



Testing, Mitigation, System Design
CCB 180537
CASCARI927C1
Fed ID 26-1809992

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

Radon Survey Analysis Job# 19-C110R

for

Eagle Point School District Hillside Elementary c/o Angie Hamilton

property located at

185 E Main Street

Eagle Point, OR 97524

December 19th 2019



STATE OF OREGON
CERTIFIED
EMERGING SMALL BUSINESS

ESB#10782

Introduction

The following report documents a study of radon levels for the property located at 185 E Main Street Eagle Point OR 97524. The goal of this study is to determine indoor radon levels for all areas in contact with the ground. Testing was performed per Oregon Health Authority School Testing Protocols.

Analysis assumes that the buildings tested were maintained under “closed-building” conditions (windows closed and exterior doors shut immediately after entering and exiting), as well as normal indoor temperatures, for the duration of the testing period. The H-VAC system for each building was set to normal occupied settings for the entirety of the testing period.

Conclusions and Recommendations

Test was a “Short-Term” test, with minimum duration of 72 hours. See the chart below of areas in buildings that were tested, and the corresponding levels found. All current test results are provided in Table 1. Maps of the test levels are provided in Appendix A. Note that all fifty-five (55) locations tested had results below the USEPA Action Level of 4.0 pCi/L.

No mitigation action is recommended at this time. While the USEPA recommends buildings be fixed if the radon level is 4.0 pCi/L or more, because there is no known safe level of exposure to radon, the US EPA also suggests individuals consider fixing buildings for radon levels between 2.0 pCi/L and 4.0 pCi/L.

This report represents the average radon concentration for the period that testing was and at the specific location(s) within the building. The concentration of radon gas in indoor air can vary widely; it fluctuates daily, seasonally, and with weather conditions. Indoor radon levels may be affected by barometric pressure, strong winds, rain-soaked ground, snow cover, heating and A/C systems, building construction, open windows, and the like. For further confirmation of average, long-term radon levels, it is suggested that long-term, Alpha-Track type radon testing be performed.

NOTE: It is recommended that any building indicating low radon values be retested at least every 5 years. In areas where mitigation has been performed, it is recommended to test using long-term testing at least every 2 years.

Radon Level Measurements

The building tested was assumed occupied during testing. The measurement technique used (72) AirChek activated charcoal kits.

Test Start Date: 11/20/2019

Test End Date: 11/23/2019

Measurements of radon levels were made in the following areas:

Table 1: Results

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
Conference room	1	9316244	09:29 AM	09:11 AM	0.8

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
Break room	1	9316245	09:38 AM	09:17 AM	0.9
Heath room	1	9316246	09:37 AM	09:08 AM	0.6
Staff work room	1	Duplicate Avg*	09:38 AM	09:16 AM	0.7
Office kathryn	1	9316250	09:35 AM	09:15 AM	0.7
B office 1	1	Duplicate Avg*	08:53 AM	09:23 AM	0.6
Nw gym	1	9316268	09:02 AM	08:38 AM	1.9
Sw gym	1	9316279	09:01 AM	08:38 AM	1.0
Main office	1	Duplicate Avg*	09:25 AM	09:07 AM	0.9
Custodian	1	9316281	09:22 AM	08:50 AM	2.3
Kitchen	1	9316282	09:11 AM	08:47 AM	1.0
File area	1	9316286	09:31 AM	09:10 AM	1.0
B office 2	1	9316502	08:51 AM	08:58 AM	0.7
B3	1	9316503	08:44 AM	09:00 AM	0.3
B wing	1	9316504	08:55 AM	09:02 AM	0.9
Computer room	1	9316505	09:19 AM	08:53 AM	0.3
Principal	1	9316506	09:27 AM	09:12 AM	0.7
B1	1	9316507	08:43 AM	08:59 AM	0.6
Disciplinarian office	1	9316509	09:33 AM	09:14 AM	0.8
Ne gym	1	9316510	09:03 AM	08:39 AM	1.0
South library	1	9316511	09:13 AM	08:53 AM	0.9
B2	1	9316512	08:47 AM	09:05 AM	0.6
Lilbrary office	1	9316513	09:16 AM	08:54 AM	1.4
D wing	1	9316515	08:35 AM	08:44 AM	0.8
D5	1	9316516	08:36 AM	08:41 AM	1.0
D2	1	9316517	08:32 AM	08:43 AM	0.8
D1	1	9316518	08:29 AM	08:39 AM	0.3
Orange wing office 1	1	9316519	08:22 AM	08:29 AM	1.5
D calm room	1	9316520	08:39 AM	08:43 AM	0.7
North library	1	9316522	09:13 AM	08:57 AM	0.8
B5	1	9316523	08:45 AM	09:01 AM	0.9

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
C3	1	9316524	08:19 AM	08:31 AM	0.9
D4	1	9316525	08:33 AM	08:42 AM	0.7
D6	1	9316526	08:34 AM	08:42 AM	1.1
A2	1	Duplicate Avg*	08:07 AM	08:21 AM	1.0
Wing a office	1	9316528	08:10 AM	08:26 AM	1.2
Wing a	1	9316529	08:13 AM	08:16 AM	1.0
C6	1	9316530	08:17 AM	08:32 AM	0.8
C4	1	9316531	08:18 AM	08:33 AM	0.7
C2	1	9316532	08:18 AM	08:34 AM	1.1
D3	1	9316533	08:31 AM	08:40 AM	0.8
C1	1	9316534	08:23 AM	08:30 AM	1.2
A6	1	9316535	08:04 AM	08:21 AM	1.0
A4	1	9316536	08:06 AM	08:20 AM	0.6
A play room	1	9316537	08:11 AM	08:25 AM	0.8
C5	1	9316538	08:16 AM	08:32 AM	0.6
B6	1	9316540	08:46 AM	09:03 AM	0.8
Se gym	1	9316541	09:03 AM	08:38 AM	0.7
Kitchen office	1	Duplicate Avg*	09:07 AM	08:48 AM	0.8
B4	1	9316543	08:46 AM	09:04 AM	1.0
C wing	1	9316544	08:26 AM	08:51 AM	1.2
A3	1	9316545	08:01 AM	08:23 AM	0.8
A5	1	9316546	08:01 AM	08:17 AM	1.0
Orange wing office 2	1	Duplicate Avg*	08:23 AM	08:34 AM	1.0
A1	1	9316550	08:03 AM	08:24 AM	0.6

Duplicate measurements were conducted as a means to assess the precision of the test measurements. The criteria of acceptance is that the average relative percent difference (ARPD) of the results of the two measurement results for results whose averages are greater than 4.0pCi/L, should be within 25%. The results of the collated duplicates are provided in Table 2. The applicable ARPD for this survey was not applicable and is thus in compliance.

Table 2: *Duplicate Table

Room	Kit ID#	Test Start Time	Test End Time	Result (pCi/L)	Average (pCi/L)	Avg > 3.9 pCi/L?	RPD %
A2	9316527	08:07 AM	08:21 AM	0.9	1.0	No	N/A
	9316539	08:07 AM	08:21 AM	1.0			
B1 Office	9316263	08:53 AM	09:23 AM	0.8	0.6	No	N/A
	9316508	08:54 AM	09:23 AM	0.3			
Orange wing office 2	9316547	08:23 AM	08:34 AM	1.0	1.0	No	N/A
	9316548	08:25 AM	08:35 AM	1.0			
Kitchen Office	9316542	09:07 AM	08:48 AM	0.7	0.8	No	N/A
	9316521	09:07 AM	08:48 AM	0.8			
Main Office	9316280	09:25 AM	09:07 AM	0.7	0.9	No	N/A
	9316256	09:25 AM	09:07 AM	1.0			
Staff Work Room	9316248	09:38 AM	09:16 AM	0.6	0.7	No	N/A
	9316247	09:38 AM	09:16 AM	0.8			
Average RPD for Duplicate Averages more than 3.9 pCi/L:							No
In Compliance:							Yes

As a means to determine any biases in the results, detectors were deployed but not opened. At the time of test retrieval of the regular test, the devices were removed from their packaging and sent to the laboratory for blind analysis. The results of these unexposed devices are shown in Table 3. As can be seen, the laboratory reported these at the lower level of detection, indicating that no biases were introduced in handling and shipping of the devices.

Table 3: Blanks

Room	Blank #	Kit ID #	Result (pCi/L)	In Compliance?
Library Office	1	9316514	0.3	Yes
Principal	2	9316257	0.3	Yes
Nurse	3	9316249	0.3	Yes
Blank in Transit	4	9316103	0.3	Yes
Blank in Transit	5	9316104	0.3	Yes
Blank in Transit	6	9316563	0.3	Yes
Blank in Transit	7	9316112	0.3	Yes
Blank in Transit	8	9316107	0.3	Yes
Blank in Transit	9	9316106	0.3	Yes

A device was also selected from the lot of detectors that were utilized for exposure to a known radon environment at a spiking chamber (Bowser-Morner, NEHANRPP ID# 101 TC). After exposure, the device was submitted as a blind measurement to the laboratory. A comparison of the reported reading from the lab and the known concentration in the chamber is as follows:

Chamber concentration to which device was exposed:	26.2 pCi/L
Concentration reported by lab:	24.6
Relative percent difference (RPD):	6.3

Chamber concentration to which device was exposed:	26.2 pCi/L
Concentration reported by lab:	23.3
Relative percent difference (RPD):	11.7

The RPD between the reported and spiking concentration is well within normal limits.

Key:

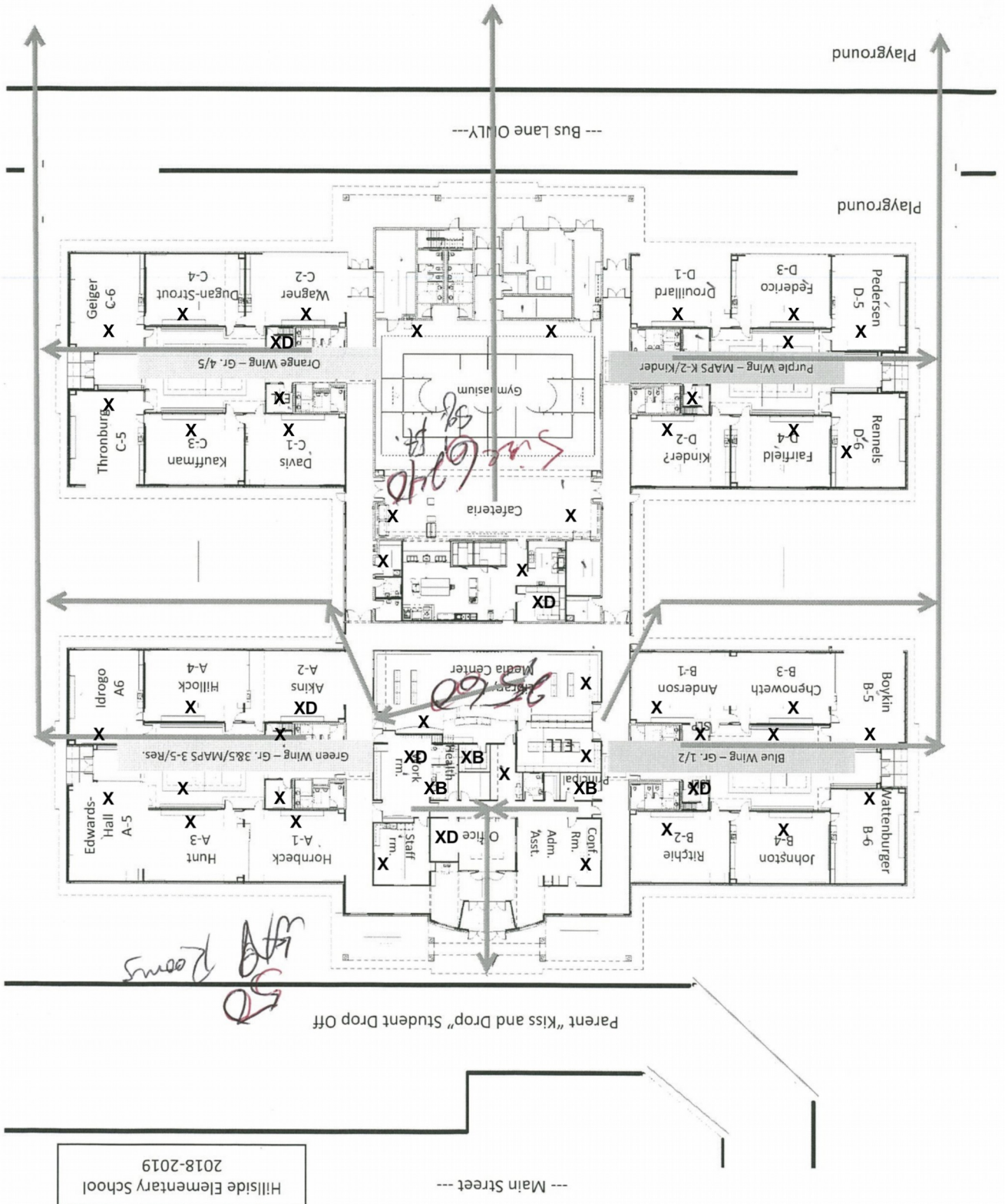
pCi/L: Picocuries per liter – units of radon concentration.

Average (Avg): Cumulative average of the entire period since the test started.

Please contact me if you have any questions.

Thank you,
Rachell Meyers
NRPP 110320 RT

Appendix A Test Placement Map



Appendix B: Test Results Map

