

**SPORE SAMPLING REPORT
FOR
GLENWOOD MIDDLE SCHOOL
2680 ROUTE 97
GLENWOOD, MD 21738**

PREPARED FOR:

**HOWARD COUNTY PUBLIC SCHOOL SYSTEM
10910 ROUTE 108
ELLICOTT CITY, MD 21043**

PREPARED BY:



**ARIA ENVIRONMENTAL, INC.
PO BOX 286
WOODBINE, MD 21797**

SEPTEMBER 24, 2015

150876

**SPORE TRAP SAMPLING REPORT
FOR GLENWOOD MIDDLE SCHOOL
SEPTEMBER 16, 2015**

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**SPORE TRAP SAMPLING REPORT
FOR GLENWOOD MIDDLE SCHOOL
SEPTEMBER 16, 2015**

EXECUTIVE SUMMARY

Aria Environmental, Inc. (AE) was contracted by Howard County Public School System to perform spore trap sampling at the Glenwood Middle School at the end of August 2015 due to air quality concerns expressed by staff and parents and to monitor the school after a recent heating, ventilation and air-conditioning (HVAC) system upgrade. AE made measurements for temperature, humidity, carbon monoxide, carbon dioxide and particulate matter and collected microbial spore trap sampling for fungal spore identification and counting on September 16, 2015 as part of a series of spore sampling events that will occur in the first month of the 2015 - 2016 school year and less frequently throughout the school year. This report presents the results of air sampling made on September 16, 2015.

**Spore Trap Sampling Report
For Glenwood Middle School
September 16, 2015**

I. BACKGROUND

Representatives from Aria Environmental, Inc. (AE) visited Glenwood Middle School on September 16, 2015 to perform air monitoring in response to an ongoing indoor air quality complaint at the school. Measurements for temperature, humidity, carbon monoxide, carbon dioxide and particulate matter and microbial spore trap sampling were collected from classrooms 1, 6, 13, 14, 15, 24, 31, FACS Room 35 and Art Room 38, and portable classrooms 60, 61, 70, 71, 80 and 81. Outdoor air samples were also collected for comparison purposes in one courtyard and outside near portable classroom 71. This monitoring was performed in response to employee and parental complaints and as a follow up to HVAC improvements.

There was no visible evidence of mold growth nor observed odors consistent with mildew in the classrooms sampled. Weather on the day of monitoring was warm and sunny.

II. OBSERVATIONS AND MEASUREMENTS

A. Observations and Measurements on September 16, 2015

Industry guidelines or standards for seasonal temperature and humidity ranges for thermal comfort are established by the American Society for Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) standard 55-2013. These ranges are presented in Table 1. The U.S. Environmental Protection Agency (EPA) recommends maintaining indoor relative humidity below 60% and ideally between 30 and 50%. The room air temperature measured between 3:00 PM and 5:30 PM ranged from 73.1 to 81.9° F with an average of 75.5° F. The indoor relative humidity ranged from 36.7 to 50.2 percent. The temperature and relative humidity measurements are considered acceptable for summer thermal comfort in all rooms except Room 81 where the temperature was 81.9° F which is slightly above the comfort range. Room 81 is a portable classroom. The outside temperature at 5:06 PM was 80.2° F and the outdoor relative humidity was 40.9% outside near Portable Classroom 71, and the outside temperature at 5:09 PM was 82.3° F and the relative humidity was 36.4% in the courtyard between classrooms 19 and 30. No windows or doors were observed to be open during the monitoring period. Results of temperature, relative humidity, carbon dioxide and carbon monoxide monitoring are presented in Table 2.

Table 1- Acceptable Ranges of Temperature and Relative Humidity in Summer and Winter^a

Relative Humidity	Winter Temperature	Summer Temperature
30%	68.5°F – 76.0°F	74.0°F – 80°F
40%	68.5°F - 75.5°F	73.5°F – 79.5°F
50%	68.5°F - 74.5°F	73.0°F – 79.0°F
60%	68.0°F - 74.0°F	72.5°F – 78.0°F

^aadapted from ASHRAE Standard 55-2013

Carbon dioxide and carbon monoxide measurements are used to assess ventilation system performance. The exhaled breath of building occupants is the main indoor source of carbon dioxide; therefore, the build-up of carbon dioxide indicates inadequate ventilation. Air monitoring was performed after school hours when the rooms were mostly unoccupied. Carbon dioxide concentrations ranged from 375 to 1,029 ppm indoors. The concentration of concern for carbon dioxide is set by ASHRAE standard 62.1–2013 as 700 ppm above outdoor air. On the day

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of monitoring, the outdoor air concentration of carbon dioxide ranged from 349 to 384 ppm. Carbon dioxide concentrations were within the comfort parameters established by ASHRAE.

Carbon monoxide is mainly attributed to incomplete combustion. Concentrations of CO ranged from 0.2 to 0.9 ppm indoors and the outdoor concentrations ranged from 0.0 – 0.2 ppm in the two outdoor locations measured. CO concentrations were below the ASHRAE concentration of concern of 9 ppm.

Particulate matter or PM is the term for a mixture of solid particles and liquid droplets found in the air. It does not distinguish between the types of particles in the air (e.g., pollen, skin cells, mold spores, soil, etc.). Particulate matter includes "inhalable coarse particles," with diameters larger than 2.5 micrometers and smaller than 10 micrometers (PM 10) and "fine particles," with diameters that are 2.5 micrometers and smaller (PM 2.5). Particle loads expected to be a part of the school environment include carpet and clothing fiber, soil tracked from outside, paper dust, chalk dust, and dust and fibers from building materials. ASHRAE Standard 62.1–2013 suggests target indoor concentrations for PM 2.5 and PM 10 of 15 $\mu\text{g}/\text{m}^3$ and 50 $\mu\text{g}/\text{m}^3$, respectively. These concentrations are taken from the EPA's National Ambient Air Quality Standards (NAAQS) based on annual arithmetic means deemed acceptable for outdoor air quality. Occupational standards and guidelines for particles are nearly an order of magnitude higher than concentrations typically found in non-occupational settings and are not appropriate for comparison.

Particle measurements were taken with an Aerocet 531 particulate monitor. The particle monitor takes a two minute averaged sample of particle concentrations in 5 size fractions (PM 1, PM 2.5, PM 7, PM 10 and total suspended particles (TSP)). Results of particulate monitoring, presented in Table 2, revealed that PM 2.5 and PM 10 particle concentrations were well below the ASHRAE target concentrations in all areas monitored.

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**Table 2: Particle, Temperature, Relative Humidity, Carbon Dioxide and Carbon Monoxide
Measurements Collected on September 16, 2015 at Glenwood Middle School**

Location	Time	PM1 ($\mu\text{g}/\text{m}^3$)	PM2.5 ($\mu\text{g}/\text{m}^3$)	PM7 ($\mu\text{g}/\text{m}^3$)	PM10 ($\mu\text{g}/\text{m}^3$)	TSP ($\mu\text{g}/\text{m}^3$)	Temp ($^{\circ}\text{F}$)	Rh (%)	CO (ppm)	CO ₂ (ppm)
CR 1	3:24 PM	0	3	16	18	21	75.5	36.8	0.6	422
CR 6	3:28 PM	0	0	1	1	2	73.9	38.3	0.4	375
CR 13	3:33 PM	0	0	0	1	1	73.6	39.3	0.3	409
CR 14	3:35 PM	0	0	0	0	1	73.9	38.8	0.2	403
CR 15	3:39 PM	0	0	1	2	3	73.8	37.8	0.3	384
CR 24	3:47 PM	0	0	0	1	1	73.8	37.7	0.3	389
CR 31	3:50 PM	0	0	1	1	1	73.9	37.7	0.2	403
CR 35	3:53 PM	0	0	0	0	0	73.1	37.6	0.4	427
CR 38	3:43 PM	0	0	0	0	0	73.5	38.9	0.3	638
PCR 60	5:02 PM	0	0	1	1	2	74.8	46.9	0.2	566
PCR 61	4:59 PM	0	0	0	0	0	75.4	50.2	0.4	412
PCR 70	4:46 PM	0	0	0	0	0	78.1	37.6	0.2	523
PCR 71	4:43 PM	0	0	1	1	3	79.5	38.2	0.9	1,029
PCR 80	5:19 PM	0	0	0	1	2	78.4	36.7	0.7	719
PCR 81	5:15 PM	0	0	1	1	2	81.9	44.3	0.2	403
Out 2 Courtyard	5:09 PM	0	0	6	8	12	82.3	36.4	0.2	349
Out 1 near PCR 71	5:06 PM	0	0	4	6	9	80.2	40.9	0	384

CR = Classroom; PCR = Portable Classroom; Bold type indicates measurements above the guidelines

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B. Air Monitoring for Fungal Identification and Counting on September 16, 2015

In the absence of visual sources of mold amplification and growth in the classrooms, non-viable spore trap samples were collected from eight classrooms within the main school building (Classrooms 1, 6, 13, 14, 15, 24, 31, FACS Room 35 and Art Room 38), six portable classrooms (portable classrooms 60, 61, 70, 71, 80, and 81) and two outdoor locations to determine whether there was a difference between mold spore loads inside the building versus outside.

The spore trap samples were collected using AllergenCo-D cassettes attached to a Buck BioAire™ sampling pump calibrated to 15 liter per minute (LPM) air flow. The samples were collected for a period of ten minutes, the time period recommended for spore trap sampling in a clean indoor environment. The spore trap samples were submitted to Aerobiology Laboratory for analysis. The sample results are reported as the spores per cubic meter of air (spores per m³) of hyphal fragments and total fungal spores. Depending upon the morphology of the spores, they were counted by their unique genus or were grouped into spores exhibiting common characteristics (e.g., Penicillium/Aspergillus group). Table 3 presents the results of the spore trap samples collected at Glenwood Middle School on September 16, 2015.

Indoor spore counts ranged from 1,767 to 3,493 total spores per cubic meter of air (m³) in the main school building and from 447 to 2,630 in the portable classrooms on September 16, 2015. All indoor samples had total spore counts lower than the outdoor samples which ranged from 17,543 to 20,287 spores per m³. Chaetomium spores were found in the Classroom 81 sample at 7 spores per m³, but these spores were not found in the outdoor samples. All other spore types detected indoors were lower than the outdoor samples. Windows were not open during sampling.

No secondary colonizers including Chaetomium or Stachybotrys were detected in the indoor air samples except for the 7 spores per m³ found in the Room 81 sample. This spore concentration is equivalent to one spore counted in the sample. Hyphal elements were detected in four of the nine main building classrooms and in three of the six portable classrooms. Indoor samples ranged from 7 to 33 hyphal elements per m³; however, all detected indoor hyphal elements were lower than the outdoor sample hyphal element counts ranging from 200 to 267 elements per m³ in the two outdoor samples. Variations in outdoor spore concentrations are a function of diurnal rhythms of spore release, weather-related factors (e.g., wind, rain, snow cover, temperature), and physical spatial factors. Certificates of analysis are included as Attachment B.

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Table 3: Results of Spore Trap Sampling in Selected Classrooms in Glenwood Middle School on September 16, 2015

Location	Outside near Room 71 (Out 1)	Outside in Courtyard (Out 2)	Room 1 (GM 01)	Room 6 (GM 06)	Room 13 (GM 13)	Room 14 (GM 14)	Room 15 (GM 15)	Room 24 (GM 24)	Room 31 (GM 31)	Room 35 (GM 35)	Art Room 38 (GM 38)
Spore Type	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³
Alternaria	113	107	-	-	-	-	-	-	-	-	-
Ascospores	640	533	60	53	33	53	20	47	53	107	20
Basidiospores	8,533	10,987	1,707	1,280	1,280	2,187	2,027	2,240	1,173	2,560	2,187
Cercospora	47	67	13	-	-	-	20	-	7	13	-
Chaetomium	-	-	-	-	-	-	-	-	-	-	-
Cladosporium	6,827	7,457	360	747	853	333	427	693	353	500	640
Clear brown	-	7	-	-	-	-	-	-	-	-	-
Colorless	-	180	-	-	-	-	-	-	-	-	-
Curvularia	87	-	-	7	-	-	-	-	-	-	-
Drechslera/Bipolaris group	20	-	-	-	-	-	-	-	-	-	-
Epicoccum	180	-	-	-	-	-	-	-	7	-	-
Fusicladium	27	-	-	-	-	-	-	-	-	-	-
Hyphal Elements	200	267	7	-	7	-	-	20	-	13	-
Oidium	-	20	-	-	-	-	-	-	7	-	-
Penicillium/Aspergillus	527	433	-	253	160	180	133	293	167	287	13
Pithomyces	40	20	7	-	-	-	-	-	-	7	7
Polythrincium	-	7	-	-	-	-	-	-	-	-	-
Rusts	20	-	-	-	-	-	-	-	-	-	-
Smuts, Periconia, myxomycetes	167	173	13	-	-	7	20	7	-	7	-
Spegazzinia	13	-	-	-	-	-	-	-	-	-	-
Unknown	13	20	-	-	-	-	-	-	-	-	-
Total Fungi	17,543	20,287	2,167	2,340	2,333	2,760	2,647	3,300	1,767	3,493	2,867

Bold numbers represent spore concentrations above the outdoor counts. Dashes designate none detected.

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Table 4: Results of Spore Trap Sampling in Portable Classrooms in Glenwood Middle School on September 16, 2015

Location	Outside near Room 71 (Out 1)	Outside in Courtyard (Out 2)	Room 60 (GM 60)	Room 61 (GM 61)	Room 70 (GM 70)	Room 71 (GM 71)	Room 80 (GM 80)	Room 81 (GM 81)
Spore Type	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³	Spores/ m ³
<i>Alternaria</i>	113	107	-	-	13	-	-	27
<i>Ascospores</i>	640	533	20	7	13	13	87	7
<i>Basidiospores</i>	8,533	10,987	1,280	213	1,067	240	1,067	207
<i>Cercospora</i>	47	67	-	-	-	13	-	-
<i>Chaetomium</i>	-	-	-	-	-	-	-	7
<i>Cladosporium</i>	6,827	7,457	1,600	147	747	173	933	220
Clear brown	-	7	-	-	-	-	-	-
Colorless	-	180	-	-	-	-	-	-
<i>Curvularia</i>	87	-	7	-	7	-	-	-
<i>Drechslera/Bipolaris</i> group	20	-	-	-	-	-	-	-
<i>Epicoccum</i>	180	-	-	20	7	13	-	-
<i>Fusicladium</i>	27	-	-	-	-	-	-	-
Hyphal Elements	200	267	33	-	-	-	13	7
<i>Oidium</i>	-	20	-	-	-	-	-	-
<i>Penicillium/ Aspergillus</i>	527	433	13	27	-	140	200	107
<i>Pithomyces</i>	40	20	13	13	-	7	-	7
<i>Polythrincium</i>	-	7	-	-	-	-	-	-
Rusts	20	-	-	-	-	-	-	-
<i>Smuts, Periconia, myxomycetes</i>	167	173	-	-	-	-	-	47
<i>Spegazzinia</i>	13	-	-	-	-	-	-	-
Unknown	13	20	-	20	-	-	-	-
Total Fungi	17,543	20,287	2,967	447	1,853	600	2,300	633

Bold numbers represent spore concentrations above the outdoor counts. Dashes designate none detected.

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For Glenwood Middle School
September 16, 2015**

III. CONCLUSIONS AND RECOMMENDATIONS

Aria Environmental, Inc. (AE) was contracted by Howard County Public School System to perform spore trap sampling at the Glenwood Middle School at the end of August 2015 due to air quality concerns expressed by staff and parents and to monitor the school after a recent heating, ventilation and air-conditioning (HVAC) system upgrade. AE made measurements for temperature, humidity, carbon monoxide, carbon dioxide and particulate matter and collected microbial spore trap samples on September 16, 2015.

Thermal comfort parameters of temperature and humidity were measured and found to be within the comfort ranges established by ASHRAE except for one portable classroom where the temperature (81.9°F) was slightly above the comfort range. Carbon dioxide, carbon monoxide and particulate matter measurements were within acceptable ranges for good indoor air quality in all areas.

Indoor spore counts ranged from 1,767 to 3,493 total spores per cubic meter of air (m³) in the main school building classrooms and from 447 to 2,967 in the portable classrooms on September 16, 2015. All indoor samples had total spore counts lower than the outdoor samples which ranged from 17,543 to 20,287 spores per m³.

Chaetomium spores were found in the Classroom 81 sample at 7 spores per m³, but these spores were not found in the outdoor samples. This spore count is equivalent to one spore counted in this sample. All other spore types detected indoors were less than the spores detected in the outdoor samples.

Table 5 presents a summary of spore sampling results to date in the 2015 - 2016 school year. The indoor and outdoor ranges demonstrate the variable nature of spore counts.

Table 5 – Summary of Spore Sampling Results to Date at GMS in the 2015-2016 School Year

Date	Indoor Spore Count Range Spores per m³	Outdoor Spore Count Range Spores per m³
August 25, 2015	1,787 to 8,807	34,001 to 37,316
August 27, 2015	400 to 747	9,433 to 10,960
September 2, 2015	1,860 to 7,960	33,294 to 37,306
September 9, 2015	1,053 to 3,173	21,890 to 31,876
September 16, 2015	447 to 3,493	17,543 to 20,287

Spore measurements collected in classrooms were generally acceptable compared to outdoor samples with outdoor total spore counts approximately 9 times higher than the indoor counts on average. Indoor sample total spore counts and individual spore counts were all lower than the outdoor sample counts with one exception described above. Follow up air sampling is scheduled for September 24, 2015 and will be performed on a weekly basis until the end of September in order to monitor changes in conditions affected by seasonal variations and the new HVAC system.

IV. LIMITATIONS

This report has been prepared for the exclusive use of the Howard County Public School System and/or their agents. This service has been performed in accordance with generally accepted environmental practices. No other warranty, expressed or implied, is made. Our conclusions and recommendations are based, in part, upon information provided to us by others and our site

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September 16, 2015**

observations. We have not verified the completeness or accuracy of the information provided to us by others, unless otherwise noted. Our observations and recommendations are based upon conditions readily visible at the site at the time of our site visit, and upon current industry standards. Destructive sampling was not performed as part of this survey. No observations were made behind solid walls, ceilings or in pipe chases that weren't already openly visible.

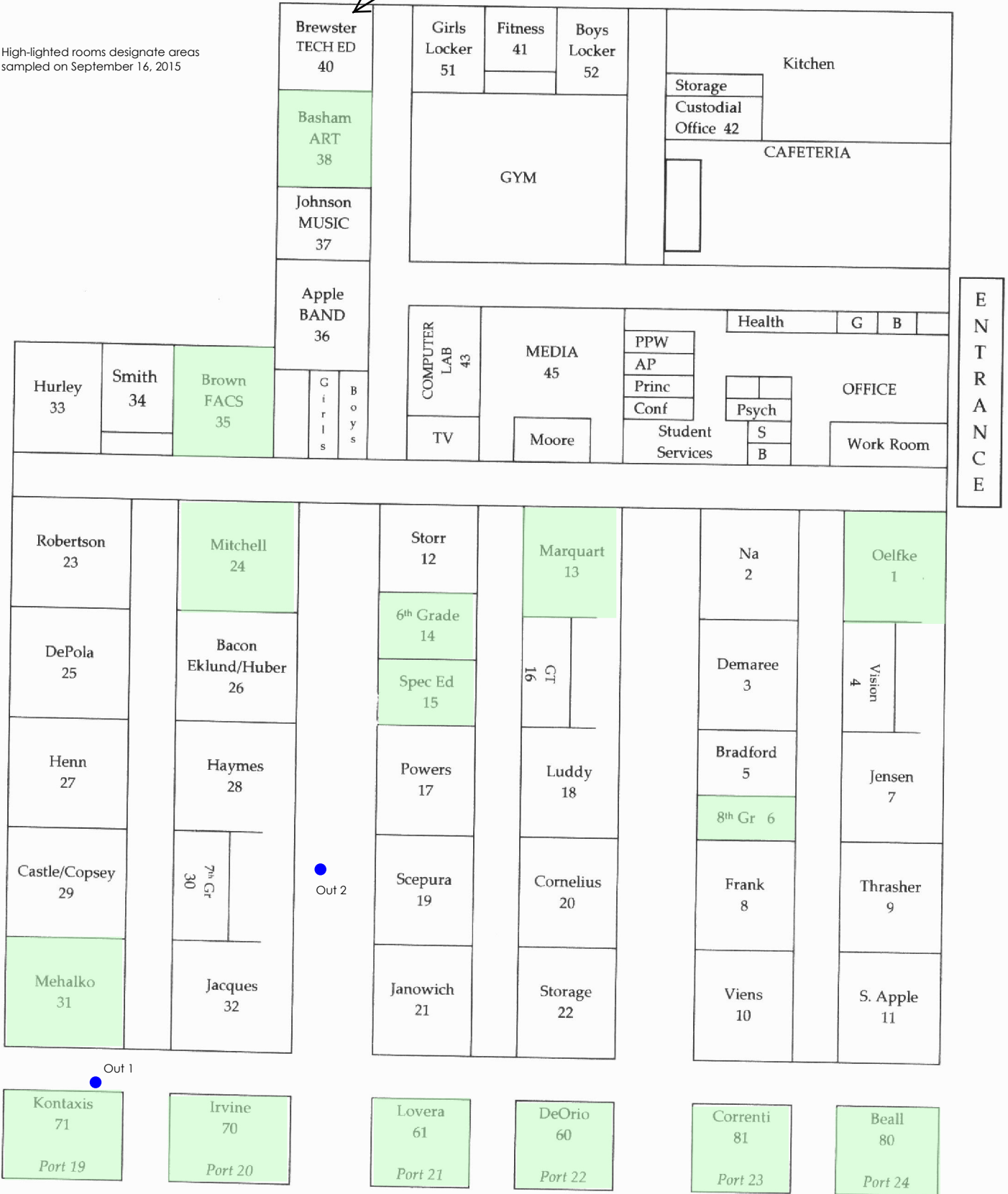
By virtue of providing the services described in this report, the preparer does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies any conditions at the site that may present a potential danger to public health, safety, or the environment. It is the Client's responsibility to notify the appropriate local, state, or federal public agencies as required by law, or otherwise to disclose, in a timely manner, any information that may be necessary to prevent any danger to public health, safety, or the environment. Under this scope of services, the preparer assumes no responsibility regarding response actions (e.g. abatement, removal, etc.) initiated as a result of these findings. Response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements, and should be performed by appropriately licensed personnel as warranted.

Attachment A:

Building Layout and Sample Location Plan for September 16, 2015

Rooms 39 & 40

High-lighted rooms designate areas sampled on September 16, 2015



Glenwood Middle School Floor Plan

As of 8/02/13



Attachment B:

**Report of Analysis and Chain of Custody Forms
September 16, 2015**

Aria Environmental
P.O. Box 286
Woodbine, Maryland 21797
Attn: Julie Barth
Project: **J15-876 GMS, Glenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 09/16/2015
Date Received: 09/18/2015
Date Analyzed: 09/23/2015
Date Reported: 09/23/2015
Project ID: 15023273
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1054 Spore Trap Analysis: SOP 3.8

Client Sample Number	GM-01				GM-Out1			
Sample Location	Classroom 1				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-001				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	9	60	3	1/11	6	640	4	-
basidiospores	32	1707	79	1/5	80	8533	49	-
Cercospora	2	13	1	1/4	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	54	360	17	1/19	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	1	7	<1	1/30	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	-	-	-	-	79	527	3	-
Pithomyces	1	7	<1	1/6	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	2	13	1	1/13	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	101	2167	~100%	1/8	368	17453	~100%	-

Aria Environmental
P.O. Box 286
Woodbine, Maryland 21797
Attn: Julie Barth
Project: **J15-876 GMS, Glenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 09/16/2015
Date Received: 09/18/2015
Date Analyzed: 09/23/2015
Date Reported: 09/23/2015
Project ID: 15023273
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Client Sample Number	GM-06				GM-Out1			
Sample Location	Room 6				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-002				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	8	53	2	1/12	6	640	4	-
basidiospores	48	1280	55	1/7	80	8533	49	-
Cercospora	-	-	-	-	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	28	747	32	1/9	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	1	7	<1	1/13	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	-	-	-	-	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	38	253	11	1/2	79	527	3	-
Pithomyces	-	-	-	-	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	-	-	-	-	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	123	2340	~100%	1/7	368	17453	~100%	-

Aria Environmental
 P.O. Box 286
 Woodbine, Maryland 21797
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 Project: **J15-876 GMS, Glenwood MS**
 Condition of Sample(s) Upon Receipt: Acceptable

 Date Collected: 09/16/2015
 Date Received: 09/18/2015
 Date Analyzed: 09/23/2015
 Date Reported: 09/23/2015
 Project ID: 15023273
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Client Sample Number	GM-13				GM-Out1			
Sample Location	Classroom 13				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-003				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	5	33	1	1/19	6	640	4	-
basidiospores	48	1280	55	1/7	80	8533	49	-
Cercospora	-	-	-	-	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	32	853	37	1/8	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	1	7	<1	1/30	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	24	160	7	1/3	79	527	3	-
Pithomyces	-	-	-	-	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	-	-	-	-	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments								
Total *See Footnotes	110	2333	~100%	1/7	368	17453	~100%	-

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Client Sample Number	GM-14				GM-Out1			
Sample Location	Classroom 14				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-004				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	8	53	2	1/12	6	640	4	-
basidiospores	41	2187	79	1/4	80	8533	49	-
Cercospora	-	-	-	-	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	50	333	12	1/20	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	-	-	-	-	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	27	180	7	1/3	79	527	3	-
Pithomyces	-	-	-	-	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	1	7	<1	1/25	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments								
Total *See Footnotes	127	2760	~100%	1/6	368	17453	~100%	-

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Client Sample Number	GM-15				GM-Out1			
Sample Location	Classroom 15				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-005				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	3	20	1	1/32	6	640	4	-
basidiospores	38	2027	77	1/4	80	8533	49	-
Cercospora	3	20	1	1/2	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	64	427	16	1/16	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	-	-	-	-	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	20	133	5	1/4	79	527	3	-
Pithomyces	-	-	-	-	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	3	20	1	1/8	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	131	2647	~100%	1/7	368	17453	~100%	-

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Client Sample Number	GM-24				GM-Out1			
Sample Location	Classroom 24				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-006				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	7	47	1	1/14	6	640	4	-
basidiospores	42	2240	68	1/4	80	8533	49	-
Cercospora	-	-	-	-	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	13	693	21	1/10	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	3	20	1	1/10	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	44	293	9	1/2	79	527	3	-
Pithomyces	-	-	-	-	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	1	7	<1	1/25	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	110	3300	~100%	1/5	368	17453	~100%	-

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Client Sample Number	GM-31				GM-Out1			
Sample Location	Classroom 31				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-007				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	8	53	3	1/12	6	640	4	-
basidiospores	44	1173	66	1/7	80	8533	49	-
Cercospora	1	7	<1	1/7	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	53	353	20	1/19	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	1	7	<1	1/27	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	-	-	-	-	30	200	1	-
Oidium	1	7	<1	-	-	-	-	-
Penicillium/Aspergillus group	25	167	9	1/3	79	527	3	-
Pithomyces	-	-	-	-	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	-	-	-	-	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	133	1767	~100%	1/10	368	17453	~100%	-

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Client Sample Number	GM-35				GM-Out1			
Sample Location	Classroom 35 FACS				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-008				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	16	107	3	1/6	6	640	4	-
basidiospores	48	2560	73	1/3	80	8533	49	-
Cercospora	2	13	<1	1/4	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	75	500	14	1/14	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	2	13	<1	1/15	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	43	287	8	1/2	79	527	3	-
Pithomyces	1	7	<1	1/6	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	1	7	<1	1/25	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	188	3493	~100%	1/5	368	17453	~100%	-

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Client Sample Number	GM-38				GM-Out1			
Sample Location	Classroom 38 Art				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-009				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	3	20	1	1/32	6	640	4	-
basidiospores	82	2187	76	1/4	80	8533	49	-
Cercospora	-	-	-	-	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	24	640	22	1/11	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	-	-	-	-	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	2	13	<1	1/40	79	527	3	-
Pithomyces	1	7	<1	1/6	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	-	-	-	-	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 2				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	112	2867	~100%	1/6	368	17453	~100%	-

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Client Sample Number	GM-60				GM-Out1			
Sample Location	Classroom 60				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-010				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	3	20	1	1/32	6	640	4	-
basidiospores	48	1280	43	1/7	80	8533	49	-
Cercospora	-	-	-	-	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	60	1600	54	1/4	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	1	7	<1	1/13	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	5	33	1	1/6	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	2	13	<1	1/40	79	527	3	-
Pithomyces	2	13	<1	1/3	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	-	-	-	-	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	121	2967	~100%	1/6	368	17453	~100%	-

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Client Sample Number	GM-61				GM-Out1			
Sample Location	Classroom 61				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-011				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	1	7	1	1/96	6	640	4	-
basidiospores	32	213	48	1/40	80	8533	49	-
Cercospora	-	-	-	-	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	22	147	33	1/47	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	3	20	4	1/9	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	-	-	-	-	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	4	27	6	1/20	79	527	3	-
Pithomyces	2	13	3	1/3	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	-	-	-	-	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	3	20	4	2/1	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments								
Total *See Footnotes	67	447	~100%	1/39	368	17453	~100%	-

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Client Sample Number	GM-70				GM-Out1			
Sample Location	Classroom 70				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-012				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	2	13	1	1/9	17	113	1	-
ascospores	2	13	1	1/48	6	640	4	-
basidiospores	40	1067	58	1/8	80	8533	49	-
Cercospora	-	-	-	-	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	28	747	40	1/9	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	1	7	<1	1/13	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	1	7	<1	1/27	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	-	-	-	-	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	-	-	-	-	79	527	3	-
Pithomyces	-	-	-	-	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	-	-	-	-	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	74	1853	~100%	1/9	368	17453	~100%	-

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Client Sample Number	GM-71				GM-Out1			
Sample Location	Classroom 71				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-013				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	2	13	2	1/48	6	640	4	-
basidiospores	36	240	40	1/36	80	8533	49	-
Cercospora	2	13	2	1/4	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	26	173	29	1/39	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	2	13	2	1/14	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	-	-	-	-	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	21	140	23	1/4	79	527	3	-
Pithomyces	1	7	1	1/6	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	-	-	-	-	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	90	600	~100%	1/29	368	17453	~100%	-

Aria Environmental
P.O. Box 286
Woodbine, Maryland 21797
Attn: Julie Barth
Project: **J15-876 GMS, Glenwood MS**
Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 09/16/2015
Date Received: 09/18/2015
Date Analyzed: 09/23/2015
Date Reported: 09/23/2015
Project ID: 15023273
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Client Sample Number	GM-80				GM-Out1			
Sample Location	Storage 80				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-014				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	-	-	-	-	17	113	1	-
ascospores	13	87	4	1/7	6	640	4	-
basidiospores	40	1067	46	1/8	80	8533	49	-
Cercospora	-	-	-	-	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	35	933	41	1/7	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	2	13	1	1/15	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	30	200	9	1/3	79	527	3	-
Pithomyces	-	-	-	-	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	-	-	-	-	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m³				Analytical Sensitivity: 7 spr/m³			
Comments								
Total *See Footnotes	120	2300	~100%	1/8	368	17453	~100%	-

Aria Environmental
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 Woodbine, Maryland 21797
 Attn: Julie Barth
 Project: **J15-876 GMS, Glenwood MS**
 Condition of Sample(s) Upon Receipt: Acceptable

 Date Collected: 09/16/2015
 Date Received: 09/18/2015
 Date Analyzed: 09/23/2015
 Date Reported: 09/23/2015
 Project ID: 15023273
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Client Sample Number	GM-81				GM-Out1			
Sample Location	Classroom 81				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-015				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	4	27	4	1/4	17	113	1	-
ascospores	1	7	1	1/96	6	640	4	-
basidiospores	31	207	33	1/41	80	8533	49	-
Cercospora	-	-	-	-	7	47	<1	-
Chaetomium	1	7	1	-	-	-	-	-
Cladosporium	33	220	35	1/31	64	6827	39	-
Clear brown	-	-	-	-	-	-	-	-
Colorless	-	-	-	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	1	7	1	1/30	30	200	1	-
Oidium	-	-	-	-	-	-	-	-
Penicillium/Aspergillus group	16	107	17	1/5	79	527	3	-
Pithomyces	1	7	1	1/6	6	40	<1	-
Polythrincium	-	-	-	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	7	47	7	1/4	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	-	-	-	-	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments								
Total *See Footnotes	95	633	~100%	1/28	368	17453	~100%	-

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 Attn: Julie Barth
 Project: **J15-876 GMS, Glenwood MS**
 Condition of Sample(s) Upon Receipt: Acceptable

 Date Collected: 09/16/2015
 Date Received: 09/18/2015
 Date Analyzed: 09/23/2015
 Date Reported: 09/23/2015
 Project ID: 15023273
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Client Sample Number	GM-Out2				GM-Out1			
Sample Location	Outside in Courtyard near CR32				Outside Near CR71			
Sample Volume (L)	150				150			
Lab Sample Number	15023273-017				15023273-016			
Spore Identification	Raw Ct	spr/m ³	% Ttl	In/Out	Raw Ct	spr/m ³	% Ttl	In/Out
Alternaria	16	107	1	1/1	17	113	1	-
ascospores	5	533	3	1/1	6	640	4	-
basidiospores	103	10987	54	1/1	80	8533	49	-
Cercospora	10	67	<1	1/1	7	47	<1	-
Chaetomium	-	-	-	-	-	-	-	-
Cladosporium	70	7467	37	1/1	64	6827	39	-
Clear brown	1	7	<1	-	-	-	-	-
Colorless	27	180	1	-	-	-	-	-
Curvularia	-	-	-	-	13	87	<1	-
Drechslera/Bipolaris group	-	-	-	-	3	20	<1	-
Epicoccum	-	-	-	-	27	180	1	-
Fusicladium	-	-	-	-	4	27	<1	-
hyphal elements	40	267	1	1/1	30	200	1	-
Oidium	3	20	<1	-	-	-	-	-
Penicillium/Aspergillus group	65	433	2	1/1	79	527	3	-
Pithomyces	3	20	<1	1/2	6	40	<1	-
Polythrincium	1	7	<1	-	-	-	-	-
Rusts	-	-	-	-	3	20	<1	-
Smuts,Periconia,Myxomycetes	26	173	1	1/1	25	167	1	-
Spegazzinia	-	-	-	-	2	13	<1	-
Unknown	3	20	<1	2/1	2	13	<1	-
	Debris Rating 3				Debris Rating 3			
Analytical Sensitivity	Analytical Sensitivity: 7 spr/m ³				Analytical Sensitivity: 7 spr/m ³			
Comments								
Total *See Footnotes	373	20287	~100%	1/1	368	17453	~100%	-

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Condition of Sample(s) Upon Receipt: Acceptable

Date Collected: 09/16/2015
Date Received: 09/18/2015
Date Analyzed: 09/23/2015
Date Reported: 09/23/2015
Project ID: 15023273
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Footnotes and Additional Report Information

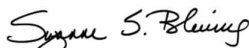
Debris Rating Table

1	Minimal (<5%) particulate present	Reported values are minimally affected by particulate load.
2	5% to 25% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
3	26% to 75% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
4	75% to 90% of the trace occluded with particulate	Negative bias is expected. The degree of bias increases directly with the percent of the trace that is occluded.
5	Greater than 90% of the trace occluded with particulate	Quantification not possible due to large negative bias. A new sample should be collected at a shorter time interval or other measures taken to reduce particulate load.

1. Penicillium/Aspergillus group spores are characterized by their small size, round to ovoid shape, being unicellular, and usually colorless to lightly pigmented. There are numerous genera of fungi whose spore morphology is similar to that of the Penicillium/Aspergillus type. Two common examples would be Paecilomyces and Acremonium. Although the majority of spores placed in this group are Penicillium, Aspergillus, or a combination of both. Keep in mind that these are not the only two possibilities.
2. Ascospores are sexually produced fungal spores formed within an ascus. An ascus is a sac-like structure designed to discharge the ascospores into the environment, e.g. Ascobolus.
3. Basidiospores are typically blown indoors from outdoors and rarely have an indoor source. However, in certain situations a high basidiospore count indoors may be indicative of a wood decay problem or wet soil.
4. The Smut, Periconia, Myxomycete group is composed of three different groups whose spores have similar morphologies. Smuts are plant pathogens, Periconia is a relatively uncommon mold indoors, and Myxomycetes are not fungi but slime molds. Although these organisms do not typically proliferate indoors, their spores are potentially allergenic.
5. The colorless group contains colorless spores which were unidentifiable to a specific genus. Examples of this group include Acremonium, Aphanocladium, Beauveria, Chrysosporium, Engyodontium microconidia, yeast, some arthrospores, as well as many others.
6. Hyphae are the vegetative mode of fungi. Hyphal elements are fragments of individual Hyphae. They can break apart and become airborne much like spores and are potentially allergenic. A mass of hyphal elements is termed the mycelium. Hyphae in high concentration may be indicative of colonization.
7. Dash (-) in this report, under raw count column means 'not detected (ND)'; otherwise 'not applicable' (NA).
8. The positive-hole correction factor is a statistical tool which calculates a probable count from the raw count, taking into consideration that multiple particles can impact on the same hole; for this reason the sum of the calculated counts may be less than the positive hole corrected total.
9. Due to rounding totals may not equal 100%.
10. Minimum Reporting Limits (MRL) for BULKS, DUSTS, SWABS, and WATER samples are a calculation based on the sample size and the dilution plate on which the organism was counted. Results are a compilation of counts taken from multiple dilutions and multiple medias. This means that every genus of fungi or bacteria recovered can be counted on the plate on which it is best represented.
11. If the final quantitative result is corrected for contamination based on the blank, the blank correction is stated in the sample comments section of the report.
12. Analysis conducted on non-viable spore traps is completed using Indoor Environmental Standards Organization (IESO) Standard 2210.
13. The results in this report are related to this project and these samples only.
14. For samples with an air volume of < 100L, the number of significant figures in the result should be considered (2) two. For samples with air volumes between 100-999L, the number of significant figures in the result should be considered (3) three. For example, a sample with a result of 55,443 spr/m³ from a 75L sample using significant figures should be considered 55,000. The same result of 55,443 from a 150L sample using significant figures should be considered 55,400 spr/m³.
15. If the In/Out ratio is greater than 100 times it is indicated >100/1, rather than showing the real value.

Terminology Used in Direct Exam Reporting

Conidiophores are a type of modified hyphae from which spores are born. When seen on a surface sample in moderate to numerous concentrations they may be indicative of fungal growth.



Suzanne S. Blevins, B.S., SM (ASCP)
Laboratory Director

15 023273
15023273



LAB #192683 (CO)
LAB #102977 (GA)
LAB #163063 (VA)
LAB #210229 (AZ)

NVLAP Lab Code 200860-0 (CO)
NVLAP Lab Code 200829-0 (VA)
NVLAP Lab Code 500097-0 (AZ)

AZ, CO, GA, VA, NJ

Aerobiology Client Aria Environmental, Inc.		Collected By/Date: 09/16/15		Relinquished By/Date: 09/17/15	
Field Contact Julie Barth	Reporting Address PO Box 286, Woodbine, MD 21797		Relinquished By/Date: 09/17/15		Received By/Date: 9/18/2015
Billing Address SAME	Sampler Type	Andersen _____	Sample Aire _____	Other <u>Attergencob</u>	
Phone/Fax 410-549-5774/410-549-4488	PO#/Job#: J15-876 GMS		Aero Trap _____	BioCulture _____	
Reporting Email (s) jbarth@ariaenviro.com	Project Name: Glenwood MS				
Routine <input checked="" type="radio"/> 24 Hour <input type="radio"/> Same Day <input type="radio"/> 4 Hour <input type="radio"/> 2 Hour <input type="radio"/>	5 Day (Asbestos Only)		Notes:		
SAMPLING LOCATION ZIP CODE 21738			CC Info:		

Sample No.	Test Code	Sample Location	Total Volume/Area
1 GM-01	1054	Classroom 1	150 L
2 GM-06	1054	Room 6	150 L
3 GM-13	1054	Classroom 13	150 L
4 GM-14	1054	Classroom 14	150 L
5 GM-15	1054	Classroom 15	150 L
6 GM-24	1054	Classroom 24	150 L
7 GM-31	1054	Classroom 31	150 L
8 GM-35	1054	Classroom 35 FACS	150 L
9 GM-38	1054	Classroom 38 Art	150 L
10 GM-60	1054	Classroom 60	150 L
11 GM-61	1054	Classroom 61	150 L
12 GM-70	1054	Classroom 70	150 L
13 GM-71	1054	Classroom 71	150 L
14 GM-80	1054	Storage 80	150 L

1054	Direct, Non-viable Spore Trap	1015	Culture - WATER Legionella
1051	Direct, Qualitative- Swab/Tape	1017	Culture - SWAB Legionella
1050	Direct, Qualitative- Bulk	1010	WATER - Potable - E. coli/total coliforms
1005	AIR Culture - Bacterial Count w/ ID's	1012	SWAB - E. coli/total coliforms
1030	AIR Culture - Fungal Count w/ ID's	1028	Sewage Screen (E. coli/Enterococcus/fecal coliforms)
1006	SWAB Culture - Bacterial Count w/ ID's	2056	Heterotrophic Plate Count
1031	SWAB Culture - Fungal Count w/ ID's	3001	ASBESTOS - Point count
1008	BULK Culture - Bacterial Count w/ ID's	3002	ASBESTOS - PLM Analysis
1033	BULK Culture - Fungal Count w/ ID's	3003	ASBESTOS - Particle characterization
1007	WATER Culture - Bacterial Count w/ID's	3004	ASBESTOS - PCM Analysis

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