



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Walt Whitman High School
Date of Test Report	05/12/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	1
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.7 pCi/L

Project Status

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



May 12, 2022

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

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

Location: Walt Whitman High School
7100 Whittier Boulevard
Bethesda, MD 20817

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Walt Whitman High School, located at 7100 Whittier Boulevard, Bethesda, MD 20817 (subject site).

Scope of Services:

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

KCI visited the site on March 21, 2022 and deployed three (3) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

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

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

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

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

KCI returned to the site on March 24, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

These tests represent:

- Follow-up to initial testing.

These tests were conducted to:

- Evaluate radon concentrations at the facility.

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

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

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

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the low 40°Fs and high temperatures ranged from the low 50°Fs to the low 70°Fs. Maximum sustained winds ranged from 0-29 miles per hour. Average humidity was around 56% with 0.51 inches of precipitation (rain) was recorded during testing period.

Results:

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

The results of the radon test analysis indicated the following:

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

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

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

Sincerely,



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

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

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Walt Whitman HS RT		
Test Period: 03/21/2022 - 03/24/2022		
Kit Number	Room / Area	Result
11131707	119.5	< 0.3
11131708	119.5	0.7
11131709	119.5	< 0.3

Table 2- Radon Testing Results			
Walt Whitman HS RT			
Test Period: 03/21/2022 - 03/24/2022			
Kit Number	QC Type	Room / Area	Result
11131709	D	119.5	< 0.3
11131707	FB	119.5	< 0.3
11139902	OB	OFFICE BLANK	< 0.3
11139928	TB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Walt Whitman HS RT		
Test Period: 03/21/22 - 03/24/22		
Kit Number	Room/Area	Result
	NA	

Summary of Missing, Compromised and >/= 4 pIC/L Tests		
Walt Whitman HS RT		
Test Period: 03/21/22 - 03/24/22		
Kit Number	Room/Area	Result
	NA	

Table Note:
* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

March 28, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
WALT WHITMAN HS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11131708	119.5	2022-03-21 @ 10:00 am	2022-03-24 @ 10:00 am	0.7 ± 0.3	2022-03-28
11131707	119.5	2022-03-21 @ 10:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28
11131709	119.5	2022-03-21 @ 10:00 am	2022-03-24 @ 10:00 am	< 0.3	2022-03-28

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204620

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

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

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

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

11139367, 11139368, 11139371, _____

11139710, 11139717 _____

E3 light

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

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

March 30, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

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

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

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – March 2022 Schools – Retesting

Name of Schools:

1. Herbert Hoover MS
2. Parkland MS
3. Redland MS
4. Rock Creek Valley ES
5. Tilden MS
6. Rockville HS
7. Wootton HS
8. Capt. James E. Daly ES
9. Clarksburg HS
10. Clearspring ES
11. Hallie Wells MS
12. Northwest HS
13. Paint Branch HS
14. Rocky Hills MS
15. Seneca Valley HS
16. Sherwood HS
17. Wilson Wims ES

	Date	Initials
Radon Test Kits Deployed	03/22/2022	BMM
Radon Test Kits Collected	03/25/2022	BMM
Radon Test Kits Shipped to Lab*	03/25/2022	BMM
Radon Test Kits Received by Lab*	03/28/2022	BMM

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



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Walt Whitman High School
Date of Test Report	2/21/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	112
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.7 pCi/L

Project Status:

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



February 21, 2022

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

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

Location: Walt Whitman High School
7100 Whittier Blvd.
Bethesda, MD 20817

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Walt Whitman High School, located at 7100 Whittier Blvd. Bethesda, MD 20817 (subject site).

Scope of Services:

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

KCI visited the site on January 18, 2022 and deployed one hundred and thirty one (131) 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 January 21, 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 30s and high temperatures ranged from the mid 30s to the mid 40s Fahrenheit. Maximum sustained winds ranged from 7-20 miles per hour. Average humidity was around 50% with .05 inches of precipitation (rain) was recorded during testing period.

Results:

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

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
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Quality Control Samples	
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Sincerely,



Tyler P. McCleaf
Radon Measurement Provider
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ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

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KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Walter Johnson HS		
Test Period: 01/18/2022-01/21/2022		
Kit Number	Room / Area	Result
11106566	100	< 0.3
11106406	104	< 0.3
11106402	106	< 0.3
11106403	106	< 0.3
11106405	106	< 0.3
11106409	108	< 0.3
11106407	110	< 0.3
11106404	113	< 0.3
11106411	117	< 0.3
11106410	118	< 0.3
11106408	130	< 0.3
11106412	132	0.6
11106564	133	< 0.3
11106578	133	0.7
11106591	133	< 0.3
11106598	134	< 0.3
11106599	135	< 0.3
11106590	137	< 0.3
11106592	140	< 0.3
11106580	141	< 0.3
11106593	142	< 0.3
11106594	145	< 0.3
11106587	146	0.6
11106588	146	< 0.3
11106595	146	0.6
11106596	147	< 0.3
11106597	148	< 0.3
11106600	149	< 0.3
11106548	151	< 0.3
11106555	154	0.8
11106558	154	< 0.3
11106543	155	0.6
11106577	156	0.8
11106573	158	< 0.3
11106576	158	0.6
11106522	159	NA
11106524	160	< 0.3
11106539	160	0.9
11106584	165	< 0.3
11106581	166	< 0.3
11106585	166	< 0.3
11106586	166	< 0.3

Table 1- Radon Testing Results		
Walter Johnson HS		
Test Period: 01/18/2022-01/21/2022		
Kit Number	Room / Area	Result
11106572	167	0.8
11106583	168	1.2
11106519	172	< 0.3
11106514	173	< 0.3
11106513	174	< 0.3
11106505	184	< 0.3
11106507	190	< 0.3
11106527	191	< 0.3
11106516	192	< 0.3
11106528	193	< 0.3
11106520	194	< 0.3
11106521	194	< 0.3
11106515	195	< 0.3
11106517	196	< 0.3
11106473	203	< 0.3
11106470	224	< 0.3
11106467	231	< 0.3
11106468	231	< 0.3
11106469	231	< 0.3
11106456	246	< 0.3
11106466	256	< 0.3
11106471	258	< 0.3
11106557	100A	< 0.3
11106561	100B	< 0.3
11106552	100C	< 0.3
11106560	100D	< 0.3
11106562	100F	0.7
11106567	100F	< 0.3
11106568	100F	< 0.3
11106554	100G	< 0.3
11106559	100H	< 0.3
11106401	104B	< 0.3
11106547	154C	0.7
11106538	155B	0.5
11106533	155C	< 0.3
11106525	155D	< 0.3
11106544	155E	0.6
11106535	155F	< 0.3
11106530	155G	< 0.3
11106526	155H	0.6
11106537	155H	< 0.3
11106545	155J	0.7

Table 1- Radon Testing Results		
Walter Johnson HS		
Test Period: 01/18/2022-01/21/2022		
Kit Number	Room / Area	Result
11106534	155K	< 0.3
11106551	155L	< 0.3
11106540	155M	< 0.3
11106549	155N	< 0.3
11106550	155P	< 0.3
11106523	155Q	0.6
11106571	156A	0.9
11106575	158D	< 0.3
11106570	158E	< 0.3
11106541	159B	< 0.3
11106518	159C	0.5
11106531	159D	< 0.3
11106532	159D	< 0.3
11106536	159D	< 0.3
11106542	159E	< 0.3
11106553	160A	< 0.3
11106565	160B	0.5
11106546	160C	< 0.3
11106589	160E	< 0.3
11106506	170 CAFETERIA	< 0.3
11106508	170 CAFETERIA	< 0.3
11106556	170C	0.9
11106529	181A	1.3
11106569	199 GYM	< 0.3
11106574	199 GYM	< 0.3
11106563	199B	< 0.3
11106579	A5 AUDITORIUM	0.8
11106582	A5 AUDITORIUM	0.9
11106455	G02	< 0.3
11106462	G03	< 0.3
11106431	G05	< 0.3
11106460	G05	< 0.3
11106448	G06	< 0.3
11106461	G07	< 0.3
11106416	G09	0.7
11106439	G10	< 0.3
11106440	G11	< 0.3
11106465	G12	< 0.3
11106454	G13	< 0.3
11106447	G14	< 0.3
11106424	G20	0.9
11106436	G20	0.7

Table 1- Radon Testing Results		
Walter Johnson HS		
Test Period: 01/18/2022-01/21/2022		
Kit Number	Room / Area	Result
11106437	G20	< 0.3
11106428	G21	1.8
11106434	G22	1
11106417	G25	0.9
11106426	G27	0.7
11106413	G31	1
11106419	G32	1.5
11106420	G33	0.8
11106422	G34	1.9
11106421	G35	< 0.3
11106414	G36	1.2
11106418	G36	1
11106423	G37	1.2
11106427	G39	< 0.3
11106435	G40	< 0.3
11106464	G41	< 0.3
11106429	G43	0.6
11106430	G44	< 0.3
11106438	G44B	< 0.3
11106442	G46	< 0.3
11106432	G51 SECOND GYM	0.6
11106446	G51 SECOND GYM	0.9
11106443	G52	0.6
11106425	G53	< 0.3
11106451	G53	< 0.3
11106444	G59	0.7
11106415	G64	< 0.3
11106441	G65 WEIGHT ROOM	< 0.3
11106450	G81	< 0.3
11106449	G82	< 0.3
11106452	G83	0.9
11106445	G84	< 0.3
11106433	G85	< 0.3
11106457	G86	< 0.3
11106458	G86	< 0.3
11106459	G86	< 0.3
11106453	G87	0.9

Table 2- Radon Testing Results			
Walt Whitman HS			
Test Period: 01/18/22-01/21/22			
Kit Number	QC Type	Room / Area	Result
11107060	D	127	0.5
11107066	FB	127	< 0.3
11107065	D	100.23	< 0.3
11107047	FB	100.23	< 0.3
11107042	D	150.5	< 0.3
11107035	FB	150.5	< 0.3
11107032	D	101.6	< 0.3
11107022	D	147	0.7
11107036	FB	147	< 0.3
11107039	FB	149	< 0.3
11107020	D	149	1.9
11107048	D	151	1.5
11107017	D	124	< 0.3
11107064	D	100.12	< 0.3
11107053	D	100.7	< 0.3
11107031	D	100	< 0.3
11107033	D	141	0.6
11107034	D	143	< 0.3
11106397	OB	OFFICE BLANK	< 0.3
11106400	FB	TRAVEL BLANK	< 0.3

Summary of Missed Locations		
Walt Whitman HS		
Test Period: 01/18/22-01/21/22		
Kit Number	Room/Area	Result
	NA	

Summary of Missing, Compromised and ≥ 4 pIC/L Tests		
Walt Whitman HS		
Test Period: 01/18/22-01/21/22		
Kit Number	Room/Area	Result
11107174	119.5	Compromised

Table Note:
 * Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
WALT WHITMAN HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11107103	100	2022-01-18 @ 9:00 am	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107031	100	2022-01-18 @ 3:00 pm	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107108	100.1	2022-01-18 @ 9:00 am	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107110	100.10	2022-01-18 @ 9:00 am	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107064	100.12	2022-01-18 @ 3:00 pm	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107106	100.12	2022-01-18 @ 9:00 am	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107111	100.14	2022-01-18 @ 9:00 am	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107112	100.19	2022-01-18 @ 9:00 am	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107101	100.2	2022-01-18 @ 9:00 am	2022-01-21 @ 1:00 pm	0.6 ± 0.4	2022-01-26
11107047	100.23	2022-01-18 @ 3:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107109	100.23	2022-01-18 @ 9:00 am	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107065	100.23	2022-01-18 @ 3:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107107	100.3	2022-01-18 @ 9:00 am	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107104	100.6	2022-01-18 @ 9:00 am	2022-01-21 @ 1:00 pm	0.5 ± 0.4	2022-01-26
11107113	100.7	2022-01-18 @ 9:00 am	2022-01-21 @ 1:00 pm	0.6 ± 0.4	2022-01-26
11107053	100.7	2022-01-18 @ 3:00 pm	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107105	100.8	2022-01-18 @ 9:00 am	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107150	101	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107151	101	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107153	101.6	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107032	101.6	2022-01-18 @ 3:00 pm	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107152	101.8	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107187	102	2022-01-18 @ 1:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107185	102	2022-01-18 @ 1:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107167	103	2022-01-18 @ 12:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107180	104	2022-01-18 @ 1:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107179	104	2022-01-18 @ 12:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107182	104	2022-01-18 @ 1:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107177	106.6	2022-01-18 @ 12:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107175	106.7	2022-01-18 @ 12:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107176	106.8	2022-01-18 @ 12:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107119	108	2022-01-18 @ 9:00 am	2022-01-21 @ 4:00 pm	1.2 ± 0.4	2022-01-26
11107117	112	2022-01-18 @ 10:00 am	2022-01-21 @ 4:00 pm	0.6 ± 0.4	2022-01-26
11107121	114	2022-01-18 @ 10:00 am	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107181	115	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107186	117	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107171	119	2022-01-18 @ 12:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26

Radon test result report for:
WALT WHITMAN HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11107174	119.5	2022-01-18 @ 12:00 pm	2022-01-21 @ 4:00 pm	???? IF1	2022-01-26
11107178	119.6	2022-01-18 @ 12:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107173	119.7	2022-01-18 @ 12:00 pm	2022-01-21 @ 4:00 pm	0.9 ± 0.4	2022-01-26
11107172	119.8	2022-01-18 @ 12:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107169	119.9	2022-01-18 @ 12:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107115	120	2022-01-18 @ 10:00 am	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107122	120	2022-01-18 @ 10:00 am	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107168	121	2022-01-18 @ 12:00 pm	2022-01-21 @ 4:00 pm	< 0.3	2022-01-26
11107120	124	2022-01-18 @ 10:00 am	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107017	124	2022-01-18 @ 3:00 pm	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107066	127	2022-01-18 @ 3:00 pm	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107021	127	2022-01-18 @ 2:00 pm	2022-01-21 @ 1:00 pm	< 0.3	2022-01-26
11107060	127	2022-01-18 @ 3:00 pm	2022-01-21 @ 1:00 pm	0.5 ± 0.4	2022-01-26
11107124	128	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107123	130	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107125	130.2	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107132	134	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107133	136	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107131	138	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107127	140	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107158	141	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107033	141	2022-01-18 @ 3:00 pm	2022-01-21 @ 2:00 pm	0.6 ± 0.4	2022-01-26
11107156	143	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107034	143	2022-01-18 @ 3:00 pm	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107157	143.1	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107162	143.2	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107134	147	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107022	147	2022-01-18 @ 3:00 pm	2022-01-21 @ 2:00 pm	0.7 ± 0.4	2022-01-26
11107036	147	2022-01-18 @ 3:00 pm	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107135	147.1	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107136	148	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107137	148.1	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107142	148.2	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107020	149	2022-01-18 @ 3:00 pm	2022-01-21 @ 2:00 pm	1.9 ± 0.4	2022-01-26
11107130	149	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	1.5 ± 0.4	2022-01-26
11107039	149	2022-01-18 @ 3:00 pm	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107128	149.1	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	1.0 ± 0.4	2022-01-26

Radon test result report for:
WALT WHITMAN HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11107143	150	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107149	150.1	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107145	150.10	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107140	150.11	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107139	150.13	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107148	150.3	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107154	150.4	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107042	150.5	2022-01-18 @ 3:00 pm	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107147	150.5	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107035	150.5	2022-01-18 @ 3:00 pm	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107144	150.6	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107146	150.7	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107141	150.9	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26
11107138	151	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	1.2 ± 0.4	2022-01-26
11107126	151	2022-01-18 @ 10:00 am	2022-01-21 @ 2:00 pm	1.1 ± 0.4	2022-01-26
11107048	151	2022-01-18 @ 3:00 pm	2022-01-21 @ 2:00 pm	1.5 ± 0.4	2022-01-26
11107163	159	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	2.5 ± 0.4	2022-01-26
11107164	159	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	2.7 ± 0.5	2022-01-26
11107160	159.1	2022-01-18 @ 12:00 pm	2022-01-21 @ 2:00 pm	1.3 ± 0.4	2022-01-26
11107161	159.2	2022-01-18 @ 12:00 pm	2022-01-21 @ 2:00 pm	1.2 ± 0.4	2022-01-26
11107166	159.2	2022-01-18 @ 12:00 pm	2022-01-21 @ 2:00 pm	1.1 ± 0.4	2022-01-26
11107165	159.7	2022-01-18 @ 12:00 pm	2022-01-21 @ 2:00 pm	1.2 ± 0.4	2022-01-26
11107016	201	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107013	207	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107010	215	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107009	216	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107012	217	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107011	217.2	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107008	218	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107004	218.1	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107005	222	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107007	224	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107006	226	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107002	226.2	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	0.5 ± 0.4	2022-01-26
11107019	227	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107200	228	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107003	228.2	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26

Radon test result report for:
WALT WHITMAN HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11107001	228.3	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107014	231	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107191	241	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107188	244	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107192	245	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107193	245.1	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107194	248	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107183	250	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107189	251	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107195	254	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107190	255	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107197	257	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107196	260	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107198	261	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107184	262	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107199	268	2022-01-18 @ 1:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107073	398	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107027	401	2022-01-18 @ 2:00 pm	2022-01-21 @ 3:00 pm	< 0.3	2022-01-26
11107114	C131	2022-01-18 @ 9:00 am	2022-01-21 @ 4:00 pm	0.6 ± 0.4	2022-01-26
11107155	ITSS	2022-01-18 @ 11:00 am	2022-01-21 @ 2:00 pm	< 0.3	2022-01-26

P4792 / WILLIAM LYMAN

Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11107129	2022-01-18	8:00 am	2022-01-21	9:00 am	72	WALT WHITMAN HS	MAIN	100		1	< 0.3

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 203404

NOMINAL Conditions: Radon Conc 16.2 pCi/L Rel. Hum 28.8 % Temp. 59.9 F

Date Start: 12/24/21 Date Stop: 12/27/21 Date Start: _____ Date Stop: _____

Time Start: 0809 Time Stop: 0809 Time Start: _____ Time Stop: _____

Device No.'s: (2) Char Bags- Device No.'s: _____

9341721, 9341722

G4 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 µR/h Elevation = 820 ft**

December 31, 2021

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

SK
MA MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (16.2 pCi/L).

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9341721	1	2021-12-24 @ 8:00 am	2021-12-27 @ 8:00 am	11.6 \pm 0.9	2021-12-31
9341722	1	2021-12-24 @ 8:00 am	2021-12-27 @ 8:00 am	15.4 \pm 1.2	2021-12-31

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – January 2022 Schools

Name of Schools:

1. Poolesville ES
2. Rosa Parks MS
3. Seven Locks ES
4. Somerset ES
5. Thomas Pyle MS
6. Walt Whitman HS
7. Walter Johnson HS
8. Westland MS
9. Wyngate ES

	Date	Initials
Radon Test Kits Deployed	01/18/2022	JM
Radon Test Kits Collected	01/21/2022	JM
Radon Test Kits Shipped to Lab*	01/21/2022	JM
Radon Test Kits Received by Lab*	01/23/2022	JM

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



MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	Walt Whitman High School
Date of Report	2/28/2020
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	1
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.2 pCi/L

Project Status

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



2/28/2020

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

Re: Radon Testing Services

KCI Job #12146341.126

Location: Walt Whitman High School

7100 Whittier Boulevard
Bethesda, Maryland 20817

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 Walt Whitman High School, located at 7100 Whittier Boulevard in Bethesda, Maryland 20817 (subject site).

SCOPE OF SERVICES

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

KCI visited the site on 2/4/2020 and deployed eight (8) 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 with missing test kits from the December 2019 testing period (i.e. test kit was deployed but not recovered),

-
2. Rooms with invalidated test kits from the December 2019 testing period (e.g. an open window in the room or disturbed test kit),
 3. Rooms which were locked/inaccessible during the December 2019 testing period,
 4. Rooms with elevated December 2019 results (i.e. ≥ 3.5 pCi/L),
 5. Rooms previously tested for radon but not tested in December 2019, and
 6. Additional rooms that require testing (if applicable.)

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 2/7/2020 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 ranged from the mid-30s to the low-50s; and high temperatures ranged from the upper-40s to the mid-60s. Maximum sustained winds ranged from 13-21 miles per hour. Average humidity was approximately 76%. A total of 1.09 Inches of rain were recorded during the testing period. The weather conditions during the testing period may have resulted in atypical radon test results for this facility.

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

The results of the radon test analysis indicated the following:

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

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

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

Sincerely,

Mr. Tyler P. McCleaf
 Radon Measurement Provider
 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

Floor Plan Legend

X-Sample Location (in red)

X- Previous Sample Location

1- Not Samled; No Ground Contact

2- Not Samled; Unoccupied (e.g. Storage, Mechanical)

3- Not Samled; High Humidity/Moisture

4- Not Samled; Bathroom/Hallway

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		
Whitman High School		
Test Period: 02/04/20-02/07/20		
Kit Number	Room / Area	Result
9339946	AUX GYM	0.9
9339955	AUX GYM	<0.3
9339951	AUX GYM	0.6
9339940	AUX GYM	1.2
9339961	AUX GYM	0.8
9339952	AUX GYM	<0.3
9334909	OFFICE BLANK	<0.3
9334910	OFFICE BLANK	<0.3

Table 2- Radon Testing Results			
Whitman High School			
Test Period: 02/04/20-02/07/20			
Kit Number	QC Type	Room / Area	Result
9339952	FB	AUX GYM	<0.3
9339946	D	AUX GYM	0.9
9334902	TRANSIT BLANK	NA	<0.3

ATTACHMENT C

Laboratory Analytical Results

February 11, 2020

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9339946	AUX GYM	2020-02-04 @ 11:00 am	2020-02-07 @ 10:00 am	0.9 ± 0.3	2020-02-11
9339955	AUX GYM	2020-02-04 @ 10:00 am	2020-02-07 @ 10:00 am	< 0.3	2020-02-11
9339951	AUX GYM	2020-02-04 @ 10:00 am	2020-02-07 @ 10:00 am	0.6 ± 0.3	2020-02-11
9339940	AUX GYM	2020-02-04 @ 10:00 am	2020-02-07 @ 10:00 am	1.2 ± 0.4	2020-02-11
9339961	AUX GYM	2020-02-04 @ 10:00 am	2020-02-07 @ 10:00 am	0.8 ± 0.3	2020-02-11
9339952	AUX GYM	2020-02-04 @ 10:00 am	2020-02-07 @ 10:00 am	< 0.3	2020-02-11

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 194523

NOMINAL Conditions: Radon Conc 25.8 pCi/L Rel. Hum 49.8 % Temp. 70.2 F

Date Start: 2/21/20 Date Stop: 2/24/20 Date Start: _____ Date Stop: _____

Time Start: 0745 Time Stop: 0745 Time Start: _____ Time Stop: _____

Device No.'s: (9) Char Bags - Device No.'s: _____

9341725 thru 9341733

52 ceph

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

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

Radon test 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
9341725	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.9 \pm 1.6	2020-02-26
9341730	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.1 \pm 1.6	2020-02-26
9341728	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.9 \pm 1.6	2020-02-26
9341726	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	25.8 \pm 1.5	2020-02-26
9341731	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	25.1 \pm 1.5	2020-02-26
9341729	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	26.2 \pm 1.6	2020-02-26
9341727	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	27.2 \pm 1.6	2020-02-26
9341732	N/A	2020-02-21 @ 8:00 am	2020-02-24 @ 8:00 am	27.3 \pm 1.6	2020-02-26



Radon Test Kit Chain of Custody

Project Name: MCPS Radon 2019 Week 1 Retesting

Name of Schools:

1. Belmont E.S.
2. Clarksburg H.S.
3. Damascus E.S.
4. Damascus H.S.
5. DuFief E.S.
6. Fields Road E.S.
7. Gaithersburg E.S.
8. McAuliffe E.S.
9. Quince Orchard H.S.
10. Snowden Farms E.S.
11. South Lake E.S.
12. Stone Mill E.S.
13. Travilah ES
14. Watkins Mill ES
15. Whitman H.S.

	Date	Initials
Radon Test Kits Deployed	02/03/20 to 02/04/20	JM
Radon Test Kits Collected	02/06/20 to 02/07/20	JM
Radon Test Kits Shipped to Lab*	02/07/20	JM
Radon Test Kits Received by Lab*	02/10/20	JM

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



MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	Walt Whitman High School
Date of Report	1/28/2020
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	79
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.1 pCi/L

Project Status

Current Project Status at this time: Testing Complete; missing/compromised tests to be sampled.



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: Walt Whitman High School

7100 Whittier Boulevard
Bethesda, Maryland 20817

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 Walt Whitman High School, located at 7100 Whittier Boulevard in Bethesda, Maryland 20817 (subject site).

SCOPE OF SERVICES

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon 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.

KCI visited the site on 12/10/2019 and deployed ninety-six (96) 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 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.

RESULTS

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

The results of the radon test analysis indicated the following:

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

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

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

Sincerely,

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		
Whitman High School		
Test Period: 12/10/2019-12/13/2019		
Kit Number	Room / Area	Result
9334201	D116	< 0.3
9334202	TEAM RM 3	0.7
9334203	D152	0.7
9334204	D151	0.6
9334205	D149	0.7
9334206	A149	< 0.3
9334207	A154	< 0.3
9334208	A153	0.6
9334209	D112	< 0.3
9334210	D111	< 0.3
9334211	A156	0.9
9334212	A155	< 0.3
9334213	A152	< 0.3
9334214	A139	0.6
9334216	A146	1.3
9334217	A148	< 0.3
9334218	A148	0.8
9334219	A148	< 0.3
9334220	A136	1.2
9334221	A151	0.6
9334222	A151	< 0.3
9334223	A138	0.5
9334224	A111	< 0.3
9334225	A110	< 0.3
9334226	A115	0.7
9334227	A105	0.7
9334228	A106	0.6
9334229	A112	< 0.3
9334230	A104	< 0.3
9334231	A113	< 0.3
9334232	A109	< 0.3
9334233	A107	< 0.3
9334234	A113	< 0.3
9334235	A113	0.6
9334236	A108	1.9
9334237	A119-A	0.6
9334238	A116	< 0.3
9334239	A118	0.7
9334240	A119	0.8
9334241	A119	0.6
9334242	A129	0.6
9334243	A133	0.6
9334244	A132	0.6
9334245	B123	0.6
9334246	A131	0.9
9334247	C115	0.6
9334248	B123A	0.5
9334249	C115	0.7
9334250	A131	< 0.3
9334251	B102	1.6

9334252	B103	1.1
9334253	B104	< 0.3
9334254	B104	1.3
9334255	B104	1.5
9334256	TV RM	< 0.3
9334257	A128	0.8
9334258	AUD	1.4
9334259	AUD	2.1
9334260	C115	0.9
9334261	C110	< 0.3
9334262	A127	1
9334263	C129	0.5
9334264	A131	1
9334265	D122	< 0.3
9334267	C124	< 0.3
9334268	D218	< 0.3
9334269	A130	0.9
9334270	A223	< 0.3
9334271	C237	< 0.3
9334272	A206	< 0.3
9334273	A206	< 0.3
9334274	C232	< 0.3
9334275	C230	< 0.3
9334276	C224	< 0.3
9334277	C230	< 0.3
9334278	B211	< 0.3
9334279	D209	< 0.3
9334280	D213	< 0.3
9334281	D213B	< 0.3
9334282	C224A	< 0.3
9334283	C213	< 0.3
9334284	B312	< 0.3
9334285	C222	1
9334286	C218	1.3
9334287	C230A	< 0.3
9334288	C216	1.6
9334215	A157	0.7
9334266	A206	< 0.3
9334985	OFFICE BLANK	< 0.3
9335151	GYM	0.9
9335152	D161	0.7
9335153	GYM	0.7
9335154	D155	0.7
9335156	TEAM RM 1	0.6
9335166	B124	< 0.3
9335167	D15R	0.6
9335168	A GYM	1
9335199	TEAM RM 1	< 0.3
9335200	B116	< 0.3
9335155	A GYM	MISSING

Table 2- Radon Testing Results			
Whitman High School			
Test Period: 12/10/2019-12/13/2019			
Kit Number	QC Type	Room / Area	Result
9335156	D	TEAM RM 1	0.6
9334218	D	A148	0.8
9334217	FB	A148	<0.3
9334221	D	A151	0.6
9334235	D	A113	0.6
9334231	FB	A113	<0.3
9334241	D	A119	0.6
9334255	D	B104	1.5
9334253	FB	B104	<0.3
9334249	D	C115	0.7
9334272	D	A206	<0.3
9334266	FB	A206	<0.3
9334277	D	C230	<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

Summary of Missed Locations		
Walt Whitman High School		
Test Period: 12/10/2019 - 12/13/2019		
Kit Number	Room/Area	Result
	NA	

Summary of Missing, Compromised and ≥ 4 piC/L Tests		
Walt Whitman High School		
Test Period: 12/10/2019-12/13/2019		
Kit Number	Room/Area	Result
9335155	*A GYM	Missing

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

WHITMAN HIGH SCHOOL**427**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9335168	A GYM	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	1.0 ± 0.3	2019-12-17
9334230	A104	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334227	A105	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.7 ± 0.3	2019-12-17
9334228	A106	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9334233	A107	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334236	A108	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	1.9 ± 0.4	2019-12-17
9334232	A109	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334225	A110	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	< 0.3	2019-12-17
9334224	A111	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334229	A112	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334235	A113	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9334231	A113	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334234	A113	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334226	A115	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	0.7 ± 0.3	2019-12-17
9334238	A116	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	< 0.3	2019-12-17
9334239	A118	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	0.7 ± 0.3	2019-12-17
9334240	A119	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	0.8 ± 0.4	2019-12-17
9334241	A119	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	0.6 ± 0.4	2019-12-17
9334237	A119-A	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	0.6 ± 0.3	2019-12-17
9334262	A127	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	1.0 ± 0.3	2019-12-17
9334257	A128	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	0.8 ± 0.3	2019-12-17
9334242	A129	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9334269	A130	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	0.9 ± 0.3	2019-12-17
9334264	A131	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	1.0 ± 0.4	2019-12-17
9334250	A131	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334246	A131	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	0.9 ± 0.3	2019-12-17
9334244	A132	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.4	2019-12-17
9334243	A133	2019-12-10 @ 10:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9334220	A136	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	1.2 ± 0.4	2019-12-17
9334223	A138	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.5 ± 0.3	2019-12-17
9334214	A139	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9334216	A146	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	1.3 ± 0.3	2019-12-17
9334217	A148	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334218	A148	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.8 ± 0.3	2019-12-17
9334219	A148	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334206	A149	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334222	A151	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17

Radon test result report for:

WHITMAN HIGH SCHOOL**427**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9334221	A151	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9334213	A152	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334208	A153	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9334207	A154	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334212	A155	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334211	A156	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	0.9 ± 0.3	2019-12-17
9334273	A206	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334272	A206	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334270	A223	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334259	AUD	2019-12-10 @ 11:00 am	2019-12-13 @ 7:00 am	2.1 ± 0.4	2019-12-17
9334258	AUD	2019-12-10 @ 11:00 am	2019-12-13 @ 7:00 am	1.4 ± 0.3	2019-12-17
9334251	B102	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	1.6 ± 0.4	2019-12-17
9334252	B103	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	1.1 ± 0.3	2019-12-17
9334254	B104	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	1.3 ± 0.4	2019-12-17
9334255	B104	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	1.5 ± 0.4	2019-12-17
9334253	B104	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	< 0.3	2019-12-17
9335200	B116	2019-12-10 @ 8:00 am	2019-12-13 @ 7:00 am	< 0.3	2019-12-17
9334245	B123	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	0.6 ± 0.3	2019-12-17
9334248	B123A	2019-12-10 @ 10:00 am	2019-12-13 @ 7:00 am	0.5 ± 0.3	2019-12-17
9335166	B124	2019-12-10 @ 8:00 am	2019-12-13 @ 7:00 am	< 0.3	2019-12-17
9334278	B211	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334284	B312	2019-12-10 @ 1:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334261	C110	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334249	C115	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	0.7 ± 0.3	2019-12-17
9334247	C115	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	0.6 ± 0.3	2019-12-17
9334260	C115	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	0.9 ± 0.4	2019-12-17
9334267	C124	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334263	C129	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	0.5 ± 0.3	2019-12-17
9334283	C213	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334288	C216	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	1.6 ± 0.3	2019-12-17
9334286	C218	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	1.3 ± 0.4	2019-12-17
9334285	C222	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	1.0 ± 0.4	2019-12-17
9334276	C224	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334282	C224A	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334277	C230	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334275	C230	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334287	C230A	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17

Radon test result report for:**WHITMAN HIGH SCHOOL****427**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9334274	C232	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334271	C237	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334210	D111	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334209	D112	2019-12-10 @ 9:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334201	D116	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9334265	D122	2019-12-10 @ 11:00 am	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334205	D149	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	0.7 ± 0.3	2019-12-17
9334204	D151	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9334203	D152	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	0.7 ± 0.3	2019-12-17
9335154	D155	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	0.7 ± 0.3	2019-12-17
9335167	D15R	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9335152	D161	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	0.7 ± 0.4	2019-12-17
9334279	D209	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334280	D213	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334281	D213B	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9334268	D218	2019-12-10 @ 12:00 pm	2019-12-13 @ 9:00 am	< 0.3	2019-12-17
9335153	GYM	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	0.7 ± 0.3	2019-12-17
9335151	GYM	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	0.9 ± 0.4	2019-12-17
9335199	TEAM RM 1	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	< 0.3	2019-12-17
9335156	TEAM RM 1	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	0.6 ± 0.3	2019-12-17
9334202	TEAM RM 3	2019-12-10 @ 8:00 am	2019-12-13 @ 8:00 am	0.7 ± 0.3	2019-12-17
9334256	TV RM	2019-12-10 @ 11:00 am	2019-12-13 @ 7:00 am	< 0.3	2019-12-17

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KEI 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 9334510,
9334514, 9334516, 9334517,
9334519, 9334519
9334522 thru 9334528
B4

Date Start: 12/13/19 Date Stop: 12/16/19 Date Start: _____ Date Stop: _____
Time Start: 0811 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 μ R/h Elevation = 820 ft

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

December 18, 2019

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

N/A

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
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

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

Radon test result report for:**S****N/A**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
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



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. |

	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	Walt Whitman High School
Date of Report	March 14, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	32
# Rooms ≥ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	2.0 pCi/L

Project Status

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



March 14, 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: Walt Whitman High School

7100 Whittier Blvd.
Bethesda, Maryland 20817

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 Walt Whitman High School, located at 7100 Whittier Blvd. in Bethesda, Maryland 20817 (subject site).

SCOPE OF SERVICES

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on February 13, 2018 and deployed thirty-six (36) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

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

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

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

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

KCI returned to the site on February 16, 2018 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

EVALUATION OF TESTING CONDITIONS

These tests represent:

- Follow-up to 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 10-18 miles per hour. Average humidity was around 73%. 0.30 Inches of precipitation was recorded during the testing period.

RESULTS

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

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

Quality Control Samples	
Results of Blank Canisters:	The field blank, 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		
Walt Whitman High School		
Test Period: 02/13/18-02/16/18		
Kit Number	Room / Area	Result
7975497	A115	0.7
7975479	A129	0.9
7975443	A136	0.5
7975446	A138	< 0.3
7975445	A140	0.8
7975442	A146	< 0.3
7986787	AC119	< 0.3
7975480	B114 BSO	0.7
7975482	B116	< 0.3
7975499	B118	1.4
7975439	BLR-D153B	< 0.3
7975456	C110 LOUNGE	0.6
7975454	C113 KITCHEN	1.0
7975455	C129	1.0
7975483	C129	1.2
7975440	D111	< 0.3
7975441	D112	< 0.3
7975457	D113	< 0.3
7975472	D116	< 0.3
7975452	D129	0.6
7975458	D131	1.2
7975453	D139	2.0
7975450	D149	1.4
7975449	D151	0.9
7975448	D152	1.0
7975451	D161	1.5
7975447	GLR-D153A	0.9
7975484	KITCHEN OFFICE	< 0.3
7975444	MAIN OFFICE	0.5
7975498	NURSE ROOM 2	< 0.3
7975471	TEAM ROOM 1	0.5
7975470	TEAM ROOM 2	< 0.3
7975496	WORK ROOM	0.8

Table Note:

* Missing or Compromised Sample

Table 2 - Radon Testing Results		
Walt Whitman High School		
Test Period: 02/13/18-02/16/18		
Kit Number	QC Type	Result
7986784	D (AC119)	0.8
7975459	D (D161)	1.2
7975469	FB (D131)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

**WALT WHITMAN HIGH SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7975497	A115	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.7 ± 0.3	2018-02-20
7975479	A129	2018-02-13 @ 1:00 pm	2018-02-16 @ 11:00 am	0.9 ± 0.4	2018-02-20
7975443	A136	2018-02-13 @ 11:00 am	2018-02-16 @ 11:00 am	0.5 ± 0.3	2018-02-20
7975446	A138	2018-02-13 @ 11:00 am	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975445	A140	2018-02-13 @ 11:00 am	2018-02-16 @ 11:00 am	0.8 ± 0.4	2018-02-20
7975442	A146	2018-02-13 @ 11:00 am	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7986787	AC119	2018-02-13 @ 1:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7986784	AC119	2018-02-13 @ 1:00 pm	2018-02-16 @ 11:00 am	0.8 ± 0.3	2018-02-20
7975480	B114 BSO	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.7 ± 0.3	2018-02-20
7975482	B116	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975499	B118	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.4 ± 0.4	2018-02-20
7975439	BLR-D153B	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975456	C110 LOUNGE	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.6 ± 0.3	2018-02-20
7975454	C113 KITCHEN	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.0 ± 0.3	2018-02-20
7975455	C129	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.0 ± 0.3	2018-02-20
7975483	C129	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.2 ± 0.4	2018-02-20
7975440	D111	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975441	D112	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975457	D113	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975472	D116	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975452	D129	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.6 ± 0.3	2018-02-20
7975458	D131	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.2 ± 0.3	2018-02-20
7975469	D131	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975453	D139	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	2.0 ± 0.4	2018-02-20
7975450	D149	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.4 ± 0.4	2018-02-20
7975449	D151	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.9 ± 0.3	2018-02-20
7975448	D152	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.0 ± 0.4	2018-02-20
7975459	D161	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.2 ± 0.3	2018-02-20
7975451	D161	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	1.5 ± 0.4	2018-02-20
7975447	GLR-D153A	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.9 ± 0.3	2018-02-20
7975484	KITCHEN OFFICE	2018-02-13 @ 1:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975444	MAIN OFFICE	2018-02-13 @ 11:00 am	2018-02-16 @ 11:00 am	0.5 ± 0.3	2018-02-20
7975498	NURSE ROOM 2	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975471	TEAM ROOM 1	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	0.5 ± 0.3	2018-02-20
7975470	TEAM ROOM 2	2018-02-13 @ 12:00 pm	2018-02-16 @ 11:00 am	< 0.3	2018-02-20
7975496	WORK ROOM	2018-02-13 @ 1:00 pm	2018-02-16 @ 11:00 am	0.8 ± 0.3	2018-02-20



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase

Names of Schools:

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

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

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

Radon test result report for:
OFFICE BLANKS

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

Radon test result report for:
TRANSIT BLANKS

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

February 28, 2018

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

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

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

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 183530

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

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

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____
 Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____
 Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____
 Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____
 Device No.'s: _____ Device No.'s: _____

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



MCPS RADON TESTING - EXECUTIVE SUMMARY

Site Name	Walt Whitman High School
Date of Report	January 31, 2018
Round of Testing	Initial Follow-up Post Remediation 2 year testing 5 year testing HVAC Upgrade Window Replacement New Addition New Facility
# of Rooms Tested	78
# Rooms ≥ 4.0 pCi/L	0
Lowest Value	< 0.3 pCi/L
Highest Value	2.9 pCi/L

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



January 31, 2018

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

Re: Radon Testing Services

KCI Job #1214694182

Location: Walt Whitman High School

7100 Whittier Blvd.,
Bethesda, Maryland 20817

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 Walt Whitman High School, located at 7100 Whittier Blvd., in Bethesda, Maryland 20817 (subject site).

SCOPE OF SERVICES

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on November 28, 2017 and deployed one-hundred-seven (107) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Appendix A of this report.

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

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

KCI returned to the site on December 1, 2017 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

EVALUATION OF TESTING CONDITIONS

These tests represent:

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

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

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

RESULTS

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Missing/compromised tests, missed rooms, and locked rooms are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

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

Quality Control Samples	
Results of Blank Canisters:	The field 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,



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

Attachments:

B - Tables 1-3, Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

Radon Testing Results		
Walt Whitman High School		
Test Period: 11/28/17-12/01/17		
Kit Number	Room / Area	Result
7977837	2ND GYM	0.9
7977838	2ND GYM	0.8
7977806	A104	0.6
7977818	A105	0.9
7977824	A106	0.5
7977825	A107	< 0.3
7977826	A108	1.6
7977827	A109	0.5
7977828	A110	0.6
7977829	A111	0.7
7977840	A112	0.5
7977835	A113	0.6
7977845	* A115 (Missing)	-
7977846	A116	0.6
7977847	A118	0.8
7977864	A124	0.7
7977830	A139	0.8
7977831	A148	0.9
7977865	A151	0.7
7977863	A152	0.6
7977855	A153	1.0
7977834	A154	< 0.3
7977839	A155	< 0.3
7977832	A156	1.0
7976495	A221	0.5
7976488	A227	0.7
7976478	A318	< 0.3
7976477	A322	< 0.3
7977860	ATTENDANCE OFFIC	< 0.3
7976481	AUDITORIUM	< 0.3
7976482	AUDITORIUM	< 0.3
7976473	B102	1.3
7976470	B103	1.2
7976469	B104	1.4
7976471	B104	1.7
7977849	B110	0.8
7977803	B111	0.9
7977810	B112	1.0
7977812	B124	0.8
7976475	B314	0.7
7977811	C124	1.2
7977815	C127	2.4
7977816	C128	1.9
7977817	C130	1.4
7977859	C131	1.5
7976486	C224	0.8

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Walt Whitman High School		
Test Period: 11/28/17-12/01/17		
Kit Number	Room / Area	Result
7976419	C230	0.9
7976465	C230A	0.7
7976493	C243	< 0.3
7976464	C246	< 0.3
7976476	C307	< 0.3
7976489	CAFE	0.7
7976490	CAFE	0.9
7976491	CAFE	1.0
7977833	CAREER	0.5
7977842	D122	0.9
7977844	D154	0.7
7977843	D155	0.6
7977813	LIB CONF	0.9
7977801	LIBRARY	0.9
7977802	LIBRARY	0.9
7977807	LIBRARY	0.9
7977808	LIBRARY OFFICE	0.6
7977866	MAIN AUD	2.6
7977870	MAIN AUD	2.1
7977871	MAIN AUD	2.3
7977872	MAIN AUD	2.9
7977851	MAIN GYM	1.1
7977852	MAIN GYM	1.0
7977853	MAIN GYM	1.1
7977857	MAIN GYM	0.9
7977809	NURSE	< 0.3
7976474	NURSE OFFICE	0.7
7976487	* NURSE ROOM 2 (Missing)	-
7977814	TRANSCRIPT	0.8
7977819	TV STUDIO	0.8
7977820	TV STUDIO CTRL	0.7
7976457	W103	2.3
7976499	W104	0.6
7976497	W106	1.3
7976468	W107	0.6
7976494	W108	0.9
7976496	W109	1.5
7976466	W110	1.5
7976479	W111	1.0
7976480	W112	1.6
7976483	W116	0.9
7976484	W119	2.2
7976485	W120	0.8
7976472	W122	1.4
7976498	W123	0.8

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Walt Whitman High School		
Test Period: 11/28/17-12/01/17		
Kit Number	QC Type	Result
7977841	D (A112)	0.9
7977836	D (A113)	0.6
7977856	D (A153)	1.0
7977850	D (B110)	0.9
7977804	D (B111)	0.9
7977823	D (C127)	2.0
7977821	D (C130)	1.9
7977848	D (C131)	1.6
7976492	D (CAFE)	0.6
7977854	D (MAIN GYM)	0.6
7976500	D (W123)	1.1
7977805	FB (B111)	< 0.3
7977822	FB (C130)	< 0.3
7977858	FB (MAIN GYM)	< 0.3
7975557	OB (OB)	< 0.3
7977998	OB (OB)	< 0.3

Table Note:

* Missing or Compromised Sample

Summary of Missed Locations		
Walt Whitman High School		
Test Period: 11/28/17-12/02/17		
Kit Number	Room / Area	Result
-	D129 (Missed location)	-
-	A136 (Missed location)	-
-	A146 (Missed location)	-
-	AC119 (Missed location)	-
-	C129 (Missed location)	-
-	D111 (Missed location)	-
-	MAIN OFFICE (Missed location)	-
-	WORK ROOM (Missed location)	-
-	ISS (Missed location)	-
-	C113 KITCHEN (Missed location)	-
-	C110 LOUNGE (Missed location)	-
-	B114 BSO (Missed location)	-
-	A140 (Missed location)	-
-	D112 (Missed location)	-

Summary of Missing, Compromised and ≥ 4 piC/L Tests		
Walt Whitman High School		
Test Period: 11/28/17-12/01/17		
Kit Number	Room / Area	Result
7977845 *	A115 (Missing)	-
7976487 *	NURSE ROOM 2 (Missing)	-

Table Note:
 * Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
WALT WHITMAN HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7977838	2ND GYM	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	0.8 ± 0.3	2017-12-04
7977837	2ND GYM	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	0.9 ± 0.3	2017-12-04
7977806	A104	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.6 ± 0.3	2017-12-04
7977818	A105	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.9 ± 0.3	2017-12-04
7977824	A106	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.5 ± 0.3	2017-12-04
7977825	A107	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	< 0.3	2017-12-04
7977826	A108	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	1.6 ± 0.3	2017-12-04
7977827	A109	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.5 ± 0.3	2017-12-04
7977828	A110	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.6 ± 0.3	2017-12-04
7977829	A111	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.7 ± 0.3	2017-12-04
7977841	A112	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.9 ± 0.3	2017-12-04
7977840	A112	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.5 ± 0.3	2017-12-05
7977836	A113	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.6 ± 0.3	2017-12-04
7977835	A113	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.6 ± 0.3	2017-12-05
7977846	A116	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.6 ± 0.3	2017-12-04
7977847	A118	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.8 ± 0.3	2017-12-04
7977864	A124	2017-11-28 @ 6:00 pm	2017-12-01 @ 7:00 am	0.7 ± 0.3	2017-12-04
7977830	A139	2017-11-28 @ 4:00 pm	2017-12-01 @ 9:00 am	0.8 ± 0.3	2017-12-04
7977831	A148	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.9 ± 0.3	2017-12-04
7977865	A151	2017-11-28 @ 5:00 pm	2017-12-01 @ 7:00 am	0.7 ± 0.3	2017-12-05
7977863	A152	2017-11-28 @ 5:00 pm	2017-12-01 @ 7:00 am	0.6 ± 0.3	2017-12-05
7977855	A153	2017-11-28 @ 6:00 pm	2017-12-01 @ 7:00 am	1.0 ± 0.3	2017-12-04
7977856	A153	2017-11-28 @ 6:00 pm	2017-12-01 @ 7:00 am	1.0 ± 0.3	2017-12-05
7977834	A154	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	< 0.3	2017-12-04
7977839	A155	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	< 0.3	2017-12-04
7977832	A156	2017-11-28 @ 4:00 pm	2017-12-01 @ 9:00 am	1.0 ± 0.3	2017-12-04
7976495	A221	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	0.5 ± 0.3	2017-12-04
7976488	A227	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	0.7 ± 0.3	2017-12-04
7976478	A318	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	< 0.3	2017-12-04
7976477	A322	2017-11-28 @ 2:00 pm	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7977860	ATTENDANCE OFFIC	2017-11-28 @ 6:00 pm	2017-12-01 @ 7:00 am	< 0.3	2017-12-05
7976473	B102	2017-11-28 @ 2:00 pm	2017-12-01 @ 7:00 am	1.3 ± 0.3	2017-12-05
7976470	B103	2017-11-28 @ 2:00 pm	2017-12-01 @ 7:00 am	1.2 ± 0.3	2017-12-05
7976469	B104	2017-11-28 @ 2:00 pm	2017-12-01 @ 7:00 am	1.4 ± 0.3	2017-12-04
7976471	B104	2017-11-28 @ 2:00 pm	2017-12-01 @ 7:00 am	1.7 ± 0.3	2017-12-05
7977850	B110	2017-11-28 @ 5:00 pm	2017-12-01 @ 8:00 am	0.9 ± 0.3	2017-12-04
7977849	B110	2017-11-28 @ 5:00 pm	2017-12-01 @ 8:00 am	0.8 ± 0.3	2017-12-04

Radon test result report for:
WALT WHITMAN HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7977803	B111	2017-11-28 @ 2:00 pm	2017-12-01 @ 8:00 am	0.9 ± 0.3	2017-12-04
7977804	B111	2017-11-28 @ 2:00 pm	2017-12-01 @ 8:00 am	0.9 ± 0.3	2017-12-04
7977805	B111	2017-11-28 @ 2:00 pm	2017-12-01 @ 8:00 am	< 0.3	2017-12-04
7977810	B112	2017-11-28 @ 2:00 pm	2017-12-01 @ 8:00 am	1.0 ± 0.3	2017-12-04
7977812	B124	2017-11-28 @ 3:00 pm	2017-12-01 @ 8:00 am	0.8 ± 0.3	2017-12-05
7976475	B314	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	0.7 ± 0.3	2017-12-05
7977811	C124	2017-11-28 @ 3:00 pm	2017-12-01 @ 9:00 am	1.2 ± 0.3	2017-12-04
7977823	C127	2017-11-28 @ 3:00 pm	2017-12-01 @ 9:00 am	2.0 ± 0.3	2017-12-04
7977815	C127	2017-11-28 @ 2:00 pm	2017-12-01 @ 9:00 am	2.4 ± 0.3	2017-12-04
7977816	C128	2017-11-28 @ 2:00 pm	2017-12-01 @ 9:00 am	1.9 ± 0.3	2017-12-04
7977817	C130	2017-11-28 @ 3:00 pm	2017-12-01 @ 9:00 am	1.4 ± 0.3	2017-12-04
7977821	C130	2017-11-28 @ 3:00 pm	2017-12-01 @ 9:00 am	1.9 ± 0.3	2017-12-04
7977822	C130	2017-11-28 @ 3:00 pm	2017-12-01 @ 9:00 am	< 0.3	2017-12-05
7977848	C131	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	1.6 ± 0.3	2017-12-04
7977859	C131	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	1.5 ± 0.3	2017-12-04
7976486	C224	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	0.8 ± 0.3	2017-12-05
7976419	C230	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	0.9 ± 0.3	2017-12-05
7976465	C230A	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	0.7 ± 0.3	2017-12-04
7976493	C243	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976464	C246	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	< 0.3	2017-12-04
7976476	C307	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976490	CAFE	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	0.9 ± 0.3	2017-12-04
7976492	CAFE	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	0.6 ± 0.2	2017-12-04
7976489	CAFE	2017-11-28 @ 1:00 pm	2017-12-01 @ 9:00 am	0.7 ± 0.3	2017-12-04
7976491	CAFE	2017-11-28 @ 1:00 pm	2017-12-01 @ 8:00 am	1.0 ± 0.3	2017-12-05
7977833	CAREER	2017-11-28 @ 4:00 pm	2017-12-01 @ 7:00 am	0.5 ± 0.3	2017-12-04
7977842	D122	2017-11-28 @ 4:00 pm	2017-12-01 @ 10:00 am	0.9 ± 0.3	2017-12-04
7977844	D154	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	0.7 ± 0.3	2017-12-04
7977843	D155	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	0.6 ± 0.3	2017-12-04
7977813	LIB CONF	2017-11-28 @ 3:00 pm	2017-12-01 @ 8:00 am	0.9 ± 0.3	2017-12-05
7977801	LIBRARY	2017-11-28 @ 3:00 pm	2017-12-01 @ 8:00 am	0.9 ± 0.3	2017-12-04
7977807	LIBRARY	2017-11-28 @ 3:00 pm	2017-12-01 @ 8:00 am	0.9 ± 0.3	2017-12-04
7977802	LIBRARY	2017-11-28 @ 3:00 pm	2017-12-01 @ 9:00 am	0.9 ± 0.3	2017-12-05
7977808	LIBRARY OFFICE	2017-11-28 @ 3:00 pm	2017-12-01 @ 8:00 am	0.6 ± 0.3	2017-12-04
7977872	MAIN AUD	2017-11-28 @ 6:00 pm	2017-12-01 @ 8:00 am	2.9 ± 0.4	2017-12-04
7977866	MAIN AUD	2017-11-28 @ 6:00 pm	2017-12-01 @ 8:00 am	2.6 ± 0.3	2017-12-04
7977870	MAIN AUD	2017-11-28 @ 6:00 pm	2017-12-01 @ 8:00 am	2.1 ± 0.3	2017-12-04

Radon test result report for:
WALT WHITMAN HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7977871	MAIN AUD	2017-11-28 @ 6:00 pm	2017-12-01 @ 8:00 am	2.3 ± 0.4	2017-12-05
7977857	MAIN GYM	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	0.9 ± 0.3	2017-12-04
7977852	MAIN GYM	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	1.0 ± 0.3	2017-12-04
7977853	MAIN GYM	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	1.1 ± 0.3	2017-12-04
7977854	MAIN GYM	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	0.6 ± 0.3	2017-12-04
7977851	MAIN GYM	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	1.1 ± 0.3	2017-12-05
7977858	MAIN GYM	2017-11-28 @ 5:00 pm	2017-12-01 @ 9:00 am	< 0.3	2017-12-05
7977809	NURSE	2017-11-28 @ 2:00 pm	2017-12-01 @ 8:00 am	< 0.3	2017-12-05
7976474	NURSE OFFICE	2017-11-28 @ 2:00 pm	2017-12-01 @ 8:00 am	0.7 ± 0.3	2017-12-04
7977998	OB	2017-11-28 @ 12:00 pm	2017-12-01 @ 12:00 pm	< 0.3	2017-12-04
7975557	OB	2017-11-28 @ 2:00 pm	2017-12-01 @ 2:00 pm	< 0.3	2017-12-04
7977814	TRANSCRIPT	2017-11-28 @ 3:00 pm	2017-12-01 @ 8:00 am	0.8 ± 0.3	2017-12-05
7977819	TV STUDIO	2017-11-28 @ 3:00 pm	2017-12-01 @ 8:00 am	0.8 ± 0.3	2017-12-05
7977820	TV STUDIO CTRL	2017-11-28 @ 3:00 pm	2017-12-01 @ 8:00 am	0.7 ± 0.3	2017-12-04

Radon test result report for:
WALT WHITMAN HS
WHITTIER WOODS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7976481	AUDITORIUM	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	< 0.3	2017-12-04
7976482	AUDITORIUM	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	< 0.3	2017-12-04
7976457	W103	2017-11-28 @ 12:00 pm	2017-12-01 @ 9:00 am	2.3 ± 0.3	2017-12-04
7976499	W104	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	0.6 ± 0.3	2017-12-04
7976497	W106	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	1.3 ± 0.3	2017-12-04
7976468	W107	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	0.6 ± 0.3	2017-12-05
7976494	W108	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	0.9 ± 0.3	2017-12-04
7976496	W109	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	1.5 ± 0.3	2017-12-05
7976466	W110	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	1.5 ± 0.3	2017-12-04
7976479	W111	2017-11-28 @ 12:00 pm	2017-12-01 @ 10:00 am	1.0 ± 0.3	2017-12-04
7976480	W112	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	1.6 ± 0.3	2017-12-04
7976483	W116	2017-11-28 @ 12:00 pm	2017-12-01 @ 10:00 am	0.9 ± 0.3	2017-12-04
7976484	W119	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	2.2 ± 0.3	2017-12-04
7976485	W120	2017-11-28 @ 12:00 pm	2017-12-01 @ 9:00 am	0.8 ± 0.3	2017-12-05
7976472	W122	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	1.4 ± 0.3	2017-12-04
7976498	W123	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	0.8 ± 0.3	2017-12-04
7976500	W123	2017-11-28 @ 12:00 pm	2017-12-01 @ 8:00 am	1.1 ± 0.3	2017-12-04

December 21, 2017

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
WALT WHITMAN HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7977845	A115	@	@		
7976487	NURSE ROOM 2	@	@		

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase

Names of Schools:

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

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

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

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

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

December 19, 2017

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

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

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

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 182393

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

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

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

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

7975075, 7975064, 7975063, _____

7975065, 7975069, 7975070 _____

F4 Right

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

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



MCPS RADON TESTING

Executive Summary: Walt Whitman High School

Date of Test Report:	11/28/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	2
# Rooms \geq 4.0 pCi/L:	1
Low Value:	1.2
High Value:	5.6

Rooms with results \geq 4.0 pCi/L:
C126 (5.8 pCi/L)

Project Status:
Post remediation testing completed; C126 requires additional remedial action.



November 28, 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 # 12146341.60

Location: Walt Whitman High School
7100 Whittier Boulevard
Bethesda, MD 20817

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Walt Whitman High School, located at 7100 Whittier Boulevard in Bethesda, Maryland 20817 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on November 14, 2016 and deployed two (2) 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 three (3) 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 November 17, 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

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 were in the high 20's to 30s and high temperatures were in the high 50s to low 60s. Maximum sustained winds ranged from 8-14 miles per hour. Average humidity ranged was around 55%. No precipitation was recorded during the testing period.

Results:

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	C126	5.6
<4.0 pCi/L	See Attachment B	

Notes:

D- Duplicate sample

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

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

Our professional services have been performed in accordance with customary principles and practices in

the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 316-7800.

Sincerely,



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

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

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Radon Testing Results		
Whitman High School		
Test Period: 11/14/16-11/17/16		
Kit Number	Room / Area	Result
7802082	C126	5.6
7802083	W108	1.2

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

November 22, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**WHITMAN HIGH SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7802082	C126	2016-11-14 @ 11:00 am	2016-11-17 @ 9:00 am	5.6 ± 0.6	2016-11-21
7802083	W108	2016-11-14 @ 11:00 am	2016-11-17 @ 9:00 am	1.2 ± 0.4	2016-11-21

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

November 22, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS Radon

Phase 19 BLANKS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7802909	OFFICE	2016-11-11 @ 10:00 am	2016-11-14 @ 10:00 am	< 0.3	2016-11-16
7802910	TRANSIT	2016-11-11 @ 10:00 am	2016-11-14 @ 10:00 am	< 0.3	2016-11-16

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

November 22, 2016

**** LABORATORY ANALYSIS REPORT ****

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

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7802912	1	2016-11-11 @ 10:00 am	2016-11-14 @ 10:00 am	23.5 ± 0.8	2016-11-16
7802913	2	2016-11-11 @ 10:00 am	2016-11-14 @ 10:00 am	23.0 ± 0.8	2016-11-16
7802911	3	2016-11-11 @ 10:00 am	2016-11-14 @ 10:00 am	25.6 ± 0.9	2016-11-16

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 177376

NOMINAL Conditions: Radon Conc 26.3 pCi/L Rel. Hum 59.1 % Temp. 29.0 F

Date Start: 11/11/16 Date Stop: 11/14/16 Date Start: _____ Date Stop: _____

Time Start: 0958 Time Stop: 0958 Time Start: _____ Time Stop: _____

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

7802911 thro 7802913

GS Middle

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 19

Names of Schools:

1. Wood Acres Elementary School
2. Walt Whitman High School
3. East Silver Spring Elementary School

	Date	Initials
Radon Test Kits Deployed	11/14/16	JM
Radon Test Kits Collected	11/17/16	JM
Radon Test Kits Shipped to Lab*	11/18/16	JM
Radon Test Kits Received by Lab*	11/21/16	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 19

Names of Schools:

1. Montgomery Blair High School
2. Springbrook High School
3. Sligo Middle School
4. Einstein High School
5. John F. Kennedy High School
6. Blair Ewing Center
7. Rock Terrace School
8. Thomas Wootton High School
9. Fields Road Elementary School

	Date	Initials
Radon Test Kits Deployed	11/15/16	JM
Radon Test Kits Collected	11/18/16	JM
Radon Test Kits Shipped to Lab*	11/18/16	JM
Radon Test Kits Received by Lab*	11/21/16	JM

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



MCPS RADON TESTING

Executive Summary: Walt Whitman High School

Date of Test Report:	10/20/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	11
# Rooms \geq 4.0 pCi/L:	0
Low Value:	< 0.3
High Value:	2.1

Project Status:

Post remediation testing completed; retest needed for room W108 (open door).



October 20, 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: Walt Whitman High School
7100 Whittier Boulevard
Bethesda, MD 20817

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Walt Whitman High School, located at 7100 Whittier Boulevard in Bethesda, Maryland 20817 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on September 26, 2016 and deployed fifteen (15) 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 29, 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:

Radon Concentration	Room	Result
≥4.0 pCi/L	none	n/a
<4.0 pCi/L	See Attachment B	

Notes:

D- Duplicate sample

The field blank, 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. Mouldale
Radon Measurement Specialist
KCI Technologies, Inc.

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

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Radon Testing Results		
Walt Whitman High School		
Test Period: 09/26/16-09/29/16		
Kit Number	Room / Area	Result
7801986	B103	1.6
7801960	B104	1.7
7801993	B104	1.6
7801967	* C126 (Tampered)	< 0.3
7801987	C127	1.5
7801970	W103	2.1
7801971	W106	0.9
7801976	W107	< 0.3
7801980	* W108 (Open Door)	< 0.3
7801975	W109	0.8
7801977	W122	0.6
7801958	W123	< 0.3

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Walt Whitman High School		
Test Period: 09/26/16-09/29/16		
Kit Number	QC Type	Result
7801982	D (C126)	1.7
7801981	D (W106)	1.0
7801973	FB (C127)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

October 7, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**WALT WHITMAN HIGH SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7801986	B103	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	1.6 ± 0.3	2016-10-03
7801993	B104	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	1.6 ± 0.3	2016-10-03
7801960	B104	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	1.7 ± 0.3	2016-10-03
7801973	C127	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	< 0.3	2016-10-03
7801987	C127	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	1.5 ± 0.3	2016-10-03
7801982	C126	2016-09-26 @ 10:00 am	2016-09-29 @ 9:00 am	1.7 ± 0.3	2016-10-03
7801967	C126	2016-09-26 @ 10:00 am	2016-09-29 @ 9:00 am	< 0.3	2016-10-03
7801970	W103	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	2.1 ± 0.3	2016-10-03
7801971	W106	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	0.9 ± 0.3	2016-10-03
7801981	W106	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	1.0 ± 0.3	2016-10-03
7801976	W107	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	< 0.3	2016-10-03
7801980	W108	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	< 0.3	2016-10-03
7801975	W109	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	0.8 ± 0.3	2016-10-03
7801977	W122	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	0.6 ± 0.3	2016-10-03
7801958	W123	2016-09-26 @ 9:00 am	2016-09-29 @ 9:00 am	< 0.3	2016-10-03

October 7, 2016

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

MCPS Radon

Phase 18 Office Blanks

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

Radon test result report for:**MCPS Radon****Phase 18 Transit Blanks**

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

October 12, 2016

**** LABORATORY ANALYSIS REPORT ****

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

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

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

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 176788

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

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

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

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

7769899, 7769884, 7769885, _____

7769889, 7769890, 7769891 _____

F3 Left

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 18

Name of Schools:

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

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

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 18

Name of Schools:

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

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

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

RADON SCREENING SURVEY – FOLLOW-UP WALT WHITMAN HIGH SCHOOL

7100 Whittier Boulevard, Bethesda, Maryland 20817

EXECUTIVE SUMMARY

Date of Test Report:	3/24/16 Follow-Up
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested	15
# Rooms \geq 4.0 pCi/L:	3
Low Value:	<0.3
High Value:	11.0
Confirmed Rooms \geq 4.0 pCi/L US EPA Action Level	3

Summary of Sampling Events \geq 4.0 pCi/L

Room	Result (pCi/L) 1/15/16 (Rev 1 Initial)	Result (pCi/L) 3/24/16 Follow-Up	Average Result (pCi/L)
B103	7.4	4.1	5.8
W106	4.4	2.6	3.5
B104 east	4.3	1.6	3.0
B104 west	4.3	1.3	2.8
W108	4.1	4.1	4.1
C127	4.0	2.3	3.2
154	--- Missing	<0.3	<0.3
A136	--- Missing	<0.3	<0.3
Attendance Office	--- Missing	<0.3	<0.3
Café	1.3 Tampered	0.6	1.0
Library Office	--- Missing	<0.3	<0.3
Main Aud	--- Missing	2.1	2.1
Work Room	--- Missing	<0.3	<0.3
W103	3.9	2.6	3.3
ISS	Not sampled	11.0	11.0
D122	Not sampled	<0.3	<0.3



MCPS RADON TESTING

Executive Summary: Walt Whitman High School

Date of Test Report:	3/24/2016
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	15
# Rooms \geq 4.0 pCi/L:	3
Low Value:	< 0.3
High Value:	11.0

Rooms with results \geq 4.0 pCi/L:
ISS (11.0 pCi/L), B103 (4.1 pCi/L), W108 (4.1 pCi/L)

Project Status:

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



March 24, 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 # 12146341.30

Location: Walt Whitman High School
7100 Whittier Boulevard
Bethesda, MD 20817

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Walt Whitman High School, located at 7100 Whittier Boulevard in Bethesda, Maryland 20817 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on February 29, 2016 and deployed twenty-two (22) 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 March 3, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler

Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

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

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

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

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

Results:

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥ 4.0 pCi/L	ISS	11.0
	B103	4.1
	W108	4.1
< 4.0 pCi/L	See Attachment B	

Notes:
D- Duplicate sample

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

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

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

Sincerely,



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

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

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

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 10 testing. Office blanks were not submitted under each school individually.

Radon Testing Results		
Walt Whitman High School		
Test Period: 02/29/16-03/03/16		
Kit Number	Room / Area	Result
7726836	154	< 0.3
7735044	A136	< 0.3
7726839	ATTENDANCE OFFIC	< 0.3
7735016	B103	4.1
7731798	B104	1.6
7731797	B104	1.3
7735009	C127	2.3
7726837	CAFE	0.6
7735190	CAFE	< 0.3
7735017	D122	1.0
7726815	ISS	11.0
7726823	LIBRARY OFFICE	< 0.3
7726825	MAIN AUD	1.5
7726807	MAIN AUD	2.1
7732476	W103	2.6
7726819	W106	2.6
7730100	W108	4.1
7726824	WORKROOM	< 0.3

Table Note:

* Missing or Compromised Sample

Radon Testing Results		
Walt Whitman High School		
Test Period: 02/29/16-03/03/16		
Kit Number	QC Type	Result
7726838	D (ATTENDANCE OFFIC)	< 0.3
7732478	D (D122)	0.7
7735021	FB (C127)	< 0.3
7726840	FB (WORKROOM)	< 0.3

Table Note:

* Missing or Compromised Sample

ATTACHMENT C

Laboratory Analytical Results

March 16, 2016
**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**WALT WHITMAN HIGH SCHOOL
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7726836	154	2016-02-29 @ 10:00 am	2016-03-03 @ 8:00 am	< 0.3	2016-03-07
7735044	A136	2016-02-29 @ 11:00 am	2016-03-03 @ 8:00 am	< 0.3	2016-03-07
7726838	ATTENDANCE OFFIC	2016-02-29 @ 10:00 am	2016-03-03 @ 8:00 am	< 0.3	2016-03-07
7726839	ATTENDANCE OFFIC	2016-02-29 @ 10:00 am	2016-03-03 @ 8:00 am	< 0.3	2016-03-07
7735016	B103	2016-02-29 @ 11:00 am	2016-03-03 @ 8:00 am	4.1 ± 0.5	2016-03-07
7731797	B104	2016-02-29 @ 11:00 am	2016-03-03 @ 8:00 am	1.3 ± 0.4	2016-03-07
7731798	B104	2016-02-29 @ 11:00 am	2016-03-03 @ 8:00 am	1.6 ± 0.4	2016-03-07
7735009	C127	2016-02-29 @ 10:00 am	2016-03-03 @ 8:00 am	2.3 ± 0.4	2016-03-07
7735021	C127	2016-02-29 @ 10:00 am	2016-03-03 @ 8:00 am	< 0.3	2016-03-07
7726837	CAFE	2016-02-29 @ 11:00 am	2016-03-03 @ 9:00 am	0.6 ± 0.3	2016-03-07
7735190	CAFE	2016-02-29 @ 11:00 am	2016-03-03 @ 9:00 am	< 0.3	2016-03-07
7732478	D122	2016-02-29 @ 11:00 am	2016-03-03 @ 11:00 am	0.7 ± 0.3	2016-03-07
7735017	D122	2016-02-29 @ 11:00 am	2016-03-03 @ 11:00 am	1.0 ± 0.3	2016-03-07
7726815	ISS	2016-02-29 @ 12:00 pm	2016-03-03 @ 9:00 am	11.0 ± 0.9	2016-03-07
7726823	LIBRARY OFFICE	2016-02-29 @ 11:00 am	2016-03-03 @ 8:00 am	< 0.3	2016-03-07
7726825	MAIN AUD	2016-02-29 @ 11:00 am	2016-03-03 @ 9:00 am	1.5 ± 0.4	2016-03-07
7726807	MAIN AUD	2016-02-29 @ 11:00 am	2016-03-03 @ 9:00 am	2.1 ± 0.4	2016-03-07
7732476	W103	2016-02-29 @ 11:00 am	2016-03-03 @ 9:00 am	2.6 ± 0.5	2016-03-07
7726819	W106	2016-02-29 @ 11:00 am	2016-03-03 @ 9:00 am	2.6 ± 0.4	2016-03-07
7730100	W108	2016-02-29 @ 11:00 am	2016-03-03 @ 9:00 am	4.1 ± 0.5	2016-03-07
7726824	WORKROOM	2016-02-29 @ 10:00 am	2016-03-03 @ 8:00 am	< 0.3	2016-03-07
7726840	WORKROOM	2016-02-29 @ 10:00 am	2016-03-03 @ 8:00 am	< 0.3	2016-03-07

March 16, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**MCPS Radon
Phase 10 Office Blanks**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7726881	0	2016-02-29 @ 12:00 pm	2016-03-03 @ 12:00 pm	< 0.3	2016-03-07
7735197	0	2016-02-29 @ 12:00 pm	2016-03-03 @ 12:00 pm	< 0.3	2016-03-07

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

March 22, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
TRANSIT - PHASE 10 & 11
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7735300	1	2016-03-18 @ 4:00 pm	2016-03-21 @ 4:00 pm	< 0.3	2016-03-22
7735296	2	2016-03-18 @ 4:00 pm	2016-03-21 @ 4:00 pm	< 0.3	2016-03-22
7735294	3	2016-03-18 @ 4:00 pm	2016-03-21 @ 4:00 pm	< 0.3	2016-03-22

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

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

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

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

7718281, 7718282, 7718291, _____

7718288, 7718289, 7718273 _____

ε3 left

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 10

Name of Schools:

1. Clarksburg Annex
2. Gaithersburg HS
3. Garrett Park Annex
4. Fields Road ES
5. Whitman HS
6. Rockview ES
7. Whittier Woods
8. Roscoe Nix ES
9. Clearspring ES
10. Key MS

	Date	Initials
Radon Test Kits Deployed	2/29/16	JM
Radon Test Kits Collected	3/3/16	JM
Radon Test Kits Shipped to Lab*	3/3/16	JM
Radon Test Kits Received by Lab*	3/7/16	JM

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



MCPS RADON TESTING

Executive Summary: Walt Whitman High School

Date of Test Report:	1/15/2016 (Rev 1)
Round of Testing:	Initial Follow-up Post Remediation
# Rooms Tested:	81
# Rooms \geq 4.0 pCi/L:	5
Low Value:	< 0.3
High Value:	7.4

Rooms with results \geq 4.0 pCi/L:

Room B103 (7.4 pCi/L), Room W106 (4.4 pCi/L), Room B104 east side (4.3 pCi/L), Room B104 west side (4.3 pCi/L), Room W108 (4.1 pCi/L), Room C127 (4.0 pCi/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.



January 15, 2016 (Rev 1)

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

Re: **Radon Testing Services**
KCI Job # 12146341.20

Location: Walt Whitman High School
7100 Whittier Boulevard
Bethesda, MD 20817

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Walt Whitman High School, located at 7100 Whittier Boulevard in Bethesda, Maryland 20817 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on December 21, 2015 and deployed one hundred ten (110) 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 24, 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 $\leq 65^{\circ}$ F.

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

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

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

Results:

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥ 4.0 pCi/L	B103	7.4
	W106	4.4 (D)
	B104 east side	4.3
	B104 west side	4.3
	W108	4.1 (D)
	C127	4.0 (D)
< 4.0 pCi/L	See Attachment B	

Notes:
D- Duplicate sample

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

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

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

Sincerely,



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

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

ATTACHMENT 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		
Walt Whitman Hs		
Test Period: 12/21/15-12/24/15		
Kit Number	Room / Area	Result
7711755	* 154 (missing)	-
7711798	2ND GYM	< 0.3
7711799	2ND GYM	0.6
7711792	A104	1
7711775	A105	0.8
7711774	A106	0.7
7711747	A107	0.7
7711766	A108	1
7711768	A109	0.7
7711756	A110	0.6
7711746	A111	0.9
7711742	A112	0.9
7711783	A113	1.2
7711758	A115	0.8
7711701	A116	1
7711762	A118	1.4
7711729	A124	1.2
7711788	A136	< 0.3
7711793	* A136 (missing)	-
7711785	A139	< 0.3
7711751	A146	0.9
7711797	A148	< 0.3
7711787	A151	< 0.3
7711748	A152	< 0.3
7711800	A153	< 0.3
7711771	A155	< 0.3
7711869	A221	0.9
7711873	A227	0.9
7711880	A307	< 0.3
7711874	A332	0.6
7711767	* Attendance Office (missing)	-
7711717	AUDITORIUM	< 0.3
7711769	AUDITORIUM	< 0.3
7711763	B102	1.7
7711734	B103	7.4
7711736	B104	4.3
7711738	B104	4.3
7711759	B110	1.5
7711753	B111	1.5
7711872	B312	0.5
7711795	C-119	0.8
7711780	C-124	1.1
7711784	C127	3.8
7711794	C128	1.6
7711790	C129	2.2
7711791	C130	2.7

Table Note:

* Missing or Compromised Sample

Room numbers obtained from archived floor plan [onsite school provided floor plan]

Radon Testing Results		
Walt Whitman Hs		
Test Period: 12/21/15-12/24/15		
Kit Number	Room / Area	Result
7711782	C131	2.3
7711704	C224	< 0.3
7711744	C230	0.6
7711707	C243	< 0.3
7711712	C246	0.7
7711875	C309	< 0.3
7711773	CAFE	0.9
7711796	CAFE	1.1
7711776	* CAFE (tampered)	1.3
7711772	CAREER	0.9
7711789	D111	0.7
7711770	D154	1.1
7711720	D155	0.6
7711722	LIB CONF	1.2
7711721	LIBRARY	0.7
7711724	LIBRARY	1.1
7711715	LIBRARY	< 0.3
7711730	* Library Office (missing)	-
7711895	MAIN AUD	1.3
7711892	MAIN AUD	2.1
7711891	MAIN AUD	1.8
7711899	* MAIN AUD (missing)	-
7711754	MAIN GYM	0.6
7711757	MAIN GYM	< 0.3
7711760	MAIN GYM	0.7
7711765	MAIN GYM	0.7
7711761	MAIN OFFICE	0.6
7711764	NURSE	1.1
7711752	NURSE OFFICE	1.6
7711750	NURSE ROOM 2	0.6
7711711	TRANSCRIPT	0.7
7711728	TV STUDIO	1.2
7711731	TV STUDIO CTRL	1.1
7711714	W103	3.9
7711743	W104	2.8
7711702	W106	3.8
7711740	W107	3.3
7711778	W108	3.7
7711709	W109	2.1
7711739	W110	3.1
7711745	W111	2.4
7711723	W112	2
7711716	W116	1
7711718	W119	3
7711735	W120	1.5
7711737	W122	0.7
7711706	W123	2.5
7711727	* Work Room (missing)	-

Table Note:

* Missing or Compromised Sample

Room numbers obtained from archived floor plan [onsite school provided floor plan]

Radon Testing Results		
Walt Whitman Hs		
Test Period: 12/21/15-12/24/15		
Kit Number	QC Type	Result
7711749	D (A112)	0.8
7711786	D (A153)	< 0.3
7711779	D (C127)	4
7711708	D (C230)	0.8
7711705	D (C246)	0.6
7711726	D (LIBRARY)	0.7
7711732	D (TV STUDIO)	1.1
7711703	D (W106)	4.4
7711741	D (W108)	4.1
7711781	D (W112)	1.4
7711719	FB (A113)	< 0.3
7711777	FB (C129)	< 0.3
7711710	FB (C243)	< 0.3
7711733	* FB (Work Room:missing)	-
7710418	OB (0)	< 0.3
7710405	OB (0)	< 0.3

Table Note:

* Missing or Compromised Sample

Room numbers obtained from archived floor plan [onsite school provided floor plan]

ATTACHMENT C

Laboratory Analytical Results

January 12, 2016
LABORATORY ANALYSIS REPORT

Radon test result report for:
WALT WHITMAN HS MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7710405	0	2015-12-21 @ 5:00 pm	2015-12-24 @ 1:00 pm	< 0.3	2015-12-28
7710418	0	2015-12-21 @ 5:00 pm	2015-12-24 @ 1:00 pm	< 0.3	2015-12-28
7711755	154	@	@		
7711798	2ND GYM	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7711799	2ND GYM	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-28
7711792	A104	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.0 ± 0.3	2015-12-28
7711775	A105	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.8 ± 0.3	2015-12-28
7711774	A106	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.7 ± 0.3	2015-12-28
7711747	A107	2015-12-21 @ 11:00 am	2015-12-24 @ 8:00 am	0.7 ± 0.3	2015-12-28
7711766	A108	2015-12-21 @ 11:00 am	2015-12-24 @ 8:00 am	1.0 ± 0.3	2015-12-28
7711768	A109	2015-12-21 @ 11:00 am	2015-12-24 @ 8:00 am	0.7 ± 0.3	2015-12-29
7711756	A110	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-29
7711746	A111	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.9 ± 0.4	2015-12-29
7711742	A112	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.9 ± 0.3	2015-12-28
7711749	A112	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.8 ± 0.3	2015-12-28
7711719	A113	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7711783	A113	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	1.2 ± 0.3	2015-12-28
7711758	A115	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.8 ± 0.3	2015-12-28
7711701	A116	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.0 ± 0.3	2015-12-28
7711762	A118	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.4 ± 0.3	2015-12-28
7711729	A124	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.2 ± 0.3	2015-12-28
7711793	A136	@	@		
7711788	A136	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7711785	A139	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-29
7711751	A146	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.9 ± 0.3	2015-12-28
7711797	A148	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-29
7711787	A151	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-29
7711748	A152	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-29
7711800	A153	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7711786	A153	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7711771	A155	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7711869	A221	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	0.9 ± 0.3	2015-12-28
7711873	A227	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	0.9 ± 0.4	2015-12-28
7711880	A307	2015-12-21 @ 1:00 pm	2015-12-24 @ 10:00 am	< 0.3	2015-12-28
7711874	A332	2015-12-21 @ 1:00 pm	2015-12-24 @ 10:00 am	0.6 ± 0.3	2015-12-28
7711767	ATTENDANCE OFFIC	@	@		
7711717	AUDITORIUM	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	< 0.3	2015-12-28

January 12, 2016
**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**WALT WHITMAN HS
 MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7711769	AUDITORIUM	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	< 0.3	2015-12-28
7711763	B102	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.7 ± 0.4	2015-12-29
7711734	B103	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	7.4 ± 0.6	2015-12-28
7711736	B104	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	4.3 ± 0.5	2015-12-28
7711738	B104	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	4.3 ± 0.5	2015-12-28
7711759	B110	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.5 ± 0.4	2015-12-28
7711753	B111	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.5 ± 0.4	2015-12-28
7711872	B312	2015-12-21 @ 1:00 pm	2015-12-24 @ 10:00 am	0.5 ± 0.3	2015-12-28
7711795	C-119	2015-12-21 @ 9:00 am	2015-12-24 @ 10:00 am	0.8 ± 0.3	2015-12-28
7711780	C-124	2015-12-21 @ 9:00 am	2015-12-24 @ 8:00 am	1.1 ± 0.4	2015-12-29
7711784	C127	2015-12-21 @ 9:00 am	2015-12-24 @ 8:00 am	3.8 ± 0.4	2015-12-28
7711779	C127	2015-12-21 @ 9:00 am	2015-12-24 @ 8:00 am	4.0 ± 0.5	2015-12-29
7711794	C128	2015-12-21 @ 9:00 am	2015-12-24 @ 8:00 am	1.6 ± 0.3	2015-12-28
7711790	C129	2015-12-21 @ 11:00 am	2015-12-24 @ 8:00 am	2.2 ± 0.4	2015-12-28
7711777	C129	2015-12-21 @ 9:00 am	2015-12-24 @ 8:00 am	< 0.3	2015-12-28
7711791	C130	2015-12-21 @ 9:00 am	2015-12-24 @ 8:00 am	2.7 ± 0.4	2015-12-29
7711782	C131	2015-12-21 @ 9:00 am	2015-12-24 @ 8:00 am	2.3 ± 0.4	2015-12-28
7711704	C224	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	< 0.3	2015-12-28
7711744	C230	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	0.6 ± 0.3	2015-12-28
7711708	C230	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	0.8 ± 0.3	2015-12-29
7711707	C243	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	< 0.3	2015-12-29
7711710	C243	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	< 0.3	2015-12-29
7711712	C246	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	0.7 ± 0.3	2015-12-28
7711705	C246	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	0.6 ± 0.3	2015-12-29
7711875	C309	2015-12-21 @ 1:00 pm	2015-12-24 @ 10:00 am	< 0.3	2015-12-28
7711796	CAFE	2015-12-21 @ 9:00 am	2015-12-24 @ 8:00 am	1.1 ± 0.3	2015-12-28
7711776	CAFE	2015-12-21 @ 9:00 am	2015-12-24 @ 8:00 am	1.3 ± 0.3	2015-12-28
7711773	CAFE	2015-12-21 @ 9:00 am	2015-12-24 @ 8:00 am	0.9 ± 0.3	2015-12-29
7711772	CAREER	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.9 ± 0.3	2015-12-28
7711789	D111	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7711770	D154	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	1.1 ± 0.3	2015-12-28
7711720	D155	2015-12-21 @ 10:00 am	2015-12-24 @ 10:00 am	0.6 ± 0.3	2015-12-28
7711722	LIB CONF	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.2 ± 0.3	2015-12-28
7711724	LIBRARY	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.1 ± 0.3	2015-12-28
7711726	LIBRARY	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7711715	LIBRARY	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-29
7711721	LIBRARY	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-29

January 12, 2016 **LABORATORY ANALYSIS REPORT ****

Radon test result report for:
WALT WHITMAN HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7711730	LIBRARY OFFICE	@	@		
7711899	MAIN AUD	@	@		
7711891	MAIN AUD	2015-12-21 @ 1:00 pm	2015-12-24 @ 9:00 am	1.8 ± 0.4	2015-12-28
7711892	MAIN AUD	2015-12-21 @ 1:00 pm	2015-12-24 @ 9:00 am	2.1 ± 0.3	2015-12-28
7711895	MAIN AUD	2015-12-21 @ 1:00 pm	2015-12-24 @ 9:00 am	1.3 ± 0.3	2015-12-28
7711754	MAIN GYM	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-28
7711757	MAIN GYM	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	< 0.3	2015-12-28
7711760	MAIN GYM	2015-12-21 @ 10:00 am	2015-12-24 @ 10:00 am	0.7 ± 0.3	2015-12-28
7711765	MAIN GYM	2015-12-21 @ 10:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7711761	MAIN OFFICE	2015-12-21 @ 10:00 am	2015-12-24 @ 8:00 am	0.6 ± 0.3	2015-12-28
7711764	NURSE	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.1 ± 0.3	2015-12-28
7711752	NURSE OFFICE	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.6 ± 0.4	2015-12-28
7711750	NURSE ROOM 2	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.6 ± 0.3	2015-12-29
7711711	TRANSCRIPT	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	0.7 ± 0.3	2015-12-28
7711728	TV STUDIO	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.2 ± 0.3	2015-12-28
7711732	TV STUDIO	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.1 ± 0.3	2015-12-28
7711731	TV STUDIO CTRL	2015-12-21 @ 11:00 am	2015-12-24 @ 9:00 am	1.1 ± 0.3	2015-12-28
7711714	W103	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	3.9 ± 0.4	2015-12-28
7711743	W104	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	2.8 ± 0.4	2015-12-28
7711702	W106	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	3.8 ± 0.5	2015-12-28
7711703	W106	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	4.4 ± 0.5	2015-12-28
7711740	W107	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	3.3 ± 0.4	2015-12-28
7711741	W108	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	4.1 ± 0.5	2015-12-28
7711778	W108	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	3.7 ± 0.5	2015-12-29
7711709	W109	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	2.1 ± 0.3	2015-12-28
7711739	W110	2015-12-21 @ 12:00 pm	2015-12-24 @ 11:00 am	3.1 ± 0.4	2015-12-28
7711745	W111	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	2.4 ± 0.4	2015-12-28
7711723	W112	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	2.0 ± 0.4	2015-12-28
7711781	W112	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	1.4 ± 0.3	2015-12-28
7711716	W116	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	1.0 ± 0.3	2015-12-28
7711718	W119	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	3.0 ± 0.4	2015-12-28
7711735	W120	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	1.5 ± 0.4	2015-12-29
7711737	W122	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	0.7 ± 0.3	2015-12-28
7711706	W123	2015-12-21 @ 12:00 pm	2015-12-24 @ 10:00 am	2.5 ± 0.4	2015-12-28
7711727	WORKROOM	@	@		
7711733	WORKROOM	@	@		

December
29,
2015

**LABORATORY ANALYSIS
REPORT ****

Radon test result report for:
TRANSIT DEC 14 2015
NONE

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

December
23,
2015

**LABORATORY ANALYSIS
REPORT ****

Spike Sample Laboratory Results

Radon test result report for:

MCPS

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

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

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

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 173224

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

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

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

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

7706211, 7706366, _____

7706380, 7706381 _____

F3 Left

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

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

Device No.'s: _____ Device No.'s: _____

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



Chain of Custody

Project Name: MCPS Radon Phase II

School Names:

- | | | |
|---------------------------|-----------------------------|---------------------------|
| 1. Bannockburn ES | 11. Sherwood HS | 21. Fairland ES |
| 2. Walt Whitman HS | 12. Hadley Farms | 22. Cannon Road ES |
| 3. Walter Johnson HS | 13. S. Christa McAuliffe ES | 23. Richard Montgomery HS |
| 4. North Chevy Chase ES | 14. Ronald A. McNair ES | 24. Brooke Grove ES |
| 5. Piney Branch ES | 15. MLK MS | 25. Belmont ES |
| 6. Forest Knolls ES | 16. Ashburton ES | 26. Emory Grove |
| 7. Newport Mill MS | 17. Bradley Hills ES | 27. Clarksburg HS |
| 8. Broad Acres ES | 18. Flora M. Singer ES | 28. Clarksburg ES |
| 9. Briggs Chaney MS | 19. Woodlin ES | 29. John T. Baker MS |
| 10. Blair G. Ewing Center | 20. Montgomery Knolls ES | |

	Date	Initials
Radon Test Kits Deployed	12/21/2015	JM
Radon Test Kits Collected	12/24/2015	JM
Radon Test Kits Shipped to Lab*	12/24/2015	JM
Radon Test Kits Received by Lab*	12/28/2015	JM

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