March 29, 2019



Jason Barness Independent School District #709 215 North 1st Avenue East Duluth, MN 55802

RE: Independent School District #709 Continuous Radon Monitoring Results IEA Project #201910336

Dear Mr. Barness:

As requested by Independent School District #709, IEA used a continuous radon monitor (CRM) to measure radon levels in the following locations:

- Congdon Elementary Room #124 & #110
- Homecroft Elementary Room #119
- Lincoln Park Middle School Room #1532

The purpose of the monitoring was to determine whether radon levels were within an acceptable range during typical work hours.

INTRODUCTION

The Minnesota Department of Health (MDH) and the Environmental Protection Agency (EPA) have established a recommended action level in frequently occupied areas of 4.0 picoCuries per liter (pCi/L) for an annual average. The average radon level over each work day was compared to the Action Level.

Short-term radon testing conducted during March 4, 2019 and March 8, 2019, indicated a radon level above the EPA and MDH recommended Action Level. The MDH's *Best Practices for Radon Measurement in Minnesota Schools and Commercial Buildings* recommends follow-up testing in areas where initial testing results are at or above the action level in accordance with ANSI/AARST '*Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*' (ANSI/AARST MALB 2014). A CRM is recommended to determine if elevated levels are present during occupied times. Radon levels can fluctuate with the operation of the ventilation system as well as with changes in barometric pressure. The CRM provides hourly radon readings so that levels can be evaluated for periods while the room is occupied.

INSTITUTE FOR ENVIRONMENTAL ASSESSMENT, INC. www.ieasafety.com

BROOKLYN PARK 9201 West Broadway, #600 Brooklyn Park, MN 55445 763-315-7900 / FAX 763-315-7920 800-233-9513 MANKATO 610 North Riverfront Drive Mankato, MN 56001 507-345-8818 / FAX 507-345-5301 800-233-9513 ROCHESTER 210 Woodlake Drive SE Rochester, MN 55904 507-281-6664 / FAX 507-281-6695 800-233-9513 BRAINERD 601 NW 5th Street, Ste. #4 Brainerd, MN 56401 218-454-0703 / FAX 218-454-0703 800-233-9513

MARSHALL 1420 East College Drive Marshall, MN 56258 507-476-3599 / FAX 507-537-6985 800-233-9513 VIRGINIA 5525 Emerald Avenue Mountain Iron, MN 55768 218-410-9521 800-233-9513

RESULTS & DISCUSSION

During the period of March 26, 2019 through March 29, 2019 continuous radon monitoring was conducted in Congdon Elementary, Lincoln Park Middle School and Homecroft Elementary. A CRM was placed in each room for about the number of hours specified below. The MDH recommends a minimum of 48 hours placement, however in order to best utilize the CRM's that were available, that amount of time was not feasible. Days when these rooms were not occupied (e.g., weekends & holidays) were not included in the monitoring. The hourly CRM data is provided in Appendix A.

A summary of the CRM data, including previous results, is provided in the table

Congdon Elementary

Continuous Radon Monitoring Results – March 26, 2019 to March 27, 2019

Date Range	Room #	¹ Day 1 Range/(Ave.) (pCi/L)	¹ Day 2 Range/(Ave.) (pCi/L)	² Overall Average (pCi/L)	Placement Time	Results from the Previous Testing (pCi/L)			
March 26, 2019 to March 27, 2019	110	0.685	1.03	0.86	29 Hours	4.0			
March 26, 2019 to March 27, 2019	124	0.8	2.33	1.57	30 Hours	5.0			
	Readings during occupied times: 7 a.m. to 5 p.m. Overall average is average for entire test period including when room was not occupied								

pCi/L - picoCuries per liter of air

Lincoln Park Middle School

Continuous Radon Monitoring Results - March 27, 2019 to March 29, 2019

Date Range	Room #	¹ Day 1 Range/(Ave.) (pCi/L)	¹ Day 2 Range/(Ave.) (pCi/L)	¹ Day 3 Range/(Ave.) (pCi/L)	² Overall Average (pCi/L)	Placement Time	Results from the Previous Testing (pCi/L)
March 27, 2019 to March 29, 2019	1532	0.6	2.09	2.52	1.74	47 Hours	4.4

Readings during occupied times: 7 a.m. to 5 p.m.

Overall average is average for entire test period including when room was not occupied

pCi/L - picoCuries per liter of air

Homecroft Elementary

Continuous Radon Monitoring Results – March 27, 2019 to March 29, 2019

Date Range	Room #	¹ Day 1 Range/(Ave.) (pCi/L)	¹ Day 2 Range/(Ave.) (pCi/L)	¹ Day 3 Range/(Ave.) (pCi/L)	² Overall Average (pCi/L)	Placement Time	Results from the Previous Testing (pCi/L)
March 27, 2019 to March 29, 2019	119	0.17	0.59	0.83	0.53	47 Hours	4.4

¹ Readings during occupied times: 7 a.m. to 5 p.m.

Overall average is average for entire test period including when room was not occupied

pCi/L - picoCuries per liter of air

Discussion of Results

• Average radon levels in all locations were below the Action Level during the work days.

CONCLUSIONS & RECOMMENDATIONS

The results of the continuous radon monitoring indicate that radon levels in all rooms specified are below the action level during the work day. The testing was performed during the last week of March, therefore the testing should be representative of "worst case" conditions.

The EPA has established recommended guidelines for permissible radon concentrations in schools. The following are general recommendations for frequently-occupied areas of schools:

- Retest the building at least every 5 years and in conjunction with any sale of a building.
- In addition, be certain to test again when any of the following circumstances occur:
 - A new addition is constructed, or a significant renovation occurs.
 - A ground contact area not previously tested is occupied.
 - Heating or cooling systems are significantly altered resulting in changes to air pressures or distribution.
 - Ventilation is significantly altered by extensive weatherization, changes to mechanical systems or comparable procedures.
 - Significant openings to soil occur due to:
 - Ground water or slab surface water control systems (e.g., sumps, perimeter drain tile, shower/tub retrofits, etc.) or
 - Natural settlement causing major cracks to develop
 - Earthquakes, construction blasting, or formation of sink holes nearby or
 - A mitigation system is altered, modified or repaired.
- Rooms should be retested during the winter heating season (i.e. under "closed" conditions) which is typically "worst case" conditions.
- Per Minnesota Statutes, section 123B.571, school districts are required to report radon test results at a school board meeting and report results to the MDH. IEA is able to assist with presenting results to the school board, and the MDH reporting. The MDH 'School Radon Testing Form' is located in Appendix B.

For more information regarding radon, see the EPA's A Citizen's Guide to Radon at <u>http://www.epa.gov/radon</u>. MDH can be contacted at <u>health.indoorair@state.mn.us</u> or 651-201-4601.

GENERAL COMMENTS

The analysis and opinions expressed in this report are based upon data obtained from continuous radon monitoring at Independent School District #709 and are representative of the location and time period sampled. This report does not reflect variations in conditions that may occur across the site, property, or facility. Actual conditions may vary and may not become evident without further assessment.

IEA appreciates the opportunity to submit this analysis to Independent School District #709.

Should you require additional radon testing or have any questions regarding radon or any other health- or safety-related concerns, please do not hesitate to contact our office.

Sincerely,

IEA, Inc.

Saylor Dickinson

Taylor Dickinson, CSP Virginia and Brainerd Regional Manager

TD/jf 03292019

Enc.

Appendix A

Continuous Radon Monitor Hourly Data



Date: 2019-03-28

Test Addendum A

Client Name: Duluth Public Schools Street Address: City, State, Zip: , MN

> Re: Certified Radon Report #: 2861-86 Dated: 2019-03-27 Performed At: 3116 E Superior St., Duluth, MN 55811

The attached radon test report should not be used for the purpose of determining the need for remedial action due to the following reason(s):

- □ The hourly readings indicate swings in the radon concentration that are inconsistent with normal diurnal fluctuations (daily cycles). It appears likely that closed-house conditions required by EPA and/or State Radon Testing Protocols were not maintained.
- □ The technician observed open windows or broken tamper seals upon returning to the house; EPA and/or State Protocols closed-house conditions were not maintained.
- □ Tamper sensors indicate the monitor was disturbed, followed by a significant reduction in the hourly radon concentrations. It appears as if the monitor was moved from its original location. EPA and/or State Protocols require that the monitor be undisturbed during the testing period.
- □ The test was aborted by someone other than the licensed technician. EPA and/or State Protocols require that the monitor be undisturbed during the testing period.
- □ The hourly readings indicate a spike in the radon concentration that is far more severe than those typical of normal diurnal fluctuations (daily cycles). Unusually severe weather that occurred during the sampling period appears to have biased the average concentration to be higher than typical.
- \boxtimes Explanation:

Please review carefully;

Our analysis of the data indicates this test did not meet the EPA or state minimum sampling duration. Accordingly, if the test was conducted for the purpose of determining whether the structure is in need of radon mitigation, EPA Protocol recommends a retest. This result has not been sent to any other party.

For any questions regarding this Test Addendum A, please contact the Licensed Radalink Inspector or Radalink, Inc.



CERTIFIED RADON REPORT

March 28, 2019

Test Number: 2861-86

Dueuseuter	lu a u a ata da		C4 Dubit MN 55044				
Property	Inspected:	3116 E Superior	St., Duluth, MN 55811				
Licensed	Radalink Radon Ins	spector:		Test	perforr	ned for:	
Jeffrey At	or Environmental A hmann t Broadway	Assessment		Dulut	th Publ	ic Schools	;
Brooklyn	Park, MN 55445						
Phone:	763-315-7900						
Fax:		Placed By:	Mindy Mackey (MN RMEA-00186)			Pressure	R.H.
	00/05/0040 00/05/00/	00 Detrieved Dur	Mindy Mankay (MAN DNAEA 0010C)	N dian.	64.0	20.0	10

Fax:			Placed By:	Mindy Mackey (MN RMEA-00186)		Temp.	Pressure	R.H.
Calibrated:	02/25/2019 - 0	02/25/2020	Retrieved By:	Mindy Mackey (MN RMEA-00186)	Min:	64.0	30.0	19
Test Started:	03/26/2019	7:32 AM	Test Site:	Other	Avg:	67.5	30.3	25
Test Ended:	03/27/2019	1:49 PM	Test Duration:	30 hours	Max:	71.0	30.5	30

AVERAGE RADON CONCENTRATION:

1.8 pCi/l

Test has not met minimum EPA sampling duration. Uncertainty: ± 2.69%

 Test has not met		.1 7 34	iping duration.		
Notice: This Report Is Issued	d Subject To	Adden	dum A On Page	1 Of This Report.	
	03/26/		03/27/	/2019	
Time	pCi/l	Flags	pCi/l	Flags	
00:32 am			2.2	Р	
01:32			2.9	Р	
02:32			3.1	Р	
03:32			3.4	Р	
04:32			4.8	Р	
05:32			4.2	Р	
06:32			5.9	Р	
07:32			5.8	Р	
08:32	3.2	Р	3.1	Р	
09:32	0.9	Р	0.8	Р	
10:32	0.7	Р	0.8	Р	
11:32	1.1	Р	0.8	Р	
12:32 pm	0.8	Р	0.7	Р	
01:32	0.3	Р	0.7	Р	
02:32	0.3	Р			
03:32	0.6	Р			
04:32	0.1	Р			
05:32	0.3	Р			
06:32	0.4	Р			
07:32	0.2	Р			
08:32	0.9	Р			
09:32	0.8	Р			
10:32	2.1	Р			
11:32	2.1	Р			
	P= AC Power I quilization Per		i; T=Tilt		

While every effort was made to maintain optimum quality control and EPA Protocol during the testing period, neither Radalink, Inc. or its licensed agents provide any warranty, expressed or implied, for the consequences of erroneous test results. There can be some uncertainty with any measurement due to statistical variations, extreme weather changes, operation of the building, and other factors, Radalink, Inc. and its licensed operators shall not be liable under any charge or claim for losses, claims, charges, fees, demands, expenses, or damages resulting from a radon test. This report is subject to the terms on the last page of the document.

ENVIRONMENTAL DATA

Property Inspected:

3116 E Superior St. Duluth, MN 55811

	03/2	26/2019	9	0:	/27/201	9
Time	Temp	InHg	RH	Tem	o InHg	RH
00:32 am				64.0	30.3	27
01:32				64.0	30.3	27
02:32				64.0	30.3	27
03:32				64.0	30.2	26
04:32				64.0	30.2	26
05:32				64.0	30.2	26
06:32				64.0	30.2	26
07:32				66.0	30.2	26
08:32	68.0	30.5	27	68.0	30.2	30
09:32	69.0	30.5	27	69.0	30.1	30
10:32	69.0	30.5	23	71.0	30.1	30
11:32	71.0	30.5	23	71.0	30.1	30
12:32 pm	69.0	30.5	23	71.0	30.1	30
01:32	71.0	30.5	23	71.0	30.0	30
02:32	69.0	30.5	23			
03:32	69.0	30.4	19			
04:32	69.0	30.4	19			
05:32	69.0	30.4	19			
06:32	68.0	30.4	19			
07:32	68.0	30.4	23			
08:32	66.0	30.3	23			
09:32	66.0	30.3	23			
10:32	66.0	30.3	23			
11:32	64.0	30.3	27			

AVERAGE RADON CONCENTRATION:

1.8 pCi/l



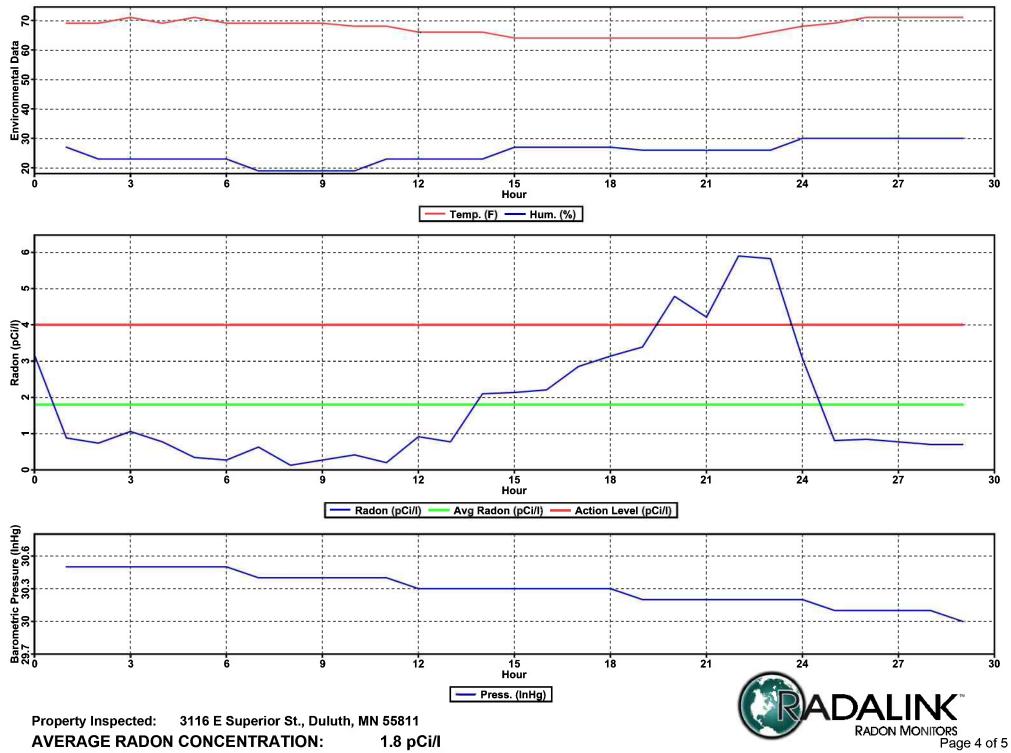
Reviewed and certified by

Terry Howell, Quality Assurance Mgr. Radalink, Inc. NRPP 135791T

	Minimum	Average	Maximum	Variance
Temperature:	64.0	67.5	71.0	6.87
Barometric Pressure:	30.0	30.3	30.5	0.02
Relative Humidity:	19	25	30	12.23

NOTE: The first hour's environmental data is excluded from the table above.

Radalink, Inc. 5599 Peachtree Road Atlanta, GA 30341 Phone: (800)295-4655



HOW TO INTERPRET YOUR TEST RESULTS

THIS REPORT RELATES ONLY TO THE ITEMS TESTED FOR AND DURING THE MEASUREMENT PERIOD SHOWN.

These results should be interpreted in accordance with the EPA's guidance as published in EPA Publication No. 402-K-008 *"Home Buyer's and Seller's Guide to Radon"* and EPA Publication No. 402-K92-001, *"Citizen's Guide to Radon"*.

Because radon is the second leading cause of lung cancer, the Surgeon General and the US Environmental Protection Agency (EPA) recommend testing all homes for radon and mitigating those with an average concentration of 4 picoCuries per Liter (4 pCi/L) or higher. Even if your test result is below 4 pCi/L, EPA suggests testing again sometime in the future.

The Radalink Radon TeleMonitor (NRPP Device # 00472) or The Radalink AirCat® Monitor (NRPP Device # 00477) used to perform this test is EPA and/or NRPP approved and meets the Single Test Option requirements (EPA 402-R-93-003, Section 3.2.3) for conducting radon measurements in the context of a real estate transaction and may be used for determining the necessity for radon mitigation.

Radon reduction systems work! Professionally installed radon mitigation systems can reduce the radon levels in your home by up to 99%. Thousands of people have reduced radon levels in their homes. Maintaining a radon reduction system takes little effort to keep the system working properly and the radon levels low. EPA recommends that you have a qualified contractor (NRPP certified or state licensed) fix your home if radon levels are confirmed to be 4 pCi/L or higher. For more information on how to reduce your radon health risk, contact your state radon office:

ALABAMA 800-582-1866 CALIFORNIA 916-449-5674 WASH. D.C. 202-535-2999 IDAHO 800-445-8647 KANSAS 800-693-5343 MARYLAND 215-814-2090 MISSISSIPPI 800-626-7739 NEVADA 888-723-6610 NEW YORK 800-458-1158 OKLAHOMA 405-702-5162 S. CAROLINA 800-768-0362 UTAH 800-458-0145 W.V. 800-922-1255 ALASKA 800-478-8324 COLORADO 800-846-3986 FLORIDA 800-543-8279 ILLINOIS 217-782-1325 KENTUCKY 502-564-4856 MASS. 800-723-6695 MISSOURI 573-751-6160 N.H. 800-852-3345 N.C. 919-571-4141 OREGON 971-673-0490 S.D.800-438-3367 VERMONT 800-439-8550 WISCONSIN 888-569-7236 ARIZONA 602-255-4845 CONNECTICUT 860-509-7367 GEORGIA 800-745-0037 INDIANA 800-272-9723 LOUISIANA 866-896-5337 MICHIGAN 517-335-8037 MONTANA 800-546-0483 NEW JERSEY 800-648-0394 N. DAKOTA 800-252-6325 PENN. 800-237-2366 TENNESSEE 800-232-1139 VIRGINIA 800-468-0138 WYOMING 800-458-5847 ARKANSAS 501-661-2301 DELAWARE 800-464-4357 HAWAII 808-586-4700 IOWA 800-383-5992 MAINE 207-287-5698 MINNESOTA 800-798-9050 NEBRASKA 800-334-9491 NEW MEXICO 800-219-6157 OHIO 800-523-4439 RHODE ISLAND 401-222-2438 TEXAS 800-293-0753 WASHINGTON 360-236-3253

ESEPA Radon Program website: www.epa.gov/radon and radon hotline 800-767-7236

SURGEON GENERAL HEALTH ADVISORY: "Indoor radon is the second-leading cause of lung cancer in the U.S. and breathing it over prolonged periods can present a significant health risk to families all over the country. More than 20,000 Americans die of radon-related lung cancer every year. It's important to know that this threat is completely preventable. Radon can be detected with a simple test and fixed through well-established venting techniques."

CONSUMER FEDERATION OF AMERICA: "Consumers need to know about the health of a house they are considering purchasing, including whether there is a radon problem, and if so, how to fix it." The EPA Home Buyer's and Sellers Guide to Radon provides practical consumer information that every homebuyer needs to know.

FLORIDA NOTICE TO CLIENTS: An organization or individual certified by the Florida Dept. of Health to perform radon or radon progeny measurements or radon mitigation services provides this Notice to you. Any questions, comments, or complaints regarding the persons performing these measurement or mitigation services may be directed to the Florida Dept. of Health, Bureau of Facility Programs, Radon Indoor Air Quality, 4052 Bald Cypress Way, Bin #A08, Tallahassee, Florida 32399-1710, (800-543-8279).

MAINE NOTICE TO CLIENTS: As per 22 MRSA, Sec. 771, results of this test will be reported to the Maine Dept. of Health and Human Services. Any questions, comments, or complaints concerning individuals or firms providing radon related services in Maine should be directed to: Radiation Control Program 11 State House Station Augusta, ME 04333-0010 (207-287-5698).

PENNSYLVANIA NOTICE TO CLIENTS: The Radon Certification Act requires that anyone who provides radon-related service or product to the general public must be certified by the Pennsylvania Department of Environmental Protection. You are entitled to evidence of certification from any person who provides such services or products. You are also entitled to a price list for services or products offered. All radon measurement data will be sent to the Department as required in the Act and will be kept confidential. If you have any questions, comments or complaints concerning persons who provide radon-related services, please contact the Department at the Bureau of Radiation Protection, Dept. Of Environmental Protection, P.O. Box 8469, Harrisburg, PA 17105-8469, (717-783-3594).

RHODE ISLAND NOTICE TO CLIENTS: This notice is provided to you by an organization or individual licenses and/or certified by the Rhode Island Dept. of Health to perform radon measurements. Any questions, comments, or complaints regarding the person performing these measurements may be directed to the RI Dept. of Health, Office of Occupational and Radiological Health, 3 Capitol Hill Room 206, Providence RI 0908-5097, (401-222-2438).

Rev: March 2016



Date: 2019-03-28

Test Addendum A

Client Name: Duluth Public Schools Street Address: City, State, Zip: , MN

> Re: Certified Radon Report #: 2876-44 Dated: 2019-03-27 Performed At: 3116 E Superior St, Duluth, MN 55811

The attached radon test report should not be used for the purpose of determining the need for remedial action due to the following reason(s):

- □ The hourly readings indicate swings in the radon concentration that are inconsistent with normal diurnal fluctuations (daily cycles). It appears likely that closed-house conditions required by EPA and/or State Radon Testing Protocols were not maintained.
- □ The technician observed open windows or broken tamper seals upon returning to the house; EPA and/or State Protocols closed-house conditions were not maintained.
- □ Tamper sensors indicate the monitor was disturbed, followed by a significant reduction in the hourly radon concentrations. It appears as if the monitor was moved from its original location. EPA and/or State Protocols require that the monitor be undisturbed during the testing period.
- □ The test was aborted by someone other than the licensed technician. EPA and/or State Protocols require that the monitor be undisturbed during the testing period.
- □ The hourly readings indicate a spike in the radon concentration that is far more severe than those typical of normal diurnal fluctuations (daily cycles). Unusually severe weather that occurred during the sampling period appears to have biased the average concentration to be higher than typical.
- \boxtimes Explanation:

Please review carefully;

Our analysis of the data indicates this test did not meet the EPA or state minimum sampling duration. Accordingly, if the test was conducted for the purpose of determining whether the structure is in need of radon mitigation, EPA Protocol recommends a retest. This result has not been sent to any other party.

For any questions regarding this Test Addendum A, please contact the Licensed Radalink Inspector or Radalink, Inc.



CERTIFIED RADON REPORT

March 28, 2019

Test Number:

2876-44

Property	Inspected:	3116	E Superior	St, Duluth, MN 55811				
Licensed F	Radalink Rac	ion Inspect	or:		Test	perform	ned for:	
Jeffrey Ath 9201 West #600			sment		Dulu	h Publi	c Schools	i
Phone:	763-315-79	00						
Fax:			Placed By:	Mindy Mackey (MN RMEA-00186)		Temp.	Pressure	R.H.
Calibrated:	02/25/2019 - 0	2/25/2020	Retrieved By:	Mindy Mackey (MN RMEA-00186)	Min:	69.0	30.0	19
Test Started:	03/26/2019	7:56 AM	Test Site:	Other	Avg:	69.5	30.3	23
Test Ended:	03/27/2019	1:55 PM	Test Duration:	29 hours	Max:	71.0	30.5	30

AVERAGE RADON CONCENTRATION:

0.7 pCi/l

Uncertainty: ± 4.71% Test has not met minimum EPA sampling duration.

16311831	iot met minimum i		iping durat	<u>.</u>		
Notice: This Report I	s Issued Subject Te	o Adden	dum A On P	age 1 Of [·]	This Report.	
		6/2019	03	8/27/2019		
Time	pCi/l	Flags	pC	i/I Flags		
00:56 am			0.	7 P		
01:56			0.	7 P		
02:56			0.	6 P		
03:56			1.	1 P		
04:56			1.	1 P		
05:56			1.	2 P		
06:56			2.	0 P		
07:56			2.	1 P		
08:56	2.5	Р	0.	6 P		
09:56	1.1	Р	0.	5 P		
10:56	0.9	Р	0.	5 P		
11:56	0.2	Р	0.	9 P		
12:56 pm	0.4	Р	0.	6 P		
01:56	0.3	Р				
02:56	0.1	Р				
03:56	0.0	Р				
04:56	0.0	Р				
05:56	0.3	Р				
06:56	0.0	Р				
07:56	0.2	Р				
08:56	0.5	Р				
09:56	0.3	Р				
10:56	0.1	Р				
11:56	0.3	Р				
	Flags: P= AC Power Eq. = Equilization Pe		ı; T=Tilt			

While every effort was made to maintain optimum quality control and EPA Protocol during the testing period, neither Radalink, Inc. or its licensed agents provide any warranty, expressed or implied, for the consequences of erroneous test results. There can be some uncertainty with any measurement due to statistical variations, extreme weather changes, operation of the building, and other factors, Radalink, Inc. and its licensed operators shall not be liable under any charge or claim for losses, claims, charges, fees, demands, expenses, or damages resulting from a radon test. This report is subject to the terms on the last page of the document.

ENVIRONMENTAL DATA

Property Inspected:

3116 E Superior St Duluth, MN 55811

	03/2	26/2019	Э	03/27/2019
Time	Temp	InHg	RH	<u>Temp</u> InHg <u>RH</u>
00:56 am				69.0 30.3 23
01:56				69.0 30.3 23
02:56				69.0 30.2 23
03:56				69.0 30.2 23
04:56				69.0 30.2 23
05:56				69.0 30.2 23
06:56				69.0 30.2 23
07:56				69.0 30.2 27
08:56	68.0	30.5	27	69.0 30.1 26
09:56	69.0	30.5	23	71.0 30.1 26
10:56	69.0	30.5	23	71.0 30.0 26
11:56	69.0	30.5	23	71.0 30.0 26
12:56 pm	71.0	30.5	23	71.0 30.0 30
01:56	71.0	30.5	23	
02:56	71.0	30.4	19	
03:56	69.0	30.4	19	
04:56	69.0	30.4	19	
05:56	69.0	30.4	19	
06:56	69.0	30.3	19	
07:56	69.0	30.3	19	
08:56	69.0	30.3	23	
09:56	69.0	30.3	23	
10:56	69.0	30.3	23	
11:56	69.0	30.3	23	

AVERAGE RADON CONCENTRATION:

0.7 pCi/l



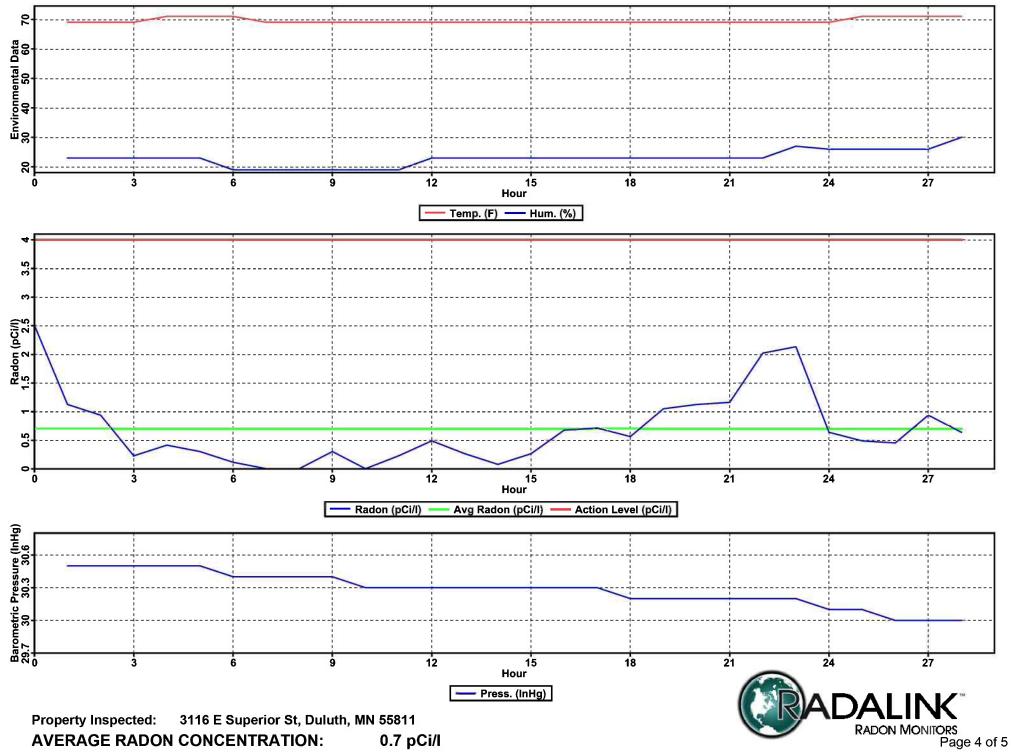
Reviewed and certified by

Terry Howell, Quality Assurance Mgr. Radalink, Inc. NRPP 135791T

	Minimum	Average	Maximum	Variance
Temperature:	69.0	69.5	71.0	0.75
Barometric Pressure:	30.0	30.3	30.5	0.02
Relative Humidity:	19	23	30	7.04

NOTE: The first hour's environmental data is excluded from the table above.

Radalink, Inc. 5599 Peachtree Road Atlanta, GA 30341 Phone: (800)295-4655



HOW TO INTERPRET YOUR TEST RESULTS

THIS REPORT RELATES ONLY TO THE ITEMS TESTED FOR AND DURING THE MEASUREMENT PERIOD SHOWN.

These results should be interpreted in accordance with the EPA's guidance as published in EPA Publication No. 402-K-008 *"Home Buyer's and Seller's Guide to Radon"* and EPA Publication No. 402-K92-001, *"Citizen's Guide to Radon"*.

Because radon is the second leading cause of lung cancer, the Surgeon General and the US Environmental Protection Agency (EPA) recommend testing all homes for radon and mitigating those with an average concentration of 4 picoCuries per Liter (4 pCi/L) or higher. Even if your test result is below 4 pCi/L, EPA suggests testing again sometime in the future.

The Radalink Radon TeleMonitor (NRPP Device # 00472) or The Radalink AirCat® Monitor (NRPP Device # 00477) used to perform this test is EPA and/or NRPP approved and meets the Single Test Option requirements (EPA 402-R-93-003, Section 3.2.3) for conducting radon measurements in the context of a real estate transaction and may be used for determining the necessity for radon mitigation.

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Rev: March 2016



CERTIFIED RADON REPORT

March 29, 2019

Test Number: 2876-46

Property Inspected: 3215 W 3rd St., Duluth, MN 55806 Licensed Radalink Radon Inspector: Test performed for: Institute for Environmental Assessment **Duluth Public Schools Jeffrey Athmann** 9201 West Broadway #600 Brooklyn Park, MN 55445 Phone: 763-315-7900 Placed By: Mindy Mackey (MN RMEA-00186) Temp. Pressure R.H. Fax: Calibrated: 02/25/2019 - 02/25/2020 Retrieved By: Mindy Mackey (MN RMEA-00186) Min: 68.0 29.8 23 Test Started: 03/27/2019 3:26 PM Test Site: Other Avg: 68.1 30.1 29 Test Ended: 03/29/2019 2:43 PM Test Duration: 47 hours 69.0 30.3 37 Max:

AVERAGE RADON CONCENTRATION:

2.6 pCi/l

Test has met minimum EPA sampling duration.

	03/27			/2019		/2019
Time	pCi/I	Flags	pCi/l	Flags	pCi/I	Flags
00:26 am			3.3	Р	3.6	Р
01:26			3.0	Р	2.9	Р
02:26			2.7	Р	4.4	Р
03:26			3.8	Р	3.3	Ρ
04:26			3.8	Р	3.9	Р
05:26			5.5	Р	4.6	Р
06:26			4.9	Р	6.1	Р
07:26			4.5	Р	4.0	Р
08:26			3.9	Р	3.5	Р
09:26			2.2	Р	2.2	Ρ
10:26			2.7	Р	1.5	Ρ
11:26			2.2	Р	2.1	Р
12:26 pm			0.7	Р	1.7	Ρ
01:26			0.4	Р	0.9	Ρ
02:26			0.6	Р	0.7	Ρ
03:26			0.8	Р		
04:26	0.5	Р	0.8	Р		
05:26	0.7	Р	1.4	Р		
06:26	1.9	Р	0.7	Р		
07:26	1.4	Р	1.5	Р		
08:26	1.8	Р	3.9	Р		
09:26	2.6	Р	2.5	Р		
10:26	1.9	Р	4.6	Р		
11:26	1.6	Р	3.6	Р		
		s: P= AC Po = Equilizatio	wer Disruption; ı Period	T=Ti l t		

While every effort was made to maintain optimum quality control and EPA Protocol during the testing period, neither Radalink, Inc. or its licensed agents provide any warranty, expressed or implied, for the consequences of erroneous test results. There can be some uncertainty with any measurement due to statistical variations, extreme weather changes, operation of the building, and other factors, Radalink, Inc. and its licensed operators shall not be liable under any charge or claim for losses, claims, charges, fees, demands, expenses, or damages resulting from a radon test. This report is subject to the terms on the last page of the document.

ENVIRONMENTAL DATA

Property Inspected:

3215 W 3rd St. Duluth, MN 55806

	03/2	27/2019	2	03	/28/201	۵	03/29/2019
Time	Temp		, RH	Temp		RH	Temp InHg RH
	Temp	mig	<u>111</u>				
00:26 am				68.0	30.0	33	68.0 30.2 30
01:26				68.0	30.0	33	68.0 30.3 30
02:26				68.0	30.1	33	68.0 30.2 30
03:26				68.0	30.1	33	68.0 30.3 30
04:26				68.0	30.1	33	68.0 30.3 30
05:26				68.0	30.1	33	68.0 30.3 30
06:26				68.0	30.1	33	68.0 30.3 26
07:26				68.0	30.1	34	68.0 30.2 27
08:26				68.0	30.1	30	68.0 30.2 23
09:26				68.0	30.1	30	68.0 30.3 23
10:26				68.0	30.2	30	68.0 30.2 23
11:26				68.0	30.2	30	68.0 30.2 23
12:26 pm				69.0	30.2	30	68.0 30.2 23
01:26				69.0	30.2	26	68.0 30.2 23
02:26				69.0	30.2	27	68.0 30.1 23
03:26				69.0	30.2	23	
04:26	69.0	29.9	33	68.0	30.2	23	
05:26	69.0	29.8	33	68.0	30.2	23	
06:26	69.0	29.9	33	68.0	30.2	27	
07:26	68.0	29.9	37	68.0	30.2	27	
08:26	68.0	29.9	37	68.0	30.2	26	
09:26	68.0	29.9	33	68.0	30.2	26	
10:26	68.0	30.0	33	68.0	30.2	26	
11:26	68.0	30.0	33	68.0	30.2	30	
		,					

AVERAGE RADON CONCENTRATION:

2.6 pCi/l



Reviewed and certified by

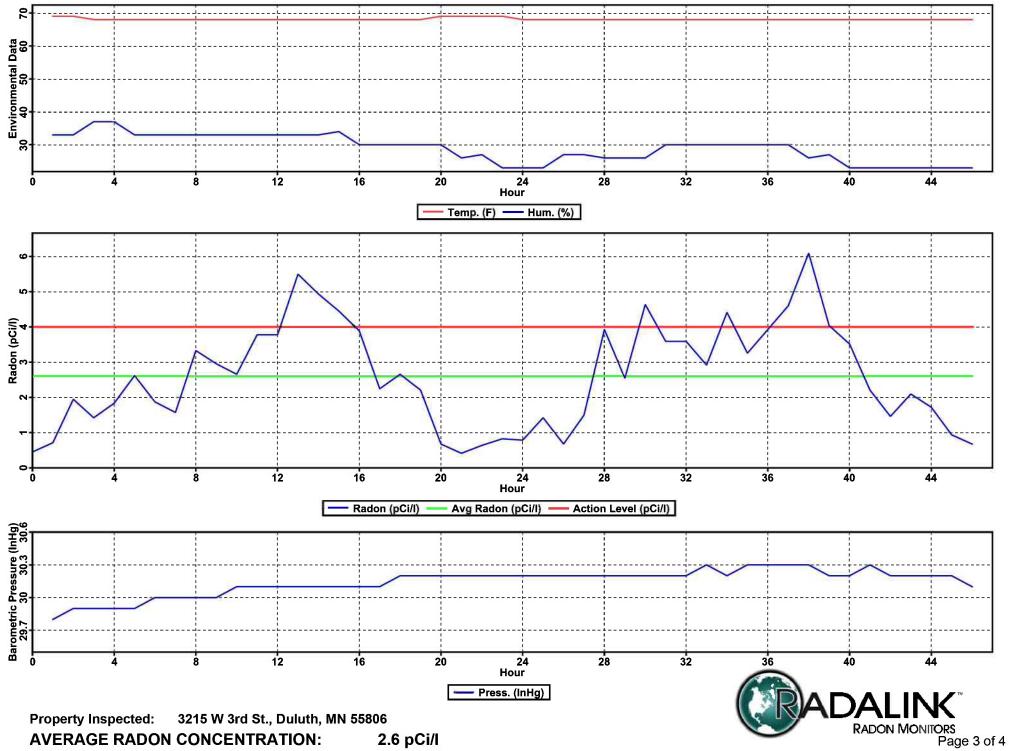
Terry Howell, Quality Assurance Mgr. Radalink, Inc. NRPP 135791T

	Minimum	Average	Maximum	Variance
Temperature:	68.0	68.1	69.0	0.11
Barometric Pressure:	29.8	30.1	30.3	0.02
Relative Humidity:	23	29	37	16.91

NOTE: The first hour's environmental data is excluded from the table above.

Radalink, Inc. 5599 Peachtree Road Atlanta, GA 30341 Phone: (800)295-4655

MONITOR-TEST NUMBER: 2876-46



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Rev: March 2016



CERTIFIED RADON REPORT

March 29, 2019

Test Number: 2861-87

Property	operty Inspected: 4784 Howard Gnesen Rd, Duluth, MN 55803							
Licensed Radalink Radon Inspector: Test performed for:								
Jeffrey Atl	or Environme nmann Broadway	ental Asses	sment		Dulu	th Publi	ic Schools	;
Brooklyn f	Park, MN 554	45						
Phone:	763-315-79	00						
Fax:			Placed By:	Mindy Mackey (MN RMEA-00186)		Temp.	Pressure	R.H.
Calibrated:	02/25/2019 - 0	2/25/2020	Retrieved By:	Mindy Mackey (MN RMEA-00186)	Min:	71.0	29.5	12
Test Started:	03/27/2019	2:27 PM	Test Site:	Other	Avg:	72.4	29.8	21
Test Ended:	03/29/2019	2:00 PM	Test Duration:	47 hours	Max:	78.0	29.9	27

AVERAGE RADON CONCENTRATION:

1.4 pCi/l

Test has met minimum EPA sampling duration.

	03/27/2019	03/28/2019	03/29/2019
Time	<u>pCi/I</u> <u>Flags</u>	pCi/l Flags	<u>pCi/l</u> <u>Flags</u>
00:27 am		2.9	2.6
01:27		2.5	2.7
02:27		2.4	4.1
03:27		3.2	2.8
04:27		2.9	2.1
05:27		2.6	1.9
06:27		3.0	0.7
07:27		1.2	0.7
08:27		0.6	0.7
09:27		0.2	0.2
10:27		0.5	0.4
11:27		0.0	0.6
12:27 pm		0.3	0.0
01:27		0.3	0.0
02:27		0.0	
03:27	0.1	0.3	
04:27	0.0	0.3	
05:27	0.4	0.4	
06:27	0.9	0.6	
07:27	1.0	1.3	
08:27	2.0	1.1	
09:27	2.1	2.0	
10:27	2.1	3.0	
11:27	1.3	2.6	
	Flags: P= AC Pow Eq. = Equilization I	er Disruption; T=Ti l t Period	

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ENVIRONMENTAL DATA

Property Inspected: 4784 Howard Gnesen Rd

Duluth, MN 55803

	03/2	27/2019	9	03/	28/201	9	03/29/2019
Time	Temp	InHg	RH	Temp	InHg	RH	Temp InHg RH
00:27 am				71.0	29.6	26	71.0 29.9 19
01:27				71.0	29.6	26	71.0 29.9 19
02:27				71.0	29.7	26	71.0 29.9 19
03:27				71.0	29.7	26	71.0 29.9 19
04:27				71.0	29.7	27	71.0 29.9 19
05:27				71.0	29.7	27	73.0 29.9 19
06:27				71.0	29.7	23	73.0 29.9 16
07:27				73.0	29.7	23	73.0 29.9 16
08:27				73.0	29.8	23	73.0 29.9 16
09:27				73.0	29.8	23	73.0 29.9 12
10:27				73.0	29.8	23	73.0 29.8 12
11:27				75.0	29.8	23	73.0 29.8 12
12:27 pm				75.0	29.8	19	73.0 29.8 12
01:27				73.0	29.8	19	73.0 29.8 12
02:27				73.0	29.8	16	
03:27	73.0	29.5	30	73.0	29.8	16	
04:27	78.0	29.5	26	73.0	29.8	16	
05:27	75.0	29.5	27	73.0	29.8	16	
06:27	73.0	29.5	26	73.0	29.8	19	
07:27	73.0	29.5	26	73.0	29.8	19	
08:27	71.0	29.5	26	71.0	29.8	19	
09:27	71.0	29.6	26	71.0	29.8	19	
10:27	71.0	29.6	26	71.0	29.8	19	
11:27	71.0	29.6	26	71.0	29.9	19	

AVERAGE RADON CONCENTRATION:

1.4 pCi/l



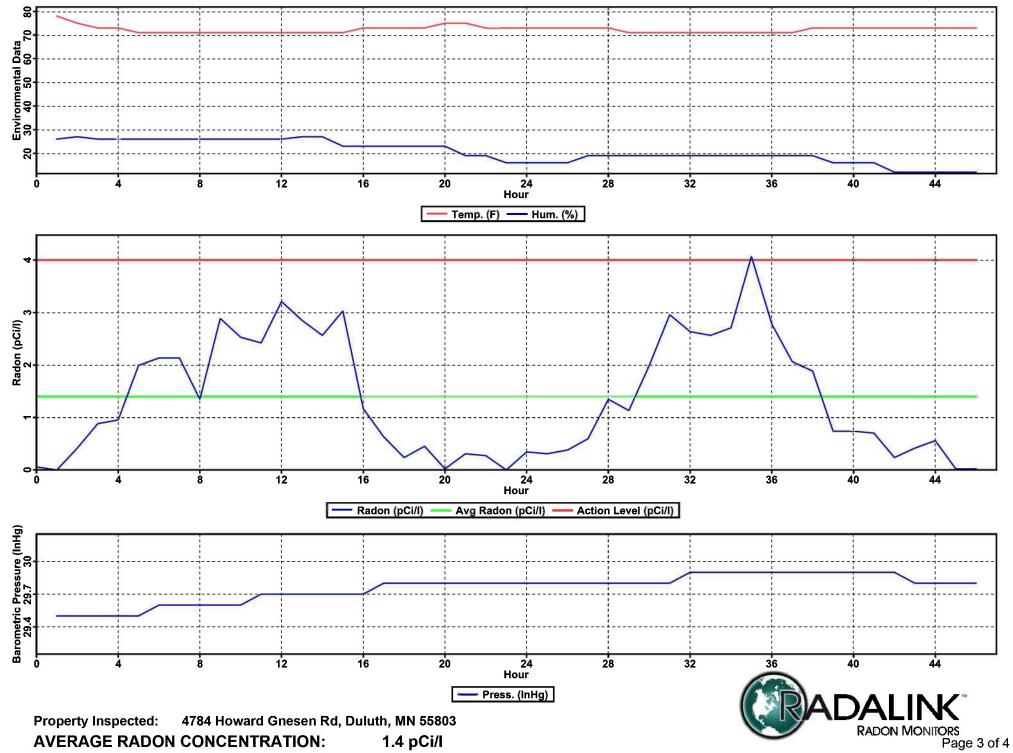
Reviewed and certified by

Terry Howell, Quality Assurance Mgr. Radalink, Inc. NRPP 135791T

	Minimum	Average	Maximum	Variance
Temperature:	71.0	72.4	78.0	2.15
Barometric Pressure:	29.5	29.8	29.9	0.02
Relative Humidity:	12	21	27	22.42
	.=			

NOTE: The first hour's environmental data is excluded from the table above.

Radalink, Inc. 5599 Peachtree Road Atlanta, GA 30341 Phone: (800)295-4655



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MAINE NOTICE TO CLIENTS: As per 22 MRSA, Sec. 771, results of this test will be reported to the Maine Dept. of Health and Human Services. Any questions, comments, or complaints concerning individuals or firms providing radon related services in Maine should be directed to: Radiation Control Program 11 State House Station Augusta, ME 04333-0010 (207-287-5698).

PENNSYLVANIA NOTICE TO CLIENTS: The Radon Certification Act requires that anyone who provides radon-related service or product to the general public must be certified by the Pennsylvania Department of Environmental Protection. You are entitled to evidence of certification from any person who provides such services or products. You are also entitled to a price list for services or products offered. All radon measurement data will be sent to the Department as required in the Act and will be kept confidential. If you have any questions, comments or complaints concerning persons who provide radon-related services, please contact the Department at the Bureau of Radiation Protection, Dept. Of Environmental Protection, P.O. Box 8469, Harrisburg, PA 17105-8469, (717-783-3594).

RHODE ISLAND NOTICE TO CLIENTS: This notice is provided to you by an organization or individual licenses and/or certified by the Rhode Island Dept. of Health to perform radon measurements. Any questions, comments, or complaints regarding the person performing these measurements may be directed to the RI Dept. of Health, Office of Occupational and Radiological Health, 3 Capitol Hill Room 206, Providence RI 0908-5097, (401-222-2438).

Rev: March 2016

Appendix B

MDH Reporting Form

DEPARTMENT OF HEALTH

School Radon Testing Reporting Form

According to Minnesota Statute 123B.571 subd. 3, a school district that has tested its school buildings for the presence of radon shall report the results of its tests to the Department of Health. Please use this form to submit information about the most recent round or cycle of testing conducted for each building.

Instructions

- 1. Complete one form for each building tested. In this case, a building is defined as an occupied facility with a unique address. This includes administrative buildings.
- 2. Include this form, raw data (e.g. laboratory report) and a building map.
- 3. Submit this form when all work is completed for a round of testing. This includes reporting to the school board, and follow-up testing and post-mitigation testing, if applicable.
- 4. Email information to <u>health.indoorair@state.mn.us</u>.

Contact Information

Name:	
Mailing Address:	
Phone:	Email:

Initial Radon Testing Information

School Building Name:					
School District & District Number:					
Building Address:					
Test Kit Manufacturer:	Device Name:				
Date of Kit Retrieval (DD/MM/YY): Length of Test (days):					
How many rooms were tested?					
Does the test period include weekends? Yes No					
Does the test period include school breaks or holidays? Yes No					

SCHOOL RADON TESTING REPORTING FORM

Were all frequently-occupied ground contact rooms tested? ¹ Yes No					
If no, did you attempt to test all frequently occupied ground contact rooms, meaning test kits were placed in all these rooms? Yes No					
How many rooms had results \geq 4 pCi/L?:					
Were the results reported at a school board meeting? Yes No					

Follow-up Testing, Mitigation, & Post-Mitigation Testing

If one or more rooms tested \geq 4 pCi/L, please answer the questions below:

How many rooms had follow-up testing?:								
Number of rooms with follow-up results $\geq 4 \text{ pCi/L}$: <4 pCi/L:								
Of the rooms that had test results \geq 4 pCi/L, how many rooms were:								
mitigated by HVAC balancing or operational changes? :								
mitigated by installation of active soil depressur	ization?:							
addressed through other corrective measures? ²	:							
What was the cost of the installation and/or HV	AC service work, to mit	igate radon? \$						
What is the known or anticipated annual operating cost of mitigation (estimate)? \$								
After radon mitigation, how many rooms were retested?:								
Post mitigation results (# of rooms) \geq 4 pCi/L: < 4 pCi/L:								

¹ This includes classrooms, offices, break rooms, laboratories, cafeterias, libraries, auditoriums, gymnasiums, etc. It includes rooms on grade and rooms above unoccupied spaces that are in contact with the ground, such as rooms above storage rooms, crawl spaces, tunnels, and boiler rooms. If only a sample or portion of rooms were tested, then respond with 'no'.

² 'Other corrective measures' could include moving staff out of a room and making a room unoccupied or trying to seal radon entry points.