium carbide with electric arc furnace

b. **PSD Avoidance – NSR Pollutants**

A new electric-arc furnace was installed and became operational in March 2013. At that time certain production limits were established to avoid PSD regulations per Construction Permit 323752-11-C, effective 07/06/2011.

i. **CO**

The uncontrolled potential-to-emit for carbon monoxide for the new furnace exceeds the significance level of 100 tons increase over the maximum emission level of the last ten years. Carbide Industries has elected to accept a limit on production to ensure that net emission of carbon monoxide does not increase above the significance level. Emission of carbon monoxide is directly related to calcium carbide production and CO destruction efficiency at the flare and coke dryer burner.

Based on the chemical reaction by which calcium carbide is produced, CO production is 875 pounds per ton of carbide. However, some of this CO is destroyed before it leaves the oven

and some additional CO is produced through reactions involving impurities in the raw materials. The company has demonstrated that the production rate is 848 $lb_{CO}/ton_{carbide}$. This yields a maximum production rate of 126,887 tons of carbide per year to avoid PSD regulations. Should the company provide adequate documentation to demonstrate a different destruction efficiency or other CO emission factor, this production limit will be adjusted.

ii. **SO_2**

The emission factor for SO_2 is a function of the sulfur content of the coke which is a raw material for calcium carbide production. This is limited in the previous permit to less than 3%, but in practice the company limits sulfur to about 1% (as borne out by historical records) to maintain the quality of their product.

This scrubber is in place principally for control of particulates. However, much of the particulate in the gas stream is CaO, which remains suspended in the process water and reacts with the SO_2 to remove it from the exhaust stream. This removal efficiency was measured as part of the startup testing of the furnace and control equipment, in December 2012, and found to be 76.5%. Calculations show that with this measured control efficiency, with sulfur content of the coke limited to 2.0%, and production limited to the same carbide mass as the CO limit (126,887 tons of carbide per year), the SO_2 significant impact level for PSD action cannot be exceeded. This limit is incorporated in the permit.

c. **Emission Unit U1 –** Lime Handling System

i. **Equipment:**

Emission Point	Description	Install Date	Applicable Regulation
E001	Unloading hopper with vibrating feeder	1968	1.14, 7.08
E002	Belt conveyor	1968	7.08
E003	Bucket elevator	1968	7.08
E004	Lime Storage Bin #1	1968	7.08
E005	Lime Storage Bin #2	1968	7.08

ii. **Standards/Operating Limits**

1) **Opacity**

Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%.

2) **$PM/PM_{10}/PM_{2.5}$**

(a) Regulation 1.14 set forth emission standards for fugitive emissions.

(b) Regulation 7.08, Table 1, PM standards are determined by the following equations:

$E = 2.34$ if $P <= 0.50$ tons/hr
$E = 3.59(P)^{0.62}$ if $P <= 30$ tons/hr
$E = 17.31(P)^{0.16}$ if $P > 30$ tons/hr

d. **Emission Unit U2 –** Coke Handling Unit

i. **Equipment:**

Emission Point	Description	Install Date	Applicable Regulation
E008	Coke ground pile	1968	1.14
E009	Coke grade hopper	1968	6.09
E010	Dryer feed belt conveyor	1968	6.09
E012	Coke dryer	1968	6.09, 6.10
E012A	Transfer point conveyor to coke dryer	1968	6.09
E013	Dryer discharge hopper	1968	6.09
E014	Hopper belt conveyor	1968	6.09
E015	Bucket elevator	1968	6.09
E016	Screen	2005	7.08
E017	Pneumatic transfer system	2005	7.08
E018	Fines storage bin	2005	7.08
E019	East storage bin	2005	7.08
E020	West storage bin	2005	7.08
E021	Fines truck-loading station	2005	7.08
E022	Fines weigh belt	2005	7.08
E023	East bin weigh belt	1968	6.09
E024	West bin weigh belt	1968	6.09

ii. **Standards/Operating Limits**

1) **CO**

Regulation 6.10, section 4 establishes CO emission limits for process gas streams.

2) **NO_X**

Regulation 6.10, section 4 establishes NO_X emission limits for process gas streams.

3) **Opacity**

Regulation 6.09, section 4 and Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%.

4) **PM/PM_{10}/$PM_{2.5}$**

(a) Regulation 1.14 sets forth emission standards and required control measures for fugitive emissions.

(b) Regulation 6.09, Table 1, PM standards are determined by the following equations:

$E = 2.58$	if P <= 0.50 tons/hr
$E = 4.10(P)^{0.67}$	if P <= 30 tons/hr
$E = (55(P)^{0.11}) - 40$	if P > 30 tons/hr

(c) Regulation 7.08, Table 1, PM standards are determined by the following equations:

$E = 2.34$	if P <= 0.50 tons/hr
$E = 3.59(P)^{0.62}$	if P <= 30 tons/hr
$E = 17.31(P)^{0.16}$	if P > 30 tons/hr

5) **SO_2**

Regulation 6.10, section 4 establishes SO_2 emission limits for process gas streams.

e. **Emission Unit U3 –** Charge Mix and Furnace

i. **Equipment:**

Emission Point	Description	Applicable Regulation
E025	Lower feed belt	6.09
E026	Upper feed belt	6.09
E027	Vibratory conveyor	7.08
E028	9 Charge bins	7.08
E029	9 Charge chutes	7.08
E030	Electrode casing assembly	---[1]
E031	Furnace	2.05, 7.08, 7.09, 40 CFR 60 Subpart Z, 40 CFR 63 Subpart 6Y, STAR
E032	3 Tap holes	7.08, 40 CFR 60 Subpart Z, 40 CFR 63 Subpart 6Y, STAR

ii. **Standards/Operating Limits**

1) **CO**

(a) Regulation 7.09 establishes CO limits for process gas streams that contain this gas.

(b) To ensure CO emissions do not increase above the significant impact level for PSD, a maximum calcium carbide production limit was established.

(c) Carbon monoxide production is directly related to carbide production, insuring that the limit cannot be exceeded, so long as the additional requirement of CO incineration is met. The requirement for burning this exhaust gas is further established in 40 CFR 60, subpart Z.

2) **HAP (Opacity)**

Federal regulation 40 CFR 63, subpart YYYYYY sets forth control-device characteristics for HAP.

[1] No air emissions from this activity.

3) **Opacity**

Regulation 6.09, section 4 and Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%.

4) **PM/PM_{10}**

(a) Regulation 6.09, Table 1, PM standards are determined by the following equations:

$E = 2.58$ if $P <= 0.50$ tons/hr
$E = 4.10(P)^{0.67}$ if $P <= 30$ tons/hr
$E = (55(P)^{0.11}) - 40$ if $P > 30$ tons/hr

(b) Regulation 7.08, Table 1, PM standards are determined by the following equations:

$E = 2.34$ if $P <= 0.50$ tons/hr
$E = 3.59(P)^{0.62}$ if $P <= 30$ tons/hr
$E = 17.31(P)^{0.16}$ if $P > 30$ tons/hr

5) **SO_2**

(a) Regulation 7.09 establishes SO_2 limits for process gas streams that contain this gas.

(b) To avoid regulation 2.05 PSD restrictions, a maximum sulfur content for the coke used in the process was established along with annual carbide production limits to ensure that SO_2 emissions would not increase above the established significant impact level of 40 tpy.

f. **Emission Unit U4 –** Primary Crushing

i. **Equipment:**

Emission Point	Description	Applicable Regulation
E033	Chill molds/grillage	6.43, STAR
E034 E035	Crusher box #1 Crusher box #2	6.09, 6.43, STAR
E036 E037	Primary crusher #1 Primary crusher #2	6.09, 6.43, STAR
E038 E039	North conveyor (Unit #1a) South conveyor (Unit #1b)	6.09, 6.43, STAR
E040	Unit #2 Conveyor	6.09, 6.43, STAR

Emission Point	Description	Applicable Regulation
E041 E042	North crusher (Unit #3a) South crusher (Unit #3b)	6.09, 6.43, STAR
E043 E044	North bucket elevator (Unit #4a) South bucket elevator (Unit #4b)	6.09, 6.43, STAR
E045 E046	North screen (Unit #5a) South screen (Unit #5b)	6.09, 6.43, STAR
E047 E048	North bucket elevator (Unit #9a) South bucket elevator (Unit #9b)	6.09, 6.43, STAR
E049	Louisville bin	6.09, 6.43, STAR
E050	Receiving bin from C6	6.43, STAR
E051	Receiving bin from cyclone	6.43, STAR

ii. **Standards/Operating Limits**

1) **Opacity**

Regulation 6.09, Section 4 establishes an opacity standard of less than 20%.

2) **$PM/PM_{10}/PM_{2.5}$**

Regulation 6.09, Table 1, PM standards are determined by the following equations:

$E = 2.58$ if $P <= 0.50$ tons/hr
$E = 4.10(P)^{0.67}$ if $P <= 30$ tons/hr
$E = (55(P)^{0.11}) - 40$ if $P > 30$ tons/hr

g. **Emission Unit U5 –** Pack and Screen

i. **Equipment:**

Emission Point	Description	Applicable Regulation
E052	Apron conveyor #13	6.09, 6.43, STAR
E053	Unit #14 bucket elevator	6.09, 6.43, STAR
E054	Unit #14A bucket elevator	6.09, 6.43, STAR
E055	Cooling Bin	6.09, 6.43, STAR
E056	Louisville Belt Conveyor	6.09, 6.43, STAR
E057	Cooling Bin Oil Screw Conveyor	1.14, 6.09, 6.43, STAR
E058	Unit #12 bucket elevator	6.09, 6.43, STAR
E059	Unit #16 screen (2x1/ Nut Screen)	6.09, 6.43, STAR

Emission Point	Description	Applicable Regulation
E060	18A Magnetic Belt Conveyor	6.09, 6.43, STAR
E061	18B Magnetic Belt Conveyor FEP	6.09, 6.43, STAR
E062	Conveyor 18C	6.09, 6.43, STAR
E063	Conveyor 40A	1.14, 6.09, 6.43, STAR
E064	Conveyor 40B	1.14, 6.09, 6.43, STAR
E065	Unit 22 bucket elevator	6.09, 6.43, STAR
E066	#20 Magnetic Belt Conveyor	6.09, 6.43, STAR
E067	Unit #21 crusher	1.14, 6.09, 6.43, STAR
E068	Unit #23 screen (Miner's screen)	6.09, 6.43, STAR
E069	#25A Magnetic Belt Conveyor	6.09, 6.43, STAR
E070	#25B Magnetic Belt Conveyor	6.09, 6.43, STAR
E071	Unit #29 – 9" Screw Conveyor	1.14, 6.09, 6.43, STAR
E072	Unit #29A – 9" Screw Conveyor	1.14, 6.09, 6.43, STAR
E073	Miner's Screw	1.14, 6.09, 6.43, STAR
E074	Quarter Oil Screw Conveyor	1.14, 6.09, 6.43, STAR
E075	Unit #27 crusher (Quartermaker)	6.09, 6.43, STAR
E076	Transfer screw	6.09, 6.43, STAR
E077	Unit #34 conveyor	6.09, 6.43, STAR
E078	Unit #31 Bucket Elevator	6.09, 6.43, STAR
E079	Unit #32 Screw Conveyor	1.14, 6.09, 6.43, STAR
E080	Unit #33 screen (Rice screen)	6.09, 6.43, STAR
E081	Cooling bin load-out	1.14, 6.09, 6.43, STAR
E083	Quarter bag bin bucket elevator	6.09, 6.43, STAR
E084	Unit #37 Screw Conveyor	1.14, 6.09, 6.43, STAR
E085	14ND Oil Screw	1.14, 6.09, 6.43, STAR
E088	Unit #34A Belt conveyor	6.09, 6.43, STAR
E089	Unit #40C Conveyor	1.14, 6.09, 6.43, STAR
E090	Unit #35 Bucket elevator	6.09, 6.43, STAR
E091	Unit #36 Bucket elevator	6.09, 6.43, STAR
E092	Nut screw	1.14, 6.09, 6.43, STAR
E093	Nut vibrator, South bulk load	6.09, 6.43, STAR
E094	Nut vibrator, Track 2 bulk load	6.09, 6.43, STAR
E095	Quarter vibrator, south bulk load	6.09, 6.43, STAR
E096	Quarter vibrator, Track 2 bulk load	6.09, 6.43, STAR
E098	Universal bin	6.09, 6.43, STAR
E099	Universal Bin Vibratory feeder	1.14, 6.09, 6.43, STAR
E100	Universal Bin Container Pack	6.09, 6.43, STAR

Emission Point	Description	Applicable Regulation
E101	Universal Bin Drum Pack	1.14, 6.09, 6.43, STAR
E103	2x1 Tramp Iron bin	1.14, 6.09, 6.43, STAR
E104	2x1 Tramp Iron load-out	1.14, 6.09, 6.43, STAR
E105	Nut Tramp Iron bin	1.14, 6.09, 6.43, STAR
E106	Nut Tramp Iron load-out	1.14, 6.09, 6.43, STAR
E107	2x1 Surge hopper	6.09, 6.43, STAR
E108	OT Nut surge hopper	6.09, 6.43, STAR
E110	Miner's Screw load-out	1.14, 6.09, 6.43, STAR
E111	Quarter Tramp Iron bin	1.14, 6.09, 6.43, STAR
E112	Quarter Tramp Iron load-out	1.14, 6.09, 6.43, STAR
E114	Miners Container Pack load-out	1.14, 6.09, 6.43, STAR
E117	Rice Bin (2.5 ton)	6.09, 6.43, STAR
E118	Rice Bin load-out	1.14, 6.09, 6.43, STAR
E119	16x80 Bin (2.5 ton)	6.09, 6.43, STAR
E120	16x80 Bin load-out	1.14, 6.09, 6.43, STAR
E121	14ND Bin (5.5 ton)	6.09, 6.43, STAR
E122	14ND Bin load-out	1.14, 6.09, 6.43, STAR
E123	Unit #38 Bag Bin (25 tons)	6.09, 6.43, STAR
E124	Bag Bin Container pack	1.14, 6.09, 6.43, STAR
E125	Bag Bin Drum pack	6.09, 6.43, STAR
E126	40C hopper (6 tons)	1.14, 6.09, 6.43, STAR
E127	40C load-out	1.14, 6.09, 6.43, STAR
E128	Unit #45 - Nut bin (100 ton)	6.09, 6.43, STAR
E129	Unit #49 Quarter bin (100 ton)	6.09, 6.43, STAR
E130	Unit #48 South bulk load weigh bin	6.09, 6.43, STAR
E131	South bulk load chute	1.14, 6.09, 6.43, STAR
E132	Unit #52 Track #2 weigh bin	6.09, 6.43, STAR
E133	Track #2 load chute	1.14, 6.09, 6.43, STAR

ii. **Standards/Operating Limits**

1) **Opacity**

Regulation 6.09, section 4 establishes an opacity standard of less than 20%.

2) **$PM/PM_{10}/PM_{2.5}$**

(a) Regulation 1.14 set forth emission standards and

required control measures for fugitive emissions.

(b) Regulation 6.09, Table 1, PM standards are determined by the following equations:

$E = 2.58$ if $P <= 0.50$ tons/hr
$E = 4.10(P)^{0.67}$ if $P <= 30$ tons/hr
$E = (55(P)^{0.11}) - 40$ if $P > 30$ tons/hr

h. **Emission Unit U6 –** Back End – Final processing and handles waste materials collected

i. **Equipment:**

Emission Point	Description	Applicable Regulation
E134	Louisville conveyor	1.14, 6.09, 6.43, STAR
E136	Track 3 rail loading	1.14, 6.09, 6.43, STAR
E141	Bin #6 – Wet Generator	6.09, 6.43, STAR
E142	Bin #5 – Wet generator	6.09, 6.43, STAR
E143	Bin #4	1.14, 6.09, 6.43, STAR
E144	Bin #3	1.14, 6.09, 6.43, STAR
E145	Bin #2 – Ball mill	6.09, 6.43, STAR
E146	Bin #1 – Ball mill	6.09, 6.43, STAR
E147	East elevator	1.14, 6.09, 6.43, STAR
E148	West elevator	1.14, 6.09, 6.43, STAR
E149	Hood flop gate	6.09, 6.43, STAR
E150	#1 Mill	1.14, 6.09, 6.43, STAR
E151	#2 Mill	1.14, 6.09, 6.43, STAR
E152	#1 Screw conveyor	1.14, 6.09, 6.43, STAR
E153	#2 Screw conveyor	1.14, 6.09, 6.43, STAR
E154	#3 Screw conveyor	1.14, 6.09, 6.43, STAR
E155	Calvert City belt conveyor	1.14, 6.09, 6.43, STAR
E156	Undercar conveyor	1.14, 6.09, 6.43, STAR
E157	Silo	1.14, 6.09, 6.43, STAR
E158	Vibratory feeder @ silo	1.14, 6.09, 6.43, STAR
E159	Silo elevator	1.14, 6.09, 6.43, STAR
E163	Calvert City RR hopper	1.14, 6.09, 6.43, STAR
E164	Vibratory feeder @ Calvert City hopper	1.14, 6.09, 6.43, STAR

ii. **Standards/Operating Limits**

1) **Opacity**

Regulation 6.09, section 4 establishes an opacity standard of less than 20%.

2) **$PM/PM_{10}/PM_{2.5}$**

(a) Regulation 1.14 set forth emission standards and required control measures for fugitive emissions.

(b) Regulation 6.09, Table 1, PM standards are determined by the following equations:

$E = 2.58$ if $P <= 0.50$ tons/hr
$E = 4.10(P)^{0.67}$ if $P <= 30$ tons/hr
$E = (55(P)^{0.11}) - 40$ if $P > 30$ tons/hr

i. **Emission Unit U7 –** Desulfurization Operations

i. **Equipment:**

Emission Point	Description	Applicable Regulation
E165	CaC2 Container #1	1.14, 6.43, 7.08, STAR
E166	CaC2 Container #2	1.14, 6.43, 7.08, STAR
E167	CaC2 Transporter	1.14, 6.43, 7.08, STAR
E168	Carbide bin	1.14, 6.43, 7.08, STAR
E169	Carbide feedscrew	1.14, 6.43, 7.08, STAR
E170	C Stand lime bin	1.14, 6.43, 7.08, STAR
E171	D Stand lime bin	1.14, 6.43, 7.08, STAR
E172	Ball mill	1.14, 6.43, 7.08, STAR
E173	Additive feedscrew	1.14, 6.43, 7.08, STAR
E174	Mixer bin	6.43, 7.08, STAR
E175	Elevator	6.43, 7.08, STAR
E176	Sizing screen	1.14, 6.43, 7.08, STAR
E177	Loading screw	6.43, 7.08, STAR
E178	Shipping vessel loading (1)	1.14, 6.43, 7.08, STAR
E179	Oversize return bin	1.14, 6.43, 7.08, STAR
E180	First loading screw	1.14, 6.43, 7.08, STAR
E181	Holding bin	1.14, 6.43, 7.08, STAR
E182	Shipping vessel loading (2)	1.14, 6.43, 7.08, STAR

Emission Point	Description	Applicable Regulation
E183	Second loading screw	6.43, 7.08, STAR
E184	Shipping vessel loading (3)	1.14, 6.43, 7.08, STAR
E185	Transporter fill station	1.14, 6.43, 7.08, STAR
E186	E Stand	1.14, 6.43, 7.08, STAR
E187	#7 bin	6.43, 7.08, STAR
E188	Screw conveyor from bin #7	1.14, 6.43, 7.08, STAR
E189	Container loading station	1.14, 6.43, 7.08, STAR

ii. **Standards/Operating Limits**

1) **Opacity**

Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%.

2) **PM/PM_{10}/$PM_{2.5}$**

(a) Regulation 1.14 set forth emission standards for fugitive emissions.

(b) Regulation 7.08, Table 1, PM standards are determined by the following equations:

$E = 2.34$ if $P <= 0.50$ tons/hr
$E = 3.59(P)^{0.62}$ if $P <= 30$ tons/hr
$E = 17.31(P)^{0.16}$ if $P > 30$ tons/hr

j. **Emission Unit U8 –** Wet Generator

i. **Equipment:**

Emission Point	Description	Applicable Regulation
E192	Dense phase pneumatic conveyor	1.14, 6.09, 6.43, STAR
E193	Elevator	6.09, 6.43, STAR
E194	Batch hopper	1.14, 6.09, 6.43, STAR
E195	Purge hopper	1.14, 6.09, 6.43, STAR
E196	Feed hopper	1.14, 6.09, 6.43, STAR
E197	Wet generator feed screw	1.14, 6.09, 6.43, 40 CFR 60 Subpart VV, STAR
E198	Wet generator	6.09, 6.43, 40 CFR 60 Subpart VV, STAR

Emission Point	Description	Applicable Regulation
E199	Cooling tower	6.09, 6.43, STAR
E200	Acetylene holding tank	6.09, 6.39, 6.43, 40 CFR 60 Subpart VV, STAR
E201	Recuperator	6.09, 6.43, 40 CFR 60 Subpart VV, STAR
E202	Hydrate slurry pit	6.09, 6.43, STAR
E203	160 foot Thickener tank	6.09, 6.43, 40 CFR 60 Subpart VV, STAR
E204	North 90 Thickener tank	6.09, 6.43, 40 CFR 60 Subpart VV, STAR

ii. **Standards/Operating Limits**

1) **Opacity**

Regulation 6.09, section 4 establishes an opacity standard of less than 20%.

2) **PM/PM_{10}/$PM_{2.5}$**

(a) Regulation 1.14 set forth emission standards and required control measures for fugitive emissions.

(b) Regulation 6.09, Table 1, PM standards are determined by the following equations:

$E = 2.58$ if $P <= 0.50$ tons/hr
$E = 4.10(P)^{0.67}$ if $P <= 30$ tons/hr
$E = (55(P)^{0.11}) - 40$ if $P > 30$ tons/hr

3) **VOC**

The wet generator meets the definition of "process equipment" in 40 CFR 60.481. Therefore, the requirements of this regulation with respect to leak detection and monitoring apply to equipment which is part of the wet generator.

k. **Emission Unit U9 –** Dry Generator

This equipment is still present on the permittee's property but has been rendered inoperable. This heading is retained for reference.

l. **Emission Unit U10 –** Acetylene Compression and Purification

This equipment is still present on the permittee's property but has been rendered inoperable. This heading is retained for reference.

m. **Emission Unit U11 –** Fuel Storage

i. **Equipment:**

Emission Point	Description	Install Date	Applicable Regulation
E205	Gasoline Storage Tank (550 gal)	Prior to 1978	6.13, 6.15, 6.43, STAR

ii. **Standards/Operating Limits**

VOC

(a) Regulation 6.13 establishes work practice standards for the gasoline storage tank.

(b) Regulation 6.15 establishes requirements for the transfer of fuel into storage tanks.

n. **Emission Unit U12 –** Gas Fired Boiler

i. **Equipment:**

Emission Point	Description	Install Date	Applicable Regulation
E208	Gas-Fired Boiler, rated at 3.3 MMBtu/hr maximum heat input. Fueled by either natural gas or carbon monoxide.	1978	7.06, STAR

ii. **Standards/Operating Limits**

1) **$PM/PM_{10}/PM_{2.5}$**

The emission standard for PM is determined in accordance with Regulation 7.06, section 4.1.4.

2) **Opacity**

Regulation 7.06, section 5.1.1 establishes an opacity standard of less than 20%.

3) **SO_2**

The emission standard for SO_2 is determined in accordance with Regulation 7.06, section 5.1.1.

o. **Emission Unit U13 –** Storm Water Neutralization

i. **Equipment:**

Emission Point	Description	Install Date	Applicable Regulation
E209	Storm water treatment plant	1997	STAR

p. **Emission Unit U14 –** Tote Reconditioning

i. **Equipment:**

Emission Point	Description	Applicable Regulation
E210	Shot blast equipment	1.14, 7.08, STAR
E211	Spray paint booth	7.59, STAR

ii. **Standards/Operating Limits**

1) **Opacity**

Regulation 7.08, section 3.1.1 establishes an opacity standard of less than 20%.

2) **PM/PM_{10}/$PM_{2.5}$**

(a) Regulation 1.14 set forth emission standards for fugitive emissions.

(b) Regulation 7.08, Table 1, PM standards are determined by the following equations:

$E = 2.34$ if $P <= 0.50$ tons/hr
$E = 3.59(P)^{0.62}$ if $P <= 30$ tons/hr
$E = 17.31(P)^{0.16}$ if $P > 30$ tons/hr

3) **VOC**

Per Regulation 7.59, section 3.1. the VOC content of the paints applied shall not exceed:

(a) 3.5 lb/gal for air-dry and extreme performance coatings;

(b) 3.0 lb/gal for all other base-coat material;

(c) 4.3 lb/gal for clearcoat materials.

q. **Emission Unit UIA1 –** Cold Solvent Parts Cleaners

i. **Equipment:**

Emission Point	Description	Applicable Regulation
IA1	Two (2) Cold Solvent Parts Cleaners	6.18

ii. **Standards/Operating Limits**

1) **VOC**

The parts washers under this unit meet the definition of insignificant activities per Regulation 2.16, section 1.23. However, Regulation 6.18 applies to each cold cleaner that use VOC to remove soluble impurities from metal surfaces. Regulation 6.18 establishes standards for cold cleaner that use VOCs to remove soluble impurities from metal surfaces.

III Other Requirements

1. Temporary Sources: The source did not request to operate any temporary facilities.

2. Short Term Activities: The source did not report any short term activities.

3. Emissions Trading: N/A

4. Alternative Operating Scenarios: The source did not request any alternative operating scenarios.

5. Calculation Methodology or Other Approved Method:

The emission calculations for the various pieces of equipment are derived from stack test results, AP-42 emission factors, EPA guidance documents, mass balances and engineering judgments.

6. Insignificant Activities

Equipment	Quantity	PTE (tpy)	Regulation Basis
Storage of lubricating oils or fuel oils with a vapor pressure of less than 10 mm Hg at conditions of 20 oC and 760 mm of Hg.	2	1.25 tpy VOC	Regulation 1.02, Appendix A 3.9.2

Equipment	Quantity	PTE (tpy)	Regulation Basis
Diesel or fuel oil storage tanks that are not used for distribution, sale or resale, and that have less than two times the capacity of the vessel in annual turnover of the fluid contained.	1	0.01 tpy VOC	Regulation 1.02, Appendix A 3.25
0.3 MMBtu/hr natural gas commercial service boiler	1	0.08 tpy NOX	Regulation 1.02, Appendix A 1.1
Natural Gas (NG-fired heaters for bldg heat, on "commercial svc")	4	0.12 tpy NOX	Regulation 1.02, Appendix A 1.2
Laboratory ventilating and exhausting systems which are not used for radioactive air contaminants.	1	0.41 tpy VOC	Regulation 1.02, Appendix A 3.11
Portable compression engines equipped with water pumps	3	0.78 tpy NOx	Regulation 1.02, Appendix A 2

1) Insignificant activities identified in District Regulation 1.02, Appendix A, may be subject to size or production rate disclosure requirements pursuant to Regulation 2.16, section 3.5.4.1.4.

2) Insignificant activities identified in District Regulation 1.02, Appendix A shall comply with generally applicable requirements as required by Regulation 2.16, section 4.1.9.4.

3) The Insignificant Activities Table is correct as of the date the permit was proposed for review by U.S. EPA, Region 4.

4) The owner or operator shall submit an updated list of insignificant activities that occurred during the preceding year pursuant to Regulation 2.16, section 4.3.5.3.6.

5) The owner or operator may elect to monitor actual throughputs for each of the insignificant activities and calculate actual annual emissions, or use Potential to Emit (PTE) to be reported on the annual emission inventory.

6) The District has determined pursuant to Regulation 2.16, section 4.1.9.4 that no monitoring, record keeping, or reporting requirements apply to the insignificant activities listed, except for the equipment that has an applicable regulation and permitted under an insignificant activity (IA) unit.