

School / Facility Radon Testing Report Form

School Year: **24-25**

Facility:	Carderock Springs Elementary School		
Address:	7401 Persimmon Tree Ln.		
	Bethesda, MD 20817		
Reason for Testing:	Scheduled Re-Testing - <input type="checkbox"/> 2-year or <input checked="" type="checkbox"/> 5-year schedule <input type="checkbox"/> Clearance Testing (Post-Mitigation) <input checked="" type="checkbox"/> Building Envelope or HVAC Upgrades <input type="checkbox"/> New Construction – Addition or Facility		
Current Radon Status:	<input type="checkbox"/> Active Mitigation (2-year regular schedule) <input checked="" type="checkbox"/> No Active Mitigation (5-year regular schedule) <input type="checkbox"/> Not Previously Tested (New Facility)		
Round of Testing:	<input checked="" type="checkbox"/> Initial Testing -or- <input type="checkbox"/> Follow-up Testing		
Testing Status:	<input checked="" type="checkbox"/> No Further Testing Needed -or- <input type="checkbox"/> Follow-Up Testing Required		

Conclusion (When Testing Status is - No Further Testing Needed)

Mitigation -	Facility Radon Status:		
<input checked="" type="checkbox"/> Not Required <input type="checkbox"/> Required (≥ 4.0 -pCi/L) Rooms:	<input checked="" type="checkbox"/> No Change in Status <input type="checkbox"/> Active Mitigation (2-year regular schedule) <input type="checkbox"/> No Active Mitigation (5-year regular schedule)		
Number of Rooms Tested	43	Lowest Value (pCi/L)	<0.3
Number of Rooms (≥ 4.0 -pCi/L)	0	Highest Value (pCi/L)	1.3

Instructions: Submit one testing report form per-facility. Include the following as attachments:

Attachment 1- Summary Data Tables – containing the following: (see attached samples tables)

- Testing Results – lab/detector Identification, by room number/name (alpha-numeric order) as depicted on facility map/floor plan provided by the facility/school at the time of test device deployment;
- Summary Results – list of rooms by test result ≥ 2.0 -pCi/L; ≥ 2.7 -pCi/L; ≥ 4.0 -pCi/L; and ≥ 8.0 -pCi/L;
- QA/QC Results - (field blanks and duplicates) indicating location collected; trip and office blanks; and spike sample results;
- Invalid Measurement Locations – missed locations, missing and or damaged/compromised testing devices.

Attachment 2 – Laboratory Report(s)

Attachment 3 – Sampling Location Map(s) – indicating approximate location of samples, duplicates and blanks.

Detector and Deployment

Detector/Device Type:	<input checked="" type="checkbox"/> Passive	<input checked="" type="checkbox"/> Charcoal Absorption (CAD) <input type="checkbox"/> Alpha Track (ATD) <input type="checkbox"/> Other
	<input type="checkbox"/> Continuous	<input type="checkbox"/> Electret ion Chamber (EIC) <input type="checkbox"/> Electronic Integration (EID)
Other—Specify here:		
Detector/Device Name:	Air Chek – Radon Test Kits	
Manufacturer:	Radon Labs	
Person(s) Deploying or Retrieving Test Devices and certification number		Organization/Company
Tyler McCleaf, CSP Cert. # 111004-RMP		KCI Technologies, Inc.
If noncertified individuals, the qualified measurement professional providing oversight -		

Testing

<input checked="" type="checkbox"/> Short-Term	Length of Test (days):	3	Date of Deployment and Retrieval (mm/dd/yy):	1/28/2025
<input type="checkbox"/> Long-Term				1/31/2025
Does the test period include weekends, school breaks or holidays?				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
If “Yes” please explain/detail in the space below:				
Was HVAC operating under occupied conditions?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
If “No” please explain/detail in the space below:				

Testing (continued)

Round of Testing	Detectors Deployed				
	Ground-Contact		Upper-Level(s)		Total
	Initial	Follow-Up	Initial	Follow-Up	
Test Locations ¹	40	0	3	0	43
Duplicates ²	4	0	0	0	4
Field Blanks ³	2	0	0	0	2
Grand Total					49

1 – include all detectors deployed (duplicates, field blanks); 1 detector per occupied (or intended to be occupied) ground-contact space ≤ 2,000-square feet; large spaces ≥ 2,000-square feet - 1 detector per 2,000-square feet or part thereof; and upper floors - 10% of all occupied or intended to be occupied rooms per floor (these are in addition to ground contact locations)

2 - 10% of all locations tested, per floor

3 – 5% of all locations tested, per floor

Quality Assurance / Quality Control (QA/QC)

A Quality Assurance plan that is consistent with ANSI/AARST MS-QA (Radon Measurement Systems Quality Assurance) was submitted under separate cover, and is available to review at the MCPS Radon Testing and Mitigation Program website. The following number of QA/QC samples are associated this facility.

Round of Testing	QA/QC Samples		Total
	Initial	Follow-Up	
Spikes ¹	Not applicable		10
Trip Blanks ²	1	0	1
Office Blanks ^{3, 4}	1	0	1
			12

1 - 3% of EIC detectors; and 3% from each LOT of CAD and ATD detectors; a maximum of 6-spiked measurements per month for both EIC detectors and each LOT of CAD and ATD detectors.

2 – One per shipping container from start of detector deployment

3 – One per facility tested as devices are removed/allocated from the storage location for deployment;

4 - One additional blank, analyzed prior to deployment, for storage locations that have not been evaluated or monitored, for detectors that have been stored for more than 30-day durations.

Quality Assurance / Quality Control (continued)

Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Quality Control measurements comply with QA/QC requirements in the submitted testing organization's/company's QA plan?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Round of Testing	Initial Follow-Up
All Field, Trip and Office Blanks are \leq (less than or equal to) to the Method Detection Limit?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No <input checked="" type="checkbox"/> No
For all Duplicate Samples ¹ , the higher value is $\leq 2x$ the lower value?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No <input checked="" type="checkbox"/> No
For all Duplicate Samples ¹ , Relative Percent Difference(s) (RPD) ² are less than the Warning Level ³ ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No <input checked="" type="checkbox"/> No
For all Duplicate Samples ¹ , Relative Percent Difference(s) (RPD) ² are less than the Control Level ³ ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> No <input checked="" type="checkbox"/> No

1 – Duplicate Control – a “NO” response constitute a control failure and the space/location represented by the duplicate sample becomes an invalid measurement location and should be listed in the “Invalid Measurement Locations” Table attached to this report.

2 - The objective of duplicate tests is to assess the precision error of the measurement method or, how well two side-by-side measurements agree or disagree. Precision involving duplicates is calculated by using Relative Percent Difference (RPD). RPD is equal to the difference between the higher test result minus the lower value test result divided by the average of the two duplicate test results, multiplied by 100. The RPD result is then compared to the warning and control limits.

3 - The Warning Level is set at the deviation from ideal performance that would be expected to occur by chance only 5% of the time, and Control Limits are set at that deviation from ideal performance that would be expected to occur by chance only 1% of the time. The Warning Level indicates a potential problem, which should be investigated. The Control Level indicates that the measurement system should be subject to corrective action.

The control and warning levels for duplicates, based on the averaged duplicate test result, are -

Average concentration of the two duplicate test results	Warning Level	Control Level
< 2.0-pCi/L	1-pCi/L	Not applicable
Between 2.0 and 3.9-pCi/L	50% RPD	67% RPD
≥ 4.0 -pCi/L	28% RPD	36% RPD

Summary of Test Results¹ and Determination of Valid Measurements²

Round of Testing	Ground-Contact		Upper-Level(s)		Total
	Initial	Follow-Up	Initial	Follow-Up	
Number of test locations:	40	0	3	0	43
Number of locations ≥ 8.0 -pCi/L:	0	0	0	0	0
Number of locations ≥ 4.0 and ≤ 8 -pCi/L:	0	0	0	0	0
Number of locations ≥ 2.7 and < 4 -pCi/L:	0	0	0	0	0
Number of locations ≥ 2.0 and < 2.7 -pCi/L:	0	0	0	0	0
Number of missing required test locations ³ :	0	0	0	0	0
Number of failed duplicate control locations:	0	0	0	0	0
Percentage of missing test locations for the facility ^{4,5} :	0	0	0	0	0

1 – for locations with multiple test results, report consistent with Section 7.2(When Two Test Results Disagree) and 8.1.2 (Averaging) of ANSI/AARST MA-MFLB 2023 – Conducting Measurements of Radon in Multifamily, School, Commercial and Mix-Use Buildings;

2 - the allowance is to be calculated individually for Ground-Contact and Upper-Level(s) Test Locations;

3 – includes missed or inaccessible locations upon deployment or retrieval, damaged (not able to analyze) and missing detectors upon retrieval;

4 – if all valid measurements are < 4.0 -pCi/L and the total number of test locations are ≥ 18 , there is an allowance of $\leq 33\%$. If less than 18 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023;

5 – if any valid measurements are ≥ 4.0 -pCi/L and the total number of test locations are ≥ 20 , there is an allowance of $\leq 25\%$ of the total locations tested. If less than 20 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023.

Summary of Test Results¹ and Determination of Valid Measurements² (continued)

Round of Testing	Initial	Follow-Up
Were test devices deployed in all occupied and intended to be occupied rooms in contact with the ground, and, if applicable, 10% of upper floor rooms?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Were valid measurements obtained in all occupied and intended to be occupied rooms in contact with the ground, and, if applicable, 10% of upper floor rooms?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<i>If Yes to both above – then Testing Status – ‘No Further Testing Needed’ mark ‘NA’ below and complete Conclusions section</i>		
If No to either above, were all results obtained under 4.0-pCi/L and were sufficient valid measurements obtained?^{1,2} <i>If Yes, then - ‘No Further Testing Needed’ complete Conclusion section on first page.</i> <i>If No, then - ‘Follow-up Testing Required’ continue below.</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA

1 – if all valid measurements are <4.0-pCi/L and the total number of test locations are ≥18, there is an allowance of ≤33%. If less than 18 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023 – Conducting Measurements of Radon in Multifamily, School, Commercial and Mix-Use Buildings to determine the allowance;
 2 – if any valid measurements are ≥4.0-pCi/L and the total number of test locations are ≥20, there is an allowance of ≤25% of the total locations tested. If less than 20 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023 – Conducting Measurements of Radon in Multifamily, School, Commercial and Mix-Use Buildings to determine the number the allowance.

Follow-Up Testing

Required –

- If an insufficient number (greater than the allowance provided above) of valid measurements were obtained during the initial round of testing (the “missing required test locations” in the table above);
- Any location test results ≥ 4.0-pCi/L;
- Any location where duplicates fail QC checks; and or
- At the discretion of MCPS IAQ Staff

Reason for Follow-Up Testing	Testing Procedure	Follow-up Result	Conclusion
Insufficient Number of Measurements	Follow same procedures as Initial Testing	Not Applicable	Follow Initial Testing procedures
Results ≥ 4.0-pCi/L	Deploy two Short-term follow-up tests and required blanks and duplicates; Average the results of the two tests	≥4.0	Mitigation Required
Failed QC checks		≥2.0 and <4.0	Consider Mitigation
		<2.0	Mitigation Not Required

- ***If follow-up testing identifies additional spaces requiring additional testing it will be performed as part of the ongoing follow-testing round.***

Attachment 1:

Summary Data Tables

Table 1- Radon Testing Results		
Carderock Springs Elementary School		
Test Period: 1/28/2025 - 1/31/2025		
Kit Number	Room / Area	Result
11919773	3	< 0.3
11919774	3	< 0.3
11919771	4	< 0.3
11919770	7	< 0.3
11919772	9	< 0.3
11919782	15	0.8
11919781	16	0.7
11903494	16	< 0.3
11919776	19	< 0.3
11919780	20	< 0.3
11930999	20	< 0.3
11919766	21	< 0.3
11919779	22	< 0.3
11919765	24	< 0.3
11919764	25	< 0.3
11919775	28	< 0.3
11919769	30	< 0.3
11893200	34	< 0.3
11919762	36	< 0.3
11930902	36	< 0.3
11930915	40	Unsealed Kit
11919735	40	< 0.3
11930948	45	< 0.3
11904198	100	0.5
11904197	102	< 0.3
11919763	111	< 0.3
11919745	128	< 0.3
11904189	132	< 0.3
11904190	132	< 0.3
11904194	136	< 0.3
11919756	140	< 0.3
11904199	206	< 0.3
11904187	100A	< 0.3
11907196	100B	< 0.3
11930976	100C	< 0.3
11930901	100E	0.6
11919712	102A	< 0.3

Table 1- Radon Testing Results		
Carderock Springs Elementary School		
Test Period: 1/28/2025 - 1/31/2025		
Kit Number	Room / Area	Result
11919768	13A	< 0.3
11919767	13B	< 0.3
11919761	13C	< 0.3
11904207	APR	< 0.3
11919758	APR	< 0.3
11904188	GYM	0.7
11919755	GYM	0.9
11919760	GYM OFFICE	1.3
11904200	KITCHEN OFFICE	< 0.3
11919746	MEDIA	< 0.3
11919759	MEDIA	< 0.3
11919711	MEDIA OFFICE	0.8

[illegible]

Table 3 - QC Radon Testing Results			
Carderock Springs Elementary School			
Test Period: 1/28/2025 - 1/31/2025			
Kit Number	QC Type	Room / Area	Result
11919774	D	3	< 0.3
11903494	FB	16	< 0.3
11919780	D	20	< 0.3
11930902	D	36	< 0.3
11919735	FB	40	< 0.3
11904189	D	132	< 0.3
11906899	OB	OFFICE BLANK	< 0.3
11926699	TB	TRAVEL BLANK	< 0.3

Table 3a - Duplicate Worksheet / Data Validation										
Carderock Springs Elementary School										
Test Period: 01/28/2025 - 01/31/2025										
Sample ID			Duplicate Concentrations (pCi/L) and OC Checks							
Kit Numbers		Room / Area	Higher	Lower	Check #1 (Pass/Fail)	2x the Lower	Check #2 (Pass/Fail)	Average	Relative Percent Difference (RPD)	Check #3
11904190	11904189	132	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11919762	11930902	36	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11919773	11919774	3	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11930999	11919780	20	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
NOTES: QC Check #1 - Data Entry QC Check #2 - Higher duplicate concentration is < or = to 2x the Lower QC Check #3 - Meets RPD Limits, by average duplicate concentration - enter 2 if RPD is BELOW warning and control levels, AND passes QC Check 1 and 2 - enter 1 if RPD is ABOVE warning and BELOW control levels, AND passes QC Check 1 and 2 - enter 0 if RPD is ABOVE control level, or 'FAILS' QC Check 1 or 2							Average (pCi/L)		Warning Level	Control Level
							< 2.0		1-pCi/L	NA
							Between 2.0 and 3.9		50% RPD	67% RPD
							≥ 4.0		28% RPD	36% RPD

[illegible]

Attachment 2:

Laboratory Reports

Radon test result report for:**CARDEROCK SPRINGS ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11904198	100	2025-01-28 @ 10:00 am	2025-01-31 @ 10:00 am	0.5 ± 0.3	2025-02-04
11904187	100A	2025-01-28 @ 10:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11907196	100B	2025-01-28 @ 10:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11930976	100C	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11930901	100E	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	0.6 ± 0.3	2025-02-04
11904197	102	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919712	102A	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919763	111	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919745	128	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11904189	132	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11904190	132	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11904194	136	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919768	13A	2025-01-28 @ 10:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11919767	13B	2025-01-28 @ 10:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11919761	13C	2025-01-28 @ 10:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11919756	140	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919782	15	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	0.8 ± 0.3	2025-02-04
11919781	16	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	0.7 ± 0.3	2025-02-04
11903494	16	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11919776	19	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11919780	20	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11930999	20	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11904199	206	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919766	21	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11919779	22	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11919765	24	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11919764	25	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11919775	28	2025-01-28 @ 11:00 am	2025-01-31 @ 10:00 am	< 0.3	2025-02-04
11919774	3	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919773	3	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919769	30	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11893200	34	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919762	36	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11930902	36	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919771	4	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919735	40	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11930915	40	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	???? UI	2025-02-04

February 4, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**CARDEROCK SPRINGS ES
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11930948	45	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919770	7	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919772	9	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919758	APR	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11904207	APR	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919755	GYM	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	0.9 ± 0.4	2025-02-04
11904188	GYM	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	0.7 ± 0.4	2025-02-04
11919760	GYM OFFICE	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	1.3 ± 0.4	2025-02-04
11904200	KITCHEN OFFICE	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919759	MEDIA	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919746	MEDIA	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04
11919711	MEDIA OFFICE	2025-01-28 @ 10:00 am	2025-01-31 @ 11:00 am	0.8 ± 0.3	2025-02-04

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

February 4, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**OFFICE
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11906885	O	2025-01-27 @ 11:00 am	2025-01-30 @ 11:00 am	< 0.3	2025-02-04
11906899	O	2025-01-28 @ 11:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04

February 4, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**TRAVEL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11906900	T	2025-01-27 @ 11:00 am	2025-01-30 @ 11:00 am	< 0.3	2025-02-04
11926699	T	2025-01-28 @ 11:00 am	2025-01-31 @ 11:00 am	< 0.3	2025-02-04

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI TECHNOLOGIES, INC Job Number 20001560

NOMINAL Conditions: Radon Conc 50.6 pCi/L Rel. Hum 50.6 % Temp. 70.8 F

Date Start: 12/14/24 Date Stop: 12/17/24 Date Start: _____ Date Stop: _____

Time Start: 0815 Time Stop: 0815 Time Start: _____ Time Stop: _____

Device No.'s: (3) CHAR BAGS Device No.'s: _____

11477880, 11477883, 11477896 _____

B4 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

December 23, 2024

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**SK
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11477880	SK1	2024-12-14 @ 8:00 am	2024-12-17 @ 8:00 am	52.0 ± 4.2	2024-12-23
11477883	SK2	2024-12-14 @ 8:00 am	2024-12-17 @ 8:00 am	54.6 ± 4.4	2024-12-23
11477896	SK3	2024-12-14 @ 8:00 am	2024-12-17 @ 8:00 am	45.5 ± 3.6	2024-12-23

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI TECHNOLOGIES, INC Job Number 20002919

NOMINAL Conditions: Radon Conc 7.0 pCi/L Rel. Hum 51.4 % Temp. 70.7 F

Date Start: 3/7/25 Date Stop: 3/10/25 Date Start: _____ Date Stop: _____

Time Start: 0832 Time Stop: 0832 Time Start: _____ Time Stop: _____

Device No.'s: (7) CHAR BAGS Device No.'s: _____

11886401 thru 11886406,

11886410

G3 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

March 19, 2025

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

QC
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886401	SK1	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.8 ± 1.1	2025-03-19
11886405	SK2	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.1 ± 1.1	2025-03-19
11886406	SK3	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.7 ± 1.1	2025-03-19
11886403	SK4	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.9 ± 1.2	2025-03-19
11886404	SK5	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.6 ± 1.2	2025-03-19
11886410	SK6	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	7.0 ± 1.1	2025-03-19
11886402	SK7	2025-03-07 @ 9:00 am	2025-03-10 @ 9:00 am	8.6 ± 1.2	2025-03-19

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







ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS
Corporate Office: 936 Ridgebrook road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Testing January 28th – January 31st, 2024

Name of Schools:

1. Carderock Springs ES
2. Cold Springs ES
3. Concord Center
4. DuFief ES
5. Thomas Edison HS
6. Fallsmead ES
7. Farmland ES

	Date	Initials
Radon Test Kits Deployed	01/28/2025	
Radon Test Kits Collected	01/31/2025	
Radon Test Kits Shipped to Lab*	01/31/2025	
Radon Test Kits Received by Lab*	02/03/2025	

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

MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Carderock Springs Elementary School
Date of Test Report	1/04/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	45
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.9 pCi/L

Project Status:

1. 5-Year retesting completed.



January 4, 2023

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

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

Location: Carderock Springs Elementary School
7401 Persimmon Tree Lane
Bethesda, MD 20817

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 Carderock Springs Elementary School, located at 7401 Persimmon Tree Ln. Bethesda, MD 20817 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Proficiency Program (NRPP) Radon Measurement Specialist (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from <https://www.montgomeryschoolsmd.org> or www.epa.gov/radon.

KCI visited the site on December 5, 2022 and deployed forty-five (45) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

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

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

KCI returned to the site on December 8, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc.

is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

These tests represent:

- Follow up to initial testing.

These tests were conducted to:

- Evaluate radon 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 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.

Results:

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Sampling locations and associated test kit identification numbers and relevant field observations are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

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

Quality Control Samples	
Results of Blank Canisters:	The office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L.
Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
Spike Sample Analysis:	The Spike Sample analysis results indicate the laboratory is operating within statistical control limits.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 891-1769.

Sincerely,



Tyler P. McCleaf
Radon Measurement Provider
#111004 RT
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-3, Radon Test Summary Spreadsheets
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Carderock ES		
Test Period: 12/05/2022 - 12/08/2022		
Kit Number	Room / Area	Result
11140103	3	< 0.3
11140115	4	0.8
11140124	7	< 0.3
11140125	7	< 0.3
11140109	9	1.0
11140110	15	0.9
11140108	16	1.8
11140116	16	< 0.3
11140119	16	1.3
11140118	19	0.9
11140104	20	1.1
11140107	21	< 0.3
11140117	22	1.0
11133701	24	0.7
11114400	25	< 0.3
11133703	28	< 0.3
11140128	29	< 0.3
11140132	29	< 0.3
11140135	29	< 0.3
11140142	29	0.9
11140123	34	< 0.3
11140126	34	< 0.3
11140127	36	0.9
11140141	40	< 0.3
11140133	42	1.4
11140134	42	1.2
11140102	45	0.7
11133707	100	0.8
11133702	102	< 0.3
11133706	105	< 0.3
11133711	116	< 0.3
11133712	116	0.9
11106212	129	< 0.3
11140136	202	< 0.3
11133713	100A	< 0.3
11133708	100B	< 0.3
11133705	100C	< 0.3
11133714	100E	0.9
11133715	100H	< 0.3
11133704	102A	< 0.3
11140106	13A	1.0
11140112	13B	1.0

Table 1- Radon Testing Results		
Carderock ES		
Test Period: 12/05/2022 - 12/08/2022		
Kit Number	Room / Area	Result
11140111	13C	1.3
11140120	33C	0.8
11140105	42A	1.9

Table 2- Radon Testing Results			
Carderock Springs ES			
Test Period: 12/05/22 - 12/08/22			
Kit Number	QC Type	Room / Area	Result
11140125	D	7	< 0.3
11140119	D	16	1.3
11140116	FB	16	< 0.3
11140132	D	29	< 0.3
11140135	FB	29	< 0.3
11133711	D	116	< 0.3
11133716	OB	OFFICE BLANK	< 0.3
11140129	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:**CARDEROCK SPRINGS****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11133707	100	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.8 ± 0.5	2022-12-14
11133713	100A	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11133708	100B	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11133705	100C	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11133714	100E	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.9 ± 0.5	2022-12-14
11133715	100H	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11133702	102	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11133704	102A	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11133706	105	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11133711	116	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11133712	116	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.9 ± 0.5	2022-12-14
11106212	129	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140106	13A	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.0 ± 0.5	2022-12-14
11140112	13B	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.0 ± 0.5	2022-12-14
11140111	13C	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.3 ± 0.5	2022-12-14
11140110	15	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.9 ± 0.5	2022-12-14
11140116	16	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140108	16	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.8 ± 0.6	2022-12-14
11140119	16	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.3 ± 0.5	2022-12-14
11140118	19	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.9 ± 0.4	2022-12-14
11140104	20	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.1 ± 0.5	2022-12-14
11140136	202	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140107	21	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140117	22	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.0 ± 0.5	2022-12-14
11133701	24	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.7 ± 0.4	2022-12-14
11144400	25	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11133703	28	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140135	29	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140132	29	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140128	29	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140142	29	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.9 ± 0.5	2022-12-14
11140103	3	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140120	33C	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.8 ± 0.5	2022-12-14
11140123	34	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140126	34	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140127	36	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.9 ± 0.5	2022-12-14
11140115	4	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.8 ± 0.5	2022-12-14

December 14, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

CARDEROCK SPRINGS

1

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11140141	40	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140133	42	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.4 ± 0.5	2022-12-14
11140134	42	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.2 ± 0.5	2022-12-14
11140105	42A	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.9 ± 0.5	2022-12-14
11140102	45	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	0.7 ± 0.5	2022-12-14
11140124	7	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140125	7	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	< 0.3	2022-12-14
11140109	9	2022-12-05 @ 12:00 pm	2022-12-08 @ 8:00 am	1.0 ± 0.5	2022-12-14

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 KC1 TECHNOLOGIES, INC Job Number 208343

NOMINAL Conditions: Radon Conc 34.7 pCi/L Rel. Hum 49.4 % Temp. 69.6 F

Date Start: 12/24/22 Date Stop: 12/27/23 Date Start: _____ Date Stop: _____

Time Start: 0810 Time Stop: 0810 Time Start: _____ Time Stop: _____

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

11285109, 11285110, 11285101 _____

THRU 11285103 _____

BY CPT

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

December 29, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

OFFICE

MA MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (34.7 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11285110	SK1	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	31.7 \pm 2.5	2022-12-29
11285101	SK2	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	30.1 \pm 2.4	2022-12-29
11285103	SK3	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	34.0 \pm 2.7	2022-12-29
11285102	SK4	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	30.9 \pm 2.5	2022-12-29
11285109	SK5	2022-12-24 @ 8:00 am	2022-12-27 @ 8:00 am	32.0 \pm 2.6	2022-12-29

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



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Corporate Office: 936 Ridgebrook road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

Radon Test Kit Chain of Custody

Project Name: MCPS Radon – April 2022 Schools – Retesting

Name of Schools:

1. Lynnbrook Center
2. Chevy Chase ES
3. North Chevy Chase ES
4. Wood Acres ES
5. Ashburton ES
6. Carderock Springs ES
7. North Bethesda MS
8. Brooke Grove ES

	Date	Initials
Radon Test Kits Deployed	12/05/2022	Bully
Radon Test Kits Collected	12/08/2022	Bully
Radon Test Kits Shipped to Lab*	12/08/2022	Bully
Radon Test Kits Received by Lab*	12/14/2022	Bully

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



MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

Executive Summary: Carderock Springs Elementary School

7401 Persimmon Tree Lane
Bethesda, MD 20817

Date of Test Report:	12/18/2018
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:	41
# of Rooms ≥ 4.0 pCi/L:	0
Low Value:	< 0.4
High Value:	1.1

Project Status

Initial testing complete: No further action at this time



December 18, 2018

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

Re: Radon Testing Services

Location: Carderock Springs Elementary School
7401 Persimmon Tree Lane
Bethesda, MD 20817

Dear Mr. Cox:

Intertek-PSI (PSI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) for completion of a "short-term" 3-day radon test for Carderock Springs Elementary School, located at 7401 Persimmon Tree Lane, Bethesda, MD 20817 (subject site).

Scope of Services:

PSI 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. PSI 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 #14SS007) 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.

PSI visited the site on November 27, 2018 and deployed fifty-six (56) activated charcoal (AC) radon test kits. PSI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. PSI returned to the site on November 30, 2018 to retrieve the radon sampling test kits. A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, PSI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, PSI submitted ten (10) 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.

PSI shipped all radon tests via overnight delivery to AccuStar Labs for analysis by gamma-ray spectroscopy. AccuStar Labs is a NRSB certified analytical laboratory for radon analysis located at 929 Mount Zion Road, Lebanon, Pennsylvania (certification # ARL0007) and 2 Saber Way, Haverhill, Massachusetts (certification # ARL0017).



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 $\leq 65^{\circ}\text{F}$.

PSI 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.

PSI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. PSI 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	NA
≤ 4.0 pCi/L	See Attachment B	

Notes:

D -Duplicate Sample

The office blank and lab transit blanks had test results of less than the laboratory detection limit of 0.4 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 (703) 698-9300.



Respectfully Submitted,

INTERTEK-PSI

Nand Kaushik, P.E.
Department Manager, Environmental Services
Nand.Kaushik@intertek.com

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

ATTACHMENT B

Radon Test Summary Spreadsheet

Radon Testing Results		
Carderock Springs Elementary School		
Testing period: 11/27/18 - 11/30/18		
Kit Number	Room / Area	Result (pCi/L)
3918421	3	0.4
3918424	4	0.5
3918439	7	< 0.4
3918423	9	< 0.4
3918428	15	0.5
3918431	16	0.8
3918430	19	0.4
3918432	20	0.5
3918436	21	0.4
3918435	24	0.6
3918438	25	0.6
3918437	28	0.7
3918419	30	0.5
3918415	33	< 0.4
3918411	34	0.4
3918412	36	0.5
3918413	40	0.5
3918417	45	0.4
3918401	100	0.7
3918409	101	0.5
3918410	101	0.6
3918404	102	0.8
3917757	112	0.6
3917755	132	0.4
3917758	200	< 0.4
3917759	206	0.5
3918403	100A	1.0
3918406	100C	1.1
3918407	100E	0.8
3917753	101A	0.6
3918405	102A	0.8
3917756	135A	0.4
3918425	13A	< 0.4
3918426	13B	0.5
3918427	13C	0.5
3918440	29C	0.6
3918416	33C	< 0.4
3888350	APR	< 0.4
3881170	APR	< 0.4
3888340	APR Stage	< 0.4
3881200	Gym	0.7
3888370	Gym	1.1
3918420	Gym Office	1.0

Radon Testing Results		
Carderock Springs Elementary School		
Testing period: 11/27/18 - 11/30/18		
Kit Number	Room / Area	Result (pCi/L)
3918434	Room Between 20 and 24	0.4

Radon Testing Results		
Carderock Springs Elementary School		
Testing period: 11/27/18 - 11/30/18		
Kit Number	QC Type	Result (pCi/L)
3918422	3 (D)	0.4
3918429	15 (D)	0.5
3918433	20 (D)	0.7
3918414	40 (D)	< 0.4
3918418	45 (D)	< 0.4
3918408	100E (D)	1.1
3917754	101A (D)	0.7
3917760	206 (D)	0.4
3917541	Office Blank	< 0.4
3917551	Transit Blank	< 0.4
3917558	Field Blank	< 0.4
3917545	Field Blank	< 0.4

Table Notes:

D – Duplicate

FB – Field Blank

OB – Office Blank

TB – Transit Blank

QC – Quality Control

ATTACHMENT C

Laboratory Analytical Results

NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

Intertek-PSI (VA)
2930 Eskridge Road
Fairfax VA 22031

Property Tested: Project # 04481387-1

MCPS Radon Survey Carderock Springs ES
Not Indicated
Bethesda MD 20817

Log Number	Device Number	Test Exposure Duration:		Area Tested		Result (pCi/L)
3199300	3918421	11/27/2018 4:30 pm	11/30/2018 12:50 pm	Floor 1st Room 3		0.4
3199301	3918422	11/27/2018 4:30 pm	11/30/2018 12:50 pm	Floor 1st Room 3 Duplicate		0.4
3199302	3918423	11/27/2018 4:34 pm	11/30/2018 12:52 pm	Floor 1st Room 9		< 0.4
3199303	3918424	11/27/2018 4:36 pm	11/30/2018 12:53 pm	Floor 1st Room 4		0.5
3199304	3918425	11/27/2018 4:38 pm	11/30/2018 12:54 pm	Floor 1st Room 13A		< 0.4
3199305	3918426	11/27/2018 4:40 pm	11/30/2018 12:55 pm	Floor 1st Room 13B		0.5
3199306	3918427	11/27/2018 4:42 pm	11/30/2018 12:56 pm	Floor 1st Room 13C		0.5
3199307	3918428	11/27/2018 4:44 pm	11/30/2018 12:57 pm	Floor 1st Room 15		0.5
3199308	3918429	11/27/2018 4:44 pm	11/30/2018 12:57 pm	Floor 1st Room 15 Duplicate		0.5
3199309	3918430	11/27/2018 4:48 pm	11/30/2018 12:59 pm	Floor 1st Room 19		0.4

Comment: A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/05/2018

Report Reviewed By: 

Report Approved By: 

Disclaimer:

The uncertainty of this radon measurement is $\sim \pm 10\%$. Factors contributing to uncertainty include statistical variations, daily and seasonal variations in radon concentrations, sample collection techniques and operation of the dwelling. Interference with test conditions may influence the test results.

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NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

Intertek-PSI (VA)
2930 Eskridge Road
Fairfax VA 22031

Property Tested: Project # 04481387-1

MCPS Radon Survey Carderock Springs ES
Not Indicated
Bethesda MD 20817

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3199310	3918431	11/27/2018 4:50 pm	11/30/2018 1:00 pm	Floor 1st Room 16	0.8
3199311	3918432	11/27/2018 4:52 pm	11/30/2018 1:01 pm	Floor 1st Room 20	0.5
3199312	3918433	11/27/2018 4:52 pm	11/30/2018 1:01 pm	Floor 1st Room 20 Duplicate	0.7
3199313	3918434	11/27/2018 4:56 pm	11/30/2018 1:03 pm	Floor 1st Room Room Between 20 and 24	0.4
3199314	3918435	11/27/2018 4:58 pm	11/30/2018 1:04 pm	Floor 1st Room 24	0.6
3199315	3918436	11/27/2018 5:00 pm	11/30/2018 1:05 pm	Floor 1st Room 21	0.4
3199316	3918437	11/27/2018 5:02 pm	11/30/2018 1:06 pm	Floor 1st Room 28	0.7
3199317	3918438	11/27/2018 5:04 pm	11/30/2018 1:07 pm	Floor 1st Room 25	0.6
3199318	3918439	11/27/2018 5:06 pm	11/30/2018 1:08 pm	Floor 1st Room 7	< 0.4
3199319	3918440	11/27/2018 5:08 pm	11/30/2018 1:09 pm	Floor 1st Room 29C	0.6

Comment: A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/05/2018

Report Reviewed By: 

Report Approved By: 

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NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

Intertek-PSI (VA)
2930 Eskridge Road
Fairfax VA 22031

Property Tested: Project # 04481387-1

MCPS Radon Survey Carderock Springs ES
Not Indicated
Bethesda MD 20817

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3199320	3918411	11/27/2018 5:16 pm	11/30/2018 1:13 pm	Floor 1st Room 34	0.4
3199321	3918412	11/27/2018 5:18 pm	11/30/2018 1:14 pm	Floor 1st Room 36	0.5
3199322	3918413	11/27/2018 5:20 pm	11/30/2018 1:15 pm	Floor 1st Room 40	0.5
3199323	3918414	11/27/2018 5:20 pm	11/30/2018 1:15 pm	Floor 1st Room 40 Duplicate	< 0.4
3199324	3918415	11/27/2018 5:24 pm	11/30/2018 1:17 pm	Floor 1st Room 33	< 0.4
3199325	3918416	11/27/2018 5:26 pm	11/30/2018 1:18 pm	Floor 1st Room 33C	< 0.4
3199326	3918417	11/27/2018 5:32 pm	11/30/2018 1:21 pm	Floor 1st Room 45	0.4
3199327	3918418	11/27/2018 5:32 pm	11/30/2018 1:21 pm	Floor 1st Room 45 Duplicate	< 0.4
3199328	3918420	11/27/2018 5:36 pm	11/30/2018 1:23 pm	Floor 1st Room Gym Office	1.0
3199329	3918419	11/27/2018 5:38 pm	11/30/2018 1:24 pm	Floor 1st Room 30	0.5

Comment: A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/05/2018

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

Intertek-PSI (VA)
2930 Eskridge Road
Fairfax VA 22031

Property Tested: Project # 04481387-1

MCPS Radon Survey Carderock Springs ES
Not Indicated
Bethesda MD 20817

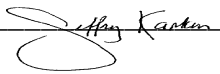
Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3199330	3918401	11/27/2018 5:40 pm	11/30/2018 1:25 pm	Floor 2nd Room 100	0.7
3199331	3918403	11/27/2018 5:42 pm	11/30/2018 1:26 pm	Floor 2nd Room 100A	1.0
3199332	3918404	11/27/2018 5:44 pm	11/30/2018 1:27 pm	Floor 2nd Room 102	0.8
3199333	3918405	11/27/2018 5:46 pm	11/30/2018 1:28 pm	Floor 2nd Room 102A	0.8
3199334	3918406	11/27/2018 5:48 pm	11/30/2018 1:29 pm	Floor 2nd Room 100C	1.1
3199335	3918407	11/27/2018 5:50 pm	11/30/2018 1:30 pm	Floor 2nd Room 100E	0.8
3199336	3918408	11/27/2018 5:50 pm	11/30/2018 1:30 pm	Floor 2nd Room 100E Duplicate	1.1
3199337	3918409	11/27/2018 5:54 pm	11/30/2018 1:32 pm	Floor 2nd Room 101	0.5
3199338	3918410	11/27/2018 5:56 pm	11/30/2018 1:33 pm	Floor 2nd Room 101	0.6
3199339	3917753	11/27/2018 6:00 pm	11/30/2018 1:33 pm	Floor 2nd Room 101A	0.6

Comment: A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/05/2018

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

Intertek-PSI (VA)
2930 Eskridge Road
Fairfax VA 22031

Property Tested: Project # 04481387-1

MCPS Radon Survey Carderock Springs ES
Not Indicated
Bethesda MD 20817

Log Number	Device Number	Test Exposure Duration:		Area Tested	Result (pCi/L)
3199340	3917754	11/27/2018 6:00 pm	11/30/2018 1:35 pm	Floor 2nd Room 101A Duplicate	0.7
3199341	3917755	11/27/2018 6:02 pm	11/30/2018 1:36 pm	Floor 2nd Room 132	0.4
3199342	3917756	11/27/2018 6:04 pm	11/30/2018 1:37 pm	Floor 2nd Room 135A	0.4
3199343	3917757	11/27/2018 6:06 pm	11/30/2018 1:38 pm	Floor 2nd Room 112	0.6
3199344	3917758	11/27/2018 6:08 pm	11/30/2018 1:39 pm	Floor 3rd Room 200	< 0.4
3199345	3917759	11/27/2018 6:12 pm	11/30/2018 1:40 pm	Floor 3rd Room 206	0.5
3199346	3917760	11/27/2018 6:12 pm	11/30/2018 1:40 pm	Floor 3rd Room 206 Duplicate	0.4
3199347	3917541	11/27/2018 6:00 am	11/30/2018 6:00 pm	Floor NA Room Office Blank	< 0.4
3199348	3917551	11/27/2018 6:00 am	11/30/2018 6:00 pm	Floor NA Room Transit Blank	< 0.4
3199349	3917558	11/27/2018 4:30 pm	11/30/2018 1:40 pm	Floor NA Room Field Blank	< 0.4

Comment: A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/05/2018

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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NRPP 105011 AL
NRSB ARL0007

Laboratory Report for:

Property Tested: Project # 04481387-1

Intertek-PSI (VA)
2930 Eskridge Road
Fairfax VA 22031

MCPS Radon Survey Carderock Springs ES
Not Indicated
Bethesda MD 20817

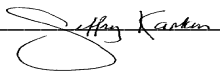
Log Number	Device Number	Test Exposure Duration:	Area Tested	Result (pCi/L)
3199350	3917545	11/27/2018 4:30 pm 11/30/2018 1:40 pm	Floor NA Room Field Blank	< 0.4

Comment: A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Nan Lin

Distributed by: Intertek-PSI (VA)

Date Received: 12/01/2018 Date Logged: 12/01/2018 Date Analyzed: 12/01/2018 Date Reported: 12/05/2018

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

EPA Method #402-R-92-004
Liquid Scintillation
NRPP Device Code 8088
NRSB Device Code 12193

Laboratory Report for:

Property Tested: Project # 04481387-1

Intertek-PSI (VA)
2930 Eskridge Road
Fairfax VA 22031

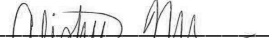
MCPS Radon Survey
Carderock Springs ES
MD 20817

Log Number	Device Number	Test Exposure Duration:				Area Tested	Result pCi/L
2401278	3888350	11/27/2018	5:10 pm	11/30/2018	1:10 pm	Floor 1st Room APR	< 0.4
2401279	3881170	11/27/2018	5:12 pm	11/30/2018	1:11 pm	Floor 1st Room APR	< 0.4
2401280	3888340	11/27/2018	5:14 pm	11/30/2018	1:12 pm	Floor 1st Room APR Stage	< 0.4
2401281	3881200	11/27/2018	5:28 pm	11/30/2018	1:19 pm	Floor 1st Room Gym	0.7
2401282	3888370	11/27/2018	5:30 pm	11/30/2018	1:20 pm	Floor 1st Room Gym	1.1

Comment: A copy of this report was emailed to Intertek-PSI (VA).

Distributed by: Intertek-PSI (VA)

Date Received: 12/03/2018 Date Logged: 12/03/2018 Date Analyzed: 12/04/2018 Date Reported: 12/04/2018

Report Reviewed By: 

Report Approved By: 

Disclaimer:

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NRPP 105011 AL
NRSB ARL0007
Ohio RL41

EPA Method #402-R-92-004
Charcoal Canister
NRPP Device Code 6048
NRSB Device Code 10317

Laboratory Report for:

Property Tested:

Intertek-PSI (VA)
2930 Eskridge Road
Fairfax VA 22031

MCPS Radon Survey
4514 Taylorsville Road
Dayton OH 45424

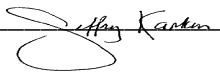
Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
3204125	3926831	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		36.1
3204126	3926832	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		34.8
3204127	3926833	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		33.7
3204128	3926834	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		35.8
3204129	3926835	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		35.0
3204130	3926836	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		34.5
3204131	3926837	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		34.6
3204132	3926838	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		34.3
3204133	3926839	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		33.2
3204134	3926840	12/07/2018 9:47 am	12/10/2018 9:47 am	Spike		34.0

Comment: A copy of this report was e-mailed to Intertek-PSI (VA)

Test Performed By: Unknown

Distributed by: Intertek-PSI (VA)

Date Received: 12/12/2018 Date Logged: 12/12/2018 Date Analyzed: 12/12/2018 Date Reported: 12/13/2018

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT Intertek - PSI

Job Number 187732

NOMINAL Conditions: Radon Conc 32.6 pCi/L Rel. Hum 49.1 % Temp. 70.1 F

Date Start: 12/7/18 Date Stop: 12/10/18

Date Start: _____ Date Stop: _____

Time Start: 0947 Time Stop: 0947

Time Start: _____ Time Stop: _____

Device No.'s: (10) Char. Cans-

Device No.'s: _____

3926831 thru 3926840

G2 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

Chain of Custody

Project Name: MCPS Radon Survey 2018

Name of Schools:

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. Ashburton ES 2. Carderock Springs ES 3. Diamond ES 4. Fox Chapel ES 5. Baker MS 6. Damascus ES 7. Clemente MS 8. Clopper Mill ES | <ol style="list-style-type: none"> 9. Broad Acres ES 10. Greencastle ES 11. Harmony Hills ES 12. Silver Spring International MS 13. Gaithersburg MS 14. Garrett Park ES 15. New Hampshire Estates ES 16. Georgian Forest ES |
|--|---|

	Date	Initials
Radon Test Kits Deployed	11/27/2018	NL
Radon Test Kits Sampled	11/30/2018	NL
Radon Test Kits Shipped to Lab*	11/30/2018	NL
Radon Test Kits Received by Lab*	12/01/2018; 12/02/2018; 12/03/2018	NL

*All samples sent to AccuStar Laboratories, 929 Mount Zion Road, Lebanon, PA 17046 and 2 Saber Way, Haverhill, MA 01835



MCPS RADON TESTING

Executive Summary: Carderock Springs Elementary School

Date of Test Report:	2/03/2016 (Rev 1)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	33
# Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	1.6

Project Status:

Initial testing completed; no further action at this time.



February 3, 2016 (Rev 1)

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

Re: **Radon Testing Services**
KCI Job # 12146341.24

Location: Carderock Springs Elementary School
7401 Persimmon Tree Lane
Bethesda, MD 20817

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 Carderock Springs Elementary School, located at 7401 Persimmon Tree Lane in Bethesda, Maryland 20817 (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 January 11, 2016 and deployed forty-three (43) 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 January 14, 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,



H. Allen Bennett
Certified Industrial Hygienist
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		
Carderock Springs Elementary School		
Test Period: 01/11/16-01/14/16		
Kit Number	Room / Area	Result
7722085	3	< 0.3
7722086	7	0.6
7722080	15	0.6
7722079	16	0.8
7722078	19	< 0.3
7722077	20	< 0.3
7722071	21	< 0.3
7722075	22	< 0.3
7722074	24	< 0.3
7722070	25	< 0.3
7722073	28	0.5
7722100	29	0.9
7722091	29	< 0.3
7722098	30	< 0.3
7722094	33	< 0.3
7722099	34	0.7
7722095	36	< 0.3
7722092	40	1.1
7722090	42	1.2
7722087	42	1.4
7722062	100	0.9
7722069	102	< 0.3
7722065	112	< 0.3
7722059	115	< 0.3
7722054	212	0.6
7722072	100A	0.8
7722064	100B	0.5
7722068	100C	0.8
7722061	102A	0.6
7722063	135B	0.7
7722081	13A	< 0.3
7722082	13B	< 0.3
7722083	13C	< 0.3
7722096	33C	< 0.3
7722097	42A	1.6

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Carderock Springs Elementary School		
Test Period: 01/11/16-01/14/16		
Kit Number	QC Type	Result
7722067	D (135B)	< 0.3
7722055	D (212)	< 0.3
7722066	D (28)	< 0.3
7722089	D (3)	< 0.3
7722088	D (42)	1.3
7722084	FB (3)	< 0.3
7722093	FB (42)	< 0.3
7721795	OB (0)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

**CARDEROCK SPRINGS ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7721795	0	2016-01-11 @ 4:00 pm	2016-01-14 @ 1:00 pm	< 0.3	2016-01-18
7722062	100	2016-01-11 @ 10:00 am	2016-01-14 @ 8:00 am	0.9 ± 0.3	2016-01-18
7722072	100A	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.8 ± 0.3	2016-01-18
7722064	100B	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.5 ± 0.3	2016-01-18
7722068	100C	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.8 ± 0.3	2016-01-18
7722069	102	2016-01-11 @ 10:00 am	2016-01-14 @ 8:00 am	< 0.3	2016-01-20
7722061	102A	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.6 ± 0.4	2016-01-20
7722065	112	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-20
7722059	115	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-20
7722063	135B	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.7 ± 0.4	2016-01-20
7722067	135B	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-20
7722081	13A	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-20
7722082	13B	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722083	13C	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722080	15	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.6 ± 0.4	2016-01-20
7722079	16	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.8 ± 0.3	2016-01-18
7722078	19	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722077	20	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722071	21	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722054	212	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.6 ± 0.3	2016-01-18
7722055	212	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722075	22	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722074	24	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722070	25	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-20
7722066	28	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722073	28	2016-01-11 @ 10:00 am	2016-01-14 @ 9:00 am	0.5 ± 0.3	2016-01-18
7722091	29	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722100	29	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.9 ± 0.3	2016-01-18
7722089	3	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722084	3	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722085	3	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722098	30	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722094	33	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722096	33C	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-20
7722099	34	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.7 ± 0.4	2016-01-20
7722095	36	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722092	40	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	1.1 ± 0.3	2016-01-18

February 1, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**CARDEROCK SPRINGS ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7722090	42	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	1.2 ± 0.3	2016-01-18
7722093	42	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	< 0.3	2016-01-18
7722087	42	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	1.4 ± 0.3	2016-01-18
7722088	42	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	1.3 ± 0.3	2016-01-18
7722097	42A	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	1.6 ± 0.3	2016-01-18
7722086	7	2016-01-11 @ 9:00 am	2016-01-14 @ 9:00 am	0.6 ± 0.3	2016-01-18

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

February 2, 2016
**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**MCPS PHASE 5 & 6
TRANSIT BLANKS**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7722194	1	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718494	10	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718475	11	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718495	12	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718496	13	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718497	14	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718498	15	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718499	16	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718500	17	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718296	18	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718295	19	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722195	2	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716789	20	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716785	21	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-26
7716791	22	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716786	23	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716793	24	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718274	25	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7716792	26	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718294	27	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718293	28	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718292	29	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722197	3	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718290	30	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722198	4	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722199	5	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7722211	6	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718491	7	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27
7718476	8	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-26
7718479	9	2016-01-19 @ 12:00 pm	2016-01-22 @ 12:00 pm	< 0.3	2016-01-27

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



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

Corporate Office: 936 Ridgebrook road • Sparks, Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

Chain of Custody

Project Name: MCPS Radon Phase V

Name of Schools:

- | | | |
|-------------------------|---------------------------|-------------------------|
| 1. Arcola ES | 11. Clopper Mill ES | 21. Parkland Magnet MS |
| 2. Argyle ES | 12. College Gardens ES | 22. Rachel Carson ES |
| 3. Bells Mill ES | 13. Eastern MS | 23. Roberto Clemente MS |
| 4. Bethesda ES | 14. Fallsmead ES | 24. Rock Creek ES |
| 5. Brookhaven ES | 15. Fields Road ES | 25. Rockview ES |
| 6. Burning Tree ES | 16. Flower Hill ES | 26. Rockville HS |
| 7. Capt. James Daly ES | 17. Flower Valley ES | 27. Rocky Hill MS |
| 8. Carderock Springs ES | 18. Fox Chapel ES | 28. Seneca Valley HS |
| 9. Cashell ES | 19. Glen Haven ES | 29. Westover ES |
| 10. Clearspring ES | 20. James Hubert Blake HS | 30. William Farquar MS |
-

	Date	Initials
Radon Test Kits Deployed	1/11/16	JM
Radon Test Kits Sampled	1/14/16	JM
Radon Test Kits Shipped to Lab*	1/15/16	JM
Radon Test Kits Received by Lab*	1/18/16	JM

*All samples sent to Air Check, Inc., 1936 Butler Bridge Road, Mills River, NC 28758