



February 8, 2024

Leo Rodriguez  
Risk Management  
Portland Public Schools

Via email: lrodriguez@pps.net

Regarding: Electronic Radon Monitor Results  
Franklin High School  
Portland, Oregon  
PBS Project 25000.241 Phase 0026

Mr. Rodriguez:

In February 2024, PBS performed short-term radon monitoring at Franklin High School at the request of Portland Public Schools in two locations that initial testing in March 2020 identified as having elevated radon. PBS used electronic Continuous Radon Monitors (CRMs), which are more sophisticated and reliable than the disposable short-term test kits initially used, to confirm results and determine hour-by-hour radon concentrations. Results are presented below.

## METHODOLOGY

The Environmental Protection Agency (EPA) recommends, and the Oregon Health Authority (OHA) requires, that school buildings be tested for radon, and that any radon concentrations be maintained below 4.0 picocuries per liter (pCi/L) of air. PBS used Sun Nuclear 1028 CRMs to monitor in select areas and identify the dynamics of radon concentration over time. Testing was conducted during the winter heating season and during the school week when building uses and operations were normal.

## RESULTS

The following table lists the results of radon concentrations at all tested locations.

**Table 1: CRM Data Summary**

| Facility | Location | Test Dates  | Overall Average Radon Level* | Average Radon Level During Occupied Hours* | Average Radon Level During Unoccupied Hours* |
|----------|----------|-------------|------------------------------|--------------------------------------------|----------------------------------------------|
| Franklin | S 021    | 02/05-02/08 | 0.9                          | 1                                          | 0.9                                          |
| Franklin | S 022    | 02/05-02/08 | 1.2                          | 0.9                                        | 1.4                                          |

\* - units are pCi/L

Overall, concentrations were found to be lower than during initial testing. Concentrations were below the EPA action level of 4.0 pCi/L in all locations. No significant difference was found between concentrations during occupied hours (6:00 AM to 6:00 PM) or unoccupied hours. See the attached CRM printout for additional information on each facility.

### **LIMITATIONS OF SCOPE**

This study was limited to the tests and locations as previously indicated. The site as a whole may have other environmental concerns that will not be characterized by this study. PBS is not able to represent conditions on the site or adjoining sites beyond those detected or observed by PBS.

Please feel free to contact me at 503.515.7489 or [james.mastanduno@pbsusa.com](mailto:james.mastanduno@pbsusa.com) with any questions or comments.

Sincerely,

A handwritten signature in black ink, appearing to be 'J. Mastanduno', written in a cursive style.

James Mastanduno  
Project Manager

Attachment: Individual Summary Reports

## Radon Inspection Report

**Test Location:**

Franklin High School  
5405 SE Woodward St , Portland, OR  
97206

**Test For:****Inspected By:**

James Mastanduno, PBS Environmental  
YOUR ADDRESS1, YOUR ADDRESS2  
YOUR CITY, YOUR STATE YOUR ZIP  
123-456-7890

Bldg. Type: Educational

Type: Screening

### Test Result: Pass

**Overall Average:**

**0.9 pCi/l**

**EPA Average:**

**1.0 pCi/l**

**Test Device Details:**

Serial Number: 238738016  
Model Number: 1028XP  
Last Calibration: 10/18/2023  
Next Calibration: 10/18/2024  
Cal-Factors: 2.65  
Motion Error: Yes

**Test Site Condition:**

Condition: Raining

**Test Summary:**

|                                      |                        |                        |                         |                                  |
|--------------------------------------|------------------------|------------------------|-------------------------|----------------------------------|
| <b><u>CRM Location:</u></b>          | <b><u>Start:</u></b>   | <b><u>Stop:</u></b>    | <b><u>Interval:</u></b> | <b><u>Duration:</u></b>          |
| S021                                 | 02/05/2024<br>07:56 AM | 02/08/2024<br>06:56 AM | 1 hr                    | 71 hr                            |
| <b>*First 4 hrs of data excluded</b> | <b><u>Min:</u></b>     | <b><u>Max:</u></b>     | <b><u>Average:</u></b>  | <b><u>Measurement Units:</u></b> |
| Radon Concentration:                 | 0.0                    | 3.4                    | 1.0                     | pCi/l                            |

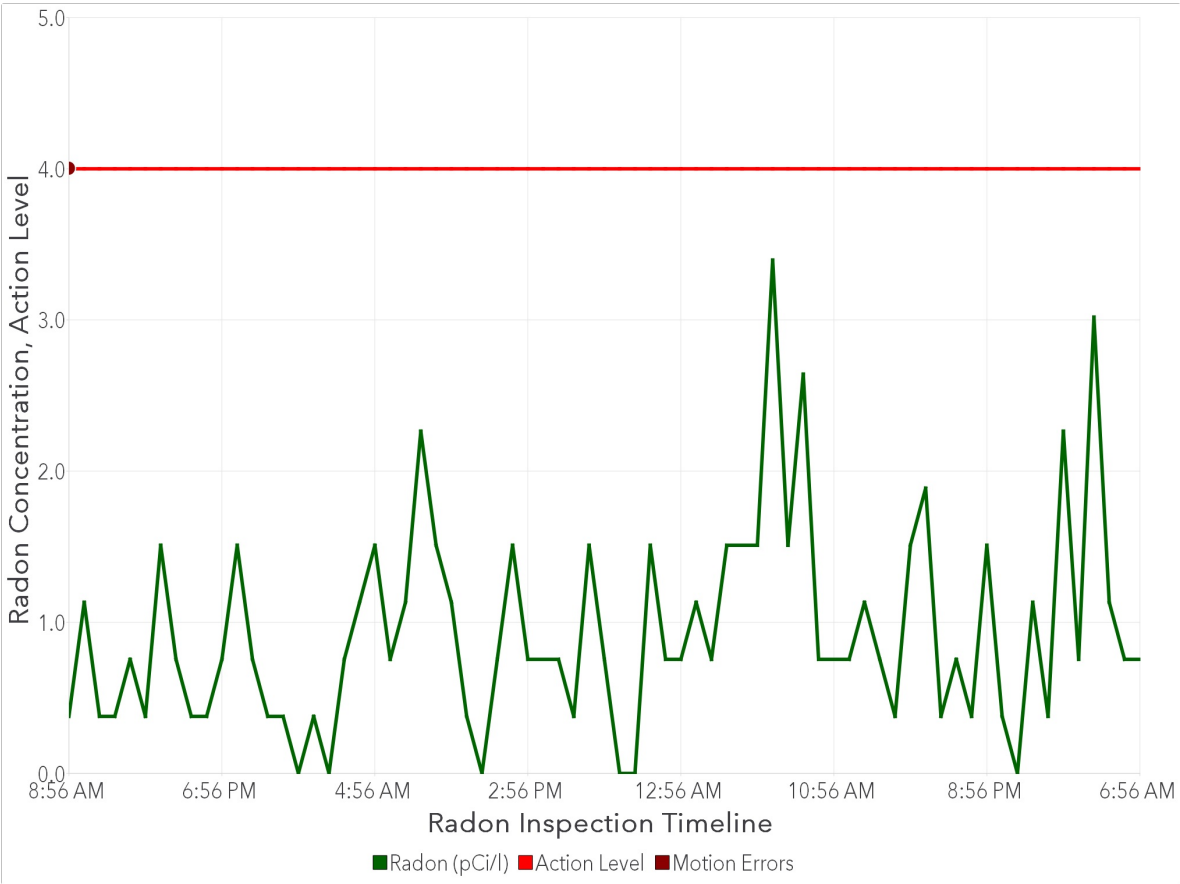
**Comments:**

Lic/Cert Signature

Test device manufactured by SunRADON, LLC

Inspection Report Date: 02/08/2024

Radon Inspection Chart



Test Result: Pass

Test Location: 5405 SE Woodward St , Portland, OR 97206 ,

Inspection Report Date: 02/08/2024

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.

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**Test Result: Pass**

**Test Location:** 5405 SE Woodward St , Portland, OR 97206 ,

**Inspection Report Date:** 02/08/2024

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Test device manufactured by SunRADON, LLC

## Test Table

\* Data from first 4 hours excluded from EPA calculations

| <u>Date/Time</u>  | <u>Radon(pCi/l)</u> | <u>Flags</u> |
|-------------------|---------------------|--------------|
| 02/05/24 08:56 AM | 0.4                 | M            |
| 02/05/24 09:56 AM | 1.1                 | -            |
| 02/05/24 10:56 AM | 0.4                 | -            |
| 02/05/24 11:56 AM | 0.4                 | -            |
| 02/05/24 12:56 PM | 0.8                 | -            |
| 02/05/24 01:56 PM | 0.4                 | -            |
| 02/05/24 02:56 PM | 1.5                 | -            |
| 02/05/24 03:56 PM | 0.8                 | -            |
| 02/05/24 04:56 PM | 0.4                 | -            |
| 02/05/24 05:56 PM | 0.4                 | -            |
| 02/05/24 06:56 PM | 0.8                 | -            |
| 02/05/24 07:56 PM | 1.5                 | -            |
| 02/05/24 08:56 PM | 0.8                 | -            |
| 02/05/24 09:56 PM | 0.4                 | -            |
| 02/05/24 10:56 PM | 0.4                 | -            |
| 02/05/24 11:56 PM | 0.0                 | -            |
| 02/06/24 12:56 AM | 0.4                 | -            |
| 02/06/24 01:56 AM | 0.0                 | -            |
| 02/06/24 02:56 AM | 0.8                 | -            |
| 02/06/24 03:56 AM | 1.1                 | -            |
| 02/06/24 04:56 AM | 1.5                 | -            |
| 02/06/24 05:56 AM | 0.8                 | -            |
| 02/06/24 06:56 AM | 1.1                 | -            |
| 02/06/24 07:56 AM | 2.3                 | -            |
| 02/06/24 08:56 AM | 1.5                 | -            |
| 02/06/24 09:56 AM | 1.1                 | -            |
| 02/06/24 10:56 AM | 0.4                 | -            |
| 02/06/24 11:56 AM | 0.0                 | -            |
| 02/06/24 12:56 PM | 0.8                 | -            |
| 02/06/24 01:56 PM | 1.5                 | -            |
| 02/06/24 02:56 PM | 0.8                 | -            |
| 02/06/24 03:56 PM | 0.8                 | -            |
| 02/06/24 04:56 PM | 0.8                 | -            |
| 02/06/24 05:56 PM | 0.4                 | -            |
| 02/06/24 06:56 PM | 1.5                 | -            |
| 02/06/24 07:56 PM | 0.8                 | -            |
| 02/06/24 08:56 PM | 0.0                 | -            |
| 02/06/24 09:56 PM | 0.0                 | -            |
| 02/06/24 10:56 PM | 1.5                 | -            |
| 02/06/24 11:56 PM | 0.8                 | -            |
| 02/07/24 12:56 AM | 0.8                 | -            |
| 02/07/24 01:56 AM | 1.1                 | -            |
| 02/07/24 02:56 AM | 0.8                 | -            |
| 02/07/24 03:56 AM | 1.5                 | -            |

**Test Result: Pass**

**Test Location:** 5405 SE Woodward St , Portland, OR 97206 ,

**Inspection Report Date:** 02/08/2024

Test device manufactured by SunRADON, LLC

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## Test Table

\* Data from first 4 hours excluded from EPA calculations

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| <u>Date/Time</u>  | <u>Radon(pCi/l)</u> | <u>Flags</u> |
|-------------------|---------------------|--------------|
| 02/07/24 04:56 AM | 1.5                 | -            |
| 02/07/24 05:56 AM | 1.5                 | -            |
| 02/07/24 06:56 AM | 3.4                 | -            |
| 02/07/24 07:56 AM | 1.5                 | -            |
| 02/07/24 08:56 AM | 2.6                 | -            |
| 02/07/24 09:56 AM | 0.8                 | -            |
| 02/07/24 10:56 AM | 0.8                 | -            |
| 02/07/24 11:56 AM | 0.8                 | -            |
| 02/07/24 12:56 PM | 1.1                 | -            |
| 02/07/24 01:56 PM | 0.8                 | -            |
| 02/07/24 02:56 PM | 0.4                 | -            |
| 02/07/24 03:56 PM | 1.5                 | -            |
| 02/07/24 04:56 PM | 1.9                 | -            |
| 02/07/24 05:56 PM | 0.4                 | -            |
| 02/07/24 06:56 PM | 0.8                 | -            |
| 02/07/24 07:56 PM | 0.4                 | -            |
| 02/07/24 08:56 PM | 1.5                 | -            |
| 02/07/24 09:56 PM | 0.4                 | -            |
| 02/07/24 10:56 PM | 0.0                 | -            |
| 02/07/24 11:56 PM | 1.1                 | -            |
| 02/08/24 12:56 AM | 0.4                 | -            |
| 02/08/24 01:56 AM | 2.3                 | -            |
| 02/08/24 02:56 AM | 0.8                 | -            |
| 02/08/24 03:56 AM | 3.0                 | -            |
| 02/08/24 04:56 AM | 1.1                 | -            |
| 02/08/24 05:56 AM | 0.8                 | -            |
| 02/08/24 06:56 AM | 0.8                 | -            |

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**Test Result: Pass**

**Test Location:** 5405 SE Woodward St , Portland, OR 97206 ,

**Inspection Report Date:** 02/08/2024

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Test device manufactured by SunRADON, LLC

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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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**Test Result: Pass**

**Test Location:** 5405 SE Woodward St , Portland, OR 97206 ,

**Inspection Report Date:** 02/08/2024

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Test device manufactured by SunRADON, LLC

## Radon Inspection Report

**Test Location:**

Franklin High School  
5405 SE Woodward St  
Portland, OR 97206,

**Test For:**

Bldg. Type: Educational

Type: Screening

**Inspected By:**

James Mastanduno, PBS Environmental  
YOUR ADDRESS1, YOUR ADDRESS2  
YOUR CITY, YOUR STATE YOUR ZIP  
123-456-7890

### Test Result: Pass

**Overall Average:**

**1.2 pCi/l**

**EPA Average:**

**1.2 pCi/l**

**Test Device Details:**

Serial Number: 238738006  
Model Number: 1028XP  
Last Calibration: 11/29/2023  
Next Calibration: 11/29/2024  
Cal-Factors: 2.68  
Motion Error: Yes

**Test Site Condition:**

Condition: Raining

**Test Summary:**

|                               |                        |                        |                  |                           |
|-------------------------------|------------------------|------------------------|------------------|---------------------------|
| <u>CRM Location:</u>          | <u>Start:</u>          | <u>Stop:</u>           | <u>Interval:</u> | <u>Duration:</u>          |
| Room S022                     | 02/05/2024<br>07:54 AM | 02/08/2024<br>06:54 AM | 1 hr             | 71 hr                     |
| *First 4 hrs of data excluded | <u>Min:</u>            | <u>Max:</u>            | <u>Average:</u>  | <u>Measurement Units:</u> |
| Radon Concentration:          | 0.0                    | 4.1                    | 1.2              | pCi/l                     |

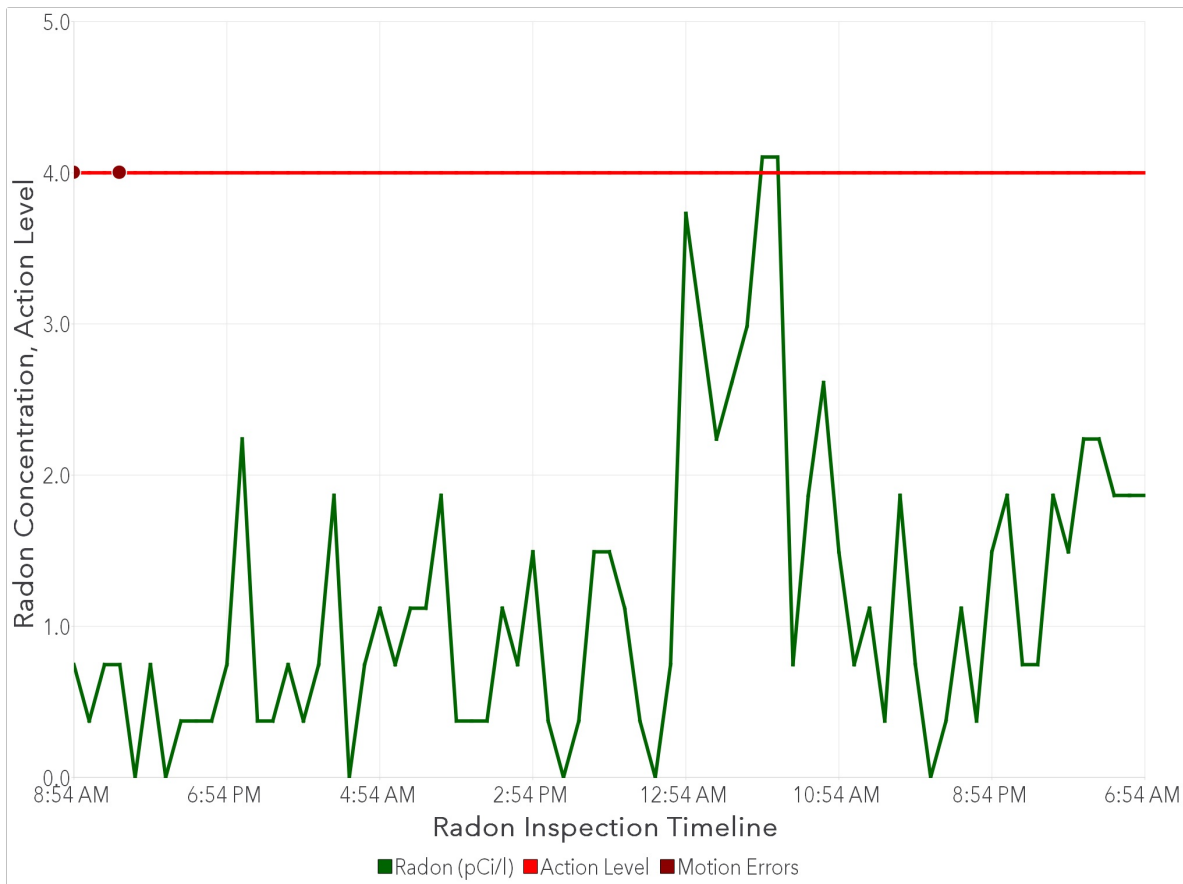
**Comments:**

Lic/Cert Signature

Test device manufactured by SunRADON, LLC

Inspection Report Date: 02/08/2024

## Radon Inspection Chart



**Test Result: Pass**

**Test Location:** 5405 SE Woodward St Portland, OR 97206,

**Inspection Report Date:** 02/08/2024

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.

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**Test Result: Pass**

**Test Location:** 5405 SE Woodward St Portland, OR 97206,

**Inspection Report Date:** 02/08/2024

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Test device manufactured by SunRADON, LLC

## Test Table

\* Data from first 4 hours excluded from EPA calculations

| <u>Date/Time</u>  | <u>Radon(pCi/l)</u> | <u>Flags</u> |
|-------------------|---------------------|--------------|
| 02/05/24 08:54 AM | 0.7                 | M            |
| 02/05/24 09:54 AM | 0.4                 | -            |
| 02/05/24 10:54 AM | 0.7                 | -            |
| 02/05/24 11:54 AM | 0.7                 | M            |
| 02/05/24 12:54 PM | 0.0                 | -            |
| 02/05/24 01:54 PM | 0.7                 | -            |
| 02/05/24 02:54 PM | 0.0                 | -            |
| 02/05/24 03:54 PM | 0.4                 | -            |
| 02/05/24 04:54 PM | 0.4                 | -            |
| 02/05/24 05:54 PM | 0.4                 | -            |
| 02/05/24 06:54 PM | 0.7                 | -            |
| 02/05/24 07:54 PM | 2.2                 | -            |
| 02/05/24 08:54 PM | 0.4                 | -            |
| 02/05/24 09:54 PM | 0.4                 | -            |
| 02/05/24 10:54 PM | 0.7                 | -            |
| 02/05/24 11:54 PM | 0.4                 | -            |
| 02/06/24 12:54 AM | 0.7                 | -            |
| 02/06/24 01:54 AM | 1.9                 | -            |
| 02/06/24 02:54 AM | 0.0                 | -            |
| 02/06/24 03:54 AM | 0.7                 | -            |
| 02/06/24 04:54 AM | 1.1                 | -            |
| 02/06/24 05:54 AM | 0.7                 | -            |
| 02/06/24 06:54 AM | 1.1                 | -            |
| 02/06/24 07:54 AM | 1.1                 | -            |
| 02/06/24 08:54 AM | 1.9                 | -            |
| 02/06/24 09:54 AM | 0.4                 | -            |
| 02/06/24 10:54 AM | 0.4                 | -            |
| 02/06/24 11:54 AM | 0.4                 | -            |
| 02/06/24 12:54 PM | 1.1                 | -            |
| 02/06/24 01:54 PM | 0.7                 | -            |
| 02/06/24 02:54 PM | 1.5                 | -            |
| 02/06/24 03:54 PM | 0.4                 | -            |
| 02/06/24 04:54 PM | 0.0                 | -            |
| 02/06/24 05:54 PM | 0.4                 | -            |
| 02/06/24 06:54 PM | 1.5                 | -            |
| 02/06/24 07:54 PM | 1.5                 | -            |
| 02/06/24 08:54 PM | 1.1                 | -            |
| 02/06/24 09:54 PM | 0.4                 | -            |
| 02/06/24 10:54 PM | 0.0                 | -            |
| 02/06/24 11:54 PM | 0.7                 | -            |
| 02/07/24 12:54 AM | 3.7                 | -            |
| 02/07/24 01:54 AM | 3.0                 | -            |
| 02/07/24 02:54 AM | 2.2                 | -            |
| 02/07/24 03:54 AM | 2.6                 | -            |

### Test Result: Pass

Test Location: 5405 SE Woodward St Portland, OR 97206,

Inspection Report Date: 02/08/2024

Test device manufactured by SunRADON, LLC

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## Test Table

\* Data from first 4 hours excluded from EPA calculations

| <u>Date/Time</u>  | <u>Radon(pCi/l)</u> | <u>Flags</u> |
|-------------------|---------------------|--------------|
| 02/07/24 04:54 AM | 3.0                 | -            |
| 02/07/24 05:54 AM | 4.1                 | -            |
| 02/07/24 06:54 AM | 4.1                 | -            |
| 02/07/24 07:54 AM | 0.7                 | -            |
| 02/07/24 08:54 AM | 1.9                 | -            |
| 02/07/24 09:54 AM | 2.6                 | -            |
| 02/07/24 10:54 AM | 1.5                 | -            |
| 02/07/24 11:54 AM | 0.7                 | -            |
| 02/07/24 12:54 PM | 1.1                 | -            |
| 02/07/24 01:54 PM | 0.4                 | -            |
| 02/07/24 02:54 PM | 1.9                 | -            |
| 02/07/24 03:54 PM | 0.7                 | -            |
| 02/07/24 04:54 PM | 0.0                 | -            |
| 02/07/24 05:54 PM | 0.4                 | -            |
| 02/07/24 06:54 PM | 1.1                 | -            |
| 02/07/24 07:54 PM | 0.4                 | -            |
| 02/07/24 08:54 PM | 1.5                 | -            |
| 02/07/24 09:54 PM | 1.9                 | -            |
| 02/07/24 10:54 PM | 0.7                 | -            |
| 02/07/24 11:54 PM | 0.7                 | -            |
| 02/08/24 12:54 AM | 1.9                 | -            |
| 02/08/24 01:54 AM | 1.5                 | -            |
| 02/08/24 02:54 AM | 2.2                 | -            |
| 02/08/24 03:54 AM | 2.2                 | -            |
| 02/08/24 04:54 AM | 1.9                 | -            |
| 02/08/24 05:54 AM | 1.9                 | -            |
| 02/08/24 06:54 AM | 1.9                 | -            |

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**Test Result: Pass**

**Test Location:** 5405 SE Woodward St Portland, OR 97206,

**Inspection Report Date:** 02/08/2024

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Test device manufactured by SunRADON, LLC

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## Radon Test Information

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### Radon Risk Information

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### Understanding Radon Test Results

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**Test Result: Pass**

**Test Location:** 5405 SE Woodward St Portland, OR 97206,

**Inspection Report Date:** 02/08/2024

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Test device manufactured by SunRADON, LLC