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SENT VIA E-MAIL AND FIRST CLASS MAIL

July 6, 2021

Richard Tallman, P.E.

Pottsville District Mining Office
Pennsylvania Department of Environmental Protection
5 West Laurel Boulevard
Pottsville, PA 17901

Re: Elevated Review Technical Deficiencies Application No. 7974SM1C10
Rock Hill Quarry
East Rockhill Township, Bucks County
Response to PADEP April 12, 2021 Technical Deficiency Letter

Dear Mr. Tallman:

Hanson Aggregates PA LLC ("Hanson") is providing this response to your letter dated, April 12, 2021, requesting additional information in connection with Hanson's Rock Hill Quarry ("Quarry").

By letter dated June 21, 2021, PADEP granted Hanson an extension through October 29, 2021 for Items 10.e. through 12.c. of the Technical Deficiency Letter in recognition of the fact that these items require additional sampling and analysis. Accordingly, this response addresses Items 1 through 10.d. of the Technical Deficiency Letter. Hanson will update its permit modules, as necessary, pending PADEP's review and acceptance of the responses provided herein.

Further, Hanson has recently collected additional background samples at the Quarry from overburden, perimeter air, and water to assess the presence of natural occurring asbestos ("NOA"). That data and corresponding maps of the sampling locations are incorporated hereto as Appendix A.

1. **Module 8.3: Groundwater Information §77.532, §77.522, §77.403**

   a. ***In the previously submitted Module 8.3, dewatering of the quarry pit was proposed at therate of 0.23 Million Gallons per Day (MGD). Please explain your intentions regarding dewatering of the pit and how it may relate to the planned removal of the 500 tons per year.***

RESPONSE: The planned removal of 500 tons of aggregate material per year will not require or involve any dewatering of the quarry pit. Approximately 15,000 tons of aggregate are currently stockpiled onsite to meet required minimum removal rates until full operations are recommenced at the Quarry. In addition, there are more than 10 million tons of material present above the water table that could be mined without dewatering the pit. Future mining below the water table will require dewatering of the pit. This will require pumping in excess of 0.23 MGD to achieve dewatering in a reasonable timeframe. At that time, Hanson will request a temporary or permanent increase in NPDES discharge rate to accommodate such dewatering operations.

2. **Module 8.4: Surface Water Information §77.406, §77.532, §77.521**

   a. **Please address any potential for degradation of Bog Run due to dewatering of the quarry pit or from the release of stormwater from the Rock Hill Quarry site considering the Naturally Occurring Asbestos (NOA) content in the water emanating from the Rock Hill Quarry Site.**

RESPONSE: The United States Environmental Protection Agency (USEPA) recommends an ambient surface water quality criterion of 7 million fibers per liter (MFL) for protection of human health[1]. This criterion is based on the established federal drinking water maximum contaminant level (MCL) of 7 MFL for asbestos fibers that exceed 10 microns in length[2]. Pennsylvania does not have a surface water quality standard for asbestos. As part of its investigation of NOA at the site[3], Hanson collected water samples from the quarry pit, NPDES Outfall, and sediment basins and traps in the spring of 2019. None of those samples were close to or exceeded EPA's recommended limit. Recent water samples collected on June 22, 2021 continue to demonstrate the absence of NOA, as all samples were below the method detection limit (MDL). Based upon these results there is no indication that water emanating from the Site has resulted in degradation of Bog Run.

In addition, as part of the mining permit, Hanson has designed and implemented an Erosion and Sediment Control plan to control and treat stormwater runoff and quarry discharge water. Full implementation and maintenance of this system during mining will mitigate the potential for degradation of streams and surface water features downgradient from the quarry. Under Chapter 93 of the PADEP regulations, Tohickon Creek (also known as Bog Run), is currently designated Trout Stocking (TSF) and Migratory Fishes (MF). Neither dewatering of the quarry or stormwater from the area will impact either of these designated uses.

3. ***Module 10.1: Equipment and Operation Plan: §77.452***

   a. ***Please provide the number hours each day and the number of days and each month that there will be any form of activity at the Rock Hill Quarry. NPDES***

[1] https://www.epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table
[2] https://www.epa.gov/sites/production/files/2018-12/documents/hh-criteria-calculation-matrix-2002.pdf
[3] EARTHRES, Qualitative Geologic Survey Report Rock Hill Quarry, 11/15/2019; RJ LEE Group, Sample Analysis Report, 8/14/2020.

sample collection will be at least twice per month as opposed to the cited "monthly" collection.

RESPONSE: The number of hours and days of quarry activities will vary depending upon whether Hanson is undertaking full quarry operations or limited operations at 500 tons per year. Full quarry activities will occur on Monday through Saturday, generally between the hours of 6:00 am and 6:00 pm. 500-ton removal activities will occur on a much more limited basis, and Hanson will notify PADEP in advance of that planned activity. Prior to site work or equipment delivery for the initial 500-ton removal operation, Hanson will perform and provide to PADEP five (5) separate sets of eight (8) perimeter ambient air samples in order to determine contemporary background air conditions. In subsequent years, Hanson will perform two (2) sampling events (2 separate sets of 8 samples) in conjunction with 500-ton removal operations – one prior to removal and one during. Please see Section 1 of Hanson's Asbestos Monitoring and Mitigation Plan in further response to this item.

b. Please provide a detailed security proposal for the Rock Hill Quarry including the frequency of routine site inspections and security visits and please describe the activityand duration associated with these security visits.

RESPONSE: Access to the Quarry is limited to two main gated entrances at Rockhill Road and Rich Hill Road. Access to the Quarry is limited to only authorized personnel during normal operational hours, though security personnel may access the site outside of normal operational hours. Hanson has contracted with a private security company for the Quarry, which is scheduled to work 40 hours per week on a random schedule focusing on high activity time periods for trespassers, including weekends and holidays. Off season hours are adjusted accordingly.

In particular, Hanson's security contractor is under agreement to:

- Patrol and confront trespassers.
- Amicably and non-confrontationally advise and direct persons off the property (involve Pennridge Regional Police Department as necessary).
- Photo persons trespassing to document and determine repeat offenders.
- Assist with identifying routes of entry.
- Assist with installing and maintaining proper signage/security features about the property.

In addition, the security contractor will assist Hanson in maintaining signage at the Quarry in the event of removal, vandalism, and or other damage that may occur.

4. Module 10.1: Equipment and Operation Plan: "Annual Removal of 500 tons.": §77.452, §77.455, §77.404(5)

According to sampling results provided by Hanson in their August 14, 2020, AdditionalSample Analysis report, seven (7) of the sixteen (16) aggregate samples showed results ranging from 0.11% to 0.52% by weight using

ISO10312, 2019-10, Annex C countingrules. Considering the limited data provided by the sample set, please explain:

As an initial matter, we note that PADEP's reference to results ranging from 0.11% to 0.52% is misleading in that it combines results from the RJLG August 14, 2020, report Tables 4 and 5, and therefore overstates the quantity of asbestos. PADEP appears to be referring to all amphibole particles observed during the analyses, not just asbestos. Two of the samples had no amphibole detected (less than $2.7x10^{-6}$ %) and five of the samples had concentrations less than 0.11%.
If only asbestiform fibers are included in the quantification, the results range from none detected in seven samples to 0.23% (Table 4) or 0.14% (Table 5). To infer that the total asbestos content is 0.11% to 0.52% is not an accurate reflection of the materials analyzed or the information provided in the report. ISO 10312 states explicitly that it cannot differentiate asbestiform from non-asbestiform morphologies of the amphiboles in fibers collected from an air sample. Therefore, to use this method to quantify asbestos in a bulk material and ignore the asbestiform morphology required in the definition of asbestos will result in an overestimate of the asbestos content.

a. ***Why Hanson believes these aggregate piles may be safely disturbed under any conditions.***

RESPONSE: Hanson's Asbestos Monitoring and Mitigation Plan and Mineral Identification and Management Guide set forth comprehensive plans to safely identify, monitor, report to PADEP, and mitigate (if necessary) NOA encountered during quarry operations. As detailed in the plans, water will be applied to aggregate stockpiles as necessary to suppress fugitive dust. Dust suppression will be provided by sprays from a water truck, sprinklers, and/or other stationary water sprayers (e.g., Rainbird). Hanson will monitor any personnel exposure to confirm that airborne particulate levels stay below applicable MSHA exposure limits.

b. Where and how this aggregate will be used, if at all.

RESPONSE: Aggregate will generally be used by end-users for unpaved surface applications and other similar uses subject to appropriate disclosures by Hanson.

c. Explain how receivers of the aggregate will be advised of the asbestos content of the aggregate and precautions they will be required to take concerning the use of the aggregate.

RESPONSE: The OSHA and MSHA Hazard Communication Standards require product warnings that meet their specifications. This is normally conveyed in Safety Data Sheets and weigh ticket warnings. The Quarry will comply with all OSHA and MSHA warning regulations.

5. Module 10.1: Equipment and Operation Plan: "Non-Scheduled Site Maintenance" §77.452, §77.455

a. The narrative in 10.1 under Non-Scheduled Site Maintenance contains the following passages (italics):

"At such time authorized by the Department, mining of the Rock Hill Quarry will commence in a single phase. Bulldozers or track loaders, excavators, and haul trucks willbe used to remove and stockpile topsoil and overburden from the mining area. Overburden will be hauled to and stored in the designated overburden material stockpile.The underlying rock will then be drilled and blasted to facilitate its removal. The shot rock will be excavated by front-end loader, track loader, or excavator.

The excavated material will then be loaded into a haul truck and transported to either a portable processing plant or a stationary processing plant that will be located within theSurface Mine Permit boundary. The processed material will be staged for sale in stockpiles. Support area in the northwest corner of the permitted area will likely be used to stockpile material. "

Please explain how the mining activities described in the above passages factor into Non-Scheduled Site Maintenance activities or in the proposed minimum 500 tons per year of stockpile crushed aggregate. It appears the described mining activities are for full site mining development, are included with Non-Scheduled Site Maintenance, and conflict with the proposed activities described for the immediate future at the Rock Hill Quarry.

RESPONSE: As stated in Hanson's June 14, 2021 letter to PADEP, Hanson previously communicated its intent, in the short term, to limit mining operations at Rock Hill Quarry to the removal of 500 tons to maintain its active mining license. However, given the extent of the information requested, Hanson now intends to provide information for "full" quarry operations, subject to any additional permitting actions or approvals required by PADEP for future activities prior to their commencement. To reflect this, Hanson has developed its Asbestos Monitoring and Mitigation Plan to address both full quarry and more limited 500-ton removal scenarios.

b. Please explain why air monitoring is excluded for dry aggregate or earthen material disturbance activities lasting less than 4 hours.

RESPONSE: Hanson has updated its approach to air monitoring for disturbance activities. As discussed in Section 1 of Hanson's Asbestos Monitoring and Mitigation Plan, prior to the initial 500-ton removal operation, five sets of eight perimeter air samples will be collected on five separate days during idle or low activity to establish the ambient baseline concentrations. Air samples will be collected during the entirety of any 500-ton removal event regardless of whether it lasts less than 4 hours. In subsequent years, Hanson will perform two (2) sampling events (2 separate sets of 8 samples) in conjunction with 500-ton removal operations – one prior to removal and one during.

6. Module 10.7: Identification of Toxic Materials §77.452, §77.404

a. ***Please explain the response of N/A to this module, particularly since NOA, a toxic substance, has been found to exist in the rock at the Rock Hill Quarry.***

RESPONSE: Hanson will identify and handle NOA encountered during its Quarry operations in

accordance with Hanson's Asbestos Monitoring and Mitigation Plan and Mineral Identification and Management Guide. Hanson will update Module 10 accordingly once agreement is reached with PADEP on the information to be included herein. Hanson previously responded with "N/A" because it will be treating all aggregate at Rock Hill Quarry as if it contains NOA and so there will be no "special" handling procedures other than what is set forth in Hanson's Asbestos Monitoring and Mitigation Plan and Mineral Identification and Management Guide.

b. Please describe in detail the procedures that will be employed in identification of NOA. The asbestos fiber structure counting criteria should be in concert with the structure counting criteria expressed in ISO 10312, 2019-10, Annex C.

RESPONSE: Hanson will identify and handle NOA encountered during its quarry operations in accordance with Hanson's Asbestos Monitoring and Mitigation Plan and Mineral Identification and Management Guide.

The procedures employed to identify NOA or EMP collected from air samples will follow the relevant portions of ISO 10312 that relate to fiber identification using energy dispersive x-ray spectroscopy and selected area electron diffraction. If further analysis of bulk materials is to be performed, the analysis will be conducted in a manner similar to prior analysis of bulk materials performed by RJLG in 2019 and 2020. This will include a combination of PLM and TEM analyses to identify and quantify any NOA or EMP present in the materials. PLM methodology will follow USEPA method 600/R-93/116 or ISO 22262-1. TEM methodology will follow ISO 10312, as modified by EPA OSWER directive modified to determine the mass percentage of asbestos in the analyzed samples. The modification will incorporate relevant portions for the mass determination outlined in ISO 22262-2. Where this data is not consistent with the six regulated asbestos minerals, the fibers will be identified to the best of the laboratory's ability and reported as "Other EMP." Optionally, powder x-ray diffraction (XRD) could be implemented to assist in the determination of the presence of amphibole minerals as well as other minerals in bulk samples submitted for analysis according to USEPA method 600/R-93/116 or ISO 22262-3.

7. Module 10.8: Special Handling of Toxic Material §77.452, §77.404

a. ***Please explain the response of N/A to this module, particularly since NOA, a toxicsubstance, has been found to exist in the rock at the Rock Hill Quarry.***

RESPONSE: Hanson will identify and handle NOA encountered during its Quarry operations in accordance with Hanson's Asbestos Monitoring and Mitigation Plan and Mineral Identification and Management Guide. Hanson previously responded with "N/A" because it will be treating all aggregate at Rock Hill Quarry as if it contains NOA and so there will be no "special" handling procedures other than what is set forth in Hanson's Asbestos Monitoring and Mitigation Plan and Mineral Identification and Management Guide.

b. Please describe in detail the procedures that will be employed in the handling of NOA including NOA containing rock and/or soil. The asbestos fiber structure counting criteria should be in concert with the structure counting criteria expressed in ISO 10312, 2019- 10, Annex C.

RESPONSE: Hanson will identify and handle NOA encountered during its quarry operations in accordance with Hanson's Asbestos Monitoring and Mitigation Plan and Mineral Identification and Management Guide.

Trace quantities of asbestiform actinolite-tremolite have been found at the Rock Hill Quarry. For the purposes of developing Hanson's plans, Hanson assumes that all rock and soil at the Quarry will have trace levels of these asbestiform minerals present unless tested and shown not to contain detectable asbestos. With this assumption, all handling of rock and soil at the Quarry, will be performed with:

- dust suppression using water trucks, sprinklers, and/or stationary water sprays.
- water sprays will be located at transfer points so the rock being processed will be continually wet.
- loads being adequately wetted or otherwise controlled before and during truck loading operations.
- unpaved roads being sprayed with a water truck.
- posted speed limits within the Quarry being limited.
- daily inspection for material tracked onto public roads and, regular cleaning of the roadway but, no later than the end of each workday, if necessary.
- trucks transporting product off-site being covered with tarps or other devices.
- paving of quarry entrance/exit to the public roadway.
- a state-of-the-art street sweeper with a broom system and water sprays used for paved traffic surfaces.
- roads resurfaced/regraded as needed to maintain a safe working surface and thereby reduce dust generation.
- air pollution control equipment being operated according to PADEP performance standards coupled with work practices, inspection, and source monitoring.
- ensuring that material being excavated, crushed, screened, loaded, transferred, or conveyed does not result in visible dust emissions exceeding 40 CFR Part 60, Subpart OOO limits for applicable sources.
- drill rigs with on-board dust collection and/or sprays to limit dust generation.
- drill shrouds utilized at the ground level to control fugitive emissions from drilling activities.
- responsible employees trained to conduct visual observations for fugitive emissions as well as opacity readings on emission sources to ensure they are operating properly.
- preventative maintenance of dust control equipment to ensure timely replacement or repair of defective components.

8. Module 10.15: Bonding Calculations: See Attachment 3(c)(i) Conceptual ReclamationPlan: §77.456, §77.453, §77.455, §77.457, §77.462, §77.404

a. ***The Conceptual Reclamation Plan includes the blasting of 52,000 cubic yards of rock to reclaim the affected highwall. Please provide a comprehensive dust monitoring and dust suppression plan for reclamation blasting activity.***

RESPONSE: Hanson's dust monitoring and dust suppression plan covers all operations at the Rock Hill Quarry, including blasting related to 500-ton, full quarry, and closure related activities. Thus, the blasting of 52,000 cubic yards of rock to reclaim the affected highwall is addressed in Hanson's dust monitoring and dust suppression plan. Hanson also addresses blasting in Section 6.2 of its Asbestos Monitoring and Mitigation Plan.

b. The Conceptual Reclamation Plan states that 8,700 cubic yards of existing overburden material would be moved from its present location to the disturbed area for reclamation. Please provide a comprehensive dust monitoring and dust suppression plan for this overburden transport activity.

RESPONSE: Hanson's dust monitoring and dust suppression plan included in module 10 is intended to cover all operations at the Rock Hill Quarry including moving and handling of overburden during 500-ton, full quarry, and closure related activities. Thus, the 8,700 cubic yards of existing overburden material to be moved from its present location to the disturbed area for reclamation is addressed in Hanson's dust monitoring and dust suppression plans. Hanson also addresses blasting in Section 6.2 of its Asbestos Monitoring and Mitigation Plan.

c. ***Please provide an analysis of the overburden material to assess its potential of containing NOA***.

RESPONSE: As provided in Appendix A, Hanson collected eight (8) discrete soil samples to evaluate the potential for NOA in soil and overburden at the Rock Hill Quarry site:

- Four (4) samples (S-1, S-2, S-3, S-4) were taken from the stockpiled overburden pile;
- Two (2) samples were taken from undisturbed soils (S-5, S-6); and,
- Two (2) samples (S-7, S-8) were taken from an area where overburden was removed in preparation for mining.

Samples were collected from 0 to 6 inches below the ground surface utilizing a 3-inch diameter stainless steel soil auger. Surficial organic material, if present, (S-5, S-6, and S-7) was excluded in order to sample a single uniform soil horizon. To evaluate the potential for NOA, samples were analyzed with polarized light microscopy (PLM) using EPA/R-93/600/116 and also by transmission electron microscopy (TEM) in accordance with ISO 22262-2. A single NOA fiber was observed by PLM in two (2) out of the eight (8) samples (S-1 & S-2) and reported as a trace concentration (< 0.1%) as the fibers were outside of the crosshairs. Analysis by TEM detected NOA in one sample (S-3) at a concentration of 0.0024%. The analyses also indicate the presence of amphibole cleavage fragments and other non-asbestos material that met counting requirements for length and aspect ratio. Based on these results, there is potential for NOA to be present at trace concentrations within the soils/overburden at the Site.

9. Module 17.2: Air Pollution Control Plan: §77.455, §77.452, §77.458, §77.631

a. ***Attachment 4(6)(ii) Draft Air Monitoring Plan - Annual removal of 500 tons of***

crushed aggregate from existing stockpiles:

i. Please include a provision committing to provide notice to DEP no less than five (5) working days prior to the beginning any activity that may disturb material on-site, including 500 ton removal events.

RESPONSE: Hanson has incorporated this requirement into section 3.3 of its Asbestos Monitoring and Mitigation Plan.

ii. Please include provisions to ensure that water and/or other dust suppression methods/devices are on-site and in usable condition, prior to undertaking any activity at the site.

RESPONSE: Hanson has incorporated this requirement into section 6.2 of its Asbestos Monitoring and Mitigation Plan.

iii. DEP requests that you commit to cleaning the public road if any material is dragged onto the public road by Hanson or any of their contractors, no later than the end of each work shift. Please provide a detailed plan for cleaning the public road.

RESPONSE: Hanson has incorporated this requirement into section 6.2 of its Asbestos Monitoring and Mitigation Plan.

iv. Please include provisions ensuring that street sweepers are only operated with sufficient water and dust suppression controls to prevent them from being a source of dust emissions.

RESPONSE: Hanson has incorporated this requirement into section 6.2 of its Asbestos Monitoring and Mitigation Plan.

v. DEP requests that a commercial wash station be installed at a sufficient distance from the exit so that vehicles can be cleaned to prevent deposition of material off-site. This should be used by all vehicles leaving the site.

RESPONSE: Hanson has incorporated this requirement into section 6.2 of its Asbestos Monitoring and Mitigation Plan.

vi. Please ensure there is a water truck and/or other dust suppression methods/devices on- site and useable prior to beginning any activities during a 500 ton removal event.

RESPONSE: Hanson has incorporated this requirement into section 6.2 of its Asbestos Monitoring and Mitigation Plan.

vii. Existing moisture level of aggregate piles and roads may not always be

sufficient to control emissions. Please include provisions indicating that you will add moisture to roads, product stockpiles, soil, or other on-site material, as needed to control dust, priorto disturbing said material and during times when no activity is occurring on-site.

RESPONSE: Hanson has incorporated this requirement into section 6.2 of its Asbestos Monitoring and Mitigation Plan.

viii. Please include additional provisions for dust control measures during loading of trucks, such as water sprays during loading, use of directed fog cannons, etc.

RESPONSE: Hanson has incorporated this requirement into section 6.2 of its Asbestos Monitoring and Mitigation Plan.

ix. Please elaborate on the protocol of adjusting air sampling locations depending on wind speed and direction during the annual removal of 500 tons of crushed aggregate. Please detail the decision process that will be used to determine the need for an adjustment of air sampling locations specifying action levels of wind speed or changes in direction.

RESPONSE: Per Section 3.1 of Hanson's Asbestos Monitoring and Mitigation Plan:

> if it is determined that the wind direction has changed, creating a situation where the designated downwind samples are no longer downwind of the active operational areas, this fact will be noted on the sample data forms and the appropriate "new" downwind samples will be identified.

In general, sampling locations will be established with the intention of collecting samples from pre-determined locations around the perimeter of the property in a systematic way over time. There are a number of locations along the perimeter of the property at which samplers can be located. These locations will encompass both upwind and downwind locations without the need to relocate due to possible shifting winds. The general locations of the samplers have been selected based on a number of factors including planned equipment operating locations, historic prevailing winds at the Quarry, site specific activities connected with planned quarrying and processing of aggregate products, and locations of potential offsite receptors.

During 500-ton removal events, Hanson will use the same sampling locations and will use a hand-held weather meter such as a Kestra 4500, or equivalent, along with data from the nearby Pennridge Airport Weather Station to evaluate wind direction and wind speed. The wind direction and speed will be recorded approximately every hour.

x. During any 500 ton removal activities, ensure that the air samples are delivered to the laboratory for analysis after each workday and the sample results have a 24-hour turnaround time from the laboratory.

RESPONSE: See Sections 3.4 and 3.5 of Hanson's Asbestos Monitoring and Mitigation Plan. Hanson will have samples analyzed on an expedited basis during removal activities. Samples collected during full quarry operations will be analyzed based on a standard 10-business day turnaround time. For samples collected during 500-ton removal activities, Hanson will request that the laboratory be analyzed on an expedited basis. When possible, results will be provided from the laboratory to Hanson within five business days of sample receipt. When expedited turnaround of results is not possible, results will be provided from the laboratory to Hanson as quickly as is possible

xi. Please clearly indicate that sampling during 500 ton removal events will take place while material is being handled and moved regardless of any 4-hour time constraint.

RESPONSE: Hanson has updated its Asbestos Monitoring and Mitigation Plan to provide that Hanson will conduct sampling in advance of and during the entirety of any 500-ton removal event. See Section 3.2 of Hanson's Asbestos Monitoring and Mitigation Plan.

xii. ***Please include provisions indicating that sample results will be forwarded to DEP via email within 24 hours of receipt from the laboratory.***

RESPONSE: This requirement has been incorporated into Section 3.5 of Hanson's Asbestos Monitoring and Mitigation Plan. Samples will be analyzed on an expedited timeline after receipt. All efforts will be made to produce results to DEP within 24 hours of receipt by Hanson from the laboratory.

xiii. Please include a provision committing to not conduct a 500 ton removal event at thesite until at least 5 ambient air monitoring events are conducted during idle or low activity conditions at the site and all results are less than the action level.

RESPONSE: Hanson's Asbestos Monitoring and Mitigation Plan has been updated to provide that Hanson will collect five sets of eight perimeter air samples on five separate days during idle or low activity at the site prior to the initial 500-ton removal event following DEP's recission of the current cessation order. See Section 3.3 of Hanson's Asbestos Monitoring and Mitigation Plan.

xiv. Please detail or specify methods, standards and action levels that will be used to initiate corrective actions, such as the use of water to suppress dust, in the following operations:

a) Loading of aggregate onto trucks
b) Adding moisture to the stockpiled aggregate.
c) Overburden loading and transportation.
d) Drilling and blasting.
e) Loading of shot rock.
f) Crushing and stockpiling.
g) Haulage on the Rock Hill Quarry site

h) Haulage off the Rock Hill Quarry site on public highways.

RESPONSE: Hanson's Asbestos Monitoring and Mitigation Plan has been developed to include dust mitigation measures associated with these activities to limit the generation of NOA during quarry activities. See section 6.2 of Hanson's plan. With respect to ambient levels of asbestos at the perimeter of the quarry, Hanson will monitor such concentrations during quarry activities in accordance with its plan and will take appropriate corrective measures if it detects NOA in exceedance of the defined action level. See Sections 3.3 and 3.6 of Hanson's Plan.

Further, these specific activities fall under the purview of the Mine Safety and Health Administration ("MSHA") program, which require that Hanson control exposure to employees of airborne contaminants. With respect to asbestos, MSHA requires that employees' exposure to asbestos not exceed an 8-hour time weighted average full-shift airborne concentration of 0.1 f/cc of air, and that no employee be exposed at any time to airborne concentrations of asbestos in excess of 1 f/cc of air as averaged over a sampling period of 30 minutes. Please see Section 4 of Hanson's Asbestos Monitoring and Mitigation Plan for more information on activity based monitoring.

xiv. ***Please provide specific engineering detail(s) on all devices planned to beused for dust suppression specific to each operational application including rates of application.***

RESPONSE: In accordance with Hanson's Asbestos Monitoring and Mitigation Plan, all dust suppression equipment will be verified to be on-site and in usable condition prior to commencement of any quarrying activity. Under the limited 500-ton operation, Hanson will use portable equipment to mitigate and suppress any dust potentially generated during quarry activities.

At such time a fixed aggregate processing plant would be constructed, Hanson will likely employ a dust suppression system, such as Nesco Dust Pro, Dustboy or equivalent as appropriate. Information on the Nesco systems are on the Nesco Website. In general, Hanson would incorporate high pressure, wet, dust suppression systems to service the primary and secondary crushing circuits. The systems are to be designed to adequately control dust emissions from the proposed circuits. Generally, high pressure spray nozzles are used, and the system will be capable of creating a minimum pressure of 200 psi measured at the discharge of the pump. Valves will be installed before each spray nozzle such that each nozzle can be adjusted for flow. A drain valve will be installed such that the entire system can be drained to prevent freezing. A surge tank is to be provided to supply the system with a supply of freshwater. Hanson will provide PADEP specific engineering details for the dust suppression system prior to initiating full operations at the quarry.

In the event that Hanson's quarrying activities advance beyond the limited 500-ton removal operation, Hanson will install more permanent equipment. Hanson will coordinate with PADEP in advance and will prepare and submit any permit application(s) necessary prior to the operation of permanent dust suppression equipment.

b. Attachment 4(b)(ii) Draft Air Monitoring Plan - General DEP Comments on Analytical Procedures: §77.455, §77.130

i. Please explain the reference to the 5 micrometers in length in the definition of asbestos fiber. The definition of an asbestos fiber should be consistent with the counting methodology as found in ISO 10312-2019-10 "Ambient Air - Determination of Asbestos Fibers - Direct Transfer Transmission Electron Microscopy Method", as modified in Appendix C, Page C-3: Fiber Measurementand Identification detailed in "OSWER Directive #9200.0-68, September 2008, Framework for Investigating Asbestos-Contaminated Superfund Sites"

RESPONSE: Hanson will identify and handle NOA encountered during its quarry operations in accordance with Hanson's Asbestos Monitoring and Mitigation Plan and Mineral Identification and Management Guide. Using fibers >5.0 µm long is consistent with OSHA and MSHA permissible exposure limit measurements and provides a comparison to known exposure and risk assessment studies. Additionally, fibers >5.0 µm are used by EPA IRIS to determine acceptable risk levels based on asbestos exposure. While 0.5 µm minimum fiber lengths will be included in data collection, action levels should be based on sound risk assessment science, which rely on fibers longer than >5.0 µm to determine asbestos disease risk.

In 1986, OSHA promulgated an occupational airborne asbestos standard after conducting a quantitative risk assessment using a number of epidemiological studies of workers exposed to asbestos in a variety of work environments (OSHA, 1986).[4] This risk standard was based on asbestos fibers measured by phase contrast microscopy (PCM) that were longer than 5 micrometers (µm), had length to width aspect ratios of 3:1 or greater, and were wider than 0.25 µm. The standard permissible exposure limit (PEL) was set at 0.2 fibers per cubic centimeter of air (f/cc). This was reduced to 0.1 f/cc in 1994 and is the current PEL (OSHA, 1994). MSHA later adopted this PEL in 2008 (MSHA, 2008).[5] The National Institute for Occupational Safety and Health (NIOSH) uses this fiber dimension for its asbestos fiber analytical methods both PCM and Transmission Electron Microscopy (TEM) (NIOSH, 2019; NIOSH, 1994).[6] EPA, through its Integrated Risk Information System (IRIS) also uses the same PCM fiber dimensions to determine risk (EPA, 1988).[7] Even the EPA's OSWER Directive #9200.0-68, September 2008, Framework for Investigating Asbestos-Contaminated Superfund Sites recognizes that asbestos fibers longer than 5 µm with aspect ratios of 3:1 and greater, are the fibers that need to be assessed to determine

[4] Occupational Safety and Health Administration (OSHA). 1986. "Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite." Fed. Reg. 51: 22612 – 22790. June 20; Occupational Safety and Health Administration (OSHA). 1994. "Occupational Exposure to Asbestos." Fed. Reg. 59: 40964 – 41162. August 10.

[5] Mine Safety and Health Administration (MSHA). 2008. "Asbestos Exposure Limit; Final Rule." Fed. Reg. 73(41):11283-11304. 30 CFR 56, 57, 71, February 29.

[6] National Institute for Occupational Safety and Health (NIOSH). 2019. "Asbestos and Other Fibers by PCM. NIOSH Method 7400: Issue 3." In NIOSH Manual of Analytical Methods (Fifth Edition). National Institute for Occupational Safety and Health (NIOSH), Cincinnati, OH. 40p., June 14; National Institute for Occupational Safety and Health (NIOSH). 1994. "Asbestos by TEM. NIOSH Method 7402: Issue 2." In NIOSH Manual of Analytical Methods (Fourth Edition). National Institute for Occupational Safety and Health (NIOSH), Cincinnati, OH. 7p., August 15.

[7] U.S. EPA. 1988. "Integrated Risk Information System for Asbestos."

asbestos risk (EPA, 2008)[8]:

> "For risk calculations, the inhalation unit risk for asbestos was derived for PCM measurements, and IRIS includes a statement that it should not be applied directly to any other analytical techniques. However, the IRIS summary also acknowledges that use of PCM alone in environments which may contain other fibers may not be adequate (EPA 1988). Therefore, methods for counting PCM-equivalent (PCMe) structures have been designed so that fiber counts made with the two techniques (PCM and TEM) would be approximately equal. EPA recognizes there is some uncertainty associated with using PCMe fiber counts to calculate risk with the inhalation unit risk, but the amount of uncertainty is thought to be relatively small compared to other sources. Alternatively, the use of PCM in environments where other mineral or organic fibers are present is likely to contribute a much larger source of uncertainty. Thus, TEM is preferred to PCM for characterization of environmental exposures."

The use of TEM for analysis of environmental particulate, that could include shorter and/or thinner fibers in the collected data, does not change the fact that the risk assessment data are based on PCM fibers. There is considerable scientific consensus that fibers less than 5 μm in length are of insignificant importance as it pertains to being a cancer health hazard (Hodgson and Darnton, 2000; Eastern Research Group, 2003; EPA, 2003; Doll, 1989; Davis et al, 1986; Moalli, 1987; Barlow et al, 2018; OSHA, 1992).[9] Most background ambient asbestos fibers are less than 5 μm in length (Lee and Van Orden, 2008).[10] These asbestos fibers have been in the environment since the beginning of time and people everywhere are exposed to these fibers every day, with every breath.

An elongate mineral particle's (EMP) length affects its ability to be deposited in the lungs and biopersist (ATSDR, 2001).[11] Longer EMPs that are sufficiently narrow are more likely to be deposited in the lower airways after being inhaled, from which they are not readily cleared by the lungs' natural processes (Craighead, 2008; ATSDR, 2001; Bernstein and Hoskins, 2006; Coin et

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[8] U.S. EPA. 2008. "Framework for Investigating Asbestos-Contaminated Superfund Sites – OSWER Directive #9200.0-68." September.

[9] J. Hodgson and A. Darnton (2000). "The Quantitative Risks of Mesothelioma and Lung Cancer in Relation to Asbestos Exposure", Annals of Occupational Hygiene, 44, p 565-601; Eastern Research Group (2003). "Report on the Expert Panel on Health Effects of Asbestos and Synthetic Vitreous Fibers: The Influence of Fiber Length", prepared for Agency for Toxic Substances and Disease Registry; USA EPA (2003). Report on the Peer Consultation Workshop to Discuss a Proposed Protocol to Assess Asbestos-Related Risk, May 30, 2003; R. Doll (1989). Mineral fibres in the non-occupational environment: concluding remarks. In Non-Occupational Exposure to Mineral Fibres, Eds. J. Bignon, J. Peto, and R. Saracci. WHO/IARC Scientific Publications No. 90, Lyon p. 511-518; J.M.G. Davis, J. Addison, R.E. Bolton, K. Donaldson, A.D. Jones, and T. Smith (1986). The pathogenicity of long versus short fiber samples of amosite asbestos administered to rats by inhalation and intraperitoneal injection, British Journal of Experimental Pathology. Vol 63(3), p. 415-430; P.A. Moalli, J.L. McDonald, L.A. Goodglick and A.B. Kane (1987). Acute injury and regeneration of the mesothelium in response to asbestos fibres. American Journal of Pathology. Vol. 128(3) p. 426-445; C.A. Barlow, J.M. Grespin, E.A. Best (2018). Asbestos fiber length and its relation to disease risk. Inhalation Toxicology Vol. 29 p. 541-554; Occupational Safety and Health Administration (1992). Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite. Federal Register 75 p. 24310.

[10] Lee, R.J., Van Orden, D.R., (2008). Airborne Asbestos in Buildings. Regulatory Toxicology and Pharmacology. Vol. 50 pp 218-225.

[11] Agency for Toxic Substances and Disease Registry (ATSDR). 2001. "Toxicological Profile for Asbestos." 441p., September.

al., 1992; Bernstein and Pavlisko, 2017).[12] In contrast, shorter EMPs are less likely to be deposited in the lower airways and more readily engulfed and digested by large white blood cells called macrophages during the phagocytosis process, thus allowing them to be cleared from the lungs more easily (Bernstein and Pavlisko, 2017).[13] NIOSH (2011) indicated that EMPs < 5 µm in length did not contribute to lung cancer risk.[14] Based on existing animal and human studies, Roggli (2015) concluded that "there is no convincing evidence for a pathogenic effect for [asbestos] fibers that are 5 µm or less in length."[15] The scientific consensus following the Monticello Conference on EMPs also supported the conclusion that asbestos fibers ≤5 µm pose insignificant risk for asbestos-related cancer (Mossman, 2018; Chatfield, 2018; Weill, 2018)[16]. Occupational epidemiology studies of cancer and mesothelioma risk, and subsequent regulatory exposure limits derived using these studies, are all based on measurements of asbestos fibers that are longer than 5 µm (Chatfield, 2018).

ii. Please indicate that 0.45 micrometer pore size filters will be used unless 0.8 poresize is approved by DEP in a particular instance (i.e. clogging).

RESPONSE: This requirement has been incorporated into Section 3.4 of Hanson's Asbestos Monitoring and Mitigation Plan.

iii. Please include procedures to ensure that sample durations are adequate to achievea reporting limit of 0.005 f/cc or lower.

RESPONSE: This requirement has been incorporated into Section 3.2 of Hanson's Asbestos Monitoring and Mitigation Plan. Using a minimum sampling time of 4 hours for any sample collection event, as well as a flow rate of 1-4 L/min will ensure that the reporting limit of 0.005 f/cc can be efficiently achieved.

iv. DEP believes that the appropriate methodology for analyzing samples in this situation is ISO 10312-2019-10 "Ambient Air - Determination of Asbestos Fibers Direct Transfer Transmission Electron Microscopy Method", as modified in Appendix C, Page C-3: Fiber Measurement

[12] Craighead, JE. 2008. "Benign pleural and parenchymal diseases associated with asbestos exposure." In Asbestos and Its Diseases. (Eds.: Craighead, JE; Gibbs, AR), Oxford University Press, Oxford, UK. p139-171; Bernstein, DM; Hoskins, JA. 2006. "The health effects of chrysotile: Current perspective based upon recent data." Regul. Toxicol. Pharmacol. 45:252-264; Coin, PG; Roggli, VL; Brody, AR. 1992. "Deposition, clearance, and translocation of chrysotile asbestos from peripheral and central regions of the rat lung." Environ. Res. 58(1):97-116; Bernstein, DM; Pavlisko, EN. 2017. "Differential pathological response and pleural transport of mineral fibres." In Mineral Fibres: Crystal Chemistry, Chemical-Physical Properties, Biological Interaction and Toxicity. (Ed.: Gualtieri, AF), European Mineralogical Union and the Mineralogical Society of Great Britain and Ireland. p417-434.

[13] Bernstein, DM; Pavlisko, EN. 2017. "Differential pathological response and pleural transport of mineral fibres." In Mineral Fibres: Crystal Chemistry, Chemical-Physical Properties, Biological Interaction and Toxicity. (Ed.: Gualtieri, AF), European Mineralogical Union and the Mineralogical Society of Great Britain and Ireland. p417-434.

[14] National Institute for Occupational Safety and Health (NIOSH). 2011. "Asbestos Fibers and Other Elongate Mineral Particles: State of the Science and Roadmap for Research (Revised Edition)." DHHS (NIOSH) Publication No. 2011-159; NIOSH Current Intelligence Bulletin 62. 174p., April.

[15] V. Roggli (2015). "The So-called Short-Fiber Controversy, Literature Review and Critical Analysis", Archives of Pathology & Laboratory Medicine, 139, p. 1052-1057.

[16] B.T. Mossman (2018). Mechanistic in vitro studies: What they have told us about carcinogenic properties of elongated mineral particles (EMPs). Toxicology and Applied Pharmacology, Vol. 361 p. 62-67; E. Chatfield (2018). Measurement of elongate mineral particles: What we should measure and how do we do it? Toxicology and Applied Pharmacology, Vol. 361, p. 36-46; D. Weill (2018). Proceedings of The Monticello Conference on Elongate Mineral Particles (EMP), Toxicology and Applied Pharmacology, Vol. 361 p. 1-2.

and Identification detailed in EPA's"OSWER Directive #9200.0-68, September 2008, Framework For Investigating Asbestos-Contaminated Superfund Sites". If Hanson wishes to do concurrent sampling to demonstrate the efficacy of other analysis methods for this site, then that may be proposed.

RESPONSE: This requirement has been incorporated into Section 3.4 of Hanson's Asbestos Monitoring and Mitigation Plan.

v. Please provide detailed laboratory standard operating procedures (SOPs) that will be used to prepare samples, analyze samples, and calculate results.

RESPONSE: All SOPs are based on published methods that are publicly available. Laboratory standard operating procedures are considered confidential and proprietary. However, Hanson will make accommodations for PADEP to review these procedure documents with any laboratory, to the extent possible, upon request by PADEP.

c. Attachment 4(b)(ii) Draft Air Monitoring Plan General DEP Comments on SamplingMethodology. §77.455, §77.401.

RESPONSE (9(c)(i through xvii)): Hanson will identify and handle NOA encountered during its Quarry operations in accordance with Hanson's Asbestos Monitoring and Mitigation Plan and Mineral Identification and Management Guide. These plans include details on how Hanson will select upwind and downwind sampling locations, the number of sampling locations, Hanson's monitoring of asbestos levels during idle or low activity periods, and steps Hanson will take to prevent NOA from migrating from the site.

i. Please provide a plan to determine background offsite NOA levels in surrounding communities and vulnerable populations.

RESPONSE: In order to assess background offsite NOA levels in surrounding communities and vulnerable populations, Hanson will collect perimeter data at the quarry and extrapolate from that data any risk of exposure. Perimeter data provides the most accurate data as it relates to NOA from the Rock Hill Quarry, offers the most conservative background assessment scenario as it relates to offsite receptors, and provides readily comparable data against which Hanson can assess any incremental risk posed by future detections of NOA. As indicated in Appendix A, preliminary background perimeter air samples do not demonstrate the presence of ambient NOA at the perimeter of the Quarry. Any offsite NOA could not be associated with any Quarry activities.

As detailed in Hanson's Asbestos Monitoring and Mitigation Plan, in order to implement this analysis, Hanson or authorized representatives will deploy eight (8) monitoring locations along the perimeter of the Quarry to examine the ambient air during periods of no or low activity. The monitoring locations were determined using site plans and expected weather patterns. The coordinates of each monitor were determined using Google Earth. The location of each sampler is at or near the predetermined coordinates based on site features and anticipated wind direction. The monitors were spaced relatively evenly around the Quarry to account for any potential change

in wind direction. Therefore, there would be an upwind and downwind monitor(s) for each possible wind direction. The monitors were set up per the ISO 10312-2019-10 method. The monitors are run at a flow rate and length of time to obtain 1,000 Liters of air. Please see Section 3.1 of Hanson's Asbestos Monitoring and Mitigation Plan for a further discussion on perimeter air sampling locations and wind monitoring.

Hanson's use of perimeter monitoring is supported by several studies of airborne asbestos migration from potential sources, which indicate that airborne migration significantly decreases after only a short distance from the original source. These studies illustrate that the most meaningful data is that which is collected nearest the source. As is the case with most airborne substances, NOA concentrations emitted from a specific source (*e.g.*, a particular occupational activity, a mine, or manufacturing operations) will decrease the farther away from that source because of the mixing of fibers with ambient or outdoor air (*i.e.*, dilution ventilation) (see, *e.g.*, Ilgren *et al*., 2015; Sahmel *et al*., 2015; Kuryvial *et al*., 1974; Donovan *et al*., 2011).[17] [18] [19] [20]

- Kurvivial *et al.* (1974) found "persons living in the vicinity of two large mining operations working asbestos-containing ore were not exposed to asbestos concentrations above those frequently encountered in ambient air. The maximum concentration determined was 0.009 $\mu g/m^3$ (based on 24-hour sample), whereas concentrations of 0.001 to 0.01 have been encountered… in other ambient sampling programs."

- Donovan *et al.* (2011) conducted a literature review and modeled exposure to asbestos in occupational settings. The authors "propose[d] the following approach as a rule of thumb: for persons 1-5 feet from the source, airborne asbestos concentrations can be roughly approximated at 50% of the source concentration; 35% at >5-10 feet, 10% for >10-30 feet, and less than 1% at distances greater than 30 feet. This approach should be helpful for bracketing the range of likely exposures to bystanders being evaluated in asbestos-related dose-reconstruction analyses."

- Ilgren *et al*. (2015) evaluated fiber drift of Bolivian crocidolite downwind of a plant in Cochabamba. They specifically evaluated crocidolite "downwind of the fiberizing unit when the fibre was being milled, shoveled and sieved. The point source readings for these operations were measured on personal samplers worn by the siever and the shoveler. All were exceedingly high. The upper boundary PCME counts for each operation ranged from 729 to 826 f/ml. Remarkably, the concentrations 10 meters outside the plant ranged from 2.7 to 3.7 f/ml, more than a 200 fold decrease. By 100 meters, these fell more than a 1000 fold (0.002 – 0.006 f/ml). At 500 meters, virtually no crocidolite fibres were detected.

[17] Ilgren, EB; Van Orden, DR; Lee, RJ; Kamiya, YM; Hoskins, JA. 2015. "Further studies of Bolivian crocidolite - Part IV: Fibre width, fibre drift and their relation to mesothelioma induction: Preliminary findings." *Epidemiol. Biostat. Public Health* 12(2):e-11167-1-e-1167-11. doi: 10.2427/11167.

[18] Sahmel, J; Avens, HJ; Scott, PK; Unice, K; Burns, A; Barlow, CA; Madl, AK; Henshaw, J; Paustenbach, DJ. 2015. "Measured removal rates of chrysotile asbestos fibers from air and comparison with theoretical estimates based on gravitational settling and dilution ventilation." *Inhal. Toxicol.* 27(14):787-801. doi: 10.3109/08958378.2015.1110216.

[19] Kuryvial, RJ; Wood, RA; Barrett, RE. 1974. "Identification and Assessment of Asbestos Emissions from Incidental Sources of Asbestos." Report to US EPA, Office of Research and Development. EPA-650/2-74-087; NTIS PB-241999, 344p., September.

[20] Donovan, EP; Donovan, BL; Sahmel, J; Scott, PK; Paustenbach, DJ. 2011. "Evaluation of bystander exposures to asbestos in occupational settings: A review of the literature and application of a simple eddy diffusion model." *Crit. Rev. Toxicol*. 41:50-72.

Indeed, the one fibre found at 500 meters could have come from re-entrainment of accumulated ground dust." In this same study, thin fibers of crocidolite (<0.25 microns) were found to be 146 to 195 f/ml at the sieving and shoveling stations respectively, yet the downwind concentrations at 100 meters were reduced to a level of 0.001 f/ml to undetectable at 500 meters downwind.

- At the Libby, Montana asbestos superfund site, the Agency for Toxic Substances and Disease Registry ("ATSDR") assessed community exposure from residual asbestos from facility emissions.[21] ATSDR concluded:

> MDH and the Minnesota Pollution Control Agency used site-specific facility and meteorological data to model past asbestos emissions for the former exfoliation site in Minneapolis, Minnesota [ATSDR 2003a]. Model results indicated a maximum long-term ambient air concentration of 0.0264 f/cc and a maximum short-term (1-hour) ambient air concentration of 0.868 f/cc around the site. Model simulations suggested that long-term airborne asbestos levels diminished rapidly to less than 0.01 f/cc within 1 to 2 blocks (approximately 50–60 yards) of the facility. These results represent a worst case scenario for facility emissions during 1936–1972, before stack emission controls were implemented.

As noted generally in Naturally Occurring Asbestos: A Resource Document for the Pennsylvania Mine-Permitting Process Where NOA May be Present[22], "[q]uarries and mines are typically isolated from adjacent communities by operator-owned undeveloped buffer zones, berms, tree lines, and other natural or constructed barriers. These features reduce airborne dust in remote areas by increasing the distance that dust must travel to reach those areas, and by interfering with any natural wind patterns that could carry dust beyond site boundaries." This is the case with the Rock Hill Quarry, which is generally surrounded by forest and inaccessible terrain, and where excavation is typically within the quarry pit, below the surrounding land.

As such, perimeter monitoring is the most likely to yield the highest (if any) concentrations of airborne NOA. Thus, perimeter monitoring will provide the best and most conservative data for assessing risks in surrounding communities and vulnerable populations, as they will likely reflect highest potential air concentrations.

ii. Please explain how the proposed one-time background air monitoring event lasting two days at the Rock Hill Quarry is sufficient to characterize background air conditions.

RESPONSE: Additional background samples at the Quarry will be collected in accordance with Sections 3.2 and 3.3 of Hanson's Asbestos Monitoring and Mitigation Plan. As explained therein, Hanson will on five (5) separate occasions, collect samples from the eight identified sampling locations along the perimeter of the property (40 samples). As explained in the Asbestos

[21] Agency for Toxic Substances and Disease Registry. October 29, 2008. "Summary Report, Exposure to Asbestos-Containing Vermiculite from Libby, Montana, at 28 Processing Sites in the United States."
[22] Goodman, J.; Wylie, A.; Chatfield, E.; Gibbs, G; Weill, D. *Naturally Occurring Asbestos: A Resource Document for the Pennsylvania Mine-Permitting Process Where NOA May Be Present* (February 5, 2021).

Monitoring and Mitigation Plan, the proposed sampling is more than sufficient to characterize background air conditions.

iii. ***Please explain in detail the methodology that will be used to locate the upwind and downwind sampling locations for air monitoring specific to the Rock Hill Quarry. Previous submissions (R.J. Pierson, December 2018) cited wind data from the Allentown Bethlehem Airport which is approximately 20 miles away with significant topographical features between the airport and the Rock Hill Quarry.***

RESPONSE: Hanson will locate upwind and downwind sampling locations as detailed in Section 3.1 of its Asbestos Monitoring and Mitigation Plan. In general, wind roses from the Quakertown Airport, which is several miles away, have been used to determine monitoring locations in addition to the onsite monitor. The Quakertown wind rose diagrams show the wind directions to be similar to that of the Lehigh Valley International Airport.

iv. ***Please include provisions and specifications for installation of a permanent weather station measuring wind direction and speed at the site for more accurate determination of those parameters.***

RESPONSE: For full quarry operations, Hanson has incorporated this requirement into Section 3.1 of Hanson's Asbestos Monitoring and Mitigation Plan. During 500-ton removal events, Hanson will use handheld monitors to measure wind direction and wind speed.

v. ***Please specify that data from the on-site weather station will be used to assess the proper sampling locations.***

RESPONSE: Hanson has incorporated this requirement into Section 3.1 of Hanson's Asbestos Monitoring and Mitigation Plan. During 500-ton removal events, Hanson will use handheld monitors to measure wind direction and wind speed.

vi. ***Please specify that at least 5 locations will be sampled during each event.***

RESPONSE: Hanson has incorporated this sampling requirement into Section 3.1 of Hanson's Asbestos Monitoring and Mitigation Plan.

vii. ***Please include procedures for collecting data if the weather station is inoperable and unable to monitor wind speed or direction for greater than 12 hours.***

RESPONSE: Hanson has incorporated this requirement into Section 3.1 of Hanson's Asbestos Monitoring and Mitigation Plan. During 500-ton removal events or when the station is inoperable and unable to monitor windspeed and direction, Hanson will use handheld monitors to measure wind direction and wind speed.

viii. ***Please provide procedures and timeframes for multiple sampling events during idle or low activity conditions to take place on a regular basis over an extended time to address concerns about differing weather and seasonal conditions. For example,***

sampling every 6 days for 5 consecutive events over 30 days, once each quarter.

RESPONSE: Hanson has incorporated this sampling requirement into Section 3.2 of Hanson's Asbestos Monitoring and Mitigation Plan.

ix. Please include a planned protocol for adjusting sampling locations depending on wind speed and direction during the sampling event and sufficient detail on the parameters used to determine the sampling locations and the general condition of the sampling site including - local obstructions, distance to the driplines of surrounding trees, type of tree (evergreen or deciduous) height of the sampler, etc.

RESPONSE: Hanson has incorporated this requirement into Section 3.1 of Hanson's Asbestos Monitoring and Mitigation Plan.

x. Please define an action level for asbestos sample results. Based on previous discussions it is suggested that this be 0.01 fibers/cubic centimeter (f/cc).

RESPONSE: Hanson has incorporated this requirement into Section 3.6 of Hanson's Asbestos Monitoring and Mitigation Plan. Hanson has incorporated an action level of 0.01 f/cc, as requested by PADEP, but for the purposes of determining whether corrective action is necessary, Hanson will only consider and count asbestos fibers that exceed 5 micrometers in length. Hanson reserves the right to petition PADEP to modify this action level pending the generation and review of additional site data.

When analyzing a sample by TEM for ambient asbestos concentration, the analyst will either count 100 fibers or 100 grid openings, whichever comes first. Since there are many more short fibers than long fibers, there is a significant possibility that 100 short fibers would be counted, and the analysis stopped before a significant number of long fibers (>5 μm) would be counted. By reducing the area analyzed based on the numerical concentration of the shorter fibers, the sensitivity of the analysis for the longer fibers is decreased. The result would be an analysis that is biased toward fibers that are not associated with health risk at the expense of fibers that are known to be related to risk (Chatfield, 2018). The results are then unusable for comparison to studies performed using PCM that are the foundation of the risk assessment science and unnecessarily confound the interpretation of the findings. Performing the analysis in this way additionally has the effect of diluting the calculated concentration of those fibers (>5 μm) that pose the greatest risk to human health.

xi. Please provide a detailed plan for what actions will be taken when sample results are above the action level. Please include maximum timeframes to take those actions.

RESPONSE: Hanson has incorporated this requirement into Section 3.6 of Hanson's Asbestos Monitoring and Mitigation Plan.

xii. Please include provisions indicating that all sample results will be forwarded to DEP via email within 24 hours of receipt from the laboratory.

RESPONSE: Samples collected during full quarry operations will be analyzed based on standard 10 business day turnaround time. Samples collected during 500-ton removal activities will be requested to be analyzed on an expedited basis. When possible, results will be provided from the laboratory to Hanson within five business days of sample receipt. When expedited turnaround of results is not possible, results will be provided from the laboratory to Hanson as quickly as is possible

xiii. Please include provisions indicating that DEP will be notified within 24 hours of receipt of a sample result from the laboratory over the action level.

RESPONSE: This requirement has been incorporated into Section 3.5 of Hanson's Asbestos Monitoring and Mitigation Plan. Samples will be analyzed on an expedited timeline after receipt. All efforts will be made to produce results to the Department within 24 hours or receipt by Hanson from the laboratory.

xiv. Please propose procedures indicating how Hanson will conduct initial asbestos air monitoring during low activity conditions and the use of on-site roads (i.e.: water sample collection, site inspections, security, etc.) demonstrating that ambient levels of asbestos do not exceed the action level.

RESPONSE: During initial air sampling, only one to two vehicles are on site in order to minimize any fugitive dust generation by vehicle traffic that might affect ambient air evaluation. Further, to mitigate generating emissions, trucks will not exceed the posted vehicle speed limits of 15 mph.

xv. Please include provisions to ensure that water emitting devices or other appropriate dust control equipment is on-site and useable prior to beginning activity where material, soil or rock on site may be disturbed, regardless of the planned length of the activity.

RESPONSE: Hanson has incorporated this requirement into section 6.2 of its Asbestos Monitoring and Mitigation Plan.

xvi. Please provide engineering detail(s) on water emitting devices planned to be used for controlling dust specific to the operational application.

RESPONSE: In accordance with Hanson's Asbestos Monitoring and Mitigation Plan, all dust suppression equipment will be verified to be on-site and in usable condition prior to commencement of any quarrying activity. Under the limited 500-ton operation, Hanson will use portable equipment to mitigate and suppress any dust potentially generated during Quarry activities.

At such time a fixed aggregate processing plant would be constructed, Hanson will likely employ a dust suppression system, such as Nesco Dust Pro, Dustboy or equivalent as appropriate. Information on the Nesco systems are on the Nesco Website. In general, Hanson would incorporate high pressure, wet, dust suppression systems to service the primary and secondary crushing circuits. The systems are to be designed to adequately control dust emissions from the

proposed circuits. Generally, high pressure spray nozzles are used. Valves will be installed before each spray nozzle such that each nozzle can be adjusted for flow. Hanson will provide PADEP specific engineering details prior to initiating full operations at the Quarry.

When Hanson's quarrying activities increase beyond the limited 500-ton removal operation, Hanson will need to install more permanent aggregate processing equipment. Hanson will coordinate with PADEP in advance and will prepare and submit any permit application(s) necessary prior to the operation of permanent dust suppression equipment.

xvii. ***Please include provisions in the air monitoring plan to sample and monitor ambient air levels of asbestos during any activity where material, soil or rock on site will be disturbed, regardless of the planned length of the activity.***

RESPONSE: Hanson has incorporated this requirement into sections 3.2 and 3.3. of its Asbestos Monitoring and Mitigation Plan.

10. Please provide an up to date comprehensive NOA Monitoring and Risk Mitigation Plan for the Rock Hill Quarry.: §77.451, §77.105, §77.130.

a. Please detail all methods, protocols and compliance standards that will be employed to assess the background exposure of NOA in the communities surrounding the Rock Hill Quarry.

RESPONSE: Hanson incorporates its Response to Item 9(c)(i). Hanson will identify and handle NOA encountered during its Quarry operations in accordance with Hanson's Asbestos Monitoring and Mitigation Plan and Mineral Identification and Management Guide. Hanson's experts have determined that sampling at the boundary of the quarry property is the most effective way to assess risks to the general population. As noted above, preliminary background perimeter air samples did not demonstrate the presence of ambient NOA. Any offsite NOA could not be associated with Quarry activities.

As discussed above, sampling at the property boundary will provide a conservative value to assess exposure to the most sensitive receptors.

b. Please detail all methods, protocols and compliance standards that will be employed to identify and quantify the NOA content in the rock or overburden at the Rock Hill Quarry.

RESPONSE: Please see Hanson's Response 8(c) on Hanson's analysis of overburden.

c. Please detail all methods, protocols and compliance standards that will be employed to monitor the migration of NOA from the Rock Hill Quarry Site.

RESPONSE: Hanson will monitor ambient levels of NOA at the perimeter of the quarry in accordance with its Asbestos Monitoring and Mitigation Plan. In the event that NOA is detected above the defined action level, Hanson will employ the following corrective measures outlined in

Section 3.6 of the Plan:

1. Report the results immediately to the Hanson site manager and Senior Director of Operations. Hanson will also notify the PADEP within 24 hours of receipt of the TEM analysis results.

2. Daily air sampling of that location will commence for 7 days.

3. Investigate the potential cause of the results. The investigation will include at least the following elements:

    a. Review of operational activities that were occurring during sampling,
    b. Confirmation that dust suppression systems are fully operational, and
    c. Quality Assurance and Quality Control review of all sampling and laboratory equipment and procedures.

4. Hanson will take immediate corrective measures. These corrective measures may vary based on the location of the sample, and findings of the investigation. The investigation will begin as soon as the result is confirmed and will be completed in an expedited manner. The corrective actions may include investigation of the source of any airborne asbestos, extra dust suppression measures, cleanup, repairs or modifications to systems and controls, or temporary cessation of operations.

5. Within seven calendar days of receipt of the TEM analysis results from the 7-day daily air sampling in 2) above, submit to PADEP a written report of the sampling results, and a plan and schedule of steps that have been or will be taken to identify and mitigate the source of the airborne asbestos, and to re-monitor ambient air at the facility perimeter.

6. Hanson will record the results and all corrective measures taken at the site in a permanent written log.

7. During a 500-ton removal event, if an exceedance of the established action level occurs, Hanson will conduct an additional sampling event (1 round of 8 perimeter air samples) and will conduct corrective actions, as necessary.

d. All methods, protocols and compliance standards that will be employed to control migration of NOA from the Rock Hill Quarry site whether they be in air, water, overburden, waste, or products produced by the Rock Hill Quarry.

RESPONSE: Hanson will address migration of NOA from the site through the following pathways:

- Air: as discussed Hanson's Asbestos Monitoring and Mitigation Plan, Hanson has identified eight (8) locations where it will monitor NOA at the perimeter of the Quarry (see Section 3.1), Hanson will sample NOA during both full quarry operation and 500-ton operations (See Section 3.3), and Hanson will perform corrective actions as necessary if NOA is detected above the established action level (see Section 3.6).

- Water: On an annual basis, unless otherwise approved in writing by PADEP, Hanson will collect a water sample from a dust suppression water source for asbestos analysis. This samples will be collected and analyzed in accordance with EPA Method 100.1, Analytical Method for Determination of Asbestos Fibers in Water. Hanson will maintain records of annual EPA Method 100.1 water analyses for at least five (5) years, and will make these records available to PADEP upon request. Furthermore, if perimeter air sampling triggers corrective action requirements in accordance with Section 3.6, then Hanson will submit the results of the most recent EPA method 100.1 analyses to PADEP in accordance with Section 3.6.

  As indicated on Appendix A, Hanson has collected preliminary water samples from the following locations:

  1. NPDES Outfall;
  2. Sediment Trap 1
  3. Sediment Trap 2
  4. Sediment Trap 3
  5. Sediment Basin 1
  6. Sediment Basin 2
  7. Quarry Pitt

  The results of the preliminary sampling demonstrate concentrations at or below the Method Detection Limit with no structures identified.

- Traffic: In accordance with Sections 4 and 6.2 and Hanson's Asbestos Monitoring and Mitigation Plan, NOA potentially generated by truck traffic and mitigated as necessary. In particular, Hanson will employ the following measures:

  - utilize a dedicated street sweeper, with water sprays, to clean paved roads and public road ways near site entrances as needed,
  - perform daily visual inspections for material tracked on public roads and will promptly clean any accumulated material;
  - will install a truck wash utilizing spray nozzles and pressurized water to remove loose or dusty material from loading trucks leaving the site;
  - require that all trucks transporting materials off-site be covered with tarps or other devices;
  - post vehicle speed limits on haul roads in quarry and stockpile areas of 15 miles per hour.
  - apply water or commercial dust suppression liquids during extremely dry or winter conditions, as needed;
  - wet materials to be handled prior to loading and limit drop height as safety permits. Trucks will be loaded on the leeward side of the storage pile. The facility will install a wind sock to easily identify wind direction.

- Product: Customers are provided Safety Data Sheets as necessary. The OSHA and

MSHA Hazard Communication Standards require product warnings that meet their specifications. This is normally conveyed in Safety Data Sheets and weigh ticket warnings. The Quarry will comply with all OSHA and MSHA warning regulations. So long as the asbestos content does not exceed the 1.0% limit from TSCA, or 0.1% from OSHA, measured using an appropriate method for bulk materials, there is no regulatory requirement to label this material as asbestos containing.

- Waste: In general, sediment and/or pieces of aggregate generated during quarrying activities are managed on-site for future use, such as reclamation. This material includes fines and/or overburden that may result from quarry and blasting activity. Materials such as filters and filter systems that may accumulate asbestos fibers will be managed and disposed of in accordance with PADEP regulations and only to properly licensed waste disposal facilities.

Hanson intends to reply to Paragraphs 10(e) through 12 of PADEP's Deficiency Letter on or before October 29, 2021.

Hanson and its experts are continuing their work and analyses in providing a comprehensive response to the remaining items in PADEP's April 12, 2021 letter. In addition, Hanson anticipates providing PADEP with additional background Quarry perimeter air, overburden, and water sampling results as those results are generated in the near term. Hanson looks forward to PADEP's comments on Hanson's initial response and sampling results. Hanson asks that PADEP let Hanson know when it can expect PADEP's comments on Hanson's initial response and sampling results so Hanson can incorporate any PADEP comments into Hanson's subsequent response due by October 29, 2021.

Hanson is committed to continuing to work with PADEP to allow the removal of the Cessation Order so that quarrying activities can resume at the Rock Hill Quarry.

Regards,

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