



Cascade Radon, Inc.  
Testing, Mitigation,  
Systems Design  
CCB 180537 / CASCARI927C1  
Fed ID 26-1809992

12839 NE Airport Way Bldg. 9  
Portland, Oregon 97230  
Phone: (503) 421-4813  
Fax: (503) 281-6170  
Office@CascadeRadon.com

# Lane Middle School

(S-67330)

7200 SE 60th Ave., Portland, OR 97206

March 13, 2019



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## **Purpose**

**Initial short-term testing was performed January 3, 2017 to January 6, 2017 by PBS Engineering and Environmental Inc. Testing indicated 5.5 pCi/L in the Room 117A of the facility. PBS performed additional testing starting in February 2017 to June 2017 as a confirmation long-term test to determine if mitigation was needed. The result of this 4 month test was 2.0 pCi/L in Room 117A.**

**Further short-term testing was performed in room 117A December 4th through the 7th of 2018. Short-term test results showed radon levels elevated once again with a result of 7.1 pCi/L.**

**PBS Environmental continued to observe the radon levels in Room 117A using an electronic radon monitor until Cascade Radon was hired to diagnose Room 117A and develop a mitigation strategy to reduce the radon levels.**

**The installation of a sub-slab depressurization system was used to reduce the radon below the EPA action level of 4 pCi/L. See attached pages for a description of the system components and post-mitigation testing.**



**This system required two fans in tandem to create enough negative pressure beneath the concrete slab in the crawlspace to mitigate Room 117A. The Festa AMG Fury model fans are utilized when a system is required to operate with with higher cubic feet per minute of air flow. The mitigation fans are mounted to the exterior of the building in a locked courtyard and the suction points are located through the concrete slab of the crawlspace below Room 117A . Vent piping continues up the side of to building to above the roofline.**



**A pipe shroud was installed to deter potential climbing on the vent piping running up the side of the building.**



**The system includes an exterior rated manometer (pressure gauge), which is a simple means of seeing the system is working mechanically. A manometer also shows how much negative pressure (depressurization) the system is creating. It is understood such a pressure gauge DOES NOT monitor radon levels.**

# Credentials

**Cascade Radon, Inc.**  
**12839 NE Airport Way Bldg. 9**  
**Portland, OR 97230**  
**(503)421-4813**  
**office@cascaderadon.com**  
**CCB180537**  
**CASCARI977C1**  
**NEHA/NRPP# 104815RMT**  
**NRSB# 1G0008**

**Christensen Electric, Inc.**  
**17201 NE Sacramento Street**  
**Portland, OR 97230**  
**(503)419-3300**  
**info@christenson.com**  
**CCB458**



## TEST DETAILS:

Lande Middle School  
 7200 SE 60th Ave  
 Portland, OR 97206  
 Multnomah

Portland Public Schools

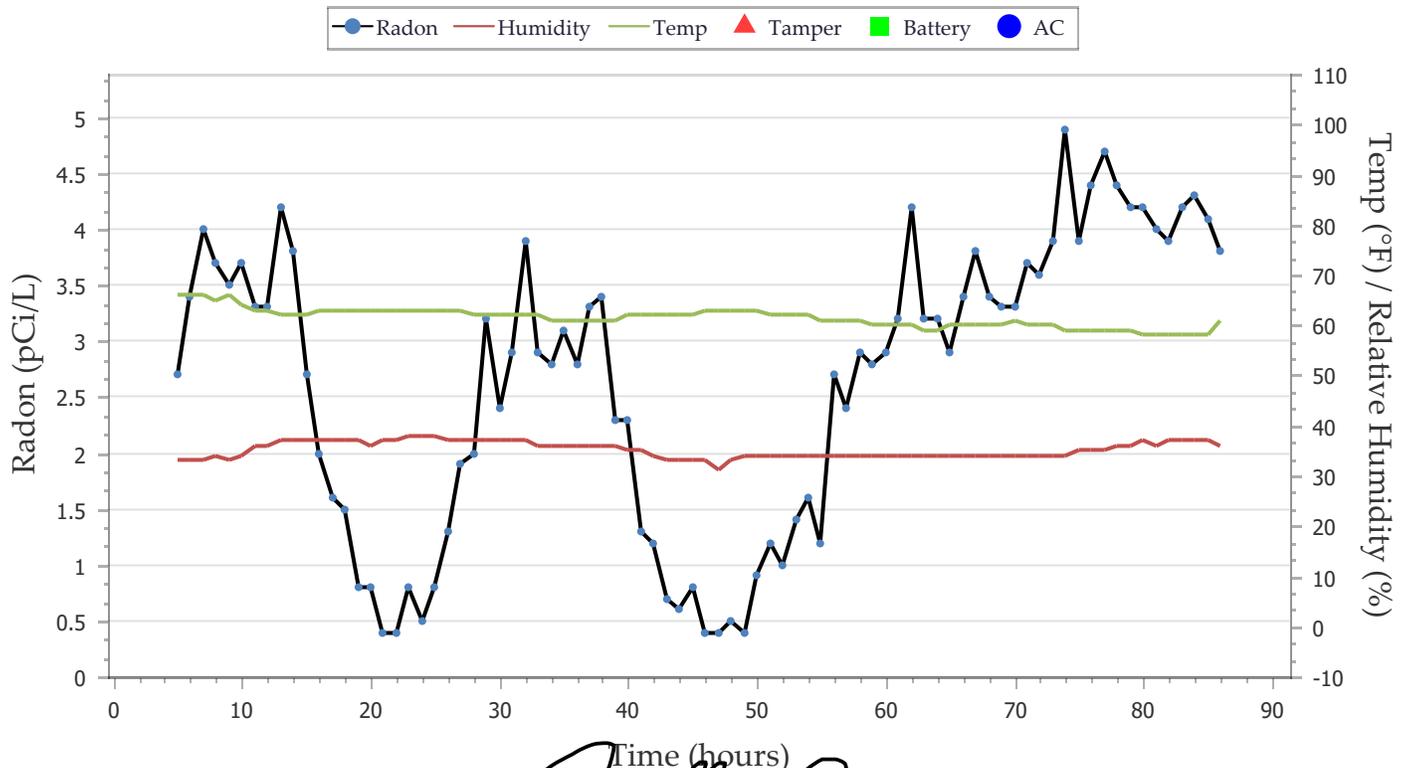
**Test Start Date/Time:** Friday, February 15, 2019 // 4:45 PM  
**Test End Date/Time:** Tuesday, February 19, 2019 // 7:40 AM  
**Location of Instrument:** Room 117A

**Notes:**

## TEST RESULTS:

**Average:** 2.6 pCi/L

**Test ID#** 80437



*Danielle Weir*

2/26/2019

Danielle Weir  
 Certification #:  
 License 1:  
 License 2:

Date  
 CCB 180537/ CASCARI927C1  
 108953RT



## INTERVAL REPORT:

Hour	T	B	AC	pCi/L	Temp	Humd	Alpha
1				0.4	64	37	13
2				1.3	65	35	42
3				1.3	66	34	44
4				2.7	66	33	87
5				2.7	66	33	86
6				3.4	66	33	111
7				4.0	66	33	128
8				3.7	65	34	120
9				3.5	66	33	113
10				3.7	64	34	119
11				3.3	63	36	107
12				3.3	63	36	107
13				4.2	62	37	134
14				3.8	62	37	122
15				2.7	62	37	88
16				2.0	63	37	64
17				1.6	63	37	53
18				1.5	63	37	50
19				0.8	63	37	28
20				0.8	63	36	27
21				0.4	63	37	13
22				0.4	63	37	13
23				0.8	63	38	28
24				0.5	63	38	16
25				0.8	63	38	26
26				1.3	63	37	42
27				1.9	63	37	61
28				2.0	62	37	65
29				3.2	62	37	102
30				2.4	62	37	79
31				2.9	62	37	94
32				3.9	62	37	127
33				2.9	62	36	95
34				2.8	61	36	90
35				3.1	61	36	101
36				2.8	61	36	92
37				3.3	61	36	107
38				3.4	61	36	110
39				2.3	61	36	76
40				2.3	62	35	74
41				1.3	62	35	44
42				1.2	62	34	41
43				0.7	62	33	24
44				0.6	62	33	20
45				0.8	62	33	28
46				0.4	63	33	13
47				0.4	63	31	14
48				0.5	63	33	19
49				0.4	63	34	14
50				0.9	63	34	29
51				1.2	62	34	39
52				1.0	62	34	32
53				1.4	62	34	45
54				1.6	62	34	53
55				1.2	61	34	41
56				2.7	61	34	89
57				2.4	61	34	77



58	2.9	61	34	93
59	2.8	60	34	90
60	2.9	60	34	93
61	3.2	60	34	103
62	4.2	60	34	136
63	3.2	59	34	104
64	3.2	59	34	102
65	2.9	60	34	95
66	3.4	60	34	109
67	3.8	60	34	121
68	3.4	60	34	109
69	3.3	60	34	108
70	3.3	61	34	108
71	3.7	60	34	118
72	3.6	60	34	117
73	3.9	60	34	125
74	4.9	59	34	159
75	3.9	59	35	127
76	4.4	59	35	142
77	4.7	59	35	152
78	4.4	59	36	140
79	4.2	59	36	136
80	4.2	58	37	136
81	4.0	58	36	129
82	3.9	58	37	127
83	4.2	58	37	136
84	4.3	58	37	137
85	4.1	58	37	133
86	3.8	61	36	123

**Minimum:** 0.4 pCi/L

**Maximum:** 4.9 pCi/L

**Average:** 2.6 pCi/L

*Danielle Weir*

Danielle Weir

2/26/2019

Date

Certification #:

License 1:

CCB 180537/ CASCARI927C1

License 2:

108953RT



**CERTIFICATE OF CALIBRATION  
RadStar RS800 Continuous Monitor**

This instrument has been calibrated in accordance with the procedures set forth by the manufacturer.  
Please retain this certificate for your records

Cal Date: 10-30-18 Last Cal Date: 07/06/17 Next Cal Date: 10-30-19  
Device Serial Number: 1596 Device Type: RS800  
Device Status: Passed  Failed  Radon Chamber: TC 103 B

NRPP Chamber#TC103	Radon Gas Concentration: <u>23.1 pCi/l</u>
CRM Serial Numbers: <u>4183 2173 2178</u>	
Chamber Temperature: <u>73.7 °F</u>	Chamber Humidity: <u>45.7 %RH</u>
Start Chamber Exposure: <u>08/10/18 09:00</u>	Stop Chamber Exposure: <u>08/13/18 07:00</u>

Calibration Number (as found, if applicable) 322 *Calib#=(10240/(Hourly Counts/pCi/l))*

Calibration Number (Final) 322 Calibrated By: *Ken Smith*

**RadonAway 3 Saber Way Ward Hill, Massachusetts 01835 978-521-3703**

This RadStar Continuous Radon Monitor has been calibrated by the Manufacturer using a standard operating procedure for the calibration of the RS800, TP010 Rev F. This procedure provides for the following performance checks:

- System Functional Checks
- Battery Check
- Back Ground Check in Nitrogen 0.04 pCi/l 11 cph
- Chamber Exposure in known Radon Gas Concentration
- Adjustment to Calibration Number, if necessary
- Adjustment to Background, if necessary
- Verification Chamber Exposure, if necessary

*(As Tested Background is Integrated into Instrument Calculation Program. Do Not Adjust Readings by Background)*

The manufacturer, RadonAway performs quarterly inter-comparisons with a Secondary Chamber

NRPP Device Code 476 Device group 18 USEPA Verified

Radon Measurement Specialist:

NRSB #6SS0002, NRPP #100842RT

*The RadStar RS800 is distributed by Accustar Labs 888-580-9596*



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[Office@CascadeRadon.com](mailto:Office@CascadeRadon.com)

March 13, 2019  
S - 67330

To: Portland Public Schools  
501 N. Dixon Street  
Portland, OR 97227

RE: Lane Middle School  
7200 SE 60<sup>th</sup> Ave.  
Portland, OR 97206

Effective: February 19, 2019

Cascade Radon, Inc. warrants that all work has been performed in a workmanlike manner and according to the best standard practices. All materials and equipment are new, unless otherwise specified, and of first quality.

Cascade Radon, Inc. guarantees that the installation will maintain average, long-term, indoor radon levels, based upon approved 9 month duration Alpha-Track testing at or below 4 pCi/L for a period of 10 years.

With the exception of the exhaust fan unit(s), Cascade Radon, Inc. warrants that all labor, work, materials and equipment will be free from faults in material or workmanship for period of ten (10) years from the date of substantial completion.

Includes 5-year manufactures replacement warranty on exhaust fan unit(s), beginning at time of initial activation, with any related work and materials provided at no cost to the Client.

All warranties and guarantees are transferable to future owners of the same property.

Warranty or service inquires, please call (503) 421-4813

Sincerely,  
Wade Gervais  
Division Manager  
Cascade Radon, Inc.