

School / Facility Radon Testing Report Form

School Year: **24-25**

Facility:	Greencastle Elementary School		
Address:	13611 Robey Road		
	Silver Spring, MD 20904		
Reason for Testing:	Scheduled Re-Testing - <input checked="" type="checkbox"/> 2-year or <input 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 checked="" type="checkbox"/> Active Mitigation (2-year regular schedule) <input 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	45	Lowest Value (pCi/L)	< 0.3
Number of Rooms (≥ 4.0 -pCi/L)	0	Highest Value (pCi/L)	2.0

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 Lab	
Person(s) Deploying or Retrieving Test Devices and certification number		Organization/Company
Shakia Dawkins		KCI Technologies, Inc.
If noncertified individuals, the qualified measurement professional providing oversight -		
Tyler McCleaf, CSP – Cert. #111004-RMP		KCI Technologies, Inc.

Testing

<input checked="" type="checkbox"/> Short-Term	Length of Test (days):	3	Date of Deployment and Retrieval (mm/dd/yy):	12/09/2024
<input type="checkbox"/> Long-Term				12/12/2024
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				Total
	Ground-Contact		Upper-Level(s)		
	Initial	Follow-Up	Initial	Follow-Up	
Test Locations ¹	41	0	4	0	45
Duplicates ²	4	0	1	0	5
Field Blanks ³	2	0	0	0	2
Grand Total					52

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		3
Trip Blanks ²	1	0	1
Office Blanks ^{3, 4}	1	0	1
			5

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:	41	0	4	0	46
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:	1	0	0	0	1
Number of missing required test locations ³ :	1	0	0	0	1
Number of failed duplicate control locations:	0	0	0	0	0
Percentage of missing test locations for the facility ^{4,5} :	2.44%	0%	0%	0%	2.17%

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 type="checkbox"/> Yes <input checked="" 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input 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		
Greencastle Elementary School		
Test Period: 12/09/2024 - 12/12/2024		
Kit Number	Room / Area	Result
11907013	102	1.4
11907026	103	1.9
11907045	103	2.0
11907038	104	1.9
11907019	105	1.1
11907055	106	1.3
11907042	107	0.5
11903593	112	< 0.3
11903578	113	< 0.3
11903598	113	< 0.3
11903600	114	0.6
11903592	115	< 0.3
11903599	116	0.7
11907049	118	< 0.3
11907050	118	Manufacturer Defect
11907041	119	0.6
11907044	120	< 0.3
11907056	121	0.9
11907034	122	< 0.3
11903558	125	< 0.3
11903564	125	0.7
11907017	128	< 0.3
11907018	128	< 0.3
11907002	130	< 0.3
11907031	130	< 0.3
11907043	132	< 0.3
11907033	133	< 0.3
11907032	134	< 0.3
11907037	135	< 0.3
11907035	136	< 0.3
11903563	137	< 0.3
11903574	138	< 0.3
11907014	140	0.7
11907029	141	< 0.3
11907030	209	< 0.3
11907016	212	0.7
11907015	220	< 0.3

Table 1- Radon Testing Results		
Greencastle Elementary School		
Test Period: 12/09/2024 - 12/12/2024		
Kit Number	Room / Area	Result
11907040	220	< 0.3
11903585	125A	0.7
11907020	APR	0.7
11907046	APR	0.9
11903594	ASST PRINCIPAL	1.1
11907001	CONFERENCE	< 0.3
11907048	CONFERENCE	< 0.3
11903595	HEALTH	0.9
11903586	HEALTH OFFICE	1.0
11903577	IMC	< 0.3
11903573	IMC OFFICE	< 0.3
11903596	MAIN	1.0
11907047	PRINCIPAL	< 0.3
11907036	TELEPHONE	< 0.3
11907051	WORKROOM	< 0.3

[illegible]

Table 3 - QC Radon Testing Results			
Greencastle Elementary School			
Test Period: 12/09/2024 - 12/12/2024			
Kit Number	QC Type	Room / Area	Result
11907026	D	103	1.9
11903598	D	113	< 0.3
11907049	FB	118	< 0.3
11907018	FB	128	< 0.3
11907031	D	130	< 0.3
11907040	D	220	< 0.3
11907001	D	Conference	< 0.3
11477899	OB	OFFICE BLANK	< 0.3
11482789	TB	TRAVEL BLANK	< 0.3

Table 3a - Duplicate Worksheet / Data Validation										
Greencastle Elementary School										
Test Period: 12/09/2024 - 12/13/2024										
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
11903578	11903598	113	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11907001	11907048	Conference	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11907045	11907026	103	2.0	1.9	✓	3.8	PASS	2.0	<1-pCi/L	✓
11907031	11907002	130	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11907015	11907040	220	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:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11907013	102	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	1.4 ± 0.4	2024-12-16
11907026	103	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	1.9 ± 0.4	2024-12-16
11907045	103	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	2.0 ± 0.4	2024-12-16
11907038	104	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	1.9 ± 0.4	2024-12-16
11907019	105	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	1.1 ± 0.3	2024-12-16
11907055	106	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	1.3 ± 0.4	2024-12-16
11907042	107	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	0.5 ± 0.3	2024-12-16
11903593	112	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11903578	113	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11903598	113	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11903600	114	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	0.6 ± 0.3	2024-12-16
11903592	115	2024-12-09 @ 10:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11903599	116	2024-12-09 @ 10:00 am	2024-12-12 @ 9:00 am	0.7 ± 0.3	2024-12-16
11907049	118	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	< 0.3	2024-12-16
11907050	118	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	???? IA5	2024-12-16
11907041	119	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	0.6 ± 0.3	2024-12-16
11907044	120	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11907056	121	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	0.9 ± 0.4	2024-12-16
11907034	122	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11903564	125 GYM	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	0.7 ± 0.3	2024-12-16
11903558	125 GYM	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11903585	125A	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	0.7 ± 0.3	2024-12-16
11907017	128	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11907018	128	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11907002	130	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11907031	130	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11907043	132	2024-12-09 @ 12:00 pm	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11907033	133	2024-12-09 @ 12:00 pm	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11907032	134	2024-12-09 @ 12:00 pm	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11907037	135	2024-12-09 @ 12:00 pm	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11907035	136	2024-12-09 @ 12:00 pm	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11903563	137	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	< 0.3	2024-12-16
11903574	138	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	< 0.3	2024-12-16
11907014	140 STAGE	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	0.7 ± 0.3	2024-12-16
11907029	141	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	< 0.3	2024-12-16
11907030	209	2024-12-09 @ 12:00 pm	2024-12-12 @ 10:00 am	< 0.3	2024-12-16
11907016	212	2024-12-09 @ 12:00 pm	2024-12-12 @ 10:00 am	0.7 ± 0.3	2024-12-16

December 16, 2024

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11907040	220	2024-12-09 @ 12:00 pm	2024-12-12 @ 10:00 am	< 0.3	2024-12-16
11907015	220	2024-12-09 @ 12:00 pm	2024-12-12 @ 10:00 am	< 0.3	2024-12-16
11907020	APR	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	0.7 ± 0.3	2024-12-16
11907046	APR	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	0.9 ± 0.3	2024-12-16
11903594	ASST PRINCIPAL	2024-12-09 @ 10:00 am	2024-12-12 @ 9:00 am	1.1 ± 0.4	2024-12-16
11907048	CONFERENCE	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	< 0.3	2024-12-16
11907001	CONFERENCE	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	< 0.3	2024-12-16
11903595	HEALTH	2024-12-09 @ 10:00 am	2024-12-12 @ 9:00 am	0.9 ± 0.3	2024-12-16
11903586	HEALTH OFFICE	2024-12-09 @ 10:00 am	2024-12-12 @ 9:00 am	1.0 ± 0.4	2024-12-16
11903577	IMC	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11903573	IMC OFFICE	2024-12-09 @ 11:00 am	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11903596	MAIN	2024-12-09 @ 10:00 am	2024-12-12 @ 9:00 am	1.0 ± 0.3	2024-12-16
11907047	PRINCIPAL	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	< 0.3	2024-12-16
11907036	TELEPHONE	2024-12-09 @ 12:00 pm	2024-12-12 @ 9:00 am	< 0.3	2024-12-16
11907051	WORKROOM	2024-12-09 @ 11:00 am	2024-12-12 @ 10:00 am	< 0.3	2024-12-16

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

December 16, 2024

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**OFFICE
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11477899	O	2024-12-09 @ 10:00 am	2024-12-12 @ 11:00 am	< 0.3	2024-12-16
11907194	O	2024-12-10 @ 10:00 am	2024-12-13 @ 11:00 am	< 0.3	2024-12-16

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

December 16, 2024

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**TRAVEL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11482789	T	2024-12-09 @ 10:00 am	2024-12-12 @ 11:00 am	< 0.3	2024-12-16
11907193	T	2024-12-10 @ 10:00 am	2024-12-13 @ 11:00 am	< 0.3	2024-12-16

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Testing December 9th – December 12th, 2024

Name of Schools:

1. Georgian Forest ES
2. Glen Haven ES
3. Glenallen ES
4. Greencastle ES
5. Highland ES

	Date	Initials
Radon Test Kits Deployed	12/09/2024	BMM
Radon Test Kits Collected	12/12/2024	BMM
Radon Test Kits Shipped to Lab*	12/12/2024	BMM
Radon Test Kits Received by Lab*	12/16/2024	BMM

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



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Greencastle Elementary School
Date of Test Report	05/27/2022
Round of Testing	Initial <u>Follow-up</u> Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	1
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	<0.3 pCi/L

Project Status

Current Project Status at this time: Testing completed; no further action needed



May 27, 2022

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

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

Location: Greencastle Elementary School
13611 Robey Rd.
Silver Spring, MD 20904

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 Greencastle Elementary School, located at 13611 Robey Rd. Silver Spring, MD 20904 (subject site).

Scope of Services:

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

KCI visited the site on March 29, 2022 and deployed four (4) 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 sampled the following locations during this follow-up test:

1. Rooms with missing test kits from the Radon 2022 testing period (i.e. test kit was deployed but not recovered),
2. Rooms with invalidated test kits from the Radon 2022 testing period (e.g. an open window in the room or disturbed test kit),
3. Rooms which were locked/inaccessible during the Radon 2022 testing period,
4. Rooms with elevated radon results (i.e. ≥ 3.5 pCi/L),
5. Rooms previously tested for radon but not tested in Radon 2022, and
6. Additional rooms that require testing (if applicable.)

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 April 01, 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 mid 20°Fs and high temperatures ranged from the low 50°Fs to the mid 70°Fs. Maximum sustained winds ranged from 0-33 miles per hour. Average humidity was around 47% with 0.23 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		
Greencastle ES RT		
Test Period: 03/29/2022 - 04/01/2022		
Kit Number	Room / Area	Result
11139874	STAGE	< 0.3
11139875	STAGE	< 0.3
11139877	STAGE	< 0.3
11139878	STAGE	< 0.3

Table 2- Radon Testing Results			
Greencastle ES RT			
Test Period: 03/29/2022 - 04/01/2022			
Kit Number	QC Type	Room / Area	Result
11139874	D	Stage	< 0.3
11139878	FB	Stage	< 0.3
11139883	OB	OFFICE BLANK	< 0.3
11139841	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

April 4, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
GREENCASTLE ES
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139874	STAGE	2022-03-29 @ 11:00 am	2022-04-01 @ 11:00 am	< 0.3	2022-04-04
11139875	STAGE	2022-03-29 @ 11:00 am	2022-04-01 @ 11:00 am	< 0.3	2022-04-04
11139877	STAGE	2022-03-29 @ 11:00 am	2022-04-01 @ 11:00 am	< 0.3	2022-04-04
11139878	STAGE	2022-03-29 @ 11:00 am	2022-04-01 @ 11:00 am	< 0.3	2022-04-04

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204620

NOMINAL Conditions: Radon Conc 27.0 pCi/L Rel. Hum 50.1 % Temp. 70.0 F

Date Start: 3/18/22 Date Stop: 3/21/22 Date Start: _____ Date Stop: _____

Time Start: 0705 Time Stop: 0705 Time Start: _____ Time Stop: _____

Device No.'s: (5) Char Bags - Device No.'s: _____

11139367, 11139368, 11139371, _____

11139710, 11139717 _____

E3 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 30, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (25.7 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139367	SK1	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.9 \pm 2.1	2022-03-30
11139368	SK2	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	23.9 \pm 2.0	2022-03-30
11139371	SK3	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.7 \pm 2.1	2022-03-30
11139710	SK4	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	26.4 \pm 2.1	2022-03-30
11139717	SK5	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	24.6 \pm 2.0	2022-03-30

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



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 – March 2022 Schools – Retesting

Name of Schools:

1. Watkins Mill HS
2. Cresthaven ES
3. East Silver Spring ES
4. Fairland Center
5. Francis Scott Key MS
6. Greencastle ES
7. Roscoe Nix ES
8. West Farm Transportation Depot
9. Wheaton HS
10. White Oak MS
11. William Tyler Page ES
12. Bel Pre ES
13. Fairland ES
14. Highland ES
15. Rolling Terrace ES
16. Takoma Park MS
17. Viers Mill ES
18. Poolesville ES

	Date	Initials
Radon Test Kits Deployed	03/29/2022	BMM
Radon Test Kits Collected	04/01/2022	BMM
Radon Test Kits Shipped to Lab*	04/01/2022	BMM
Radon Test Kits Received by Lab*	04/04/2022	BMM

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

MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Greencastle Elementary School
Date of Test Report	4/29/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	50
# Rooms ≥ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.9 pCi/L

Project Status:

Initial testing completed; Missing or compromised samples need re-sampling



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

April 29, 2022

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

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

Location: Greencastle Elementary School
13611 Robey Rd.
Silver Spring, MD 20904

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 Greencastle Elementary School, located at 13611 Robey Rd. Silver Spring, MD 20904 (subject site).

Scope of Services:

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

KCI visited the site on March 7, 2022 and deployed fifty-seven (57) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

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

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

KCI returned to the site on March 10, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a

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

Evaluation of Testing Conditions:

These tests represent:

- Follow-up to post-mitigation biennial testing.

These tests were conducted to:

- Confirm the success of the mitigation system(s).

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility's HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room during the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the mid 20s and high temperatures ranged from the high 70s to the low 50s Fahrenheit. Maximum sustained winds ranged from 0-32 miles per hour. Average humidity was around 65% with 1.09 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		
Greencastle ES		
Test Period: 03/07/2022 - 03/10/2022		
Kit Number	Room / Area	Result
11133940	102	< 0.3
11133962	103	1.0
11133948	104	1.0
11133947	105	0.8
11133970	106	< 0.3
11133956	107	0.5
11130578	112	< 0.3
11130586	113	< 0.3
11130593	114	< 0.3
11130577	115	< 0.3
11130597	116	0.6
11130599	116	0.7
11130598	117	1.9
11130573	118	< 0.3
11130574	118	< 0.3
11130596	119	0.7
11130595	120	< 0.3
11130587	121	< 0.3
11130585	122	< 0.3
11130584	128	< 0.3
11130589	128	< 0.3
11130594	130	< 0.3
11130600	130	< 0.3
11133965	132	< 0.3
11133954	133	< 0.3
11133959	134	< 0.3
11133957	135	< 0.3
11133960	136	< 0.3
11130582	137	< 0.3
11130575	138	< 0.3
11130581	140	< 0.3
11133963	208	< 0.3
11133955	220	< 0.3
11133964	220	< 0.3
11133961	229	< 0.3
11130538	100B	0.7
11130545	100C	< 0.3
11130537	100D	< 0.3
11130547	100E	< 0.3
11130554	100H	< 0.3
11130561	100I	0.6
11130562	100I	0.7

Table 1- Radon Testing Results		
Greencastle ES		
Test Period: 03/07/2022 - 03/10/2022		
Kit Number	Room / Area	Result
11130546	100J	< 0.3
11130583	109 MULTIPURPOSE	< 0.3
11130588	109 MULTIPURPOSE	< 0.3
11133953	130 TELEPHONE	< 0.3
11130576	141 BS	< 0.3
11130569	144 MEDIA	< 0.3
11130571	144 MEDIA	< 0.3
11130572	144 MEDIA	< 0.3
11130591	GYM	< 0.3
11130592	GYM	< 0.3
11130590	GYM OFFICE	< 0.3
11130564	HEALTH OFFICE	< 0.3
11130579	KITCHEN OFFICE	< 0.3
11130552	MAIN OFFICE	< 0.3
11130570	MEDIA OFFICE	< 0.3

Table 2- Radon Testing Results			
Greencastle ES			
Test Period: 03/07/2022 - 03/10/2022			
Kit Number	QC Type	Room / Area	Result
11130561	D	100I	0.6
11130574	D	118	< 0.3
11130572	FB	144 Media	< 0.3
11130597	D	116	0.6
11130584	D	128	< 0.3
11130594	FB	130	< 0.3
11133955	D	220	< 0.3
11131662	OB	OFFICE BLANK	< 0.3
11131691	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:**GREENCASTLE ES**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11130538	100B	2022-03-07 @ 10:00 am	2022-03-10 @ 9:00 am	0.7 ± 0.3	2022-03-14
11130545	100C	2022-03-07 @ 10:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130537	100D	2022-03-07 @ 10:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130547	100E	2022-03-07 @ 10:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130554	100H	2022-03-07 @ 10:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130561	100I	2022-03-07 @ 10:00 am	2022-03-10 @ 9:00 am	0.6 ± 0.3	2022-03-14
11130562	100I	2022-03-07 @ 10:00 am	2022-03-10 @ 9:00 am	0.7 ± 0.3	2022-03-14
11130546	100J	2022-03-07 @ 10:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130588	109 MULTIPURPOSE	2022-03-07 @ 10:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130583	109 MULTIPURPOSE	2022-03-07 @ 10:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130578	112	2022-03-07 @ 11:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130586	113	2022-03-07 @ 11:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130593	114	2022-03-07 @ 11:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130577	115	2022-03-07 @ 11:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130599	116	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	0.7 ± 0.3	2022-03-14
11130597	116	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	0.6 ± 0.3	2022-03-14
11130598	117	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	1.9 ± 0.3	2022-03-14
11130574	118	2022-03-07 @ 10:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130573	118	2022-03-07 @ 10:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130596	119	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	0.7 ± 0.3	2022-03-14
11130595	120	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130587	121	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130585	122	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130589	128	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130584	128	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130594	130	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130600	130	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130582	137	2022-03-07 @ 10:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130575	138	2022-03-07 @ 10:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130581	140	2022-03-07 @ 10:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130576	141 BS	2022-03-07 @ 10:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130572	144 MEDIA	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130571	144 MEDIA	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130569	144 MEDIA	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130592	GYM	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130591	GYM	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130590	GYM OFFICE	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14

March 15, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

GREENCASTLE ES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11130564	HEALTH OFFICE	2022-03-07 @ 10:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130579	KITCHEN OFFICE	2022-03-07 @ 10:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11130552	MAIN OFFICE	2022-03-07 @ 10:00 am	2022-03-10 @ 9:00 am	< 0.3	2022-03-14
11130570	MEDIA OFFICE	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14

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

March 15, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11133940	102	2022-03-07 @ 12:00 pm	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133962	103	2022-03-07 @ 12:00 pm	2022-03-10 @ 10:00 am	1.0 ± 0.3	2022-03-14
11133948	104	2022-03-07 @ 12:00 pm	2022-03-10 @ 10:00 am	1.0 ± 0.3	2022-03-14
11133947	105	2022-03-07 @ 12:00 pm	2022-03-10 @ 10:00 am	0.8 ± 0.3	2022-03-14
11133970	106	2022-03-07 @ 12:00 pm	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133956	107	2022-03-07 @ 12:00 pm	2022-03-10 @ 10:00 am	0.5 ± 0.3	2022-03-14
11133953	130 TELEPHONE	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133965	132	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133954	133	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133959	134	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133957	135	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133960	136	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133963	208	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133955	220	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133964	220	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14
11133961	229	2022-03-07 @ 11:00 am	2022-03-10 @ 10:00 am	< 0.3	2022-03-14

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 KCI Technologies, Inc. Job Number 204620

NOMINAL Conditions: Radon Conc 27.0 pCi/L Rel. Hum 50.1 % Temp. 70.0 F

Date Start: 3/18/22 Date Stop: 3/21/22 Date Start: _____ Date Stop: _____

Time Start: 0705 Time Stop: 0705 Time Start: _____ Time Stop: _____

Device No.'s: (5) Char Bags - Device No.'s: _____

11139367, 11139368, 11139371, _____

11139710, 11139717 _____

E3 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 30, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (25.7 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11139367	SK1	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.9 \pm 2.1	2022-03-30
11139368	SK2	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	23.9 \pm 2.0	2022-03-30
11139371	SK3	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.7 \pm 2.1	2022-03-30
11139710	SK4	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	26.4 \pm 2.1	2022-03-30
11139717	SK5	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	24.6 \pm 2.0	2022-03-30

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



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 – March 2022 Schools

Name of Schools:

1. Cresthaven ES
2. Key, Francis Scott MS
3. Nix, Roscoe ES
4. Greencastle ES
5. Jackson Road
6. Page, William Tyler ES
7. West Farm Transportation Depot
8. Westover ES
9. White Oak MS

	Date	Initials
Radon Test Kits Deployed	03/07/2022	BMM
Radon Test Kits Collected	03/10/2022	BMM
Radon Test Kits Shipped to Lab*	03/10/2022	BMM
Radon Test Kits Received by Lab*	03/13/2022	BMM

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



MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

Executive Summary: Greencastle Elementary School

13611 Robey Road,
Silver Spring, MD 20904

Date of Test Report:	3/15/2019
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:	2
# of Rooms ≥ 4.0 pCi/L:	0
Low Value:	<0.4
High Value:	<0.4

Project Status

Retesting completed: No further action at this time.



March 15, 2019

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

Re: Radon Testing Services

Location: Greencastle Elementary School
13611 Robey Road,
Silver Spring, MD 20904

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 Greencastle Elementary School, located at 13611 Robey Road, Silver Spring, MD 20904 (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 February 26, 2019 and deployed two (2) activated charcoal (AC) radon test kit. 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 March 01, 2019 to retrieve the radon sampling test kit. A floor plan map of the building with the test location is included as Attachment A of this report.

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).

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

A handwritten signature in black ink, appearing to read "Nand Kaushik". The signature is fluid and cursive, with the first name "Nand" and last name "Kaushik" clearly distinguishable.

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		
Greencastle Elementary School		
Testing period: 2/26/19 - 3/01/19		
Kit Number	Room / Area	Result (pCi/L)
3923478	Computer room	<0.4
3923480	Instrumental Music	<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

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

MCPS Radon Survey Greencastle ES
13611 Robey Rd
Silver Spring MD 20904

Log Number	Device Number	Test Exposure Duration:	Area Tested	Result pCi/L
3220627	3923478	02/26/2019 7:23 am 03/01/2019 6:38 am	First Floor Computer Room/Comm Center	< 0.4
3220628	3923480	02/26/2019 7:25 am 03/01/2019 6:39 am	First Floor Instrumental Music Room	< 0.4

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

Distributed by: Intertek-PSI (VA)

Date Received: 03/04/2019 Date Logged: 03/04/2019 Date Analyzed: 03/05/2019 Date Reported: 03/05/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

The uncertainty of this radon measurement is $\pm 10\%$. 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.

Shawn Price, Director of Laboratory Operations, AccuStar Labs

This report may only be transferred to a third party in its entirety. Analytical results relate to the samples AS RECEIVED BY THE LABORATORY. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.



MONTGOMERY COUNTY PUBLIC SCHOOLS RADON TESTING

Executive Summary:
Greencastle Elementary School
13611 Robey Road,
Silver Spring, MD 20904

Date of Test Report:	2/13/2019
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:	40
# of Rooms \geq 4.0 pCi/L:	0
Low Value:	<0.4
High Value:	0.4

Project Status
Initial testing complete: Missing or compromised
samples need re-test.



February 13, 2019

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

Re: Radon Testing Services

Location: Greencastle Elementary School
13611 Robey Road,
Silver Spring, MD 20904

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 Greencastle Elementary School, located at 13611 Robey Road, Silver Spring, MD 20904 (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-two (52) 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

A handwritten signature in black ink, appearing to read 'Nand Kaushik'.

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		
Greencastle Elementary School		
Testing period: 11/27/18 - 11/30/18		
Kit Number	Room / Area	Result (pCi/L)
3919738	1 (GK #1)	<0.4
3919731	11 (Material Prep)	<0.4
3917811	14 (Health Office)	<0.4
3917327	18	<0.4
3917329	21	<0.4
3917330	22	<0.4
3917328	26	<0.4
3919736	APR	<0.4
3919735	Art	<0.4
3917998	Assistant Principal	<0.4
3919728	Building Services	<0.4
3919721	Cafeteria MPR	0.4
3919725	Cafeteria MPR	<0.4
--	Computer Lab (MISSED)	--
3917814	Conference	<0.4
3919727	Counselor	<0.4
3919739	CR2	<0.4
3919732	CR4	<0.4
3919733	CR5	<0.4
3919797	CR6	<0.4
3919793	CR7	<0.4
3919792	CR8	<0.4
3917816	CR9	<0.4
3917996	CR10	<0.4
3919795	Gym	<0.4
3919800	Gym	<0.4
3919799	Gym Office	<0.4
3917993	Health	0.4
--	Instrumental Music (MISSED)	--
3919724	K1	<0.4
3919726	K2	<0.4
3917994	K3	0.4
3919722	K4	<0.4
3919729	Kitchen	<0.4
3918000	Main	<0.4
3917995	Math	<0.4
3919740	Media	<0.4
3919737	Media	<0.4
3919734	Media Office	<0.4
3917813	Music	<0.4
3917815	Principal	<0.4
3919798	Staff Dining (DR Staff Office)	<0.4
3917817	Staff Lounge	<0.4

Radon Testing Results		
Greencastle Elementary School		
Testing period: 11/27/18 - 11/30/18		
Kit Number	Room / Area	Result (pCi/L)
3917997	Staff Workroom	<0.4
3917812	Volunteer Room (Linkage Office)	<0.4

Radon Testing Results		
Greencastle Elementary School		
Testing period: 11/27/18 - 11/30/18		
Kit Number	QC Type	Result (pCi/L)
3917999	Main (D)	<0.4
3917820	Music (D)	<0.4
3919794	Gym Office (D)	<0.4
3919796	CR6 (D)	<0.4
3919723	K4 (D)	<0.4
3917245	Field Blank	<0.4
3917439	Field Blank	<0.4
3915541	Office Blank	<0.4
3917440	Transit Blank	<0.4

Table Notes:

D – Duplicate

FB – Field Blank

OB – Office Blank

TB – Transit Blank

QC – Quality Control

ATTACHMENT C

Laboratory Analytical Results

NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

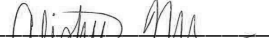
MCPS Radon Survey
Greencastle ES
Silver Spring MD 20904

Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
2401286	3918000	11/27/2018 2:14 pm	11/30/2018 10:10 am	Bldg Greencastle ES Floor First Room Main		< 0.4
2401287	3917999	11/27/2018 2:14 pm	11/30/2018 10:10 am	Bldg Greencastle ES Flr First Rm Main Duplicate		< 0.4
2401288	3917997	11/27/2018 2:18 pm	11/30/2018 10:11 am	Bldg Greencastle ES Floor First Room Staff WR		< 0.4
2401289	3917993	11/27/2018 2:20 pm	11/30/2018 10:12 am	Bldg Greencastle ES Floor First Room HR		0.4
2401290	3917811	11/27/2018 2:22 pm	11/30/2018 10:13 am	Bldg Greencastle ES Flr First Rm Nurse's Off		< 0.4
2401291	3917998	11/27/2018 2:24 pm	11/30/2018 10:14 am	Bldg Greencastle ES Flr First Rm Asst Principal		< 0.4
2401292	3917812	11/27/2018 2:26 pm	11/30/2018 10:15 am	Bldg Greencastle ES Flr First Rm Linkage Off		< 0.4
2401293	3917814	11/27/2018 2:27 pm	11/30/2018 10:17 am	Bldg Greencastle ES Floor First Room Conf Roo		< 0.4
2401294	3917815	11/27/2018 2:28 pm	11/30/2018 10:19 am	Bldg Greencastle ES Flr First Rm Principal off		< 0.4
2401295	3917813	11/27/2018 2:30 pm	11/30/2018 10:20 am	Bldg Greencastle ES Floor First Room Music		< 0.4
2401296	3917820	11/27/2018 2:30 pm	11/30/2018 10:20 am	Bldg Greencastle ES Flr First Rm Music Duplicate		< 0.4

Comment: Updated 1/29/2018 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: 12/03/2018 Date Reported: 01/29/2019

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.

This report may only be transferred to a third party in its entirety. Analytical results relate to the samples AS RECEIVED BY THE LABORATORY. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.

NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

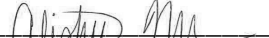
MCPS Radon Survey
Greencastle ES
Silver Spring MD 20904

Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
2401297	3919736	11/27/2018 2:32 pm	11/30/2018 10:21 am	Bldg Greencastle ES Floor First Room APR		< 0.4
2401298	3919731	11/27/2018 2:34 pm	11/30/2018 10:21 am	Bldg Greencastle ES Flr First Rm Material Prep		< 0.4
2401299	3919735	11/27/2018 2:36 pm	11/30/2018 10:22 am	Bldg Greencastle ES Floor First Room Art		< 0.4
2401300	3919738	11/27/2018 2:37 pm	11/30/2018 10:22 am	Bldg Greencastle ES Floor First Room GK1		< 0.4
2401301	3919740	11/27/2018 2:38 pm	11/30/2018 10:23 am	Bldg Greencastle ES Floor First Room Media		< 0.4
2401302	3919737	11/27/2018 2:40 pm	11/30/2018 10:24 am	Bldg Greencastle ES Floor First Room Media		< 0.4
2401303	3919734	11/27/2018 2:45 pm	11/30/2018 10:25 am	Bldg Greencastle ES Floor First Room Media Off		< 0.4
2401304	3919739	11/27/2018 2:46 pm	11/30/2018 10:25 am	Bldg Greencastle ES Floor First Room CR2		< 0.4
2401305	3919732	11/27/2018 2:50 pm	11/30/2018 10:26 am	Bldg Greencastle ES Floor First Room CR4		< 0.4
2401306	3919733	11/27/2018 2:57 pm	11/30/2018 10:27 am	Bldg Greencastle ES Floor First Room CR5		< 0.4
2401307	3919800	11/27/2018 3:00 pm	11/30/2018 10:29 am	Bldg Greencastle ES Floor First Room Gym		< 0.4

Comment: Updated 1/29/2018 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: 12/03/2018 Date Reported: 01/29/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

The uncertainty of this radon measurement is ~+/- 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.

This report may only be transferred to a third party in its entirety. Analytical results relate to the samples AS RECEIVED BY THE LABORATORY. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.

NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

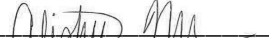
MCPS Radon Survey
Greencastle ES
Silver Spring MD 20904

Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
2401308	3919799	11/27/2018 3:04 pm	11/30/2018 10:30 am	Bldg Greencastle ES Floor First Room Gym Off		< 0.4
2401309	3919794	11/27/2018 3:04 pm	11/30/2018 10:30 am	Bldg Greencastle ES Flr First Rm Gym Off Duplic		< 0.4
2401310	3919798	11/27/2018 3:09 pm	11/30/2018 10:31 am	Bldg Greencastle ES Flr First Rm DR Staff Off		< 0.4
2401311	3919797	11/27/2018 3:10 pm	11/30/2018 10:32 am	Bldg Greencastle ES Floor First Room CR6		< 0.4
2401312	3919796	11/27/2018 3:10 pm	11/30/2018 10:32 am	Bldg Greencastle ES Flr First Rm CR6 Duplicate		< 0.4
2401313	3919793	11/27/2018 3:12 pm	11/30/2018 10:33 am	Bldg Greencastle ES Floor First Room CR7		< 0.4
2401314	3919792	11/27/2018 3:15 pm	11/30/2018 10:34 am	Bldg Greencastle ES Floor First Room CR8		< 0.4
2401315	3917816	11/27/2018 3:16 pm	11/30/2018 10:34 am	Bldg Greencastle ES Floor First Room CR9		< 0.4
2401316	3917996	11/27/2018 3:20 pm	11/30/2018 10:35 am	Bldg Greencastle ES Floor First Room CR10		< 0.4
2401317	3917817	11/27/2018 3:24 pm	11/30/2018 10:35 am	Bldg Greencastle ES Flr First Rm Staff Lounge		< 0.4
2401318	3917995	11/27/2018 3:26 pm	11/30/2018 10:36 am	Bldg Greencastle ES Floor First Room Math		< 0.4

Comment: Updated 1/29/2018 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: 12/03/2018 Date Reported: 01/29/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

The uncertainty of this radon measurement is ~+/- 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.

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

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

Laboratory Report for:

Property Tested: Project # 04481387-1

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

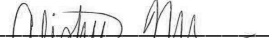
MCPS Radon Survey
Greencastle ES
Silver Spring MD 20904

Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
2401319	3919727	11/27/2018 3:28 pm	11/30/2018 10:36 am	Bldg Greencastle ES Floor First Room Counselor		< 0.4
2401320	3919728	11/27/2018 3:30 pm	11/30/2018 10:37 am	Bldg Greencastle ES Floor First Room Bldg Svcs		< 0.4
2401321	3919729	11/27/2018 3:32 pm	11/30/2018 10:37 am	Bldg Greencastle ES Floor First Room Kitchen		< 0.4
2401322	3919725	11/27/2018 3:34 pm	11/30/2018 10:38 am	Bldg Greencastle ES Floor First Room Café MPR		< 0.4
2401323	3919721	11/27/2018 3:38 pm	11/30/2018 10:38 am	Bldg Greencastle ES Floor First Room Café MPR		0.4
2401324	3919724	11/27/2018 3:40 pm	11/30/2018 10:38 am	Bldg Greencastle ES Floor First Room K1		< 0.4
2401325	3919726	11/27/2018 3:44 pm	11/30/2018 10:39 am	Bldg Greencastle ES Floor First Room K2		< 0.4
2401326	3917994	11/27/2018 3:46 pm	11/30/2018 10:39 am	Bldg Greencastle ES Floor First Room K3		0.4
2401327	3919722	11/27/2018 3:48 pm	11/30/2018 10:40 am	Bldg Greencastle ES Floor First Room K4		< 0.4
2401328	3919723	11/27/2018 3:48 pm	11/30/2018 10:41 am	Bldg Greencastle ES Flr First Rm K4 Duplicate		< 0.4
2401329	3917330	11/27/2018 4:00 pm	11/30/2018 10:42 am	Bldg Greencastle ES Floor Second Room 22		< 0.4

Comment: Updated 1/29/2018 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: 12/03/2018 Date Reported: 01/29/2019

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
Charcoal Canister
NRPP Device Code 6048
NRSB Device Code 10317

Laboratory Report for:

Property Tested: Project # 04481387-1

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

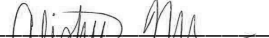
MCPS Radon Survey
Greencastle ES
Silver Spring MD 20904

Log Number	Device Number	Test Exposure Duration:		Area Tested		Result pCi/L
2401330	3917328	11/27/2018 4:02 pm	11/30/2018 10:43 am	Bldg Greencastle ES Floor Second Room 26		< 0.4
2401331	3917327	11/27/2018 4:04 pm	11/30/2018 10:44 am	Bldg Greencastle ES Floor Second Room 18		< 0.4
2401332	3917329	11/27/2018 4:06 pm	11/30/2018 10:45 am	Bldg Greencastle ES Floor Second Room 21		< 0.4
2401333	3917245	11/27/2018 2:14 pm	11/30/2018 10:45 am	Bldg Greencastle ES Field Blank		< 0.4
2401334	3917439	11/27/2018 2:14 pm	11/30/2018 10:45 am	Bldg Greencastle ES Field Blank		< 0.4
2401335	3915541	11/27/2018 2:14 pm	11/30/2018 10:45 am	Bldg Greencastle ES Transit Blank		< 0.4
2401336	3917440	11/27/2018 6:00 am	11/30/2018 6:00 pm	Bldg Greencastle ES Office Blank		< 0.4

Comment: Updated 1/29/2018 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: 12/03/2018 Date Reported: 01/29/2019

Report Reviewed By: 

Report Approved By: 

Disclaimer:

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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:

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.

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:

- | | |
|--|---|
| <ul 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 | <ul 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

RADON SCREENING SURVEY – FOLLOW-UP GREENCASTLE ELEMENTARY SCHOOL

13611 Robey Rd., Silver Spring, Maryland 20904

EXECUTIVE SUMMARY

Date of Test Report:	3/9/18
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	9
# Rooms \geq 4.0 pCi/L:	1
Low Value:	<0.3
High Value:	4.2
Confirmed Rooms \geq 4.0 pCi/L US EPA Action Level	1

Summary of Sampling Events \geq 4.0 pCi/L

Room	Result (pCi/L) 1/31/18	Result (pCi/L) 3/9/18	Average Result (pCi/L)
Media Office	4.5	4.2	4.4

MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	Greencastle Elementary School
Date of Report	March 9, 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	9
# Rooms ≥ 4.0 pCi/L	1
Lowest Value	<0.3 pCi/L
Highest Value	4.2 pCi/L

Project Status

Room with results ≥ 4.0 pCi/L:

Media Office (4.2 pCi/L), Media Office Duplicate (4.1 pCi/L)

Current Project Status at this time: Retesting completed; use the average of the initial and re-test results in a room to determine if remediation is necessary.



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

March 9, 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: Greencastle Elementary School

13611 Robey Rd.
Silver Spring, Maryland 20904

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 Greencastle Elementary School, located at 13611 Robey Rd. in Silver Spring, Maryland 20904 (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 12, 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 15, 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 HVAC upgrade testing.

These tests were conducted to:

- Evaluate radon concentrations following the installation of a new HVAC system.

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 10-15 miles per hour. Average humidity was around 69%. 0.05 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	Media Office	4.2, 4.1 (D)
≤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		
Greencastle Elementary School		
Test Period: 02/12/18-02/15/18		
Kit Number	Room / Area	Result
7985899	ASSIST. PRIN. 2	< 0.3
7985894	CAFE	3.7
7985900	FAC	0.6
7985893	G&T COORDINATOR	1.4
7985875	GYM	2.4
7985878	MEDIA OFFICE	4.2
7985877	MPR	0.9
7985892	TELEPHONE ROOM	< 0.3
7985898	VOLUNTEER ROOM	3.5

Table Note:

* Missing or Compromised Sample

Table 2 - Radon Testing Results		
Greencastle Elementary School		
Test Period: 02/12/18-02/15/18		
Kit Number	QC Type	Result
7985876	D (MEDIA OFFICE)	4.1

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

February 27, 2018

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**GREENCASTLE ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7985899	ASSIST. PRIN. 2	2018-02-12 @ 8:00 am	2018-02-15 @ 8:00 am	< 0.3	2018-02-19
7985894	CAFE	2018-02-12 @ 8:00 am	2018-02-15 @ 8:00 am	3.7 ± 0.4	2018-02-19
7985900	FAC	2018-02-12 @ 8:00 am	2018-02-15 @ 8:00 am	0.6 ± 0.3	2018-02-19
7985893	G&T COORDINATOR	2018-02-12 @ 8:00 am	2018-02-15 @ 8:00 am	1.4 ± 0.4	2018-02-19
7985875	GYM	2018-02-12 @ 8:00 am	2018-02-15 @ 8:00 am	2.4 ± 0.4	2018-02-19
7985878	MEDIA OFFICE	2018-02-12 @ 8:00 am	2018-02-15 @ 8:00 am	4.2 ± 0.5	2018-02-19
7985876	MEDIA OFFICE	2018-02-12 @ 8:00 am	2018-02-15 @ 8:00 am	4.1 ± 0.5	2018-02-19
7985877	MPR	2018-02-12 @ 8:00 am	2018-02-15 @ 8:00 am	0.9 ± 0.3	2018-02-19
7985892	TELEPHONE ROOM	2018-02-12 @ 8:00 am	2018-02-15 @ 8:00 am	< 0.3	2018-02-19
7985898	VOLUNTEER ROOM	2018-02-12 @ 8:00 am	2018-02-15 @ 7:00 am	3.5 ± 0.4	2018-02-19

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

Names of Schools:

- | | |
|--|--------------------------------------|
| 1. Highland Elementary School | 20. Bethesda Trans. and Maint. Depot |
| 2. Stephen Knolls Elementary School | 21. Sequoyah Elementary School |
| 3. Silver Creek Middle School | 22. Gaithersburg Middle School |
| 4. Woodlin Elementary School | 23. Wayside Elementary School |
| 5. Sligo Creek Elementary School | 24. Travilah Elementary School |
| 6. Francis Scott Key Middle School | 25. Damascus High School |
| 7. John T. Baker Middle School | 26. Jones Lane Elementary School |
| 8. Cedar Grove Elementary School | 27. Greencastle Elementary School |
| 9. Clarksburg Elementary School | 28. Spring Brook High School |
| 10. Clarksburg Elementary School Annex | 29. Montgomery Blair High School |
| 11. Fields Road Elementary School | 30. Watkins Mill High School |
| 12. Dufief Elementary School | |
| 13. Brown Station Elementary School | |
| 14. Diamond Elementary School | |
| 15. Fallsmeade Elementary School | |
| 16. Thomas Whootton High School | |
| 17. Lake Seneca Elementary School | |
| 18. Redland Middle School | |
| 19. Newport Mill Middle School | |

	Date	Initials
Radon Test Kits Deployed	2/12/18	JM
Radon Test Kits Collected	2/15/18	JM
Radon Test Kits Shipped to Lab*	2/15/18	JM
Radon Test Kits Received by Lab*	2/19/15	JM

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

February 27, 2018

**** LABORATORY ANALYSIS REPORT ****

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

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

February 27, 2018

**** LABORATORY ANALYSIS REPORT ****

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

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

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 ± 0.8	2018-02-21
7986621	2	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.4 ± 0.8	2018-02-21
7985683	3	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.5 ± 0.8	2018-02-21
7984168	4	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	20.5 ± 0.8	2018-02-21
7986618	5	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	19.9 ± 0.8	2018-02-21
7984169	6	2018-02-16 @ 11:00 am	2018-02-19 @ 11:00 am	20.4 ± 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: <u>2/16/18</u> Date Stop: <u>2/19/18</u>	Date Start: _____ Date Stop: _____
Time Start: <u>1052</u> Time Stop: <u>1052</u>	Time Start: _____ Time Stop: _____
Device No.'s: <u>(6) Char. Bags-</u>	Device No.'s: _____
<u>7984181, 7986621, 7985683</u>	_____
<u>7984168, 7986618, 7984169</u>	_____
<u>G3 Middle</u>	_____
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

Site Name	Greencastle 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	44
# Rooms ≥ 4.0 pCi/L	1
Lowest Value	< 0.3 pCi/L
Highest Value	4.5 pCi/L

Rooms with results ≥ 4.0 pCi/L: Media Office (4.5 pCi/L)

Current Project Status at this time: Testing Completed; retesting needed for results ≥ 4.0 pCi/L.

Missing or compromised samples need re-test.



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936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

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: Greencastle Elementary School

13611 Robey Rd.
Silver Spring, Maryland 20904

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 Greencastle Elementary School, located at 13611 Robey Rd. in Silver Spring, Maryland 20904 (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 fifty-five (55) 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:

- HVAC upgrade testing.

These tests were conducted to:

- Evaluate radon concentrations following installation of a new HVAC system.

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	Media Office	4.5
≤ 4.0 pCi/L	See Attachment B	See Attachment B

Quality Control Samples	
Results of Blank Canisters:	The field blanks, 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 Moulds, 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		
Greencastle Elementary School		
Test Period: 11/28/17-12/01/17		
Kit Number	Room / Area	Result
7976230	14	< 0.3
7976244	ADMIN OFFICE	0.8
7976243	APR	< 0.3
7976263	ART	0.6
7976275	ASSIST. PRINCIPA	0.6
7976268	BLDG SCVS MGMT	0.8
7976248	COMMUNICATION RO	0.5
7976266	COMP. LAB	1.9
7976294	CONF ROOM	0.7
7976252	CONTROL ROOM	< 0.3
7976298	COUNSELOR	1.1
7976256	CR1	0.6
7976293	CR10	< 0.3
7976233	CR11	< 0.3
7976251	CR2	0.7
7976237	CR22	< 0.3
7976240	CR3	< 0.3
7976247	CR4	< 0.3
7976239	CR5	0.6
7976295	CR6	< 0.3
7976261	CR7	< 0.3
7976258	CR8	< 0.3
7976291	CR9	< 0.3
7976269	GYM	1.8
7976253	* GYM (Tampered)	1.6
7976292	GYM OFFICE	1.2
7976250	HEALTH ROOM	1.1
7976288	INSTRUMENTAL MUS	< 0.3
7976232	K1	0.6
7976231	K2	0.6
7976225	K3	0.7
7976224	K4	0.7
7976267	MATERIAL PREP	2.0
7976259	MATH	1.3
7976257	MEDIA CENTER	2.2
7976254	MEDIA OFFICE	4.5
7976260	MPR	1.3
7976245	* MPR (Tampered)	1.0
7976255	MUSIC ROOM	< 0.3
7976290	PRINCIPAL OFFICE	1.7
7976236	SPT	0.8
7976017	STAFF DINING	0.5
7976281	STAFF LOUNGE	< 0.3
7976299	STAFF WORKROOM	1.5
7976274	TELEPHONE ROOM	0.8
7976262	VOLUNTEER ROOM	1.6

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Greencastle Elementary School		
Test Period: 11/28/17-12/01/17		
Kit Number	Room / Area	Result

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Greencastle Elementary School		
Test Period: 11/28/17-12/01/17		
Kit Number	QC Type	Result
7976242	D (ADMIN OFFICE)	1.0
7976241	D (APR)	0.5
7976214	D (ASSISTANT PRINC)	0.9
7976228	D (CR22)	< 0.3
7976067	D (STAFF LOUNGE)	< 0.3
7976287	* D (VOLUNTEER ROOM:Tampered)	1.3
7976238	FB (COUNSELOR)	< 0.3
7976226	FB (HEALTH ROOM)	< 0.3
7978086	OB (OB)	< 0.3

Table Note:

* Missing or Compromised Sample

Summary of Missed Locations		
Greencastle Elementary School		
Test Period: 11/28/17-12/02/17		
Kit Number	Room / Area	Result
-	ASSISTANT PRINCIPAL 2 (Missed location)	-
-	FAC (Missed location)	-
-	G&T COORDINATOR (Missed location)	-
-	CAFÉ (Missed location)	-

[illegible]

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:**GREENCASTLE ES****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7976230	14	2017-11-28 @ 10:00 am	2017-12-01 @ 9:00 am	< 0.3	2017-12-04
7976242	ADMIN OFFICE	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	1.0 ± 0.3	2017-12-04
7976244	ADMIN OFFICE	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	0.8 ± 0.3	2017-12-05
7976241	APR	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	0.5 ± 0.3	2017-12-04
7976243	APR	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976263	ART	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	0.6 ± 0.3	2017-12-05
7976275	ASSIST. PRINCIPA	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	0.6 ± 0.3	2017-12-04
7976214	ASSISTANT PRINC	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	0.9 ± 0.3	2017-12-04
7976268	BLDG SCVS MGMT	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	0.8 ± 0.3	2017-12-05
7976248	COMMUNICATION RO	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	0.5 ± 0.3	2017-12-04
7976266	COMP. LAB	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	1.9 ± 0.3	2017-12-05
7976294	CONF ROOM	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	0.7 ± 0.3	2017-12-04
7976252	CONTROL ROOM	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976238	COUNSELOR	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-04
7976298	COUNSELOR	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	1.1 ± 0.3	2017-12-04
7976256	CR1	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	0.6 ± 0.3	2017-12-04
7976293	CR10	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976233	CR11	2017-11-28 @ 10:00 am	2017-12-01 @ 9:00 am	< 0.3	2017-12-04
7976251	CR2	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	0.7 ± 0.3	2017-12-05
7976228	CR22	2017-11-28 @ 10:00 am	2017-12-01 @ 9:00 am	< 0.3	2017-12-04
7976237	CR22	2017-11-28 @ 10:00 am	2017-12-01 @ 9:00 am	< 0.3	2017-12-04
7976240	CR3	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976247	CR4	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976239	CR5	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	0.6 ± 0.3	2017-12-05
7976295	CR6	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976261	CR7	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976258	CR8	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976291	CR9	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976269	GYM	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	1.8 ± 0.3	2017-12-05
7976253	GYM	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	1.6 ± 0.3	2017-12-05
7976292	GYM OFFICE	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	1.2 ± 0.3	2017-12-05
7976250	HEALTH ROOM	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	1.1 ± 0.3	2017-12-04
7976226	HEALTH ROOM	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-04
7976288	INSTRUMENTAL MUS	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976232	K1	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	0.6 ± 0.3	2017-12-04
7976231	K2	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	0.6 ± 0.3	2017-12-05
7976225	K3	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	0.7 ± 0.3	2017-12-04

Radon test result report for:**GREENCASTLE ES****1**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7976224	K4	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	0.7 ± 0.3	2017-12-04
7976267	MATERIAL PREP	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	2.0 ± 0.3	2017-12-05
7976259	MATH	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	1.3 ± 0.3	2017-12-05
7976257	MEDIA CENTER	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	2.2 ± 0.3	2017-12-05
7976254	MEDIA OFFICE	2017-11-28 @ 9:00 am	2017-12-01 @ 9:00 am	4.5 ± 0.4	2017-12-04
7976260	MPR	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	1.3 ± 0.3	2017-12-05
7976245	MPR	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	1.0 ± 0.3	2017-12-05
7976255	MUSIC ROOM	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7978086	OB	2017-11-28 @ 2:00 pm	2017-12-01 @ 2:00 pm	< 0.3	2017-12-04
7976290	PRINCIPAL OFFICE	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	1.7 ± 0.3	2017-12-05
7976236	SPT	2017-11-28 @ 10:00 am	2017-12-01 @ 9:00 am	0.8 ± 0.3	2017-12-04
7976017	STAFF DINING	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	0.5 ± 0.3	2017-12-05
7976067	STAFF LOUNGE	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976281	STAFF LOUNGE	2017-11-28 @ 9:00 am	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976299	STAFF WORKROOM	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	1.5 ± 0.3	2017-12-05
7976274	TELEPHONE ROOM	2017-11-28 @ 8:00 am	2017-12-01 @ 8:00 am	0.8 ± 0.3	2017-12-04
7976287	VOLUNTEER ROOM	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	1.3 ± 0.3	2017-12-04
7976262	VOLUNTEER ROOM	2017-11-28 @ 10:00 am	2017-12-01 @ 8:00 am	1.6 ± 0.4	2017-12-05



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 Phase

Names of Schools:

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

RADON SCREENING SURVEY – FOLLOW-UP GREENCASTLE ELEMENTARY SCHOOL

13611 Robey Road, Silver Spring, Maryland 20904

EXECUTIVE SUMMARY

Date of Test Report:	3/21/16 Follow-Up
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	1
# Rooms \geq 4.0 pCi/L:	0
Low Value:	<0.3
High Value:	1.9
Confirmed Rooms \geq 4.0 pCi/L US EPA Action Level	0

Summary of Sampling Events ≥ 4.0 pCi/L

[illegible]



MCPS RADON TESTING

Executive Summary: Greencastle Elementary School

Date of Test Report:	3/21/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	1
# Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	1.9

Project Status:

Retesting completed; no further action at this time.



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936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

March 21, 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: Greencastle Elementary School
13611 Robey Road
Silver Spring, Maryland 20904

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 Greencastle Elementary School, located at 13611 Robey Road in Silver Spring, Maryland 20904 (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 23, 2016 and deployed three (3) 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 26, 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 $\leq 65^{\circ}\text{F}$.

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. Moulds
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

*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		
Greencastle Elementary School		
Test Period: 02/23/16-02/26/16		
Kit Number	Room / Area	Result
7732195	MATERIAL PREP	1.9

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Greencastle Elementary School		
Test Period: 02/23/16-02/26/16		
Kit Number	QC Type	Result
7732196	D (MATERIAL PREP)	1.7
7732198	FB (MATERIAL PREP)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

March 8, 2016

**** LABORATORY ANALYSIS
REPORT ****

Radon test result report for:

**GREENCASTLE ELEMENTARY SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7732195	MATERIAL PREP	2016-02-23 @ 1:00 pm	2016-02-26 @ 11:00 am	1.9 ± 0.3	2016-03-01
7732196	MATERIAL PREP	2016-02-23 @ 1:00 pm	2016-02-26 @ 11:00 am	1.7 ± 0.3	2016-03-01
7732198	MATERIAL PREP	2016-02-23 @ 1:00 pm	2016-02-26 @ 11:00 am	< 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

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

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: 2/1/17

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

3 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



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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 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: Greencastle Elementary School

Date of Test Report:	3/11/2016 (Rev 1)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	43
# Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	2.4

Project Status:

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



March 11, 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 # 12146341.22

Location: Greencastle Elementary School
13611 Robey Road
Silver Spring, MD 20904

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 Greencastle Elementary School, located at 13611 Robey Road in Silver Spring, Maryland 20904 (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 28, 2015 and deployed fifty-four (54) 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 31, 2015 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 $\leq 65^{\circ}\text{F}$.

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

The 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. Moulds
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		
Greencastle ES		
Test Period: 12/28/15-12/31/15		
Kit Number	Room / Area	Result
7707449	ADMIN OFF	< 0.3
7707415	APR	< 0.3
7707454	ASSIST PRINCIP 1	< 0.3
7707450	ASSIST PRINCIP2	< 0.3
7707439	BLDG SVC MANAGER	0.6
7707452	COMMUNICATION RM	1.2
7707448	CONFERENCE RM	< 0.3
7707455	CONTROL RM	< 0.3
7707456	COUNSELOR OFFICE	1.3
7707416	CR1	0.6
7707421	CR10	< 0.3
7707410	CR11	< 0.3
7707402	CR14	0.6
7707441	CR2	< 0.3
7707408	CR2 ART	0.7
7707411	CR22	< 0.3
7707428	CR3	< 0.3
7707424	CR4	< 0.3
7707426	CR5	< 0.3
7707422	CR6	< 0.3
7707432	CR7	< 0.3
7707457	CR8	< 0.3
7707423	CR9	< 0.3
7707407	FAC	0.8
7707433	G&T COORDINATOR	1.2
7707406	GYM	1.2
7707412	GYM	1.8
7707417	GYM OFFICE	0.7
7707444	HEALTH RM	< 0.3
7707443	INSTRUMENT MUSIC	0.9
7707435	K1	< 0.3
7707431	K2	0.6
7707446	K3	0.6
7707429	K4	< 0.3
7707453	* MATERIAL PREP RM (missing)	-
7707440	MEDIA CENTER	1.2
7707425	MEDIA CENTER OFF	2.4
7707437	MPR	1.9
7707447	MPR	1.4
7707414	MU	< 0.3
7707442	PRINCIPLE OFFICE	1.6
7707403	SPT	0.6
7707436	STAFF DINING RM	1.1
7707418	STAFF LOUNGE	< 0.3
7707434	VOLUNTEER RM	1.9

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Greencastle ES		
Test Period: 12/28/15-12/31/15		
Kit Number	QC Type	Result
7707438	D (ADMIN OFFICE)	1.0
7707419	D (CR1)	< 0.3
7707430	D (CR10)	< 0.3
7707420	D (CR5)	< 0.3
7707451	D (K4)	< 0.3
7707445	D (MPR)	1.6
7707427	FB (CR10)	< 0.3
7707413	FB (MU)	< 0.3
7707505	OB (0)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

January 16, 2016

LABORATORY ANALYSIS REPORT **

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

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7707505	0	2015-12-28 @ 5:00 pm	2015-12-31 @ 1:00 pm	< 0.3	2016-01-05
7707449	ADMIN OFF	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	< 0.3	2016-01-05
7707438	ADMIN OFFICE	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	1.0 ± 0.3	2016-01-04
7707415	APR	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707454	ASSIST PRINCIP 1	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	< 0.3	2016-01-05
7707450	ASSIST PRINCIP2	2015-12-28 @ 9:00 am	2015-12-31 @ 10:00 am	< 0.3	2016-01-05
7707439	BLDG SVC MANAGER	2015-12-28 @ 10:00 am	2015-12-31 @ 8:00 am	0.6 ± 0.3	2016-01-05
7707452	COMMUNICATION RM	2015-12-28 @ 10:00 am	2015-12-31 @ 8:00 am	1.2 ± 0.3	2016-01-04
7707448	CONFERENCE RM	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	< 0.3	2016-01-05
7707455	CONTROL RM	2015-12-28 @ 10:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707456	COUNSELOR OFFICE	2015-12-28 @ 10:00 am	2015-12-31 @ 8:00 am	1.3 ± 0.3	2016-01-04
7707416	CR1	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	0.6 ± 0.3	2016-01-05
7707419	CR1	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707421	CR10	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-04
7707430	CR10	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-04
7707427	CR10	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707410	CR11	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707402	CR14	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	0.6 ± 0.3	2016-01-05
7707441	CR2	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707408	CR2 ART	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	0.7 ± 0.4	2016-01-05
7707411	CR22	2015-12-28 @ 12:00 pm	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707428	CR3	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707424	CR4	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707420	CR5	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707426	CR5	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707422	CR6	2015-12-28 @ 10:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707432	CR7	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707457	CR8	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707423	CR9	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707407	FAC	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	0.8 ± 0.3	2016-01-05
7707433	G&T COORDINATOR	2015-12-28 @ 10:00 am	2015-12-31 @ 8:00 am	1.2 ± 0.3	2016-01-04
7707406	GYM	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	1.2 ± 0.4	2016-01-05
7707412	GYM	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	1.8 ± 0.4	2016-01-05
7707417	GYM OFFICE	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	0.7 ± 0.3	2016-01-05
7707444	HEALTH RM	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	< 0.3	2016-01-04
7707443	INSTRUMENT MUSIC	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	0.9 ± 0.4	2016-01-05
7707435	K1	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	< 0.3	2016-01-05

January 16, 2016
**LABORATORY ANALYSIS
REPORT ****

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

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7707431	K2	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	0.6 ± 0.3	2016-01-04
7707446	K3	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	0.6 ± 0.3	2016-01-05
7707451	K4	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	< 0.3	2016-01-05
7707429	K4	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	< 0.3	2016-01-05
7707453	MATERIAL PREP RM	@	@		
7707440	MEDIA CENTER	2015-12-28 @ 10:00 am	2015-12-31 @ 8:00 am	1.2 ± 0.4	2016-01-05
7707425	MEDIA CENTER OFF	2015-12-28 @ 10:00 am	2015-12-31 @ 8:00 am	2.4 ± 0.5	2016-01-05
7707437	MPR	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	1.9 ± 0.4	2016-01-04
7707447	MPR	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	1.4 ± 0.3	2016-01-04
7707445	MPR	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	1.6 ± 0.4	2016-01-05
7707413	MU	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707414	MU	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707442	PRINCIPLE OFFICE	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	1.6 ± 0.4	2016-01-05
7707403	SPT	2015-12-28 @ 11:00 am	2015-12-31 @ 8:00 am	0.6 ± 0.3	2016-01-04
7707436	STAFF DINING RM	2015-12-28 @ 10:00 am	2015-12-31 @ 8:00 am	1.1 ± 0.4	2016-01-05
7707418	STAFF LOUNGE	2015-12-28 @ 10:00 am	2015-12-31 @ 8:00 am	< 0.3	2016-01-05
7707434	VOLUNTEER RM	2015-12-28 @ 10:00 am	2015-12-31 @ 9:00 am	1.9 ± 0.4	2016-01-05

Radon test result report for:
MCPS PHASE 3 & 4
TRANSIT BLANKS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7708218	TRANSIT 4	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708200	TRANSIT 1	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708190	TRANSIT 10	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708189	TRANSIT 11	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708191	TRANSIT 12	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708188	TRANSIT 13	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708197	TRANSIT 14	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708186	TRANSIT 15	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708185	TRANSIT 16	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708184	TRANSIT 17	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708182	TRANSIT 18	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708187	TRANSIT 18	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708199	TRANSIT 2	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708181	TRANSIT 20	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708180	TRANSIT 21	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708183	TRANSIT 22	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708178	TRANSIT 23	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708179	TRANSIT 24	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708177	TRANSIT 25	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708176	TRANSIT 26	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708174	TRANSIT 27	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708173	TRANSIT 28	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708175	TRANSIT 29	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708198	TRANSIT 3	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708172	TRANSIT 30	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708194	TRANSIT 5	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708196	TRANSIT 6	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708193	TRANSIT 7	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708192	TRANSIT 8	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23
7708195	TRANSIT 9	2015-12-18 @ 12:00 pm	2015-12-21 @ 12:00 pm	< 0.3	2015-12-23

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 III

Name of Schools:

- | | | |
|-----------------------|-----------------------|-----------------------|
| 1. Burnt Mills ES | 13. Georgian Frost ES | 25. Northlake Center |
| 2. Burtonsville ES | 14. Germantown ES | 26. Olney ES |
| 3. Cedar Grove ES | 15. Goshen ES | 27. Rosa Parks MS |
| 4. Cloverly ES | 16. Greencastle ES | 28. Poolesville ES |
| 5. Cold Spring ES | 17. Greenwood ES | 29. Poolesville HS |
| 6. Damascus HS | 18. Lake Seneca ES | 30. Potomac ES |
| 7. Darnestown ES | 19. Laytonsville ES | 31. Rock Terrace HS |
| 8. Diamond ES | 20. Col. E. Brooke MS | 32. Rosemary Hills ES |
| 9. Charles R. Drew ES | 21. Luxmanor ES | 33. Carl Sandburg |
| 10. DuFief ES | 22. Magruder HS | 34. Sequoyah ES |
| 11. Thomas Edison HS | 23. Thur. Marshall ES | 35. Stedwick ES |
| 12. Robert Frost MS | 24. Monocacy ES | 36. Whetstone ES |
-

	Date	Initials
Radon Test Kits Deployed	12/28/15	JM
Radon Test Kits Sampled	12/31/15	JM
Radon Test Kits Shipped to Lab*	12/31/15	JM
Radon Test Kits Received by Lab*	1/4/16	JM

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