



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



Federally Enforceable District Origin Operating Permit (FEDOOP)

Permit No.: O-0465-16-F

Plant ID: 0465

Effective Date: XXXX

Expiration Date: XXXX

Permission is hereby given by the Louisville Metro Air Pollution Control District to operate the process(es) and equipment described herein which are located at:

Owner/Source: Universal Minerals Kentucky, Inc.
 8250 Port Road
 Louisville, Kentucky 40258

The applicable procedures of District Regulation 2.17 regarding review by the U.S. EPA and public participation have been followed in the issuance of this permit. Based on review of the application on file with the District, permission is given to operate under the conditions stipulated herein. If a renewal permit is not issued prior to the expiration date, the owner or operator may continue to operate in accordance with the terms and conditions of this permit beyond the expiration date, provided that a complete renewal application is submitted to the District no earlier than twelve (12) months and no later than ninety (90) days prior to the expiration date.

Emission limitations to qualify for non-major status:

Pollutant: PM₁₀
 Tons/year: < 25

Application No.:	12933	Application Received:	7/31/2006
	57182		7/11/2013
	71842		2/28/2015
	71424		5/21/2015

Permit Writer: Elise Venard

Date of Public Notice: 05/07/2016

{Manager1}
 Air Pollution Control Officer
 {date1}

TABLE OF CONTENTS

FEDOOP Permit Revisions/Changes..... 3

Construction Permit History: 3

Abbreviations and Acronyms 4

Preamble 5

General Conditions 6

Emission Unit: Plant-wide 10

 Plant-wide Applicable Regulations: 10

 Plant-wide Specific Conditions..... 11

Emission Unit U1: Production/Processing Equipment 14

 U1 Applicable Regulations: 14

 U1 Equipment: 14

 U1 Control Devices: 15

 U1 Specific Conditions 16

Emission Unit U2: Equipment with C-I Engines..... 21

 U2 Applicable Regulations: 21

 U2 Equipment: 21

 U2 Specific Conditions 22

Insignificant Activities 25

Idled Equipment: 27

Fee Comment 27

Attachment A - Stack Performance Testing 28

Attachment B - 40 CFR Part 63 Subpart ZZZZ..... 30

Attachment C - Protocol Checklist for a Performance Test 33

FEDOOP Permit Revisions/Changes

Revision No.	Permit No.	Issue Date	Public Notice Date	Change Type	Change Scope	Description
Initial	0080-01-F	11/05/2001	6/03/2001	Initial	Entire Permit	Initial Permit Issuance
NA	O-0465-16-F	XXXX	5/7/2016	Renewal	Entire Permit	Permit renewal to include the incorporation of construction permits and STAR exempt status

Construction Permit History:

Permit No.	Issue Date	Description
442-07-C	8/31/2008	Construction permit for load-out station
C-0465-1004	TBD	Powerscreen Chieftain aggregate sorting screen (200 tph) with diesel engine (66.2 hp)

Abbreviations and Acronyms

AP-42	- AP-42, <i>Compilation of Air Pollutant Emission Factors, published by U.S.EPA</i>
APCD	- Louisville Metro Air Pollution Control District
BAC	- Benchmark Ambient Concentration
Btu	- British thermal unit
CEMS	- Continuous Emission Monitoring System
CFR	- Code of Federal Regulations
CO	- Carbon monoxide
District	- Louisville Metro Air Pollution Control District
EA	- Environmental Acceptability
gal	- U.S. fluid gallons
GHG	- Greenhouse Gas
HAP	- Hazardous Air Pollutant
HCl	- Hydrogen chloride
Hg	- Mercury
hr	- Hour
in.	- Inches
lbs	- Pounds
l	- Liter
LMAPCD	- Louisville Metro Air Pollution Control District
mmHg	- Millimeters of mercury column height
MM	- Million
NAICS	- North American Industry Classification System
NO _x	- Nitrogen oxides
PM	- Particulate Matter
PM ₁₀	- Particulate Matter less than 10 microns
PM _{2.5}	- Particulate Matter less than 2.5 microns
ppm	- parts per million
PSD	- Prevention of Significant Deterioration
psia	- Pounds per square inch absolute
QA	- Quality Assurance
SIC	- Standard Industrial Classification
SIP	- State Implementation Plan
SO ₂	- Sulfur dioxide
STAR	- Strategic Toxic Air Reduction
TAC	- Toxic Air Contaminant
UTM	- Universal Transverse Mercator
VOC	- Volatile Organic Compound
w.c.	- Water column
year	- Any period of twelve consecutive months, unless "calendar year" is specified
yr	- Year, or any 12 consecutive-month period, as determined by context

Preamble

This permit covers only the provisions of Kentucky Revised Statutes Chapter 77 Air Pollution Control, the regulations of the Louisville Metro Air Pollution Control District (District) and, where appropriate, certain federal regulations. The issuance of this permit does not exempt any owner or operator to whom it has been issued from prosecution on account of the emission or issuance of any air contaminant caused or permitted by such owner or operator in violation of any of the provisions of KRS 77 or District regulations. Any permit shall be considered invalid if timely payment of annual fees is not made. The permit contains general permit conditions and specific permit conditions. General conditions are applicable unless a more stringent requirement is specified elsewhere in the permit.

General Conditions

1. The owner or operator shall comply with all General Conditions herein and all terms and conditions in the referenced process/process equipment list.
2. All terms and conditions in this FEDOOP are enforceable by EPA, except those terms and conditions specified as District-only enforceable and those which are not required pursuant to the Clean Air Act Amendments of 1990 (CAAA) or any of the Act's applicable requirements.
3. All application forms, reports, compliance certifications, and other relevant information submitted to the District shall be certified by a responsible official. If a change in the responsible official (RO) occurs during the term of this permit, or if an RO is added, the owner or operator shall provide written notification (Form AP-100A) to the District within 30 calendar days of such change or addition.
4. The owner or operator shall submit an annual compliance certification, signed by the responsible official, to the District, on or before April 15 of the year following the year for which the certification applies. This certification shall include completion of District Form 9440-0.
5. Periodic testing, instrumental monitoring, or non-instrumental monitoring, which may include record keeping, shall be performed to the extent necessary to yield reliable data for purposes of demonstrating continuing compliance with the terms and conditions of this permit.
6. The owner or operator shall retain all records required by the District or any applicable requirement, including all required monitoring data and supporting information, for a period of five years from the date of the monitoring, sampling, measurement, report, or application, unless a longer time period for record retention is required by the District or an applicable requirement. Records shall be retrievable within a reasonable time and made available to the District, Kentucky Division for Air Quality, or the EPA upon request.
7. The owner or operator shall provide written notification to the District, and receive approval, prior to making any changes to existing equipment or processes that would result in emissions of any regulated pollutant in excess of the allowable emissions specified in this permit.
8. This permit may be reissued, revised, reopened, or revoked pursuant to District Regulation 2.17. Repeated violations of permit conditions are sufficient cause for revocation of this permit. The filing of a request by the owner or operator for any reissuance, revision, revocation, termination, or a notification of planned changes in equipment or processes, or anticipated noncompliance shall not alter any permit requirement.
9. Except as otherwise specified or limited herein, the owner or operator shall not allow or cause the emissions to equal or exceed either 10 tons per year, or such lesser quantity as

the EPA has established by rule, of any one Hazardous Air Pollutant (HAP) or 25 tons per year of all HAPs combined. Fugitive HAP emissions shall be included in this limit. HAPs are listed in Section 112(b) of the CAAA and as amended in 40 CFR 63, Subpart C.

10. Except as otherwise specified or limited herein, the owner or operator shall not allow or cause the emissions to equal or exceed 100 tons per year of any regulated pollutant, including particulate matter, PM₁₀, PM_{2.5}, sulfur dioxide, carbon monoxide, nitrogen oxides, lead, hydrogen sulfide, gaseous fluorides, total fluorides, or Volatile Organic Compounds (VOC); any pollutant subject to any standard in District Regulation 7.02; any substance listed in sections 112(r), 602(a) and 602(b) of the CAAA; or any combination of greenhouse gasses whose combined global warming potential equals or exceeds 100,000 tons CO₂-equivalent, as defined in 40 CFR 98). Fugitive emissions shall be included in these limits for source categories listed in District Regulation 2.16.
11. Unless specified elsewhere in this permit, the owner or operator shall complete required monthly record keeping within 30 days following the end of each calendar month.
12. Unless specified elsewhere in this permit, the owner or operator shall submit annual reports demonstrating compliance with the emission limitations specified. The report shall contain monthly and consecutive 12-month totals for each pollutant that has a federally enforceable limitation on the potential to emit. All reports shall include the company name, plant ID number, and the beginning and ending date of the reporting period. The compliance reports shall clearly identify any deviation from a permit requirement or a declaration that there were no such deviations. All annual compliance reports shall include the following per Regulation 2.17, section 3.5.
 - A certification statement: "Based on information and belief formed after reasonable inquiry, I certify that the statements and information in this document are true, accurate, and complete", and
 - The signature and title of a responsible official of the company.

The report must be postmarked no later than March 1 of the year following the calendar year covered in the annual report

13. The owner or operator shall comply with all applicable requirements of the following federally enforceable District Regulations:

Regulation	Title
1.01	General Application of Regulations and Standards
1.02	Definitions
1.03	Abbreviations and Acronyms
1.04	Performance Tests
1.05	Compliance with Emissions Standards and Maintenance Requirements
1.06	Source Self-Monitoring, Emissions Inventory Development and Reporting
1.07	Excess Emissions During Startups, Shutdowns, and Upset Conditions
1.08	Administrative Procedures

Regulation	Title
1.09	Prohibition of Air Pollution
1.10	Circumvention
1.11	Control of Open Burning
1.14	Control of Fugitive Particulate Emissions
2.01	General Application (Permit Requirements)
2.02	Air Pollution Regulation Requirements and Exemptions
2.03	Authorization to Construct or Operate; Demolition/Renovation Notices and Permit Requirements
2.07	Public Notification for Title V, PSD, and Offset Permits; SIP Revisions; and Use of Emission Reduction Credits
2.09	Causes for Permit Modification, Revocation, or Suspension
2.10	Stack Height Considerations
2.11	Air Quality Model Usage
2.17	Federally Enforceable District Origin Operating Permits
4.01	General Provisions for Emergency Episodes
4.02	Episode Criteria
4.03	General Abatement Requirements
4.07	Episode Reporting Requirements
6.01	General Provisions
6.02	Emission Monitoring for Existing Sources
7.01	General Provisions

14. The owner or operator shall comply with all applicable requirements of the following District-only enforceable regulations:

Regulation	Title
1.12	Control of Nuisances
1.13	Control of Objectionable Odors in the Ambient Air
2.08	Fees
5.00	Definitions
5.01	General Provisions
5.02	Adoption and Incorporation by Reference of National Emission Standards for Hazardous Air Pollutants
5.14	Hazardous Air Pollutants and Source Categories
5.20	Methodology for Determining Benchmark Ambient Concentration of a Toxic Air Contaminant
5.21	Environmental Acceptability for Toxic Air Contaminants
5.22	Procedures for Determining the Maximum Ambient Concentration of a Toxic Air Contaminant
5.23	Categories of Toxic Air Contaminants
7.02	Adoption of Federal New Source Performance Standards

15. The owner or operator shall submit emission inventory reports, as required by Regulation 1.06, if so notified by the District.
16. The owner or operator shall submit timely reports of abnormal conditions or operational changes that may cause excess emissions, as required by Regulation 1.07.
17. Applications, reports, test data, monitoring data, compliance certifications, and any other document required by this permit shall be submitted to:

*Air Pollution Control District
Suite 303
701 West Ormsby Ave
Louisville, KY 40203-3137*

Emission Unit: Plant-wide**Plant-wide Applicable Regulations:**

FEDERALLY ENFORCEABLE REGULATIONS		
Regulation	Title	Applicable Sections
1.14	Control of Fugitive Particulate Emissions	2.4
2.17	Federally Enforceable District Origin Operating Permits	5.1, 5.2

Plant-wide Specific Conditions

S1. **Standards** (Regulation 2.17, section 5.1)

a. **PM₁₀**

- i. The owner or operator shall not allow the plant-wide PM₁₀ emissions to equal or exceed twenty five (25) tons during any consecutive twelve (12) month period.¹ (Regulation 2.17, section 5.1)
- ii. The owner or operator shall operate and maintain the control device at all times an associated emission point is in operation, including periods of startup, shutdown, and malfunction, in a manner consistent with good air pollution control practice to meet the standards. (Regulation 2.03, section 6.1)
- iii. No owner or operator shall cause or permit the discharge of visible fugitive emissions beyond the lot line of the property on which the emissions originate. (Regulation 1.14, section 2.4)

S2. **Monitoring and Record Keeping** (Regulation 2.17, section 5.2)

The owner or operator shall maintain the following records for a minimum of 5 years and make the records readily available to the District upon request.

a. **PM₁₀**

- i. The owner or operator shall monthly maintain records that show the quantity (in tons) and type of material processed during each calendar month and consecutive 12-month period.
- ii. The owner or operator shall monthly maintain records that show the quantity (in gallons) of diesel fuel used during each calendar month and consecutive 12-month period.
- iii. The owner or operator shall calculate the PM₁₀ emissions based on the material throughput and emission factors from (or derived from) AP-42, Chapter 11 Section 11.19.2-2 Emission Factors for Crushed Stone Processing Operations; Section 11.24-2 Emission Factors for Metallic Minerals Processing; and Chapter 13 Section 13.2.2 Unpaved Roads and Section 13.2.4 Aggregate Handling and Storage Piles, unless another method is approved in writing by the District.

¹ This facility has the potential to be a major source of PM₁₀. Opting to become a synthetic minor source and limiting PM₁₀ emissions to 25 tpy allows this facility to avoid both Major status and STAR requirements.

Emission Source	Uncontrolled PM ₁₀ Emission Factor	Controlled PM ₁₀ Emission Factor
Tertiary Crushing	0.0024	0.00054
Screening	0.0087	0.00074
Conveyor Transfer Point*	0.00110	4.6x10 ⁻⁵
Drying – all minerals except titanium/zirconium sands	12	0.6
Aggregate Stockyard †	0.15	NA

* Use this emission factor for conveyors, feeder/hoppers, bucket elevators, bagging and truck load-out
 † This emission factor includes pile loading, pile unloading, haul road transport, and wind action on a sitting storage pile.

Using the above Emission Factors, controlled and uncontrolled as appropriate, calculating the tons per month PM₁₀ emissions for crushing, screening, conveyor transfer points and aggregate storage and handling is as follows:

$$E_{PM10} = (X)(EF \text{ lb/ton})(1 \text{ ton}/2000 \text{ lb.})$$

Where: E_{PM10} = PM₁₀ emissions (tons) during a month

X = the amount of material throughput (tons) processed by the unit during a month

- iv. The owner or operator shall calculate PM₁₀ emissions from the diesel engine powering the Powerscreen Chieftain utilizing diesel fuel throughput, AP-42, table 3.3-1, Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines (diesel engines less than or equal to 600-hp), and the formula shown below, unless another method is approved in writing by the District:

$$E_{PM} = (0.31 \text{ lb. PM}_{10}/\text{MMBtu}) (0.139 \text{ MMBtu}/\text{gal}) (X) (1 \text{ ton}/2000 \text{ lb.})$$

Where: E_{PM} = PM₁₀ emissions (tons) during a consecutive 12-month period

X = the amount of diesel fuel (gallons) combusted, in the cranking engine, during a consecutive 12-month period

- v. The owner or operator shall account for the minor PM₁₀ emissions from Insignificant Activities when totaling the monthly plant-wide emissions. Since the emissions are minor the owner or operator may use the potential PM₁₀ emissions as the monthly emissions. District calculated PM₁₀ potential to emit for the heaters is 0.017 pounds per month.

- vi. The owner or operator shall maintain monthly records that show the plant-wide monthly PM_{10} emissions during each calendar month and consecutive 12-month period utilizing the equations listed above.
- vii. The owner or operator shall maintain daily records of any periods of time where the process was operating and the control device was not operating or a declaration that the control device operated at all times that day when the process was operating.
- viii. If there is any time that the control device is bypassed or not in operation when the process is operating, then the owner or operator shall keep a record of the following for each bypass event:
 - 1) Date;
 - 2) Start time and stop time;
 - 3) Identification of the control device and process equipment;
 - 4) PM_{10} emissions during the bypass in tons using the uncontrolled emission factors;
 - 5) Summary of the cause or reason for each bypass event;
 - 6) Corrective action taken to minimize the extent or duration of the bypass event; and
 - 7) Measures implemented to prevent reoccurrence of the situation that resulted in the bypass event.

S3. **Reporting** (Regulation 2.17, section 5.2)

a. **PM_{10}**

- i. The owner or operator shall report the monthly plant wide PM_{10} emissions, including excess emissions, during each calendar month for each month in the reporting period and consecutive 12 month period.
- ii. The owner or operator shall identify all periods in the reporting period when the PM control systems were offline when the associated process was in operation.
- iii. The owner or operator shall describe any corrective action taken for each permit deviation.
- iv. If no deviations occur during an annual reporting period, the report shall state a negative declaration.

Emission Unit U1: Production/Processing Equipment**U1 Applicable Regulations:**

FEDERALLY ENFORCEABLE REGULATIONS		
Regulation	Title	Applicable Sections
2.17	Federally Enforceable District Origin Operating Permits	5.1, 5.2
7.08	Standards of Performance for New Process Operations	3.11, 3.12

U1 Equipment:

Emission Point	Description	Applicable Regulation	Control ID	Stack ID	Installation Date
Screen 1 (IA)	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor. (75 tph)	2.17 7.08	C-2	S-2	12/16/2015
Screen 2 (IA)	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor. (75 tph)		C-2	S-2	12/30/2015
Screen 3 (IA)	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor. (20 tph)		C-1	S-1	1996
Screen 4 (IA)	SWECO 4-ft diameter circular screen (25 tph), electric motor		NA	NA	1996
Crusher 1 (IA)	Barmac, model 6900 Duopactor, vertical impact crusher, electric motor. (100 tph)		C-2	S-2	1995
Dryer 1	Rotary aggregate dryer (50 tph) with Hauck burner (12.0 MMBtu/hr.), natural gas		C-2	S-2	1996
Aggregate Stockyard (IA)	Aggregate Stockyard * (3013 ft ² , 50 tph, 0.3 miles/trip)		NA	NA	NA
Elevator 1 w/ surge bin	Bucket elevator 1, electric motor, surge bin (150 tph)		C-2	S-2	1996
Elevator 2 (IA)	Bucket elevator 2 (30 tph), electric motor		C-2	S-2	1996
Elevator 3 (IA)	Bucket elevator 3 (20 tph), electric motor		NA	NA	1996
Elevator 4 (IA)	Bucket elevator 4 (25 tph), electric motor		NA	NA	1996
Load-out Station (IA)	Truck load-out station (25 tph)		NA	NA	2007
Bagger 1 (IA)	MHE/Choice Packaging, plug stack, air packer #1, bagging machine, , electric motor (12 tph)		NA	NA	1995
Bagger 2 (IA)	MHE/Choice Packaging, plug stack, air packer, bagging machine #2, electric motor (12 tph)		NA	NA	1995

Emission Point	Description	Applicable Regulation	Control ID	Stack ID	Installation Date
Conveyor / Stacker 1 (IA)	Conveyor 1 (50 tph), electric motor	2.17 7.08	C-2	S-2	1996
Conveyor / Stacker 2 (IA)	Conveyor 2 (100 tph), electric motor		C-2	S-2	1996
Conveyor / Stacker 3 (IA)	Conveyor 3 (100 tph), electric motor		C-2	S-2	1996
Conveyor / Stacker 4 (IA)	Conveyor 4 (100 tph), electric motor		C-2	S-2	1996
Conveyor / Stacker 5 (IA)	Conveyor 5 (30 tph), electric motor		C-2	S-2	1996
Conveyor / Stacker 6 (IA)	Conveyor 6 (20 tph), electric motor		C-2	S-2	1996
Conveyor / Stacker 7 (IA)	Conveyor 7 (30 tph), electric motor		C-2	S-2	1996
Conveyor / Stacker 8 (IA)	Conveyor 8 (20 tph), electric motor		C-2	S-2	1996
Conveyor / Stacker 9 (IA)	Conveyor 9 (50 tph), electric motor		NA	NA	1996
Conveyor / Stacker 10 (IA)	Conveyor 10 (25 tph), electric motor		NA	NA	1996

* This emission factor includes pile loading, pile unloading, haul road transport, and wind action on a sitting storage pile.

U1 Control Devices:

Control ID	Description	Control Efficiency	Performance Indicator	Stack ID
C-1	Bin vent dust collector with electric motor	95%	Weekly VE(s)	S-1
C-2	Pulse jet dust collector with electric motor	96.8% ²	Weekly VE(s)	S-2

² The stack test performed on March 14, 1996 demonstrated that the source was in compliance with the PM emission standard of 32.37 lb/hr for Dryer 1. The highest PM concentration from the stack test was 2.7×10^{-6} lb/cf and the lowest was 2.26×10^{-6} lb/cf for an average PM concentration for all test runs of 2.5×10^{-6} lb/cf. This equates to 1.487 lb/hr controlled.

U1 Specific Conditions

S1. Standards (Regulation 2.17, section 5.1)

a. PM/PM₁₀

- i. The owner or operator shall not cause or allow the emissions of particulate matter to exceed the following limits: ³ (Regulation 7.08, section 3.1.2, Table 1)

Emission Point ID	Equipment	Design Capacity	PM₁₀ Limit (lb/hr)
Dryer 1	Rotary aggregate dryer (50 tph) with Hauck burner (12.0 MMBtu/hr.), natural gas	50 tph	32.37 ⁴
Elevator 1	Bucket elevator #1 with surge bin	150 tph	37.50

- ii. The owner or operator shall not cause or allow the emissions of particulate matter to exceed the following limits. (Regulation 7.08, section 3.1.2) ⁵

Emission Point ID	Equipment	Design Capacity	PM₁₀ Limit (lb/hr)
Screen 1	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor	75 tph	34.53
Screen 2	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor	75 tph	34.53
Screen 3	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor	20 tph	23.00
Screen 4	SWECO 4-ft diameter circular screen, electric motor	25 tph	26.41
Crusher 1	Barmac, model 6900 Duopactor, vertical impact crusher, electric motor	100 tph	36.17
Aggregate Stockyard	Aggregate storage pile	50 tph	32.37
Elevator 2	Bucket elevator 2, electric motor	30 tph	29.57

³ The District has determined that Elevator 1 cannot exceed hourly PM limits uncontrolled.

⁴ To meet the lb./hr. PM emission standard the Pulse jet dust collector (C-2) must be in operation at all times the Rotary aggregate dryer is in operation.

⁵ The District has determined that the equipment (Screen 1, Screen 2, Aggregate Stockyard, Screen 3, Screen 4, Crusher 1, Elevator 2 through Elevator 4, Load-out Station, Bagger 1, Bagger 2, and Conveyors 1 through 10) in this unit cannot exceed hourly PM limits uncontrolled.

Emission Point ID	Equipment	Design Capacity	PM₁₀ Limit (lb/hr)
Elevator 3	Bucket elevator 3, electric motor	20 tph	23.00
Elevator 4	Bucket elevator 4, electric motor	25 tph	26.41
Load-out Station	Truck load-out station	25 tph	26.41
Bagger 1	MHE/Choice Packaging, plug stack, air packer, bagging machine #1, electric motor	12 tph	17.00
Bagger 2	MHE/Choice Packaging, plug stack, air packer, bagging machine #2, electric motor	12 tph	17.00
Conveyor / Stacker 1	Conveyor 1, electric motor	50 tph	32.37
Conveyor / Stacker 2	Conveyor 2, electric motor	100 tph	36.17
Conveyor / Stacker 3	Conveyor 3, electric motor	100 tph	36.17
Conveyor / Stacker 4	Conveyor 4, electric motor	100 tph	36.17
Conveyor / Stacker 5	Conveyor 5, electric motor	30 tph	29.57
Conveyor / Stacker 6	Conveyor 6, electric motor	20 tph	23.00
Conveyor / Stacker 7	Conveyor 7, electric motor	30 tph	29.57
Conveyor / Stacker 8	Conveyor 8, electric motor	20 tph	23.00
Conveyor / Stacker 9	Conveyor 9, electric motor	50 tph	32.37
Conveyor / Stacker 10	Conveyor 10, electric motor	25 tph	26.41

- iii. The owner or operator shall operate and maintain the associated control device at all times an associated emission point is in operation, including periods of startup, shutdown, and malfunction, in a manner consistent with good air pollution control practice to meet the standards. (Regulation 2.03, section 6.1)
- iv. For additional PM₁₀ standards see Emission Unit Plant-wide.

b. Opacity

The owner or operator shall not allow or cause visible emissions to equal or exceed 20% opacity. (Regulation 7.08, section 3.1.1)

S2. Monitoring and Record Keeping (Regulation 2.17, section 5.2)

The owner or operator shall maintain the following records for a minimum of 5 years and make the records readily available to the District upon request.

a. PM/PM₁₀

- i. The owner or operator shall maintain daily records of the type and amount of product transferred.
- ii. The owner or operator shall maintain daily records of the hours of operation of the equipment.
- iii. For the emission point Dryer 1: If there is any time that the control device is bypassed or not in operation when the process is operating, then the owner or operator shall keep a record of the following for each bypass event:
 - 1) Date;
 - 2) Start time and stop time;
 - 3) Identification of the control device and process equipment;
 - 4) PM emissions during the bypass in lb/hr;
 - 5) Summary of the cause or reason for each bypass event;
 - 6) Corrective action taken to minimize the extent or duration of the bypass event; and
 - 7) Measures implemented to prevent reoccurrence of the situation that resulted in the bypass event.
- iv. The owner or operator shall maintain a monthly maintenance log for the emission filters and containment methods to include all maintenance performed, including dates and duration of any control device downtime or bypasses.
- v. For the emission point Dryer 1: The owner or operator shall calculate any bypass event PM emissions based on the material throughput, duration of event, and emission factors from AP-42, Chapter 11 Section 11.24-2 Emission Factors for Metallic Minerals Processing shown below unless another method is approved in writing by the District:

Emission Source	Uncontrolled PM Emission Factor (lb/ton)	E.F. Rating
Drying (uncontrolled) (SCC 3-03-024-11)	19.7	C

Equation 1: $E_{PM} = (X)(EF \text{ lb/ton})$

Where: E_{PM} = uncontrolled PM emissions (pounds) during a bypass event
 X = the amount of material throughput (tons) processed by the unit during a bypass event

- vi. A description of the measures implemented to prevent reoccurrence of the situation that resulted in bypassing the emission filters and containment methods.
- vii. For additional PM_{10} monitoring and record keeping requirements see Emission Unit Plant-wide.

b. Opacity

- i. The owner or operator shall conduct a weekly one-minute visible emissions survey, during normal operation, of the emission points. No more than four emission points shall be observed simultaneously. The opacity surveys can be performed on the building exhaust points if the process is inside an enclosure.
- ii. At emission points where visible emissions are observed, the owner or operator shall initiate corrective action within eight hours of the initial observation. If the visible emissions persist, the owner or operator shall perform or cause to be performed a Method 9, in accordance with 40 CFR Part 60, Appendix A, within 24 hours of the initial observation.
- iii. The owner or operator shall maintain records, weekly, of the results of all visible emissions surveys and tests. Records of the results of any visible emissions survey shall include the date of the survey, the name of the person conducting the survey, whether or not visible emissions were observed, and what if any corrective action was performed. If an emission point is not being operated during a given week, then no visible emission survey needs to be performed and a negative declaration shall be entered in the record.

S3. Reporting (Regulation 2.17, section 5.2)

a. PM/PM_{10}

- i. There are no reporting requirements related to the lb/hr emission standard for all the equipment listed in this emission unit with the exception of Dryer 1.
- ii. For Dryer 1: The owner or operator shall report the following information regarding PM bypasses in the annual compliance reports.

- 1) Number of times the PM vent stream bypasses the control device and is vented to the atmosphere;
- 2) Duration of each bypass to the atmosphere;
- 3) The calculated lb/hr PM emissions for each bypass; or
- 4) A negative declaration if no bypasses occurred.

iii. For additional PM₁₀ reporting requirements see Emission Unit Plant-wide.

b. Opacity

- i. The owner or operator shall report any deviation from the requirement to perform weekly visible emission surveys or Method 9 tests;
- ii. The owner or operator shall report any deviation from the requirement to record the results of each VE survey and Method 9 test performed;
- iii. The owner or operator shall report the number, date, and time of each VE Survey where visible emissions were observed beyond the opacity standard and the results of the Method 9 test performed;
- iv. The owner or operator shall identify all periods of exceedance of the opacity standard; and
- v. The owner or operator shall provide a description of any corrective actions taken for each exceedance of the opacity standard; and
- vi. If no deviations from permit requirements occur during a reporting period, the owner or operator shall submit a negative declaration stating that no permit deviations occurred during the reporting period for opacity.

S4. Testing (Regulation 2.17, section 5.2)

a. PM/PM₁₀

The owner or operator shall comply with all stack testing requirements in Regulation 2.17, section 5.2 for C-2. (See Attachment A)

Emission Unit U2: Equipment with C-I Engines

U2 Applicable Regulations:

FEDERALLY ENFORCEABLE REGULATIONS		
Regulation	Title	Applicable Sections
2.17	Federally Enforceable District Origin Operating Permits	5.1, 5.2
7.08	Standards of Performance for New Process Operations	3.11, 3.12
40 CFR Part 63, Subpart ZZZZ	National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (RICE)	§63.6580 → §63.6675

DISTRICT ONLY ENFORCEABLE REGULATIONS		
Regulation	Title	Applicable Sections
5.02	Adoption and Incorporation by Reference of National Emission Standards for Hazardous Air Pollutants	All

U2 Equipment:

Emission Point	Description	Applicable Regulation	Control ID	Stack ID	Installation Date/ Manufacture Date
Screen 5(a)	Powerscreen Chieftain aggregate sorting screen (200 tph) with diesel engine	2.17, 7.08,	NA	NA	2012
Screen 5(b)	Diesel engine for the Powerscreen Chieftain aggregate sorting screen (66.2 hp)	2.17, 40 CFR Part 63, Subpart ZZZZ	NA	NA	1984

U2 Specific Conditions

S1. **Standards** (Regulation 2.17, section 5.1)

a. **HAP**

For emission point Screen 5(b):

The owner or operator shall comply with all emission limitations, work practice standards, and operating limits in 40 CFR 63, Subpart ZZZZ. (See Attachment B)

b. **PM/PM₁₀**

For emission point Screen 5(a):

i. The owner or operator shall not cause or allow the emissions of particulate matter from Powerscreen Chieftain sorting screen to exceed 38.83 lb/hr. (Regulation 7.08, section 3.1.2, Table 1)⁶

ii. For additional PM₁₀ standards see Emission Unit Plant-wide.

c. **Opacity**

For emission point Screen 5(a):

The owner or operator shall not allow or cause the visible emissions to exceed 20 % opacity. (Regulation 7.08, section 3.3.1)

S2. **Monitoring and Record Keeping** (Regulation 2.17, section 5.2)

The owner or operator shall maintain the following records for a minimum of 5 years and make the records readily available to the District upon request.

a. **HAP**

For emission point Screen 5(b):

The owner or operator shall comply with all monitoring and record keeping requirements in 40 CFR 63, Subpart ZZZZ. (See Attachment B)

b. **PM/PM₁₀**

For emission point Screen 5(a):

⁶ Calculations for uncontrolled potential to emit for screen 5(a) has determined that the equipment cannot exceed the lb/hr standard, therefore no monitoring or record keeping are required.

- i. There are no monitoring or record keeping requirements related to the lb/hr emission standard for this emission unit.
- ii. For additional PM₁₀ monitoring and record keeping requirements see Emission Unit Plant-wide.

c. **Opacity**

For emission point Screen 5(a):

- i. The owner or operator shall conduct a weekly one-minute visible emissions survey, during normal operation, of the emission points. No more than four emission points shall be observed simultaneously.
- ii. At emission points where visible emissions are observed, the owner or operator shall initiate corrective action within eight hours of the initial observation. If the visible emissions persist, the owner or operator shall perform or cause to be performed a Method 9, in accordance with 40 CFR 60, Appendix A, within 24 hours of the initial observation.
- iii. The owner or operator shall maintain records, weekly, of the results of all visible emissions surveys and tests. Records of the results of any visible emissions survey shall include the date of the survey, the name of the person conducting the survey, whether or not visible emissions were observed, and what if any corrective action was performed. If an emission point is not being operated during a given week, then no visible emission survey needs to be performed and a negative declaration shall be entered in the record.

S3. **Reporting** (Regulation 2.17, section 5.2)

a. **HAP**

For emission point Screen 5(b):

The owner or operator shall comply with all reporting requirements in 40 CFR 63, Subpart ZZZZ. (See Attachment B)

b. **PM/PM₁₀**

For emission point Screen 5(a):

- i. There are no reporting requirements related to the lb/hr emission standard for this equipment.
- ii. For additional PM₁₀ reporting requirements see Emission Unit Plant-wide.

c. **Opacity**

For emission point Screen 5(a):

- i. The owner or operator shall report any deviation from the requirement to perform weekly visible emission surveys or Method 9 tests;
- ii. The owner or operator shall report any deviation from the requirement to record the results of each VE survey and Method 9 test performed;
- iii. The owner or operator shall report the number, date, and time of each VE Survey where visible emissions were observed beyond the opacity standard and the results of the Method 9 test performed;
- iv. The owner or operator shall identify all periods of exceedance of the opacity standard; and
- v. The owner or operator shall provide a description of any corrective actions taken for each exceedance of the opacity standard; and
- vi. If no deviations from permit requirements occur during a reporting period, the owner or operator shall submit a negative declaration stating that no permit deviations occurred during the reporting period for opacity.

Insignificant Activities

Emission Process	Equipment Description ⁷	Quantity	PTE (tpy) each	Regulation Basis
Screen	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor. (75 tph)	2	PM ₁₀ =2.86 PM=8.21	Regulation 1.02
Screen	Derrick Manufacturing, 3'x10', double deck, vibrating screen, electric motor. (20 tph)	1	PM ₁₀ =0.76 PM=2.19	Regulation 1.02
Screen	SWECO 4-ft diameter circular screen with electric motor. (25 tph)	1	PM ₁₀ =0.95 PM=2.74	Regulation 1.02
Crusher	Barmac, model 6900 Duopactor, vertical impact crusher, electric motor. (100 tph)	1	PM ₁₀ =1.05 PM=2.37	Regulation 1.02
Aggregate Stockyard	Aggregate storage pile (50 tph)	1	PM ₁₀ =4.40 PM=8.80	Regulation 1.02
Elevator	Bucket Elevator with electric motor (30 tph)	1	PM ₁₀ =1.14 PM=3.29	Regulation 1.02
Elevator	Bucket Elevator with electric motor (20 tph)	1	PM ₁₀ =0.76 PM=2.19	Regulation 1.02
Elevator	Bucket Elevator with electric motor (25 tph)	1	PM ₁₀ =0.95 PM=2.74	Regulation 1.02
Load-out Station	Truck load-out station (25 tph)	1	PM ₁₀ =0 PM=0	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (50 tph)	2	PM ₁₀ =0.24 PM=0.66	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (100 tph)	3	PM ₁₀ =0.48 PM=1.31	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (30 tph)	2	PM ₁₀ =0.14 PM=0.39	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (20 tph)	1	PM ₁₀ =0.10 PM=0.26	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (10 tph)	1	PM ₁₀ =0.05 PM=0.13	Regulation 1.02
Conveyor/stacker	Conveyor/Stacker with electric motor (25 tph)	1	PM ₁₀ =0.12 PM=0.33	Regulation 1.02

⁷ For the engines associated with forklifts, front-end loaders, and spotter trucks; the District has determined that these are mobile and not stationary and do not count for PTE purposes in determining major source status. These emissions also do not need to be accounted for in the plant-wide emission limits to show compliance with this permit.

Emission Process	Equipment Description⁷	Quantity	PTE (tpy) each	Regulation Basis
Storage tank	Storage tank < 250 gallons	1	VOC=0.01	Regulation 1.02, Appendix A
Heaters	Area heaters, natural gas, direct fire, < 10 MMBtu	2	NOx=1.61 PM ₁₀ =0.0003	Regulation 1.02

- 1) Insignificant activities identified in District Regulation 1.02, Appendix A, may be subject to size or production rate disclosure requirements.
- 2) Insignificant activities identified in District Regulation 1.02, Appendix A shall comply with generally applicable requirements.
- 3) The owner or operator shall annually submit an updated list of insignificant activities that occurred during the preceding year, with the compliance certification due April 15th.
- 4) Emissions from Insignificant Activities shall be reported in conjunction with the reporting of annual emissions of the facility as required by the District.
- 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) as the annual emissions for each piece of equipment.
- 6) The District has determined 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.
- 7) There are two MHE/Choice Packaging, plug stack, air packer, bagging machine, electric motor (12 tph) on site that do not emit any regulated air pollutants.

Idled Equipment:

The owner or operator must inform the District prior to reinstating any of these idled units.

Emission Point	Description	Capacity	Stack ID	Install Date
Bagger	MHE/Choice Packaging, plug stack, air packer, bagging machine #3, electric motor (12 tph)	12 tph	NA	1995
Bagger	MHE/Choice Packaging, plug stack, air packer, bagging machine #4, electric motor (12 tph)	12 tph	NA	1995
Collector	Bin vent dust collector #2	4,500 cfm	NA	1996
Collector	Bin vent dust collector #3	4,500 cfm	NA	1996
Collector	Bin vent dust collector #4	1,000 cfm	NA	1996
Collector	Bin vent dust collector #5	1,000 cfm	NA	1996
Collector	Bin vent dust collector #6	1,000 cfm	NA	1996

Fee Comment

1. On May 15, 2013, the Board approved revisions to Regulation 2.08, which implemented a new fee structure. As a result, Universal Minerals Kentucky, Inc. will be required to pay annual fees.
2. The administrative fee in the amount of \$516.52 due to an ownership change on 15 January 2010 is required to be paid prior to the issuance of this permit renewal.
3. The NESHAP (40 CFR 63 Subpart ZZZZ) review fee in the amount of \$516.52 is required to be paid prior to the issuance of this permit renewal.

Attachment A - Stack Performance Testing

S1. Testing (Regulation 2.17, section 5.2)

a. General Requirements

The owner or operator shall retest all control devices within ten (10) years since the most recent District accepted performance test or within 180 days after the effective date of the permit if no previous test has been performed, unless the District requires a different time schedule. For equipment which has been tested but not within ten years prior to the effective date of this permit, the Company may submit within 90 days of the effective date of this permit, contingent on approval by the District, a schedule which shall, at a minimum, propose testing for all affected equipment within this permit cycle. Thereafter, the Company shall retest each affected device at least once every 10 years. Devices of adequately similar design and filter media may be represented by a common performance test contingent upon review and approval by the District of the testing protocol. In lieu of the control efficiency testing, unless required by a Federal Regulation, the owner or operator may submit a signature guarantee from the control device manufacture stating the control device efficiency.

The owner or operator shall use the most recent District accepted performance test results to demonstrate compliance with the emission limits and in the annual emission inventory reporting.

If performance testing is not completed by the required date, then the company shall calculate emissions using expired test result data or methods such as EPA approved emission factors and guidance documents such as EIIP and AP-42 or other methods upon written approval by the District, whichever results in the greater (more conservative) emissions.

b. PM

- i. The owner or operator shall perform an EPA Reference Method 5 PM performance test on the inlet and outlet of the control device or emission point to determine the emission rate and control efficiency. The test shall be performed at 90% or higher of maximum capacity, or allowable/permitted capacity, or at a level of capacity which results in the greatest emissions and is representative of the operations. Failure to perform the test, at maximum capacity, allowable/permitted capacity, or at a level of capacity which resulted in the greatest emissions, may necessitate a re-test or necessitate a revision of the allowable/permitted capacity of the process equipment depending upon the difference between the testing results and the limit.
- ii. The owner or operator shall submit written compliance test plans (protocol) for the control efficiency. They shall include the EPA test methods that will be used for PM compliance testing, the process operating parameters that will be monitored during the performance test,

and the control device performance indicators (e.g. pressure drop) that will be monitored during the performance test. The compliance test plans shall be furnished to the District at least 30 days prior to the actual date of the performance test. Attached to the permit is a Protocol Checklist for a Performance Test with the information to be submitted in the protocol.

- iii. The owner or operator shall provide the District at least 10 days prior notice of any performance test to afford the District the opportunity to have an observer present.
- iv. The owner or operator shall furnish the District with a written report of the results of the performance test within 60 days following the actual date of completion of the performance test.

c. **Opacity**

The owner or operator shall demonstrate compliance with the opacity limit by initially conducting a test in accordance with Method 9 of 40 CFR 60 Appendix A at the same time as the Method 5 PM performance test. The test shall be performed at maximum capacity or allowable/permitted capacity or at a level of capacity which results in the greatest emissions and is representative of the operations. Failure to perform the test at these conditions may necessitate a re-test. The maximum 6-minute average opacity exhibited during the test period shall be used to determine whether the affected source is in initial compliance with the standard. The duration of the Method 9 performance test shall be 3 hours (30 6-minute averages).

Attachment B - 40 CFR Part 63 Subpart ZZZZ
National Emission Standards for Hazardous Air Pollutants for Area Source Categories
(Compression Ignition Engines \leq 300 HP)

The owner or operator shall comply with the following requirements unless there are more current promulgated regulations.

Specific Conditions

S1. Standards (40 CFR Part 63, Subpart ZZZZ)

a. **HAP** (Regulation 2.17, section 5.1)

i. If you own or operate existing stationary RICE located at an area source of HAP emissions, you must comply with the following requirements: (40 CFR 63.6603 (a)) and (40 CFR 63 Table 2d)

- 1) Change oil and filter every 1,000 hours of operation or annually, whichever comes first; and (Table 2d, 1, a)
- 2) Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first; (Table 2d, 1, b)
- 3) Inspect all hoses and belts every 500 hours of operation or annually, whichever comes first, and replace as necessary. (Table 2d, 1, b)
- 4) During periods of startup you must minimize the engine's time spent at idle and minimize the engine's startup time at startup to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the non-startup emission limitations apply. (Table 2d, 1)

ii. Fuel Requirements:

There are no fuel requirements for engines this size at this facility.

S2. Monitoring and Record Keeping (Regulation 2.17, section 5.2)

The owner or operator shall maintain the following records for a minimum of 5 years and make the records readily available to the District upon request.

a. **HAP**

i. If you own or operate existing non-emergency, non-black start stationary CI RICE with a site rating less than or equal to 300 HP located at an area source of HAP emissions, you must:

- 1) Operate and maintain the stationary RICE according to the manufacturer's emission-related written instructions or develop your own maintenance plan which must provide to the extent practicable for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. (40 CFR 63.6625 (e))
 - 2) Minimize the engine's time spent at idle during startup and minimize the engine's startup time to a period needed for appropriate and safe loading of the engine, not to exceed 30 minutes, after which time the emission standards applicable to all times other than startup apply. (40 CFR 63.6625(h))
- ii. This facility does have the option of utilizing an oil analysis program in order to extend the specified oil change requirement. (40 CFR 63.6625(i))
- 1) The oil analysis must be performed at the same frequency specified for changing the oil.
 - 2) The analysis program must, at a minimum, analyze the following three parameters: Total Base Number, viscosity, and percent water content.
 - 3) The condemning limits for these parameters are as follows: Total Base Number is less than 30 percent of the Total Base Number of the oil when new; viscosity of the oil has changed by more than 20 percent from the viscosity of the oil when new; or percent water content (by volume) is greater than 0.5. If all of these condemning limits are not exceeded, the engine owner or operator is not required to change the oil. If any of the limits are exceeded, the engine owner or operator must change the oil within 2 days of receiving the results of the analysis;
 - 4) If the engine is not in operation when the results of the analysis are received, the engine owner or operator must change the oil within 2 days or before commencing operation, whichever is later.
 - 5) The owner or operator must keep records of the parameters that are analyzed as part of the program, the results of the analysis, and the oil changes for the engine. The analysis program must be part of the maintenance plan for the engine.
- iii. You must be in compliance with the emission limitations and operating limitations that apply to you at all times. (40 CFR 63.6605)
- 1) At all times you must operate and maintain any affected source in a manner consistent with safety and good air pollution control practices for minimizing emissions. The general duty to minimize emissions does not require you to make any further efforts to reduce emissions if levels required by this standard have been achieved. Determination of whether such operation and

maintenance procedures are being used will be based on information available to the Administrator (District) which may include, but is not limited to, monitoring results, review of operation and maintenance procedures, review of operation and maintenance records, and inspection of the source.

- iv. To demonstrate compliance with emission and operating limitations, you must keep the following records: (40 CFR 63.6655(a))
 - 1) A copy of each report that you submitted to comply with this subpart, including all documentation supporting any Initial Notification or Notification of Compliance Status that you submitted. (40 CFR 63.6655(a-1))
 - 2) Operating and maintaining the stationary RICE according to the manufacturer's emission-related operation and maintenance instructions (40 CFR 63.6640, Table 6, Item 9)
 - 3) Develop and follow your own maintenance plan which must provide, to the extent practicable, for the maintenance and operation of the engine in a manner consistent with good air pollution control practice for minimizing emissions. (40 CFR 63.6640, Table 6, Item 9)
- v. You must keep records of the maintenance conducted on the stationary RICE in order to demonstrate that you operated and maintained the stationary RICE and after-treatment control device (if any) according to your own maintenance plan. (40 CFR 63.6655 (e))

S3. **Reporting** (Regulation 2.17, section 5.2)

a. **HAP**

- i. The owner or operator shall report any deviation from the required maintenance on the diesel engine. If there are no deviations from any of the required maintenance, a statement that there were no deviations from the operating limitations during the reporting period.
- ii. You must demonstrate continuous compliance with each emission limitation and operating limitation in Table 2d. (40 CFR 63.6640)
 - 1) You must report each instance in which you did not meet each emission limitation or operating limitation. These instances are deviations from the emission and operating limitations in this subpart. (40 CFR 63.6640(b))

Attachment C - Protocol Checklist for a Performance Test

A completed protocol should include the following information:

- 1. Facility name, location, and ID #;
- 2. Responsible Official and environmental contact names;
- 3. Permit numbers that are requiring the test to be conducted;
- 4. Test methods to be used (i.e. EPA Method 1, 2, 3, 4, and 5);
- 5. Alternative test methods or description of modifications to the test methods to be used;
- 6. Purpose of the test including equipment and pollutant to be tested; the purpose may be described in the permit that requires the test to be conducted or may be to show compliance with a federal regulation or emission standard;
- 7. Tentative test dates (These may change but the District will need final notice at least 10 days in advance of the actual test dates in order to arrange for observation.);
- 8. Maximum rated production capacity of the system;
- 9. Production-rate goal planned during the performance test for demonstration of compliance (if appropriate, based on limits);
- 10. Method to be used for determining rate of production during the performance test;
- 11. Method to be used for determining rate of production during subsequent operations of the process equipment to demonstrate compliance;
- 12. Description of normal operation cycles;
- 13. Discussion of operating conditions that tend to cause worse case emissions; it is especially important to clarify this if worst case emissions do not come from the maximum production rate;
- 14. Process flow diagram;
- 15. The type and manufacturer of the control equipment, if any;
- 16. The control equipment (baghouse, scrubber, condenser, etc.) parameter to be monitored and recorded during the performance test. Note that this data will be used to ensure representative operation during subsequent operations. These parameters can include pressure drops, flow rates, pH, and temperature. The values achieved during the test may be required during subsequent operations to describe what pressure drops, etcetera, are indicative of good operating performance; and
- 17. How quality assurance and accuracy of the data will be maintained, including;
 - Sample identification and chain-of-custody procedures
 - If audit samples are required for this test method, audit sample provider and number of audit samples to be used
- 18. Pipe, duct, stack, or flue diameter to be tested;
- 19. Distances from the testing sample ports to the nearest upstream and downstream flow disturbances such as bends, valves, constrictions, expansions, and exit points for outlet and additionally for inlet;
- 20. Determine number of traverse points to be tested for outlet and additionally for inlet if required using Appendix A-1 to 40 CFR Part 60;
 - Method 1 if stack diameter is >12"
 - Method 1a if stack diameter is greater than or equal to 4" and less than 12"
 - Alternate method of determination for <4"
 - If a sample location at least two stack or duct diameters downstream and half a diameter upstream from any flow disturbance is not available then an alternative procedure is available for determining the acceptability of a measurement location. This procedure described in Method 1, Section 11.5 allows for the determination of gas flow angles at the sampling points and comparison of the measured results with acceptability criteria.
- 21. The Stack Test Review fee shall be submitted with each stack test protocol.