INTERNAL PERMITTING DOCUMENT TRACKING MANIFEST

Company Name **Antero Treatment LLC**

Permitting Action Number R13-3331 Total Days 61 DAQ Days 35

Permitting Action:

- ○ Permit Determination
- ○ General Permit
- ○ Administrative Update
- ○ Temporary
- ○ Relocation
- ✓ Construction
- ○ Modification
- ○ PSD (Rule 14)
- ○ NNSR (Rule 19)

Documents Attached:

- ✓ Engineering Evaluation/Memo
- ✓ Draft Permit
- ✓ Notice
- ○ Denial
- ○ Final Permit/General Permit Registration
- ○ Completed Database Sheet
- ○ Withdrawal
- ○ Letter
- ○ Other *(specify)*

Date	From	To	Action Requested
8/31/2016	Jerry	Bev	Please review and approve to go to public notice.
9/2	Bev	Jerry	See comments - Address - Cost to Notice
9/9	Jerry	Sandra	Approved for Notice

NOTE: Retain a copy of this manifest for your records when transmitting your document(s).

AIR QUALITY PERMIT NOTICE

Notice of Intent to Approve

On July 1, 2016, Antero Treatment LLC applied to the WV Department of Environmental Protection, Division of Air Quality (DAQ) for a permit to construct a landfill located on located south of US-50 off of Gum Run Road, Greenwood, Doddridge County, WV at latitude 39.264245 and longitude -80.906745. The proposed facility utilizes the same entrance as the Clearwater Treatment Facility. A preliminary evaluation has determined that all State and Federal air quality requirements will be met by the proposed facility. The DAQ is providing notice to the public of its preliminary determination to issue the permit as R13-3331.

The following potential point source emissions will be authorized by this permit action: Particulate Matter less than 10 microns, 17.55 tons per year (TPY); Particulate Matter less than 2.5 microns, 2.13 TPY; Sulfur Dioxide, 0.07 TPY; Oxides of Nitrogen, 0.27 TPY; Carbon Monoxide, 0.27 TPY; Volatile Organic Compounds, 0.01 TPY; Total Hazardous Air Pollutants, <0.01 TPY; Carbon Dioxide Equivalents, 30 TPY.

The following fugitive emissions will be authorized by this permit action: Particulate Matter less than 10 microns, 40.89 TPY; Particulate Matter less than 2.5 microns, 4.00 TPY.

Written comments or requests for a public meeting must be received by the DAQ before 5:00 p.m. on (Day of Week, Month, Day, Year). A public meeting may be held if the Director of the DAQ determines that significant public interest has been expressed, in writing, or when the Director deems it appropriate.

The purpose of the DAQ's permitting process is to make a preliminary determination if the proposed construction will meet all state and federal air quality requirements. The purpose of the public review process is to accept public comments on air quality issues relevant to this determination. Only written comments received at the address noted below within the specified time frame, or comments presented orally at a scheduled public meeting, will be considered prior to final action on the permit. All such comments will become part of the public record.

Jerry Williams, P.E.
WV Department of Environmental Protection
Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
Telephone: 304/926-0499, ext. 1223
FAX: 304/926-0478

Additional information, including copies of the draft permit, application and all other supporting materials relevant to the permit decision may be obtained by contacting the engineer listed above. The draft permit and engineering evaluation can be downloaded at:

www.dep.wv.gov/daq/Pages/NSRPermitsforReview.aspx

west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
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Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3331
Plant ID No.:	017-00157
Applicant:	Antero Treatment LLC (Antero)
Facility Name:	Antero Landfill
Location:	Greenwood, Doddridge County
NAICS Code:	213112 (Support Activities for Oil and Gas Operations)
Application Type:	Construction
Received Date:	July 1, 2016
Engineer Assigned:	Jerry Williams, P.E.
Fee Amount:	$2,000.00
Date Received:	July 1, 2016
Complete Date:	July 27, 2016
Due Date:	October 25, 2016
Applicant Ad Date	July 15, 2016 (DI), July 20, 2016 (PN)
Newspaper:	*The Doddridge Independent, The Pennsboro News*
UTM's:	Easting: 508.045 km Northing: 4,346.105 km Zone: 17
Description:	Landfill to handle salt waste from the Antero Clearwater Facility.

DESCRIPTION OF PROCESS

The following process description was taken from Permit Application R13-3331:

Salt waste from the Clearwater Facility is transported by haul trucks to the Antero Landfill (the Landfill) (UPMAIN). At the Landfill, the salt waste is unloaded (UNLOAD1) into the mixing building where it can be stored, mixed with native soil, and/or moved to the working cell. Soil will be unloaded (UNLOAD3) in the mixing building from the landfill stockpiles. The salt waste will consist of either sodium chloride (NaCl) or calcium chloride (CaCl), with the CaCl portion mixed with native soil prior to placing the waste in the working cell due to its high moisture content (MIXING). Although the mixing building plans to operate 24 hours per day and 365 days per year, the salt waste may be stored in the mixing building during periods of

inclement weather because the salt waste (NaCl and CaCl) has a high affinity for moisture and needs to stay as dry as possible as it already has a high moisture content itself. Salt waste (salt or salt mixed with soil) is loaded from the mixing building into trucks (LOAD1) and taken to the working cell by haul trucks (UPWKFACE). The emissions from material handing within the material building are controlled by 70% due to the building being a full enclosure. Any material handling that contains salt or a mix of salt and soil will not be watered for control due to the salt's affinity for moisture. The unpaved road from the Clearwater Facility to the Landfill will be watered for dust control. The unpaved road may be graded at times for maintenance (GRADER). The other temporary unpaved roads from the mixing building to the working cell and around the working areas will be watered up to the point that they enter the actual active working cell. It is estimated that two-thirds of the length of the temporary unpaved roads will be watered for dust control. Although some of the material handling will be salt, all of the material handling emissions were calculated with the lower moisture content of soil so as to be conservative as some of the salt is mixed with soil.

Once the salt waste reaches the working cell, it is unloaded (UNLOAD2) where it is then spread and/or compacted in the daily cell by a dozer (COMP). Wind erosion of the active working cell will occur as well as inactive areas that are waiting for waste or to be seeded (WIND1 and WIND2). Weather permitting, geosynthetic rain covers, called Reinforced Landfill Covers (RLC), may be used in daily cover operations rather than daily cover soil. Additionally, during the nine non-winter months of the year, other areas that are exposed will be covered with a RLC so as to not create emissions from wind erosion. During the three winter months, the exposed acreage cannot be covered with the RLC due to the potential for snow cover. Although the snow cover will act as dust suppressant, it is not likely a continual cover; thus, for three months of the year there is additional exposed acreage that can create wind erosion emissions (WIND4). The working cells will be covered with the daily, intermediate, and final covers (UNLOAD4, UNLOAD5, UNLOAD6) as needed and then seeded as quickly as possible. The working cell will operate 12 hours per day and 365 days per year. For times of the year when there are less than 12 hours of daylight, portable light plants will be used that are powered by diesel engines (ENG001 and ENG002). None of the activities that occur at the active working cell will be watered for dust control due to the salt.

Native soil stockpiles or other active areas will be used as sources of native soil to be moved to the mixing building or working cell for cover soils. Soil may be loaded at the native soil areas to be moved (UPSOILRD) to the mixing building (LOAD2), or soil may be loaded for daily cover (LOAD3), intermediate cover (LOAD4), or final cover (LOAD5) and moved to the working cell (UPDCOVER, UPICOVER, UPFCOVER). Wind erosion of the native soil stockpiles will occur (WIND3). The native soil areas will not be watered because the soil used for mixing or cover cannot be wet when mixed or covering the salt.

Additional emissions from passenger vehicles, water trucks, and fuel trucks on the unpaved roads will occur. Travel from dozers and excavators or loaders will also create particulate matter emissions.

Lastly, an emergency diesel generator will be located on site for use only when the grid power goes down to power the leachate tank pump and maintain the necessary leachate level. Leachate resulting from the Landfill operations may be piped from the leachate tank to the influent stream of the Clearwater Facility to be treated.

SITE INSPECTION

A site inspection was conducted on August 12, 2016 by the writer. I met with Conrad Baston and Bryan Radabaugh of Antero. The closest residence is approximately 1,300 feet from the proposed facility. No construction had occurred.

Latitude: 39.264245
Longitude: -80.906745

Directions to the facility are as follows:

From Greenwood: Facility located off of US-50 on access road off of Gum Run Road (50/36). Entrance for Antero Landfill will be through the Clearwater Treatment Facility.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions associated with this application consist of particulate matter dust emissions and the combustion emissions from two (2) light plant engines (18E, 19E). Fugitive particulate matter dust emissions also occur from road travel to and within the landfill, equipment travel within landfill and grader operations. Fugitive particulate matter emissions were estimated using USEPA AP-42 emission factors. The following table indicates which methodology was used in the emissions determination:

Emission Point ID#	Process Equipment	Calculation Methodology
1E	Salt Waste Unloading in Mixing Building	EPA AP-42 Emission Factors
2E	Waste Loading at Mixing Building	EPA AP-42 Emission Factors
3E	Waste Unloading at Working Cell	EPA AP-42 Emission Factors
4E	Soil Loading at Native Stock Piles	EPA AP-42 Emission Factors
5E	Soil Unloading at Mixing Building	EPA AP-42 Emission Factors
6E	Daily Soil Cover Loading at Stock Piles	EPA AP-42 Emission Factors
7E	Daily Soil Cover Unloading at Working Cell	EPA AP-42 Emission Factors
8E	Intermediate Soil Cover Loading at Stock Piles	EPA AP-42 Emission Factors
9E	Intermediate Soil Cover Unloading at Working Cell	EPA AP-42 Emission Factors
10E	Final Soil Cover Loading at Stock Piles	EPA AP-42 Emission Factors
11E	Final Soil Cover Unloading at Working Cell	EPA AP-42 Emission Factors
12E	Daily Active Wind Erosion	EPA AP-42 Emission Factors
13E	Daily Inactive Wind Erosion	EPA AP-42 Emission Factors
14E	Stockpile Wind Erosion	EPA-450/3-88-008 "Control of Open Fugitive Dust Sources"
15E	Winter Wind Erosion	EPA AP-42 Emission Factors
16E	Cover Soil Compaction	EPA AP-42 Emission Factors
17E	Mixing Salt and Soil	EPA AP-42 Emission Factors
18E	12.2 hp Light Plant Engine 1	Manufacturer's Data, EPA AP-42 Emission Factors

19E	12.2 hp Light Plant Engine 2	Manufacturer's Data, EPA AP-42 Emission Factors
20E	85 hp Emergency Generator	Manufacturer's Data, EPA AP-42 Emission Factors

The total non-fugitive facility PTE for the Clearwater Facility (water treatment facility and landfill) is shown in the following table:

Pollutant	**R13-3260 PTE Water Treatment Facility (tons/year)**	**R13-3331 PTE Landfill Facility (tons/year)**	**Facility ID 017-00157 Total (tons/year)**
Nitrogen Oxides	94.86	0.27	95.13
Carbon Monoxide	95.41	0.27	95.68
Volatile Organic Compounds	44.94	0.01	44.95
Particulate Matter-10	26.94	17.55	44.49
Particulate Matter-2.5	22.27	2.13	24.40
Sulfur Dioxide	1.82	0.07	1.89
Total HAPs	3.90	<0.01	3.91
Carbon Dioxide Equivalent	301,969	30	301,999

Fugitive particulate matter emissions associated with the landfill operations consist of 40.89 tons/year of PM_{10} and 4.00 tons/year of $PM_{2.5}$.

Maximum detailed controlled point source emissions were calculated by Antero and checked for accuracy by the writer and are summarized in the table on the next page.

Antero Treatment LLC – Antero Landfill (R13-3331)

Emission	Source	NO_x		CO		VOC		PM-10		PM-2.5		SO_2		Total HAPs		CO2e
Point ID#		lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	lb/hr	ton/year	ton/year
1E	Salt Waste Unloading in Mixing Bldg	0	0	0	0	0	0	0.004	0.016	0.001	0.003	0	0	0	0	0
2E	Waste Loading at Mixing Building	0	0	0	0	0	0	0.009	0.019	0.001	0.003	0	0	0	0	0
3E	Waste Unloading at Working Cell	0	0	0	0	0	0	0.028	0.062	0.004	0.009	0	0	0	0	0
4E	Soil Loading at Native Stock Piles	0	0	0	0	0	0	0.004	0.008	0.001	0.001	0	0	0	0	0
5E	Soil Unloading at Mixing Building	0	0	0	0	0	0	0.001	0.002	0.000	0.000	0	0	0	0	0
6E	Daily Soil Cover Loading at Stock Piles	0	0	0	0	0	0	0.008	0.018	0.001	0.003	0	0	0	0	0
7E	Daily Soil Cover Unl at Working Cell	0	0	0	0	0	0	0.008	0.018	0.001	0.003	0	0	0	0	0
8E	Intermediate Soil Cover Loading at SP	0	0	0	0	0	0	0.015	0.005	0.002	0.001	0	0	0	0	0
9E	Inter Soil Cover Unl at Working Cell	0	0	0	0	0	0	0.015	0.005	0.002	0.001	0	0	0	0	0
10E	Final Soil Cover Loading at Stock Piles	0	0	0	0	0	0	0.094	0.011	0.014	0.002	0	0	0	0	0
11E	Final Soil Cover Unl at Working Cell	0	0	0	0	0	0	0.094	0.011	0.014	0.002	0	0	0	0	0
12E	Daily Active Wind Erosion	0	0	0	0	0	0	1.46	6.39	0.22	0.96	0	0	0	0	0
13E	Daily Inactive Wind Erosion	0	0	0	0	0	0	0.30	1.32	0.05	0.20	0	0	0	0	0
14E	Stockpile Wind Erosion	0	0	0	0	0	0	0.40	1.73	0.06	0.26	0	0	0	0	0
15E	Winter Wind Erosion	0	0	0	0	0	0	2.42	2.61	0.36	0.39	0	0	0	0	0
16E	Cover Soil Compaction	0	0	0	0	0	0	1.90	4.15	0.05	0.10	0	0	0	0	0
17E	Mixing Salt and Soil	0	0	0	0	0	0	0.26	1.15	0.04	0.17	0	0	0	0	0
18E	Light Plant Engine 1	0.14	0.05	0.13	0.05	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.01	0.0003	0.0001	4
19E	Light Plant Engine 2	0.14	0.05	0.13	0.05	0.01	0.00	0.01	0.00	0.01	0.00	0.02	0.01	0.0003	0.0001	4
20E	Backup Generator	0.62	0.16	0.70	0.17	0.03	0.01	0.06	0.01	0.06	0.01	0.16	0.04	0.0020	0.0005	22
Total Landfill Point Source		**0.90**	**0.27**	**0.96**	**0.27**	**0.05**	**0.01**	**7.09**	**17.55**	**0.89**	**2.13**	**0.21**	**0.07**	**0.0026**	**0.0007**	**30**
Fugitive	Other Operations	0	0	0	0	0	0	2.04	1.11	0.05	0.03	0	0	0	0	0
Fugitive	Road Travel to Landfill	0	0	0	0	0	0	3.06	13.43	0.31	1.34	0	0	0	0	0
Fugitive	Road Travel within Landfill	0	0	0	0	0	0	32.48	22.33	3.25	2.23	0	0	0	0	0
Fugitive	Equipment Travel within Landfill	0	0	0	0	0	0	5.68	4.02	0.57	0.40	0	0	0	0	0
Total Landfill Fugitive		**0**	**0**	**0**	**0**	**0**	**0**	**43.26**	**40.89**	**4.18**	**4.00**	**0**	**0**	**0**	**0**	**0**
Total Landfill Site Wide		**0.90**	**0.27**	**0.96**	**0.27**	**0.05**	**0.01**	**50.35**	**58.44**	**5.07**	**6.13**	**0.21**	**0.07**	**0.00**	**0.00**	**30**
Water Treatment Facility Point Source		33.62	94.86	28.23	95.41	26.57	44.94	6.52	26.94	5.39	22.27	0.51	1.82	1.02	3.90	301969
Landfill + Water Treatment Facility Point Source		**34.52**	**95.13**	**29.19**	**95.68**	**26.62**	**44.95**	**56.87**	**85.38**	**10.46**	**28.40**	**0.72**	**1.89**	**1.02**	**3.90**	**301999**

REGULATORY APPLICABILITY

The following rules apply to the landfill:

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)

A 45CSR13 construction permit applies to this source due to the fact that Antero exceeds the regulatory emission threshold for criteria pollutants of 6 lbs/hr and 10 tons/year of a regulated air pollutant (PM_{10}) and are subject to a substantive requirement of an emission control rule (40CFR60 Subpart IIII).

Antero paid the appropriate application fee and published the required legal advertisement for a construction permit application.

45CSR16 (Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60)

45CSR16 applies to this source by reference of 40CFR60, Subpart IIII. These requirements are discussed under that rule below.

45CSR17 (To Prevent and Control Particulate Matter Air Pollution from Materials Handling, Preparation, Storage and Other Sources of Fugitive Particulate Matter)

The purpose of this rule is to prevent and control particulate matter air pollution from materials handling, preparation, storage and other sources of fugitive particulate matter. No person shall cause, suffer, allow or permit fugitive particulate matter to be discharged beyond the boundary lines of the property on which the discharge originates or at any public or residential location, which causes or contributes to statutory air pollution. The fugitive particulate matter controls required in R13-3331 meet the requirements of this rule.

45CSR30 (Requirements for Operating Permits)

The source (Clearwater Treatment and Antero Landfill) is a nonmajor source subject to 45CSR30. This facility is a deferred Title V source. Section 2.26 states that the fugitive emissions of a stationary source shall not be considered in determining whether it is a major stationary source for the purposes of §302(j) of the Clean Air Act, unless the source belongs to one of the following categories listed in that rule. This facility is not one of the listed sources. Therefore, the fugitive emissions do not count towards 45CSR30 major source status.

40CFR60 Subpart IIII (Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CI ICE))

Subpart IIII sets forth non-methane hydrocarbon (NMHC), hydrocarbon (HC), nitrogen oxides (NO_x), carbon monoxide (CO), and particulate matter (PM) emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject internal combustion engine.

The two (2) 12.2 HP diesel fired light plant engines (18E, 19E) are subject to this subpart. These units are required to meet the §1039.101 Tier 4 exhaust standards of 7.13 g/kw-hr (5.3 g/hp-hr) for NMHC+NO_x, 6.6 g/kw-hr (4.9 g/hp-hr) for CO, 0.38 g/kw-hr (0.3 g/hp-hr) for VOC and 0.4 g/kw-hr (0.3 g/hp-hr) for PM. The units meet these standards.

The 85 HP diesel fired emergency generator (20E) is also subject to this subpart. The unit is required to meet the §89.112 Tier 3 exhaust standards of 4.47 g/kw-hr (3.3 g/hp-hr) for NMHC+NO_x, 5.0 g/kw-hr (3.7 g/hp-hr) for CO, 0.23 g/kw-hr (0.2 g/hp-hr) for VOC and 0.4 g/kw-hr (0.3 g/hp-hr) for PM. The unit meets this standard.

40CFR63 Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines)

Subpart ZZZZ establishes national emission limitations and operating limitations for HAPs emitted from stationary RICE located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations. The engines at the Antero Landfill are subject to the area source requirements for emergency and non-emergency compression ignition engines.

The applicability requirements for new stationary RICEs located at an area source of HAPs, is the requirement to meet the standards of 40CFR60 Subpart IIII. These requirements were outlined above. The proposed engines meet these standards.

The following rules do not apply to the landfill:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

There are no indirect heat exchangers at the landfill.

45CSR7 (To Prevent and Control Particulate Matter Air Pollution from Manufacturing Processes and Associated Operations)

45CSR7 defines a "manufacturing process" as any action, operation or treatment, embracing chemical, industrial or manufacturing efforts, and employing, for example, heat treating furnaces, by-product coke plants, core-baking ovens, mixing kettles, cupolas, blast furnaces, open hearth furnaces, heating and reheating furnaces, puddling furnaces, sintering plants, electric steel furnaces, ferrous and non-ferrous foundries, kilns, stills, driers, crushers, grinders, roasters, and equipment used in connection therewith and all other methods or forms of manufacturing or processing that may emit smoke, particulate matter or gaseous matter. The landfill does not meet the definition of a "manufacturing process" under 45CSR7, therefore, this rule does not apply.

45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants)

45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment)

The Antero Landfill is located in Doddridge County, which is an unclassified county for all criteria pollutants, therefore it is not applicable to 45CSR19.

As shown in the following table, Antero is not a major source subject to 45CSR14 or 45CSR19 review. According to 45CSR14 Section 2.43.e, fugitive emissions are included in the major source determination because it is listed as one of the source categories in Table 1 (fossil fuel boilers (or combination thereof) totaling more than 250 MMBTU/hr heat input that is located at the Clearwater Treatment Facility (R13-3260)). The boilers at the Clearwater Treatment Facility are viewed as "nested sources" in the analysis of 45CSR14. During the 45CSR14 analysis of R13-3260, it was determined that the Clearwater Treatment Facility was not subject to this rule. The Antero Landfill is not a listed source and the emissions associated with this facility do not change the prior decision.

40CFR60 Subpart Cc (Emission Guidelines and Compliance Times for Municipal Waste Landfills)

The Antero Landfill is not a municipal solid waste landfill per the definition in §60.31c. No gas will be entering or released from the facility since the facility will only handle soil and salts. Because the facility is not a municipal solid waste landfill, this rule does not apply.

40CFR60 Subpart WWW (Standards of Performance for Municipal Solid Waste Landfills)

The Antero Landfill is not a municipal solid waste landfill per the definition in §60.751. No gas will be entering or released from the facility since the facility will only handle soil and salts. Because the facility is not a municipal solid waste landfill, this rule does not apply.

40CFR60 Subpart OOOOa (Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution for which Construction, Modification or Reconstruction Commenced after September 18, 2015)

EPA published its New Source Performance Standards (NSPS) and air toxics rules for the oil and gas sector on August 16, 2012. EPA published amendments to the Subpart on September 23, 2013 and June 3, 2016. 40CFR60 Subpart OOOOa establishes emission standards and compliance schedules for the control of the pollutant greenhouse gases (GHG). The greenhouse gas standard in this subpart is in the form of a limitation on emissions of methane from affected facilities in the crude oil and natural gas source category that commence construction, modification or reconstruction after September 18, 2015. This subpart also establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO_2) emissions from affected facilities that commence construction, modification or reconstruction after September 18, 2015. The effective date of this rule is August 2, 2016.

The Antero Landfill is not a natural gas production, transmission or distribution facility. Therefore, this rule would not apply.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will be a negligible amount of hazardous air pollutants (0.0007 tons/year) emitted from the combustion of natural gas in the two (2) 12.2 hp diesel light plant engines and one (1) 85 hp emergency generator. Therefore, due to the negligible concentrations emitted, detailed toxicological information is not included in this evaluation.

AIR QUALITY IMPACT ANALYSIS

Modeling was not required of this source due to the fact that the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) or 45CSR19 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution which Cause or Contribute to Nonattainment) as shown in the table listed in the Regulatory Discussion section under 45CSR14/45CSR19.

SOURCE AGGREGATION

Classifying multiple facilities as one "stationary source" under 45CSR13, 45CSR14, and 45CSR19 is based on the definition of "Building, structure, facility, or installation" as given in §45-14-2.13 and §45-19-2.12. The definition states:

"Building, Structure, Facility, or Installation" means all of the pollutant-emitting activities which belong to the same industrial grouping, are located on one or more contiguous or adjacent properties, and are under the control of the same person (or persons under common control). Pollutant-emitting activities are a part of the same industrial grouping if they belong to the same "Major Group" (i.e., which have the same two (2)-digit code) as described in the Standard Industrial Classification Manual, 1987 (United States Government Printing Office stock number GPO 1987 0-185-718:QL 3).

The Antero Landfill and Clearwater Treatment Facility are under common control and share the same SIC code. Therefore, the potential classification of these facilities as one stationary source with any other facility depends on the determination if these stations are considered "contiguous or adjacent properties."

"Contiguous or Adjacent" determinations are made on a case by case basis. These determinations are proximity based, and it is important to focus on this. The terms "contiguous" or "adjacent" are not defined by USEPA. Contiguous has a dictionary definition of being in actual contact; touching along a boundary or at a point. Adjacent has a dictionary definition of not distant; nearby; or having a common endpoint or border. The Antero Landfill and Clearwater Treatment Facility are located on contiguous or adjacent properties.

Because the facilities are considered to be on contiguous or adjacent properties, the emissions from these facilities should be aggregated in determining major source or PSD status.

MONITORING OF OPERATIONS

Antero will be required to perform the following monitoring and recordkeeping:

- Maintain salt waste throughput to landfill
- Maintain records of the hours of operation for all engines
- Maintain truck trips, haulroads and fugitive minimization data
- Maintain records of testing conducted in accordance with the permit. Said records shall be maintained on-site or in a readily accessible off-site location
- Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit
- Maintain records of all applicable requirements of 40CFR60 Subpart IIII
- The records shall be maintained on site or in a readily available off-site location maintained by Antero for a period of five (5) years

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that Antero meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Antero Landfill should be granted a 45CSR13 construction permit for their facility.

Jerry Williams, P.E.
Engineer

SEP 8, 2016
Date

West Virginia Department of Environmental Protection

Earl Ray Tomblin
Governor

Division of Air Quality

Randy C. Huffman
Cabinet Secretary

Permit to Construct

R13-3331

This permit is issued in accordance with the West Virginia Air Pollution Control Act (West Virginia Code §§22-5-1 et seq.) and 45 C.S.R. 13 – Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation. The permittee identified at the above-referenced facility is authorized to construct the stationary sources of air pollutants identified herein in accordance with all terms and conditions of this permit.

Issued to:

Antero Treatment LLC
Antero Landfill
017-00157

William F. Durham
Director

Issued: Draft

Facility Location:	Greenwood, Doddridge County, West Virginia
Mailing Address:	1615 Wynkoop Street, Denver, CO 80202
Facility Description:	Water Treatment Facility
NAICS Codes:	213112
UTM Coordinates:	508.045 km Easting • 4,346.105 km Northing • Zone 17
Permit Type:	Construction
Description of Change:	Landfill to handle salt waste from the Antero Clearwater Facility.

Any person whose interest may be affected, including, but not necessarily limited to, the applicant and any person who participated in the public comment process, by a permit issued, modified or denied by the Secretary may appeal such action of the Secretary to the Air Quality Board pursuant to article one [§§22B-1-1 et seq.], Chapter 22B of the Code of West Virginia. West Virginia Code §§22-5-14.

This permit does not affect 45CSR30 applicability, the source is a nonmajor source subject to 45CSR30.

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1.0. Emission Units

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
UNLOAD1	1E	Salt Waste Unloading in Mixing Building	2016	2,100 tpd	None
LOAD1	2E	Waste Loading at Mixing Building	2016	2,415 tpd	None
UNLOAD2	3E	Waste Unloading at Working Cell	2016	2,415 tpd	None
LOAD2	4E	Soil Loading at Native Stock Piles	2016	315 tpd	None
UNLOAD3	5E	Soil Unloading at Mixing Building	2016	315 tpd	None
LOAD3	6E	Daily Soil Cover Loading at Stock Piles	2016	670 tpd	None
UNLOAD4	7E	Daily Soil Cover Unloading at Working Cell	2016	670 tpd	None
LOAD4	8E	Intermediate Soil Cover Loading at Stock Piles	2016	1,300 tpd	None
UNLOAD5	9E	Intermediate Soil Cover Unloading at Working Cell	2016	1,300 tpd	None
LOAD5	10E	Final Soil Cover Loading at Stock Piles	2016	8,000 tpd	None
UNLOAD6	11E	Final Soil Cover Unloading at Working Cell	2016	8,000 tpd	None
WIND1	12E	Daily Active Wind Erosion	2016	0.23 acres	None
WIND2	13E	Daily Inactive Wind Erosion	2016	1 acre	None
WIND3	14E	Stockpile Wind Erosion	2016	2 acres	None
WIND4	15E	Winter Wind Erosion	2016	8 acres	None
COMP	16E	Cover Soil Compaction	2016	NA	None
MIXING	17E	Mixing Salt and Soil	2016	2,415 tpd	None
ENG001	18E	Mitsubishi L3E-W26ML Light Plant Engine 1	2016	12.2 hp	None
ENG002	19E	Mitsubishi L3E-W26ML Light Plant Engine 2	2016	12.2 hp	None
ENG003	20E	Generac RD050 Emergency Generator	2016	85 hp	None

2.0. General Conditions

2.1. Definitions

2.1.1. All references to the "West Virginia Air Pollution Control Act" or the "Air Pollution Control Act" mean those provisions contained in W.Va. Code §§ 22-5-1 to 22-5-18.

2.1.2. The "Clean Air Act" means those provisions contained in 42 U.S.C. §§ 7401 to 7671q, and regulations promulgated thereunder.

2.1.3. "Secretary" means the Secretary of the Department of Environmental Protection or such other person to whom the Secretary has delegated authority or duties pursuant to W.Va. Code §§ 22-1-6 or 22-1-8 (45CSR§30-2.12.). The Director of the Division of Air Quality is the Secretary's designated representative for the purposes of this permit.

2.2. Acronyms

CAAA	Clean Air Act Amendments	**NO_X**	Nitrogen Oxides
CBI	Confidential Business Information	**NSPS**	New Source Performance Standards
CEM	Continuous Emission Monitor	**PM**	Particulate Matter
CES	Certified Emission Statement	**$PM_{2.5}$**	Particulate Matter less than 2.5 µm in diameter
C.F.R. *or* CFR	Code of Federal Regulations		
CO	Carbon Monoxide	**PM_{10}**	Particulate Matter less than 10µm in diameter
C.S.R. *or* CSR	Codes of State Rules		
DAQ	Division of Air Quality	**Ppb**	Pounds per Batch
DEP	Department of Environmental Protection	**Pph**	Pounds per Hour
		Ppm	Parts per Million
dscm	Dry Standard Cubic Meter	**Ppm_V or ppmv**	Parts per Million by Volume
FOIA	Freedom of Information Act		
HAP	Hazardous Air Pollutant	**PSD**	Prevention of Significant Deterioration
HON	Hazardous Organic NESHAP		
HP	Horsepower	**Psi**	Pounds per Square Inch
lbs/hr	Pounds per Hour	**SIC**	Standard Industrial Classification
LDAR	Leak Detection and Repair		
M	Thousand	**SIP**	State Implementation Plan
MACT	Maximum Achievable Control Technology	**SO_2**	Sulfur Dioxide
		TAP	Toxic Air Pollutant
MDHI	Maximum Design Heat Input	**TPY**	Tons per Year
MM	Million	**TRS**	Total Reduced Sulfur
MMBtu/hr *or* mmbtu/hr	Million British Thermal Units per Hour	**TSP**	Total Suspended Particulate
		USEPA	United States Environmental Protection Agency
MMCF/hr *or* mmcf/hr	Million Cubic Feet per Hour		
		UTM	Universal Transverse Mercator
NA	Not Applicable	**VEE**	Visual Emissions Evaluation
NAAQS	National Ambient Air Quality Standards	**VOC**	Volatile Organic Compounds
		VOL	Volatile Organic Liquids
NESHAPS	National Emissions Standards for Hazardous Air Pollutants		

2.3. Authority

This permit is issued in accordance with West Virginia Air Pollution Control Act W.Va. Code §§ 22-5-1. et seq. and the following Legislative Rules promulgated thereunder:

2.3.1. 45CSR13 – *Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits and Procedures for Evaluation*;

2.4. Term and Renewal

2.4.1. This Permit shall remain valid, continuous and in effect unless it is revised, suspended, revoked or otherwise changed under an applicable provision of 45CSR13 or any other applicable legislative rule;

2.5. Duty to Comply

2.5.1. The permitted facility shall be constructed and operated in accordance with the plans and specifications filed in Permit Applications R13-3260 and R13-3331, and any modifications, administrative updates, or amendments thereto. The Secretary may suspend or revoke a permit if the plans and specifications upon which the approval was based are not adhered to; **[45CSR§§13-5.11 and 10.3.]**

2.5.2. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the West Virginia Code and the Clean Air Act and is grounds for enforcement action by the Secretary or USEPA;

2.5.3. Violations of any of the conditions contained in this permit, or incorporated herein by reference, may subject the permittee to civil and/or criminal penalties for each violation and further action or remedies as provided by West Virginia Code 22-5-6 and 22-5-7;

2.5.4. Approval of this permit does not relieve the permittee herein of the responsibility to apply for and obtain all other permits, licenses, and/or approvals from other agencies; i.e., local, state, and federal, which may have jurisdiction over the construction and/or operation of the source(s) and/or facility herein permitted.

2.6. Duty to Provide Information

The permittee shall furnish to the Secretary within a reasonable time any information the Secretary may request in writing to determine whether cause exists for administratively updating, modifying, revoking, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the Secretary copies of records to be kept by the permittee. For information claimed to be confidential, the permittee shall furnish such records to the Secretary along with a claim of confidentiality in accordance with 45CSR31. If confidential information is to be sent to USEPA, the permittee shall directly provide such information to USEPA along with a claim of confidentiality in accordance with 40 C.F.R. Part 2.

2.7. Duty to Supplement and Correct Information

Upon becoming aware of a failure to submit any relevant facts or a submittal of incorrect information in any permit application, the permittee shall promptly submit to the Secretary such supplemental facts or corrected information.

2.8. Administrative Update

The permittee may request an administrative update to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-4.]

2.9. Permit Modification

The permittee may request a minor modification to this permit as defined in and according to the procedures specified in 45CSR13.
[45CSR§13-5.4.]

2.10 Major Permit Modification

The permittee may request a major modification as defined in and according to the procedures specified in 45CSR14 or 45CSR19, as appropriate.
[45CSR§13-5.1]

2.11. Inspection and Entry

The permittee shall allow any authorized representative of the Secretary, upon the presentation of credentials and other documents as may be required by law, to perform the following:

a. At all reasonable times (including all times in which the facility is in operation) enter upon the permittee's premises where a source is located or emissions related activity is conducted, or where records must be kept under the conditions of this permit;

b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

c. Inspect at reasonable times (including all times in which the facility is in operation) any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under the permit; and

d. Sample or monitor at reasonable times substances or parameters to determine compliance with the permit or applicable requirements or ascertain the amounts and types of air pollutants discharged.

2.12. Emergency

2.12.1. An "emergency" means any situation arising from sudden and reasonable unforeseeable events beyond the control of the source, including acts of God, which situation requires immediate corrective action to restore normal operation, and that causes the source to exceed a technology-based emission limitation under the permit, due to unavoidable increases in emissions attributable to the emergency. An emergency shall not include noncompliance to the extent caused by

improperly designed equipment, lack of preventative maintenance, careless or improper operation, or operator error.

2.12.2. Effect of any emergency. An emergency constitutes an affirmative defense to an action brought for noncompliance with such technology-based emission limitations if the conditions of Section 2.12.3 are met.

2.12.3. The affirmative defense of emergency shall be demonstrated through properly signed, contemporaneous operating logs, or other relevant evidence that:

a. An emergency occurred and that the permittee can identify the cause(s) of the emergency;

b. The permitted facility was at the time being properly operated;

c. During the period of the emergency the permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards, or other requirements in the permit; and

d. The permittee submitted notice of the emergency to the Secretary within one (1) working day of the time when emission limitations were exceeded due to the emergency and made a request for variance, and as applicable rules provide. This notice must contain a detailed description of the emergency, any steps taken to mitigate emissions, and corrective actions taken.

2.12.4. In any enforcement proceeding, the permittee seeking to establish the occurrence of an emergency has the burden of proof.

2.12.5 The provisions of this section are in addition to any emergency or upset provision contained in any applicable requirement.

2.13. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a permittee in an enforcement action that it should have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. However, nothing in this paragraph shall be construed as precluding consideration of a need to halt or reduce activity as a mitigating factor in determining penalties for noncompliance if the health, safety, or environmental impacts of halting or reducing operations would be more serious than the impacts of continued operations.

2.14. Suspension of Activities

In the event the permittee should deem it necessary to suspend, for a period in excess of sixty (60) consecutive calendar days, the operations authorized by this permit, the permittee shall notify the Secretary, in writing, within two (2) calendar weeks of the passing of the sixtieth (60) day of the suspension period.

2.15. Property Rights

This permit does not convey any property rights of any sort or any exclusive privilege.

2.16. Severability

The provisions of this permit are severable and should any provision(s) be declared by a court of competent jurisdiction to be invalid or unenforceable, all other provisions shall remain in full force and effect.

2.17. Transferability

This permit is transferable in accordance with the requirements outlined in Section 10.1 of 45CSR13. **[45CSR§13-10.1.]**

2.18. Notification Requirements

The permittee shall notify the Secretary, in writing, no later than thirty (30) calendar days after the actual startup of the operations authorized under this permit.

2.19. Credible Evidence

Nothing in this permit shall alter or affect the ability of any person to establish compliance with, or a violation of, any applicable requirement through the use of credible evidence to the extent authorized by law. Nothing in this permit shall be construed to waive any defense otherwise available to the permittee including, but not limited to, any challenge to the credible evidence rule in the context of any future proceeding.

3.0. Facility-Wide Requirements

3.1. Limitations and Standards

3.1.1. **Open burning.** The open burning of refuse by any person, firm, corporation, association or public agency is prohibited except as noted in 45CSR§6-3.1.
[45CSR§6-3.1.]

3.1.2. **Open burning exemptions.** The exemptions listed in 45CSR§6-3.1 are subject to the following stipulation: Upon notification by the Secretary, no person shall cause, suffer, allow or permit any form of open burning during existing or predicted periods of atmospheric stagnation. Notification shall be made by such means as the Secretary may deem necessary and feasible.
[45CSR§6-3.2.]

3.1.3. **Asbestos.** The permittee is responsible for thoroughly inspecting the facility, or part of the facility, prior to commencement of demolition or renovation for the presence of asbestos and complying with 40 C.F.R. § 61.145, 40 C.F.R. § 61.148, and 40 C.F.R. § 61.150. The permittee, owner, or operator must notify the Secretary at least ten (10) working days prior to the commencement of any asbestos removal on the forms prescribed by the Secretary if the permittee is subject to the notification requirements of 40 C.F.R. § 61.145(b)(3)(i). The USEPA, the Division of Waste Management, and the Bureau for Public Health - Environmental Health require a copy of this notice to be sent to them.
[40CFR§61.145(b) and 45CSR§34]

3.1.4. **Odor.** No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.
[45CSR§4-3.1] ***[State Enforceable Only]***

3.1.5. **Permanent shutdown.** A source which has not operated at least 500 hours in one 12-month period within the previous five (5) year time period may be considered permanently shutdown, unless such source can provide to the Secretary, with reasonable specificity, information to the contrary. All permits may be modified or revoked and/or reapplication or application for new permits may be required for any source determined to be permanently shutdown.
[45CSR§13-10.5.]

3.1.6. **Standby plan for reducing emissions.** When requested by the Secretary, the permittee shall prepare standby plans for reducing the emissions of air pollutants in accordance with the objectives set forth in Tables I, II, and III of 45CSR11.
[45CSR§11-5.2.]

3.2. Monitoring Requirements

[Reserved]

3.3. Testing Requirements

3.3.1. **Stack testing.** As per provisions set forth in this permit or as otherwise required by the Secretary, in accordance with the West Virginia Code, underlying regulations, permits and orders, the permittee shall conduct test(s) to determine compliance with the emission limitations set forth in this permit and/or established or set forth in underlying documents. The Secretary, or his duly authorized representative, may at his option witness or conduct such test(s). Should the Secretary exercise his option to conduct such test(s), the operator shall provide all necessary sampling

connections and sampling ports to be located in such manner as the Secretary may require, power for test equipment and the required safety equipment, such as scaffolding, railings and ladders, to comply with generally accepted good safety practices. Such tests shall be conducted in accordance with the methods and procedures set forth in this permit or as otherwise approved or specified by the Secretary in accordance with the following:

a. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with 40 C.F.R. Parts 60, 61, and 63 in accordance with the Secretary's delegated authority and any established equivalency determination methods which are applicable. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4. or 45CSR§13-5.4 as applicable.

b. The Secretary may on a source-specific basis approve or specify additional testing or alternative testing to the test methods specified in the permit for demonstrating compliance with applicable requirements which do not involve federal delegation. In specifying or approving such alternative testing to the test methods, the Secretary, to the extent possible, shall utilize the same equivalency criteria as would be used in approving such changes under Section 3.3.1.a. of this permit. If a testing method is specified or approved which effectively replaces a test method specified in the permit, the permit may be revised in accordance with 45CSR§13-4. or 45CSR§13-5.4 as applicable.

c. All periodic tests to determine mass emission limits from or air pollutant concentrations in discharge stacks and such other tests as specified in this permit shall be conducted in accordance with an approved test protocol. Unless previously approved, such protocols shall be submitted to the Secretary in writing at least thirty (30) days prior to any testing and shall contain the information set forth by the Secretary. In addition, the permittee shall notify the Secretary at least fifteen (15) days prior to any testing so the Secretary may have the opportunity to observe such tests. This notification shall include the actual date and time during which the test will be conducted and, if appropriate, verification that the tests will fully conform to a referenced protocol previously approved by the Secretary.

d. The permittee shall submit a report of the results of the stack test within sixty (60) days of completion of the test. The test report shall provide the information necessary to document the objectives of the test and to determine whether proper procedures were used to accomplish these objectives. The report shall include the following: the certification described in paragraph 3.5.1., a statement of compliance status, also signed by a responsible official; and, a summary of conditions which form the basis for the compliance status evaluation. The summary of conditions shall include the following:

    1. The permit or rule evaluated, with the citation number and language;
    2. The result of the test for each permit or rule condition; and,
    3. A statement of compliance or noncompliance with each permit or rule condition.

[WV Code § 22-5-4(a)(14-15) and 45CSR13]

3.4. Recordkeeping Requirements

3.4.1. **Retention of records.** The permittee shall maintain records of all information (including monitoring data, support information, reports, and notifications) required by this permit recorded in a form suitable and readily available for expeditious inspection and review. Support information includes all calibration and maintenance records and all original strip-chart recordings for continuous monitoring instrumentation. The files shall be maintained for at least five (5) years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. At a minimum, the most recent two (2) years of data shall be maintained on site. The remaining three (3) years of data may be maintained off site, but must remain accessible within a reasonable time. Where appropriate, the permittee may maintain records electronically (on a computer, on computer floppy disks, CDs, DVDs, or magnetic tape disks), on microfilm, or on microfiche.

3.4.2. **Odors.** For the purposes of 45CSR4, the permittee shall maintain a record of all odor complaints received, any investigation performed in response to such a complaint, and any responsive action(s) taken.
[45CSR§4. *State Enforceable Only.*]

3.5. Reporting Requirements

3.5.1. **Responsible official.** Any application form, report, or compliance certification required by this permit to be submitted to the DAQ and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

3.5.2. **Confidential information.** A permittee may request confidential treatment for the submission of reporting required by this permit pursuant to the limitations and procedures of W.Va. Code § 22-5-10 and 45CSR31.

3.5.3. **Correspondence.** All notices, requests, demands, submissions and other communications required or permitted to be made to the Secretary of DEP and/or USEPA shall be made in writing and shall be deemed to have been duly given when delivered by hand, or mailed first class with postage prepaid to the address(es) set forth below or to such other person or address as the Secretary of the Department of Environmental Protection may designate:

If to the DAQ:
Director
WVDEP
Division of Air Quality
601 57th Street
Charleston, WV 25304-2345

If to the US EPA:
Associate Director
Office of Air Enforcement and Compliance Assistance (3AP20)
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029

3.5.4. **Operating Fee**

3.5.4.1. In accordance with 45CSR30 – Operating Permit Program, the permittee shall submit a certified emissions statement and pay fees on an annual basis in accordance with the submittal requirements of the Division of Air Quality. A receipt for the appropriate fee shall be

maintained on the premises for which the receipt has been issued, and shall be made immediately available for inspection by the Secretary or his/her duly authorized representative.

3.5.5. **Emission inventory.** At such time(s) as the Secretary may designate, the permittee herein shall prepare and submit an emission inventory for the previous year, addressing the emissions from the facility and/or process(es) authorized herein, in accordance with the emission inventory submittal requirements of the Division of Air Quality. After the initial submittal, the Secretary may, based upon the type and quantity of the pollutants emitted, establish a frequency other than on an annual basis.

4.0. Source-Specific Requirements

4.1. Limitations and Standards

4.1.1. **Record of Monitoring.** The permittee shall keep records of monitoring information that include the following:

a. The date, place as defined in this permit, and time of sampling or measurements;
b. The date(s) analyses were performed;
c. The company or entity that performed the analyses;
d. The analytical techniques or methods used;
e. The results of the analyses; and
f. The operating conditions existing at the time of sampling or measurement.

4.1.2. **Minor Source of Hazardous Air Pollutants (HAP).** HAP emissions from the facility shall be less than 10 tons/year of any single HAP or 25 tons/year of any combination of HAPs. Compliance with this Section shall ensure that the facility is a minor HAP source.

4.1.3. **Operation and Maintenance of Air Pollution Control Equipment.** The permittee shall, to the extent practicable, install, maintain, and operate all pollution control equipment and associated monitoring equipment in a manner consistent with safety and good air pollution control practices for minimizing emissions, or comply with any more stringent limits set forth in this permit or as set forth by any State rule, Federal regulation, or alternative control plan approved by the Secretary. **[45CSR§13-5.11.]**

4.1.4. **Record of Malfunctions of Air Pollution Control Equipment.** For all air pollution control equipment listed, the permittee shall maintain records of the occurrence and duration of any malfunction or operational shutdown of the air pollution control equipment during which excess emissions occur. For each such case, the following information shall be recorded:

a. The equipment involved.
b. Steps taken to minimize emissions during the event.
c. The duration of the event.
d. The estimated increase in emissions during the event.

For each such case associated with an equipment malfunction, the additional information shall also be recorded:

e. The cause of the malfunction.
f. Steps taken to correct the malfunction.
g. Any changes or modifications to equipment or procedures that would help prevent future recurrences of the malfunction.

5.0. Source-Specific Requirements (Salt Waste Landfill (1E-17E))

5.1. Limitations and Standards

5.1.1. The maximum throughput of material to be handled or processed shall not exceed the following:

Emission Point ID#	Material	Hourly Throughput (tons/hr)	Daily Throughput (tons/day)	Annual Throughput (tons/year)
1E	Salt	87.5	2,100	766,500
2E	Salt or Salt/Soil Mix	201.3	2,415	881,475
3E	Salt or Salt/Soil Mix	201.3	2,415	881,475
4E	Soil	26.3	315	114,975
5E	Soil	26.3	315	114,975
6E	Soil	26.3	670	250,000
7E	Soil	26.3	670	250,000
8E	Soil	52.5	1,300	65,000
9E	Soil	52.5	1,300	65,000
10E	Soil	52.5	8,000	156,000
11E	Soil	52.5	8,000	156,000

5.1.2. The maximum size of the stockpiles associated with this process shall not exceed the following:

Emission Point ID#	Material	Max Base Area (ft^2)
12E	Soil	10,019
13E	Soil	43,560
14E	Soil	87,120
15E	Soil	348,480

5.1.3. The maximum number of truck trips shall not exceed the following:

Type of Trip	Daily Trips	Annual Trips
Plant to Landfill Transfer Trucks	70	25,600
Trucks to Working Face from Building	75	27,600
Trucks to Mixing Building from Landfill	9	3,325
Passenger Vehicles to Mixing Building	40	14,600
Trucks for Daily Cover	20	7,000
Trucks for Intermediate Cover	38	1,900
Trucks for Final Cover	230	4,500
Water Trucks	25	3,750
Fuel Trucks	6	1,955

5.1.4. The compaction of salt and/or cover soil by dozers (16E) shall not exceed 4,380 hours per year of operation. Compliance with the maximum yearly operation limitation shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the hours of operation at any given time during the previous twelve consecutive calendar months.

5.1.5. The activities associated with emission points 1E, 2E and 5E shall occur inside the mixing building (17E) with full enclosure.

5.1.6. The average moisture content of material associated with emission points 1E-17E shall be 12%.

5.1.7. Weather permitting, geosynthetic rain covers, called Reinforced Landfill Covers (RLC), may be used in daily cover operations of landfill work areas rather than daily cover soil. Additionally, during the nine (9) non-winter months of the year, other areas that are exposed and not an active placement zone will be covered with a RLC so as to not create emissions from wind erosion. During the three (3) winter months, the exposed acreage may not be able to be covered with the RLC due to the potential for snow cover.

5.1.8. Minimization of Fugitive Emissions, Methods and Required Systems

a. The permittee shall maintain fugitive dust control of the premises, haulroads and access roads by utilization of a water truck and/or other suitable measures for UPMAIN, UPPASS, UPWKFACE, UPSOILRD, UPDCOVER, UPICOVER, UPFCOVER, UPWATER, UPFUEL. Good operating methods, practices and general maintenance shall be observed in relation to stockpiling and haulroads to effectively minimize the emission of particulate matter. This shall include the operation of UPEXCAV, UPDOZER, UPGRADER;

b. To maintain effective fugitive dust control of the premises and minimize the emission of particulate matter, fugitive dust generation and atmospheric entrainment of particulate matter, the permittee shall properly install, operate and maintain a fugitive dust control system designed in accordance with good engineering practices and observe and employ good operating methods, practices and general maintenance. Such fugitive dust control system shall be installed, equipped and operated according to the emissions control equipment and fugitive dust control system design data proposed in the Permit Application R13-3331;

c. Emissions control equipment and fugitive dust control system design data proposed and submitted in Permit Application R13-3331 shall follow and adhere to the following requirements for fugitive dust control systems, methods, practices and general maintenance.

1. Fugitive Dust Control of Premises: The permittee shall adequately maintain and operate on-site: (1) a water truck, or (2) a fixed system of water sprays, or (3) a combination of a water truck and a fixed system of water sprays to minimize the emission of particulate matter generated from access roads, haulroads, and work areas. Any fixed water spray system shall be no less effective than a water truck in minimizing fugitive particulate emissions from the area under control. The water truck and/or fixed water spray system shall be operated at all times when fugitive particulate emissions from access roads, haulroads, and work areas are generated as a result of vehicular traffic, operational activity or wind. All water trucks and fixed water sprays shall be equipped with a pump and spraybars to apply water or a mixture of water and an environmentally acceptable dust control additive (solution) to access roads, haulroads, and work areas where mobile equipment is used. Spraybars shall be equipped with commercially available spray nozzles of sufficient size and number so as to provide adequate coverage to the area being treated. The pump and piping system used to deliver the water or solution shall be of sufficient size and capacity to deliver an adequate quantity of water or solution to the spray nozzles at a sufficient pressure to provide an effective spray.

2. Haulroad Maintenance: All haulroads, access roads, and work areas shall be kept clean and in good condition by replacing base material and/or grading as required.

3. Vehicular Tracking: If tracking of solids by vehicular traffic from access and/or haulroads onto any public road or highway occurs and generates or has the potential to generate fugitive particulate emissions, the permittee shall properly operate and maintain an underbody truck wash, rumble strips or employ other suitable measures to maintain effective fugitive dust control of the premises and minimize the emission of particulate matter;

4. Load-outs: All truck load-outs shall be equipped with a device and/or employ a specific operating method which minimizes drop height during load-out in order to minimize the emission of particulate matter; and

5. Open Storage Pile Loading: All loading of open storage piles shall be accomplished with a device and/or employ a specific operating method which minimizes drop height during load-in to effectively minimize the emission of particulate matter.

d. The permittee shall properly install, operate and maintain designed winterization systems for all water trucks and/or water sprays in a manner that all such fugitive dust control systems remain effective and functional, to the maximum extent practicable, during winter months and cold weather. At all times, including periods of cold weather, the permittee shall comply with the requirements, provisions, standards and conditions of this permit, any other permit or applicable statutory or regulatory requirement.

5.2. Recordkeeping Requirements

5.2.1. To demonstrate compliance with permit requirements 5.1.1 and 5.1.2, the permittee shall maintain records of the amount and type of material loaded and stored. Said records shall be maintained on site for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.

5.2.2. To demonstrate compliance with permit requirement 5.1.3, the permittee shall maintain records of the amount and type of truck trips. Said records shall be maintained on site for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.

5.2.3. To demonstrate compliance with permit requirement 5.1.4, the permittee shall maintain records of the hours or operation of compaction of salt and/or cover soil by dozers (16E). Said records shall be maintained on site for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.

5.2.4. To demonstrate compliance with permit requirement 5.1.8.c.1 and 2, the permittee shall maintain records of the fugitive dust control and haulroad maintenance. Said records shall be maintained on site for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.

5.2.2. **Record of Maintenance of Air Pollution Control Equipment.**

a. The permittee shall maintain maintenance records relating to failure and/or repair of fugitive dust control systems. In the event of fugitive dust control system failure, these records shall document the permittee's effort to maintain proper and effective operation of such equipment and/or systems.

b. Air pollution control equipment maintenance records shall be retained on-site for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air

Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.

5.3. Reporting Requirements

5.3.1. Any violation(s) of the fugitive dust control systems must be reported in writing to the Director of the Division of Air Quality as soon as practicable, but within ten (10) calendar days, of the occurrence and shall include, at a minimum, the following information: the cause or suspected cause of the violation(s), and any corrective measures taken or planned.

6.0. Source-Specific Requirements (Engines, 18E-20E)

6.1. Limitations and Standards

6.1.1. Maximum emissions from each of the 12.2 hp disesel fired light plant engines, Mitsubishi L3E-W26ML (18E, 19E) shall not exceed the following limits:

Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
Nitrogen Oxides	0.14	0.05
Carbon Monoxide	0.13	0.05

6.1.2. **Maximum Yearly Operation Limitation.** The maximum yearly hours of operation for each of the 12.2 hp diesel fired light plant engines, Mitsubishi L3E-W26ML (18E, 19E) shall not exceed 750 hours per year. Compliance with the Maximum Yearly Operation Limitation shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the hours of operation at any given time during the previous twelve consecutive calendar months.

6.1.3. Maximum emissions from the 85 hp diesel fired emergency generator, Generac 48/50 kW (20E) shall not exceed the following limits:

Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (ton/year)
Nitrogen Oxides	0.62	0.16
Carbon Monoxide	0.70	0.17

6.1.4. **Maximum Yearly Operation Limitation.** The maximum yearly hours of operation for the 85 hp diesel fired emergency generator, Generac 48/50 kW (20E) shall not exceed 500 hours per year. Compliance with the Maximum Yearly Operation Limitation shall be determined using a twelve month rolling total. A twelve month rolling total shall mean the sum of the hours of operation at any given time during the previous twelve consecutive calendar months.

6.1.5. Owners and operators of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in §60.4201 for their 2007 model year and later stationary CI ICE, as applicable. **[40CFR§60.4204(b)] Engines 18E, 19E**

6.1.6. Owners and operators of 2007 model year and later emergency stationary CI ICE with a displacement of less than 30 liters per cylinder that are not fire pump engines must comply with the emission standards for new nonroad CI engines in §60.4202, for all pollutants, for the same model year and maximum engine power for their 2007 model year and later emergency stationary CI ICE. **[40CFR§60.4205(b)] Engine 20E**

6.1.7. Beginning October 1, 2010, owners and operators of stationary CI ICE subject to this subpart with a displacement of less than 30 liters per cylinder that use diesel fuel must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for nonroad diesel fuel. **[40CFR§60.4207(b)]**

6.2. Recordkeeping Requirements

6.2.1. To demonstrate compliance with permit conditions 6.1.1 – 6.1.4, the permittee shall maintain records of the hours of operation of engines 18E-20E. Said records shall be maintained on site or in a readily accessible off-site location maintained by the permittee for a period of five (5) years. Said records shall be readily available to the Director of the Division of Air Quality or his/her duly authorized representative for expeditious inspection and review. Any records submitted to the agency pursuant to a requirement of this permit or upon request by the Director shall be certified by a responsible official.

6.3. Testing Requirements

6.3.1. Owners and operators of stationary CI ICE with a displacement of less than 30 liters per cylinder who conduct performance tests pursuant to this subpart must do so according to paragraphs (a) through (e) of this section.
[40CFR§60.4212]

6.4. Reporting Requirements

6.4.1. See Facility-Wide Reporting Requirements Section 3.5 and 40CFR60 Subpart IIII.

CERTIFICATION OF DATA ACCURACY

I, the undersigned, hereby certify that, based on information and belief formed after reasonable inquiry, all information contained in the attached _____, representing the period beginning _____ and ending _____, and any supporting documents appended hereto, is true, accurate, and complete.

Signature[1] (please use blue ink) _____ Responsible Official or Authorized Representative _____ Date

Name & Title (please print or type) _____ Name _____ Title

Telephone No. _____ Fax No. _____

[1] This form shall be signed by a "Responsible Official." "Responsible Official" means one of the following:

a. For a corporation: The president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation, or a duly authorized representative of such person if the representative is responsible for the overall operation of one or more manufacturing, production, or operating facilities applying for or subject to a permit and either:

(i) the facilities employ more than 250 persons or have a gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), or

(ii) the delegation of authority to such representative is approved in advance by the Director;

b. For a partnership or sole proprietorship: a general partner or the proprietor, respectively;

c. For a municipality, State, Federal, or other public entity: either a principal executive officer or ranking elected official. For the purposes of this part, a principal executive officer of a Federal agency includes the chief executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., a Regional Administrator of U.S. EPA); or

d. The designated representative delegated with such authority and approved in advance by the Director.

KLEINFELDER
Bright People. Right Solutions.

August 30, 2016
Kleinfelder Project No.: 20170072.001A

Mr. Jerry Williams
WV Department of Environmental Protection
Division Air Quality
601 57th Street, SE
Charleston, WV 25304

SUBJECT: Antero Treatment LLC – Antero Landfill
West Virginia Department of Environmental Protection, Division of Air Quality, 45CSR13 Air Permit Application – Revision 1

Dear Mr. Williams,

On behalf of Antero Treatment LLC, please find attached the 45CSR13 air permit application revisions for the proposed Antero Landfill located in Doddridge County, West Virginia. Revisions include the daily and annual amounts of soil and salt waste moved, as well as the number of truck trips based on revised loads. The process description was also modified to include the leachate being piped to the Clearwater Facility.

Included are revised emission calculations as well as any modified application forms. Please also note that it is requested that the facility name be changed from Clearwater Landfill to Antero Landfill.

Please call if you have any questions or if I can be of further assistance. I can be reached at (719) 632-3593 or by email at msteyskal@kleinfelder.com .

Sincerely,

KLEINFELDER

Michele Steyskal

Michele Steyskal
Air Quality Specialist

ID # 017-00157
Reg R13-3371
Company ANTERO TREATMENT
Facility LANDFILL Initials MW

Enclosure: Antero Landfill 45CSR13 Air Permit Application – Revision 1

NON-CONFIDENTIAL

KLEINFELDER 1801 California Street, Suite 1100, Denver, CO 80202 p | 303.237.6601 f | 303.237.6602

Antero Treatment LLC

Antero Landfill

NSR Permit Application
West Virginia Department of Environmental Protection
Division of Air Quality
45CSR13

Doddridge County, West Virginia

August 2016
Revision 1

Prepared by:

1801 California Street, Suite 1100
Denver, CO 80202
(303) 237-6601
Fax (303) 237-6602
www.kleinfelder.com

DEN16O41187

Table of Contents

Attachment G.
Process Description

Process Description – Antero Landfill

Salt waste from the Clearwater Facility is hauled by haul trucks to the Antero Landfill (the Landfill) (UPMAIN). At the Landfill, the salt waste is unloaded (UNLOAD1) into the mixing building where it can be stored, mixed with native soil, and/or moved to the working cell. Alternately, salt waste may be unloaded directly at the working cell. Soil will be unloaded (UNLOAD3) in the mixing building from the landfill stockpiles or soil from the phase that is under construction. The salt waste will consist of either sodium chloride (NaCl) or calcium chloride (CaCl), with the CaCl portion mixed with native soil prior to placing the waste in the working cell due to its high moisture content (MIXING). Although the mixing building plans to operate 24 hours per day and 365 days per year, the salt waste may be stored in the mixing building during periods of inclement weather because the salt waste (NaCl and CaCl) has a high affinity for moisture and needs to stay dry as possible as it already has a high moisture content itself. Salt waste (salt or salt mixed with soil) is loaded from the mixing building into trucks (LOAD1) and taken to the working cell by haul trucks (UPWKFACE). The emissions from material handing within the material building are controlled by 70% due to the building being a full enclosure. Any material handing that contains salt or a mix of salt and soil will not be watered for control due to the salt's affinity for moisture. The unpaved road from the Clearwater Facility to the Landfill will be watered for dust control. The unpaved road may be graded at times for maintenance (GRADER). The other temporary unpaved roads from the mixing building to the working cell and around the working areas will be watered up to the point that they enter the actual active working cell. It is estimated that two-thirds of the length of the temporary unpaved roads will be watered for dust control. Although some of the material handling will be mostly salt, all of the material handling emissions were calculated with the lower moisture content of soil so as to be conservative as some of the salt is mixed with soil.

Once the salt waste reaches the working cell, it is unloaded (UNLOAD2) where it is then spread and/or compacted in the daily cell by a dozer (COMP). Wind erosion of the active working cell will occur as well as inactive areas that are waiting for waste or to be seeded (WIND1 and WIND2). Weather permitting, geosynthetic rain covers, called Reinforced Landfill Covers (RLC), may be used in daily cover operations rather than daily cover soil. Additionally, during the nine non-winter months of the year, other areas that are exposed will be covered with a RLC so as to not create emissions from wind erosion. During the three winter months, the exposed acreage may not be able to be covered with the RLC due to the potential for snow cover. Although the snow cover will act as dust suppressant, it is not likely a continual cover; thus, for three months of the year there is additional exposed acreage that can create wind erosion emissions (WIND4). The working cells will be covered with the daily cover (UNLOAD4) as needed and then seeded as quickly as possible. The working cell will operate on average 12 hours per day and 365 days per year. However, the working cell may operate 24 hours on some days and not at all on others due to weather. For times of the year when there are less daylight hours than operating hours, portable light plants will be used that are powered by diesel engines (ENG001 and ENG002). None of the activities that occur at the active working cell will be watered for dust control due to the salt.

Intermediate cover soil is unloaded (UNLOAD5) on areas that are not to final grade but will be sitting for some time before getting more waste or areas at final grade but not able to do final cover. Final cover will be placed (UNLOAD6) on areas that are at final grade.

Native soil stockpiles or other active areas will be used as sources of native soil to be moved to the mixing building or working cell for cover soils. Soil may be loaded at the native soil areas to be moved (UPSOILRD) to the mixing building (LOAD2), or soil may be loaded for daily cover (LOAD3), intermediate cover (LOAD4), or final cover (LOAD5) and moved to the working cell (UPDCOVER, UPICOVER, UPFCOVER). Wind erosion of the native soil stockpiles will occur (WIND3). The native soil areas will not be watered because the soil used for mixing or cover cannot be wet when mixed or covering the salt.

Additional emissions from passenger vehicles, water trucks, and fuel trucks on the unpaved roads will occur. Travel from dozers and excavators or loaders will also create particulate matter emissions.

Lastly, a backup diesel generator will be located on site for use only when the grid power goes down to power the leachate tank pump and maintain the necessary leachate level.

Leachate resulting from the Landfill operations may be piped from the leachate tank to the influent stream of the Clearwater Facility to be treated.

Attachment I.
Emission Units Table

Attachment I

Emission Units Table

(includes all emission units and air pollution control devices that will be part of this permit application review, regardless of permitting status)

Emission Unit ID[1]	Emission Point ID[2]	Emission Unit Description	Year Installed/ Modified	Design Capacity	Type[3] and Date of Change	Control Device[4]
UNLOAD1	1E	Salt Waste Unloading in Mixing Bld	2016	2100 tpd	New	None
LOAD1	2E	Waste Loading at Mixing Building	2016	2415 tpd	New	None
UNLOAD2	3E	Waste Unloading at Working Cell	2016	2415 tpd	New	None
LOAD2	4E	Soil Loading at Native Stock Piles	2016	315 tpd	New	None
UNLOAD3	5E	Soil Unloading at Mixing Building	2016	315 tpd	New	None
LOAD3	6E	Daily Soil Cover Loading at Stock Piles	2016	670 tpd	New	None
UNLOAD4	7E	Daily Soil Cover Unloading at Working Cell	2016	670 tpd	New	None
LOAD4	8E	Intermediate Soil Cover Loading at Stock Piles	2016	1,300 tpd	New	None
UNLOAD5	9E	Intermediate Soil Cover Unloading at Working Cell	2016	1,300 tpd	New	None
LOAD5	10E	Final Soil Cover Loading at Stock Piles	2016	8,000 tpd	New	None
UNLOAD6	11E	Final Soil Cover Unloading at Working Cell	2016	8,000 tpd	New	None
WIND1	12E	Daily Active Wind Erosion	2016	0.23 acres	New	None
WIND2	13E	Daily Inactive Wind Erosion	2016	1 acre	New	None
WIND3	14E	Stockpile Wind Erosion	2016	2 acres	New	None
WIND4	15E	Winter Wind Erosion	2016	8 acres	New	None
COMP	16E	Cover Soil Compaction	2016	NA	New	None
MIXING	17E	Mixing Salt and Soil	2016	2415 tpd	New	None
ENG001	18E	Light Plant Engine 1	2016	12.2 hp	New	None
ENG002	19E	Light Plant Engine 2	2016	12.2 hp	New	None
ENG003	20E	Backup Generator	2016	85 hp	New	None

[1] For Emission Units (or Sources) use the following numbering system:1S, 2S, 3S,... or other appropriate designation.
[2] For Emission Points use the following numbering system:1E, 2E, 3E, ... or other appropriate designation.
[3] New, modification, removal
[4] For Control Devices use the following numbering system: 1C, 2C, 3C,... or other appropriate designation.

Attachment J.
Emission Point Data Summary Sheet

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 1: Emissions Data

Emission Point ID No. *(Must match Emission Units Table & Plot Plan)*	Emission Point Type[1]	Emission Unit Vented Through This Point *(Must match Emission Units Table & Plot Plan)*		Air Pollution Control Device *(Must match Emission Units Table & Plot Plan)*		Vent Time for Emission Unit *(chemical processes only)*		All Regulated Pollutants - Chemical Name/CAS[3] *(Speciate VOCs & HAPS)*	Maximum Potential Uncontrolled Emissions [4]		Maximum Potential Controlled Emissions [5]		Emission Form or Phase *(At exit conditions, Solid, Liquid or Gas/Vapor)*	Est. Method Used [6]
		ID No.	Source	ID No.	Device Type	Short Term[2]	Max (hr/yr)		lb/hr	ton/yr	lb/hr	ton/yr		
1E	Material handling	UNLOAD1	Unload salt in mix blg		Fully enclosed blg	C	8760	PM	0.026	0.11	0.0078	0.034	solid	EE
								PM10	0.012	0.054	0.0037	0.016		
								PM2.5	0.0019	0.008	0.0006	0.0025		
2E	Material handling	LOAD1	Load in mix blg		Fully enclosed blg	C	8760	PM	0.060	0.13	0.018	0.039	solid	EE
								PM10	0.028	0.062	0.0085	0.019		
								PM2.5	0.0043	0.009	0.0013	0.0028		
3E	Material handling	UNLOAD2	Unload at working cell			C	4380	PM	0.060	0.13	0.060	0.13	solid	EE
								PM10	0.028	0.062	0.028	0.062		
								PM2.5	0.0043	0.009	0.0043	0.0094		
4E	Material handling	LOAD2	Loading soil at stockpile			C	4380	PM	0.0078	0.017	0.0078	0.017	solid	EE
								PM10	0.0037	0.008	0.0037	0.008		
								PM2.5	0.0006	0.001	0.0006	0.0012		
5E	Material handling	UNLOAD3	Unload soil in mix blg		Fully enclosed blg	C	4380	PM	0.0078	0.017	0.0024	0.0051	solid	EE
								PM10	0.0037	0.008	0.0011	0.0024		
								PM2.5	0.0006	0.001	0.0002	0.00037		
6E	Material handling	LOAD3	Load soil at stockpile			C	4380	PM	0.017	0.037	0.017	0.037	solid	EE
								PM10	0.0079	0.018	0.0079	0.018		
								PM2.5	0.0012	0.003	0.0012	0.003		

7E	Material handling	UNLOAD4	Unload soil at working cell			C	4380	PM	0.017	0.037	0.017	0.037	solid	EE
								PM10	0.0079	0.018	0.0079	0.018		
								PM2.5	0.0012	0.003	0.0012	0.003		
8E	Material handling	LOAD4	Load soil at stockpile			C	4380	PM	0.032	0.010	0.032	0.010	solid	EE
								PM10	0.015	0.005	0.015	0.005		
								PM2.5	0.0023	0.0007	0.0023	0.0007		
9E	Material handling	UNLOAD5	Unload soil at working cell			C	4380	PM	0.032	0.010	0.032	0.010	solid	EE
								PM10	0.015	0.005	0.015	0.005		
								PM2.5	0.0023	0.0007	0.0023	0.0007		
10E	Material handling	LOAD5	Load soil at stockpile			C	4380	PM	0.20	0.023	0.20	0.023	solid	EE
								PM10	0.094	0.011	0.094	0.011		
								PM2.5	0.014	0.002	0.014	0.002		
11E	Material handling	UNLOAD6	Unload soil at working cell			C	4380	PM	0.20	0.023	0.20	0.023	solid	EE
								PM10	0.094	0.011	0.094	0.011		
								PM2.5	0.014	0.002	0.014	0.002		
12E	Wind erosion	WIND1	Wind erosion at working cell			C	8760	PM	2.92	12.78	2.92	12.78	solid	EE
								PM10	1.46	6.39	1.46	6.39		
								PM2.5	0.22	0.96	0.22	0.96		
13E	Wind erosion	WIND2	Wind erosion at working cell			C	8760	PM	0.60	2.65	0.60	2.65	solid	EE
								PM10	0.30	1.32	0.30	1.32		
								PM2.5	0.045	0.20	0.045	0.20		
14E	Wind erosion	WIND3	Wind erosion at stockpile			C	8760	PM	0.84	3.66	0.84	3.66	solid	EE
								PM10	0.40	1.73	0.40	1.73		
								PM2.5	0.060	0.26	0.060	0.26		
15E	Wind erosion	WIND4	Winter Wind erosion			Winter only	2190	PM	4.83	5.22	4.83	5.22	solid	EE
								PM10	2.42	2.61	2.42	2.61		
								PM2.5	0.36	0.39	0.36	0.39		
16E	Compaction	COMP	Compaction at the working cell			C	4380	PM	2.53	5.54	2.53	5.54	solid	EE
								PM10	1.90	4.15	1.90	4.15		
								PM2.5	0.047	0.10	0.047	0.10		

17E	Mixing	MIXING	Mixing salt and soil in mix blg			C	8760	PM PM10 PM2.5	2.52 0.88 0.13	11.02 3.83 0.58	0.75 0.26 0.039	3.31 1.15 0.17	solid	EE
18E	Upward vertical	ENG001	Light Plant 1			Short term use daily	500	NOx CO VOC SO2 PM PM10 PM2.5 HAPs GHG	0.14 0.13 0.0075 0.020 0.0080 0.0080 0.0080 2.6e-4 11.07	.054 0.050 0.003 0.007 0.003 0.003 0.003 9.6e-5 4.15	0.14 0.13 0.0075 0.020 0.0080 0.0080 0.0080 2.6e-4 11.07	. 054 0.050 0.0028 0.0073 0.0030 0.0030 0.0030 9.6e-5 4.15	Gas/vapor	EE
19E	Upward vertical	ENG002	Light Plant 2			Short term use daily	500	NOx CO VOC SO2 PM PM10 PM2.5 HAPs GHG	0.14 0.13 0.0075 0.020 0.0080 0.0080 0.0080 2.6e-4 11.07	.054 0.050 0.003 0.007 0.003 0.003 0.003 9.6e-5 4.15	0.14 0.13 0.0075 0.020 0.0080 0.0080 0.0080 2.6e-4 11.07	.054 0.050 0.0028 0.0073 0.0030 0.0030 0.0030 9.6e-5 4.15	Gas/vapor	EE
20E	Upward vertical	ENG003	Backup Generator			Emergency use	500	NOx CO VOC SO2 PM PM10 PM2.5 HAPs GHG	0.62 0.70 0.033 0.16 0.056 0.056 0.056 2.0e-3 88.12	0.16 0.17 0.008 0.039 0.014 0.014 0.014 5.1e-4 22.03	0.62 0.70 0.033 0.16 0.056 0.056 0.056 2.0e-3 88.12	0.16 0.17 0.008 0.039 0.014 0.014 0.014 5.1e-4 22.03	Gas/vapor	EE

The EMISSION POINTS DATA SUMMARY SHEET provides a summation of emissions by emission unit. Note that uncaptured process emission unit emissions are not typically considered to be fugitive and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET. Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions). Please complete the FUGITIVE EMISSIONS DATA SUMMARY SHEET for fugitive emission activities.

[1] Please add descriptors such as upward vertical stack, downward vertical stack, horizontal stack, relief vent, rain cap, etc.

[2] Indicate by "C" if venting is continuous. Otherwise, specify the average short-term venting rate with units, for intermittent venting (ie., 15 min/hr). Indicate as many rates as needed to clarify frequency of venting (e.g., 5 min/day, 2 days/wk).

[3] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. **LIST** Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. **DO NOT LIST** H_2, H_2O, N_2, O_2, and Noble Gases.

[4] Give maximum potential emission rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[5] Give maximum potential emission rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[6] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

[7] Provide for all pollutant emissions. Typically, the units of parts per million by volume (ppmv) are used. If the emission is a mineral acid (sulfuric, nitric, hydrochloric or phosphoric) use units of milligram per dry cubic meter (mg/m^3) at standard conditions (68 °F and 29.92 inches Hg) (see 45CSR7). If the pollutant is SO_2, use units of ppmv (See 45CSR10).

Attachment J
EMISSION POINTS DATA SUMMARY SHEET

Table 2: Release Parameter Data								
Emission Point ID No. *(Must match Emission Units Table)*	Inner Diameter (ft.)	Exit Gas			Emission Point Elevation (ft)		UTM Coordinates (km)	
		Temp. (°F)	Volumetric Flow [1] (acfm) *at operating conditions*	Velocity (fps)	Ground Level *(Height above mean sea level)*	Stack Height [2] *(Release height of emissions above ground level)*	Northing	Easting
1E – 2E, 5E	These point will occur at the height of the drop point from a loader to a truck (~10 ft) or to ground level for unloading in the mixing building				1070	NA	4346.395	508.609
3E – 4E, 6E – 11E	These point will occur at the height of the drop point from a loader to a truck (~10 ft) or to ground level for unloading on the working face				Variable – depends on where working cell is	NA	Variable – depends on where working cell is	
12E – 15E	Wind erosion will occur on average about the midpoint height of the storage pile or a ground release for flat exposed areas.				Variable – depends on where working cell is	NA	Variable – depends on where working cell is	
16E	Will occur at ground release				Variable – depends on where working cell is	NA	Variable – depends on where working cell is	
17E	Will occur in the mixing building at ground level or slightly higher				1070	NA	4346.395	508.609
18E – 19E	TBD	914	50	TBD	Variable – depends on where working cell is	TBD	Variable – depends on where working cell is	
20E	0.17	1120	448	329	1070	~5	4346.369	508.615

[1] Give at operating conditions. Include inerts.
[2] Release height of emissions above ground level.

Attachment K.
Fugitive Emissions Data Summary Sheet

Attachment K

FUGITIVE EMISSIONS DATA SUMMARY SHEET

The FUGITIVE EMISSIONS SUMMARY SHEET provides a summation of fugitive emissions. Fugitive emissions are those emissions which could not reasonably pass through a stack, chimney, vent or other functionally equivalent opening. Note that uncaptured process emissions are not typically considered to be fugitive, and must be accounted for on the appropriate EMISSIONS UNIT DATA SHEET and on the EMISSION POINTS DATA SUMMARY SHEET.

Please note that total emissions from the source are equal to all vented emissions, all fugitive emissions, plus all other emissions (e.g. uncaptured emissions).

APPLICATION FORMS CHECKLIST - FUGITIVE EMISSIONS
1.) Will there be haul road activities? ☒ Yes ☐ No ☒ If YES, then complete the HAUL ROAD EMISSIONS UNIT DATA SHEET.
2.) Will there be Storage Piles? ☒ Yes ☐ No ☒ If YES, complete Table 1 of the NONMETALLIC MINERALS PROCESSING EMISSIONS UNIT DATA SHEET.
3.) Will there be Liquid Loading/Unloading Operations? ☐ Yes ☒ No ☐ If YES, complete the BULK LIQUID TRANSFER OPERATIONS EMISSIONS UNIT DATA SHEET.
4.) Will there be emissions of air pollutants from Wastewater Treatment Evaporation? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
5.) Will there be Equipment Leaks (e.g. leaks from pumps, compressors, in-line process valves, pressure relief devices, open-ended valves, sampling connections, flanges, agitators, cooling towers, etc.)? ☐ Yes ☒ No ☐ If YES, complete the LEAK SOURCE DATA SHEET section of the CHEMICAL PROCESSES EMISSIONS UNIT DATA SHEET.
6.) Will there be General Clean-up VOC Operations? ☐ Yes ☒ No ☐ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET.
7.) Will there be any other activities that generate fugitive emissions? ☒ Yes ☐ No (grading operations on haul roads) ☒ If YES, complete the GENERAL EMISSIONS UNIT DATA SHEET or the most appropriate form.
If you answered "NO" to all of the items above, it is not necessary to complete the following table, "Fugitive Emissions Summary."

FUGITIVE EMISSIONS SUMMARY	All Regulated Pollutants - Chemical Name/CAS [1]	Maximum Potential Uncontrolled Emissions [2]		Maximum Potential Controlled Emissions [3]		Est. Method Used [4]
		lb/hr	ton/yr	lb/hr	ton/yr	
Haul Road/Road Dust Emissions Paved Haul Roads						
Unpaved Haul Roads	PM PM-10 PM-2.5	273.12 80.48 8.05	320.54 94.61 9.46	139.90 41.22 4.12	134.78 39.78 3.98	EE
Storage Pile Emissions	PM PM-10 PM-2.5	9.19 4.57 0.69	24.31 12.06 1.81	9.19 4.57 0.69	24.31 12.06 1.81	EE
Loading/Unloading Operations						
Wastewater Treatment Evaporation & Operations						
Equipment Leaks						
General Clean-up VOC Emissions						
Other	PM PM-10 PM-2.5	3.39 2.04 0.050	1.86 1.11 0.028	3.39 2.04 0.050	1.86 1.11 0.028	EE

[1] List all regulated air pollutants. Speciate VOCs, including all HAPs. Follow chemical name with Chemical Abstracts Service (CAS) number. LIST Acids, CO, CS_2, VOCs, H_2S, Inorganics, Lead, Organics, O_3, NO, NO_2, SO_2, SO_3, all applicable Greenhouse Gases (including CO_2 and methane), etc. DO NOT LIST H_2, H_2O, N_2, O_2, and Noble Gases.

[2] Give rate with no control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[3] Give rate with proposed control equipment operating. If emissions occur for less than 1 hr, then record emissions per batch in minutes (e.g. 5 lb VOC/20 minute batch).

[4] Indicate method used to determine emission rate as follows: MB = material balance; ST = stack test (give date of test); EE = engineering estimate; O = other (specify).

Attachment L.
Emission Unit Data Sheets

Attachment L
FUGITIVE EMISSIONS FROM UNPAVED HAULROADS

UNPAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	10	10
p =	Number of days per year with precipitation >0.01 in.	157	157

Item Number	Description	Number of Wheels	Mean Vehicle Weight (tons)	Mean Vehicle Speed (mph)	Miles per Trip	Maximum Trips per **DAY**	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1	UPMAIN		51.5		1.14	70	25,600		70
2	UPPASS		4		1.14	40	14,600		70
3	UPWKFACE		52.5		0.68	75	27,600		70
4	UPSOILRD		52.5		0.68	9	3,325		70
5	UPDCOVER		52.5		0.38	20	7,000		70
6	UPICOVER		52.5		0.38	38	1,900		70
7	UPFCOVER		52.5		0.76	230	4,500		70
8	UPWATER		22.4		1.89	25	3,750		70
9	UPFUEL		22.4		1.52	6	1,955		70
10	UPEXCAV		34		0.038	20	7,300		0
11	UPDOZER		15		0.076	150	54,750		0
12	UPGRADER		22.5		1.89	1	365		0
13	GRADER		22.5		1.89	1	365		0

Source: *AP-42 Fifth Edition – 13.2.2 Unpaved Roads*

$E = k \times 5.9 \times (s \div 12) \times (S \div 30) \times (W \div 3)^{0.7} \times (w \div 4)^{0.5} \times ((365 - p) \div 365) =$ lb/Vehicle Mile Traveled (VMT)

Where:

		PM	PM-10
k =	Particle size multiplier	0.80	0.36
s =	Silt content of road surface material (%)	10	10
S =	Mean vehicle speed (mph)		
W =	Mean vehicle weight (tons)	see calcs	see calcs
w =	Mean number of wheels per vehicle		
p =	Number of days per year with precipitation >0.01 in.	157	157

For lb/hr: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] = lb/hr

For TPY: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] × [Ton ÷ 2000 lb] = Tons/year

SUMMARY OF UNPAVED HAULROAD EMISSIONS

Item No.	PM				PM-10			
	Uncontrolled		Controlled		Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
1	29.28	128.49	8.78	38.55	8.64	37.93	2.59	11.38
2	5.30	23.21	1.59	6.96	1.56	6.85	0.47	2.055
3	38.66	83.84	20.62	44.71	11.28	24.75	6.01	13.20
4	4.64	10.22	2.47	5.45	1.37	3.02	0.73	1.61

5	5.69	11.95	3.04	6.38	1.68	3.53	0.90	1.88
6	10.82	3.24	5.77	1.73	3.19	0.96	1.70	0.51
7	130.93	15.37	69.83	8.20	38.64	4.54	20.61	2.42
8	23.98	21.58	7.19	6.47	7.08	6.37	2.12	1.91
9	4.60	9.00	1.38	2.70	1.36	2.66	0.41	0.80
10	1.94	1.01	1.94	1.01	0.57	0.30	0.57	0.30
11	5.76	10.52	5.76	10.52	1.70	3.10	1.70	3.10
12	11.53	2.10	11.53	2.10	3.40	0.62	3.40	0.62
13	3.39	1.86	3.39	1.86	2.04	1.11	2.04	1.11
TOTALS	276.51	322.40	143.30	136.64	82.52	95.72	43.26	40.90

FUGITIVE EMISSIONS FROM PAVED HAULROADS

INDUSTRIAL PAVED HAULROADS (including all equipment traffic involved in process, haul trucks, endloaders, etc.)

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface material silt content (%)	
L =	Surface dust loading (lb/mile)	

Item Number	Description	Mean Vehicle Weight (tons)	Miles per Trip	Maximum Trips per Hour	Maximum Trips per Year	Control Device ID Number	Control Efficiency (%)
1							
2							
3							
4							
5							
6							
7							
8							

Source: *AP-42 Fifth Edition – 11.2.6 Industrial Paved Roads*

$E = 0.077 \times I \times (4 \div n) \times (s \div 10) \times (L \div 1000) \times (W \div 3)^{0.7}$ = lb/Vehicle Mile Traveled (VMT)

Where:

I =	Industrial augmentation factor (dimensionless)	
n =	Number of traffic lanes	
s =	Surface meterial silt content (%)	
L =	Surface dust loading (lb/mile)	
W =	Average vehicle weight (tons)	

For lb/hr: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] = lb/hr

For TPY: [lb ÷ VMT] × [VMT ÷ trip] × [Trips ÷ Hour] × [Ton ÷ 2000 lb] = Tons/year

SUMMARY OF PAVED HAULROAD EMISSIONS

Item No.	Uncontrolled		Controlled	
	lb/hr	TPY	lb/hr	TPY
1				
2				
3				
4				
5				
6				
7				
8				
TOTALS				

CONVEYING AFFECTED SOURCE SHEET

Source Identification Number[1]	Date of Construction, Reconstruction, or Modification (Month/Year)[2]	Type of Material Handled[3]	Size of Material Handled[4]	Maximum Material Transfer Rate[5]		Average Moisture Content (%)[6]	Control Device[7]
				tons/day	tons/year		
UNLOAD1	2016	salt		2,100	766,500	12	building
LOAD1	2016	Salt or salt/soil mix		2,415	881,475	12	building
UNLOAD2	2016	Salt or salt/soil mix		2,415	881,475	12	none
LOAD2	2016	Soil		315	114,975	12	none
UNLOAD3	2016	Soil		315	114,975	12	building
LOAD3	2016	Soil		670	250,000	12	none
UNLOAD4	2016	Soil		670	250,000	12	none
LOAD4	2016	Soil		1,300	65,000	12	none
UNLOAD5	2016	Soil		1,300	65,000	12	none
LOAD5	2016	Soil		8,000	156,000	12	none
UNLOAD6	2016	Soil		8,000	156,000	12	none
COMP	2016	Salt or salt/soil mix		NA	NA	12	none
MIXING	2016	Salt/soil mix		2,415	881,475	12	building

1. Enter the appropriate Source Identification Number for each conveyor using the following codes. For example, multiple belt conveyors should be designated BC-1, BC-2, BC-3 etc. Transfer points are considered emission points, not sources, and should not be included in the *Conveying Affected Source Sheet.* Transfer Point Identification Numbers shall be assigned in the *Emission Calculation Sheet.*

BC	Belt Conveyor	BE	Bucket Elevator	DL	Drag-link Conveyor
PS	Pneumatic System	SC	Screw Conveyor	VC	Vibrating Conveyor
OT	Other				

2. Enter the date that each crusher and screen was constructed, reconstructed, or modified.
3. Enter the type of material being handled - Raw Material (RM) Sized Material (SM) Refuse (R) Other (O)
4. Enter the nominal size of the material being conveyed (e.g. sized material- ¾" x 0). If more than one material is handled by the listed conveyor, list each material and enter the appropriate data for each material.
5. Enter the maximum material transfer rate for each conveyor in tons per hour and tons per year.
6. Enter the average percent moisture content of the conveyed material.
7. Enter the control device for the conveyor. PE - Partial Enclosure (example 3/4 hoop), FE - Full Enclosure, N – None

STORAGE ACTIVITY AFFECTED SOURCE SHEET

Source Identification Number[1]	WIND1	WIND2	WIND3	WIND4		
Type of Material Stored[2]	Soil	Soil	Soil	Soil		
Average Moisture Content (%)[3]	12	12	12	12		
Maximum Yearly Storage Throughput (tons)[4]	NA	NA	Varies	NA		
Maximum Storage Capacity (tons)[5]	NA	NA	Varies	NA		
Maximum Base Area (ft^2)[6]	10019	43560	87120	348480		
Maximum Pile Height (ft)[7]	NA	NA	Varies	NA		
Method of Material Load-in[8]	NA	NA	FE	NA		
Load-in Control Device Identification Number[9]	NA	NA	None	NA		
Storage Control Device Identification Number[9]	NA	NA	none	NA		
Method of Material Load-out[8]	NA	NA	FE	NA		
Load-out Control Device Identification Number[9]	NA	NA	none	NA		

1. Enter the appropriate Source Identification Number for each storage activity using the following codes. For example, if the facility utilizes three storage bins, four open stockpiles and one storage building (full enclosure), the Source Identification Numbers should be BS-1, BS-2, and BS-3; OS-1, OS-2, OS-3, and OS-4; and SB-1, respectively.
   - BS Bin or Storage Silo (full enclosure)
   - E3 Enclosure (three sided enclosure)
   - OS Open Stockpile
   - SB Storage Building (full enclosure)
   - SF Stockpiles with wind fences
   - OT Other
2. Describe the type of material stored or stockpiled. (e.g. sized material, raw material, refuse, etc).
3. Enter the average percent moisture content of the stored material.
4. Enter the maximum yearly storage throughput for each storage activity.
5. Enter the maximum storage capacity for each storage activity in tons (e.g. silo capacity, maximum stockpile size, etc.)
6. For stockpiles, enter the maximum stockpile base area.
7. For stockpiles, enter the maximum stockpile height.
8. Enter the method of load-in or load-out to/from stockpiles or bins using the following codes:
   - CS Clamshell
   - SS Stationary Conveyor/Stacker
   - FC Fixed Height Chute from Bins
   - ST Stacking Tube
   - FE Front Endloader
   - TC Telescoping Chute from Bins
   - MC Mobile Conveyor/Stacker
   - TD Truck Dump
   - UC Under-pile or Under-Bin Reclaim Conveyor
   - PC Pneumatic Conveyor/Stacker
   - RC Rake or Bucket Reclaim Conveyor
   - OT Other
9. Enter the appropriate Control Device Identification Number for each storage activity. Refer to Table A - *Control Device Listing* and *Control Device Identification Number Instructions* in the *Reference Document* for Control Device ID prefixes and numbering.

ENGINE DATA SHEET

Source Identification Number[1]		ENG001		ENG002		ENG003	
Engine Manufacturer and Model		Mitsubishi L3E-W26ML		Mitsubishi L3E-W26ML		Generac RD050	
Manufacturer's Rated bhp/rpm		12.2/1800		12.2/1800		85/1800	
Source Status[2]		NS		NS		NS	
Date Installed/Modified/Removed (Month/Year)[3]		TBD/2017		TBD/2017		TBD/2017	
Engine Manufactured/Reconstruction Date[4]		TBD		TBD		TBD	
Is this a Certified Stationary Compression Ignition Engine according to 40CFR60 Subpart IIII? (Yes or No)[5]		Yes		Yes		Yes	
Is this a Certified Stationary Spark Ignition Engine according to 40CFR60 Subpart JJJJ? (Yes or No)[6]		N/A		N/A		N/A	
Engine, Fuel and Combustion Data	Engine Type[7]	Compression Ignition		Compression Ignition		Compression Ignition	
	APCD Type[8]	N/A		N/A		N/A	
	Fuel Type[9]	ULSD		ULSD		ULSD	
	H_2S (gr/100 scf)	0		0		0	
	Operating bhp/rpm	12.2/1800		12.2/1800		85/1800	
	BSFC (Btu/bhp-hr)	N/A		N/A		N/A	
	Fuel throughput (gal/hr)	0.5		0.5		3.98	
	Fuel throughput (gal/yr)	375		375		1990	
	Operation (hrs/yr)	750		750		500	
Reference[10]	Potential Emissions[11]	lbs/hr	tons/yr	lbs/hr	tons/yr	lbs/hr	tons/yr
	NO_X	0.14	0.054	0.14	0.054	0.62	0.16
	CO	0.13	0.050	0.13	0.050	0.70	0.17
	VOC	0.0075	0.0028	0.0075	0.0028	0.033	0.0082
	SO_2	0.020	0.0073	0.020	0.0073	0.16	0.039
	PM_{10}	0.0080	0.0030	0.0080	0.0030	0.056	0.014
	Formaldehyde	7.97e-5	2.99E-5	7.97e-5	2.99E-5	6.34e-4	1.59e-4

1. Enter the appropriate Source Identification Number for each reciprocating internal combustion compressor/generator engine located at the facility. Multiple compressor engines should be designated CE-1, CE-2, CE-3 etc. Emergency Generator engines should be designated EG-1, EG-2, EG-3 etc. If more than three (3) engines exist, please use additional sheets.

2. Enter the Source Status using the following codes:

NS	Construction of New Source (installation)	ES	Existing Source
MS	Modification of Existing Source	RS	Removal of Source

3. Enter the date (or anticipated date) of the engine's installation (construction of source), modification or removal.

4. Enter the date that the engine was manufactured, modified or reconstructed.

5. Is the engine a certified stationary compression ignition internal combustion engine according to 40CFR60 Subpart IIII. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4210 as appropriate.

   Provide a manufacturer's data sheet for all engines being registered.

6. Is the engine a certified stationary spark ignition internal combustion engine according to 40CFR60 Subpart JJJJ. If so, the engine and control device must be operated and maintained in accordance with the manufacturer's emission-related written instructions. You must keep records of conducted maintenance to demonstrate compliance, but no performance testing is required. If the certified engine is not operated and maintained in accordance with the manufacturer's emission-related written instructions, the engine will be considered a non-certified engine and you must demonstrate compliance according to 40CFR§60.4243a(2)(i) through (iii), as appropriate.

   Provide a manufacturer's data sheet for all engines being registered.

7. Enter the Engine Type designation(s) using the following codes:

LB2S	Lean Burn Two Stroke	RB4S	Rich Burn Four Stroke
LB4S	Lean Burn Four Stroke		

8. Enter the Air Pollution Control Device (APCD) type designation(s) using the following codes:

A/F	Air/Fuel Ratio	IR	Ignition Retard
HEIS	High Energy Ignition System	SIPC	Screw-in Precombustion Chambers
PSC	Prestratified Charge	LEC	Low Emission Combustion
NSCR	Rich Burn & Non-Selective Catalytic Reduction	SCR	Lean Burn & Selective Catalytic Reduction

9. Enter the Fuel Type using the following codes:

PQ	Pipeline Quality Natural Gas	RG	Raw Natural Gas
2FO	#2 Fuel Oil	LPG	Liquid Propane Gas

10. Enter the Potential Emissions Data Reference designation using the following codes. Attach all referenced data to this *Compressor/Generator Data Sheet(s).*

MD	Manufacturer's Data	AP	AP-42	
GR	GRI-HAPCalc™	OT	Other _____	(please list)

11. Enter each engine's Potential to Emit (PTE) for the listed regulated pollutants in pounds per hour and tons per year. PTE shall be calculated at manufacturer's rated brake horsepower and may reflect reduction efficiencies of listed Air Pollution Control Devices. Emergency generator engines may use 500 hours of operation when calculating PTE. PTE data from this data sheet shall be incorporated in the *Emissions Summary Sheet.*

Attachment N.
Supporting Emissions Calculations

Emissions Summary Total

Company:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV

UNCONTROLLED POTENTIAL EMISSION SUMMARY

Source	PM			PM_{10}			$PM_{2.5}$			NOx			CO		
	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy
Non-Fugitive Emissions															
Total Material Handling	0.66	8.21	0.55	0.311	3.88	0.26	0.047	0.59	0.040	----	----	----	----	----	----
Wind Erosion	9.19	220.62	24.31	4.57	109.77	12.06	0.69	16.48	1.81	----	----	----	----	----	----
Other Operations	5.04	90.73	16.56	2.77	43.77	7.99	0.18	3.71	0.68	----	----	----	----	----	----
Diesel Engines	0.072	0.11	0.020	0.072	0.11	0.020	0.072	0.11	0.020	0.91	1.44	0.26	0.96	1.50	0.27
Fugitive Emissions															
Other Operations	3.39	10.18	1.86	2.04	6.11	1.11	0.050	0.15	0.028	----	----	----	----	----	----
Road Travel to Landfill	34.58	829.85	151.70	10.21	244.94	44.78	1.02	24.49	4.48	----	----	----	----	----	----
Road Travel within Landfill	219.31	2,631.77	155.21	64.60	775.18	45.81	6.46	77.52	4.58	----	----	----	----	----	----
Travel from Equipment within Landfill	19.23	74.70	13.63	5.68	22.05	4.02	0.57	2.20	0.40	----	----	----	----	----	----
Non-Fugitive Facility PTE =	14.97	319.66	41.44	7.73	157.53	20.33	0.98	20.89	2.55	0.91	1.44	0.26	0.96	1.50	0.27
Fugitive Facility PTE =	276.51	3,546.50	322.40	82.52	1,048.28	95.72	8.10	104.37	9.49	0.00	0.00	0.00	0.00	0.00	0.00
Total Facility PTE =	291.48	3,866.16	363.84	90.25	1,205.81	116.05	9.08	125.25	12.04	0.91	1.44	0.26	0.96	1.50	0.27

CONTROLLED POTENTIAL EMISSION SUMMARY

Source	PM			PM_{10}			$PM_{2.5}$			NOx			CO		
	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy	lb/hr	lb/day	tpy
Non-Fugitive Emissions															
Total Material Handling	0.592	7.20	0.37	0.280	3.41	0.17	0.0424	0.52	0.026	----	----	----	----	----	----
Wind Erosion	9.19	220.62	24.31	4.57	109.77	12.06	0.69	16.48	1.81	----	----	----	----	----	----
Other Operations	3.28	48.46	8.84	2.16	29.07	5.30	0.086	1.50	0.27	----	----	----	----	----	----
Diesel Engines	0.072	0.11	0.020	0.072	0.11	0.020	0.072	0.11	0.020	0.91	1.44	0.26	0.96	1.50	0.27
Fugitive Emissions															
Other Operations	3.39	10.18	1.86	2.04	6.11	1.11	0.050	0.15	0.028	----	----	----	----	----	----
Road Travel to Landfill	10.37	248.95	45.51	3.06	73.48	13.43	0.31	7.35	1.34	----	----	----	----	----	----
Road Travel within Landfill	110.30	1323.59	75.64	32.48	389.81	22.33	3.25	38.98	2.23	----	----	----	----	----	----
Travel from Equipment within Landfill	19.23	74.70	13.63	5.68	22.05	4.02	0.57	2.20	0.40	----	----	----	----	----	----
Non-Fugitive Facility PTE =	13.14	276.39	33.54	7.09	142.35	17.56	0.89	18.61	2.13	0.91	1.44	0.26	0.96	1.50	0.27
Fugitive Facility PTE =	143.30	1,657.42	136.64	43.26	491.45	40.90	4.17	48.69	4.01	0.00	0.00	0.00	0.00	0.00	0.00
Total Facility PTE =	156.44	1,933.81	170.19	50.34	633.80	58.45	5.06	67.29	6.14	0.91	1.44	0.26	0.96	1.50	0.27

Unpaved Road Emissions

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Fugitive Road Dust Emissions

AP-42 Section 13.2.2 Unpaved Haul Roads, Final Section, November 2006.

Emission Factor Equation: $E=[k(s/12)^a(W/3)^b]*[(365-P)/365]$ Equation 13.2.2-1a and 13.2.2-2

where:
E = particulate emission factor (pounds per vehicle mile traveled, lb/VMT)
k, a, b = dimensionless constants
s = surface material silt content (%)
W = mean vehicle weight of the vehicles traveling the road (tons)
P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period

Operating Parameters:

Source ID	Vehicle Description	Decription of Haul	Tons per Day Hauled	Unloaded Vehicle Weight (Tons)	Loaded Vehicle Weight (Tons)
UPMAIN	Haul Truck	Hauls waste from Water Treatment Facilty to Landfill mixing building	2100	36.5	66.5
UPPASS	Passenger Vehicles	Passenger vehicles for employees entering and exiting the Landfill	---	4.0	4.0
UPWKFACE	Haul Truck	Hauls waste from mixing building to working face of landfill	2415	36.5	68.5
UPSOILRD	Haul Truck	Hauls native soil from working areas of landfill to mixing building	315	36.5	71.3
UPDCOVER	Haul Truck	Hauls borrow/stockpile soil to working face for daily cover	670	36.5	71.3
UPICOVER	Haul Truck	Hauls borrow/stockpile soil to working face for intermediate cover	1300	36.5	71.3
UPFCOVER	Haul Truck	Hauls borrow/stockpile soil to working face for final cover	8000	36.5	71.3
UPWATER	Water Trucks	Water trucks for watering roads or storage piles, etc	---	12.0	32.9
UPFUEL	Fuel Trucks	Fuel trucks to deliver fuel for the dozers, loaders, etc	---	12.0	29.8

Emission Factor Parameters:

Description	Variable	Value	Unit	Notes
Mean Silt Content of Unpaved Roads	s	10	%	G40-C permit guidance - AP-42 13.2.2-1 for quarries
Average Weight of Trucks from Plant to Landfill	W	51.5	tons	Based on typical trucks and amount hauled
Average Weight of Truck to Working Face	W	52.5	tons	Based on typical trucks and amount hauled
Average Weight of Truck with native soil	W	53.9	tons	Based on typical trucks and amount hauled
Average Weight of Passenger Vehicles	W	4.0	tons	Based on typical passenger trucks
Average Weight of a Water or Fuel Truck	W	22.4	tons	Based on typical trucks and 5000 gallons
Mean Days > 0.01-in precipitation	P	157	days	G40-C permit guidance - Table B, Zone 1
Control Efficiency	CE	70	%	G40-C permit guidance for watering unpaved roads

		PM	PM_{10}	$PM_{2.5}$
Particle Size Multipliers for Unpaved Road Equation Table 13.2.2-2	k	4.9	1.5	0.15
	a	0.7	0.9	0.9
	b	0.45	0.45	0.45

Emission Factors:

		PM	PM_{10}	$PM_{2.5}$
Plant to Landfill Trucks Emission Factor (lb/VMT)	E	8.83	2.61	0.26
Truck With Waste Emission Factor (lb/VMT)	E	8.91	2.63	0.26
Truck with Soil Emission Factor (lb/VMT)	E	9.02	2.66	0.27
Passenger Emission Factor (lb/VMT)	E	2.80	0.83	0.083
Water or Fuel Truck Emission Factor (lb/VMT)	E	6.08	1.79	0.18

Unpaved Road Emissions

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Fugitive Road Dust Emissions

VMT Calculations:

Number of Trips	**Hourly**[2]	**Daily**[1]	**Annual**[1]	
Plant to Landfill transfer trucks	---	70	25,600	trucks
Trucks to Working Face from Building	---	75	27,600	trucks
Trucks to Mixing Building from Landfill	---	9	3,325	trucks
Passenger Vehicles to Mixing Building	---	40	14,600	vehicles
Trucks for Daily Cover	---	20	7,000	trucks
Trucks for Intermediate Cover	---	38	1,900	trucks
Trucks for Final Cover	---	230	4,500	trucks
Water Trucks	---	25	3,750	trucks
Fuel Trucks	---	6	1,955	trucks
Distances	**Average**		**Control**[3]	
One Way Distance from Treatment Facility to Landfill	3,000	feet	All watered	
Average One Way Distance from Building to Working Face	1,800	feet	2/3 watered	
Average One Way Distance from Soil Piles to Building	1,800	feet	2/3 watered	
Average One Way Distance for Daily and Intermediate Cover	1,000	feet	2/3 watered	
Average One Way Distance for Final Cover	2,000	feet	2/3 watered	
Average One Way Distance for Water Trucks	5,000	feet	All watered	
Average One Way Distance for Fuel Trucks	4,000	feet	All watered	
VMT Calculations	**Hourly**[2]	**Daily**[1]	**Annual**[1]	
VMT for Plant to Landfill Trucks	---	79.55	29,091	miles
VMT for Trucks to Working Face from Building	---	51.46	18,818	miles
VMT for Trucks to Mixing Building from Landfill	---	6.17	2,267	miles
VMT for Passenger Vehicles to Mixing Building	---	45.45	16,591	miles
VMT for Trucks for Daily Cover	---	7.58	2,652	miles
VMT for Trucks for Intermediate Cover	---	14.39	720	miles
VMT for Trucks for Final Cover	---	174.24	3,409	miles
VMT for Water Trucks	---	47.35	7,102	miles
VMT for Fuel Trucks	---	9.09	2,962	miles

Emissions:

PM	**Uncontrolled**			**Controlled**		
Source ID	(lb/hr)[2]	(lb/day)[1]	(ton/yr)[1]	(lb/hr)[2]	(lb/day)[1]	(ton/yr)[1]
UPMAIN	29.28	702.69	128.49	8.78	210.81	38.55
UPPASS	5.30	127.16	23.21	1.59	38.15	6.96
UPWKFACE	38.66	463.97	83.84	20.62	247.45	44.71
UPSOILRD	4.64	55.65	10.22	2.47	29.68	5.45
UPDCOVER	5.69	68.31	11.95	3.04	36.43	6.38
UPICOVER	10.82	129.79	3.24	5.77	69.22	1.73
UPFCOVER	130.93	1571.10	15.37	69.83	837.92	8.20
UPWATER	23.98	287.72	21.58	7.19	86.32	6.47
UPFUEL	4.60	55.24	9.00	1.38	16.57	2.70

PM_{10}	**Uncontrolled**			**Controlled**		
Source ID	(lb/hr)[2]	(lb/day)[1]	(ton/yr)[1]	(lb/hr)[2]	(lb/day)[1]	(ton/yr)[1]
UPMAIN	8.64	207.41	37.93	2.59	62.22	11.38
UPPASS	1.56	37.53	6.85	0.47	11.26	2.055
UPWKFACE	11.28	135.33	24.75	6.01	72.18	13.20
UPSOILRD	1.37	16.43	3.02	0.73	8.76	1.61
UPDCOVER	1.68	20.16	3.53	0.90	10.75	1.88
UPICOVER	3.19	38.31	0.96	1.70	20.43	0.51
UPFCOVER	38.64	463.73	4.54	20.61	247.32	2.42
UPWATER	7.08	84.92	6.37	2.12	25.48	1.91
UPFUEL	1.36	16.31	2.66	0.41	4.89	0.80

$PM_{2.5}$	**Uncontrolled**			**Controlled**		
Source ID	(lb/hr)[2]	(lb/day)[1]	(ton/yr)[1]	(lb/hr)[2]	(lb/day)[1]	(ton/yr)[1]
UPMAIN	0.86	20.74	3.79	0.26	6.22	1.14
UPPASS	0.16	3.753	0.685	0.047	1.126	0.2055
UPWKFACE	1.13	13.53	2.47	0.60	7.22	1.32
UPSOILRD	0.14	1.64	0.30	0.07	0.88	0.16
UPDCOVER	0.17	2.02	0.35	0.09	1.08	0.19
UPICOVER	0.32	3.83	0.10	0.17	2.04	0.05
UPFCOVER	3.86	46.37	0.45	2.06	24.73	0.24
UPWATER	0.71	8.49	0.637	0.21	2.55	0.191
UPFUEL	0.14	1.63	0.266	0.041	0.489	0.080

Notes:

1. Daily and Annual calculations are based on the landfill operating 365 days per year with average road distances. The daily maximum will not occur all 365 days per year, so the annual trips are based on averages and not daily maximums.
2. Hourly emissions in some cases will not occur every hour, but is the maximum that could occur in an hour. Hourly emissions are based on 24 hour per day operations for mixing building and 12 hour per day operations for the working face.
3. Due to the working cell not being able to be watered because of the salt, the last 1/3 of the temporary roads to the cell will not be watered.

Unpaved Road Emissions - Equipment Traffic

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Fugitive Road Dust Emissions

AP-42 Section 13.2.2 Unpaved Haul Roads, Final Section, November 2006.

Emission Factor Equation: $E=[k(s/12)^a(W/3)^b]*[(365-P)/365]$ Equation 13.2.2-1a and 13.2.2-2

where:
E = particulate emission factor (pounds per vehicle mile traveled, lb/VMT)
k, a, b = dimensionless constants
s = surface material silt content (%)
W = mean vehicle weight of the vehicles traveling the road (tons)
P = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period

Operating Parameters:

Source ID	Vehicle Description	Decription of Activity	Unloaded Vehicle Weight (Tons)	Loaded Vehicle Weight (Tons)
UPEXCAV	Loader/Excavator	Travel around the landfill of loaders or excavators to load the haul trucks	34.0	34.0
UPDOZER	Dozers	Travel of dozers around the landfill for spreading and compacting waste	15.0	15.0
UPGRADER	Graders	Travel of graders around the landfill	22.5	22.5

Emission Factor Parameters:

Description	Variable	Value	Unit	Notes
Mean Silt Content of Unpaved Roads	s	10	%	G40-C permit guidance - AP-42 13.2.2-1 for quarries
Average Weight of Loaders/Excavators	W	34.0	tons	Based on weight of typical equipment
Average Weight of Dozers	W	15.0	tons	Based on weight of typical equipment
Average Weight of Graders	W	22.5	tons	Based on weight of typical equipment
Mean Days > 0.01-in precipitation	P	157	days	G40-C permit guidance - Table B, Zone 1
Control Efficiency	CE	0	%	No watering will occur at the working face

		PM	PM_{10}	$PM_{2.5}$
Particle Size Multipliers for Unpaved Road Equation Table 13.2.2-2	k	4.9	1.5	0.15
	a	0.7	0.9	0.9
	b	0.45	0.45	0.45

Emission Factors:

		PM	PM_{10}	$PM_{2.5}$
Loader/Excavator Emission Factor (lb/VMT)	E	7.33	2.16	0.22
Dozer Emission Factor (lb/VMT)	E	5.07	1.50	0.15
Grader Emission Factor (lb/VMT)	E	6.09	1.80	0.18

VMT Calculations:

Number of Trips	Hourly[1]	Daily[2]	Annual[3]	
Loaders/Excavators	7	20	7,300	vehicles
Dozers	15	150	54,750	vehicles
Graders	1	1	365	vehicles
Distances	**Average**			
Average One Way Distance Travel of Loader/Excavator	100	feet		
Average One Way Distance Travel of Dozer	200	feet		
Average One Way Distance Travel of Grader	5,000	feet		
VMT Calculations	**Hourly[1]**	**Daily[2]**	**Annual[3]**	
VMT for Loader/Excavator	0.27	0.76	277	miles
VMT for Dozers	1.14	11.36	4,148	miles
VMT for Graders	1.89	1.89	691	miles

Emissions:

PM	Uncontrolled			Controlled		
Source ID	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
UPEXCAV	1.94	5.55	1.01	1.94	5.55	1.01
UPDOZER	5.76	57.62	10.52	5.76	57.62	10.52
UPGRADER	11.53	11.53	2.10	11.53	11.53	2.10

PM_{10}	Uncontrolled			Controlled		
Source ID	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
UPEXCAV	0.57	1.64	0.30	0.57	1.64	0.30
UPDOZER	1.70	17.01	3.10	1.70	17.01	3.10
UPGRADER	3.40	3.40	0.62	3.40	3.40	0.62

$PM_{2.5}$	Uncontrolled			Controlled		
Source ID	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
UPEXCAV	0.057	0.16	0.030	0.057	0.164	0.0299
UPDOZER	0.17	1.70	0.31	0.170	1.70	0.310
UPGRADER	0.34	0.34	0.062	0.34	0.34	0.062

Notes:
1. Number of trips per hour are based on the number of hours that the equipment is anticipated to operate and rounded up: 3 hours for loaders/excavators and graders and 10 hours for dozers.
2. Daily calculations are based on the average number of trips per day for each vehicle type.
3. Annual calculations are based on the landfill operating 365 days per year with average travel distances.

Material Handing Emissions

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Material Handing - Transfer Points

AP-42 Section 13.2.4 Aggregate Handing and Storage Piles, Final Section, November 2006.

Emission Factor Equation: $E=k(0.0032)*[(U/5)^{1.3}]/[(M/2)^{1.4}]$ Equation 13.2.4.3-1

where:

E = emission factor (pounds emission per ton of material (lb/ton))

k = dimensionless constant for particle size multiplier

U = mean wind speed in miles per hour (mph)

M = material moisture content (%)

Note: Although some of the material handled is salt, which has a higher moisture content than soil, the lower moisture content of soil is used in all of the calculations to be conservative as some of the salt is mixed with soil.

Operating Parameters:

Source ID	Source Description	Material Handled per Hour (tons/hr)	Material Handled per Day (tons/day)	Material Handled per Year (tons/year)[3]
UNLOAD1	Salt Waste Unloaded in Mixing Building	87.5	2,100	766,500
LOAD1	Waste Loaded in Mixing Building	201.3	2,415	881,475
UNLOAD2	Waste Unloaded at Working Cell	201.3	2,415	881,475
LOAD2	Native Soil Loaded at Active Area or Stockpile	26.3	315	114,975
UNLOAD3	Native Soil Unloaded at Mixing Building	26.3	315	114,975
LOAD3	Loading daily cover soil at borrow area or stockpiles	55.8	670	250,000
UNLOAD4	Unloading daily cover soil at working cell	55.8	670	250,000
LOAD4	Loading intermediate cover soil at borrow area or stockpiles	108.3	1,300	65,000
UNLOAD5	Unloading intermediate cover soil at working cell	108.3	1,300	65,000
LOAD5	Loading final cover soil at borrow area or stockpiles	666.7	8,000	156,000
UNLOAD6	Unloading final cover soil at working cell	666.7	8,000	156,000

Material Handing Emissions

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Material Handing - Transfer Points

Emission Factor Parameters:

Description	Variable	Value	Unit	Notes
Mean wind speed	U	7	mph	G40-C permit guidance for transfer points
Material moisture content [1]	M	12	%	AP-42 Table 13.2.4-1 for cover at MSW landfills
Control factor for building	CE	70	%	G40-C permit guidance for unloading in a full enclosure
Control factor for watering	CE	0	%	Working face will not be watered due to moisture in salt waste

		PM	PM_{10}	$PM_{2.5}$
Particle Size Multipliers from AP-42 Section 13.2.4.3	k	0.74	0.35	0.053

Emission Factors:

		PM	PM_{10}	$PM_{2.5}$
Emission Factor (lb/ton)	E	0.00030	0.00014	0.000021

Uncontrolled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
UNLOAD1	0.026	0.63	0.11	0.012	0.30	0.054	0.0019	0.045	0.0082
LOAD1	0.060	0.72	0.13	0.028	0.34	0.062	0.0043	0.052	0.0094
UNLOAD2	0.060	0.72	0.13	0.028	0.34	0.062	0.0043	0.052	0.0094
LOAD2	0.0078	0.094	0.017	0.0037	0.044	0.0081	0.00056	0.0067	0.0012
UNLOAD3	0.0078	0.094	0.017	0.0037	0.044	0.0081	0.00056	0.0067	0.0012
LOAD3	0.017	0.20	0.037	0.0079	0.095	0.018	0.0012	0.014	0.0027
UNLOAD4	0.017	0.20	0.037	0.0079	0.095	0.018	0.0012	0.014	0.0027
LOAD4	0.032	0.39	0.010	0.015	0.18	0.0046	0.0023	0.028	0.00069
UNLOAD5	0.032	0.39	0.010	0.015	0.18	0.0046	0.0023	0.028	0.00069
LOAD5	0.20	2.39	0.023	0.094	1.13	0.011	0.014	0.17	0.0017
UNLOAD6	0.20	2.39	0.023	0.094	1.13	0.011	0.014	0.17	0.0017
TOTAL:	**0.66**	**8.21**	**0.55**	**0.31**	**3.88**	**0.26**	**0.047**	**0.59**	**0.040**

Controlled Emissions[2]

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
UNLOAD1	0.0078	0.19	0.034	0.0037	0.089	0.016	0.00056	0.013	0.0025
LOAD1	0.018	0.22	0.039	0.0085	0.10	0.019	0.0013	0.015	0.0028
UNLOAD2	0.060	0.72	0.13	0.028	0.34	0.062	0.0043	0.052	0.0094
LOAD2	0.0078	0.094	0.017	0.0037	0.044	0.0081	0.00056	0.0067	0.0012
UNLOAD3	0.0024	0.028	0.0051	0.0011	0.013	0.0024	0.00017	0.0020	0.00037
LOAD3	0.017	0.20	0.037	0.0079	0.095	0.018	0.0012	0.014	0.0027
UNLOAD4	0.017	0.20	0.037	0.0079	0.095	0.018	0.0012	0.014	0.0027
LOAD4	0.032	0.39	0.010	0.015	0.18	0.0046	0.0023	0.028	0.00069
UNLOAD5	0.032	0.39	0.010	0.015	0.18	0.0046	0.0023	0.028	0.00069
LOAD5	0.20	2.39	0.023	0.094	1.13	0.011	0.014	0.17	0.0017
UNLOAD6	0.20	2.39	0.023	0.094	1.13	0.011	0.014	0.17	0.0017
TOTAL:	**0.59**	**7.20**	**0.37**	**0.28**	**3.41**	**0.17**	**0.042**	**0.52**	**0.026**

Notes:

1. Moisture of the salt material is higher than the native soil. Soil moisture content used as a conservative value.
2. Unloading (UNLOAD1 and UNLOAD3) and loading (LOAD1) in the building will be controlled based on the control efficiency for a full enclosure
3. Cover soil operations will not occur at the daily maximum all 365 days per year.

Wind Erosion

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Wind Erosion

Stockpiles

EPA-450/3-88-008, "Control of Open Fugitive Dust Sources"

Emission Factor Equation: **E=1.7*(s/1.5)*((365-p)/235)*(f/15)** Equation 4-9

where:
E = PM emission factor (pounds emission per acre per day (lbs/acre-day))
s = silt content in percent
p = number of "wet" days with at least 0.254 mm (0.01 in) of precipitation during the averaging period
f = percentage of time the wind speed exceeds 12 mph at mean pile height

Emission Factor Parameters:

Description	Variable	Value	Unit	Notes
Silt Content	s	7.5	%	EPA-450/3-88-008, Table 4-1 mean value for overburden
Number of wet days	p	157	days	G40-C permit guidance - Table B, Zone 1
Percent time wind speed > 12 mph	f	20	%	G40-C permit guidance

		PM	PM_{10}	$PM_{2.5}$
Particle Size Multipliers based on ratios from AP-42 Section 13.2.4.3	k	1	0.47	0.072

Emission Factors:

		PM	PM_{10}	$PM_{2.5}$
Emission Factor (lb/acre-day)	E	10.03	4.74	0.72

Operating Parameters:

Source ID	Source Description	Acres
WIND3	Average daily acreage in outside stockpiles or borrow areas	2

Notes:
1. Storage piles located in the mixing building will not have any emissions from wind erosion as they are located inside.
2. Only 2 acres would be active or exposed at a time as the other stockpile or borrow areas will be seeded.

Uncontrolled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
WIND3	0.84	20.06	3.66	0.40	9.49	1.73	0.060	1.44	0.26

Controlled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
WIND3	0.84	20.06	3.66	0.40	9.49	1.73	0.06	1.44	0.26

Wind Erosion

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Wind Erosion

Exposed Areas

AP-42 13.2.5 Industrial Wind Erosion, November 2006

Emission Factor Equation: **E=k*N*P** Equation 13.2.5-2

where:
E = PM emission factor (grams/square meter/year)
k = particle size multiplier
N = Number of disturbances per year
P = Erosion potential corresponding to the fastest mile between disturbances (g/m^2)

Erosion Potential Equation: **P = 58*(u* - ut*)^2 + 25*(u* - ut*) and P = 0 for u* <= ut*** Equation 13.2.5-3

where:
P = erosion potential (g/m^2)
u* = friction velocity (m/s) - 0.053*u10
ut* = threshold friction velocity (m/s)
u10 = fastest mile anemometer for period between disturbances (m/s)

Emission Factor Parameters:

Description	Variable	Value	Unit	Notes
Number of disturbances for WIND1	N1	2,190	disturb/year	Assume area would be disturbed six times per day
Number of disturbances for WIND2	N2	104	disturb/year	Assume area would be disturbed twice per week
Number of disturbances for WIND4	N4	26	disturb/year	Assume area would be disturbed twice per week for 90 days
Friction velocity	u*	1.18	m/s	Equation 13.2.5-4
Threshold friction velocity for overburden	ut*	1.02	m/s	AP-42 Table 13.2.5-2
Highest gust wind speed	u10	22	m/s	May 2015 - April 2016 NWS data from Parkersburg

		PM	PM_{10}	$PM_{2.5}$
Particle Size Multipliers, AP-42 Section 13.2.5.3	k	1	0.50	0.075

Erosion Potential, Equation 13.2.5-3	P	5.69	g/m^2

Emission Factors:

		PM	PM_{10}	$PM_{2.5}$
WIND1 Emission Factor (g/m^2-year)	E	12,458.63	6,229.32	934.40
WIND1 Emission Factor (lb/acre-day)	E	304.53	152.26	22.84
WIND2 Emission Factor (g/m^2-year)	E	593.27	296.63	44.50
WIND2 Emission Factor (lb/acre-day)	E	14.50	7.25	1.09
WIND4 Emission Factor (g/m^2-year)	E	146.29	73.14	10.97
WIND4 Emission Factor (lb/acre-day)	E	14.50	7.25	1.09

Operating Parameters:

Source ID	Source Description	Acres
WIND1	Average daily active acreage at working face	0.23
WIND2	Average daily exposed, but inactive, acreage at working face	1
WIND4	Exposed winter areas that cannot be tarped	8

Uncontrolled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
WIND1	2.92	70.04	12.78	1.46	35.02	6.39	0.22	5.25	0.96
WIND2	0.60	14.50	2.65	0.30	7.25	1.32	0.045	1.09	0.20
WIND4	4.83	116.01	5.22	2.42	58.01	2.61	0.363	8.70	0.39

Controlled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
WIND1	2.92	70.04	12.78	1.46	35.02	6.39	0.22	5.25	0.96
WIND2	0.60	14.50	2.65	0.30	7.25	1.32	0.045	1.09	0.20
WIND4	4.83	116.01	5.22	2.42	58.01	2.61	0.363	8.70	0.39

Other Operation Emissions

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Other Non-Fugitive Sources

Cover Soil Compaction

AP-42 Section 11.9 Western Surface Coal Mining, July 1998

Emission Factor Equation: **E1=5.7*(s^1.2)/(M^1.3)** Table 11.9-1 Bulldozing Overburden
E2=1.0*(s^1.5)/(M^1.4)
where:
E1 = Total particulate emission factor (pounds per hour, lb/hr)
E2 = PM15 emission factor (pounds per hour, lb/hr)
s = material silt content (%)
M = material moisture content (%)

Operating Parameters:

Source ID	Vehicle Description	Decription of Activity	Hours Per Day
COMP	Dozers	Compaction of waste and/or cover soil	12

Emission Factor Parameters:

Description	Variable	Value	Unit	Notes
Silt Content	s	7.5	%	Consistent with silt for wind erosion
Material moisture content	M	12	%	Consistent with moisture for transfer points
Control Efficiency	CE	0	%	Working face will not be watered due to moisture in salt waste

		PM_{10}	$PM_{2.5}$
Particle Size Multipliers, Table 11.9-1	*E1	0.75	---
	*E2	---	0.105

Emission Factors:

		PM	PM_{10}	$PM_{2.5}$
Compacation Emission Factor (lb/hr)	E	2.53	1.90	0.047

Uncontrolled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
COMP	2.53	30.35	5.54	1.90	22.76	4.15	0.047	0.56	0.10

Controlled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
COMP	2.53	30.35	5.54	1.90	22.76	4.15	0.047	0.56	0.10

Other Operation Emissions

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Other Non-Fugitive Sources

Grading

AP-42 Section 11.9 Western Surface Coal Mining, July 1998

Emission Factor Equation: **E1=0.040*(S^2.5)** Table 11.9-1 Grading
E2=0.051*(S^2.0)
where:
E1 = Total particulate emission factor (pounds per vehicle miles traveled, lb/VMT)
E2 = PM15 emission factor (pounds per vehicle miles traveled, lb/VMT)
S = mean grader speed (mph)

Operating Parameters:

Source ID	Vehicle Description	Decription of Activity	Hours Per Day	Feet per day
GRADER	Graders	Grading for road maintenance	3	10,000

Emission Factor Parameters:

Description	Variable	Value	Unit	Notes
Mean Vehicle Speed	S	7.1	mph	AP-42 Table 11.9-3
Control Efficiency	CE	0	%	Working face will not be watered due to moisture in salt waste

		PM_{10}	$PM_{2.5}$
Particle Size Multipliers, Table 11.9-1	*E1	0.60	---
	*E2	---	0.031

Emission Factors:

		PM	PM_{10}	$PM_{2.5}$
Grading Emission Factor (lb/VMT)	E	5.37	3.22	0.080

Uncontrolled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
GRADER	3.39	10.18	1.86	2.04	6.11	1.11	0.050	0.15	0.028

Controlled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
GRADER	3.39	10.18	1.86	2.04	6.11	1.11	0.050	0.15	0.028

Other Operation Emissions

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Other Non-Fugitive Sources

Mixing Waste and Soil

AP-42 Section 11.19 Crushed Stone Processing and Pulverized Mineral Processing, August 2004

Operating Parameters:

Source ID	Decription of Activity	Tons per day	Hours Per Day
MIXING	Mixing native soil with salt waste	2,415	24

Emission Factor Parameters:

Description	Variable	Value	Unit	Notes
Control factor for building	CE	70	%	G40-C permit guidance for activity in a full enclosure

Emission Factors:

		PM	PM_{10}	$PM_{2.5}$
Screening Emission Factor (lb/ton)	E	0.025	0.0087	0.0013

Notes: 1. No emission factor for mixing was available, so screening was used as a similar activity estimate
2. $PM_{2.5}$ factor was derived assuming the same ratio of $PM_{2.5}/PM_{10}$ as material handing (0.15)

Uncontrolled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
MIXING	2.52	60.38	11.02	0.88	21.01	3.83	0.13	3.15	0.58

Controlled Emissions

Source ID	PM Emissions			PM_{10} Emissions			$PM_{2.5}$ Emissions		
	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)	(lb/hr)	(lb/day)	(ton/yr)
MIXING	0.75	18.11	3.31	0.26	6.30	1.15	0.039	0.95	0.17

Diesel Engine Emissions - Light Plants

Company Name:	**Antero Treatment LLC**
Facility Name:	**Antero Landfill**
Facility Location:	**Doddridge County, WV**
Source Description:	**Light Plant**

Source Information

Emission Source ID	ENG001 - ENG002
Engine Make/Model	Mitsubishi L3E-W26ML
Service Type	Light Plant
Number of Engines	2
Emissions Level	Tier 4[3]
Power (hp)[1]	12.2
Fuel Consumption (gal/hr)[1]	0.5
Fuel Consumption (gal/yr)[2]	375
Heat Rating (MMBtu/hr)[2]	0.068
Fuel Heating Value (Btu/gal)	135,000
Annual Operating Hours	750

1. Values retrieved from manufacturer specification sheet.
2. Calculated per engine.
3. For engines of this horsepower, there are no Tier 3 emission factors, so Tier 4 was assumed.

Potential to Emit

			Per Engine		Total Engines		
Criteria Pollutants	**Emission Factors**		**Emissions**		**Emissions**		**Emission Factor Source**
	g/hp-hr	**lb/MMBtu**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
NO_x[4]	5.3	—	0.14	0.054	0.29	0.11	Tier 4 emission levels
CO[4]	4.9	—	0.13	0.050	0.26	0.099	Tier 4 emission levels
VOC[4]	0.3	—	0.0075	0.0028	0.015	0.0056	Tier 4 emission levels
PM[4]	0.3	—	0.0080	0.0030	0.016	0.0060	Tier 4 emission levels
SO_2[5]	—	0.29	0.020	0.0073	0.039	0.015	AP-42 Table 3.3-1
Hazardous Air Pollutants	**Emission Factors[5]**		**Emissions**		**Emissions**		**Emission Factor Source**
	g/hp-hr	**lb/MMBtu**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
1,3-Butadiene	—	3.91E-05	2.64E-06	9.90E-07	5.28E-06	1.98E-06	AP-42 Table 3.3-2
Acetaldehyde	—	7.67E-04	5.18E-05	1.94E-05	1.04E-04	3.88E-05	AP-42 Table 3.3-2
Acrolein	—	9.25E-05	6.24E-06	2.34E-06	1.25E-05	4.68E-06	AP-42 Table 3.3-2
Benzene	—	9.33E-04	6.30E-05	2.36E-05	1.26E-04	4.72E-05	AP-42 Table 3.3-2
Formaldehyde	—	1.18E-03	7.97E-05	2.99E-05	1.59E-04	5.97E-05	AP-42 Table 3.3-2
Napthelene	—	8.48E-05	5.72E-06	2.15E-06	1.14E-05	4.29E-06	AP-42 Table 3.3-2
Toluene	—	4.09E-04	2.76E-05	1.04E-05	5.52E-05	2.07E-05	AP-42 Table 3.3-2
Xylenes	—	2.85E-04	1.92E-05	7.21E-06	3.85E-05	1.44E-05	AP-42 Table 3.3-2
Total HAPs	—	—	**2.56E-04**	**9.59E-05**	**5.12E-04**	**1.92E-04**	
Greenhouse Gases	**Emission Factors**		**Emissions**		**Emissions**		**Emission Factor Source**
	g/hp-hr	**kg/MMBtu**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
CO_2	—	73.96	11.03	4.14	22.07	8.27	40 CFR Part 98 Subpart C Table C-1
CH_4	—	0.003	0.00045	0.00017	0.00090	0.00034	40 CFR Part 98 Subpart C Table C-2
N_2O	—	0.0006	0.000090	0.000034	0.00018	0.000067	40 CFR Part 98 Subpart C Table C-2
CO_2e	—	—	11.07	4.15	22.14	8.30	40 CFR Part 98 Subpart A Table A-1

4. Emissions from NOx, CO, VOC, and PM are based on EPA Tier 4 emission standards for nonroad diesel fueled engines with a horsepower rating between 11 HP to 25 HP. It is assumed that 95% of the NMHC+NOx emissions are NOx, and 5% are VOC.
5. SO2 and HAP emission factors retrieved from AP-42 Section 3.3-2.

Diesel Engine Emissions - Emergency Generator

Company Name:	Antero Treatment LLC
Facility Name:	Antero Landfill
Facility Location:	Doddridge County, WV
Source Description:	Emergency Generator

Source Information

Emission Source ID	ENG003
Engine Make/Model	Generac 48/50 kW
Service Type	Emergency Generator
Number of Engines	1
Emissions Level	Tier 3
Power (hp)[1]	85
Fuel Consumption (gal/hr)[1]	3.98
Fuel Consumption (gal/yr)[2]	1,990
Heat Rating (MMBtu/hr)[2]	0.54
Fuel Heating Value (Btu/gal)	135,000
Annual Operating Hours	500

1. Values retrieved from manufacturer specification sheet.
2. Calculated per engine.

Potential to Emit

			Per Engine		Total Engines		
Criteria Pollutants	**Emission Factors**		**Emissions**		**Emissions**		**Emission Factor Source**
	g/hp-hr	**lb/MMBtu**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
NO_x[3]	3.3	---	0.62	0.16	0.62	0.16	Tier 3 emission levels
CO[3]	3.7	---	0.70	0.17	0.70	0.17	Tier 3 emission levels
VOC[3]	0.2	---	0.033	0.0082	0.033	0.0082	Tier 3 emission levels
PM[3]	0.3	---	0.056	0.014	0.056	0.014	Tier 3 emission levels
SO_2[4]	---	0.29	0.16	0.039	0.16	0.039	AP-42 Table 3.3-1
Hazardous Air Pollutants	**Emission Factors[4]**		**Emissions**		**Emissions**		**Emission Factor Source**
	g/hp-hr	**lb/MMBtu**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
1,3-Butadiene	---	3.91E-05	2.10E-05	5.25E-06	2.10E-05	5.25E-06	AP-42 Table 3.3-2
Acetaldehyde	---	7.67E-04	4.12E-04	1.03E-04	4.12E-04	1.03E-04	AP-42 Table 3.3-2
Acrolein	---	9.25E-05	4.97E-05	1.24E-05	4.97E-05	1.24E-05	AP-42 Table 3.3-2
Benzene	---	9.33E-04	5.01E-04	1.25E-04	5.01E-04	1.25E-04	AP-42 Table 3.3-2
Formaldehyde	---	1.18E-03	6.34E-04	1.59E-04	6.34E-04	1.59E-04	AP-42 Table 3.3-2
Napthelene	---	8.48E-05	4.56E-05	1.14E-05	4.56E-05	1.14E-05	AP-42 Table 3.3-2
Toluene	---	4.09E-04	2.20E-04	5.49E-05	2.20E-04	5.49E-05	AP-42 Table 3.3-2
Xylenes	---	2.85E-04	1.53E-04	3.83E-05	1.53E-04	3.83E-05	AP-42 Table 3.3-2
Total HAPs	---	---	**2.04E-03**	**5.09E-04**	**2.04E-03**	**5.09E-04**	
Greenhouse Gases	**Emission Factors**		**Emissions**		**Emissions**		**Emission Factor Source**
	g/hp-hr	**kg/MMBtu**	**lb/hr**	**tpy**	**lb/hr**	**tpy**	
CO_2	---	73.96	87.82	21.96	87.82	21.96	40 CFR Part 98 Subpart C Table C-1
CH_4	---	0.003	0.0036	0.00089	0.0036	0.00089	40 CFR Part 98 Subpart C Table C-2
N_2O	---	0.0006	0.00071	0.000178	0.00071	0.000178	40 CFR Part 98 Subpart C Table C-2
CO_2e	---	---	88.12	22.03	88.12	22.03	40 CFR Part 98 Subpart A Table A-1

3. Emissions from NOx, CO, VOC, and PM are based on EPA Tier 3 emission standards for nonroad diesel fueled engines with a horsepower rating between 75 HP to 100 HP. It is assumed that 95% of the NMHC+NOx emissions are NOx, and 5% are VOC.
4. SO2 and HAP emission factors retrieved from AP-42 Section 3.3-2 since the engine is less than 600 HP.

Williams, Jerry

From: Bryan Radabaugh <bradabaugh@anteroresources.com>
Sent: Thursday, August 11, 2016 9:58 AM
To: Williams, Jerry; Barry Schatz; Conrad Baston
Subject: RE: WVDAQ Visit to Clearwater Landfill- Friday, August 12, 2016
Attachments: Conrad Baston; Bryan Radabaugh

Mr. Williams,

We will meet you there at 9:00 tomorrow morning. We will meet on the western end of the landfill just off of Cabin Run Road in Ritchie County. Directions are as follows:

I-77 to US 50 East
Continue on US 50 East for 34.7 miles and turn right onto Cabin Run Road.
Continue on Cabin Run for 0.8 miles, then turn left onto the driveway/well road.

We will meet there, then utilize a UTV to access the landfill site to provide you a tour of the planned facility.

Thanks and look forward to meeting you there tomorrow, I have attached contact information for Conrad and myself.

Bryan Radabaugh
Senior Civil Design Manager
Antero Resources
(O) 740-760-1062
(M) 740-248-8945

From: Williams, Jerry [mailto:Jerry.Williams@wv.gov]
Sent: Thursday, August 11, 2016 7:25 AM
To: Barry Schatz; Conrad Baston
Cc: Bryan Radabaugh
Subject: RE: WVDAQ Visit to Clearwater Landfill- Friday, August 12, 2016

I would like to be there around 9 am tomorrow. I have been to the water treatment site before and met with Conrad. I would like someone to show me where the landfill will be located in relation to the treatment facility and give me an idea of the size of the landfill. I don't see this taking much more than 1 hour +/-. Please let me know if this is ok, and where the best meeting place would be.

Thanks
Jerry

Jerry Williams, P.E.
Engineer
WVDEP – Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
(304) 926-0499 ext. 1223
jerry.williams@wv.gov

ID # 017-00157
Reg K13-3331
Company Antero Treatment
Facility Landfill Initials JW

NON-CONFIDENTIAL

(303) 357-7276 (O)
(719) 351-4198 (C)

Williams, Jerry

Full Name:	Conrad Baston
Last Name:	Baston
First Name:	Conrad
Job Title:	General Manager-Civil Engineering
Department:	Production
Business:	304-842-4393
Mobile:	304-476-6200
E-mail:	cbaston@anteroresources.com
E-mail Display As:	cbaston@anteroresources.com

Thursday, May 07, 2015 8:26 AM:

Details Updated 10/1/2014:
Job Title: General Manager - Civil Engineering Sr. Staff Civil Engineer

---

Details Updated 10/13/2014:
Job Title: SR Engineer, Civil General Manager - Civil Engineering

---

Details Updated 7/6/2015:
Job Title: SR Civil Engineer SR Engineer, Civil

Details Updated 4/4/2016:
Job Title: General Manager-Civil Engineering SR Civil Engineer

Williams, Jerry

Full Name:	Bryan Radabaugh
Last Name:	Radabaugh
First Name:	Bryan
Job Title:	SR Design Manager
Department:	Production
Business:	740-760-1062
Mobile:	740-248-8945
E-mail:	bradabaugh@anteroresources.com
E-mail Display As:	bradabaugh@anteroresources.com

Details Updated 12/22/2014:
Mobile Phone: 740-248-8945

Details Updated 4/4/2016:
Job Title: SR Design Manager Roadway Engineering Manager

Details Updated 8/8/2016:
Business Phone: 740-760-1062 (740) 760-1062

August 3, 2016

Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

Mr. Jerry Williams
Division of Air Quality
WV Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

Dear Mr. Williams:

Re: Original Affidavit of Publication
Antero Landfill – Permit No. R13-3331

Antero Treatment would like to submit the Original Affidavit of Publication from *The Pennsboro News*. This is being submitted in accordance with a permit application requirement for an oil and gas compressor station.

Sincerely,

Barry Schatz

Barry Schatz
Senior Environmental & Regulatory Manager

Encl.

017-00157
Reg R13-3311
Company Antero Treatment
Facility Clearwater Initials lw

NON-CONFIDENTIAL

INVOICE AND AFFIDAVIT OF PUBLICATION

The Pennsboro News

103 North Spring Street, P.O. Box 241
Harrisville, WV 26362
Ph. 304.643.4947 • Fax 304.643.4717

WEST CENTRAL PUBLISHING
FEDERAL I.D. NO. 55-06700561
STATE OF WEST VIRGINIA
COUNTY OF RITCHIE, to wit:

I, James McGoldrick, being first duly sworn upon my oath, do depose and say:

- that I am Publisher of The Pennsboro News, a Democratic newspaper,
- that I have been duly authorized to execute this affidavit,
- that such newspaper is regularly published weekly for at least fifty weeks during the calendar year, in the municipality of Harrisville, Ritchie County, West Virginia.
- That such newspaper is a newpaper of "general circulation" as defined in Art. 3, Chap. 59 of the Code of West Virginia 1931 as amended, within Ritchie County
- that such newspaper averages in length four or more pages, exclusive of any cover, per issue;
- that such newspaper is circulated to the general public at a definite price or consideration;
- that such newspaper is a newspaper to which the general public resorts for passing events or a political, religious, commercial and social nature and for current happenings, announcements, miscellaneous reading matters, advertisements and other notices;
- and that the annexed notice described as follows:

Clearwater Landfill Air Quality Permit Application

WAS PUBLISHED IN SAID NEWSPAPER AS FOLLOWS:

TIMES	DATES
One	July 20, 2016

PUBLICATION CHARGES	$93.84

CERTIF-BILL TO

Antero Resources
Attn: Betsy McLaughlin
1615 Wynkoop St.
Denver, CO 80202

(signed) _____

NOTARIZATION

Taken, sworn to and subscribed before me this 20th day of July, 20 16

Charlott C Stine

Notary Public

Official Seal
Notary Public, State of West Virginia
Charlott C Stine
115 Pine Grove Rd
St. Marys WV 26170
My commission expires November 18, 2023

PLEASE RETURN A COPY OF THIS INVOICE WITH YOUR PAYMENT TO:
P.O. BOX 241, Harrisville, WV 26362

RECEIVED
AUG 05 2016
WV DEP / DIV OF AIR QUALITY

Air Quality Permit Notice
Notice of Application – Clearwater Landfill

Notice is given that Antero Treatment LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a 45CSR13 Construction Permit for a non-municipal waste landfill located south of US-50 near Greenwood, in Doddridge and Ritchie Counties, West Virginia. The latitude and longitude coordinates are: 39.26425N, 80.90675W.

The applicant estimates the potential to discharge the following Regulated Air Pollutants will be:

Pollutant	Emission Rate (tons per year)
Non-Fugitive Sources	
Total PM (PM)	33.58
Particulate Matter less than 10 um (PM10)	17.57
Particulate Matter less than 2.5 um (PM2.5)	2.13
Nitrogen Oxides (NOx)	0.26
Carbon Monoxides (CO)	0.27
Fugitive Sources	
Total PM (PM)	162.67
Particulate Matter less than 10 um(PM10)	48.58
Particulate Matter less than 2.5 um (PM2.5)	4.77

Startup of operation is planned to begin on or about July 2017, with construction starting in November. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 28th day of June 2016.

By: Antero Resources Corporation
Barry Schatz
Senior Environmental and Regulatory Manager
1615 Wynkoop Street
Denver, CO 80202

7-20 R

Williams, Jerry

From: Elizabeth McLaughlin <emclaughlin@anteroresources.com>
Sent: Wednesday, August 03, 2016 12:53 PM
To: Williams, Jerry
Subject: Antero Treatment- Antero Landfill Affidavit
Attachments: Antero Treatment- Landfill Original Affidavit 8.3.16.pdf

Dear Mr. Williams:

Re: Original Affidavit of Publication
Antero Landfill- Permit No. R13-3331

Antero Treatment would like to submit the Original Affidavit of Publication (original sent via FedEx) from *The Pennsboro News*. This is being submitted in accordance with a permit application requirement.

Thanks,

Betsy McLaughlin
Air Quality Specialist

1615 Wynkoop Street
Denver, CO 80202
O: 303.357.6839
C: 303.396.9465

ID # 017-00157
Reg R13-3311
Company ANTERO TREATMENT
Facility CLEARWATER Initials JW

NON-CONFIDENTIAL

August 3, 2016

Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

Mr. Jerry Williams
Division of Air Quality
WV Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304

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Sincerely,

Barry Schatz

Barry Schatz
Senior Environmental & Regulatory Manager

Encl.

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The Pennsboro News

103 North Spring Street, P.O. Box 241
Harrisville, WV 26362
Ph. 304.643.4947 • Fax 304.643.4717

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COUNTY OF RITCHIE, to wit:

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- that such newspaper is a newspaper to which the general public resorts for passing events or a political, religious, commercial and social nature and for current happenings, announcements, miscellaneous reading matters, advertisements and other notices;
- and that the annexed notice described as follows:

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One	July 20, 2016

PUBLICATION CHARGES	$93.84

CERTIF-BILL TO

Antero Resources
Attn: Betsy McLaughlin
1615 Wynkoop St.
Denver, CO 80202

(signed) James McGoldrick

NOTARIZATION

Taken, sworn to and subscribed before me this 20th

day of July, 20 16

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The applicant estimates the potential to discharge the following Regulated Air Pollutants will be:

Pollutant	Emission Rate (tons per year)
Non-Fugitive Sources	
Total PM (PM)	33.56
Particulate Matter less than 10 um (PM10)	17.57
Particulate Matter less than 2.5 um (PM2.5)	2.13
Nitrogen Oxides (NOx)	0.26
Carbon Monoxides (CO)	0.27
Fugitive Sources	
Total PM (PM)	162.67
Particulate Matter less than 10 um(PM10)	48.58
Particulate Matter less than 2.5 um (PM2.5)	4.77

Startup of operation is planned to begin on or about July 2017, with construction starting in November. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 28th day of June 2016.

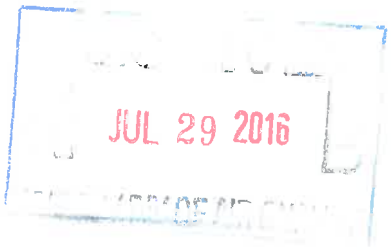
By: Antero Resources Corporation
Barry Schatz
Senior Environmental and Regulatory Manager
1615 Wynkoop Street
Denver, CO 80202

7-20 R

July 26, 2016

Antero Resources
1615 Wynkoop Street
Denver, CO 80202
Office 303.357.7310
Fax 303.357.7315

Mr. Jerry Williams
Division of Air Quality
WV Department of Environmental Protection
601 57th Street, SE
Charleston, WV 25304



Dear Mr. Williams:

Re: Original Affidavit of Publication
Antero Landfill – Permit No. R13-3331

Antero Treatment would like to submit the Original Affidavit of Publication from *The Doddridge Independent*. This is being submitted in accordance with a permit application requirement for an oil and gas compressor station.

Sincerely,

Barry Schatz
Senior Environmental & Regulatory Manager

Encl.

ID # 017-00157
Reg R13-3331
Company ANTERO TREATMENT
Facility LANDFILL Initials JL

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The Doddridge Independent

The Doddridge Independent
PUBLISHER'S CERTIFICATE

I, Michael D. Zorn, Publisher of The Doddridge Independent, A newspaper of general circulation published in the town of West Union, Doddridge County, West Virginia, do hereby certify that:

Attachment U / Air Quality Permit Notice / Notice of Application / Clearwater Landfill / Antero Resources Corporation / Doddridge County, West Virginia / NNotice is given that Antero Treatment LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a 45CSR13 Construction Permit for a non-municipal waste landfill located south of US-50 near Greenwood, in Doddridge County, West Virginia. The latitude and longitude coordinates are: 39.26425N, 80.90675W.

was published in The Doddridge Independent 1 time commencing on Friday, July 15, 2016 and Ending on Friday, July 15, 2016 at the request of:

Antero Resources Corporation

Given under my hand this Monday, July 18, 2016

The publisher's fee for said publication is:
$ 41.97 1st Run/$ 0 Subsequent Runs
This Legal Ad Total: $ 41.97

Michael D. Zorn
Publisher of The Doddridge Independent

Subscribed to and sworn to before me on this date: 7 / 16 / 16

Robert E Burnside

Notary Public in and for Doddridge County

My Commission expires on The 16 day of May 20 19

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
ROBERT E. BURNSIDE
100 SCHOOL ST.
WEST UNION, WV 26456
My commission expires May 16, 2019

LEGAL ADVERTISEMENT

Attachment U

Air Quality Permit Notice

Notice of Application
Clearwater Landfill
Antero Resources Corporation
Doddridge County, West Virginia

Notice is given that Antero Treatment LLC has applied to the West Virginia Department of Environmental Protection, Division of Air Quality, for a 45CSR13 Construction Permit for a non-municipal waste landfill located south of US-50 near Greenwood, in Doddridge County, West Virginia. The latitude and longitude coordinates are: 39.26425N, 80.90675W.

The applicant estimates the increased potential to discharge the following Regulated Air Pollutants will be:

Pollutants	Emission Rate (tons per year)
Non-Fugitive Sources	
Total PM (PM)	33.58
Particulate Matter less than 10 µm (PM10)	17.57
Particulate Matter less than 2.5 µm (PM2.5)	2.13
Nitrogen Oxides (NOx)	0.26
Carbon Monoxide (CO)	0.27
Fugitive Sources	
Total PM (PM)	162.67
Particulate Matter less than 10 µm (PM10)	48.58
Particulate Matter less than 2.5 µm (PM2.5)	4.77

Startup of operation is planned to begin on or about July 2017, with construction starting in November 2016. Written comments will be received by the West Virginia Department of Environmental Protection, Division of Air Quality, 601 57th Street, SE, Charleston, WV 25304, for at least 30 calendar days from the date of publication of this notice.

Any questions regarding this permit application should be directed to the DAQ at (304) 926-0499, extension 1250, during normal business hours.

Dated this the 28th day of June 2016.

By: Antero Resources Corporation
Barry Schatz,
Senior Environmental & Regulatory Manager,
1615 Wynkoop Street, Denver, CO 80202

07/015

JUL 29 2016

Williams, Jerry

From:	Williams, Jerry
Sent:	Wednesday, July 27, 2016 10:23 AM
To:	'aschopp@anteroresources.com'; Barry Schatz; Michele Steyskal
Cc:	McKeone, Beverly D
Subject:	WV DAQ NSR Permit Application Complete for Antero Treatment LLC, Clearwater Landfill

RE: Application Status: Complete
Antero Treatment LLC, Clearwater Landfill
Permit Application R13-3331
Plant ID No. 017-00157

Mr. Schopp,

Your application for a construction permit for a landfill was received by this Division on July 1, 2016 and assigned to the writer for review. Upon review of said application, it was determined that the application was incomplete and additional information was requested. The requested information has been received, therefore, the application is now complete and the statutory review period commenced on July 27, 2016.

In the case of this application, the agency believes it will take approximately 90 days to make a final permit determination.

This determination of completeness shall not relieve the permit applicant of the requirement to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit determination.

Should you have any questions, please contact Jerry Williams at (304) 926-0499 ext. 1223 or reply to this email.

Jerry Williams, P.E.
Engineer
WVDEP – Division of Air Quality
601 57th Street, SE
Charleston, WV 25304
(304) 926-0499 ext. 1223
jerry.williams@wv.gov

dep

Please consider the environment before printing this email.

NON-CONFIDENTIAL

Williams, Jerry

From: Ward, Beth A
Sent: Tuesday, July 05, 2016 2:32 PM
To: Williams, Jerry
Subject: ANTERO TREATMENT LLC PERMIT APPLICATION FEE

This is the receipt for payment received from:

ANTERO TREATMENT LLC, ANTERO CLEARWATER, CHECK NUMBER 1465, CHECK DATE 06/22/2016, $2,000.00
R13-3260A ID# 017-00157

OASIS Deposit CR 1700000917

Thank You!

Beth Ward

WV DEPARTMENT OF ENVIRONMENTAL PROTECTION
BTO FISCAL
601 57TH STREET SE
CHARLESTON, WV 25304
(304) 926-0499 EXT 1846
beth.a.ward@wv.gov

Adkins, Sandra K

From:	Adkins, Sandra K
Sent:	Tuesday, July 05, 2016 10:56 AM
To:	'aschopp@anteroresources.com'; 'bschatz@anteroresources.com'; 'msteyskal@kleinfelder.com'
Cc:	McKeone, Beverly D; Williams, Jerry
Subject:	WV DAQ Permit Application Status for Antero Treatment LLC; Antero Clearwater Facility

RE: Application Status
Antero Treatment LLC
Antero Clearwater Facility
Facility ID No. 017-00157
Application No. R13-3260A

Mr. Schopp,

Your application for modification permit for the Antero Clearwater Facility was received by this Division on July 1, 2016, and was assigned to Jerry Williams. The following item was not included in the initial application submittal:

Original affidavit for Class I legal advertisement not submitted.

This item is necessary for the assigned permit writer to continue the 30-day completeness review.

Within 30 days, you should receive a letter from Jerry stating the status of the permit application and, if complete, given an estimated time frame for the agency's final action on the permit.

Any determination of completeness shall not relieve the permit applicant of the requirement to subsequently submit, in a timely manner, any additional or corrected information deemed necessary for a final permit decision.

Should you have any questions, please contact the assigned engineer, Jerry Williams, at 304-926-0499, extension 1223.

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R13-3204/~~R13-~~ Jay
017-00157 ~~Construction~~ Modification

45CSR13 Administrative Update, Construction, Modification, Relocation, Temporary Permit or General Permit Registration Incomplete Application

A complete application is demonstrated when all of the information required below is properly prepared, completed and attached. The items listed below are required information which must be submitted with a 45CSR13 permit application. Any submittal will be considered incomplete if the required information is not included. The applicant must submit a complete application in order to receive a 45CSR13 permit.

☒ Class I legal advertisement not published in a newspaper certified to accept legal advertisements and original affidavit submitted.

☐ Application fee AND/OR additional application fees not included:
- ☐ $250 Class I General Permit
- ☐ $300 Class II Administrative Update
- ☐ $1,000 Construction, Modification, Relocation or Temporary Permit
- ☐ $500 Class II General Permit
- ☐ $1,000 NSPS
- ☐ $2,500 NESHAP
- ☐ $2,500 45CSR27 Pollutant
- ☐ $5,000 Major Modification
- ☐ $10,000 Major Construction

☐ Original and two (2) copies of the application not submitted.

☐ File organization – application pages are not numbered or in correct order, application is not bound in some way, etc.

☐ Confidential Business Information is not properly identified.

☐ General application forms not completed and signed by a responsible official.

☐ Authority of Corporation form not included – required if application is signed by someone other than a responsible official.

☐ Applicant is not registered with the West Virginia Secretary of State's Office.

☐ Copy of current Business Registration Certificate not included.

☐ Process description, including equipment and emission point identification numbers, not submitted.

☐ Process flow diagram, including equipment and emission point identification numbers, not submitted.

☐ Plot plan, including equipment and emission point identification numbers, not submitted.

☐ Applicable technical forms not completed and submitted:

- ☐ Emission Point Data Summary Sheets
- ☐ Air Pollution Control Device Sheets
- ☐ Emission Unit Data Sheets
- ☐ Equipment List Form

☐ Emission calculations not included – emission factors, references, source identification numbers, etc.

☐ Electronic submittal diskette not included.