



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Travilah 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	52
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.3 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: Travilah Elementary School
13801 DuFief Mill Rd
North Potomac, MD 20878

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 Travilah ES, located at 13801 DuFief Mill Rd. North Potomac, MD 20878 (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 nine (59) 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		
Travilah ES		
Test Period: 02/28/2022 - 03/03/2022		
Kit Number	Room / Area	Result
11133011	100	< 0.3
11133012	102	0.6
11133019	106	1.0
11130356	109	< 0.3
11133018	112	1.1
11133020	114	< 0.3
11130368	115	1.0
11130369	119	1.0
11130366	120	< 0.3
11130367	121	0.6
11130363	122	< 0.3
11130380	122	0.7
11130371	123	0.7
11130378	125	< 0.3
11130370	127	1.2
11130375	132	1.2
11130399	134	0.9
11130364	135	1.2
11130398	135	0.7
11130397	139	1.6
11133014	139	< 0.3
11130382	141	2.3
11130396	145	1.4
11133008	146	1.2
11130379	147	0.8
11130385	148	0.8
11133002	151	0.8
11130301	152	1.3
11130394	152	0.9
11130384	155	0.8
11130393	156	1.1
11130381	157	1.2
11130389	160	1.0
11130390	162	< 0.3
11130302	164	0.7
11130383	164	< 0.3
11130395	165	1.2
11130400	166	1.0
11130392	167	1.7
11130388	169	0.8
11130386	171	1.3
11130387	171	0.9

Table 1- Radon Testing Results		
Travilah ES		
Test Period: 02/28/2022 - 03/03/2022		
Kit Number	Room / Area	Result
11130391	173	0.9
11133013	175	0.7
11133009	178	< 0.3
11133023	178	0.7
11133005	179	0.8
11133007	180	0.7
11133021	181	0.9
11133022	183	0.7
11133001	185	< 0.3
11133017	100A	< 0.3
11133016	100C	0.7
11130359	APR	0.8
11130365	APR	0.7
11133006	GYM	0.6
11133010	GYM	1.0
11133015	GYM OFFICE	< 0.3
11130376	IMC	0.7

Table 2- Radon Testing Results			
Travilah ES			
Test Period: 02/28/2022 - 03/03/2022			
Kit Number	QC Type	Room / Area	Result
11133009	D	178	< 0.3
11130383	FB	164	< 0.3
11130387	D	171	0.9
11130394	D	152	0.9
11133014	FB	139	< 0.3
11130364	D	135	1.2
11130380	D	122	0.7
11130811	OB	OFFICE BLANK	< 0.3
11130816	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
TRAVILAH ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11130356	109	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	< 0.3	2022-03-08
11130368	115	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.0 ± 0.4	2022-03-08
11130369	119	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.0 ± 0.3	2022-03-08
11130366	120	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	< 0.3	2022-03-08
11130367	121	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.6 ± 0.3	2022-03-08
11130363	122	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	< 0.3	2022-03-08
11130380	122	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.7 ± 0.4	2022-03-08
11130371	123	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.7 ± 0.3	2022-03-08
11130378	125	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	< 0.3	2022-03-08
11130370	127	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.2 ± 0.4	2022-03-08
11130375	132	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.2 ± 0.4	2022-03-08
11130399	134	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.9 ± 0.4	2022-03-08
11130398	135	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.7 ± 0.3	2022-03-08
11130364	135	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.2 ± 0.4	2022-03-08
11130397	139	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.6 ± 0.4	2022-03-08
11130382	141	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	2.3 ± 0.4	2022-03-08
11130396	145	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.4 ± 0.4	2022-03-08
11130379	147	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.8 ± 0.3	2022-03-08
11130385	148	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.8 ± 0.3	2022-03-08
11130394	152	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.2 ± 0.4	2022-03-08
11130301	152	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.3 ± 0.4	2022-03-08
11130384	155	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.8 ± 0.4	2022-03-08
11130393	156	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.1 ± 0.4	2022-03-08
11130381	157	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.2 ± 0.4	2022-03-08
11130389	160	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.0 ± 0.4	2022-03-08
11130390	162	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	< 0.3	2022-03-08
11130383	164	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	< 0.3	2022-03-08
11130302	164	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.7 ± 0.4	2022-03-08
11130395	165	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.2 ± 0.3	2022-03-08
11130400	166	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	1.0 ± 0.4	2022-03-08
11130392	167	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.7 ± 0.4	2022-03-08
11130388	169	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.8 ± 0.3	2022-03-08
11130386	171	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	1.3 ± 0.4	2022-03-08
11130387	171	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	0.9 ± 0.4	2022-03-08
11130391	173	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	0.9 ± 0.3	2022-03-08
11130359	APR	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	0.8 ± 0.4	2022-03-08
11130365	APR	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.7 ± 0.4	2022-03-08

March 8, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
TRAVILAH ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11130376	IMC	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.7 ± 0.4	2022-03-08

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

March 8, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
TRAVILAH ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11133011	100	2022-02-28 @ 9:00 am	2022-03-03 @ 11:00 am	< 0.3	2022-03-08
11133017	100A	2022-02-28 @ 9:00 am	2022-03-03 @ 11:00 am	< 0.3	2022-03-08
11133016	100C	2022-02-28 @ 9:00 am	2022-03-03 @ 12:00 pm	0.7 ± 0.3	2022-03-08
11133012	102	2022-02-28 @ 9:00 am	2022-03-03 @ 11:00 am	0.6 ± 0.4	2022-03-08
11133019	106	2022-02-28 @ 9:00 am	2022-03-03 @ 11:00 am	1.0 ± 0.4	2022-03-08
11133018	112	2022-02-28 @ 9:00 am	2022-03-03 @ 11:00 am	1.1 ± 0.4	2022-03-08
11133020	114	2022-02-28 @ 9:00 am	2022-03-03 @ 11:00 am	< 0.3	2022-03-08
11133014	139	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	< 0.3	2022-03-08
11133008	146	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	1.2 ± 0.4	2022-03-08
11133002	151	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.8 ± 0.3	2022-03-08
11133013	175	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	0.7 ± 0.3	2022-03-08
11133009	178	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	< 0.3	2022-03-08
11133023	178	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	0.7 ± 0.3	2022-03-08
11133005	179	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	0.8 ± 0.3	2022-03-08
11133007	180	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	0.7 ± 0.4	2022-03-08
11133021	181	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	0.9 ± 0.3	2022-03-08
11133022	183	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	0.7 ± 0.3	2022-03-08
11133001	185	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	< 0.3	2022-03-08
11133010	GYM	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	1.0 ± 0.3	2022-03-08
11133006	GYM	2022-02-28 @ 10:00 am	2022-03-03 @ 11:00 am	0.6 ± 0.3	2022-03-08
11133015	GYM OFFICE	2022-02-28 @ 10:00 am	2022-03-03 @ 12:00 pm	< 0.3	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