

KELSAY

Environmental Consulting

June 22, 2020

Mr. Kevin Strong
Business Manager
Sweet Home School District Office
1920 Long Street
Sweet Home, Oregon 97386

RE: Long-Term Radon Sampling at Oak Heights Elementary School (DRAFT)

Kelsay Environmental performed a long-term radon survey at Oak Heights Elementary School located at 605 Elm St., Sweet Home, Oregon. Sampling began on November 20, 2019 as a screening for potential Radon concerns in compliance with Oregon Revised Statute (ORS) 332.116-167. *Long-term sampling* is defined by a minimum of 90 days which helps account for normal fluctuations in building conditions over time.

Under ORS 332.166-167, radon testing in Oregon Schools must be performed by January 1st, 2021. The sampling protocol was derived from a document produced by the Oregon Health Authority called “Testing for Elevated Radon in Oregon Schools, A Protocol and Plan”. The screening was performed to determine if radon levels in the building were above the Environmental Protection Agency’s (EPA) action level of 4.0 pCi/L (picocuries per liter). If levels exceed the action level, a remediation process must be enacted to mitigate exposure levels. This survey would be the basis of that remediation plan.

Testing locations included every occupied room on the first floor of the structure. According to ORS 332.166-167, it specifies that “at a minimum, any frequently-occupied room in contact with the ground or located above a basement or crawlspace” should be tested.

Sampling Procedures

Kelsay Environmental conducted sampling for radon gas in all occupied rooms that were bordered by ground or soil. Oak Heights Elementary consists of a concrete foundation with one floor. Samples were collected using Alpha Track AT-100 diffusion-based track radon monitors from Accustar Labs. A total of 26 rooms were tested (see attached table for locations). In addition, two duplicates, one blank and a spike were submitted to the lab to ensure quality control. A total of 32 detectors kits were used.

Radon detectors were placed in each occupied space, particularly within the height of the normal breathing zone (between 2 and 6 feet in height) on November 20, 2019. The conditions of the building were such that the HVAC system was operating under normal occupancy conditions and the building was occupied as usual on a day-to-day basis. Samples were retrieved on March 27, 2020, providing for 128 total days of sampling, and then submitted to the Accustar Laboratory for analysis, a NELAP accredited lab, using electrochemical etching to process it’s alpha track foils

which are subsequently counted with computer-aided image analysis equipment. Samples to be spiked for quality control are sent to the Bowser-Morner Radon Reference Laboratory. Samples are exposed to specific concentrations of radon in a radon reference chamber and are then submitted to the Accustar Labs for analysis. The results are compared to the known spike concentration to ensure quality control.

Results and Discussion

Radon gas is generally always present in varying quantities, inside and outside of buildings. According to the EPA, radon gas averages 1.3 pCi/L inside buildings across the country, with 0.4 pCi/L generally considered background level. The background level is also the analytical level of detection for AccuStar Labs, levels below which cannot be accurately measured.

Laboratory results indicate all measured radon gas concentrations were below the EPA's action level of 4.0 pCi/L.

Spiked samples were within acceptable parameters for quality assurance based on the Relative Percentage Error (RPE). 6.1 pCi/L is the analytical result for the spikes from Bowser-Morner.

$$((\text{Measured Value} - \text{Reference Value}) / \text{Reference Value}) \times 100\%$$

Duplicate and blank samples were as well within acceptable parameters based on the Relative Percent Difference:

$$((\text{Initial Result} - \text{Duplicate Result}) / \text{Average of Both Results}) \times 100\%$$

TABLE 1
SPIKE/DUPLICATE/BLANK SAMPLE RESULTS
SWEET HOME SCHOOL DISTRICT OFFICE

| Sample No. | Sample Variety | Location | Results (pCi/L) | Relative Percentage Error/Difference | Acceptance |
|---------------------|--------------------|-------------|-----------------|--------------------------------------|------------|
| 4326955 | Spike | NA | 5.7 | 6.55 % | Yes |
| 4327020/ 4327019 | Duplicate/Original | Speech Room | 1.0 & 1.2 | 18.18 % | Yes |
| 4327042/ 4327041 | Duplicate/Original | Gym Stage | 0.9 & 0.9 | 0% | Yes |
| ADD # | Blank | | | | TBD |

*Blanks should be close to 0.00 pCi/L or near the laboratory analytical level of detection

*A trend in RPE values over +/-30 pCi/L should be investigated

*RPD values of >27% should be questioned for results over 4.0 pCi/L

*RPD values of >49% should be questioned for results between 2.0-3.9 pCi/L

Recommendations

Radon levels throughout the structure were all below the EPA Action Level of 4.0 pCi/L and therefore remediation procedures are not required now. Oregon Health Authority requires schools to re-test for radon every 10 years.

Sincerely,



Lisa Janik
Industrial Hygienist

Attachments: Long-Term Radon Sampling Table
Lab Results/Chain of Custody
Exposure In Bowser-Morner Radon Chamber

Radon Sampling Table
Oak Heights Elementary
605 Elm St.
Sweet Home, Oregon

| DEVICE NUMBER | START DATE | STOP DATE | Total Days | LOCATION | RADON pCi/L |
|------------------|------------|-----------|------------|-----------------------|----------------|
| 4327138 | 11/20/2019 | 3/27/2020 | 128 | Front Desk | 0.9 |
| 4327016 | 11/20/2019 | 3/27/2020 | 128 | Principal's Office | 0.8 |
| 4327017 | 11/20/2019 | 3/27/2020 | 128 | Room 1 | 1.3 |
| 4327139 | 11/20/2019 | 3/27/2020 | 128 | Room 2 | 3.5 |
| 4327136 | 11/20/2019 | 3/27/2020 | 128 | Room 3 | 2.6 |
| 4327140 | 11/20/2019 | 3/27/2020 | 128 | Room 4 | 3.4 |
| 4327137 | 11/20/2019 | 3/27/2020 | 128 | Room 5 | 0.6 |
| 4327018 | 11/20/2019 | 3/27/2020 | 128 | Room 6 | 1.0 |
| 4327019 | 11/20/2019 | 3/27/2020 | 128 | Speech Room | 1.2 |
| 4327020 | 11/20/2019 | 3/27/2020 | 128 | Speech Room Duplicate | 1.0 |
| 4327012 | 11/20/2019 | 3/27/2020 | 128 | Staff Room | 1.0 |
| 4327027 | 11/20/2019 | 3/27/2020 | 128 | Health Room | 1.1 |
| 4327026 | 11/20/2019 | 3/27/2020 | 128 | Break Room | 0.8 |
| 4327029 | 11/20/2019 | 3/27/2020 | 128 | Library | 0.5 |
| 4327028 | 11/20/2019 | 3/27/2020 | 128 | Library | 0.4 |
| 4327034 | 11/20/2019 | 3/27/2020 | 128 | Counselor's Office | 0.7 |
| 4327031 | 11/20/2019 | 3/27/2020 | 128 | Room 8 | 1.0 |
| 4327011 | 11/20/2019 | 3/27/2020 | 128 | Room 15 | 0.9 |
| 4327030 | 11/20/2019 | 3/27/2020 | 128 | Room 14 | 1.1 |
| 4327032 | 11/20/2019 | 3/27/2020 | 128 | Room 9 | 1.5 |
| 4327035 | 11/20/2019 | 3/27/2020 | 128 | Room 13 | 1.0 |
| 4327033 | 11/20/2019 | 3/27/2020 | 128 | Room 10 | 1.0 |
| 4327050 | 11/20/2019 | 3/27/2020 | 128 | Room 12 | 0.9 |

Bold - Indicates Exceeds Action Level
EPA Action Level: 4.0 pCi/L
"<": Below the level of detection

Kelsay Environmental
833 SE Main St., Suite 410
Portland, Oregon 97214

Radon Sampling Table
Oak Heights Elementary
605 Elm St.
Sweet Home, Oregon

| DEVICE NUMBER | START DATE | STOP DATE | Total Days | LOCATION | RADON pCi/L |
|------------------|------------|-----------|------------|---------------|----------------|
| 4327049 | 11/20/2019 | 3/27/2020 | 128 | Room 11 | 1.3 |
| 4327047 | 11/20/2019 | 3/27/2020 | 128 | Speech Room | 0.8 |
| 4327046 | 11/20/2019 | 3/27/2020 | 128 | Room 16 | 0.6 |
| 4327048 | 11/20/2019 | 3/27/2020 | 128 | Gym- Stage | 0.7 |
| 4327041 | 11/20/2019 | 3/27/2020 | 128 | Gym- Stage | 0.9 |
| 4327042 | 11/20/2019 | 3/27/2020 | 128 | Gym Duplicate | 0.9 |
| 4327045 | 11/20/2019 | 3/27/2020 | 128 | Calm Room | 0.6 |
| 4326955 | 11/20/2019 | 3/27/2020 | 128 | Spike | 5.7 |
| 4326840 | | | | Blank | TBD |

Bold - Indicates Exceeds Action Level
EPA Action Level: 4.0 pCi/L
"<": Below the level of detection

Kelsay Environmental
833 SE Main St., Suite 410
Portland, Oregon 97214

NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

EPA Method #402-R-92-004
Alpha Track
NRPP Device Code 8205
NRSB Device Code 12001

Laboratory Report for:

Property Tested:

Kelsay Environmental
833 Southeast Main Street 410
Portland OR 97214

Oak Heights Elementary
605 Elm Street
Sweet Home OR 97386


| Log Number | Device Number | Test Exposure Duration: | | Area Tested | Result pCi/L |
|------------|---------------|-------------------------|------------|-----------------------|--------------|
| 2673777 | 4327138 | 11/20/2019 | 03/27/2020 | Office Front Desk | 0.9 |
| 2673778 | 4327016 | 11/20/2019 | 03/27/2020 | Principle Office | 0.8 |
| 2673779 | 4327017 | 11/20/2019 | 03/27/2020 | Room 1 | 1.3 |
| 2673780 | 4327139 | 11/20/2019 | 03/27/2020 | Room 2 | 3.5 |
| 2673781 | 4327136 | 11/20/2019 | 03/27/2020 | Room 3 | 2.6 |
| 2673782 | 4327140 | 11/20/2019 | 03/27/2020 | Room 4 | 3.4 |
| 2673783 | 4327137 | 11/20/2019 | 03/27/2020 | Room 5 | 0.6 |
| 2673784 | 4327018 | 11/20/2019 | 03/27/2020 | Room 6 | 1.0 |
| 2673785 | 4327019 | 11/20/2019 | 03/27/2020 | Speech Room | 1.2 |
| 2673786 | 4327020 | 11/20/2019 | 03/27/2020 | Speech Room Duplicate | 1.0 |
| 2673787 | 4327012 | 11/20/2019 | 03/27/2020 | Staff Room | 1.0 |

Comment: Confidential: Release results to client only. Kelsay Environmental was emailed a copy of this report.

Test Performed By: Placed: Lisa Janik Retrieved: Lisa Janik

Distributed by: Kelsay Environmental

Date Received: 04/07/2020 Date Logged: 04/22/2020 Date Analyzed: 05/06/2020 Date Reported: 05/19/2020

Report Reviewed By: 

Report Approved By: 

Disclaimer:

Shawn Price, Director of Laboratory Operations, AccuStar Labs

The uncertainty of this radon measurement is $\pm 15\%$. Factors contributing to uncertainty include statistical variations, daily and seasonal variations in radon concentrations, sample collection techniques, and operation of the dwelling. Interference with test conditions may influence the test results.

This report may only be transferred to a third party in its entirety. Analytical results relate to the samples AS RECEIVED BY THE LABORATORY. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.

NELAC NY 11769
NRPP 103216 AL
NRSB ARL0017

EPA Method #402-R-92-004
Alpha Track
NRPP Device Code 8205
NRSB Device Code 12001

Laboratory Report for:

Property Tested:

Kelsay Environmental
833 Southeast Main Street 410
Portland OR 97214

Oak Heights Elementary
605 Elm Street
Sweet Home OR 97386


| Log Number | Device Number | Test Exposure Duration: | | Area Tested | Result pCi/L |
|------------|---------------|-------------------------|------------|--------------------|--------------|
| 2673788 | 4327027 | 11/20/2019 | 03/27/2020 | Health Room | 1.1 |
| 2673789 | 4327026 | 11/20/2019 | 03/27/2020 | Break Room | 0.8 |
| 2673790 | 4327029 | 11/20/2019 | 03/27/2020 | Library | 0.5 |
| 2673791 | 4327028 | 11/20/2019 | 03/27/2020 | Library | 0.4 |
| 2673792 | 4327034 | 11/20/2019 | 03/27/2020 | Counselor's Office | 0.7 |
| 2673793 | 4327031 | 11/20/2019 | 03/27/2020 | Room 8 | 1.0 |
| 2673794 | 4327011 | 11/20/2019 | 03/27/2020 | Room 15 | 0.9 |
| 2673795 | 4327030 | 11/20/2019 | 03/27/2020 | Room 14 | 1.1 |
| 2673796 | 4327032 | 11/20/2019 | 03/27/2020 | Room 9 | 1.5 |
| 2673797 | 4327035 | 11/20/2019 | 03/27/2020 | Room 13 | 1.0 |
| 2673798 | 4327033 | 11/20/2019 | 03/27/2020 | Room 10 | 1.0 |

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Test Performed By: Placed: Lisa Janik Retrieved: Lisa Janik

Distributed by: Kelsay Environmental

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NRPP 103216 AL
NRSB ARL0017

EPA Method #402-R-92-004
Alpha Track
NRPP Device Code 8205
NRSB Device Code 12001

Laboratory Report for:

Property Tested:

Kelsay Environmental
833 Southeast Main Street 410
Portland OR 97214

Oak Heights Elementary
605 Elm Street
Sweet Home OR 97386


| Log Number | Device Number | Test Exposure Duration: | | Area Tested | Result pCi/L |
|------------|---------------|-------------------------|------------|---------------|--------------|
| 2673799 | 4327050 | 11/20/2019 | 03/27/2020 | Room 12 | 0.9 |
| 2673800 | 4327049 | 11/20/2019 | 03/27/2020 | Room 11 | 1.3 |
| 2673801 | 4327047 | 11/20/2019 | 03/27/2020 | Speech Room | 0.8 |
| 2673802 | 4327046 | 11/20/2019 | 03/27/2020 | Room 16 | 0.6 |
| 2673803 | 4327048 | 11/20/2019 | 03/27/2020 | Gym-Stage | 0.7 |
| 2673804 | 4327041 | 11/20/2019 | 03/27/2020 | Gym | 0.9 |
| 2673805 | 4327042 | 11/20/2019 | 03/27/2020 | Gym Duplicate | 0.9 |
| 2673806 | 4327045 | 11/20/2019 | 03/27/2020 | Calm Room | 0.6 |
| 2673807 | 4326955 | 11/20/2019 | 03/27/2020 | Spike | 5.7 |


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Test Performed By: Placed: Lisa Janik Retrieved: Lisa Janik

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Date Received: 04/07/2020 Date Logged: 04/22/2020 Date Analyzed: 05/06/2020 Date Reported: 05/19/2020

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Send Written Report To: (print clearly)

Kathy Simonmentas
833 SE Main Ste 110
Portland, OR 97214

Contact: _____ Tel: _____

E-Mail Address: LSmitk@es@gmail.com
BKelsay.ks

Start your test before the expiration date shown on your device or your test results will be invalid.

Project Number: _____

Site Name
Address

City State Zip

Technician Name: _____

Technician Signature: _____

(if required)

Tech Certification #: _____
(if required)

1/3 Alpha Track Test Datasheet

Oak Heights Elementary
605 Elm St.
Sweet Home, OR 97386
Lisa Janik

| Lab Use Only | Device Number | Building # | Unit # | Floor | Name of Room | Start Date <small>Monthly/Day/Year</small> | Stop Date <small>Monthly/Day/Year</small> | Lab Use |
|--------------|------------------|---------------|-----------|-------|------------------------------|---|--|---------|
| | <u>*4327136*</u> | <u>Office</u> | <u>1</u> | | <u>Front Desk</u> | <u>11/20/19</u> | <u>3/07/20</u> | |
| | <u>*4327016*</u> | | <u>2</u> | | <u>Principle Office</u> | | | |
| | <u>*4327017*</u> | | <u>3</u> | | <u>Room 1</u> | | | |
| | <u>*4327139*</u> | | <u>4</u> | | <u>Room 2</u> | | | |
| | <u>*4327138*</u> | | <u>5</u> | | <u>Room 3</u> | | | |
| | <u>*4327140*</u> | | <u>6</u> | | <u>Room 4</u> | | | |
| | <u>*4327137*</u> | | <u>7</u> | | <u>Room 5</u> | | | |
| | <u>*4327018*</u> | | <u>8</u> | | <u>Room 6</u> | | | |
| | <u>*4327019*</u> | | <u>9</u> | | <u>Speech Room</u> | | | |
| | <u>*4327020*</u> | | <u>10</u> | | <u>Speech Room duplicate</u> | | | |



AccuStar Labs
2 Sable Way
Ward Hill, MA 01835
888-480-8812

Alpha Track Test Datasheet

2/3

Send Written Report To: (print clearly)

Contact: _____ Tel: _____
E-Mail Address: _____

Project Number: _____
Site Name: Oak Heights Elementary
Address: 605 Elm St.
City State Zip: Sweet Home, OR
Technician Name: _____
Technician Signature: _____
Tech Certification #: _____ (if required)

Start your test before the expiration date shown on your device or your test results will be invalid.

| Lab Use Only | Device Number | Building # | Unit # | Floor | Name of Room | Start Date <small>Month/Day/Year</small> | Stop Date <small>Month/Day/Year</small> | Lab Use |
|--------------|-----------------------|------------|--------|-------|--------------------|---|--|---------|
| | 4327012* ✓ | | 11 | | Staff room | | | |
| | 4327027* ✓ | | 12 | | Health room | | | |
| | 4327026* ✓ | | 13 | | Break room | | | |
| | 4327029* ✓ | | 14 | | Library | | | |
| | 4327028* ✓ | | 15 | | ↓ | | | |
| | 4327034* ✓ | | 16 | | Counselor's office | | | |
| | 4327031* ✓ | | 17 | | Room 8 | | | |
| | 4327011* ✓ | | 18 | | Room 15 | | | |
| | 4327030* ✓ | | 19 | | Room 14 | | | |
| | 4327032* ✓ | | 20 | | Room 9 | | | |

Place up to 10 devices together with the matching datasheet in a plastic "zip lock" bag. Please see the back of this datasheet for test instructions.

3/3

Send Written Report To: (print clearly)

Project Number:

Site Name

Address

City State Zip

Oak Heights Elementary

Technician Name:

Contact: _____ Tel: _____







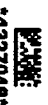
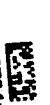
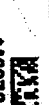


Technician Signature:

(if required)

Tech Certification #: _____
(if required)

E-Mail Address: _____

Start your test before the expiration date shown on your device or your test results will be invalid.

| Lab Use Only | Device Number | Building # | Unit # | Floor | Name of Room | Start Date <small>Month/Day/Year</small> | Stop Date <small>Month/Day/Year</small> | Lab Use |
|--------------|--|------------|--------|-------|----------------|---|--|---------|
| |  *4327035* | | 21 | | Room 13 | | | |
| |  *4327033* | | 22 | | Room 10 | | | |
| |  *4327050* | | 23 | | Room 12 | | | |
| |  *4327049* | | 24 | | Room 11 | | | |
| |  *4327047* | | 25 | | SPEECH Room | | | |
| |  *4327046* | | 26 | | Room 16 | | | |
| |  *4327048* | | 27 | | Gym - Stage | | | |
| |  *4327041* | | 28 | | Gym | | | |
| |  *4327042* | | 29 | | Gym duplicate | | | |
| |  *4327045* | | 30 | | Cal/m room | | | |
| |  *4326956* | | 31 | | SPICE | | | |

Place up to 10 devices together with

sheet in a plastic "zip lock" bag. Please see the back of this datasheet for test instructions.

Radio in Air Test Data Sheet:

Kelsay Environments

To:

Sanik kes@qmail.com

Stop Date:

City State Zip

Oak Heights Elementary
605 Elm St.
Sweet Home, OR

Lisa Janik

Start and Stop Times and Dates must be entered

[illegible]

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT Kelsay Environmental

Job Number 194065

NOMINAL Conditions: Radon Conc 25.9 pCi/L Rel. Hum 50.1 % Temp. 70.2 F
777.2 pCi/L

Date Start: 2/9/20 Date Stop: 3/10/20

Date Start: _____ Date Stop: _____

Time Start: 0817 Time Stop: 0817

Time Start: _____ Time Stop: _____

Device No.'s: (24) Alpha Tracks -

Device No.'s: _____

4326967, 4326968, 4327065, 4326966,
4327143, 4326953, 4327142, 4326955,
4327063, 4327061, 4327064, 4327141,
4327092, 4327093, 4327094, 4327091,
4326970, 4327095, 4326954, 4327059,
MS Right 4327060, 4327062, 4326969, 4327144

128 Day Conversion: $30 \times 25.9 =$
128