

ATTACHMENT A

October 29, 2021

Mr. Robert Schena
Fox Rothschild, LLP
747 Constitution Dr
Suite 100
Exton, PA 19341

RE: Hanson Aggregates Rock Hill Quarry
RJ Lee Group Project Number LLH901997

Dear Mr. Schena,

This letter is to present a technical response to the letter dated September 28, 2021 from Erskine Environmental Consulting (EEC) to REPA. The EEC letter contains several statements as to the nature of the testing and results provided by RJ Lee Group.

REPA criticism #1

Hanson submitted a number of test results where asbestos was detected in one sample during a time frame when activity at the site was minimal or absent. The test results and interpretations were provided by their consulting laboratory, R.J. Lee Group (RJLG). For the sample where an actinolite fiber was observed, RJLG, within the body of the text, classified the fiber as not having the characteristics of asbestos, and included a TEM photograph and EDX chemical spectra in support of this assertion. The final laboratory report omitted reference to the determination that the fiber was actinolite, a regulated form of asbestos.

A particle of actinolite was observed during the analysis and was accurately and completely reported. Contrary to EEC's assertion, the observed actinolite fiber was reported, but was correctly classified as having a non-asbestiform habit.

The definition of asbestos, from ISO 10312-2019 is:

**3.6
asbestos**
group of silicate minerals belonging to the serpentine and *amphibole* (3.2) groups, which have crystallized in the asbestiform habit, causing them to be easily separated into long, thin, flexible, strong fibres (3.22) when crushed or processed

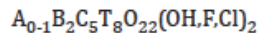
Note 1 to entry: The Chemical Abstracts Service Registry Numbers of the most common asbestos varieties are: chrysotile (12001-29-5), crocidolite (12001-28-4), grunerite asbestos (Amosite) (12172-73-5), anthophyllite asbestos (77536-67-5), tremolite asbestos (77536-68-6) and actinolite asbestos (77536-66-4). Other varieties of asbestiform amphibole, such as richterite asbestos and winchite asbestos^[49] may also be found in some products such as vermiculite and talc.

This is expanded by the definition of amphibole:

3.2

amphibole

group of rock-forming ferromagnesium silicate minerals, closely related in crystal form and composition, and having the nominal formula:



where

A = K, Na;

B = Fe²⁺, Mn, Mg, Ca, Na;

C = Al, Cr, Ti, Fe³⁺, Mg, Fe²⁺;

T = Si, Al, Cr, Fe³⁺, Ti.

Further, the definition for amphibole asbestos:

3.3

amphibole asbestos

amphibole (3.2) in an *asbestiform* (3.5) habit

For completeness, the definition of asbestiform:

3.5

asbestiform

specific type of mineral fibrosity in which the *fibres* (3.22) and fibrils possess high tensile strength and flexibility

And fibre:

3.22

fibre

elongated particle that has parallel or stepped sides

Note 1 to entry: For the purposes of this document, a fibre is defined to have an aspect ratio equal to or greater than 5:1 and a minimum length of 0,5 µm.

Note: this definition has been modified per USEPA OSWER Directive 9200.0-68 as specified by PADEP to include particles with aspect ratio equal to or greater than 3:1.

A further clarifying definition is also provided in the method:

3.13

cleavage fragment

fragment of a crystal that is bounded by *cleavage* (3.12) faces

Note 1 to entry: Crushing of non-asbestiform amphibole generally yields elongated fragments that conform to the definition of a fibre.

In the above definition for cleavage fragment, it is important to note that elongated non-asbestiform fragments can conform to the definition of a fiber, and would be included in the overall structure count. However, ISO's specific definition for "cleavage fragment" clearly acknowledges that not all elongated fibers can or should be considered to be asbestos. This is critical in that the known facts are the rocks at Rock Hill have indicated the presence of both asbestiform (and thus amphibole asbestos) and non-

asbestiform amphiboles (not amphibole asbestos). Thus, it is improper to presume all amphibole fibers would be asbestos, as not all of the fibers can be assumed to be asbestiform. The importance of this fact has been codified by USOSHA in 1992¹ to exclude non-asbestiform varieties of the amphibole minerals from the regulation of asbestos. Further, USMSHA came to a similar conclusion in 2008² and did not include non-asbestiform amphiboles in the definition of asbestos.

REPA criticism #2

The fiber in question, does, in fact, possess the characteristics of asbestos as defined by the procedures of the test method, and the method includes no criteria allowing the classification of a fiber as non-asbestos using general descriptive criteria. ISO 10312 defines a fiber as:

Any particle with parallel or stepped sides, of minimum length 0.5 µm, and with an aspect ratio of 5:1 or greater, shall be defined as a fiber.

The fiber in question meets this definition.

Here EEC mixes definitions. It is clear that EEC is using only the definition of “fiber” as provided in ISO 10312 to mean “asbestos”. EEC believes that any and all amphibole fibers be counted as asbestos even if they are not. RJLG clearly reported the fiber as amphibole and did nothing to exclude it from the analysis or hide it from critical review. Reporting the fiber as non-asbestiform is consistent with the facts presented by observation of the fiber and comparison to characteristics of asbestiform material presented in peer-reviewed literature cited in ISO 10312 (Campbell W.J, Blake R.L., Brown L.L., Cather E.E., Sjöberg J.J. Selected silicate minerals and their asbestiform varieties. Mineralogical definitions and identification-characterization. Information circular 8751. United States Department of the Interior, Bureau of Mines, Washington, D.C., 1977).

REPA criticism #3

The RJLG report (dated July 30, 2021) identified the fiber as actinolite, an amphibole regulated as asbestos.

Actinolite is regulated as asbestos only when it occurs in the asbestiform habit. RJLG is following current US regulations on the nature of what is and is not asbestos.

It is not clear why RJLG did not report the fiber as asbestos when, by their own report, meets the criteria specified in ISO 10312:

1. The particle meets the definition of a fiber,
2. The particle was identified as an amphibole, and
3. The amphibole was identified as actinolite.

Thus, the fiber should have been reported on the report as actinolite asbestos, and not non-asbestiform amphibole.

¹ 57 FR 24310, June 8, 1992

² 73 FR 11284, February 29, 2008

RJLG did not report the fiber as asbestos because it does not possess the characteristics of being asbestiform. The fiber in question does in fact meet all of the three criteria listed, and was accurately reported as an amphibole fiber. RJLG will only report as asbestos those fibers that possess asbestiform characteristics. We have been clear and transparent in presenting this finding.

The ISO 10312 method acknowledges the interference that non-asbestiform fibers (i.e. cleavage fragments) present. However, it in no way requires that all amphibole fibers be reported as asbestos. At Appendix D, Section D.4.1:

It is not always possible to proceed to a definitive identification of a fibre; this may be due to instrumental limitations or to the actual nature of the fibre.

This statement acknowledges the inherent interferences using the ISO10312 method by fibers of non-asbestiform morphology (i.e. actual nature of the fibre).

Also at Appendix D, Section D.4.3:

Every particle without tubular morphology and which is not obviously of biological origin, with an aspect ratio of 5:1 or greater, and having parallel or stepped sides, shall be considered as a suspected amphibole fibre.

This phrasing clearly describes the fiber at issue. RJLG followed the appropriate steps of zone axis ED and quantitative EDS analysis to arrive at the correct identification of the fiber being of unequivocal amphibole composition as outlined in Figure D.4 and identified the fiber as amphibole.

All particles observed to have the morphology of a fiber have been counted. This fiber has also been accurately identified as being amphibole. RJLG has not evaded any portion of the ISO 10312 method.

The continued criticism by REPA and its consultant on the RJLG results is refuted by the method itself. The argument hinges on this single sentence in the Scope section of ISO 10312:

The method cannot discriminate between individual fibres of asbestos and elongate fragments (cleavage fragments and acicular particles) from non-asbestos analogues of the same amphibole mineral^[13].

This statement is at odds with the entire foundation of the EEC criticisms of the results provided by RJLG and is ignored by REPA. By their reasoning all observed fibers of amphibole should be asbestos. Since the counting criteria cannot differentiate between the two forms, and we know that the two forms exist at this site, it cannot be used to differentiate one form from the other. By utilizing and continually misinterpreting this method it is clear that one of the aims of REPA through their consultant is to consistently inflate (in this instance by 100%) the concentration of any "asbestos" that might be measured. By equating the definition of "fiber" to mean "asbestos" REPA is ignoring the facts of the geology at this site as has been consistently done in repeated reviews of RJLG analyses. RJLG does not deny that an amphibole fiber was found during the analysis (we reported it). By referring to the publication cited at 13 in the bibliography of ISO 10312 it is possible to understand the differences in the nature of asbestos and non-asbestos varieties of amphibole. While there is no quantitative means to make this distinction for a single fiber, that does not preclude making the best effort to accurately

describe the nature of the material being examined. When dealing with non-commercial amphibole types (e.g., actinolite), if the dimensions and characteristics of the observed fiber were consistent with amphibole asbestos it would have been reported as such. Additionally, ISO 22262-1 describes a means of differentiating asbestiform amphiboles states:

In general, for this part of ISO 22262, the presence of either the asbestiform or the non-asbestiform analogues of tremolite, actinolite, anthophyllite or richterite/winchite can usually be specified. If the majority of the amphibole fibres longer than 5 µm have aspect ratios equal to or lower than 5:1, and if the fibres do not exhibit any of the characteristics in c), it can be concluded that the amphibole is probably non-asbestiform, with the degree of certainty increasing with decreasing maximum aspect ratio. If any amphibole fibres longer than 5 µm with aspect ratios in the range of 20:1 or higher are observed, then it can be concluded that amphibole asbestos is probably present, with the degree of certainty increasing with increasing aspect ratio.

REPA criticism #4

Finally, EEC continues to make the same criticism of RJLG:

This subject has been addressed in several memoranda by EEC, and it is a very important issue in evaluating whether or not the project should be allowed to move forward. If the RJLG reports are an indication of what may be expected in the future, then it seems asbestos in processed material and air samples will be reported as non-asbestos based on "characteristics of asbestiform morphology" rather than as reported by the test methodology. Asbestos that may be present will be unreported, as it was during the initial investigation. An exposure assessment cannot be accurately conducted with a compromised or biased data set.

Reporting on this site over the past two years by RJLG has been consistent with the prescribed generally accepted methods: the amphibole present in the quarry is actinolite and represents a range of morphologies from asbestiform to prismatic. When asbestiform actinolite has been observed, it has been accurately reported as actinolite asbestos. Likewise, when non-asbestiform actinolite has been observed, it has been accurately reported as such following generally accepted analytical methodologies. No serpentine or amphibole type fibers have been excluded from the analyses and RJLG will continue to accurately follow the counting protocols of any prescribed methods. The fact that amphibole occurs in a range of morphologies confounds any interpretation of the data collected on the nature of any airborne fibers by any laboratory that thoroughly understands the issues at hand (refer to EMSL letter to PADEP dated October 30, 2019). Just because the prescribed analytical method does not provide a quantitative means to distinguish asbestiform from non-asbestiform fibers does not abolish the fact that they may exist together in a sample and in this quarry.

For the purpose of regulating this site, the distinction between asbestiform and non-asbestiform materials is crucial. For the purpose of monitoring the concentration of airborne fibers to assess any hazard presented, that distinction is also crucial.

If PADEP personnel have any concerns over the scientific credentials and integrity of the RJ Lee Group's laboratory and staff based on the continued assertions of REPA and their paid contractor(s), we welcome PADEP to visit our laboratory and speak with our personnel. It should be noted that RJLG is a PADEP approved laboratory for asbestos analysis.

RJLG strives for accuracy in all analyses performed, and to over-report the asbestos content measured by deviation from standard methods is inaccurate and unacceptable. How the PADEP or our client Hanson uses or interprets our data is beyond our control.

Sincerely,

A handwritten signature in black ink, appearing to read 'Bryan Bandli', with a stylized flourish at the end.

Bryan Bandli, Ph.D.
Principal Investigator