

## STATEMENT OF BASIS

To: Reviewers

Through: Michael Stoll, Operating Permit Program Manager



From: Jamie O'Dell, Senior Environmental Analyst



Subject: Draft Operating Permit 3-1-176, for Black Hills Bentonite, LLC, Mills Complex

Date: October 30, 2006

Attached is a draft renewal Wyoming Air Quality Standards and Regulations (WAQSR) Chapter 6, Section 3 operating permit for the Black Hills Bentonite, LLC, Mills Complex. The Mills Complex consists of two bentonite processing plants, the Mills Plant and the HT Plant. Field-dried bentonite is delivered to the facility by truck and stored in raw bentonite stockpiles. The bentonite is then transferred, by front end loaders, to hopper bins feeding the two rotary dryers at the complex. The dried bentonite is stored and screened to various sizes. The screened material is separated into fine and coarse material for additional processing. Finished products are loaded into bulk bags, railcars, or trucks for delivery. Currently the facility is limited to 350,000 tons per year of processed bentonite.

Emissions sources at the Mills Complex include 2 rotary dryers, various screens, sizing equipment, packaging equipment, and material handling equipment. Particulate emissions are controlled by 19 different baghouse units and the collected fine material is reprocessed to the dryers. The Mills Complex does not have any add-on control equipment for Nitrogen Oxide, Sulfur Dioxide and Carbon Monoxide (NO<sub>x</sub>, SO<sub>2</sub> and CO) emissions. SO<sub>2</sub> emissions are reduced, however, due to inherent absorption by the bentonite during the drying process.

The facility is a major source of particulate matter and NO<sub>x</sub> emissions. The facility also emits moderate amounts of CO and SO<sub>2</sub>. The facility is not a major source of hazardous air pollutants, and therefore is not subject to any of the MACT standards.

**Permitting History (permit and waivers which no longer have applicable requirements and are discussed in the 30-176 Reviewer's memorandum are not discussed here):**

WAQSR Ch 6, Sec 2 Permit OP-211 (7/30/90) was issued to allow operation of the coal-fired rotary dryer, Raymond Roller Mill, and associated equipment. It limited the amount of coal burned in the Mills Rotary Dryer and required that the coal sulfur content not exceed 1%. Using the assumption that all of the sulfur in the coal is converted to SO<sub>2</sub> emissions; the 1% sulfur limit is equivalent to an SO<sub>2</sub> emission limit of between 1.7-2.4 lb/MMBtu, depending on the BTU content of the coal. Permit MD-1180 raises the annual coal limitation and sets an SO<sub>2</sub> emission limit of 0.3 lb/MMBtu for the Mills Rotary Dryer. Since this lb/MMBtu SO<sub>2</sub> emission limit is much more stringent than the previous coal sulfur content limit, only the SO<sub>2</sub> emission limit from MD-1180 is incorporated in this operating permit. All other conditions from OP-211 have also been superseded.

MD-196 (4/4/1994): allowed the installation of a wall fan, and the addition of the crushed and dried storage tank. The only remaining applicable condition of this permit limits emissions from the telescopic chute associated with the 1,000 ton crushed and dried stockpile to 20 percent opacity.

A June 28, 1995 waiver allowed the replacement of the railcar loadout systems with a larger baghouse. All conditions of this waiver have been superseded by AP-TE2.

MD-239 (8/25/1995): allowed the Mills Plant to operate as a synthetic minor source. This permit set particulate and opacity limits on units at the Mills Plant. A majority of the emission limits remain in affect from this permit. MD-239A (12/9/2003): was issued to correct the application of Subpart OOO requirements to a ventilation fan (17-M), and only require the unit to meet an opacity standard.

CT-1233 (7/2/1996): allowed the construction of the HT Plant. With the construction of this plant, being adjacent, classified under the same SIC code and under common control, the two plants are considered one facility for the purposes of WAQSR Ch 6, Sec 3 operating permits. The remaining applicable conditions from this permit include operating the four 10,000 cfm baghouses (2-HT thru 5-HT) during all bentonite processing activities, limiting those baghouses in terms of grains per dry standard cubic foot (gr/dscf), pounds per hour (lb/hr), and tons per year (TPY) of particulate emissions. This permit states that units 2-HT thru 5-HT are subject to 40 CFR Part 60, Subpart OOO, and the applicable opacity standard. The permit also requires that all haul roads and plant work areas be treated to control fugitive dust.

AP-198 (10/22/1997): waived permitting requirements for three wall ventilation fans in the Mills Plant, on the condition that the fans be limited to 7% opacity.

AP-D58 (11/21/1997): waived permitting requirements for the packer/bagger (9-M) at the Mills Plant, on the condition that the baghouse comply with Subpart OOO, and meet the corresponding particulate matter and opacity limits.

MD-365 (6/19/1998): allowed the HT rotary dryer (1-HT) to convert from firing natural gas to firing coal, and increase the firing rate of the unit. This permit requires that the rotary dryer baghouse operate during all bentonite processing activities, limits the rotary dryer in terms of lb/hr and TPY for NO<sub>x</sub>, SO<sub>2</sub> and particulate matter. In accordance with Subpart UUU, the dryer also was limited in terms of gr/dscf of particulates and percent opacity. MD-365A (1/20/1999) was issued to correct a typographical error in the NO<sub>x</sub> emission limit for the dryer. MD-365A2 (5/30/2000) was issued to correct the required visible emissions monitoring language to reflect both options for monitoring requirements from Subpart UUU.

MD-537 (9/14/2000): allowed the replacement of the Mills Plant rotary dryer baghouse (1-M) and increased the firing rate of the unit. In accordance with Subpart UUU this permit limits the dryer baghouse in terms of gr/dscf, lb/hr and TPY of particulate emissions, and the percent opacity from the dryer. All other conditions of this permit have been superseded.

AP-VT1 (5/31/2001): allowed the construction of two bulk silos and the addition of a baghouse on the pin mixer (11-M). The two bulk silos are vented thru the North and South Classifiers (10-M and 13-M). This waiver limits the particulate emissions in terms of gr/dscf and lb/hr and the percent opacity from each baghouse. The baghouses must also comply with Subpart OOO.

AP-KA2 (10/4/2002): allowed the construction of an exterior screen (14-M) at the Mills Plant. This waiver incorrectly applied a 20% opacity limitation. An October 25, 2002 letter corrected the applicable requirements for unit 14-M, requiring the unit comply with Subpart OOO and the applicable 10% opacity.

AP-TE2 (10/17/2002): allowed the relocation of the old railcar loadout baghouse to the holeplug bagger (12-M) and a new baghouse to be installed at the railcar loadout (8-M). This waiver limits particulate emissions (in terms of gr/dscf and lb/hr) and percent opacity from both baghouses. The baghouses are also required to comply with Subpart OOO. Unit 12-M was performance tested demonstrating compliance on 12/3/2002 and unit 8-M on 1/22/2003.

AP-1148 (10/30/2003): allowed the construction of a new granular screen (19-M) with baghouse control at the Mills Plant. This waiver limits particulate emissions (in terms of gr/dscf and lb/hr) and percent opacity from the baghouse, and requires the baghouse to comply with Subpart OOO. This unit was performance tested, demonstrating compliance on 2/25/2005.

AP-2981 (2/22/2005): allowed the replacement of the crushed and dried storage tank baghouse (7-M) at the Mills Plant. This waiver limits particulate emissions (in terms of gr/dscf and lb/hr) and percent opacity from the baghouse, and requires the baghouse to comply with Subpart OOO. Performance tests were completed for this unit that demonstrated compliance.

MD-1180 (7/14/2005): allowed the facility to burn more coal in the Mills rotary dryer (1-M). This permit limits NO<sub>x</sub>, SO<sub>2</sub>, and CO emissions from the Mills rotary dryer (1-M) in terms of pound per million BTU (lb/MMBtu), lb/hr, and TPY. This permit also limits the annual amount of coal that may be burned in the Mills rotary dryer. The facility conducted performance tests on 10/4 & 10/6/2005, demonstrating compliance.

MD-1340 (3/21/2006): allowed facility production to increase to 350,000 TPY of bentonite. This permit limits the total production from the Mills Complex and limits the size of the crushed and dried stockpile at the facility. The permittee submitted a letter on April 20, 2006 outlining a method to estimate the size of the crushed and dried stockpile, as required by this permit.

**Applicable Requirements:**

The facility has an annual bentonite production limit from permit MD-1340. Permit CT-1233 requires that all haul roads and plant work areas be treated with water or chemical dust suppressants in order to minimize fugitive dust. The opacity of fugitive dust from the telescopic chute associated with the 1,000 ton crushed and dried outdoor stockpile is limited to 20 percent in accordance with permit MD-196. In accordance with the above discussed permits, waivers and letters, units 1-HT thru 5-HT, 1-M thru 13-M, and 19-M have particulate emission limits.

All units with baghouses, the exterior screen, and the wall ventilation fans have an applicable opacity limit.

The HT rotary dryer has NO<sub>x</sub> and SO<sub>2</sub> emission limits from permit MD-365A2. The Mills rotary dryer has NO<sub>x</sub>, SO<sub>2</sub>, and CO emission limits from MD-1180. Permits MD-1180 and MD-1340 limit the amount of coal burned in the Mills rotary dryer and the size of the crushed and dried stockpile. Finally, the baghouses which are not subject to compliance assurance monitoring (CAM) are required to be maintained in accordance with the baghouse maintenance program, with selected baghouses required to be operated during all bentonite processing activities.

The facility is a nonmetallic mineral processing plant, and is subject to the requirements of 40 CFR Part 60, Subpart OOO. Subpart OOO limits particulate and visible emissions from specific operations built after August 31, 1983. Each baghouse, with the exception of the dryers and the Raymond Mill, is subject to the requirements of Subpart OOO. The Raymond Mill was built in 1980, and therefore is not subject to the requirements of Subpart OOO.

The Mills and the HT rotary dryers are subject to the requirements of 40 CFR Part 60, Subpart UUU for calciners and dryers in mineral industries. Subpart UUU limits particulate and visible emissions from the dryers. Subpart UUU has specific monitoring options, recordkeeping, and reporting requirements for these units. The dryers are also subject to the CAM requirements of Chapter 7, Section 3 of WAQSR and are included in CAM plans in this permit.

#### **Periodic and Compliance Assurance Monitoring:**

Fugitive emissions monitoring from vehicle dust disturbance consists of monitoring and recording the date of dust suppressant application, what was applied (water or chemical), and the amount applied to the haul roads or plant work area. Periodic monitoring of fugitive emissions from the exterior screen (14-M) consists of quarterly method 9 observations.

Monitoring of visible emissions from the rotary dryers shall be conducted in accordance with Subpart UUU, consisting of either 3 times daily method 9 observations or operation and maintenance of a COMS unit on each dryer. Periodic monitoring for visible and particulate emissions from the Mills Plant units, other than the rotary dryer and the St. Regis Packer, consists of weekly visible observations. Particulate emissions from the rotary dryers, the St. Regis Packer, and the HT plant baghouses are subject to Compliance Assurance Monitoring (CAM) requirements. CAM for these units consists of daily observations to determine the presence of visual emissions, which also serves as periodic monitoring for opacity.

Periodic monitoring of other emissions from the rotary dryers, in accordance with the Division's Periodic Monitoring Guidance, shall consist of once per permit term NO<sub>x</sub> emission testing for both rotary dryers and once per permit term CO testing for the Mills rotary dryer. Monitoring for SO<sub>2</sub> shall consist of testing each dryer once per permit term, and calculating SO<sub>2</sub> emissions quarterly using coal sulfur content data, operating information, and a SO<sub>2</sub> retention factor. Testing has shown that bentonite absorbs SO<sub>2</sub> in coal-fired dryers, and a SO<sub>2</sub> retention factor can

be calculated using data from previous SO<sub>2</sub> emissions tests. The monitoring for the dryers has changed (compared to the previous operating permit) to be consistent with monitoring currently being required for similar dryers at other bentonite facilities in Wyoming, and because SO<sub>2</sub> limits for the Mills Rotary Dryer have become significantly more stringent with the issuance of Chapter 6, Section 2 permit MD-1180.

