The Scott Lawson Group, Ltd.
Environmental, Health & Safety Consultants

January 25, 2012

Mr. Peter Barbuto, Facilities Manager
School Administrative Unit No. 15
Hooksett School District
90 Farmer Road
Hooksett, New Hampshire 03106

Re: Indoor Air Quality Survey – Auburn Village School
SLGL File Number 11-1044

Dear Mr. Barbuto:

On January 3, 2012, *The Scott Lawson Group, Ltd. (SLGL)* conducted a limited Indoor Air Quality (IAQ) Survey for School Administration Unit No. 15 (SAU #15) at the Auburn Village School located at 11 Eaton Road in Auburn, New Hampshire. The objective of the Survey was to further evaluate the indoor environment for IAQ issues following our initial survey in November of last year. The IAQ Survey was accomplished by conducting visual observations of the area, the collection of air samples for Fungi, and the use of a direct-reading instrument to collect spot readings for Carbon dioxide (CO_2).

During the survey, *SLGL* collected five (5) Air-O-Cell® samples within the school, one (1) outside the building (for comparison purposes), and an analytical blank (for quality control purposes) for the evaluation of total airborne fungal spore concentrations. As the samples were collected during the cold winter months, the outside samples were lower than they would typically be during other times of the year.

All occupied buildings require a supply of outdoor air. As outdoor air is drawn in, indoor air is exhausted or allowed to escape, removing air contaminants. Previous testing indicated that there was insufficient ventilation in the tested areas, due to exhaust fans not functioning properly (not turned on, or no ventilation units serviced the area). Based on this information, facility maintenance staff, inspected, adjusted, and repaired existing ventilation systems as feasible to remedy this situation.

Testing conducted on January 3, 2012, revealed that in most tested areas the improvements to the ventilation system resulted in a decrease of CO_2, a good indicator of air circulation. Analysis of the air samples indicate that airborne Fungi levels are within normal/background levels, and do not present a concern to the health of staff/occupants.

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Air Samples – Total Spore Counts with Predominant Genus Identification:

Resampling of Portable Classrooms P5 and P6, and Modular Classrooms M1 and M2 was also included in this survey. Each sample was collected by drawing air through an Air-O-Cell sampling cassette. Analysis of the Air-O-Cell cassettes (with count and identification by Predominant Genus) was used to determine total airborne viable and non-viable Fungi spores. All Fungi are considered to be potentially allergenic. (The term "genus" refers to the particular "family" of Fungi or Bacteria, and there are individual species within each genus.) The following table compares airborne spore levels on November 15, 2011, sampled with no ventilation running, and January 3, 2012, with ventilation systems in operation.

TABLE I - Spore Count Comparison

Sample Location	**Total fungal Spore Count (Count/m³) 11/15/11**	**Predominant Genus(s) 11/15/11**	**Total fungal Spore Count (Count/m³) 1/3/12**	**Predominant Genus(s) 1/3/12**
P-5	2,293	*Aspergillus/Penicillium*-like (1,120) Basidiospores (533)	None detected	____
P-6	Not Tested	------	53	Basidiospores (53)
M-2	800	*Aspergillus/Penicillium*-like (320) Basidiospores (213)	None detected	____
M-1	587	*Aspergillus/Penicillium*-like (320) Basidiospores (107) *Cladosporium* (107)	107	Myxomycetes/ *Periconia*/smuts (107)
Maintenance Office	Not Tested	-----	160	Myxomycetes/ *Periconia*/smuts (53) Ascospores (53)
Exterior	6,827	Basidiospores (5,333) Ascospores (853) *Aspergillus/Penicillium*-like (427)	640	Basidiospores (267) *Cladosporium (267)*

Data Logging Instrument, Carbon dioxide Readings:

Data collected with the TSI Q-TRAK documented CO_2 levels in selected areas of the school. Studies indicate that CO_2 is an excellent surrogate indicator of indoor air quality. Since CO_2 is given off by humans when exhaling, its levels in the air provide a good indication of the quality of air circulation and how effectively the ventilation system, if present, is diluting and removing pollutants from the air. It must be noted that it is (generally) not necessarily the concentration of CO_2 itself that is of concern in non-industrial settings, but rather it is the levels of CO_2 exceeding 1,000 parts per million (1,000 ppm), which are indicative of inadequate fresh/outdoor air introduction - or under-ventilation.

The following table compares CO_2 levels on November 15, 2011, with no ventilation running, and January 3, 2012, with ventilation system in operation.

TABLE II - CO_2 Comparison

Sample Location	CO^2 (PPM) 11/15/11	Ventilation System in Operation (Y/N)	CO^2 (PPM) 01/03/12	Ventilation System in Operation (Y/N)
P-5	1,512	N	665	Y
P-6	Not Tested	N	631	Y
M-1	1,608	N	1,039	Y
M-2	1,590	N	439	Y
101	1,911	N	1,200	Y
Special Ed Office	1,704	N	745	Y
Main Office	1,143	N	645	Y
Library	1,412	N	1,116	Y
115	Not Tested	N/A	2,120	N
126	1,442	N	1,087	Y

Sample Location	CO^2 (PPM) 11/15/11	Ventilation System in Operation (Y/N)	CO^2 (PPM) 01/03/12	Ventilation System in Operation (Y/N)
201	1,056	Window Open	973	Y
205	1,415	N	1,082	N
Exterior	390	N/A	195	N/A

The sampling period was from 11:05 am to 1:30 pm on 11/15/11 and the sampling period was from 12:35 pm to 1:40 pm on 1/3/12.

ANSI/ASHRAE standard 62-1989 recommends that 1,000 ppm of CO_2 be utilized as a value not to be exceeded, to ensure adequate fresh/outdoor air introduction and dilution of indoor air pollutants.

Controlling the source of contaminants is fundamental in any IAQ strategy. The latest round of sampling with the ventilation system in operation, clearly indicates that ventilation of the area is one way to control contaminants, in this case microbial spores and CO_2. Both the quantity and quality of ventilation air necessary to assure adequate dilution of contaminants must be considered when evaluating air quality. When using dilution as a IAQ solution, the air exchange must be balanced to allow occupant comfort and still not allow for contaminants to accumulate.

In areas where dilution (increasing the amount of fresh air to total air) is not feasible, and/or adequate, another option is air cleaning. Air cleaning is most effective when used in conjunction with ventilation. Air cleaning equipment intended to provide better air quality must be properly selected and designed for the particular contaminant of concern. Once installed it must be properly maintained, and maintenance requirements must be considered in selection of the equipment.

Successful mitigation of IAQ problems requires the involvement of building management, facility maintenance, housekeeping, and staff. All must be educated about the cause(s) of IAQ problems and about the actions that are being taken or avoided to prevent recurrence of the problems. A buildings indoor air quality is the result of the decisions and actions of a wide variety of individuals. Design of the buildings heating, ventilation, air conditioning system, contaminant sources, and air-cleaning efficiency all play roles, as do the cooperation of staff and maintenance in the operation of these systems. Microbial Spore and CO_2 levels clearly were reduced in most areas with the ventilation system in operation. *SLGL* recommends that all ventilation systems be reviewed and maintained in accordance with manufacturers' recommendations.

Thank you for providing *The Scott Lawson Group, Ltd.* with the opportunity to assist you with this project. We enjoyed working with on this project and would welcome the opportunity to work with you again. We trust that you will find everything in order; however, should you have any questions or comments, please feel free to contact me at your earliest convenience.

Sincerely,

The Scott Lawson Group, Ltd.

Stephen McPherson SC

Stephen McPherson
Senior Safety & Health Professional
Member Indoor Air Quality Association (#7954), Associated Member ACGIH (305730-00)

Enclosures

WARRANTY

The conclusions and recommendations contained in this report are based on information available to *SLGL* as of January 3, 2012. *SLGL* provides no warranties on information provided by third parties and contained herein. Data compiled were in accordance with *SLGL's* approved scope of services and should not be construed beyond their limitations. Any interpretations or use of this report other than those expressed herein are not warranted. The use, partial use, or duplication of this report without the expressed written consent of *The Scott Lawson Group, Ltd.*, is strictly prohibited.

APPENDIX A

ANALYTICAL RESULTS

The Scott Lawson Group, Ltd.
Environmental, Health & Safety Consultants
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(603) 228-3610 / (800) 645-7674 / Fax (603) 228-3871

Client: SAU #15
90 Farmer Road
Hooksett, NH 03106
SLGL Job #: 11-1044
Client Project: Auburn Village School
Report Date: January 6, 2012
Date Sampled: January 3, 2012
Date Received: January 4, 2012
Collected by: SRM
Analyzed by: NEF, #01040036

PAN AMERICAN AEROBIOLOGY CERTIFICATION BOARD
PAACB
Certified Spore Analyst

Analytical Results

Lab Number:	294571	294572	294573
Sample Identification:	1-3-12-11-1044-A01, Area, background, exterior- rear parking lot by portables	1-3-12-11-11-1044-A02, Area, background, Classroom P-6	1-3-12-11-11-1044-A03, Area, background, Classroom P-5
Analysis:	Fungi Enumeration & Identification - Direct Examination	Fungi Enumeration & Identification - Direct Examination	Fungi Enumeration & Identification - Direct Examination
Methodology:	SLGL-3067	SLGL-3067	SLGL-3067
Sample Media:	Air-O-Cell	Air-O-Cell	Air-O-Cell
Debris Rating:	2	2	2
Air Volume (L):	75.0	75.0	75.0
Minutes:	5	5	5
Date Analyzed:	January 6, 2012	January 6, 2012	January 6, 2012

Mold/Fungi Type	Raw Count	Count/m^3	Raw Count	Count/m^3	Raw Count	Count/m^3
Alternaria						
Ascospores	1	53				
****Aspergillus/Penicillium-** like						
Basidiospores	5	267	1	53		
Bipolaris/Drechslera -like	1	53				
Botrytis						
Chaetomium						
Cladosporium	5	267				
Curvularia						
Epicoccum						
Fusarium						
Myxomycetes/*Periconia* /smuts						
Nigrospora						
Oidium/Erysiphe/Peronospora						
Phoma						
Pithomyces						
rusts						
Spegazzinia						
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
unknown/unidentified						
hyphal fragments						
Total fungal spores and fragments:	12	640	1	53	< 1	< 53
Limit of Detection:	1	53	1	53	1	53
Comments:					None detected	

TNTC: Too numerous to count
<: Less Than
>: Greater Than
Count/m3: Count per meter cubed
PAACB: Pan-American Aerobiology Certification Board
Detection Limit: The detection limit is equal to one fungal spore or hyphal fragment.
**: *Aspergillus* and *Penicillium* spores (and others such as *Paecilomyces*) are small and round with few distinguishing characteristics. They cannot be distinguished by this method.

*: No analytical field blank submitted with associated sample(s).

Background Debris: Background debris is an indication of the amount of non-microbial debris present on the slide and is rated on a scale of 1 to 5:

Debris Load of 1: <10% debris present. Counts not affected.
Debris Load of 2: 11-25% debris present. Counts not affected.
Debris Load of 3: 25-75% debris present. Counts may be underestimated.
Debris Load of 4: 76-90% debris present. Counts underestimated.
Debris Load of 5: >90% debris present. Counts could not be determined, sample overloaded.

Reviewed by: Helen M Enzle

Approved By: Norman E Fletcher
Norman Fletcher, Lab Manager

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PAN AMERICAN AEROBIOLOGY CERTIFICATION BOARD PAACB Certified Spore Analyst

Analytical Results

Lab Number:	294574	294575	294576
Sample Identification:	1-3-12-11-1044-A04, Area, background, Classroom M-2	1-3-12-11-11-1044-A05, Area, background, Classroom M-1	1-3-12-11-11-1044-A06, Area, background, Maintenance office
Analysis:	Fungi Enumeration & Identification - Direct Examination	Fungi Enumeration & Identification - Direct Examination	Fungi Enumeration & Identification - Direct Examination
Methodology:	SLGL-3067	SLGL-3067	SLGL-3067
Sample Media:	Air-O-Cell	Air-O-Cell	Air-O-Cell
Debris Rating:	2	3	3
Air Volume (L):	75.0	75.0	75.0
Minutes:	5	5	5
Date Analyzed:	January 6, 2012	January 6, 2012	January 6, 2012

Mold/Fungi Type	Raw Count	Count/m³	Raw Count	Count/m³	Raw Count	Count/m³
Alternaria						
Ascospores					1	53
****Aspergillus/Penicillium-** like						
Basidiospores						
Bipolaris/Drechslera -like						
Botrytis						
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Myxomycetes/*Periconia* /smuts			2	107	1	53
Nigrospora						
Oidium/Erysiphe/Peronospora						
Phoma						
Pithomyces						
rusts						
Spegazzinia						
Stachybotrys						
Stemphylium						
Torula					1	53
Ulocladium						
unknown/unidentified						
hyphal fragments						
Total fungal spores and fragments:	< 1	< 53	2	107	3	160
Limit of Detection:	1	53	1	53	1	53
Comments:	None detected					

TNTC: Too numerous to count

<: Less Than

>: Greater Than

Count/m3: Count per meter cubed

PAACB: Pan-American Aerobiology Certification Board

Detection Limit: The detection limit is equal to one fungal spore or hyphal fragment.

**: *Aspergillus* and *Penicillium* spores (and others such as *Paecilomyces*) are small and round with few distinguishing characteristics. They cannot be distinguished by this method.

*: No analytical field blank submitted with associated sample(s).

Background Debris: Background debris is an indication of the amount of non-microbial debris present on the slide and is rated on a scale of 1 to 5:

Debris Load of 1: <10% debris present. Counts not affected.

Debris Load of 2: 11-25% debris present. Counts not affected.

Debris Load of 3: 25-75% debris present. Counts may be underestimated.

Debris Load of 4: 76-90% debris present. Counts underestimated.

Debris Load of 5: >90% debris present. Counts could not be determined, sample overloaded.

Reviewed by: Helen M Enzel

Approved By: Norman E Fletcher

Norman Fletcher, Lab Manager

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Analyzed by: NEF, #01040036

PAN AMERICAN AEROBIOLOGY CERTIFICATION BOARD PAACB Certified Spore Analyst

Analytical Results

Lab Number:	294577		
Sample Identification:	1-3-12-11-1044-A07, Analytical field blank		
Analysis:	Fungi Enumeration & Identification - Direct Examination		
Methodology:	SLGL-3067		
Sample Media:	Air-O-Cell		
Debris Rating:	1		
Air Volume (L):	0.0		
Minutes:	0		
Date Analyzed:	January 6, 2012		

Mold/Fungi Type	Raw Count	Count/m³				
Alternaria						
Ascospores						
***Aspergillus/Penicillium*- like						
Basidiospores						
Bipolaris/Drechslera -like						
Botrytis						
Chaetomium						
Cladosporium						
Curvularia						
Epicoccum						
Fusarium						
Myxomycetes/*Periconia* /smuts						
Nigrospora						
Oidium/Erysiphe/Peronospora						
Phoma						
Pithomyces						
rusts						
Spegazzinia						
Stachybotrys						
Stemphylium						
Torula						
Ulocladium						
unknown/unidentified						
hyphal fragments						
Paecilomyces						
Total fungal spores and fragments:	< 1	----				
Limit of Detection:	1	----				
Comments:	None detected					

TNTC: Too numerous to count

<: Less Than

>: Greater Than

Count/m3: Count per meter cubed

PAACB: Pan-American Aerobiology Certification Board

Detection Limit: The detection limit is equal to one fungal spore or hyphal fragment.

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Debris Load of 4: 76-90% debris present. Counts underestimated.

Debris Load of 5: >90% debris present. Counts could not be determined, sample overloaded.

Reviewed by: Helen M Erzen

Approved By: Norman E Fletcher
Norman Fletcher, Lab Manager

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Submitting Co.: SAU 15

SLGL Job #: 11-1044

Address:

Client Project: Auburn Village School

Client PO:

Attention:

Sampled By: SMC

Phone: Fax:

email:

Turnaround Time (select one)
[ ] 3 hours* [ ] 6-8 hours* [ ] 24 hours* [ ] 48 hours* [ ] 72 hours*
[X] 5 days [ ] 10 days [ ] Weekend [ ] Other: _____

Not available for all tests. Schedule rush and weekend tests in advance.

Sample Matrix Type (select one)
[X] Air [ ] Bulk [ ] Soil [ ] Water, drinking or waste
[ ] Aqueous [ ] Oil [ ] Solid [ ] Wipe
[ ] Agar (biostrip) [ ] Paint [ ] Swab [ ] Wipe composite
[ ] Agar (plate) [ ] Sludge [ ] Tape Lift [ ] Other: _____

Comments:

All samples on this form should be of the SAME matrix type. Use additional forms as needed.

Samples received in good condition? [ ]Yes [ ]No

SLGL Lab #	Sample Identification	Analysis	Date Sampled	Time	Media/ Container	Preservative	4°C	Swab/Wipe Area Units: ____	Air Volume (L)	Minutes
294571	1-3-12-11-1044 A01	Fungal CT + FD	1/3	T	Air-O-Cell	—		—	75	5
572	A02					—			75	5
573	A03					—		—	75	5
574	A04					—			75	5
575	A05					—		—	75	5
576	A06					—			75	5
577	A07					—		—	~~0~~	~~0~~

Sample Collection and Custody Information

Samples Shipped Via: [ ] FedEx [ ] UPS [ ] DHL [ ] US Mail [ ] Drop Box [ ] Drop Off [ ] Other

Relinquished By:	Date/Time:	Received By:	Date/Time:
SMC 1-3-12 1500		Helen M Erzen	1/4/12 9:00
Relinquished By:	Date/Time:	Received By:	Date/Time:

A Note to Customer: by signing and relinquishing your samples to the laboratory, you agree with the terms and conditions found on the back of this Chain of Custody Form.

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Submitting Co.: SAU 15
SLGL Job #: 11-1044
Address:
Client Project: Auburn Village School
Client PO:
Attention:
Sampled By: SMC
Phone: Fax:
email:

Turnaround Time (select one): [ ] 3 hours* [ ] 6-8 hours* [ ] 24 hours* [ ] 48 hours* [ ] 72 hours* [X] 5 days [ ] 10 days [ ] Weekend [ ] Other: _____

Not available for all tests. Schedule rush and weekend tests in advance.

Sample Matrix Type (select one): [X] Air [ ] Bulk [ ] Soil [ ] Water, drinking or waste [ ] Aqueous [ ] Oil [ ] Solid [ ] Wipe [ ] Agar (biostrip) [ ] Paint [ ] Swab [ ] Wipe composite [ ] Agar (plate) [ ] Sludge [ ] Tape Lift [ ] Other: _____

Comments:

All samples on this form should be of the SAME matrix type. Use additional forms as needed.

Samples received in good condition? [ ]Yes [ ]No

SLGL Lab #	Sample Identification	Analysis	Date Sampled	Time	Media/ Container	Preservative	4°C	Swab/Wipe Area Units: ____	Air Volume (L)	Minutes
24571	1-3-12-11-1044 A01	Fungal CT + TD	1/3	T	Air-O-Cell				75	5
572	A02								75	5
573	A03								75	5
574	A04								75	5
575	A05								75	5
576	A06								75	5
577	A07								~~0~~	~~0~~

Sample Collection and Custody Information

Samples Shipped Via: [ ] FedEx [ ] UPS [ ] DHL [ ] US Mail [ ] Drop Box [ ] Drop Off [ ] Other

Relinquished By:	Date/Time:	Received By:	Date/Time:
SMC 1-3-12 1500		Helen Ezzen	1/4/12 900
Relinquished By:	Date/Time:	Received By:	Date/Time:

A Note to Customer: by signing and relinquishing your samples to the laboratory, you agree with the terms and conditions found on the back of this Chain of Custody Form.