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**west virginia** department of environmental protection

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Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304  
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
[www.dep.wv.gov](http://www.dep.wv.gov)

## **ENGINEERING EVALUATION / FACT SHEET**

### BACKGROUND INFORMATION

Application No.: R13-3034  
Plant ID No.: 085-00024  
Applicant: Central Supply Company  
Facility Name: Pennsboro Plant  
Location: Pennsboro, Ritchie County  
NAICS Code: 327320  
Application Type: Construction  
Received Date: November 21, 2012  
Engineer Assigned: Mindy Hendrickson  
Fee Amount: \$1,000  
Date Received: November 26, 2012  
Complete Date: January 10, 2013  
Applicant Ad Date: November 21, 2012  
Newspaper: *Ritchie Gazette*  
UTM's: Easting: 498.18 km Northing: 4347.351 km Zone: 17  
Description: Applicant proposes the construction and operation of a concrete batch plant. The plant will produce concrete at a maximum rate of 150 cubic yards per hour and 300,000 cubic yards per year. The facility will utilize a 2.1 MMBtu/hr natural gas fired water heater.

### DESCRIPTION OF PROCESS

Central Supply Company proposes to construct and operate a McNeilus Batchmaster Model 12 concrete batch plant in Pennsboro, Ritchie County. The concrete batch plant will have a maximum concrete production rate of 150 cubic yards per hour and 300,000 cubic yards per year. A 2.1 MMBtu/hr natural gas fired water heater HWH1 will be used. Diesel fuel will be stored in tank T1. This diesel fuel will only be used for mobile vehicles.

Trucks will deliver sand to stockpile OS3 and aggregate to stockpiles OS1 and OS2 using minimized drop heights. Endloaders will transfer aggregate and sand to partially enclosed hopper H1, which transfers to belt conveyor BC1. BC1 then conveys the material to partially enclosed bins BS1, BS2, and BS3. Aggregate and sand transfer from BS1, BS2, and BS3 to partially enclosed weigh hopper WH1, which then transfers to conveyor BC2. BC2 then conveys the aggregate and sand to a fully enclosed telescoping chute to concrete truck.

Cement, fly ash, and Gran Cem are pneumatically transferred from truck to fully enclosed silo BS4 (APCD1) and fully enclosed split barrel silo BS5 (APCD2)/BS6 (APCD3). Cement from BS4 is transferred to weigh hopper WH2 (APCD4). Screw conveyor SC1 transfers fly ash from BS5 to WH2 (APCD4). Screw conveyor SC2 transfers Gran Cem from BS6 to WH2 (APCD4). WH2 transfers cement and fly ash to concrete truck.

Water admixes are injected into the system along with water directly into the truck or by the truck operator at a later time. There are no air emissions associated with the admix or water addition. Water is heated as needed in HWH1.

Central Supply Company will utilize the following equipment, controls, and throughputs at the Pennsboro Plant:

Table 1: Equipment Summary

Equipment ID No.	Description	Year Installed	Throughput		Control Equipment
			Hourly	Annual	
HWH1	Water Heater - Pearson Heating Systems, Inc. 2.1 MMBtu/hr –Natural Gas Fuel	2013	2,100 scf/hr (natural gas)	18.4 x 10 <sup>6</sup> scf/yr (natural gas)	
APCD1	McNeilus SFV10 Shaker Baghouse	2013			
APCD2	Belgrade Belle 225 Shaker Baghouse	2013			
APCD3	Belgrade Belle 225 Shaker Baghouse	2013			
APCD4	McNeilus BFV15 Shaker Baghouse	2013			
BC1	Belt Conveyor – Aggregate	2013	300 tons/hr	446,606 tons/yr	
BC2	Belt Conveyor – Aggregate	2013	300 tons/hr	446,606 tons/yr	
SC1	Screw Conveyor – Cement/Flyash/Gran Cem	2013	60 tons/hr	85,886 tons/yr	APCD4
SC2	Screw Conveyor – Cement/Flyash/Gran Cem	2013	60 tons/hr	85,886 tons/yr	APCD4
<b>Storage</b>			<b>Storage Capacity</b>	<b>Maximum Throughput</b>	Control Equipment
OS1	Open Stockpile – Aggregate	2013	5,000 tons	446,606 tons/yr	WS
OS2	Open Stockpile – Aggregate	2013	5,000 tons		WS
OS3	Open Stockpile – Sand	2013	5,000 tons		WS
WH1	Weigh Hopper – Aggregate/Sand	2013	20 tons	446,606 tons/yr	PE
WH2	Weigh Hopper – Aggregate/Gran Cem/Flyash	2013	5 tons	85,886 tons/yr	PE
H1	Hopper – Aggregate / Sand	2013	16 tons	446,606 tons/yr	PE
BS1	Storage Bin – Aggregate / Sand	2013	67 tons	446,606 tons/yr	PE
BS2	Storage Bin – Aggregate / Sand	2013	67 tons		PE
BS3	Storage Bin – Aggregate / Sand	2013	67 tons		PE
BS4	Storage Silo – Cement	2013	110 tons	85,886 tons/yr	APCD1
BS5	Storage Silo – Flyash	2013	55 tons	51,532 tons/yr	APCD2
BS6	Storage Silo – Gran Cem	2013	55 tons	51,532 tons/yr	APCD3
T1	Storage Tank – Diesel	2013	1,000 gal	10,000 gal/yr	

## SITE INSPECTION

A pre-construction site inspection was performed by the author on March 12, 2013. The site is located in the Ritchie Industrial Park, and no siting problems are expected. Take I77 North toward Parkersburg. Take exit 176 (US 50 / 7<sup>th</sup> Street). Turn right onto US 50E. Go past Ellenboro to the Ritchie Industrial Park.

## ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Fugitive emissions include particulate emissions from unpaved haulroads, stockpiles, and work areas. Water sprays will be utilized on these areas as necessary to minimize particulate emissions. Concrete trucks will make 15 trips per hour and 31,983 trips per year maximum on 0.72 miles of unpaved haulroads.. Aggregate trucks will make 12 trips per hour and 17,865 trips per year maximum on 0.72 miles of unpaved haulroads. . Cement/flyash trucks will make 3 trips per hour and 3,436 trips per year maximum on 0.72 miles of unpaved haulroads. . Endloaders will make 50 trips per hour and 74,435 trips per year maximum on 0.25 miles of unpaved haulroads.

The cement storage silo (B4) will be fully enclosed with the usage of a McNeilus SFV10 shaker baghouse (APCD1) with a manufacturer's guaranteed control efficiency of 99.9%. The flyash storage silo (B5) will be fully enclosed with the usage of a Belgrade Belle 225 shaker baghouse (APCD2) with a manufacturer's guaranteed control efficiency of 99.9%. The Gran Cem storage silo (B6) will be fully enclosed with the usage of a Belgrade Belle 225 shaker baghouse (APCD3) with a manufacturer's guaranteed control efficiency of 99.9%. The weigh hopper (WH2) will be fully enclosed with the usage of a McNeilus SFV10 shaker baghouse (APCD4) with a manufacturer's guaranteed control efficiency of 99.9%.

A natural gas fired 2.1 MMbtu/hr water heater will be utilized by the facility to heat water that is added to the concrete mixture when necessary. The Pearson Heating Systems, Inc. water heater can use up to 2,100 scf per hour and  $18.40 \times 10^6$  scf per year of natural gas operating at 8,760 hours per year.

Each batch consists of 10 cubic yards of concrete. The facility will produce a maximum of 15 batches of concrete per hour and 29,744 batches per year. Emission factors were obtained from the following: AP-42 Section 13.2.4 for material handling; AP-42 Table 11.12-2 for non-aggregate/sand transfers; AP-42 Section 1.4-3 and 1.4-4 for the water heater; AP-42 Section 13.2.2 for the unpaved haulroads; and AP-42 Section 11.2.3 for the stockpiles. Emission calculations were performed by Patrick Ward of Potesta & Associates, Inc. on behalf of Central Supply Company.

Table 2: Concrete Production Emissions Summary

Emission Source	Controlled PM Emissions		Controlled PM <sub>10</sub> Emissions	
	lb/hour	TPY	lb/hour	TPY
<b>Fugitive Emissions</b>				
Stockpile Emissions	0.05	0.20	0.02	0.10
Unpaved Haulroad Emissions	67.04	55.55	19.77	16.38
<b>Fugitive Emissions Total</b>	<i>67.09</i>	<i>55.75</i>	<i>19.79</i>	<i>16.48</i>
<b>Point Source Emissions</b>				
Material Handling Emissions	51.16	25.41	16.48	8.07
<b>Point Source Emissions Total (PTE)</b>	<i>51.16</i>	<i>25.41</i>	<i>16.48</i>	<i>8.07</i>
<b>FACILITY EMISSIONS TOTAL</b>				
	<b>118.25</b>	<b>81.16</b>	<b>36.27</b>	<b>24.55</b>

Table 3: Water Heater (HWH1) Emissions Summary

Source ID	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
HWH1	Nitrogen Oxides	0.21	0.92
	Carbon Monoxide	0.18	0.79
	Sulfur Dioxide	0.01	0.05
	Total Particulate Matter	0.02	0.09
	Particulate Matter less than 10 microns	0.02	0.09
	Volatile Organic Compounds	0.02	0.09
	Total HAPs	0.02	0.10

Table 4: Total Facility Emissions Summary

Pollutant	Maximum Emissions (Including Fugitives)		Maximum Emissions (NOT Including Fugitives)	
	Hourly (lb/hr)	Annual (tons/yr)	Hourly (lb/hr)	Annual (tons/yr)
Total Particulate Matter	118.27	81.25	51.18	25.50
Particulate Matter Less than 10 Microns	36.29	24.64	16.50	8.16
Particulate Matter Less than 2.5 Microns	5.66	3.58	3.67	1.90
Nitrogen Oxides	0.21	0.92	0.21	0.92
Carbon Monoxide	0.18	0.79	0.18	0.79
Sulfur Dioxide	0.01	0.05	0.01	0.05
Volatile Organic Compounds	0.02	0.09	0.02	0.09
Total HAPs	0.02	0.10	0.02	0.10

## REGULATORY APPLICABILITY

NESHAPS, NSPS, and PSD have no applicability to the proposed facility. The proposed construction of a ready mix concrete batch plant is subject to the following state rules:

*45CSR2 To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers*

The purpose of this rule is to establish limitations for smoke and particulate matter which are discharged from fuel burning units. Per this rule, Section 2.14 defines an indirect heat exchanger as a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. Section 2.10 defines a fuel burning unit as any furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer. The facility is exempt from sections 4, 5, 6, 8, and 9 because the water heater (2.1 MMBtu/hr) is below 10 MMBtu/hr. The facility will be subject to the opacity requirements in this rule, which is 10% opacity based on a six minute block average.

*45CSR7 To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations*

The facility is subject to the requirements of 45CSR7 because it meets the definition of "Manufacturing Process" found in subsection 45CSR7.2.20. The facility will need to be in compliance with Subsection 3.7 -- no visible emissions from any storage structure pursuant to subsection 5.1 which is required to have a full enclosure and be equipped with a control device (WH-2 is equipped with baghouse APCD4, BS4 with APCD1, BS5 with APCD2, and BS6 with APCD3), Subsection 4.1 – PM emissions shall not exceed those allowed under Table 45-7A (see paragraph below), Subsection 5.1 – manufacturing process and storage structures must be equipped with a system to minimize emissions (see above), Subsection 5.2 – minimize PM emissions from haulroads and plant premises (Water sprays will be used when needed for dust control on haul road surfaces and open stockpiles and during aggregate/sand deliveries). All requirements should be met when the particulate matter control methods and devices proposed within application 13-3034 are in operation.

*45CSR10 To Prevent and Control Air Pollution from Emissions of Sulfur Oxides*

The purpose of this rule is to prevent and control air pollution from the emission of sulfur oxides. Per this rule, Section 2.9 defines an indirect heat exchanger as a device that combusts any fuel and produces steam or heats water or any other heat transfer medium. Section 2.8 defines a fuel burning unit as any furnace, boiler apparatus, device, mechanism, stack or structure used in the process of burning fuel or other combustible material for the primary purpose of producing heat or power by indirect heat transfer. This facility is exempt from sections 3 and 6 because the liquid asphalt heater (2.1 MMBtu/hr) is below 10 MMBtu/hr. It is also exempt from section 8 because it combusts natural gas. According to section 4.1., sulfur dioxide concentrations must fall below 2,000 parts per million by volume (included in permit as 4.1.3.(e)).

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

The proposed construction is subject to the requirements of 45CSR13 because it will result in the potential to discharge 118.27 pounds per hour and 81.25 TPY of PM (particulate matter), of which 36.29 pounds per hour and 24.64 TPY will be PM10 (particulate matter less than 10 microns in diameter). Since the potential to discharge is greater than six (6) pounds per hour and ten (10) tons per year, and 144 pounds per day of a regulated air pollutant (PM and PM10), the proposed construction requires an application to construct. The applicant submitted an application fee of \$500. The applicant published a Class I legal advertisement in The Ritchie Gazette on November 21, 2012.

*45CSR22 Air Quality Management Fee Program*

This rule establishes a program to collect fees for certificates to operate and for permits to construct, modify or relocate sources of air pollution. Funds collected from these fees will be used to supplement the Director's budget for the purpose of maintaining an effective air quality management program.

The proposed modification of a ready mix concrete batch plant will NOT be subject to the following state and federal rules:

*45CSR14 Permits for Construction and Major Modification of Major Stationary Sources of Air Pollution for the Prevention of Significant Deterioration*

In accordance with 45CSR14 Major Source Determination, the proposed concrete batch plant is not listed in Table 1. The facility will have a potential to emit 25.50 TPY of a regulated air pollutant (PM), not including fugitive emissions, which is less than the 45CSR14 threshold of 250 TPY. This Pennsboro, Ritchie County site is not listed in Table 2, and so fugitive emissions are not included when determining source applicability. Therefore, the proposed construction is not subject to the requirements set forth within 45CSR14.

*45CSR30 Requirements for Operating Permits*

The facility's potential to emit will be 8.16 TPY of a regulated air pollutant (PM10), not including fugitive emissions, which is less than the 45CSR30 threshold of 100 TPY for a major source.

*40CFR63 Subpart JJJJJ*

*National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources*

Per 63.11195(3), gas-fired boilers as defined in this subpart are exempt. Therefore, the proposed natural gas fired water heater is not subject to the requirements set forth within 40CFR63 Subpart JJJJJ.

AIR QUALITY IMPACT ANALYSIS

Air dispersion modeling was not performed due to the size and location of this facility and the limit of the proposed construction. This facility will be located in Ritchie, WV, which is designated as attainment for PM2.5 (particulate matter less than 2.5 microns in diameter). The facility is a minor source and not subject to 45CSR14.

## MONITORING OF OPERATIONS

Maximum concrete production, natural gas usage, and visible emissions will be monitored:

- 4.2.1. For the purpose of determining compliance with maximum throughput and emission limits set forth in 4.1.1. and 4.1.2., the permittee shall monitor concrete production and maintain certified daily records. An example form is included as Appendix A. Such records shall be retained onsite by the permittee for at least five (5) years. Certified records shall be made available to the Director or his duly authorized representative upon request.
- 4.2.2. For the purpose of determining compliance with the maximum fuel usage limits set forth in 4.1.3. and 4.1.4., the permittee shall maintain monthly diesel fuel records for the 2.1 MMBTU/hr water heater HWH1 utilizing the form identified as Appendix C.
- 4.2.3. For the purpose of determining compliance with the opacity limits of 45CSR§2 and 45CSR§7, the permittee shall conduct visible emission checks and / or opacity monitoring and recordkeeping for all emission sources subject to an opacity limit.
  - a. The visible emission check shall determine the presence or absence of visible emissions. At a minimum, the observer must be trained and knowledgeable regarding the effects of background contrast, ambient lighting, observer position relative to lighting, wind, and the presence of uncombined water (condensing water vapor) on the visibility of emissions. This training may be obtained from written materials found in the References 1 and 2 from 40CFR Part 60, Appendix A, Method 22 or from the lecture portion of the 40CFR Part 60, Appendix A, Method 9 certification course.
  - b. Visible emission checks shall be conducted at least once per calendar month with a maximum of forty-five (45) days between consecutive readings. These checks shall be performed at each source (stack, transfer point, fugitive emission source, etc.) for a sufficient time interval, but no less than one (1) minute, to determine if any visible emissions are present. Visible emission checks shall be performed during periods of facility operation and appropriate weather conditions.

- c. If visible emissions are present at a source(s) for three (3) consecutive monthly checks, the permittee shall conduct an opacity reading at that source(s) using the procedures and requirements of Method 9 as soon as practicable, but within seventy-two (72) hours of the final visual emission check. A Method 9 observation at a source(s) restarts the count of the number of consecutive readings with the presence of visible emissions.

RECOMMENDATION TO DIRECTOR

The information contained in this construction application indicates that compliance with all applicable regulations should be achieved when all proposed particulate matter control methods are in operation. Due to the nature of the process and control methods proposed, adverse impacts on the surrounding area should be minimized. Therefore, the granting of a Rule 13 construction permit to Central Supply Company for the construction of a concrete batch plant located in Pennsboro, Ritchie County, WV is hereby recommended.

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Mindy Hendrickson  
Permit Writer

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March 27, 2013

Fact Sheet R13-3034  
Central Supply Company  
Pennsboro Plant