Asbestos Abatement Air Monitoring Report

AUGUST 27, 2018

PREPARED FOR:
School District of Philadelphia
440 North Broad Street, Room 3053
Philadelphia, Pennsylvania
Attn: Mr. Gerald Junod

PREPARED BY:
The Vertex Companies, Inc.
700 Turner Industrial Way
Aston, Pennsylvania 19014
PHONE 610.558.8902

VERTEX Project No: 51213
Work Order Numbers: 1759097
Control No: 2018831005
Encumbrance Number: 583018
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1.0 EXECUTIVE SUMMARY

In June 2018, The Vertex Companies, Inc. (VERTEX) was retained by the School District of Philadelphia to provide air monitoring and laboratory services in conjunction with an abatement project at the JH Moore Elementary School located at 6990 Summerdale Avenue in Philadelphia, PA. These services were performed under Encumbrance Number 583018, School District Control Number 2018831005 and Work Order Number 1759097.

Work activities were initiated in response to the newspaper article (i.e., dated May 10, 2018 online at Philly.com and May 13, 2018 in the Philadelphia Inquirer). The article reported that wipe sampling was performed by a staff member in the Second Floor Hallway, the Second Floor Copy Room/Women’s Restroom and the Auditorium. The analytical results for the wipe samples collected ranged from a level of 78,600 F/cm² to 2,590,000 F/cm².

Following the review of the article and the analytical results reported, the School District of Philadelphia initiated a remedial effort to address the reported concerns. To that end, the following protocol was employed:

Initial Response

1. The School District directed one of its contracted consultants to inspect these areas for presence of asbestos containing materials and/or the potential source of the results reported.
2. In accordance with School District standard protocol, the building inspector prepared an Asbestos Design Data Collection (DDC).

Secondary Response

1. The School District of Philadelphia retained The Vertex Companies, Inc. (VERTEX) to consult/oversee any resulting remediation or abatement to be performed.
2. VERTEX, in conjunction with a representative of the Philadelphia Federation of Teachers, Mr. Jerry Roseman of Occupational Health Consultation Services, Inc. (OHCS) performed a re-inspection of designated areas of the school which included: 1st Floor Hallways, 2nd Floor Hallways, 2nd Floor Copy Room and 2nd Floor Women’s Restroom.
3. The re-inspection confirmed that asbestos containing vinyl floor tile was identified in each area.
4. A DDC was prepared by VERTEX. The DDC was utilized to define the abatement remedial effort to be employed. However, the school underwent a major renovation project throughout the summer. Therefore, the scope of initial remediation was limited to specific areas (additional areas will be performed as part of DDC O&M work in the Fall 2018). The scope of work included:

2nd Floor Hallway/Copy Room/Women’s Restroom

- The removal of approximately 200 square feet of floor tile within the copy room. In addition, the copy room/women’s restroom was HEPA vacuumed/wet wiped clean.
- The removal of approximately 30 square feet of floor tile within the 2nd floor center lobby common area.
The removal of approximately 1 square foot of floor tile in the hall outside Classroom #203.

The removal of approximately 1 square foot of floor tile in the hallway close to the center stairwell.

All hallway areas on the 2nd floor were HEPA vacuumed/wet wiped clean.

1st Floor South Hallway/Auditorium

The removal of approximately 48 square feet of floor tile on the stage in the auditorium.

The removal of approximately 18 square feet of floor tile at the doorway, stage right.

The removal of approximately 12 square feet of floor tile outside the slop sink in the 1st floor hallway.

The removal of approximately 12 square feet of floor tile in the common area inside the center entrance.

The auditorium and all south side hallway areas on the 1st floor were HEPA vacuumed/wet wiped clean.

Abatement Redial Effort

1. Work was performed between August 23, 2018 and August 26, 2018.
2. All work was performed in full accordance with the City of Philadelphia’s Asbestos Control Regulations. Specifically, non-friable removal methodologies (i.e., dry ice) were employed.
3. All work was performed by members of the School District of Philadelphia’s A-Team. The A-Team workers are all licensed by the City of Philadelphia and Commonwealth of Pennsylvania to perform asbestos abatement operations.
4. Daily air monitoring was performed by a licensed Asbestos Project Inspector (API) throughout the duration of the remedial effort.
5. At the completion of abatement, VERTEX’s API performed a visual inspection and did not observe any dust or debris on any surfaces within the work areas.
6. The final air testing protocol employed included:
   - VERTEX collected five (5) PCM samples within the 2nd floor copy room work area.
   - VERTEX and OHCS collected five (5) samples within the work area throughout the 2nd floor hallway/copy room/women’s restroom.
   - VERTEX and OHCS collected five (5) samples within the work area throughout the 1st floor south hallway and auditorium.
7. Analytical results of clearance testing throughout the 2nd floor hallway/copy room/women’s restroom work area for both VERTEX and OHCS yielded levels below the City of Philadelphia’s clearance criteria and below the AHERA clearance criteria.
8. Analytical results of clearance testing within the 1st floor hallway/auditorium found levels that passed the AHERA criteria but failed to reach the clearance criteria established by the City of Philadelphia’s Asbestos Control Regulations.
9. The 1st floor work area was split into two (2) separate regulated areas (the south hallway and the auditorium). Both regulated areas were re-cleaned on August 25, 2018. Following re-cleaning, the API performed a visual inspection and did not observe any dust or debris on any surfaces within the work areas.
10. The second set of analytical results of clearance testing within the 1st floor south hallway for both VERTEX and OHCS yielded levels below the City of Philadelphia’s clearance criteria of 0.00554 AS/cc, and the AHERA clearance criteria <70 AS/mm².

11. The second set of analytical results of clearance testing within the 1st floor south auditorium for both VERTEX and OHCS yielded levels below the City of Philadelphia’s clearance criteria of 0.00554 AS/cc, and the AHERA clearance criteria <70 AS/mm².

2.0 PROJECT OVERSIGHT

VERTEX provided an API for on-site inspection and daily air monitoring throughout the duration of the project. Services were performed by certified APIs George Steffe (certification no. 951-1008) and Louis DiMichele (certification no. 991-1004). The project was managed by Donald P. Heim.

3.0 RESULTS

1. Airborne concentrations (i.e., five PCM samples) collected in the 2nd floor copy room work area after abatement (final clearances) were below the City of Philadelphia’s recommended clearance criteria of 0.01 F/cc, for non-friable projects.

2. Airborne concentrations (i.e., five TEM samples) collected throughout the 2nd floor hallway/copy room/women’s restroom and the 1st floor south hallway/auditorium work areas after abatement (final clearances) were below the City of Philadelphia’s clearance criteria of 0.00554 AS/cc, and the AHERA clearance criteria <70 AS/mm². Note: Initial testing within the 1st floor south hallway/auditorium yielded levels above the City of Philadelphia’s Clearance Criteria. Both areas were re-cleaned and re-testing in each area yielded levels below all clearance criteria.

3. Airborne concentrations collected outside the regulated work areas during abatement activities (perimeters) yielded levels below 0.01 F/cc.

4. Airborne concentrations collected inside the regulated work areas during abatement activities also yielded levels below 0.01 F/cc.

Please refer to the attached PCM Air Sampling Results, for a summary of the air sample results.

4.0 ANALYTICAL / AIR MONITORING METHODOLOGIES

Phase Contrast Microscopy (PCM) air samples were collected and analyzed in accordance with the National Institute of Safety and Health (NIOSH) Analytical Method #7400, “Asbestos Fibers in Air,” using A counting rules. A segment of the collected sample filter is mounted on a slide, treated chemically to make the filter transparent, and then examined using a special microscope reticle and counting procedure with phase contrast illumination at 400 to 500 magnification. Any particle having a length to width (or aspect) ratio greater than 3:1, and a length of 5 micrometers (μm) or greater is counted as a fiber. PCM analysis does not distinguish between asbestos and non-asbestos fibers.
All air samples were collected by the high-volume method in which a pump is used to draw a volume of air through a membrane filter at a known rate. Typical sampling rates for final air testing are less than 10 Liters per minute (L/min) for approximately 1200-1,800 liters. Samples are collected in 25-millimeter (mm) cassettes containing a mixed cellulose ester (MCE) filter with a 0.8 μm-effective pore size for PCM analysis.

Final clearance air samples were collected and analyzed by both Phase Contrast Microscopy (PCM) and Transmission Electron Microscopy (TEM). TEM analysis was performed by International Asbestos Testing Laboratories (IATL) of Mount Laurel, New Jersey (AIHA #100188).

5.0 ABATEMENT METHODOLOGIES

Abatement was performed by Commonwealth of Pennsylvania/City of Philadelphia licensed asbestos abatement workers. All licensed workers donned proper personal protective (PPE) equipment, including but not limited to TYVEK® suits and NIOSH approved half-face air purifying respirators.

Non-Friable

Prior to removal, utilizing an approved Alternative Method (i.e. dry ice) asbestos warning signs were posted to demarcate the asbestos regulated work areas and asbestos warning tape was used for notification purposes. Access to the regulated areas was limited to authorized personnel only.

Critical barriers consisting of two layers of plastic sheeting were used to seal over all openings in the work areas and prevent airborne asbestos from migrating to adjacent areas. In addition, plastic sheeting was utilized to cover designated objects within each area. Microtraps were installed within each work area and a single stage decontamination unit was established at the entrance to each work area.

Abatement operations were performed utilizing non-friable removal methodologies (i.e., dry ice). At the completion of abatement operations, final air testing incorporated TEM (i.e., five samples) methodologies.

Following the completion of the abatement operations, all waste generated as part of the removal project was double-bagged and labeled for proper disposal. Asbestos waste will be transported by Super Kwik, a licensed waste transporter, and disposed of Dauphin Meadows, an EPA approved landfill.
### 6.0 SUMMARY OF PCM AIR SAMPLING RESULTS

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Sample Location/Activity</th>
<th>Volume (L)</th>
<th>Fibers per 100 Fields</th>
<th>Sample Result (F/cc)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.23.01</td>
<td>Perimeter: 1st floor at entrance to auditorium</td>
<td>1203</td>
<td>2.5</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.02</td>
<td>Perimeter: 2nd floor hallway at room #201</td>
<td>1119</td>
<td>0</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.03</td>
<td>Perimeter: 2nd floor, hallway at copy room</td>
<td>1110</td>
<td>3</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.01</td>
<td>Baseline: In front of auditorium at stage</td>
<td>1134</td>
<td>4</td>
<td>&lt;0.002</td>
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<tr>
<td>8.23.02</td>
<td>Baseline: In rear of auditorium adjacent to entrance/exit</td>
<td>1107</td>
<td>4.5</td>
<td>&lt;0.002</td>
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<tr>
<td>8.23.03</td>
<td>Baseline: In hallway at electrical panel box</td>
<td>1098</td>
<td>2</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.04</td>
<td>Baseline: In hallway at rec room</td>
<td>1080</td>
<td>3.5</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.05</td>
<td>Baseline: In hallway at girls’ room</td>
<td>1080</td>
<td>1</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.01</td>
<td>Final: In Room #201</td>
<td>1215</td>
<td>0</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.02</td>
<td>Final: In Room #201</td>
<td>1215</td>
<td>1.5</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.03</td>
<td>Final: In Room #201</td>
<td>1215</td>
<td>2</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.04</td>
<td>Final: In Room #201</td>
<td>1215</td>
<td>1</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.05</td>
<td>Final: In Room #201</td>
<td>1215</td>
<td>4</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.01</td>
<td>Final: In copy room</td>
<td>1161</td>
<td>6</td>
<td>0.002</td>
</tr>
<tr>
<td>8.23.02</td>
<td>Final: In copy room</td>
<td>1161</td>
<td>4.5</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.03</td>
<td>Final: In copy room</td>
<td>1152</td>
<td>2</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.04</td>
<td>Final: In copy room</td>
<td>1152</td>
<td>4</td>
<td>&lt;0.002</td>
</tr>
<tr>
<td>8.23.05</td>
<td>Final: In copy room</td>
<td>1152</td>
<td>4.5</td>
<td>&lt;0.002</td>
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<tr>
<td>8.23.06</td>
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<td>-</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>8.23.07</td>
<td>Blank</td>
<td>-</td>
<td>0</td>
<td>-</td>
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</table>

**JH Moore Elementary School**  
6990 Summerdale Avenue  
Philadelphia, Pennsylvania
<table>
<thead>
<tr>
<th>Sample #</th>
<th>Sample Location/Activity</th>
<th>Volume (L)</th>
<th>Fibers per 100 Fields</th>
<th>Sample Result (F/cc)</th>
</tr>
</thead>
</table>
| **Date collected: 8/24/18**  
**Site Activity/Work Area: 2nd Floor Baselines** | **Site Activity/Work Area: 1st Floor & 2nd Floors Hallways/Prep – HEPA Vac** | **Site Activity/Work Area: 1st Floor Hallway & Auditorium Containment/Re-Cleaning** | **Site Activity/Work Area: 1st Floor Hallway & Auditorium Containment/Re-Cleaning** |
| 8.24.01  | Baseline: In hallway at mechanical room               | 1305       | 8.5                   | 0.003                |
| 8.24.02  | Baseline: In hallway at boy’s room                    | 1278       | 4                     | <0.002               |
| 8.24.03  | Baseline: In hallway at copy room                     | 1260       | 5.5                   | 0.002                |
| 8.24.04  | Baseline: In hallway at 201                           | 1242       | 5                     | <0.002               |
| 8.24.05  | Baseline: In hallway at 213                           | 1215       | 2                     | <0.002               |
| 8.24.01  | Perimeter: 1st floor hallway at boy’s room            | 1089       | 13                    | 0.006                |
| 8.24.02  | Perimeter: 1st floor hallway at Room #107             | 1089       | 10                    | 0.004                |
| 8.24.03  | Work area: 2nd floor hall at mechanical room          | 1086       | 8                     | 0.004                |
| 8.24.04  | Work area: 1st floor hall at Room #105                | 1086       | 11                    | 0.005                |
| 8.24.05  | Work area: In auditorium (front) at stage             | 1089       | 6                     | 0.003                |
| 8.24.06  | Blank                                                 | -          | 0                     | -                    |
| 8.24.07  | Blank                                                 | -          | 0                     | -                    |
| 8.25.01  | Perimeter: Hallway outside principal’s office         | 696        | 5                     | <0.004               |
| 8.25.02  | Perimeter: Hallway outside main office                | 696        | 3.5                   | <0.004               |
| 8.25.03  | Perimeter: Main entrance lobby                        | 696        | 6                     | 0.004                |
| 8.25.04  | Field Blank                                           | -          | 0                     | -                    |
| 8.25.05  | Lab Blank                                             | -          | 0                     | -                    |
7.0 SUMMARY OF TEM AIR SAMPLING RESULTS
## Preliminary Results

### Airborne Asbestos Analysis

**TEM AHERA**

<table>
<thead>
<tr>
<th>Client</th>
<th>Vertex</th>
<th>Batch No.:</th>
<th>571479</th>
</tr>
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<tbody>
<tr>
<td>Project</td>
<td>PSD/JH/Moore ES</td>
<td>Project No.:</td>
<td>51213</td>
</tr>
<tr>
<td>Philly Regs.:</td>
<td>Y</td>
<td>Turn-Around Time:</td>
<td>6 Hour Rush</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Client Contacts:</th>
<th>Laboratory Contacts:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contacts:</td>
<td>Frank E. Ehrenfeld III</td>
</tr>
<tr>
<td>Phone:</td>
<td>(856) 231-9449</td>
</tr>
<tr>
<td>Fax:</td>
<td>(856) 231-9818</td>
</tr>
<tr>
<td>Cell/Pager:</td>
<td>(609) 929-4211</td>
</tr>
<tr>
<td>E-Mail:</td>
<td><a href="mailto:frankehrenfeld@iatl.com">frankehrenfeld@iatl.com</a></td>
</tr>
</tbody>
</table>

### Chain of Custody:

<table>
<thead>
<tr>
<th>Samples Taken In Field:</th>
<th>Date:</th>
<th>Time:</th>
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</thead>
<tbody>
<tr>
<td>Samples Rec'd at Laboratory:</td>
<td>K. Goedde</td>
<td>8/25/2018</td>
</tr>
<tr>
<td>Samples Analyzed:</td>
<td>K. Goedde</td>
<td>8/25/2018</td>
</tr>
<tr>
<td>Preliminary Results Faxed:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preliminary Results E-Mail:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Summary Data

**Transmission Electron Microscopy**

**AHERA 40CFR 763**

<table>
<thead>
<tr>
<th>Client Sample ID</th>
<th>IATL Sample ID</th>
<th>Volume (L)</th>
<th>Comments</th>
<th>Results s/mm²</th>
<th>Results s/cc</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-11 6591056</td>
<td>1818</td>
<td>Chrysotile</td>
<td>19.2</td>
<td>0.0041</td>
<td></td>
</tr>
<tr>
<td>C-12 6591057</td>
<td>1818</td>
<td>Chrysotile</td>
<td>19.2</td>
<td>0.0041</td>
<td></td>
</tr>
<tr>
<td>C-13 6591058</td>
<td>1818</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
<td>&lt; 0.0041</td>
<td></td>
</tr>
<tr>
<td>C-14 6591059</td>
<td>1818</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
<td>&lt; 0.0041</td>
<td></td>
</tr>
<tr>
<td>C-15 6591060</td>
<td>1802</td>
<td>Chrysotile</td>
<td>19.2</td>
<td>0.0041</td>
<td></td>
</tr>
</tbody>
</table>

**AHERA Clearance Criteria is 70 s/mm².**

Average (s/mm²) = 19.2

**Phila. Regulations Clearance Criteria is 0.00554 s/cc**

Geo = 0.0041

Z Test Results (see attached, if applicable)

| Instrument (I, II, III) | 11 |

These preliminary results are issued by IATL to expedite procedures by the clients based upon the above data. IATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificates of Analysis will follow these preliminary results. The signed COAs are to be considered the official results.

TEM AHERA 001

Revision Date: 05/22/18
# Sample Log

## Airborne Asbestos

**Client:** VEERTEX  
**Project:** P50/JH/Mart/ES

**Sampling Date/Time:** 8/25/18

```
All samples taken in 2nd floor Hellway U10
```

<table>
<thead>
<tr>
<th>Client Sample #</th>
<th>iATL #</th>
<th>Location/Description</th>
<th>Flow Rate</th>
<th>Start Time</th>
<th>End Time</th>
<th>Sampling Time (min)</th>
<th>Area (ft²)</th>
<th>Volume (L)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-11</td>
<td>0091056</td>
<td>Hallway 402 North</td>
<td>99</td>
<td>11:30 Am</td>
<td>2:33 Pm</td>
<td>18/19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-12</td>
<td>0091057</td>
<td>Hallway CopyRoom</td>
<td>99</td>
<td>11:55 Am</td>
<td>2:33 Pm</td>
<td>18/18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-13</td>
<td>0091058</td>
<td>Hallway Reception</td>
<td>99</td>
<td>11:30 Am</td>
<td>2:33 Pm</td>
<td>19/08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-14</td>
<td>0091059</td>
<td>Hallway Office</td>
<td>99</td>
<td>11:30 Am</td>
<td>2:34 Pm</td>
<td>18/10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C-15</td>
<td>0091060</td>
<td>Hallway Office</td>
<td>99</td>
<td>11:40 Am</td>
<td>2:40 Pm</td>
<td>18/02</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- **:** Insufficient Sample Provided to Perform QC Reanalysis (<200mg)
- **:** Insufficient Sample Provided to Analyze (<500mg)
- **:** Matrix/Substrate Interference Possible
- **FB** Method Requires the submission of blank(s).
- **ML** Multi Layered Sample. May result in inconsistent results.

These preliminary results are issued by iATL to expedite procedures by clients based upon the above data. iATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificate of Analysis will follow these preliminary results. The signed COA is to be considered the official results. All EPA, HIUD, and NIDEP conditions apply.
### PRELIMINARY RESULTS

**Airborne Asbestos Analysis**

**TEM AHERA**

<table>
<thead>
<tr>
<th>Client:</th>
<th>Verex</th>
<th>Batch No.:</th>
<th>571468</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client No.:</td>
<td>VER100</td>
<td>Project No.:</td>
<td>51213</td>
</tr>
<tr>
<td>700 Turner Way</td>
<td>101</td>
<td>Philly Regs:</td>
<td>Y</td>
</tr>
<tr>
<td>Suite 105</td>
<td>101</td>
<td>Turn-Around Time:</td>
<td>6 Hour Rush</td>
</tr>
<tr>
<td>Aston PA 19014</td>
<td>19014</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Client Contacts:
- **Contacts:**
  - Phone: [Blank]
  - Fax: [Blank]
  - Cell/Pager: [Blank]
  - E-Mail: [Blank]

#### Laboratory Contacts:
- **Contacts:** Frank E. Ehrenfeld III
- **Phone:** (856) 231-9449
- **Fax:** (856) 231-9818
- **Cell/Pager:** (609) 929-4211
- **E-Mail:** frankehrenfeld@iatl.com

#### Chain of Custody:
- **Samples Taken in Field:** [Blank]
- **Samples Rec'd at Laboratory:** K. Goedde
- **Samples Analyzed:** K. Goedde
- **Preliminary Results Faxed:** [Blank]
- **Preliminary Results E-Mail:** [Blank]

#### Summary Data

**Transmission Electron Microscopy**

**AHERA 40CFR 763**

<table>
<thead>
<tr>
<th>Sample ID #</th>
<th>IATL Sample ID #</th>
<th>Volume (L)</th>
<th>Comments</th>
<th>Results s/mm²</th>
<th>Results s/cc</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-06</td>
<td>6590989</td>
<td>1818</td>
<td>Chrysotile</td>
<td>38.5</td>
<td>0.0081</td>
</tr>
<tr>
<td>C-07</td>
<td>6590990</td>
<td>1802</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
<td>&lt; 0.0041</td>
</tr>
<tr>
<td>C-08</td>
<td>6590991</td>
<td>1802</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
<td>&lt; 0.0041</td>
</tr>
<tr>
<td>C-09</td>
<td>6590992</td>
<td>1818</td>
<td>Chrysotile Actinolite</td>
<td>57.7</td>
<td>0.012</td>
</tr>
<tr>
<td>C-10</td>
<td>6590993</td>
<td>1802</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
<td>&lt; 0.0041</td>
</tr>
</tbody>
</table>

**AHERA Clearance Criteria is 70 s/mm².**

**Average (s/mm²) = 30.8**

**Phila. Regulations Clearance Criteria is 0.00554 s/cc**

**Geo = 0.00582**

**Z Test Results (see attached, if applicable)**

**Grid Box #: 1166**

**Sample analysis terminated. Set fails by Phila. Regulations (Geometric mean > 0.00554 s/cc)**

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# Chain of Custody

## Contact Information
- **Client Company:** VERTEX
- **Office Address:** 700 Turner Way, Ste 105
- **City, State, Zip:** Aston, PA 19014
- **Fax Number:** 610-558-8904
- **Email Address:** dheim@vertexeng.com
- **Project Number:** 51203
- **Project Name:** P90124 YMW 19-25
- **Primary Contact:** Don Heim
- **Office Phone:** 610-558-8902
- **Cell Phone:** 610-787-0402

## Matrix:
- **Air**
- **Soil**
- **Bulk**
- **Water**
- **Paint**
- **Surface Dust / Wipe**
- **Other**

## Analysis Method:
- **PCM:** NIOSH 7400
- **PCM:** OSHA
- **PCM:** TWA
- **Total Dust:** NIOSH 0300
- **Total Dust:** NIOSH 0600
- **IAQ Use Mould Sample Log**
  - IAQ: 1 Bioaerosol Fungal Spore Trap
  - IAQ: II Bioaerosol Fungal Spore
  - IAQ: Tape, Bulk, Misc. Qualitative
  - IAQ: Tape, Bulk, Misc. Quantitative
  - IAQ: Other Culturable ID
- **AAS:** Lead in Air
- **AAS:** Lead in Water
- **AAS:** Lead in Paint
- **AAS:** Lead Dust/Wipe
- **AAS:** Lead in Soil
- **AAS:** TCLP
- **AAS:** Metals [Cd, Zn, Cr-circle]

## Special Instructions:
- Need results by 7:00 PM.

## Turnaround Time
- Preliminary Results Requested Date: **8/25/18**
- **Verbal**
- **Email**
- **Fax**

## Shipping Method
- **FedEx**
- **UPS**
- **USPS**
- **Other**

## Chain of Custody
- **Relinquished (Name/Organization):**
- **Received (Name / iATL):**
- **Sample Login (Name / iATL):**
- **Analyst (Name(s) / iATL):**
- **QA/QC Review (Name / iATL):**
- **Archived / Released:**

- **Date:**
- **Time:**

**Celebrating 25 years: Only sample at a time**

www.iatl.com
# Sample Log

**Airborne Asbestos**

**Client:** VERTEX  
**Project:** JM/35/13/JH/000r ES

**Sampling Date/Time:** 8/28/19

<table>
<thead>
<tr>
<th>Client Sample #</th>
<th>IATL #</th>
<th>Location/Description</th>
<th>Flow Rate</th>
<th>Start</th>
<th>End</th>
<th>Sampling time (min)</th>
<th>Area (ft²)</th>
<th>Volume (L)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>C-06</td>
<td>0950090</td>
<td>Auditorium</td>
<td>9.9</td>
<td>9:00 AM</td>
<td>12:00 PM</td>
<td>1818</td>
<td>900</td>
<td>1802</td>
<td></td>
</tr>
<tr>
<td>C-07</td>
<td>0950090</td>
<td>Hallway</td>
<td>9.9</td>
<td>9:00 AM</td>
<td>12:00 PM</td>
<td>1818</td>
<td>900</td>
<td>1802</td>
<td></td>
</tr>
<tr>
<td>C-08</td>
<td>0950091</td>
<td>Hallway/Closet</td>
<td>9.9</td>
<td>9:00 AM</td>
<td>12:00 PM</td>
<td>1818</td>
<td>900</td>
<td>1802</td>
<td></td>
</tr>
<tr>
<td>C-09</td>
<td>0950092</td>
<td>Hallway/Closet</td>
<td>9.9</td>
<td>9:00 AM</td>
<td>12:00 PM</td>
<td>1818</td>
<td>900</td>
<td>1802</td>
<td></td>
</tr>
<tr>
<td>C-10</td>
<td>0950093</td>
<td>Hallway/Closet</td>
<td>9.9</td>
<td>9:00 AM</td>
<td>12:00 PM</td>
<td>1818</td>
<td>900</td>
<td>1802</td>
<td></td>
</tr>
</tbody>
</table>

* **Insufficient Sample Provided to Perform QC Reanalysis (<200ng)**
* **Insufficient Sample Provided to Analyze (<50ng)**
**Matrix/substrate Interference Possible**

**FB Method Requires the Submittal of blank(s); ML Multi Layered Sample; May result in inconsistent results.**

These preliminary results are issued by IATL to expedite procedures by clients based upon the above data. IATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificate of Analysis will follow these preliminary results. The signed COA is to be considered the official results. All EPA, HUD, and NIDEP conditions apply.
## Sample Log

### Airborne Asbestos

**Client:** Vertex  
**Project:** JHMoore / 5/12/13  
**Sampling Date/Time:** 8/24/18  
**Do not analyze blanks - hold**

<table>
<thead>
<tr>
<th>Client Sample #</th>
<th>iATL #</th>
<th>Location/Description</th>
<th>Flow Rate</th>
<th>Start End</th>
<th>Sampling time (min)</th>
<th>Area (ft²)</th>
<th>Volume (L)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>JHM-01</td>
<td></td>
<td>Hallway across Junior Classroom</td>
<td>9.5</td>
<td>1030 AM</td>
<td>344 AM 190</td>
<td>1805</td>
<td>6591134</td>
<td></td>
</tr>
<tr>
<td>JHM-02</td>
<td></td>
<td>Auditorium Lobby</td>
<td>9.5</td>
<td>1240 AM</td>
<td>352 AM 190</td>
<td>1805</td>
<td>6591135</td>
<td></td>
</tr>
<tr>
<td>JHM-03</td>
<td></td>
<td>Hallway Center Lobby</td>
<td>9.5</td>
<td>1241 AM</td>
<td>351 AM 190</td>
<td>1805</td>
<td>6591136</td>
<td></td>
</tr>
<tr>
<td>JHM-04</td>
<td></td>
<td>Hallway across Km 113</td>
<td>9.5</td>
<td>1242 AM</td>
<td>352 AM 190</td>
<td>1805</td>
<td>6591137</td>
<td></td>
</tr>
<tr>
<td>JHM-05</td>
<td></td>
<td>Hallway next to Km 101</td>
<td>9.5</td>
<td>1243 AM</td>
<td>353 AM 190</td>
<td>1805</td>
<td>6591138</td>
<td></td>
</tr>
<tr>
<td>JHM-06</td>
<td></td>
<td>IWA Blank</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>6591139</td>
</tr>
<tr>
<td>JHM-07</td>
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<td>OWA Blank</td>
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<td></td>
<td></td>
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<td>6591140</td>
</tr>
<tr>
<td>JHM-08</td>
<td></td>
<td>Le B Blank</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>6591141</td>
</tr>
</tbody>
</table>

\* = Insufficient Sample Provided to Perform QC Reanalysis (<200ng)  
\*\* = Insufficient Sample Provided to Analyze (<30ng)  
\*\*\* = Matrix / Substrate Interference Possible  
FB = Method Requires the submission of blank(s). ML = Multi Layered Sample. May result in inconsistent results.

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Received: AUG 2 6 2018 @ 0435  
By: 

Log of: 15P  
Reduced: B. J. Beumic / Vertex 8/26/18  
435 AM  
analyzed: D5 8/24/18
PRELIMINARY RESULTS
Airborne Asbestos Analysis
TEM AHERA

Client:  The Vertex Companies, Inc.
700 Turner Way, Suite 105
ASTON, PA  19014
Client No.:  VER100

Batch No.:  571481
Project:  JH Moore
Project No.:  51213
Philly Regs:  Y
Turn-Around Time:  6 Hour Rush

Client Contacts:

<table>
<thead>
<tr>
<th>Contacts:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone:</td>
<td></td>
</tr>
<tr>
<td>Fax:</td>
<td></td>
</tr>
<tr>
<td>Cell/Pager:</td>
<td></td>
</tr>
<tr>
<td>E-Mail:</td>
<td></td>
</tr>
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</table>

Laboratory Contacts:

<table>
<thead>
<tr>
<th>Contacts:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone:</td>
<td>(856) 231-9449</td>
</tr>
<tr>
<td>Fax:</td>
<td>(856) 231-9818</td>
</tr>
<tr>
<td>Cell/Pager:</td>
<td>(609) 929-4211</td>
</tr>
<tr>
<td>E-Mail:</td>
<td><a href="mailto:frankopherfield@iatl.com">frankopherfield@iatl.com</a></td>
</tr>
</tbody>
</table>

Chain of Custody:

<table>
<thead>
<tr>
<th>Samples Taken in Field:</th>
<th>Date:</th>
<th>Time:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client</td>
<td></td>
<td></td>
</tr>
<tr>
<td>WRR</td>
<td>8/26/2018</td>
<td></td>
</tr>
<tr>
<td>J. Joon</td>
<td>8/26/2018</td>
<td></td>
</tr>
</tbody>
</table>

Summary Data
Transmission Electron Microscopy
AHERA 40CFR 763

<table>
<thead>
<tr>
<th>Client Sample ID #</th>
<th>IATL Sample ID #</th>
<th>Volume (L)</th>
<th>Comments</th>
<th>Results s/mm²</th>
<th>Results s/cc</th>
</tr>
</thead>
<tbody>
<tr>
<td>JHM-01</td>
<td>6591134</td>
<td>1805</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
<td>&lt; 0.0041</td>
</tr>
<tr>
<td>JHM-02</td>
<td>6591135</td>
<td>1805</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
<td>&lt; 0.0041</td>
</tr>
<tr>
<td>JHM-03</td>
<td>6591136</td>
<td>1805</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
<td>&lt; 0.0041</td>
</tr>
<tr>
<td>JHM-04</td>
<td>6591137</td>
<td>1805</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
<td>&lt; 0.0041</td>
</tr>
<tr>
<td>JHM-05</td>
<td>6591138</td>
<td>1805</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
<td>&lt; 0.0041</td>
</tr>
</tbody>
</table>

AHERA Clearance Criteria is 70 s/mm².
Phila. Regulations Clearance Criteria is 0.00554 s/cc

Average (s/mm²) = 19.2
Geo = 0.0041

Instrument (I, II, III)    II

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Revision Date: 06/22/18
Chain of Custody

Contact Information
Client Company: Virtex
Project Number: 51213
Office Address: Astar Pa
Project Name: Rio (3rd mo.)
City, State, Zip: 
Primary Contact: Lin A. Michel
Fax Number: 
Office Phone: 215-783-8732
Email Address: DHEM@virtex.com
Cell Phone: 215-783-8732

Matrix:
- Air
- Soil
- Paint
- Surface Dust
- Bulk
- Other

Analysis Method:
- PPM: NIOSH 7400
- PCP: PPM: OSHA
- PPM: TWA
- Total Dust: NIOSH 0540
- Total Dust: NIOSH 0640
- IAQ Use Mold Sample Log
- IAQ: I Biosediment Fungal Spore Trap
- IAQ: II Biosediment Fungal Spore
- IAQ: Tape, Bulk, Visc. Qualitative
- IAQ: Tape, Bulk, Visc. Quantitative
- IAQ: Other Culturable ID

Special Instructions:
- N.R.

Turnaround Time
Preliminary Results Requested Date:

Verbal ☐ Email ☐ Fax ☐
☐ 10 Day ☐ 5 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day ☐ 12 Hour ☐ 6 Hour ☐ RUSH ☐
End of next business day unless otherwise specified. Matrix Dependent.

Shipping Method
☐ FedEx ☐ UPS ☐ USPS ☐ Other ☐

Chain of Custody
Relinquished (Name Organization):
Date: 8-26-18
Received (Name of Lab):
Date: 8-26-18
Sample Log (Name of Lab):
Date: 8-26-18
Analyst (Name of Lab):
Date: 8-26-18
QA QC Review (Name of Lab):
Date: 8-26-18
Archived / Released:
Date: 8-26-18

RECEIVE
# Sample Log

- Airborne Asbestos -

**Client:** VERTEX  
**Project:** JH Moore  
**Sampling Date/Time:** 8-26-18 10:55 AM

<table>
<thead>
<tr>
<th>Client Sample #</th>
<th>iATL #</th>
<th>Location/Description</th>
<th>Flow Rate</th>
<th>Start</th>
<th>End</th>
<th>Sampling time (min)</th>
<th>Area (ft²)</th>
<th>Volume (L)</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>A - 001</td>
<td>0591142</td>
<td>Aud. Room 2nd Fl.</td>
<td>9.9</td>
<td>10:55</td>
<td>11</td>
<td>2 min (185)</td>
<td>131.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A - 002</td>
<td>0591143</td>
<td></td>
<td>9.9</td>
<td>10:55</td>
<td>11</td>
<td>2 min (185)</td>
<td>131.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A - 003</td>
<td>0591144</td>
<td>Aud. Room 2nd Fl.</td>
<td>9.9</td>
<td>10:55</td>
<td>11</td>
<td>2 min (185)</td>
<td>131.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A - 004</td>
<td>0591145</td>
<td>Office 101</td>
<td>9.9</td>
<td>10:55</td>
<td>11</td>
<td>2 min (185)</td>
<td>131.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A - 005</td>
<td>0591146</td>
<td>Aud. Room 2nd Fl.</td>
<td>9.9</td>
<td>10:55</td>
<td>11</td>
<td>2 min (185)</td>
<td>131.5</td>
<td></td>
<td></td>
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<tr>
<td>A - 006 Blank</td>
<td>0591147</td>
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<tr>
<td>A - 007 Blank</td>
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</tr>
</tbody>
</table>

* = Insufficient Sample Provided to Perform QC Reanalysis (<200mg)  
** = Insufficient Sample Provided to Analyze (<50mg)  
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Final Certificate of Analysis will follow these preliminary results. The signed COA is to be considered the official results. All EPA, ILUD, and NJDEP conditions apply.
**Preliminary Results**

**Airborne Asbestos Analysis**

**TEM AHERA**

**Client:** The Vertex Companies, Inc.  
700 Turner Way, Suite 105  
ASTON, PA 19014

**Batch No.:** 571482

**Project:** PSD (J&H Moore)  
**Project No.:** 51213

**Philly Regs.:** Y  
**Turn-Around Time:** 6 Hour Rush

**Client Contacts:**

- **Contacts:**  
- **Phone:**  
- **Fax:**  
- **Cell/Pager:**  
- **E-Mail:**

**Laboratory Contacts:**

- **Contacts:** Frank E. Ehrenfeld III  
- **Phone:** (856) 231-9449  
- **Fax:** (856) 231-9818  
- **Cell/Pager:** (609) 929-4211  
- **E-Mail:** frankehrenfeld@iatl.com

**Chain of Custody:**

- **Samples Taken in Field:** Client  
  **Date:** 8/26/2018  
  **Time:**

- **Samples Rec'd at Laboratory:** J. Jeon  
  **Date:** 8/26/2018  
  **Time:**

- **Samples Analyzed:** J. Jeon  
  **Date:** 8/26/2018  
  **Time:**

- **Preliminary Results Faxed:**

- **Preliminary Results E-Mail:**

---

**Summary Data**

**Transmission Electron Microscopy**

**AHERA 40CFR 763**

<table>
<thead>
<tr>
<th>Client Sample ID #</th>
<th>IATL Sample ID #</th>
<th>Volume (L)</th>
<th>Comments</th>
<th>Results s/mm²</th>
<th>Results s/cc</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-001</td>
<td>6591142</td>
<td>1831.5</td>
<td>None Detected</td>
<td>&lt; 19.2</td>
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<td>A-002</td>
<td>6591143</td>
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<td>&lt; 0.004</td>
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<td>6591146</td>
<td>1831.5</td>
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<td>&lt; 19.2</td>
<td>&lt; 0.004</td>
</tr>
</tbody>
</table>

**AHERA Clearance Criteria is 70 s/mm².**

Average (s/mm²) = 19.2

**Grid Box #:** 1168

**Phila. Regulations Clearance Criteria is 0.00554 s/cc**

**Geo = 0.004**

**Z Test Results (see attached, if applicable)**

**Instrument (I, II, III)** 11

---

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