



**MCPS RADON TESTING – EXECUTIVE SUMMARY**

Site Name	Waters Landing Elementary 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	49
# Rooms $\geq$ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.3 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: Waters Landing ES  
13100 Waters Landing Dr.  
Germantown, MD 20874

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 Waters Landing ES, located at 13100 Waters Landing Dr. Germantown, MD 20874 (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](http://www.epa.gov/radon).

KCI visited the site on February 15, 2022 and deployed fifty six (56) 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 18, 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 concentration levels 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 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:

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

<b>Quality Control Samples</b>	
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		
Waters Landing ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11123018	101	1.3
11122989	103	0.9
11123013	105	0.8
11122993	106	< 0.3
11123010	106	< 0.3
11123014	107	< 0.3
11123037	109	< 0.3
11123038	111	< 0.3
11122990	113	0.9
11113499	115	< 0.3
11122991	115	0.7
11122988	119	< 0.3
11122999	121	< 0.3
11122992	125	< 0.3
11123034	131	0.6
11123029	135	< 0.3
11123032	135	< 0.3
11123031	137	< 0.3
11123033	137	< 0.3
11123030	139	< 0.3
11123028	141	< 0.3
11123027	143	< 0.3
11123026	145	< 0.3
11122996	147	0.6
11123019	149	< 0.3
11123023	153	< 0.3
11123025	153	< 0.3
11123024	155	< 0.3
11123011	158	< 0.3
11123003	166	< 0.3
11123041	167	< 0.3
11123042	167	< 0.3
11123007	169	< 0.3
11123006	170	< 0.3
11123008	173	< 0.3
11123005	174	< 0.3
11123009	176	< 0.3
11122983	207	< 0.3
11123035	231	0.6
11122987	245	< 0.3
11123020	252	0.6
11123048	100A	< 0.3



Table 1- Radon Testing Results		
Waters Landing ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11123004	100B	0.6
11123002	100F	0.9
11123001	100I	1.0
11123049	100K	0.6
11123021	152A	0.8
11123050	AP	< 0.3
11123015	APR	< 0.3
11123016	APR	0.5
11122995	GYM	1.3
11123022	GYM	0.6
11123012	LIBRARY	< 0.3
11123017	LIBRARY	< 0.3
11123046	MAIN OFFICE	0.6
11122994	PRINCIPAL	< 0.3

Table 2- Radon Testing Results			
Waters Landing ES			
Test Period: 02/15/2022 - 02/18/2022			
Kit Number	QC Type	Room / Area	Result
11123042	D	167	< 0.3
11122993	D	106	< 0.3
11123012	FB	Library	< 0.3
11123023	D	153	< 0.3
11123031	D	137	< 0.3
11123029	FB	135	< 0.3
11113499	D	115	< 0.3
11131660	OB	OFFICE BLANK	< 0.3
11131661	TB	TRAVEL BLANK	< 0.3



# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:  
**WATERS LANDING ES  
 MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11123048	100A	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123004	100B	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	0.6 ± 0.3	2022-02-22
11123002	100F	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	0.9 ± 0.3	2022-02-22
11123001	100I	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	1.0 ± 0.3	2022-02-22
11123049	100K	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	0.6 ± 0.3	2022-02-22
11123018	101	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	1.3 ± 0.3	2022-02-22
11122989	103	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	0.9 ± 0.3	2022-02-22
11123013	105	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	0.8 ± 0.3	2022-02-22
11122993	106	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123010	106	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123014	107	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123037	109	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123038	111.	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11122990	113	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	0.9 ± 0.3	2022-02-22
11122991	115	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	0.7 ± 0.3	2022-02-22
11113499	115	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11122988	119	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11122999	121	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11122992	125	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123034	131	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	0.6 ± 0.3	2022-02-22
11123032	135	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123029	135	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123031	137	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123033	137	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123030	139	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123028	141	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123027	143	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123026	145	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11122996	147	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	0.6 ± 0.3	2022-02-22
11123019	149	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123021	152A	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	0.8 ± 0.3	2022-02-22
11123025	153	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123023	153	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123024	155	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123011	158	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123003	166	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123041	167	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22

Radon test result report for:  
**WATERS LANDING ES**  
**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11123042	167	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123007	169	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123006	170	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123008	173	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123005	174	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123009	176	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11122983	207	2022-02-15 @ 1:00 pm	2022-02-18 @ 12:00 pm	< 0.3	2022-02-22
11123035	231	2022-02-15 @ 1:00 pm	2022-02-18 @ 12:00 pm	0.6 ± 0.3	2022-02-22
11122987	245	2022-02-15 @ 1:00 pm	2022-02-18 @ 12:00 pm	< 0.3	2022-02-22
11123020	252	2022-02-15 @ 1:00 pm	2022-02-18 @ 12:00 pm	0.6 ± 0.3	2022-02-22
11123050	AP	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123016	APR	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	0.5 ± 0.3	2022-02-22
11123015	APR	2022-02-15 @ 12:00 pm	2022-02-18 @ 12:00 pm	< 0.3	2022-02-22
11122995	GYM	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	1.3 ± 0.4	2022-02-22
11123022	GYM	2022-02-15 @ 1:00 pm	2022-02-18 @ 11:00 am	0.6 ± 0.3	2022-02-22
11123017	LIBRARY	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123012	LIBRARY	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22
11123046	MAIN OFFICE	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	0.6 ± 0.3	2022-02-22
11122994	PRINCIPAL	2022-02-15 @ 12:00 pm	2022-02-18 @ 11:00 am	< 0.3	2022-02-22

**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  $\mu$ 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).

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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

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### Radon Test Kit Chain of Custody

**Project Name:** MCPS Radon – February 2022 Schools

**Name of Schools:**

1. Damascus HS
2. Germantown ES
3. Great Seneca Creek ES
4. Lake Seneca ES
5. S. Christa McAuliffe ES
6. Northwest HS
7. Waters Landing ES
8. Seneca Valley HS
9. Cedar Grove ES
10. Capt. James E. Daly ES
11. Neelsville MS
12. Dr. Sally K. Ride ES

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	Date	Initials
Radon Test Kits Deployed	02/15/2022	DM
Radon Test Kits Collected	02/18/2022	DM
Radon Test Kits Shipped to Lab*	02/18/2022	DM
Radon Test Kits Received by Lab*	02/21/2022	DM

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