

MOLD AND MOISTURE ASSESSMENT REPORT



ALBERT HILL MIDDLE SCHOOL

3400 PATTERSON AVENUE
RICHMOND, VIRGINIA 23221

ECS PROJECT NO. 47:14153-M

FOR: RICHMOND PUBLIC SCHOOLS FACILITY SERVICES

FEBRUARY 26, 2024





February 26, 2024

Mr. Ronald Hathaway Jr.
Richmond Public Schools Facility Services
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ECS Project No. 47:14153-M

Reference: Mold and Moisture Assessment, Albert Hill Middle School, 3400 Patterson Avenue, Richmond, Virginia

Dear Mr. Hathaway Jr.:

ECS Mid-Atlantic, LLC (ECS) is pleased to provide Richmond Public Schools Facility Services with the results of the above-referenced Mold and Moisture Assessment performed at Albert Hill Middle School located at 3400 Patterson Avenue in Richmond, Virginia. This report summarizes our observations, analytical results, findings, and recommendations related to the work performed. The work described in this report was performed by ECS in general accordance with the Scope of Services described in ECS Proposal Number 47:47:30369-EP and the terms and conditions of the agreement authorizing those services.

ECS appreciates this opportunity to provide Richmond Public Schools Facility Services with our services. If we can be of further assistance to you, please do not hesitate to contact us.

Sincerely,

ECS Mid-Atlantic, LLC

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1.0 PROJECT DESCRIPTION

The building located at 3400 Patterson Avenue in Richmond, Virginia is a school building known as Albert Hill Middle School. The building contains approximately 90,642 square feet of space and was reportedly originally constructed in 1925.

Based on information provided by Richmond Public Schools Facility Services representatives, ECS understands that building occupants have reported mold and moisture concerns in the building to the Richmond Public Schools Facility Services Department. Richmond Public Schools Facility Services has requested ECS to conduct a Mold and Moisture Assessment to evaluate these concerns.

2.0 PURPOSE

The purpose of the Mold and Moisture Assessment was to conduct visual observations and testing for mold and moisture to identify evidence of moisture-affected building materials or selective amplification of mold within tested areas of the subject building.

3.0 METHODOLOGY

ECS performed the authorized Scope of Services in general accordance with our proposal, standard industry practices and methods specified by guidelines and industry standards for the identification of mold and moisture-affected building materials.

3.1 Mold and Moisture

The assessment included a non-invasive visual and olfactory survey for evidence of mold and moisture within the subject building. The assessments focused on the client-selected areas indicated by Richmond Public Schools Facility Services. The ECS site personnel observed readily accessible areas and selected building materials to evaluate visible suspect fungal growth and/or moisture impacted materials. A reasonable effort was made to identify water and mold impacted areas; however, this does not imply a guarantee that all possible reservoirs of mold were identified because mold or water-impacted building materials may be hidden by walls, flooring, partitions, etc. ECS did not access the crawlspace(s) in the school. Additional assessment should be performed in this area to determine if mold or moisture impacted building materials are present. ECS observed an enclosure behind the main school building. ECS did not assess this structure as part of the assessment as it was not requested to be included by the client.

Ambient temperature, relative humidity, and dewpoint temperature were measured during the survey using a Q-Trak hand held IAQ meter and Fluke Thermo-hygrometer. The purpose of these measurements was to identify elevated interior humidity levels, which could potentially support indoor mold growth or indicate ongoing moisture problems.

ECS measured the moisture content in various building materials in multiple locations within the surveyed areas utilizing a Protimeter brand hand-held moisture meter. The instrument may be operated in two independent modes. The non-destructive "search mode" uses radio-frequency induction to detect moisture in a substrate. Using the search mode, the Protimeter is capable of detecting moisture in solid, homogeneous materials at depths up to 10 millimeters (0.39 inches). When operated in search mode, the Protimeter produces qualitative readings ("dry", "at risk", "wet")



along with a relative numerical reading corresponding to the appropriate qualitative reading. The Protimeter may also be used in “measure mode” to obtain actual moisture percentage readings in wood and other solid, non-conductive materials. Measurements are taken by inserting the pins of a moisture probe into the material being tested. For wood substrates, the moisture percentage is expressed as “% Moisture Content (MC)”; for other materials this number is expressed as “% Wood Moisture Equivalent (WME)”. In general, %MC or %WME values of less than 17 are considered “dry”, values greater than or equal to 17 but less than 20 are considered “at risk” for moisture damage, and values of 20 or greater are considered “wet”. Values of greater than 17 % typically are considered at risk for mold growth. This was not a comprehensive moisture mapping survey of all building materials within the areas surveyed but rather a non-invasive survey of moisture in select areas of specific building materials which may be impacted by moisture.

Fungal spore air samples were collected using calibrated self-contained battery-operated air sampling pumps and Allergenco® cassettes. Samples were transported to Environmental Hazards Services located in Richmond, Virginia for analysis. Environmental Hazards Services is accredited by the Environmental Microbiology Laboratory Accreditation Program, administered by the American Industrial Hygiene Association. Air samples were reported to the genus or group level according to the laboratory standard quantification procedures.

Direct samples were collected using pre-packaged tape lift slides used to sample a suspect surface or material. The samples were then placed back into the packaged sealed container for transport to the laboratory for analysis. Note: This is a semi-quantitative test and only indicative of the location sampled and primarily meant to identify the type of mold spores present and associated concentration from the sampled area only. The results may also present concentration ratings reported for hyphal fragments pollen, insect fragments, skin fragments, fibrous particulate, and background matter.

Samples collected were transported/shipped to Environmental Hazards Services (EHS) located in Richmond, Virginia for analysis. EHS is an AIHA (American Industrial Hygiene Association) EMLAP (Environmental Microbiology Laboratory Accreditation Program) accredited laboratory. The samples were analyzed for total spore concentrations in accordance to the laboratory’s quantification methods.

It is important to note that fungal spore samples represent a snapshot in time of a constantly changing microbiome. Environmental conditions such as temperature and humidity may influence sample results. The goal of the sampling performed was not to establish precise numerical concentrations over time, but rather to generally identify the dominant fungi in the sampled locations and the general significance of their relative concentrations as compared to outdoor concentrations or unaffected locations.

4.0 RESULTS

The following is a summary of laboratory results, measurements, findings and observations.

Based on our observations and sampling data, ECS does not see any reason why the school should not be continued to be used based on our experience with similar school buildings across the Richmond area and our findings for this study. In general, our air sample results did not indicate any



significantly elevated spore trap air samples in the classrooms above outdoor comparison samples. As would be expected with any school building, new or old, areas of mold and moisture were observed and it is our understanding that the recommendations identified in the assessment reports are being addressed or will be addressed by Richmond Public Schools.

4.1 Mold and Moisture

Main School Building

- Mold was observed associated with the ceiling mounted fan coil units and associated pipe insulation in many of the classrooms, the cafeteria and the main office. Moisture meter readings indicated that the associated pipe insulation was wet in several of the locations tested;
- Moisture impacted drop ceiling tiles were observed sporadically throughout the hallways, random classrooms, the auditorium and the gym. Moisture meter readings indicated that the ceiling tiles were dry at the time of the assessment in areas where they were accessible for testing;
- Mold was observed in several locations in Room 111 (Teacher's Lounge) including on the doors and outside of the white refrigerator in the back of the room, on the window mounted air conditioning unit and on the plaster walls within the sink closet on the left side of the room. Elevated moisture readings were not detected associated with these items.
- A portion of the floor tile had been removed in Room 212 and the wood sub-floor was exposed. ECS was informed by the on-site custodian that the floor had been previously moisture impacted from the ceiling mounted fan coil condensate drain overflowing in this room. Mold was observed on the sub-floor and was confirmed through tape lift sampling. Moisture meter readings indicated the sub-floor was dry at the time of the assessment.
- Mold was observed within several of the cabinets and the materials stored within the cabinets in Room 204. Tape lift sampling confirmed significant concentrations of mold were present in the far right sink cabinet and similar conditions should be assumed to be present throughout the similar blue painted storage and sink cabinets in this room.
- Mold was observed on pipe insulation in sporadic areas throughout the ceiling cavity on the 1st and 2nd floors. Surface mold was observed on the pipe insulation wrap and mold was observed at the pipe junctions and elbows. Elevated moisture meter readings were also detected associated with the pipe insulation in the areas where mold was observed at the junctions and elbows. Based on ECS' observation's it appeared that the mold was present on chilled water piping in these areas;
- Moisture damaged plaster walls and ceilings were observed sporadically on the third floor in the hallway and Rooms 301 and 303. Moisture meter readings indicated that these materials were dry at the time of the assessment and mold was not observed;
- An area of moisture damaged ceiling tiles and plaster ceiling was observed in the Gym. Suspect mold was observed on the HVAC supply vents on the main trunk line in the Gym. These areas were not accessible for testing;
- Moisture damaged plaster ceiling was observed in the girl's locker room. Mold was not observed in this location during the assessment. Moisture meter readings collected from the ceiling in the girl's locker room indicated a slight elevation in moisture in this area;



-
- Suspect mold was observed on HVAC vents in the ceiling of the auditorium. These areas were not accessible for testing during the assessment;
 - Apparent moisture staining was observed on the ceiling deck above the stage on the right side. This area was not accessible for testing during the assessment.

Cafeteria

- Moisture damaged 1'x1' applied ceiling tiles and plaster ceiling were observed in one area in the middle of the cafeteria. Moisture meter readings indicated that the materials were dry at the time of the assessment and suspect mold was not observed;
- Significantly moisture damaged plaster walls were observed in the kitchen directly outside of the cleaning supplies storage room in the rear. Elevated relative humidity and moisture meter readings were observed associated with the plaster wall in this area. The source of the elevated humidity and moisture in this area appeared to be an un-insulated steam pipe that was leaking steam into this area. Mold was not observed associated with this area;

Basement

- Mold was observed on the return vents at the bottom of the air handler unit in the band room;
- Moisture stained ceiling tiles, wood framing and wall panels were observed in the band room. Elevated moisture meter readings were identified associated with one of the stained ceiling tiles and the other stained materials tested were determined to be dry at the time of the survey. The source of moisture in this area appeared to be an un-insulated pipe above the ceiling that had visible condensation on it;
- Significantly moisture damaged plaster ceiling was observed above the drop ceiling in the band room. Elevated relative humidity above the recommended range was detected in the ceiling cavity and elevated moisture was identified associated with the plaster ceiling. The cause of the elevated relative humidity appeared to be the mechanical systems/piping that are located in this area. Mold was not observed associated with the plaster ceiling in the areas observed;
- The plaster ceiling was observed to be sagging and paint was peeling in several areas in the harp room around mechanical piping penetrating the ceiling. Suspect mold and elevated moisture meter readings were not identified in this room;
- The plaster ceiling was observed to be significantly damaged in the hallway between the harp room and the boiler room and elevated moisture was detected. Mold was not observed associated with the plaster ceiling in this area;
- Moisture stained pipe insulation was observed sporadically throughout the basement boiler room and areas of suspect mold were observed. The conditions seemed fairly normal for a boiler room of this age. One piece of equipment on the far exterior wall of the boiler room was actively emitting steam into the air that was visibly impacting pipe insulation in this area where mold was observed. Mold was also observed on the wood bathroom door frame in the boiler room;
- Moisture stained pipe insulation was observed in Ms. Macklin's office. Moisture meter readings collected from some of the stained areas indicated elevated moisture associated with the pipe insulation;



- Mold was observed on an access door and wood storage shelves in the "Coats for the Community" storage room in the basement. Moisture testing indicated that the materials were dry at the time of the assessment;
- Moisture stained and suspect mold impacted plaster ceiling was observed in the HVAC fan room in the basement adjacent to the boiler room. ECS did not enter the fan room to perform moisture or tape lift testing because the fan was in operation at the time of the assessment;

Exterior Envelope

- The window sash glazing was observed to be damaged or missing in several areas around the exterior of the building. The window frame caulk appeared to be intact and in good condition in most areas observed;
- Several gutter downspouts were observed to be draining directly against the building or outside of the receptacles meant to catch or collect stormwater;
- These items do not appear to be a significant source of water intrusion into the building based on our observations and testing but are potential sources of water intrusion into the building.

4.1.1 Spore-Trap Air Samples

Fungal spore-trap air samples were collected from classrooms and functionally distinct spaces in the school where students and faculty would be expected to spend the most time. Representative exterior samples were collected for comparison. The following table summarizes the results of sample analysis reported in spore counts per cubic meter of air.

Spore-Trap Sample Results

Sample Number	Sample Location	Total Fungal Spore Concentration (count/cubic meter)
11-15-23 Site Visit		
A1	Outdoors, main entrance	1,400
A2	102	130
A3	Infirmary	190
A4	103	73
A5	104	40
A6	105	130
A7	106	140
A8	107	230
A9	108	110



Sample Number	Sample Location	Total Fungal Spore Concentration (count/cubic meter)
A10	109	190
A11	110	660
A12	111/teacher's lounge	820
A13	112	810
A14	113	200
A15	114	120
A16	115	630
A17	116-117/media center	450
A18	200	130
A19	201	430
A20	Outdoors, main entrance	1,600
A21	202	40
A22	203	80
A23	204	790
A24	205	33
A25	206/207	No relevant fungal spores observed
A26	208	6.7
A27	209	170
A28	210	67
A29	211	33
A30	212	170
A31	213	130
A32	214	80
A33	215	110
A34	216	110
A35	217	360
A36	218	120



Sample Number	Sample Location	Total Fungal Spore Concentration (count/cubic meter)
A37	300	40
A38	301	13
A39	302	53
A40	303	13
A41	305	13
A42	306	33
A43	Auditorium	33
A44	Cafeteria	60
A45	Basement classroom	110
A46	Main office back hallway	110
A47	Outdoors, main entrance	940
12-05-23 Site Visit		
A1	Outside	4,100
A2	Ms. Macklin's Office	570
A3	The Harp Room	1,000
A4	The Band Room	390
A5	Outside	4,400

Analytical results of the mold air testing determined that total spore counts reported on the interior samples collected in the school were below the level of total airborne mold spores reported on the outside samples. The fungal genera detected were also generally comparable with fungal genera detected outdoors. Minor elevations of the individual fungal genera *Penicillium/Aspergillus* were identified associated with the samples collected in rooms 110, 112, 201 and 204. The elevations appear to be minor and may just represent normal fluctuations between indoor and outdoor mold spore counts. Mold impacted materials or items were observed in the Teacher's Lounge (Room 111) during the assessment which may be impacting the samples in room 110 and 112. Direct tape lift sampling results identified *Penicillium/Aspergillus* mold spores on the far right sink cabinet in Room 204 which is likely the source of the elevation in this room and may be affecting the sample collected in Room 201. As mentioned in Section 4.0, generally mold was observed on the ceiling mounted fan coil units and their associated hydronic plumbing insulation throughout the school which may also be a contributing factor to these minor elevations.



Additionally, minor elevations of the individual fungal genera *Penicillium/Aspergillus* mold spores (above the outside spore counts) were identified on the samples collected in the basement Band Room, Harp Room and Ms. Macklin's office. Mold was observed on the air handling unit return and behind vinyl cove baseboard in the Band Room. Elevated relative humidity and moisture was also identified associated with the ceiling cavity above the drop ceiling in the band room which may also be contributing to these elevated counts, although no visible mold was observed directly in this area.

There are currently no accepted regulatory standards or guidelines with respect to acceptable fungal levels inside buildings. Generally total spore counts and fungal genera detected on spore trap samples collected on the interior should be comparable to and less than outdoor samples. It is important to note however that spore trap measurements can fluctuate rapidly and the readings reported should not be used as a definitive indication that mold and or health hazards related to mold are present or absent.

4.1.2 Direct Surface Fungi Samples

Surface tape-lift samples were collected from the surveyed areas. Sample locations were selected from areas suspected to have fungal spore concentrations present due to water staining on building materials, visible mold growth, or other observations made by ECS indicative of possible fungal spore growth. The following table summarizes the results of sample analysis. The laboratory reports the results in accordance with the following density rating:

- Occasional: 1-5 spores seen per cover slip, growth not likely
- Few: Over 5 spores seen per cover slip, but less than 1 spore seen in 5 fields; possible indication of growth
- Moderate: At least 1 spore seen in 5 fields, probable indication of growth
- Numerous: Several spores seen in every field, indication of growth
- N/A: Not applicable

Direct Surface Fungi Samples

Sample Number	Sample Location	Type and Density Rating
T1	Wood sub-floor in Room 212	Numerous - <i>Chaetomium</i> spores Occasional - <i>Stachybotrys</i> spores
T2	Wall behind cove baseboard	Occasional - <i>Penicillium/Aspergillus</i> spores



Sample Number	Sample Location	Type and Density Rating
T3	Room 204, far right sink cabinet	Numerous - <i>Penicillium/Aspergillus</i> spores Occasional to Few - <i>Alternaria</i> spores and <i>Epicoccum</i> spores Occasional - <i>ascospores</i> , <i>Cladosporium</i> spores, <i>smuts</i> , <i>Periconia</i> , <i>myxomycetes</i> and <i>Drechslera/Bipolaris</i> group spores

Significant concentrations of mold spores were identified associated with the direct tape lift samples collected in Rooms 212 and 204. In Room 212 ECS observed that a portion of the vinyl floor tile had been removed and the wood sub-floor was mold impacted. ECS was informed by the custodian on-site that the source of the moisture was the condensate drain over-flowing from the ceiling mounted fan coil unit. The floor tested dry at the time of the assessment. In room 204 mold was observed associated with the sink and other storage cabinets in the room and materials stored within them. Tape lift sample T3 was collected from inside one of the sink cabinets on the far right side of the room. The materials tested were dry at the time of the assessment.

Mold spores were identified on the CMU block wall behind vinyl cove baseboard in the band room. The concentrations identified do not appear to be indicative of active mold growth but likely indicate that the area has been wet in the past. The source of moisture in this location appears to be an uninsulated pipe that was observed to be dripping down the wall in this area at the time of the assessment.

There are currently no accepted regulatory standards or guidelines with respect to acceptable fungal levels inside buildings. Surface samples are generally qualitative in that they reflect the type and quantity of mold present only at the sampled location at the time the sample was collected.

4.1.3 Moisture in Building Materials

The following table summarizes moisture content readings collected.

Summary of Moisture Readings from Building Materials

Location	Building Component	Substrate Material	Moisture Content (%)
Kitchen	Wall	Plaster	100.0
Band Room	Ceiling	Ceiling Tile	49.0
Band Room	Ceiling	Plaster	34.7



Location	Building Component	Substrate Material	Moisture Content (%)
Hallway outside boiler room	Ceiling	Plaster	22.3
Room 112	Pipe Insulation	Fiberglass	100.0
2nd Floor Hallway	Pipe Insulation	Fiberglass	37.2
Girl's Locker Room	Ceiling	Plaster	25.5
Ms. Macklin's Office	Pipe Insulation	Fiberglass	22.3

Elevated moisture meter readings were detected in the locations detailed above. Other visibly moisture stained materials were observed in other areas of the school which are described in section 4.1 which were determined to be dry at the time of the assessment.

The source of moisture associated with the plaster wall in the kitchen appears to be a leaking steam pipe.

The source of moisture associated with the plaster ceiling in the areas in the band room, harp room and hallway outside the boiler room in the basement appears to be steam pipes and other mechanical pipes that run through the ceilings.

The source of moisture associated with the pipe insulation (that was leaking or sweating) appears to be failed insulation.

The source of moisture associated with the plaster ceiling in the girl's locker room was apparently the pipe that penetrates the ceiling in this area that was leaking above the ceiling.

4.1.4 Temperature and Humidity

The key to understanding humidity is that warmer air can contain greater quantities of moisture than cooler air. Relative humidity is defined as the ratio of the amount of moisture contained in the air to the maximum amount of moisture the air can contain at that temperature. The dew point temperature is defined as the temperature at which the amount of moisture in the air reaches saturation. The dew point is a more accurate indication of the actual amount of moisture in the air, because it is independent of temperature.

The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) has published several standards for ventilated buildings. *ANSI/ASHRAE Standard 62.1-2019, Ventilation for Acceptable Air Quality* specifies that indoor humidity should be maintained below 60 degrees Fahrenheit (°F) dew point temperature. The EPA recommends that indoor relative humidity be maintained below 60%, ideally 30-50%, to prevent mold growth. The *OSHA Technical Manual, Section III, Chapter 2 for Indoor Air Quality Investigations* specifies a thermal comfort range of 68°F to 76°F and a relative humidity range of 20% to 60% to maximize comfort for all occupants.

The following table summarizes the indoor air temperature and relative humidity readings collected by ECS during the survey.



In general, the temperature and relative humidity readings collected during this assessment were considered normal and within the recommended ranges.

Elevated humidity was noted in the following areas of the building but appeared to be caused by a localized source and not the overall interior relative humidity in the room:

- The ceiling cavity above the drop ceiling in the band room was observed to be at 70.1%
- The area directly surrounding the damaged plaster wall in the kitchen was observed to be at 74.3%

Temperature and Relative Humidity

Location	Relative Humidity (%)	Temperature (°F)
Outdoors, main entrance	37.4	70.5
102	36.4	76.3
Infirmary	35.4	77.2
103	39.8	73.4
104	40.3	72.9
105	38.0	74.6
106	37.6	74.8
107	38.9	73.8
108	39.2	73.3
109	41.1	71.9
110	40.6	71.7
111/teachers lounge	41.7	69.5
112	44.9	67.4
113	46.8	66.9
114	43.8	71.0
115	41.3	71.6
116-117/media center	40.5	72.4
200	38.5	74.2
201	37.5	75.0
Outdoors, main entrance	48.1	65.0
202	37.8	74.8
203	41.0	73.1



Location	Relative Humidity (%)	Temperature (°F)
204	41.2	72.8
205	38.8	73.5
206/207	41.2	72.0
208	38.5	73.6
209	42.5	70.5
210	43.1	70.1
211	42.9	70.1
212	44.6	68.6
213	43.3	70.2
214	42.6	71.1
215	40.9	72.0
216	40.4	72.7
217	40.1	72.3
218	39.3	73.7
300	40.7	72.0
301	39.9	72.9
302	39.1	73.9
303	39.1	73.1
305	38.4	72.7
306	40.5	70.8
Auditorium	41.2	70.5
Cafeteria	38.5	76.9
Basement classroom	41.7	68.3
Main office back hallway	39.0	73.7
Outdoors, main entrance	61.1	51.0

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on our understanding of the purpose of the Mold and Moisture Assessment, the results of laboratory analysis, and our findings and observations, ECS presents the following recommendations.



5.1 Mold and Moisture

ECS recommends remediation be performed for all water and mold impacted materials within the surveyed areas as soon as reasonably possible. This includes all materials that have visible suspected mold and/or have been subjected to elevated moisture conditions for greater than 48 hours without proper drying efforts.

General

ECS recommends that a qualified mold remediation/drying contractor be retained to properly remove mold impacted materials. Remediation activities should be performed in general accordance with the guidelines described in EPA's March 2001 document "Mold Remediation in Schools and Commercial Buildings" and under the OSHA 2010 Guidelines for mold removal. Additional remedial guidance documents are also referenced in Section at the end of this report. Workers performing this work should wear proper personal protective equipment (PPE) including HEPA filtered respirators and disposable clothing (per OSHA standards for PPE).

Due to the complexity of the project, ECS recommends that the remediation contractor, the owner, and ECS meet on-site to review the project in order to review and discuss the scope of work.

ECS recommends that a building envelope study be performed for the building by a qualified engineer. Correction of building envelope and water intrusion issues should be performed prior to or concurrent with any remediation activities.

Setup

In general accordance with the EPA and OSHA guidelines, ECS recommends containment of the remediation areas using plastic barriers and tape to create negative pressure containment during removal of mold impacted materials. The contractor should seal HVAC vents in the work area(s), as well as all other penetrations and openings. A HEPA-filtered local exhaust ventilation (negative air machine) should be utilized within the work area directly adjacent to the area(s) being cleaned and should maintain negative pressure and HEPA filtration continuously inside the containment during remediation activities and prior to clearance sampling. If greater than 100 square feet, or an occupied area adjacent to 30 square feet or more: A manometer should be used to measure the pressure difference between the remediation area and adjacent areas. The target pressure differential in the containment should be -0.02 inches of water gauge.

Scope of Work

All impacted drywall materials that have visible growth and/or have sustained water impacts should be removed in excess of 2 feet beyond the visible extent of mold or water stains where feasible. Further observation of the wall and ceiling systems may be necessary during remediation efforts to determine if additional materials will need to be removed. **As noted previously, any active moisture leaks into the building should be properly accessed and corrected prior to or concurrent with mold remediation activities. In addition, prior to performing any work the remediation contractor shall review all asbestos reports for the school building.**



ECS makes the following recommendations concerning abatement of mold and/or moisture impacted materials in the building:

- Mold was observed associated with the ceiling mounted fan coil units and associated pipe insulation in many of the classrooms, the cafeteria and the main office. Moisture meter readings indicated that the associated pipe insulation was wet in several of the locations tested. ECS recommends complete cleaning of the ceiling mounted fan coil units and complete removal and replacement of any visibly mold or moisture impacted pipe insulation throughout the school by a qualified mold remediation contractor. Additionally, ECS recommends inspection of each fan coil unit by a qualified HVAC engineer or technician or qualified maintenance staff and a review of the maintenance and service schedule of these fan coil units to determine if they are being maintained properly and are operating per the manufacturer's recommended specifications;
- Moisture impacted drop ceiling tiles were observed sporadically throughout the hallways, the auditorium and the gym. Moisture meter readings indicated that the ceiling tiles were dry at the time of the assessment in areas where they were accessible for testing. Remove and replace the moisture impacted ceiling tiles identified in the building using a mold remediation contractor or qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section;
- Mold was observed in several locations in Room 111 (Teacher's Lounge) including on the doors and outside of the white refrigerator in the back of the room, on the window mounted air conditioning unit and on the plaster walls within the sink closet on the left side of the room. Elevated moisture readings were not detected associated with these items. ECS recommends cleaning of the mold impacted surfaces and application of an anti-microbial encapsulant to treat the impacted surfaces using a mold remediation contractor or qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section, as needed;
- A portion of the floor tile had been removed in Room 212 and the wood sub-floor was exposed. ECS was informed by the on-site custodian that the floor had been previously moisture impacted from the ceiling mounted fan coil condensate drain overflowing in this room. Mold was observed on the sub-floor and was confirmed through tape lift sampling. Moisture meter readings indicated the sub-floor was dry at the time of the assessment. ECS recommends further investigation beneath the remaining floor tiles to determine if mold may still be concealed beneath the flooring. If additional mold is discovered then remove the remaining floor tile in the room, clean the wood sub-floor as needed and apply an anti-microbial sealant prior to re-installation of new floor tile. If additional mold impact is not observed then clean and seal the exposed portion of the wood sub-floor prior to re-installation of new floor tiles. Verify that the condensate drain for the fan coil unit in this room is working properly prior to remedial efforts. Perform any mold remediation as described in this protocol, above this section, as needed; Use a qualified mold remediation contractor;
- Mold was observed within several of the cabinets and on the materials stored within the cabinets in Room 204. Tape lift sampling confirmed significant concentrations of mold were present in the far right sink cabinet and similar conditions should be assumed to be present throughout the similar blue painted storage and sink cabinets in this room. ECS recommends removal and disposal of any mold or moisture impacted materials stored in these cabinets



and complete removal and replacement of the cabinets as needed. If the cabinets will remain then clean the interior of the cabinets and apply anti-microbial encapsulant to the cleaned surfaces. Perform any mold remediation as described in this protocol, above this section, as needed. Use a qualified mold remediation contractor;

- Mold was observed on pipe insulation in sporadic areas throughout the ceiling cavity on the 1st and 2nd floors. Surface mold was observed on the pipe insulation wrap and mold was observed at the junctions and elbows. Elevated moisture meter readings were detected associated with the pipe insulation at the areas where mold was observed at the junctions and elbows. Based on ECS' observations it appeared that the mold was present on chilled water piping in these areas. Where surface mold is observed on the pipe insulation wrap, clean the pipe insulation and apply an anti-microbial sealant to the cleaned areas. Where pipe insulation is mold or moisture impacted beneath the pipe insulation wrap then ECS recommends complete removal and replacement of the pipe insulation. Once exposed have a qualified HVAC engineer or technician or qualified maintenance staff inspect the mechanical plumbing to determine if it is leaking, damaged etc. and determine if it needs to be replaced. Use a qualified mold remediation contractor for cleaning and removal of the pipe insulation and perform any mold remediation as described in this protocol, above this section, as needed;
- Moisture damaged plaster walls and ceilings were observed sporadically on the third floor in the hallway and Rooms 301 and 303. Moisture meter readings indicated that these materials were dry at the time of the assessment and mold was not observed. ECS recommends that staff correct the source of water intrusion and then remove any damaged plaster as needed. The wall and ceiling cavity should be inspected for the presence of additional moisture impacted or mold impacted materials. Perform any mold remediation as described in this protocol, above this section;
- An area of moisture damaged ceiling tiles and plaster ceiling was observed in the Gym. Suspect mold was observed on the HVAC supply vents on the main trunk line in the Gym. ECS recommends removal and replacement of the impacted ceiling tiles and further investigation into the plaster ceiling for the presence of additional moisture impacted or mold impacted materials using qualified school maintenance staff or a mold remediation contractor - especially if it appears mold maybe present as materials are being removed. Clean the HVAC vents and apply an anti-microbial sealant to the cleaned areas using qualified maintenance staff. Perform further investigation into the main HVAC trunk line in this area to determine if the interior of the HVAC duct is mold impacted and clean and seal as needed. Perform any mold remediation as described in this protocol, above this section as needed;
- Moisture damaged plaster ceiling was observed in the girl's locker room. Mold was not observed on the plaster ceilings in this area during the assessment. Moisture meter readings collected from the ceiling in the girl's locker room indicated a slight elevation in moisture in this area. ECS recommends further investigation into the plaster ceiling for the presence of additional moisture impacted or mold impacted materials using qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section as needed;

-
- Suspect mold was observed on HVAC vents in the ceiling of the auditorium. These areas were not accessible for testing during the assessment. ECS recommends cleaning of the HVAC vents and application of an anti-microbial sealant to the cleaned areas using qualified maintenance staff. Perform further investigation into the supply ducts in this area to determine if the interior of the ducts are mold impacted and clean and seal as needed.
 - Apparent moisture staining was observed on the ceiling deck above the stage on the right side. ECS recommends further investigation into the source of the staining and correction of any potential sources of water intrusion such as a roof leak above this area. Perform further investigation into the materials above the stage ceiling in this location for any additional mold or moisture impacted materials using qualified maintenance staff. Perform any mold remediation as described in this protocol, above this section as needed.

Cafeteria

- Moisture damaged 1'x1' applied ceiling tiles and plaster ceiling were observed in one area in the middle of the cafeteria. Moisture meter readings indicated that the materials were dry at the time of the assessment and suspect mold was not observed. ECS recommends removal and replacement of the moisture impacted 1'x1' ceiling tiles and further investigation into the plaster ceiling for the presence of additional moisture impacted or mold impacted materials using qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section as needed;
- Significantly moisture damaged plaster walls were observed in the kitchen directly outside of the cleaning supplies storage room in the rear. Elevated relative humidity and moisture meter readings were observed associated with the plaster wall in this area. The source of the elevated humidity and moisture in this area appears to be an un-insulated steam pipe that was leaking steam into this area. Mold was not observed associated with this area. ECS recommends inspection of the mechanical piping in this area by a qualified mechanical contractor or qualified maintenance staff to determine if the insulation and/or piping is damaged or leaking, and repair as needed. Remove and replace any moisture impacted plaster wall and investigate the wall cavity for any additional mold or moisture impacted materials and remove as necessary. Perform any mold remediation as described in this protocol, above this section, as needed;

Basement

- Mold was observed on the return vents at the bottom of the air handler unit in the band room. ECS recommends cleaning of the air handler unit and further investigation into the inside of the unit determine if mold impacted materials are present. Use qualified maintenance staff and perform any mold remediation as described in this protocol, above this section, as needed;
- Moisture stained ceiling tiles, wood framing and wall panels were observed in the band room. Elevated moisture meter readings were identified associated with one of the stained ceiling tiles, although other stained materials tested were determined to be dry at the time of the survey. The source of moisture in this area appears to be an un-insulated pipe above the ceiling that had visible condensation on it. Remove and clean the moisture stained wall panels and vinyl cove baseboard (remove and replace if cleaning is not feasible) in this area



and clean the exposed wood framing and CMU walls and apply an anti-microbial sealant to the cleaned surfaces. Use a mold remediation contractor and perform any mold remediation as described in this protocol, above this section;

- Significantly moisture damaged plaster ceiling was observed above the drop ceiling in the band room. Elevated relative humidity above the recommended ranges was detected in the ceiling cavity and elevated moisture was identified associated with the plaster ceiling. The cause of the elevated relative humidity appeared to be the mechanical systems/piping above the plaster ceilings in these areas. Mold was not observed associated with the plaster ceiling in the limited areas it could be observed. ECS recommends removal of moisture impacted plaster ceiling in this area and further investigation into the ceiling cavity for any additional mold or moisture impacted materials. Correct the source of elevated relative humidity associated with the ceiling cavity in this area. Use a mold remediation contractor and perform any mold remediation as described in this protocol, above this section, as needed;
- The plaster ceiling was observed to be sagging and paint was peeling in several areas in the harp room around mechanical piping penetrating the ceiling. Suspect mold and elevated moisture meter readings were not identified in this room. Perform further investigation into the structural integrity of the plaster ceiling in this room. The plaster ceilings in areas of the basement on either side of this room appear to be failing structurally;
- The plaster ceiling was observed to be significantly damaged in the hallway between the harp room and the boiler room and elevated moisture was detected. Mold was not observed associated with the plaster ceiling in this area. ECS recommends removal of moisture impacted plaster ceiling in this area and further investigation into the ceiling cavity for any additional mold or moisture impacted materials. Use qualified maintenance staff or a qualified mold remediation contractor and perform any mold remediation as described in this protocol, above this section, as needed;
- Moisture stained pipe insulation was observed sporadically throughout the basement boiler room and areas of suspect mold were observed. The conditions observed seemed fairly normal for a boiler room of this age. One piece of equipment on the far exterior wall of the boiler room was actively emitting steam into the air that was visibly impacting pipe insulation in this area (where mold was observed). Mold was also observed on the wood bathroom door frame in the boiler room. ECS recommends removal and replacement of mold or moisture impacted pipe insulation throughout the mechanical room and removal and disposal of the mold impacted bathroom wood door frame. Inspect the exposed piping and mechanical systems for damage and proper operation before re-insulating. Use a mold remediation contractor and perform any mold remediation as described in this protocol, above this section, as needed. ECS assumes that this area is not a regularly occupied area and that faculty or students would not enter this area so this may not be an immediate action item. Determination of the proper course of action is up to the maintenance staff of the school and the Facility Services Department;
- Moisture stained pipe insulation was observed in Ms. Macklin's office. Moisture meter readings collected from some of the stained areas indicated elevated moisture associated with the pipe insulation. ECS recommends removal and replacement of the pipe insulation in this area and further investigation by qualified maintenance staff of the mechanical piping system to determine if it leaking, etc. and if it needs to be replaced;



- Mold was observed on an access door and wood storage shelves in the "Coats for the Community" storage room in the basement. Moisture testing indicated that the materials were dry at the time of the assessment. ECS recommends cleaning of the access door and surrounding walls and application of an anti-microbial sealant to the cleaned surfaces by qualified maintenance staff. Additionally, ECS recommends complete removal and disposal of the mold impacted wood shelves and further investigation of the clothing stored in this room to determine if they are mold impacted prior to giving them out;
- Moisture stained and suspect mold impacted plaster ceiling was observed in the HVAC fan room in the basement adjacent to the boiler room. ECS recommends removal of the moisture and mold impacted plaster ceiling. Perform further investigation into the ceiling cavity for any additional mold or moisture impacted materials. Use a qualified mold remediation contractor and perform any mold remediation as described in this protocol, above this section.

Following remediation/removal of mold-impacted materials, ECS recommends that the contained areas of the building undergo a thorough cleaning following guidelines described in EPA's March 2001 document "Mold Remediation in Schools and Commercial Buildings." Surface remediation should include HEPA vacuuming of vertical and horizontal surfaces and a clean-wipe with a mild detergent. The surfaces should not be saturated and discard cleaning cloths. All areas (affected and unaffected) should be left dry, visibly free from contamination and debris prior to build back activities.

Air sampling should be performed by fungal spore trap method to document mold levels following remediation efforts. Surface sampling may also be performed to assess visible debris or staining remaining in the work area. The results of air sampling should find air samples in and adjacent to the work area to be less than concurrent outdoor samples, and the indoor samples will not find a prevalence of certain fungi considered likely indoor contaminants as determined by rank-order analysis. ECS notes that outdoor concentrations may be suppressed during the winter, and may utilize other references to compare with the indoor sample results on the day of the sampling.

Although not accessible during the survey, ECS is concerned that underlying structural materials (CMU walls, wood framing, poured concrete, etc...) contain excess moisture which will need to be thoroughly dried prior to installation of new materials. Where elevated moisture is still present in building materials, mechanical drying efforts should be performed. The use of portable dehumidifiers should be implemented immediately. Following removal of mold-affected materials and fine cleaning, the fans should also be utilized to accelerate drying efforts. For large areas with significant moisture load, the use of desiccant dehumidification systems should be considered.

ECS recommends that prior to performing any mold remediation or removal of mold or moisture impacted materials, the RPS Facility Services department should review the AHERA asbestos inspection reports and any other supplemental testing reports available for the school to determine if asbestos containing materials or lead based paints are present where remediation or repairs will occur. If these materials are present then any work that would disturb them should be performed by properly licensed or accredited remediation contractors.

Follow-up



Prior to removal of the containment barriers, a post-remediation survey and testing should be performed to assess the remediation efforts. Visible suspect mold and moisture-affected porous materials should not be present in the work area (although ECS recognizes that some semi-porous materials may still have stains present following cleaning). The moisture content of materials that have been dried or cleaned and will remain should be confirmed to be below recommended guidelines prior to re-construction of new materials. The indoor relative humidity in and around the work area should be below 60%. If the temperature in the work area is above 80°F, the indoor dew point should be below 65°F.

Air sampling should be performed by fungal spore trap method to document mold levels following remediation efforts. Surface sampling may also be performed to assess visible debris or staining remaining in the work area. The results of air sampling should find air samples in and adjacent to the work area to be less than concurrent outdoor samples, and the indoor samples will not find a prevalence of certain fungi considered likely indoor contaminants as determined by rank-order analysis. ECS notes that outdoor concentrations may be suppressed during the winter, and may utilize other references to compare with the indoor sample results on the day of the sampling.

Note: The purpose of this survey was to evaluate areas where moisture intrusion or suspected visible mold growth has occurred and provide findings and recommendations for remedial work efforts. Identification and recommendations for correction of sources of moisture should be performed by a qualified engineer. Because of the nature of the environment, complete elimination of all microbial organisms within a building cannot be expected and is not the goal of remediation. The goal of remediation is to restore the affected materials to at least the condition of unaffected materials. It is important to note that the reported mold levels are only reflective of conditions at the time of this test and that mold populations can vary over time, depending upon a number of conditions, including environmental factors (i.e., temperature and relative humidity). If significant mold growth reappears, or if the occupants experience prolonged allergic-type health complaints, they should seek further investigation of the problem.

ECS was not requested to assess the potential presence of hazardous materials, and ECS assumes no responsibility for actions taken to address mold or moisture that inadvertently disturb hazardous materials. ECS is unaware of the presence of possible asbestos containing materials or lead based paint (LBP). Prior to remediation work, if not performed already, an asbestos/LBP survey is recommended for the building. Pending the results of this survey, disclosures and/or abatement should be made with regards to hazardous containing materials prior to mold/water damage material removal efforts.

Note: The purpose of this survey was to evaluate areas where moisture intrusion or suspected visible mold growth has occurred and provide findings and recommendations for remedial work efforts. Identification and recommendations for correction of sources of moisture should be performed by a qualified engineer.



6.0 LIMITATIONS

The conclusions and recommendations presented within this report are based upon a reasonable level of assessment within normal bounds and standards of professional practice for a site in this particular geographic setting. ECS is not responsible or liable for the discovery and elimination of hazards that may potentially cause damage, accidents, or injuries.

This survey is not intended to represent an exhaustive research of every potential hazard or condition that may exist, nor does it claim to represent indoor conditions or events that arise after the survey. This report has been prepared in accordance with generally accepted environmental practices. Our conclusions and findings are based, in part, upon information provided to us by others and our site observations. We have not verified the completeness or accuracy of the information provided by others. The scope of services performed was limited to those requested by the Client and does not constitute a full microbial assessment of the site or a comprehensive moisture survey of the site. The data provided in this study is only indicative of conditions sampled at the immediate time of the study.

This report does not warrant against future operations or conditions, nor does it warrant against extant, or future, conditions of a type or at a location not investigated. Because of the nature of this type of work and the difficulties involved in conducting remediation work, ECS cannot guarantee that the methods or recommendations described in this report will eliminate all potential indoor air quality issues. Since performance of the remediation work is also beyond ECS scope of services, ECS also cannot be held responsible for the execution of the remediation work. The reported microbial levels are only reflective of conditions at the time of this test and that microbial populations can vary over time, depending upon a number of conditions, including environmental factors (i.e., temperature and relative humidity). The work performed in conjunction with this assessment and the data developed is intended as a description of available information at the dates and locations given.

The observations, conclusions, and recommendations pertaining to environmental conditions at the subject site are necessarily limited to conditions observed, and/or materials reviewed at the time this study was undertaken. No warranty, expressed or implied, is made with regard to the conclusions and recommendations presented within this report. This report is provided for the exclusive use of the client. This report is not intended to be used or relied upon in connection with other projects or by other unidentified third parties without the written consent of ECS and the client.

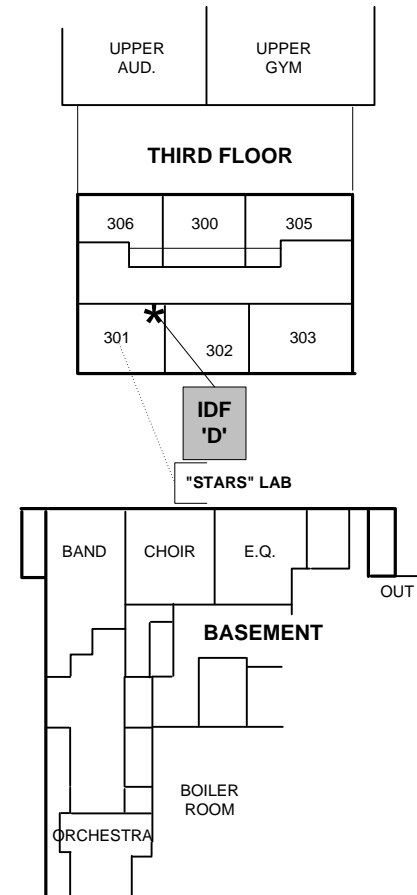
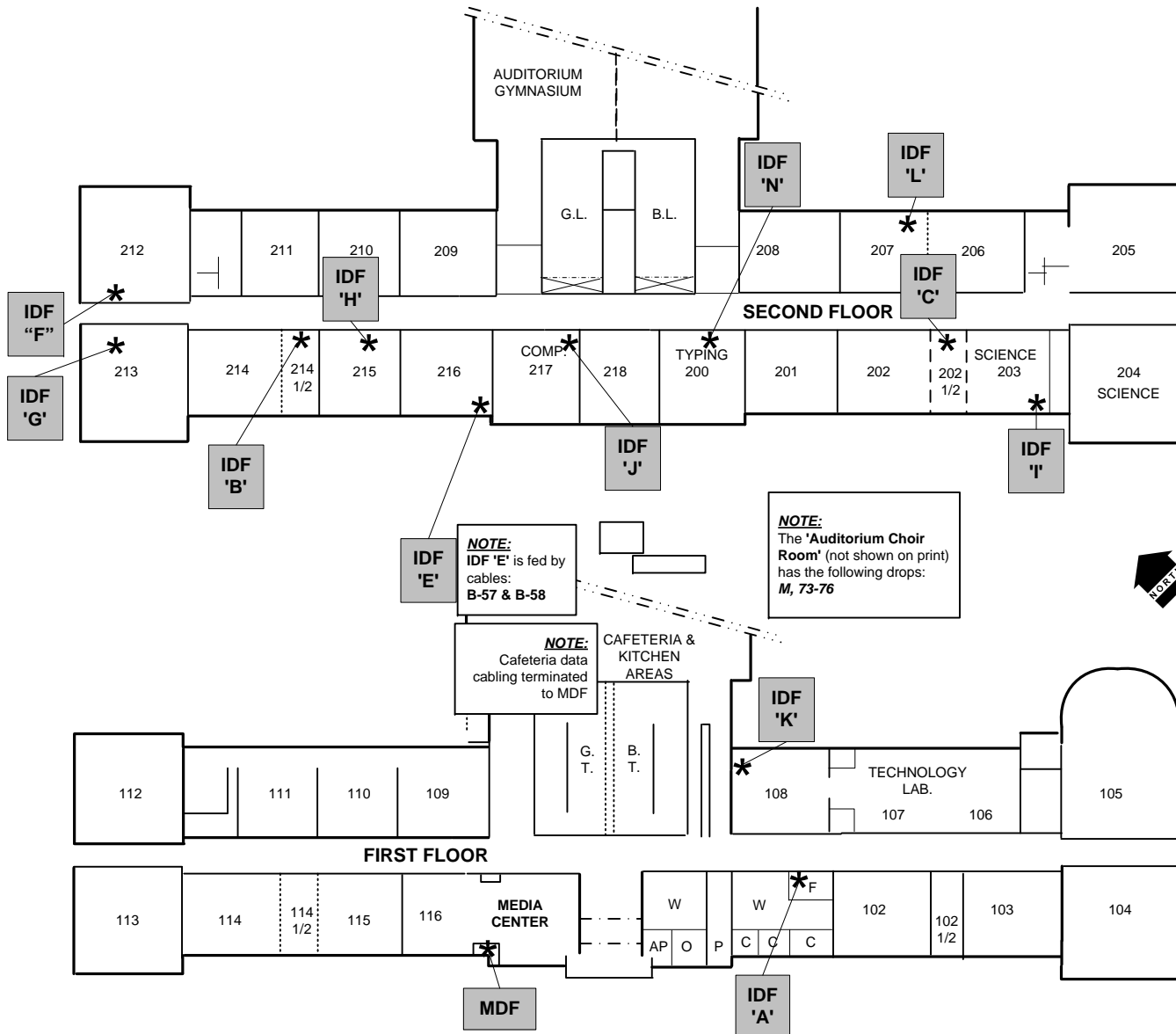
Our recommendations are in part based on federal, state, and local regulations and guidelines. ECS does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies, any conditions at the site that may present a potential danger to public health, safety, or the environment. Under this scope of services, ECS assumes no responsibility regarding any response actions initiated as a result of these findings. General compliance with regulations and response actions are the sole responsibility of the Client and should be conducted in accordance with local, state, and/or federal requirements.



Appendix I: School Diagram

RICHMOND PUBLIC SCHOOLS DATA SYSTEMS CONNECTIONS AND FLOOR PLAN LAYOUT

ALBERT HILL MIDDLE SCHOOL



Appendix II: Mold Laboratory Report(s)



Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Report Number: 23-11-02618

Telephone: 800.347.4010

Received Date: 11/17/2023
Analyzed Date: 11/28/2023, 11/29/2023
Reported Date: 11/29/2023

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Project/Test Address: Albert Hill Middle School; 3400 Patterson Ave; Richmond,
Virginia (Samples A1-A26)

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-11-02618-001	23-11-02618-002	23-11-02618-003	23-11-02618-004	23-11-02618-005					
Client Sample ID :	A1	A2	A3	A4	A5					
Date Collected :	11/16/2023	11/16/2023	11/16/2023	11/16/2023	11/16/2023					
Collection Location :	OUTDOORS MAIN ENTRANCE	102	INFIRMARY	103	104					
Sampling Media :	Air-O-Cell	Air-O-Cell	Air-O-Cell	Air-O-Cell	Air-O-Cell					
Analytical Sensitivity (spores/m3) :	6.7	6.7	6.7	6.7	6.7					
Volume (L) :	150	150	150	150	150					
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	117	780	8	53	6	40	5	33	3	20
Penicillium/Aspergillus group spores	37	250	8	53	18	120	6	40	2	13
Alternaria spores	2	13								
Aureobasidium spores	7	47								
Drechslera/Bipolaris group spores	1	6.7								
Curvularia spores					1	6.7				
Stachybotrys spores					2	13			1	6.7
Torula spores	1	6.7								
Pithomyces spores	1	6.7								
smuts, Periconia, myxomycetes	48	320	4	27	1	6.7				
Trichocladium spores	1	6.7								
TOTAL SPORES(Spores/m3)	1400		130		190		73		40	
Analyst:	Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher	



Non-Viable Spore Trap Analysis Report

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Virginia (Samples A1-A26)

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-11-02618-006	23-11-02618-007	23-11-02618-008	23-11-02618-009	23-11-02618-010					
Client Sample ID :	A6	A7	A8	A9	A10					
Date Collected :	11/16/2023	11/16/2023	11/16/2023	11/16/2023	11/16/2023					
Collection Location :	105	106	107	108	109					
Sampling Media :	Air-O-Cell	Air-O-Cell	Air-O-Cell	Air-O-Cell	Air-O-Cell					
Analytical Sensitivity (spores/m3) :	6.7	6.7	6.7	6.7	6.7					
Volume (L) :	150	150	150	150	150					
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	6	40	8	53	7	47	6	40	16	110
Penicillium/Aspergillus group spores	11	73	8	53	23	150	7	47	11	73
Aureobasidium spores					1	6.7	2	13		
Stachybotrys spores	1	6.7							1	6.7
Chaetomium spores			1	6.7						
Epicoccum spores							1	6.7	1	6.7
smuts, Periconia, myxomycetes	1	6.7	4	27	3	20				
TOTAL SPORES(Spores/m3)	130		140		230		110		190	
Analyst:	Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher	



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Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-11-02618-011		23-11-02618-012		23-11-02618-013		23-11-02618-014		23-11-02618-015	
Client Sample ID :	A11		A12		A13		A14		A15	
Date Collected :	11/16/2023		11/16/2023		11/16/2023		11/16/2023		11/16/2023	
Collection Location :	110		111 TEACHERS LOUNGE		112		113		114	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	31	210	58	390	64	430	11	73	10	67
Penicillium/Aspergillus group spores	56	370	32	210	38	250	13	87	2	13
Alternaria spores	1	6.7								
Aureobasidium spores	2	13	4	27	1	6.7			1	6.7
Stachybotrys spores			3	20						
Chaetomium spores			2	13					1	6.7
Epicoccum spores			2	13						
Pestalotia spores			1	6.7						
smuts, Periconia, myxomycetes	9	60	21	140	19	130	6	40	4	27
TOTAL SPORES(Spores/m3)	660		820		810		200		120	
Analyst:	Kitana Usher		Kitana Usher		Kitana Usher		Felicia Butler		Felicia Butler	



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Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-11-02618-016		23-11-02618-017		23-11-02618-018		23-11-02618-019		23-11-02618-020	
Client Sample ID :	A16		A17		A18		A19		A20	
Date Collected :	11/16/2023		11/16/2023		11/16/2023		11/16/2023		11/16/2023	
Collection Location :	115		116 117 MEDIA CENTER		200		201		OUTDOORS MAIN ENTRANCE	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	49	330	45	300	7	47	3	20	121	810
Penicillium/Aspergillus group spores	8	53	8	53	5	33	53	350	29	190
Alternaria spores									1	6.7
Aureobasidium spores									1	6.7
Curvularia spores			1	6.7			1	6.7	2	13
Stachybotrys spores			1	6.7			1	6.7	2	13
Ulocladium spores									1	6.7
Chaetomium spores	1	6.7					3	20		
Epicoccum spores			1	6.7					2	13
Pestalotia spores									2	13
Nigrospora spores	1	6.7	1	6.7						
smuts, Periconia, myxomycetes	35	230	10	67	7	47	3	20	84	560
Bispora spores									1	6.7

TOTAL SPORES(Spores/m3)	630	450	130	430	1600
Analyst:	Felicia Butler	Felicia Butler	Felicia Butler	Felicia Butler	Felicia Butler



Non-Viable Spore Trap Analysis Report

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7469 Whitepine Rd
Richmond, VA 23237

Report Number: 23-11-02618

Telephone: 800.347.4010

Received Date: 11/17/2023
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Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Project/Test Address: Albert Hill Middle School; 3400 Patterson Ave; Richmond,
Virginia (Samples A1-A26)

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-11-02618-021	23-11-02618-022	23-11-02618-023	23-11-02618-024	23-11-02618-025					
Client Sample ID :	A21	A22	A23	A24	A25					
Date Collected :	11/16/2023	11/16/2023	11/16/2023	11/16/2023	11/16/2023					
Collection Location :	202	203	204	205	206 207					
Sampling Media :	Air-O-Cell	Air-O-Cell	Air-O-Cell	Air-O-Cell	Air-O-Cell					
Analytical Sensitivity (spores/m3) :	6.7	6.7	6.7	6.7	6.7					
Volume (L) :	150	150	150	150	150					
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	5	33	6	40	2	13	4	27		
Penicillium/Aspergillus group spores			4	27	116	770	1	6.7		
Aureobasidium spores					1	6.7				
smuts, Periconia, myxomycetes	1	6.7	2	13						
No relevant fungal spores observed										See Notes

TOTAL SPORES(Spores/m3)	40	80	790	33	
Analyst:	Felicia Butler	Felicia Butler	Felicia Butler	Felicia Butler	Felicia Butler

Notes (Sample 025): No relevant fungal spores observed



Non-Viable Spore Trap Analysis Report

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Richmond, VA 23237

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2119 D North Hamilton St
Richmond, VA 23230

Report Number: 23-11-02618

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Project/Test Address: Albert Hill Middle School; 3400 Patterson Ave; Richmond,
Virginia (Samples A1-A26)

Client Number:

200625

Fax Number:

804-353-9478

Laboratory Results

Lab # :	23-11-02618-026									
Client Sample ID :	A26									
Date Collected :	11/16/2023									
Collection Location :	208									
Sampling Media :	Air-O-Cell									
Analytical Sensitivity (spores/m3) :	6.7									
Volume (L) :	150									
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
smuts, Periconia, myxomycetes	1	6.7								

TOTAL SPORES(Spores/m3) 6.7

Analyst: Felicia Butler

Sample Narratives:

- (Sample 001) M02: Large amounts of particulate observed.
- (Sample 020) M03: Substantial amount of particulate observed, counts may be underestimated.
- (Sample 015) M02: Large amounts of particulate observed.

Method: Non-Culturable Spore Trap Examination

Reviewed By Authorized Signatory:

Tasha Eaddy
QA/QC Clerk

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, volume, etc., was provided by the client. The Client is hereby notified that due to the subjective nature of fungal analysis and the growth process of fungal infestation, laboratory samples can and do change over time relative to the originally sampled material. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C.

ENVIRONMENTAL HAZARDS SERVICES, LLC

Mold Chain of Custody Form

Company Name	ECS Mid-Atlantic	Account #	
Company Address	2119 North Hamilton Street	City/State/Zip	Richmond/VA/23230
Phone	804-353-6333	Email	rcurran@ecslimited.com
Project / Testing Address	Albert Hill Middle School, 3400 Patterson Ave, Richmond, Virginia		
PO Number	47:14153-M	Collected By	Rob Curran
Collection Date & Time	11/16/23	Outside Air Temp	
		Indoor Air Temp	
Was there any precipitation (rain, sleet or snow) 2 hours or less before taking the samples?		<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Turn-Around Time	<input checked="" type="radio"/> 5 Day <input type="radio"/> 3 Day <input type="radio"/> 2 Day <input type="radio"/> 1 Day <input type="radio"/> Same Day / Weekend - Must Call Ahead		

SAMPLER TYPE CODE			
AIR / NON-VOLATILE		SWAB SAMPLE SURFACE	
Bulk	B	Air-D-Cell	AOC
Swab	S	Cyclic D	C
Bio-Tape	T	BioSS	B
Wall Check	W	Micro S	MS
		Non-Porous	NP
		Semi-Porous	SP
		Porous	P

Lab Number	Client Sample ID	Collection Location	Sample Type	Air Samples		Swab Samples		Qualitative Particulate Analysis Additional \$10.00 per sample	Comments
				Spore Trap Type	Air Volume (Total Liter)	Surface Type (NRSP)	Area of Mold (Square Feet)		
1	A1	Outdoors, main entrance	B	AOC	150				5688020
2	A2	102	B	AOC	150				5688961
3	A3	Infirmery	B	AOC	150				5688920
4	A4	103	B	AOC	150				5688941
5	A5	104	B	AOC	150				5688942
6	A6	105	B	AOC	150				5688929
7	A7	106	B	AOC	150				5688972
8	A8	107	B	AOC	150				5688908
9	A9	108	B	AOC	150				5688927
10	A10	109	B	AOC	150				5688999
11	A11	110	B	AOC	150				5688946
12	A12	111/Teachers lounge	B	AOC	150				5688906
13	A13	112	B	AOC	150				5688925

Released By: Robert Curran	Date: 11/17/23	Time: 3:02pm
Signature: <i>Robert Curran</i>		

LAB USE ONLY - BELOW THIS LINE

Received By: *J. Scott*

Signature: *J. Scott*

Date: 11/17/23 Time: 3:00 AM PM

Portal Contact Added

23-11-02618

Due Date:
11/28/2023
(Tuesday)
ER

ENVIRONMENTAL HAZARDS SERVICES, LLC

Mold Chain of Custody Form

Company Name: ECS Mid-Atlantic	Account #:
Company Address: 2119 North Hamilton Street	City/State/Zip: Richmond/VA/23230
Phone: 804-353-6333	Email: rcurran@ecslimited.com
Project / Testing Address: Albert Hill Middle School, 3400 Patterson Ave, Richmond, Virginia	
PO Number: 47-14153-M	Collected By: Rob Curran
Collection Date & Time: 11/16/23	Outside Air Temp: _____ Indoor Air Temp: _____
Was there any precipitation (rain, sleet or snow) 2 hours or less before taking the samples? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Turn-Around Time: <input checked="" type="radio"/> 5 Day <input type="radio"/> 3 Day <input type="radio"/> 2 Day <input type="radio"/> 1 Day <input type="radio"/> Same Day / Weekend - Must Call Ahead	

SAMPLE TYPE CODES					
AIR - NON VIABLE		SPORE TRAP		SWAB SAMPLE SURFACE	
ENV	B	Air-O-Cel	AOC	Non Porous	NP
Swab	S	Cydux D	C	Semi Porous	SP
Air-Trap	T	BioSB	B	Porous	P
Well Check	W	Micro S	MS		

AIR NUMBER	Client Sample ID	Collection Location	Sample Type	Air Samples		Swab Samples		Qualitative Particulate Analysis <small>Additional \$10.00 per sample</small>	Comments
				Spore Trap Type	Air Volume (Total Ltr)	Surface Type (NP/SP)	Area of Mold (Square Feet)		
1	A14	113	B	AOC	150				5688967
2	A15	114	B	AOC	150				5688996
3	A16	115	B	AOC	150				5688981
4	A17	116-117/media center	B	AOC	150				5689014
5	A18	200	B	AOC	150				5689346
6	A19	201	B	AOC	150				5689374
7	A20	Outdoors, main entrance	B	AOC	150				5689362
8	A21	202	B	AOC	150				5689375
9	A22	203	B	AOC	150				5689384
10	A23	204	B	AOC	150				5689391
11	A24	205	B	AOC	150				5689381
12	A25	206-207	B	AOC	150				5689347
13	A26	208	B	AOC	150				5689349

Released By: Robert Curran	Date: 11/17/23	Time: _____
Signature: <i>Robert Curran</i>		

LAB USE ONLY - BELOW THIS LINE

Received By: *[Signature]*

Signature: *[Signature]*

Date: 11/17/23 Time: 3:06 AM PM

Portal Contact Added

2618

EHS

Laboratories™

Attach Laboratory Label Here



Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Report Number: 23-11-02619

Telephone: 800.347.4010

Received Date: 11/17/2023

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Analyzed Date: 11/28/2023

Reported Date: 11/29/2023

Project/Test Address: Albert Hill Middle School; 3400 Patterson Ave; Richmond,
Virginia

Client Number:

200625

Fax Number:

804-353-9478

Laboratory Results

Lab # :	23-11-02619-001		23-11-02619-002		23-11-02619-003		23-11-02619-004		23-11-02619-005	
Client Sample ID :	A27		A28		A29		A30		A31	
Date Collected :	11/16/2023		11/16/2023		11/16/2023		11/16/2023		11/16/2023	
Collection Location :	209		210		211		212		213	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	20	130	6	40	5	33	8	53	7	47
Penicillium/Aspergillus group spores	5	33	4	27			2	13	5	33
Aureobasidium spores									1	6.7
Chaetomium spores							16	110	2	13
smuts, Periconia, myxomycetes	1	6.7							5	33

TOTAL SPORES(Spores/m3)	170	67	33	170	130
Analyst:	Felicia Butler	Felicia Butler	Felicia Butler	Felicia Butler	Felicia Butler



Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Report Number: 23-11-02619

Telephone: 800.347.4010

Received Date: 11/17/2023

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Analyzed Date: 11/28/2023

Reported Date: 11/29/2023

Project/Test Address: Albert Hill Middle School; 3400 Patterson Ave; Richmond,
Virginia

Client Number:

Fax Number:

200625

Laboratory Results

804-353-9478

Lab # :	23-11-02619-006	23-11-02619-007	23-11-02619-008	23-11-02619-009	23-11-02619-010					
Client Sample ID :	A32	A33	A34	A35	A36					
Date Collected :	11/16/2023	11/16/2023	11/16/2023	11/16/2023	11/16/2023					
Collection Location :	214	215	216	217	218					
Sampling Media :	Air-O-Cell	Air-O-Cell	Air-O-Cell	Air-O-Cell	Air-O-Cell					
Analytical Sensitivity (spores/m3) :	6.7	6.7	6.7	6.7	6.7					
Volume (L) :	150	150	150	150	150					
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	10	67	11	73	7	47	33	220	9	60
Penicillium/Aspergillus group spores			1	6.7	9	60	16	110	7	47
Alternaria spores									1	6.7
Aureobasidium spores	1	6.7								
Chaetomium spores			1	6.7	1	6.7				
Nigrospora spores			1	6.7						
smuts, Periconia, myxomycetes	1	6.7	2	13			5	33	1	6.7
TOTAL SPORES(Spores/m3)	80		110		110		360		120	
Analyst:	Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler	



Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Report Number: 23-11-02619

Telephone: 800.347.4010

Received Date: 11/17/2023

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Analyzed Date: 11/28/2023

Reported Date: 11/29/2023

Project/Test Address: Albert Hill Middle School; 3400 Patterson Ave; Richmond,
Virginia

Client Number:

200625

Fax Number:

804-353-9478

Laboratory Results

Lab # :	23-11-02619-011		23-11-02619-012		23-11-02619-013		23-11-02619-014		23-11-02619-015	
Client Sample ID :	A37		A38		A39		A40		A41	
Date Collected :	11/16/2023		11/16/2023		11/16/2023		11/16/2023		11/16/2023	
Collection Location :	300		301		302		303		305	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	3	20	2	13	3	20	2	13	1	6.7
Penicillium/Aspergillus group spores	1	6.7			1	6.7				
Aureobasidium spores									1	6.7
Chaetomium spores	1	6.7			1	6.7				
Epicoccum spores					1	6.7				
smuts, Periconia, myxomycetes	1	6.7			2	13				
TOTAL SPORES(Spores/m3)	40		13		53		13		13	
Analyst:	Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler	



Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Report Number: 23-11-02619

Telephone: 800.347.4010

Received Date: 11/17/2023

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Analyzed Date: 11/28/2023

Reported Date: 11/29/2023

Project/Test Address: Albert Hill Middle School; 3400 Patterson Ave; Richmond,
Virginia

Client Number:

200625

Fax Number:

804-353-9478

Laboratory Results

Lab # :	23-11-02619-016		23-11-02619-017		23-11-02619-018		23-11-02619-019		23-11-02619-020	
Client Sample ID :	A42		A43		A44		A45		A46	
Date Collected :	11/16/2023		11/16/2023		11/16/2023		11/16/2023		11/16/2023	
Collection Location :	306		AUDITORIUM		CAFETERIA		BASEMENT CLASSROOM		MAIN OFFICE BACK HALLWAY	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	1	6.7	4	27	2	13	4	27	5	33
Penicillium/Aspergillus group spores	1	6.7			5	33	6	40	6	40
smuts, Periconia, myxomycetes	3	20	1	6.7	2	13	7	47	6	40
TOTAL SPORES(Spores/m3)	33		33		60		110		110	
Analyst:	Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler		Felicia Butler	



Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Report Number: 23-11-02619

Telephone: 800.347.4010

Received Date: 11/17/2023

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Analyzed Date: 11/28/2023

Reported Date: 11/29/2023

Project/Test Address: Albert Hill Middle School; 3400 Patterson Ave; Richmond,
Virginia

Client Number:

200625

Fax Number:

804-353-9478

Laboratory Results

Lab # :	23-11-02619-021									
Client Sample ID :	A47									
Date Collected :	11/16/2023									
Collection Location :	OUTDOORS MAIN ENTRANCE									
Sampling Media :	Air-O-Cell									
Analytical Sensitivity (spores/m3) :	6.7									
Volume (L) :	150									
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	87	580								
Penicillium/Aspergillus group spores	4	27								
Alternaria spores	1	6.7								
Aureobasidium spores	4	27								
Arthrinium spores	2	13								
Stachybotrys spores	2	13								
Torula spores	6	40								
Epicoccum spores	3	20								
Pestalotia spores	1	6.7								
smuts, Periconia, myxomycetes	31	210								

TOTAL SPORES(Spores/m3) 940

Analyst: Felicia Butler

Environmental Hazards Services, L.L.C

Client Number: 200625
Project/Test Address: Albert Hill Middle School; 3400 Patterson Ave;
Richmond, Virginia

Report Number: 23-11-02619

Sample Narratives:

(Sample 021)	M03:	Substantial amount of particulate observed, counts may be underestimated.
(Sample 020)	M02:	Large amounts of particulate observed.
(Sample 004)	M01:	Several Chaetomium hyphal elements observed.
(Sample 005)	M01:	Chaetomium hyphal elements observed.

Method: Non-Culturable Spore Trap Examination

Reviewed By Authorized Signatory:



Tasha Eaddy
QA/QC Clerk

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, volume, etc., was provided by the client. The Client is hereby notified that due to the subjective nature of fungal analysis and the growth process of fungal infestation, laboratory samples can and do change over time relative to the originally sampled material. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C.

ENVIRONMENTAL HAZARDS SERVICES, LLC

Mold Chain of Custody Form

Company Name	ECS Mid-Atlantic	Account #	
Company Address	2119 North Hamilton Street	City/State/Zip	Richmond/VA/23230
Phone	804-353-6333	Email	rcurran@ecslimited.com
Project / Testing Address	Albert Hill Middle School, 3400 Patterson Ave, Richmond, Virginia		
PO Number	47-14153-M	Collected By	Rob Curran
Collection Date & Time	11/16/23	Outside Air Temp	
		Indoor Air Temp	
Was there any precipitation (rain, sleet or snow) 2 hours or less before taking the samples?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Turn-Around Time	<input checked="" type="radio"/> 5 Day <input type="radio"/> 3 Day <input type="radio"/> 2 Day <input type="radio"/> 1 Day <input type="radio"/> Same Day / Weekend - Must Call Ahead		

SAMPLE TYPE CODES					
AIR / NON-VIABLE		SPORE TRAP		SWAB SAMPLE SURFACE	
Blank	B	Air-O-Cell	AOC	Non Porous	NP
Swab	S	Cyclex D	C	Semi Porous	SP
Bio-Tape	T	BioSIS	B	Porous	P
Wall Check	W	Micro 5	M5		

Lab Number	Client Sample ID	Collection Location	Sample Type	Air Samples		Swab Samples		Qualitative Particulate Analysis Additional \$10.00 per sample	Comments
				Spore Trap Type	Air Volume (Total Liter)	Surface Type (NP/SP)	Area of Mold (Square Feet)		
1	A27	209	B	AOC	150				5689362
2	A28	210	B	AOC	150				5689365
3	A29	211	B	AOC	150				5689382
4	A30	212	B	AOC	150				5689344
5	A31	213	B	AOC	150				5688973
6	A32	214	B	AOC	150				5688933
7	A33	215	B	AOC	150				5689351
8	A34	216	B	AOC	150				5688354
9	A35	217	B	AOC	150				5689339
10	A36	218	B	AOC	150				5689350
11	A37	300	B	AOC	150				5689388
12	A38	301	B	AOC	150				5689385
13	A39	302	B	AOC	150				5689368

Released By: Robert Curran	Date: 11/17/23	Time: _____
Signature: <i>[Handwritten Signature]</i>		

LAB USE ONLY - BELOW THIS LINE


Received By: J. Scoble

Signature: [Handwritten Signature]

Date: 11/17/23 Time: 3:07 AM PM

Portal Contact Added

23-11-02619



Due Date:
11/28/2023
(Tuesday)
ER

ENVIRONMENTAL HAZARDS SERVICES, LLC

Mold Chain of Custody Form

Company Name	ECS Mid-Atlantic	Account #	
Company Address	2119 North Hamilton Street	City/State/Zip	Richmond/VA/23230
Phone	804-353-6333	Email	rcurren@ecslimited.com
Project / Testing Address	Albert Hill Middle School, 3400 Patterson Ave, Richmond, Virginia		
PO Number	47:14153-M	Collected By	Rob Curran
Collection Date & Time	11/16/23	Outside Air Temp	Indoor Air Temp
Was there any precipitation (rain, sleet or snow) 2 hours or less before taking the samples?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Turn-Around Time	<input checked="" type="radio"/> 5 Day <input type="radio"/> 3 Day <input type="radio"/> 2 Day <input type="radio"/> 1 Day <input type="radio"/> Same Day / Weekend - Must Call Ahead		

SAMPLE TYPE CODES					
AIR (NON-VIABLE)		SPORE TRAP		SWAB SAMPLE SURFACE	
Bulk	B	Air-O-Cel	AOC	Non Porous	NP
Swab	S	Cyclax D	C	Semi Porous	SP
Bio-Tape	T	ExoS	B	Ferrous	F
Wall Check	W	Micro S	M5		

LAB NUMBER	Client Sample ID	Collection Location	Sample Type	Air Samples		Swab Samples		Qualitative Particulate Analysis Additional \$10.00 per sample	Comments
				Spore Trap Type	Air Volume (Total Liter)	Surface Type (NP/SP)	Area of Mold (Square Feet)		
1	A40	303	B	AOC	150				5689393
2	A41	305	B	AOC	150				5689356
3	A42	306	B	AOC	150				5689377
4	A43	Auditorium	B	AOC	150				5689371
5	A44	Cafeteria	B	AOC	150				5689376
6	A45	Basement classroom	B	AOC	150				5689345
7	A46	Main office, back hallway	B	AOC	150				5689364
8	A47	Outdoors, main entrance	B	AOC	150				5689336
9									
10									
11									
12									
13									

Released By: Robert Curran	Date: 11/17/23	Time:
Signature: <i>Robert Curran</i>		

LAB USE ONLY - BELOW THIS LINE

Received By: *S. Baker*

Signature: *S. Baker*

Date: 11/17/23 Time: 3:07 AM PM

Portal Contact Added

2619

EHS

Laboratories™

Attach Laboratory Label Here



Non-Viable Spore Trap Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Report Number: 23-12-00893

Telephone: 800.347.4010

Received Date: 12/07/2023

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Analyzed Date: 12/08/2023

Reported Date: 12/08/2023

Project/Test Address: Albert Hill Middle School; 3400 Patterson Avenue;
Richmond

Client Number:

Fax Number:

200625

Laboratory Results

804-353-9478

Lab # :	23-12-00893-001		23-12-00893-002		23-12-00893-003		23-12-00893-004		23-12-00893-005	
Client Sample ID :	A1		A2		A3		A4		A5	
Date Collected :										
Collection Location :	OUTSIDE		MS MACKLINS OFFICE		THE HARP ROOM		THE BAND ROOM		OUTSIDE	
Sampling Media :	Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell		Air-O-Cell	
Analytical Sensitivity (spores/m3) :	6.7		6.7		6.7		6.7		6.7	
Volume (L) :	150		150		150		150		150	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
Cladosporium spores	577	3800	34	230	75	500	30	200	600	4000
Peronospora/Oidium spores									1	6.7
Penicillium/Aspergillus group spores	19	130	33	220	64	430	24	160	18	120
Alternaria spores	2	13	1	6.7					6	40
Aureobasidium spores	1	6.7	3	20	1	6.7	1	6.7	6	40
Drechslera/Bipolaris group spores	5	33	2	13	1	6.7	1	6.7	4	27
Arthrinium spores					1	6.7				
Curvularia spores	3	20								
Stachybotrys spores	1	6.7			1	6.7	2	13		
Pithomyces spores									1	6.7
Epicoccum spores	3	20	1	6.7	2	13			5	33
Nigrospora spores			2	13	3	20			1	6.7
Fusarium spores					2	13				
smuts, Periconia, myxomycetes	3	20	8	53	4	27			21	140
Bispora spores			1	6.7						

Environmental Hazards Services, L.L.C

Client Number: 200625
 Project/Test Address: Albert Hill Middle School; 3400 Patterson Avenue;
 Richmond

Report Number: 23-12-00893

Lab # :	23-12-00893-001		23-12-00893-002		23-12-00893-003		23-12-00893-004		23-12-00893-005	
Spore ID	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)	Raw Count	Results (Spores/m3)
TOTAL SPORES(Spores/m3)	4100		570		1000		390		4400	
Analyst:	Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher	

Sample Narratives:

(Sample 003) M02: Large amounts of particulate observed.

Method: Non-Culturable Spore Trap Examination

Reviewed By Authorized Signatory:



Tasha Eaddy
 QA/QC Clerk

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, volume, etc., was provided by the client. The Client is hereby notified that due to the subjective nature of fungal analysis and the growth process of fungal infestation, laboratory samples can and do change over time relative to the originally sampled material. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C.



Non-Viable Surface/Bulk Analysis Report

Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237

Report Number: 23-12-00893

Telephone: 800.347.4010

Received Date: 12/07/2023

Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Analyzed Date: 12/08/2023

Reported Date: 12/08/2023

Project/Test Address: Albert Hill Middle School; 3400 Patterson Avenue;
Richmond

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-12-00893-006	Collection Location:	SUB-FLOOR IN ROOM 212
Client Sample ID :	Tape T1	Date Analyzed:	12/8/2023
Date Collected :		Analyst:	Kitana Usher

Numerous	Chaetomium spores and hyphal elements
Occasional	Stachybotrys spores

Note:

Lab # :	23-12-00893-007	Collection Location:	BEHIND COVE BASE
Client Sample ID :	Tape T2	Date Analyzed:	12/8/2023
Date Collected :		Analyst:	Felicia Butler

Occasional	Penicillium/Aspergillus group spores
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Note:

Lab # :	23-12-00893-008	Collection Location:	FAR RIGHT SINK CABINET
Client Sample ID :	Tape T3	Date Analyzed:	12/8/2023
Date Collected :		Analyst:	Kitana Usher

Numerous	Penicillium/Aspergillus group spores
Occasional to Few	Alternaria spores
Occasional	ascospores
Occasional to Few	Epicoccum spores
Occasional	Cladosporium spores
Occasional	smuts, Periconia, myxomycetes
Occasional	Drechslera/Bipolaris group spores

Note:

Quantification Key:

Numerous:	Several spores seen in every field
Moderate:	At least 1 spore seen in 5 fields
Few:	Over 5 spores seen per cover slip, but less than 1 spore seen in 5 fields
Occasional:	1-5 spores seen per a cover slip

Environmental Hazards Services, L.L.C

Client Number: 200625
Project/Test Address: Albert Hill Middle School; 3400 Patterson Avenue;
Richmond

Report Number: 23-12-00893

Method: Direct Microscopic Exam

Reviewed By Authorized Signatory:



Tasha Eaddy
QA/QC Clerk

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, volume, etc., was provided by the client. The Client is hereby notified that due to the subjective nature of fungal analysis and the growth process of fungal infestation, laboratory samples can and do change over time relative to the originally sampled material. This report shall not be reproduced except in full, without the written consent of Environmental Hazards Services, L.L.C.

ENVIRONMENTAL HAZARDS SERVICES, LLC

Mold Chain of Custody Form

Page ____ of ____

Company Name	ECS Mid-Atlantic	Account #	
Company Address	2119 North Hamilton Street	City/State/Zip	Richmond/VA/23230
Phone	804-353-6333	Email	rcurran@ecslimited.com
Project / Testing Address	Albert Hill Middle School/3400 Patterson Avenue, Richmond		
PO Number	47:14153-M	Collected By	Rob Curran
Collection Date & Time		Outside Air Temp	
		Indoor Air Temp	
Was there any precipitation (rain, sleet or snow) 2 hours or less before taking the samples?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Turn-Around Time: 5 Day 3 Day 2 Day 1 Day Same Day / Weekend - Must Call Ahead

SAMPLE TYPE MATRIX					
AIR MON VIALS		SPORE TRAP		SWAB SAMPLE SURFACE	
Buk	B	Air-O-Cell	AOC	Non Porous	NP
Swab	S	Cyclax D	C	Semi Porous	SP
Bio-Tape	T	BioSIS	B	Porous	P
Wall Check	W	Micro 5	M5		

LAB NUMBER	Client Sample ID	Collection Location	Sample Type	Air Samples		Swab Samples		Qualitative Particulate Analysis Additional \$10.00 per sample	Comments
				Spore Trap Type	Air Volume (Total Lites)	Surface Type (NP/SP)	Area of Mold (Square Feet)		
1	A1	Outside	B	Allergenco	150				5689372
2	A2	Ms. Macklin's Office	B	Allergenco	150				5689340
3	A3	The Harp Room	B	Allergenco	150				5689373
4	A4	The Band Room	B	Allergenco	150				5689343
5	A5	Outside	B	Allergenco	150				5689165
6	T1	Sub-floor in Room 212							
7	T2	Behind Cove Base							Band Room
8	T3	Far Right Sink Cabinet							Room 204
9									
10									
11									
12									
13									
14									
15									

Released By: [Signature] Date: 12/08/23 Time: _____
 Signature: [Signature]

LAB USE ONLY - BELOW THIS LINE

Received By: ECHRISTMAS
 Signature: [Signature]
 Date: 12/7/23 Time: 12:59 AM PM

Portal Contact Added

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010
 RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

23-12-00893



Due Date:
 12/08/2023
 (Friday)
 ER

Appendix III: Mold and Moisture Photos



1 - Mold on hydronic plumbing insulation in the cafeteria



2 - Moisture damaged ceiling tiles in the cafeteria



3 - Mold on the ceiling mounted fan coil in the cafeteria



4 - Moisture damaged plaster wall in the kitchen



5 - Elevated relative humidity near the moisture damaged plaster wall



6 - Moisture meter reading indicating a portion of the damaged plaster wall is wet



7 - Moisture stained ceiling tiles in the band room



8 - Moisture stained wall panels in the band room



9 - Mold behind vinyl cove baseboard in the band room



10 - Mold on wood framing above the ceiling in the band room



11 - Elevated moisture meter reading collected from ceiling tile in the band room



12 - Un-insulated condensating pipe above the ceiling in the band room



13 - Mold on the air handler return in the band room



14 - Moisture damaged plaster ceiling in the basement outside of the boiler room



15 - Elevated moisture meter reading associated with the plaster ceiling outside of the boiler room



16 - Moisture damaged plaster ceiling in the Harp Room



17 - Mold and moisture impacted plaster ceiling in the basement fan room



18 - Mold on pipe insulation above the 2nd floor ceiling



19 - Moisture impacted sub-floor in Room 212



20 - Mold impacted sub-floor in Room 212



21 - Mold on pipe insulation in Room 216



22 - Mold on pipe insulation above the ceiling in the 2nd floor hallway



23 - Mold on pipe insulation above the ceiling in the 2nd floor hallway



24 - Elevated moisture meter reading associated with the mold impacted pipe insulation



25 - Moisture damaged drop ceiling and plaster ceiling in the gym



26 - Suspect mold on the HVAC supply ducts in the gym



27 - Moisture damaged plaster ceiling in the girl's locker room



28 - Elevated moisture meter reading associated with the damaged plaster ceiling



29 - Mold on the ceiling mounted fan coil in Room 301



30 - Mold on pipe insulation in Room 301



31 - Moisture stained plaster ceiling in the closet in Room 301



32 - Moisture damaged plaster wall in the 3rd floor hallway



33 - Moisture stained ceiling tiles in the auditorium



34 - Suspect mold on HVAC supplies in the Auditorium



35 - Mold on the refrigerator door in Room 111



36 - Mold on the plaster wall beside the sink in Room 111



37 - Mold impacted access door and wall in the Coats for Communities storage room in the basement



38 - Mold impacted storage shelves in the Coats for Communities storage room in the basement



39 - Elevated moisture meter reading from pipe insulation in Ms. Macklin's office in the basement

Appendix IV: Mold Reference and Guidance Documents

MOLD REFERENCE DOCUMENTS AND GUIDANCE

Standards and Publications

Mold Remediation in Schools and Commercial Buildings, EPA, EPA 402-K-01-001, September 2008

A Brief Guide to Mold in the Workplace, Occupational Safety Health Administration (OSHA), SHIB 03-10-10, updated 11-08-13

ANSI/IICRC S520-2015 Standard and Reference Guide for Professional Mold Remediation, Institute of Inspection, Cleaning, and Restoration Certification, Third Edition

ANSI/IICRC S500-2021 Standard and Reference Guide for Professional Water Damage Restoration, Institute of Inspection, Cleaning, and Restoration Certification, Fifth Edition

Bioaerosols: Assessment and Control, American Conference of Governmental Industrial Hygienists, 1999.

Building Air Quality: A Guide for Building Owners and Facility Managers, National Institute for Occupational Safety and Health (NIOSH) and Environmental Protection Agency (EPA) EPA 402F-91-102, December 1991

Mold Moisture and Your Home, EPA, EPA-402-K-02-003, September 2012

WHO Guidelines for Indoor Air Quality: Dampness and Mould, World Health Organization (WHO), 2009

Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health and Mental Hygiene, November 2008.

Damp Buildings, Human Health, and HVAC Design, Report of the ASHRAE Multidisciplinary Task Group: Damp Buildings, American Society of Heating, Refrigerating, and Air Conditioning Engineers, 2020

Websites

EPA – Mold Resources, <https://www.epa.gov/mold>

Centers for Disease Control and Prevention (CDC), <https://www.cdc.gov/mold/faqs.htm>

Department of Energy and the Environment (DOEE), Mold Assessment and Remediation Licensure Regulations <https://doee.dc.gov/service/mold-professional-licensing>

Virginia Department of Health, Environmental Health, Public Health Toxicology, Mold <https://www.vdh.virginia.gov/environmental-health/public-health-toxicology/mold/>

