



**MCPS RADON TESTING – EXECUTIVE SUMMARY**

Site Name	Lake Seneca 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	54
# Rooms $\geq$ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.9 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: Lake Seneca ES  
13600 Wanegarden 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 Lake Seneca ES, located at 13600 Wanegarden 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 sixty three (63) 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 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:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
≥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		
Lake Seneca ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11124091	2	< 0.3
11124080	3	< 0.3
11124064	4	< 0.3
11124063	5	< 0.3
11124079	5	< 0.3
11124048	6	< 0.3
11124078	7	0.6
11124055	8	< 0.3
11124083	9	< 0.3
11124085	10	< 0.3
11124049	11	< 0.3
11124084	11	< 0.3
11124082	12	< 0.3
11124057	13	0.9
11124086	13	< 0.3
11124058	14	< 0.3
11124069	15	< 0.3
11124070	16	< 0.3
11124056	17	0.6
11124071	18	< 0.3
11124076	19	1.0
11124065	20	< 0.3
11124072	20	< 0.3
11124059	21	< 0.3
11124073	22	< 0.3
11124061	24	< 0.3
11124062	26	< 0.3
11124045	27	< 0.3
11124052	28	< 0.3
11124046	29	0.6
11124041	30	< 0.3
11124042	31	< 0.3
11124040	32	0.6
11124033	33	< 0.3
11124035	33	< 0.3
11124039	34	< 0.3
11124054	24 OFFICE	< 0.3
11124060	24 OFFICE	< 0.3
11124067	24 OFFICE	< 0.3
11124068	24 OFFICE	< 0.3
11124051	26 OFFICE	< 0.3
11124050	26 THERAPIST	< 0.3



Table 1- Radon Testing Results		
Lake Seneca ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11124053	26 THERAPIST	< 0.3
11124038	AP	< 0.3
11124081	BUILDING SERVICES	< 0.3
11124088	CAFETERIA	< 0.3
11124090	CAFETERIA	< 0.3
11124034	CONFERENCE ROOM	< 0.3
11124047	GYM	< 0.3
11124089	GYM	0.5
11124092	GYM OFFICE	0.5
11124036	HEALTH ROOM	< 0.3
11124087	KITCHEN OFFICE	< 0.3
11124044	MAIN OFFICE	< 0.3
11124075	MEDIA	< 0.3
11124066	MEDIA OFFICE	< 0.3
11124043	MRS D RAY	< 0.3
11124037	PRINCIPAL ROOM	< 0.3
11124096	STAFF LOUNGE	< 0.3
11124099	STAFF LOUNGE	< 0.3
11124074	TV STUDIO	< 0.3
11124077	XEROX	< 0.3
11124094	XEROX	< 0.3

Table 2- Radon Testing Results			
Lake Seneca ES			
Test Period: 02/15/2022 - 02/18/2022			
Kit Number	QC Type	Room / Area	Result
11124035	D	33	< 0.3
11124053	D	26 therapist	< 0.3
11124068	FB	24 office	< 0.3
11124072	D	20	< 0.3
11124057	D	13	0.9
11124084	FB	11	< 0.3
11124063	D	5	< 0.3
11124077	D	Xerox	< 0.3
11124096	FB	Staff lounge	< 0.3
11131660	OB	OFFICE BLANK	< 0.3
11131661	TB	TRAVEL BLANK	< 0.3



# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:

**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11124085	10	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124049	11	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124084	11	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124082	12	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124057	13	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	0.9 ± 0.3	2022-02-22
11124086	13	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124058	14	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124069	15	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124070	16	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124056	17	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	0.6 ± 0.3	2022-02-22
11124071	18	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124076	19	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	1.0 ± 0.3	2022-02-22
11124091	2	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124065	20	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124072	20	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124059	21	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124073	22	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124061	24	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124060	24 OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124067	24 OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124068	24 OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124054	24 OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124062	26	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124051	26 OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124050	26 THERAPIST	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124053	26 THERAPIST	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124045	27	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124052	28	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124046	29	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	0.6 ± 0.3	2022-02-22
11124080	3	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124041	30	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124042	31	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124040	32	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	0.6 ± 0.3	2022-02-22
11124035	33	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124033	33	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124039	34	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124064	4	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22

Radon test result report for:

**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11124063	5	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124079	5	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124048	6	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124078	7	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	0.6 ± 0.3	2022-02-22
11124055	8	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124083	9	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124038	AP	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124081	BUILDING SERVICES	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124088	CAFETERIA	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124090	CAFETERIA	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124034	CONFERENCE ROOM	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124047	GYM	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124089	GYM	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	0.5 ± 0.3	2022-02-22
11124092	GYM OFFICE	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	0.5 ± 0.3	2022-02-22
11124036	HEALTH ROOM	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124087	KITCHEN OFFICE	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124044	MAIN OFFICE	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124075	MEDIA	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124066	MEDIA OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124043	MRS D RAY	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124037	PRINCIPAL ROOM	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124099	STAFF LOUNGE	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124096	STAFF LOUNGE	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124074	TV STUDIO	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124094	XEROX	2022-02-15 @ 10:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124077	XEROX	2022-02-15 @ 10:00 am	2022-02-18 @ 8:00 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 µR/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