



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Odessa Shannon Middle School
Date of Test Report	2/17/2023
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	76
# Rooms ≥ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.5 pCi/L

Project Status:

1. Initial testing of new facility completed.



February 17, 2023

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

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

Location: Odessa Shannon Middle School
11801 Monticello Avenue
Silver Spring, MD 20902

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 Odessa Shannon Middle School, located at 11801 Monticello Ave. Silver Spring, MD 20902 (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 23, 2023 and deployed eighty-six (86) 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 26, 2023 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Accustar Labs - MA. for analysis by gamma-ray spectroscopy.

Accustar Labs - MA is a NRSB certified analytical laboratory for radon analysis (certification #ARL0017) located at 2 Saber Way, Ward Hill, MA 01835.

Evaluation of Testing Conditions:

These tests represent:

- Initial testing.

These tests were conducted to:

- Evaluate radon concentration levels at the new 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 temperatures ranged from the 31°F to 52°F. Maximum sustained winds ranged from 5-25 miles per hour. Average humidity was around 60% with .32 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		
Odessa Shannon MS		
Test Period: 01/23/2023 - 01/26/2023		
Kit Number	Room / Area	Result
11633856	1012	< 0.3
11633849	1016	< 0.3
11633817	1035	< 0.3
11633805	1036	< 0.3
11633806	1038	< 0.3
11633811	1038	< 0.3
11633812	1040	< 0.3
11633814	1042	< 0.3
11633801	1043	< 0.3
11633830	1043	< 0.3
11633884	1052	< 0.3
11633846	1055	< 0.3
11633847	1055	< 0.3
11633890	1056	< 0.3
11633831	1074	1.3
11633837	1075	< 0.3
11633828	1076	1.5
11633802	1080	< 0.3
11633827	1080	0.6
11633881	2012	< 0.3
11633854	2020	< 0.3
11633841	2026	< 0.3
11633835	2103	< 0.3
11633853	2106	< 0.3
11633844	2107	< 0.3
11633836	2108	1.0
11633843	2108	1.0
11633863	2111	< 0.3
11633864	2112	< 0.3
11633861	2115	< 0.3
11633862	2201	< 0.3
11633851	2205	< 0.3
11633868	2205	< 0.3
11633865	2208	< 0.3
11633866	2210	< 0.3
11633871	2210	< 0.3
11633872	2214	< 0.3
11633852	2217	< 0.3
11633875	2218	< 0.3
11633860	2221	< 0.3
11633874	2222	< 0.3
11633859	2223	< 0.3

Table 1- Radon Testing Results		
Odessa Shannon MS		
Test Period: 01/23/2023 - 01/26/2023		
Kit Number	Room / Area	Result
11633869	2224	< 0.3
11633867	2225	< 0.3
11633870	2227	0.6
11633873	2227	< 0.3
11633876	2312	< 0.3
11633879	2315	< 0.3
11633880	2316	< 0.3
11633877	2318	< 0.3
11633882	3121	< 0.3
11633887	3121	< 0.3
11633886	3312	< 0.3
11633809	1031A	< 0.3
11633818	1031B	< 0.3
11633824	1031D	< 0.3
11633823	1031E	< 0.3
11633825	1031E	< 0.3
11633826	1031F	< 0.3
11633810	1031G	< 0.3
11633808	1031H	< 0.3
11633816	1035B	< 0.3
11633815	1035D	0.9
11633832	1043A	< 0.3
11633821	1043B	< 0.3
11633829	1043D	< 0.3
11633822	1043E	< 0.3
11633813	1043F	< 0.3
11633820	1043H	< 0.3
11633819	1043J	< 0.3
11633845	1055A	< 0.3
11633834	1055B	< 0.3
11633839	1055C	< 0.3
11633840	1055E	< 0.3
11633803	1060A	< 0.3
11633883	2105A	< 0.3
11633885	2105A	< 0.3
11633855	BLR	< 0.3
11633804	DINING	0.6
11633838	DINING	< 0.3
11633842	GLR	< 0.3
11633857	GYM	< 0.3
11633858	GYM	0.7
11633807	MAIN OFFICE	< 0.3

Table 1- Radon Testing Results		
Odessa Shannon MS		
Test Period: 01/23/2023 - 01/26/2023		
Kit Number	Room / Area	Result
11633833	MEDIA	< 0.3
11633848	MEDIA	< 0.3

Table 2- Radon Testing Results			
Odessa Shannon MS			
Test Period: 01/23/23 - 01/26/23			
Kit Number	QC Type	Room / Area	Result
11633811	D	1038	< 0.3
11633830	FB	1043	< 0.3
11633802	FB	1080	< 0.3
11633868	D	2205	< 0.3
11633871	FB	2210	< 0.3
11633870	D	2227	0.6
11633882	FB	3121	< 0.3
11633823	D	1031e	< 0.3
11633840	D	1055e	< 0.3
11633885	D	2105a	< 0.3
11633990	OB	OFFICE BLANK	< 0.3
11633992	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
ODESSA SHANNON MS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11633856	1012	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633849	1016	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633809	1031A	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633818	1031B	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633824	1031D	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633825	1031E	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633823	1031E	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633826	1031F	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633810	1031G	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633808	1031H	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633817	1035	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633816	1035B	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633815	1035D	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	0.9 ± 0.4	2023-01-30
11633805	1036	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633811	1038	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633806	1038	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633812	1040	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633814	1042	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633830	1043	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633801	1043	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633832	1043A	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633821	1043B	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633829	1043D	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633822	1043E	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633813	1043F	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633820	1043H	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633819	1043J	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633884	1052	2023-01-23 @ 12:00 pm	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633847	1055	2023-01-23 @ 10:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633846	1055	2023-01-23 @ 10:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633845	1055A	2023-01-23 @ 10:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633834	1055B	2023-01-23 @ 10:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633839	1055C	2023-01-23 @ 10:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633840	1055E	2023-01-23 @ 10:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633890	1056	2023-01-23 @ 12:00 pm	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633803	1060A	2023-01-23 @ 10:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633831	1074	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	1.3 ± 0.4	2023-01-30

Radon test result report for:
ODESSA SHANNON MS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11633837	1075	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633828	1076	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	1.5 ± 0.4	2023-01-30
11633802	1080	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633827	1080	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	0.6 ± 0.4	2023-01-30
11633881	2012	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633854	2020	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633841	2026	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633835	2103	2023-01-23 @ 11:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633885	2105A	2023-01-23 @ 12:00 pm	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633883	2105A	2023-01-23 @ 12:00 pm	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633853	2106	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633844	2107	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633843	2108	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	1.0 ± 0.4	2023-01-30
11633836	2108	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	1.0 ± 0.4	2023-01-30
11633863	2111	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633864	2112	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633861	2115	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633862	2201	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633851	2205	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633868	2205	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633865	2208	2023-01-23 @ 11:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633866	2210	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633871	2210	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633872	2214	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633852	2217	2023-01-23 @ 11:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633875	2218	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633860	2221	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633874	2222	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633859	2223	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633869	2224	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633867	2225	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633873	2227	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633870	2227	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	0.6 ± 0.4	2023-01-30
11633876	2312	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633879	2315	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633880	2316	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633877	2318	2023-01-23 @ 12:00 pm	2023-01-26 @ 10:00 am	< 0.3	2023-01-30

Radon test result report for:
**ODESSA SHANNON MS
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11633882	3121	2023-01-23 @ 11:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633887	3121	2023-01-23 @ 11:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633886	3312	2023-01-23 @ 11:00 am	2023-01-26 @ 11:00 am	< 0.3	2023-01-30
11633855	BLR	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633804	DINING	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	0.6 ± 0.4	2023-01-30
11633838	DINING	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633842	GLR	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633857	GYM	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633858	GYM	2023-01-23 @ 10:00 am	2023-01-26 @ 10:00 am	0.7 ± 0.4	2023-01-30
11633807	MAIN OFFICE	2023-01-23 @ 9:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633833	MEDIA	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30
11633848	MEDIA	2023-01-23 @ 11:00 am	2023-01-26 @ 10:00 am	< 0.3	2023-01-30

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KC1 TECHNOLOGIES, INC Job Number 208343

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

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

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

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

11285109, 11285110, 11285101

THRU 11285103

BY 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

December 29, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

OFFICE

MAIN

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

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



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Week 2 January Schools

Name of Schools:

1. Glen Haven ES
2. Kemp Mill ES
3. John F. Kennedy HS
4. Oakland Terrace ES
5. Odessa Shannon MS
6. JoAnn Leleck ES @ Broad Acres
7. New Hampshire Estates ES
8. Cannon Road ES
9. Galway ES
- 10.A. Mario Loiederman MS

	Date	Initials
Radon Test Kits Deployed	01/23/2023	BMM
Radon Test Kits Collected	01/26/2023	BMM
Radon Test Kits Shipped to Lab*	01/26/2023	BMM
Radon Test Kits Received by Lab*	01/31/2023	BMM

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