



July 31, 2017

Joe Crelier
Director of Risk Management
Portland Public Schools
501 N Dixon Street
Portland, Oregon 97227

Via email: jcrelier@pps.net

Regarding: Continuous Radon Monitor Measurement Report
Peninsula Elementary School
Portland, Oregon
PBS Project No. 06500.618, Phase 0002

Dear Mr. Crelier:

From July 25, to July 31, 2017, PBS Engineering and Environmental Inc. (PBS) conducted continuous radon monitor (CRM) testing in the Peninsula Elementary School boiler room. This measurement was performed in response to elevated radon levels identified during previous short-term radon monitoring and CRM radon monitoring. This test represents conditions in the boiler room following the installation of a temporary mitigation system. At the time of testing there was limited occupancy as the school is on summer break. PBS could not verify the current ventilation system operation or schedule at the time of testing.

Testing was performed with Sun Nuclear Model 1027 continuous radon monitors, EPA- and industry-approved testing devices. The CRM monitor was in place at the seating area in the north end of the boiler room in the same location as previous testing. The device had the data cleared and was reset to begin logging data on the morning of July 25, 2017. The data logger was collected on the morning of July 31, 2017. The device recorded radon level and tilt (an anti-tampering indication) data for 90 hours. Closed building conditions were not verified during the course of this testing.

The following table summarizes radon data collected:

Test Location	Start Time	Stop Time	Total Time*	Average Radon Concentration (pCi/L = picocuries per liter)
Peninsula E.S. – Boiler Room	07/25/2017 11:35 AM	07/31/2017 09:30 AM	90 Hours	0.2 pCi/l

* Units log data once per hour for a maximum of the first 90 hours. Data for all hours between start and stop times may not be logged.

For more detail, please see the Report Graphs with Detailed Hourly Data for each test location (attached).

Joe Crelier, Director of Risk Management
Continuous Radon Monitor Measurement Report: Ockley Green Gym
March 30, 2017
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Please feel free to contact me at 503.417.7694 or chris.boyce@pbsusa.com with any questions or comments.

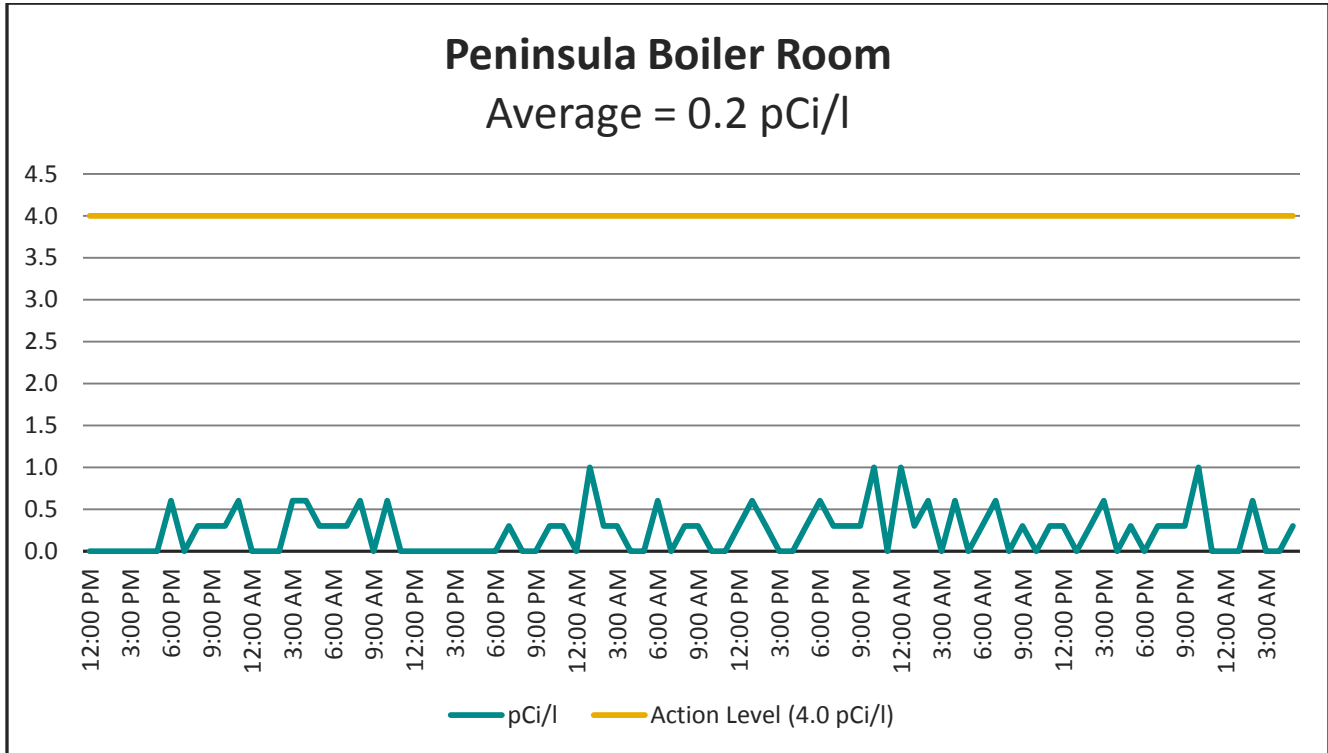
Sincerely,

A handwritten signature in black ink, appearing to read "Chris Boyce".

Chris Boyce
Project Manager

Attachments: Report Graph with Detailed Hourly Data
CRM Statement of Calibration (Serial Number: 1407185)

Unit Type: Sun Nuclear Model 1027
 Serial Number: 1407185



Date:	Time:	Radon (pCi/l)
July 25, 2017	12:00 PM	0.0
July 25, 2017	1:00 PM	0.0
July 25, 2017	2:00 PM	0.0
July 25, 2017	3:00 PM	0.0
July 25, 2017	4:00 PM	0.0
July 25, 2017	5:00 PM	0.0
July 25, 2017	6:00 PM	0.6
July 25, 2017	7:00 PM	0.0
July 25, 2017	8:00 PM	0.3
July 25, 2017	9:00 PM	0.3
July 25, 2017	10:00 PM	0.3
July 25, 2017	11:00 PM	0.6
July 26, 2017	12:00 AM	0.0
July 26, 2017	1:00 AM	0.0
July 26, 2017	2:00 AM	0.0
July 26, 2017	3:00 AM	0.6

July 26, 2017	4:00 AM	0.6
July 26, 2017	5:00 AM	0.3
July 26, 2017	6:00 AM	0.3
July 26, 2017	7:00 AM	0.3
July 26, 2017	8:00 AM	0.6
July 26, 2017	9:00 AM	0.0
July 26, 2017	10:00 AM	0.6
July 26, 2017	11:00 AM	0.0
July 26, 2017	12:00 PM	0.0
July 26, 2017	1:00 PM	0.0
July 26, 2017	2:00 PM	0.0
July 26, 2017	3:00 PM	0.0
July 26, 2017	4:00 PM	0.0
July 26, 2017	5:00 PM	0.0
July 26, 2017	6:00 PM	0.0
July 26, 2017	7:00 PM	0.3
July 26, 2017	8:00 PM	0.0
July 26, 2017	9:00 PM	0.0
July 26, 2017	10:00 PM	0.3
July 26, 2017	11:00 PM	0.3
July 27, 2017	12:00 AM	0.0
July 27, 2017	1:00 AM	1.0
July 27, 2017	2:00 AM	0.3
July 27, 2017	3:00 AM	0.3
July 27, 2017	4:00 AM	0.0
July 27, 2017	5:00 AM	0.0
July 27, 2017	6:00 AM	0.6
July 27, 2017	7:00 AM	0.0
July 27, 2017	8:00 AM	0.3
July 27, 2017	9:00 AM	0.3
July 27, 2017	10:00 AM	0.0
July 27, 2017	11:00 AM	0.0
July 27, 2017	12:00 PM	0.3
July 27, 2017	1:00 PM	0.6
July 27, 2017	2:00 PM	0.3
July 27, 2017	3:00 PM	0.0
July 27, 2017	4:00 PM	0.0
July 27, 2017	5:00 PM	0.3
July 27, 2017	6:00 PM	0.6
July 27, 2017	7:00 PM	0.3
July 27, 2017	8:00 PM	0.3

July 27, 2017	9:00 PM	0.3
July 27, 2017	10:00 PM	1.0
July 27, 2017	11:00 PM	0.0
July 28, 2017	12:00 AM	1.0
July 28, 2017	1:00 AM	0.3
July 28, 2017	2:00 AM	0.6
July 28, 2017	3:00 AM	0.0
July 28, 2017	4:00 AM	0.6
July 28, 2017	5:00 AM	0.0
July 28, 2017	6:00 AM	0.3
July 28, 2017	7:00 AM	0.6
July 28, 2017	8:00 AM	0.0
July 28, 2017	9:00 AM	0.3
July 28, 2017	10:00 AM	0.0
July 28, 2017	11:00 AM	0.3
July 28, 2017	12:00 PM	0.3
July 28, 2017	1:00 PM	0.0
July 28, 2017	2:00 PM	0.3
July 28, 2017	3:00 PM	0.6
July 28, 2017	4:00 PM	0.0
July 28, 2017	5:00 PM	0.3
July 28, 2017	6:00 PM	0.0
July 28, 2017	7:00 PM	0.3
July 28, 2017	8:00 PM	0.3
July 28, 2017	9:00 PM	0.3
July 28, 2017	10:00 PM	1.0
July 28, 2017	11:00 PM	0.0
July 29, 2017	12:00 AM	0.0
July 29, 2017	1:00 AM	0.0
July 29, 2017	2:00 AM	0.6
July 29, 2017	3:00 AM	0.0
July 29, 2017	4:00 AM	0.0
July 29, 2017	5:00 AM	0.3



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<http://www.sunnuclear.com>

Radon Certificate of Calibration

The following radon monitor was placed in the calibration chamber:

SNC Serial No: 1407185

Model No: 1027

<u>Actual Reading</u>	<u>Error %</u>	<u>Correction Factor</u>	<u>Background</u>
186.6 pCi/l	-2.7%	1.03	0.2

The Rn-222 gas concentration in the chamber, over the measurement interval was:

191.7 pCi/l, $\pm 10\%$ as measured with 100ml scintillation cells

The correction factor is a multiplicative and can be applied to the displayed value on the monitor.

The accuracy of this radon monitor is $\pm 25\%$ or 1 pCi/l, which ever is greater, after a 24 hour period of deployment.

This instrument has been calibrated in accordance with the specifications set forth by the manufacturer. Radon gas calibrations are traceable to the NIST SRM 4973 Radon emanation standard.

The error of the chamber concentration is a best estimate based upon typical inter-comparison results with Bowser Morner Reference Laboratory. The most recent inter-comparison in which Sun Nuclear participated, March 2015, resulted in a 1.4% error in our reported measurement.

Frequency of re-calibration may vary depending upon local, state, or proficiency program requirements.

Sun Nuclear Corporation has successfully met the established and published requirements for Accreditation by the National Radon Safety Board as an accredited chamber. Certification No: NRSB TRC6001 expiring May 2017.

Calibration Date: 11/5/2016 Next Calibration Date: 11/5/2017

Technician: CG

Please retain this document for record keeping purposes.