

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

**Air Permit Review**

**Permit Issue Date:**

<b>Region:</b> Fayetteville Regional Office
<b>County:</b> Richmond
<b>NC Facility ID:</b> 7700074
<b>Inspector's Name:</b> n/a
<b>Date of Last Inspection:</b> n/a
<b>Compliance Code:</b> n/a

<b>Facility Data</b>	<b>Permit Applicability (this application only)</b>
<p><b>Applicant (Facility's Name):</b> Martin Marietta Aggregates - Richmond Quarry</p> <p><b>Facility Address:</b> Martin Marietta Aggregates - Richmond Quarry State Road 1105 Rockingham, NC 28379</p> <p><b>SIC:</b> 1442 / Construction Sand And Gravel <b>NAICS:</b> 212321 / Construction Sand and Gravel Mining</p> <p><b>Facility Classification: Before:</b>      <b>After:</b> Small <b>Fee Classification: Before:</b>      <b>After:</b> Small</p>	<p><b>SIP:</b> yes <b>NSPS:</b> yes <b>NESHAP:</b> <b>PSD:</b> <b>PSD Avoidance:</b> <b>NC Toxics:</b> <b>112(r):</b> <b>Other:</b></p>

<b>Contact Data</b>			<b>Application Data</b>
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	<p><b>Application Number:</b> 7700074.03A <b>Date Received:</b> 02/24/2003 <b>Application Type:</b> Green Field <b>Application Schedule:</b> State <b>Existing Permit Data</b> <b>Existing Permit Number:</b> <b>Existing Permit Issue Date:</b> <b>Existing Permit Expiration Date:</b></p>
<p>Brian North, PE, Manager, Engineering Services (704) 409-1475 P. O. Box 7446 Charlotte NC, 28241+7446</p>	<p>Steve Whitt Environmental Manager (919) 783-4630 P O Box 30013 Raleigh NC, 27622+0013</p>	<p>Brian North, PE, Manager, Engineering Services (704) 409-1475 P. O. Box 7446 Charlotte NC, 28241+7446</p>	

<p><b>Review Engineer:</b> Robert Kennedy</p> <p><b>Review Engineer's Signature:</b>      <b>Date:</b></p>	<p style="text-align: center;"><b>Comments / Recommendations:</b></p> <p><b>Issue</b> 09151/R01 <b>Permit Issue Date:</b> <b>Permit Expiration Date:</b></p>
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**1. Purpose of Application:**

Martin Marietta Aggregates – Richmond Quarry is a greenfield granite quarry. It is located approximately 4.5 miles south of Rockingham on State Road 1105. At the time of the permit application in February 2003, the site was not governed by zoning as indicated in the zoning consistency determination received March 2003. In July 2003, Richmond County enacted countywide zoning effective 13 July 2003 and the site is currently zoned 'AR': Agricultural or Residential; a granite quarry is now not consistent with this zoning. The permit will contain a stipulation concerning compliance with all ordinances per DAQ procedures (note that this was also requested by the Richmond County Department of Planning and G.I.S. Services).

Additionally, a permit was issued in December 2001 to this site for a greenfield quarry and it was subsequently challenged/adjudicated to the Office of Administrative Hearings by a group of concerned citizens. As a settlement of that challenge, it was agreed that Martin Marietta Aggregates (MMA) would reapply for a greenfield permit and DAQ would hold public hearings for the permit. Due to concerns raised during that process, DAQ re-evaluated the permitting process for quarries, specifically

greenfield quarries and existing quarries increasing their primary capacities. The format of the permit was also reevaluated.

US EPA AP-42 emission factors are used by many states in their evaluation of emissions from facilities. The section on emission from quarries changed drastically in the mid-90s and thus many of the old DAQ policy memos from the late 80s became obsolete. The DAQ gave quarries a re-evaluation for Title V applicability based on these new emission factors with a conclusion that they are not major sources of PM-10 emissions. Typically particulate modeling is conducted for major sources subject to NSR/PSD and most small SIP sources are not individually modeled. However, it was recently pointed out that there was still an outstanding memo on modeling greenfield quarries that was based on the obsolete emission factors. DAQ has concluded that for the time being, quarries (new and expanding) will be modeled for particulate emissions, until we can gain a better understanding of the new emission factors effect on the modeling analysis. Therefore, this new greenfield quarry will be modeled. The delay in issuing a draft permit was due to working out procedures on conducting these facility wide modeling analyses.

## 2. Application Chronology Summary:

<u>Note</u>	Martin Marietta Aggregates (MMA) had applied for a permit in 2001. An air quality permit was issued but adjudicated by a group of nearby residents. As part of the settlement in that process, it was agreed that MMA would drop the first permit and begin a new permit process. This permit would go through a public review and hearing process.
<u>02/24/03</u>	FRO received the air permit application for the Richmond County site from Martin Marietta Aggregates (MMA).
<u>03/11/03</u>	FRO received a letter from the Richmond County Department of Planning and G.I.S. Services that stated that there are no current zoning regulations in the quarry area but the Board is working on a countywide zoning ordinance. The letter also requested a condition in the permit for the Permittee to comply with all lawfully adopted ordinances at the time of construction or operation.
<u>03/20/03</u>	DAQ received a letter from Frederick M. Morris III, a neighbor of the site, requesting that DAQ schedule a hearing to receive public comment on the Martin Marietta air permit.
<u>04/11/03</u>	FRO requested refined level deposition modeling to complete the permit application from Martin Marietta.
<u>Note</u>	On 2 June 2003, FRO received an air permit application for the identical Richmond County site from H. B. Mellott Estate, Inc. It is our understanding that this company would use the site first. FRO immediately requested refined level deposition modeling to complete the permit application from H. B. Mellott Estate, Inc. They acknowledged this request on 13 June 2003. They eventually requested that the air-modeling due date to DAQ be extended to 60 days after acceptance of the Martin Marietta modeling analysis by DAQ. Note : for this project, Frederick M. Morris III requested in a letter dated 8

July 03 that H.B Mellott be held to the same rigorous standards as Martin Marietta. FRO responded to Mr. Morris that this would be the case.

07/07/03 FRO received the first air dispersion model analysis from Martin Marietta. It was later determined that this was not complete and additional information would be needed.

Aug 2003 On 9 August 2003, DAQ AQAB received a request from BEST Consulting to use North Carolina specific emission factors from an industry test in 1994 by Entropy at the Wake Stone facility in Wake County. As a result a meeting is held on 19 Aug 2003 in Raleigh with BEST Consulting and DAQ Central Office (Permitting, Modeling). BEST requested the approval of the 0.00008 lb/ton storage pile emission rate, the definition of ambient air with regard to the placement of receptors for modeling, and the elimination of a requirement for increment consumption. DAQ would seek more information prior to their evaluation.

01/07/04 DAQ answered modeling questions from the August 2003 meeting, including “the use of test data shall be subject to approval by the DAQ Stationary Source Compliance Branch...”. Therefore on 15 Jan 2004, BEST Consulting requested DAQ approval of the stockpile emission factors. The DAQ SSCB Stack Test Review group would evaluate the information similar to a stack test submittal.

02/16/04 FRO received information on the stockpile emission factors from BEST Consulting.

02/18/04 DAQ, Stationary Source Compliance Branch, established storage pile emission factor as 0.0017 lb/ton based on the 1994 Entropy testing.

04/08/04 FRO received two copies of the revised air dispersion model and forwarded one copy to DAQ AQAB.

04/16/04 As part of FRO’s review of the emission factors used in modeling, FRO contacted BEST Consulting concerning the calculation of the formula in AP-42 13.2.5 and the location of the plant on the site. Beth Barfield stated that the formula calculations were never attempted and that Martin Marietta chose the plant location. FRO then contacted Brian North of Martin Marietta concerning the AP-42 formula that was not used. He called later to inform me that Beth Barfield was sending FRO a copy of the correspondence from DAQ Raleigh and that the formula was not relevant to granite/limestone quarries in North Carolina and was not used because it contained too many unknowns that required both time-consuming, expensive calculations based on questionable variables. The stack test data from the quarry in Wake County was far more relevant.

04/19/04 FRO also contacted Ron Meyers, EPA RTP, concerning emission factors or testing concerning quarry stockpiles. Mr. Meyers stated that he did not know of any testing or emissions factors other than from coal processing equipment. He did state that coal and granite are not similar in emissions and that generally emissions are only noticeable at higher wind events (greater than 10 mph).

- 04/27/04 FRO received an explanation of the stockpile emission factor from BEST Consulting on the relevance of this data for use by MMA. Additionally on 11 May 04, FRO received a summary of the August 1994 PM-10 testing from Steve Whitt, Martin Marietta.
- 05/10/04 DAQ AQAB requested a modification to the model.
- 05/28/04 FRO and DAQ AQAB received information concerning a revision to the PM-10 modeling.
- 06/01/04 DAQ AQAB reported that the model successfully demonstrated compliance.
- 07/06/04 Per our DAQ procedures for issuing permits to quarries, FRO requested additional information concerning the primary crusher rating and the general quarry rating.
- 07/14/04 FRO received a letter from James Armstrong, Director of Planning and G.I.S. Services for Richmond County, stating that Richmond County Commissioners approved a County-wide Zoning Ordinance effective July 13, 2003.
- 07/20/04 FRO received primary crusher and quarry general information from Martin Marietta.

### **3. Zoning Consistency**

When this permit application was submitted in February 2003, neither Richmond County nor any other agency regulated zoning in the quarry area. In March 2003, FRO received a letter from the Richmond County Department of Planning and G.I.S. Services that stated that while there were no current zoning regulations in the quarry area, the Board was working on a countywide zoning ordinance. The letter also requested a condition in the permit for the Permittee to comply with all lawfully adopted ordinances at the time of construction or operation. In July 2004, FRO received a letter from James Armstrong, Director of Planning and G.I.S. Services for Richmond County, stating that Richmond County Commissioners approved a countywide zoning ordinance effective July 13, 2003. This letter also contained the request for a condition for the Permittee to comply with all ordinances.

Per our DAQ policy memo (issued by Laura Butler on 31 July 2000), this permit contains a stipulation requiring the Permittee to comply with all ordinances.

#### **4. New Equipment/Change in Emissions and Regulatory Review:**

This is a greenfield quarry; therefore, all the equipment is considered new and Martin Marietta is required to complete a refined level deposition modeling analysis with consideration of emissions from haul roads and stockpiles.

#### **5. Refined Level Deposition Modeling:**

In the mid 1990s, DAQ used the newest USEPA AP-42 emission factors to evaluate quarries for applicability to the EPA's new major source permit program called Title V. Based on this federal (nationwide) guidance it was determined that if quarries adhered to all state regulations (specifically the 2D.0510 requirement for water suppression), quarries would not be major emitters of PM-10. It was clear that the old thresholds in prior permits to remain a non-major source were based on antiquated emission factors estimates. It was also thought that the policies that used these emission factors were also obsolete.

DAQ recently became aware that one of our 1980s policy memos referenced modeling and set a modeling threshold for new greenfield quarries. Even though the emission factors used at that time were up to 10 fold greater, the previous guidance memo was never officially superceded and thus indicated a modeling threshold for greenfield quarries. DAQ will model the next few greenfield or expanded quarries using the best available emission factors as well as the best available models. DAQ will then evaluate these results and develop a new policy memo that will address any need to model greenfield or expanded quarries.

BEST Consulting was contracted by Martin Marietta to complete the required modeling analysis and represented Martin Marietta in phone discussions and an August 2003 meeting with NC DAQ Ambient Monitoring in Raleigh, NC. During these discussions, DAQ and BEST discovered that there has not been much data collected or developed for the haul roads and the stockpiles in granite quarries. After discussions with numerous DAQ personnel, BEST requested DAQ permission to use the stockpile emission factor (0.00008 lb/ton) based on the Entropy testing at Wake Stone (Wake County) in 1994. The DAQ Technical Services Section Stack Test Evaluation group reviewed detailed data submitted by the Industry. Concurrently, Robert Kennedy, FRO, contacted Ron Meyers, EPA RTP, to determine if he knew of any quarry testing or emissions factors for granite quarry stockpiles; Mr. Meyers reported that he was not familiar with any such data or testing. After due consideration including recalculations DAQ Technical Services Section approved the use of a different stockpile emission factor (0.0017 lb/ton) based on their analysis of the submitted source test data.

The dispersion modeling analysis was conducted by Jerry Freeman, Meteorologist with the DAQ Air Quality Analysis Branch, with assistance and oversight from Jim Roller. In a memo dated 1 June 2004, it was stated that the analysis successfully demonstrated compliance (both annual and 24-hr) with the NAAQS for PM-10 and the SAAQS for TSP.

**6. PSD, NESHAPS, NSPS, and Chemical Accident Prevention (112r):**

PSD and NESHAPS do not apply to this facility. The facility will not store any 112r chemicals above the threshold and is not required to maintain a written Risk Management Plan. Most of the equipment at this facility is subject to NSPS Subpart OOO including:

- NSPS Crushers           ID Nos. 4, 8, and 15
- NSPS Conveyors       ID Nos. 5, 6, 9, 10, 11, 12, 13, 14, and 16
- NSPS Screens           ID No. 7

**7. Toxics Review:**

The North Carolina toxic air pollutant requirements are not applicable for this facility.

**8. Facility Compliance Status:**

This is not applicable for a greenfield facility. Application was submitted prior to construction and operation. And all procedures appear to have been followed properly.

**9. Facility Emissions Review:**

Facility-wide emissions based on the application and dispersion modeling.

Pollutant	Actual Emissions tpy	Potential Emissions After controls tpy*	Potential Emissions before controls tpy
TSP	6.1	17	271
PM-10	2.9	8	129

\* Numbers based on wet suppression.

For TSP, the modeling showed the 24-hr impact at 90% of the standard and the annual impact at 65%. For PM10, the modeling showed the 24-hr impact at 48% and the annual impact at 56%. The location of the processing equipment is specified in the dispersion modeling analysis on the Property Topo. A small portion of this diagram is included with this review, and based on this diagram, processing equipment shall not be located closer than 787 feet from any property boundary.

**10. Stipulation Review:**

<b>Regulation</b>	<b>Affected Sources</b>	<b>Emission Limit or Requirement</b>
Crushing capacity	Primary crusher	Maximum 650 tons/hour
Equipment Reporting	All equipment	Equipment list, plant diagram
Equipment Location	All processing equipment	Minimum 787 feet to boundary
Zoning Consistency	Facility wide	Compliance with all local ordinances
15A NCAC 2D .0510	All equipment	Wet suppression on crushers,
15A NCAC 2D .0521	All sources after 1 July 1971	Opacity < 20%
15A NCAC 2D .0524	All crushers, conveyors and screens after 31 August 1983	Subpart OOO testing and recordkeeping
15A NCAC 2D .0540	Fugitive sources	Substantive complaints

**11. Conclusion, Comments, and Recommendations:**

The standard Permit Writer module was used to create this permit. The following information was added or altered from the Permit Writer output:

1. cover letter, first paragraph: added “and additional information received through June 1, 2004” after April 8, 2004,
2. permit emission source table: adjusted column widths and removed duplicate source IDs,
3. permit, after emission source table: added “and additional information received through June 1, 2004” after April 8, 2004,
4. stipulation A.3.: added primary crusher capacity stipulation,
5. stipulation A.4.: added equipment reporting stipulation,
6. stipulation A.9.: deleted all text after “... substantive complaints.” in the first paragraph.

I recommend that air permit no. 09151R01 be issued to Martin Marietta Aggregates – Richmond County.

Review Engineer: \_\_\_\_\_ Date: \_\_\_\_\_

Permit Coordinator: \_\_\_\_\_ Date: \_\_\_\_\_

DAQ Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

/sfv/rpk

Attachments

cc: RCO Central Files  
FRO Files

**Martin Marietta Aggregates - Richmond Quarry**  
Application Number: 7700074.03A

ATTACHMENTS :