SUMMER/FALL 2017
INDOOR AIR QUALITY ASSESSMENT REPORT

HINSDALE COMMUNITY CONSOLIDATED SCHOOL DISTRICT 181
HINSDALE MIDDLE SCHOOL
100 SOUTH GARFIELD AVENUE
HINSDALE, ILLINOIS
IES NO. 915-25

INTEGRITY
ENVIRONMENTAL SERVICES, INC.

1240 IROQUOIS DRIVE
SUITE 102
NAPERVILLE, IL 60563

630-718-9133
FAX 630-718-9114

October 26, 2017 C-12321

Mr. Mike Duggan
Director of Facilities
Community Consolidated School District 181
115 West 55th Street
Clarendon Hills, Illinois 60514

Dear Mike:

Focused Indoor Air Quality Assessment
Community Consolidated School District 181
Hinsdale Middle School
100 South Garfield Avenue
Hinsdale, Illinois
IES No. 915-25

Integrity Environmental Services, Inc. has completed this Focused Indoor Air Quality Assessment Report for the above referenced School District facility. One (1) original and one (1) copy of the Report have been provided.

This Report has been prepared based on observations made and sample data collected during our September 21 and 28, 2017 investigation. Opinions made or formed, other than those expressed herein are those of the reader and in no way shall obligate Integrity Environmental Services, Inc. The findings presented in this Report are representative of the date and times that the samples were collected. The findings presented herein should not be used or relied upon to evaluate the air quality measurements obtained at significantly later dates.

As always, if you have any questions, please feel free to contact our office at (630) 718-9133.

INTEGRITY ENVIRONMENTAL SERVICES, INC.

Guy S. Tawzer
Vice President, Air Quality Division

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EXECUTIVE SUMMARY

SUMMER/FALL 2017
INDOOR AIR QUALITY ASSESSMENT REPORT
HINSDALE COMMUNITY CONSOLIDATED SCHOOL DISTRICT 181
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A. INTRODUCTION:

The following paragraphs provide a narrative description of an air quality investigation conducted for Hinsdale Community Consolidated School District 181 within the above referenced facility. The study was requested as part of a program to proactively address any existing and/or potential indoor air quality concerns to help maintain the well being of the School District's students, faculty and staff.

At the request of the School District, Integrity Environmental Services, Inc. (IES) was initially present at Hinsdale Middle School on Thursday, September 21, 2017 to conduct an indoor air quality (IAQ) assessment. The IAQ assessment was conducted to document ambient air conditions within representative areas of the school district facility, including carbon monoxide (CO), carbon dioxide (CO_2), temperature, and relative humidity. IES returned to the school building on Thursday, September 28, 2017 to collect samples for airborne mold spores and conduct a visual inspection for the presence of mold within various locations throughout the school building. During each of the visits, the IES representative noted the conditions within the school building. The IES representative also spoke with the School District's Director of Facilities, Mr. Mike Duggan, regarding any air quality issues raised by faculty, staff members, students or parents within the building. A more detailed description of the air sample collection and IAQ monitoring is provided in the sample strategy section of this report.

IES conducted the site inspection, and the indoor air quality study procedures under normal building conditions and during normal school hours, with students, faculty, and staff members present. In all areas sampled, the windows and doors were closed (unless noted), and the building's HVAC system was operational during each of the sampling events.

On September 21, 2017 the weather in both the morning and afternoon was partly cloudy, warm and calm. On September 28, 2017, the weather was breezy, clear and cool.

B. INSPECTION SUMMARY:

Prior to the IAQ study, IES was not informed of any indoor air quality concerns raised by school staff members. Additionally, at the time of this assessment, no building-related student health issues were reported.

During past discussions with the school building's maintenance engineer, the IES representative was informed that heating and cooling within the building is controlled using forced-air by means of roof-top air handling units (AHUs). All systems are maintained on a regular basis and schedule. Filters are visually inspected regularly and are changed on an "as needed" basis. Filters are typically changed three (3) times a year; during the summer, winter and spring breaks (approximately every four (4) months).

The ventilation systems within the school district facility are air conditioned and controlled by means of computerized programming. Air within the supply ducts and the univents is usually a combination of outside air and re-circulated indoor air. IES understands that it is the School District's policy to try and maintain indoor building temperatures within the American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE) guidelines.

During this assessment, a visual inspection was performed in each of the areas sampled. The floors in most areas are finished with vinyl tile. Carpeting covers the floor in the Main Office, the Guidance Office, Music Office, mobile unit classrooms, faculty lounge, and in the school's MRC. Ceilings in most areas of the building consist of lay-in ceiling tile. Walls are constructed of masonry and/or gypsum. No obvious sign of mold was observed in any of the areas included in this assessment.

C. SAMPLING STRATEGY:

Indoor Air Quality –

Guidelines suggested by the American Indoor Air Quality Association (AIAQA), the EPA National Ambient Air Quality Standards (NAAQS), and ASHRAE were utilized to help interpret the CO, CO_2, temperature, and relative humidity sample data. Environmental sample readings were collected from twelve (12) separate locations within the school building. Readings were collected at each location during both the morning and afternoon. At each sample location, the IES representative collected simultaneous readings for CO, CO_2, temperature, and relative humidity using a VelociCalc Multifunction Ventilation Meter, Model 9555-P monitor, manufactured by TSI, Inc.

At each sample location, the IAQ monitor was placed at breathing zone level in an area of the room that would result in minimal distraction to the on-going classroom/administrative activities. The duration of each set of readings was five (5) minutes.

The average reading of each parameter (CO, CO_2, temperature, and relative humidity), and the time that the reading was taken, was recorded by the IES representative prior to moving to the next sample location. A separate set of sample readings was collected outside the building as baseline or background data. The VelociCalc is a "direct-read" instrument.

All sample locations are illustrated in Section 2, Exhibit A of this report. Refer to Section 2, Exhibit B for a table listing all direct read environmental sample results.

Airborne Mold Spores –

The sampling protocols for this project were developed in conjunction with existing guidelines and recommendations presented by the American Conference of Governmental Industrial Hygienists (ACGIH), the American Industrial Hygiene Association (AIHA), and Environmental Microbiology Laboratories, Inc. (EMLab), a nationally recognized, AIHA proficiency-tested laboratory specializing in microbial testing. In conjunction with our Air Quality Division, guidelines suggested by the Indoor Air Quality Association (IAQA) and Mycotech Biological, Inc. were utilized in helping determine and interpret sample data.

It should be noted that there are no current regulatory requirements governing the testing strategies and interpretation of sample data at this time. Our sampling strategy has included the incorporation of current guidelines and recommendations, as well as state-of-the-art methodologies to help define the levels of airborne mold spores in the subject areas located within Hinsdale Middle School. IES collected a representative sample within each sample location.

At each area air sample location, the IES representative collected a sample for mold spores using a particulate sampling cassette known as an "Allergenco-D" Disposable Air Sampling Cassette. The duration of each of the mold spore air samples was five (5) minutes at each sample location. A separate area air sample was collected for mold spores outside the facility as a baseline or background samples.

Following each collection event, all samples were relinquished to STAT Analysis Corporation, located in Chicago, Illinois for analysis.

A total of twelve (12) area air samples were collected for mold spores (including the required QA/QC blank). All sample locations are illustrated in Section 2, Exhibit A of this report.

D. DATA SUMMARY:

Indoor Air Quality –

On September 21, 2017 readings for CO, CO_2, temperature and relative humidity were collected with the use of the VelociCalc Multifunction Ventilation Meter in both the morning and the afternoon. During the morning, readings of interior concentrations of CO were undetected and reported as 0.0 parts per million (ppm). The indoor concentrations of CO_2 ranged between 466 and 810 ppm. The highest reading was collected from Room 207.

The morning indoor temperatures ranged between 67.2°F and 73.4°F, while the indoor relative humidity ranged between 53.8% and 67.3%. The morning CO readings collected outside the building, on the southeast exterior, at the beginning and at the end of the session were also undetected and reported as 0.0 ppm. The concentrations of CO_2 were shown to be 458 ppm and 467 ppm respectively. The respective exterior morning temperatures were 73.8°F and 78.5°F. The respective exterior relative humidity readings were 80.3% and 73.0%.

During the afternoon, indoor concentrations of CO were undetected and all readings were reported as 0.0 ppm. The CO_2 concentrations ranged between 937 ppm and 2,097 ppm. The afternoon indoor temperatures ranged between 70.9°F and 74.5°F, while indoor relative humidity ranged between 52.7% and 62.1%. The afternoon readings of CO collected on the building's exterior at the beginning and at the end of the session were reported to be 0.0 ppm and 0.1 ppm respectively. The outside levels of CO_2 were shown to be 426 ppm and 440 ppm. The respective exterior afternoon temperatures were 91.0°F and 92.2°F. The respective exterior relative humidity readings were 41.3% and 37.7%.

The EPA NAAQS state that CO levels of 35 ppm for a 1-hour exposure and 9 ppm for an 8-hour exposure should not be exceeded more than once a year, per person. While these levels are intended to protect the health of the general public, they do not directly apply to indoor environments.

According to ASHRAE Standard 62.1-2010, classrooms containing children ages 5-8 should be provided with fifteen (15) cubic feet per minute (cfm) of outside (make-up) air per person (based on occupancy of twenty-five (25) people per 1,000 ft^2). Classrooms containing children ages 9 and above should be provided with thirteen (13) cfm of outside air (based on occupancy of thirty-five (35) people per 1,000 ft^2). Standard 62.1-2010, Informative Appendix C recommends indoor concentrations of CO_2 not exceed the outdoor concentrations by more than 700 ppm. CO_2 levels above those recommended are a possible indication of poor ventilation.

Former ASHRAE Standard 55-1992 recommended indoor summer temperatures between 73°F and 79°F and indoor winter temperatures between 68°F and 74.5°F. To minimize the growth of microorganisms, former ASHRAE Standard 62-2001 recommended that the relative humidity be maintained between 30% and 60%.

ASHRAE Standard 55-2010, Section 5.2.1.1 provides acceptable ranges of operative temperatures that meet the criteria specified within the Section. The operative temperature "comfort zone" for warm environments ranges between 75°F and 83°F. The operative temperature "comfort zone" for cold environments ranges between 67°F and 79°F.

The temperatures within each range are designed to be acceptable to 80% of a building's occupants. It should be noted that at the time of this assessment, overall exterior environmental conditions were considered to be warm.

ASHRAE Standard 62.1-2010, Section 5.9.1 recommends that the upper relative humidity within an occupied space be limited to 65% or less. There is no longer a recommended lower relative humidity limit.

All CO_2 concentrations recorded in the morning were below the recommended ASHRAE upper concentration limit. It should be noted that the morning temperatures recorded within the school building are below the recommended range for warm environments. The relative humidity reading recorded in Room 214 was above 65%.

Four (4) of the twelve (12) interior CO_2 concentrations recorded in the afternoon were above the recommended ASHRAE upper concentration limit. The CO_2 concentration recorded in Rooms 120, Portable Unit Room 3, Room 207, and Room 302 (Boys Coach) were reported to be elevated. All afternoon temperatures recorded within the school building were also below the recommended "comfort zone" range for warm environments. All recorded afternoon interior relative humidity readings were below the ASHRAE recommended limit of 65%. Tables listing all direct read environmental sample results can be found in Section 2, Exhibit B of this report.

Airborne Mold Spores –

Mold spores were found on all eleven (11) air samples collected during this investigation. Results of the air sample analysis show that ten (10) types of mold spores were found on the collected air samples. Seven (7) types of spores including Ascospores, Aspergillus-Penicillium-type spores, Basidiospores, spores from the genera *Cladosporium sp.*, *Epicoccum sp.*, Rusts, and the group including Smuts and spores from the genus *Myxomycetes sp.* were found on air samples collected both inside and outside of the building. Spores from the genera *Alternaria sp.*, *Periconia sp.*, and *Pithomyces sp.* were found exclusively on air sample collected inside of the school building.

Area air sample laboratory results for mold spores show that spores from a group including Smuts and the genus *Myxomycetes sp.* were found on all air samples collected both inside and outside of the school building. Spores from the genus *Alternaria sp.* were found on air samples collected in Rooms 116 and 207. Ascospores were found on air samples collected in Rooms 207, 302, and on the air sample collected outside of the school building. Aspergillus-Penicillium-type spores were found on the air sample collected in Room 207 and on the air sample collected outside of the school building. Basidiospores were found on the air samples collected in Rooms 207, 214, 302, and on the air sample collected outside of the school building. Spores from the genus *Cladosporium sp.* were found on the air samples collected in Rooms 207, 214, and on the air sample collected outside of the school building. Spores from the genus *Epicoccum sp.* were found on the air sample collected in Rooms 207, 204, and on the air sample collected outside of the school building. Spores from the genus *Periconia sp.* were found on air samples collected in Rooms 207 and 302. Spores from the genus *Pithomyces sp.* were found on the air samples collected in Rooms 120, 207, 214, 302, and 304. Spores from Rusts were found on air samples collected Rooms 108, 120, 207, 214, 302, 304, and on the air sample collected outside of the school building.

While most interior mold spore concentrations of molds found both inside and outside of the school building were reported to be less than or equal to their corresponding exterior concentration, two (2) locations within the building (Rooms 207 and 302) exhibited higher interior spore concentrations of Rusts. All reported interior airborne mold spore concentrations were reported to be below the MBI total spore concentration guideline of 2,000 spores per cubic meter of air (spores/m^3) as well as the MBI individual spore guideline of 650 spores/m^3.

Refer to Section 2, Exhibit C for Laboratory Analytical Results. Refer to Section 3, Definitions, for additional information regarding the types of mold fungi and spores mentioned above.

E. CONCLUSIONS:

Based on our inspection, sample collection work, and laboratory analysis, Integrity Environmental Services, Inc. has made the following conclusions:

- Interior concentrations of CO were undetected.
- While most of the recorded interior concentrations of CO_2 were within acceptable limits, during the afternoon of September 21, 2017, the CO_2 concentrations in Rooms 120, Portable Unit Room 3, 207, and 302 were elevated.
- On September 21, 2017, one (1) A.M. interior humidity reading (Room 214) was above 65%. The other humidity readings recorded on September 21, 2017, in both the A.M. and P.M. were below 65% and are acceptable.
- On September 21, 2017 all A.M. and P.M. interior temperature readings were observed to be below the recommended operative temperature "comfort zone" for warm environments.
- Visible mold was not identified in the areas sampled within the school building during this investigation.
- The majority of interior airborne spore concentrations were reported to be equal to or below their corresponding exterior concentrations.
- While concentrations of spores from the genera *Alternaria sp.*, *Periconia sp.*, and *Pithomyces sp.*, were found exclusively on various interior air samples, and two (2) sample concentrations of spores from Rusts were observed to be greater that their corresponding exterior concentration, these types of spores are all associated with plants (both growing and decaying) and predominantly originate from an exterior source. Based upon observations both inside and outside of the school building, an interior source for these interior concentrations is not suspected.
- All interior airborne mold spore sample concentrations were below both the Mycotech Biological, Inc. total spore concentration guideline of 2,000 spores/m^3, and the individual spore concentration guideline of 650 spores/m^3.
- Many of the types of mold spores identified within the building, including Alternaria, Ascospores, Cladosporium, Epicoccum, and Smuts/Myxomycetes are allergenic.
- Results of both IAQ readings and laboratory analysis do not indicate an immediate air quality concern.

F. RECOMMENDATIONS:

While IAQ readings and laboratory results do not indicate any immediate air quality concern, IES recommends that the following actions be taken to 1.) minimize or eliminate any microbial presence and 2.) improve the overall air quality within the Hinsdale Middle School Building:

1. Continue to be pro-active with the investigation and elimination (if necessary) of any air quality concerns or reported suspect mold-like material.

2. While visible mold growth was not observed in areas investigated and sampled during this investigation, any surfaces found to be water damaged or showing visible mold growth should be addressed by cleaning and disinfecting as soon as possible. Materials such as gypsum (i.e. drywall) should be removed and replaced immediately. Minimal disturbance of the contaminated surface during any cleaning or disinfecting and/or removal work is necessary to prevent introduction of additional microorganisms into the air.

3. Carpeting within the school building should continue to be routinely vacuumed and cleaned. The use of HEPA vacuums is recommended.

4. Increasing the volume of outside air within classrooms that typically exhibit a larger volume of students should be considered to minimize the build-up of CO_2.

5. Continue to routinely clean and/or replace all HVAC filters as necessary to help maintain the levels of potential microbial and other airborne contaminants entering the building at a minimum. Make sure that the installed filters are intact and that they fit properly within the intended HVAC unit.

6. To reduce and/or eliminate conditions within the school building that could potentially promote mold growth; efforts should be made to maintain the humidity level within the building below 65%.

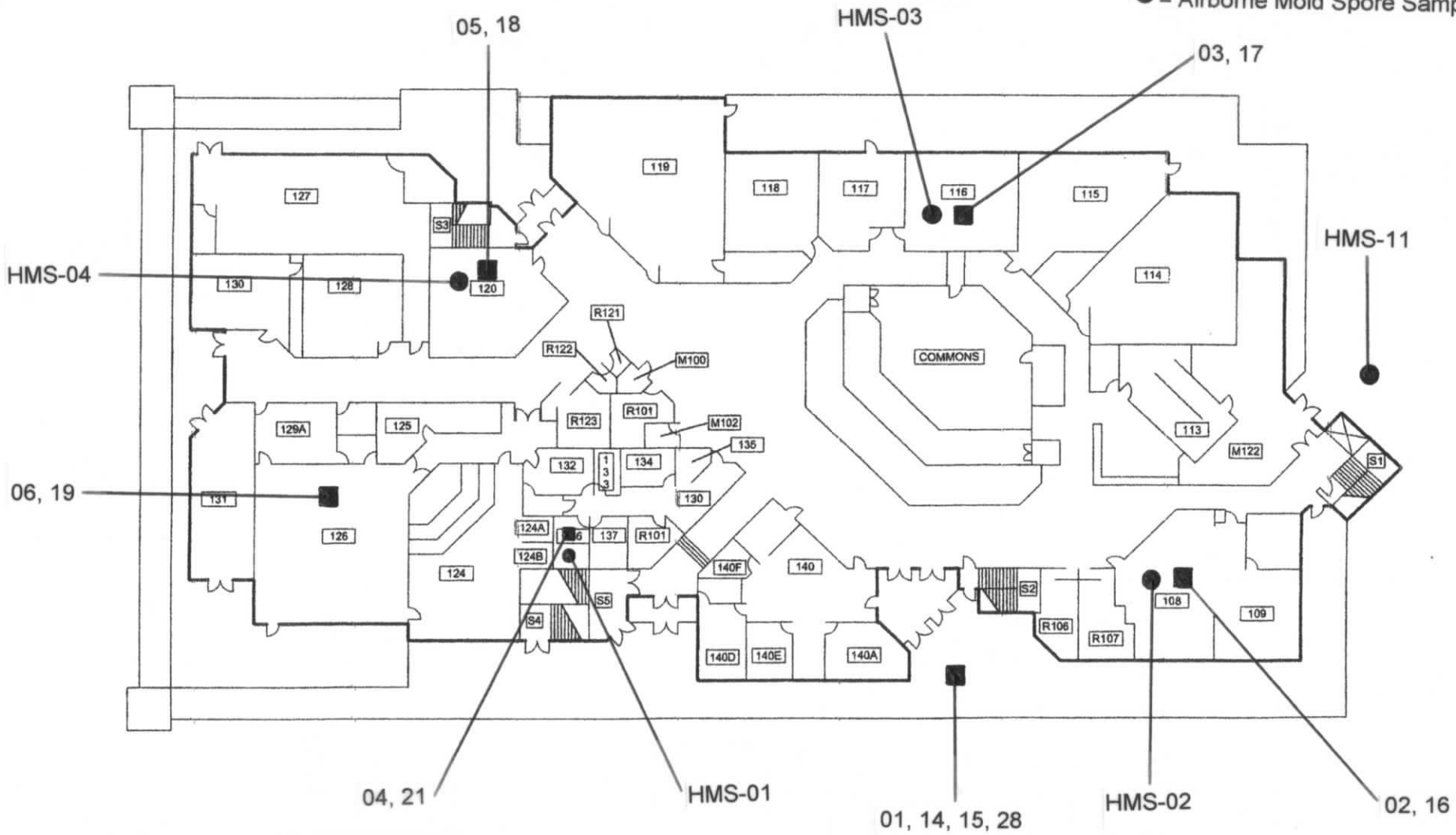
7. Adjust and maintain interior building temperatures as needed to maintain the comfort of the majority of the building occupants during all times of the school year.

SECTION 2

EXIBIT A
SAMPLE LOCATION DRAWINGS

■ = IAQ Reading Sample Location

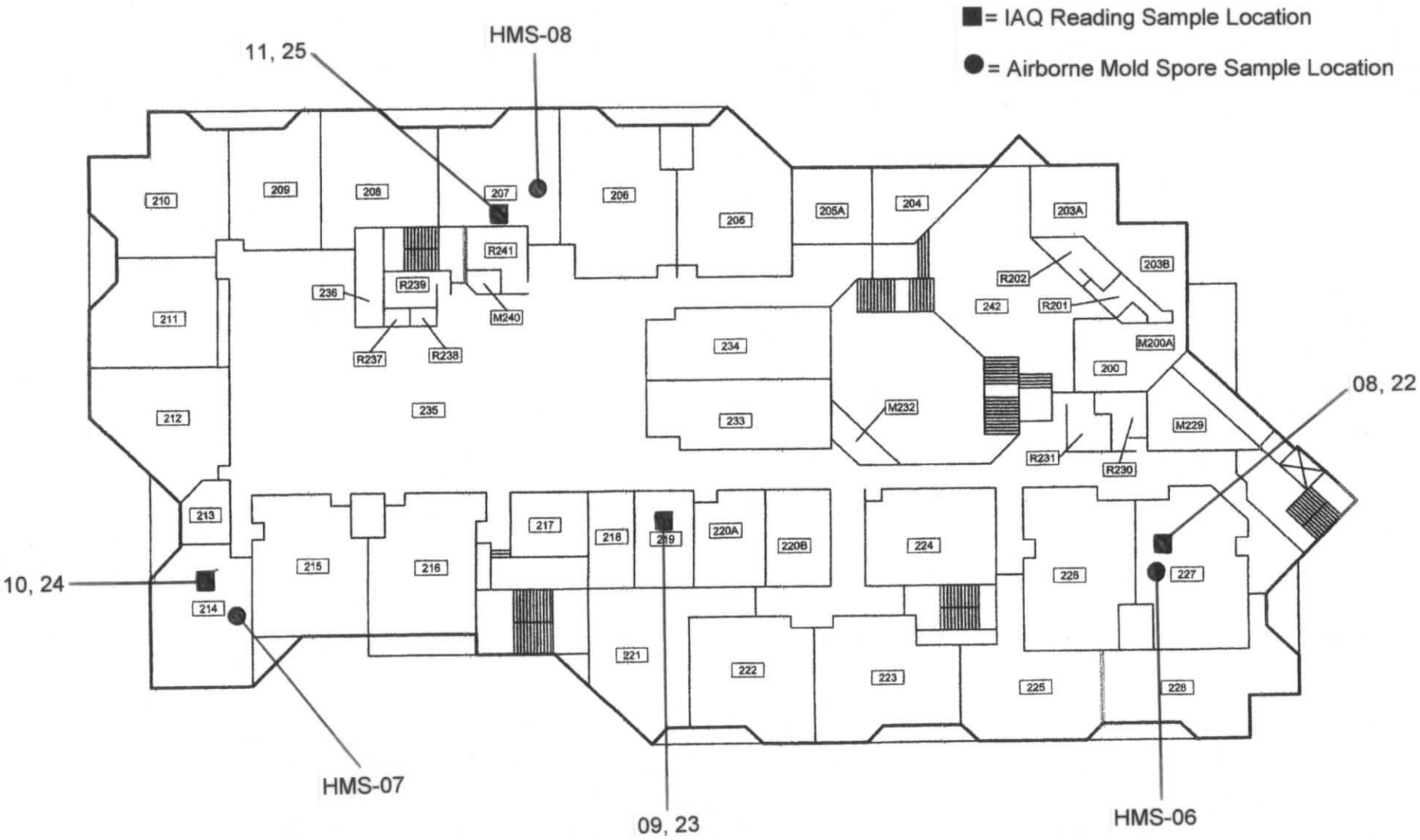
● = Airborne Mold Spore Sample Location



07, 20, HMS-05 (Room 3 of Portable Classrooms)

HMS-12 = Blank

INTEGRITY ENVIRONMENTAL SERVICES, INC. 1240 IROQUOIS DRIVE, SUITE 102 NAPERVILLE, ILLINOIS 60563 (630) 718-9133 (630) 718-9114 (FAX)	PROJECT: HINSDALE MIDDLE SCHOOL 100 SOUTH GARFIELD AVENUE HINSDALE, ILLINOIS OWNER: COMMUNITY CONSOLIDATED SCHOOL DIST. 181 6010 SOUTH ELM STREET BURR RIDGE, ILLINOIS	DRAWN BY: GT DATE: 10/23/17 IES NO.: 915-25 NO SCALE	NORTH IAQ SAMPLE LOCATION DIAGRAM FIRST FLOOR



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(630) 718-9133
(630) 718-9114 (FAX)

PROJECT: HINSDALE MIDDLE SCHOOL
100 SOUTH GARFIELD AVENUE
HINSDALE, ILLINOIS

OWNER: COMMUNITY CONSOLIDATED SCHOOL DIST. 181
6010 SOUTH ELM STREET
BURR RIDGE, ILLINOIS

DRAWN BY: GT
DATE: 10/23/17

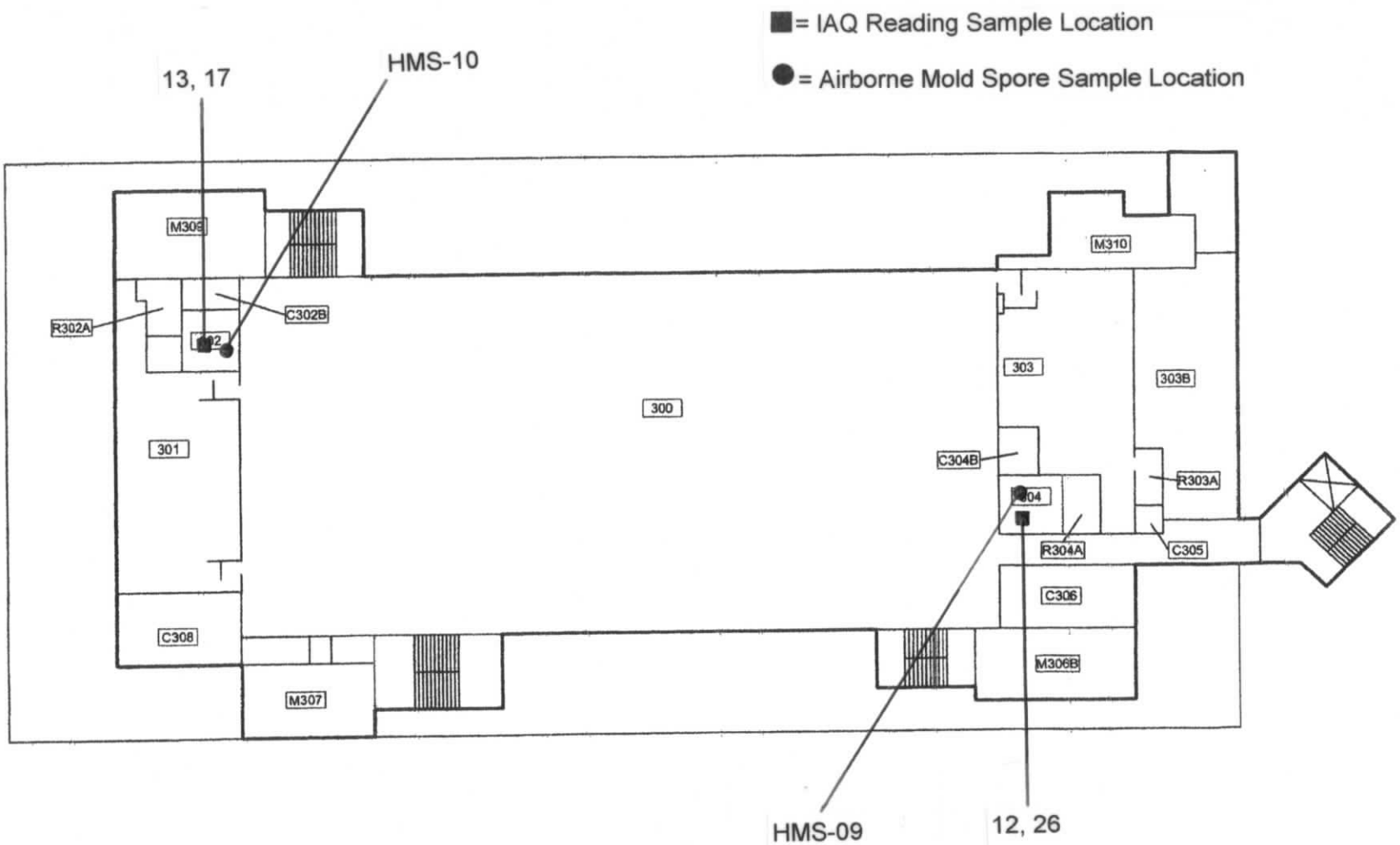
IES NO.: 915-25

NO SCALE

NORTH

IAQ
SAMPLE LOCATION
DIAGRAM

SECOND FLOOR



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PROJECT: HINSDALE MIDDLE SCHOOL
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HINSDALE, ILLINOIS

OWNER: COMMUNITY CONSOLIDATED SCHOOL DIST. 181
6010 SOUTH ELM STREET
BURR RIDGE, ILLINOIS

DRAWN BY: GT
DATE: 10/23/17

IES NO.: 915-25

NO SCALE

NORTH

IAQ
SAMPLE LOCATION
DIAGRAM

THIRD FLOOR

EXHIBIT B
IAQ SAMPLE SUMMARY TABLES

SUMMER/FALL 2017
INDOOR AIR QUALITY INVESTIGATION
HINSDALE COMMUNITY CONSOLIDATED SCHOOL DISTRICT 181
HINSDALE MIDDLE SCHOOL
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IAQ SUMMARY TABLE
09/21/17 P.M. READINGS

Sample No.	Sample Location	CO (ppm)	CO_2 (ppm)	Temp. (°F)	Relative Humidity	Time of Day	No. of People
15	Building Exterior (By Main Entrance)	0.0	426	91.0	41.3	12:05	0
16	Room 108	0.0	1,111	73.4	55.4	12:19	8
17	Room 116	0.0	1,112	71.7	58.3	12:27	2
18	Room 120	0.0	1,493	72.1	62.1	12:36	26**
19	Room 126	0.0	937	70.9	59.2	12:44	3
20	Room 3 (Portables)	0.0	2,097	74.5	56.1	12:52	27**
21	Room 136	0.0	1,004	74.1	54.1	13:01	0
22	Room 227	0.0	1,088	72.8	55.3	13:09	1
23	Room 219	0.0	986	72.9	55.6	13:15	2
24	Room 214	0.0	1,115	73.2	57.8	13:22	25
25	Room 207	0.0	1,212	73.6	58.0	13:30	22
26	Room 304 (Girls Coach)	0.0	1,120	73.6	52.7	13:38	0
27	Room 302 (Boys Coach)	0.0	1,279	71.9	55.5	13:45	2
28	Building Exterior (By Main Entrance)	0.1	440	92.2	37.7	13:58	0

*Students left room just prior to start of sampling **HVAC not in operation

Blue = Concentrations/Temperatures below recommended levels/ranges
Red = Concentrations/Temperatures above recommended levels/ranges

ANSI/ASHRAE Standard 62.1-2010 does not provide or recommend default concentrations for indoor air contaminants.

9 ppm = Permissible Exposure Level (PEL) for CO from National Ambient Air Quality Standards (NAAQS) as developed by the U.S. EPA (Not to be exceeded more than once a year)
50ppm = OSHA PEL for CO
25ppm = ACGIH TLV for CO (1/10 TLV formerly used by ASHRAE for non-industrial indoor environments) ASHRAE no longer recommends the use of a fraction of TLV® to establish an acceptable concentration of an indoor contaminant within a non-industrial environment without first establishing whether or not the fraction is suitable for the subject contaminant.

ANSI/ASHRAE Standard 62.1-2010 recommends that relative humidity within an occupied space be limited to 65% or less. Specific Lower limits for relative humidity are no longer recommended.

SUMMER/FALL 2017
INDOOR AIR QUALITY INVESTIGATION
HINSDALE COMMUNITY CONSOLIDATED SCHOOL DISTRICT 181
HINSDALE MIDDLE SCHOOL
IES NO. 915-25

IAQ SUMMARY TABLE
09/21/17 A.M. READINGS

Sample No.	Sample Location	CO (ppm)	CO_2 (ppm)	Temp. (°F)	Relative Humidity	Time of Day	No. of People
01	Building Exterior (Southeast Side)	0.0	458	73.8	80.3	07:14	0
02	Room 108	0.0	466	69.1	53.8	07:23	0
03	Room 116	0.0	475	67.2	58.0	07:30	0
04	Room 136	0.0	500	68.9	65.7	07:38	0
05	Room 120	0.0	475	69.0	65.0	07:45	0
06	Room 126	0.0	523	69.7	65.0	07:52	6
07	Room 3 (Portables)	0.0	480	72.5	57.5	08:00	0
08	Room 227	0.0	551	71.0	56.2	08:09	2
09	Room 219	0.0	642	72.0	60.8	08:17	4
10	Room 214	0.0	617	72.1	67.3	08:24	20
11	Room 207	0.0	810	72.6	63.4	08:33	20
12	Room 304 (Girls Coach)	0.0	707	73.4	60.2	08:40	1
13	Room 302 (Boys Coach)	0.0	663	73.2	60.9	08:53	0
14	Building Exterior (Southeast Side)	0.0	467	78.5	73.0	09:00	0

Blue = Concentrations/Temperatures below recommended levels/ranges
Red = Concentrations/Temperatures above recommended levels/ranges

ANSI/ASHRAE Standard 62.1-2010 does not provide or recommend default concentrations for indoor air contaminants.

9 ppm = Permissible Exposure Level (PEL) for CO from National Ambient Air Quality Standards (NAAQS) as developed by the U.S. EPA (Not to be exceeded more than once a year)
50ppm = OSHA PEL for CO
25ppm = ACGIH TLV for CO (1/10 TLV formerly used by ASHRAE for non-industrial indoor environments) ASHRAE no longer recommends the use of a fraction of TLV® to establish an acceptable concentration of an indoor contaminant within a non-industrial environment without first establishing whether or not the fraction is suitable for the subject contaminant.

ANSI/ASHRAE Standard 62.1-2010 recommends that relative humidity within an occupied space be limited to 65% or less. Specific Lower limits for relative humidity are no longer recommended.

EXHIBIT C
LABORATORY ANALYTICAL RESULTS
(MOLD SPORES)

STAT Analysis Corporation
2242 West Harrison St., Suite 200, Chicago, IL 60612-3766
Tel: (312) 733-0551 Fax: (312) 733-2386 STATinfo@STATAnalysis.com
Accreditations: IEPA ELAP 100445; ORELAP IL300001; AIHA-LAP, LLC 101160; NVLAP LabCode 101202-0

October 05, 2017

Integrity Environmental Services, Inc.
1240 Iroquois Drive
Naperville, IL 60563

Telephone: (630) 718-9133
Fax: (630) 718-9114

Analytical Report for STAT Work Order: 17100055 Revision 0

RE: 915-25, Hinsdale Middle School, Throught Bld

Dear Guy Tawzer:

STAT Analysis received 12 samples for the referenced project on 10/3/2017 9:46:00 AM. The analytical results are presented in the following report.

Enclosed are the analytical results for the above referenced project. The samples were analyzed as per the enclosed chain of custody.

All analyses were performed in accordance with established microbiology methodology. All Quality Control criteria as specified in the methods have been met. QA/QC documentation and raw data will remain on file for future reference. Sample acceptance criteria has been met unless noted in the Case Narrative or Sample Receipt Checklist. If required, an estimate of uncertainty for the analyses can be provided.

Thank you for the opportunity to serve you and I look forward to working with you in the future. If you have any questions about the enclosed materials, please contact me at (312) 733-0551.

Sincerely,

Daniel Mikos
Microscopist

The information contained in this report and any attachments is confidential information intended only for the use of the individual or entities named above. The results of this report relate only to the samples tested. If you have received this report in error, please notify us immediately by phone. This report shall not be reproduced, except in its entirety, unless written approval has been obtained from the laboratory. This analytical report shall become property of the Customer upon payment in full. Otherwise, STAT will be under no obligation to support, defend or discuss the analytical report.

STAT Analysis Corporation:
2242 West Harrison St., Suite 200, Chicago, Illinois 60612-3766
Tel: 312.733.0551; Fax: 312.733.2386; e-mail address: STATinfo@STATAnalysis.com

Analytical Report for Microbiological Analysis - Fungal Spores in Air

Client:	Integrity Environmental Services, Inc.	Date/Time Received:	10/3/17 9:46 AM
Project ID:	915-25, Hinsdale Middle School, Throught Bld	Date Analyzed:	10/5/2017
STAT Project No.:	17100055	Analyzed By:	DM
		QC By:	AM

Client Sample No.:	HMS-01				HMS-02				HMS-03				HMS-04			
Sample Description:	Rm 136				Rm 108				Rm 116				Rm 120			
Date Sampled:	9/28/2017				9/28/2017				9/28/2017				9/28/2017			
STAT Sample No.:	17100055-001				17100055-002				17100055-003				17100055-004			
Volume (m^3):	0.075				0.075				0.075				0.075			
	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%
Total Fungal Spores:	4	53	13	100	2	27	13	100	2	27	13	100	4	53	13	100
Alternaria																
Ascospores																
Aspergillus/Penicillium																
Basidiospores									1	13		50.0				
Botrytis																
Cercospora																
Chaetomium																
Cladosporium																
Curvularia																
Drechslera/Bipolaris																
Epicoccum																
Fusarium																
Nigrospora																
Oidium/Erysiphe																
Periconia																
Phoma																
Pithomyces																
Pleospora																
Polythrincium																
Rhizopus/Mucor																
Rusts					1	13		50.0					1	13		25.0
Smuts/Myxomycetes	4	53		100.0	1	13		50.0	1	13		50.0	3	40		75.0
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Unidentified Fungi																
Other																
Mycelial Fragments																
Debris Level	Moderate				Low				Low				Low			
Organic Material	Present				Present				Present				Present			

DL - Detection Limit = Spores/m^3

SOP 6110

STAT Analysis Corporation:
2242 West Harrison St., Suite 200, Chicago, Illinois 60612-3766
Tel: 312.733.0551; Fax: 312.733.2386; e-mail address: STATinfo@STATAnalysis.com

Analytical Report for Microbiological Analysis - Fungal Spores in Air

Client:	Integrity Environmental Services, Inc.	Date/Time Received:	10/3/17 9:46 AM
Project ID:	915-25, Hinsdale Middle School, Throught Bld	Date Analyzed:	10/5/2017
STAT Project No.:	17100055	Analyzed By:	DM
		QC By:	AM

Client Sample No.:	HMS-05				HMS-06				HMS-07				HMS-08			
Sample Description:	Rm 3-Portable				Rm 227				Rm 214				Rm 207			
Date Sampled:	9/28/2017				9/28/2017				9/28/2017				9/28/2017			
STAT Sample No.:	17100055-005				17100055-006				17100055-007				17100055-008			
Volume (m^3):	0.075				0.075				0.075				0.075			
	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%
Total Fungal Spores:	2	27	13	100	2	27	13	100	5	67	13	100	32	427	13	100
Alternaria													1	13		3.1
Ascospores													1	13		3.1
Aspergillus/Penicillium													1	13		3.1
Basidiospores									1	13		20.0	2	27		6.3
Botrytis																
Cercospora																
Chaetomium																
Cladosporium									1	13		20.0	1	13		3.1
Curvularia																
Drechslera/Bipolaris																
Epicoccum													1	13		3.1
Fusarium																
Nigrospora																
Oidium/Erysiphe																
Periconia													5	67		15.6
Phoma																
Pithomyces	1	13		50.0					1	13		20.0	3	40		9.4
Pleospora																
Polythrincium																
Rhizopus/Mucor																
Rusts									1	13		20.0	8	107		25.0
Smuts/Myxomycetes	1	13		50.0	2	27		100.0	1	13		20.0	9	120		28.1
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Unidentified Fungi																
Other																
Mycelial Fragments																
Debris Level	Low				Low				Moderate				Moderate			
Organic Material	Present				Present				Present				Present			

DL - Detection Limit = Spores/m^3

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Analytical Report for Microbiological Analysis - Fungal Spores in Air

Client:	Integrity Environmental Services, Inc.	Date/Time Received:	10/3/17 9:46 AM
Project ID:	915-25, Hinsdale Middle School, Throught Bld	Date Analyzed:	10/5/2017
STAT Project No.:	17100055	Analyzed By:	DM
		QC By:	AM

Client Sample No.:	HMS-09				HMS-10				HMS-11				HMS-12			
Sample Description:	Rm 304				Rm 302				Bld Ext				Blank			
Date Sampled:	9/28/2017				9/28/2017				9/28/2017				9/28/2017			
STAT Sample No.:	17100055-009				17100055-010				17100055-011				17100055-012			
Volume (m^3):	0.075				0.075				0.075				0			
	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%	Total Count	Count/ m^3	DL	%
Total Fungal Spores:	8	107	13	100	18	240	13	100	41	547	13	100	0			100
Alternaria																
Ascospores					1	13		5.6	3	40		7.3				
Aspergillus/Penicillium									1	13		2.4				
Basidiospores					2	27		11.1	11	147		26.8				
Botrytis																
Cercospora																
Chaetomium																
Cladosporium									13	173		31.7				
Curvularia																
Drechslera/Bipolaris																
Epicoccum	1	13		12.5					2	27		4.9				
Fusarium																
Nigrospora																
Oidium/Erysiphe																
Periconia					3	40		16.7								
Phoma																
Pithomyces	2	27		25.0	4	53		22.2								
Pleospora																
Polythrincium																
Rhizopus/Mucor																
Rusts	1	13		12.5	3	40		16.7	1	13		2.4				
Smuts/Myxomycetes	4	53		50.0	5	67		27.8	10	133		24.4				
Stachybotrys																
Stemphylium																
Torula																
Ulocladium																
Unidentified Fungi																
Other																
Mycelial Fragments																
Debris Level	Moderate				Moderate				Moderate				Absent			
Organic Material	Present				Present				Present				Absent			

DL - Detection Limit = Spores/m^3

SOP 6110

STAT Analysis Corporation
2242 West Harrison Street, Suite 200, Chicago, Illinois 60612 Phone: (312) 733-0551 Fax: (312) 733-2386
e-mail address: STATinfo@STATAnalysis.com

MICROBIOLOGY CHAIN OF CUSTODY RECORD

Client: Integrity Environmental Serv., Inc.
Street Address: 1240 Iroquois Ave., Ste. 102
City, State, Zip: Naperville, IL 60563
Phone: (630) 718-9133/Cell (708) 528-1491
Fax: (630) 718-9114
e-mail/Alt. Fax: ies2001@sbcglobal.net

Project Number: 915-25
Project Name: Hinsdale Middle Sch.
Project Location: Throughout Bld.
Project Manager: Guy Tawzer
P.O. Number: 915-25

Office Use Only Below:

Work Order No.: 1700055
Samples Acceptable: Yes: ✓ No:
Analyzed By:
Date/Time: 10/5/17
Data File:
QC By:
Reported By (Initial/Date/Time):
Verbal:
Fax/e-mail:

Turn Around Time: <1 ☐ 1 ☐ 2 ☐ 3 ☒ Viable: 6-10 ☐
Other TAT: Date Due: Time Due:
Relinquished by: [signature] Date/Time: 10-2-17/12:00
Received by: 12822W2X03 [illegible] 6627 - UPS
Relinquished by: UPS Date/Time:
Received for lab by: [signature] Date/Time 10/3/17 0946
Relinquished by: Date/Time:
Received by: Date/Time:

Client Sample Number/Description:	Date Taken	Time Taken	Volume (Liters)	Area Wiped (Units)^2	Laboratory Sample No.	Non-Viable:	Air Cassette	Direct Exam-Tape	Direct Exam-Swab	Direct Exam-Bulk		Viable:	Air Impact	Swab	Bulk		Other:					
HMS-01/Rm. 136	9-28-17	07:16	75.0		001		X															
HMS-02/Rm. 108	↓	07:30	↓		002		↓															
HMS-03/Rm. 116		07:38			003																	
HMS-04/Rm. 120		07:48			004																	
HMS-05/Rm. 3-Portable		07:57			005																	
HMS-06/Rm. 227		08:10			006																	
HMS-07/Rm. 214		08:18			007																	
HMS-08/Rm. 207		08:26			008																	
HMS-09/Rm. 304		08:36			009																	
HMS-10/Rm. 302		08:45			010																	
HMS-11/Bld. Ext.		08:57			011																	
HMS-12/Blank		—	0.06		012																	

Comments:

SECTION 3

DEFINITIONS

MOLD FUNGI AND SPORES –

An estimated 100,000 species of fungi are known to exist. Fungi may be single celled or multi-cellular. Various organisms such as yeasts, mushrooms, morels, truffles, and molds are actually fungi. Fungal growth is affected by moisture, temperature, and light. All humans are exposed to fungi through inhalation and ingestion, apparently, with no ill health effects. Many fungi are used as foods and sources of drugs that help fight disease. Most fungi are saprophytic, feeding on dead and decaying organic matter. Some species of fungi, however, are known to cause infectious diseases in humans. In most cases, the fungi are unable to cause disease in persons with a healthy immune system.

Three (3) types of fungal infections exist. They are defined as:

1. Systemic Infection: Caused by the inhalation of certain fungal spores. Most of these infections produce little or no symptoms.

2. Opportunistic Infection: Limited to those with impaired immunological defenses. In this situation, infection is secondary to a primary disease. Species of *Aspergillus*, *Cladosporium*, *Mucor*, *Rhizopus* and *Cryptococcus* are common opportunistic fungi.

3. Dermatophytes: A group of fungi that infect the hair, skin and nails. Direct contact with an infected individual or the sharing of items such as grooming utensils or clothes is usually how the infection is transmitted. Transmission to humans from an environmental source is rare.

Fungi produce toxic metabolites called mycotoxins. Mycotoxins are present in both spores and viable fungi. Usually, inhalation exposure of mycotoxins occurs following the disturbance of a contaminated source.

Fungi also produce volatile organic compounds (VOCs) while growing. Some of these compounds have noticeable odors that many people find offensive. It is thought that exposure to these VOCs may be generally responsible for some building-related symptoms (BRSs).

The following is a description of each genus of airborne fungal (mold) spores found within the Hinsdale Middle School:

Alternaria sp.: Spores were found on air samples collected in Rooms 116 and 207. This fungus is very common, found both indoors and outdoors in soil, dead organic debris, foodstuffs, and textiles. This mold is a plant pathogen and is one of the main fungal causes of allergies.

Ascospores: These spores were found on air samples collected in Rooms 207, 302, and on the air sample collected outside of the school building. These spores were not positively identified. They are possibly from species of *Alternaria, Aspergillus, Cladosporium, or Penicillium* among others.

Aspergillus sp.: Spores were found on the air sample collected in Room 207 and on the air sample collected outside of the school building. This fungus is associated with grains, nuts, cotton, organic debris and water damaged building materials. This is the most common group of fungi in our environment. Sixteen (16) of the over 160 species of *Aspergillus* are known to act as agents of etiological disease in humans. These diseases are fairly uncommon and do not normally occur in people with healthy immune systems. The spores produced by *Aspergillus sp.* appear very similar to the spores produced by *Pennicillium sp.*

Basidiospores: Spores were found on air samples collected in Rooms 207, 214, 302 and on the air sample collected outside of the school building. These spores were not positively identified and are possibly from some species of yeasts (*Rhodotorula* and *Sporobolomyces*).

Cladosporium sp.: These spores were found on air samples collected in Rooms 207, 214 and on the air sample collected outside of the school building. This fungus is commonly found both indoors and outdoors and is often located in spaces where condensation is collected and/or where there is poor ventilation. It is commonly found on the surface of fiberglass duct lining inside supply ducts. It is a common cause of allergies and hay fever and has also been associated with various skin and eye infections acquired by immune compromised individuals.

Epicoccum sp.: Spores were found on air samples collected in Rooms, 207, 304 and on the air sample collected outside of the school building. This fungus is commonly found in plants, soils, grains, textiles and paper products. It is usually found in association with *Cladosporium* and Aureobasidum. Considered to be a saprophyte, *Epicoccum*, is routinely found on air samples and occasionally found in dust samples. This fungus is reported to be an allergen.

Myxomycetes: These spores were found on all air samples collected both inside and outside of the school building. Myxomycetes are usually found outdoors on decaying plant material. They are easily dispersed by wind in their dry phase and occasionally are found in indoor environments. Under 600x microscopy, Myxomycetes are indistinguishable from smuts.

Penicillium sp.: Spores were found on the air sample collected in Room 207 and on the air sample collected outside of the school building. A large number of organisms belong to this genus. This fungus is commonly found in soil, food, cellulose, paint, grains, compost piles, carpet, wall paper, and in interior fiberglass duct insulation. It is reported to cause allergic reactions on skin and in susceptible individuals, may cause among other infections, hypersensitivity pneumonitis or allergic alveolitis. Some species can produce various mycotoxins that are harmful to humans. The spores produced by *Penicillium sp.* appear very similar to the spores produced by *Aspergillus sp.*

Periconia sp.: Spores were found on air samples collected in Rooms 207 and 302. This widespread mitosporic fungi is commonly found in temperate to tropical areas. It is usually found on soils, plant debris, grasses, and air. *Periconia* is rarely found growing indoors. It is saprophytic or parasitic on plants, and can be a cause of root rot. Rare cases of mycotic keatitis have been reported from *Periconia*. The species P. circinata can produce Peritoxins, which are secondary metabolites.

Pithomyces sp.: Spores were found on the air samples collected in Rooms 120, 207, 214, 302 and 304. This fungus is found on decaying plants. *Pithomyces sp.* produces a mycotoxin known as sporidesmin, which is an animal pathogen.

Rusts: Spores were found on the air samples collected in Rooms 121, 213, 304, and on the air sample collected outside of the school building. Rusts are plant pathogens that develop in cool weather. Spread by wind and splashing water, rusts need water to reproduce and infect host plants.

Smuts: These spores were found on all air samples collected both inside and outside of the school building. This allergen is a parasitic plant pathogen that needs a living host. Smuts are often found on corn, grass, weeds, flowering plants, and even other fungi. Smuts are distributed by wind. Under 600x microscopy, smuts are indistinguishable from mxomycetes.