



**CASCADE RADON, INC.**

Testing, Mitigation,  
Systems Design  
CCB 180537 / CASCARI927C1

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**Radon Survey Analysis**  
Job # 22-C101V

for

Lake Oswego School District  
Uplands Elementary  
c/o Brent Paul

Property located at

2055 Wembley Park Road

Lake Oswego, OR 97034

November 29, 2023

## **Introduction**

The following report documents a study of radon levels for the property located at 2055 Wembley Park Road Lake Oswego, OR 97034. The goal of this study is to determine indoor radon levels within the areas addressed by the mitigation system following system installation.

**Analysis assumes that the building tested was maintained under “closed-building” conditions** (windows closed and exterior doors shut immediately after entering and exiting) 12 hours prior to the start of testing, as well as normal indoor temperatures, for the duration of the testing period.

## **Conclusions and Recommendations**

The radon mitigation system has been installed per applicable codes. The average “Short-Term” test levels are now below the EPA recommended “action level” of 4.0 pCi/L. Test performed was a “Short-Term” post-mitigation diagnostic test, with a minimum duration of 62 hours.

No further mitigation action is recommended at this time. The EPA recommends that in buildings with mitigation systems, mitigated areas undergo post-mitigation testing using a long-term, Alpha-Track type test for a duration of 12-months. Alpha-Track test kits are available for about \$35-40 each.

All conditions, warranties, and guarantees noted in the Contract are transferable to future owners of the same property. For further information regarding the system and long-term testing, post-mitigation radon testing, please refer to the Mitigation Contract or the document titled “About Your Radon System” provided to you.

## **Short-Term, Post-Mitigation Test Results:**

Manometer Reading, system #1 Classroom 16: 3.3 inches of water column pressure.

The building tested was assumed occupied during testing.

The measurement technique used (1) SunNuc continuous electronic monitors: (241951003)

Measurements of radon levels were made in the following areas:

Monitor ID 241951003 – Classroom 16

Test Start: 4:18PM 10/29/2023      Test End: 2:18PM 11/03/2023

**Average radon reading for duration of test = 0.6 pCi/L**

Highest level recorded: 3.3 pCi/L

Lowest level recorded: 0.0 pCi/L

## **Key:**

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

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

Please contact me if you have any questions.

Thank you,  
Felicia Flanders  
NRPP 112059 RMP

## Radon Inspection Report

**Test Location:**22-101V Uplands Elementary  
2055 Wembley Park Road  
Lake Oswego, OR 97034**Test For:**22-101V Uplands Elementary  
2055 Wembley Park Road  
Lake Oswego, OR 97034**Inspected By:**Cascade Radon  
12839 NE Airport Way  
Portland, OR 97230  
503.421.4813  
Lic/Cert. # CCB180537/CASCARI927C1

Bldg. Type: Residential Single Family    Type: Diagnosis

Radon  
Test.  
Report.  
Prevent.**Monitor Retrieval:**

Felicia Flanders

**Certificate:**

NRPP 112059 RMP

## Test Result: Pass

**Overall Average:****0.6 pCi/l****EPA Average:****0.6 pCi/l****Test Device Details:**Serial Number: 241951003  
Model Number: 1028XP  
Last Calibration: 05/03/2023  
Next Calibration: 05/03/2024  
Cal-Factors: 2.71  
Motion Error: Yes**Test Site Condition:**Condition: Recent Rainfall  
  
Mitigation Sys: Installed and Active**Test Summary:**

<u>CRM Location:</u>	<u>Start:</u>	<u>Stop:</u>	<u>Interval:</u>	<u>Duration:</u>
Classroom 16	10/29/2023 04:18 PM	11/03/2023 02:18 PM	1 hr	118 hr

	<u>Min:</u>	<u>Max:</u>	<u>Average:</u>	<u>Measurement Units:</u>
*First 4 hrs of data excluded				
Radon Concentration:	0.0	3.3	0.6	pCi/l
Temperature	64.8	71.4	68.4	F
Humidity	25	59	40	%
Pressure	29.42	29.90	29.71	inHg

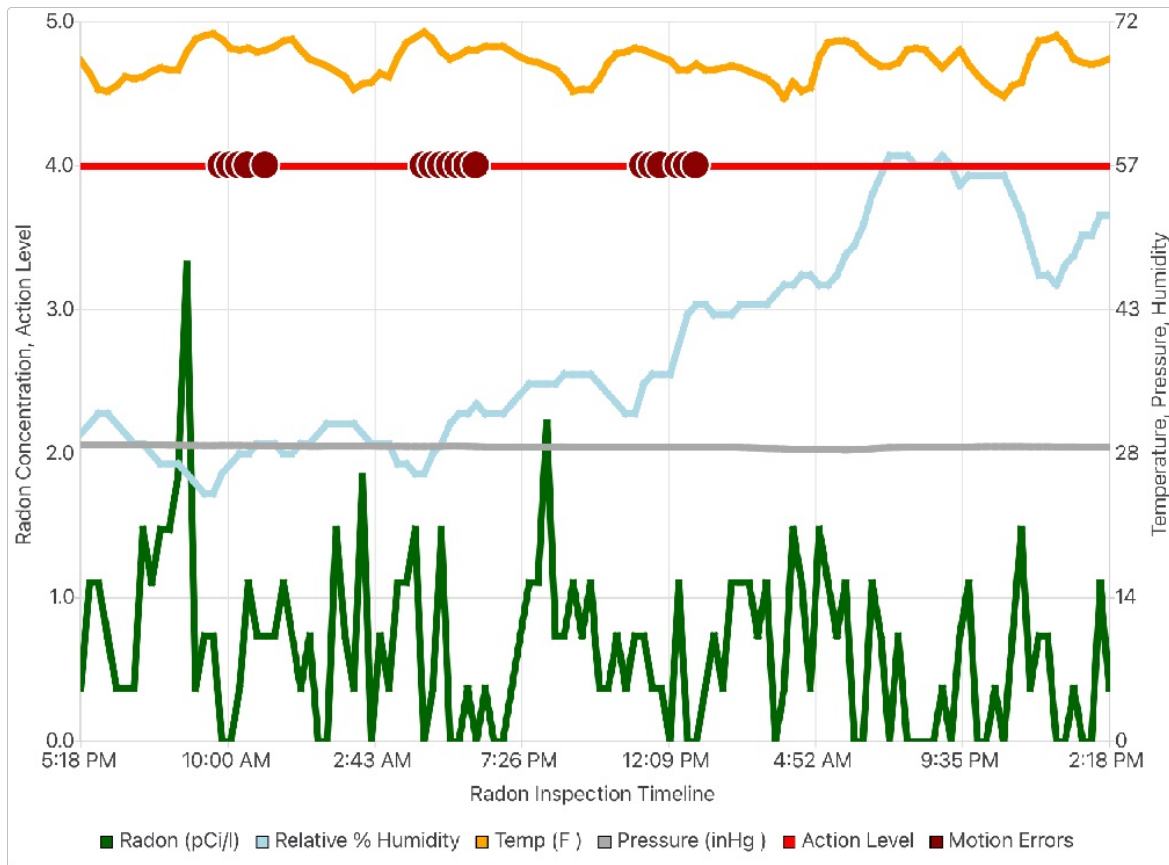
**Comments:**

NRPP 112059 RMP

**Lic/Cert Signature****Inspection Report Date: 11/03/2023**

Test device manufactured by SunRADON, LLC

## Radon Inspection Chart



**Test Result: Pass**

**Test Location:** 2055 Wembley Park Road Lake Oswego, OR 97034

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Test device manufactured by SunRADON, LLC

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## Test Checklist

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- ☒ The location of the detector was selected so the detector was not to be disturbed during testing.
- ☒ The monitor was not placed in an area of high humidity such as: Kitchen, laundry room, cellar, spa room, garage, crawl space or sump area.
- ☒ The detector was not located near drafts caused by HVAC vents, windows and doors.
- ☒ The detector was not placed near areas of excessive heat, such as a fireplace or in direct sunlight.
- ☒ The detector was placed within the breathing zone of at least 20 inches to 6 feet above the floor and at least 1 foot below the ceiling if suspended.
- ☒ The detector was not placed within 1 foot of outside walls of the home or within 3 feet of any windows or doors to the exterior of the home.
- ☒ Ceiling fans, portable dehumidifiers, portable humidifiers, portable air filters, and all window air conditioners are not operated within 20 feet of the detector.

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## Test Result: Pass

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## Test Table

\* Data from first 4 hours excluded from EPA calculations

Date/Time	Radon(pCi/l)	Temp(F)	Pres(inHg)	Humidity(%)	Flags
10/29/23 05:18 PM	0.4	68.5	29.90	31	-
10/29/23 06:18 PM	1.1	67.3	29.90	32	-
10/29/23 07:18 PM	1.1	65.7	29.90	33	-
10/29/23 08:18 PM	0.7	65.5	29.90	33	-
10/29/23 09:18 PM	0.4	66.0	29.90	32	-
10/29/23 10:18 PM	0.4	66.9	29.90	31	-
10/29/23 11:18 PM	0.4	66.7	29.90	30	-
10/30/23 12:18 AM	1.5	66.9	29.90	30	-
10/30/23 01:18 AM	1.1	67.5	29.90	29	-
10/30/23 02:18 AM	1.5	67.8	29.90	28	-
10/30/23 03:18 AM	1.5	67.6	29.89	28	-
10/30/23 04:18 AM	1.8	67.6	29.88	28	-
10/30/23 05:18 AM	3.3	69.4	29.87	27	-
10/30/23 06:18 AM	0.4	70.7	29.87	26	-
10/30/23 07:18 AM	0.7	71.1	29.86	25	-
10/30/23 08:18 AM	0.7	71.2	29.86	25	-
10/30/23 09:18 AM	0.0	70.7	29.87	27	M
10/30/23 10:18 AM	0.0	69.8	29.87	28	M
10/30/23 11:18 AM	0.4	69.6	29.87	29	M
10/30/23 12:18 PM	1.1	69.8	29.86	29	M
10/30/23 01:18 PM	0.7	69.4	29.85	30	-
10/30/23 02:18 PM	0.7	69.6	29.83	30	M
10/30/23 03:18 PM	0.7	70.0	29.82	30	-
10/30/23 04:18 PM	1.1	70.5	29.80	29	-
10/30/23 05:18 PM	0.7	70.7	29.79	29	-
10/30/23 06:18 PM	0.4	69.6	29.78	30	-
10/30/23 07:18 PM	0.7	68.7	29.77	30	-
10/30/23 08:18 PM	0.0	68.4	29.77	31	-
10/30/23 09:18 PM	0.0	68.0	29.78	32	-
10/30/23 10:18 PM	1.5	67.5	29.78	32	-
10/30/23 11:18 PM	0.7	66.9	29.78	32	-
10/31/23 12:18 AM	0.4	65.7	29.78	32	-
10/31/23 01:18 AM	1.8	66.2	29.78	31	-
10/31/23 02:18 AM	0.0	66.4	29.78	30	-
10/31/23 03:18 AM	0.7	67.3	29.77	30	-
10/31/23 04:18 AM	0.4	66.9	29.77	30	-
10/31/23 05:18 AM	1.1	68.9	29.77	28	-
10/31/23 06:18 AM	1.1	70.3	29.76	28	-
10/31/23 07:18 AM	1.5	70.9	29.76	27	-
10/31/23 08:18 AM	0.0	71.4	29.76	27	M
10/31/23 09:18 AM	0.4	70.7	29.76	29	M
10/31/23 10:18 AM	1.5	69.4	29.77	30	M
10/31/23 11:18 AM	0.0	68.7	29.78	32	M
10/31/23 12:18 PM	0.0	69.1	29.78	33	M

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10/31/23 01:18 PM	0.4	69.6	29.77	33	M
10/31/23 02:18 PM	0.0	69.6	29.75	34	M
10/31/23 03:18 PM	0.4	70.0	29.73	33	-
10/31/23 04:18 PM	0.0	70.0	29.71	33	-
10/31/23 05:18 PM	0.0	70.0	29.71	33	-
10/31/23 06:18 PM	0.4	69.4	29.70	34	-
10/31/23 07:18 PM	0.7	68.9	29.71	35	-
10/31/23 08:18 PM	1.1	68.5	29.71	36	-
10/31/23 09:18 PM	1.1	68.4	29.72	36	-
10/31/23 10:18 PM	2.2	68.0	29.72	36	-
10/31/23 11:18 PM	0.7	67.6	29.73	36	-
11/01/23 12:18 AM	0.7	66.7	29.73	37	-
11/01/23 01:18 AM	1.1	65.5	29.72	37	-
11/01/23 02:18 AM	0.7	65.7	29.72	37	-
11/01/23 03:18 AM	1.1	65.7	29.72	37	-
11/01/23 04:18 AM	0.4	66.7	29.72	36	-
11/01/23 05:18 AM	0.4	68.4	29.71	35	-
11/01/23 06:18 AM	0.7	69.3	29.70	34	-
11/01/23 07:18 AM	0.4	69.4	29.70	33	-
11/01/23 08:18 AM	0.7	69.8	29.70	33	-
11/01/23 09:18 AM	0.7	69.6	29.72	36	M
11/01/23 10:18 AM	0.4	69.3	29.71	37	M
11/01/23 11:18 AM	0.4	68.9	29.70	37	M
11/01/23 12:18 PM	0.0	68.5	29.70	37	-
11/01/23 01:18 PM	1.1	67.6	29.69	40	M
11/01/23 02:18 PM	0.0	67.6	29.68	43	M
11/01/23 03:18 PM	0.0	68.2	29.66	44	M
11/01/23 04:18 PM	0.4	67.6	29.64	44	-
11/01/23 05:18 PM	0.7	67.6	29.64	43	-
11/01/23 06:18 PM	0.4	67.8	29.63	43	-
11/01/23 07:18 PM	1.1	68.0	29.62	43	-
11/01/23 08:18 PM	1.1	67.8	29.60	44	-
11/01/23 09:18 PM	1.1	67.5	29.58	44	-
11/01/23 10:18 PM	0.7	67.1	29.56	44	-
11/01/23 11:18 PM	1.1	66.7	29.54	44	-
11/02/23 12:18 AM	0.0	66.0	29.53	45	-
11/02/23 01:18 AM	0.4	64.8	29.51	46	-
11/02/23 02:18 AM	1.5	66.4	29.49	46	-
11/02/23 03:18 AM	1.1	65.5	29.47	47	-
11/02/23 04:18 AM	0.4	65.8	29.45	47	-
11/02/23 05:18 AM	1.5	68.9	29.44	46	-
11/02/23 06:18 AM	1.1	70.3	29.44	46	-
11/02/23 07:18 AM	0.7	70.5	29.44	47	-
11/02/23 08:18 AM	1.1	70.5	29.42	49	-

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Date/Time	Radon(pCi/l)	Temp(F)	Pres(inHg)	Humidity(%)	Flags
11/02/23 09:18 AM	0.0	70.2	29.44	50	-
11/02/23 10:18 AM	0.0	69.3	29.48	52	-
11/02/23 11:18 AM	1.1	68.5	29.52	55	-
11/02/23 12:18 PM	0.7	68.0	29.56	57	-
11/02/23 01:18 PM	0.0	68.0	29.59	59	-
11/02/23 02:18 PM	0.7	68.4	29.60	59	-
11/02/23 03:18 PM	0.0	69.6	29.61	59	-
11/02/23 04:18 PM	0.0	69.8	29.62	58	-
11/02/23 05:18 PM	0.0	69.6	29.65	58	-
11/02/23 06:18 PM	0.0	68.7	29.66	58	-
11/02/23 07:18 PM	0.4	67.8	29.68	59	-
11/02/23 08:18 PM	0.0	68.7	29.71	58	-
11/02/23 09:18 PM	0.7	69.6	29.72	56	-
11/02/23 10:18 PM	1.1	68.2	29.72	57	-
11/02/23 11:18 PM	0.0	67.1	29.74	57	-
11/03/23 12:18 AM	0.0	66.2	29.75	57	-
11/03/23 01:18 AM	0.4	65.5	29.75	57	-
11/03/23 02:18 AM	0.0	64.9	29.75	57	-
11/03/23 03:18 AM	0.7	66.0	29.75	55	-
11/03/23 04:18 AM	1.5	66.4	29.75	53	-
11/03/23 05:18 AM	0.4	68.9	29.74	50	-
11/03/23 06:18 AM	0.7	70.5	29.74	47	-
11/03/23 07:18 AM	0.7	70.7	29.74	47	-
11/03/23 08:18 AM	0.0	71.1	29.73	46	-
11/03/23 09:18 AM	0.0	70.2	29.73	48	-
11/03/23 10:18 AM	0.4	68.7	29.73	49	-
11/03/23 11:18 AM	0.0	68.4	29.72	51	-
11/03/23 12:18 PM	0.0	68.2	29.71	51	-
11/03/23 01:18 PM	1.1	68.4	29.69	53	-
11/03/23 02:18 PM	0.4	68.7	29.66	53	-

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## Radon Test Information

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### Radon Risk Information

Radon causes lung cancer by means of the decay of its daughter products after breathing in air contaminated with higher levels of Radon. The World Health Organization (WHO) estimates that 15% of lung cancers worldwide are caused by exposure to elevated indoor levels of Radon. Overall, radon is the second leading cause of lung cancer responsible for about 21,000 lung cancer deaths every year in the US alone. Radon gas is the number one cause of lung cancer among non-smokers. The U.S. Environmental Protection Agency (EPA), the U.S. Surgeon General, and the Center for Disease Control and Prevention (CDC) strongly recommend that ALL homebuyers have an indoor radon test performed prior to purchase or taking occupancy and recommend having the radon levels professionally mitigated if elevated radon concentrations are found.

### Understanding Radon Test Results

Recommended Action Levels vary by country and typically range from 3 pCi/l (100 Bq/m<sup>3</sup>) to 8 pCi/l (300 Bq/m<sup>3</sup>). Recommendations below are based on test results by a Continuous Radon Monitor (CRM) Test of at least 48h duration and are based on recommendations by the EPA.

Measured Average Radon Level:

- At or above 4.0 pCi/l (148 Bq/m<sup>3</sup>): Corrective measures to reduce exposure to radon gas is strongly recommended (ANSI MAH2014)
- Between 2-4 pCi/l (74-148 Bq/m<sup>3</sup>): Consider mitigation or periodic retest as indoor Radon levels vary by season and weather conditions
- Below 2 pCi/l (74 Bq/m<sup>3</sup>): Consider bi-annual retest or whenever significant changes to the home structure or mechanical systems occurred

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