MOLD AND MOISTURE ASSESSMENT REPORT

SUMMER HILL PRESCHOOL

2717 ALEXANDER AVENUE
RICHMOND, VIRGINIA 23234

ECS PROJECT NO. 47:14153-F

FOR: RICHMOND PUBLIC SCHOOLS FACILITY SERVICES

FEBRUARY 26, 2024

February 26, 2024

Mr. Ronald Hathaway Jr.
Richmond Public Schools Facility Services
1461-A Commerce Road
Richmond, Virginia 23224
Rhathawa@rvaschools.net

ECS Project No. 47:14153-F

Reference: Mold and Moisture Assessment, Summer Hill Preschool, 2717 Alexander 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 Summer Hill Preschool located at 2717 Alexander 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 47:30369-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 2717 Alexander Avenue in Richmond, Virginia is a one-story school building known as Summer Hill Preschool. The building contains approximately 37,282 square feet of space and was reportedly originally constructed in 1919.

Based on information provided by Richmond Public Schools Facility Services representatives, ECS understands that building occupants have reported mold and moisture concerns in the school to Richmond Public School Facility Services. Richmond Public Schools Facility Services has requested ECS conduct a Mold and Moisture Assessment to evaluate these concerns. In addition, ECS was requested to collect samples of suspect asbestos containing materials that are determined to be moisture or mold impacted requiring remediation.

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 and determine if asbestos containing materials are present in the tested areas that may require mold remediation.

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 and asbestos containing 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.

Ambient temperature and relative humidity were measured during the survey using a Q-Trak hand held IAQ meter. 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

Original School Building

- The materials throughout the basement that includes rooms 17, 18, 19 and mechanical areas are moisture and mold impacted. Significant visible mold and elevated moisture meter readings were present throughout these rooms/areas;
- Moisture meter readings collected from the wood sub-floor in room 15 on the upper level indicated that the sub-floor was wet. Visible mold was also observed associated with this sub-floor. The apparent cause of the moisture impact was a roof leak;
- Mold was observed on pipe insulation throughout the upper level and within pipe chase access panels in these areas.
- ECS was informed by school staff during the assessment that this portion of the building is off limits and access to it remains locked and it is generally not accessible to RPS staff or students.

Main School Building

- A heavy build-up of dust and dirt was observed associated with the wall mounted fan coil units in each of the classrooms beneath the units and within the supply vents on the top of the units;
- Mold was observed on the dust buildup on many of the window mounted A/C units in the classrooms and other rooms including rooms 2, 6, and 9;
- Mold was observed on the ceiling mounted fan coil units throughout the building. Tape lift sampling confirmed that elevated mold concentrations are present in this location in Room 10;
- Significantly moisture damaged plaster wall was observed in the Auditorium on the North wall around windows, around a window on the left section of the stage and the South Auditorium wall. Causation appears to be apparent roof leak(s) and leaking windows. Moisture meter readings indicated elevated moisture levels in the plaster walls around the windows and the stage floor in this area;
- Several areas of the Auditorium ceiling have replacement ceiling tiles and visible staining which may be caused by roof leaks;
- The asbestos containing 9"x9" floor tile is de-laminating in the areas adjacent to the moisture damaged plaster wall in the Auditorium;
- Mold was observed on an HVAC duct and on plaster walls and ceilings in the back of the stage;
- Mold was observed on the window mounted A/C units in the Auditorium;
- Mold was observed on the supply vent of the ceiling mounted fan coil units throughout the school;

- Surface mold was observed on hydronic HVAC piping and plumbing in the hallway ceiling cavity on the West half of both hallway wings, the portion of the front hallway leading to the original building and the electrical room; Mold was also observed on this piping on a vertical run in the kitchen.
- Moisture damaged and mold impacted plaster ceiling was observed above the drop ceiling in the main hallway leading to the original portion of the building and the electrical room;
- Moisture damaged plaster wall was observed behind the fan coil unit and inside the storage closet on the perimeter wall in Room 14. Moisture meter readings indicated that the materials were dry at the time of the assessment;
- Moisture damaged plaster ceiling was observed in the southwest corner of Room 9. This appears to be associated with the separating exterior brick wall on the outside of the building in this area;
- Many of the perimeter CMU walls in Rooms 3, 4, 5, 6 are visibly moisture stained and moisture meter readings indicate that some minor elevated moisture content was present. The apparent cause appears to be storm water draining down the exterior walls in the courtyard area where staining was observed on the exterior brick walls above the classroom windows;
- Mold was observed on the back of drywall within the drywall ceiling chase near the access panel above the school entrance in the main office. Additional moisture stained drywall was observed in this area but moisture meter readings from accessible areas indicated that the drywall was dry at the time of the assessment;
- Mold and moisture impacted pipe insulation was observed in the basement boiler room. The conditions seemed consistent with a mechanical room of this age and this is not an area of regular occupation;
- Mold was observed on cardboard boxes in a basement storage room adjacent to the basement boiler room;
- Suspect mold observed within the fresh air plenum above the courtyard door in the Cafeteria;

Media Center

- Mold was observed on the metal ceiling deck adjacent to the skylights. The apparent cause appears to be air and moisture infiltration from the exterior of the building. The roof deck was partially rusted in this area indicating moisture intrusion;
- The wood frames around the skylights were significantly moisture stained indicating that the roof is leaking in these areas causing the staining. Moisture meter readings from the accessible skylight frame indicated the material was dry at the time of the survey and suspect mold was not observed on the material. Moisture staining was observed on the back of the light fixtures beneath this area indicating a leak had occurred;
- Stained ceiling tiles were observed in the DSS Coordinator's Office in the Library. The source of the staining was not readily apparent. Rust and mold was observed on the HVAC supply vent in this area;

Exterior Envelope

- General Note: Most of the findings in this section are long term recommendations to address the building envelope.

- The exterior brick and mortar was damaged or missing in several areas;
- The asbestos containing window sash glazing is damaged in many areas of the building;
- The gutter on the exterior of Room 14 is disconnected and likely storm water is draining directly against the exterior wall in this area;
- The porch on the North end of the building is significantly damaged and likely a significant cause of the water intrusion into the basement of the original portion of the building;
- A drain outside the basement exterior door of the original building is covered by moss and may be a cause of water infiltration into the building during precipitation events;
- The metal window frames and sashes are rusted in many areas associated with the cafeteria windows and the windows on the South side of 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)
A1	Outdoors, front entry	1,800
A2	15	530
A3	16	450
A4	6	670
A5	5	170
A6	18	1,500
A7	19	820
A8	17	1,000
A9	4	170
A10	3	60
A11	Multi/gym	27
A12	2	120
A15	Main office	540
A16	Wellness room (room 14)	150
A17	1	310

Sample Number	Sample Location	Total Fungal Spore Concentration (count/cubic meter)
A18	Clinic	27
A19	13	150
A20	12	190
A21	Outdoors, front entry	2,300
A22	11	210
A23	Lounge/break room	120
A24	10	650
A25	9	520
A26	8	67
A27	Cafeteria	1,100
A28	Kitchen	700
A29	Auditorium	310
A30	Speech/language	140
A31	Outdoors, front entry	2,300

Analytical results of the mold air testing determined that total spore counts reported in the rooms tested in the main school building and the original school building 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 sp* were present in the general in the air samples collected in rooms 17, 18 and 19 in the basement of the original building. This portion of the school is significantly moisture and mold impacted which is likely the reason for the elevations in *Penicillium/Aspergillus sp* reported. Based on discussions with school faculty and staff and observations at the time of the assessment this portion of the school is not occupied, is not currently in use and is secured from entry from anyone who does not have key access.

There are currently no accepted regulatory standards or guidelines with respect to acceptable fungal levels inside buildings. 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 inside classroom 224 and the library. 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:

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	Supply Vent of Ceiling Mounted Fan Coil in Room 10	Moderate to Numerous - *Cladosporium spores and hyphal elements, Aurebasidium spores and hyphal elements*
T2	Plaster Ceiling, Electrical Room Hallway	Numerous - *Penicillium/ Aspergillus group spores and hyphal elements* Few to Mdoerate - *smuts, Periconia, myxomycetes* Occasional to Few - *Cladosporium spores, Epicoccum spores* Occasional - *ascospores, Drechslera/Bipolaris group spores, basidiospores*

Sample Number	Sample Location	Type and Density Rating
T3	Room 3, top of light fixture	Moderate- *pollen grains* Few - *smuts, Periconia, myxomycetes* Occasional to Few - *Curvualria spores, Cladosporium spores* Occasional - *ascospores, Drechslera/Bipolaris group spores, Penicillium/Aspergillus group spores, Bispora spores*

The tape lift sampling laboratory results indicate mold in significant concentrations associated with the ceiling mounted fan coil in Room 10 and the plaster ceiling in the electrical room hallway near the basement steps to the original portion of the building. The concentrations of mold identified in these locations indicate that these materials may be impacted by an active or regular source of moisture or elevated relative humidity.

The concentrations of mold identified associated with the ceiling mounted fan coil in Room 10 should be assumed to be indicative of conditions at all of the ceiling mounted fan coil units located throughout the school. These fan coils were observed by ECS to be significantly mold impacted in all of the locations surveyed.

Mold spores were identified on the back of a fluorescent light fixture in room 3 though not in elevated concentrations. The concentrations identified would be considered normal for the type of surface/ material sampled.

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 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.

The temperature and relative humidity readings collected during this assessment were considered normal and within recommended ranges.

Temperature and Relative Humidity

Location	Relative Humidity (%)	Temperature (°F)
Outdoors, front entry (4:51 pm)	30.3	65.0
Outdoors, front entry (6:42 pm)	55.6	55.6
Outdoors, front entry (7:34 pm)	55.7	55.7
Room 1	34.8	72.4
Room 2	33.6	72.5
Room 3	34.9	73.1
Room 4	33.6	73.4
Room 5	34.1	73.2
Room 6	35.1	72.3
Room 7	38.7	70.3
Room 8	37.8	69.7
Room 9	38.5	69.9
Room 10	40.6	69.7
Room 11	36.9	70.6
Room 12	40.6	69.7
Room 13	35.5	70.3
Room 14	44.5	69.6
Room 15	37.4	67.3
Room 16	38.3	69.4
Room 17	39.5	67.6

Location	Relative Humidity (%)	Temperature (°F)
Auditorium	55.1	68.1
Cafeteria	36.7	69.5
Clinic	44.0	69.1
Kitchen	38.9	68.7
Library	39.2	72.2
Wellness room (room 14)	40.2	67.4
Lounge/break room	39.0	70.4
Main office	37.3	70.8
Multi/gym	32.6	72.5
Speech/language room	42.3	68.5

4.1.4 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 (%)
Original building, basement mechanical area	Pipe insulation	Fiberglass	32.5
Auditorium	Wall	Plaster	100.0
Auditorium	Floor	Wood	40.0
Room 14	Wall	Plaster	25.8
Original building, room 15	Floor	Wood	100.0
Original building, basement hallway	Wall	Plaster	100.0

Elevated moisture meter readings were detected in the locations detailed above.

Many of the building materials in the basement of the original building exhibited elevated moisture levels. ECS believes that based on observations and testing that the cause of the elevated moisture meter readings in this area are from a general failure of the building envelope in this area of the building associated with windows, doors, sub-grade walls and the damaged exterior porch components.

The apparent source of water intrusion impacting the plaster walls and the stage floor in the Auditorium is failing and leaking gutters.

The apparent source of water intrusion impacting the plaster walls in room 14 is failing and leaking gutters.

The apparent source of water intrusion impacting the floor in room 15 in the original building is a roof leak.

Other building materials were visibly impacted in other areas of the building and were tested during the assessment and determined to be dry at the time of the assessment.

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 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:

Original School Building

- The materials throughout the basement that includes rooms 17, 18, 19 and mechanical areas are moisture and mold impacted. Significant visible mold and elevated moisture meter readings were present throughout these rooms/areas;
- Moisture meter readings collected from the wood sub-floor in room 15 on the upper level indicated that the sub-floor was wet. Visible mold was also observed associated with this sub-floor. The apparent cause of the moisture intrusion was a roof leak;
- Mold was observed on pipe insulation throughout the upper level and within pipe chase access panels in these areas.
- ECS was informed by school staff during the assessment that this portion of the building is off limits and access to it remains locked so no RPS students or staff are expected to be in this section of the building.

For this portion of the school, due to its complexity, ECS recommends that RPS meet with a selected remediation contractor and ECS to discuss the scope of work for remediation in the original school building. Several sources of water intrusion are likely present and will need to be address concurrently with any remediation. This includes the damaged porch components and window trim on the North side of the building, the windows and the clogged exterior drain outside the basement door. The roof also appears to be leaking into the original building. As noted the building envelope in general should be properly assessed as recommended previously and properly repaired prior to or in conjunction with any remediation preformed.

Main School Building

- Assessment of the building envelope by a qualified engineer or contractor to determine what repairs should be made to the exterior of the building in order to properly seal the building envelope and prevent further moisture intrusion. The envelope assessment should include an assessment of the integrity of roof throughout the building as well;
- A heavy build-up of dust and dirt was observed associated with the wall mounted fan coil units in each of the classrooms beneath the units and within the supply vents on the top of the units. Perform localized cleaning of the fan coil units and review the cleaning and maintenance schedule for these units. Use a mold remediation contractor or qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section, if required;
- Mold was observed on the dust buildup on many of the window mounted A/C units in the classrooms and rooms including rooms 2, 6, and 9. Perform localized cleaning of all window mounted A/C units or replace them and review the cleaning and maintenance schedule. Use a mold remediation contractor or qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section, if required;
- Mold was observed on the ceiling mounted fan coil units throughout the building. Tape lift sampling confirmed that elevated mold concentrations are present in this location in Room 10. ECS recommends complete cleaning of the ceiling mounted fan coil units throughout the school by a qualified mold remediation contractor and inspection by a qualified HVAC engineer or technician. Additionally, ECS recommends a review of the maintenance and service schedule of these fan coil units to determine if they are being maintained and operating per the manufacturer's recommended specifications. Use a mold remediation contractor and perform any mold remediation as described in this protocol, above this section, if required;
- Significantly moisture damaged plaster wall was observed in the Auditorium on the North wall around windows, around a window on the left section of the staget and the South wall. Moisture meter readings indicated elevated moisture levels in the North plaster wall and stage floor in this area. Correct the source of water intrusion and then remove any damaged plaster as needed. The wall 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;
- Several areas of the Auditorium ceiling have replacement ceiling tiles and visible moisture staining. During the building envelope review assess the integrity of the auditorium roof and inspect for leaks. Once identified and corrected remove and replace the moisture impacted ceiling tiles. The ceiling tiles and associated mastic should be assumed to be asbestos containing (or tested for asbestos) since they were not accessible for testing during the assessment;
- The asbestos containing 9"x9" floor tile is de-laminating in the areas adjacent to the moisture damaged plaster wall in the Auditorium. Have a Virginia licensed Asbestos Abatement Contractor remove the de-laminated and moisture damaged 9"x9" floor tiles in the auditorium and replace the tiles;
- Mold was observed on an HVAC duct and on plaster walls and ceilings in the back of the stage; Correct the source of water intrusion and then remove any damaged plaster as needed. The wall 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;

- Mold was observed on the window mounted A/C units in the Auditorium. Perform localized cleaning of these A/C units or dispose of them. Use a mold remediation contractor or qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section, as needed;
- Surface mold was observed on hydronic HVAC piping and plumbing in the hallway ceiling cavity on the West half of both hallway wings, the portion of the front hallway leading to the original building and the electrical room; mold was also observed on this piping on a vertical run in the Kitchen. Perform localized surface cleaning of the pipe insulation in these areas and apply an anti-microbial encapsulant. Use a mold remediation contractor and where visible mold is present, perform any mold remediation as described in this protocol, above this section. Have a qualified mechanical contractor or qualified maintenance staff inspect the pipes in all the areas listed to determine if they are operating properly or leaking/ condensating;
- Moisture damaged and mold impacted plaster ceiling was observed above the drop ceiling in the main hallway leading to the original portion of the building and the electrical room in this area; identify and correct the source of water intrusion and remove and replace the impacted portion of the plaster ceiling. Use a mold remediation contractor or qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section;
- Moisture damaged plaster wall was observed behind the fan coil and inside the storage closet on the perimeter wall in Room 14. Moisture meter readings indicated that the materials were dry at the time of the assessment; Correct the source of water intrusion and repair the damaged plaster;
- Moisture damaged plaster ceiling was observed in the southwest corner of Room 9, apparently associated with the separating brick envelope on the outside of the building in this area; Correct the source of water intrusion and repair the damaged plaster;
- Many of the perimeter CMU walls in Rooms 3, 4, 5, 6, 7, 8 and 9 are visibly moisture impacted and indicated some minor elevated moisture content. The apparent cause is storm water draining down the exterior walls in the courtyard area where staining was observed on the exterior brick walls. Perform localized cleaning of any staining on walls in these rooms and perform any necessary drying of CMU walls and correct the water intrusion issue.
- Mold was observed on drywall within the drywall ceiling chase near the access panel above the school entrance inthe Main Office. Additional moisture stained drywall was observed in this area but moisture meter readings from accessible areas indicated that the drywall was dry at the time of the assessment. Perform localized cleaning of these areas of the drywall ceiling within the chase. Use a mold remediation contractor or qualified school maintenance staff. If cleaning the areas is not feasible or accessible then remove and replace the mold impacted drywall. Perform any mold remediation as described in this protocol, above this section;
- Mold and moisture impacted pipe insulation was observed in the basement boiler room. The conditions seemed consistent with a mechanical room of this age and this is not an area of regular occupation;
- Mold was observed on cardboard boxes in a basement storage room adjacent to the basement boiler room. Dispose of any porous or semi-porous materials stored in this area and not store any materials in this area; Use a mold remediation contractor to perform this work.

- Suspect mold observed within the fresh air plenum above the courtyard door in the cafeteria; Perform localized cleaning of the interior of the plenum and apply an anti-microbial encapsulant to the treated areas. Use a mold remediation contractor or qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section;
- Conduct an inspection of the HVAC systems and fan coil units that service the building and also a review of the maintenance and service schedules by a qualified HVAC contractor or qualified maintenance staff to determine if the systems are being maintained and properly performing per the manufacturer's recommended specifications;
- Repair and replace the damaged asbestos window sash glazing throughout the building. Any disturbance or the removal of the material will need to be performed by a Virginia licensed Asbestos Abatement Contractor. If these windows will be removed and replaced then the windows and associated caulking should be disposed of as Category II Non-Friable ACM by a licensed abatement contractor.

Media Center

- Mold was observed on the metal ceiling deck adjacent to the skylights. The apparent cause was air and moisture infiltration from the exterior of the building. The roof deck was partially rusted in this area indicating moisture intrusion in this area. Correct the source of moisture intrusion and then perform localized cleaning of the metal ceiling deck and apply an anti-microbial encapsulant to the treated areas. Use a mold remediation contractor or qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section;
- The wood frames around the skylights were significantly moisture stained indicating that the roof is leaking in these areas, causing the staining. Moisture meter readings from the accessible skylight framing indicated the material was dry at the time of the survey and suspect mold was not observed on the material. Moisture staining was observed on the back of the light fixtures beneath this area indicating a leak had occurred. Correct the source of moisture intrusion and then perform localized cleaning of the skylight frames and light fixtures. Use a mold remediation contractor or qualified school maintenance staff. Perform any mold remediation as described in this protocol, above this section, if needed;
- Stained ceiling tiles were observed in the DSS Coordinator's Office in the Library. The source of the staining was not readily apparent. Rust and mold was observed on the HVAC supply vent in this area. Determine and correct the source of the staining and remove and replace the impacted ceiling tiles and perform localized cleaning of the HVAC supply vent.

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.

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.

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.

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.

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.

During this study, samples were submitted for analysis at an accredited laboratory via polarized light microscopy. As with any similar survey of this nature, actual conditions exist only at the precise locations from which samples were collected. Certain inferences are based on the results of this sampling and related testing to form a professional opinion of conditions in areas beyond those from which the samples were collected. No warranty, expressed or implied, is made.

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

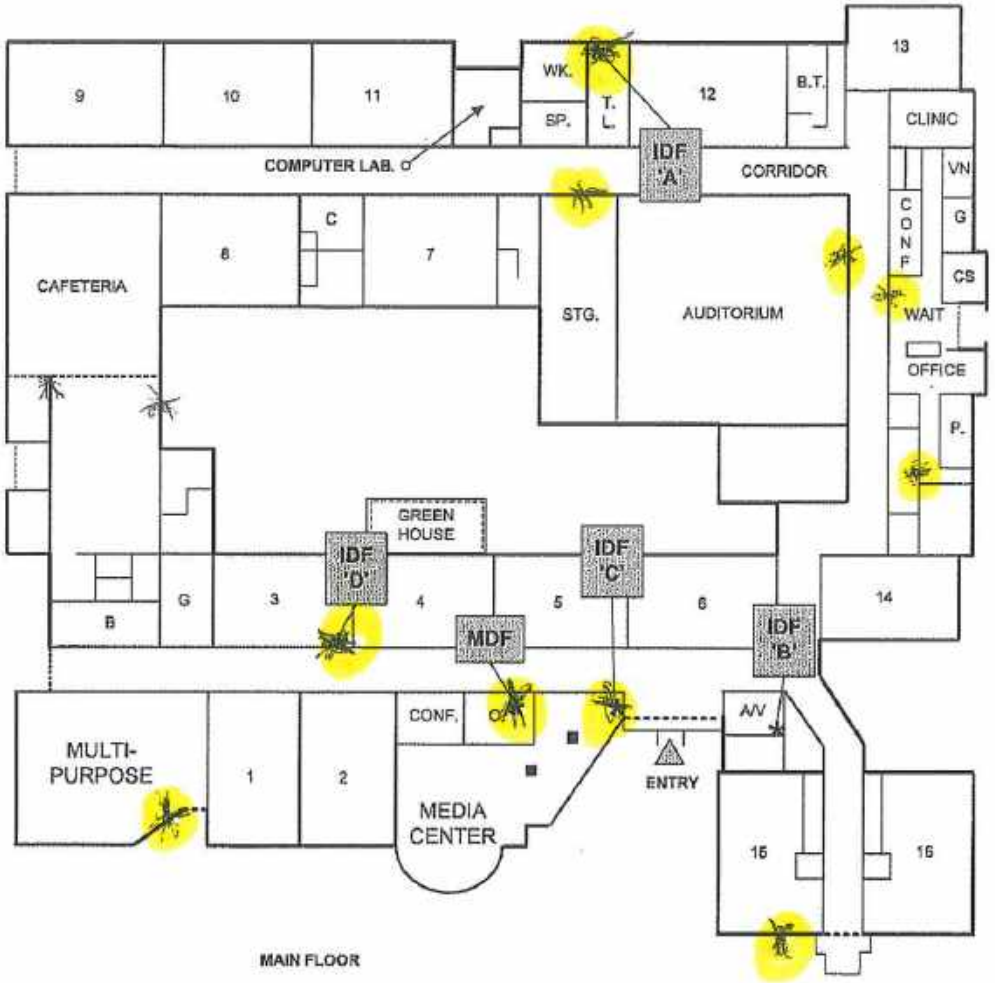
and recommendations presented within this report. This report is provided for the exclusive use of the client. This report is not intended to be used or relied upon in connection with other projects or by other unidentified third parties without the written consent of ECS and the client.

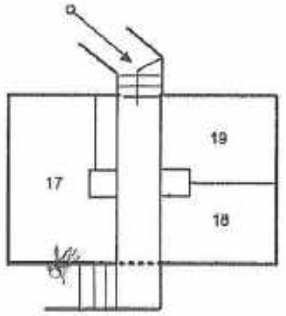
Our recommendations are in part based on federal, state, and local regulations and guidelines. ECS does not assume the responsibility of the person(s) in charge of the site, or otherwise undertake responsibility for reporting to any local, state, or federal public agencies, any conditions at the site 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

SUMMER HILL ELEMENTARY





Prepared: Dec. 15, 1997
Updated: August 19, 2008
File Name: SUMMER HILL SYS. LAYOUT RE-DRAW 08192008.vsd

Appendix II: Mold Laboratory Reports

Non-Viable Spore Trap Analysis Report

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

Telephone: 800.347.4010

Report Number: 23-10-03585

Received Date: 10/24/2023
Analyzed Date: 10/31/2023
Reported Date: 10/31/2023

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

Project/Test Address: Summer Hill School; 2717 Alexander Avenue; Richmond, VA

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-10-03585-001		23-10-03585-002		23-10-03585-003		23-10-03585-004		23-10-03585-005	
Client Sample ID :	A1		A2		A3		A4		A5	
Date Collected :	10/23/2023		10/23/2023		10/23/2023		10/23/2023		10/23/2023	
Collection Location :	OUTDOORS FRONT ENTRANCE B		15		16		6		5	
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	188	1300	56	370	37	250	73	490	10	67
Penicillium/Aspergillus group spores	16	110	6	40	20	130	24	160	14	93
Alternaria spores	1	6.7								
Aureobasidium spores	2	13	12	80	3	20				
Drechslera/Bipolaris group spores	1	6.7								
Arthrinium spores			1	6.7						
Curvularia spores					1	6.7				
Pithomyces spores	1	6.7								
Epicoccum spores	6	40			2	13				
Cercospora spores	1	6.7								
Nigrospora spores	3	20								
Fusarium spores	1	6.7								
smuts, Periconia, myxomycetes	53	350	4	27	4	27	3	20	1	6.7
Bispora spores	1	6.7	1	6.7						
TOTAL SPORES(Spores/m3)		**1800**		**530**		**450**		**670**		**170**
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

Telephone: 800.347.4010

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Received Date: 10/24/2023
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Client: ECS Mid-Atlantic - Richmond
2119 D North Hamilton St
Richmond, VA 23230

Project/Test Address: Summer Hill School; 2717 Alexander Avenue; Richmond, VA

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-10-03585-006		23-10-03585-007		23-10-03585-008		23-10-03585-009		23-10-03585-010	
Client Sample ID :	A6		A7		A8		A9		A10	
Date Collected :	10/23/2023		10/23/2023		10/23/2023		10/23/2023		10/23/2023	
Collection Location :	18		19		17		4		3	
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	80	530	60	400	73	490	21	140	2	13
Penicillium/Aspergillus group spores	146	970	56	370	72	480				
Aureobasidium spores					1	6.7			1	6.7
Drechslera/Bipolaris group spores	1	6.7								
Arthrinium spores			1	6.7						
Curvularia spores			1	6.7	1	6.7				
Stachybotrys spores	1	6.7	4	27			1	6.7	1	6.7
Pestalotia spores			1	6.7						
Nigrospora spores					1	6.7				
smuts, Periconia, myxomycetes	2	13			6	40	2	13	5	33
Bispora spores	1	6.7					1	6.7		
TOTAL SPORES(Spores/m3)		**1500**		**820**		**1000**		**170**		**60**
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

Telephone: 800.347.4010

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

Report Number: 23-10-03585

Received Date: 10/24/2023
Analyzed Date: 10/31/2023
Reported Date: 10/31/2023

Project/Test Address: Summer Hill School; 2717 Alexander Avenue; Richmond, VA

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-10-03585-011		23-10-03585-012							
Client Sample ID :	A11		A12							
Date Collected :	10/23/2023		10/23/2023							
Collection Location :	MULTIPURPOSE GYM		2							
Sampling Media :	Air-O-Cell		Air-O-Cell							
Analytical Sensitivity (spores/m3) :	6.7		6.7							
Volume (L) :	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	4	27	9	60						
Penicillium/Aspergillus group spores			8	53						
smuts, Periconia, myxomycetes			1	6.7						
TOTAL SPORES(Spores/m3)		**27**		**120**						
Analyst:	Felicia Butler		Felicia Butler							

Sample Narratives:

(Sample 007) M01: Penicillium conidiophore observed.
(Sample 001) M02: Large amounts of particulate observed.

Environmental Hazards Services, L.L.C

Client Number: 200625 **Report Number:** 23-10-03585

Project/Test Address: Summer Hill School; 2717 Alexander Avenue; Richmond, VA

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	Summer Hill School, 2717 Alexander Avenue, Richmond, VA		
PO Number	47:14153-F	Collected By	Rob Curran
Collection Date & Time	10/23/23	Outside Air Temp	Indoor Air Temp
Was there any precipitation (rain, sleet or snow) 2 hours of less before taking the samples?	☐ Yes	☑ No	

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

SAMPLE TYPE CODES

AIR/ NON-VIABLE		SPORE TRAP		SWAB SAMPLE SURFACE	
Bulk	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: Spore Trap Type	Air Samples: Air Volume (Total Liter)	Swab Samples: Surface Type (NP/SP)	Swab Samples: Area of Mold (Square Feet)	Qualitative Particulate Analysis Additional $10.00 per sample	Comments
1	A1	Outdoors, front entrance B	B	AOC	150				3721-8763
2	A2	15	B	AOC	150				3722-0429
3	A3	16	B	AOC	150				3722-0329
4	A4	6	B	AOC	150				3722-0422
5	A5	5	B	AOC	150				3722-0350
6	A6	18	B	AOC	150				3721-0421
7	A7	19	B	AOC	150				3721-9077
8	A8	17	B	AOC	150				3722-0401
9	A9	Library	B	AOC	150	Sample not used 10/24 KD			3722-0347
10	A10	4	B	AOC	150				3722-0410
11	A11	3	B	AOC	150				3722-0441
12	A12	Multipurpose, Gym	B	AOC	150				3721-8750
13	A13	2	B	AOC	150				3722-0450

Released By:	Robert Curran	Date:	10/24/23	Time:	
Signature:	Robert Curran				

LAB USE ONLY – BELOW THIS LINE

Received By: D Bowen

Signature: DB

Date: 10.29.23 Time: 436 ☐ AM ☐ PM

☐ Portal Contact Added

23-10-03585

Due Date:
10/31/2023
(Tuesday)
ER

Non-Viable Spore Trap Analysis Report

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

Telephone: 800.347.4010

Report Number: 23-10-03584

Received Date: 10/24/2023
Analyzed Date: 10/31/2023
Reported Date: 10/31/2023

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

Project/Test Address: Summer Hill School; 2717 Alexander Avenue; Richmond, VA

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-10-03584-001		23-10-03584-002		23-10-03584-003		23-10-03584-004		23-10-03584-005	
Client Sample ID :	A15		A16		A17		A18		A19	
Date Collected :	10/23/2023		10/23/2023		10/23/2023		10/23/2023		10/23/2023	
Collection Location :	MAIN OFFICE		WELLNESS ROOM 14		1		CLINIC		13	
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	28	190	10	67	20	130	1	6.7	14	93
Penicillium/Aspergillus group spores	43	290	11	73	23	150	3	20	6	40
Alternaria spores	2	13								
Aureobasidium spores					2	13				
Drechslera/Bipolaris group spores	1	6.7	1	6.7						
Pithomyces spores	1	6.7	1	6.7						
Epicoccum spores	2	13								
Fusarium spores					1	6.7				
smuts, Periconia, myxomycetes	3	20			1	6.7			2	13
Bispora spores	1	6.7								
Trichocladium spores									1	6.7
TOTAL SPORES(Spores/m3)		**540**		**150**		**310**		**27**		**150**
Analyst:	Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher	

Non-Viable Spore Trap Analysis Report

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

Telephone: 800.347.4010

Report Number: 23-10-03584

Received Date: 10/24/2023
Analyzed Date: 10/31/2023
Reported Date: 10/31/2023

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

Project/Test Address: Summer Hill School; 2717 Alexander Avenue; Richmond, VA

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-10-03584-006		23-10-03584-007		23-10-03584-008		23-10-03584-009		23-10-03584-010	
Client Sample ID :	A20		A21		A22		A23		A24	
Date Collected :	10/23/2023		10/23/2023		10/23/2023		10/23/2023		10/23/2023	
Collection Location :	12		OUTDOORS MAIN ENTRANCE		11		TEACHERS LOUNGE		10	
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	11	73	247	1600	14	93	12	80	66	440
Penicillium/Aspergillus group spores	15	100	55	370	8	53	4	27	24	160
Alternaria spores			2	13						
Aureobasidium spores	1	6.7	1	6.7						
Drechslera/Bipolaris group spores			2	13						
Stachybotrys spores					1	6.7				
Chaetomium spores							2	13	2	13
Pithomyces spores			2	13						
Epicoccum spores			2	13	1	6.7				
Fusarium spores	1	6.7	2	13	2	13			2	13
smuts, Periconia, myxomycetes			28	190	5	33			3	20
Bispora spores			2	13						
TOTAL SPORES(Spores/m3)		**190**		**2300**		**210**		**120**		**650**
Analyst:	Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher	

Non-Viable Spore Trap Analysis Report

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7469 Whitepine Rd
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Telephone: 800.347.4010

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Richmond, VA 23230

Report Number: 23-10-03584

Received Date: 10/24/2023
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Reported Date: 10/31/2023

Project/Test Address: Summer Hill School; 2717 Alexander Avenue; Richmond, VA

Client Number:
200625

Laboratory Results

Fax Number:
804-353-9478

Lab # :	23-10-03584-011		23-10-03584-012									
Client Sample ID :	A25		A26									
Date Collected :	10/23/2023		10/23/2023									
Collection Location :	9		8									
Sampling Media :	Air-O-Cell		Air-O-Cell									
Analytical Sensitivity (spores/m3) :	6.7		6.7									
Volume (L) :	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	33	220	6	40								
Penicillium/Aspergillus group spores	45	300	2	13								
smuts, Periconia, myxomycetes			2	13								
TOTAL SPORES(Spores/m3)		**520**		**67**								
Analyst:	Kitana Usher		Kitana Usher									

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	Summer Hill School, 2717 Alexander Avenue, Richmond, VA				
PO Number	47:14153-F	Collected By	Rob Curran		
Collection Date & Time	10/23/23	Outside Air Temp		Indoor Air Temp	
Was there any precipitation (rain, sleet or snow) 2 hours of less before taking the samples?				☐ Yes	☑ No

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

SAMPLE TYPE CODES

AIR/ NON VIABLE		SPORE TRAP		SWAB SAMPLE SURFACE	
Bulk	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: Spore Trap Type	Air Samples: Air Volume (Total Liter)	Swab Samples: Surface Type (NP/SP)	Swab Samples: Area of Mold (Square Feet)	Qualitative Particulate Analysis Additional $10.00 per sample	Comments
1	A14	(sample corrupt, not submitted)	B	AOC	150				N/A
2	A15	Main office	B	AOC	150				3722-0355
3	A16	Wellness room (14)	B	AOC	150				3722-0428
4	A17	1	B	AOC	150				3722-0415
5	A18	Clinic	B	AOC	150				3722-0436
6	A19	13	B	AOC	150				3722-0348
7	A20	12	B	AOC	150				3721-8851
8	A21	Outdoors, main entrance	B	AOC	150				3722-0386
9	A22	11	B	AOC	150				3721-8789
10	A23	Teachers' lounge	B	AOC	150				3721-9025
11	A24	10	B	AOC	150				3722-0389
12	A25	9	B	AOC	150				3722-0418
13	A26	8	B	AOC	150				3722-0420

Released By:	Robert Curran	Date:	10/24/23	Time:	
Signature:					

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Received By: R Bowen

Signature:

Date: 10.24.23 Time: 432 ☐ AM ☑ PM

☐ Portal Contact Added

23-10-03584

Due Date:
10/31/2023
(Tuesday)
ER

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Non-Viable Spore Trap Analysis Report

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

Telephone: 800.347.4010

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

Report Number: 23-10-03581

Received Date: 10/24/2023
Analyzed Date: 10/30/2023
Reported Date: 10/31/2023

Project/Test Address: Summer Hill School; 2717 Alexander Avenue; Richmond, VA

Client Number:
200625

Fax Number:
804-353-9478

Laboratory Results

Lab # :	23-10-03581-001		23-10-03581-002		23-10-03581-003		23-10-03581-004		23-10-03581-005	
Client Sample ID :	A27		A28		A29		A30		A31	
Date Collected :	10/23/2023		10/23/2023		10/23/2023		10/23/2023		10/23/2023	
Collection Location :	CAFETERIA		KITCHEN		AUDITORIUM		SPEECH/LANGUAGE ROOM		OUTDOORS	
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	116	770	78	520	15	100	2	13	251	1700
Penicillium/Aspergillus group spores	37	250	23	150	31	210	17	110	43	290
Alternaria spores									2	13
Aureobasidium spores			1	6.7					2	13
Drechslera/Bipolaris group spores	1	6.7							1	6.7
Curvularia spores									1	6.7
Stachybotrys spores									2	13
Epicoccum spores							1	6.7	2	13
Pestalotia spores									4	27
Cercospora spores									1	6.7
Fusarium spores	1	6.7							1	6.7
smuts, Periconia, myxomycetes	6	40	3	20	1	6.7	1	6.7	40	270
Bispora spores	2	13								
TOTAL SPORES(Spores/m3)		**1100**		**700**		**310**		**140**		**2300**
Analyst:	Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher		Kitana Usher	

Environmental Hazards Services, L.L.C

Client Number: 200625 **Report Number:** 23-10-03581

Project/Test Address: Summer Hill School; 2717 Alexander Avenue; Richmond, VA

Sample Narratives:

(Sample 002)	M02:	Large amounts of particulate observed.
(Sample 005)	M02:	Large amounts of particulate observed.

Method: Non-Culturable Spore Trap Examination

Reviewed By Authorized Signatory: Tasha Eaddy

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	Summer Hill School, 2717 Alexander Avenue, Richmond, VA		
PO Number	47:14153-F	Collected By	Rob Curran
Collection Date & Time	10/23/2023	Outside Air Temp	Indoor Air Temp
Was there any precipitation (rain, sleet or snow) 2 hours of less before taking the samples?	☐ Yes	☑ No	

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

SAMPLE TYPE CODES

AIR/ NON VIABLE		SPORE TRAP		SWAB SAMPLE SURFACE	
Bulk	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: Spore Trap Type	Air Samples: Air Volume (Total Liter)	Swab Samples: Surface Type (NP/SP)	Swab Samples: Area of Mold (Square Feet)	Qualitative Particulate Analysis Additional $10.00 per sample	Comments
1	A27	Cafeteria	B	AOC	150				3722-0345
2	A28	Kitchen	B	AOC	150				3721-9169
3	A29	Auditorium	B	AOC	150				3721-8751
4	A30	Speech/language room	B	AOC	150				3722-0416
5	A31	Outdoors.	B	AOC	150				3722-0437
6			B	AOC	150				
7			B	AOC	150				
8			B	AOC	150				
9			B	AOC	150				
10			B	AOC	150				
11			B	AOC	150				
12			B	AOC	150				
13			B	AOC	150				

Released By:	Robert Curran	Date:	10/24/2023	Time:	
Signature:					

LAB USE ONLY – BELOW THIS LINE

Received By: D Bowen

Signature: [signature]

Date: 10/24/23 Time: ~~48~~ 428 (KB) ☐ AM ☒ PM

☐ Portal Contact Added

23-10-03581

Due Date:
10/31/2023
(Tuesday)
ER

7469 WHITEPINE RD, RICHMOND, VA 23237 (800)-347-4010

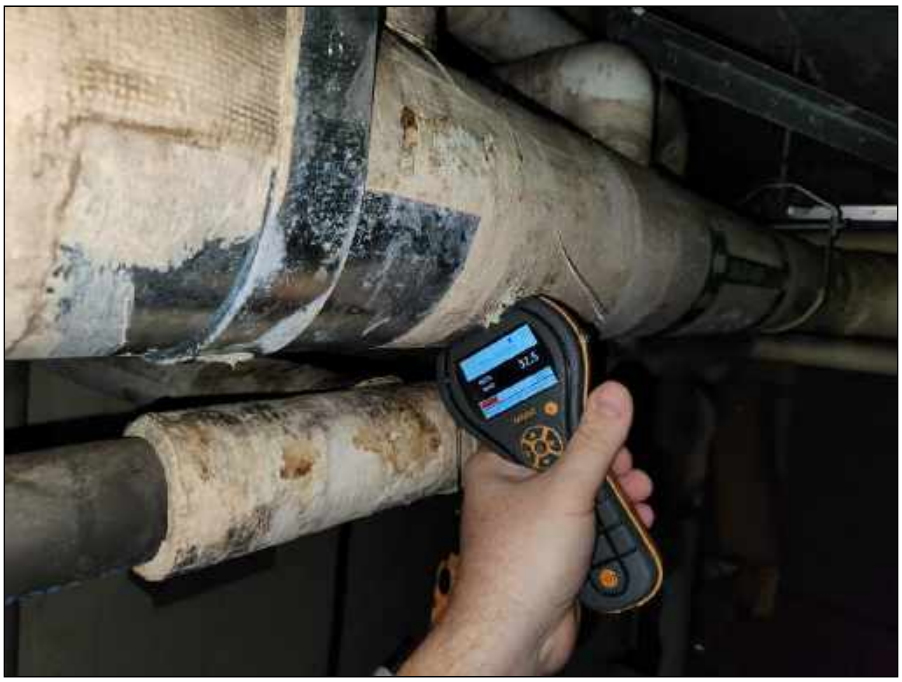
RESULTS VIA CLIENT PORTAL AVAILABLE @ www.leadlab.com

Appendix III: Mold and Moisture Photos

1 - Elevated moisture meter reading collected from plaster in the basement of the original building

2 - Elevated moisture meter reading collected from flooring in the basement of the original building

3 - Elevated moisture meter reading collected from a wood window sash in the basement of the original building



4 - Elevated moisture meter reading collected from pipe insulation in the basement of the original building

5 - Mold on the wall in the basement hallway

6 - Mold on the plaster ceiling in a classroom in the basement of the original building

7 - Elevated moisture meter reading and mold on the sub-floor in Room 15 in the original building

8 - Mold on pipe insulation in a room on the upper floor of the original building

9 - Mold on pipe insulation in a room on the upper floor of the original building

10 - Mold on pipe insulation in a pipe chase on the upper level of the original building

11 - Mold on the plaster wall - right section of the stage

12 - Mold on the plaster wall - left section of the stage

13 - Moisture damaged plaster wall in the Auditorium

14 - Wet moisture meter reading collected from the damaged plaster wall

15 - Wet moisture meter reading collected from the stage floor

16 - Mold on an HVAC duct above the stage

17 - Moisture impacted ceiling tiles and plaster wall in the Auditorium

18 - Mold on a window mounted A/C unit in the Auditorium

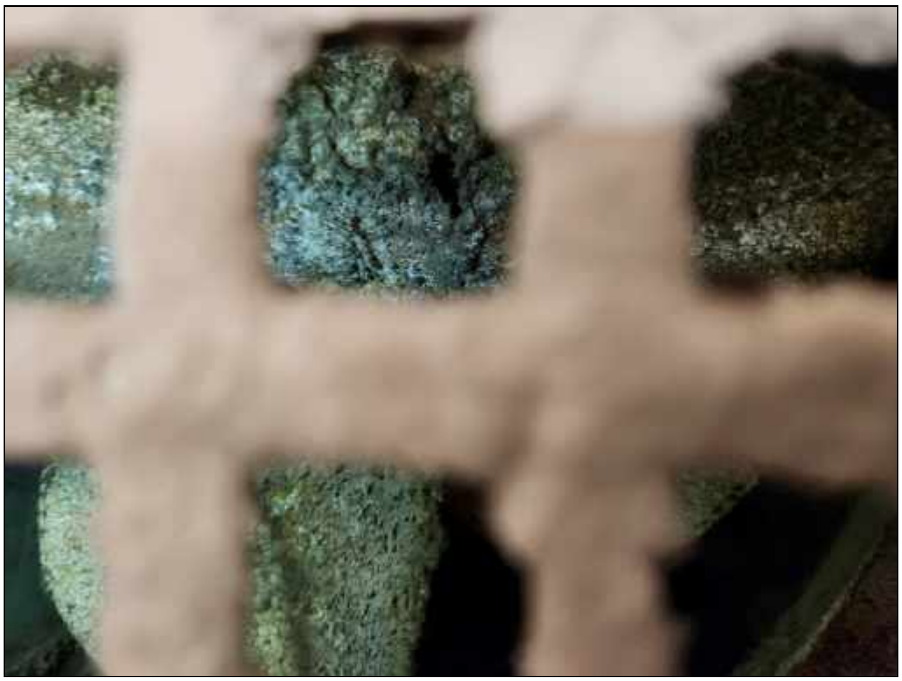
19 - Mold within the ceiling mounted fan coil in Room 10

20 - Mold impacted plaster ceiling outside the electrical room

21 - Damaged plaster wall in Room 14

22 - Surface mold on pipe insulation above the ceiling in the South hallway

23 - Mold within the window mounted A/C unit in Room 9



24 - Mold on a fan blade within the fresh air plenum over the courtyard door in the Cafeteria

25 - Mold on pipe insulation in the kitchen

Appendix IV: Mold and Moisture Photos Exterior Envelope

1 - Staining on the brick wall around the downspout indicating the water is running down the wall outside Room 14

2 - Cracked concrete porch on the North side of the original building

3 - Area where porch step is separating and likely a cause of water intrusion into the basement

4 - Disconnected gutter outside room 14 likely causing water damaged plaster wall

5 - Brick wall separating in the Southwest corner of the building outside room 9

6 - Rusted window sash mullion and damaged window sash glazing on the South side of the building

7 - Staining on the brick wall around the downspout indicating the water is running down the wall outside the Auditorium

8 - Staining on the brick wall around the downspout indicating the water is running down the wall outside the Auditorium

9 - Staining on the exterior wall in the courtyard outside Room 5

Appendix V: 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/