

# School / Facility Radon Testing Report Form

School Year: **24-25**

Facility:	Lake Seneca Elementary School		
Address:	13600 Wanegarden Drive		
	Germantown, MD 20874		
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 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 type="checkbox"/> Initial Testing -or- <input checked="" 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 ( $\geq 4.0$ -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	54	Lowest Value (pCi/L)	< 0.3
Number of Rooms ( $\geq 4.0$ -pCi/L)	0	Highest Value (pCi/L)	0.9

**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  $\geq 2.0$ -pCi/L;  $\geq 2.7$ -pCi/L;  $\geq 4.0$ -pCi/L; and  $\geq 8.0$ -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
Shannon King		KCI Technologies, Inc.
Shakia Dawkins		KCI Technologies, Inc.
<i>If noncertified individuals, the qualified measurement professional providing oversight -</i>		
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):	02/25/25	03/25/25
<input type="checkbox"/> Long-Term				02/28/25	03/28/25
Does the test period include weekends, school breaks or holidays?				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<i>If “Yes” please explain/detail in the space below:</i>					
Was HVAC operating under occupied conditions?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<i>If “No” please explain/detail in the space below:</i>					

**Testing** (continued)

Round of Testing	Detectors Deployed				
	Ground-Contact		Upper-Level(s)		Total
	Initial	Follow-Up	Initial	Follow-Up	
Test Locations <sup>1</sup>	53	2	0	0	55
Duplicates <sup>2</sup>	6	1	0	0	7
Field Blanks <sup>3</sup>	3	1	0	0	4
Grand Total					66

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 <sup>1</sup>	Not applicable		10
Trip Blanks <sup>2</sup>	1	1	2
Office Blanks <sup>3, 4</sup>	1	1	2
			14

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
<b>Round of Testing</b>	<b>Initial</b> <b>Follow-Up</b>
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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No
For all Duplicate Samples <sup>1</sup> , the higher value is $\leq 2x$ the lower value?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
For all Duplicate Samples <sup>1</sup> , Relative Percent Difference(s) (RPD) <sup>2</sup> are less than the Warning Level <sup>3</sup> ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
For all Duplicate Samples <sup>1</sup> , Relative Percent Difference(s) (RPD) <sup>2</sup> are less than the Control Level <sup>3</sup> ?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Yes <input 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
$\geq 4.0$ -pCi/L	28% RPD	36% RPD

## Summary of Test Results<sup>1</sup> and Determination of Valid Measurements<sup>2</sup>

Round of Testing	Ground-Contact		Upper-Level(s)		Total
	Initial	Follow-Up	Initial	Follow-Up	
Number of test locations:	53	1	0	0	54
Number of locations $\geq 8.0$ -pCi/L:	0	0	0	0	0
Number of locations $\geq 4.0$ and $\leq 8$ -pCi/L:	0	0	0	0	0
Number of locations $\geq 2.7$ and $< 4$ -pCi/L:	0	0	0	0	0
Number of locations $\geq 2.0$ and $< 2.7$ -pCi/L:	0	0	0	0	0
Number of missing required test locations <sup>3</sup> :	1	0	0	0	1
Number of failed duplicate control locations:	1	0	0	0	1
Percentage of missing test locations for the facility <sup>4,5</sup> :	1.89%	0	0	0	0

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

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

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

4 – if all valid measurements are  $< 4.0$ -pCi/L and the total number of test locations are  $\geq 18$ , 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  $\geq 4.0$ -pCi/L and the total number of test locations are  $\geq 20$ , 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 Results<sup>1</sup> and Determination of Valid Measurements<sup>2</sup> (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 checked="" type="checkbox"/> Yes <input 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 checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<i>If Yes to both above – then Testing Status – ‘No Further Testing Needed’ mark ‘NA’ below and complete Conclusions section</i>		
<b>If No to either above, were all results obtained under 4.0-pCi/L and were sufficient valid measurements obtained?<sup>1,2</sup></b> <b><i>If Yes, then - ‘No Further Testing Needed’ complete Conclusion section on first page.</i></b> <b><i>If No, then - ‘Follow-up Testing Required’ continue below.</i></b>	<input type="checkbox"/> Yes <input checked="" 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		
Lake Seneca Elementary School		
Test Period: 2/25/2025 - 2/28/2025		
Kit Number	Room / Area	Result
11927399	1	< 0.3
11927398	2	0.9
11927394	3	< 0.3
11927391	4	< 0.3
11927392	4	< 0.3
11927393	5	< 0.3
11927390	6	< 0.3
11927388	7	< 0.3
11927386	8	< 0.3
11927387	9	< 0.3
11927385	10	< 0.3
11927383	11	< 0.3
11927384	11	< 0.3
11927380	12	< 0.3
11927381	13	< 0.3
11927382	13	< 0.3
11927379	14	< 0.3
11927374	15	< 0.3
11927375	16	< 0.3
11927376	17	< 0.3
11927378	18	0.6
11927377	19	< 0.3
11927365	20	< 0.3
11927369	21	< 0.3
11927370	22	< 0.3
11927364	23	< 0.3
11927361	24	< 0.3
11927362	24	< 0.3
11927366	25	< 0.3
11927360	26	< 0.3
11927356	27	< 0.3
11927357	28	< 0.3
11927355	29	< 0.3
11927354	30	< 0.3
11927353	31	< 0.3
11927351	32	< 0.3
11927352	32	< 0.3



<b>Table 1- Radon Testing Results</b>		
<b>Lake Seneca Elementary School</b>		
<b>Test Period: 2/25/2025 - 2/28/2025</b>		
Kit Number	Room / Area	Result
11927349	33	< 0.3
11927350	34	< 0.3
11927363	24A	< 0.3
11927367	24A	< 0.3
11927368	24B	< 0.3
11927389	ALVING	< 0.3
11927201	APR	< 0.3
11927400	APR	< 0.3
11927395	BSO	< 0.3
11927358	BURR	< 0.3
11927347	CONFERENCE	< 0.3
11927345	DALI	< 0.3
11927396	GYM	< 0.3
11927397	GYM OFFICE	< 0.3
11927348	HENDERSON	< 0.3
11927341	MAIN OFFICE	< 0.3
11927373	MEDIA OFFICE	< 0.3
11927371	MEDIA WORK ROOM	< 0.3
11927342	NURSE.	< 0.3
11927359	OFFICE NEXT TO 26	< 0.3
11927346	RAY	< 0.3
11927202	STAGE	< 0.3
11927203	STAGE	< 0.3
11927344	WORK ROOM	< 0.3

[illegible]

Table 3 - QC Radon Testing Results			
Lake Seneca Elementary School			
Test Period: 2/25/2025 - 2/28/2025			
Kit Number	QC Type	Room / Area	Result
11927392	D	4	< 0.3
11927384	FB	11	< 0.3
11927382	D	13	< 0.3
11927362	D	24	< 0.3
11927352	D	32	< 0.3
11927367	FB	24A	< 0.3
11927201	D	APR	< 0.3
11927372	D	Media Workroom	Missing
11927202	FB	Stage	< 0.3
11926885	OB	OFFICE BLANK	< 0.3
11926889	TB	TRAVEL BLANK	< 0.3

Table 3a - Duplicate Worksheet / Data Validation

Lake Seneca Elementary School

Test Period: 2/25/2025 - 2/28/2025

Sample ID			Duplicate Concentrations (pCi/L) and OC Checks							
Kit Numbers		Room / Area	Higher	Lower	Check #1 (Pass/Fail)	2x the Lower	Check #2 (Pass/Fail)	Average	Relative Percent Difference (RPD)	Check #3
11927391	11927392	4	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11927381	11927382	13	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11927361	11927362	24	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11927351	11927352	32	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11927201	11927400	APR	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
11927371	11927372 (Missing)	Media Workroom	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

**NOTES:**

QC Check #1 - Data Entry

QC Check #2 - Higher duplicate concentration is &lt; 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]

Table 1- Radon Testing Results		
Lake Seneca Elementary School RT		
Test Period: 3/25/2025 - 3/28/2025		
Kit Number	Room / Area	Result
11887263	MEDIA WORKROOM	< 0.3
11887272	MEDIA WORKROOM	< 0.3
11887273	MEDIA WORKROOM	< 0.3
11887274	MEDIA WORKROOM	< 0.3

[illegible]

Table 3 - QC Radon Testing Results			
Lake Seneca Elementary School RT			
Test Period: 3/25/2025 - 3/28/2025			
Kit Number	QC Type	Room / Area	Result
11887273	D	MEDIA WORKROOM	< 0.3
11887274	FB	MEDIA WORKROOM	< 0.3
11886692	OB	OFFICE BLANK	< 0.3
11886693	TB	TRAVEL BLANK	< 0.3



Table 3a - Duplicate Worksheet / Data Validation										
Lake Seneca Elementary School RT										
Test Period: 3/25/2025 - 3/28/2025										
Sample ID			Duplicate Concentrations (pCi/L) and QC 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
11887273	11887263 11887272	MEDIA WORKROOM	0.3	0.3	✓	0.6	PASS	0.3	<1-pCi/L	✓
<b>NOTES:</b> 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
11927399	1	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927385	10	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927384	11	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927383	11	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927380	12	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927382	13	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927381	13	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927379	14	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927374	15	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927375	16	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927376	17	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927378	18	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	0.6 ± 0.3	2025-03-04
11927377	19	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927398	2	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	0.9 ± 0.3	2025-03-04
11927365	20	2025-02-25 @ 10:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927369	21	2025-02-25 @ 10:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927370	22	2025-02-25 @ 10:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927364	23	2025-02-25 @ 10:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927361	24	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927362	24	2025-02-25 @ 10:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927363	24A	2025-02-25 @ 10:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927367	24A	2025-02-25 @ 10:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927368	24B	2025-02-25 @ 10:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927366	25	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927360	26	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927356	27	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927357	28	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927355	29	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927394	3	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927354	30	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927353	31	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927351	32	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927352	32	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927349	33	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927350	34	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927391	4	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927392	4	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04

March 4, 2025

**\*\* LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11927393	5	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927390	6	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927388	7	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927386	8	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927387	9	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927389	ALVING	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927201	APR	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927400	APR	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927395	BSO	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927358	BURR	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927347	CONFERENCE	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927345	DALI	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927396	GYM	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927397	GYM OFFICE	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927348	HENDERSON	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927341	MAIN OFFICE	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927373	MEDIA OFFICE	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927371	MEDIA WORK ROOM	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927342	NURSE.	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927359	OFFICE NEXT TO 26	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927346	RAY	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04
11927203	STAGE	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927202	STAGE	2025-02-25 @ 10:00 am	2025-02-28 @ 10:00 am	< 0.3	2025-03-04
11927344	WORK ROOM	2025-02-25 @ 9:00 am	2025-02-28 @ 9:00 am	< 0.3	2025-03-04

March 4, 2025

**\*\* LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:

**OFFICE  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11926885	OB	2025-02-25 @ 11:00 am	2025-02-28 @ 11:00 am	< 0.3	2025-03-04

March 4, 2025

**\*\* LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:

**TRAVEL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11926889	TB	2025-02-25 @ 11:00 am	2025-02-28 @ 11:00 am	< 0.3	2025-03-04

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI TECHNOLOGIES, INC Job Number 20001560

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

Date Start: 12/14/24 Date Stop: 12/17/24 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0815 Time Stop: 0815 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (3) CHAR BAGS Device No.'s: \_\_\_\_\_

11477880, 11477883, 11477896 \_\_\_\_\_

B4 Right

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)  
Background = 7  $\mu$ 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



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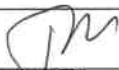



## Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Testing February 25<sup>th</sup> – February 28<sup>th</sup>, 2025

Name of Schools:

1. Gaithersburg MS
2. Germantown ES
3. William B Gibbs ES
4. Goshen ES
5. Great Seneca Creek ES
6. Jones Lane ES
7. MLK Jr. MS
8. Lake Seneca ES
9. Laytonsville ES

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	Date	Initials
Radon Test Kits Deployed	2/25/2025	
Radon Test Kits Collected	2/28/2025	
Radon Test Kits Shipped to Lab*	2/28/2025	
Radon Test Kits Received by Lab*	3/3/2025	

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

Radon test result report for:**LAKE SENECA ES - RETESTING**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11887263	MEDIA WORKROOM	2025-03-25 @ 11:00 am	2025-03-28 @ 10:00 am	< 0.3	2025-04-02
11887272	MEDIA WORKROOM	2025-03-25 @ 11:00 am	2025-03-28 @ 10:00 am	< 0.3	2025-04-02
11887273	MEDIA WORKROOM	2025-03-25 @ 11:00 am	2025-03-28 @ 10:00 am	< 0.3	2025-04-02
11887274	MEDIA WORKROOM	2025-03-25 @ 11:00 am	2025-03-28 @ 10:00 am	< 0.3	2025-04-02

April 3, 2025

**\*\* LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:

**OFFICE  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886664	OB	2025-03-24 @ 11:00 am	2025-03-27 @ 11:00 am	< 0.3	2025-04-02
11886692	OB	2025-03-25 @ 11:00 am	2025-03-28 @ 11:00 am	< 0.3	2025-04-02
11951800	OB	2025-03-24 @ 11:00 am	2025-03-28 @ 11:00 am	< 0.3	2025-04-02

April 3, 2025

**\*\* LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:

**TRAVEL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11886691	TB	2025-03-24 @ 11:00 am	2025-03-27 @ 11:00 am	< 0.3	2025-04-02
11886693	TB	2025-03-25 @ 11:00 am	2025-03-28 @ 11:00 am	< 0.3	2025-04-02
11892493	TB	2025-03-24 @ 11:00 am	2025-03-28 @ 11:00 am	< 0.3	2025-04-02

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI TECHNOLOGIES, INC Job Number 20002919

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

Date Start: 3/7/25 Date Stop: 3/10/25 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0832 Time Stop: 0832 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (7) CHAR BAGS Device No.'s: \_\_\_\_\_

11886401 thru 11886406, \_\_\_\_\_

11886410 \_\_\_\_\_

G3 Right \_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)  
Background = 7  $\mu$ R/h Elevation = 820 ft

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March 19, 2025

**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:

**QC**  
**MAIN**

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

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



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## Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Testing March 25<sup>th</sup> – March 28<sup>th</sup>, 2025

Name of Schools:

- |                    |                               |
|--------------------|-------------------------------|
| 1. Wheaton HS      | 7. Goshen ES                  |
| 2. Clarksburg HS   | 8. Great Seneca Creek ES      |
| 3. Darnestown ES   | 9. Lake Seneca ES             |
| 4. Diamond ES      | 10. Lathrop E. Smith Center   |
| 5. Gaithersburg ES | 11. Martin Luther King Jr. MS |
| 6. Germantown ES   |                               |

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	Date	Initials
Radon Test Kits Deployed	3/25/2025	BMM
Radon Test Kits Collected	3/28/2025	BMM
Radon Test Kits Shipped to Lab*	3/28/2025	BMM
Radon Test Kits Received by Lab*	4/01/2025	BMM

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





### MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Lake Seneca Elementary School
Date of Test Report	4/6/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	54
# Rooms $\geq 4.0$ pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.9 pCi/L

Project Status:  
Initial testing completed; no further action needed.



April 6, 2022

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

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

Location: Lake Seneca ES  
13600 Wanegarden Dr.  
Germantown, MD 20874

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 Lake Seneca ES, located at 13600 Wanegarden Dr. Germantown, MD 20874 (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](http://www.epa.gov/radon).

KCI visited the site on February 15, 2022 and deployed sixty three (63) 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 February 18, 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 20s and high temperatures ranged from the high 30s to the high 40s Fahrenheit. Maximum sustained winds ranged from 5-18 miles per hour. Average humidity was around 15% with 1.5 inches of precipitation (rain) was recorded during testing period.

### **Results:**

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

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
<b>≥4.0 pCi/L</b>	None	N/A
<b>&lt;4.0 pCi/L</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) 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		
Lake Seneca ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11124091	2	< 0.3
11124080	3	< 0.3
11124064	4	< 0.3
11124063	5	< 0.3
11124079	5	< 0.3
11124048	6	< 0.3
11124078	7	0.6
11124055	8	< 0.3
11124083	9	< 0.3
11124085	10	< 0.3
11124049	11	< 0.3
11124084	11	< 0.3
11124082	12	< 0.3
11124057	13	0.9
11124086	13	< 0.3
11124058	14	< 0.3
11124069	15	< 0.3
11124070	16	< 0.3
11124056	17	0.6
11124071	18	< 0.3
11124076	19	1.0
11124065	20	< 0.3
11124072	20	< 0.3
11124059	21	< 0.3
11124073	22	< 0.3
11124061	24	< 0.3
11124062	26	< 0.3
11124045	27	< 0.3
11124052	28	< 0.3
11124046	29	0.6
11124041	30	< 0.3
11124042	31	< 0.3
11124040	32	0.6
11124033	33	< 0.3
11124035	33	< 0.3
11124039	34	< 0.3
11124054	24 OFFICE	< 0.3
11124060	24 OFFICE	< 0.3
11124067	24 OFFICE	< 0.3
11124068	24 OFFICE	< 0.3
11124051	26 OFFICE	< 0.3
11124050	26 THERAPIST	< 0.3



Table 1- Radon Testing Results		
Lake Seneca ES		
Test Period: 02/15/2022 - 02/18/2022		
Kit Number	Room / Area	Result
11124053	26 THERAPIST	< 0.3
11124038	AP	< 0.3
11124081	BUILDING SERVICES	< 0.3
11124088	CAFETERIA	< 0.3
11124090	CAFETERIA	< 0.3
11124034	CONFERENCE ROOM	< 0.3
11124047	GYM	< 0.3
11124089	GYM	0.5
11124092	GYM OFFICE	0.5
11124036	HEALTH ROOM	< 0.3
11124087	KITCHEN OFFICE	< 0.3
11124044	MAIN OFFICE	< 0.3
11124075	MEDIA	< 0.3
11124066	MEDIA OFFICE	< 0.3
11124043	MRS D RAY	< 0.3
11124037	PRINCIPAL ROOM	< 0.3
11124096	STAFF LOUNGE	< 0.3
11124099	STAFF LOUNGE	< 0.3
11124074	TV STUDIO	< 0.3
11124077	XEROX	< 0.3
11124094	XEROX	< 0.3

Table 2- Radon Testing Results			
Lake Seneca ES			
Test Period: 02/15/2022 - 02/18/2022			
Kit Number	QC Type	Room / Area	Result
11124035	D	33	< 0.3
11124053	D	26 therapist	< 0.3
11124068	FB	24 office	< 0.3
11124072	D	20	< 0.3
11124057	D	13	0.9
11124084	FB	11	< 0.3
11124063	D	5	< 0.3
11124077	D	Xerox	< 0.3
11124096	FB	Staff lounge	< 0.3
11131660	OB	OFFICE BLANK	< 0.3
11131661	TB	TRAVEL BLANK	< 0.3



## ATTACHMENT C

### Laboratory Analytical Results

Radon test result report for:**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11124085	10	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124049	11	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124084	11	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124082	12	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124057	13	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	0.9 ± 0.3	2022-02-22
11124086	13	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124058	14	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124069	15	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124070	16	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124056	17	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	0.6 ± 0.3	2022-02-22
11124071	18	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124076	19	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	1.0 ± 0.3	2022-02-22
11124091	2	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124065	20	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124072	20	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124059	21	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124073	22	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124061	24	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124060	24 OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124067	24 OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124068	24 OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124054	24 OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124062	26	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124051	26 OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124050	26 THERAPIST	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124053	26 THERAPIST	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124045	27	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124052	28	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124046	29	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	0.6 ± 0.3	2022-02-22
11124080	3	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124041	30	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124042	31	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124040	32	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	0.6 ± 0.3	2022-02-22
11124035	33	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124033	33	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124039	34	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124064	4	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22

Radon test result report for:

**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11124063	5	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124079	5	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124048	6	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124078	7	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	0.6 ± 0.3	2022-02-22
11124055	8	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124083	9	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124038	AP	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124081	BUILDING SERVICES	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124088	CAFETERIA	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124090	CAFETERIA	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124034	CONFERENCE ROOM	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124047	GYM	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124089	GYM	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	0.5 ± 0.3	2022-02-22
11124092	GYM OFFICE	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	0.5 ± 0.3	2022-02-22
11124036	HEALTH ROOM	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124087	KITCHEN OFFICE	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124044	MAIN OFFICE	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124075	MEDIA	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124066	MEDIA OFFICE	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124043	MRS D RAY	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124037	PRINCIPAL ROOM	2022-02-15 @ 8:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124099	STAFF LOUNGE	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124096	STAFF LOUNGE	2022-02-15 @ 10:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124074	TV STUDIO	2022-02-15 @ 9:00 am	2022-02-18 @ 9:00 am	< 0.3	2022-02-22
11124094	XEROX	2022-02-15 @ 10:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22
11124077	XEROX	2022-02-15 @ 10:00 am	2022-02-18 @ 8:00 am	< 0.3	2022-02-22

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204186

NOMINAL Conditions: Radon Conc 25.8 pCi/L Rel. Hum 50.1 % Temp. 70.9 F

Date Start: 2/18/22 Date Stop: 2/21/22 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0911 Time Stop: 0911 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (3) Char Bags - Device No.'s: \_\_\_\_\_

11113484, 1112998, 20107126 \_\_\_\_\_

23 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  $\mu$ R/h Elevation = 820 ft

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March 14, 2022

**\*\* LABORATORY ANALYSIS REPORT \*\***

Pg 1 of 1

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

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Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11113484	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK1		1	27.9
11122998	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK2		1	26.0
20107126	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK3		1	27.6

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





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

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## Radon Test Kit Chain of Custody

Project Name: MCPS Radon – February 2022 Schools

Name of Schools:

1. Damascus HS
2. Germantown ES
3. Great Seneca Creek ES
4. Lake Seneca ES
5. S. Christa McAuliffe ES
6. Northwest HS
7. Waters Landing ES
8. Seneca Valley HS
9. Cedar Grove ES
10. Capt. James E. Daly ES
11. Neelsville MS
12. Dr. Sally K. Ride ES

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	Date	Initials
Radon Test Kits Deployed	02/15/2022	BM
Radon Test Kits Collected	02/18/2022	BM
Radon Test Kits Shipped to Lab*	02/18/2022	BM
Radon Test Kits Received by Lab*	02/21/2022	BM

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

### **MCPS RADON TESTING - EXECUTIVE SUMMARY**

Site Name	Lake Seneca Elementary School
Date of Report	1/28/2020
Round of Testing	Initial Follow-up Post Remediation <b>2 year testing</b> 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	56
# Rooms $\geq 4.0$ pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.6 pCi/L

### **Project Status**

Current Project Status at this time: Testing Complete; no further action.



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1/28/2020

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

Re: Radon Testing Services

KCI Job #12146341126

**Location: Lake Seneca Elementary School**

13600 Wanegarden Drive  
Germantown, Maryland 20874

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 Lake Seneca Elementary School, located at 13600 Wanegarden Drive in Germantown, Maryland 20874 (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/departments/facilities/maintenance/default.aspx?id=458858> or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on 12/10/2019 and deployed sixty-five (65) 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.

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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 sixty (60) 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 12/13/2019 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 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 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 upper-30s and high temperatures ranged from the upper-30s to the mid-50s. Maximum sustained winds ranged from 7-21 miles per hour. Average humidity was around 75%. 0.52 inches of precipitation (rain) was recorded during the testing period.

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## **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:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
$\geq 4.0$ pCi/L	None	N/A
$\leq 4.0$ pCi/L	See Attachment B	See Attachment B

<b>Quality Control Samples</b>	
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,

Mr. Tyler P. McCleaf  
Radon Measurement Provider  
111004 RT

KCI Technologies, Inc.

Attachments:

A- Floor Plan with Test Locations

B - Tables 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 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		
Lake Seneca Elementary School		
Test Period: 12/10/2019-12/13/2019		
Kit Number	Room / Area	Result
9334801	CONFERENCE RM	< 0.3
9334802	22	< 0.3
9334803	21	< 0.3
9334804	23	< 0.3
9334805	WORK ROOM	< 0.3
9334806	HEALTH ROOM	< 0.3
9334807	24	< 0.3
9334808	24A	< 0.3
9334809	34	< 0.3
9334810	34	< 0.3
9334811	32	< 0.3
9334812	34	< 0.3
9334813	24D	< 0.3
9334814	29	< 0.3
9334815	30	< 0.3
9334816	28	< 0.3
9334817	15	< 0.3
9334818	16	< 0.3
9334819	AP OFFICE	< 0.3
9334820	OFFICE	< 0.3
9334821	27	< 0.3
9334822	ROOM 26 OFFICE	< 0.3
9334823	26	< 0.3
9334824	MAIN OFFICE	< 0.3
9334825	CONFERENCE ROOM	< 0.3
9334826	CONFERENCE ROOM	< 0.3
9334827	PRINCIPAL OFFICE	< 0.3
9334828	31	< 0.3
9334829	24B	< 0.3
9334830	33	< 0.3
9334835	24C	< 0.3
9334836	17	< 0.3
9334903	APR	< 0.3
9334904	APR	< 0.3
9334906	BUILDING SERVE OFFICE	< 0.3
9334911	1	< 0.3
9334912	1	< 0.3
9334913	BUILDING SERV OFFICE	< 0.3
9334984	OFFICE BLANK	< 0.3
9335736	12	< 0.3
9335737	14	< 0.3
9335738	25A	< 0.3
9335739	18	< 0.3
9335740	18	< 0.3
9335741	18	< 0.3
9335742	19	< 0.3
9335743	26B	< 0.3
9335744	25	< 0.3
9335745	LIBRARY OFFICE	< 0.3
9335746	13	< 0.3

9335747	26A	< 0.3
9335749	20	< 0.3
9335752	20	< 0.3
9335753	5	< 0.3
9335754	11	< 0.3
9335755	9	< 0.3
9335756	GYM	0.6
9335757	4	< 0.3
9335758	8	< 0.3
9335759	7	< 0.3
9335760	6	< 0.3
9335761	GYM	< 0.3
9335762	3	< 0.3
9335763	GYM OFFICE	< 0.3
9335764	2	< 0.3
9335765	20	< 0.3
9335766	10	< 0.3

Table 2- Radon Testing Results			
Lake Seneca Elementary School			
Test Period: 12/10/2019-12/13/2019			
Kit Number	QC Type	Room / Area	Result
9334801	D	CONFERENCE RM	<0.3
9334826	FB	CONFERENCE ROOM	<0.3
9334809	D	34	<0.3
9334810	FB	34	<0.3
9335765	D	20	<0.3
9335749	FB	20	<0.3
9335740	D	18	<0.3
9335739	FB	18	<0.3
9334913	D	BUILDING SERV OFFICE	<0.3
9334850	TRANSIT BLANK	NA	< 0.3
9334914	TRANSIT BLANK	NA	< 0.3
9334916	TRANSIT BLANK	NA	< 0.3
9334963	TRANSIT BLANK	NA	< 0.3



# ATTACHMENT C

## Laboratory Analytical Results

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 193475

NOMINAL Conditions: Radon Conc 25.7 pCi/L Rel. Hum 74.6 % Temp. 69.9 F

Date Start: 12/13/19 Date Stop: 12/16/19 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_  
 Time Start: 0806 Time Stop: 0806 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_  
 (Group 1)  
 Device No.'s: (20) Char. Bags - Device No.'s: \_\_\_\_\_  
9334502 thru 9334519,  
9334514, 9334516, 9334517,  
9334519, 9334519  
9334522 thru 9334528  
B4

Date Start: 12/13/19 Date Stop: 12/16/19 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_  
0811  
 Time Start: 0806 acm Time Stop: 0811 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_  
 (Group 2)  
 Device No.'s: (20) Char. Bags - Device No.'s: \_\_\_\_\_  
9334529 thru 9334538,  
9334540,  
9334542 thru 9334550  
B3

Date Start: 12/13/19 Date Stop: 12/16/19 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_  
 Time Start: 0816 Time Stop: 0816 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_  
 (Group 3)  
 Device No.'s: (20) Char. Bags - Device No.'s: \_\_\_\_\_  
9334551, 9334552, 9334562,  
9334555 thru 9334559,  
9334569, 9334576, 9334579,  
9334580, 9334583, 9334584,  
9334591, 9334593, 9334594,  
9334597, 9334598, 9334599  
B2

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)  
 Background = 7  $\mu$ R/h Elevation = 820 ft

Radon test result report for:  
**LAKE SENECA ES  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9334911	1	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334912	1	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335766	10	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335754	11	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335736	12	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335746	13	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335737	14	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334817	15	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334818	16	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334836	17	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335741	18	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335739	18	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335740	18	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335742	19	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335764	2	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335749	20	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335752	20	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335765	20	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334803	21	2019-12-10 @ 9:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334802	22	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334804	23	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334807	24	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334808	24A	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334829	24B	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334835	24C	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334813	24D	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335744	25	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335738	25A	2019-12-10 @ 9:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334823	26	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335747	26A	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335743	26B	2019-12-10 @ 9:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334821	27	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334816	28	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334814	29	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335762	3	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334815	30	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334828	31	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16

Radon test result report for:  
**LAKE SENECA ES**  
**MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9334811	32	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334830	33	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334809	34	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334812	34	2019-12-10 @ 8:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334810	34	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335757	4	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335753	5	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335760	6	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335759	7	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335758	8	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335755	9	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334819	AP OFFICE	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334904	APR	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334903	APR	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334913	BUILDING SERV OFFICE	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334906	BUILDING SERVE OFFICE	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334801	CONFERENCE RM	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334825	CONFERENCE ROOM	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335756	GYM	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-16
9335761	GYM	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335763	GYM OFFICE	2019-12-10 @ 10:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-16
9334806	HEALTH ROOM	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9335745	LIBRARY OFFICE	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334824	MAIN OFFICE	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334820	MRS D OFFICE	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334827	PRINCIPLE OFFICE	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334822	ROOM 26 OFFICE	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16
9334805	WORK ROOM	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-16



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
9334583	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 $\pm$ 1.4	2019-12-18
9334529	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.3 $\pm$ 1.5	2019-12-18
9334597	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 $\pm$ 1.4	2019-12-18
9334534	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 $\pm$ 1.4	2019-12-18
9334540	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.9 $\pm$ 1.4	2019-12-18
9334546	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.9 $\pm$ 1.5	2019-12-18
9334551	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 $\pm$ 1.4	2019-12-18
9334558	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 $\pm$ 1.4	2019-12-18
9334579	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 $\pm$ 1.4	2019-12-18
9334593	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 $\pm$ 1.4	2019-12-18
9334532	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 $\pm$ 1.4	2019-12-18
9334537	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 $\pm$ 1.4	2019-12-18
9334544	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.5 $\pm$ 1.4	2019-12-18
9334549	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.4 $\pm$ 1.5	2019-12-18
9334556	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 $\pm$ 1.4	2019-12-18
9334569	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.7 $\pm$ 1.4	2019-12-18
9334584	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.4 $\pm$ 1.5	2019-12-18
9334530	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 $\pm$ 1.4	2019-12-18
9334598	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.7 $\pm$ 1.4	2019-12-18
9334535	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.0 $\pm$ 1.4	2019-12-18
9334542	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.7 $\pm$ 1.4	2019-12-18
9334547	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	25.2 $\pm$ 1.5	2019-12-18
9334552	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.2 $\pm$ 1.4	2019-12-18
9334559	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 $\pm$ 1.4	2019-12-18
9334580	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 $\pm$ 1.4	2019-12-18
9334594	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 $\pm$ 1.4	2019-12-18
9334533	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.3 $\pm$ 1.5	2019-12-18
9334538	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.6 $\pm$ 1.5	2019-12-18
9334545	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.0 $\pm$ 1.4	2019-12-18
9334550	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 $\pm$ 1.4	2019-12-18
9334557	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.6 $\pm$ 1.5	2019-12-18
9334576	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 $\pm$ 1.4	2019-12-18
9334591	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.7 $\pm$ 1.4	2019-12-18
9334531	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.3 $\pm$ 1.5	2019-12-18
9334599	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 $\pm$ 1.4	2019-12-18
9334536	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.4 $\pm$ 1.5	2019-12-18
9334543	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.4 $\pm$ 1.5	2019-12-18

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December 18, 2019

**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:

**N/A**

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
9334548	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.0 ± 1.4	2019-12-18
9334555	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.4 ± 1.4	2019-12-18
9334562	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.5 ± 1.4	2019-12-18

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

December 18, 2019

**\*\* LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:

**S**

**N/A**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
9334505	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.5 ± 1.5	2019-12-18
9334510	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.4 ± 1.5	2019-12-18
9334522	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.9 ± 1.4	2019-12-18
9334527	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	22.6 ± 1.4	2019-12-18
9334503	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 ± 1.4	2019-12-18
9334508	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.7 ± 1.5	2019-12-18
9334517	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.5 ± 1.4	2019-12-18
9334525	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 ± 1.4	2019-12-18
9334506	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.3 ± 1.5	2019-12-18
9334514	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.5 ± 1.5	2019-12-18
9334523	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.6 ± 1.4	2019-12-18
9334528	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 ± 1.4	2019-12-18
9334504	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.8 ± 1.4	2019-12-18
9334509	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.5 ± 1.4	2019-12-18
9334519	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.1 ± 1.4	2019-12-18
9334526	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.3 ± 1.4	2019-12-18
9334502	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	23.7 ± 1.4	2019-12-18
9334507	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.7 ± 1.5	2019-12-18
9334516	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	22.2 ± 1.3	2019-12-18
9334524	N/A	2019-12-13 @ 8:00 am	2019-12-16 @ 8:00 am	24.6 ± 1.5	2019-12-18



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 2019 Week 1

Name of Schools:

- |                             |                         |
|-----------------------------|-------------------------|
| 1. Baker M.S.               | 13. Jones Lane E.S.     |
| 2. Belmont E.S.             | 14. Lake Seneca E.S.    |
| 3. Clarksburg E.S.          | 15. McAuliffe E.S.      |
| 4. Clarksburg H.S.          | 16. Quince Orchard H.S. |
| 5. Clearspring E.S.         | 17. Rosa Parks M.S.     |
| 6. Damascus E.S.            | 18. Snowden Farm E.S.   |
| 7. Damascus H.S.            | 19. South Lake E.S.     |
| 8. Dufief E.S.              | 20. Stone Mill E.S.     |
| 9. Fields Road E.S.         | 21. Travilah E.S.       |
| 10. Gaithersburg E.S.       | 22. Watkins Mill E.S.   |
| 11. Germantown E.S.         | 23. Watkins Mill H.S.   |
| 12. Great Seneca Creek E.S. | 24. Whitman H.S.        |

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	Date	Initials
Radon Test Kits Deployed	12/09/19 to 12/10/19	JM
Radon Test Kits Collected	12/12/19 to 12/13/19	JM
Radon Test Kits Shipped to Lab*	12/13/19	JM
Radon Test Kits Received by Lab*	12/16/19	JM

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

**MCPS RADON TESTING - EXECUTIVE SUMMARY**

Site Name	Lake Seneca Elementary School
Date of Report	March 12, 2018
Round of Testing	Initial <b>Follow-up</b> Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	20
# Rooms $\geq 4.0$ pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.9 pCi/L

**Project Status**

Current Project Status at this time: 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 12, 2018

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

Re: Radon Testing Services

KCI Job #1214634188

**Location: Lake Seneca Elementary School**

13600 Wanegarden Dr.  
Germantown, Maryland 20874

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 Lake Seneca Elementary School, located at 13600 Wanegarden Dr. in Germantown, Maryland 20874 (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](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on February 12, 2018 and deployed twenty-four (24) 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.  $\geq 3.5$  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 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 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:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
$\geq 4.0$ pCi/L	None	N/A
$\leq 4.0$ pCi/L	See Attachment B	See Attachment B

<b>Quality Control Samples</b>	
Results of Blank Canisters:	The field blanks, 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		
Lake Seneca Elementary School		
Test Period: 02/12/18-02/15/18		
Kit Number	Room / Area	Result
7984299	1	0.8
7984288	10	0.5
7984293	18	0.6
7984232	23	0.7
7984292	2/MUSIC	0.8
7984231	24 CONF	0.9
7984226	24 OBSERV	< 0.3
7984230	24 OFFICE	0.5
7984219	24 OFFICE 2	< 0.3
7984228	25 (MEDIA)	< 0.3
7984215	25 (MEDIA)	0.5
7984294	25 OFF/MEDIAOFF	< 0.3
7984229	26 CONF	< 0.3
7984291	26 OBSERV	< 0.3
7984220	26 OFFICE	< 0.3
7984290	5 OFFICE	0.9
7984279	APR	0.9
7984298	BS OFFICE	< 0.3
7984296	COPY ROOM	0.6
7984295	GYM OFFICE	0.7
7984300	KITCHEN	0.6

Table Note:

\* Missing or Compromised Sample

Table 2 - Radon Testing Results		
Lake Seneca Elementary School		
Test Period: 02/12/18-02/15/18		
Kit Number	QC Type	Result
7984280	D (5 OFFICE)	< 0.3
7984289	FB (10)	< 0.3
7984297	FB (COPY ROOM)	< 0.3

Table Note:

\* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:

**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7984299	1	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	0.8 ± 0.3	2018-02-19
7984288	10	2018-02-12 @ 11:00 am	2018-02-15 @ 11:00 am	0.5 ± 0.3	2018-02-19
7984289	10	2018-02-12 @ 11:00 am	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984293	18	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	0.6 ± 0.3	2018-02-19
7984292	2/MUSIC	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	0.8 ± 0.3	2018-02-19
7984232	23	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	0.7 ± 0.3	2018-02-19
7984231	24 CONF	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	0.9 ± 0.3	2018-02-19
7984226	24 OBSERV	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984230	24 OFFICE	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	0.5 ± 0.3	2018-02-19
7984219	24 OFFICE 2	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984228	25 (MEDIA)	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984215	25 (MEDIA)	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	0.5 ± 0.3	2018-02-19
7984294	25 OFF/MEDIAOFF	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984229	26 CONF	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984291	26 OBSERV	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984220	26 OFFICE	2018-02-12 @ 1:00 pm	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984290	5 OFFICE	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	0.9 ± 0.3	2018-02-19
7984280	5 OFFICE	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984279	APR	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	0.9 ± 0.3	2018-02-19
7984298	BS OFFICE	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984296	COPY ROOM	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	0.6 ± 0.3	2018-02-19
7984297	COPY ROOM	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	< 0.3	2018-02-19
7984295	GYM OFFICE	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	0.7 ± 0.3	2018-02-19
7984300	KITCHEN	2018-02-12 @ 12:00 pm	2018-02-15 @ 11:00 am	0.6 ± 0.3	2018-02-19



## 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         |                                      |

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	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



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

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February 28, 2018

**\*\* LABORATORY ANALYSIS REPORT \*\***

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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).**

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

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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  $\mu$ R/h Elevation = 820 ft

**MCPS RADON TESTING - EXECUTIVE SUMMARY**

Site Name	Lake Seneca Elementary School
Date of Report	February 2, 2018
Round of Testing	Initial Follow-up Post Remediation <b>2 year testing</b> 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	44
# Rooms $\geq 4.0$ pCi/L	0
Lowest Value	< 0.3 pCi/L
Highest Value	1.1 pCi/L

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



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

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

February 2, 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: Lake Seneca Elementary School**

13600 Wanegarden Dr.  
Germantown, Maryland 20874

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 Lake Seneca Elementary School, located at 13600 Wanegarden Dr. in Germantown, Maryland 20874 (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](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on December 5, 2017 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 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 8, 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:

- Post-mitigation biennial 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 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 low-30s to mid-40s and high temperatures ranged from the upper-30s to mid-50s. Maximum sustained winds ranged from 4-17 miles per hour. Average humidity was around 60%. 0.16 Inches of precipitation was recorded during the testing period.

### **RESULTS**

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

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
$\geq 4.0$ pCi/L	None	N/A
$\leq 4.0$ 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.

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 Moulds, CHMM  
Radon Measurement Specialist  
KCI Technologies, Inc.

Attachments:

B- Table 1-Radon Test Summary Spreadsheet

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		
Lake Seneca Elementary School		
Test Period: 12/05/17-12/08/17		
Kit Number	Room / Area	Result
7983767	2	1.0
7983703	3	0.6
7983749	4	< 0.3
7983768	5	< 0.3
7983769	6	< 0.3
7983756	7	< 0.3
7983705	8	0.5
7983704	9	< 0.3
7983707	11	< 0.3
7983710	12	< 0.3
7983750	13	< 0.3
7983711	14	< 0.3
7983712	15	0.9
7983717	16	< 0.3
7983719	17	0.5
7983715	19	1.1
7983722	20	< 0.3
7983721	21	< 0.3
7983725	22	< 0.3
7983723	24	< 0.3
7983720	26	0.5
7983727	27	< 0.3
7983726	28	< 0.3
7975286	29	< 0.3
7983731	30	< 0.3
7975278	31	< 0.3
7975247	32	< 0.3
7983728	33	< 0.3
7194243	34	< 0.3
7983760	AP	< 0.3
7983765	APR	0.7
7983762	* APR (Missing)	-
7983713	CC	< 0.3
7983761	CONFERENCE	< 0.3
7975254	* COPY (Box fan running in room)	< 0.3
7983702	GYM	1.0
7983701	GYM	0.8
7983758	HEALTH	< 0.3
7983772	LOUNGE	< 0.3
7983757	MAIN OFF	< 0.3
7983771	MAINT	< 0.3
7983716	MEDIA	< 0.3
7983714	MEDIA	< 0.3
7983718	MEDIAOFF	< 0.3
7983764	PRINCIPAL	0.5
7983763	SECRETARY	< 0.3

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Lake Seneca Elementary School		
Test Period: 12/05/17-12/08/17		
Kit Number	Room / Area	Result
7983759	WORK	< 0.3

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Lake Seneca Elementary School		
Test Period: 12/05/17-12/08/17		
Kit Number	QC Type	Result
7975285	D (27)	< 0.3
7983770	D (6)	< 0.3
7983766	D (APR)	< 0.3
7983724	D (CC)	0.6
7983709	FB (12)	< 0.3
7975253	* FB (COPY:Box fan running in room)	< 0.3
7193837	OB (OFFICE BLANK)	< 0.3

Table Note:

\* Missing or Compromised Sample



# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7983706	10	@	@		
7983707	11	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983709	12	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983710	12	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983750	13	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7983708	14	@	@		
7983711	14	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983712	15	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	0.9 ± 0.3	2017-12-11
7983717	16	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7983719	17	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	0.5 ± 0.3	2017-12-12
7983715	19	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	1.1 ± 0.3	2017-12-12
7983767	2	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	1.0 ± 0.3	2017-12-12
7983722	20	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983721	21	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983725	22	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983723	24	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7983720	26	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	0.5 ± 0.3	2017-12-11
7983755	26A	@	@		
7975285	27	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7983727	27	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7983726	28	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7975286	29	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983703	3	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	0.6 ± 0.3	2017-12-12
7983731	30	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7975278	31	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7975247	32	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983728	33	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7194243	34	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983749	4	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983768	5	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983769	6	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983770	6	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983756	7	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983705	8	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	0.5 ± 0.3	2017-12-12
7983704	9	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7983760	AP	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983762	APR	@	@		

Radon test result report for:**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7983765	APR	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	0.7 ± 0.3	2017-12-11
7983766	APR	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7983713	CC	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7983724	CC	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	0.6 ± 0.3	2017-12-11
7983761	CONFERENCE	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7975253	COPY	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7975254	COPY	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983701	GYM	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	0.8 ± 0.3	2017-12-12
7983702	GYM	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	1.0 ± 0.3	2017-12-12
7983758	HEALTH	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7983772	LOUNGE	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983757	MAIN OFF	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983771	MAINT	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983716	MEDIA	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-11
7983714	MEDIA	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983718	MEDIAOFF	2017-12-05 @ 10:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7193837	OFFICE BLANK	2017-12-05 @ 12:00 pm	2017-12-08 @ 12:00 pm	< 0.3	2017-12-12
7983764	PRINCIPAL	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	0.5 ± 0.3	2017-12-12
7983763	SECRETARY	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12
7983759	WORK	2017-12-05 @ 9:00 am	2017-12-08 @ 10:00 am	< 0.3	2017-12-12





## Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase

Names of Schools:

- |  |                                 |
|--|---------------------------------|
| 1. John T. Baker Middle School           | 15. Whetstone Elementary School |
| 2. Cedar Grove Elementary School         |                                 |
| 3. Clarksburg Elementary School          |                                 |
| 4. Clarksburg Elementary School Annex    |                                 |
| 5. Clarksburg High School                |                                 |
| 6. Clearspring Elementary School         |                                 |
| 7. Damascus Elementary School            |                                 |
| 8. Damascus High School                  |                                 |
| 9. Dr. Charles R. Drew Elementary School |                                 |
| 10. Facilities Maintenance Depot - Shop  |                                 |
| 11. Lake Seneca Elementary School        |                                 |
| 12. Laytonville Elementary School        |                                 |
| 13. Watkins Mill Elementary School       |                                 |
| 14. Watkins Mill High School             |                                 |

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	Date	Initials
Radon Test Kits Deployed	12/05/17	JM
Radon Test Kits Collected	12/08/17	JM
Radon Test Kits Shipped to Lab*	12/08/17	JM
Radon Test Kits Received by Lab*	12/13/17	JM

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

Radon test result report for:**TRANSIT 2  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7193838	TRANSIT 1	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979384	TRANSIT 10	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979385	TRANSIT 11	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7984056	TRANSIT 12	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7983834	TRANSIT 13	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7194097	TRANSIT 14	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7194092	TRANSIT 15	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7193840	TRANSIT 16	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979072	TRANSIT 17	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979071	TRANSIT 18	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979065	TRANSIT 19	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	0.6 ± 0.4	2017-12-13
7978194	TRANSIT 2	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7985660	TRANSIT 20	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7985661	TRANSIT 21	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	0.7 ± 0.4	2017-12-13
7193843	TRANSIT 22	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7984055	TRANSIT 23	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7983813	TRANSIT 24	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7983827	TRANSIT 25	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7978193	TRANSIT 3	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7978189	TRANSIT 4	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	0.5 ± 0.4	2017-12-13
7986187	TRANSIT 5	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7986188	TRANSIT 6	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7986177	TRANSIT 7	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979077	TRANSIT 8	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13
7979386	TRANSIT 9	2017-12-05 @ 2:00 pm	2017-12-08 @ 2:00 pm	< 0.3	2017-12-13

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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

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# 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) Chan. 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  $\mu$ R/h Elevation = 820 ft



## MCPS RADON TESTING

### Executive Summary: Lake Seneca Elementary School

Date of Test Report:	10/19/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	16
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	0.5

#### Project Status:

Post remediation testing completed; no further action at this time.



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October 19, 2016

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

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

Location: Lake Seneca Elementary School  
13600 Wanegarden Drive  
Germantown, MD 20874

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 Lake Seneca Elementary School, located at 13600 Wanegarden Drive in Germantown, Maryland 20874 (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](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on September 27, 2016 and deployed nineteen (19) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

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

KCI returned to the site on September 30, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

### **Evaluation of Testing Conditions:**

These tests represent:

- Post-mitigation testing for radon mitigation systems installed recently.

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

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

Future periodic testing should be conducted during the heating season in ideal conditions as described below. According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility's HVAC system was operating in cooling mode; therefore, KCI concludes that this test was not conducted during ideal testing conditions.

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

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

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

### **Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
<b>≥4.0 pCi/L</b>	none	n/a
<b>&lt;4.0 pCi/L</b>	See Attachment B	

Notes:

D- Duplicate sample

The field blank, lab transit blanks, and office 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

Radon Testing Results		
Lake Seneca Elementary School		
Test Period: 09/27/16-09/30/16		
Kit Number	Room / Area	Result
7802940	2	0.5
7802921	5	0.5
7802926	6	< 0.3
7802959	7	< 0.3
7802930	8	< 0.3
7802929	9	< 0.3
7802931	10	< 0.3
7802934	11	< 0.3
7802923	13	< 0.3
7802927	23	< 0.3
7802922	25	< 0.3
7769858	33	< 0.3
7802939	1 STAFF LOUNGE	< 0.3
7802951	* 4 (Tampered)	-
7802936	ART	< 0.3
7802937	IMC OFFICE	< 0.3

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Lake Seneca Elementary School		
Test Period: 09/27/16-09/30/16		
Kit Number	QC Type	Result
7802924	D (13)	< 0.3
7802920	D (23)	< 0.3
7802925	FB (25)	< 0.3

Table Note:

\* Missing or Compromised Sample

## ATTACHMENT C

### Laboratory Analytical Results

October 7, 2016

**\*\* LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:

**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7802939	1 STAFF LOUNGE	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802931	10	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802934	11	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802924	13	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802923	13	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802940	2	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	0.5 ± 0.2	2016-10-03
7802920	23	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802927	23	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802925	25	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802922	25	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7769858	33	2016-09-27 @ 3:00 pm	2016-09-30 @ 12:00 pm	< 0.3	2016-10-03
7802951	4	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	???? IF1	2016-10-03
7802921	5	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	0.5 ± 0.2	2016-10-03
7802926	6	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802959	7	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802930	8	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802929	9	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802936	ART	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03
7802937	IMC OFFICE	2016-09-27 @ 3:00 pm	2016-09-30 @ 11:00 am	< 0.3	2016-10-03

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????IF1= test kit damaged, voided by laboratory

October 7, 2016

**\*\* LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:

**MCPS Radon**

**Phase 18 Office Blanks**

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

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October 7, 2016

**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:

**MCPS Radon**

**Phase 18 Transit Blanks**

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

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October 12, 2016

**\*\* LABORATORY ANALYSIS REPORT \*\***

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

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

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

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

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 176788

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

Date Start: 9/24/16 Date Stop: 9/26/16 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0758 Time Stop: 0758 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

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

7769899, 7769884, 7769885, \_\_\_\_\_

7769889, 7769890, 7769891 \_\_\_\_\_

F3 Left

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_ Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_ Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: \_\_\_\_\_ Device No.'s: \_\_\_\_\_

Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)  
Background = 7  $\mu$ R/h Elevation = 820 ft



## Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 18

Name of Schools:

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

---

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

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



## Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 18

Name of Schools:

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

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

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

# RADON SCREENING SURVEY – FOLLOW-UP LAKE SENECA ELEMENTARY SCHOOL

13600 Wanegarden Drive, Germantown, Maryland 20874

## EXECUTIVE SUMMARY

Date of Test Report:	3/7/16 Follow-Up
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	8
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	1.2
High Value:	3.5
Confirmed Rooms $\geq$ 4.0 pCi/L US EPA Action Level	2

## Summary of Sampling Events $\geq$ 4.0 pCi/L

Room	Result (pCi/L) 1/21/16 Initial	Result (pCi/L) 3/7/16 Follow-Up	Average Result (pCi/L)
Room 23	8.0	3.5	5.8
Room 9	6.2	1.7	4.0
Room 13	5.5	1.6	3.6
Room 1	4.8	2.4	3.6
Room 5 Office	4.7	1.5	3.1
Room 2	4.5	3.3	3.9
Gym	Missing	2.0	2.0
Room 25	3.9	3.3	3.6



## MCPS RADON TESTING

### Executive Summary: Lake Seneca Elementary School

Date of Test Report:	3/7/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	8
# Rooms $\geq$ 4.0 pCi/L:	0
Low Value:	1.2
High Value:	3.5

#### Project Status:

Retesting completed; use the average of the initial and re-test results in a room to determine if remediation is necessary.



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March 7, 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 # 12146341.28

Location: Lake Seneca Elementary School  
13600 Wanegarden Drive  
Germantown, MD 20874

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 Lake Seneca Elementary School, located at 13600 Wanegarden Drive in Germantown, Maryland 20874 (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](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on February 8, 2016 and deployed eleven (11) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

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

KCI returned to the site on February 11, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936

Butler Bridge Road, Mills River, North Carolina.

### **Evaluation of Testing Conditions:**

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

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

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

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

### **Results:**

The results of the radon test analysis indicated the following:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
<b><math>\geq 4.0</math> pCi/L</b>	none	n/a
<b><math>&lt; 4.0</math> pCi/L</b>	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 8 testing. Office blanks were not submitted under each school individually.

Radon Testing Results		
Lake Seneca Elementary School		
Test Period: 02/08/16-02/11/16		
Kit Number	Room / Area	Result
7731073	1	2.4
7721402	2	3.3
7731049	9	1.7
7726775	13	1.6
7731081	23	3.5
7721436	25	3.3
7731050	5 OFFICE	1.5
7721432	GYM	2.0
7721427	GYM	1.2

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Lake Seneca Elementary School		
Test Period: 02/08/16-02/11/16		
Kit Number	QC Type	Result
7721404	D (GYM)	1.3
7721403	FB (2)	< 0.3

Table Note:

\* Missing or Compromised Sample

## ATTACHMENT C

### Laboratory Analytical Results

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February 25, 2016

**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:

**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7731073	1	2016-02-08 @ 9:00 am	2016-02-11 @ 10:00 am	2.4 ± 0.3	2016-02-15
7726775	13	2016-02-08 @ 8:00 am	2016-02-11 @ 11:00 am	1.6 ± 0.3	2016-02-15
7721402	2	2016-02-08 @ 8:00 am	2016-02-11 @ 10:00 am	3.3 ± 0.4	2016-02-15
7721403	2	2016-02-08 @ 8:00 am	2016-02-11 @ 10:00 am	< 0.3	2016-02-15
7731081	23	2016-02-08 @ 8:00 am	2016-02-11 @ 10:00 am	3.5 ± 0.4	2016-02-15
7721436	25	2016-02-08 @ 8:00 am	2016-02-11 @ 10:00 am	3.3 ± 0.4	2016-02-15
7731050	5 OFFICE	2016-02-08 @ 8:00 am	2016-02-11 @ 10:00 am	1.5 ± 0.3	2016-02-15
7731049	9	2016-02-08 @ 8:00 am	2016-02-11 @ 10:00 am	1.7 ± 0.3	2016-02-15
7721404	GYM	2016-02-08 @ 8:00 am	2016-02-11 @ 10:00 am	1.3 ± 0.3	2016-02-15
7721427	GYM	2016-02-08 @ 8:00 am	2016-02-11 @ 10:00 am	1.2 ± 0.3	2016-02-15
7721432	GYM	2016-02-08 @ 8:00 am	2016-02-11 @ 10:00 am	2.0 ± 0.3	2016-02-15

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



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February 25, 2016

**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:

**MCPS RADON  
PHASE 8  
OFFICE BLANKS**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7729754	0	2016-02-08 @ 4:00 pm	2016-02-11 @ 5:00 pm	< 0.3	2016-02-15
7729757	0	2016-02-08 @ 4:00 pm	2016-02-11 @ 5:00 pm	< 0.3	2016-02-15
7729758	0	2016-02-08 @ 4:00 pm	2016-02-11 @ 5:00 pm	< 0.3	2016-02-15

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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: 2/1/16

Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0926 Time Stop: 0926

Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

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

Device No.'s: \_\_\_\_\_

7718281, 7718282, 7718291,

7718288, 7718289, 7718273

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  $\mu$ R/h Elevation = 820 ft



## Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 8

Name of Schools:

- |                          |                          |
|--------------------------|--------------------------|
| 1. Blair G. Ewing Center | 12. Jackson Road ES      |
| 2. Cedar Grove ES        | 13. Jones Lane ES        |
| 3. Clarksburg ES         | 14. Lake Seneca ES       |
| 4. Cloverly ES           | 15. Laytonsville ES      |
| 5. Cold Spring ES        | 16. Montgomery Knolls ES |
| 6. Damascus ES           | 17. North Chevy Chase ES |
| 7. Dufief ES             | 18. Oakview ES           |
| 8. East Silver Spring    | 19. Randolph Maint       |
| 9. Georgian Forest ES    | 20. Robert Frost MS      |
| 10. Germantown ES        | 21. Shady Grove Maint    |
| 11. Glenallen ES         | 22. Viers Mill ES        |

---

	Date	Initials
Radon Test Kits Deployed	2/8/16	JM
Radon Test Kits Collected	2/11/16	JM
Radon Test Kits Shipped to Lab*	12/11/16	JM
Radon Test Kits Received by Lab*	12/15/16	JM

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



## MCPS RADON TESTING

### Executive Summary: Lake Seneca Elementary School

Date of Test Report:	1/21/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	70
# Rooms $\geq$ 4.0 pCi/L:	6
Low Value:	< 0.3
High Value:	8.0

Rooms with results  $\geq$  4.0 pCi/L:

Room 23 (8.0 pCi/L), Room 9 (6.2 pCi/L), Room 13 (5.5 pCi/L), Room 1 (4.8 pCi/L), Room 5  
Office (4.7 pCi/L), Room 2 (4.5pCi/L),

Project Status:

Initial testing completed; re-test needed for results  $\geq$  4.0 pCi/L.

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



ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

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

January 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 # 12146341.21

Location: Lake Seneca Elementary School  
13600 Wanegarden Drive  
Germantown, MD 20874

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 Lake Seneca Elementary School, located at 13600 Wanegarden Drive in Germantown, Maryland 20874 (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](http://www.montgomerycountymd.gov/dep/air/radon) or [www.epa.gov/radon](http://www.epa.gov/radon).

KCI visited the site on December 28, 2015 and deployed eighty-two (82) 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:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
<b><math>\geq 4.0</math> pCi/L</b>	23	8.0
	9	6.2
	13	5.5
	1	4.8
	5 Office	4.7
	2	4.5
<b><math>&lt; 4.0</math> pCi/L</b>	See Attachment B	

Notes:

D- Duplicate sample

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

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

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 316-7800.



Sincerely,



James M. 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 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		
Lake Seneca Elementary School		
Test Period: 12/28/15-12/31/15		
Kit Number	Room / Area	Result
7712198	1	4.8
7707307	2	4.5
7712153	3	0.8
7712143	4	1.9
7712140	5	2.6
7712144	6	1.6
7712145	7	2.7
7712154	8	0.9
7712146	9	6.2
7712155	10	1.3
7712156	11	2.5
7712158	12	1.8
7712157	13	5.5
7712159	14	< 0.3
7712104	15	3
7712101	16	1.7
7712163	17	3.3
7712160	18	2.4
7712141	19	2.6
7712109	20	0.6
7712112	21	2.6
7712111	22	0.8
7712113	23	8
7712119	24	0.9
7712107	25	3.9
7712120	26	0.7
7712124	27	0.8
7712125	28	0.9
7712126	29	1.8
7712127	30	1.6
7712130	31	1.1
7712128	32	1.5
7712131	33	0.6
7712129	34	0.9
7712115	24 CONF	1.6
7712114	24 OBSERV	1.3
7712117	24 OFFICE	1.3
7712116	24 OFFICE	1.2
7712106	25 OFFICE	3.1
7712105	25 STORAGE	2.3
7712122	26 OBSERV	0.8
7712121	26 OFFICE	1.3
7712142	5 OFFICE	4.7
7708238	BUILDING SERVICE	0.7
7712194	CAF. KITCHEN	1.6
7712191	CAFE	1.3

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Lake Seneca Elementary School		
Test Period: 12/28/15-12/31/15		
Kit Number	Room / Area	Result
7712193	CAFE	1
7712147	GYM	1.3
7712148	* GYM (missing)	0
7712150	GYM OFFICE	2.6
7712134	HEALTH	1
7712123	KITCHEN	1.4
7712136	OFFICE	0.9
7712137	OFFICE CONF.	< 0.3
7712133	OFFICE RAY	1.7
7712135	OFFICE SCOTT	1.1
7712103	OFFICE TELEPHONE	0.8
7712187	PORT 1	< 0.3
7712189	PORT 2	< 0.3
7712185	PORT 3	< 0.3
7712181	PORT 4	< 0.3
7712183	PORT 5	< 0.3
7712182	PORT 6	< 0.3
7712190	PORT 7	< 0.3
7712180	PORT 8	< 0.3
7712179	PORT 9	< 0.3
7712186	PORT. 2	< 0.3
7712139	PRINCIPAL	0.7
7712132	STORAGE 1	0.6
7710257	WORK ROOM	1.3

Table Note:

\* Missing or Compromised Sample

Radon Testing Results		
Lake Seneca Elementary School		
Test Period: 12/28/15-12/31/15		
Kit Number	QC Type	Result
7712102	D (15)	2.8
7712110	D (22)	0.7
7712118	D (24)	1.1
7712152	D (8)	1
7712197	D (CAF. KITCHEN)	1.6
7712151	D (GYM)	1.6
7712138	D (OFFICE)	1.1
7712167	D (PORT 5)	< 0.3
7712108	FB (20)	< 0.3
7712149	FB (GYM)	< 0.3
7712184	FB (PORT 4)	< 0.3
7710511	OB (0)	< 0.3

Table Note:

\* Missing or Compromised Sample

## ATTACHMENT C

### Laboratory Analytical Results

Radon test result report for:

**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7710511	0	2015-12-28 @ 2:00 pm	2015-12-31 @ 12:00 pm	< 0.3	2016-01-04
7712198	1	2015-12-28 @ 11:00 am	2015-12-31 @ 10:00 am	4.8 ± 0.5	2016-01-04
7712155	10	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.3 ± 0.3	2016-01-04
7712156	11	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	2.5 ± 0.4	2016-01-04
7712158	12	2015-12-28 @ 10:00 am	2015-12-31 @ 11:00 am	1.8 ± 0.4	2016-01-04
7712157	13	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	5.5 ± 0.5	2016-01-04
7712159	14	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	< 0.3	2016-01-04
7712102	15	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	2.8 ± 0.4	2016-01-04
7712104	15	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	3.0 ± 0.4	2016-01-04
7712101	16	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.7 ± 0.4	2016-01-04
7712163	17	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	3.3 ± 0.4	2016-01-04
7712160	18	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	2.4 ± 0.4	2016-01-04
7712141	19	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	2.6 ± 0.4	2016-01-04
7707307	2	2015-12-28 @ 11:00 am	2015-12-31 @ 10:00 am	4.5 ± 0.5	2016-01-04
7712108	20	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	< 0.3	2016-01-04
7712109	20	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	0.6 ± 0.3	2016-01-04
7712112	21	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	2.6 ± 0.4	2016-01-04
7712110	22	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	0.7 ± 0.3	2016-01-04
7712111	22	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	0.8 ± 0.3	2016-01-04
7712113	23	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	8.0 ± 0.6	2016-01-04
7712118	24	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.1 ± 0.3	2016-01-04
7712119	24	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	0.9 ± 0.3	2016-01-04
7712115	24 CONF	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.6 ± 0.3	2016-01-04
7712114	24 OBSERV	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.3 ± 0.3	2016-01-04
7712117	24 OFFICE	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.3 ± 0.3	2016-01-04
7712116	24 OFFICE	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.2 ± 0.3	2016-01-04
7712107	25	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	3.9 ± 0.5	2016-01-04
7712106	25 OFFICE	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	3.1 ± 0.4	2016-01-04
7712105	25 STORAGE	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	2.3 ± 0.4	2016-01-04
7712120	26	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	0.7 ± 0.3	2016-01-04
7712122	26 OBSERV	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	0.8 ± 0.3	2016-01-04
7712121	26 OFFICE	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.3 ± 0.3	2016-01-04
7712124	27	2015-12-28 @ 9:00 am	2015-12-31 @ 10:00 am	0.8 ± 0.3	2016-01-04
7712125	28	2015-12-28 @ 9:00 am	2015-12-31 @ 10:00 am	0.9 ± 0.3	2016-01-04
7712126	29	2015-12-28 @ 9:00 am	2015-12-31 @ 10:00 am	1.8 ± 0.4	2016-01-04
7712153	3	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	0.8 ± 0.3	2016-01-04
7712127	30	2015-12-28 @ 9:00 am	2015-12-31 @ 10:00 am	1.6 ± 0.3	2016-01-04



Radon test result report for:

**LAKE SENECA ELEMENTARY SCHOOL  
 MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7712130	31	2015-12-28 @ 9:00 am	2015-12-31 @ 10:00 am	1.1 ± 0.3	2016-01-04
7712128	32	2015-12-28 @ 9:00 am	2015-12-31 @ 10:00 am	1.5 ± 0.3	2016-01-04
7712131	33	2015-12-28 @ 9:00 am	2015-12-31 @ 10:00 am	0.6 ± 0.3	2016-01-04
7712129	34	2015-12-28 @ 9:00 am	2015-12-31 @ 10:00 am	0.9 ± 0.3	2016-01-04
7712143	4	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.9 ± 0.4	2016-01-04
7712140	5	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	2.6 ± 0.4	2016-01-04
7712142	5 OFFICE	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	4.7 ± 0.5	2016-01-04
7712144	6	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.6 ± 0.3	2016-01-04
7712145	7	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	2.7 ± 0.4	2016-01-04
7712152	8	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.0 ± 0.3	2016-01-04
7712154	8	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	0.9 ± 0.3	2016-01-04
7712146	9	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	6.2 ± 0.6	2016-01-04
7708238	BUILDING SERVICE	2015-12-28 @ 11:00 am	2015-12-31 @ 10:00 am	0.7 ± 0.3	2016-01-04
7712194	CAF. KITCHEN	2015-12-28 @ 11:00 am	2015-12-31 @ 10:00 am	1.6 ± 0.3	2016-01-04
7712197	CAF. KITCHEN	2015-12-28 @ 11:00 am	2015-12-31 @ 10:00 am	1.6 ± 0.4	2016-01-04
7712191	CAFE	2015-12-28 @ 11:00 am	2015-12-31 @ 10:00 am	1.3 ± 0.3	2016-01-04
7712193	CAFE	2015-12-28 @ 11:00 am	2015-12-31 @ 10:00 am	1.0 ± 0.3	2016-01-04
7712148	GYM	@	@		
7712147	GYM	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.3 ± 0.3	2016-01-04
7712149	GYM	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	< 0.3	2016-01-04
7712151	GYM	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.6 ± 0.3	2016-01-04
7712150	GYM OFFICE	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	2.6 ± 0.4	2016-01-04
7712134	HEALTH	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	1.0 ± 0.3	2016-01-04
7712123	KITCHEN	2015-12-28 @ 10:00 am	2015-12-31 @ 10:00 am	1.4 ± 0.3	2016-01-04
7712136	OFFICE	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	0.9 ± 0.3	2016-01-04
7712138	OFFICE	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	1.1 ± 0.3	2016-01-04
7712137	OFFICE CONF.	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	< 0.3	2016-01-04
7712133	OFFICE RAY	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	1.7 ± 0.4	2016-01-04
7712135	OFFICE SCOTT	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	1.1 ± 0.3	2016-01-04
7712103	OFFICE TELEPHONE	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	0.8 ± 0.3	2016-01-04
7712187	PORT 1	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7712189	PORT 2	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7712185	PORT 3	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7712181	PORT 4	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7712184	PORT 4	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7712167	PORT 5	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7712183	PORT 5	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04

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January 16, 2016

**\*\* LABORATORY ANALYSIS  
REPORT \*\***

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Radon test result report for:  
**LAKE SENECA ES  
PORTABLE**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7712186	PORT. 2	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04

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January 16, 2016

**\*\* LABORATORY ANALYSIS  
REPORT \*\***

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Radon test result report for:  
**LAKE SENECA ELEMENTARY SCHOOL  
MAIN**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7712182	PORT 6	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7712190	PORT 7	2015-12-28 @ 11:00 am	2015-12-31 @ 10:00 am	< 0.3	2016-01-04
7712180	PORT 8	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7712179	PORT 9	2015-12-28 @ 11:00 am	2015-12-31 @ 11:00 am	< 0.3	2016-01-04
7712139	PRINCIPAL	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	0.7 ± 0.3	2016-01-04
7712132	STORAGE 1	2015-12-28 @ 9:00 am	2015-12-31 @ 10:00 am	0.6 ± 0.3	2016-01-04
7710257	WORK ROOM	2015-12-28 @ 9:00 am	2015-12-31 @ 9:00 am	1.3 ± 0.3	2016-01-04

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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

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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  $\mu$ R/h Elevation = 820 ft



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

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## 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