



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Whestone 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	60
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	3.3 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: Whetstone Elementary School
19201 Thomas Farm Rd.
Gaithersburg, MD 20879

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 Whetstone ES, located at 19201 Thomas Farm Rd. Gaithersburg, MD 20879 (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 sixty nine (69) 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		
Whetstone ES		
Test Period: 02/28/2022 - 03/03/2022		
Kit Number	Room / Area	Result
11133795	1	< 0.3
11133796	2	0.9
11133764	4	1.7
11133769	5	2.4
11133755	6	0.8
11133744	7	2.2
11133750	8	1.9
11133777	20	< 0.3
11133783	21	< 0.3
11133800	22	< 0.3
11133793	23	< 0.3
11133760	27	< 0.3
11133767	31	< 0.3
11133756	33	< 0.3
11133754	34	0.8
11133762	34	0.8
11133766	38	0.6
11133761	40	0.8
11133799	104	< 0.3
11133787	100 MAIN	0.6
11133786	100A ASST PRINCIPAL	0.6
11133789	100C	< 0.3
11133790	100D	0.8
11133788	100F	< 0.3
11133794	100G	< 0.3
11133778	101 HEALTH	< 0.3
11133784	101B	< 0.3
11133785	101C	< 0.3
11133791	101C	< 0.3
11133749	103 PARA	1.0
11133737	11A	0.5
11133743	11A	0.6
11133742	19B	0.6
11133776	24 OFFICE	< 0.3
11133782	26 OFFICE	0.9
11133781	28 OFFICE	0.9
11133774	3A	0.7
11133775	3B	0.7
11133763	6 CONTROL	1.0
11133738	8A	< 0.3
11133745	ALL PURPOSE	1.1
11133758	ALL PURPOSE	1.1

Table 1- Radon Testing Results		
Whetstone ES		
Test Period: 02/28/2022 - 03/03/2022		
Kit Number	Room / Area	Result
11133792	BOOK ROOM	0.9
11133724	BUILDING SERVICES	0.8
11133740	BUILDING SERVICES	1.0
11133770	D1	< 0.3
11133771	D1	1.2
11133736	D10	0.7
11133759	D2	< 0.3
11133765	D3	0.6
11133780	D4	0.7
11133772	D5	< 0.3
11133779	D5	< 0.3
11133723	GYM	2.6
11133730	GYM	2.3
11133722	GYM OFFICE	3.3
11133798	K1	0.9
11133768	K2	< 0.3
11133773	K2	< 0.3
11133747	KAUFMAN	< 0.3
11133748	KAUFMAN	0.6
11133739	KITCHEN OFFICE	1.2
11133753	KITCHEN OFFICE	0.6
11133757	LOUNGE	0.9
11133751	MEDIA CENTER	0.6
11133752	MEDIA CENTER	< 0.3
11133732	MEDIA OFFICE	< 0.3
11133731	MEDIA WORKROOM	< 0.3
11133746	STAGE	1.6

Table 2- Radon Testing Results			
Whetstone ES			
Test Period: 02/28/2022 - 03/03/2022			
Kit Number	QC Type	Room / Area	Result
11133791	D	101C	< 0.3
11133798	D	K1	0.9
11133768	FB	K2	< 0.3
11133754	D	34	0.8
11133771	D	D1	1.2
11133772	FB	D5	< 0.3
11133724	D	Building Services	0.8
11133748	D	Kaufman	0.6
11133753	FB	Kitchen Office	0.6
11133737	D	11A	0.5
11130811	OB	OFFICE BLANK	< 0.3
11130816	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Whetstone ES		
Test Period: 02/28/2022 - 03/03/2022		
Kit Number	Room/Area	Result
	NA	

Summary of Missing, Compromised and >= 4 piC/L Tests		
Whetstone ES		
Test Period: 02/28/2022 - 03/03/2022		
Kit Number	Room/Area	Result
	NA	

Table Note:
* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11133795	1	2022-02-28 @ 9:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11133787	100 MAIN	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	0.6 ± 0.4	2022-03-08
11133786	100A ASST PRINCIPAL	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	0.6 ± 0.4	2022-03-08
11133789	100C	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11133790	100D	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	0.8 ± 0.4	2022-03-08
11133788	100F	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11133794	100G	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-07
11133778	101 HEALTH	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11133784	101B	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-07
11133785	101C	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11133791	101C	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11133749	103 PARA	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	1.0 ± 0.4	2022-03-08
11133799	104	2022-02-28 @ 9:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-07
11133743	11A	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	0.6 ± 0.3	2022-03-07
11133737	11A	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	0.5 ± 0.3	2022-03-08
11133742	19B	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	0.6 ± 0.4	2022-03-08
11133796	2	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.9 ± 0.3	2022-03-07
11133777	20	2022-02-28 @ 9:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11133783	21	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11133800	22	2022-02-28 @ 9:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11133793	23	2022-02-28 @ 8:00 am	2022-03-03 @ 9:00 am	< 0.3	2022-03-08
11133776	24 OFFICE	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133782	26 OFFICE	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.9 ± 0.4	2022-03-08
11133760	27	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133781	28 OFFICE	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.9 ± 0.4	2022-03-08
11133767	31	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133756	33	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133754	34	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.8 ± 0.3	2022-03-08
11133762	34	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.8 ± 0.3	2022-03-08
11133766	38	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.6 ± 0.4	2022-03-08
11133774	3A	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.7 ± 0.4	2022-03-08
11133775	3B	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.7 ± 0.4	2022-03-08
11133764	4	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	1.7 ± 0.4	2022-03-08
11133761	40	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.8 ± 0.3	2022-03-08
11133769	5	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	2.4 ± 0.4	2022-03-08
11133755	6	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.8 ± 0.4	2022-03-08
11133763	6 CONTROL	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	1.0 ± 0.4	2022-03-08

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11133744	7	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	2.2 ± 0.4	2022-03-08
11133750	8	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	1.9 ± 0.4	2022-03-08
11133738	8A	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133745	ALL PURPOSE	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	1.1 ± 0.4	2022-03-08
11133758	ALL PURPOSE	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	1.1 ± 0.4	2022-03-08
11133792	BOOK ROOM	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.9 ± 0.4	2022-03-08
11133740	BUILDING SERVICES	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	1.0 ± 0.4	2022-03-08
11133724	BUILDING SERVICES	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.8 ± 0.4	2022-03-08
11133771	D1	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	1.2 ± 0.4	2022-03-08
11133770	D1	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133736	D10	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	0.7 ± 0.4	2022-03-08
11133759	D2	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133765	D3	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.6 ± 0.3	2022-03-08
11133780	D4	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.7 ± 0.4	2022-03-08
11133779	D5	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133772	D5	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133730	GYM	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	2.3 ± 0.4	2022-03-08
11133723	GYM	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	2.6 ± 0.4	2022-03-08
11133722	GYM OFFICE	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	3.3 ± 0.5	2022-03-08
11133798	K1	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	0.9 ± 0.4	2022-03-08
11133773	K2	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133768	K2	2022-02-28 @ 9:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133748	KAUFMAN	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	0.6 ± 0.3	2022-03-07
11133747	KAUFMAN	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-07
11133739	KITCHEN OFFICE	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	1.2 ± 0.3	2022-03-07
11133753	KITCHEN OFFICE	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	0.6 ± 0.4	2022-03-08
11133757	LOUNGE	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	0.9 ± 0.4	2022-03-08
11133752	MEDIA CENTER	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-07
11133751	MEDIA CENTER	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	0.6 ± 0.3	2022-03-08
11133732	MEDIA OFFICE	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133731	MEDIA WORKROOM	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	< 0.3	2022-03-08
11133746	STAGE	2022-02-28 @ 10:00 am	2022-03-03 @ 10:00 am	1.6 ± 0.4	2022-03-08

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