



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Blair G. Ewing Center
Date of Test Report	4/6/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	58
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.5 pCi/L

Project Status:
Initial testing completed; no further action needed.



April 6, 2022

Brian T. Croyle, PG, CHMM
Environmental Specialist
Montgomery County Public Schools
Gaithersburg, MD 20879

Re: **Radon Testing Services**
KCI Job # 122108316

Location: Blair G. Ewing Center
14501 Avery Rd.
Rockville, MD 20853

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Blair G. Ewing Center, located at 14501 Avery Rd. Rockville, MD 20853 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Proficiency Program (NRPP) Radon Measurement Specialist (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from <https://www.montgomeryschoolsmd.org> or www.epa.gov/radon.

KCI visited the site on February 7, 2022 and deployed sixty seven (67) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI also included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on February 10, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc.

is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

These tests represent:

- Follow-up to post-mitigation biennial testing.

These tests were conducted to:

- Confirm the success of the mitigation system(s).

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility’s HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room during the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the 30s and high temperatures ranged from the mid 30s to the mid 50s Fahrenheit. Maximum sustained winds ranged from 3-12 miles per hour. Average humidity was around 23% with 0.1 inches of precipitation (rain) was recorded during testing period.

Results:

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Sampling locations and associated test kit identification numbers and relevant field observations are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	None	N/A
<4.0 pCi/L	See Attachment B	

Quality Control Samples	
Results of Blank Canisters:	The office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L.
Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
Spike Sample Analysis:	The Spike Sample analysis results indicate the laboratory is operating within statistical control limits.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 891-1769.

Sincerely,



Tyler P. McCleaf
Radon Measurement Provider
#111004 RT
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-3, Radon Test Summary Spreadsheets
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Blair G. Ewing Center		
Test Period: 02/7/2022 - 02/10/2022		
Kit Number	Room / Area	Result
11114547	A1	0.8
11114537	A10	0.7
11114535	A11	0.9
11114548	A12	0.8
11114546	A14	0.9
11114534	A14A COMPUTER	0.8
11114561	A15	< 0.3
11114550	A16	0.9
11114551	A17	< 0.3
11114552	A17A	0.8
11114553	A17B	0.7
11114554	A18	0.8
11114560	A19	0.9
11114538	A2	1.3
11114555	A20	0.6
11114539	A3	< 0.3
11114541	A5	1.6
11114542	A5	2.5
11114540	A6	0.7
11114545	A7	1.1
11114575	AB1	< 0.3
11114591	AB1 STAGE	< 0.3
11114590	AB2	< 0.3
11114599	BS HEALTH ROOM	< 0.3
11114595	BS NURSE OFFICE	< 0.3
11114598	BS NURSE OFFICE	< 0.3
11114585	BS OFFICE RC10	0.7
11114549	COMMUNITY CONFERENCE ROOM	0.6
11114536	CONFERENCE ROOM A	< 0.3
11114559	CONFERENCE ROOM C	0.6
11114544	DINING ROOM	1.0
11114593	GYM	< 0.3
11114594	GYM	0.5
11114600	GYM OFFICE	< 0.3
11114533	KITCHEN OFFICE	1.7
11114563	L10	< 0.3
11114584	L11	< 0.3
11114583	L11 OFFICE	< 0.3
11114562	L12	0.9
11114568	L12 OFFICE	0.7
11114573	L13 HEALTH	0.6
11114574	L13 MED ROOM	< 0.3

Table 1- Radon Testing Results		
Blair G. Ewing Center		
Test Period: 02/7/2022 - 02/10/2022		
Kit Number	Room / Area	Result
11114570	L14	< 0.3
11114588	L15	< 0.3
11114571	L16 COPY	< 0.3
11114572	L16 COPY	< 0.3
11114569	L16 MAIN OFFICE	0.7
11114581	L17	< 0.3
11114580	L17A	0.5
11114578	L3	< 0.3
11114566	L4	< 0.3
11114579	L5	0.6
11114567	L6	< 0.3
11114589	L7	0.7
11114587	L7 OFFICE	0.6
11114564	L8	< 0.3
11114565	L8 OFFICE	< 0.3
11114582	L9	< 0.3
11114586	MEDIA BREAK ROOM RC8	0.7
11114576	MEDIA CENTER	0.6
11114577	MEDIA CENTER	0.5
11114592	MEDIA CENTER OFFICE RC7	< 0.3
11114543	MULTIPURPOSE ROOM	0.9
11114556	MULTIPURPOSE ROOM	0.7
11114557	PRINCIPALS OFFICE	< 0.3
11114558	PRINCIPALS OFFICE	1.1
11114532	STAFF LOUNGE	0.9

Table 2- Radon Testing Results			
Blair G. Ewing Center			
Test Period: 02/7/2022 - 02/10/2022			
Kit Number	QC Type	Room / Area	Result
11114539	D	A3	< 0.3
11114558	D	Principals Office	1.1
11114557	FB	Principals Office	< 0.3
11114556	D	Multipurpose Room	0.7
11114571	D	L16 Copy	< 0.3
11114572	FB	L16 Copy	< 0.3
11114581	D	L17	< 0.3
11114599	D	BS Health Room	< 0.3
11114598	FB	BS Nurse Office	< 0.3
11113481	OB	OFFICE BLANK	< 0.3
11113483	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

- Radon test result report for:

BLAIR G. EWING CENTER

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114547	A1	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	0.8 ± 0.4	2022-02-14
11114537	A10	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	0.7 ± 0.3	2022-02-14
11114535	A11	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	0.9 ± 0.3	2022-02-14
11114548	A12	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	0.8 ± 0.4	2022-02-15
11114546	A14	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	0.9 ± 0.3	2022-02-14
11114534	A14A COMPUTER	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	0.8 ± 0.4	2022-02-14
11114561	A15	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114550	A16	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.9 ± 0.4	2022-02-14
11114551	A17	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114552	A17A	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.8 ± 0.3	2022-02-14
11114553	A17B	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.7 ± 0.4	2022-02-14
11114554	A18	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.8 ± 0.3	2022-02-14
11114560	A19	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.9 ± 0.3	2022-02-14
11114538	A2	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	1.3 ± 0.4	2022-02-14
11114555	A20	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.6 ± 0.3	2022-02-14
11114539	A3	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114542	A5	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	2.5 ± 0.4	2022-02-14
11114541	A5	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	1.6 ± 0.4	2022-02-15
11114540	A6	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	0.7 ± 0.4	2022-02-14
11114545	A7	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	1.1 ± 0.3	2022-02-14
11114575	AB1	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114591	AB1 STAGE	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114590	AB2	2022-02-07 @ 1:00 pm	2022-02-10 @ 11:00 am	< 0.3	2022-02-14
11114599	BS HEALTH ROOM	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114595	BS NURSE OFFICE	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114598	BS NURSE OFFICE	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114585	BS OFFICE RC10	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	0.7 ± 0.4	2022-02-14
11114549	COMMUNITY CONFERENCE ROOM	2022-02-07 @ 11:00 am	2022-02-10 @ 9:00 am	0.6 ± 0.3	2022-02-14
11114536	CONFERENCE ROOM A	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114559	CONFERENCE ROOM C	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.6 ± 0.3	2022-02-14
11114544	DINING ROOM	2022-02-07 @ 11:00 am	2022-02-10 @ 9:00 am	1.0 ± 0.4	2022-02-14
11114593	GYM	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114594	GYM	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	0.5 ± 0.3	2022-02-14
11114600	GYM OFFICE	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114533	KITCHEN OFFICE	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	1.7 ± 0.4	2022-02-14
11114563	L10	2022-02-07 @ 12:00 pm	2022-02-10 @ 11:00 am	< 0.3	2022-02-14
11114584	L11	2022-02-07 @ 12:00 pm	2022-02-10 @ 11:00 am	< 0.3	2022-02-14

Radon test result report for:**BLAIR G. EWING CENTER**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114583	L11 OFFICE	2022-02-07 @ 12:00 pm	2022-02-10 @ 11:00 am	< 0.3	2022-02-15
11114562	L12	2022-02-07 @ 12:00 pm	2022-02-10 @ 11:00 am	0.9 ± 0.4	2022-02-14
11114568	L12 OFFICE	2022-02-07 @ 12:00 pm	2022-02-10 @ 11:00 am	0.7 ± 0.3	2022-02-14
11114573	L13 HEALTH	2022-02-07 @ 12:00 pm	2022-02-10 @ 9:00 am	0.6 ± 0.3	2022-02-14
11114574	L13 MED ROOM	2022-02-07 @ 12:00 pm	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114570	L14	2022-02-07 @ 12:00 pm	2022-02-10 @ 11:00 am	< 0.3	2022-02-14
11114588	L15	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114571	L16 COPY	2022-02-07 @ 12:00 pm	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114572	L16 COPY	2022-02-07 @ 12:00 pm	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114569	L16 MAIN OFFICE	2022-02-07 @ 12:00 pm	2022-02-10 @ 9:00 am	0.7 ± 0.3	2022-02-14
11114581	L17	2022-02-07 @ 12:00 pm	2022-02-10 @ 11:00 am	< 0.3	2022-02-14
11114580	L17A	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	0.5 ± 0.3	2022-02-14
11114578	L3	2022-02-07 @ 12:00 pm	2022-02-10 @ 11:00 am	< 0.3	2022-02-14
11114566	L4	2022-02-07 @ 11:00 am	2022-02-10 @ 11:00 am	< 0.3	2022-02-14
11114579	L5	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	0.6 ± 0.4	2022-02-14
11114567	L6	2022-02-07 @ 11:00 am	2022-02-10 @ 11:00 am	< 0.3	2022-02-14
11114589	L7	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	0.7 ± 0.3	2022-02-14
11114587	L7 OFFICE	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	0.6 ± 0.3	2022-02-14
11114564	L8	2022-02-07 @ 11:00 am	2022-02-10 @ 11:00 am	< 0.3	2022-02-14
11114565	L8 OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 11:00 am	< 0.3	2022-02-15
11114582	L9	2022-02-07 @ 12:00 pm	2022-02-10 @ 11:00 am	< 0.3	2022-02-14
11114586	MEDIA BREAK ROOM RC8	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	0.7 ± 0.3	2022-02-14
11114577	MEDIA CENTER	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	0.5 ± 0.3	2022-02-14
11114576	MEDIA CENTER	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	0.6 ± 0.3	2022-02-14
11114592	MEDIA CENTER OFFICE RC7	2022-02-07 @ 1:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114543	MULTIPURPOSE ROOM	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.9 ± 0.4	2022-02-14
11114556	MULTIPURPOSE ROOM	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.7 ± 0.3	2022-02-15
11114557	PRINCIPALS OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114558	PRINCIPALS OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	1.1 ± 0.4	2022-02-15
11114532	STAFF LOUNGE	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	0.9 ± 0.3	2022-02-14

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204186

NOMINAL Conditions: Radon Conc 25.8 pCi/L Rel. Hum 50.1 % Temp. 70.9 F

Date Start: 2/18/22 Date Stop: 2/21/22 Date Start: _____ Date Stop: _____

Time Start: 0911 Time Stop: 0911 Time Start: _____ Time Stop: _____

Device No.'s: (3) Char Bags - Device No.'s: _____

11113484, 1112998, 20107126 _____

23 Right

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)
Background = 7 μ R/h Elevation = 820 ft**

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (25.7 pCi/L).

Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11113484	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK1		1	27.9
11122998	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK2		1	26.0
20107126	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK3		1	27.6



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – February 2022 Schools

Name of Schools:

1. Lincoln Center
2. Wootton HS
3. Rockville HS
4. Richard Montgomery HS
5. Rocking Horse Rd. Center
6. Blair G. Ewing Center
7. Twinbrook ES
8. Rock Creek Valley ES
9. Luxmanor ES
10. Tilden MS

	Date	Initials
Radon Test Kits Deployed	02/07/2022	
Radon Test Kits Collected	02/10/2022	
Radon Test Kits Shipped to Lab*	02/10/2022	
Radon Test Kits Received by Lab*	02/14/2022	

*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759