



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Sargent Shriver Elementary School
Date of Test Report	5/11/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	67
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.2 pCi/L

Project Status:
Initial testing completed; No further action needed



May 11, 2022

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

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

Location: Sargent Shriver Elementary School
12518 Greenly Drive
Silver Spring, MD 20906

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 Sargent Shriver Elementary School, located at 12518 Greenly Drive, Silver Spring, MD 20906 (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 seventy-six (76) 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 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 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 low 40s and high temperatures ranged from the low 70s to the low 50s Fahrenheit. Maximum sustained winds ranged from 0-25 miles per hour. Average humidity was around 56% with 0.5 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:

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		
Sargent Shriver ES		
Test Period: 03/21/2022 - 03/24/2022		
Kit Number	Room / Area	Result
11124095	1000	< 0.3
11113643	1002	< 0.3
11113602	1004	< 0.3
11132462	1005	< 0.3
11132454	1007	< 0.3
11132461	1007	< 0.3
11132500	1008	< 0.3
11124098	1009	< 0.3
11132499	1010	0.6
11124100	1011	< 0.3
11132477	1014	< 0.3
11132479	1014	< 0.3
11113605	1015	< 0.3
11139135	1019	0.7
11139136	1023	0.6
11139149	1023	< 0.3
11139181	1101	< 0.3
11139169	1105	< 0.3
11139161	1108	< 0.3
11139151	1109	< 0.3
11139164	1112	< 0.3
11139182	1114	< 0.3
11139189	1117	< 0.3
11139190	1117	< 0.3
11139162	1118	< 0.3
11139175	1118	< 0.3
11132469	1126	1.2
11139158	1200	< 0.3
11139170	1200	< 0.3
11139138	1204	< 0.3
11139137	1206	< 0.3
11139145	1209	< 0.3
11139159	1210	< 0.3
11139174	1212	< 0.3
11139146	1213	< 0.3
11139157	1213	< 0.3
11139167	1219	< 0.3
11139165	1222	1.1
11139166	1222	0.9
11139168	1223	0.5
11139172	1223	0.9
11132480	1300	< 0.3

Table 1- Radon Testing Results		
Sargent Shriver ES		
Test Period: 03/21/2022 - 03/24/2022		
Kit Number	Room / Area	Result
11132485	1301	< 0.3
11132478	1305	1.1
11132463	1307	0.8
11139129	1311	0.7
11132470	1400	0.7
11139180	1404	0.6
11139183	1404	< 0.3
11139173	1500	0.5
11139147	1502	< 0.3
11139148	1502	< 0.3
11139160	1506	< 0.3
11139141	1600	< 0.3
11139171	1601	0.5
11139154	1605	< 0.3
11139155	1609	< 0.3
11139144	1612	< 0.3
11139153	1613	< 0.3
11139156	1615	< 0.3
11139142	1619	< 0.3
11139193	2001	0.8
11139194	2004	0.6
11124093	1000A	0.7
11113606	1000B	< 0.3
11113601	1000C	< 0.3
11124097	1000E	< 0.3
11113608	1002A	< 0.3
11139152	1117 OFFICE	< 0.3
11139163	1117 OFFICE	< 0.3
11139130	1300A	< 0.3
11139179	1404A	< 0.3
11132471	CAFETERIA	< 0.3
11132472	CAFETERIA	0.7
11139197	CAFETERIA	< 0.3
11139198	KITCHEN	1.0

Table 2- Radon Testing Results			
Sargent Shirver ES			
Test Period: 03/21/2022 - 03/24/2022			
Kit Number	QC Type	Room / Area	Result
11132461	D	1007	< 0.3
11132477	D	1014	< 0.3
11139149	FB	1023	< 0.3
11139148	D	1502	< 0.3
11139168	FB	1223	0.5
11139146	D	1213	< 0.3
11139162	D	1118	< 0.3
11139163	FB	1117 office	< 0.3
11132472	D	Cafeteria	0.7
11139902	OB	OFFICE BLANK	< 0.3
11139928	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Sargent Shriver ES		
Test Period: 03/21/22 - 03/24/22		
Kit Number	Room/Area	Result
	NA	

Summary of Missing, Compromised and >= 4 piC/L Tests		
Sargent Shriver ES		
Test Period: 03/21/22 - 03/24/22		
Kit Number	Room/Area	Result
	NA	

Table Note:
* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
SARGENT SHRIVER ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11124095	1000	2022-03-21 @ 8:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11124093	1000A	2022-03-21 @ 8:00 am	2022-03-24 @ 9:00 am	0.7 ± 0.3	2022-03-28
11113606	1000B	2022-03-21 @ 8:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11113601	1000C	2022-03-21 @ 8:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11124097	1000E	2022-03-21 @ 8:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11113643	1002	2022-03-21 @ 8:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11113608	1002A	2022-03-21 @ 8:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11113602	1004	2022-03-21 @ 8:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11132462	1005	2022-03-21 @ 8:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11132461	1007	2022-03-21 @ 8:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11132454	1007	2022-03-21 @ 8:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11132500	1008	2022-03-21 @ 8:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11124098	1009	2022-03-21 @ 8:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11132499	1010	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	0.6 ± 0.3	2022-03-28
11124100	1011	2022-03-21 @ 8:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11132477	1014	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11132479	1014	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11113605	1015	2022-03-21 @ 8:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139135	1019	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	0.7 ± 0.3	2022-03-28
11139136	1023	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	0.6 ± 0.3	2022-03-28
11139149	1023	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139181	1101	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139169	1105	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139161	1108	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139151	1109	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139164	1112	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139182	1114	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139190	1117	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139189	1117	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139163	1117 OFFICE	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139152	1117 OFFICE	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139162	1118	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139175	1118	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11132469	1126	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	1.2 ± 0.3	2022-03-28
11139170	1200	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139158	1200	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139138	1204	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28

Radon test result report for:
SARGENT SHRIVER ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139137	1206	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139145	1209	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139159	1210	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139174	1212	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139157	1213	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139146	1213	2022-03-21 @ 9:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139167	1219	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139166	1222	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	0.9 ± 0.3	2022-03-28
11139165	1222	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	1.1 ± 0.3	2022-03-28
11139168	1223	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	0.5 ± 0.3	2022-03-28
11139172	1223	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	0.9 ± 0.3	2022-03-28
11132480	1300	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139130	1300A	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11132485	1301	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11132478	1305	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	1.1 ± 0.3	2022-03-28
11132463	1307	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	0.8 ± 0.3	2022-03-28
11139129	1311	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	0.7 ± 0.3	2022-03-28
11132470	1400	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	0.7 ± 0.3	2022-03-28
11139183	1404	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139180	1404	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	0.6 ± 0.3	2022-03-28
11139179	1404A	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11139173	1500	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	0.5 ± 0.3	2022-03-28
11139148	1502	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139147	1502	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139160	1506	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139141	1600	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139171	1601	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	0.5 ± 0.3	2022-03-28
11139154	1605	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139155	1609	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139144	1612	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139153	1613	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139156	1615	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139142	1619	2022-03-21 @ 9:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11139193	2001	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	0.8 ± 0.3	2022-03-28
11139194	2004	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	0.6 ± 0.3	2022-03-28
11139197	CAFETERIA	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28
11132471	CAFETERIA	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	< 0.3	2022-03-28

March 28, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**SARGENT SHRIVER ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11132472	CAFETERIA	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	0.7 ± 0.3	2022-03-28
11139198	KITCHEN	2022-03-21 @ 10:00 am	2022-03-24 @ 9:00 am	1.0 ± 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 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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – March 2022 Schools

Name of Schools:

1. Shriver, Sargent ES

	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