



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	John T. Baker Middle School
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	64
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.4 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: John T. Baker MS
25400 Oak Dr.
Damascus, MD 20872

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 John T. Baker MS, located at 25400 Oak Dr. Damascus, MD 20872 (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 14, 2022 and deployed seventy four (74) 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 17, 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 20s and high temperatures ranged from the high 30s to the high 40s Fahrenheit. Maximum sustained winds ranged from 5-18 miles per hour. Average humidity was around 15% with 1.5 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		
John T. Baker MS		
Test Period: 02/14/2022 - 02/17/2022		
Kit Number	Room / Area	Result
11122339	100	< 0.3
11122352	101	< 0.3
11122354	101	< 0.3
11122353	102	0.5
11122351	103	0.5
11122349	105	< 0.3
11122342	107	< 0.3
11122379	109	< 0.3
11122380	109	< 0.3
11122372	111	< 0.3
11122365	113	< 0.3
11122377	115	0.9
11122362	119	1.5
11122350	125	< 0.3
11122340	130	0.8
11122345	131	0.8
11122346	131	< 0.3
11122343	132	< 0.3
11122344	132	< 0.3
11122341	133	1.2
11122347	134	< 0.3
11122320	201	< 0.3
11122324	204	< 0.3
11122304	205	< 0.3
11122327	205	< 0.3
11122328	206	< 0.3
11122323	207	< 0.3
11122326	211	< 0.3
11122329	212	< 0.3
11122332	214	< 0.3
11122325	225	< 0.3
11122331	225	< 0.3
11122330	231	< 0.3
11122348	107 OFFICE	< 0.3
11122358	117A	2.4
11122357	117B	2.1
11122355	121A	< 0.3
11122356	121B	< 0.3
11122321	201S	< 0.3
11122322	201S	< 0.3
11122308	ASSISTANTPRINCIPAL	< 0.3
11122370	AUX GYM	< 0.3

Table 1- Radon Testing Results		
John T. Baker MS		
Test Period: 02/14/2022 - 02/17/2022		
Kit Number	Room / Area	Result
11122360	BOYS LOCKER ROOM	0.9
11122367	BOYS LOCKER ROOM OFFICE	0.8
11122368	BOYS LOCKER ROOM OFFICE	< 0.3
11122359	BOYSLOCKER ROOM	0.8
11122361	BUILDING SERVICES	0.8
11122337	CAFETERIA	< 0.3
11122338	CAFETERIA	< 0.3
11122336	CAFETERIA OFFICE KITCHEN	0.7
11122310	COUNSELOR	< 0.3
11122314	COUNSELOR	0.6
11122315	COUNSELOR	< 0.3
11122316	COUNSELOR	< 0.3
11122317	COUNSELOR	< 0.3
11122318	COUNSELOR	< 0.3
11122363	GIRLS LOCKER ROOM	< 0.3
11122364	GIRLS LOCKER ROOM OFFICE	0.7
11122375	GYM	0.8
11122376	GYM	< 0.3
11122333	HEALTH ROOM	< 0.3
11122334	HEALTH ROOM	< 0.3
11122302	MAIN OFFICE PRINCIPAL	< 0.3
11122306	MAIN OFFICE SECURITY	< 0.3
11122305	MAIN OFFICE ZZZ	< 0.3
11122307	MAIN OFFICE ASSISTANT PRINCIPAL	< 0.3
11122371	MATH OFFICE	< 0.3
11122311	MEDIA CENTER	< 0.3
11122312	MEDIA CENTER	< 0.3
11122309	MEDIA CENTER CLASSROOM	< 0.3
11122313	MEDIA OFFICE	< 0.3
11122319	MEDIA OFFICE	0.6
11122301	SECURITY MAIN OFFICE	< 0.3
11122369	SPEECH OFFICE	< 0.3

Table 2- Radon Testing Results			
John T. Baker MS			
Test Period: 02/14/2022 - 02/17/2022			
Kit Number	QC Type	Room / Area	Result
11122313	D	Media office	< 0.3
11122322	D	201S	< 0.3
11122304	FB	205	< 0.3
11122325	D	225	< 0.3
11122346	FB	131	< 0.3
11122344	D	132	< 0.3
11122354	D	101	< 0.3
11122360	D	Boys locker room	0.9
11122368	FB	Boys locker room office	< 0.3
11122380	D	109	< 0.3
11107385	OB	OFFICE BLANK	< 0.3
11123161	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
JOHN T BAKER MS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11122339	100	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122354	101	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122352	101	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122353	102	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	0.5 ± 0.3	2022-02-21
11122351	103	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	0.5 ± 0.3	2022-02-21
11122349	105	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122342	107	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122348	107 OFFICE	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122380	109	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122379	109	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122372	111	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122365	113	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122377	115	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	0.9 ± 0.3	2022-02-21
11122358	117A	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	2.4 ± 0.4	2022-02-21
11122357	117B	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	2.1 ± 0.4	2022-02-21
11122362	119	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	1.5 ± 0.3	2022-02-21
11122355	121A	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122356	121B	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122350	125	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122340	130	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	0.8 ± 0.3	2022-02-21
11122346	131	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122345	131	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	0.8 ± 0.3	2022-02-21
11122343	132	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122344	132	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122341	133	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	1.2 ± 0.3	2022-02-21
11122347	134	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122320	201	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122322	201S	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122321	201S	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122324	204	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122327	205	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122304	205	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122328	206	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122323	207	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122326	211	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122329	212	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122332	214	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21

Radon test result report for:
JOHN T BAKER MS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11122325	225	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122331	225	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122330	231	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122308	ASSISTANTPRINCIPAL	2022-02-14 @ 9:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122370	AUX GYM	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122360	BOYS LOCKER ROOM	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	0.9 ± 0.3	2022-02-21
11122368	BOYS LOCKER ROOM OFFICE	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122367	BOYS LOCKER ROOM OFFICE	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	0.8 ± 0.3	2022-02-21
11122359	BOYSLOCKER ROOM	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	0.8 ± 0.3	2022-02-21
11122361	BUILDING SERVICES	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	0.8 ± 0.3	2022-02-21
11122337	CAFETERIA	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122338	CAFETERIA	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122336	CAFETERIA OFFICE KITCHEN	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	0.7 ± 0.3	2022-02-21
11122315	COUNSELOR	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122318	COUNSELOR	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122314	COUNSELOR	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	0.6 ± 0.3	2022-02-21
11122316	COUNSELOR	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122310	COUNSELOR	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122317	COUNSELOR	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122363	GIRLS LOCKER ROOM	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122364	GIRLS LOCKER ROOM OFFICE	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	0.7 ± 0.3	2022-02-21
11122375	GYM	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	0.8 ± 0.3	2022-02-21
11122376	GYM	2022-02-14 @ 11:00 am	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122334	HEALTH ROOM	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122333	HEALTH ROOM	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122302	MAIN OFFICE PRINCIPAL	2022-02-14 @ 9:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122306	MAIN OFFICE SECURITY	2022-02-14 @ 9:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122305	MAIN OFFICE ZZZ	2022-02-14 @ 9:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122307	MAIN OFFICE ASSISTANT PRINCIPAL	2022-02-14 @ 9:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122371	MATH OFFICE	2022-02-14 @ 12:00 pm	2022-02-17 @ 10:00 am	< 0.3	2022-02-21
11122311	MEDIA CENTER	2022-02-14 @ 9:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122312	MEDIA CENTER	2022-02-14 @ 9:00 am	2022-02-17 @ 12:00 pm	< 0.3	2022-02-21
11122309	MEDIA CENTER CLASSROOM	2022-02-14 @ 10:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122319	MEDIA OFFICE	2022-02-14 @ 9:00 am	2022-02-17 @ 11:00 am	0.6 ± 0.3	2022-02-21
11122313	MEDIA OFFICE	2022-02-14 @ 9:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122301	SECURITY MAIN OFFICE	2022-02-14 @ 9:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21
11122369	SPEECH OFFICE	2022-02-14 @ 11:00 am	2022-02-17 @ 11:00 am	< 0.3	2022-02-21

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 -
11113484, 1112998, 20107126 Device No.'s: _____

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. Sherwood HS
2. Paint Branch HS
3. Clarksburg HS
4. Hallie Wells MS
5. Rocky Hill MS
6. Wilson Wims ES
7. John T. Baker MS
8. Clearspring ES
9. Damascus ES

	Date	Initials
Radon Test Kits Deployed	02/14/2022	
Radon Test Kits Collected	02/17/2022	
Radon Test Kits Shipped to Lab*	02/17/2022	
Radon Test Kits Received by Lab*	02/19/2022	

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