Montana Department of
ENVIRONMENTAL QUALITY
Brian Schweitzer, Governor
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December 21, 2011

James Hodges
The Quikrete Companies
561 Sugar Ave.
Billings, MT. 59107

Dear Mr. Hodges:

Montana Air Quality Permit #3149-03 is deemed final as of December 21, 2011, by the Department of Environmental Quality (Department). This permit is for a stationary dry cement mix plant and associated equipment. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Vickie Walsh
Air Permitting Program Supervisor
Air Resources Management Bureau
(406) 444-9741

Doug Kuenzli
Environmental Science Specialist
Air Resources Management Bureau
(406) 444-4267

VW:DCK
Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #3149-03

The Quikrete Companies
561 Sugar Ave.
Billings, MT. 59107

December 21, 2011

MONTANA AIR QUALITY PERMIT

Issued To: The Quikrete Companies
561 Sugar Ave.
Billings, MT. 59107

MAQP: #3149-03
Administrative Amendment (AA) Request Received: 10/17/2011
Department's Decision on AA: 12/05/2011
Permit Final: 12/21/2011
AFS #: 777-3149

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to The Quikrete Companies (Quikrete), pursuant to Section 75-2-204 and 211, Montana Code Annotated (MCA), as amended, and the Administrative Rules of Montana (ARM) 17.8.740, *et seq*., as amended, for the following:

Section I: Permitted Facilities

A. Plant Location

Quikrete operates a stationary dry mix cement plant at the Southwest ¼ of Section 11, Township 1 South, Range 26 East, in Yellowstone County, Montana.

B. Current Permit Action

On October 17, 2011, the Department of Environmental Quality (Department) received a notification of proposed de minimis changes to the operations at Quikrete to include the addition of material storage silos and a change in control equipment associated with internal material handling operations. In addition to the proposed changes the current action, updates the emission inventory and rule references used by the Department.

Section II: Conditions and Limitations

A. Emission Limitations

1. Quikrete shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes (ARM 17.8.304 and ARM 17.8.752).

2. Quikrete shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308 and ARM 17.8.752).

3. Quikrete shall treat all unpaved portions of the haul roads, access roads, parking lots, or the general plant area with water and/or chemical dust suppressant, as necessary, to maintain compliance with the reasonable precautions limitation in Section II.A.2 (ARM 17.8.752).

4. Cement production shall be limited to 57,540 tons during any rolling 12-month time period (ARM 17.8.749).

5. If the permitted equipment is used in conjunction with any other equipment owned or operated by Quikrete, at the same site, production shall be limited to correspond with an emission level that does not exceed 250 tons during any rolling 12-month time period. Any calculations used to establish production levels shall be approved by the Department (ARM 17.8.749).

B. Testing Requirements

1. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

2. The Department may require testing (ARM 17.8.105).

C. Operational Reporting Requirements

1. Quikrete shall maintain on-site records showing daily hours of operation and daily production rates for the last 12 months. All records compiled in accordance with this permit shall be maintained by Quikrete as a permanent business record for at least 5-years following the date of the measurement, shall be available at the plant site for inspection by the Department, and shall be submitted to the Department upon request (ARM 17.8.749).

2. Quikrete shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the most recent emission inventory report and sources identified in Section I.A of the permit analysis.

   Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. This information may be used for calculating operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

3. Quikrete shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include ***the addition of a new emission unit***, change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location, or fuel specifications, or would result in an increase in source capacity above its permitted operation. The notice must be submitted to the Department, in writing, 10 days prior to start-up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).

4. Quikrete shall document, by month, the production of the cement plant. By the 25th day of each month, Quikrete shall total the production of cement for the previous month. The monthly information will be used to verify compliance with the rolling 12-month limitation in Section II.A.4. The information for each of the previous months shall be submitted along with the annual emission inventory (ARM 17.8.749).

Section III: General Conditions

A. Inspection – Quikrete shall allow the Department's representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (continuous emission monitoring system/continuous emission rate monitoring system (CEMS)) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.

B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if Quikrete fails to appeal as indicated below.

C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Quikrete of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*. (ARM 17.8.756).

D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties, or other enforcement action as specified in Section 75-2-401, *et seq*., MCA.

E. Appeals – Any person or persons jointly or severally adversely affected by the Department's decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department's decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department's decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department's decision on the application is final 16 days after the Department's decision is made.

F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.

G. Permit Fee – Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by Quikrete may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.

H. Duration of Permit - Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Montana Air Quality Permit (MAQP) Analysis
The Quikrete Companies
Permit #3149-03

I. Introduction/Process Description

A. Permitted Equipment

The Quikrete Companies (Quikrete) operates a stationary dry mix cement plant within a maximum production throughput of 14 tons per hour (tons/hr). Particulate emissions from the facility are controlled by one of two control devices. A cyclone is operated on the exterior operations to control particulate emissions from material handling activities and aggregate drying. A baghouse is located within the production facility to control material handling particulate emissions from sorting, mixing, and bagging operations.

- Maxon Ventite Natural Gas-Fired Rotary Dryer 7.6 MMBtu/hr (maximum) Model HD-8-88 [60 tons/hr]
- Bucket Elevator [100 Tons/hr]
- Shaker/Screen
- 4,000 lb. Weigh Hopper
- 8 Cubic Yard (yd^3) Dry Cement Mixer
- (2) 15 yd^3 Aggregate Bins
- 10 yd^3 Aggregate Bin
- Lime Silo [25 Ton]
- Split Cement/Fly-Ash Silo [60/40 Tons]
- Associated Material Handling Equipment [conveyors, air-slides, bagging equipment]

B. Process Description

Aggregate such as masonry sand, concrete, and 3/8" rock are loaded into a feed hopper from exterior storage bins. The feed hopper delivers aggregate via conveyor to a natural gas fired flame dryer which removes excess moisture. Fine particulates are removed by way of a dry cyclone. Upon exiting the dryer the aggregate is lifted, via an enclosed bucket conveyor, to the shaker located inside the manufacturing plant where screens are utilized to separate the different grades of aggregate into various bins.

Sorted aggregate from bins and cement and cement supplements (pozzolan, lime, and fly ash) are gravity feed into the weigh hopper for batching. Once ingredient proportions are achieved the material is fed directly to the batch mixer for blending. Upon thorough mixing, the rotation of the mixer is reversed which push the material of the system and onto a conveyor where it is transferred to the surge hopper.

The surge hopper holds the material in preparation for bagging and is tied directly to the bagging hopper/tube packer, which inserts the product into 60 and 80-pound bags. The bags are sealed and warehoused for distribution.

C. Permit History

On May 2, 2001, Rocky Mountain Concrete Products submitted a complete permit application to operate a stationary dry mix cement plant (maximum production rate 14 TPH) and associated equipment. Particulate emissions were controlled by two cyclones. The cyclone within the enclosure had an efficiency of approximately 50% and the cyclone outside the enclosure had an efficiency of approximately 99%. The application was assigned **MAQP #3149-00.**

On July 28, 2003, Robinson Brick Company (Robinson) submitted a request for a transfer of ownership of the facility from Rocky Mountain Concrete Products to Robinson. The permit was also updated to reflect the current permit language and rule references used by the Department. **MAQP #3149-01** replaced MAQP #3149-00.

On November 28, 2005, Robinson submitted a request to transfer ownership from Robinson to Quikrete. **MAQP #3149-02** replaced MAQP #3149-01.

D. Current Permit Action

On October 17, 2011, the Department of Environmental Quality (Department) received a notification of proposed de minimis changes to the Quikrete facility. The correspondence indicated the installation of a 25 ton lime silo, as well as a 60/30 ton split silo to contain cement and fly ash. Further notification was provided regarding the replacement of the cyclone, used to control particulate emission from internal material handling operations, with a baghouse filter. In addition to the proposed changes the current action, updates the emission inventory and rule references used by the Department. **MAQP #3149-03** replaces MAQP #3149-02.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT)/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department. Upon request, the Department will provide references for locations of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1, General Provisions, including, but not limited to:

1. ARM 17.8.101 Definitions. This rule is a list of applicable definitions used in this sub-chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment, including instruments and sensing devices, and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.

3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq*., Montana Code Annotated (MCA).

Quikrete shall comply with all requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation, or to continue for a period greater than 4 hours.

5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant which would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2, Ambient Air Quality, including, but not limited to:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide (SO_2)
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide (CO)
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
7. ARM 17.8.221 Ambient Air Quality Standard for Visibility
8. ARM 17.8.223 Ambient Air Quality Standard for Particulate Matter with an Aerodynamic Diameter of Ten Microns or Less (PM_{10})

Quikrete must comply with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3, Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 consecutive minutes.

2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions are taken to control emissions of airborne particulate matter. (2) Under this rule, Quikrete shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.

3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause or authorize to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this section.

4. ARM 17.8.310 Particulate Matter, Industrial Processes. This rule requires that no person shall cause or authorize to be discharged into the atmosphere particulate matter in excess of the amount set forth in this section.

5. ARM 17.8.340 Standards of Performance for New Stationary Sources. The owner and operator of any stationary source or modification, as defined and applied in 40 Code of Federal Regulations (CFR) Part 60, shall comply with the standards and provisions of 40 CFR Part 60. This facility is not an New Source Performance Standard (NSPS) affected source because it does not meet the definition of any NSPS subpart defined in 40 CFR Part 60.

6. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. This rule incorporates, by reference, 40 CFR 63, National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories. This facility is not a NESHAP-affected source because it does not meet the definition of any Subpart defined in 40 CFR Part 63.

D. ARM 17.8, Subchapter 5, Air Quality Permit Application, Operation, and Open Burning Fees, including, but not limited to:

1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that Quikrete submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. Quikrete was not required to submit a permit application fee for the current permit action because this permit action is an administrative permit action.

2. ARM 17.8.505 Air Quality Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit, excluding an open burning permit, issued by the Department. This operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

   An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions which prorate the required fee amount.

E. ARM 17.8, Subchapter 7, Permit, Construction and Operation of Air Contaminant Sources, including, but not limited to:

1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.

2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit alteration to construct, alter or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 tons per year (tpy) of any pollutant. Quikrete has the PTE more than 25 tpy of total PM and PM_{10}; therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit Program.

4. ARM 17.8.745 Montana Air Quality Permits—Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.

5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration or use of a source. The current permit action is administrative; therefore, no application is required. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. Quikrete was not required to submit an affidavit of publication of public notice for the current permit action because the current permit action is an administrative amendment.

6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.

7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be utilized. The required BACT analysis is included in Section III of this permit analysis.

8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.

9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Quikrete of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq*.

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.

11. ARM 17.8.760 Additional Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those applications that require an environmental impact statement.

12. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than 1 year after the permit is issued.

13. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).

14. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. A source may not increase its emissions beyond those found in its permit unless the source applies for and receives another permit.

15. ARM 17.8.765 Transfer of Permit. (1) This rule states that an air quality permit may be transferred from one location to another if the Department receives a complete notice of Intent to Transfer location, the facility will operate in the new location for less than 1 year, the facility will comply with the FCAA and the Clean Air Act of Montana, and the facility complies with other applicable rules. (2) This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.

F. ARM 17.8, Subchapter 8, Prevention of Significant Deterioration of Air Quality, including, but not limited to:

1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this sub-chapter.

2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

   This facility is not a major stationary source because it is not a listed source and the facility's PTE is less than 250 tpy (excluding fugitive emissions) of any air pollutant.

G. ARM 17.8, Subchapter 12, Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:

   a. PTE > 100 tpy of any pollutant.

   b. PTE > 10 tpy of any one Hazardous Air Pollutant (HAP), PTE > 25 tpy of any combination of HAPs, or lesser quantity as the Department may establish by rule.

   c. PTE > 70 tpy of PM_{10} in a serious PM_{10} nonattainment area.

2. ARM 17.8.1204 Air Quality Operating Permit Program Applicability. Title V of the FCAA Amendments of 1990 requires that all sources, as defined in ARM 17.8.1204 (1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #3149-03 for Quikrete, the following conclusions were made:

   a. The facility's permitted PTE is less than 100 tpy for all criteria pollutants.

   b. The facility's PTE is less than 10 tpy of any one HAP and less than 25 tpy of combined HAPs.

   c. This source is not located in a serious PM_{10} nonattainment area.

   d. This facility is not subject to any current NSPS standards.

   e. This facility is not subject to any current NESHAP standards.

   f. This source is not a Title IV affected source nor a solid waste combustion unit.

   g. This source is not an EPA designated Title V source.

   Based on these facts, the Department determined that Quikrete will be a minor source of emissions as defined under Title V. MAQP 3149-03 contains permit allowable production limits that were established in previous MAQP's. These limits were not established to avoid major source permitting under Title V, therefore language and conditions associated with synthetic minor permitting is not necessary.

III. BACT Determination

A BACT determination is required for each new or altered source. Quikrete shall install on the new or altered source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized.

A BACT analysis was not required for the current permit action because the current permit action is considered an administrative permit action.

IV. Emission Inventory

	Emissions Tons/Year [PTE] [a]						
Emission Source	PM	PM_{10}	$PM_{2.5}$	CO	NOx	SO_2	VOC
Aggregate Handling/Transfer	0.99	0.47	0.15	--	--	--	--
Aggregate Dryer	57.66	30.59	10.41	1.29	1.53	0.01	0.08
Aggregate Shaker-Screen	0.43	0.10	0.06	--	--	--	--
Cement Receiving	0.06	0.02	0.01	--	--	--	--
Cement Supplement Receiving - Lime & Fly Ash	0.51	0.28	0.08	--	--	--	--
Weigh Hopper Loading	0.003	0.002	N.G.	--	--	--	--
Dry Cement Mix	0.33	0.09	0.05	--	--	--	--
Dry Cement Transfer & Bagging	0.01	0.01	0.014	--	--	--	--
Unpaved Roadways (Haul Roads)	4.20	1.16	0.12	--	--	--	--
TOTAL EMISSIONS ▶	64.19	32.72	10.89	1.29	1.53	0.01	0.08

a) Emission Inventory reflects permit allowable emissions, based on establish production throughput limit. Current Permit action does not allow alteration of limits which increase emission levels. Quikete is a minor source for all criteria pollutants.

C_e, control efficiency
CO, carbon monoxide
lbs/hr, pounds per hour
MMBtu, million British Thermal Units
N.G., negligible emissions
NO_X, oxides of nitrogen
PM, particulate matter
PM_{10}, particulate matter with an aerodynamic diameter of 10 microns or less
$PM_{2.5}$, particulate matter with an aerodynamic diameter of 2.5 microns or less [Sum of condensable and filterable]
PTE, potential to emit
psi, pound per square inch
scf, standard cubic feet
SO_2, sulfur Dioxide
TPY, tons per year
VOC, volatile organic compounds
yds^3, cubic yards

Dry Mix Cement Plant

Process Rate: 14 tons/hour (Maximum) 57540 tons/year (Allowable) 122640 tons/year (Maximum)
Allowable Operating Hours: 4110

External Operations: Material Handling

Aggregate Handling - Transfers [SCC 3-02-011-21]

Process Rate: 14.0 tons/hour
Operating Hours 4110 hours/year
Transfers: 5 [Delivery→Hopper/Conveyor→Dryer→Bucket Elevator→Internal Operation]

PM Emissions:

Emission Factor 0.0069 lbs/tons transferred [AP-42 Table 11.12-2, 6/06]
Calculations (0.0069 lbs/ton) * (14.00 tons/hour) * (5 transfers) = 0.48 lbs/hr
(0.48 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) = 0.99 TPY

PM_{10} Emissions:

Emission Factor	0.0033 lbs/tons transferred [AP-42 Table 11.12-2, 6/06]	
Calculations	(0.0033 lbs/ton) * (14.00 tons/hour) * (5 transfers) =	0.23 lbs/hr
	(0.23 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.47 TPY

$PM_{2.5}$ Emissions:

Emission Factor	0.0010 lbs/ton transferred (15% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 3, 1/95]	
Calculations	(0.001035 lbs/ton) * (14.00 tons/hour) * (5 transfers) =	0.07 tons/year (uncontrolled)
	(0.07 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.15 tons/year (controlled)

Aggregate Dryer [SCC 3-05-027-20]

Dryer Equipment: 1996 Maxon Ventite Dryer Model HD-8-88
Fuel: Natural Gas
Fuel Input: 7.6 MMBtu/hr [Maximum Input @ 30 psi]
0.0075 scf/hr
Control Equipment: Cyclone
Control Efficiency (Ce): 95.0 %
Process Rate: 14 tons/hr
Operating Hours: 4110

Particulate Emissions - Combustion (uncontrolled):

PM Emissions:

Emission Factor	7.6 lb/MMscf [AP-42 Table, 1.4-2, 7/98]	
Calculations	(7.6 lb/MMscf) * (0.0075 MMscf/hr) =	0.057 lbs/hr
	(0.057 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	0.12 TPY

PM_{10} Emissions:

Emission Factor	6.0 lb/MMscf (79% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 2, 1/95]	
Calculations	(6.004 lb/MMscf) * (0.0075 MMscf/hr) =	0.045 lbs/hr
	(0.045 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	0.09 TPY

$PM_{2.5}$ Emissions:

Emission Factor	3.4 lb/MMscf (45% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 2, 1/95]	
Calculations	(3.42 lb/MMscf) * (0.0075 MMscf/hr) =	0.025 lbs/hr
	(0.025 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	0.05 TPY

Particulate Emissions - Combustion (controlled):

PM Emissions:

Emission Factor	7.6 lb/MMscf [AP-42 Table, 1.4-2, 7/98]	
Calculations	(7.6 lb/MMscf) * (0.0075 MMscf/hr) * (1 - 0.95 Ce) =	0.003 lbs/hr
	(0.003 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	0.01 TPY

PM_{10} Emissions:

Emission Factor	6.0 lb/MMscf (79% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 2, 1/95]	
Calculations	(6.004 lb/MMscf) * (0.0075 MMscf/hr) * (1 - 0.95 Ce) =	0.002 lbs/hr
	(0.002 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	0.00 TPY

$PM_{2.5}$ Emissions:

Emission Factor	3.4 lb/MMscf (45% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 2, 1/95]	

Calculations	(3.42 lb/MMscf) * (0.0075 MMscf/hr) * (1 - 0.95 Ce) =	0.001 lbs/hr
	(0.001 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	0.00 TPY

Particulate Emissions - Aggregate Drying (uncontrolled):

PM Emissions:

Emission Factor	2.0 lb/ton processed [AP-42 Table, 11.19.1-1, 11/95]	
Calculations	(2 lb/ton) * (14.00 tons/hr) =	28.00 lbs/hr
	(28.00 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	57.54 TPY

PM_{10} Emissions:

Emission Factor	1.06 lb/ton processed (53% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 5, 1/95]	
Calculations	(1.06 lb/ton) * (14.00 tons/hr) =	14.84 lbs/hr
	(14.84 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	30.50 TPY

$PM_{2.5}$ Emissions:

Emission Factor	0.36 lb/ton processed (18% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 5, 1/95]	
Calculations	(0.36 lb/ton) * (14.00 tons/hr) =	5.04 lbs/hr
	(5.04 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	10.36 TPY

Particulate Emissions - Aggregate Drying (controlled):

PM Emissions:

Emission Factor	2.0 lb/ton processed [AP-42 Table, 11.19.1-1, 11/95]	
Calculations	(2 lb/ton) * (14.00 tons/hr) * (1 - 0.95 Ce) =	1.40 lbs/hr
	(1.40 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	2.88 TPY

PM_{10} Emissions:

Emission Factor	1.06 lb/ton processed (53% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 5, 1/95]	
Calculations	(1.06 lb/ton) * (14.00 tons/hr) * (1 - 0.95 Ce) =	0.74 lbs/hr
	(0.74 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	1.52 TPY

$PM_{2.5}$ Emissions:

Emission Factor	0.36 lb/ton processed (18% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 5, 1/95]	
Calculations	(0.36 lb/ton) * (14.00 tons/hr) * (1 - 0.95 Ce) =	0.25 lbs/hr
	(0.25 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	0.52 TPY

CO Emissions (Uncontrolled):

Emission Factor	84 lb/MMscf [AP-42 Table, 1.4-1, 7/98]	
Calculations	(84 lb/MMscf) * (0.0075 MMscf/hr) =	0.63 lbs/hr
	(0.63 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	1.29 TPY

NO_x Emissions (Uncontrolled):

Emission Factor	100 lb/MMscf [AP-42 Table, 1.4-1, 7/98]	
Calculations	(100 lb/MMscf) * (0.0075 MMscf/hr) =	0.75 lbs/hr
	(0.75 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	1.53 TPY

SO_2 Emissions (uncontrolled):

Emission Factor	0.6 lb/MMscf [AP-42 Table, 1.4-2, 7/98]	
Calculations	(0.6 lb/MMscf) * (0.0075 MMscf/hr) =	0.004 lbs/hr
	(0.004 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	0.01 TPY

VOC Emissions (uncontrolled):

Emission Factor	5.5 lb/MMscf [AP-42 Table, 1.4-2, 7/98]	
Calculations	(5.5 lb/MMscf) * (0.0075 MMscf/hr) =	0.04 lbs/hr
	(0.04 lbs/hr) * (4110 hrs/yr) * (0.0005 tons/lb) =	0.08 TPY

Internal Operations: Material Handling:

Aggregate Shaker-Screen [SCC 3-05-020-21]

Process Rate: 14.0 tons/hour
Control Equipment: Baghouse
Control Efficiency (Ce): 98.0 %
Operating Hours: 4110 hours/year

PM Emissions (controlled):

Emission Factor	0.30 lbs/tons processed [AP-42 Table 11.19.2-2]	
Calculations	(0.30 lbs/ton) * (14.00 tons/hour) * (1 - 98 Ce) =	0.21 lbs/hr
	(0.21 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.43 TPY

PM_{10} Emissions (controlled):

Emission Factor	0.072 lbs/tons [processed [AP-42 Table 11.19.2-2]	
Calculations	(0.072 lbs/ton) * (14.00 tons/hour) * (1 - 98 Ce) =	0.05 lbs/hr
	(0.05 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.10 TPY

$PM_{2.5}$ Emissions (controlled):

Emission Factor	0.045 lbs/tons transferred (15% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 3, 1/95]	
Calculations	(0.045 lbs/ton) * (14.00 tons/hour) * (1 - 98 Ce) =	0.03 lbs/hr
	(0.03 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.06 TPY

Cement & Cement Supplement

Process Rate: 14.0
Control Equipment: Silo Vent Filters
Control Efficiency (Ce): 95.0 % [Accounted in emission factor]
Operating Hours: 4110 hours/year

Cement Delivery to Silo [SCC 3-05-011-07]

PM Emissions (controlled):

Emission Factor	0.00099 lbs/ton [AP-42 Table 11.12-2, 6/06]	
Calculations	(0.00099 lbs/ton) * (14.00 tons/hour) * (2 Silo) =	0.03 lbs/hr
	(0.03 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.06 TPY

PM_{10} Emissions (controlled):

Emission Factor	0.0003 lbs/ton [AP-42 Table 11.12-2, 6/06]	
Calculations	(0.00034 lbs/ton) * (14.00 tons/hour) * (2 Silo) =	0.010 lbs/hr
	(0.010 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.02 TPY

$PM_{2.5}$ Emissions (controlled):

Emission Factor	0.00015 lbs/tons (15% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 3, 1/95]	
Calculations	(0.00015 lbs/ton) * (14.00 tons/hour) * (2 Silo) =	0.004 lbs/hr
	(0.004 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.01 TPY

Cement Supplement (Fly Ash & Lime) Delivery to Silo [SCC 3-05-011-17]

PM Emissions (controlled):

Emission Factor	0.0089 lbs/ton processed	[AP-42 Table 11.12-2, 6/06]
Calculations	(0.0089 lbs/ton) * (14.00 tons/hour) * (2 Silo) =	0.25 lbs/hr
	(0.25 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.51 TPY

PM_{10} Emissions (controlled):

Emission Factor	0.0049 lbs/ton processed	[AP-42 Table 11.12-2, 6/06]
Calculations	(0.0049 lbs/ton) * (14.00 tons/hour) * (2 Silo) =	0.137 lbs/hr
	(0.137 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.28 TPY

$PM_{2.5}$ Emissions (controlled):

Emission Factor	0.00134 lbs/tons (15% PM)	[AP-42 App. B.2 - Table B.2.2, Cat. 3, 1/95]
Calculations	(0.00134 lbs/ton) * (14.00 tons/hour) * (2 Silo) =	0.037 lbs/hr
	(0.037 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.08 TPY

Weigh Hopper Loading [SCC 3-05-011-08]

Process Rate: 14.0
Control Equipment: Baghouse
Control Efficiency (Ce): 98.0 % [Accounted in emission factor]
Operating Hours: 4110 hours/year

PM Emissions (controlled):

Emission Factor	0.0048 lbs/ton processed	[AP-42 Table 11.12-2, 6/06]
Calculations	(0.0048 lbs/ton) * (14.00 tons/hour) * (1 - 0.98 Ce) =	0.0013 lbs/hr
	(0.0013 lbs/hr) * (4110 hrs/yr) * (0.005 tons/lb) =	0.003 TPY

PM_{10} Emissions (controlled):

Emission Factor	0.0028 lbs/ton processed	[AP-42 Table 11.12-2, 6/06]
Calculations	(0.0028 lbs/ton) * (14.00 tons/hour) * (1 - 0.98 Ce) =	0.0008 lbs/hr
	(0.0008 lbs/hr) * (4110 hrs/yr) * (0.005 tons/lb) =	0.002 TPY

$PM_{2.5}$ Emissions (controlled):

Emission Factor	0.00072 lbs/tons (15% PM)	[AP-42 App. B.2 - Table B.2.2, Cat. 3, 1/95]
Calculations	(0.00072 lbs/ton) * (14.00 tons/hour) * (2 Silo) =	0.0002 lbs/hr
	(0.0002 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.0004 TPY

Dry Cement Mixer [3-05-011-09]

Process Rate: 14.0
Control Equipment: Baghouse
Control Efficiency (Ce): 98.0 % [Accounted in emission factor]
Operating Hours: 4110 hours/year

PM Emissions (controlled):

Emission Factor	0.572 lbs/ton processed	[AP-42 Table 11.12-2, 6/06]
Calculations	(0.572 lbs/ton) * (14.00 tons/hour) * (1 - 0.98 Ce) =	0.16 lbs/hr
	(0.16 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.33 TPY

PM_{10} Emissions (controlled):

Emission Factor	0.1560 lbs/ton processed	[AP-42 Table 11.12-2, 6/06]
Calculations	(0.156 lbs/ton) * (14.00 tons/hour) * (1 - 0.98 Ce) =	0.04 lbs/hr
	(0.04 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.09 TPY

$PM_{2.5}$ Emissions (controlled):

Emission Factor	0.08580 lbs/tons (15% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 3, 1/95]	
Calculations	(0.08580 lbs/ton) * (14.00 tons/hour) * (2 Silo) =	0.024 lbs/hr
	(0.024 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.05 TPY

Dry Mix - Transfer [SCC 3-05-011-09]

Process Rate: 14.0
Control Equipment: Baghouse
Control Efficiency (Ce): 98.0 % [Accounted in emission factor]
Transfers: 5 [Mixer→Surge Hopper→Bag Hopper→Tube Hopper→ Bag]
Operating Hours: 4110 hours/year

PM Emissions (controlled):

Emission Factor	0.00480 lbs/ton processed [AP-42 Table 11.12-2, 6/06]	
Calculations	(0.0048 lbs/ton) * (14.00 tons/hour) * (1 - 0.98 Ce) =	0.0067 lbs/hr
	(0.0067 lbs/hr) * (4110 hrs/yr) * (0.005 tons/lb) =	0.014 TPY

PM_{10} Emissions (controlled):

Emission Factor	0.0028 lbs/ton processed [AP-42 Table 11.12-2, 6/06]	
Calculations	(0.0028 lbs/ton) * (14.00 tons/hour) * (1 - 0.98 Ce) =	0.0039 lbs/hr
	(0.0039 lbs/hr) * (4110 hrs/yr) * (0.005 tons/lb) =	0.008 TPY

$PM_{2.5}$ Emissions (controlled):

Emission Factor	0.00072 lbs/tons (15% PM) [AP-42 App. B.2 - Table B.2.2, Cat. 3, 1/95]	
Calculations	(0.00072 lbs/ton) * (14.00 tons/hour) * (2 Silo) =	0.0010 lbs/hr
	(0.0010 lbs/hr) * (4110 hrs/yr) *(0.005 tons/lb) =	0.002 TPY

Unpaved Roadways (Haul Roads)

Miles Travelled: 5 Miles/Day [Estimate]
Vehicle Weight: 27.5 Tons [Mean Vehicle Weight Empty/Full]
Control Method: Water Application
Control Efficiency (Ce): 50%

Emission Factor EF = k(s/12)^a * (W/3)^b [AP-42 13.2.2.2, 11/06]

where:

EF,	Emission Factor =	lbs Emitted Per Vehicle Mile Traveled (VMT)	
k,	Empirical Constant PM =	4.9	[AP-42 Table 13.2.2-2, 11/06]
k,	Empirical Constant PM10 =	1.5	[AP-42 Table 13.2.2-2, 11/06]
k,	Empirical Constant PM2.5 =	0.15	[AP-42 Table 13.2.2-2, 11/06]
s,	Surface Material Silt Content (%) =	7.1	[AP-42 Table 13.2.2-1, 11/06]
W,	Mean Vehicle Weight (tons) =	27.5	[Applicant Provided Data]
a,	Empirical Constant PM =	0.7	[AP-42 Table 13.2.2-2, 11/06]
a,	Empirical Constant PM10 /PM2.5 =	0.9	[AP-42 Table 13.2.2-2, 11/06]
b,	Empirical Constant PM - PM2.5 =	0.45	[AP-42 Table 13.2.2-2, 11/06]

PM Emissions (controlled):

Emission Factor	EF = 4.9 * (7.1/12)^0.7 * (27.5/3)^0.45 =	9.20 lbs/VMT
Calculations	(9.20 lbs/VMT) * (5 miles/day) * (1 - 0.5 Ce) =	22.99 lbs/day
	(22.99 lbs/day) * (365 days/yr) * (0.0005 tons/lb) =	4.20 TPY

PM_{10} Emissions (controlled):

Emission Factor	EF = 1.5 * (7.1/12)^0.9 * (27.5/3)^0.45 =	2.53 lbs/VMT
Calculations	(2.53 lbs/VMT) * (5 miles/day) * (1 - 0.5 Ce) =	6.34 lbs/day
	(6.34 lbs/day) * (365 days/yr) * (0.0005 tons/lb) =	1.16 TPY

$PM_{2.5}$ Emissions:

Emission Factor	EF = * (7.1/12)^0.09 * (27.5/3)^0.45 =	0.25 lbs/VMT
Calculations	(0.25 lbs/VMT) * (5 miles/day) * (1 - 0.5 Ce) =	0.63 lbs/day
	(0.63 lbs/day) * (365 days/yr) * (0.0005 tons/lb) =	0.12 TPY

V. Existing Air Quality

Permit #3149-03 is issued for the operation of a dry mix cement manufacturing plant to be operated at the Southwest ¼ of Section 11, Township 1 South, Range 26 East, in Yellowstone County, Montana. The area in which the facility will operate has been designated unclassified/attainment with all ambient air quality standards and there are no major air pollution sources in the surrounding area. Based on the amount of controlled particulate emissions generated by the equipment, this facility is capable of complying with the applicable ambient air quality standards.

VI. Air Quality Impacts

This permit contains conditions and limitations that would protect air quality for the site and surrounding area. Air quality impacts are expected to be minor.

VII. Ambient Air Impact Analysis

Based on the information provided and the conditions established in MAQP #3149-03, the Department determined that the impact from this permitting action will be minor. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

VIII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

IX. Environmental Assessment

This permitting action will not result in an increase of emissions from the facility and is considered an administrative action; therefore, an environmental assessment is not required.

Analysis Prepared By: D. Kuenzli
Date: November 14, 2011