



**VIA EMAIL**

October 10, 2016

John R. Aultman, [aultmanj@vmcmail.com](mailto:aultmanj@vmcmail.com)  
Manager of Environmental Services  
Vulcan Construction Materials, LLC  
201 Brown Road  
Piedmont SC, 29673-8513

Re: Comments and Request for Clarification on Reports and Analysis Letters  
Proposed Lexington Quarry  
Mine Operating Permit Application I-002106

Dear Mr. Aultman:

The SC Department of Health and Environmental Control (Department) acknowledges receipt of letter reports and analysis on matters of public concern on the referenced application for the Lexington Quarry. The Mining and Reclamation Section (Section) has reviewed the letters and provides the following comments and requests for clarification:

**Analysis of Potential Drawdown, August 25, 2016**

The purpose of this letter was to analyze the potential drawdown in the area of the proposed Lexington Quarry resulting from quarry operations. A groundwater flow model was developed using the following data; petrographic reports from the proposed quarry site, geological reports from the area, pumping and slug test data from the quarry site, and annual water level variation data from a nearby site. During the drilling of wells used for hydrologic characterization, it was observed that uniform saturated conditions do not exist across the site.

A pump test was performed in the coastal plain sediments in the southern portion of the site and slug tests were performed in the bedrock/overburden interface in the northern portion of the site. The site was modeled as if uniform saturated conditions exist, and the analyses states that the assumption of uniform saturated conditions results in a conservative model. The Section requests clarification on how the assumption of saturated conditions across the site cause the model to be more conservative. Please elaborate and compare how saturated versus variably saturated conditions affect the model and predicted drawdown of the potentiometric surface.

**Analysis of Potential Radium/Radon Impacts, September 8, 2016**

The purpose of this report was to respond to concerns raised about the presence of naturally occurring radium and radon gas in groundwater. The report evaluates potential impacts from aggregate production to radium and radon gas transport. Data reviewed for the analysis included geological reports for the area, South Carolina Department of Natural Resources ground water reports, and technical reports examining radium/radon related to quarry operations in other countries.

The analysis concludes that there is no correlation between blasting or processing granite aggregate and radon emissions from aggregate mining activities. It is stated that the operations will not affect the physical or chemical characteristics of the subsurface in a way that would be expected to increase the concentration of radium or radon and that the buffer of 1,000 ft from blasting is sufficient to address any cracks or micro fractures created by blasting in which radon may accumulate.

The Section has reviewed this information and requests some clarification. Clarification is requested in the portion of the analysis that discusses weathering and mylonitic rocks. There is a comparison between mylonite rocks at another site and the mylonite rocks observed in cores from the proposed Lexington Quarry. The author reports that the mylonite at the other site was brittle and weathered to catalasite and gouge. The mylonite at the proposed Lexington Quarry site is different in that it is not fractured, but is indurated and not porous. Because of these differences it is the opinion of the author that the mylonite rocks at the proposed Lexington Quarry are not preferential pathways for the migration of groundwater or radon gas.

The Section assumes that a greater concentration of radium and/or radon gas is associated with the brittle mylonite with associated catalalite and gouge. Please clarify this paragraph as it is unclear if the radioisotopes are a weathering product.

**Seismicity and the Lexington Quarry, September 12, 2016**

In this report, Vibra-Tech gives a professional opinion regarding the likelihood of blasting at the proposed Lexington Quarry triggering earthquakes in a nearby fault zone. The last sentence of the first paragraph states that "This facility is required to have a seismograph on site to measure that strength of any blasting that might occur and at a distance of one mile the seismic levels will be so low that they may not be measurable." Although ground motion may or may not be measurable one mile from the site of detonation, residents may hear and experience the air blast.

The proposed Lexington Quarry will monitor each blast with a seismograph to ensure compliance with the blasting regulations. These seismographs may also detect any other seismic activity at or near the site. The Section will consider the professional opinion of Vibra-Tech as part of the technical review of the application for a Mine Operating Permit.

If you have any questions or would like to discuss, please contact me at 803-898-1371 or [koonjm@dhec.sc.gov](mailto:koonjm@dhec.sc.gov).

Sincerely,



Joe Koon, Manager  
Mining and Reclamation Section

Email to: John Hodge, [johnhodge@johnhodgelaw.com](mailto:johnhodge@johnhodgelaw.com)