

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION



PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number: 07 2007 - 008 Project Number: 2006-11-095

Owner: Continental Cement Company, L.L.C.

Owner's Address: 14755 N. Outer Forty Dr., Ste. 514, Chesterfield, MO 63017

Installation Name: Continental Cement Company, L.L.C.

Installation Address: 10107 Highway 79 South, Hannibal, MO 63401

Location Information: Ralls County, S2, T56N, R4W

Application for Authority to Construct was made for: Modification to Prevention of Significant Deterioration Permit No. 072006-003 to eliminate the Saverton Quarry, to develop a new onsite quarry and to increase daily clinker production. This review was conducted in accordance with Section (8), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

JUL 24 2007

EFFECTIVE DATE

James C. Kromer
DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within eighteen months from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within eighteen months after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located with 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, Missouri 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Air Pollution Control Program, P.O. Box 176, Jefferson City, Missouri 65102-0176, attention: Construction Permit Unit.

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI AIR CONSERVATION COMMISSION



PERMIT TO CONSTRUCT

Under the authority of RSMo 643 and the Federal Clean Air Act the applicant is authorized to construct the air contaminant source(s) described below, in accordance with the laws, rules and conditions as set forth herein.

Permit Number:

Project Number: 2006-11-095

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Owner's Address: 14755 N. Outer Forty Dr., Ste. 514, Chesterfield, MO 63017

Installation Name: Continental Cement Company, L.L.C.

Installation Address: 10107 Highway 79 South, Hannibal, MO 63401

Location Information: Ralls County, S2, T56N, R4W

Application for Authority to Construct was made for:
Modification to Prevention of Significant Deterioration Permit No. 072006-003 to eliminate the Saverton Quarry, to develop a new onsite quarry and to increase daily clinker production. This review was conducted in accordance with Section (8), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*.

-
- Standard Conditions (on reverse) are applicable to this permit.
- Standard Conditions (on reverse) and Special Conditions are applicable to this permit.

EFFECTIVE DATE

DIRECTOR OR DESIGNEE
DEPARTMENT OF NATURAL RESOURCES

STANDARD CONDITIONS:

Permission to construct may be revoked if you fail to begin construction or modification within eighteen months from the effective date of this permit. Permittee should notify the Air Pollution Control Program if construction or modification is not started within eighteen months after the effective date of this permit, or if construction or modification is suspended for one year or more.

You will be in violation of 10 CSR 10-6.060 if you fail to adhere to the specifications and conditions listed in your application, this permit and the project review. In the event that there is a discrepancy between the permit application and this permit, the conditions of this permit shall take precedence. Specifically, all air contaminant control devices shall be operated and maintained as specified in the application, associated plans and specifications.

You must notify the Air Pollution Control Program of the anticipated date of start up of this (these) air contaminant source(s). The information must be made available not more than 60 days but at least 30 days in advance of this date. Also, you must notify the Department of Natural Resources Regional office responsible for the area within which you are located with 15 days after the actual start up of this (these) air contaminant source(s).

A copy of this permit and permit review shall be kept at the installation address and shall be made available to Department of Natural Resources' personnel upon request.

You may appeal this permit or any of the listed special conditions to the Administrative Hearing Commission (AHC), P.O. Box 1557, Jefferson City, Missouri 65102, as provided in RSMo 643.075.6 and 621.250.3. If you choose to appeal, you must file a petition with the AHC within thirty days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed. If it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC.

If you choose not to appeal, this certificate, the project review and your application and associated correspondence constitutes your permit to construct. The permit allows you to construct and operate your air contaminant source(s), but in no way relieves you of your obligation to comply with all applicable provisions of the Missouri Air Conservation Law, regulations of the Missouri Department of Natural Resources and other applicable federal, state and local laws and ordinances.

The Air Pollution Control Program invites your questions regarding this air pollution permit. Please contact the Construction Permit Unit at (573) 751-4817. If you prefer to write, please address your correspondence to the Air Pollution Control Program, P.O. Box 176, Jefferson City, Missouri 65102-0176, attention: Construction Permit Unit.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

The special conditions listed in this permit were included based on the authority granted the Missouri Air Pollution Control Program by the Missouri Air Conservation Law (specifically 643.075) and by the Missouri Rules listed in Title 10, Division 10 of the Code of State Regulations (specifically 10 CSR 10-6.060). For specific details regarding conditions, see 10 CSR 10-6.060 paragraph (12)(A)10. "Conditions required by permitting authority."

Continental Cement Company, L.L.C.
Ralls County, S2, T56N, R4W

1. Superseding Condition

The conditions of this permit supersede all special conditions found in the previously issued construction permit (Permit Numbers 032005-024, 092002-022 and 072006-003) from the Air Pollution Control Program.

2. Shut Down of Existing Emission Units and Operations at Installation

A. Continental Cement Company, L.L.C. shall render inoperable by removing the starters, motors or drive devices of the equipment listed below before the date all shake down related activities for the new preheater/precalciner (PH/PC) kiln system (KP-8) have been completed and the new kiln system becomes fully operational. However, in no instance, may this shake down period for the new kiln system exceed 180 days from the initial start-up date of the new kiln system. The emission units and operations listed below may not be operated after the new kiln system becomes fully operational without first undergoing New Source Review from the Air Pollution Control Program.

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
1.	CG-01B	Barge unloading (clinker)
2.	CG-04	Coal storage pile (rail)
3.	CG-07	Gypsum stockpile – stockhouse 5
4.	CG-9A	Coal unloading at rail hopper
5.	CG-09D	Truck gypsum unloading at hopper
6.	CG-9G	Coal transfer rail
7.	CG-10	Coal transfer from MBC2 to trucks
8.	CG-11	Coal transfer rail – elevator to truck
9.	CG-12, 12A	Coal transfer – elevator to coal conveyors
		<u>MBE-1/MBC-3/MBC-4</u>
10.	CG-13	Coal transfer – MBC-4 to coal silo
11.	SG-3	Indoor synthetic gypsum storage pile
12.	SG-12	Reclaim hopper loading
13.	RM-06	Clay storage pile in stockhouse 5
14.	RM-11	Limestone reclaim hopper
15.	RM-12	Belt conveyor to silos – raw material conveyor

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

16. RM-13 Crushed raw material storage pile
17. RM-13A Crushed raw material conveyor transfer
18. RM-14 Raw material storage silos
19. RM-14A Limestone storage silos
20. RM-14B Clay storage silos
21. RM-15 Secondary crusher – limestone
22. RM-16 Transfer point limestone
23. RM-17 Raw material grinding and drying
24. RM-18 Secondary crusher – clay
25. RM-19 Transfer point clay
26. KP-01, 01A Cement kiln, cement kiln auxiliary fuel
27. KP-02A Endloader transfer
28. CM-01 Clinker cooler
29. CM-01A Clinker discharge via screw conveyor
30. CM-02 Clinker transfer drag to belt conveyor
31. CM-02A Clinker discharge to apron pan
32. CM-05 Clinker storage pile – stockhouse #5
33. CM-10B Finish mills #1 and #2 cement coolers
34. SH-06 Cement handling – bag packing

- B. Continental Cement Company, L.L.C. shall notify the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 15 days after the following events occur:
 - 1) The date of initial start-up of the new PH/PC kiln system (KP-8),
 - 2) The date the shake down period ends and the new kiln system becomes fully operational or 180 days after initial start-up of the new kiln system, whichever is sooner, and
 - 3) The date each unit listed in Special Condition Number 2.A is rendered inoperable.

3. Cessation of Transport of Materials on Existing Haul Roads
 - A. Continental Cement Company, L.L.C. shall cease transport of the stated material on the haul roads listed below before the date all shake down related activities for the new PH/PC kiln system (KP-8) have been completed and the new kiln system becomes fully operational. However, in no instance, may this shake down period for the new kiln system exceed 180 days from the initial start-up date of the new kiln system. The haul roads listed below may not be used to transport the listed materials after the new kiln system becomes fully operational without first undergoing New Source Review from the Air Pollution Control Program.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
1.	CG-02A	Unpaved haul road – trucks to coal/coke stockpiles
2.	CG-02B	Paved haul road – trucks to coal/coke stockpiles
3.	CG-03A	<u>Unpaved haul road – clinker from stone entrance to stockhouse 5</u>
4.	CG-03B	Paved haul road – clinker from stone entrance to stockhouse 5
5.	CG-03C	Unpaved haul road – clinker truck to hopper
6.	CG-03D	<u>Unpaved haul road – coal to stockhouse 5</u>
7.	CG-03E	Paved haul road – coal to stockhouse 5
8.	CG-05	Unpaved haul road – coal from stockpile to hopper
9.	CG-06A	<u>Unpaved haul road – gypsum from stone entrance to stockhouse 5</u>
10.	CG-06B	Paved haul road – gypsum from stone entrance to stockhouse 5
11.	CG-08	Unpaved haul road – gypsum from stockhouse 5 to hopper
12.	CG-18	<u>Unpaved haul road – Syn gyp from entrance to syn gyp bldg</u>
13.	CG-20	Haul road unpaved – outdoor syn gyp storage pile to syngyp building
14.	RM-05A	Haul road – plant entrance to stockhouse 5 (clay)
15.	RM-05B	<u>Haul road – plant entrance to stockhouse 5 (clay)</u>
16.	RM-07	Haul road – clay from stockhouse 5
17.	RM-24	Paved Road - Iron Ore from Entrance to Storage Building
18.	CM-06	<u>Unpaved haul road – Clinker/fines from Stockhouse #5 to Hopper</u>
19.	CM-14	Unpaved haul road – clinker outside stockpile to stockhouse #5
20.	KP-04	Unpaved haul road – waste dust to landfill
21.	AS-1B	<u>Paved haul road – entrance to offsite soils pile</u>
22.	AS-1A	Unpaved haul road – entrance to offsite soils pile
23.	SG-11	Haul road – gypsum from entrance to syngyp building

B. Continental Cement Company, L.L.C. shall notify the Air Pollution Control Program's Enforcement Section, P.O. Box 176, Jefferson City, MO 65102, no later than 15 days after the following events occur:

- 1) The date of initial start-up of the new PH/PC kiln system (KP-8),
- 2) The date the shake down period ends and the new kiln system becomes fully operational or 180 days after initial start-up of the new kiln system, whichever is sooner, and

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The permittee is authorized to construct and operate subject to the following special conditions:

- 3) The date each haul road listed in Special Condition Number 3.A ceases to transport the material listed.
4. Restriction on the Maximum Amount of Clinker Production Allowed From the New PH/PC Kiln System
 - A. Continental Cement Company, L.L.C. shall not produce over 3,500 tons of clinker from the new kiln system (KP-8) per day.
 - B. Continental Cement Company, L.L.C. shall not produce over 1,204,500 tons of clinker from the new kiln system (KP-8) per year, on a 12 month rolling average.
 - C. Continental Cement Company, L.L.C. shall maintain an accurate record of clinker production from the new kiln system (KP-8). The installation shall record the daily and annual totals of clinker production from this emission unit.
5. Allowable Fuels for PH/PC Kiln System
 - A. Continental Cement Company, L.L.C. shall combust the following fuels only in the new PH/PC kiln system:
 - 1) Coal
 - 2) Petroleum coke
 - 3) Solid hazardous waste derived fuel (SHWDF)
 - 4) Liquid hazardous waste derived fuel (LHWDF)
 - 5) Natural gas (start-up/malfunction only)
 - 6) Synthetic gas
 - 7) Alternative non-hazardous waste fuels, including chipped tires, shredded plastics, plastic-backed paper, autoplant sludge, automobile fluff, wastewater sludges, industrial resins, furniture manufacturing sawdust and wood waste, plastic and starch abrasives, shredded shingles, wood waste, tank bottoms, spent carbon, off-spec industrial products, mixed industrial debris and other residential residues.
 - B. Continental Cement Company, L.L.C. shall control emissions of mercury, semi-volatile and low volatile metals when utilizing any of the alternative non-hazardous waste fuels listed in Special Condition Number 5.A.7) by following the provisions outlined below:
 - 1) Stack emissions shall not exceed the following limits:
 - a) Mercury - 120 micrograms per dry standard cubic meter ($\mu\text{g}/\text{dscm}$) corrected to 7 percent oxygen.
 - b) Lead and Cadmium - 180 $\mu\text{g}/\text{dscm}$, combined emissions, corrected to 7 percent oxygen.

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- c) Arsenic, beryllium and chromium - 54 $\mu\text{g}/\text{dscm}$, combined emissions, corrected to 7 percent oxygen.
- 2) Compliance with emission limits shall be determined through stack testing during regularly scheduled comprehensive performance testing for compliance with the HWC MACT. Each fuel listed under Special Condition Number 8.A.7) must undergo stack testing.
- 3) In lieu of stack testing, Continental Cement Company, L.L.C. may conduct the following activities:
 - a) Prior to feeding the material, an analysis of each feedstream must be completed. A feedstream analysis plan must be developed and made available to Department of Natural Resources' employees upon request. The feedstream analysis plan must specify:
 - (i) The parameters used to analyze each feedstream,
 - (ii) The method that will be used for the analysis,
 - (iii) How the analysis will be used to document compliance with the emission limits above,
 - (iv) The test methods used to obtain the analyses,
 - (v) The sampling method used to obtain a representative sample of each feedstream to be analyzed, and
 - (vi) The frequency with which the initial analysis of the feedstream will be repeated to ensure that the analysis is accurate and up to date.
 - b) Determine the feedrate of mercury, semi-volatile metals and low volatile metals from all feedstreams.
 - c) Determine the stack gas flowrate using a continuous monitoring system.
 - d) Calculate a maximum theoretical emissions concentration (MTEC) for each metal by dividing the feedrate by the gas flowrate, assuming all mercury, semi-volatile metals and low volatile metals, less system removal efficiency (SRE) as defined in 40 CFR 63, from all feedstreams is emitted.
 - e) Continuously calculate and record the MTEC and interlock the MTEC to the automatic waste feed cutoff to stop feed of hazardous waste or non-hazardous waste to the kiln, or
 - f) Establish a minimum gas flowrate limit and a maximum feed rate limit of mercury, semi-volatile metals and low volatile metals to ensure that the MTEC is below the emission standards above. The flowrate limit and the feedrate limit should be interlocked to the automatic waste feed cutoff to stop feed of hazardous waste or alternate non-hazardous waste fuel to the kiln.

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The permittee is authorized to construct and operate subject to the following special conditions:

6. Haul Road and Stockpile PM₁₀ Controls at Continental Cement Company (non-BACT controls)

A. Unpaved Haul Roads/Vehicular Activity Areas

- 1) Continental Cement Company, L.L.C. shall control the emissions of PM₁₀ from the vehicular traffic areas of the following storage piles and unpaved haul roads so as to achieve 90% control of PM₁₀ by **either** documented watering or the application of chemical dust suppressant:

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
1.	RM-21	Cave Clay Storage Pile
2.	RM-22	Clay Storage Pile
3.	CM-15	Outside Clinker Storage Pile
4.	RM-23	Clay from Cave to Primary Crusher Haul Road
5.	RM-04A	Quarries to Primary Crusher – A1 Haul Road
6.	RM-04B	Quarries to Primary Crusher – Sims Haul Road
7.	RM-20B	Clay from Entrance to Cave Storage Haul Road
8.	SF-34	Waste Fuel Delivery to Fuel Prep Haul Road
9.	SF-37	LWDF from Rail to Tanks Haul Road

- 2) Chemical Dust Suppressant

- a) The suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) shall be applied in accordance with the manufacturer's suggested application rate and re-applied as necessary to achieve control of fugitive emissions from these areas.
- b) Continental Cement Company, L.L.C. shall keep records of the time, date, and the amount of material applied for each application of chemical dust suppressant agent on these areas.

- 3) Documented Watering

- a) Water shall be applied in accordance with a recommended application rate of 100 gallons per day per 1,000 square feet of unpaved/untreated surface area of haul roads/vehicle activity areas as necessary to achieve control of fugitive emissions from these areas.
- b) Continental Cement Company, L.L.C. shall maintain a log that documents daily water applications. This log shall include, but is not limited to, date and volumes (e.g., number of tanker applications and/or total gallons used) of water application. The log shall also record rationale for not applying water on days the areas are in use (e.g., meteorological situations, precipitation events, freezing,

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etc.). Meteorological precipitation of any kind, (e.g. a quarter inch or more rainfall, sleet, snow, and/or freeze thaw conditions) which is sufficient in the amount or condition to achieve control of fugitive emissions from these areas while the areas are in use, may be substituted for water application until such time as conditions warrant application of water.

- c) Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would be inadvisable for traffic safety reasons, or when there will be no traffic on the roads. Continental Cement Company, L.L.C. shall record a brief description of such events in the same log that documents the watering.

B. Paved Haul Roads

- 1) Continental Cement Company, L.L.C. shall control the emissions of PM₁₀ from the following haul roads so as to achieve 95% control of PM₁₀ by periodically watering and washing its surface:

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
1.	SH-10	Cement Product Out Haul Road
2.	SF-33	Waste Fuel Delivery to Fuel Prep Haul Road
3.	SF-36	LWDF from Rail to Tanks Haul Road
4.	SF-53	Solid Fuel Feed Carts Haul Road

- 2) Maintenance and/or repair of the surfaces will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.

- C. Continental Cement Company, L.L.C. shall not process clay in the clay storage cave (RM-21) and the outdoor clay storage pile (RM-22) concurrently. Continental Cement Company, L.L.C. shall maintain an accurate record of clay handling to insure that material is not being processed concurrently from RM-21 and RM-22.

7. Point Source Control of PM₁₀ Emissions (non-BACT controls) – Crusher Building

- A. Continental Cement Company, L.L.C. shall control the emissions of PM₁₀ from the crusher building by holding the building under negative pressure and venting the primary crusher (RM-9) and two transfer points (RM-10.1, 10.2) to a baghouse (LDC-4). The negative pressure should be maintained such that no visible emissions [zero percent (0%) opacity] are allowed to occur from the three points (RM-9, RM-10.1 and RM-10.2) except those gases being drawn into the baghouse intake for each point.

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The permittee is authorized to construct and operate subject to the following special conditions:

- B. In lieu of performing visible emissions checks on each emission point, Continental Cement Company, L.L.C. may demonstrate negative building pressure by using a visual indicator such as streamers, talc puff test, etc. at building openings that are not closed during normal operations, i.e., conveyor openings, etc. Each opening in the building must indicate the presence of negative pressure for compliance.
 - C. Continental Cement Company, L.L.C. shall perform a visible emissions check on each of the three emissions points (RM-9, RM-10.1 and RM-10.2) or a visual indicator check on the building at least once in every 24-hour period, while crushing equipment is in operation. Continental Cement Company, L.L.C. shall keep records of the results of the daily checks.
8. Control of Nitrogen Oxides (NO_x) Emissions (non-BACT controls)
- A. Continental Cement Company, L.L.C. shall control the emissions of NO_x from the new PH/PC kiln system (KP-08) by installing a multi-stage preheater and a low-NO_x calciner.
 - B. The preheater and calciner must be in use at all times when the new PH/PC kiln system is in operation, and shall be operated and maintained in accordance with the manufacturer's specifications.
9. Standards of Performance for Best Available Control Technology (BACT) for PM₁₀
- A. Unpaved Haul Roads/Vehicular Activity Areas
 - 1) Continental Cement Company, L.L.C. shall control the emissions of PM₁₀ from the vehicular traffic areas of the following storage piles and unpaved haul roads so as to achieve 90% control of PM₁₀ by **either** documented watering or the application of chemical dust suppressant:

<u>No.</u>	<u>Unit ID</u>	<u>Emission Unit Description</u>
1.	RM-4C	Hi-Mag Quarry to Crusher Haul Road
2.	RM-24A	Iron Ore from Entrance to Storage Building Haul Road
3.	RM-30	Shale Quarry Haul Road
4.	RM-60	<u>Raw Material Storage – Limestone</u>
5.	RM-61	Raw Material Storage – Shale
6.	RM-62	Raw Material Storage – Clay
7.	RM-63	<u>Raw Material Storage – Iron Ore</u>
8.	CM-30	Clinker Storage Pile - Cave

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The permittee is authorized to construct and operate subject to the following special conditions:

9. CM-31/
32/31A/
32A Clinker from Outside Stockpile to Cave Haul Road
10. KP-04A Waste Dust Baghouse to Artificial Soils Haul Road
11. CG-02AA Trucks to Coal/Coke Stockpiles Haul Road
12. CG-18A Syn Gyp from Entrance to Syn Gyp Building Haul Road
13. AS-1AA Entrance to Offsite Soils Pile Haul Road

- 2) Chemical Dust Suppressant
 - a) The suppressant (such as magnesium chloride, calcium chloride, lignosulfonates, etc.) shall be applied in accordance with the manufacturer's suggested application rate and re-applied as necessary to achieve control of fugitive emissions from these areas.
 - b) Continental Cement Company, L.L.C. shall keep records of the time, date, and the amount of material applied for each application of chemical dust suppressant agent on these areas.
- 3) Documented Watering
 - a) Water shall be applied in accordance with a recommended application rate of 100 gallons per day per 1,000 square feet of unpaved/untreated surface area of haul roads as necessary to achieve control of fugitive emissions from these areas.
 - b) Continental Cement Company, L.L.C. shall maintain a log that documents daily water applications. This log shall include, but is not limited to, date and volumes (e.g., number of tanker applications and/or total gallons used) of water application. The log shall also record rationale for not applying water on days the areas are in use (e.g., meteorological situations, precipitation events, freezing, etc.).
 - c) Meteorological precipitation of any kind, (e.g. a quarter inch or more rainfall, sleet, snow, and/or freeze thaw conditions) which is sufficient in the amount or condition to achieve control of fugitive emissions from these areas while the areas are in use, may be substituted for water application until such time as conditions warrant application of water.
 - d) Watering may also be suspended when the ground is frozen, during periods of freezing conditions when watering would

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

be inadvisable for traffic safety reasons, or when there will be no traffic on the roads. Continental Cement Company, L.L.C. shall record a brief description of such events in the same log that documents the watering.

- B. Paved Haul Road
- 1) Continental Cement Company, L.L.C. shall control the emissions of PM₁₀ from the Lime Haul Road (LM-01) so as to achieve 95% control of PM₁₀ by periodically watering and washing its surface.
 - 2) Maintenance and/or repair of the surfaces will be conducted as necessary to ensure that the physical integrity of the pavement is adequate to achieve control of fugitive emissions from these areas while the plant is operating.
- C. SHWDF Storage Pile Requirements
- 1) The Kiln Burner Building (BB-1) that houses the SHWDF storage pile (SF-61) shall be held under negative pressure and vented by the secondary air fans at the clinker cooler to the kiln whenever the kiln is in operation.
 - 2) When the kiln is not operating, back-up fans will vent emissions to an activated carbon system.
 - 3) These fans shall be equipped with monitors, which shall monitor the vacuum on the fans. The monitors shall be located such that Department of Natural Resources' employees may easily observe them.
 - 4) Continental Cement Company, L.L.C. shall cease operations at the BB-1 Building should negative pressure no longer exist at the fans. Operations at the BB-1 Building may resume upon restoration of negative pressure.
- D. Point Sources Requirement – Continental Cement Company, L.L.C. shall enclose and vent each PM₁₀ point source listed in Table A.1, *Point Source Baghouse/Cartridge Filter Control Devices*, using baghouses or cartridge filters, as specified in Table A.1. The enclosure of the emissions units shall be constructed and maintained such that no visible emissions [zero percent (0%) opacity from the enclosure] are allowed to occur from these sources except through the gases exiting from the baghouses or cartridge filters.
- 1) Continental Cement Company, L.L.C. shall not emit more than 0.007 grains per dry standard cubic foot (gr/dscf) of filterable PM₁₀ from any baghouse or cartridge filter except the main stack baghouses (316BF1 and 326BF1) and the clinker cooler stack

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The permittee is authorized to construct and operate subject to the following special conditions:

- baghouse (356BF1).
- 2) Continental Cement Company, L.L.C. shall not emit more than 0.01 gr/dscf of filterable PM₁₀ from the clinker cooler stack baghouse (356BF1).
- 3) Continental Cement Company, L.L.C. shall not emit more than 0.0069 gr/dscf of total PM₁₀ from the main stack baghouses (316BF1 and 326BF1). Total PM₁₀ consists of both condensable and filterable fractions.
- 4) Compliance Testing for Grain Loading
 - a) Continental Cement Company, L.L.C. shall test each of the following baghouses subject to this emission limitation for initial compliance demonstration.
 - (i) Main Stack – cement kiln (316BF1 and 326BF1)
 - (ii) Clinker cooler stack (356BF1)
 - (iii) Finish mill air separator (546BF1)
 - b) Continental Cement Company, L.L.C. shall test ten percent by group (listed below) of the baghouses/cartridge filters (not specifically listed above) subject to this emission limitation for initial compliance demonstration.
 - (i) Group 1 – All units with flow rates less than 2000 standard cubic feet per minute (scfm),
 - (ii) Group 2 – All units with flow rates equal to or exceeding 2000 scfm but less than or equal to 5000 scfm,
 - (iii) Group 3 – All units with flow rates exceeding 5000 scfm.
- 5) Emissions from the main stack of the new PH/PC kiln system (stack ID number 318SK1) shall not exceed the following emission limits, dependent on the limestone raw mix combination, based on a 30-day rolling average. These limits are for total PM₁₀, consisting of both condensable and filterable fractions.
 - a) When the raw mix contains <= 20% Kimmswick limestone, emissions shall not exceed 0.33 pounds of total PM₁₀ per ton of clinker.
 - b) When 20% < raw mix <= 40% Kimmswick limestone, emissions shall not exceed 0.37 pounds of total PM₁₀ per ton of clinker.
 - c) When 40% < raw mix <= 60% Kimmswick limestone, emissions shall not exceed 0.42 pounds of total PM₁₀ per ton of clinker.
 - d) When 60% < raw mix <= 80% Kimmswick limestone, emissions shall not exceed 0.47 pounds of total PM₁₀ per ton

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The permittee is authorized to construct and operate subject to the following special conditions:

- of clinker.
 - e) When raw mix > 80% Kimmswick limestone, emissions shall not exceed 0.516 pounds of total PM₁₀ per ton of clinker.
 - 6) Compliance Demonstration
 - a) The installation shall demonstrate compliance with each tiered limit by performing compliance testing within 90 days of initiating the use of a raw material mix constituting a new tier for which a compliance demonstration has not yet been performed (e.g., within 90 days of beginning to use a 40% < Kimmswick <= 60% raw material mix).
 - b) An annual compliance demonstration shall be performed for any raw material mix tier group utilized for more than 12 consecutive months. When making a change from one raw material tier group to another, Continental Cement Company, L.L.C. shall document the tier groups being switched from and to, and the date and time the switch was made.
 - c) Each compliance demonstration shall be made using stack testing results from at least three 1-hour runs.
- E. Emergency Generator
 - 1) Continental Cement Company, L.L.C. shall not emit more than 0.33 pounds of total PM₁₀ per hour of operation from the emergency generator (MS-7) in order to meet BACT.
 - 2) The installation shall demonstrate compliance with this limit by:
 - a) Initial compliance demonstration, consisting of at least three 1-hour runs, or
 - b) Submittal of manufacturer's stack test results to the Air Pollution Control Program's Compliance Section for the specific unit installed on site. In the absence of specific unit data a similarly configured unit's test data can be submitted. Upon approval of the manufacturer's stack testing results by the Director, the initial compliance demonstration is not needed.
- 10. Standards of Performance for BACT for Sulfur Oxides (SO_x)
 - A. Kiln/Coal Mill Preheater
 - 1) Continental Cement Company, L.L.C. shall control the emissions of SO₂ from the new PH/PC kiln system (KP-08) by installing spray drying systems on the alkali bypass stream and on the stream that normally vents to the raw mill, when the raw mill is not in operation (raw mill bypass stream) in order to meet BACT.

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The permittee is authorized to construct and operate subject to the following special conditions:

- a) The alkaline spray dryer on the alkali bypass line must be in use at all times when kiln exhaust is routed to the alkali bypass line.
 - b) The raw mill bypass lime spray dryer must be in use at all times that the raw mill is not in operation.
 - 2) The spray dryers shall be operated and maintained in accordance with the manufacturer's specifications.
 - 3) Emissions from the main stack of the new PH/PC kiln system (stack ID number 318SK1) shall not exceed the following emission limits, dependent on the limestone raw mix combination, based on a 30-day rolling average.
 - a) When the raw mix contains $\leq 20\%$ Kimmswick limestone, emissions shall not exceed 0.89 pounds of SO_2 per ton of clinker.
 - b) When $20\% < \text{raw mix} \leq 40\%$ Kimmswick limestone, emissions shall not exceed 1.15 pounds of SO_2 per ton of clinker.
 - c) When $40\% < \text{raw mix} \leq 60\%$ Kimmswick limestone, emissions shall not exceed 1.41 pounds of SO_2 per ton of clinker.
 - d) When $60\% < \text{raw mix} \leq 80\%$ Kimmswick limestone, emissions shall not exceed 1.67 pounds of SO_2 per ton of clinker.
 - e) When raw mix $> 80\%$ Kimmswick limestone, emissions shall not exceed 1.93 pounds of SO_2 per ton of clinker.
 - 4) To document the amount of each type of limestone utilized, Continental Cement Company, L.L.C. will record the mass of limestone delivered to the process from each quarry area. The respective mass of Kimmswick and Burlington limestones placed into the process can be measured.
 - 5) Continental Cement Company, L.L.C. shall operate continuous SO_2 emission monitors (CEMS) to measure, record and report SO_2 emissions compliance.
- B. Emergency Generator Control
- 1) Continental Cement Company, L.L.C. shall not emit more than 0.01 pounds of SO_x per hour of operation from the emergency generator (MS-7) in order to meet BACT.
 - 2) The installation shall demonstrate compliance with this limit by:
 - a) Initial compliance demonstration, consisting of at least three 1-hour runs, or
 - b) A mass balance calculation can be submitted for SO_2 as the

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- concentration of sulfur in the diesel fuel has a direct impact on emissions. A calculation can be submitted with the actual sulfur content of the diesel fuel and all sulfur emissions reporting as SO₂ to show compliance. Upon approval of the calculation by the Director, the initial compliance demonstration is not needed.
- c) Submittal of manufacturer's stack test results to the Air Pollution Control Program's Compliance Section for the specific unit installed on site. Upon approval of the manufacturer's stack testing results by the Director, the initial compliance demonstration is not needed.
11. Standards of Performance for BACT for Carbon Monoxide (CO) and Volatile Organic Compounds (VOC)
- A. Kiln/Coal Mill Preheater
- 1) Continental Cement Company, L.L.C. shall use good combustion practices at all times for the new PH/PC kiln system (KP-8) and the coal mill preheater (CG-25) in order to meet BACT.
 - 2) Emissions from the main stack of the new PH/PC kiln system (stack ID number 318SK1) shall not exceed the following emission limits, dependent on the limestone raw mix combination, based on a 30-day rolling average.
 - a) When the raw mix contains $\leq 20\%$ Kimmswick limestone, emissions shall not exceed 1.82 pounds of CO per ton of clinker.
 - b) When $20\% < \text{raw mix} \leq 40\%$ Kimmswick limestone, emissions shall not exceed 2.27 pounds of CO per ton of clinker.
 - c) When $40\% < \text{raw mix} \leq 60\%$ Kimmswick limestone, emissions shall not exceed 2.71 pounds of CO per ton of clinker.
 - d) When $60\% < \text{raw mix} \leq 80\%$ Kimmswick limestone, emissions shall not exceed 3.16 pounds of CO per ton of clinker.
 - e) When raw mix $> 80\%$ Kimmswick limestone, emissions shall not exceed 3.60 pounds of CO per ton of clinker.
 - 3) Emissions from the main stack of the new PH/PC kiln system (stack ID number 318SK1) shall not exceed the following emission limits, dependent on the limestone raw mix combination, based on a 30-day rolling average.
 - a) When the raw mix contains $\leq 20\%$ Kimmswick limestone, emissions shall not exceed 0.05 pounds of VOC per ton of clinker.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- b) When 20% < raw mix <= 40% Kimmswick limestone, emissions shall not exceed 0.07 pounds of VOC per ton of clinker.
 - c) When 40% < raw mix <= 60% Kimmswick limestone, emissions shall not exceed 0.084 pounds of VOC per ton of clinker.
 - d) When 60% < raw mix <= 80% Kimmswick limestone, emissions shall not exceed 0.10 pounds of VOC per ton of clinker.
 - e) When raw mix > 80% Kimmswick limestone, emissions shall not exceed 0.12 pounds of VOC per ton of clinker.
 - 4) To document the amount of each type of limestone utilized, Continental Cement Company, L.L.C. will record the mass of limestone delivered to the process from each quarry area. The respective mass of Kimmswick and Burlington limestones placed into the process can be measured.
 - 5) Continental Cement Company, L.L.C. shall operate continuous CO emission monitors to measure, record and report CO emissions compliance.
 - 6) Continuous CO emission monitors shall be used as a surrogate for VOC limitations compliance.
- B. Emergency Generator
- 1) Continental Cement Company, L.L.C. shall not emit more than 2.08 pounds of CO per hour of operation from the emergency generator (MS-7) in order to meet BACT.
 - 2) The installation shall demonstrate compliance with this limit by:
 - a) Initial compliance demonstration, consisting of at least three 1-hour runs, or
 - b) Submittal of manufacturer's stack test results to the Air Pollution Control Program's Compliance Section for the specific unit installed on site. In the absence of specific unit data a similarly configured unit's test data can be submitted. Upon approval of the manufacturer's stack testing results by the Director, the initial compliance demonstration is not needed.
 - 3) Continental Cement Company, L.L.C. shall develop an Operating and Maintenance Manual for the emergency generator (MS-7) based on manufacturer's specifications and recommendations for unit operation to ensure that good combustion practice of ultra low sulfur diesel fuel occurs as a routine operating practice. This manual shall be finalized prior to commencement of operation of

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

the generator.

- a) System operators shall be provided training on those procedures prior to operation of the generator.
- b) A written record will be maintained detailing the names of employees, date of the initial training, and dates of subsequent review of the good combustion practice procedures.

C. LHWDF Storage Tanks

Continental Cement Company, L.L.C. shall vent all vapors emanating from the LHWDF tanks (SF-3C and SF-3D) to a carbon adsorption bed.

12. PH/PC Kiln System Operating Conditions

A. Sulfur-to-Alkali Ratio

- 1) Continental Cement Company, L.L.C. shall maintain a sulfur-to-alkali ratio in the kiln between 0.8 and 1.2 until such time that the installation is able to provide a demonstration that SO₂ emissions are unaffected by fuel sulfur content, as described in Special Condition 12.B below. This sulfur-to-alkali ratio range may be revised based on actual kiln operating conditions upon request of Continental Cement Company, L.L.C. and approval by the Director.
- 2) The installation shall keep a log containing test results of the ratio on a daily basis for compliance.

B. Continental Cement Company, L.L.C. may perform an evaluation of the impact of fuel sulfur content on SO₂ emissions from the new PH/PC kiln system's (KP-8) main stack in accordance with the procedures outlined below.

- 1) Fuels with a representative range of sulfur content should be evaluated, including fuel containing the maximum fuel sulfur content Continental Cement Company, L.L.C. intends to utilize in the new kiln system. Each evaluation period shall last for a minimum of 24-hours. There must be, at a minimum, one evaluation period per 1% increase in fuel sulfur content (e.g. 0% sulfur, 1% sulfur, 2% sulfur).
- 2) SO₂ emissions shall be recorded using CEMS for each evaluation period.
- 3) The evaluation shall be conducted during periods of representative conditions and should also be conducted at the maximum process/production rates or within ten percent (10%) of this rated capacity, not to include periods of start-up, shutdown, or

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The permittee is authorized to construct and operate subject to the following special conditions:

- malfunction.
- 4) Two (2) copies of a written report of the evaluation results must be submitted to the Director within 90 days of completion of the evaluation. The report must include legible copies of the CEMS raw data sheets, test results for fuel and raw material sulfur content and the recorded values for each operating parameter detailed below. The report must contain a statistical analysis of the CEMS readings.
 - a) Fuel sulfur content – Continental Cement Company, L.L.C. shall test the sulfur content of the fuel used during each evaluation period. The fuel sulfur content must be recorded and remain constant during each evaluation period.
 - b) Raw material sulfur content – Continental Cement Company, L.L.C. shall test the sulfur content of the raw material used during each evaluation period. The raw material feed sulfur content must be recorded and remain constant during each evaluation period.
 - c) Raw mill hourly throughput - The raw mill must be in operation during each evaluation period. The hourly throughput for the raw mill must be recorded and remain constant during each evaluation period.
 - d) Coal mill throughput - The coal mill shall be operated for the same fraction of each evaluation period. The hourly throughput for the coal mill must remain constant while the coal mill is in operation during each evaluation period. The hours of operation and the hourly throughput must be recorded during the evaluation.
 - e) Alkali bypass scrubber – The alkali bypass scrubber must be in operation during each evaluation period. The hourly alkaline slurry injection flow rate must be recorded and remain constant during each evaluation period
 - 5) Upon approval of the Director, based on a finding that changes in SO₂ emissions are statistically insignificant when compared to fuel sulfur content, Continental Cement Company, L.L.C. may cease testing and recording the sulfur-to-alkali ratio, and related requirements found at Special Condition 12.A for fuels having a sulfur content up to the maximum fuel sulfur content included in the demonstration.
13. Emergency Generator Operating Conditions
- A. Continental Cement Company, L.L.C. shall operate the emergency generator (MS-7) only in the event of interruption of electric power from

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the local utility and for short periods of time to perform maintenance and operational readiness testing.

- B. Continental Cement Company, L.L.C. shall not operate the emergency generator for more than 500 hours annually. The generator shall be equipped with a non-resettable meter to record the annual hours of operation for compliance.
 - C. The sulfur content of the diesel fuel combusted in the emergency generator at the installation shall not exceed 15 parts per million by weight (ppmw). Continental Cement Company, L.L.C. shall obtain and record, for each fuel oil delivery from the fuel vendors the sulfur content for the diesel fuel. The installation also has the option to conduct their own fuel analysis.
14. Baghouse/Cartridge Filter Operating Conditions
- A. The baghouses and cartridge filters specified in Table A.1, *Point Source Baghouse/Cartridge Filter Control Devices*, must be in use at all times when that associated piece of equipment is in operation, and shall be operated and maintained in accordance with the manufacturer's specifications. These baghouses/cartridge filters shall be equipped with a gauge, meter or indicator which indicates the pressure drop across the control device. These gauges, meters or indicators shall be located such that the Department of Natural Resources' employees may easily observe them.
 - B. Pressure Drop Monitoring
 - 1) Continental Cement Company, L.L.C. shall monitor and record the operating pressure drop across the baghouses/cartridge filters at least once in every 24-hour period when the associated equipment is in operation.
 - 2) Alternatively, Continental Cement Company, L.L.C. may install an alarm system which checks a pressure drop sensing device for each baghouse during each system start-up. If the system remains in continuous operation, the alarm check will be initiated every 24 hours. If the operating pressure drop across the baghouse does not meet the setting required for proper operation, an alarm will be activated at the operator's console. Each alarm event will be recorded in the operating record, and corrective action will be initiated within the hour.
 - C. Appropriate replacement filters for each baghouse/cartridge filter shall be

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The permittee is authorized to construct and operate subject to the following special conditions:

kept on hand at all times. These replacement filters shall be made of fibers appropriate for operating conditions expected to occur (i.e. temperature limits, acidic and alkali resistance, and abrasion resistance).

- D. Continental Cement Company, L.L.C. shall maintain an operating and maintenance log for each baghouse/cartridge filter specified in Table A.1, *Point Source Baghouse/Cartridge Filter Control Devices* which shall include the following:
- 1) Incidents of malfunction including the dates and duration of the event, the probable cause, any corrective actions taken and the impact on emissions due to the malfunction,
 - 2) Any maintenance activities conducted on the unit, such as parts replacement, replacement of equipment, etc., and
 - 3) A written record of regular inspection schedule, the date and results of all inspections including any actions or maintenance activities that result from that inspection.
15. Emissions Limitations Resulting from Ambient Air Quality Analysis
- A. Continental Cement Company, L.L.C. shall not emit more than 75.32 pounds of total PM₁₀ per hour from the main stack. This limit is for total PM₁₀, consisting of both condensable and filterable fractions. The installation shall demonstrate compliance with this limit through annual compliance demonstration, consisting of at least three 1-hour runs.
- B. Continental Cement Company, L.L.C. shall not emit more than 550 pounds of SO₂ per hour from the main stack based on a 3-hour rolling average. The installation shall demonstrate compliance with this condition using the SO₂ monitoring system established in Special Condition Number 10.A.5).
- C. Continental Cement Company, L.L.C. shall not emit more than 281.46 pounds of SO₂ per hour from the main stack based on a 24-hour rolling average. The installation shall demonstrate compliance with this condition using the SO₂ monitoring system established in Special Condition Number 10.A.5).
- D. Continental Cement Company, L.L.C. shall not emit more than 1,300 pounds of CO per hour, based on a 1-hour rolling average. The installation shall demonstrate compliance with this condition using the CO monitoring system established in Special Condition Number 11.A.5).
16. Restriction of Operations Resulting from Ambient Air Quality Analysis

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

- A. Continental Cement Company, L.L.C. shall not process/handle more than 465 tons per day of clay in any piece of equipment from hauling into the plant through load-in to the clay storage piles (RM-20A, RM-20B, RM-21 and RM-22).
- B. Continental Cement Company, L.L.C. shall not process/handle more than 3,600 tons per day of clay in any piece of equipment from load-out from the clay storage piles to the primary raw materials crusher (RM-21, RM-22 and RM-23).
- C. Continental Cement Company, L.L.C. shall not process/handle more than 3,600 tons per day of shale from truck loading through hauling to the primary raw materials crusher (RM-29 and RM-30).
- D. Continental Cement Company, L.L.C. shall not process/handle a combined total of shale and clay more than 3,600 tons per day from the truck unloading at the primary raw materials primary crusher through unloading at the raw material storage building (RM-8, RM-9, RM-10.1, RM-10.2, RM-31, RM-54, RM-55, RM-56, RM-61 and RM-62).
- E. Continental Cement Company, L.L.C. shall not process/handle more than 150 tons per day of iron ore from hauling into plant through unloading at the raw material storage building (RM-24A and RM-63).
- F. Under no circumstances may Continental Cement Company, L.L.C. store ash, or any other clay substitute, in the outdoor clay storage pile (RM-22).
- G. Continental Cement Company, L.L.C. shall not process/handle more than 3,500 tons per day of limestone from the A1 Quarry (RM-01A, RM-03A and RM-04A).
- H. Continental Cement Company, L.L.C. shall not process/handle more than 7,000 tons per day of limestone each from the Sims Quarry or Hi-Mag Quarry (RM-01B, RM-01C, RM-03B, RM-03C, RM-04B and RM-04C).
- I. Continental Cement Company, L.L.C. shall not process/handle more than 7,000 tons per day of limestone from the limestone hopper through unloading at the raw material storage building (RM-50, RM-51, RM-51-1, RM-51-2, RM-51.3, RM-52-1, RM-52-2, RM-53 and RM-60).
- J. Continental Cement Company, L.L.C. shall not haul more than a combined total of 250 tons per day of gypsum (synthetic or natural) on the

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The permittee is authorized to construct and operate subject to the following special conditions:

haul road (CG-18A) in and out of the plant.

- K. Continental Cement Company, L.L.C. shall not process/handle more than 2,400 tons per day of natural gypsum (CG-9B, CG-9E, CG-9F, CG-14, CG-14A, CG-14B, CG-14C, CG-14D and CG-16)
- L. Continental Cement Company, L.L.C. shall not haul more than 20 tons per day of lime into the plant on the haul road (LM-1).
- M. Continental Cement Company, L.L.C. shall not process/handle more than a combined total of coal and pet coke more than 1,800 tons per day from barge unloading or truck hauling from offsite to the coal/coke storage pile (CG-1A, CG-02AA and CG-17).
- N. Continental Cement Company, L.L.C. shall not haul (SF-33/34 or SF-36/37) more than 600 tons per day of supplemental fuels into the plant.
- O. Continental Cement Company, L.L.C. shall not haul (SF-53) more than 200 tons per day of waste fuel from fuel prep to solid waste storage.
- P. Continental Cement Company, L.L.C. shall not load more than 100 tons per day of cement kiln dust into trucks per day (KP-3).
- Q. Continental Cement Company, L.L.C. shall not haul more than 300 tons per day of waste associated with the artificial soils project on the offsite haul road (AS-1AA).
- R. Continental Cement Company, L.L.C. shall not unload more than 100 tons per day each of ash, biosolids or carbon source waste (including yard waste, sawdust or ground wood) associated with the artificial soils project (AS-2A, AS-2B and AS-2D).
- S. Continental Cement Company, L.L.C. shall not load more than the following listed amounts of cement on a daily basis:
 - 1) Bulk Railcar Loading (SH-5) – 2,500 tons of cement per day,
 - 2) River Cement Silos (SH-7) – 10,000 tons of cement per day,
 - 3) Barge Loading (SH-8, SH-9) – 30,000 tons of cement per day, combined, and
 - 4) Bulk Truck Loading (SH-4) – 4,500 tons of cement per day.
- T. Continental Cement Company, L.L.C. shall maintain an accurate record of raw materials handling, limestone handling, fuel handling, gypsum

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The permittee is authorized to construct and operate subject to the following special conditions:

handling, cement kiln dust handling, waste handling associated with the artificial soils project and cement loadout. The installation shall record the daily total of the materials processed in order to verify compliance with the limits established above.

17. Continuous Emission Monitoring System (CEMS) – PH/PC Kiln System
 - A. Continental Cement Company, L.L.C. shall install, certify, operate, calibrate, test and maintain CEMS for SO₂ and CO and any necessary auxiliary monitoring equipment in accordance with all applicable regulations. If there are conflicting regulatory requirements, the more stringent shall apply.
 - B. Continental Cement Company, L.L.C. shall install and operate a data acquisition and handling system to calculate emissions in terms of the emission limitations specified in this permit.
 - C. Compliance with the SO₂ and CO emission limits for the new PH/PC kiln system shall be demonstrated through the use of the required CEMS.
18. Stack Testing Requirements – New PH/PC Kiln System
 - A. Continental Cement Company, L.L.C. shall conduct performance testing on the new PH/PC kiln system's (KP-8) main stack sufficient to quantify the emission rates of filterable, condensable and total PM₁₀, SO_x, NO_x, VOC and CO from this source. These tests shall be done in accordance with the procedures outlined below.
 - B. A completed Proposed Test Plan (form enclosed) must be submitted to the Air Pollution Control Program at least 30 days prior to the proposed test date of any such performance tests so that a pretest meeting may be arranged, if necessary, and to assure that the test date is acceptable for an observer to be present. The Proposed Test Plan must include specification of test methods to be used and be approved by the Director prior to conducting the above-required emissions testing.
 - C. Within 60 days of achieving the maximum production rate of the new PH/PC kiln system, and in any case, no later than 180 days after initial start-up, the owner/operator shall have conducted the required performance tests. If one or more of the above air pollutants for which testing is required by Special Condition Number 18.A is also required to be tested to demonstrate compliance with another applicable rule (such as 40 CFR Part 63 Subpart LLL, National Emission Standards for Hazardous Air

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The permittee is authorized to construct and operate subject to the following special conditions:

Pollutants from the Portland Cement Manufacturing Industry), then Continental Cement Company, L.L.C. may conduct the performance testing according to the time frames indicated by the applicable regulation.

- D. Any required performance testing shall be conducted during periods of representative conditions and should also be conducted at the maximum process/production rates or within ten percent (10%) of this rated capacity, not to include periods of start-up, shutdown, or malfunction. However, if a new performance testing is conducted at a production rate which is less than 90% of the maximum rated capacity of the equipment, then ten percent (10%) above the production rate at which the performance test was conducted shall become the new maximum allowable hourly production rate for the unit.
- E. Two (2) copies of a written report of the performance test results must be submitted to the Director within 90 days of completion of the performance testing. The report must include legible copies of the raw data sheets, analytical instrument laboratory data, and complete sample calculations from the required Environmental Protection Agency (EPA) Method for at least one (1) sample run for each air pollutant tested.
- F. No later than thirty (30) days after the performance test results are submitted, Continental Cement Company, L.L.C. shall provide the Director with a report that establishes the potential emissions of each air pollutant tested in Special Condition Number 18.A. This report shall report the potential emission rates in pounds per hour, tons per year and pounds per ton of clinker produced from the new PH/PC kiln system (KP-8) in order that the Air Pollution Control Program may verify the potential emissions from this project.
- G. If the results of the performance testing shows that the emission rates for NO_x are greater than those used in the emissions analysis herein, then Continental Cement Company, L.L.C. shall evaluate what effects these higher emission rates would have had on the permit applicability of this project. Continental Cement Company, L.L.C. shall submit the results of any such evaluation in a timely manner for Air Pollution Control Program review and approval.
- H. The above time frames associated with this performance testing condition may be extended upon request of Continental Cement Company, L.L.C. and approval by the Director.

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SPECIAL CONDITIONS:

The permittee is authorized to construct and operate subject to the following special conditions:

19. **Restriction of Public Access – Fencing or Physical Barrier to Restrict Public Access to Property**
Continental Cement Company, L.L.C. shall preclude public access to property that is considered within the non-ambient air zone with respect to the air quality impact analysis conducted for this permit. Installation and maintenance of a fence or other physical barrier shall be the means to preclude public access. A map showing property boundary (precluded areas) can be found in Figure 4, entitled “Continental Cement – Property Boundary” of the Ambient Air Quality Impact Analysis modeling memo. Continental Cement Company, L.L.C. shall complete construction of the physical barrier to prior to commencing operation of the new PH/PC kiln system.
20. **Record Retention Requirements**
Continental Cement Company, L.L.C. shall maintain all records required by this permit, on-site, for the most recent 60 months of operation and shall make such records available immediately to any Missouri Department of Natural Resources’ personnel upon request.
21. **Notification Requirement**
Continental Cement Company, L.L.C. shall report to the Air Pollution Control Program’s Enforcement Section, P.O. Box 176, Jefferson City, Missouri 65102, no later than ten (10) days after the end of the month during which the records required by this permit indicate that the source exceeds the limitations established in the Special Conditions above.

REVIEW OF APPLICATION FOR AUTHORITY TO CONSTRUCT AND OPERATE
SECTION (8) REVIEW

Project Number: 2006-11-095
Installation ID Number: 173-0001
Permit Number:

Continental Cement Company, L.L.C.
10107 Highway 79 South
Hannibal, MO 63401

Complete: December 14, 2006
Reviewed: July 23, 2007

Parent Company:
Continental Cement Company, L.L.C.
14755 North Outer Forty Drive, Suite 514
Chesterfield, MO 63017

Ralls County, S2, T56N, R4W

REVIEW SUMMARY

- Continental Cement Company, L.L.C. has applied for authority to modify their recent Prevention of Significant Deterioration (PSD) permit by eliminating the Saverton Quarry, developing a new onsite high magnesium quarry and increasing daily clinker production.
- Hazardous Air Pollutant (HAP) emissions are expected from the increase in clinker production levels. HAPs of concern from the cement manufacturing processes are hydrogen chloride, fluorides, and compounds of lead, beryllium, mercury, arsenic and selenium. However, the HAP emitting units at the installation are governed by the requirements of a Maximum Achievable Control Technology (MACT) standard; therefore a Missouri Section (9) review is not required.
- Subpart OOO, *Standards of Performance for Nonmetallic Mineral Processing Plants*, of the New Source Performance Standards (NSPS) applies to some of the proposed equipment. Subpart Y, *Standards of Performance for Coal Preparation Plants*, applies to some of the coal handling equipment.
- The following MACT standards, 40 CFR Part 63, apply to some of the proposed equipment:
 - ✧ Subpart LLL, *National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry*,
 - ✧ Subpart XX, *National Emission Standards for Ethylene Manufacturing Process Units: Heat Exchange Systems and Waste Operations*, and
 - ✧ Subpart EEE, *National Emission Standards for Hazardous Air Pollutants From Hazardous Waste Combustors*.

- Subpart FF of the National Emission Standards for Hazardous Air Pollutants (NESHAPs), *NESHAPs for Benzene Waste Operations*, applies to this installation.
- The control technologies associated with Best Available Control Technology (BACT) for the new kiln system in the original project were determined to be:
 - ✧ PM₁₀: baghouses;
 - ✧ SO_x: an alkaline spray drying system on the alkali bypass exhaust; inherent dry scrubbing when the raw mill is operating; a raw mill bypass lime spray drying (LSD) system when the raw mills are not in operation; and
 - ✧ CO and VOC: good combustion practices.

The BACT analysis for the kiln system was revisited as part of this modification project for each of these pollutants. BACT control technologies remain the same as initially determined. Emission limitations differ, however, based on the type of limestone used in the clinker production process.
- Additional PM₁₀ sources included in this modification project also underwent BACT analysis. BACT for the new or modified PM₁₀ sources were determined to include baghouse control for point source PM₁₀ emissions and paving and/or water spray for fugitive source PM₁₀ emissions.
- Continental is an existing major source for criteria pollutants. The potential emissions for this project were calculated to be above the major source level for PM₁₀ [15.0 tons per year (tpy)], SO_x (40.0 tpy), CO (100.0 tpy) and VOC (40 tpy). Potential emissions of beryllium exceed Missouri's de minimis threshold (0.0004 tpy). However, beryllium was removed from the list of currently regulated pollutants subject to Federal PSD review as of December 31, 2002 (Federal Register, Part III, EPA 40 CFR Parts 51 and 52, *PSD and NSR; Final Rule and Proposed Rule*). The potential emissions of lead, mercury and fluorides were calculated to be below their respective significance levels. Therefore, this review was conducted in accordance with Section (8) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM₁₀, SO_x, VOC and CO from the project are above de minimis levels.
- A revised net emissions increase analysis was submitted with the original project for nitrogen oxides (NO_x) emissions in which the company proposed to remove one (1) existing wet process rotary clinker kiln at the installation. This net emissions increase analysis demonstrated that this project would not exceed the significant threshold associated with major review for NO_x. No changes have been made to the original netting analysis due to modifications included in this project.
- This installation is located in Ralls County, an attainment area for all criteria air pollutants.

- This installation is on the List of Named Installations [10 CSR 10-6.020(3)(B), Table 2, Number 3, *Portland Cement Plants*].
- Air quality modeling for this project was performed to determine the ambient impact of those pollutants affected by the modification (PM₁₀ and CO). Based upon the model reviewed by the Air Pollution Control Program staff, the study submitted by Continental is complete and demonstrates that Continental will not contribute to any violation of the National Ambient Air Quality Standards (NAAQS) or available increment. Ambient air quality modeling was not performed for VOC for this review. No model is currently available which can accurately predict ambient ozone concentrations caused by this installation's VOC emissions.
- Emissions testing is required for several pieces of the new equipment subject to a NSPS, BACT or MACT standard. Several pieces of existing equipment will need to be retested due to increased utilization of the equipment. Testing is also required for the new PH/PC kiln system, to quantify emission rates of PM₁₀, SO_x, NO_x, CO and VOC.
- Revision to the Part 70 Operating Permit is required for this installation within 1 year of equipment startup.
- Approval of this permit is recommended with special conditions.

INSTALLATION DESCRIPTION

Continental Cement Company, L.L.C. (Continental) currently operates a wet process rotary cement kiln on a 3,300-acre site three miles south of the city of Hannibal in Ralls County. Clinker production averages 620,000 tons annually. The plant operates as a hazardous waste combustor while producing Portland cement. In addition to the kiln system, the installation operates a syngyp process (synthetic gypsum mixed with cement kiln dust) and has an ongoing artificial soils project to support the production of trees as a renewable alternative fuel source. The installation received a PSD permit (Permit No. 072006-003) for the replacement of the wet process kiln with a new PH/PC kiln system last summer. Construction is ongoing for that project.

The existing installation is considered to be a major source of air emissions by both the Construction and Operating Permit units. Continental obtained a Part 70 operating permit on April 8, 2005 (Permit No. OP2005-009). The following construction permits have been issued to Continental from the Air Pollution Control Program.

Table 1: Previously Issued Construction Permits

Permit Number	Description
0686-002	A Section (5) permit issued on October 7, 1986, for a new waste fuels storage facility
1086-004	A Section (5) permit issued on December 24, 1986, to add the capability to burn waste fuel in the kiln
1086-004A	An amendment to Permit No. 1086-004 issued on February 15, 1990 for the use of a substitute raw material
1086-004B	An amendment to Permit No. 1086-004 to alter a beryllium emission limit
0890-008	A Section (5) permit issued on August 21, 1990, for the addition of 2 new 75,000 gallon above ground tanks for liquid fuel storage and 1 200 ton capacity dry fuel storage tank and 1 50 ton capacity dry fuel surge tank
1086-004C	An amendment to Permit No. 1086-004A issued on June 11, 1996, to allow the installation to accept and burn 5,000 BTU/pound or greater solid wastes in combination with other liquid waste fuels and coal as fuel.
0198-014	A Section (5) permit issued on January 13, 1998, to install a syngyp process to manufacture synthetic gypsum and mix it with cement kiln dust
122001-014	A Section (5) permit issued on December 21, 2001, to utilize a mixture of waste materials to create an artificial soil to support the production of trees as a renewable alternative fuel source.
092002-022	A Section (5) permit issued on October 2, 2002, for the replacement of the existing kiln system with a new kiln. This new kiln was never built. This project is replacing the original proposal.
1086-004D	An amendment to Permit No. 1086-004 issued on August 6, 2003, to allow alternate feed rate limits based on future compliance testing
072006-003	A Section (8) permit issued on July 11, 2006, to install a new PH/PC kiln system and underground mine

PROJECT DESCRIPTION

Since the issuance of the PSD permit last July, CCC has determined that the transport of Kimmswick limestone from the Saverton Quarry was unduly burdensome, as well as unnecessary. The proposed PH/PC kiln system would be able to operate using either Kimmswick limestone or the Burlington limestone prevalent onsite. Several changes have been made to the original proposal due to this finding as part of this modification project. Each section of the proposed final plant is outlined below. Modifications of the PSD Permit No. 072006-003 are noted.

It should be noted that the original project included an underground Kimmswick limestone mine and associated processes. Since Continental is now able to utilize the Burlington limestone that lies aboveground, development and use of the underground mine has been postponed. The BACT limits in the original permit, and in this revised permit, consider the characteristics of the underground Kimmswick limestone. If and when Continental decides to pursue the underground mine, a BACT analysis will be required for only those new pieces of equipment associated with mine operations. At that time, Continental will also need to show compliance for modeling of the entire installation, not just for the underground mine project.

- Raw Material Mining

The 2006 PSD permit included operations at Saverton Quarry, a viable source of Kimmswick limestone, located several miles from CCC's site. Since the proposed kiln is now thought capable of utilizing Burlington limestone or Kimmswick limestone, the Saverton Quarry operation is no longer needed. This modification excludes all processes at the Saverton Quarry, as well as the temporary limestone haul road and storage dome.

The modified plant will retain two existing onsite quarries that were to be removed from service in the original PSD permit: the A1 and Sims quarries. Additionally, a third proposed quarry, the Hi-Mag quarry, will be developed.

Bedrock limestone is wet-drilled (RM-01) and then blasted to produce fragmented stone. Trucks loaded with the fragmented stone (RM-03) transport the material on unpaved haul roads (RM-04) and unload to either a new limestone hopper (RM-50) or to an existing hopper (RM-08) in the Crusher Building. Emissions from the haul roads will be controlled using water spray or chemical surfactant.

A new shale quarry was included in the original PSD permit application and remains part of the currently proposed plant. Shale, like limestone is mined by wet-drilling and blasting (RM-28 and RM-28A). After the blasted rock is loaded onto trucks (RM-29), it is taken to the Crusher Building and unloaded at the receiving hopper (RM-08) for processing. The shale quarry haul road (RM-30) will either be watered or chemical dust suppressant will be applied.

- Raw Material Preparation

Clay and iron ore will continue to be hauled in from offsite sources (RM-20A, RM-20B and RM-24A). The clay is unloaded in the clay storage cave (RM-21) or the outdoor covered roof clay storage pile (RM-22), and then hauled to the Crusher Building (RM-08). Ash or other clay substitute may be used. When this occurs, the substituted material will only be stored in the clay storage cave.

Limestone, clay and shale can all be prepared by routing through the existing system located in the Crusher Building (RM-09 through RM-10.2) or through the new crushing system (RM-51 and RM-52). The Crusher Building is enclosed and vented to a baghouse. The proposed crushing equipment vents to baghouse. All three raw materials are transferred via a proposed system of conveyors and transfer towers to a proposed new roof-covered storage hall (RM-53 through RM-56). This conveyance system and hall will replace the conveyance system and raw material storage building proposed as part of the original PSD project.

Iron ore is brought directly to the proposed new roof-covered storage hall, as there is no need to crush the ore. The new storage hall will house storage piles for each of the raw materials (RM-60 through RM-63).

From the new storage hall, each material will be reclaimed via gravity feed to new apron feeders and conveyor belt scales located under the storage hall. The proportioned material will be conveyed to a new surge bin awaiting transfer to the

Raw Material Grinding circuit. Each conveyor, transfer tower, bin and screen will be controlled by either baghouse or cartridge filter (RM-64 through RM-68).

- Raw Material Grinding/Homogenization

The grinding system and blending silo equipment proposed as part of the original PSD project will be installed with only minor changes; some equipment originally proposed is no longer included in the currently proposed plan.

A roller mill works to grind the raw materials to a uniform size. The raw meal is then dried in the roller mill with hot air from the kiln's preheater induced draft fan exhaust, blended and then conveyed to storage in the raw meal blending silos. From the silos, the raw meal is conveyed to the raw meal feed bin, where it will be fed into the new PH/PC kiln system. All emission points are vented to baghouses (RM-35, RM-37, RM-39 through RM-41).

- Fuels and Fuel Handling

- ✧ Coal/Pet Coke

The only changes proposed for the modified project are a change in daily throughput limit from 600 tons per day (tpd) to 1,800 tpd for fuel handling and a switch to natural gas for the coal mill preheater.

Coal and coke will arrive at the site by barge or rail (CG-1A and CG-1B) or truck and hauled (CG-2A and CG-2B) to storage piles (CG-17). Unloading from the piles will occur by front-end loader. The loader will dump the coal/pet coke into a coal hopper (CG-21), where it will be transferred to the coal feed bin (CG-22). The coal/pet coke will be ground in the coal mill (CG-23) and then stored in the fine coal/coke silos (CG-24 and CG-24A) until fed into the new kiln system. The coal hopper, coal feed bin, coal mill and fine coal/coke silos are all vented to baghouses.

The coal/pet coke is dried while being ground. The heat for the drying will be provided by exhaust from the kiln and supplemented by a natural gas fired air heater (CG-25). The new kiln system is more efficient than the wet process kiln. The new kiln system needs only 3.0 MMBTU/ton clinker of energy, compared to 6 MMBTU/ton clinker for the existing kiln. Therefore, Continental's coal use is not expected to increase as a result of this project. The exhaust from the coal mill will be released through the main stack to the ambient air.

- ✧ Solid Hazardous Waste Derived Fuel (SHWDF)

The only change proposed for the modified project is a change in daily throughput limit from 300 tpd to 600 tpd for all supplemental fuels.

SHWDF will be received and processed in the existing enclosed facility. After processing, the SHWDF will be hauled to the new SHWDF storage building (kiln burner building) and unloaded to the new SHWDF storage pile (SF-61). From the building, the fuel will be conveyed to the new kiln system. Building emissions will be vented to the new kiln system through the clinker cooler or to carbon filters.

- ✧ Liquid Hazardous Waste Derived Fuel (LHWDF)
As stated above, the only change to the LHWDF processes is to increase the daily throughput limit from 300 tpd to 600 tpd for all supplemental fuels.

Existing tanks will be used to receive LHWDF. LHWDF will be pumped from those tanks to two new burn tanks (SF-3C and SF-3D), and then delivered via piping and pumps to the new kiln system. The new tanks will be vented to carbon filters and a vapor recovery unit. Unloaded tanker trucks and railcars may be cleaned after emptying. Volatile organic compounds (VOCs) associated with the cleaning process are either vented to a flare for combustion or to carbon filters.

- ✧ Natural Gas
The original PSD permit allowed natural gas to be used for startup only. As part of this modification, a natural gas fueled air preheater (CG-25) has been added. This preheater will take the place of the fuel oil preheater originally planned.
- ✧ Fuel Oil
Due to the change in the proposed coal mill preheater, fuel oil will no longer be used.
- ✧ Other Fuels
No changes to the alternate fuels are planned as part of this modification.

To supplement SHWDF usage, Continental intends to combust non-hazardous alternate fuels, including chipped tires, shredded plastics, plastic-backed paper, autoplant sludge, automobile fluff, wastewater sludges, industrial resins, furniture manufacturing sawdust and wood waste, plastic and starch abrasives, shredded shingles, wood waste, tank bottoms, spent carbon, off-spec industrial products, mixed industrial debris and other residential residues. Synthetic gas is an additional alternative. All material will be processed in the supplemental fuels system equipment.

Whenever a fuel other than coal and pet coke are utilized, Continental plans to feed each of the fuels in accordance with the Hazardous Waste Combustor MACT. By so doing, potential emissions of heavy metals, dioxins, furans and other HAPs should be below regulatory thresholds. Although emissions of PM₁₀, SO_x, NO_x, VOC and CO may differ from what is expected from combusting coal and petroleum coke, review of these pollutants would remain the same. The method of operation of all control equipment at the installation shall remain constant, regardless of what type of fuel is combusted.

- PH/PC Kiln System
The current modification affects only daily production limits. Daily clinker production will increase from 3,300 tpd to 3,500 tpd. Annual clinker production remains unchanged.

The system (KP-8) consists of the preheater, precalciner, rotary kiln and cooler. Raw meal is fed to the 4-stage preheater whereupon it is heated to a temperature that allows calcination of the meal in the precalciner. Staged combustion of coal, SHWDF and LHWDF occurs in the bottom of the precalciner. The heated air generated from the combustion of the fuel is the air used in the preheater. The preheater exhaust is routed through the raw mill bypass lime spray dryer (LSD) system when the raw mill is not operating. The LSD will be located prior to the preheater induced draft fan. As mentioned previously, when the raw mill is in operation, the preheater exhaust will be vented directly to the raw mill. Under both operating scenarios, the preheater exhaust is routed through the kiln/mill baghouses that vent to the ambient air through the main new kiln system stack.

By the time the meal reaches the rotary kiln, calcination is almost complete and the sintering step begins. The main kiln burner will utilize LHWDF, coal or pet coke for fuel. An alkali bypass system (KP-10) will be installed to which 35% of the new kiln system exhaust may be fed. This bypass will allow removal of alkali salts that can cause operational problems from the system. The bypass gases are fed through an alkaline spray dryer and then vented through a baghouse to the main new kiln system stack. The dust collected by the spray tower, spray dryer and bypass dust collector is conveyed to the waste kiln dust bin system.

A new clinker cooler will be installed where air is used to cool the clinker exiting the new kiln system. Some of the air fed to the clinker cooler will be drawn from the SHWDF buildings. Exhaust air from the first four stages of the clinker cooler is used as secondary air for the kiln burner. The remaining exhaust from the clinker cooler is exhausted to an air-to air heat exchanger to lower the air temperature, then to a baghouse that vents to the clinker cooler stack (CM-17). A roll crusher follows the last section of the cooler.

Reducing atmospheres are created through staged combustion in the low-NO_x section of the precalciner, limiting NO_x production. Natural scrubbing of SO₂ occurs in the rotary kiln, preheater and raw mill systems, in addition to the raw mill bypass LSD that will be installed at the preheater exhaust. An alkaline spray dryer will control SO₂ emissions from the alkali bypass. High kiln system temperatures and the specific design of the new kiln system control both CO and VOC emissions. Baghouses on each emission point control PM₁₀ emissions.

- Clinker Handling and Finish Grinding

A few changes will result from the modification. The daily throughput will increase to 3,500 tons of clinker. Stockhouse number 5 will no longer be used for clinker storage. Instead, clinker may be stored in a new Clay Cave storage area (CM-30).

Clinker will be conveyed from the clinker cooler to existing clinker silos, outdoor storage piles, or the Clay Cave through a series of conveyors and belt tripper systems. Existing raw materials silos (RM-14, RM-14A and RM-14B) will be converted to store clinker (CM-08). A number of new baghouses are being installed to control emissions from various points during processing (CM-18 through CM-21B).

The two existing cement mills will remain unchanged. The existing raw mill (RM-17) will be replaced with a third cement mill. The new mill will include a roll press and air separator. Baghouses will be installed on both the mill and the air separator (CM-22 and CM-23).

- Cement Transport, Storage and Loadout

The only change resulting from the modification is to daily throughput limits related to the method of transport.

The existing cement loadout system will remain unchanged with the exception of pneumatic pumping installed between the modified raw mill and existing cement silos. Cement will be loaded onto barges, railcars and trucks. All transfer points will continue to be controlled by baghouses.

- Syngyp Handling

No changes to the syngyp processes are expected from this modification.

The existing synthetic gypsum process is not expected to change from its current configuration. Continental will no longer utilize natural gypsum to the extent it does currently. Any natural gypsum processing that occurs upon completion of this project will be done with the existing syngyp equipment. Some emission point numbering was previously duplicated. The following table provides a list of emission point ID numbers that have been eliminated due to duplication.

Table 2: Deleted Emission Points

Deleted Emission Point ID	Emission Point Description	Remaining Emission Point ID
SG-01	CKD Screw Conveyor	SG-13
SG-02	Syngyp Outdoor Storage Pile	CG-19
SG-03	Indoor Syngyp storage pile	SG-04

- Emergency Generator
An 8 MMBTU per hour emergency generator will be installed at the plant. Continental intends to utilize ultra-low sulfur diesel containing no more than 15 ppmw of sulfur in the generator. Continental will not operate the emergency generator for more than 500 hours per year.

NET EMISSIONS INCREASE ANALYSIS

Continental conducted a net emissions increase analysis for NO_x as part of their original permit application. No changes to that analysis occurred due to the current modifications. Table 3 is included as part of this permit for reference purposes only.

Table 3: Summary of NO_x Netting Analysis Conducted for Permit No. 072006-003

Emissions Unit	Emissions Unit Description	Emission Increase or Decrease	PTE/2-Year Average Actual NO _x Emissions (tons/year)*
Estimated Increase in PM₁₀ Emissions From New Project			
KP-08	New Kiln System/Coal Mill Preheater	Increase	1626.08
MS-7	Emergency Generator	Increase	3.50
Actual NO_x Emissions From Existing Equipment Proposed to Be Removed as a Result of Project (2 Year Average)			
KP-01	Kiln	Decrease	-2122.20
Total NO_x Emissions Remaining for Project After Completion of Netting Analysis:			-492.62

*PTE = Potential to Emit

EMISSIONS/CONTROLS EVALUATION

The emission factors and control efficiencies for calculation of PM₁₀ emissions used in this analysis were obtained from the following sections of the Environmental Protection Agency (EPA) document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition:

- Section 1.3 *Fuel Oil Combustion* (9/1998),
- Section 11.6 *Portland Cement Manufacturing* (1/1995),
- Section 11.12 *Concrete Batching* (10/2001),
- Section 11.19.2 *Crushed Stone Processing and Pulverized Mineral Processing* (8/2004),
- Section 13.2.2 *Unpaved Roads* (12/2003), and
- Section 13.2.4 *Aggregate Handling and Storage Piles* (1/1995).

Emission factors for potential PM₁₀ emissions calculations were also taken from the Factor Information Retrieval (FIRE) Data System for the following SCC numbers:

- 3-05-009-04 *Shale/Clay Crushing*,
- 3-05-006-14 *Clinker Cooler, uncontrolled*,
- 3-05-011-08 *Concrete Batching, Weigh Hopper Loading: Cement*.

Potential emissions of HAPs from the new kiln system were based on the emission factors found in the AP-42 section for Portland cement manufacturing. All other non-PM₁₀ emissions from the new kiln system, coal preheater and emergency generator were estimated from the BACT limits proposed by the applicant. Finally, VOC emissions from the burn tanks were estimated using the EPA's TANKS 4.0 program.

The EPA "Revised Draft Policy on Permit Modifications and Extensions" (July 5, 1985) provides guidance on permit modifications proposed for sources issued PSD permits. The modifications presented by CCC constitute what EPA would consider a "fundamental" change. The physical and operational changes proposed by CCC effectively render the modified plant as a whole, a different plant than originally permitted in Permit No. 072006-003. Therefore, project potential emissions will include emissions from the entire plant, after modifications.

Potential emissions of the application represent the potential of the new and modified equipment, assuming continuous operation (8760 hours per year). The emergency generator emissions were calculated based on 500 hours of operation annually. Existing potential emissions from the installation are major for all criteria pollutants. Actual emissions were taken from the installation's 2005 EIQ submittal. The following table provides an emissions summary for this project.

Table 4: Emissions Summary (tons per year)

Pollutant	Regulatory De Minimis Levels	Existing Potential Emissions	Existing Actual Emissions (2005 EIQ)	Potential Emissions of the Modified Plant
PM ₁₀	15.0	Major	174.51	529.68
SO _x	40.0	Major	422.08	1162.35
NO _x	40.0	Major	2071.47	1629.58
VOC	40.0	Major	11.54	72.59
CO	100.0	Major	23.32	2168.62
HAPs	10.0/25.0	Major	N/D	96.704
Lead	0.6	N/D	N/D	0.045
Mercury	0.1	N/D	N/D	0.014
Beryllium	4E-4	N/D	N/D	3.97E-4
Fluorides	3.0	N/D	N/D	0.542
Arsenic	10.0	N/D	N/D	0.007
Hydrogen Chloride	10.0	N/D	N/D	84.315
Selenium	10.0	N/D	N/D	0.120

N/D = Not Determined

PERMIT RULE APPLICABILITY

This review was conducted in accordance with Section (8) of Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*. Potential emissions of PM₁₀, SO_x, VOC and CO are above their respective major source thresholds.

APPLICABLE REQUIREMENTS

Continental shall comply with the following applicable requirements. The Missouri Air Conservation Laws and Regulations should be consulted for specific record keeping, monitoring, and reporting requirements. Compliance with these emission standards, based on information submitted in the application, has been verified at the time this application was approved. For a complete list of applicable requirements for your installation, please consult your operating permit.

GENERAL REQUIREMENTS

- *Submission of Emission Data, Emission Fees and Process Information, 10 CSR 10-6.110*
The emission fee is the amount established by the Missouri Air Conservation Commission annually under Missouri Air Law 643.079(1). Submission of an Emissions Inventory Questionnaire (EIQ) is required April 1 for the previous year's emissions.
- *Operating Permits, 10 CSR 10-6.065*
- *Restriction of Particulate Matter to the Ambient Air Beyond the Premises of Origin, 10 CSR 10-6.170*
- *Restriction of Emission of Visible Air Contaminants, 10 CSR 10-6.220*
- *Restriction of Emission of Odors, 10 CSR 10-3.090*

SPECIFIC REQUIREMENTS

- *Control of NO_x Emissions From Portland Cement Kilns, 10 CSR 10-6.380*
- *Restriction of Emission of Particulate Matter From Industrial Processes, 10 CSR 10-6.400*
- *New Source Performance Regulations, 10 CSR 10-6.070 – NSPS for Coal Preparation Plants, 40 CFR Part 60, Subpart Y*
- *New Source Performance Regulations, 10 CSR 10-6.070 – NSPS for Nonmetallic Mineral Processing Plants, 40 CFR Part 60, Subpart OOO*
- *Emission Standards for Hazardous Air Pollutants, 10 CSR 10-6.080 – National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Benzene Waste Operations, 40 CFR Part 61, Subpart FF*
- *Maximum Achievable Control Technology (MACT) Regulations, 10 CSR 10-6.075, National Emission Standards for Ethylene Manufacturing Process Units: Heat Exchange Systems and Waste Operations, 40 CFR Part 63, Subpart XX*
- *Maximum Achievable Control Technology (MACT) Regulations, 10 CSR 10-6.075, National Emission Standards for Hazardous Air Pollutants From Hazardous Waste Combustors, 40 CFR Part 63, Subpart EEE*
- *Maximum Achievable Control Technology (MACT) Regulations, 10 CSR 10-6.075, National Emission Standards for Hazardous Air Pollutants From the Portland Cement Manufacturing Industry, 40 CFR Part 63, Subpart LLL*
- *Restriction of Emission of Sulfur Compounds, 10 CSR 10-6.260*

BACT ANALYSIS

Introduction

Any source subject to Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, Section (8) must conduct a BACT analysis on any pollutant emitted in greater than de minimis levels. The BACT requirement is detailed in Section 165(a)(4) of the Clean Air Act, at 40 CFR 52.21 and 10 CSR 10-0.60(8)(B).

A BACT analysis is done on a case by case basis and is performed in general by using a “top-down” method. The following steps detail the top-down approach:

1. Identify all potential control technologies – must be a comprehensive list, it may include technology employed outside the United States and must include the Lowest Achievable Emission Rate (LAER) determinations.
2. Eliminate technically infeasible options – must be well documented and must preclude the successful use of the control option.
3. Rank remaining control technologies – based on control effectiveness, expected emission rate, expected emission reduction, energy impacts, environmental impacts, and economic impacts.
4. Evaluate the most effective controls – based on a case-by-case consideration of energy, environmental, and economic impacts.
5. Select BACT.

Permit No. 072006-003 contains the BACT analysis for those emission units that remain unaltered as part of this permit revision. This permit reinstates all special conditions related to the BACT analysis results, however. CCC prepared additional BACT analyses for those emission units emitting PM₁₀, SO_x, CO and VOC affected by the modifications constituting this project. The BACT analysis is summarized below.

Particulate Matter Less Than 10 Microns in Diameter (PM₁₀) – Fugitive Sources

Since Continental is a named source, BACT review of fugitive emission sources is required. Modified and new fugitive sources include the Hi-Mag quarry (RM-1C), truck loading (RM-3C), hauling (RM-4C), unloading (RM-50), the new raw material storage area (RM-60 through RM-63), additional clay cave storage (CM-30) and associated haul roads (CM-31, CM-32, CM-31A and CM-32A) and the lime haul road (LM-1). Some of the haul roads have been rerouted as part of the permit revision request. The modified routes are considered to be “new” roads, subject to BACT analysis. The following roads are affected: RM-24A, KP-04A, CG-02AA, CG-18A and AS-1AA.

Fugitive Emission Source Control Technologies

- Water Spray and Paving
- Surfactant Spray
- Water Spray
- Paving
- Enclosures

Eliminate the Technically Infeasible Options

Water spray and paving provides the highest level of control (95 percent) of PM₁₀ emissions. However, paving of interior haul roads or storage piles is considered to be

technically infeasible since the trucks used in within the plant will exceed the legal weight limits for traditional roads. Interior roads (and stockpile areas) would need to be specially designed to accommodate the immense load. Additionally, some of the interior roads change over time as the mining/landfilling location changes. For these reasons, paving is infeasible. Paving of the roads providing access to the plant is feasible, since the trucks traveling on those roads will not exceed weight limitations.

Surfactant application is technically feasible on storage piles. However, continued use of surfactants can negatively affect final product quality. Use of surfactants on quarry roads, however, is technically feasible and can reduce PM₁₀ emissions by 90 percent. An alternative to chemical surfactant use is watering of haul roads; water spray can achieve the same level of control as surfactant if applied in sufficient quantities. Water spray use for stockpile vehicular activity areas is a feasible option.

Use of enclosures for storage piles is effective and feasible. In fact, full enclosure of storage piles is considered to be the most effective method of reducing PM₁₀ from storage piles. Enclosure of haul roads is infeasible, due to their length and the complexity of erecting enclosures.

Ranking of Remaining Control Technologies

Table 5: Ranking of PM₁₀ Control Technologies by Effectiveness

Control Technology	PM ₁₀ Control Efficiency	Haul Roads	Stockpiles
Water Spray/Paving	95%	X	N/A
Surfactant Spray	90%	X	For vehicular activity areas only
Water Spray	90%	X	For vehicular activity areas only
Paving	90%	X	N/A
Enclosures	Varies	N/A	X

X = applicable, N/A = not applicable.

Watering of material stored in storage piles may result in detrimental secondary environmental effects due to the increased moisture content of the material. Increased fuel usage would result from the need to dry materials prior to their processing. The increase in fuel usage would translate into an increase in PM₁₀, NO_x and CO emissions. The elevated moisture content levels could also negatively affect baghouse control efficiency. For these reasons, water spray of material stored in storage piles is eliminated from further consideration.

Although enclosing storage piles is the most effective means to reduce wind erosion emissions from stockpiles, it is economically infeasible. CCC conducted an economic analysis that detailed the cost effectiveness of enclosure with vents to baghouse. The cost effectiveness was determined to be \$89,000 per ton of PM₁₀ removed. Complete enclosure with venting to baghouse is eliminated due to economic infeasibility.

Selection of BACT for Fugitive PM₁₀ Sources

The following controls are BACT for fugitive sources of PM₁₀:

- Surfactant spray used in accordance with the manufacturer's specifications and/or periodic water spray to achieve a control efficiency of 90% on the following haul roads: RM-4C, CM-31, CM-32, CM-31A, CM-32A, KP-04A, CG-02AA, CG-18A and AS-1AA.
- Surfactant spray used in accordance with the manufacturer's specifications and/or periodic water spray to achieve a control efficiency of 90% from the vehicular activity areas of the following stockpiles: RM-60 through RM-63 and CM-30.
- No controls will be used to reduce emissions from the materials kept in storage piles.
- The lime haul road (LM-1) must be paved and watered periodically.
- The limestone quarrying operations, blasting and truck loading, are uncontrolled. None of the reviewed control technologies are suitable for these operations. Drilling will be either wet drilling or controlled by a dust collector (RM-1C, RM-3C and RM-50).

PM₁₀ – Fugitive Sources

New point source emissions from the plant come from crushing, conveying and screening associated with raw material processing (RM-51 through RM-56 and RM-64 through RM-68) and lime transfer (LM-2).

Point Source Control Technologies

- Fabric Filter Systems
- Electrostatic Precipitator Systems
- Wet Scrubbing Systems
- Inertial Collection Systems
- Inherent Moisture Content/Wet Suppression
- Enclosures

Eliminate the Technically Infeasible Options

Fabric filters are feasible for all the above mentioned point sources at the plant. Use of electrostatic precipitator systems on an intermittent basis decreases the collection efficiency substantially. Therefore, use of the technology is not well suited for those point sources that will be operating on an intermittent basis. Wet scrubbers are infeasible for the point source operations because of their intermittent operation. Although inertial collection systems (cyclones) are a proven technology, they are most effective for larger particles; baghouse control is more efficient.

Ranking of Remaining Control Technologies

Table 6: Ranking of PM₁₀ Control Technologies by Effectiveness

Control Technology	PM₁₀ Control Efficiency
Fabric Filters	95-99+%
Electrostatic Precipitator Systems	80-98%
Wet Scrubbing Systems	90%
Inertial Collection Systems	10-90%
High Moisture Content/Wet Suppression	75-96.6%
Enclosures	Varies

Baghouses have been selected as BACT for each point source of PM₁₀ emissions that is new. This is the top control method. Table A.1 of the appendix lists the emission points vented to baghouse and the associated outlet grain loading for each baghouse. Continental has proposed, and the department concurs, that an outlet grain loading limit of 0.007 grains per dry standard cubic feet (DSCF) is BACT for each of the new point sources. This limit is among the lowest in the country according to data available on the RBLC database.

Pyritic Sulfur Content of Limestone – Revision of PM₁₀, SO₂, CO and VOC BACT Limits

Although the only change made to the kiln system as part of this modification project is the increase in daily production, the specific BACT limits, on a pound per ton of clinker basis, for the kiln system were reevaluated. The original BACT limits resulted from the assumption that Kimmswick limestone would be used in the kiln system. Kimmswick limestone has a high percentage of pyritic sulfur compared to the Burlington limestone that CCC now wants to utilize. Discussion of changes to the BACT limit for each pollutant follows.

It should be noted that no changes have been made to the control device(s) that constitutes BACT on the new kiln system for each pollutant during this permit modification. Permit No. 072006-003 contains the complete BACT analysis for the original project with detailed explanations concerning the type of control considered as BACT for each pollutant.

PM₁₀

Combustible sources generate condensable PM₁₀ emissions, in addition to filterable PM₁₀. The recommended method for testing condensable PM₁₀ is EPA’s Method 202. Continental still contends that Method 202 overestimates condensable PM₁₀ due to artifact condensable particulate matter caused by catalytic and aqueous phase reactions of SO₂ in the sampling train. The test includes the artifact formation, although this amount would not actually become condensable PM₁₀ in the ambient air.

Although Continental contends that artifact formation of condensable PM₁₀ would occur, determining the extent of that formation is not a simple matter. CCC’s kiln process designers were not able to locate valid test data to determine a proposed total PM₁₀ limit. Continental believes, and the Air Pollution Control Program concurs, that the most reasonable method to determine a BACT limit for condensable PM₁₀ is by comparison with other plants similar to the proposed plant and utilizing similar raw materials.

Continental determined in their BACT analysis that the limestone most likely used at the Lehigh plant in Mason City, Iowa, has similar sulfur content (0.36%) as the Kimmswick limestone originally proposed for the new plant. The plant size and process design are also similar to the Iowa plant. The Lehigh plant has a total PM₁₀ limit of 0.516 pounds per ton (lb/ton) of clinker. The LaFarge plant in Iowa also has this limit, as well as limestone with similar sulfur content.

The Holcim plant located in Ste. Genevieve, Missouri utilizes limestone with a sulfur content of only 0.07%. The Burlington limestone that CCC now wants to utilize has a similar sulfur content (0.08%). The Holcim plant has a limit of 0.28 pounds PM₁₀ per ton of clinker. Continental proposes the same limit for its main stack. Although there are some recently permitted facilities in the state of Florida that contain lower BACT limits for PM/PM₁₀, those limits are for the filterable portion of PM₁₀ only.

SO₂

Emissions from the plant exiting the main stack are limited to 1.93 pounds of SO_x per ton of clinker when utilizing the originally proposed Kimmswick limestone. When CCC uses Burlington limestone, a limit of 0.63 lb/ton clinker has been established to account for the much smaller fraction of pyritic sulfur found in that type of limestone.

VOCs and CO

Organic compounds found in the raw materials are the primary source of VOC emissions, while CO emissions are caused by incomplete combustion. Continental originally chose to utilize Kimmswick limestone. This type of limestone has a high organic carbon content. Burlington limestone contains significantly less organic carbon content, resulting in a decrease in emissions, on a pound per ton of clinker basis. When utilizing 100 percent Burlington limestone, Continental believes they can meet an emission limit of 1.38 lb/ton clinker for CO and 0.03 lb/ton clinker for VOC.

Conclusions

Continental's kiln designers believe that emissions of total PM₁₀, SO_x, CO and VOC are linear based upon the percentage of each stone utilized. A tiered limit approach was taken in establishing revised BACT limits from the main stack based upon this presumption. The limits can be found in the Special Conditions portion of the permit.

AMBIENT AIR QUALITY IMPACT ANALYSIS

The ambient air quality impact analysis indicates that this project will not cause ambient air concentrations above acceptable levels. The results of a preliminary impact analysis indicate that ambient air concentrations for CO will be below the modeling significance levels listed in Table 4 of 10 CSR 10-6.060(11), therefore additional analysis was not required. Ambient air concentrations for PM₁₀ are predicted to be greater than modeling significance levels but below levels that would present a problem with regard to the national ambient air quality standard or PSD increment consumption. Please refer to the incorporated air dispersion modeling memo for additional information.

STAFF RECOMMENDATION

On the basis of this review conducted in accordance with Section (8), Missouri State Rule 10 CSR 10-6.060, *Construction Permits Required*, I recommend this permit be granted with special conditions.

Kendall Hale, P.E.
Environmental Engineer

Date

PERMIT DOCUMENTS

The following documents are incorporated by reference into this permit:

- The Application for Authority to Construct form, dated November 24, 2006, received November 27, 2006, designating Continental Cement Company, L.L.C. as the owner and operator of the installation.
- Letter concerning relocation of new milling system, dated February 21, 2007, received February 22, 2007.
- Amendment #1 to the BACT Sulfur Dioxide Analysis, dated and received February 22, 2007.
- Letter concerning limestone quarry crusher relocation, dated and received March 9, 2007.
- Amendment #2 Documentation of Emission Reductions for SO₂, CO, VOC and TOTAL PM₁₀ when using Burlington Limestone, dated and received March 27, 2007.
- U.S. EPA document AP-42, *Compilation of Air Pollutant Emission Factors*, Fifth Edition.
- Northeast Regional Office Site Survey, dated December 6, 2006.

Table A.1 Point Source Baghouse/Cartridge Filter Control Devices

Emission Point ID No.	Description	Control Device ID No.	Outlet Grain Loading (gr/dscf)
CG-21	Coal/Coke Hopper	716BF1	0.007
CG-22	Coal/Coke Transfer/Coal/Coke Feedbin	716BF2	0.007
CG-23	Coal/Coke Mill	726BF1	0.0085
CG-24	Fine Coal/Coke Silo	746BF1	0.007
CG-25	Coal Mill Preheater	726BF1	0.007
RM-35	Top Elevator/Conveyor Baghouse	216BF2	0.007
RM-37	Airslide Baghouse	236BF1	0.007
RM-39	Silo Vent Baghouse	286BF1	0.007
RM-40	Airslide/Feedbin/Elevator Baghouse	286BF2	0.007
RM-41	Airslide/Elevator Baghouse	286BF3	0.007
RM-51	Limestone Baghouse	122BF1	0.007
RM-52	Limestone Transfer Baghouse	122BF2	0.007
RM-53	Limestone Sizing Screen Baghouse	124SN1	0.007
RM-54	Limestone/Clay/Shale Conveyor Transfer 124TT1 Baghouse	122BF3	0.007
RM-55	Limestone/Clay/Shale Conveyor Transfer 124TT2 Baghouse	122BF4	0.007
RM-56	Limestone/Clay/Shale Conveyor Transfer 126TT1 Baghouse	122BF5	0.007
RM-64	Limestone/Clay/Shale Transfer to Conveyor Cartridge Filter	134DE	0.007
RM-65	Limestone/Clay/Shale Conveyor Transfer Baghouse	198BF2	0.007
RM-66	Raw Material Transfer Baghouse	136BF7	0.007
RM-67	Transfer to Dust Bin Baghouse	298BF1	0.007
RM-68	Kiln Feed Airslides Cartridge Filter	275DE	0.007
KP-8	Cement Kiln	326BF1	0.0069
KP-2/9	Cement Kiln Dust Loadout Bin	326BF3	0.007
KP-10	Alkali Bypass	326BF1	0.0069
CM-17	Clinker Cooler	356BF1	0.01
CM-18	Clinker Handling	356BF2	0.007
CM-19	Clinker Handling 2	356BF3	0.007
CM-20	Clinker Handling 3	356BF4	0.007
CM-21A	Clinker Silo Vent	356BF5	0.007
CM-21B	Clinker Silo Vent 2	356BF6	0.007
CM-22	Finish Mill – SKS	546BF1	0.007
CM-23	Finish Mill – Mill Vent	546BF2	0.007
SH-02	Cement Storage Silos – Truck Loading	CDC-1 to CDC-6	0.007
LM-2	Lime Transfer to Bin Baghouse	348BF1	0.007

Mr. R. Michael Johnson
CEO and President
Continental Cement Company, L.L.C.
14755 N. Outer Forty Dr., Ste. 514
Chesterfield, MO 63017

RE: New Source Review Permit - Project Number: 2006-11-095

Dear Mr. Johnson:

Enclosed with this letter is your permit to construct. Please study it carefully. Also, note the special conditions, if any, on the accompanying pages. The document entitled, "Review of Application for Authority to Construct," is part of the permit and should be kept with this permit in your files.

Operation in accordance with these conditions, your new source review permit application and with your revised operating permit is necessary for continued compliance.

The reverse side of your permit certificate has important information concerning standard permit conditions and your rights and obligations under the laws and regulations of the State of Missouri.

If you have any questions regarding this permit, please contact Tim Hines at the department's Air Pollution Control Program, P.O. Box 176, Jefferson City, MO 65102 or telephone (573) 751-4817. Thank you for your attention to this matter.

Sincerely,

AIR POLLUTION CONTROL PROGRAM

Kendall B. Hale
New Source Review Unit Chief

KBH:thl

Enclosures

c: Northeast Regional Office
PAMS File: 2006-11-095

Permit Number:



Comments and Responses on Continental Cement Company Prevention of Significant Deterioration (PSD) Permit Project Number 2006-11-095

A draft PSD permit for modification to Prevention of Significant Deterioration Permit No. 072006-003 to eliminate the Saverton Quarry, to develop a new onsite quarry and to increase daily clinker production an expansion at the Continental Cement Company, LLC. In Ralls County, Missouri was placed on public notice June 15, 2007. The only comments received during the public notice period were from Continental Cement Company.

Continental Cement Company's comments have been summarized or paraphrased in this document, please refer to the attachments for further detail.

This document and the attachments will be posted at

<http://www.dnr.mo.gov/alpd/apcp/PermitPublicNotices.htm>

The posting may be discontinued 45 days after final permit issuance.

In a letter dated July 12, 2007 Continental Cement Company submitted comments pertaining to the draft prevention of significant deterioration (PSD) permit. The Air Pollution Control Program (APCP) responds to the Continental Cement Company comments as follows:

Comment 1: Restriction on the Maximum Amount of Clinker Production Allowed from the New PH/PC Kiln System

Continental Cement Company requests that "on a daily rolling average" be eliminated from Special Condition #4. In special condition #4.A., Continental Cement Company is limited to 3500 tons per day of clinker. The application and all modeling were prepared based upon 3500 tons per day and 1,204,500 tons per year (3300 tons/day over 365 days). With a "daily rolling average" stipulation in the special condition, it is possible for Continental Cement Company to be in violation of the permit by producing 3500 tons per day from start-up to the first scheduled maintenance shutdown. The kiln will not operate all 365 days of the year, as maintenance must be performed. Including "daily rolling average" adds confusion and the potential for short-term non-compliance. Limits on both daily and annual production are provided in this special condition.

MDNR Response:

In special condition #4.B, the phrase daily rolling average has been removed and replaced with 12 month rolling average.

Comment 2: Standards of Performance for BACT

Continental Cement requests that Special Condition #9.E.2).b), Special Condition #10.B.2).b), Special Condition #11.B.2).b) be modified to reflect manufacturers data that is actually available. The emergency generator equipment supplier has actual stack test data for engines configured similarly to the unit purchased. Continental Cement requests that the wording of Special Conditions #9.E.2).b) and #11.B.2).b) be changed from "specific unit" to "similarly configured" unit. Stack test data is available for PM₁₀ and CO. For SO₂, the manufacturer provides a calculation for emissions as the concentration of sulfur in the diesel fuel has a direct impact on emissions. Special Condition #13 C in the draft permit, limits the sulfur in the diesel fuel to <15 ppmw. Continental Cement requests that Special Condition #10.B.2).b) be modified to allow a calculation to be submitted with the actual sulfur content of the diesel fuel to be used in the engine.

MDNR Response:

Special Conditions #9.E.2).b) and #11.B.2).b) will be changed to: "In the absence of specific unit data a similarly configured unit's test data can be submitted." Special Condition #10.B.2).b) will be changed to allow for a calculation to be submitted with the actual sulfur content of the diesel fuel to be used in the engine. This calculation does require that the assumption for all fuel sulfur to report as SO₂.

Comment 3: PH/PC Operating Conditions

Continental Cement requests that Special Condition #12 be eliminated because it is 1) a process monitoring parameter and not reasonably related to compliance with the sulfur dioxide emission limit; 2) not based on actual operating data, and 3) could adversely affect Continental's ability to operate the kiln and maintain compliance with the limits. By modifying the permit to allow use of Burlington limestone, Continental may not be able to maintain the ratio of 0.8 to 1.2 with available raw materials. Continental may be forced to take extreme measures such as purchasing high sulfur or high alkali raw materials that may not be readily available in quantities that are necessary to achieve the ratio needed to avoid non-compliance.

Last year, Continental Cement Company met with MDNR to explain the fate of sulfur in the cement pyroprocessing system. The ratio of 0.8 to 1.2 was utilized in this discussion to demonstrate that in a wet cement process, operating very far outside of this range can cause significant operational problems. Until the system is actually constructed and operating with the actual raw materials, the true sulfur-to-alkali ratio will not be known. With the change to Burlington limestone, the ratio could end up well outside the range as previously discussed for a wet cement process. In the PH/PC kiln system, two distinct chemical reactions occur. In the precalciner, the fuel and raw materials are in a near perfect environment for chemical conversion of the sulfur and free lime to calcium sulfate. The calcium sulfate will remain in the clinker. In the rotary kiln, with its own burner, a separate chemical reaction occurs between sulfur and alkali materials. Using a sulfur to alkali ratio over the entire system is not an appropriate special condition given that two separate reactions occur in two distinct units, the precalciner and the kiln.

In this permit modification, the SO₂ limits from the stack have been significantly reduced due to the use of Burlington limestone. SO₂ emissions mainly result from sulfur in the raw materials, not from the fuel. Best available control technology has been demonstrated to control the cement process. The environment is protected by the proposed sulfur emission limits. Limiting the operator's ability to control the process is unwarranted and unnecessary given that a specific stack sulfur emission limitation has been set. Therefore, Continental Cement requests that this special condition be eliminated.

MDNR Response:

We are not able to grant Continental's request on the removal of Special Condition #12, Comment #3. Special Condition #12 was in Continental's original permit 072006-003 as Special Condition 16. Continental commented at the time for the removal of this permit condition and our response was:

Continental Cement intends to utilize a number of different fuels in the kiln system: coal, pet coke, liquid and solid hazardous waste fuels, in addition to the dozens of non-hazardous waste alternate fuels outlined in Special Condition 8.A of the permit. Discussions were held with the applicant on April 19, 2006 concerning the potential need for multiple SO₂ BACT limits for the number of possible fuel combinations that would be fed to the kiln system. Continental Cement at that time provided the Department an explanation as to the importance of the sulfur-to-alkali ratio in the kiln system as justification as to why one SO₂ limit would be sufficient, regardless of the fuel mix being fed to the kiln system. Continental Cement explained that should a low-sulfur fuel be used in the kiln system, higher sulfur raw materials would need to be fed to the kiln to maintain the sulfur-to-alkali ratio. Likewise, if high-sulfur coal would be utilized, the sulfur content of the raw mix would need to be adjusted to stay within the ratio specified by Continental Cement's production manager, equal to the 0.8 – 1.2 level found in the draft permit.

The ratio limit was not placed in the permit as assurance that the sulfur dioxide emission limit would be met. The limit was placed in the special conditions as a way to avoid needing multiple SO₂ emission limits while utilizing fuels of widely varying sulfur content. The Department has revised the special condition to allow Continental Cement opportunity to revise the ratio once the new kiln's particular range is determined. Upon approval of a revised range by the Department, the installation will be required to operate within the given range for compliance. The Department has also included a provision for Continental Cement to provide a demonstration showing the lack of correlation between fuel sulfur content and SO₂ emissions, all other factors constant. The demonstration may use SO₂ CEMS data over a period of time and a range of fuel sulfur content (Special Condition 16).

The response clearly defines why this condition is needed - to avoid multiple SO₂ emission limits for different fuels. The condition allows for the flexibility to revise the range upon operation, which is the new concern Continental raised on this permit based upon the unknowns of utilizing the Burlington limestone.

Comment 4: Stack Testing Requirements - New PH/PC Kiln System

Continental Cement requests that the last sentence of Special Condition #18.D be modified to the new maximum allowable daily production rate for the unit instead of hourly production rate. The entire application, modeling and the draft permit were based upon daily limits. Hourly fluctuations occur in the process and record keeping will be burdensome. A daily production limit will be consistent with the permit and application.

MDNR Response:

Special Condition #18.D reflects the standards of the Air Pollution Control Program Compliance Section. In the EEE and LLL MACT the emissions are pounds per ton of feed. The daily production limit is established. The hourly production amount derived from the testing establishes the maximum hourly design rate.

Comment #5: Review Summary

Continental Cement Company requests that the description of the Clinker Handling and Finish Grinding be revised to reflect a construction change in Permit No. 072006-003 as documented to MDNR on 2/21/2007. The change involved a relocation of the new mill and use of a roll press mill instead of converting the old ball mill. No emission changes resulted. The description should read as follows:

The two existing cement mills will remain unchanged. The existing raw mill (RM-17) will be replaced with a third cement mill. The new mill will include a roll press and air separator. Baghouses will be installed on both the mill and the air separator (CM-22 and CM-23).

MDNR Response:

We agree with this change. The description will be changed to read as follows:

The two existing cement mills will remain unchanged. The existing raw mill (RM-17) will be replaced with a third cement mill. The new mill will include a roll press and air separator. Baghouses will be installed on both the mill and the air separator (CM-22 and CM-23).

Comment #6: Syngyp Handling

Continental Cement requests that the description of the existing synthetic gypsum process be revised to reflect the changes made in this application. Any natural gypsum used in the new PH/PC kiln system will be managed in the existing natural gypsum system. The description should read as follows:

The existing synthetic gypsum process is not expected to change from its current configuration. Continental will no longer utilize natural gypsum to the extent it does currently. Any natural gypsum processing that occurs upon completion of this project will be done with the existing natural gypsum equipment.

MDNR Response:

The suggested wording is contained in the permit with the addition of Table 2. The inclusion of Table 2, Deleted Emission Points, was added to avoid future confusion from changed emission points. Recent emission inventory review suggest that these tables are very helpful to clarify emission point information.

Comment #7: Selection of BACT for Fugitive PM₁₀ Sources

Continental Cement requests that this description the lime haul road (LM-1) and the iron ore haul road (RM-24A) be revised consistent with Special Condition #9 A. Unpaved Haul Roads/Vehicular Activity Areas, where RM-24A, iron ore haul road, is unpaved. In the previous permit, the iron ore haul road was paved. The haul road was relocated in this application to the new storage building. RM-24A was modeled and should be described as an unpaved road.

MDNR Response:

The permit will be changed to reflect the road being rerouted and unpaved.