



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Somerset Elementary School
Date of Test Report	05/12/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	1
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	<0.3 pCi/L

Project Status

Current Project Status at this time: Testing completed; no further action needed



May 12, 2022

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

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

Location: Somerset Elementary School
5811 Warwick Place,
Chevy Chase, MD 20815

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 Somerset Elementary School, located at 5811 Warwick Place, Chevy Chase, MD 20815 (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 March 21, 2022 and deployed three (3) 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.

KCI sampled the following locations during this follow-up test:

1. Rooms with missing test kits from the Radon 2022 testing period (i.e. test kit was deployed but not recovered),
2. Rooms with invalidated test kits from the Radon 2022 testing period (e.g. an open window in the room or disturbed test kit),
3. Rooms which were locked/inaccessible during the Radon 2022 testing period,
4. Rooms with elevated radon results (i.e. ≥ 3.5 pCi/L),
5. Rooms previously tested for radon but not tested in Radon 2022, and
6. Additional rooms that require testing (if applicable.)

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 March 24, 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 initial testing.

These tests were conducted to:

- Evaluate radon concentrations at the facility.

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 low 40°Fs and high temperatures ranged from the low 50°Fs to the low 70°Fs. Maximum sustained winds ranged from 0-29 miles per hour. Average humidity was around 56% with 0.51 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		
Somerset ES RT		
Test Period: 03/21/2022 - 03/24/2022		
Kit Number	Room / Area	Result
11131704	32	< 0.3
11131705	32	< 0.3
11131706	32	< 0.3

Table 2- Radon Testing Results			
Somerset ES RT			
Test Period: 03/21/2022 - 03/24/2022			
Kit Number	QC Type	Room / Area	Result
11131704	D	32	< 0.3
11131706	FB	32	< 0.3
11139902	OB	OFFICE BLANK	< 0.3
11139928	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

March 28, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
SOMERSET ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11131705	32	2022-03-21 @ 10:00 am	2022-03-24 @ 11:00 am	< 0.3	2022-03-28
11131706	32	2022-03-21 @ 10:00 am	2022-03-24 @ 11:00 am	< 0.3	2022-03-28
11131704	32	2022-03-21 @ 10:00 am	2022-03-24 @ 11:00 am	< 0.3	2022-03-28

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204620

NOMINAL Conditions: Radon Conc 27.0 pCi/L Rel. Hum 50.1 % Temp. 70.0 F

Date Start: 3/18/22 Date Stop: 3/21/22 Date Start: _____ Date Stop: _____

Time Start: 0705 Time Stop: 0705 Time Start: _____ Time Stop: _____

Device No.'s: (5) Char Bags - Device No.'s: _____

11139367, 11139368, 11139371, _____

11139710, 11139717 _____

E3 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

March 30, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

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 #	Room Id	Started	Ended	pCi/L	Analyzed
11139367	SK1	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.9 \pm 2.1	2022-03-30
11139368	SK2	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	23.9 \pm 2.0	2022-03-30
11139371	SK3	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.7 \pm 2.1	2022-03-30
11139710	SK4	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	26.4 \pm 2.1	2022-03-30
11139717	SK5	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	24.6 \pm 2.0	2022-03-30

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – March 2022 Schools – Retesting

Name of Schools:

1. Rosa Parks MS
2. Poolesville ES
3. Wyngate ES
4. Seven Locks ES
5. Walt Whitman HS
6. Somerset ES
7. Rock Creek Forest ES
8. Walter Johnson HS
9. Westbrook ES
10. Westland MS
11. Farmland ES
12. College Gardens ES
13. Julius West MS
14. Robert Frost MS
15. Carl Sandburg Learning Center

	Date	Initials
Radon Test Kits Deployed	03/21/2022	BMM
Radon Test Kits Collected	03/24/2022	BMM
Radon Test Kits Shipped to Lab*	03/25/2022	BMM
Radon Test Kits Received by Lab*	03/28/2022	BMM

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



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Somerset Elementary School
Date of Test Report	2/21/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	30
# Rooms ≥ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.5 pCi/L

Project Status:

Initial testing completed; Missing or compromised samples need re-sampling



February 21, 2022

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

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

Location: Somerset Elementary School
5811 Warwick Pl.
Chevy Chase, MD 20815

Dear Mr. Croyle:

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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 January 18, 2022 and deployed thirty four (34) 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.

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

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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 40s Fahrenheit. Maximum sustained winds ranged from 7-20 miles per hour. Average humidity was around 50% with .05 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:

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Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
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ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

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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		
Somerset ES		
Test Period: 01/18/2022-01/21/2022		
Kit Number	Room / Area	Result
11106771	6	< 0.3
11106772	6	< 0.3
11106799	9	< 0.3
11106798	11	< 0.3
11106790	15	< 0.3
11106786	16	< 0.3
11106791	16	< 0.3
11106778	17	< 0.3
11106785	19	< 0.3
11106766	22	< 0.3
11106797	28	0.5
11106782	100	< 0.3
11106773	101	< 0.3
11106774	101	< 0.3
11106781	101	< 0.3
11106796	101	< 0.3
11106770	103	< 0.3
11106795	131	< 0.3
11106765	214	< 0.3
11106776	313	< 0.3
11106780	100B	< 0.3
11106788	100B	< 0.3
11106783	101B	< 0.3
11106787	101C	< 0.3
11106789	101D	< 0.3
11106784	19H	< 0.3
11106792	1A	< 0.3
11106793	ART	< 0.3
11106501	BUILDING SERVICES	< 0.3
11106509	BUILDING SERVICES	< 0.3
11106775	CAFETERIA	< 0.3
11106777	CAFETERIA	< 0.3
11106794	GYM	< 0.3
11106800	GYM	< 0.3

Table 2- Radon Testing Results			
Somerset ES			
Test Period: 01/18/22-01/21/22			
Kit Number	QC Type	Room / Area	Result
11106509	FB	Building services	< 0.3
11106791	D	16	< 0.3
11106774	D	101	< 0.3
11106781	FB	101	< 0.3
11106780	D	100b	< 0.3
11106397	OB	OFFICE BLANK	< 0.3
11106400	FB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
SOMERSET ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11106782	100	2022-01-18 @ 9:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106788	100B	2022-01-18 @ 10:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106780	100B	2022-01-18 @ 10:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106796	101	2022-01-18 @ 9:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106773	101	2022-01-18 @ 9:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106774	101	2022-01-18 @ 9:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106781	101	2022-01-18 @ 9:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106783	101B	2022-01-18 @ 10:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106787	101C	2022-01-18 @ 10:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106789	101D	2022-01-18 @ 10:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106770	103	2022-01-18 @ 10:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106798	11	2022-01-18 @ 9:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106795	131	2022-01-18 @ 10:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106790	15	2022-01-18 @ 9:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106786	16	2022-01-18 @ 9:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106791	16	2022-01-18 @ 9:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106778	17	2022-01-18 @ 9:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106785	19	2022-01-18 @ 9:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106784	19H	2022-01-18 @ 9:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106792	1A	2022-01-18 @ 8:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106765	214	2022-01-18 @ 10:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106766	22	2022-01-18 @ 11:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106797	28	2022-01-18 @ 9:00 am	2022-01-21 @ 8:00 am	0.5 ± 0.4	2022-01-26
11106776	313	2022-01-18 @ 10:00 am	2022-01-21 @ 9:00 am	< 0.3	2022-01-26
11106772	6	2022-01-18 @ 10:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106771	6	2022-01-18 @ 10:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106799	9	2022-01-18 @ 8:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106793	ART	2022-01-18 @ 8:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106509	BUILDING SERVICES	2022-01-18 @ 8:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106501	BUILDING SERVICES	2022-01-18 @ 8:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106777	CAFETERIA	2022-01-18 @ 9:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106775	CAFETERIA	2022-01-18 @ 9:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106794	GYM	2022-01-18 @ 8:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26
11106800	GYM	2022-01-18 @ 8:00 am	2022-01-21 @ 8:00 am	< 0.3	2022-01-26

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 203404

NOMINAL Conditions: Radon Conc 16.2 pCi/L Rel. Hum 28.8 % Temp. 59.9 F

Date Start: 12/24/21 Date Stop: 12/27/21 Date Start: _____ Date Stop: _____

Time Start: 0809 Time Stop: 0809 Time Start: _____ Time Stop: _____

Device No.'s: (2) Char Bags- Device No.'s: _____

9341721, 9341722

64 left

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

December 31, 2021

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

SK
MA MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (16.2 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9341721	1	2021-12-24 @ 8:00 am	2021-12-27 @ 8:00 am	11.6 \pm 0.9	2021-12-31
9341722	1	2021-12-24 @ 8:00 am	2021-12-27 @ 8:00 am	15.4 \pm 1.2	2021-12-31

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – January 2022 Schools

Name of Schools:

1. Poolesville ES
2. Rosa Parks MS
3. Seven Locks ES
4. Somerset ES
5. Thomas Pyle MS
6. Walt Whitman HS
7. Walter Johnson HS
8. Westland MS
9. Wyngate ES

	Date	Initials
Radon Test Kits Deployed	01/18/2022	JM
Radon Test Kits Collected	01/21/2022	JM
Radon Test Kits Shipped to Lab*	01/21/2022	JM
Radon Test Kits Received by Lab*	01/23/2022	JM

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