

February 26, 2020

Mr. Ed Dexter
Maryland Department of the Environment
Land and Materials Administration
Solid Waste Program
1800 Washington Boulevard, Suite 605
Baltimore, Maryland 21230-1719

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LAND MANAGEMENT ADMIN
SOLID WASTE PROGRAM

Re: Calendar Year 2019 Generator Tonnage Reports for the Brandon Shores and H. A. Wagner Electric Generating Stations

Dear Mr. Dexter:

Enclosed please find the 2019 Coal Combustion Byproducts (CCBs) Annual Generator Tonnage Reports for Raven Power's Brandon Shores and H.A. Wagner Generating Stations. These reports cover the period from January 1, 2019 to December 31, 2019 for the coal-fired units at these facilities and reflect coal combustion byproduct production, beneficial reuse, and disposal.

For any questions regarding these reports, please contact me at 410-787-5423, or by email at edwin.much@talenergy.com.

Regards,



Edwin Much
Regional Environmental Director

Enclosures (2)

MARYLAND DEPARTMENT OF THE ENVIRONMENT

Land and Materials Administration • Solid Waste Program
1800 Washington Boulevard • Suite 605 • Baltimore Maryland 21230-1719
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LAND MANAGEMENT ADMIN
SOLID WASTE PROGRAM

Coal Combustion Byproducts (CCBs) Annual Generator Tonnage Report Instructions for Calendar Year 2019

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 2019. 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 ed.dexter@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 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 MDE 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, 2020:

A. Contact information:

Facility Name: Brandon Shores Generating Station

Name of Permit Holder: Brandon Shores LLC

Facility Address: 2030 Brandon Shores Road
Street

Facility Address: Baltimore MD 21226
City State Zip

County: Anne Arundel

Contact Information (Person filing report or Environmental Manager)

Facility Telephone No.: 410-787-6928 Facility Fax No.: 410-255-1793

Contact Name: Edwin Much

Contact Title: Regional Environmental Director

Contact Address: 1005 Brandon Shores Road, Suite 100
Street

Contact Address: Baltimore MD 21226
City State Zip

Contact Email: edwin.much@talenergy.com

Contact Telephone No.: 410-787-5423 Contact Fax No.: 410-255-7608

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:

Brandon Shores electrical generating station consists of two coal fired units which produce electricity for commercial sale. Units are equipped with Babcock & Wilcox natural circulation radiant boilers. Bituminous coal is delivered by barge and stored in a pile adjacent to the plant. A proprietary additive, Chem-Mod®, is added to the coal for NOx, and mercury reduction as it is conveyed by belt from the coal pile to storage bunkers in the plant. The coal is pulverized and fed by air to the boilers where it is burned using low NOx burners. Heavier bottom ash drops to the bottom of the boilers where it is conveyed by high-pressure water to settling bins before being loaded onto trucks for beneficial reuse or disposal. Lighter fly ash is conveyed by furnace air flow to electrostatic precipitators where the ash is collected on charged plates and falls into storage hoppers. Fly ash from the hoppers is conveyed pneumatically to storage silos before being trucked off site for beneficial reuse or disposal. High carbon fly ash is retained and re-burned. Pulse jet fabric filters downstream of the precipitators remove remaining fly ash which has been mixed with powdered activated carbon and hydrated lime injected into the flue gas stream for emissions control. This fly ash is conveyed to storage silos for reuse or disposal. The wet flue gas desulfurization (FGD) scrubber produces CCBs including fly ash, gypsum, and FGD sludge. These CCBs are stored under cover before being loaded onto trucks for beneficial reuse or disposal. Waste water fines are from CCB clean up or area wash downs and are sent to the settling basin at the internal waste water treatment plant for storage. This basin is periodically de-watered and the CCBs are allowed to dry before being dug out, loaded on trucks, and sent for disposal.

C. The volume and weight of CCBs generated during calendar year 2019, 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 2019: 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 2019 | | | | |
|---|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Fly Ash | Bottom Ash | Gypsum | FGD Sludge | Waste Water Fines |
| Type of CCB | Type of CCB | Type of CCB | Type of CCB | Type of CCB |
| 87,226 | 8,031 | 137,625 | 6,936 | 7,094 |
| Volume of CCB, in Cubic Yards | Volume of CCB, in Cubic Yards | Volume of CCB, in Cubic Yards | Volume of CCB, in Cubic Yards | Volume of CCB, in Cubic Yards |
| 64,765 | 5,963 | 102,187 | 5,150 | 5,267 |
| Weight of CCB, in Tons | Weight of CCB, in Tons | Weight of CCB, in Tons | Weight of CCB, in Tons | Weight of CCB, in Tons |

Additional notes:

Coal combustion byproducts (CCBs) are reported in dry tons. Cubic yards are calculated using a conversion factor of 1 ton equals 1.3468 cubic yards (CY).

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.

No modeling or risk assessments were completed during 2019.

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

No chemical characterization of CCBs were performed during 2019.

F. A description of how you disposed of or used your CCBs in calendar year 2019, 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:

See Attachment F(a) - Disposal/Beneficial Reuse of CCBs in 2019.

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

Fly Ash

57,487 tons (77,424 CY) of fly ash was used in cement/concrete manufacturing.

Bottom Ash

5,963 tons (8,031 CY) of bottom ash was used for drainage/protective layer for landfill liner.

Gypsum

124,745 tons (168,006 CY) of gypsum was used in wallboard manufacturing.

7,198 tons (9,694 CY) of gypsum was used in cement manufacturing.

1,429 tons (1,925 CY) of was used in agriculture as a soil amendment.

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:

See Attachment G(a) - Disposal/Beneficial Reuse of CCBs in Next Five Years.

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

Fly Ash

Approximately 36,000 tons (48,485 CY) of fly ash each year will be beneficially used in the manufacturing of cement.

Bottom Ash

Approximately 5,000 tons (6,734 CY) of bottom ash each year will be beneficially used as drainage/protective layer above a landfill liner.

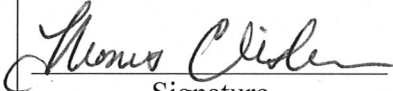
Gypsum

Approximately 90,000 tons (121,212 CY) of gypsum each year will be beneficially used in wallboard, cement, and agriculture.



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:

| | | |
|--|--|----------------------------------|
|  Signature | <hr/> <p>Thomas Clisham, Plant Manager, 410-787-6928 Name, Title, & Telephone No. (Print or Type)</p> <hr/> <p>thomas.clisham@talenergy.com Your Email Address</p> | <p><u>2/26/2020</u> Date</p> |
|--|--|----------------------------------|

V: Attachments (please list):

F(a) - Disposal/Beneficial Reuse of CCBs in 2019

G(a) - Disposal/Beneficial Reuse of CCBs in Next Five Years

Attachment

F(a) – Disposal/Beneficial Reuse of CCBs in 2019

Fly Ash – Beneficial Reuse

51,788 tons (69,748 CY) delivered to Separation Technologies, LLC in Baltimore, MD for use in concrete.

5,699 tons (7,676 CY) delivered to Lehigh in Union Bridge, MD for use in cement manufacturing.

Fly Ash – Disposal

7,278 tons (9,802 CY) delivered to Fort Armistead Road - Lot 15 Landfill in Baltimore, MD for landfilling.

Bottom Ash – Beneficial Reuse

5,963 tons (8,031 CY) delivered to Fort Armistead Road - Lot 15 Landfill in Baltimore, MD for drainage/protective layer above the liner.

Gypsum – Beneficial Reuse

119,812 tons (161,363 CY) delivered to USG in Baltimore, MD for use in wallboard manufacturing.

6,049 tons (8,147 CY) delivered to Lehigh in Union Bridge, MD for use in cement manufacturing.

3,211 tons (4,324 CY) delivered to USG in Norfolk, VA for use in wallboard manufacturing.

1,722 tons (2,319 CY) delivered to USG in Danville, PA for use in wallboard manufacturing.

1,128 tons (1,519 CY) delivered to SCB International in North Hampton, PA for temporary storage prior to use in cement manufacturing.

717 tons (966 CY) delivered to Sports Aggregate in Sunbury, PA for use as a soil amendment.

585 tons (788 CY) delivered to Zimmerman Farms in Lititz, PA for use as a soil amendment.

64 tons (86 CY) delivered to Beyla Farms in Denton, MD for use as a soil amendment.

43 tons (58 CY) delivered to Dave Wilson Farm in Cambridge, MD for use as a soil amendment.

20 tons (27 CY) delivered to Dave Wilson Farm in New Market, MD for use as a soil amendment.

21 tons (28 CY) delivered to SCB International - Lehigh Cement in Nazareth, PA for use in cement manufacturing.

Gypsum – Storage

31,188 tons (42,004 CY) of gypsum stored on site at the end of 2018 was beneficially reused or disposed of in 2019.

(Note that the stored gypsum was accounted for in Table I of reporting year 2018 and was not included in the gypsum generated in 2019 (Table I). The gypsum stored at the end of 2018 is accounted for in the beneficial reuse and disposal amounts above.)

3 tons (4 CY) of gypsum was stored on site at the end of 2019.

FGD Sludge – Disposal

5,150 tons (6,936 CY) of FGD sludge was delivered to Fort Armistead Road - Lot 15 Landfill in Baltimore, MD for landfilling.

Waste Water Fines – Disposal

5,267 tons (7,094 CY) of waste water fines delivered to Fort Armistead Road - Lot 15 Landfill in Baltimore, MD for landfilling.

Attachment

G(a) – Disposal/Beneficial Reuse of CCBs in Next Five Years

Fly Ash

Raven Power projects that as much as 24,000 tons (32,323 CY) of fly ash will be generated each year for the next five years. Approximately 21,600 tons (29,091 CY) of fly ash will be beneficially used in cement products and the remaining 2,400 tons (3,232 CY) will be disposed of in the Fort Armistead Road - Lot 15 Landfill in Baltimore, MD.

Bottom Ash

Raven Power projects that as much as 3,000 tons (4,040 CY) of bottom ash will be generated each year for the next five years, all of which will be beneficially used as drainage/protective layer above the liner in the Fort Armistead Road - Lot 15 Landfill in Baltimore, MD.

Gypsum

Raven Power projects that as much as 48,000 tons (64,646 CY) of gypsum will be generated each year for the next five years, all of which will be beneficially used in wallboard, cement, and agriculture.

FGD Sludge

Raven Power projects that as much as 2,500 tons (3,367 CY) of FGD sludge will be generated each year for the next five years, all of which will be disposed of in the Fort Armistead Road - Lot 15 Landfill in Baltimore, MD.

Waste Water Fines

Raven Power projects that as much as 2,500 tons (3,367 CY) of waste water fines will be generated each year for the next five years, all of which will be disposed of in the Fort Armistead Road - Lot 15 Landfill in Baltimore, MD.