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Quarterly Microbial IAQ Assessment Report

Conducted At

Hobomock Elementary School
81 Learning Lane
Pembroke, MA 02359

August, 2025
Sampling Session #4

Prepared For: Ms. Erin Obey
Superintendent of Schools
Pembroke Public Schools
72 Pilgrim Road
Pembroke, MA 02339

Report Prepared By: 
Paul Matuszko, CIH
Paul Matuszko Environmental Consulting
79 Cedar Street
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Report Date: August 26, 2025

PMEC Project #: 25-144



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August 26, 2025

Ms. Erin Obey
Superintendent of Schools
Pembroke Public Schools
72 Pilgrim Road
Pembroke, MA 02339

RE: Quarterly Microbial (Mold) IAQ Sampling Report #4 for
Hobomock Elementary School
81 Learning Lane, Pembroke, MA
PMEC Project #25-144

Dear Ms. Obey:

Paul Matuszko Environmental Consulting (**PMEC**) is pleased to submit the enclosed report for the quarterly microbial (mold) indoor air quality (IAQ) sampling session conducted at the Hobomock Elementary School, 81 Learning Lane, Pembroke, Massachusetts. PMEC conducted the spore trap air sampling within the school on August 21, 2025. A total of eight (8) spore trap air samples were collected for microbial laboratory analysis.

This limited microbial assessment report has been prepared for the exclusive use of The Pembroke Public Schools.

Certification:

PMEC certifies that the results and findings provided herein for the Hobomock Elementary School building have been reviewed for accuracy, content, regulatory compliance and quality of presentation.

Should you have any questions regarding this report, please do not hesitate to contact me at (617) 893-4476. Thank you for providing PMEC with the opportunity to provide our services to the Pembroke Public Schools for this project.

Respectively submitted;

A handwritten signature in black ink that reads "Paul Matuszko".

Paul Matuszko, CIH, CIEC
Project Manager
CIH - Certified Industrial Hygienist (American Board of Industrial Hygiene #9236 CP)
CIEC - Certified Indoor Environmental Consultant (American Council for Accredited Certification)





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**Quarterly Microbial IAQ
Sampling Report
Session #4
For
Hobomock Elementary School
81 Learning Lane
Pembroke, MA
August, 2025**

1.0 Introduction

- A. Paul Matuszko Environmental Consulting (**PMEC**) is pleased to submit this report for the quarterly microbial air sampling assessment (session #4) conducted at the Hobomock Elementary School, 81 Learning Lane, Pembroke, Massachusetts. PMEC was retained by the Pembroke Public Schools to conduct the general microbial spore trap air sampling within the school building. The microbial (fungal/mold) spore trap air sampling was conducted by PMEC on August 21, 2025. The quarterly sampling session was performed to assess existing spore levels in compliance with the on-going school system indoor air quality (IAQ) program. A summary of the sampling locations and methods, analysis methods and results are outlined within the report.
- B. PMEC was assisted by the staff members of the Pembroke Public Schools Superintendent office and maintenance/custodial department during the air sampling. Representative member(s) of the Pembroke Teachers Association (PTA) union and Massachusetts State Teachers Association safety professional were present during the sampling to confirm the locations and sampling methods used. The sampling was conducted to determine existing airborne microbial spore levels in representative areas of each section or wing of the school building.

2.0 Scope of Work

- A. The microbial spore trap sampling was conducted in accordance with the following tasks:
 - 1. General inspection of the representative sampled areas accessed for visible water damaged materials and mold growth in the rooms being sampled.
 - 2. Conduct representative bioaerosol (microbial) spore trap air sampling for airborne mold (fungal) analysis in designated and representative locations. The sampling scheme focused on rooms not previously sampled.
 - 3. Prepare a detailed report detailing the findings of the assessment and sampling data.

3.0 Mold Sampling and Analysis Methods

- A. PMEC collected "spore trap" air samples for mold spore analysis using air-o-cell® brand sampling cassettes. Seven (7) indoor samples and one (1) outdoor entrance (ambient air) comparison sample were collected for analysis. A calibrated, battery operated Zefon IAQ 15 sampling pump was used to draw air onto the sample cassette's adhesive slide. PMEC collected the samples at 15 liters of air per minute (LPM) for a five (5) minute sample duration for a total sample collection volume of 75 liters of air. Samples are collected in the middle or back side of each room at an approximate height of four feet high. The airborne aerosols (mold, particulates, pollen, etc.) are trapped on the filter media slide for direct microscopic examination.
- B. The samples were collected on August 21, 2025 at approximately 11:15 am – 12:45 pm. Ambient conditions were slightly cool (~70° F) and clear for the midsummer season.

- C. The samples were sent via chain of custody by FedEx to Hayes Microbial Laboratory (Hayes), located in Midlothian, Virginia. Hayes Laboratory is accredited by the American Industrial Hygiene Association (AIHA) for mold and bacteria identification and analysis (AIHA EMPAT Laboratory Accreditation ID # 188863).
- D. Results are reported as Total Fungi Counts in spores per cubic meter of air (**C/m³**). The samples were analyzed for both non-viable and viable fungi by direct analysis optical microscopy. A summary of analysis criteria of spore trap and direct identification analysis is provided in the lab analysis sheets. The sample results are provided as Attachment B to this report.

4.0 Laboratory Analysis Results

- A. The results of the August 21, 2025 spore trap air sampling are presented in Table 2 below.

Table 2 Spore Trap Air Sample Analysis Results August 21, 2025 Quarterly IAQ Sampling Session #4				
Sample #	Sample Location	Total Fungi (C/m³)	Specific Species & levels of note	Comments
3961 2291 (01)	Science Lab	13 C/m ³	Ascospores – 13 C/m ³	Very low and acceptable
3961 2276 (02)	Classroom #260	67 C/m ³	Ascospores – 40 C/m ³ Cladosporium – 27 C/m ³	Very low and acceptable
3961 2274 (03)	Classroom # 245	13 C/m ³	Ascospores – 13 C/m ³	Very low and acceptable
3961 2278 (04)	Classroom #261	94 C/m ³	Basidiospores – 27 C/m ³ Aspergillus/Penicillium - 67 C/m ³	Low and acceptable
3961 2271 (05)	Classroom #150	3,000 C/m ³	Aspergillus/Penicillium - 3,000 C/m³	Elevated spore level present
3911 2284 (06)	Classroom #110	119 C/m ³	Aspergillus/Penicillium - 93 C/m ³ Basidiospores – 13 C/m ³ Pithomyces – 13 C/m ³	Low and acceptable
3961 2285 (07)	Teachers Lounge (large)	290 C/m ³	Aspergillus/Penicillium - 290 C/m³	Slightly elevated spore level present
3961 2290 (08)	Outside entrance – ambient air (comparison sample)	2,213 C/m ³	Ascospores – 1,600 C/m ³ Basidiospores – 600 C/m ³ Cladosporium – 13 C/m ³	Typical summer spore level

- Notes:**
- Additional information on species types are provided in the Laboratory Analysis results.
 - C/m³ = spore counts per cubic meter of air
 - Aspergillus/penicillium spores are two different species but cannot be differentiated at the level of magnification used during analysis.
 - Samples collected adjacent to teachers desk or back middle of room
 - Results in **Bold** (if present) = species or levels of concern.

5.0 Discussion of Analysis Results

- A. The analysis results for the August 21, 2025 sampling session indicate an inconsistent or varying spore level in the areas sampled. Most locations were analyzed to contain low and acceptable airborne spore levels. The fungal species identified in these rooms are typically found indoors at low levels and are not a cause for concern. The rooms with low spore levels include:

- Science lab
- Classroom 260
- Classroom 245
- Classroom 261
- Classroom 110

- B. The Classroom 150 sample was analyzed to contain an elevated level of aspergillus/penicillium (Asp/Pen) spores at 3,000 C/m³. No immediate potential sources were identified during the sampling session in this room. The airborne spore level is higher than expected and the room requires additional cleaning and air purification.
- C. The large teacher's room sample was analyzed to contain slightly elevated Asp/Pen spore level at 3,000 C/m³. Although not excessive, the Asp/Pen spores present are higher than expected. Similar to Classroom 150, no immediate potential sources were identified while accessing the room during the sampling period. The airborne spore level is higher than expected and requires additional cleaning and air purification.

6.0 Background Mold Information

- A. Currently, there are no standards or regulations to indicate acceptable numerical levels of airborne fungal spores derived from indoor environments. Results are also assessed for specific target species that may induce allergic reactions. Specific species are reviewed for their known potential to cause allergic reactions or as an indicator of potential water damage and moisture issues. In general, indoor mold levels should be equivalent to or lower than outdoor levels or non-complaint areas with similar types and percentages of mold species. Please note that airborne mold spores are present in most indoor environments at low levels.
- B. There are no regulations for acceptable levels of mold in the indoor environment; therefore, exact numerical limits are not supported at this time. Specific fungal species of concern are recommended to have much lower levels in the indoor environment. Existing conditions and symptoms are unique to each season, building and occupant. Airborne mold spore levels may vary greatly by location, time of day and weather conditions. However, health impacts cannot be predicted based on this information; individuals experience varying levels of allergic and non-allergic response to mold. Controlling moisture, in each form, is critical to the prevention of indoor mold growth issues.

7.0 Summary Conclusions

- A. The August 21, 2025 sampling laboratory analysis results for sampling session #4 indicate that the airborne mold spore levels were low and acceptable in the five rooms presented above. ***The current levels in these five locations indicate a Level 1 condition (normal indoor fungal ecology) as defined by the Institute of Inspection, Cleaning, and Restoration Certification (IICRC).***
- B. However, elevated spore levels of Asp/Pen species were identified in classroom 150 and slightly elevated in the large teacher's room. These rooms are recommended to have additional cleaning and air purification performed. This include disinfecting surfaces, including ceiling vents, and HEPA air purifying. Additional inspection and assessment within the room and associated HVAC (AHU) may be warranted.
- C. Temperature and relative humidity levels were within recommended levels during the sampling period. These levels are typical for the summer season with cool and dry conditions.
- D. Room surfaces were free on stained ceiling tiles and any current water damaged surfaces or materials. Additionally, no visible mold growth was identified in the areas sampled. Ceiling vents

area generally free of accumulated dust and debris. Horizontal surfaces are free of accumulated dust and debris. Carpeting throughout the majority on the school has been replaced with non-porous tiled flooring.

8.0 Limitations

- A. The assessment provided herein is based on the professional judgment of P MEC using approved industry standards and guidelines. Not all areas of the school building were accessed for inspection during the representative general spore trap air sampling. Assessment findings are based on the investigator's careful consideration of field observations and interpretation of analysis results in accordance with industry standards, including, but not limited to, IICRC S520 guidelines for Condition 1 – normal fungal ecology, 2008 AIHA (Green Book) publication "Recognition, Evaluation, and Control of Indoor Mold", and the ACGIH 1999 book "Bioaerosols – Assessment and Control".
- B. The analysis results are only representative of the conditions of the date and time of sample collection and are considered a "snapshot in time". P MEC's results and discussion listed herein represent the conditions present at the time of inspection and sampling.

ATTACHMENTS

Attachment A – Sampling Floor Plan (1 page)

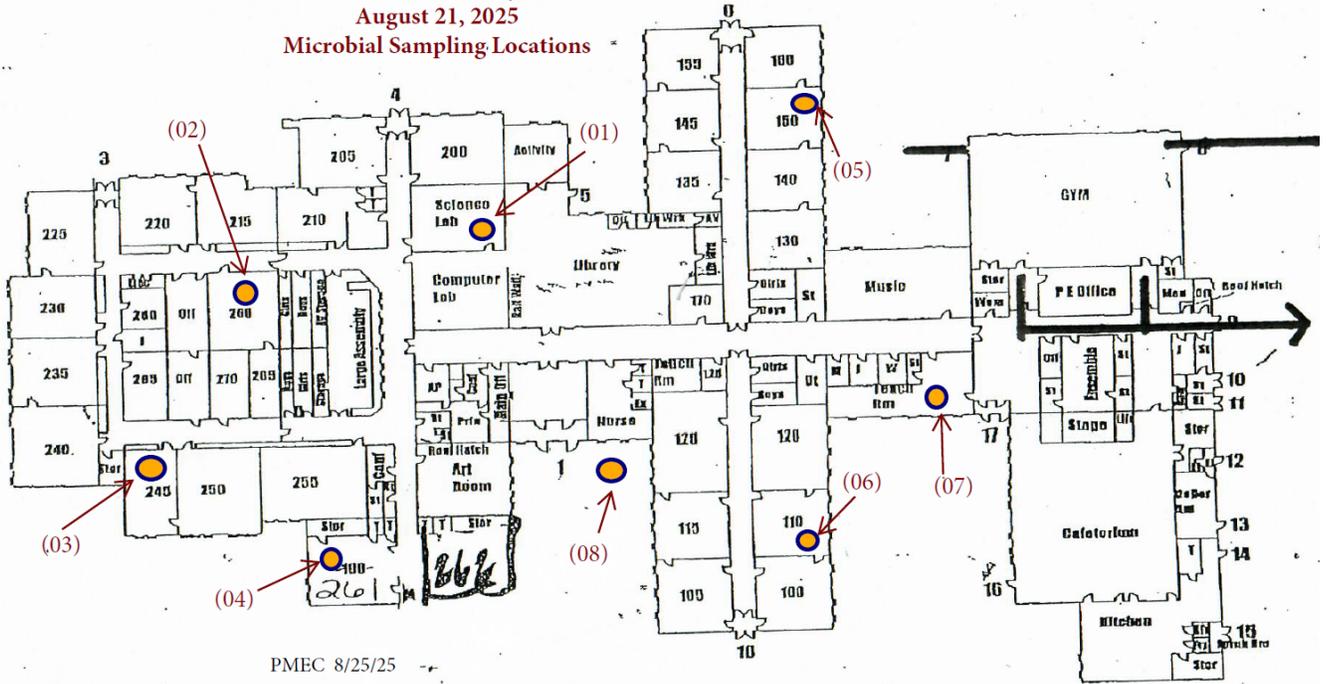
Attachment B – Hayes Microbial – August 21, 2025 Sample Analysis Results (pages 1-6)

Attachment A

Sample Location Floor Plan

Attachment A – Sampling Floor Plan

Hobomock Elementary School
August 21, 2025
Microbial Sampling Locations



Attachment B

Laboratory Analysis Results

**Hayes Microbial Laboratory
August 21, 2025 Sampling Session #4
(pages 1-6)**



#25039831

Analysis Report prepared for

Paul Matuszko Environmental Consulting

79 Cedar Street
Walpole, MA 02081

Phone: (617) 893-4476

25-144

Hobomock Elementary School
81 Learning Lane
Pembroke, MA 03359

Collected: **August 21, 2025**
Received: **August 22, 2025**
Reported: **August 22, 2025**



EPA Laboratory ID: VA01419



Lab ID: #188863



DPH License: #PH-0198

We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 8 samples by FedEx in good condition for this project on August 22nd, 2025.

The results in this analysis pertain only to this job, collected on the stated date, and should not be used in the interpretation of any other job. Information supplied by the customer can affect the validity of results. These results apply only to the samples as received. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC.

All information provided to Hayes Microbial is confidential information relating to our customers and their clients. We will not disclose, copy, or distribute any information verbally or written, except to those designated by the customer(s). We take confidentiality very seriously. No changes to the distribution list will be made without the express consent of the customer.

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial. In no event, shall Hayes Microbial or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of the use of these test results.

A handwritten signature in black ink that reads 'Stephen N. Hayes'.

Steve Hayes, BSMT (ASCP)
Laboratory Director
Hayes Microbial Consulting, LLC.

Sample Number*	5 3961 2271			6 3961 2284			7 3961 2285			8 3961 2290		
Sample Name*	Classroom 150			Classroom 110			Teachers Lounge - Large			Outside Ambient Air		
Sample Volume*	75 L											
Reporting Limit	13 spores/m ³											
Background	2			2			2			2		
Fragments	13/m ³			ND			ND			ND		
Organism	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total	Raw Count	Count / m ³	% of Total
Alternaria												
Ascospores										122	1600	72.6%
Aspergillus Penicillium	224	3000	100.0%	7	93	77.8%						
Basidiospores				1	13	11.1%				45	600	26.8%
Bipolaris Drechslera												
Chaetomium												
Cladosporium							22	290	100.0%	1	13	<1%
Curvularia												
Epicoccum												
Fusarium												
Memnoniella												
Myxomycetes												
Pithomyces				1	13	11.1%						
Stachybotrys												
Stemphylium												
Torula												
Ulocladium												
Total	224	3000	100%	9	119	100%	22	290	100%	168	2213	100%

Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality
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* indicates data provided by the customer

Collected: **Aug 21, 2025**

Received: **Aug 22, 2025**

Reported: **Aug 22, 2025**



Project Analyst:
 Ramesh Poluri, PhD

P. Ramesh

Date:
08 - 22 - 2025

Reviewed By:
 David McDonald, PHR

David McDonald

Date:
08 - 22 - 2025

Spore Trap Information

Reporting Limit	The Reporting Limit is the lowest number of spores that can be detected based on the total volume of the sample collected and the percentage of the slide that is counted. At Hayes Microbial, 100% of the slide is read so the LOD is based solely on the total volume. Raw spore counts that exceed 500 spores will be estimated.					
Blanks	Results have not been corrected for field or laboratory blanks.					
Background	<p>The Background is the amount of debris that is present in the sample. This debris consists of skin cells, dirt, dust, pollen, drywall dust and other organic and non-organic matter. As the background density increases, the likelihood of spores, especially small spores such as those of <i>Aspergillus</i> and <i>Penicillium</i> may be obscured. The background is rated on a scale of 1 to 5 and each level is determined as follows:</p> <p>NBD: No background detected due to possible pump or cassette malfunction. Recollect sample. (Field Blanks will display NBD)</p> <p>1 : <5% of field occluded. No spores will be uncountable.</p> <p>2 : 5-25% of field occluded.</p> <p>3 : 25-75% of field occluded.</p> <p>4 : 75-90% of field occluded.</p> <p>5 : >90% of field occluded. Suggested recollection of sample.</p>					
Fragments	Fragments are small pieces of fungal mycelium or spores. They are not identifiable as to type and when present in very large numbers, may indicate the presence of mold amplification.					
Control Comparisons	There are no national standards for the numbers of fungal spores that may be present in the indoor environment. As a general rule and guideline that is widely accepted in the indoor air quality field, the numbers and types of spores that are present in the indoor environment should not exceed those that are present outdoors at any given time. There will always be some mold spores present in "normal" indoor environments. The purpose of sampling and counting spores is to help determine whether an abnormal condition exists within the indoor environment and if it does, to help pinpoint the area of contamination. Spore counts should not be used as the sole determining factor of mold contamination. There are many factors that can cause anomalies in the comparison of indoor and outdoor samples due to the dynamic nature of both of those environments.					
<table border="1"> <tr><td>Water Damage Indicator</td></tr> <tr><td>Common Allergen</td></tr> <tr><td>Slightly Higher than Baseline</td></tr> <tr><td>Significantly Higher than Baseline</td></tr> <tr><td>Ratio Abnormality</td></tr> </table>	Water Damage Indicator	Common Allergen	Slightly Higher than Baseline	Significantly Higher than Baseline	Ratio Abnormality	<p>Blue: These molds are commonly seen in conditions of prolonged water intrusion and usually indicate a problem.</p> <p>Green: Although all molds are potential allergens, these are the most common allergens that may be found indoors.</p> <p>Orange: The spore count is slightly higher than the outside count and may or may not indicate a source of contamination.</p> <p>Red: The spore count is significantly higher than the baseline count and probably indicates a source of contamination.</p> <p>Violet: The types of spores found indoors should be similar to the ones that were identified in the baseline sample. Significant increases (more than 25%) in the ratio of a particular spore type may indicate the presence of abnormal levels of mold, even if the total number of spores of that type is lower in the indoor environment than it was outdoors.</p>
Water Damage Indicator						
Common Allergen						
Slightly Higher than Baseline						
Significantly Higher than Baseline						
Ratio Abnormality						
Color Coding	Fungi that are present in indoor samples at levels lower than 200 per cubic meter are not color coded on the report, unless they are one of the water damage indicators.					
Significant Figures	Raw counts and column totals may reflect more than 2 significant figures, but results should only be considered significant to 2 figures.					

Ascospores	Habitat:	A large group consisting of more than 3000 species of fungi. Common plant pathogens and outdoor numbers become very high following rain. Most of the genera are indistinguishable by spore trap analysis and are combined on the report.
	Health Effects:	Health affects are poorly studied, but many are likely to be allergenic.

Aspergillus Penicillium	Habitat:	The most common fungi isolated from the environment. Very common in soil and on decaying plant material. Are able to grow well indoors on a wide variety of substrates.
	Health Effects:	This group contains common allergens and many can cause hypersensitivity pneumonitis. They may cause extrinsic asthma, and many are opportunistic pathogens. Many species produce mycotoxins which may be associated with disease in humans and other animals. Toxin production is dependent on the species, the food source, competition with other organisms, and other environmental conditions.

Basidiospores	Habitat:	A common group of Fungi that includes the mushrooms and bracket fungi. They are saprophytes and plant pathogens. In wet conditions they can cause structural damage to buildings.
	Health Effects:	Common allergens and are also associated with hypersensitivity pneumonitis.

Cladosporium	Habitat:	One of the most common genera worldwide. Found in soil and plant debris and on the leaf surfaces of living plants. The outdoor numbers are lower in the winter and often relatively high in the summer, especially in high humidity. The outdoor numbers often spike in the late afternoon and evening. Indoors, it can be found growing on textiles, wood, sheetrock, moist window sills and in HVAC supply ducts.
	Health Effects:	A common allergen, producing more than 10 allergenic antigens and a common cause of hypersensitivity pneumonitis.

Pithomyces	Habitat:	Common fungus isolated from soil, decaying plant material. Rarely found indoors.
	Health Effects:	Allergenic properties are poorly studied. No cases of infection in humans.



Paul Matuszko Environmental Consulting
 79 Cedar Street
 Walpole, MA 02081

N

SHIP: FEDEX - ENV 50
 DATE: 08-22-2025



Job Number: 25-144	Job Name: Hobomock Elementary School	Mobile: 617 893-4476	Email: pmatuszko@pmecsolutions.co
Collector: Paul Matuszko	81 Leaning Lane		
Date Collected: 8/21/25	Pembroke, MA 02359	Note: <i>Background air sampling</i>	

Analysis Type		Analysis Description	Turnaround	Accepted Media Types
Spore Trap	S	Identification & Enumeration of Fungal Spores	24 Hour	Air Cassettes, Impact Slides
	S+	Spore Trap Analysis with Dander, Fiber, and Pollen counts	24 Hour	Air Cassettes, Impact Slides
Direct ID	D	ID & Semi-Quantative Enumeration of spores and mycelium	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
	D+	Direct Analysis with Fully Quantitative spore count	24 Hour	Bio-Tape, Tape, Swab, Bulk, Agar Plate
Culture	C1	Identification & Enumeration of Mold only	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C2	Identification & Enumeration of Bacteria only	4 Day	Air Plate, Agar Plate, Swab, Bulk
	C3	Identification & Enumeration of Mold and Bacteria	7 Day	Air Plate, Agar Plate, Swab, Bulk
	C5	Coliform Screen for Sewage Bacteria	2 Day	Agar Plate, Swab, Bulk
Particle	TPA	Total Particulate Analysis, ID & Count (Does Not Include Mold)	24 Hour	Air Cassettes, Impact Slides, Bio-Tape

#	Number	Sample	Analysis	Volume	Notes
1	3961 2291	science Lab	S	75 L	5min @ 15LPM
2	3961 2276	classroom 260			
3	3961 2274	classroom 245			
4	3961 2278	classroom 261			
5	3961 2271	classroom 150			
6	3961 2284	classroom 110			
7	3961 2285	Teacher's Lounge - Large			
8	3961 2290	Outside Ambient Air			
9					
10					
11					
12					
13					
14					
15					
16					

Released by: Paul Matuszko	<i>Paul Matuszko</i>	Date: 8/21/25	Received By: <i>[Signature]</i>	Date: 8/22
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