



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Watkins Mill Elementary School
Date of Test Report	4/26/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	48
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.1 pCi/L

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



April 26, 2022

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

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

Location: Watkins Mill Elementary School
19001 Watkins Mill Rd.
Montgomery Village, MD 20886

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 Watkins Mill ES, located at 19001 Watkins Mill Rd. Montgomery Village, MD 20886 (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 28, 2022 and deployed fifty five (55) 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 March 3, 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 biennial post-mitigation testing.

These tests were conducted to:

- Confirm the success of 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 50s to the low 60s Fahrenheit. Maximum sustained winds ranged from 9-17 miles per hour. Average humidity was around 40% with 0 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		
Watkins Mill ES		
Test Period: 02/28/2022 - 03/03/2022		
Kit Number	Room / Area	Result
11134157	5	0.9
11134154	6	2.1
11134156	7	< 0.3
11134161	7	< 0.3
11134162	7	0.9
11134181	11	0.9
11134178	12	0.6
11134197	13	1.0
11134187	14	0.9
11134198	15	0.7
11134196	16	< 0.3
11134172	17	< 0.3
11134173	18	< 0.3
11134177	18	0.6
11134192	18	0.9
11134174	19	0.6
11134188	20	< 0.3
11134171	21	< 0.3
11134180	22	0.7
11134184	23	0.9
11134183	25	1.2
11134170	27	1.2
11134194	27	0.8
11134163	29	1.3
11134182	30	1.1
11134191	32	1.3
11134189	33	1.1
11134190	35	1.2
11134155	47	1.7
11134169	59	1.1
11134165	48C	1.1
11123199	AP	< 0.3
11134139	APR	1.1
11134159	APR	1.2
11134149	BSM	1.4
11134168	CONFERENCE	0.7
11134179	CONFERENCE	0.5
11134193	CONFERENCE	0.7
11134147	COU	1.1
11134164	CT4	1.0
11134158	GYM	0.8
11134166	GYM	0.7

Table 1- Radon Testing Results		
Watkins Mill ES		
Test Period: 02/28/2022 - 03/03/2022		
Kit Number	Room / Area	Result
11123198	HR	< 0.3
11134146	HR	< 0.3
11134153	K1	1.6
11134148	K2	1.1
11134160	KITCHEN OFFICE	0.9
11134167	KITCHEN OFFICE	0.8
11123200	MAIN OFFICE	0.6
11134186	OT	1.0
11107393	PR	0.9
11134185	SPEECH	1.1
11134150	STG	1.5
11134175	TRIAGE	0.7
11134195	WR	< 0.3

Table 2- Radon Testing Results			
Watkins Mill ES			
Test Period: 02/28/2022 - 03/03/2022			
Kit Number	QC Type	Room / Area	Result
11134193	D	Conference	0.7
11134192	D	18	0.9
11134173	FB	18	< 0.3
11134194	D	27	0.8
11134162	D	7	0.9
11134156	FB	7	< 0.3
11134167	D	Kitchen office	0.8
11130811	OB	OFFICE BLANK	< 0.3
11130816	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
WATKINS MILL ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11134181	11	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.9 ± 0.3	2022-03-07
11134178	12	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.6 ± 0.3	2022-03-07
11134197	13	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.0 ± 0.4	2022-03-08
11134187	14	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.9 ± 0.4	2022-03-08
11134198	15	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.7 ± 0.4	2022-03-07
11134196	16	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11134172	17	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	< 0.3	2022-03-07
11134192	18	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.9 ± 0.3	2022-03-07
11134173	18	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	< 0.3	2022-03-07
11134177	18	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.6 ± 0.4	2022-03-08
11134174	19	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.6 ± 0.3	2022-03-07
11134188	20	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	< 0.3	2022-03-07
11134171	21	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	< 0.3	2022-03-07
11134180	22	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.7 ± 0.3	2022-03-07
11134184	23	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.9 ± 0.3	2022-03-07
11134183	25	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.2 ± 0.3	2022-03-07
11134170	27	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.2 ± 0.4	2022-03-08
11134194	27	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.8 ± 0.4	2022-03-08
11134163	29	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.3 ± 0.4	2022-03-08
11134182	30	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.1 ± 0.4	2022-03-07
11134191	32	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.3 ± 0.4	2022-03-07
11134189	33	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.1 ± 0.3	2022-03-07
11134190	35	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.2 ± 0.4	2022-03-07
11134155	47	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.7 ± 0.4	2022-03-08
11134165	48C	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.1 ± 0.4	2022-03-08
11134157	5	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	0.9 ± 0.4	2022-03-08
11134169	59	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.1 ± 0.4	2022-03-08
11134154	6	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	2.1 ± 0.4	2022-03-08
11134162	7	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	0.9 ± 0.3	2022-03-07
11134156	7	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11134161	7	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11123199	AP	2022-02-28 @ 11:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-07
11134139	APR	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	1.1 ± 0.3	2022-03-07
11134159	APR	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	1.2 ± 0.4	2022-03-08
11134149	BSM	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	1.4 ± 0.4	2022-03-07
11134179	CONFERENCE	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.5 ± 0.3	2022-03-07
11134168	CONFERENCE	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	0.7 ± 0.4	2022-03-08

Radon test result report for:
WATKINS MILL ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11134193	CONFERENCE	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	0.7 ± 0.4	2022-03-08
11134147	COU	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	1.1 ± 0.4	2022-03-08
11134164	CT4	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.0 ± 0.4	2022-03-08
11134158	GYM	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	0.8 ± 0.3	2022-03-08
11134166	GYM	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	0.7 ± 0.4	2022-03-08
11123198	HR	2022-02-28 @ 11:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-07
11134146	HR	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11134153	K1	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	1.6 ± 0.4	2022-03-07
11134148	K2	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	1.1 ± 0.4	2022-03-08
11134160	KITCHEN OFFICE	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	0.9 ± 0.4	2022-03-07
11134167	KITCHEN OFFICE	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	0.8 ± 0.4	2022-03-08
11123200	MAIN OFFICE	2022-02-28 @ 11:00 am	2022-03-03 @ 9:00 am	0.6 ± 0.3	2022-03-07
11134186	OT	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.0 ± 0.4	2022-03-07
11107393	PR	2022-02-28 @ 11:00 am	2022-03-03 @ 9:00 am	0.9 ± 0.4	2022-03-07
11134185	SPEECH	2022-02-28 @ 12:00 pm	2022-03-03 @ 9:00 am	1.1 ± 0.4	2022-03-07
11134150	STG	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	1.5 ± 0.4	2022-03-07
11134175	TRIAGE	2022-02-28 @ 1:00 pm	2022-03-03 @ 9:00 am	0.7 ± 0.4	2022-03-07
11134195	WR	2022-02-28 @ 11:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-07

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 light

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

March 30, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**RSH
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139726	BASEMENT	2022-03-20 @ 8:00 am	2022-03-23 @ 7:00 am	0.9 ± 0.5	2022-03-30
11139725	DINING	2022-03-20 @ 8:00 am	2022-03-23 @ 7:00 am	< 0.3	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

Name of Schools:

1. Marshall, Thurgood ES
2. Ridgeview MS
3. Travilah ES
4. Flower Hill ES
5. Resnik, Judith A. ES
6. Strawberry Knolls ES
7. Whetstone ES
8. Laytonsville ES
9. Stedwick ES
10. Watkins Mill ES
11. Watkins Mill HS
12. Einstein, Albert E. HS

	Date	Initials
Radon Test Kits Deployed	02/28/2022	PM
Radon Test Kits Collected	03/03/2022	PM
Radon Test Kits Shipped to Lab*	03/3/2022	PM
Radon Test Kits Received by Lab*	03/5/2022	PM

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