

Golder Associates Inc.

6241 NW 23rd Street, Suite 500
Gainesville, FL 32653-1500
Telephone (352) 336-5600
Fax (352) 336-6603



January 30, 2009

Florida Department of Environmental Protection
Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

RECEIVED 063-7642

FEB 04 2009

BUREAU OF AIR REGULATION

Attention: Mr. Syed Arif, P.E.

**RE: MOSAIC FERTILIZER, LLC – NEW WALES FACILITY
DEP FILE NO. 1050059-061-AC
BEST AVAILABLE RETROFIT TECHNOLOGY EXEMPTION APPLICATION**

Dear Mr. Arif:

Mosaic Fertilizer, LLC (Mosaic) has received the Florida Department of Environmental Protection's (FDEP's) request for additional information (RAI) dated December 30, 2008, regarding the best available retrofit technology (BART) exemption application for the New Wales facility. The FDEP's request is answered below.

Comment 1. The Department in the first RAI requested information on how the reduction in emissions of particulate matter (PM), sulfur dioxide (SO₂), nitrogen oxides (NO_x) and sulfuric acid mist (SAM) with the shut down of Multifos A and B Kilns and their respective coolers were accounted for.

The applicant indicated that PM emissions from Emission Unit (EU) Nos. 032 and 033 are 2.14 lb/hr while the emission rate of EU 036 blending operation is 10.0 lb/hr. Please provide to the Department information on how these PM mass emission rates for EU 032, 033 and 036 (blending operation) were arrived at. The permit indicates that EU 032 and 033 has to comply with 20 percent opacity limit only.

The applicant indicated that SO₂ emission rate for EU 036 was 316 lb/hr in the original BART application submitted in January 2007 but was later revised as 177.5 lb/hr based on more recent test data. The response is still ambiguous in what value of SO₂ emissions reduction is being used for this BART exemption application. If SO₂ emission reduction of 316 lb/hr is being used, then explain why the revised emission of 177.5 lb/hr was neglected.

The applicant indicated that NO_x and SAM emissions are based on Table A-6 in Appendix A and the table is attached for convenience. The applicant failed to include the table with the response.

Response: The PM emission rates of EU 032 and 033 were calculated based on an outlet grain loading of 0.01 grains per actual cubic foot (gr/acf) and an estimated exhaust flow rate based on stack test data as explained in Tables 2-2 and 2-3 of the BART exemption analysis report submitted in September 2008. The calculation is shown below:

$$PM = 0.01 \text{ gr/acf} \times 25,000 \text{ acfm} \times 60 \text{ min/hr} \times (\text{lb}/7,000 \text{ gr}) = 2.14 \text{ lb/hr (each of EUs 032 and 033)}$$

The PM emission rate of 10.0 pounds per hour (lb/hr) for EU 036 is a requested emission limit for the blending operation and equipment scrubber only. The Multifos A and B Kilns and scrubbers are proposed to be shut down under Scenario A. These three scrubbers share a common stack as Emission Unit 036. The blending operation and the equipment scrubber will continue to vent through that stack when the A and B Kilns and scrubbers are shut down under Scenario A. The emission limit submitted was an estimate for that stack based on a limited amount of data from engineering studies for a construction permit application to replace that scrubber (1050059-054-AC). Because the impact of the PM emission rate has limited effect on the deciview modeling, this limit was proposed to provide ample assurance of compliance.

The original BART analysis submitted in January 2007 used 316 lb/hr SO₂ from EU 036 based on the latest test data at that time. The rate was later revised to 177.5 lb/hr based on the test data, which became available in March 2007. The BART exemption analysis submitted in September 2008 uses neither of these SO₂ emission rates. Two BART exemption scenarios have been presented in the September 2008 application – Scenario A and Scenario B. Scenario A assumes the shutdown of the Multifos A and B Kilns, which means there will be no SO₂ emissions from EU 036. Under Scenario B, Mosaic proposes a SO₂ emissions limit of 25 lb/hr, which is based on the current SO₂ emissions limit of Kiln C. The proposed SO₂ emissions limit for the Multifos A and B Kilns will be achieved by a new scrubber. The September 2008 BART exemption application used an SO₂ emission rate of 0.0 lb/hr for EU 036 under Scenario A and 25.0 lb/hr under Scenario B.

Table A-6 was inadvertently left out of the December 2008 RAI response package. Table A-6 is included with this response package, which shows how the NO_x and SAM emissions rates of 45.7 and 4.2 lb/hr, respectively, were calculated for the January 2007 BART analysis.

Thank you for the opportunity to provide you with this additional information. If you have any questions, please do not hesitate to call me at (352) 336-5600.

Sincerely,

GOLDER ASSOCIATES INC.



David A. Buff, P.E., Q.E.P.
Principal Engineer



Salahuddin Mohammad
Staff Engineer

DB/tlc

Enclosures

cc: D. Turley, Mosaic
D. Jagiella, Mosaic
D. Jellerson, Mosaic
R. Iyer, Mosaic

R013009_642.doc

Professional Engineer Certification

| |
|---|
| 1. Professional Engineer Name: David A. Buff Registration Number: 19011 |
| 2. Professional Engineer Mailing Address... Organization/Firm: Golder Associates Inc.** Street Address: 6241 NW 23rd Street, Suite 500 City: Gainesville State: FL Zip Code: 32653 |
| 3. Professional Engineer Telephone Numbers... Telephone: (352) 336-5600 ext. Fax: (352) 336-6603 |
| 4. Professional Engineer E-mail Address: dbuff@golder.com |
| 5. Professional Engineer Statement: <i>I, the undersigned, hereby certify, except as particularly noted herein*, that:</i> <i>(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this application for air permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and</i> <i>(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.</i> <i>(3) If the purpose of this application is to obtain a Title V air operation permit (check here <input type="checkbox"/> , if so), I further certify that each emissions unit described in this application for air permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance plan and schedule is submitted with this application.</i> <i>(4) If the purpose of this application is to obtain an air construction permit (check here <input type="checkbox"/> , if so) or concurrently process and obtain an air construction permit and a Title V air operation permit revision or renewal for one or more proposed new or modified emissions units (check here <input type="checkbox"/> , if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.</i> <i>(5) If the purpose of this application is to obtain an initial air operation permit or operation permit revision or renewal for one or more newly constructed or modified emissions units (check here <input checked="" type="checkbox"/> , if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.</i> Signature: <u>David A. Buff</u> Date: <u>2/2/09</u> (seal) |

* Attach any exception to certification statement.

**Board of Professional Engineers Certificate of Authorization #00001670.

TABLE A-6
MAXIMUM EMISSION RATES DUE TO FUEL COMBUSTION FOR THE MULTIFOS A AND B KILNS & DRYER (EU 036)
MOSAIC NEW WALES

| Parameter | Units | No. 6 Fuel Oil | Natural Gas | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|----------------------|----------------------|----------------------|----------------------|-----------------------|----------------------|-----------|--|----------------|--|-------------|--|-----------------------|--|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------|-------|---------|-------|---------|-------|-----------------------|--|--|--|--|--|--|--|----------|--|--------|---------|----|----|----|----|-------------|--|----|----|------|------|----|----|---------------------------------|--|----|----|----|----|--------|---------|---------------------------|--|--|--|--|--|--|--|----------|--|------|-------|----|----|------|--------|------------------------|--|--|--|--|--|--|--|----------|---------------------------|-------|--------|----|----|----|----|-------------|--|----|----|-------|-------|----|----|---------------------------------|--|----|----|----|----|-------|--------|
| <u>Operating Data</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Annual Operating Hours | hr/yr | 8,760 | 8,760 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Heat Input Rate | 10 ⁶ Btu/hr | 124.5 | 124.5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hourly Fuel Oil Usage ^a | 10 ³ gal/hr | 0.83 | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Annual Fuel Oil Usage | 10 ³ gal/yr | 7,271 | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Sulfur Content | Weight % | 2.50 | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hourly Natural Gas Usage ^b | 10 ⁶ scf/hr | N/A | 0.125 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Annual Natural Gas Usage | 10 ⁶ scf/yr | N/A | 1090.6 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum Sulfur Content | gr/100 ft ³ | N/A | N/A | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3">Pollutant</th> <th rowspan="3">AP-42 Emissions Factor^c</th> <th colspan="2">No. 6 Fuel Oil</th> <th colspan="2">Natural Gas</th> <th colspan="2">Maximum Emission Rate</th> </tr> <tr> <th>Hourly Emission Rate</th> <th>Annual Emission Rate</th> <th>Hourly Emission Rate</th> <th>Annual Emission Rate</th> <th>Hourly Emission Rate</th> <th>Annual Emission Rate</th> </tr> <tr> <th>(lb/hr)</th> <th>(TPY)</th> <th>(lb/hr)</th> <th>(TPY)</th> <th>(lb/hr)</th> <th>(TPY)</th> </tr> </thead> <tbody> <tr> <td colspan="8"><u>Sulfur Dioxide</u></td> </tr> <tr> <td>Fuel oil</td> <td>157 *(S) lb/10³ gal^d</td> <td>325.78</td> <td>1426.89</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> </tr> <tr> <td>Natural gas</td> <td>0.6 lb/10⁶ ft³</td> <td>--</td> <td>--</td> <td>0.07</td> <td>0.33</td> <td>--</td> <td>--</td> </tr> <tr> <td>Worse-Case Combination of Fuels</td> <td></td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>325.78</td> <td>1426.89</td> </tr> <tr> <td colspan="8"><u>Sulfuric Acid Mist</u></td> </tr> <tr> <td>Fuel oil</td> <td>2 *(S) lb/10³ gal^{d,e}</td> <td>4.15</td> <td>18.18</td> <td>--</td> <td>--</td> <td>4.15</td> <td>18.177</td> </tr> <tr> <td colspan="8"><u>Nitrogen Oxides</u></td> </tr> <tr> <td>Fuel oil</td> <td>55 lb/10³ gal</td> <td>45.65</td> <td>199.95</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> </tr> <tr> <td>Natural gas</td> <td>100 lb/10⁶ ft³</td> <td>--</td> <td>--</td> <td>12.45</td> <td>54.53</td> <td>--</td> <td>--</td> </tr> <tr> <td>Worse-Case Combination of Fuels</td> <td></td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>45.65</td> <td>199.95</td> </tr> </tbody> </table> | | | | | | | | Pollutant | AP-42 Emissions Factor ^c | No. 6 Fuel Oil | | Natural Gas | | Maximum Emission Rate | | Hourly Emission Rate | Annual Emission Rate | Hourly Emission Rate | Annual Emission Rate | Hourly Emission Rate | Annual Emission Rate | (lb/hr) | (TPY) | (lb/hr) | (TPY) | (lb/hr) | (TPY) | <u>Sulfur Dioxide</u> | | | | | | | | Fuel oil | 157 *(S) lb/10 ³ gal ^d | 325.78 | 1426.89 | -- | -- | -- | -- | Natural gas | 0.6 lb/10 ⁶ ft ³ | -- | -- | 0.07 | 0.33 | -- | -- | Worse-Case Combination of Fuels | | -- | -- | -- | -- | 325.78 | 1426.89 | <u>Sulfuric Acid Mist</u> | | | | | | | | Fuel oil | 2 *(S) lb/10 ³ gal ^{d,e} | 4.15 | 18.18 | -- | -- | 4.15 | 18.177 | <u>Nitrogen Oxides</u> | | | | | | | | Fuel oil | 55 lb/10 ³ gal | 45.65 | 199.95 | -- | -- | -- | -- | Natural gas | 100 lb/10 ⁶ ft ³ | -- | -- | 12.45 | 54.53 | -- | -- | Worse-Case Combination of Fuels | | -- | -- | -- | -- | 45.65 | 199.95 |
| Pollutant | AP-42 Emissions Factor ^c | No. 6 Fuel Oil | | Natural Gas | | Maximum Emission Rate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Hourly Emission Rate | Annual Emission Rate | Hourly Emission Rate | Annual Emission Rate | Hourly Emission Rate | Annual Emission Rate | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | (lb/hr) | (TPY) | (lb/hr) | (TPY) | (lb/hr) | (TPY) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>Sulfur Dioxide</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fuel oil | 157 *(S) lb/10 ³ gal ^d | 325.78 | 1426.89 | -- | -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Natural gas | 0.6 lb/10 ⁶ ft ³ | -- | -- | 0.07 | 0.33 | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Worse-Case Combination of Fuels | | -- | -- | -- | -- | 325.78 | 1426.89 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>Sulfuric Acid Mist</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fuel oil | 2 *(S) lb/10 ³ gal ^{d,e} | 4.15 | 18.18 | -- | -- | 4.15 | 18.177 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>Nitrogen Oxides</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Fuel oil | 55 lb/10 ³ gal | 45.65 | 199.95 | -- | -- | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Natural gas | 100 lb/10 ⁶ ft ³ | -- | -- | 12.45 | 54.53 | -- | -- | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Worse-Case Combination of Fuels | | -- | -- | -- | -- | 45.65 | 199.95 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Notes:

^a Based on the heat content of fuel oil of 150,000 Btu/gallon.

^b Based on the heat content of natural gas of 1,000 Btu/scf.

^c Emission factors for fuel oil are based on AP-42, Section 1.3, September 1998. Emission factors for natural gas are based on AP-42, Section 1.4, July 1998.

^d S denotes the weight-percent of sulfur in fuel oil; maximum sulfur content = 2.5%.

^e Sulfuric acid mist emission factor based on emission factor for SO₃ (AP-42, Section 1.3) converted to H₂SO₄ using molecular weight.