



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Beall Elementary School
Date of Test Report	2/20/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	55
# Rooms Re-tested	1
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.4 pCi/L

Project Status:

1. Initial testing completed;
2. Missing or compromised samples need re-test.
3. Retesting Completed 1/31/23 – 2/3/23.
4. 5-Year Testing Completed.



February 20, 2023

Mr. Brian Croyle
Environmental Specialist
Montgomery County Public Schools
Gaithersburg, MD 20879

Re: **Radon Testing Services**
KCI Job # 122210551

Location: Beall Elementary School
451 Beall Avenue
Rockville, MD 20850

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 Beall Elementary School, located at 451 Beall Avenue in Rockville, Maryland 20850 (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 initially on December 5, 2022 and deployed sixty-six (66) 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.

KCI returned to the site on December 8, 2022 to retrieve initial testing 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.

KCI re-visited the site on January 31, 2023 to deploy three (3) activated charcoal (AC) radon test kits for testing of missed rooms or compromised test kits during initial testing.

KCI returned to the site on February 3, 2023 to retrieve the radon re-sampling test kits. KCI shipped all radon tests via overnight delivery to Accustar Labs – MA for analysis by gamma-ray spectroscopy. Accustar Labs – MA is a NRSB certified analytical laboratory for radon analysis (certification #ARL0017) located at 2 Saber Way, Ward Hill, MA 01835.

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.

Evaluation of Testing Conditions:

These tests represent:

- Follow up to initial testing.

These tests were conducted to:

- Evaluated radon concentrations 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 initial test period, weather records indicate low temperatures were in the 20s°F and high temperatures ranged to the mid-50s°F. Maximum sustained winds ranged from 0-12 miles per hour. Average humidity was around 75% with .04 inches of precipitation (rain) was recorded during testing period.

During the re-testing period, weather records indicate low temperatures were in the mid-20s°F and high temperatures ranged to the low 40s°F. Maximum sustained winds ranged from 0-21 miles per hour. Average humidity was around 70% with .18 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	

The results of the radon re-testing 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		
Beall ES		
Test Period: 12/06/2022 - 12/09/2022		
Kit Number	Room / Area	Result
11139474	1	< 0.3
11139459	2	0.8
11139456	3	0.9
11139464	4	0.6
11139434	5	0.9
11139448	6	< 0.3
11139455	6	1.2
11139473	7	0.8
11139433	8	0.7
11139447	9	< 0.3
11139440	10	< 0.3
11139483	11	< 0.3
11139457	12	< 0.3
11139491	13	< 0.3
11139480	14	< 0.3
11139481	15	< 0.3
11139422	16	< 0.3
11139466	16	< 0.3
11139475	17	< 0.3
11139421	18	0.8
11139458	18	< 0.3
11139443	101	0.6
11139442	102	1.1
11139450	102	0.8
11139449	103	0.8
11139444	104	0.9
11139435	105	0.9
11139452	106	1.3
11139454	107	2.4
11139427	108	1.0
11139451	109	1.0
11139445	110	0.6
11139446	110	0.8
11139437	111	< 0.3
11139439	111	1.2
11139472	204	0.6
11139482	209	0.7
11139488	10A	< 0.3
11139432	8A	0.6
11139412	APR	0.7
11139413	APR	0.6
11139416	ASST PRINCIPAL	< 0.3

Table 1- Radon Testing Results		
Beall ES		
Test Period: 12/06/2022 - 12/09/2022		
Kit Number	Room / Area	Result
11139418	BS OFFICE	< 0.3
11139414	CONFERENCE	< 0.3
11139410	FILE	0.6
11139423	GYM	1.2
11139429	GYM	0.9
11139420	HEALTH	0.5
11139406	KITCHEN OFFICE	1.0
11139436	LAMINATION ROOM	< 0.3
11139409	LH	0.7
11139426	MAIN OFFICE	< 0.3
11139403	MEDIA CENTER	< 0.3
11139404	MEDIA CENTER	< 0.3
11139401	MEDIA OFFICE	< 0.3
11139402	MEDIA OFFICE	< 0.3
11139428	MEDIA WORKROOM	< 0.3
11139425	NURSE OFFICE	< 0.3
11139415	PRINCIPAL	< 0.3
11139453	SMALL GROUP	1.3
11139405	STAFF LOUNGE	< 0.3
11139411	STAGE	< 0.3
11139407	TELEPHONE	< 0.3
11139408	TELEPHONE	0.6
11139417	TESTING	< 0.3
11139419	WORKROOM	0.6

Table 2- Radon Testing Results			
Beall ES			
Test Period: 12/06/22 - 12/09/22			
Kit Number	QC Type	Room / Area	Result
11139455	D	6	1.2
11139422	FB	16	< 0.3
11139458	D	18	< 0.3
11139450	D	102	0.8
11139445	D	110	0.6
11139437	FB	111	< 0.3
11139403	D	Media Center	< 0.3
11139402	FB	Media Office	< 0.3
11139408	D	Telephone	0.6
11287676	OB	OFFICE BLANK	< 0.3
11287288	TB	TRAVEL BLANK	< 0.3

Table 1- Radon Testing Results		
Beall ES RT		
Test Period: 01/31/2023 - 02/03/2023		
Kit Number	Room / Area	Result
11634003	GYM OFFICE	1.8
11634020	GYM OFFICE	< 0.3
11634038	GYM OFFICE	1.7

Table 2- Radon Testing Results			
Beall ES RT			
Test Period: 01/31/23 - 02/03/23			
Kit Number	QC Type	Room / Area	Result
11634038	D	GYM OFFICE	1.7
11634020	FB	GYM OFFICE	< 0.3
11634990	OB	OFFICE BLANK	< 0.3
11634991	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139474	1	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139440	10	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139443	101	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	0.6 ± 0.3	2022-12-13
11139442	102	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	1.1 ± 0.3	2022-12-13
11139450	102	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	0.8 ± 0.3	2022-12-13
11139449	103	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	0.8 ± 0.3	2022-12-13
11139444	104	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	0.9 ± 0.3	2022-12-13
11139435	105	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	0.9 ± 0.3	2022-12-13
11139452	106	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	1.3 ± 0.3	2022-12-13
11139454	107	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	2.4 ± 0.4	2022-12-13
11139427	108	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	1.0 ± 0.3	2022-12-13
11139451	109	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	1.0 ± 0.3	2022-12-13
11139488	10A	2022-12-06 @ 10:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139483	11	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139445	110	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	0.6 ± 0.3	2022-12-13
11139446	110	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	0.8 ± 0.3	2022-12-13
11139439	111	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	1.2 ± 0.3	2022-12-13
11139437	111	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139457	12	2022-12-06 @ 10:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139491	13	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139480	14	2022-12-06 @ 10:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139481	15	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139466	16	2022-12-06 @ 10:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139422	16	2022-12-06 @ 10:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139475	17	2022-12-06 @ 10:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139421	18	2022-12-06 @ 10:00 am	2022-12-09 @ 10:00 am	0.8 ± 0.3	2022-12-13
11139458	18	2022-12-06 @ 10:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139459	2	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	0.8 ± 0.3	2022-12-13
11139472	204	2022-12-06 @ 10:00 am	2022-12-09 @ 10:00 am	0.6 ± 0.3	2022-12-13
11139482	209	2022-12-06 @ 10:00 am	2022-12-09 @ 10:00 am	0.7 ± 0.3	2022-12-13
11139456	3	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	0.9 ± 0.3	2022-12-13
11139464	4	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	0.6 ± 0.3	2022-12-13
11139434	5	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	0.9 ± 0.3	2022-12-13
11139455	6	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	1.2 ± 0.3	2022-12-13
11139448	6	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139473	7	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	0.8 ± 0.3	2022-12-13
11139433	8	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	0.7 ± 0.3	2022-12-13

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139432	8A	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	0.6 ± 0.3	2022-12-13
11139447	9	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139412	APR	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	0.7 ± 0.3	2022-12-13
11139413	APR	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	0.6 ± 0.3	2022-12-13
11139416	ASST PRINCIPAL	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	< 0.3	2022-12-13
11139418	BS OFFICE	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	< 0.3	2022-12-13
11139414	CONFERENCE	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	< 0.3	2022-12-13
11139410	FILE	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	0.6 ± 0.3	2022-12-13
11139429	GYM	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	0.9 ± 0.3	2022-12-13
11139423	GYM	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	1.2 ± 0.3	2022-12-13
11139420	HEALTH	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	0.5 ± 0.3	2022-12-13
11139406	KITCHEN OFFICE	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	1.0 ± 0.3	2022-12-13
11139436	LAMINATION ROOM	2022-12-06 @ 9:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139409	LH	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	0.7 ± 0.3	2022-12-13
11139426	MAIN OFFICE	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	< 0.3	2022-12-13
11139403	MEDIA CENTER	2022-12-06 @ 8:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139404	MEDIA CENTER	2022-12-06 @ 8:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139401	MEDIA OFFICE	2022-12-06 @ 8:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139402	MEDIA OFFICE	2022-12-06 @ 8:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139428	MEDIA WORKROOM	2022-12-06 @ 8:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139425	NURSE OFFICE	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	< 0.3	2022-12-13
11139415	PRINCIPAL	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	< 0.3	2022-12-13
11139453	SMALL GROUP	2022-12-06 @ 9:00 am	2022-12-09 @ 9:00 am	1.3 ± 0.3	2022-12-13
11139405	STAFF LOUNGE	2022-12-06 @ 8:00 am	2022-12-09 @ 10:00 am	< 0.3	2022-12-13
11139411	STAGE	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	< 0.3	2022-12-13
11139407	TELEPHONE	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	< 0.3	2022-12-13
11139408	TELEPHONE	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	0.6 ± 0.3	2022-12-13
11139417	TESTING	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	< 0.3	2022-12-13
11139419	WORKROOM	2022-12-06 @ 8:00 am	2022-12-09 @ 9:00 am	0.6 ± 0.3	2022-12-13

February 7, 2023

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**BEALL ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11634003	GYM OFFICE	2023-01-31 @ 10:00 am	2023-02-03 @ 10:00 am	1.8 ± 0.4	2023-02-07
11634020	GYM OFFICE	2023-01-31 @ 10:00 am	2023-02-03 @ 10:00 am	< 0.3	2023-02-07
11634038	GYM OFFICE	2023-01-31 @ 10:00 am	2023-02-03 @ 10:00 am	1.7 ± 0.4	2023-02-07

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 208802

NOMINAL Conditions: Radon Conc 24.4 pCi/L Rel. Hum 48.6 % Temp. 79.3 F

Date Start: 1/27/23 Date Stop: 1/30/23 Date Start: _____ Date Stop: _____

Time Start: 0816 Time Stop: 0816 Time Start: _____ Time Stop: _____

Device No.'s: (5) CHAR BAGS Device No.'s: _____

11633682, 11633687, 11633688 _____

11633695, 11633696 _____

P3 left

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**

February 3, 2023

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

OFFICE

MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11633696	SK10	2023-01-27 @ 8:00 am	2023-01-30 @ 8:00 am	24.2 ± 1.9	2023-02-03
11633682	SK6	2023-01-27 @ 8:00 am	2023-01-30 @ 8:00 am	26.9 ± 2.1	2023-02-03
11633687	SK7	2023-01-27 @ 8:00 am	2023-01-30 @ 8:00 am	23.8 ± 1.9	2023-02-03
11633688	SK8	2023-01-27 @ 8:00 am	2023-01-30 @ 8:00 am	25.9 ± 2.1	2023-02-03
11633695	SK9	2023-01-27 @ 8:00 am	2023-01-30 @ 8:00 am	27.0 ± 2.2	2023-02-03

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 – Week 2 January Schools

Name of Schools:

1. Beall ES
2. Gaithersburg HS
3. Kingsview MS
4. Lucy V. Barnsley ES
5. Martin Luther King Jr. MS
6. Mill Creek Towne ES
7. North Bethesda MS
8. Radnor Center
9. Winston Churchill HS

	Date	Initials
Radon Test Kits Deployed	01/31/2023	DM
Radon Test Kits Collected	02/03/2023	DM
Radon Test Kits Shipped to Lab*	02/03/2023	DM
Radon Test Kits Received by Lab*	02/06/2023	DM

*All samples sent to Air Check, Inc., 2 Saber Way, Ward Hill, MA 01835



MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	Beall Elementary School
Date of Report	March 12, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	7
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.1 pCi/L

Project Status

Current Project Status at this time: Retesting completed; no further action at this time.



March 12, 2018

Mr. Richard Cox, MS
Team Leader
Montgomery County Public Schools
Division of Maintenance
Gaithersburg, Maryland 20879

Re: Radon Testing Services

KCI Job #1214634188

Location: Beall Elementary School

451 Beall Ave.
Rockville, Maryland 20850

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools pursuant to completing a “short-term” 3-day radon test for the Beall Elementary School, located at 451 Beall Ave. in Rockville, Maryland 20850 (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 Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on February 13, 2018 and deployed ten (10) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

KCI sampled the following locations during this follow-up test:

1. Rooms not successfully tested,
2. Rooms with elevated November 2017 results (i.e. ≥ 3.5 pCi/L).

A floor plan map of the building with the test locations is included as Appendix A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner, Inc. prior to being returned to the laboratory for analysis.

KCI returned to the site on February 16, 2018 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, 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 routine five-year re-test.

These tests were conducted to:

- verify radon levels remain low throughout 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 at 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 ranged from the mid-20s to upper 40s and high temperatures ranged from the high-30s to the high-60s. Maximum sustained winds ranged from 10-18 miles per hour. Average humidity was around 73%. 0.30 Inches of precipitation was recorded during the 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). 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	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 410-316-7800.

Sincerely,



Radon Measurement Specialist
KCI Technologies, Inc.

Attachments:

B - Radon Test Summary Spreadsheets

C - Laboratory Analytical Results

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Table 1- Radon Testing Results		
Beall Elementary School		
Test Period: 02/13/18-02/16/18		
Kit Number	Room / Area	Result
7986674	1	1.8
7986675	1	2.1
7986644	118	< 0.3
7986663	119	< 0.3
7986652	BUILDING SERVICE	0.6
7986632	IMC STORAGE	0.6
7986667	KITCHEN	0.6
7986671	SDT	0.6

Table Note:

* Missing or Compromised Sample

Table 2- Radon Testing Results		
Beall Elementary School		
Test Period: 02/13/18-02/16/18		
Kit Number	QC Type	Result
7986651	D (KITCHEN)	0.7
7986664	D (SDT)	0.9

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

February 27, 2018

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**BEALL ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7986674	1	2018-02-13 @ 1:00 pm	2018-02-16 @ 12:00 pm	1.8 ± 0.4	2018-02-20
7986675	1	2018-02-13 @ 1:00 pm	2018-02-16 @ 12:00 pm	2.1 ± 0.4	2018-02-20
7986644	118	2018-02-13 @ 1:00 pm	2018-02-16 @ 12:00 pm	< 0.3	2018-02-20
7986663	119	2018-02-13 @ 1:00 pm	2018-02-16 @ 12:00 pm	< 0.3	2018-02-20
7986652	BUILDING SERVICE	2018-02-13 @ 1:00 pm	2018-02-16 @ 12:00 pm	0.6 ± 0.3	2018-02-20
7986632	IMC STORAGE	2018-02-13 @ 1:00 pm	2018-02-16 @ 12:00 pm	0.6 ± 0.3	2018-02-20
7986667	KITCHEN	2018-02-13 @ 1:00 pm	2018-02-16 @ 12:00 pm	0.6 ± 0.3	2018-02-20
7986651	KITCHEN	2018-02-13 @ 1:00 pm	2018-02-16 @ 12:00 pm	0.7 ± 0.3	2018-02-20
7986664	SDT	2018-02-13 @ 1:00 pm	2018-02-16 @ 12:00 pm	0.9 ± 0.3	2018-02-20
7986671	SDT	2018-02-13 @ 1:00 pm	2018-02-16 @ 12:00 pm	0.6 ± 0.3	2018-02-20

Air Chek, Inc. 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 Phase

Names of Schools:

- | | |
|---------------------------------------|--|
| 1. Westbrook Elementary School | 21. E. Silver Spring Elementary School |
| 2. Westland Middle School | 22. Silver Spring Int. Middle School |
| 3. Walt Whitman High School | 23. Clarksburg High School |
| 4. Cloverly Elementary School | 24. Rosa Parks Middle School |
| 5. Sligo Middle School | 25. Greenwood Elementary School |
| 6. Flora Singer Elementary School | 26. Montgomery Knolls Elem. School |
| 7. Albert Einstein High School | 27. Watkins Mill Elementary School |
| 8. Roscoe Nix Elementary School | 28. Gaithersburg Elementary School |
| 9. Mario Loiederman Middle School | 29. Viers Mill Elementary School |
| 10. Sargent Shriver Elementary School | 30. Rock View Elementary School |
| 11. Whetstone Elementary School | |
| 12. Brooke Grove Elementary School | |
| 13. Clearspring Elementary School | |
| 14. Beall Elementary School | |
| 15. Maryvale Elementary School | |
| 16. Lathrop E. Smith Center | |
| 17. Laytonsville Elementary School | |
| 18. Germantown Elementary School | |
| 19. Spring Mill Center | |
| 20. Northwood High School | |

	Date	Initials
Radon Test Kits Deployed	2/13/18	JM
Radon Test Kits Collected	2/16/18	JM
Radon Test Kits Shipped to Lab*	2/16/18	JM
Radon Test Kits Received by Lab*	2/20/18	JM

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

Radon test result report for:
OFFICE BLANKS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7979482	1	2018-02-13 @ 1:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986991	10	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985684	11	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986987	12	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986993	13	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986990	14	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7979485	2	2018-02-13 @ 1:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985686	3	2018-02-13 @ 1:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986995	4	2018-02-13 @ 1:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986989	5	2018-02-13 @ 1:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986998	6	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986986	7	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986985	8	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986997	9	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20

Radon test result report for:
TRANSIT BLANKS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7984188	1	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7984044	10	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986582	11	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986999	12	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7987000	13	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7984196	14	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986996	2	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986994	3	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7986992	4	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985680	5	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985698	6	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985699	7	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985700	8	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20
7985872	9	2018-02-13 @ 2:00 pm	2018-02-16 @ 2:00 pm	< 0.3	2018-02-20

February 28, 2018

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS - Spike Sample Laboratory Results. Measured values are satisfactory, i.e. within $\pm 25\%$ of the chamber's reference value (20.9 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7984181	1	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.7 \pm 0.8	2018-02-21
7986621	2	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.4 \pm 0.8	2018-02-21
7985683	3	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.5 \pm 0.8	2018-02-21
7984168	4	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	20.5 \pm 0.8	2018-02-21
7986618	5	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.9 \pm 0.8	2018-02-21
7984169	6	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	20.4 \pm 0.8	2018-02-21

Air Chek, Inc. 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 183530

NOMINAL Conditions: Radon Conc 20.9 pCi/L Rel. Hum 49.8 % Temp. 79.1 F

Date Start: 2/16/18 Date Stop: 2/19/18 Date Start: _____ Date Stop: _____
 Time Start: 1052 Time Stop: 1052 Time Start: _____ Time Stop: _____
 Device No.'s: (6) Char. Bags Device No.'s: _____
7984181, 7986621, 7985683 _____
7984168, 7986618, 7984169 _____
G3 Middle

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 RADON TESTING - EXECUTIVE SUMMARY

Site Name	Beall Elementary School
Date of Report	January 31, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	54
# Rooms \geq 4.0 pCi/L	0
Lowest Value	< 0.3 pCi/L
Highest Value	3.4 pCi/L

Current Project Status at this time: Results satisfactory to date; missed locations and missing/compromised tests to be sampled.



January 31, 2018

Mr. Richard Cox, MS
Team Leader
Montgomery County Public Schools
Division of Maintenance
Rockville, Maryland 20855

Re: Radon Testing Services

KCI Job #1214694182

Location: Beall Elementary School

451 Beall Ave.
Rockville, Maryland 20850

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools pursuant to completing a “short-term” 3-day radon test for the Beall Elementary School, located at 451 Beall Ave. in Rockville, Maryland 20850 (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 Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on November 28, 2017 and deployed sixty-four (64) activated charcoal (AC) radon test kits. KCI deployed radon test kits in 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 Appendix A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to

Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner, Inc. prior to being returned to the laboratory for analysis.

KCI returned to the site on December 1, 2017 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, 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:

- Routine five-year re-test

These tests were conducted to:

- verify radon levels remain low throughout 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 at 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 30s and high temperatures ranged from the low-50s to mid-60s. Maximum sustained winds ranged from 8-15 miles per hour. Average humidity was around 65%. 0.02 Inches of precipitation was recorded during the testing period.

A magnitude 4.1 earthquake was reported on Thursday November 30 near Dover, Delaware approximately 95 miles east of Gaithersburg, Maryland. The earthquake occurred during or just after the radon testing period for this facility. In general, enhanced radon emissions have been observed prior to earthquakes and this has been recorded all over the world, according to the research article entitled *Radon-222: A Potential Short-Term Earthquake Precursor*, published June 30, 2015 in the Journal of Earth Science and Climate

Change. The nearby earthquake, which occurred during or prior to the testing period, may have resulted in higher-than-normal radon test results for this facility.

RESULTS

The sampling locations, field observations, 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). Missing/compromised tests, missed rooms, and locked rooms 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	See Attachment B

Quality Control Samples	
Results of Blank Canisters:	The field blank, office blank, 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 410-316-7800.

Sincerely,



James Mouldale, CHMM
Radon Measurement Specialist
KCI Technologies, Inc.

Attachments:

B - Tables 1-3, Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Radon Testing Results		
Beall Elementary School		
Test Period: 11/28/17-12/01/17		
Kit Number	Room / Area	Result
7975135	2	0.8
7975128	3	0.7
7975133	4	1.7
7975126	5	1.4
7975125	6	2.1
7975129	7	1.2
7975124	8	1.9
7975123	9	1.2
7975122	10	1.4
7975112	12	0.8
7975115	13	1.1
7975121	13	0.8
7975118	14	1.9
7975116	15	0.7
7975117	16	0.8
7975114	17	< 0.3
7975113	18	< 0.3
7975161	101	0.8
7975153	102	1.2
7975159	103	0.8
7975162	104	1.5
7975200	105	0.9
7975160	106	1.7
7975163	106	1.0
7975171	108	1.5
7975179	109	1.6
7975197	110	0.9
7975172	111	0.9
7975109	205	0.7
7975108	208	0.7
7975134	* 1 (Fan On)	1.6
7975165	106A	3.4
7975119	10A	0.7
7975127	8A	1.3
7975136	AP	< 0.3
7975155	APR	0.8
7975131	BSM	1.0
7975158	* BUILDING SERVICE (Missing)	-
7975167	CONFERENCE	0.6
7975148	EMPLOYEE LOUNGE	0.8
7975139	FILE ROOM	0.6
7975156	GYM	2.1
7975164	GYM OFFICE	3.1
7975140	HEALTH ROOM	0.5
7975146	HEALTH ROOM OFFI	< 0.3
7975154	IMC	< 0.3

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Beall Elementary School		
Test Period: 11/28/17-12/01/17		
Kit Number	Room / Area	Result
7975142	IMC OFFICE	1.0
7975143	* IMC STORAGE (Missing)	-
7975138	MAILROOM	0.7
7975145	MAIN OFFICE	0.5
7975141	MEDIA RM	0.7
7975130	PHONE ROOM	< 0.3
7975144	PRINCIPAL	< 0.3
7975147	STAGE	0.8
7975132	TESTING OFFICE	0.8

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Beall Elementary School		
Test Period: 11/28/17-12/01/17		
Kit Number	QC Type	Result
7975152	D (102)	1.0
7975120	D (8A)	1.3
7975157	D (APR)	0.6
7975137	D (CONFERENCE)	0.6
7975166	D (GYM)	1.9
7975149	D (IMC OFFICE)	0.5
7975150	D (IMC)	0.9
7975151	FB (IMC)	< 0.3
7978577	OB (OB)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:**BEALL ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7975134	1	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.6 ± 0.4	2017-12-05
7975122	10	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.4 ± 0.3	2017-12-05
7975161	101	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	0.8 ± 0.3	2017-12-04
7975152	102	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	1.0 ± 0.3	2017-12-04
7975153	102	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	1.2 ± 0.3	2017-12-04
7975159	103	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	0.8 ± 0.3	2017-12-04
7975162	104	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	1.5 ± 0.3	2017-12-05
7975200	105	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	0.9 ± 0.3	2017-12-05
7975160	106	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	1.7 ± 0.3	2017-12-04
7975163	106	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	1.0 ± 0.3	2017-12-05
7975165	106A	2017-11-28 @ 12:00 pm	2017-12-01 @ 11:00 am	3.4 ± 0.4	2017-12-05
7975171	108	2017-11-28 @ 12:00 pm	2017-12-01 @ 11:00 am	1.5 ± 0.3	2017-12-05
7975179	109	2017-11-28 @ 12:00 pm	2017-12-01 @ 11:00 am	1.6 ± 0.3	2017-12-04
7975119	10A	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	0.7 ± 0.3	2017-12-04
7975197	110	2017-11-28 @ 12:00 pm	2017-12-01 @ 11:00 am	0.9 ± 0.3	2017-12-04
7975172	111	2017-11-28 @ 12:00 pm	2017-12-01 @ 11:00 am	0.9 ± 0.3	2017-12-05
7975112	12	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	0.8 ± 0.3	2017-12-04
7975115	13	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.1 ± 0.3	2017-12-04
7975121	13	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	0.8 ± 0.3	2017-12-05
7975118	14	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.9 ± 0.3	2017-12-04
7975116	15	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	0.7 ± 0.3	2017-12-04
7975117	16	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	0.8 ± 0.3	2017-12-05
7975114	17	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	< 0.3	2017-12-05
7975113	18	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	< 0.3	2017-12-04
7975135	2	2017-11-28 @ 2:00 pm	2017-12-01 @ 12:00 pm	0.8 ± 0.3	2017-12-05
7975109	205	2017-11-28 @ 3:00 pm	2017-12-01 @ 11:00 am	0.7 ± 0.3	2017-12-05
7975108	208	2017-11-28 @ 3:00 pm	2017-12-01 @ 11:00 am	0.7 ± 0.3	2017-12-05
7975128	3	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	0.7 ± 0.3	2017-12-05
7975133	4	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.7 ± 0.4	2017-12-05
7975126	5	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.4 ± 0.4	2017-12-05
7975125	6	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	2.1 ± 0.4	2017-12-05
7975129	7	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.2 ± 0.3	2017-12-05
7975124	8	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.9 ± 0.4	2017-12-04
7975127	8A	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.3 ± 0.4	2017-12-05
7975120	8A	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.3 ± 0.3	2017-12-05
7975123	9	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.2 ± 0.4	2017-12-05
7975136	AP	2017-11-28 @ 2:00 pm	2017-12-01 @ 10:00 am	< 0.3	2017-12-05

Radon test result report for:**BEALL ES****MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7975155	APR	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	0.8 ± 0.3	2017-12-05
7975157	APR	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	0.6 ± 0.3	2017-12-05
7975131	BSM	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	1.0 ± 0.3	2017-12-05
7975167	CONFERENCE	2017-11-28 @ 2:00 pm	2017-12-01 @ 10:00 am	0.6 ± 0.3	2017-12-05
7975137	CONFERENCE	2017-11-28 @ 2:00 pm	2017-12-01 @ 10:00 am	0.6 ± 0.3	2017-12-05
7975148	EMPLOYEE LOUNGE	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	0.8 ± 0.3	2017-12-04
7975139	FILE ROOM	2017-11-28 @ 2:00 pm	2017-12-01 @ 10:00 am	0.6 ± 0.3	2017-12-05
7975156	GYM	2017-11-28 @ 1:00 pm	2017-12-01 @ 12:00 pm	2.1 ± 0.3	2017-12-04
7975166	GYM	2017-11-28 @ 1:00 pm	2017-12-01 @ 12:00 pm	1.9 ± 0.3	2017-12-04
7975164	GYM OFFICE	2017-11-28 @ 1:00 pm	2017-12-01 @ 12:00 pm	3.1 ± 0.4	2017-12-04
7975140	HEALTH ROOM	2017-11-28 @ 1:00 pm	2017-12-01 @ 10:00 am	0.5 ± 0.3	2017-12-05
7975146	HEALTH ROOM OFFI	2017-11-28 @ 1:00 pm	2017-12-01 @ 10:00 am	< 0.3	2017-12-04
7975151	IMC	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	< 0.3	2017-12-04
7975154	IMC	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	< 0.3	2017-12-04
7975150	IMC	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	0.9 ± 0.4	2017-12-05
7975142	IMC OFFICE	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	1.0 ± 0.3	2017-12-05
7975149	IMC OFFICE	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	0.5 ± 0.3	2017-12-05
7975138	MAILROOM	2017-11-28 @ 2:00 pm	2017-12-01 @ 10:00 am	0.7 ± 0.3	2017-12-04
7975145	MAIN OFFICE	2017-11-28 @ 2:00 pm	2017-12-01 @ 10:00 am	0.5 ± 0.3	2017-12-04
7975141	MEDIA RM	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	0.7 ± 0.3	2017-12-04
7978577	OB	2017-11-28 @ 4:00 pm	2017-12-01 @ 4:00 pm	< 0.3	2017-12-05
7975130	PHONE ROOM	2017-11-28 @ 2:00 pm	2017-12-01 @ 10:00 am	< 0.3	2017-12-04
7975144	PRINCIPAL	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	< 0.3	2017-12-04
7975147	STAGE	2017-11-28 @ 1:00 pm	2017-12-01 @ 11:00 am	0.8 ± 0.3	2017-12-04
7975132	TESTING OFFICE	2017-11-28 @ 2:00 pm	2017-12-01 @ 11:00 am	0.8 ± 0.3	2017-12-05

December 21, 2017

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**BEALL ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7975158	BUILDING SERVICE	@	@		
7975143	IMC STORAGE	@	@		

Air Chek, Inc. 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 Phase

Names of Schools:

1. Chevy Chase Elementary School
2. Greencastle Elementary School
3. English Manor
4. Rock View Elementary School
5. Wheaton Woods Elementary School
6. Sequoyah Elementary School
7. Fallsmead Elementary School
8. Beall Elementary School
9. Stephen Knolls School
10. Maryvale Elementary School
11. Redland Middle School
12. Walt Whitman High School
13. Springbrook High School
14. Blair G. Ewing Center
15. Viers Mill Elementary School
16. Albert Einstein High School
17. Wayside Elementary School
18. Thomas S. Wootton High School
19. Highland Elementary School
20. Bethesda Transportation Depot
21. Bethesda Maintenance Depot
22. Travilah Elementary School
23. Lathrop E. Smith Center

	Date	Initials
Radon Test Kits Deployed	11/28/17	JM
Radon Test Kits Collected	12/01/17	JM
Radon Test Kits Shipped to Lab*	12/01/17	JM
Radon Test Kits Received by Lab*	12/05/17	JM

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

Radon test result report for:**TRANSIT 1****NONE**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7978062	TRANSIT 1	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975804	TRANSIT 10	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7977990	TRANSIT 11	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978201	TRANSIT 12	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978203	TRANSIT 13	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978206	TRANSIT 14	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978246	TRANSIT 15	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978239	TRANSIT 16	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978226	TRANSIT 17	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7975078	TRANSIT 18	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7975077	TRANSIT 19	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978074	TRANSIT 2	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975076	TRANSIT 20	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975684	TRANSIT 21	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975683	TRANSIT 22	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975601	TRANSIT 23	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978011	TRANSIT 24	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978012	TRANSIT 25	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978094	TRANSIT 26	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7975624	TRANSIT 27	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7834562	TRANSIT 28	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7977995	TRANSIT 29	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978098	TRANSIT 3	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7977992	TRANSIT 30	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978719	TRANSIT 4	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-05
7978732	TRANSIT 5	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7978731	TRANSIT 6	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975806	TRANSIT 7	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975815	TRANSIT 8	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04
7975805	TRANSIT 9	2017-11-27 @ 4:00 pm	2017-11-30 @ 4:00 pm	< 0.3	2017-12-04

December 19, 2017

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS - Spike Sample Laboratory Results. Measured values are satisfactory, i.e. within $\pm 25\%$ of the chamber's reference value (27.7 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7975075	S1	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	25.6 \pm 0.7	2017-12-07
7975064	S2	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	27.4 \pm 0.8	2017-12-07
7975063	S3	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	26.3 \pm 0.7	2017-12-07
7975065	S4	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	23.0 \pm 0.7	2017-12-07
7975069	S5	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	25.6 \pm 0.7	2017-12-07
7975070	S6	2017-12-01 @ 11:00 am	2017-12-04 @ 11:00 am	23.0 \pm 0.7	2017-12-07

Air Chek, Inc. 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 182393

NOMINAL Conditions: Radon Conc 27.7 pCi/L Rel. Hum 49.1 % Temp. 70.1 F

Date Start: 12/1/17 Date Stop: 12/4/17 Date Start: _____ Date Stop: _____

Time Start: 1049 Time Stop: 1049 Time Start: _____ Time Stop: _____

Device No.'s: (6) Char. Bags. Device No.'s: _____

7975075, 7975064, 7975063, _____

7975065, 7975069, 7975070 _____

F4 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 μ R/h Elevation = 820 ft



MCPS RADON TESTING

Executive Summary: Beall Elementary School

Date of Test Report:	10/18/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	52
# Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	1.8

Project Status:

Follow-up testing after HVAC update completed; no further action at this time.



October 18, 2016

Mr. Richard Cox
Indoor Air Quality Team Leader
Montgomery County Public Schools
850 Hungerford Drive
Rockville, MD 20850

Re: **Radon Testing Services**
KCI Job # 12146341.54

Location: Beall Elementary School
451 Beall Avenue
Rockville, MD 20850

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Beall Elementary School, located at 451 Beall Avenue in Rockville, Maryland 20850 (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 Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on September 27, 2016 and deployed sixty (60) activated charcoal (AC) radon test kits. KCI deployed radon test kits in 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 included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) 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 September 30, 2016 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 sampling of a school that had HVAC modifications over the summer.

To expedite the testing, tests were conducted in September as soon as students and staff returned to:

- Determine if the HVAC project changed previously detected radon levels.

Future periodic testing should be conducted during the heating season in ideal conditions as described below. 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 cooling mode; therefore, KCI concludes that this test was not conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room at 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 50s and high temperatures in the mid-60s to mid-70s. Maximum sustained winds ranged from 3-15 miles per hour. Average humidity ranged from 71 to 89 percent. Rain (1.83 inches in Gaithersburg, MD) was recorded on 9/29/16. The weather conditions during the testing period may have resulted in atypical radon test results for this facility.

Results:

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	

Notes:

D- Duplicate sample

The field blank, office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C). Laboratory results and exposure data for the spike samples are also included in Attachment C.

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) 316-7800.

Sincerely,



James M. Mouldale
Radon Measurement Specialist
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-Radon Test Summary Spreadsheet
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Radon Testing Results		
Beall Elementary School		
Test Period: 09/27/16-09/30/16		
Kit Number	Room / Area	Result
7714152	1	1.4
7769864	2	1.4
7756849	3	0.7
7714153	4	1.2
7769861	5	< 0.3
7802101	6	1.2
7756846	7	1.0
7756847	8	1.1
7714148	9	0.6
7714156	10	0.7
7714151	11	0.8
7769869	12	< 0.3
7714157	13	< 0.3
7714160	14	0.6
7802118	15	< 0.3
7802102	16	1.0
7802138	17	< 0.3
7714163	18	< 0.3
7769874	101	< 0.3
7756851	102	< 0.3
7756808	103	< 0.3
7714185	104	< 0.3
7756826	105	< 0.3
7714176	106	0.9
7756841	107	0.9
7769865	108	0.6
7769871	109	0.8
7756850	110	< 0.3
7769872	111	< 0.3
7769866	205	< 0.3
7714179	106A	1.1
7714155	10A	< 0.3
7769863	201A	0.5
7714139	APR	< 0.3
7769867	APR	< 0.3
7756843	* AS PRIN (Fan on)	< 0.3
7756868	BSM	< 0.3
7756821	CONF	0.8
7756825	FILE	0.8
7756867	* GOF (Tampered)	< 0.3
7714181	GYM	1.1
7769873	GYM	1.2
7714177	GYM OFF	1.8
7756863	IDA	0.8
7756842	MAIL	0.7
7714203	* MAIN CONF (Tampered)	< 0.3

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Beall Elementary School		
Test Period: 09/27/16-09/30/16		
Kit Number	QC Type	Result
7714154	D (9)	0.9
7806840	* D (GYM:Missing)	-
7714204	D (MAIN CONF)	< 0.3
7756864	D (SDT)	< 0.3
7769868	FB (110)	< 0.3

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Beall Elementary School		
Test Period: 09/27/16-09/30/16		
Kit Number	Room / Area	Result
7769859	MEDIA	< 0.3
7769860	MEDIA	< 0.3
7769878	MEDIA OFF	< 0.3
7769875	MINI	< 0.3
7756866	NURSE	0.7
7756844	PRIN	0.7
7769879	SDT	< 0.3
7714180	STAGE	< 0.3
7769870	* STUDIO (Tampered)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

**BEALL ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7714152	1	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	1.4 ± 0.3	2016-10-03
7714156	10	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	0.7 ± 0.3	2016-10-03
7769874	101	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7756851	102	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7756808	103	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7714185	104	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7756826	105	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7714176	106	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	0.9 ± 0.3	2016-10-03
7714179	106A	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	1.1 ± 0.3	2016-10-03
7756841	107	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	0.9 ± 0.3	2016-10-03
7769865	108	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	0.6 ± 0.3	2016-10-03
7769871	109	2016-09-27 @ 9:00 am	2016-09-30 @ 9:00 am	0.8 ± 0.3	2016-10-03
7714155	10A	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7714151	11	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	0.8 ± 0.3	2016-10-03
7769868	110	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7756850	110	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7769872	111	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7769869	12	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7714157	13	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7714160	14	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	0.6 ± 0.3	2016-10-03
7802118	15	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802102	16	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	1.0 ± 0.3	2016-10-03
7802138	17	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7714163	18	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7769864	2	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	1.4 ± 0.3	2016-10-03
7769863	201A	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	0.5 ± 0.2	2016-10-03
7769866	205	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7756849	3	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	0.7 ± 0.3	2016-10-03
7714153	4	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	1.2 ± 0.3	2016-10-03
7769861	5	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	< 0.3	2016-10-03
7802101	6	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	1.2 ± 0.3	2016-10-03
7756846	7	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	1.0 ± 0.3	2016-10-03
7756847	8	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	1.1 ± 0.3	2016-10-03
7714154	9	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	0.9 ± 0.3	2016-10-03
7714148	9	2016-09-27 @ 10:00 am	2016-09-30 @ 9:00 am	0.6 ± 0.3	2016-10-03
7769867	APR	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7714139	APR	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03

Radon test result report for:

**BEALL ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7756843	AS PRIN	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7756868	BSM	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7756821	CONF	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	0.8 ± 0.3	2016-10-03
7756825	FILE	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	0.8 ± 0.3	2016-10-03
7756867	GOF	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7756840	GYM	@	@		
7769873	GYM	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	1.2 ± 0.3	2016-10-03
7714181	GYM	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	1.1 ± 0.3	2016-10-03
7714177	GYM OFF	2016-09-27 @ 9:00 am	2016-09-30 @ 8:00 am	1.8 ± 0.4	2016-10-03
7756863	IDA	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	0.8 ± 0.3	2016-10-03
7756842	MAIL	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	0.7 ± 0.3	2016-10-03
7714203	MAIN CONF	2016-09-27 @ 11:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7714204	MAIN CONF	2016-09-27 @ 11:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7769859	MEDIA	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7769860	MEDIA	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7769878	MEDIA OFF	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7769875	MINI	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7756866	NURSE	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	0.7 ± 0.3	2016-10-03
7756844	PRIN	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	0.7 ± 0.3	2016-10-03
7769879	SDT	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7756864	SDT	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7714180	STAGE	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03
7769870	STUDIO	2016-09-27 @ 8:00 am	2016-09-30 @ 8:00 am	< 0.3	2016-10-03

October 7, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS Radon

Phase 18 Office Blanks

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7802697	1	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7801899	10	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802932	11	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802935	12	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802915	13	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802941	2	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802942	3	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802919	4	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802918	5	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802917	6	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802916	7	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802952	8	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03
7802928	9	2016-09-26 @ 11:00 am	2016-09-29 @ 11:00 am	< 0.3	2016-10-03

Radon test result report for:

MCPS Radon

Phase 18 Transit Blanks

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7714274	1	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802962	10	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714295	11	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714299	12	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714273	13	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714270	14	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802965	2	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802696	3	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802690	4	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714275	5	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7714298	6	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802990	7	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802974	8	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03
7802694	9	2016-09-26 @ 10:00 am	2016-09-29 @ 10:00 am	< 0.3	2016-10-03

October 12, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**MCPS Radon
Spike Sample Results**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7769880	101	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	22.9 ± 1.0	2016-09-28
7769884	102	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	22.4 ± 1.0	2016-09-28
7769885	103	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	23.0 ± 1.0	2016-09-28
7769890	104	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	22.3 ± 1.0	2016-09-28
7769891	105	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	26.8 ± 1.2	2016-09-28
7769899	106	2016-09-24 @ 8:00 am	2016-09-26 @ 8:00 am	24.1 ± 1.1	2016-09-28

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

Note: Spike samples are test canisters that are deliberately exposed to a controlled high level of radon in a laboratory. They provide a quality control measure in the testing process and do NOT reflect radon levels in the building being tested.

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 176788

NOMINAL Conditions: Radon Conc 26.1 pCi/L Rel. Hum 49.6 % Temp. 70.0 F

Date Start: 9/24/16 Date Stop: 9/26/16 Date Start: _____ Date Stop: _____

Time Start: 0758 Time Stop: 0758 Time Start: _____ Time Stop: _____

Device No.'s: (6) Char. Bags - Device No.'s: _____

7769899, 7769884, 7769885, _____

7769889, 7769890, 7769891 _____

F3 Left

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**



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 18

Name of Schools:

1. Wood Acres Elementary School
2. Walt Whitman High School
3. Burning Tree Elementary School
4. Ashburton Elementary School
5. Bethesda Maintenance
6. Bethesda Transportation
7. Herbert Hoover Middle School
8. Cold Spring Elementary School
9. Garret Park Elementary School
10. Rock View Elementary School
11. Francis Scott Key Middle School
12. Montgomery Blair High School
13. Stephen Knolls School
14. Lourie Center
15. Shriver Elementary School
16. Viers Mill Elementary School
17. Highland Elementary School
18. Newport Middle School
19. Albert Einstein High School
20. Sligo Middle School
21. East Silver Spring Elementary School
22. Oak View Elementary School
23. Roscoe Nix Elementary School
24. Northwood High School
25. Springbrook High School
26. John F. Kennedy High School

	Date	Initials
Radon Test Kits Deployed	9/26/16	JM
Radon Test Kits Collected	9/29/16	JM
Radon Test Kits Shipped to Lab*	9/30/16	JM
Radon Test Kits Received by Lab*	10/03/16	JM

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 18

Name of Schools:

- | | |
|--|-----------------------------------|
| 1. Damascus High School | 17. Watkins Mills High School |
| 2. Cedar Grove Elementary School | 18. Forest Oak Middle School |
| 3. Hallie Wells Middle School | 19. Gaithersburg Middle School |
| 4. Clarksburg Elementary School | 20. Emory Grove |
| 5. Clarksburg High School | 21. Fields Road Elementary School |
| 6. Woodlin Elementary School | 22. Beall Elementary School |
| 7. Flora Singer Elementary School | 23. Julius West Middle School |
| 8. Spring Mill Center | 24. Thomas Wootton High School |
| 9. Dr. Charles Drew Elementary School | 25. Robert Frost High School |
| 10. William Farquah Middle School | 26. Travilah Elementary School |
| 11. Rosa Parks Middle School | 27. Jones Lane Elementary School |
| 12. Blair Ewing Center | 28. Longview School |
| 13. Lathrop Smith Environmental Center | 29. Rock Terrace High School |
| 14. Sequoyah Elementary School | 30. Germantown Elementary School |
| 15. Shady Grove Middle School | 31. Lake Seneca Elementary School |
| 16. Captain James Daly Elementary School | |

	Date	Initials
Radon Test Kits Deployed	9/27/16	JM
Radon Test Kits Collected	9/30/16	JM
Radon Test Kits Shipped to Lab*	9/30/16	JM
Radon Test Kits Received by Lab*	10/03/16	JM

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

RADON SCREENING SURVEY – FOLLOW-UP BEALL ELEMENTARY SCHOOL

6520 Dalroy Lane, Bethesda, Maryland 20817

EXECUTIVE SUMMARY

Date of Test Report:	3/11/16 Follow-Up
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	7
# Rooms \geq 4.0 pCi/L:	0
Low Value:	<0.3
High Value:	3.5
Confirmed Rooms \geq 4.0 pCi/L US EPA Action Level	0

Summary of Sampling Events \geq 4.0 pCi/L

Room	Result (pCi/L) 2/19/16 (Rev 3 Initial)	Result (pCi/L) 3/11/16 Follow-Up	Average Result (pCi/L)
110	<0.3 Tampered	0.9	0.6
118	3.4 Tampered	3.5	3.5
120	--- Missing	1.4	1.4
148	0.8 Tampered	<0.3	0.6
148	0.9 Tampered	0.7	0.8
149	<0.3 Tampered	0.9	0.6
GYM	1.6 Tampered	2.1	1.9
GYM	1.6 Tampered	2.4	2.0
GYM	1.1 (D) Tampered	Not Sampled	1.1
GYM	1.1 (D) Tampered	Not Sampled	1.1
176	1.5	1.2	1.4



MCPS RADON TESTING

Executive Summary: Beall Elementary School

Date of Test Report:	3/11/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	7
# Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	3.5

Project Status:

Retesting completed; no further action at this time.



March 11, 2016

Mr. Richard Cox
Indoor Air Quality Team Leader
Montgomery County Public Schools
850 Hungerford Drive
Rockville, MD 20850

Re: **Radon Testing Services**
KCI Job # 12146341.29

Location: Beall Elementary School
451 Beall Avenue
Rockville, MD 20850

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Beall Elementary School, located at 451 Beall Avenue in Rockville, Maryland 20850 (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 Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on February 22, 2016 and deployed eleven (11) activated charcoal (AC) radon test kits. KCI deployed radon test kits in 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 included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) 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 25, 2016 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:

The operating condition that represents the greatest amount of significantly occupied time for this building is; heating active, with outdoor temperature averages $\leq 65^{\circ}$ F.

KCI concludes that the test period reasonably represents normal conditions when the building is significantly occupied. Clear characterization of the radon hazard is most likely to be observed under this normal operating condition. Based on the evaluation of test conditions, this test should reasonably characterize radon hazards.

KCI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. Note that strong storms and heavy rainfall were recorded during the test period. The unusual weather conditions may have resulted in atypical radon test results for this facility.

KCI recorded observations of the following conditions in each room at 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.

Results:

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	

Notes:

D- Duplicate sample

The field blank, office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C). Laboratory results and exposure data for the spike samples are also included in Attachment C.

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) 316-7800.

Sincerely,



James M. Mouldale
Radon Measurement Specialist
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-Radon Test Summary Spreadsheet
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

Table Notes:

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank*

PM- Project Manager

QC- Quality Control

*Office blanks were submitted at a rate of 1% for all samples deployed in Phase 9 testing. Office blanks were not submitted under each school individually.

Radon Testing Results		
Beall ES		
Test Period: 02/22/16-02/25/16		
Kit Number	Room / Area	Result
7712597	110	0.9
7712594	118	3.5
7712593	120	1.4
7712596	148	< 0.3
7712586	148	0.7
7712577	149	0.9
7712560	176	1.2
7712565	GYM	2.1
7712590	GYM	2.4

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Beall ES		
Test Period: 02/22/16-02/25/16		
Kit Number	QC Type	Result
7712591	D (148)	< 0.3
7712576	FB (148)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

March 8, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**BEALL ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7712597	110	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	0.9 ± 0.3	2016-02-29
7712594	118	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	3.5 ± 0.4	2016-02-29
7712593	120	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	1.4 ± 0.3	2016-02-29
7712576	148	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	< 0.3	2016-02-29
7712586	148	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	0.7 ± 0.3	2016-02-29
7712591	148	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	< 0.3	2016-02-29
7712596	148	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	< 0.3	2016-02-29
7712577	149	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	0.9 ± 0.3	2016-02-29
7712560	176	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	1.2 ± 0.3	2016-02-29
7712565	GYM	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	2.1 ± 0.4	2016-02-29
7712590	GYM	2016-02-22 @ 11:00 am	2016-02-25 @ 12:00 pm	2.4 ± 0.4	2016-02-29

March 9, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
MCPS
Phase 9 Office Blanks

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7712568	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29
7712584	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29
7719460	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29
7719481	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29
7719497	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29
7719498	0	2016-02-22 @ 6:00 pm	2016-02-25 @ 3:00 pm	< 0.3	2016-02-29

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

March 9, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
MCPS
Phase 9 Office Blanks

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7731626	0	2016-02-23 @ 2:00 pm	2016-02-26 @ 3:00 pm	< 0.3	2016-03-01
7731633	0	2016-02-23 @ 2:00 pm	2016-02-26 @ 3:00 pm	< 0.3	2016-03-01
7735204	0	2016-02-23 @ 2:00 pm	2016-02-26 @ 3:00 pm	< 0.3	2016-03-01

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

February 23, 2016
LABORATORY ANALYSIS REPORT

Radon test result report for:
TRANSIT- PHASE 7, 8, 9
NONE

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7734937	1	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734946	10	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734955	11	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734956	12	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734959	13	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734930	14	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734953	15	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734954	16	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734940	17	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734949	18	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734948	19	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734939	2	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734942	20	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734929	21	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734933	22	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734934	23	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734936	24	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734943	25	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734944	26	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734935	27	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734928	28	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734952	29	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734947	3	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734931	30	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734932	31	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718520	32	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718523	33	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718522	34	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7718521	35	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734945	4	2016-02-19 @ 3:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734960	5	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734958	6	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734951	7	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734957	8	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23
7734938	9	2016-02-19 @ 4:00 pm	2016-02-22 @ 11:00 am	< 0.3	2016-02-23

February
15,
2016

****LABORATORY ANALYSIS
REPORT ****

Spike Sample Laboratory Results

Radon test result report for:
MCPS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7718273	101A	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.5 ± 0.6	2016-02-04
7718281	102B	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.4 ± 0.6	2016-02-04
7718282	103C	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.3 ± 0.6	2016-02-04
7718288	104D	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.7 ± 0.6	2016-02-04
7718289	105E	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.6 ± 0.6	2016-02-04
7718291	106F	2016-01-30 @ 9:00 am	2016-02-01 @ 9:00 am	6.5 ± 0.6	2016-02-04

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

Note: Spike samples are test canisters that are deliberately exposed to a controlled high level of radon in a laboratory. They provide a quality control measure in the testing process and do NOT reflect radon levels in the building being tested.

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCF Technologies Inc. Job Number 173704

NOMINAL Conditions: Radon Conc 5.9 pCi/L Rel. Hum 45.9 % Temp. 79.0 F

Date Start: 11/30/16 Date Stop: 2/1/16 Date Start: _____ Date Stop: _____

Time Start: 0926 Time Stop: 0926 Time Start: _____ Time Stop: _____

Device No.'s: (6) Char. Bags - Device No.'s: _____

7718281, 7718282, 7718291, _____

7718288, 7718289, 7718273 _____

ε3 Left

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 9

Name of Schools:

- | | | |
|--------------------------|---------------------------|------------------------|
| 1. Rocking Horse Road ES | 16. Broad Acres ES | 31. Rosa Parks MS |
| 2. Rockwell ES | 17. Belmont ES | 32. Rosemary Hills ES |
| 3. Oakland Terrace ES | 18. Emory Grove Center | 33. Sequoyah ES |
| 4. Rosemont ES | 19. Forest Knolls ES | 34. Damascus HS |
| 5. Beall ES | 20. Baker MS | 35. Einstein ES |
| 6. Cresthaven ES | 21. MLK MS | 36. Forest Oak MS |
| 7. Quince Orchard HS | 22. Richard Montgomery HS | 37. Hoover MS |
| 8. Smith Center | 23. Sherwood HS | 38. Julius West MS |
| 9. Ashburton ES | 24. Walter Johnson HS | 39. John F. Kennedy HS |
| 10. Bannockburn ES | 25. Diamond ES | 40. Travilah ES |
| 11. Bradley Hills ES | 26. Newport Mill MS | 41. Watkins Mill HS |
| 12. Cannon Road ES | 27. Drew ES | 42. Northwood HS |
| 13. Flora M. Singer ES | 28. Monocacy ES | 43. Lincoln Center |
| 14. Clarksburg HS | 29. Potomac ES | |
| 15. Briggs Chaney MS | 30. Rock Terrace School | |

	Date	Initials
Radon Test Kits Deployed	2/22/16	JM
Radon Test Kits Collected	2/25/16	JM
Radon Test Kits Shipped to Lab*	2/25/16	JM
Radon Test Kits Received by Lab*	2/29/16	JM

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 9

Name of Schools:

- | | |
|----------------------------|-------------------------|
| 1. Banneker MS | 10. Maryvale ES |
| 2. Bethesda-Chevy Chase HS | 11. Montgomery Blair HS |
| 3. Burtonsville ES | 12. Poolesville HS |
| 4. Chevy Chase ES | 13. Rachel Carson ES |
| 5. Clopper Mill ES | 14. Stedwick ES |
| 6. Edison HS | 15. Watkins Mill ES |
| 7. Flower Hill ES | 16. Laytonsville ES |
| 8. Flower Valley ES | 17. Lincoln Center |
| 9. Greencastle ES | |

	Date	Initials
Radon Test Kits Deployed	2/23/16	JM
Radon Test Kits Collected	2/26/16	JM
Radon Test Kits Shipped to Lab*	2/26/16	JM
Radon Test Kits Received by Lab*	3/01/16	JM

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



MCPS RADON TESTING

Executive Summary: Beall Elementary School

Date of Test Report:	2/19/2016 (Rev 3)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	65
# Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	3.4

Project Status:

Initial testing completed; missing or compromised samples need re-test.



February 19, 2016 (Rev 3)

Mr. Richard Cox
Indoor Air Quality Team Leader
Montgomery County Public Schools
850 Hungerford Drive
Rockville, MD 20850

Re: **Radon Testing Services**
KCI Job # 12146341.19

Location: Beall Elementary School
451 Beall Avenue
Rockville MD 20850

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Beall Elementary School, located at 451 Beall Avenue in Rockville Maryland 20850 (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 Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on December 15, 2016 and deployed eighty-one (81) activated charcoal (AC) radon test kits. KCI deployed radon test kits in 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 included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) 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 December 18, 2016 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:

The operating condition that represents the greatest amount of significantly occupied time for this building is; heating active, with outdoor temperature averages $\leq 65^{\circ}$ F.

KCI concludes that the test period reasonably represents normal conditions when the building is significantly occupied. Clear characterization of the radon hazard is most likely to be observed under this normal operating condition. Based on the evaluation of test conditions, this test should reasonably characterize radon hazards.

KCI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. KCI recorded observations of the following conditions in each room at 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.

Results:

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	

Notes:
D- Duplicate sample

All field blanks, office blank, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C). Laboratory results and exposure data for the spike samples are also included in Attachment C.

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) 316-7800.

Sincerely,



James M. Mouldale
Radon Measurement Specialist
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-Radon Test Summary Spreadsheet
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Radon Testing Results		
Beall Elementary School		
Test Period: 12/15/15-12/18/15		
Kit Number	Room / Area	Result
7705197	102	0.5
7705199	103	< 0.3
7705200	104	< 0.3
7704997	105	0.7
7704996	107	0.7
7705193	107	< 0.3
7704327	108	0.6
7705194	109	< 0.3
7705192	111	0.8
7705198	112	0.6
7704294	113	0.6
7704325	114	< 0.3
7704973	115	3.2
7704974	116	1.5
7704999	117	1
7704991	119	0.9
7704977	121	2.7
7704998	122	1.4
7704976	123	1.6
7704985	125	1
7704986	129	< 0.3
7704955	130	< 0.3
7704971	131	0.8
7704318	132	0.7
7704984	133	1.5
7704306	134	1.2
7704967	135	0.6
7704961	136	< 0.3
7704954	137	< 0.3
7704978	138	0.6
7704311	141	< 0.3
7704956	141	0.6
7704958	142	< 0.3
7704990	143	< 0.3
7704979	144	0.8
7704960	146	< 0.3
7704304	165	0.7
7704296	166	0.8
7704965	167	0.9
7704992	168	0.8
7704963	170	1.1
7704981	171	1.4
7704993	172	< 0.3
7704957	172	0.9
7704959	173	2.2
7704962	174	1.1

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Beall Elementary School		
Test Period: 12/15/15-12/18/15		
Kit Number	Room / Area	Result
7704964	175	1.5
7704945	176	1.5
7704987	182	1.7
7704937	206	0.6
7704943	207	0.6
7704989	208	< 0.3
7704982	209	0.9
7704948	210	< 0.3
7704952	211	0.9
7704972	212	1.1
7704966	213	0.8
7704970	214	1.1
7704968	215	1.1
7704969	216	0.8
7705190	* 110 (Tampered)	< 0.3
7704980	* 118 (Tampered)	3.4
7705187	* 120 (Missing)	-
7705186	* 148 (Tampered)	0.8
7705189	* 148 (Tampered)	0.9
7704326	* 149 (Tampered)	< 0.3
7704941	* GYM (Tampered)	1.6
7704995	* GYM (Tampered)	1.6

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Beall Elementary School		
Test Period: 12/15/15-12/18/15		
Kit Number	QC Type	Result
7705196	D (102)	0.6
7705195	D (113)	< 0.3
7705182	D (114)	0.6
7704975	D (118)	2.8
7705000	D (119)	0.7
7704983	D (176)	1.6
7704988	* D (GYM:Tampered)	1.1
7704994	* D (GYM:Tampered)	1.1
7705181	FB (107)	< 0.3
7704295	FB (108)	< 0.3
7705191	FB (110)	< 0.3
7705103	FB (112)	< 0.3
7704398	OB (OFFICE BLANK)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

December
30,
2015

**LABORATORY ANALYSIS
REPORT ****

Radon test result report for:
**BEALL ES SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7705196	102	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	0.6 ± 0.3	2015-12-22
7705197	102	2015-12-15 @ 8:00 am	2015-12-18 @ 8:00 am	0.5 ± 0.3	2015-12-22
7705199	103	2015-12-15 @ 8:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7705200	104	2015-12-15 @ 8:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7704997	105	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	0.7 ± 0.3	2015-12-22
7704996	101	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	0.7 ± 0.3	2015-12-22
7705181	107	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7705193	107	2015-12-15 @ 8:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7704327	108	2015-12-15 @ 8:00 am	2015-12-18 @ 8:00 am	0.6 ± 0.3	2015-12-22
7704295	108	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7705194	109	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7705190	110	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7705191	110	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7705192	111	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	0.8 ± 0.3	2015-12-22
7705103	112	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7705198	112	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	0.6 ± 0.3	2015-12-22
7705195	113	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7704294	113	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	0.6 ± 0.3	2015-12-22
7705182	114	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	0.6 ± 0.3	2015-12-22
7704325	114	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7704973	115	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	3.2 ± 0.4	2015-12-22
7704974	116	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	1.5 ± 0.3	2015-12-22
7704999	117	2015-12-15 @ 9:00 am	2015-12-18 @ 8:00 am	1.0 ± 0.3	2015-12-22
7704975	118	2015-12-15 @ 10:00 am	2015-12-18 @ 9:00 am	2.8 ± 0.4	2015-12-22
7704980	118	2015-12-15 @ 10:00 am	2015-12-18 @ 9:00 am	3.4 ± 0.4	2015-12-22
7704991	119	2015-12-15 @ 9:00 am	2015-12-18 @ 9:00 am	0.9 ± 0.3	2015-12-22
7705000	119	2015-12-15 @ 9:00 am	2015-12-18 @ 9:00 am	0.7 ± 0.3	2015-12-22
7704977	121	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	2.7 ± 0.3	2015-12-22
7704998	122	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	1.4 ± 0.3	2015-12-22
7704976	123	2015-12-15 @ 10:00 am	2015-12-18 @ 9:00 am	1.6 ± 0.3	2015-12-22
7704985	125	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	1.0 ± 0.3	2015-12-22
7704986	129	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7704955	130	2015-12-15 @ 10:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704971	131	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	0.8 ± 0.3	2015-12-22
7704318	132	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	0.7 ± 0.3	2015-12-22
7704984	133	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	1.5 ± 0.3	2015-12-22
7704306	134	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	1.2 ± 0.3	2015-12-22

December
30,
2015

**LABORATORY ANALYSIS
REPORT ****

Radon test result report for:
**BEALL ES SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7704967	135	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	0.6 ± 0.3	2015-12-22
7704961	136	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7704954	137	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	< 0.3	2015-12-22
7704978	138	2015-12-15 @ 10:00 am	2015-12-18 @ 8:00 am	0.6 ± 0.3	2015-12-22
7704956	141	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.6 ± 0.3	2015-12-22
7704311	141	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704958	142	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704990	143	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704979	144	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.8 ± 0.3	2015-12-22
7704960	146	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7705186	148	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.8 ± 0.3	2015-12-22
7705189	148	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.9 ± 0.3	2015-12-22
7704326	149	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704304	165	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.7 ± 0.3	2015-12-22
7704296	166	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.8 ± 0.3	2015-12-22
7704965	167	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.9 ± 0.3	2015-12-22
7704992	168	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.8 ± 0.3	2015-12-22
7704963	170	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	1.1 ± 0.3	2015-12-22
7704981	171	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	1.4 ± 0.3	2015-12-22
7704993	172	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704957	169	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.9 ± 0.3	2015-12-22
7704959	173	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	2.2 ± 0.3	2015-12-22
7704962	174	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	1.1 ± 0.3	2015-12-22
7704964	175	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	1.5 ± 0.3	2015-12-22
7704945	176	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	1.5 ± 0.3	2015-12-22
7704983	176	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	1.6 ± 0.3	2015-12-22
7704987	182	2015-12-15 @ 1:00 pm	2015-12-18 @ 9:00 am	1.7 ± 0.3	2015-12-22
7704937	206	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.6 ± 0.3	2015-12-22
7704943	207	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.6 ± 0.3	2015-12-22
7704989	208	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704982	209	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.9 ± 0.3	2015-12-22
7704948	210	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	< 0.3	2015-12-22
7704952	211	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.9 ± 0.3	2015-12-22
7704972	212	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	1.1 ± 0.3	2015-12-22
7704966	213	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.8 ± 0.3	2015-12-22
7704970	214	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	1.1 ± 0.3	2015-12-22
7704968	215	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	1.1 ± 0.3	2015-12-22

December
30,
2015

**** LABORATORY ANALYSIS
REPORT ****

Radon test result report for:
**BEALL ES SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7704969	216	2015-12-15 @ 11:00 am	2015-12-18 @ 9:00 am	0.8 ± 0.3	2015-12-22
7704941	GYM	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	1.6 ± 0.3	2015-12-22
7704994	GYM	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	1.1 ± 0.3	2015-12-22
7704995	GYM	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	1.6 ± 0.3	2015-12-22
7704988	GYM	2015-12-15 @ 12:00 pm	2015-12-18 @ 9:00 am	1.1 ± 0.3	2015-12-22

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

December
30,
2015

**** LABORATORY ANALYSIS
REPORT ****

Radon test result report for:
**BEALL ES SCHOOL
OFFICE BLANK**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7704398	OFFICE BLANK	2015-12-15 @ 2:00 pm	2015-12-18 @ 2:00 pm	< 0.3	2015-12-22

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

December
29,
2015

****LABORATORY ANALYSIS
REPORT ****

Radon test result report for:
TRANSIT DEC 14 2015
NONE

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7704395	TRANSIT 1	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706508	TRANSIT 10	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706510	TRANSIT 11	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706511	TRANSIT 12	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706505	TRANSIT 13	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704371	TRANSIT 14	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706506	TRANSIT 15	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704381	TRANSIT 16	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704399	TRANSIT 17	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704390	TRANSIT 18	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704396	TRANSIT 2	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704364	TRANSIT 3	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704370	TRANSIT 4	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7704368	TRANSIT 5	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706524	TRANSIT 6	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706526	TRANSIT 7	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706518	TRANSIT 8	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16
7706516	TRANSIT 9	2015-12-13 @ 10:00 am	2015-12-15 @ 10:00 am	< 0.3	2015-12-16

December
23,
2015

**LABORATORY ANALYSIS
REPORT ****

Spike Sample Laboratory Results

Radon test result report for:
MCPS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7706380	101	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	25.2	2015-12-23
7706381	102	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	26.5	2015-12-23
7706208	103	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	27.7	2015-12-23
7705132	104	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	28.6	2015-12-23
7706366	105	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	26.5	2015-12-23
7706211	106	2015-12-18 @ 9:00 am	2015-12-21 @ 9:00 am	26.1	2015-12-23

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

Note: Spike samples are test canisters that are deliberately exposed to a controlled high level of radon in a laboratory. They provide a quality control measure in the testing process and do NOT reflect radon levels in the building being tested.

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 173224

NOMINAL Conditions: Radon Conc 26.9 pCi/L Rel. Hum 49.6 % Temp. 69.9 F

Date Start: 12/18/15 Date Stop: 12/21/15 Date Start: _____ Date Stop: _____

Time Start: 0929 Time Stop: 0929 Time Start: _____ Time Stop: _____

Device No.'s: 7705132, 7706208, Device No.'s: _____

7706211, 7706366, _____

7706380, 7706381 _____

F3 Left

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**



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase I

Name of Schools:

- | | | | |
|----------------------------|------------------------|------------------------|-----------------------|
| 1. Westland M.S. | 6. South Lake E.S. | 11. Highland View E.S. | 16. Ridgeview M.S. |
| 2. East Silver Spring E.S. | 7. Jones Lane E.S. | 12. Cresthaven E.S. | 17. Rockwell E.S. |
| 3. Oakland Terrace E.S. | 8. Quince Orchard H.S. | 13. Viers Mill E.S. | 18. Oak View E.S. |
| 4. Rocking Horse Road E.S. | 9. Damascus E.S. | 14. Smith Center | 19. Jackson Road E.S. |
| 5. Beall E.S. | 10. Westbrooke E.S. | 15. Rosemont E.S. | 20. Highland E.S. |
| | | | 21. Watkins Mill E.S. |

	Date	Initials
Radon Test Kits Deployed	12/15/15	KM
Radon Test Kits Collected	12/18/15	KM
Radon Test Kits Shipped to Lab*	12/18/15	KM
Radon Test Kits Received by Lab*	12/22/15	KM

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

A.B.E. Radiation Measurements Laboratory

Division of Health Physics Associates, Inc.

1005 Old 22 PO Box 214 Lenhartsville, PA 19534

dee@radprotection.com

(610) 756-4153 (Voice) (610) 756-0042 (FAX)

December 22, 2015

MA Cecil & Associates, Inc.
4475 Shannon Way
Port Republic, MD 20676

Attn: Kimberly Tayman

re: **Radon Sampling**, Beall Elementary School,
451 Beall Ave., Rockville, MD 20850.
Dates of tests: December 9 to 11, 2015
Chamber Spikes: 2.9 % Deviation; September 19 to 21, 2015

Dear Ms. Tayman:

The following is a report of the radon sampling your company conducted at the referenced property using activated charcoal. The charcoal analysis procedures have passed the US EPA's Radon Measurement Proficiency Testing program, and A.B.E. Radiation Measurements Lab is certified by the PA DEP as a laboratory (certification number 0048). The table lists each sample location and the net radon levels in picocuries per liter (pCi/l). Screening testing should be conducted under "closed house" conditions; however, A.B.E. Radiation Measurements Laboratory has no control over how the test device is treated in our absence or the degree of ventilation at the property over the course of the test.

<u>Canister Number</u>	<u>Location</u>	<u>Start Time</u>	<u>End Time</u>	<u>pCi/l</u>
174424	Mail Room	16:59	17:01	0.9
174430	Conference Room	16:59	17:01	0.7

CONCLUSIONS

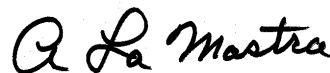
The radon concentrations measured during the test were below the US EPA screening guideline of less than 4.0 pCi/l and remedial action to reduce the radon concentration is not indicated based on the results of this test. Because of the variability of radon air concentrations over the course of a year, follow-up biannual testing during a different season, under occupied conditions, is recommended to better estimate the annual average air concentrations.

The results of this test are valid only for the date, time and conditions under which the test was conducted and only for the client ordering the test.

Should you wish to discuss this report, please do not hesitate to contact us at (610) 756-4153.

Thank you for the opportunity to serve you.

Sincerely,



A. LaMastra
President