

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Land and Materials Administration • Solid Waste Program

1800 Washington Boulevard • Suite 605 • Baltimore Maryland 21230-1719

410-537-3315 • 800-633-6101 x3315 • www.mde.maryland.gov

Coal Combustion Byproducts (CCBs) Annual Generator Tonnage Report Instructions for Calendar Year 2024

The following is general information relating to the requirement for reporting quantities of coal combustion byproducts (CCBs) that were managed in the State of Maryland during calendar year 2024. Please answer the questions on the form provided, attaching additional information and any requested supplemental information to the back of the form. *Note that the form requires both volume and weight of the CCBs produced. If you know one of these parameters but not the others, for example, you have the tonnage produced but not the volume, you may calculate the other parameter; however, please provide the calculations and assumptions that you used in your estimate.* Questions can be directed to the Solid Waste Program at (410) 537-3315 or via email at andrew.grenzer@maryland.gov.

I. Background. This requirement that generators of CCBs submit an annual report was instituted in the Code of Maryland Regulations COMAR 26.04.10.08, that was promulgated effective December 1, 2008. The regulation requires that any non-residential generator of CCBs submit a report to MDE by March 1 of each year describing the manner in which CCBs generated within the State were managed during the preceding calendar year. Additional information and specific instructions follow. For more detailed information, please refer to COMAR 26.04.10.08.

II. General Information and Applicability.

A. **Definitions.** CCBs are defined in COMAR 26.04.10.02B as:

“(3) Coal Combustion Byproducts. (a) "Coal combustion byproducts" means the residue generated by or resulting from the burning of coal.

(b) "Coal combustion byproducts" includes fly ash, bottom ash, boiler slag, pozzolan, and other solid residuals removed by air pollution control devices from the flue gas and combustion chambers of coal burning furnaces and boilers, including flue gas desulfurization sludge and other solid residuals recovered from flue gas by wet or dry methods.”

A generator of CCBs is defined in COMAR 26.04.10.02B as:

“(9) Generator.

(a) "Generator" means a person whose operations, activities, processes, or actions create coal combustion byproducts.

(b) "Generator" does not include a person who only generates coal combustion byproducts by burning coal at a private residence.”

B. Applicability. **If you or your company meets the definition of a generator of CCBs as defined above, you must provide the information as required below.** For the purposes of this

Facility Name: AES Warrior Run

CCB Tonnage Report – 2024

report, “you” shall hereinafter refer to the generator defined above. Please note that COMAR 26.04.10.08 requires generators of CCBs to submit an annual report to the Department concerning the disposition of the CCBs that they generated the previous year. **THIS INCLUDES CCBS THAT WERE NOT SEPARATELY COLLECTED BUT WERE PRODUCED BY THE BURNING OF COAL AND WERE DIRECTLY CONTRIBUTED TO A PRODUCT, such as cement.** Where the amount cannot be directly measured, estimates based on the amount of coal burned can be used. The method of determining the volume of CCBs produced must be described.

III. Required Information. The following information must be provided to MDE by March 1, 2025:

A. Contact information:

Facility Name: AES Warrior Run

Name of Permit Holder: AES Warrior Run

Facility Address: 11600 Mexico Farms Rd. SE
Street

Facility Address: Cumberland MD 21502
City State Zip

County: Allegany

Contact Information (Person filing report or Environmental Manager)

Facility Telephone No.: 301-777-0055 Facility Fax No.: 301-777-8772

Contact Name: Kara Hawkins

Contact Title: Environmental Specialist

Contact Address: Same as above
Street

Contact Address: _____
City State Zip

Contact Email: kara.hawkins@aes.com

Contact Telephone No.: 301-777-0055 x-1105 Contact Fax No.: 301-777-8772

For questions on how to complete this form, please contact the Solid Waste Program at 410-537-3315

B. A description of the process that generates the CCBs, including the type of coal or other raw material that generates the CCBs. If the space provided is insufficient, please attach additional pages:

AES Warrior Run (AES) is an electric co-generation facility located at 11600 Mexico Farms Road in Cumberland Allegany County Maryland. The facility operates a 180-Megawatt coal-fired steam electric co-generation plant and a 150-ton per day food grade carbon dioxide production plant. The facility consists of an ABB CE coal-fired atmospheric fluidized bed combustion boiler (ACFB) burning bituminous coal and Number 2 Fuel oil as a start-up fuel. Selective non-catalytic reduction (SNCR) system provides supplemental control of Nitrogen Oxides (NOx) to the ACFB Boiler design. Sulfur dioxide (SO2) emissions are controlled by the introduction of limestone into the fluidized bed of the boiler. A bag house controls particulate emissions in the boiler flue gas. Bed Ash is removed at the bottom of the boiler and is loaded into a silo for eventual removal. Fly ash is removed at the bottom of the baghouse, air heater, and boiler back-pass sections and is kept segregated from the bed ash in a different silo. Both fly ash and bed ash are mixed with small amounts of service water (to control dusting) and loaded into trucks for disposal off-site. The applicable SIC Code for the facility is 4911-Electric Services. AES commenced commercial operations on February 10, 2000, and ceased coal operations on June 1, 2024. The 150-ton per day food grade carbon dioxide production plant ceased operation at the end of June 2023.

C. The volume and weight of CCBs generated during calendar year 2024, including an identification of the different types of CCBs generated and the volume of each type generated. If the space provided is insufficient, please attach additional pages in a similar format. If converting from volume to weight or weight to volume, please provide your calculations and assumptions.

Table I: Volume and Weight of CCBs Generated for Calendar Year 2024: Please note that this table includes both the volume and weight of the types of CCBs your facility produces.

Volume and Weight of CCBs Generated for Calendar Year 2024			
Fly Ash	Bed Ash	Slag Ash	
Type of CCB	Type of CCB	Type of CCB	Type of CCB
93,485.03	39,153.04	21,366.78	
Volume of CCB, in Cubic Yards	Volume of CCB, in Cubic Yards	Volume of CCB, in Cubic Yards	Volume of CCB, in Cubic Yards
52,835.27	25,355.38	12,796.27	
Weight of CCB, in Tons	Weight of CCB, in Tons	Weight of CCB, in Tons	Weight of CCB, in Tons

Additional notes:

Slag ash consists of fly and bed ash as a mixture. We use the term slag ash to differentiate from the discrete fly ash and bed ash in our system.

Volumes were determined with the calculated densities of: Fly Ash = 0.57 tons/cu yd, Bed Ash = 0.65 tons/cu yd, Slag Ash = 0.60 tons/cu yd.

D. Descriptions of any modeling or risk assessments, or both, conducted relating to the CCBs or their use that were performed by you or your company during the reporting year. Please attach this information to the report.

E. Copies of all laboratory reports of all chemical characterizations of the CCBs. Please attach this information to the report.

F. A description of how you disposed of or used your CCBs in calendar year 2024, identifying:

(a) The types and volume of CCBs disposed of or used (if different than described in Paragraph C above) including any CCBs stored during the previous calendar year, the location of disposal, mine reclamation and use sites, and the type and volume of CCBs disposed of or used at each site:

2024	Fly Ash Tons	Fly Ash CuYds	Bed Ash Tons	Bed Ash CuYds	Slag Ash Tons	Slag Ash CuYds	Use
Cabin Run Mine	10,554.78	18,675.29	5,398.37	8,336.01	6,320.66	10,554.03	Mine Reclamation
Carlos Coal Mine	6,081.52	10,760.45	2,751.97	4,249.51	828.16	1,382.83	Mine Reclamation
Hampshire Hill Coal Mine	5,806.49	10,273.82	4,143.45	6,398.20	527.80	881.30	Mine Reclamation
419 Coal Mine	30,392.48	53,775.48	13,061.59	20,169.33	5,119.65	8,548.62	Mine Reclamation
Total	52,835.27	93,485.03	25,355.38	39,153.04	12,796.27	21,366.78	

and (b) The different uses by type and volume of CCBs:
see chart above

If the space provided is insufficient, please attach additional pages in a similar format.

G. A description of how you intend to dispose of or use CCBs in the next 5 years, identifying:

(a) The types and volume of CCBs intended to be disposed of or used, the location of intended disposal, mine reclamation and use sites, and the type and volume of CCBs intended to be disposed of or used at each site:


No change, same as previous years.

and (b) The different intended uses by type and volume of CCBs.

No change, same as previous years.

If the space provided is insufficient, please attach additional pages in a similar format.

IV. Signature and Certification. An authorized official of the generator must sign the annual report, and certify as to the accuracy and completeness of the information contained in the annual report:

This is to certify that, to the best of my knowledge, the information contained in this report and any attached documents are true, accurate, and complete.		
 _____ Signature	<u>Matt Ottaviani, Plant Manager, 301-777-0055</u> _____ Name, Title, & Telephone No. (Print or Type) matt.ottaviani@aes.com _____ Your Email Address	_____ 2/13/2025 _____ Date

V: Attachments (please list):

- TCLP-Total Metals analysis of fly and bed ash
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Laboratory Results

Geochemical Testing

Date: 15-Feb-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2402386
Project: AES Warrior Ash Samples
Lab ID: G2402386-001
Matrix: SOLID

Client Sample ID: Bed Ash North
Sampled By: AES Warrior Run
Collection Date: 2/6/2024 9:00:00 AM
Received Date: 2/8/2024 7:24:47 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed	
SOLID FORMS OF CARBON		Analyst: BAB				ASTM D6316 (N1)		
CO2	9500	0.500	N1	mg/Kg-dry	1	02/14/24 5:00 AM	02/14/24 5:00 AM	
Total Carbon	9950		N1	mg/Kg-dry	1	02/14/24 5:00 AM	02/14/24 5:00 AM	

TOTAL METALS		Analyst: TMS			EPA 3050B	EPA 6010 D	
Aluminum	29200	20.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Antimony	< 10	10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Arsenic	23.2	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Barium	220	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Beryllium	1.87	0.10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Boron	28.7	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Cadmium	< 5.0	5.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Chromium	34.3	5.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Cobalt	7.1	0.5		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Copper	20.8	10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Lead	12.8	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Lithium	59.4	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Manganese	133	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Molybdenum	4.7	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Nickel	20.9	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Selenium	< 2.0	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Silver	< 0.5	0.5		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Vanadium	57.0	0.5		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM
Zinc	121	10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:49 PM

ACID BASE ACCOUNTING		Analyst: CDJ			DEP OB Man p67		
Total Sulfur	5.02	0.01		%	1	02/09/24 12:00 AM	02/09/24 12:00 AM
Max Potential Acidity	157	0.30		see note	1	02/09/24 12:00 AM	02/09/24 12:00 AM
Fizz Rating	2				1	02/09/24 12:00 AM	02/09/24 12:00 AM
Deficiency or Excess	77.2			see note	1	02/09/24 12:00 AM	02/09/24 12:00 AM
Neutralization Potential (CaCO3 Tons)	234			see note	1	02/09/24 12:00 AM	02/09/24 12:00 AM

NOTES:
units are: Tons CaCO3 / 1000 tons dry

MERCURY		Analyst: RLL			ASTM D6722 (N1)		
Mercury	< 0.010	0.010		mg/Kg-dry	1	02/13/24 7:31 AM	02/13/24 7:31 AM

CARBONATE RESULTS		Analyst: TMS			Calculated		
Calcium Carbonate	33.7			%	1	02/13/24 12:00 AM	02/13/24 12:00 AM



Laboratory Results

Geochemical Testing

Date: 15-Feb-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2402386
Project: AES Warrior Ash Samples
Lab ID: G2402386-001
Matrix: SOLID

Client Sample ID: Bed Ash North
Sampled By: AES Warrior Run
Collection Date: 2/6/2024 9:00:00 AM
Received Date: 2/8/2024 7:24:47 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
Calcium Carbonate Equivalent	38.6			%	1		02/13/24 12:00 AM
Magnesium Carbonate	4.1			%	1		02/13/24 12:00 AM

MAJOR / MINOR ELEMENTS IN ASH

Analyst: **TMS**

ASTM D6349 (N1)

EPA 6010 D

Calcium Oxide	18.87	0.01		% Dry	1	02/13/24 4:00 AM	02/13/24 4:53 PM
Magnesium Oxide	1.96	0.01		% Dry	1	02/13/24 4:00 AM	02/13/24 4:53 PM

TCLP EXTRACTION

Analyst: **MAG**

EPA 1311

Extraction Fluid Used	1.0				1		02/11/24 9:35 AM
Final pH	12.5	1.0		S.U.	1		02/11/24 9:35 AM
Initial pH	12.0	1.0		S.U.	1		02/11/24 9:35 AM
pH with HCl	2.2	1.0		S.U.	1		02/11/24 9:35 AM
TCLP, non-volatile	NA				1		02/11/24 9:35 AM

TCLP METALS

Analyst: **LXM**

EPA 7470A

EPA 7470A

Mercury	< 0.0020	0.0020		mg/L	1	02/13/24 10:20 AM	02/14/24 9:50 AM
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TCLP METALS

Analyst: **TMS**

EPA 3010 A

EPA 6010 D

Aluminum	0.3	0.1		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Antimony	< 0.10	0.10		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Arsenic	< 0.02	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Barium	0.5	0.3		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Beryllium	< 0.001	0.001		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Boron	0.37	0.05		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Cadmium	< 0.002	0.002		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Chromium	0.03	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Cobalt	< 0.005	0.005		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Copper	0.03	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Lead	< 0.02	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Lithium	0.23	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Manganese	< 0.01	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Molybdenum	0.08	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Nickel	< 0.01	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Selenium	< 0.02	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Silver	< 0.005	0.005		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Vanadium	0.013	0.005		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM
Zinc	0.03	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:40 PM



Laboratory Results

Geochemical Testing

Date: 15-Feb-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2402386
Project: AES Warrior Ash Samples
Lab ID: G2402386-002
Matrix: SOLID

Client Sample ID: Bed Ash South
Sampled By: AES Warrior Run
Collection Date: 2/6/2024 9:00:00 AM
Received Date: 2/8/2024 7:24:47 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed	
SOLID FORMS OF CARBON		Analyst: BAB				ASTM D6316 (N1)		
CO2	10800	100	N1	mg/Kg-dry	1	02/14/24 5:00 AM	02/14/24 5:00 AM	
Total Carbon	13500		N1	mg/Kg-dry	1	02/14/24 5:00 AM	02/14/24 5:00 AM	
TOTAL METALS		Analyst: TMS				EPA 3050B	EPA 6010 D	
Aluminum	29100	20.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Antimony	< 10	10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Arsenic	25.2	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Barium	221	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Beryllium	2.07	0.10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Boron	31.7	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Cadmium	< 5.0	5.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Chromium	36.7	5.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Cobalt	7.5	0.5		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Copper	20.7	10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Lead	13.3	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Lithium	56.3	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Manganese	168	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Molybdenum	4.6	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Nickel	22.0	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Selenium	< 2.0	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Silver	< 0.5	0.5		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Vanadium	65.8	0.5		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
Zinc	129	10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 12:51 PM	
ACID BASE ACCOUNTING		Analyst: CDJ				DEP OB Man p67		
Total Sulfur	5.94	0.01		%	1	02/09/24 12:00 AM	02/09/24 12:00 AM	
Max Potential Acidity	186	0.30		see note	1	02/09/24 12:00 AM	02/09/24 12:00 AM	
Fizz Rating	2				1	02/09/24 12:00 AM	02/09/24 12:00 AM	
Deficiency or Excess	92.0			see note	1	02/09/24 12:00 AM	02/09/24 12:00 AM	
Neutralization Potential (CaCO3 Tons)	278			see note	1	02/09/24 12:00 AM	02/09/24 12:00 AM	
NOTES:		units are: Tons CaCO3 / 1000 tons dry						
MERCURY		Analyst: RLL				ASTM D6722 (N1)		
Mercury	< 0.010	0.010		mg/Kg-dry	1	02/13/24 7:31 AM	02/13/24 7:31 AM	
CARBONATE RESULTS		Analyst: TMS				Calculated		
Calcium Carbonate	41.2			%	1	02/13/24 12:00 AM	02/13/24 12:00 AM	



Laboratory Results

Geochemical Testing

Date: 15-Feb-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2402386
Project: AES Warrior Ash Samples
Lab ID: G2402386-002
Matrix: SOLID

Client Sample ID: Bed Ash South
Sampled By: AES Warrior Run
Collection Date: 2/6/2024 9:00:00 AM
Received Date: 2/8/2024 7:24:47 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
Calcium Carbonate Equivalent	46.7			%	1		02/13/24 12:00 AM
Magnesium Carbonate	4.7			%	1		02/13/24 12:00 AM

MAJOR / MINOR ELEMENTS IN ASH

Analyst: **TMS**

ASTM D6349 (N1)

EPA 6010 D

Calcium Oxide	23.07	0.01		% Dry	1	02/13/24 4:00 AM	02/13/24 4:57 PM
Magnesium Oxide	2.22	0.01		% Dry	1	02/13/24 4:00 AM	02/13/24 4:57 PM

TCLP EXTRACTION

Analyst: **MAG**

EPA 1311

Extraction Fluid Used	1.0				1		02/11/24 9:35 AM
Final pH	12.6	1.0		S.U.	1		02/11/24 9:35 AM
Initial pH	11.6	1.0		S.U.	1		02/11/24 9:35 AM
pH with HCl	2.1	1.0		S.U.	1		02/11/24 9:35 AM
TCLP, non-volatile	NA				1		02/11/24 9:35 AM

TCLP METALS

Analyst: **LXM**

EPA 7470A

EPA 7470A

Mercury	< 0.0020	0.0020		mg/L	1	02/13/24 10:20 AM	02/14/24 9:51 AM
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TCLP METALS

Analyst: **TMS**

EPA 3010 A

EPA 6010 D

Aluminum	0.3	0.1		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Antimony	< 0.10	0.10		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Arsenic	< 0.02	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Barium	0.5	0.3		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Beryllium	< 0.001	0.001		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Boron	0.38	0.05		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Cadmium	< 0.002	0.002		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Chromium	0.03	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Cobalt	< 0.005	0.005		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Copper	0.02	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Lead	0.04	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Lithium	0.22	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Manganese	< 0.01	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Molybdenum	0.07	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Nickel	< 0.01	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Selenium	< 0.02	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Silver	< 0.005	0.005		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Vanadium	0.011	0.005		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM
Zinc	0.03	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:42 PM



Laboratory Results

Geochemical Testing

Date: 15-Feb-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2402386
Project: AES Warrior Ash Samples
Lab ID: G2402386-003
Matrix: SOLID

Client Sample ID: Fly Ash
Sampled By: AES Warrior Run
Collection Date: 2/6/2024 9:30:00 AM
Received Date: 2/8/2024 7:24:47 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
SOLID FORMS OF CARBON		Analyst: BAB				ASTM D6316 (N1)	
CO2	15200	100	N1	mg/Kg-dry	1	02/14/24 5:00 AM	02/14/24 5:00 AM
Total Carbon	86200		N1	mg/Kg-dry	1	02/14/24 5:00 AM	02/14/24 5:00 AM

TOTAL METALS		Analyst: TMS			EPA 3050B	EPA 6010 D	
Aluminum	35200	20.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Antimony	< 10	10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Arsenic	34.2	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Barium	442	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Beryllium	3.46	0.10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Boron	22.1	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Cadmium	< 5.0	5.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Chromium	38.8	5.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Cobalt	12.9	0.5		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Copper	39.0	10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Lead	23.3	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Lithium	63.0	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Manganese	118	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Molybdenum	8.7	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Nickel	35.5	1.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Selenium	6.2	2.0		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Silver	< 0.5	0.5		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Vanadium	89.7	0.5		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM
Zinc	199	10		mg/Kg-dry	1	02/12/24 7:30 AM	02/14/24 1:04 PM

ACID BASE ACCOUNTING		Analyst: CDJ			DEP OB Man p67	
Total Sulfur	3.37	0.01	%	1	02/09/24 12:00 AM	02/09/24 12:00 AM
Max Potential Acidity	105	0.30	see note	1	02/09/24 12:00 AM	02/09/24 12:00 AM
Fizz Rating	2			1	02/09/24 12:00 AM	02/09/24 12:00 AM
Deficiency or Excess	59.2		see note	1	02/09/24 12:00 AM	02/09/24 12:00 AM
Neutralization Potential (CaCO3 Tons)	165		see note	1	02/09/24 12:00 AM	02/09/24 12:00 AM

NOTES:
units are: Tons CaCO3 / 1000 tons dry

MERCURY		Analyst: RLL			ASTM D6722 (N1)	
Mercury	0.964	0.010		mg/Kg-dry	1	02/13/24 7:31 AM

CARBONATE RESULTS		Analyst: TMS			Calculated	
Calcium Carbonate	26.9		%	1	02/13/24 12:00 AM	02/13/24 12:00 AM



Laboratory Results

Geochemical Testing

Date: 15-Feb-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2402386
Project: AES Warrior Ash Samples
Lab ID: G2402386-003
Matrix: SOLID

Client Sample ID: Fly Ash
Sampled By: AES Warrior Run
Collection Date: 2/6/2024 9:30:00 AM
Received Date: 2/8/2024 7:24:47 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
Calcium Carbonate Equivalent	30.6			%	1		02/13/24 12:00 AM
Magnesium Carbonate	3.1			%	1		02/13/24 12:00 AM

MAJOR / MINOR ELEMENTS IN ASH

Analyst: **TMS**

ASTM D6349 (N1)

EPA 6010 D

Calcium Oxide	15.08	0.01		% Dry	1	02/13/24 4:00 AM	02/13/24 5:00 PM
Magnesium Oxide	1.46	0.01		% Dry	1	02/13/24 4:00 AM	02/13/24 5:00 PM

TCLP EXTRACTION

Analyst: **MAG**

EPA 1311

Extraction Fluid Used	2.0				1		02/11/24 9:35 AM
Final pH	10.2	1.0		S.U.	1		02/11/24 9:35 AM
Initial pH	12.6	1.0		S.U.	1		02/11/24 9:35 AM
pH with HCl	11.9	1.0		S.U.	1		02/11/24 9:35 AM
TCLP, non-volatile	NA				1		02/11/24 9:35 AM

TCLP METALS

Analyst: **LXM**

EPA 7470A

EPA 7470A

Mercury	< 0.0020	0.0020		mg/L	1	02/13/24 10:20 AM	02/14/24 9:57 AM
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TCLP METALS

Analyst: **TMS**

EPA 3010 A

EPA 6010 D

Aluminum	0.7	0.1		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Antimony	< 0.10	0.10		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Arsenic	< 0.02	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Barium	0.6	0.3		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Beryllium	< 0.001	0.001		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Boron	0.35	0.05		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Cadmium	< 0.002	0.002		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Chromium	0.10	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Cobalt	< 0.005	0.005		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Copper	< 0.01	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Lead	0.02	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Lithium	0.25	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Manganese	< 0.01	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Molybdenum	0.21	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Nickel	< 0.01	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Selenium	0.02	0.02		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Silver	< 0.005	0.005		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Vanadium	0.30	0.005		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM
Zinc	0.03	0.01		mg/L	1	02/12/24 11:15 AM	02/14/24 1:58 PM



Laboratory Results

Geochemical Testing

Date: 22-Apr-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2404259
Project: AES Warrior Ash Samples
Lab ID: G2404259-001
Matrix: SOLID

Client Sample ID: Bed Ash North
Sampled By: AES Warrior Run
Collection Date: 4/2/2024 9:00:00 AM
Received Date: 4/4/2024 6:59:09 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed	
SOLID FORMS OF CARBON		Analyst: BAB				ASTM D6316 (N1)		
CO2	9700	0.500	N1	mg/Kg-dry	1	04/11/24	12:30 AM	
Total Carbon	8120		N1	mg/Kg-dry	1	04/11/24	12:30 AM	

TOTAL METALS		Analyst: TMS			EPA 3050B		EPA 6010 D	
Aluminum	29700	20.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Antimony	< 10	10		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Arsenic	27.7	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Barium	215	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Beryllium	2.01	0.10		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Boron	36.0	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Cadmium	< 5.0	5.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Chromium	35.0	5.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Cobalt	6.6	0.5		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Copper	24.6	10		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Lead	10.2	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Lithium	54.0	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Manganese	131	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Molybdenum	4.4	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Nickel	20.4	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Selenium	< 2.0	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Silver	< 0.5	0.5		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Vanadium	69.6	0.5		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:03 AM	
Zinc	28.9	10		mg/Kg-dry	1	04/17/24 7:30 AM	04/19/24 9:17 AM	

ACID BASE ACCOUNTING		Analyst: RLL			DEP OB Man		
Total Sulfur (p44)	6.10	0.01	%		1	04/05/24	6:25 AM
Max Potential Acidity (Calc)	191	0.30	see note		1	04/05/24	6:25 AM
Fizz Rating (p67)	2				1	04/05/24	6:25 AM
Deficiency or Excess (Calc)	117		see note		1	04/05/24	6:25 AM
Neutralization Potential (Tons) (p67)	307		see note		1	04/05/24	6:25 AM

NOTES:
units are: Tons CaCO3 / 1000 tons dry

TOTAL METALS		Analyst: RLL			EPA 7473		
Mercury	0.011	0.010		mg/Kg-dry	1	04/10/24	7:22 AM

CARBONATE RESULTS		Analyst: TMS			Calculated		
Calcium Carbonate	44.4		%		1	04/08/24	12:00 AM



Laboratory Results

Geochemical Testing

Date: 22-Apr-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2404259
Project: AES Warrior Ash Samples
Lab ID: G2404259-001
Matrix: SOLID

Client Sample ID: Bed Ash North
Sampled By: AES Warrior Run
Collection Date: 4/2/2024 9:00:00 AM
Received Date: 4/4/2024 6:59:09 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
Calcium Carbonate Equivalent	49.6			%	1		04/08/24 12:00 AM
Magnesium Carbonate	4.4			%	1		04/08/24 12:00 AM

MAJOR / MINOR ELEMENTS IN ASH

Analyst: **TMS**

ASTM D6349 (N1)

EPA 6010 D

Calcium Oxide	24.87	0.01		% Dry	1	04/08/24 7:30 AM	04/08/24 6:23 PM
Magnesium Oxide	2.07	0.01		% Dry	1	04/08/24 7:30 AM	04/08/24 6:23 PM

TCLP EXTRACTION

Analyst: **AMW**

EPA 1311

Extraction Fluid Used	1.0				1		04/04/24 10:45 AM
Final pH	12.5	1.0		S.U.	1		04/04/24 10:45 AM
Initial pH	12.2	1.0		S.U.	1		04/04/24 10:45 AM
pH with HCl	2.1	1.0		S.U.	1		04/04/24 10:45 AM
TCLP, non-volatile	NA				1		04/04/24 10:45 AM

TCLP METALS

Analyst: **LMH**

EPA 7470A

EPA 7470A

Mercury	< 0.0020	0.0020		mg/L	1	04/05/24 10:00 AM	04/08/24 9:45 AM
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TCLP METALS

Analyst: **TMS**

EPA 3010 A

EPA 6010 D

Aluminum	0.4	0.1		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Antimony	< 0.10	0.10		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Arsenic	< 0.02	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Barium	0.5	0.3		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Beryllium	< 0.001	0.001		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Boron	0.59	0.05		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Cadmium	< 0.002	0.002		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Chromium	0.03	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Cobalt	< 0.005	0.005		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Copper	0.02	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Lead	< 0.02	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Lithium	0.17	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Manganese	< 0.01	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Molybdenum	0.07	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Nickel	< 0.01	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Selenium	< 0.02	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Silver	< 0.005	0.005		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Vanadium	0.010	0.005		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM
Zinc	< 0.01	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:13 AM



Laboratory Results

Geochemical Testing

Date: 22-Apr-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2404259
Project: AES Warrior Ash Samples
Lab ID: G2404259-002
Matrix: SOLID

Client Sample ID: Bed Ash South
Sampled By: AES Warrior Run
Collection Date: 4/2/2024 9:00:00 AM
Received Date: 4/4/2024 6:59:09 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
SOLID FORMS OF CARBON		Analyst: BAB				ASTM D6316 (N1)	
CO2	10600	100	N1	mg/Kg-dry	1	04/11/24	12:30 AM
Total Carbon	6080		N1	mg/Kg-dry	1	04/11/24	12:30 AM

TOTAL METALS		Analyst: TMS			EPA 3050B	EPA 6010 D	
Aluminum	30100	20.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Antimony	< 10	10		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Arsenic	35.1	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Barium	236	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Beryllium	2.54	0.10		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Boron	38.2	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Cadmium	< 5.0	5.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Chromium	39.7	5.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Cobalt	7.3	0.5		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Copper	25.9	10		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Lead	10	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Lithium	51.6	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/12/24 12:46 PM
Manganese	115	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Molybdenum	5.3	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Nickel	23.1	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Selenium	< 2.0	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Silver	< 0.5	0.5		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Vanadium	90.2	0.5		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:24 AM
Zinc	26.8	10		mg/Kg-dry	1	04/17/24 7:30 AM	04/19/24 9:20 AM

ACID BASE ACCOUNTING		Analyst: RLL			DEP OB Man
Total Sulfur (p44)	7.21	0.01	%	1	04/05/24 6:25 AM
Max Potential Acidity (Calc)	225	0.30	see note	1	04/05/24 6:25 AM
Fizz Rating (p67)	2			1	04/05/24 6:25 AM
Deficiency or Excess (Calc)	63.6		see note	1	04/05/24 6:25 AM
Neutralization Potential (Tons) (p67)	289		see note	1	04/05/24 6:25 AM

NOTES:
units are: Tons CaCO3 / 1000 tons dry

TOTAL METALS		Analyst: RLL			EPA 7473	
Mercury	< 0.010	0.010		mg/Kg-dry	1	04/10/24 7:22 AM

CARBONATE RESULTS		Analyst: TMS			Calculated
Calcium Carbonate	47.6		%	1	04/08/24 12:00 AM



Laboratory Results

Geochemical Testing

Date: 22-Apr-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2404259
Project: AES Warrior Ash Samples
Lab ID: G2404259-002
Matrix: SOLID

Client Sample ID: Bed Ash South
Sampled By: AES Warrior Run
Collection Date: 4/2/2024 9:00:00 AM
Received Date: 4/4/2024 6:59:09 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
Calcium Carbonate Equivalent	52.6			%	1		04/08/24 12:00 AM
Magnesium Carbonate	4.2			%	1		04/08/24 12:00 AM

MAJOR / MINOR ELEMENTS IN ASH

Analyst: **TMS**

ASTM D6349 (N1)

EPA 6010 D

Calcium Oxide	26.67	0.01		% Dry	1	04/08/24 7:30 AM	04/08/24 6:28 PM
Magnesium Oxide	1.99	0.01		% Dry	1	04/08/24 7:30 AM	04/08/24 6:28 PM

TCLP EXTRACTION

Analyst: **AMW**

EPA 1311

Extraction Fluid Used	1.0				1		04/04/24 10:45 AM
Final pH	12.6	1.0		S.U.	1		04/04/24 10:45 AM
Initial pH	12.0	1.0		S.U.	1		04/04/24 10:45 AM
pH with HCl	1.9	1.0		S.U.	1		04/04/24 10:45 AM
TCLP, non-volatile	NA				1		04/04/24 10:45 AM

TCLP METALS

Analyst: **LMH**

EPA 7470A

EPA 7470A

Mercury	< 0.0020	0.0020		mg/L	1	04/05/24 10:00 AM	04/08/24 9:47 AM
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TCLP METALS

Analyst: **TMS**

EPA 3010 A

EPA 6010 D

Aluminum	0.4	0.1		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Antimony	< 0.10	0.10		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Arsenic	< 0.02	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Barium	0.5	0.3		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Beryllium	< 0.001	0.001		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Boron	0.52	0.05		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Cadmium	< 0.002	0.002		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Chromium	0.04	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Cobalt	< 0.005	0.005		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Copper	0.02	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Lead	< 0.02	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Lithium	0.15	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Manganese	< 0.01	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Molybdenum	0.08	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Nickel	< 0.01	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Selenium	< 0.02	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Silver	< 0.005	0.005		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Vanadium	0.016	0.005		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM
Zinc	< 0.01	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:30 AM



Laboratory Results

Geochemical Testing

Date: 22-Apr-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2404259
Project: AES Warrior Ash Samples
Lab ID: G2404259-003
Matrix: SOLID

Client Sample ID: Fly Ash
Sampled By: AES Warrior Run
Collection Date: 4/2/2024 9:15:00 AM
Received Date: 4/4/2024 6:59:09 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
SOLID FORMS OF CARBON		Analyst: BAB				ASTM D6316 (N1)	
CO2	14400	101	N1	mg/Kg-dry	1	04/11/24	12:30 AM
Total Carbon	77100		N1	mg/Kg-dry	1	04/11/24	12:30 AM

TOTAL METALS		Analyst: TMS			EPA 3050B	EPA 6010 D	
Aluminum	38100	20.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Antimony	< 10	10		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Arsenic	35.5	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Barium	413	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Beryllium	3.31	0.10		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Boron	27.7	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Cadmium	< 5.0	5.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Chromium	40.6	5.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Cobalt	11.2	0.5		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Copper	45.6	10		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Lead	23.6	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Lithium	71.5	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Manganese	106	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Molybdenum	8.2	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Nickel	31.3	1.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Selenium	6.1	2.0		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Silver	< 0.5	0.5		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Vanadium	89.6	0.5		mg/Kg-dry	1	04/10/24 9:00 AM	04/11/24 11:26 AM
Zinc	52.2	10		mg/Kg-dry	1	04/17/24 7:30 AM	04/19/24 9:23 AM

ACID BASE ACCOUNTING		Analyst: RLL			DEP OB Man
Total Sulfur (p44)	3.51	0.01	%	1	04/05/24 6:25 AM
Max Potential Acidity (Calc)	110	0.30	see note	1	04/05/24 6:25 AM
Fizz Rating (p67)	2			1	04/05/24 6:25 AM
Deficiency or Excess (Calc)	65.6		see note	1	04/05/24 6:25 AM
Neutralization Potential (Tons) (p67)	175		see note	1	04/05/24 6:25 AM

NOTES:
units are: Tons CaCO3 / 1000 tons dry

TOTAL METALS		Analyst: RLL			EPA 7473	
Mercury	0.96	0.010		mg/Kg-dry	1	04/10/24 7:22 AM

CARBONATE RESULTS		Analyst: TMS			Calculated
Calcium Carbonate	27.7		%	1	04/08/24 12:00 AM



Laboratory Results

Geochemical Testing

Date: 22-Apr-24

CLIENT: AES - WARRIOR RUN INC
Lab Order: G2404259
Project: AES Warrior Ash Samples
Lab ID: G2404259-003
Matrix: SOLID

Client Sample ID: Fly Ash
Sampled By: AES Warrior Run
Collection Date: 4/2/2024 9:15:00 AM
Received Date: 4/4/2024 6:59:09 AM

Analyses	Result	QL	Q	Units	DF	Date Prepared	Date Analyzed
Calcium Carbonate Equivalent	31.3			%	1		04/08/24 12:00 AM
Magnesium Carbonate	3.0			%	1		04/08/24 12:00 AM

MAJOR / MINOR ELEMENTS IN ASH

Analyst: **TMS** **ASTM D6349 (N1)** **EPA 6010 D**

Calcium Oxide	15.52	0.01		% Dry	1	04/08/24 7:30 AM	04/08/24 6:30 PM
Magnesium Oxide	1.43	0.01		% Dry	1	04/08/24 7:30 AM	04/08/24 6:30 PM

TCLP EXTRACTION

Analyst: **AMW** **EPA 1311**

Extraction Fluid Used	2.0				1		04/04/24 10:45 AM
Final pH	11.7	1.0		S.U.	1		04/04/24 10:45 AM
Initial pH	12.7	1.0		S.U.	1		04/04/24 10:45 AM
pH with HCl	12.3	1.0		S.U.	1		04/04/24 10:45 AM
TCLP, non-volatile	NA				1		04/04/24 10:45 AM

TCLP METALS

Analyst: **LMH** **EPA 7470A** **EPA 7470A**

Mercury	< 0.0020	0.0020		mg/L	1	04/05/24 10:00 AM	04/08/24 9:48 AM
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TCLP METALS

Analyst: **TMS** **EPA 3010 A** **EPA 6010 D**

Aluminum	0.5	0.1		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Antimony	< 0.10	0.10		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Arsenic	< 0.02	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Barium	0.6	0.3		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Beryllium	< 0.001	0.001		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Boron	0.63	0.05		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Cadmium	< 0.002	0.002		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Chromium	0.21	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Cobalt	< 0.005	0.005		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Copper	< 0.01	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Lead	< 0.02	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Lithium	0.21	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Manganese	< 0.01	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Molybdenum	0.19	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Nickel	< 0.01	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Selenium	< 0.02	0.02		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Silver	< 0.005	0.005		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Vanadium	0.062	0.005		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM
Zinc	< 0.01	0.01		mg/L	1	04/08/24 10:10 AM	04/09/24 9:32 AM

