# School / Facility Radon Testing Report Form

School Year: **24-25**

| | |
|---|---|
| Facility: | Woodlin Elementary School |
| Address: | 2101 Luzerne Ave.<br>Silver Spring, MD 20910 |
| Reason for Testing: | Scheduled Re-Testing - ☐ 2-year or ☐ 5-year schedule<br>☐ Clearance Testing (Post-Mitigation)<br>☐ Building Envelope or HVAC Upgrades<br>☒ New Construction – Addition or Facility |
| Current Radon Status: | ☐ Active Mitigation (2-year regular schedule)<br>☐ No Active Mitigation (5-year regular schedule)<br>☒ Not Previously Tested (New Facility) |
| Round of Testing: | ☒ Initial Testing **-or-** ☐ Follow-up Testing |
| Testing Status: | ☒ No Further Testing Needed **-or-** ☐ Follow-Up Testing Required |

## Conclusion (When Testing Status is - No Further Testing Needed)

| **Mitigation -** | **Facility Radon Status:** | | |
|---|---|---|---|
| ☒ Not Required<br>☐ Required (≥4.0-pCi/L) Rooms: | ☐ No Change in Status<br>☐ Active Mitigation (2-year regular schedule)<br>☒ No Active Mitigation (5-year regular schedule) | | |
| Number of Rooms Tested | 45 | Lowest Value (pCi/L) | <0.3 |
| Number of Rooms (≥4.0-pCi/L) | 0 | Highest Value (pCi/L) | <0.3 |

**Instructions:** Submit one testing report form per-facility. Include the following as attachments:

Attachment 1- Summary Data Tables – containing the following: (see attached samples tables)

- Testing Results – lab/detector Identification, by room number/name (alpha-numeric order) as depicted on facility map/floor plan provided by the facility/school at the time of test device deployment;
- Summary Results – list of rooms by test result ≥2.0-pCi/L; ≥2.7-pCi/L; ≥4.0-pCi/L; and ≥8.0-pCi/L;
- QA/QC Results - (field blanks and duplicates) indicating location collected; trip and office blanks; and spike sample results;
- Invalid Measurement Locations – missed locations, missing and or damaged/compromised testing devices.

Attachment 2 – Laboratory Report(s)

Attachment 3 – Sampling Location Map(s) – indicating approximate location of samples, duplicates and blanks.

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# School / Facility Radon Testing Report Form

## Detector and Deployment

| | | |
|---|---|---|
| Detector/Device Type: | ☒ Passive<br>☐ Continuous | ☒ Charcoal Absorption (CAD) ☐ Alpha Track (ATD) ☐ Other<br>☐ Electret ion Chamber (EIC) ☐ Electronic Integration (EID) |
| | *Other–Specify here:* | |
| Detector/Device Name: | Air Chek – Radon Test Kits | |
| Manufacturer: | Radon Labs | |

| Person(s) Deploying or Retrieving Test Devices and certification number | Organization/Company |
|---|---|
| Shannon King | KCI Technologies, Inc. |
| | |
| | |
| *If noncertified individuals, the qualified measurement professional providing oversight -* | |
| Tyler McCleaf, CSP Cert. # 111004-RMP | KCI Technologies, Inc. |

## Testing

| | | | | |
|---|---|---|---|---|
| ☒ Short-Term<br>☐ Long-Term | Length of Test (days): | 3 | Date of Deployment and Retrieval (mm/dd/yy): | 1/13/2025<br>1/16/2025 |
| Does the test period include weekends, school breaks or holidays? | | | | ☐ Yes ☒ No |
| *If "**Yes**" please explain/detail in the space below:* | | | | |
| Was HVAC operating under occupied conditions? | | | | ☒ Yes ☐ No |
| *If "**No**" please explain/detail in the space below:* | | | | |

## Testing (continued)

| | Detectors Deployed | | | | |
|---|---|---|---|---|---|
| | Ground-Contact | | Upper-Level(s) | | Total |
| Round of Testing | Initial | Follow-Up | Initial | Follow-Up | |
| Test Locations[1] | 41 | 0 | 4 | 0 | 45 |
| Duplicates[2] | 5 | 0 | 0 | 0 | 5 |
| Field Blanks[3] | 2 | 0 | 0 | 0 | 2 |
| | | | | Grand Total | 52 |

1 – include all detectors deployed (duplicates, field blanks); 1 detector per occupied (or intended to be occupied) ground-contact space ≤ 2,000-square feet; large spaces ≥ 2,000-square feet - 1 detector per 2,000-square feet or part thereof); and upper floors - 10% of all occupied or intended to be occupied rooms per floor (these are in addition to ground contact locations)
2 - 10% of all locations tested, per floor
3 – 5% of all locations tested, per floor

## Quality Assurance / Quality Control (QA/QC)

A Quality Assurance plan that is consistent with ANSI/AARST MS-QA (Radon Measurement Systems Quality Assurance) was submitted under separate cover, and is available to review at the MCPS Radon Testing and Mitigation Program website. The following number of QA/QC samples are associated this facility.

| | QA/QC Samples | | Total |
|---|---|---|---|
| Round of Testing | Initial | Follow-Up | |
| Spikes[1] | Not applicable | | 10 |
| Trip Blanks[2] | 1 | 0 | 1 |
| Office Blanks[3, 4] | 1 | 0 | 1 |
| | | | 12 |

1 - 3% of EIC detectors; and 3% from each LOT of CAD and ATD detectors; a maximum of 6-spiked measurements per month for both EIC detectors and each LOT of CAD and ATD detectors.
2 – One per shipping container from start of detector deployment
3 – One per facility tested as devices are removed/allocated from the storage location for deployment;
4 - One additional blank, analyzed prior to deployment, for storage locations that have not been evaluated or monitored, for detectors that have been stored for more than 30-day durations.

## Quality Assurance / Quality Control (continued)

| | | |
|---|---|---|
| Spike Sample Lab Results. Measured values are satisfactory, i.e., within ± 25% of the chamber's reference value? | ☒ Yes ☐ No | |
| Quality Control measurements comply with QA/QC requirements in the submitted testing organization's/company's QA plan? | ☒ Yes ☐ No | |
| **Round of Testing** | **Initial** | **Follow-Up** |
| All Field, Trip and Office Blanks are **≤** (less than or equal to) to the Method Detection Limit? | ☒ Yes ☐ No | ☐ Yes ☒ No |
| For all Duplicate Samples[1], the higher value is **≤ 2x** the lower value? | ☒ Yes ☐ No | ☐ Yes ☒ No |
| For all Duplicate Samples[1], Relative Percent Difference(s) (RPD)[2] are less than the Warning Level[3]? | ☒ Yes ☐ No | ☐ Yes ☒ No |
| For all Duplicate Samples[1], Relative Percent Difference(s) (RPD)[2] are less than the Control Level[3]? | ☒ Yes ☐ No | ☐ Yes ☒ No |

1 – Duplicate Control – a "NO" response constitute a control failure and the space/location represented by the duplicate sample becomes an invalid measurement location and should be listed in the "Invalid Measurement Locations" Table attached to this report.

2 - The objective of duplicate tests is to assess the precision error of the measurement method or, how well two side-by-side measurements agree or disagree. Precision involving duplicates is calculated by using Relative Percent Difference (RPD). RPD is equal to the difference between the higher test result minus the lower value test result divided by the average of the two duplicate test results, multiplied by 100. The RPD result is then compared to the warning and control limits.

3 - The Warning Level is set at the deviation from ideal performance that would be expected to occur by chance only 5% of the time, and Control Limits are set at that deviation from ideal performance that would be expected to occur by chance only 1% of the time. The Warning Level indicates a potential problem, which should be investigated. The Control Level indicates that the measurement system should be subject to corrective action.

The control and warning levels for duplicates, based on the averaged duplicate test result, are -

| **Average concentration of the two duplicate test results** | **Warning Level** | **Control Level** |
|---|---|---|
| < 2.0-pCi/L | 1-pCi/L | Not applicable |
| Between 2.0 and 3.9-pCi/L | 50% RPD | 67% RPD |
| ≥ 4.0-pCi/L | 28% RPD | 36% RPD |

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# School / Facility Radon Testing Report Form

## Summary of Test Results[1] and Determination of Valid Measurements[2]

| | Ground-Contact | | Upper-Level(s) | | Total |
|---|---|---|---|---|---|
| **Round of Testing** | **Initial** | **Follow-Up** | **Initial** | **Follow-Up** | |
| Number of test locations: | 41 | 0 | 4 | 0 | 45 |
| | | | | | |
| Number of locations ≥8.0-pCi/L: | 0 | 0 | 0 | 0 | 0 |
| Number of locations ≥4.0 and ≤8-pCi/L: | 0 | 0 | 0 | 0 | 0 |
| Number of locations ≥2.7 and <4-pCi/L: | 0 | 0 | 0 | 0 | 0 |
| Number of locations ≥2.0 and <2.7-pCi/L: | 0 | 0 | 0 | 0 | 0 |
| | | | | | |
| Number of missing required test locations[3]: | 0 | 0 | 0 | 0 | 0 |
| Number of failed duplicate control locations: | 0 | 0 | 0 | 0 | 0 |
| Percentage of missing test locations for the facility[4,5]: | 0 | 0 | 0 | 0 | 0 |

1 – for locations with multiple test results, report consistent with Section 7.2(When Two Test Results Disagree) and 8.1.2 (Averaging) of ANSI/AARST MA-MFLB 2023 – Conducting Measurements of Radon in Multifamily, School, Commercial and Mix-Use Buildings;

2 - the allowance is to be calculated individually for Ground-Contact and Upper-Level(s) Test Locations;

3 – includes missed or inaccessible locations upon deployment or retrieval, damaged (not able to analyze) and missing detectors upon retrieval;

4 – if all valid measurements are <4.0-pCi/L and the total number of test locations are ≥18, there is an allowance of ≤33%. If less than 18 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023;

5 – if any valid measurements are ≥4.0-pCi/L and the total number of test locations are ≥20, there is an allowance of ≤25% of the total locations tested. If less than 20 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023.

## Summary of Test Results[1] and Determination of Valid Measurements[2] (continued)

| Round of Testing | Initial | Follow-Up |
|---|---|---|
| Were test devices deployed in all occupied and intended to be occupied rooms in contact with the ground, and, if applicable, 10% of upper floor rooms? | ☒ Yes<br>☐ No | ☐ Yes<br>☒ No |
| Were valid measurements obtained in all occupied and intended to be occupied rooms in contact with the ground, and, if applicable, 10% of upper floor rooms? | ☒ Yes<br>☐ No | ☐ Yes<br>☒ No |
| ***If Yes to both above*** *– then Testing Status –* ***'No Further Testing Needed'*** *mark 'NA' below and complete Conclusions section* | | |
| **If No to either above**, were all results obtained under 4.0-pCi/L **and** were sufficient valid measurements obtained?[1,2]<br>***If Yes,*** *then -* ***'No Further Testing Needed'*** *complete Conclusion section on first page.*<br>***If No****, then -* ***'Follow-up Testing Required'*** *continue below.* | ☐ Yes<br>☐ No<br>☒ NA | ☐ Yes<br>☐ No<br>☒ NA |

1 – if all valid measurements are <4.0-pCi/L and the total number of test locations are ≥18, there is an allowance of ≤33%. If less than 18 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023 – Conducting Measurements of Radon in Multifamily, School, Commercial and Mix-Use Buildings to determine the allowance;
2 – if any valid measurements are ≥4.0-pCi/L and the total number of test locations are ≥20, there is an allowance of ≤25% of the total locations tested. If less than 20 test locations please review section 6.2 of the ANSI/AARST MA-MFLB 2023 – Conducting Measurements of Radon in Multifamily, School, Commercial and Mix-Use Buildings to determine the number the allowance.

## Follow-Up Testing

**Required –**

- If an insufficient number (greater than the allowance provided above) of valid measurements were obtained during the initial round of testing (the "missing required test locations" in the table above);
- Any location test results ≥ 4.0-pCi/L;
- Any location where duplicates fail QC checks; and or
- At the discretion of MCPS IAQ Staff

| Reason for Follow-Up Testing | Testing Procedure | Follow-up Result | Conclusion |
|---|---|---|---|
| Insufficient Number of Measurements | Follow same procedures as Initial Testing | Not Applicable | Follow Initial Testing procedures |
| Results ≥ 4.0-pCi/L | Deploy two Short-term follow-up tests and required blanks and duplicates; Average the results of the two tests | ≥4.0 | Mitigation Required |
| Failed QC checks | | ≥2.0 and <4.0 | Consider Mitigation |
| | | <2.0 | Mitigation Not Required |

- ***If follow-up testing identifies additional spaces requiring additional testing it will be performed as part of the ongoing follow-testing round.***

# Attachment 1:

# Summary Data Tables

| Table 1- Radon Testing Results | | |
|---|---|---|
| **Woodlin Elementary School** | | |
| **Test Period: 1/12/2025 - 1/16/2025** | | |
| | | |
| Kit Number | Room / Area | Result |
| 11906829 | 104 | < 0.3 |
| 11906831 | 107 | < 0.3 |
| 11906832 | 108 | < 0.3 |
| 11906810 | 109 | < 0.3 |
| 11906827 | 109 | < 0.3 |
| 11906830 | 109 | < 0.3 |
| 11906807 | 111 | < 0.3 |
| 11906817 | 113 | < 0.3 |
| 11906814 | 115 | < 0.3 |
| 11906813 | 116 | < 0.3 |
| 11906812 | 117 | < 0.3 |
| 11906811 | 118 | < 0.3 |
| 11906824 | 118 | < 0.3 |
| 11906823 | 119 | < 0.3 |
| 11906822 | 120 | < 0.3 |
| 11906821 | 121 | < 0.3 |
| 11906801 | 122 | < 0.3 |
| 11906802 | 123 | < 0.3 |
| 11906803 | 124 | < 0.3 |
| 11906842 | 125 | < 0.3 |
| 11906848 | 125 | < 0.3 |
| 11906851 | 125 | < 0.3 |
| 11906854 | 127 | < 0.3 |
| 11906847 | 128 | < 0.3 |
| 11906840 | 129 | < 0.3 |
| 11906845 | 130 | < 0.3 |
| 11906806 | 131 | < 0.3 |
| 11906838 | 132 | < 0.3 |
| 11906818 | 133 | < 0.3 |
| 11906835 | 138 | < 0.3 |
| 11906836 | 138 | < 0.3 |
| 11906843 | 140 | < 0.3 |
| 11906816 | 143 | < 0.3 |
| 11906846 | 144 | < 0.3 |
| 11906815 | 146 | < 0.3 |
| 11906839 | 147 | < 0.3 |
| 11906844 | 148 | < 0.3 |

| Table 1- Radon Testing Results | | |
|---|---|---|
| **Woodlin Elementary School** | | |
| **Test Period: 1/12/2025 - 1/16/2025** | | |
| | | |
| Kit Number | Room / Area | Result |
| 11906826 | 155 | < 0.3 |
| 11906855 | 155 | < 0.3 |
| 11906860 | 155 | < 0.3 |
| 11906804 | 158 | < 0.3 |
| 11906852 | 211 | < 0.3 |
| 11906834 | 223 | < 0.3 |
| 11906853 | 235 | < 0.3 |
| 11906841 | 250 | < 0.3 |
| 11906820 | 111C | < 0.3 |
| 11906808 | 11B | < 0.3 |
| 11906825 | 155C | < 0.3 |
| 11906859 | 156B | < 0.3 |
| 11906809 | GYM | < 0.3 |
| 11906837 | GYM | < 0.3 |
| 11906819 | MAIN OFFICE | < 0.3 |

| Table 2 - Summary Testing Results ≥2.0 pCi/L | | | | | | | |
|---|---|---|---|---|---|---|---|
| Woodlin Elementary School | | | | | | | |
| Test Period: 1/12/2025 - 1/16/2025 | | | | | | | |
| ≥2.0 and <2.7 pCi/L | | ≥2.7 and <4.0 pCi/L | | ≥4.0 and <8.0 pCi/l | | ≥8.0 pCi/L | |
| Room / Area | Result | Room / Area | Result | Room / Area | Result | Room / Area | Result |
| N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
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| Table 3 - QC Radon Testing Results | | | |
|---|---|---|---|
| Woodlin Elementary School | | | |
| Test Period: 1/12/2025 - 1/16/2025 | | | |
| | | | |
| **Kit Number** | **QC Type** | **Room / Area** | **Result** |
| 11906827 | D | 109 | < 0.3 |
| 11906810 | FB | 109 | < 0.3 |
| 11906811 | D | 118 | < 0.3 |
| 11906842 | D | 125 | < 0.3 |
| 11906851 | FB | 125 | < 0.3 |
| 11906836 | D | 138 | < 0.3 |
| 11906855 | D | 155 | < 0.3 |
| 11906877 | OB | OFFICE BLANK | < 0.3 |
| 11903993 | TB | TRAVEL BLANK | < 0.3 |

**Table 3a - Duplicate Worksheet / Data Validation**

**Woodlin Elementary School**

**Test Period: 1/12/2025 - 1/16/2025**

| Sample ID | | | Duplicate Concentrations (pCi/L) and QC Checks | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Kit Numbers | | Room / Area | Higher | Lower | Check #1 (Pass/Fail) | 2x the Lower | Check #2 (Pass/Fail) | Average | Relative Percent Difference (RPD) | Check #3 |
| 11906824 | 11906811 | 118 | 0.3 | 0.3 | ✓ | 0.6 | PASS | 0.3 | <1-pCi/L | ✓ |
| 11906830 | 11906827 | 109 | 0.3 | 0.3 | ✓ | 0.6 | PASS | 0.3 | <1-pCi/L | ✓ |
| 11906835 | 11906836 | 138 | 0.3 | 0.3 | ✓ | 0.6 | PASS | 0.3 | <1-pCi/L | ✓ |
| 11906848 | 11906842 | 125 | 0.3 | 0.3 | ✓ | 0.6 | PASS | 0.3 | <1-pCi/L | ✓ |
| 11906826 | 11906855 | 155 | 0.3 | 0.3 | ✓ | 0.6 | PASS | 0.3 | <1-pCi/L | ✓ |

**NOTES:**

QC Check #1 - Data Entry

QC Check #2 - Higher duplicate concentration is < or = to 2x the Lower

QC Check #3 - Meets RPD Limits, by average duplicate concentration

- enter 2 if RPD is BELOW warning and control levels, AND passes QC Check 1 and 2
- enter 1 if RPD is ABOVE warning and BELOW control levels, AND passes QC Check 1 and 2
- enter 0 if RPD is ABOVE control level, or 'FAILS' QC Check 1 or 2

| Average (pCi/L) | Warning Level | Control Level |
|---|---|---|
| < 2.0 | 1-pCi/L | NA |
| Between 2.0 and 3.9 | 50% RPD | 67% RPD |
| ≥ 4.0 | 28% RPD | 36% RPD |

| Table 4 - Summary of Invalid Measurement Locations | | |
|---|---|---|
| **Woodlin Elementary School** | | |
| **Test Period: 1/12/25 - 1/16/25** | | |
| | | |
| **Kit Number** | **Room/Area** | **Reason** |
| N/A | N/A | N/A |
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# Attachment 2:

# Laboratory Reports

January 20, 2025

# ** LABORATORY ANALYSIS REPORT **

Radon test result report for:
**WOODLAND ES**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 11906829 | 104 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906831 | 107 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906832 | 108 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906827 | 109 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906810 | 109 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906830 | 109 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906807 | 111 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906820 | 111C | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906817 | 113 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906814 | 115 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906813 | 116 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906812 | 117 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906811 | 118 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906824 | 118 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906823 | 119 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906808 | 11B | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906822 | 120 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906821 | 121 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906801 | 122 | 2025-01-13 @ 8:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906802 | 123 | 2025-01-13 @ 8:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906803 | 124 | 2025-01-13 @ 8:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906851 | 125 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906848 | 125 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906842 | 125 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906854 | 127 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906847 | 128 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906840 | 129 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906845 | 130 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906806 | 131 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906838 | 132 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906818 | 133 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906836 | 138 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906835 | 138 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906843 | 140 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906816 | 143 | 2025-01-13 @ 8:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906846 | 144 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906815 | 146 | 2025-01-13 @ 8:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

January 20, 2025 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**WOODLAND ES**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 11906839 | 147 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906844 | 148 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906855 | 155 | 2025-01-13 @ 10:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906826 | 155 | 2025-01-13 @ 10:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906860 | 155 | 2025-01-13 @ 10:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906825 | 155C | 2025-01-13 @ 10:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906859 | 156B | 2025-01-13 @ 10:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906804 | 158 | 2025-01-13 @ 8:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906852 | 211 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906834 | 223 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906853 | 235 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906841 | 250 | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906809 | GYM | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906837 | GYM | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |
| 11906819 | MAIN OFFICE | 2025-01-13 @ 9:00 am | 2025-01-16 @ 9:00 am | < 0.3 | 2025-01-20 |

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January 20, 2025 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**OFFICE**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 11906876 | O | 2025-01-14 @ 11:00 am | 2025-01-17 @ 11:00 am | < 0.3 | 2025-01-20 |
| 11906877 | O | 2025-01-13 @ 11:00 am | 2025-01-16 @ 11:00 am | < 0.3 | 2025-01-20 |

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January 20, 2025 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**TRAVEL**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 11903993 | T | 2025-01-13 @ 11:00 am | 2025-01-16 @ 11:00 am | < 0.3 | 2025-01-20 |
| 11906878 | T | 2025-01-14 @ 11:00 am | 2025-01-17 @ 11:00 am | < 0.3 | 2025-01-20 |

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# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI TECHNOLOGIES, INC Job Number 20001560

NOMINAL Conditions: Radon Conc 50.6 pCi/L Rel. Hum 50.6 % Temp. 70.8 F

| | |
|---|---|
| Date Start: 12/14/24 Date Stop: 12/17/24 | Date Start: _____ Date Stop: _____ |
| Time Start: 0815 Time Stop: 0815 | Time Start: _____ Time Stop: _____ |
| Device No.'s: (3) CHAR BAGS | Device No.'s: _____ |
| 11477880, 11477883, 11477896 | _____ |
| _____ | _____ |
| B4 Right | |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)**
**Background = 7 µR/h Elevation = 820 ft**

December 23, 2024 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**SK**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 11477880 | SK1 | 2024-12-14 @ 8:00 am | 2024-12-17 @ 8:00 am | 52.0 ± 4.2 | 2024-12-23 |
| 11477883 | SK2 | 2024-12-14 @ 8:00 am | 2024-12-17 @ 8:00 am | 54.6 ± 4.4 | 2024-12-23 |
| 11477896 | SK3 | 2024-12-14 @ 8:00 am | 2024-12-17 @ 8:00 am | 45.5 ± 3.6 | 2024-12-23 |

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# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI TECHNOLOGIES, INC Job Number 20002919

NOMINAL Conditions: Radon Conc 7.0 pCi/L Rel. Hum 51.4 % Temp. 70.7 F

| | |
|---|---|
| Date Start: 3/7/25 Date Stop: 3/10/25 | Date Start: _____ Date Stop: _____ |
| Time Start: 0832 Time Stop: 0832 | Time Start: _____ Time Stop: _____ |
| Device No.'s: (7) CHAR BAGS | Device No.'s: _____ |
| 11886401 thru 11886406, | |
| 11886410 | |
| G3 Right | |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)**
**Background = 7 µR/h Elevation = 820 ft**

March 19, 2025 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**QC**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 11886401 | SK1 | 2025-03-07 @ 9:00 am | 2025-03-10 @ 9:00 am | 7.8 ± 1.1 | 2025-03-19 |
| 11886405 | SK2 | 2025-03-07 @ 9:00 am | 2025-03-10 @ 9:00 am | 7.1 ± 1.1 | 2025-03-19 |
| 11886406 | SK3 | 2025-03-07 @ 9:00 am | 2025-03-10 @ 9:00 am | 7.7 ± 1.1 | 2025-03-19 |
| 11886403 | SK4 | 2025-03-07 @ 9:00 am | 2025-03-10 @ 9:00 am | 7.9 ± 1.2 | 2025-03-19 |
| 11886404 | SK5 | 2025-03-07 @ 9:00 am | 2025-03-10 @ 9:00 am | 7.6 ± 1.2 | 2025-03-19 |
| 11886410 | SK6 | 2025-03-07 @ 9:00 am | 2025-03-10 @ 9:00 am | 7.0 ± 1.1 | 2025-03-19 |
| 11886402 | SK7 | 2025-03-07 @ 9:00 am | 2025-03-10 @ 9:00 am | 8.6 ± 1.2 | 2025-03-19 |

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KCI TECHNOLOGIES

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

Corporate Office: 936 Ridgebrook road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

# Radon Test Kit Chain of Custody

Project Name: MCPS Radon – Testing January 13th – January 16th, 2024

Name of Schools:

1. Springbrook HS
2. Woodlin ES
3. Parkside Center
4. Bannockburn ES
5. Beall ES
6. Bells Mill ES
7. Bethesda ES

---

| | Date | Initials |
|---|---|---|
| Radon Test Kits Deployed | 01/13/2025 | BMM |
| Radon Test Kits Collected | 01/16/2025 | BMM |
| Radon Test Kits Shipped to Lab* | 01/17/2025 | BMM |
| Radon Test Kits Received by Lab* | 01/21/2025 | BMM |

*All samples sent to Air Check, Inc., 2 Saber Way, Ward Hill, MA 01835

KCI TECHNOLOGIES
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936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

# MCPS RADON TESTING - EXECUTIVE SUMMARY

| | |
|---|---|
| Site Name | Woodlin Elementary School |
| Date of Report | 2/21/2020 |
| Round of Testing | Initial<br>Follow-up<br>Post Remediation<br>**2 year testing**<br>5 year testing<br>HVAC Upgrade<br>Window Replacement<br>New Addition<br>New Facility |
| # of Rooms Tested | 56 |
| # Rooms ≥4.0 pCi/L | 0 |
| Lowest Value | <0.3 pCi/L |
| Highest Value | 1.1 pCi/L |

## Project Status

Current Project Status at this time: Testing Complete; no further action.

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2/21/2020

Mr. Richard Cox, MS
Environmental Team Leader
Montgomery County Public Schools
Division of Maintenance
Gaithersburg, Maryland 20879

Re: Radon Testing Services

KCI Job #12146341126

**Location: Woodlin Elementary School**
2101 Luzerne Avenue
Silver Spring, Maryland 20910

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools pursuant to completing a "short-term" 3-day radon test for the Woodlin Elementary School, located at 2101 Luzerne Avenue in Silver Spring, Maryland 20910 (subject site).

**SCOPE OF SERVICES**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Proficiency Program (NRPP) Radon Measurement Provider (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on 1/7/2020 and deployed sixty-five activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

A floor plan map of the building with the test locations is included as Appendix A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted sixty (60) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner, Inc. prior to being returned to the laboratory for analysis.

KCI returned to the site on 1/10/2020 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a National Radon Safety Board (NRSB) radon measurement provider and is a certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

**EVALUATION OF TESTING CONDITIONS**

These tests represent:

- Follow-up to initial testing.

These tests were conducted to:

- Evaluate radon concentrations at the facility.

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility's HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room at the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the upper-20s and high temperatures were in the mid-50s. Maximum sustained winds ranged from 10-23 miles per hour. Average humidity was around 64%. 0.32 inches of precipitation (rain) was recorded during the testing period.

**RESULTS**

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Sampling locations and associated test kit identification numbers and relevant field observations are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

| Radon Concentration | Room | Result |
|---|---|---|
| ≥4.0 piC/L | None | N/A |
| ≤4.0 piC/L | See Attachment B | See Attachment B |

| Quality Control Samples | |
|---|---|
| Results of Blank Canisters: | The office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. |
| Adequate Laboratory Precision? | Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. |
| Spike Sample Analysis: | The Spike sample analysis results indicate the laboratory is operating within statistical control limits. |

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at 410-316-7800.

Sincerely,

Mr. Tyler P. McCleaf
Radon Measurement Provider
111004 RT

KCI Technologies, Inc.

Attachments:

A- Floor Plan with Test Locations

B - Tables 1-3, Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

| Table 1- Radon Testing Results | | |
|---|---|---|
| Woodlin Elementary School | | |
| Test Period: 1/6/2020-1/13/2020 | | |
| | | |
| Kit Number | Room / Area | Result |
| 9348101 | HEALTH | < 0.3 |
| 9348102 | MAIN OFFICE | < 0.3 |
| 9348103 | PRINCIPAL | < 0.3 |
| 9348104 | CONFERENCE | < 0.3 |
| 9348105 | ASSISTANT PRINCIPAL | < 0.3 |
| 9348106 | VOLUNTEER ROOM | < 0.3 |
| 9348107 | 28 | < 0.3 |
| 9348108 | 29 | 1 |
| 9348109 | 30 | < 0.3 |
| 9348110 | 31 | < 0.3 |
| 9348111 | 31 | < 0.3 |
| 9348112 | KITCHEN OFFICE | < 0.3 |
| 9348113 | 32 | < 0.3 |
| 9348114 | 34 | < 0.3 |
| 9348115 | 33 | < 0.3 |
| 9348116 | BUILDING SERVICES | 1.9 |
| 9348117 | APR | 0.7 |
| 9348118 | APR | 0.7 |
| 9348119 | KITCHEN OFFICE | < 0.3 |
| 9348120 | 18 | < 0.3 |
| 9348121 | GYM | 1 |
| 9348122 | 35 | < 0.3 |
| 9348123 | 21 | < 0.3 |
| 9348124 | 27 | < 0.3 |
| 9348125 | 26 | < 0.3 |
| 9348126 | GYM OFFICE | 1 |
| 9348127 | 17 | < 0.3 |
| 9348128 | GYM | 1.1 |
| 9348129 | 41 | < 0.3 |
| 9348130 | 23 | < 0.3 |
| 9348131 | 24 | < 0.3 |
| 9348132 | 25 | < 0.3 |
| 9348133 | 21 | < 0.3 |
| 9348134 | 22 | < 0.3 |
| 9348135 | 15 | < 0.3 |
| 9348136 | 12 | < 0.3 |
| 9348137 | IMC | < 0.3 |
| 9348138 | 19 | < 0.3 |
| 9348139 | 22 | < 0.3 |
| 9348140 | 20 | < 0.3 |
| 9348141 | IMC | < 0.3 |
| 9348142 | IMC OFFICE | < 0.3 |

| | | |
|---|---|---|
| 9348143 | 11 | < 0.3 |
| 9348144 | 100 | < 0.3 |
| 9348145 | 18 | < 0.3 |
| 9348146 | 16 | < 0.3 |
| 9348147 | 14 | 0.6 |
| 9348148 | 13 | < 0.3 |
| 9348149 | 9 | < 0.3 |
| 9348150 | 10 | < 0.3 |
| 9348151 | 9 | 0.5 |
| 9348152 | 3 | < 0.3 |
| 9348153 | 2 | < 0.3 |
| 9348154 | 1 | < 0.3 |
| 9348155 | 4 | < 0.3 |
| 9348156 | 5 | < 0.3 |
| 9348157 | 6 | < 0.3 |
| 9348158 | 7 | < 0.3 |
| 9348159 | 7 | < 0.3 |
| 9348160 | 8 | < 0.3 |
| 9348161 | 8 | < 0.3 |
| 9348162 | LOUNGE | < 0.3 |
| 9348163 | COUNSELOR | < 0.3 |
| 9348164 | COPY | < 0.3 |
| 9348165 | STAFF CAFE | < 0.3 |
| 9348314 | OFFICE BLANK | <0.3 |

| Table 1- Radon Testing Results | | | |
|---|---|---|---|
| Woodlin Elementary School | | | |
| Test Period: 1/6/2020-1/13/2020 | | | |
| | | | |
| Kit Number | QC Type | Room / Area | Result |
| 9348110 | D | 31 | <0.3 |
| 9348119 | FB | KITCHEN OFFICE | <0.3 |
| 9348122 | D | 35 | <0.3 |
| 9348139 | D | 22 | <0.3 |
| 9348120 | FB | 18 | <0.3 |
| 9348127 | D | 17 | <0.3 |
| 9348151 | D | 9 | 0.5 |
| 9348159 | FB | 7 | <0.3 |
| 9348160 | D | 8 | <0.3 |
| 9348319 | TRANSIT BLANK | NA | <0.3 |
| 9348320 | TRANSIT BLANK | NA | <0.3 |
| 9348313 | TRANSIT BLANK | NA | <0.3 |

| Summary of Missed Locations | | |
|---|---|---|
| Woodlin Elementary School | | |
| Test Period: 01/06/2020 - 01/13/2020 | | |
| | | |
| Kit Number | Room/Area | Result |
| - | N/A | - |
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| Summary of Missing, Compromised and >/= 4 piC/L Tests | | |
|---|---|---|
| Woodlin Elementary School | | |
| Test Period: 01/06/2020 - 01/13/2020 | | |
| | | |
| Kit Number | Room/Area | Result |
| - | N/A | - |
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Table Note:
* Missing or Compromised Sample

# ATTACHMENT C

# Laboratory Analytical Results

January 3, 2020

# ** LABORATORY ANALYSIS REPORT **

Radon test result report for:

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within ± 25% of the chamber's reference value (25.7 pCi/L).

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 9340067 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.1 ± 2.4 D | 2020-01-03 |
| 9340035 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 22.5 ± 2.3 D | 2020-01-03 |
| 9340003 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.2 ± 2.4 D | 2020-01-03 |
| 9340089 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 23.3 ± 2.3 D | 2020-01-03 |
| 9340072 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 18.3 ± 2.0 D | 2020-01-03 |
| 9340040 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 27.3 ± 2.6 D | 2020-01-03 |
| 9340008 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 24.8 ± 2.5 D | 2020-01-03 |
| 9340094 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 24.7 ± 2.5 D | 2020-01-03 |
| 9340099 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 27.5 ± 2.6 D | 2020-01-03 |
| 9340077 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.2 ± 2.5 D | 2020-01-03 |
| 9340045 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 24.7 ± 2.4 D | 2020-01-03 |
| 9340013 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.9 ± 2.6 D | 2020-01-03 |
| 9340018 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 29.1 ± 2.8 D | 2020-01-03 |
| 9341704 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.1 ± 2.4 D | 2020-01-03 |
| 9340050 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 27.2 ± 2.6 D | 2020-01-03 |
| 9340023 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 28.2 ± 2.7 D | 2020-01-03 |
| 9341709 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.5 ± 2.4 D | 2020-01-03 |
| 9340055 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 27.8 ± 2.6 D | 2020-01-03 |
| 9340060 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 27.3 ± 2.5 D | 2020-01-03 |
| 9340028 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 23.9 ± 2.3 D | 2020-01-03 |
| 9341714 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 28.3 ± 2.7 D | 2020-01-03 |
| 9340082 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.4 ± 2.6 D | 2020-01-03 |
| 9340065 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 24.2 ± 2.4 D | 2020-01-03 |
| 9340033 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.2 ± 2.5 D | 2020-01-03 |
| 9341719 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.7 ± 2.5 D | 2020-01-03 |
| 9340001 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.3 ± 2.5 D | 2020-01-03 |
| 9340087 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 24.8 ± 2.4 D | 2020-01-03 |
| 9340070 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 19.5 ± 2.4 D | 2020-01-03 |
| 9340038 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 24.7 ± 2.3 D | 2020-01-03 |
| 9340006 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.2 ± 2.4 D | 2020-01-03 |
| 9340092 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 31.4 ± 2.8 D | 2020-01-03 |
| 9340097 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.7 ± 2.5 D | 2020-01-03 |
| 9340075 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 29.6 ± 2.6 D | 2020-01-03 |
| 9340043 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 28.1 ± 2.6 D | 2020-01-03 |
| 9340011 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.8 ± 2.5 D | 2020-01-03 |
| 9340016 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 23.2 ± 2.4 D | 2020-01-03 |
| 9341702 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.8 ± 2.5 D | 2020-01-03 |

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

January 3, 2020

# ** LABORATORY ANALYSIS REPORT **

Radon test result report for:

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within ± 25% of the chamber's reference value (25.7 pCi/L).

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 9340048 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.5 ± 2.4 D | 2020-01-03 |
| 9340021 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.7 ± 2.6 D | 2020-01-03 |
| 9341707 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.8 ± 2.4 D | 2020-01-03 |
| 9340053 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.8 ± 2.5 D | 2020-01-03 |
| 9340058 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 28.5 ± 2.7 D | 2020-01-03 |
| 9340026 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.9 ± 2.4 D | 2020-01-03 |
| 9341712 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 24.3 ± 2.4 D | 2020-01-03 |
| 9340080 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.1 ± 2.4 D | 2020-01-03 |
| 9340063 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.8 ± 2.5 D | 2020-01-03 |
| 9340031 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 24.9 ± 2.4 D | 2020-01-03 |
| 9341717 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.7 ± 2.4 D | 2020-01-03 |
| 9340085 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.9 ± 2.5 D | 2020-01-03 |
| 9340068 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.2 ± 2.5 D | 2020-01-03 |
| 9340036 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 23.6 ± 2.3 D | 2020-01-03 |
| 9340004 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.9 ± 2.6 D | 2020-01-03 |
| 9340090 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.3 ± 2.5 D | 2020-01-03 |
| 9340073 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.8 ± 2.5 D | 2020-01-03 |
| 9340041 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.6 ± 2.4 D | 2020-01-03 |
| 9340009 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 24.1 ± 2.4 D | 2020-01-03 |
| 9340095 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.2 ± 2.5 D | 2020-01-03 |
| 9340100 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 24.5 ± 2.4 D | 2020-01-03 |
| 9340078 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.0 ± 2.4 D | 2020-01-03 |
| 9340046 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 28.0 ± 2.6 D | 2020-01-03 |
| 9340014 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 21.8 ± 2.8 D | 2020-01-03 |
| 9340019 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.0 ± 2.5 D | 2020-01-03 |
| 9341705 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 27.8 ± 2.6 D | 2020-01-03 |
| 9340051 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.5 ± 2.4 D | 2020-01-03 |
| 9340056 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 27.7 ± 2.6 D | 2020-01-03 |
| 9340024 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 28.3 ± 2.5 D | 2020-01-03 |
| 9341710 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 24.2 ± 2.3 D | 2020-01-03 |
| 9340061 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 28.9 ± 2.6 D | 2020-01-03 |
| 9340029 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 23.0 ± 2.3 D | 2020-01-03 |
| 9341715 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 27.0 ± 2.5 D | 2020-01-03 |
| 9340083 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 24.9 ± 2.4 D | 2020-01-03 |
| 9340066 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.1 ± 2.4 D | 2020-01-03 |
| 9340034 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.4 ± 2.5 D | 2020-01-03 |
| 9341720 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.3 ± 2.5 D | 2020-01-03 |

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January 3, 2020

# ** LABORATORY ANALYSIS REPORT **

Radon test result report for:

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within ± 25% of the chamber's reference value (25.7 pCi/L).

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 9340002 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.7 ± 2.5 D | 2020-01-03 |
| 9340088 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.4 ± 2.5 D | 2020-01-03 |
| 9340071 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 24.9 ± 2.4 D | 2020-01-03 |
| 9340039 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.9 ± 2.5 D | 2020-01-03 |
| 9340007 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.9 ± 2.4 D | 2020-01-03 |
| 9340093 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.1 ± 2.5 D | 2020-01-03 |
| 9340098 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.8 ± 2.5 D | 2020-01-03 |
| 9340076 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.1 ± 2.5 D | 2020-01-03 |
| 9340044 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.2 ± 2.5 D | 2020-01-03 |
| 9340012 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 22.5 ± 2.2 D | 2020-01-03 |
| 9340017 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.3 ± 2.5 D | 2020-01-03 |
| 9341703 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.0 ± 2.5 D | 2020-01-03 |
| 9340049 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.0 ± 2.5 D | 2020-01-03 |
| 9340022 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 28.6 ± 2.6 D | 2020-01-03 |
| 9341708 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 28.8 ± 2.8 D | 2020-01-03 |
| 9340054 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.8 ± 2.5 D | 2020-01-03 |
| 9340059 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.5 ± 2.6 D | 2020-01-03 |
| 9340027 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.6 ± 2.5 D | 2020-01-03 |
| 9341713 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.5 ± 2.5 D | 2020-01-03 |
| 9340081 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 18.4 ± 2.1 D | 2020-01-03 |
| 9340064 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.5 ± 2.5 D | 2020-01-03 |
| 9340032 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.1 ± 2.4 D | 2020-01-03 |
| 9341718 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 23.7 ± 2.4 D | 2020-01-03 |
| 9340086 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.9 ± 2.6 D | 2020-01-03 |
| 9340069 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.6 ± 2.5 D | 2020-01-03 |
| 9340037 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 28.4 ± 2.6 D | 2020-01-03 |
| 9340005 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | ???? DIF1 | 2020-01-03 |
| 9340091 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.5 ± 2.5 D | 2020-01-03 |
| 9340096 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.2 ± 2.5 D | 2020-01-03 |
| 9340074 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 27.7 ± 2.5 D | 2020-01-03 |
| 9340042 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.6 ± 2.5 D | 2020-01-03 |
| 9340010 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 27.5 ± 2.5 D | 2020-01-03 |
| 9341701 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 22.9 ± 2.3 D | 2020-01-03 |
| 9340047 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 26.7 ± 2.5 D | 2020-01-03 |
| 9340015 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.4 ± 2.5 D | 2020-01-03 |
| 9340020 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 24.1 ± 2.4 D | 2020-01-03 |
| 9341706 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 31.0 ± 2.7 D | 2020-01-03 |

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January 3, 2020

# ** LABORATORY ANALYSIS REPORT **

Radon test result report for:

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within ± 25% of the chamber's reference value (25.7 pCi/L).

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 9340052 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 27.4 ± 2.6 D | 2020-01-03 |
| 9340057 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 27.3 ± 2.5 D | 2020-01-03 |
| 9340025 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.1 ± 2.4 D | 2020-01-03 |
| 9341711 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 22.5 ± 2.2 D | 2020-01-03 |
| 9340079 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 26.9 ± 2.5 D | 2020-01-03 |
| 9340062 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.6 ± 2.5 D | 2020-01-03 |
| 9340030 | N/A | 2019-12-21 @ 8:00 am | 2019-12-23 @ 8:00 am | 25.0 ± 2.4 D | 2020-01-03 |
| 9341716 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 25.1 ± 2.4 D | 2020-01-03 |
| 9340084 | N/A | 2019-12-21 @ 9:00 am | 2019-12-23 @ 9:00 am | 24.5 ± 2.3 D | 2020-01-03 |

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# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 193598

NOMINAL Conditions: Radon Conc _____ pCi/L Rel. Hum _____ % Temp. _____ F

Date Start: 12/21/19 Date Stop: 12/23/19

Time Start: 0830 Time Stop: 0830

(Group 4)
Device No.'s: (20) Char. Bags -

9340061 thru 9340080

52

Avg pCi/L 35.5 RH % 50.1 Temp °F 70.0

Date Start: 12/21/19 Date Stop: 12/23/19

Time Start: 0835 Time Stop: 0835

(Group 5)
Device No.'s: (20) Char. Bags -

9340081 thru 9340100

Q5

Avg pCi/L 35.5 RH % 50.1 Temp °F 70.0

Date Start: 12/21/19 Date Stop: 12/23/19

Time Start: 0840 Time Stop: 0840

(Group 6)
Device No.'s: (20) Char. Bags -

9341701 thru 9341720

R5

Avg pCi/L 35.5 RH % 50.1 Temp °F 70.0

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)**
**Background = 7 µR/h Elevation = 820 ft**

## P4792 / WILLIAM LYMAN

| Kit Number | Start Date | Start Time | End Date | End Time | Temp. | Facility | Building | Room | Project ID | Floor | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9348101 | 2020-01-06 | 11:00 am | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | HEALTH | | 1 | < 0.3 |
| 9348102 | 2020-01-06 | 11:00 am | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | MAIN OFFICE | | 1 | < 0.3 |
| 9348103 | 2020-01-06 | 11:00 am | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | PRINCIPAL | | 1 | < 0.3 |
| 9348104 | 2020-01-06 | 11:00 am | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | CONFERENCE | | 1 | < 0.3 |
| 9348105 | 2020-01-06 | 11:00 am | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | ASSISTANT PRINCIPAL | | 1 | < 0.3 |
| 9348106 | 2020-01-06 | 11:00 am | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | VOLUNTEER ROOM | | 1 | < 0.3 |
| 9348107 | 2020-01-06 | 11:00 am | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 28 | | 1 | < 0.3 |
| 9348108 | 2020-01-06 | 11:00 am | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 29 | | 1 | 1.0 |
| 9348109 | 2020-01-06 | 11:00 am | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 30 | | 1 | < 0.3 |
| 9348110 | 2020-01-06 | 11:00 am | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 31 | | 1 | < 0.3 |
| 9348111 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 31 | | 1 | < 0.3 |
| 9348112 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | KITCHEN OFFICE | | 1 | < 0.3 |
| 9348113 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 32 | | 1 | < 0.3 |
| 9348114 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 34 | | 1 | < 0.3 |
| 9348115 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 33 | | 1 | < 0.3 |
| 9348116 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | BUILDING SERVICES | | 1 | 1.9 |
| 9348117 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | APR | | 1 | 0.7 |
| 9348118 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | APR | | 1 | 0.7 |
| 9348119 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | KITCHEN OFFICE | | 1 | < 0.3 |
| 9348120 | 2020-01-06 | 1:00 pm | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 18 | | 1 | < 0.3 |
| 9348121 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | GYM | | 1 | 1.0 |
| 9348122 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 35 | | 1 | < 0.3 |
| 9348123 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 21 | | 1 | < 0.3 |
| 9348124 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 27 | | 1 | < 0.3 |
| 9348125 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 26 | | 1 | < 0.3 |
| 9348126 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | GYM OFFICE | | 1 | 1.0 |
| 9348127 | 2020-01-06 | 1:00 pm | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 17 | | 1 | < 0.3 |
| 9348128 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | GYM | | 1 | 1.1 |
| 9348129 | 2020-01-06 | 1:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 41 | | 1 | < 0.3 |
| 9348130 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 23 | | 1 | < 0.3 |
| 9348131 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 24 | | 1 | < 0.3 |
| 9348132 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 25 | | 1 | < 0.3 |
| 9348133 | 2020-01-06 | 1:00 pm | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 21 | | 1 | < 0.3 |
| 9348134 | 2020-01-06 | 12:00 pm | 2020-01-13 | 11:00 am | 72 | WOODLIN ES | | 22 | | 1 | < 0.3 |
| 9348135 | 2020-01-06 | 1:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 15 | | 1 | < 0.3 |

## P4792 / WILLIAM LYMAN

| Kit Number | Start Date | Start Time | End Date | End Time | Temp. | Facility | Building | Room | Project ID | Floor | Result |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9348136 | 2020-01-06 | 1:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 12 | | 1 | < 0.3 |
| 9348137 | 2020-01-06 | 1:00 pm | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | IMC | | 1 | < 0.3 |
| 9348138 | 2020-01-06 | 1:00 pm | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 19 | | 1 | < 0.3 |
| 9348139 | 2020-01-06 | 1:00 pm | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 22 | | 1 | < 0.3 |
| 9348140 | 2020-01-06 | 1:00 pm | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 20 | | 1 | < 0.3 |
| 9348141 | 2020-01-06 | 1:00 pm | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | IMC | | 1 | < 0.3 |
| 9348142 | 2020-01-06 | 1:00 pm | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | IMC OFFICE | | 1 | < 0.3 |
| 9348143 | 2020-01-06 | 1:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 11 | | 1 | < 0.3 |
| 9348144 | 2020-01-06 | 1:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 100 | | 1 | < 0.3 |
| 9348145 | 2020-01-06 | 1:00 pm | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 18 | | 1 | < 0.3 |
| 9348146 | 2020-01-06 | 1:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 16 | | 1 | < 0.3 |
| 9348147 | 2020-01-06 | 1:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 14 | | 1 | 0.6 |
| 9348148 | 2020-01-06 | 1:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 13 | | 1 | < 0.3 |
| 9348149 | 2020-01-06 | 1:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 9 | | 1 | < 0.3 |
| 9348150 | 2020-01-06 | 1:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 10 | | 1 | < 0.3 |
| 9348151 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 9 | | 1 | 0.5 |
| 9348152 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 3 | | 1 | < 0.3 |
| 9348153 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 2 | | 1 | < 0.3 |
| 9348154 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 1 | | 1 | < 0.3 |
| 9348155 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 4 | | 1 | < 0.3 |
| 9348156 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 5 | | 1 | < 0.3 |
| 9348157 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 6 | | 1 | < 0.3 |
| 9348158 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 7 | | 1 | < 0.3 |
| 9348159 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 7 | | 1 | < 0.3 |
| 9348160 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 8 | | 1 | < 0.3 |
| 9348161 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | 8 | | 1 | < 0.3 |
| 9348162 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | LOUNGE | | 1 | < 0.3 |
| 9348163 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | COUNSELOR | | 1 | < 0.3 |
| 9348164 | 2020-01-06 | 2:00 am | 2020-01-13 | 12:00 pm | 72 | WOODLIN ES | | COPY | | 1 | < 0.3 |
| 9348165 | 2020-01-06 | 2:00 am | 2020-01-13 | 1:00 pm | 72 | WOODLIN ES | | STAFF CAFE | | 1 | < 0.3 |

KCI TECHNOLOGIES

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS
Corporate Office: 936 Ridgebrook road • Sparks, Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

# Radon Test Kit Chain of Custody

Project Name: MCPS Radon 2019 Week 3

Name of Schools:

1. Bannockburn E.S.
2. Bethesda E.S.
3. Bethesda-Chevy Chase H.S.
4. Bradley Hill E.S.
5. Burning Tree E.S.
6. Burnt Mills E.S.
7. East Silver Springs E.S.
8. Einstein H.S.
9. Flora Singer E.S.
10. Key M.S.
11. Montgomery Blair H.S.
12. Montgomery Knolls E.S.
13. Newport Mills M.S.
14. Oak View E.S.
15. Rock View E.S.
16. Roscoe Nix E.S.
17. Sligo M.S.
18. Spring Mill Center
19. Springbrook H.S.
20. Westland M.S.
21. Woodlin E.S.

| | Date | Initials |
|---|---|---|
| Radon Test Kits Deployed | 1/6/20 to 1/7/20 | JM |
| Radon Test Kits Collected | 1/9/20 to 1/10/20 | JM |
| Radon Test Kits Shipped to Lab* | 1/10/20 | JM |
| Radon Test Kits Received by Lab* | 1/13/202 | JM |

*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759

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# MCPS RADON TESTING - EXECUTIVE SUMMARY

| | |
|---|---|
| Site Name | Woodlin Elementary School |
| Date of Report | March 14, 2018 |
| Round of Testing | Initial<br>**Follow-up**<br>Post Remediation<br>2 year testing<br>5 year testing<br>HVAC Upgrade<br>Window Replacement<br>New Addition<br>New Facility |
| # of Rooms Tested | 2 |
| # Rooms ≥4.0 pCi/L | 0 |
| Lowest Value | 0.9 pCi/L |
| Highest Value | 1.6 pCi/L |

## Project Status

Current Project Status at this time: Retesting completed; no further action at this time.

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March 14, 2018

Mr. Richard Cox, MS
Team Leader
Montgomery County Public Schools
Division of Maintenance
Gaithersburg, Maryland 20879

Re: Radon Testing Services

KCI Job #1214634188

**Location: Woodlin Elementary School**
2101 Luzerne Ave.
Silver Spring, Maryland 20910

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools pursuant to completing a "short-term" 3-day radon test for the Woodlin Elementary School, located at 2101 Luzerne Ave. in Silver Spring, Maryland 20910 (subject site).

**SCOPE OF SERVICES**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on February 12, 2018 and deployed four (4) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

KCI sampled the following locations during this follow-up test:

1. Rooms not successfully tested,
2. Rooms with elevated November 2017 results (i.e. ≥3.5 piC/L).

A floor plan map of the building with the test locations is included as Appendix A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner, Inc. prior to being returned to the laboratory for analysis.

KCI returned to the site on February 15, 2018 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

**EVALUATION OF TESTING CONDITIONS**

These tests represent:

- Follow-up to post-mitigation biennial testing.

These tests were conducted to:

- Confirm the success of the mitigation system(s).

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility's HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room at the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures ranged from the mid-20s to upper 40s and high temperatures ranged from the high-30s to the high-60s. Maximum sustained winds ranged from 10-15 miles per hour. Average humidity was around 69%. 0.05 Inches of precipitation was recorded during the testing period.

**RESULTS**

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

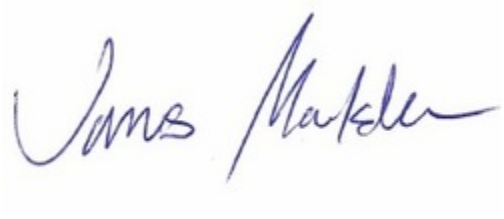
The results of the radon test analysis indicated the following:

| Radon Concentration | Room | Result |
|---|---|---|
| ≥4.0 piC/L | None | N/A |
| ≤4.0 piC/L | See Attachment B | See Attachment B |

| Quality Control Samples | |
|---|---|
| Results of Blank Canisters: | The office blanks and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. |
| Adequate Laboratory Precision? | Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. |
| Spike Sample Analysis: | The Spike sample analysis results indicate the laboratory is operating within statistical control limits. |

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at 410-316-7800.

Sincerely,



Radon Measurement Specialist
KCI Technologies, Inc.

Attachments:

A- Floor Plan with Test Locations

B - Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

| Table 1 - Radon Testing Results | | |
|---|---|---|
| Woodlin Elementary School | | |
| Test Period: 02/12/18-02/15/18 | | |
| | | |
| **Kit Number** | **Room / Area** | **Result** |
| 7986776 | CAFE | 1.4 |
| 7986775 | CAFE | 1.4 |
| 7986778 | KITCHEN | 0.9 |

Table Note:
* Missing or Compromised Sample

| Table 2 - Radon Testing Results | | |
|---|---|---|
| Woodlin Elementary School | | |
| Test Period: 02/12/18-02/15/18 | | |
| | | |
| **Kit Number** | **QC Type** | **Result** |
| 7986779 | D (CAFE) | 1.6 |

Table Note:
* Missing or Compromised Sample

# ATTACHMENT C

# Laboratory Analytical Results

February 27, 2018 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**WOODLIN ES**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7986779 | CAFE | 2018-02-12 @ 3:00 pm | 2018-02-15 @ 1:00 pm | 1.6 ± 0.3 | 2018-02-19 |
| 7986775 | CAFE | 2018-02-12 @ 3:00 pm | 2018-02-15 @ 1:00 pm | 1.4 ± 0.3 | 2018-02-19 |
| 7986776 | CAFE | 2018-02-12 @ 3:00 pm | 2018-02-15 @ 1:00 pm | 1.4 ± 0.3 | 2018-02-19 |
| 7986778 | KITCHEN | 2018-02-12 @ 3:00 pm | 2018-02-15 @ 1:00 pm | 0.9 ± 0.3 | 2018-02-19 |

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

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Corporate Office: 936 Ridgebrook Road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

# Radon Test Kit Chain of Custody

Project Name: MCPS Radon

Names of Schools:

1. Highland Elementary School
2. Stephen Knolls Elementary School
3. Silver Creek Middle School
4. Woodlin Elementary School
5. Sligo Creek Elementary School
6. Francis Scott Key Middle School
7. John T. Baker Middle School
8. Cedar Grove Elementary School
9. Clarksburg Elementary School
10. Clarksburg Elementary School Annex
11. Fields Road Elementary School
12. Dufief Elementary School
13. Brown Station Elementary School
14. Diamond Elementary School
15. Fallsmeade Elementary School
16. Thomas Whootton High School
17. Lake Seneca Elementary School
18. Redland Middle School
19. Newport Mill Middle School
20. Bethesda Trans. and Maint. Depot
21. Sequoyah Elementary School
22. Gaithersburg Middle School
23. Wayside Elementary School
24. Travilah Elementary School
25. Damascus High School
26. Jones Lane Elementary School
27. Greencastle Elementary School
28. Spring Brook High School
29. Montgomery Blair High School
30. Watkins Mill High School

---

| | Date | Initials |
|---|---|---|
| Radon Test Kits Deployed | 2/12/18 | JM |
| Radon Test Kits Collected | 2/15/18 | JM |
| Radon Test Kits Shipped to Lab* | 2/15/18 | JM |
| Radon Test Kits Received by Lab* | 2/19/15 | JM |

*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759

February 27, 2018 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**OFFICE BLANKS**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7979482 | 1 | 2018-02-13 @ 1:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986991 | 10 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7985684 | 11 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986987 | 12 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986993 | 13 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986990 | 14 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7979485 | 2 | 2018-02-13 @ 1:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7985686 | 3 | 2018-02-13 @ 1:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986995 | 4 | 2018-02-13 @ 1:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986989 | 5 | 2018-02-13 @ 1:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986998 | 6 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986986 | 7 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986985 | 8 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986997 | 9 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

February 27, 2018 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**TRANSIT BLANKS**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7984188 | 1 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7984044 | 10 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986582 | 11 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986999 | 12 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7987000 | 13 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7984196 | 14 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986996 | 2 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986994 | 3 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7986992 | 4 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7985680 | 5 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7985698 | 6 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7985699 | 7 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7985700 | 8 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |
| 7985872 | 9 | 2018-02-13 @ 2:00 pm | 2018-02-16 @ 2:00 pm | < 0.3 | 2018-02-20 |

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

February 28, 2018 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**MCPS - Spike Sample Laboratory Results. Measured values are satisfactory, i.e. within ±25% of the chamber's reference value (20.9 pCi/L).**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7984181 | 1 | 2018-02-16 @ 11:00 am | 2018-02-19 @ 11:00 am | 19.7 ± 0.8 | 2018-02-21 |
| 7986621 | 2 | 2018-02-16 @ 11:00 am | 2018-02-19 @ 11:00 am | 19.4 ± 0.8 | 2018-02-21 |
| 7985683 | 3 | 2018-02-16 @ 11:00 am | 2018-02-19 @ 11:00 am | 19.5 ± 0.8 | 2018-02-21 |
| 7984168 | 4 | 2018-02-16 @ 11:00 am | 2018-02-19 @ 11:00 am | 20.5 ± 0.8 | 2018-02-21 |
| 7986618 | 5 | 2018-02-16 @ 11:00 am | 2018-02-19 @ 11:00 am | 19.9 ± 0.8 | 2018-02-21 |
| 7984169 | 6 | 2018-02-16 @ 11:00 am | 2018-02-19 @ 11:00 am | 20.4 ± 0.8 | 2018-02-21 |

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 183530

NOMINAL Conditions: Radon Conc 20.9 pCi/L Rel. Hum 49.8 % Temp. 79.1 F

| | |
|---|---|
| Date Start: 2/16/18 Date Stop: 2/19/18 | Date Start: _____ Date Stop: _____ |
| Time Start: 1052 Time Stop: 1052 | Time Start: _____ Time Stop: _____ |
| Device No.'s: (6) Char. Bags- | Device No.'s: _____ |
| 7984181, 7986621, 7985683, | _____ |
| 7984168, 7986618, 7984169 | _____ |
| G3 Middle | _____ |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)**
**Background = 7 µR/h Elevation = 820 ft**

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## MCPS RADON TESTING - EXECUTIVE SUMMARY

| | |
|---|---|
| Site Name | Woodlin Elementary School |
| Date of Report | January 30, 2018 |
| Round of Testing | Initial<br>Follow-up<br>Post Remediation<br>**2 year testing**<br>5 year testing<br>HVAC Upgrade<br>Window Replacement<br>New Addition<br>New Facility |
| # of Rooms Tested | 51 |
| # Rooms ≥4.0 pCi/L | 0 |
| Lowest Value | < 0.3 pCi/L |
| Highest Value | 3.7 pCi/L |

### Project Status

Current Project Status at this time: Results satisfactory to date; missed locations and missing/ compromised tests to be sampled.

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January 30, 2018

Mr. Richard Cox, MS
Team Leader
Montgomery County Public Schools
Division of Maintenance
Rockville, Maryland 20855

Re: Radon Testing Services

KCI Job #1214694182

**Location: Woodlin Elementary School**
2101 Luzerne Ave.
Silver Spring, Maryland 20910

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools pursuant to completing a "short-term" 3-day radon test for the Woodlin Elementary School, located at 2101 Luzerne Ave. in Silver Spring, Maryland 20910 (subject site).

**SCOPE OF SERVICES**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on November 27, 2017 and deployed sixty-five (65) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Appendix A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to

Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner, Inc. prior to being returned to the laboratory for analysis.

KCI returned to the site on November 30, 2017 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Aircheck, Inc. for analysis by gamma-ray spectroscopy. Aircheck, Inc. is a NRSB certified analytical laboratory for radon analysis (certification #ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

**EVALUATION OF TESTING CONDITIONS**

These tests represent:

- 2 year testing.

These tests were conducted to:

- Confirm the success of the mitigation system(s).

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility's HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room at the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the 30s and high temperatures ranged from the low-50s to mid-60s. Maximum sustained winds ranged from 8-15 miles per hour. Average humidity was around 65%. 0.02 Inches of precipitation was recorded during the testing period.

A magnitude 4.1 earthquake was reported on Thursday, November 30 near Dover, Delaware approximately 95 miles east of Gaithersburg, Maryland. The earthquake occurred during or just after the radon testing period for this facility. In general, enhanced radon emissions have been observed prior to earthquakes and this has been recorded all over the world, according to the research article entitled *Radon-222: A Potential Short-Term Earthquake Precursor,* published June 30, 2015 in the Journal of Earth Science and Climate

Change. The nearby earthquake, which occurred during or prior to the testing period, may have resulted in higher-than-normal radon test results for this facility.

**RESULTS**

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Missing/compromised tests, missed rooms, and locked rooms are listed on Table 3 (Attachement B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

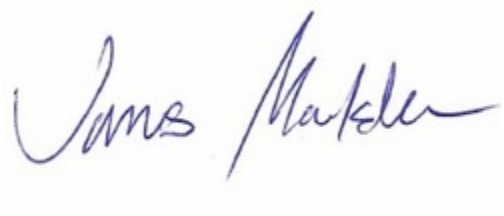
The results of the radon test analysis indicated the following:

| Radon Concentration | Room | Result |
|---|---|---|
| ≥4.0 piC/L | None | N/A |
| ≤4.0 piC/L | See Attachment B | See Attachment B |

| Quality Control Samples | |
|---|---|
| Results of Blank Canisters: | The field blanks, office blank, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. |
| Adequate Laboratory Precision? | Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. |
| Spike Sample Analysis: | The Spike sample analysis results indicate the laboratory is operating within statistical control limits. |

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at 410-316-7800.

Sincerely,



James Moulsdale, CHMM
Radon Measurement Specialist
KCI Technologies, Inc.

Attachments:

B - Tables 1-3, Radon Test Summary Spreadsheets

C- Laboratory Analytical Results

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

| Radon Testing Results | | |
|---|---|---|
| Woodlin Elementary School | | |
| Test Period: 11/27/17-11/30/17 | | |
| | | |
| **Kit Number** | **Room / Area** | **Result** |
| 7976949 | 1 | 0.8 |
| 7976929 | 2 | 0.7 |
| 7976937 | 3 | 0.6 |
| 7976930 | 4 | 1.5 |
| 7976934 | 5 | 0.9 |
| 7976950 | 6 | 1.0 |
| 7976941 | 7 | < 0.3 |
| 7976940 | 8 | 0.7 |
| 7976948 | 9 | 1.3 |
| 7976959 | 10 | 0.9 |
| 7976957 | 11 | 1.6 |
| 7976956 | 12 | 1.4 |
| 7976955 | 13 | 1.1 |
| 7976954 | 14 | 1.1 |
| 7976951 | 15 | 1.4 |
| 7976953 | 16 | 1.4 |
| 7976967 | 17 | 1.0 |
| 7976963 | 18 | 0.9 |
| 7976961 | 19 | 1.3 |
| 7976960 | 20 | 1.9 |
| 7976971 | 21 | 0.7 |
| 7976976 | 22 | 0.6 |
| 7976977 | 23 | 1.2 |
| 7976978 | 24 | 0.6 |
| 7976972 | 25 | 0.6 |
| 7976968 | 26 | 2.4 |
| 7976995 | 28 | 2.3 |
| 7977000 | 29 | 2.2 |
| 7976984 | 30 | 1.1 |
| 7976985 | 31 | 1.1 |
| 7976986 | 32 | 0.7 |
| 7976988 | 33 | 0.7 |
| 7976989 | 34 | 0.9 |
| 7976974 | 35 | 0.9 |
| 7976958 | 100 | 1.2 |
| 7976992 | ASSISTANT PRINCIPAL | 1.0 |
| 7976990 | BUILDING SERV | 3.7 |
| 7976983 | * CAFE (Open Door) | 1.3 |
| 7976980 | * CAFE (Open Door) | 1.1 |
| 7976944 | COUNSLER | < 0.3 |
| 7976973 | GYM | 2.8 |
| 7976982 | GYM | 2.3 |
| 7976979 | GYM OFFICE | 3.3 |
| 7976997 | HEALTH | 0.9 |
| 7976964 | LIBRARY MID OFFICE | 0.7 |
| 7976966 | LIBRARY S. OFFICE | < 0.3 |

Table Note:
* Missing or Compromised Sample

| Radon Testing Results | | |
|---|---|---|
| **Woodlin Elementary School** | | |
| **Test Period: 11/27/17-11/30/17** | | |
| | | |
| **Kit Number** | **Room / Area** | **Result** |
| 7976965 | LIBRARY | 0.7 |
| 7976993 | MAIN OFFICE | 1.2 |
| 7976991 | OFFICE CONFERENCE | 0.8 |
| 7976998 | PRINCIPAL OFFICE | 1.2 |
| 7976946 | STAFF LOUNGE 1 | 1.1 |
| 7976947 | STAFF LOUNGE 2 | 0.8 |
| 7976945 | WORK ROOM | 1.0 |

Table Note:
* Missing or Compromised Sample

| Radon Testing Results | | |
|---|---|---|
| Woodlin Elementary School | | |
| Test Period: 11/27/17-11/30/17 | | |
| | | |
| **Kit Number** | **QC Type** | **Result** |
| 7976952 | D (17) | 1.0 |
| 7976962 | D (19) | 1.0 |
| 7976969 | D (26) | 2.4 |
| 7976996 | D (29) | 3.2 |
| 7976987 | D (33) | 0.8 |
| 7976975 | D (35) | 0.8 |
| 7976999 | D (PRINCIPAL OFFICE) | 0.6 |
| 7976943 | FB (1) | < 0.3 |
| 7976981 | FB (29) | < 0.3 |
| 7976970 | FB (35) | < 0.3 |
| 7976994 | FB (OFFICE CONFERENCE) | < 0.3 |
| 7977270 | OB (OFFICE BLANK) | < 0.3 |

Table Note:
* Missing or Compromised Sample

| Summary of Missed Locations | | |
|---|---|---|
| Woodlin Elementary School | | |
| Test Period: 11/27/17-11/30/17 | | |
| | | |
| **Kit Number** | **Room / Area** | **Result** |
| - | 204 Office (Missed location) | - |
| - | Kitchen (Missed location) | - |

| Summary of Missing, Compromised and ≥4 piC/L Tests | | | |
|---|---|---|---|
| Woodlin Elementary School | | | |
| Test Period: 11/27/17-11/30/17 | | | |
| | | | |
| **Kit Number** | | **Room / Area** | **Result** |
| 7976983 | * | CAFE (Open Door) | 1.3 |
| 7976980 | * | CAFE (Open Door) | 1.1 |

Table Note:
* Missing or Compromised Sample

# ATTACHMENT C

# Laboratory Analytical Results

December 19, 2017 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**WOODLIN ES**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7976949 | 1 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 0.8 ± 0.4 | 2017-12-05 |
| 7976943 | 1 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | < 0.3 | 2017-12-05 |
| 7976959 | 10 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 0.9 ± 0.4 | 2017-12-05 |
| 7976958 | 100 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.2 ± 0.4 | 2017-12-05 |
| 7976957 | 11 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.6 ± 0.4 | 2017-12-04 |
| 7976956 | 12 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.4 ± 0.4 | 2017-12-05 |
| 7976955 | 13 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.1 ± 0.3 | 2017-12-04 |
| 7976954 | 14 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.1 ± 0.4 | 2017-12-05 |
| 7976951 | 15 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.4 ± 0.4 | 2017-12-05 |
| 7976953 | 16 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.4 ± 0.4 | 2017-12-05 |
| 7976967 | 17 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 10:00 am | 1.0 ± 0.4 | 2017-12-05 |
| 7976952 | 17 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.0 ± 0.4 | 2017-12-05 |
| 7976963 | 18 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 10:00 am | 0.9 ± 0.4 | 2017-12-05 |
| 7976961 | 19 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 10:00 am | 1.3 ± 0.4 | 2017-12-05 |
| 7976962 | 19 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 10:00 am | 1.0 ± 0.4 | 2017-12-05 |
| 7976929 | 2 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 0.7 ± 0.3 | 2017-12-04 |
| 7976960 | 20 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 10:00 am | 1.9 ± 0.4 | 2017-12-05 |
| 7976971 | 21 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 0.7 ± 0.4 | 2017-12-04 |
| 7976976 | 22 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 0.6 ± 0.3 | 2017-12-04 |
| 7976977 | 23 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 1.2 ± 0.4 | 2017-12-04 |
| 7976978 | 24 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 0.6 ± 0.4 | 2017-12-05 |
| 7976972 | 25 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 0.6 ± 0.4 | 2017-12-05 |
| 7976968 | 26 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 2.4 ± 0.4 | 2017-12-04 |
| 7976969 | 26 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 2.4 ± 0.5 | 2017-12-05 |
| 7976995 | 28 | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 9:00 am | 2.3 ± 0.4 | 2017-12-04 |
| 7976981 | 29 | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 9:00 am | < 0.3 | 2017-12-04 |
| 7977000 | 29 | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 9:00 am | 2.2 ± 0.4 | 2017-12-04 |
| 7976996 | 29 | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 9:00 am | 3.2 ± 0.4 | 2017-12-04 |
| 7976937 | 3 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 0.6 ± 0.4 | 2017-12-05 |
| 7976984 | 30 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 1.1 ± 0.4 | 2017-12-04 |
| 7976985 | 31 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 1.1 ± 0.4 | 2017-12-04 |
| 7976986 | 32 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 0.7 ± 0.3 | 2017-12-04 |
| 7976987 | 33 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 0.8 ± 0.3 | 2017-12-04 |
| 7976988 | 33 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 0.7 ± 0.4 | 2017-12-04 |
| 7976989 | 34 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 0.9 ± 0.4 | 2017-12-05 |
| 7976975 | 35 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 0.8 ± 0.4 | 2017-12-04 |
| 7976970 | 35 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | < 0.3 | 2017-12-04 |

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December 19, 2017 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**WOODLIN ES**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7976974 | 35 | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 0.9 ± 0.4 | 2017-12-05 |
| 7976930 | 4 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.5 ± 0.4 | 2017-12-05 |
| 7976934 | 5 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 0.9 ± 0.4 | 2017-12-05 |
| 7976950 | 6 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.0 ± 0.4 | 2017-12-05 |
| 7976941 | 7 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | < 0.3 | 2017-12-05 |
| 7976940 | 8 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 0.7 ± 0.3 | 2017-12-04 |
| 7976948 | 9 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.3 ± 0.4 | 2017-12-05 |
| 7976992 | ASSISTANT PRINCIPAL | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 9:00 am | 1.0 ± 0.4 | 2017-12-04 |
| 7976990 | BUILDING SERV | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 10:00 am | 3.7 ± 0.4 | 2017-12-04 |
| 7976980 | CAFE | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 1.1 ± 0.3 | 2017-12-04 |
| 7976983 | CAFE | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 1.3 ± 0.4 | 2017-12-05 |
| 7976944 | COUNSLER | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | < 0.3 | 2017-12-05 |
| 7976982 | GYM | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 2.3 ± 0.4 | 2017-12-04 |
| 7976973 | GYM | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 2.8 ± 0.4 | 2017-12-05 |
| 7976979 | GYM OFFICE | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 9:00 am | 3.3 ± 0.4 | 2017-12-04 |
| 7976997 | HEALTH | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 10:00 am | 0.9 ± 0.4 | 2017-12-05 |
| 7976964 | LIB MID OFFICE | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 10:00 am | 0.7 ± 0.4 | 2017-12-05 |
| 7976966 | LIB S OFFICE | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 10:00 am | < 0.3 | 2017-12-05 |
| 7976965 | LIBRARY | 2017-11-27 @ 1:00 pm | 2017-11-30 @ 10:00 am | 0.7 ± 0.4 | 2017-12-05 |
| 7976993 | MAIN OFFICE | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 9:00 am | 1.2 ± 0.4 | 2017-12-04 |
| 7977270 | OFFICE BLANK | 2017-11-27 @ 3:00 pm | 2017-11-30 @ 3:00 pm | < 0.3 | 2017-12-05 |
| 7976994 | OFFICE CONFERENCE | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 9:00 am | < 0.3 | 2017-12-05 |
| 7976991 | OFFICE CONFERENCE | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 9:00 am | 0.8 ± 0.4 | 2017-12-05 |
| 7976998 | PRINCIPAL OFFICE | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 9:00 am | 1.2 ± 0.4 | 2017-12-04 |
| 7976999 | PRINCIPAL OFFICE | 2017-11-27 @ 12:00 pm | 2017-11-30 @ 9:00 am | 0.6 ± 0.3 | 2017-12-04 |
| 7976946 | STAFF LOUNGE 1 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.1 ± 0.3 | 2017-12-04 |
| 7976947 | STAFF LOUNGE 2 | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 0.8 ± 0.4 | 2017-12-05 |
| 7976945 | WORK ROOM | 2017-11-27 @ 2:00 pm | 2017-11-30 @ 10:00 am | 1.0 ± 0.4 | 2017-12-05 |

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KCI TECHNOLOGIES

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

Corporate Office: 936 Ridgebrook Road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

# Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase

Names of Schools:

1. Montgomery Knolls Elementary School
2. New Hampshire Estates Elementary School
3. Montgomery Blair High School
4. Silver Creek Middle School
5. Sligo Creek Elementary School
6. East Silver Spring Elementary School
7. Silver Spring International Middle School
8. Woodlin Elementary School
9. Northwood High School
10. Spring Mill Center
11. Westbrook Elementary School
12. Westland Middle School
13. Cloverly Elementary School
14. Flora Singer Elementary School
15. Sligo Middle School
16. Mario Loiederman Middle School
17. Roscoe Nix Elementary School
18. Sargent Shriver Elementary School
19.
20.
21.
22.
23.
24.
25.
26.

---

| | Date | Initials |
|---|---|---|
| Radon Test Kits Deployed | 11/27/17 | JM |
| Radon Test Kits Collected | 11/30/17 | JM |
| Radon Test Kits Shipped to Lab* | 11/30/17 | JM |
| Radon Test Kits Received by Lab* | 12/04/17 | JM |

*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759

December 19, 2017 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**TRANSIT 1**
**NONE**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7978062 | TRANSIT 1 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7975804 | TRANSIT 10 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7977990 | TRANSIT 11 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7978201 | TRANSIT 12 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7978203 | TRANSIT 13 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7978206 | TRANSIT 14 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7978246 | TRANSIT 15 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7978239 | TRANSIT 16 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7978226 | TRANSIT 17 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7975078 | TRANSIT 18 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7975077 | TRANSIT 19 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7978074 | TRANSIT 2 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7975076 | TRANSIT 20 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7975684 | TRANSIT 21 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7975683 | TRANSIT 22 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7975601 | TRANSIT 23 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7978011 | TRANSIT 24 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7978012 | TRANSIT 25 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7978094 | TRANSIT 26 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7975624 | TRANSIT 27 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7834562 | TRANSIT 28 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7977995 | TRANSIT 29 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7978098 | TRANSIT 3 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7977992 | TRANSIT 30 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7978719 | TRANSIT 4 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-05 |
| 7978732 | TRANSIT 5 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7978731 | TRANSIT 6 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7975806 | TRANSIT 7 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7975815 | TRANSIT 8 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |
| 7975805 | TRANSIT 9 | 2017-11-27 @ 4:00 pm | 2017-11-30 @ 4:00 pm | < 0.3 | 2017-12-04 |

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December 19, 2017 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**MCPS - Spike Sample Laboratory Results. Measured values are satisfactory, i.e. within ±25% of the chamber's reference value (27.7 pCi/L).**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7975075 | S1 | 2017-12-01 @ 11:00 am | 2017-12-04 @ 11:00 am | 25.6 ± 0.7 | 2017-12-07 |
| 7975064 | S2 | 2017-12-01 @ 11:00 am | 2017-12-04 @ 11:00 am | 27.4 ± 0.8 | 2017-12-07 |
| 7975063 | S3 | 2017-12-01 @ 11:00 am | 2017-12-04 @ 11:00 am | 26.3 ± 0.7 | 2017-12-07 |
| 7975065 | S4 | 2017-12-01 @ 11:00 am | 2017-12-04 @ 11:00 am | 23.0 ± 0.7 | 2017-12-07 |
| 7975069 | S5 | 2017-12-01 @ 11:00 am | 2017-12-04 @ 11:00 am | 25.6 ± 0.7 | 2017-12-07 |
| 7975070 | S6 | 2017-12-01 @ 11:00 am | 2017-12-04 @ 11:00 am | 23.0 ± 0.7 | 2017-12-07 |

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 182393

NOMINAL Conditions: Radon Conc 27.7 pCi/L Rel. Hum 49.1 % Temp. 70.1 F

Date Start: 12/1/17 Date Stop: 12/4/17

Time Start: 1049 Time Stop: 1049

Device No.'s: (6) Chan. Bags.

7975075, 7975064, 7975063,

7975065, 7975069, 7975070

F4 Right

Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____

Device No.'s: _____

Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____

Device No.'s: _____

Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____

Device No.'s: _____

Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____

Device No.'s: _____

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)**
**Background = 7 µR/h Elevation = 820 ft**

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# MCPS RADON TESTING

Executive Summary: Woodlin Elementary School

| | |
|---|---|
| Date of Test Report: | 10/20/2016 |
| Round of Testing: | Initial<br>Follow-up<br>Post Remediation |
| | |
| # Rooms Tested: | 8 |
| # Rooms ≥ 4.0 pCi/L: | 0 |
| | |
| Low Value: | < 0.3 |
| High Value: | 0.8 |

Project Status:
Post remediation testing completed; no further action at this time.

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October 20, 2016

Mr. Richard Cox
Indoor Air Quality Team Leader
Montgomery County Public Schools
850 Hungerford Drive
Rockville, MD 20850

Re: **Radon Testing Services**
KCI Job # 12146341.54

Location: Woodlin Elementary School
2101 Luzerne Avenue
Silver Spring, MD 20910

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a "short-term" 3 day radon test for the Woodlin Elementary School, located at 2101 Luzerne Avenue in Silver Spring, Maryland 20910 (subject site).

**Scope of Services:**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on September 26, 2016 and deployed ten (10) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on September 29, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

**Evaluation of Testing Conditions:**

These tests represent:

- Post-mitigation testing for radon mitigation systems installed recently.

To expedite the testing, tests were conducted in September as soon as students and staff returned to:

- Confirm the success of the mitigation system(s).

Future periodic testing should be conducted during the heating season in ideal conditions as described below. According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility's HVAC system was operating in cooling mode; therefore, KCI concludes that this test was not conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room at the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the 50s and high temperatures in the mid-60s to mid-70s. Maximum sustained winds ranged from 3-15 miles per hour. Average humidity ranged from 71 to 89 percent. Rain (1.83 inches in Gaithersburg, MD) was recorded on 9/29/16. The weather conditions during the testing period may have resulted in atypical radon test results for this facility.

**Results:**

The results of the radon test analysis indicated the following:

| Radon Concentration | Room | Result |
|---|---|---|
| **≥4.0 piC/L** | none | n/a |
| **<4.0 piC/L** | See Attachment B | |

Notes:
D- Duplicate sample

The field blank, lab transit blanks, and office blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C). Laboratory results and exposure data for the spike samples are also included in Attachment C.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 316-7800.

Sincerely,

James M. Moulsdale
Radon Measurement Specialist
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
B- Table 1-Radon Test Summary Spreadsheet
C- Laboratory Analytical Results

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

| Radon Testing Results | | |
|---|---|---|
| **Woodlin Elementary School** | | |
| **Test Period: 09/27/16-09/30/16** | | |
| | | |
| **Kit Number** | **Room / Area** | **Result** |
| 7802373 | 4 | 0.6 |
| 7802367 | 5 | 0.6 |
| 7802371 | 10 | 0.8 |
| 7802369 | 11 | < 0.3 |
| 7802350 | 12 | 0.7 |
| 7802357 | 13 | 0.8 |
| 7802372 | 14 | < 0.3 |
| 7802376 | 100 | < 0.3 |

Table Note:
* Missing or Compromised Sample

| Radon Testing Results | | |
|---|---|---|
| Woodlin Elementary School | | |
| Test Period: 09/27/16-09/30/16 | | |
| | | |
| **Kit Number** | **QC Type** | **Result** |
| 7802375 | D (100) | 0.6 |
| 7802370 | FB (100) | < 0.3 |

Table Note:
* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

October 7, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**WOODLIN ELEMENTARY SCHOOL**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7802371 | 10 | 2016-09-27 @ 12:00 pm | 2016-09-30 @ 1:00 pm | 0.8 ± 0.2 | 2016-10-03 |
| 7802375 | 100 | 2016-09-27 @ 12:00 pm | 2016-09-30 @ 1:00 pm | 0.6 ± 0.2 | 2016-10-03 |
| 7802376 | 100 | 2016-09-27 @ 12:00 pm | 2016-09-30 @ 1:00 pm | < 0.3 | 2016-10-03 |
| 7802370 | 100 | 2016-09-27 @ 12:00 pm | 2016-09-30 @ 1:00 pm | < 0.3 | 2016-10-03 |
| 7802369 | 11 | 2016-09-27 @ 12:00 pm | 2016-09-30 @ 1:00 pm | < 0.3 | 2016-10-03 |
| 7802350 | 12 | 2016-09-27 @ 12:00 pm | 2016-09-30 @ 1:00 pm | 0.7 ± 0.2 | 2016-10-03 |
| 7802357 | 13 | 2016-09-27 @ 12:00 pm | 2016-09-30 @ 1:00 pm | 0.8 ± 0.2 | 2016-10-03 |
| 7802372 | 14 | 2016-09-27 @ 12:00 pm | 2016-09-30 @ 1:00 pm | < 0.3 | 2016-10-03 |
| 7802373 | 4 | 2016-09-27 @ 12:00 pm | 2016-09-30 @ 1:00 pm | 0.6 ± 0.2 | 2016-10-03 |
| 7802367 | 5 | 2016-09-27 @ 12:00 pm | 2016-09-30 @ 1:00 pm | 0.6 ± 0.2 | 2016-10-03 |

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

October 7, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**MCPS Radon**
**Phase 18 Office Blanks**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7802697 | 1 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7801899 | 10 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802932 | 11 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802935 | 12 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802915 | 13 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802941 | 2 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802942 | 3 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802919 | 4 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802918 | 5 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802917 | 6 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802916 | 7 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802952 | 8 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |
| 7802928 | 9 | 2016-09-26 @ 11:00 am | 2016-09-29 @ 11:00 am | < 0.3 | 2016-10-03 |

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

October 7, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:

**MCPS Radon**
**Phase 18 Transit Blanks**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7714274 | 1 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7802962 | 10 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7714295 | 11 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7714299 | 12 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7714273 | 13 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7714270 | 14 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7802965 | 2 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7802696 | 3 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7802690 | 4 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7714275 | 5 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7714298 | 6 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7802990 | 7 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7802974 | 8 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |
| 7802694 | 9 | 2016-09-26 @ 10:00 am | 2016-09-29 @ 10:00 am | < 0.3 | 2016-10-03 |

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

October 12, 2016 **** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
**MCPS Radon**
## Spike Sample Results

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7769880 | 101 | 2016-09-24 @ 8:00 am | 2016-09-26 @ 8:00 am | 22.9 ± 1.0 | 2016-09-28 |
| 7769884 | 102 | 2016-09-24 @ 8:00 am | 2016-09-26 @ 8:00 am | 22.4 ± 1.0 | 2016-09-28 |
| 7769885 | 103 | 2016-09-24 @ 8:00 am | 2016-09-26 @ 8:00 am | 23.0 ± 1.0 | 2016-09-28 |
| 7769890 | 104 | 2016-09-24 @ 8:00 am | 2016-09-26 @ 8:00 am | 22.3 ± 1.0 | 2016-09-28 |
| 7769891 | 105 | 2016-09-24 @ 8:00 am | 2016-09-26 @ 8:00 am | 26.8 ± 1.2 | 2016-09-28 |
| 7769899 | 106 | 2016-09-24 @ 8:00 am | 2016-09-26 @ 8:00 am | 24.1 ± 1.1 | 2016-09-28 |

Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

**Note: Spike samples are test canisters that are deliberately exposed to a controlled high level of radon in a laboratory. They provide a quality control measure in the testing process and do NOT reflect radon levels in the building being tested.**

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 176788

NOMINAL Conditions: Radon Conc 26.1 pCi/L Rel. Hum 49.6 % Temp. 79.0 F

| | |
|---|---|
| Date Start: 9/24/16 Date Stop: 9/26/16 | Date Start: _____ Date Stop: _____ |
| Time Start: 0758 Time Stop: 0758 | Time Start: _____ Time Stop: _____ |
| Device No.'s: (6) Char. Bags - | Device No.'s: _____ |
| 7769899, 7769884, 7769885, | _____ |
| 7769889, 7769890, 7769891 | _____ |
| F3 Left | _____ |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)**
**Background = 7 μR/h Elevation = 820 ft**

KCI TECHNOLOGIES

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

Corporate Office: 936 Ridgebrook road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

# Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 18

Name of Schools:

1. Wood Acres Elementary School
2. Walt Whitman High School
3. Burning Tree Elementary School
4. Ashburton Elementary School
5. Bethesda Maintenance
6. Bethesda Transportation
7. Herbert Hoover Middle School
8. Cold Spring Elementary School
9. Garret Park Elementary School
10. Rock View Elementary School
11. Francis Scott Key Middle School
12. Montgomery Blair High School
13. Stephen Knolls School
14. Lourie Center
15. Shriver Elementary School
16. Viers Mill Elementary School
17. Highland Elementary School
18. Newport Middle School
19. Albert Einstein High School
20. Sligo Middle School
21. East Silver Spring Elementary School
22. Oak View Elementary School
23. Roscoe Nix Elementary School
24. Northwood High School
25. Springbrook High School
26. John F. Kennedy High School

---

| | Date | Initials |
|---|---|---|
| Radon Test Kits Deployed | 9/26/16 | JM |
| Radon Test Kits Collected | 9/29/16 | JM |
| Radon Test Kits Shipped to Lab* | 9/30/16 | JM |
| Radon Test Kits Received by Lab* | 10/03/16 | JM |

*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759

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Corporate Office: 936 Ridgebrook road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

# Radon Test Kit Chain of Custody

Project Name: MCPS Radon Phase 18

Name of Schools:

1. Damascus High School
2. Cedar Grove Elementary School
3. Hallie Wells Middle School
4. Clarksburg Elementary School
5. Clarksburg High School
6. Woodlin Elementary School
7. Flora Singer Elementary School
8. Spring Mill Center
9. Dr. Charles Drew Elementary School
10. William Farquah Middle School
11. Rosa Parks Middle School
12. Blair Ewing Center
13. Lathrop Smith Environmental Center
14. Sequoyah Elementary School
15. Shady Grove Middle School
16. Captain James Daly Elementary School
17. Watkins Mills High School
18. Forest Oak Middle School
19. Gaithersburg Middle School
20. Emory Grove
21. Fields Road Elementary School
22. Beall Elementary School
23. Julius West Middle School
24. Thomas Wootton High School
25. Robert Frost High School
26. Travilah Elementary School
27. Jones Lane Elementary School
28. Longview School
29. Rock Terrace High School
30. Germantown Elementary School
31. Lake Seneca Elementary School

---

| | Date | Initials |
|---|---|---|
| Radon Test Kits Deployed | 9/27/16 | JM |
| Radon Test Kits Collected | 9/30/16 | JM |
| Radon Test Kits Shipped to Lab* | 9/30/16 | JM |
| Radon Test Kits Received by Lab* | 10/03/16 | JM |

*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759

RADON SCREENING SURVEY – FOLLOW-UP WOODLIN ELEMENTARY SCHOOL

2101 Luzerne Avenue, Silver Spring, Maryland 20910

EXECUTIVE SUMMARY

| | |
|---|---|
| Date of Test Report: | 3/24/16 Follow-Up |
| Round of Testing: | Initial<br>Follow-up<br>Post Remediation |
| # Rooms Tested | 8 |
| # Rooms ≥ 4.0 pCi/L: | 0 |
| Low Value: | 0.5 |
| High Value: | 1.6 |
| Confirmed Rooms ≥ 4.0 pCi/L US EPA Action Level | 1 |

**Summary of Sampling Events ≥ 4.0 pCi/L**

| Room | Result (pCi/L) 2/23/16 (Rev 3 Initial) | Result (pCi/L) 3/24/16 Follow-Up | Average Result (pCi/L) |
|---|---|---|---|
| 100 | 8.6 | --- Missing | 8.6 |
| 4 | --- Missing | 0.8 | 0.8 |
| All Purpose Room | 2.0 Tampered | 0.9 | 1.5 |
| Asst. Principal | <0.3 Tampered | 0.6 | 0.5 |
| Gym | 1.4 Tampered | 1.6 | 1.5 |
| Staff Lounge 2 | 0.8 Tampered | 0.5 | 0.7 |
| 11 | 3.6 | 1.0 | 2.3 |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

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936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

# MCPS RADON TESTING

Executive Summary: Woodlin Elementary School

| | |
|---|---|
| Date of Test Report: | 3/24/2016 |
| Round of Testing: | Initial<br>Follow-up<br>Post Remediation |
| | |
| # Rooms Tested: | 8 |
| # Rooms ≥ 4.0 pCi/L: | 0 |
| | |
| Low Value: | 0.5 |
| High Value: | 1.6 |

Project Status:
Retesting completed; use the average of the initial and re-test results in a room to determine if remediation is necessary.

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March 24, 2016

Mr. Richard Cox
Indoor Air Quality Team Leader
Montgomery County Public Schools
850 Hungerford Drive
Rockville, MD 20850

Re: **Radon Testing Services**
KCI Job # 12146341.30

Location: Woodlin Elementary School
2101 Luzerne Avenue
Silver Spring, MD 20910

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a "short-term" 3 day radon test for the Woodlin Elementary School, located at 2101 Luzerne Avenue in Silver Spring, Maryland 20910 (subject site).

**Scope of Services:**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on February 29, 2016 and deployed eleven (11) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on March 3, 2016 to retrieve the radon sampling test kits. KCI shipped all radon tests to Accustar Labs for analysis by gamma-ray spectroscopy. Accustar Labs is a NRSB certified analytical laboratory for radon analysis (certification # ARL0007) located at 929 Mount Zion Road,

Lebanon, Pennsylvania.

**Evaluation of Testing Conditions:**

The operating condition that represents the greatest amount of significantly occupied time for this building is; heating active, with outdoor temperature averages ≤ 65° F.

KCI concludes that the test period reasonably represents normal conditions when the building is significantly occupied. Clear characterization of the radon hazard is most likely to be observed under this normal operating condition. Based on the evaluation of test conditions, this test should reasonably characterize radon hazards.

KCI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. KCI recorded observations of the following conditions in each room at the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

**Results:**

The results of the radon test analysis indicated the following:

| Radon Concentration | Room | Result |
|---|---|---|
| **≥4.0 piC/L** | none | n/a |
| **<4.0 piC/L** | See Attachment B | |

Notes:
D- Duplicate sample

The field blank, office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.4 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C). Laboratory results and exposure data for the spike samples are also included in Attachment C.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 316-7800.

Sincerely,

James M. Moulsdale
Radon Measurement Specialist
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
B- Table 1-Radon Test Summary Spreadsheet
C- Laboratory Analytical Results

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank*

PM- Project Manager

QC- Quality Control

*Office blanks were submitted at a rate of 1% for all samples deployed in Phase 10 testing. Office blanks were not submitted under each school individually.

| Radon Testing Results | | |
|---|---|---|
| **Woodlin Elementary School** | | |
| **Test Period: 02/29/16-03/03/16** | | |
| | | |
| **Kit Number** | **Room / Area** | **Result** |
| 3028857 | 4 | 0.8 |
| 3028858 | 11 | 1.0 |
| 3028856 | * 100 (Missing) | - |
| 3028864 | APR | 0.9 |
| 3028863 | * APR (Tampered) | 0.8 |
| 3028862 | ASST PRINC. | 0.6 |
| 3028865 | GYM | 1.1 |
| 3028866 | GYM | 1.6 |
| 3028861 | STAFF LOUNGE 2 | 0.5 |

Table Note:
* Missing or Compromised Sample

| Radon Testing Results | | |
|---|---|---|
| Woodlin Elementary School | | |
| Test Period: 02/29/16-03/03/16 | | |
| | | |
| **Kit Number** | **QC Type** | **Result** |
| 3028860 | D (STAFF LOUNGE 2) | <0.4 |
| 3028859 | FB (STAFF LOUNGE 2) | <0.4 |

Table Note:
* Missing or Compromised Sample

# ATTACHMENT C

## Laboratory Analytical Results

AccuStar
Professional Radon Laboratory Services Since 1984

# Radon in Air

NRPP 10511AL
NRSB ARL0007

EPA Method #402-R-92-004
Charcoal Canister
NRPP Device Code 6048
NRSB Device Code 10317

Laboratory Report for:

KCI Technologies
936 Ridgebrook Rd
Sparks MD 21152

Property Tested: Project # 12146341

Woodlin ES
2101 Luzeme Avenue
Silver Spring MD 20910

| Log Number | Device Number | Test Exposure Duration: | | Area Tested | Result (pCi/L) |
|---|---|---|---|---|---|
| 3015343 | 3028858 | 02/29/2016 2:31 pm | 03/03/2016 8:34 am | 11 | 1.0 |
| 3015344 | 3028857 | 02/29/2016 2:37 pm | 03/03/2016 8:33 am | 4 | 0.8 |
| 3015345 | 3028859 | 02/29/2016 2:44 pm | 03/03/2016 8:29 am | Staff Lounge 2 | <0.4 |
| 3015346 | 3028860 | 02/29/2016 2:44 pm | 03/03/2016 8:29 am | Staff Lounge 2 | <0.4 |
| 3015347 | 3028861 | 02/29/2016 2:44 pm | 03/03/2016 8:29 am | Staff Lounge 2 | 0.5 |
| 3015348 | 3028862 | 02/29/2016 2:50 pm | 03/03/2016 8:29 am | Asst. Principal | 0.6 |
| 3015349 | 3028863 | 02/29/2016 2:58 pm | 03/03/2016 8:21 am | APR | 0.8 |
| 3015350 | 3028864 | 02/29/2016 2:58 pm | 03/03/2016 8:17 am | APR | 0.9 |
| 3015351 | 3028865 | 02/29/2016 3:05 pm | 03/03/2016 8:27 am | Gym | 1.1 |
| 3015352 | 3028866 | 02/29/2016 3:05 pm | 03/03/2016 8:27 am | Gym | 1.6 |

**Comment:** A copy of this report was emailed to tehsin@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 03/07/2016 Date Logged: 03/07/2016 Date Analyzed: 03/07/2016 Date Reported: 03/08/2016

Report Reviewed By: _____ Report Approved By: _____

Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

The uncertainty of this radon measurement is ~+/- 10 %. 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.

AccuStar
Professional Radon Laboratory Services Since 1984

AccuStar Labs
11 Awl Street
Medway MA 02053
888-480-8812
www.accustarlabs.com

# Radon Device Type Open Face Canister

**Send Written Report To:**

| | |
|---|---|
| Name | KCI Technologies, Inc |
| Address | 936 Ridgebrook Road |
| Address | |
| City / Town | Sparks |
| State/Province Postal Code | MD 21152 |
| Report Country | Baltimore County |
| Email Address | tehsin@kci.com |

**Site Tested:**

| | |
|---|---|
| Site Name | Woodlin ES |
| Address | 2101 LUZERNE AVE. |
| Address | |
| City / Town | SILVER SPRING |
| State/Province Postal Code | MD 20910 |
| Test Country | Montgomery County |
| Project Number | 12146341 |

**Contact Information:**

| | |
|---|---|
| Contact | Tehsin Aurangabadwala |
| Telephone | 410-891-1726 |
| Technician | Atm I. |
| Cert. Number | |
| Signature | |

| Lab Use Only | Device Number | Building Number | Unit Number | Floor | Temp Name of Room | Start Date mm/dd/yyyy | Start Time hh:mm am / pm | Stop Date mm/dd/yyyy | Stop Time hh:mm am / pm | Lab Use Only |
|---|---|---|---|---|---|---|---|---|---|---|
| | 3028856 | | 100 (SR-229) | | 70° | 02/29/2016 | 2.28 pm | 03/03/2016 | Missing | |
| | 3028858 | | 11 (SR 224) | | 70° | 02/29/2016 | 2.31 pm | 03/03/2016 | 8.34 AM | |
| | 3028857 | | 4 (CR-221) | | 70° | 02/29/2016 | 2.37 pm | 03/03/2016 | 8.33 AM | |
| | 3028859 | | Staff-210 | | 70° | 02/29/2016 | 2.44 pm | 03/03/2016 | 8.29 AM | |
| | 3028860 | | Staff-210 | | 70° | 02/29/2016 | 2.44 pm | 03/03/2016 | 8.29 AM | |
| | 3028861 | | staff-210 | | 70° | 02/29/2016 | 2.44 pm | 03/03/2016 | 8.29 AM | |
| | 3028862 | | 20 (STO-248) | | 70° | 02/29/2016 | 2.50 pm | 03/03/2016 | 8.29 AM | |
| | 3028863 | | APR-(MPR-136) | Cafe | 70° | 02/29/2016 | 2.58 pm | 03/03/2016 | 8.21 AM | |
| | 3028864 | | APR-(MPR-136) | Cafe | 70° | 02/29/2016 | 2.58 pm | 03/03/2016 | 8.17 AM | |
| | 3028865 | | 108-Gym | Gym | 70° | 02/29/2016 | 3.05 pm | 03/03/2016 | 8.27 AM | |
| | 3028866 | | 108-Gym | Gym | 70° | 2/29/16 | 3.05 pm | | 8.27 AM | |

Rev E1512

***Test must start before the expiration date shown on your device or test results will be invalid***

AccuStar
Professional Radon Laboratory Services Since 1984

# Radon in Air

NRPP 10511AL
NRSB ARL0007

EPA Method #402-R-92-004
Charcoal Canister
NRPP Device Code 6048
NRSB Device Code 10317

Laboratory Report for:

KCI Technologies
936 Ridgebrook Rd
Sparks MD 21152

Property Tested: Project # 12146341

MCPS Radon Phase 10 Office Blank

| Log Number | Device Number | Test Exposure Duration: | | Area Tested | Result (pCi/L) |
|---|---|---|---|---|---|
| 3015360 | 3028828 | 02/29/2016 9:30 am | 03/03/2016 9:30 am | Office Blank | <0.4 |

**Comment:** A copy of this report was emailed to tehsin@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 03/07/2016 Date Logged: 03/07/2016 Date Analyzed: 03/08/2016 Date Reported: 03/08/2016

Report Reviewed By: Jeffrey Karten Report Approved By: Carolyn D. Koke

Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

The uncertainty of this radon measurement is ~+/- 10 %. 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.

AccuStar
Professional Radon Laboratory Services Since 1984

AccuStar Labs
11 Awl Street
Medway MA 02053
888-480-8812
www.accustarlabs.com

# Radon Device Type Open Face Canister

**Send Written Report To:**

| | |
|---|---|
| Name | KCI Technologies, Inc |
| Address | 936 Ridgebrook Road |
| Address | |
| City / Town | Sparks |
| State/Province Postal Code | MD 21152 |
| Report Country | Baltimore County |
| Email Address | tehsin@kci.com |

**Site Tested:**

| | |
|---|---|
| Site Name | KCI OFFICE |
| Address | 936 Ridgebrook Road |
| Address | |
| City / Town | Sparks |
| State/Province Postal Code | MD 21152 |
| Test Country | Montgomery County |
| Project Number | 12146341 |

**Contact Information:**

| | |
|---|---|
| Contact | Tehsin Aurangabadwala |
| Telephone | 410-891-1726 |
| Technician | |
| Cert. Number | |
| Signature | |

| Lab Use Only | Device Number | Building Number | Unit Number | Floor | Name of Room | Start Date mm/dd/yyyy | Start Time hh:mm am / pm | Stop Date mm/dd/yyyy | Stop Time hh:mm am / pm | Lab Use Only |
|---|---|---|---|---|---|---|---|---|---|---|
| | 3028828 | | 0 | 1 | OFFICE (TEMP - 70F) | 02/29/2016 | 9:30 am | 03/03/2016 | 9:30 am | |
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Rev E1512

***Test must start before the expiration date shown on your device or test results will be invalid***

AccuStar
Professional Radon Laboratory Services Since 1984

# Radon in Air

NRPP 10511AL
NRSB ARL0007

EPA Method #402-R-92-004
Charcoal Canister
NRPP Device Code 6048
NRSB Device Code 10317

Laboratory Report for:

KCI Technologies
936 Ridgebrook Rd
Sparks MD 21152

Property Tested:

MCPS
Transit Blanks

| Log Number | Device Number | Test Exposure Duration: | | Area Tested | Result (pCi/L) |
|---|---|---|---|---|---|
| 3010588 | 3028953 | 01/19/2016 1:00 pm | 01/22/2016 9:30 am | 1 | < 0.4 |
| 3010589 | 3028955 | 01/19/2016 1:00 pm | 01/22/2016 9:30 am | 2 | < 0.4 |
| 3010590 | 3028954 | 01/19/2016 1:00 pm | 01/22/2016 9:30 am | 3 | < 0.4 |
| 3010591 | 3028997 | 01/19/2016 1:00 pm | 01/22/2016 9:30 am | 4 | < 0.4 |

**Comment:** AMENDED REPORT for 3028953-8955, 3028997 on 2/22/16 to add all missing information from the blank datasheet. A copy of this report was emailed to james.moulsdale@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 01/27/2016 Date Logged: 01/27/2016 Date Analyzed: 01/28/2016 Date Reported: 01/28/2016

Report Reviewed By: Crystal Bates Report Approved By: Carolyn D. Koke

Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

The uncertainty of this radon measurement is ~+/- 10 %. 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.

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**Return canisters for analysis to:**
**AccuStar Labs**
**929 Mt. Zion Rd., Lebanon, PA 17046**
**800-523-4964**

RECEIVED JAN 27 2016

# AccuStar Labs – Lebanon, PA
# INFORMATION FORM - Large Buildings - Projects - Apartments

**Instructions on back of form**
**Read instructions carefully**
**Discrepancies will invalidate tests**

**Do not use this form in New Jersey or Florida Call for correct forms.**

## Test Site Info

Name of Building/Project or Owner Transit

Site Address: Transit

City: _____ State _____ Zip _____ County _____

Projects Contact Name: Jon Coale Phone: _____ Email: _____

Multi-Page Report Y-N

| Detector Serial# | ROOM NAME & NUMBER - LOCATION OF DETECTOR IN ROOM (indicate duplicates and blanks) | | Floor | Start Date | Start Time Include AM/PM | Stop Date | Stop Time Include AM/PM | LAB USE ONLY Wgt. Gain | LAB USE ONLY pCi/L |
|---|---|---|---|---|---|---|---|---|---|
| 12 3028953 | Transit | 3010588 | 1 | 1/19/16 | 1:00pm | 1/22/16 | 9:30am | | <0.4 |
| 1 8955 | Transit | 3010589 | 1 | 1/19/16 | ↓ | ↓ | ↓ | | <0.4 |
| 2 8954 | Transit | 3010590 | 1 | 1/19/16 | | | | | <0.4 |
| 3 8997 | Transit | 3010591 | 1 | 1/19/16 | | | | | <0.4 |
| | | | | | | | | | |
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KCI Technologies, Inc. 1/27/2016
3010588 **3028953** ACPC275B EXP12/31/2018

**Structure Type:** (circle one or more) Basement - Crawlspace - Slab on Grade - Other

**Test Purpose:** (Circle all that apply) Initial Screening - Follow Up Test - Post Mitigation - Real Estate - Other

**Building Type:** (Circle One) Residential - Non Residential; Private Day Care - Private School; Day Care in Public School - Public School

**Both Placed by and Retrieved by signatures are required** Certified Tester's Name # 

**Canisters placed by** _____ #_____

**Canisters retrieved by** _____ #_____

Owner waives confidentiality by signing here _____ Date 1/22/16

Were general operating conditions maintained? Yes - No explain if NO

Were closed building conditions maintained? Yes - No explain if NO

Normal Temp. Yes - No
Normal Humidity Yes - No
Windy Y-N Rainy Y-N

**Send Results To:**

Company Name: KCI Tech Attention: James Moulsdale

Address: 936 Ridgebrook

City: Sparks State: MD Zip 21152

Phone: 410-584-3826 Fax:

EMAIL Results to: James.Moulsdale@kci.com

Make sure information is complete and correct.

If a recalculation is requested there is a $10.00 recalc fee PER Canister.

Mailing: PO Box 990 Jonestown, PA 17038
Shipping: 929 Mt Zion Road, Lebanon, PA 17046
800-523-4964 fax 717-274-5662
NEHA 10511AL NRSB ARL 0007

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 173618

NOMINAL Conditions: Radon Conc 25.2 pCi/L Rel. Hum 49.1 % Temp. 70.0 F

| | |
|---|---|
| Date Start: 1/23/16 Date Stop: 1/25/16 | Date Start: _____ Date Stop: _____ |
| Time Start: 0821 Time Stop: 0821 | Time Start: _____ Time Stop: _____ |
| Device No.'s: (6) Char. Cans - | Device No.'s: _____ |
| 3028985 thru 3028990 | _____ |
| _____ | _____ |
| E2 LOT | _____ |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)**
**Background = 7 μR/h Elevation = 820 ft**

AccuStar
Professional Radon Laboratory Services Since 1984

# Radon in Air

NRPP 10511AL
NRSB ARL0007

EPA Method #402-R-92-004
Charcoal Canister
NRPP Device Code 6048
NRSB Device Code 10317

Laboratory Report for:

KCI Technologies
936 Ridgebrook Rd
Sparks MD 21152

Property Tested:

MCPS
Radon Spike Sample Laboratory Results

| Log Number | Device Number | Test Exposure Duration: | | Area Tested | Result (pCi/L) |
|---|---|---|---|---|---|
| 3010551 | 3028985 | 01/23/2016 8:20 am | 01/25/2016 8:20 am | 1 First Floor | 24.2 |
| 3010552 | 3028986 | 01/23/2016 8:20 am | 01/25/2016 8:20 am | 2 First Floor | 25.7 |
| 3010553 | 3028987 | 01/23/2016 8:20 am | 01/25/2016 8:20 am | 3 First Floor | 23.8 |
| 3010554 | 3028988 | 01/23/2016 8:20 am | 01/25/2016 8:20 am | 4 First Floor | 23.3 |
| 3010555 | 3028989 | 01/23/2016 8:20 am | 01/25/2016 8:20 am | 5 First Floor | 24.0 |
| 3010556 | 3028990 | 01/23/2016 8:20 am | 01/25/2016 8:20 am | 6 First Floor | 24.4 |

Note: Spike samples are test canisters that are deliberately exposed to a controlled high level of radon in a laboratory. They provide a quality control measure in the testing process and do NOT reflect radon levels in the building being tested.

**Comment:** A copy of this report was emailed to james.moulsdale@kci.com.

Distributed by: KCI Technologies, Inc.

Date Received: 01/27/2016 Date Logged: 01/27/2016 Date Analyzed: 01/28/2016 Date Reported: 01/28/2016

Report Reviewed By: _____ Report Approved By: _____

Carolyn D. Koke, President, AccuStar Labs

**Disclaimer:**

The uncertainty of this radon measurement is ~+/- 10 %. 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.

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**Return canisters for analysis to:**
**AccuStar Labs**
**929 Mt. Zion Rd., Lebanon, PA 17046**
**800-523-4964**

RECEIVED JAN 27 2016

# AccuStar Labs – Lebanon, PA
# INFORMATION FORM - Large Buildings - Projects - Apartments

**Instructions on back of form**
**Read instructions carefully**
**Discrepancies will invalidate tests**

**Do not use this form in New Jersey or Florida Call for correct forms.**

## Test Site Info

Name of Building/Project or Owner: MCPS
Site Address: 850 Hungerford dr
City: Rockville MD State: MD Zip: 20850 County: Montgomery
Projects Contact Name: James Moulsdale Phone: 410-891-1842 Email: James.moulsdale@kci.com

Multi-Page Report Y-N

| | Detector Serial# | ROOM NAME & NUMBER - LOCATION OF DETECTOR IN ROOM (indicate duplicates and blanks) | | Floor | Start Date | Start Time Include AM/PM | Stop Date | Stop Time Include AM/PM | LAB USE ONLY Wgt. Gain | LAB USE ONLY pCi/L |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 3028985 | 1 | 3010551 | 1 | 1/23/16 | 08:20 | 1/25/16 | 08:20 | | N/A |
| 3 | 3028986 | 2 | 3010552 | 1 | ↓ | ↓ | ↓ | ↓ | | ↓ |
| 1 | 3028987 | 3 | 3010553 | 1 | | | | | | |
| 3 | 3028988 | 4 | 3010554 | 1 | | | | | | |
| 1 | 3028989 | 5 | 3010555 | 1 | | | | | | |
| 2 | 3028990 | 6 | 3010556 | 1 | | | | | | |
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**Structure Type:** (circle one or more) Basement - Crawlspace - Slab on Grade - Other

**Test Purpose:** (Circle all that apply) (Initial Screening) - Follow Up Test - Post Mitigation - Real Estate - Other

**Building Type:** (Circle One) Residential - Non Residential - Private Day Care - Private School - Day Care in Public School - (Public School)

**Both Placed by and Retrieved by signatures are required**

Certified Testers Provide #

**Canisters placed by** James Moulsdale #

**Canisters retrieved by** James Moulsdale #

Owner waives confidentiality by signing here _____ Date _____

Were general operating conditions maintained? (Yes) - No explain if NO

Were closed building conditions maintained? (Yes) - No explain if NO

Normal Temp. (Yes) - No

Normal Humidity (Yes) - No

Windy Y-(N) Rainy Y-(N)

**Send Results To:**

Company Name: KCI Technologies Inc
Attention: James Moulsdale
Address: 936 Ridgebrook Rd
City: Sparks State: MD Zip: 21152
Phone: 410-891-1842 Fax:
EMAIL Results to: James.moulsdale@kci.com

1/27/2016

KCI Technologies, Inc.

3010551 **3028985** ACPC275B EXP12/31/2018

Make sure information is complete and correct.
If a recalculation is requested there is a $10.00 recalc fee PER Canister.

Mailing: PO Box 990 Jonest
Shipping: 929 Mt Zion Road, Le
800-523-4964 fax 717-2

NEHA 10511AL NRSB ARL 0007

Revision 5
4/2015

KCI TECHNOLOGIES

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

# MCPS RADON TESTING

Executive Summary: Woodlin Elementary School

| | |
|---|---|
| Date of Test Report: | 2/23/2016 (Rev 3) |
| Round of Testing: | Initial<br>Follow-up<br>Post Remediation |
| | |
| # Rooms Tested: | 60 |
| # Rooms ≥ 4.0 pCi/L: | 1 |
| | |
| Low Value: | < 0.3 |
| High Value: | 8.6 |

Rooms with results ≥ 4.0 pCi/L:
Room 100 (8.6 pCi/L)

Project Status:
Initial testing completed; re-test needed for results ≥ 4.0 pCi/L.
Initial testing completed; missing or compromised samples need re-test.

KCI TECHNOLOGIES

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936 RIDGEBROOK ROAD • SPARKS, MD 21152 • 410-316-7800 • (FAX) 410-316-7935

January 15, 2016 (Rev 3)

Mr. Richard Cox
Indoor Air Quality Team Leader
Montgomery County Public Schools
850 Hungerford Drive
Rockville, MD 20850

Re: **Radon Testing Services**
KCI Job # 12146341.20

Location: Woodlin Elementary School
2101 Luzerne Avenue
Silver Spring, MD 20910

Dear Mr. Cox:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to the Montgomery County Public Schools (MCPS) pursuant to completing a "short-term" 3 day radon test for the Woodlin Elementary School, located at 2101 Luzerne Avenue in Silver Spring, Maryland 20910 (subject site).

**Scope of Services:**

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Safety Board (NRSB) Radon Measurement Specialist (certification #14SS056) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from www.montgomerycountymd.gov/dep/air/radon or www.epa.gov/radon.

KCI visited the site on December 21, 2015 and deployed seventy-four (74) activated charcoal (AC) radon test kits. KCI deployed radon test kits in frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance. A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted six (6) test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on December 24, 2015 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc. is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936

Butler Bridge Road, Mills River, North Carolina.

**Evaluation of Testing Conditions:**

The operating condition that represents the greatest amount of significantly occupied time for this building is; heating active, with outdoor temperature averages ≤ 65° F.

KCI concludes that the test period reasonably represents normal conditions when the building is significantly occupied. Clear characterization of the radon hazard is most likely to be observed under this normal operating condition. Based on the evaluation of test conditions, this test should reasonably characterize radon hazards.

KCI also conducted observations of field conditions which could affect the results of the test and compiled weather data for the testing period. KCI recorded observations of the following conditions in each room at the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

**Results:**

The results of the radon test analysis indicated the following:

| Radon Concentration | Room | Result |
|---|---|---|
| **≥4.0 piC/L** | 100 | 8.6 |
| **<4.0 piC/L** | See Attachment B | |

Notes:
D- Duplicate sample

All field blanks, office blank, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L. Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved. The Spike sample analysis results indicate the laboratory is operating within statistical control limits.

The sampling locations, field observations, and analytical results are listed on Table 1 (Attachment B). The laboratory analytical results are also attached (Attachment C). Laboratory results and exposure data for the spike samples are also included in Attachment C.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 316-7800.

Sincerely,

James M. Moulsdale
Radon Measurement Specialist
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
B- Table 1-Radon Test Summary Spreadsheet
C- Laboratory Analytical Results

# ATTACHMENT A

## Floor Plan With Test Locations

# ATTACHMENT B

## Radon Test Summary Spreadsheet

**Table Notes:**

AC- Activated Charcoal

ACI- Air Chek, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

QC- Quality Control

| Radon Testing Results | | |
|---|---|---|
| Woodlin E.S | | |
| Test Period: 12/21/15-12/24/15 | | |
| | | |
| **Kit Number** | **Room / Area** | **Result** |
| 7708243 | 1 | 1.0 |
| 7712068 | 2 | 0.8 |
| 7708242 | 3 | 1.0 |
| 7712077 | 5 | 1.3 |
| 7712069 | 6 | 1.5 |
| 7712065 | 7 | 1.5 |
| 7708229 | 8 | 0.9 |
| 7712076 | 9 | 1.8 |
| 7712060 | 10 | 1.9 |
| 7708212 | 11 | 3.6 |
| 7708246 | 12 | 3.1 |
| 7712063 | 13 | 2.7 |
| 7712064 | 14 | 2.1 |
| 7712067 | 15 | 2.0 |
| 7712081 | 16 | 1.3 |
| 7712079 | 17 | 1.3 |
| 7712083 | 18 | 1.2 |
| 7712086 | 19 | 1.6 |
| 7708224 | 20 | 1.3 |
| 7712096 | 21 | 0.8 |
| 7708248 | 22 | 0.7 |
| 7708221 | 23 | 0.9 |
| 7712061 | 24 | 0.7 |
| 7712062 | 25 | 1.1 |
| 7708223 | 26 | 2.0 |
| 7712082 | 27 | 1.5 |
| 7712091 | 28 | 1.2 |
| 7712089 | 29 | 1.5 |
| 7712074 | 30 | 1.5 |
| 7708232 | 31 | 1.7 |
| 7712078 | 32 | 0.8 |
| 7712093 | 33 | 1.0 |
| 7708234 | 34 | 1.5 |
| 7712092 | 35 | 1.0 |
| 7712072 | 100 | 8.6 |
| 7712073 | * 4 (missing) | - |
| 7708233 | All Purpose Room | 1.9 |
| 7712095 | * All Purpose Room (tampered) | 2.0 |
| 7712088 | * Asst. Principal (tampered) | < 0.3 |
| 7712066 | Bldg Service | 3.1 |
| 7708227 | Conference | 0.8 |
| 7708215 | Counselor | 0.8 |
| 7712094 | Gym | 1.5 |
| 7712100 | * Gym (tampered) | 1.4 |
| 7708245 | Gym Office | 2.2 |
| 7708220 | Health Room | 1.0 |

Table Note:
* Missing or Compromised Sample
Room numbers obtained from archived floor plan [onsite school provided floor plan]

| Radon Testing Results | | |
|---|---|---|
| **Woodlin E.S** | | |
| **Test Period: 12/21/15-12/24/15** | | |
| | | |
| **Kit Number** | **Room / Area** | **Result** |
| 7712085 | Media Center | < 0.3 |
| 7712084 | Media Center (middle office) | < 0.3 |
| 7712080 | Media Center (south office) | < 0.3 |
| 7708226 | Office | 0.7 |
| 7708222 | Office 204 | 0.7 |
| 7712097 | P-3 | < 0.3 |
| 7712098 | P-4 | < 0.3 |
| 7708244 | P-5 | < 0.3 |
| 7712195 | P-6 | < 0.3 |
| 7708235 | P-7 | < 0.3 |
| 7712099 | P-8 | < 0.3 |
| 7708230 | P-9 | < 0.3 |
| 7708216 | Principal | 0.8 |
| 7712048 | Staff Lounge 1 | 0.8 |
| 7708228 | * Staff Lounge 2 (tampered) | 0.8 |
| 7708239 | Work Room | 0.7 |

Table Note:
* Missing or Compromised Sample
Room numbers obtained from archived floor plan [onsite school provided floor plan]

| Radon Testing Results | | |
|---|---|---|
| Woodlin E.S | | |
| Test Period: 12/21/15-12/24/15 | | |
| | | |
| **Kit Number** | **QC Type** | **Result** |
| 7708219 | D (1) | 0.8 |
| 7712071 | D (14) | 2.6 |
| 7712087 | D (19) | 1.6 |
| 7712090 | D (32) | 0.9 |
| 7708236 | D (Gym Office) | 2.3 |
| 7712196 | D (P-5) | < 0.3 |
| 7708240 | D (Principal) | 1.1 |
| 7708237 | FB (34) | < 0.3 |
| 7712075 | FB (9) | < 0.3 |
| 7708225 | FB (Conference) | < 0.3 |
| 7708231 | FB (Gym Office) | < 0.3 |
| 7712188 | OB (0) | < 0.3 |

Table Note:
* Missing or Compromised Sample
Room numbers obtained from archived floor plan [onsite school provided floor plan]

# ATTACHMENT C

## Laboratory Analytical Results

February 29, 2016

# ** LABORATORY ANALYSIS REPORT **

Radon test result report for:

**WOODLIN E.S**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7712188 | 0 | 2015-12-21 @ 6:00 pm | 2015-12-24 @ 2:00 pm | < 0.3 | 2015-12-28 |
| 7708243 | 1 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 1.0 ± 0.3 | 2015-12-29 |
| 7708219 | 1 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 0.8 ± 0.4 | 2015-12-29 |
| 7712060 | 10 | 2015-12-21 @ 5:00 pm | 2015-12-24 @ 11:00 am | 1.9 ± 0.3 | 2015-12-28 |
| 7712072 | 100 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 8.6 ± 0.6 | 2015-12-28 |
| 7708212 | 11 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 3.6 ± 0.4 | 2015-12-28 |
| 7708246 | 12 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 3.1 ± 0.4 | 2015-12-28 |
| 7712063 | 13 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 2.7 ± 0.4 | 2015-12-28 |
| 7712064 | 14 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 2.1 ± 0.3 | 2015-12-28 |
| 7712071 | 14 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 2.6 ± 0.4 | 2015-12-28 |
| 7712067 | 15 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 2.0 ± 0.4 | 2015-12-28 |
| 7712081 | 16 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | 1.3 ± 0.3 | 2015-12-28 |
| 7712079 | 17 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | 1.3 ± 0.4 | 2015-12-28 |
| 7712083 | 18 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | 1.2 ± 0.3 | 2015-12-28 |
| 7712087 | 19 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | 1.6 ± 0.3 | 2015-12-28 |
| 7712086 | 19 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | 1.6 ± 0.4 | 2015-12-29 |
| 7712068 | 2 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 0.8 ± 0.3 | 2015-12-28 |
| 7708224 | 20 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | 1.3 ± 0.4 | 2015-12-29 |
| 7712096 | 21 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 0.8 ± 0.3 | 2015-12-28 |
| 7708248 | 22 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 0.7 ± 0.3 | 2015-12-28 |
| 7708221 | 23 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 0.9 ± 0.3 | 2015-12-28 |
| 7712061 | 24 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 0.7 ± 0.3 | 2015-12-28 |
| 7712062 | 25 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 1.1 ± 0.3 | 2015-12-28 |
| 7708223 | 26 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 2.0 ± 0.3 | 2015-12-28 |
| 7712082 | 27 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 12:00 pm | 1.5 ± 0.4 | 2015-12-29 |
| 7712091 | 28 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | 1.2 ± 0.3 | 2015-12-28 |
| 7712089 | 29 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | 1.5 ± 0.3 | 2015-12-28 |
| 7708242 | 3 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 1.0 ± 0.3 | 2015-12-28 |
| 7712074 | 30 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | 1.5 ± 0.3 | 2015-12-28 |
| 7708232 | 31 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 1.7 ± 0.3 | 2015-12-28 |
| 7712078 | 32 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 0.8 ± 0.3 | 2015-12-28 |
| 7712090 | 32 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 0.9 ± 0.3 | 2015-12-29 |
| 7712093 | 33 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 1:00 pm | 1.0 ± 0.3 | 2015-12-28 |
| 7708237 | 34 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-28 |
| 7708234 | 34 | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 1.5 ± 0.4 | 2015-12-29 |
| 7712092 | 35 | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | 1.0 ± 0.3 | 2015-12-28 |
| 7712077 | 5 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 1.3 ± 0.3 | 2015-12-28 |

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February 29, 2016

# ** LABORATORY ANALYSIS REPORT **

Radon test result report for:

**WOODLIN E.S**
**MAIN**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7712069 | 6 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 1.5 ± 0.4 | 2015-12-28 |
| 7712065 | 7 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 1.5 ± 0.3 | 2015-12-28 |
| 7708229 | 8 | 2015-12-21 @ 5:00 pm | 2015-12-24 @ 12:00 pm | 0.9 ± 0.3 | 2015-12-28 |
| 7712076 | 9 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 1.8 ± 0.4 | 2015-12-28 |
| 7712075 | 9 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 1:00 pm | < 0.3 | 2015-12-29 |
| 7708233 | ALL PURPOSE ROOM | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 1.9 ± 0.4 | 2015-12-28 |
| 7712095 | ALL PURPOSE ROOM | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 2.0 ± 0.4 | 2015-12-28 |
| 7712088 | ASST. PRINCIPAL | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-29 |
| 7712066 | BLDG SERVICE | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 12:00 pm | 3.1 ± 0.4 | 2015-12-28 |
| 7708227 | CONFERENCE | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 1:00 pm | 0.8 ± 0.3 | 2015-12-28 |
| 7708225 | CONFERENCE | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | < 0.3 | 2015-12-28 |
| 7708215 | COUNSELOR | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 0.8 ± 0.3 | 2015-12-28 |
| 7712094 | GYM | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 1:00 pm | 1.5 ± 0.3 | 2015-12-28 |
| 7712100 | GYM | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 1.4 ± 0.3 | 2015-12-28 |
| 7708231 | GYM OFFICE | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-28 |
| 7708236 | GYM OFFICE | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 2.3 ± 0.4 | 2015-12-28 |
| 7708245 | GYM OFFICE | 2015-12-21 @ 4:00 pm | 2015-12-24 @ 12:00 pm | 2.2 ± 0.4 | 2015-12-29 |
| 7708220 | HEALTH ROOM | 2015-12-21 @ 1:00 pm | 2015-12-24 @ 11:00 am | 1.0 ± 0.3 | 2015-12-28 |
| 7712085 | MEDIA CENTER | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | < 0.3 | 2015-12-28 |
| 7712084 | MEDIA CENTER (MI | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | < 0.3 | 2015-12-28 |
| 7712080 | MEDIA CENTER (SO | 2015-12-21 @ 3:00 pm | 2015-12-24 @ 11:00 am | < 0.3 | 2015-12-28 |
| 7708226 | OFFICE | 2015-12-21 @ 1:00 pm | 2015-12-24 @ 11:00 am | 0.7 ± 0.3 | 2015-12-28 |
| 7708222 | OFFICE 204 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 0.7 ± 0.3 | 2015-12-28 |
| 7708240 | PRINCIPAL | 2015-12-21 @ 1:00 pm | 2015-12-24 @ 11:00 am | 1.1 ± 0.3 | 2015-12-28 |
| 7708216 | PRINCIPAL | 2015-12-21 @ 1:00 pm | 2015-12-24 @ 1:00 pm | 0.8 ± 0.3 | 2015-12-28 |
| 7712048 | STAFF LOUNGE 1 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 0.8 ± 0.3 | 2015-12-28 |
| 7708228 | STAFF LOUNGE 2 | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 0.8 ± 0.3 | 2015-12-28 |
| 7708239 | WORK ROOM | 2015-12-21 @ 2:00 pm | 2015-12-24 @ 11:00 am | 0.7 ± 0.3 | 2015-12-28 |

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February 29, 2016

# ** LABORATORY ANALYSIS REPORT **

Radon test result report for:

**WOODLIN E.S**
**PORTABLE**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7712097 | P-3 | 2015-12-21 @ 5:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-28 |
| 7712098 | P-4 | 2015-12-21 @ 5:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-28 |
| 7708244 | P-5 | 2015-12-21 @ 5:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-28 |
| 7712196 | P-5 | 2015-12-21 @ 5:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-28 |
| 7712195 | P-6 | 2015-12-21 @ 5:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-28 |
| 7708235 | P-7 | 2015-12-21 @ 5:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-28 |
| 7712099 | P-8 | 2015-12-21 @ 5:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-28 |
| 7708230 | P-9 | 2015-12-21 @ 5:00 pm | 2015-12-24 @ 12:00 pm | < 0.3 | 2015-12-29 |

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December 29, 2015

# ** LABORATORY ANALYSIS REPORT **

Radon test result report for:

**TRANSIT DEC 14 2015**
**NONE**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7704395 | TRANSIT 1 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7706508 | TRANSIT 10 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7706510 | TRANSIT 11 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7706511 | TRANSIT 12 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7706505 | TRANSIT 13 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7704371 | TRANSIT 14 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7706506 | TRANSIT 15 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7704381 | TRANSIT 16 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7704399 | TRANSIT 17 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7704390 | TRANSIT 18 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7704396 | TRANSIT 2 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7704364 | TRANSIT 3 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7704370 | TRANSIT 4 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7704368 | TRANSIT 5 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7706524 | TRANSIT 6 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7706526 | TRANSIT 7 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7706518 | TRANSIT 8 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |
| 7706516 | TRANSIT 9 | 2015-12-13 @ 10:00 am | 2015-12-15 @ 10:00 am | < 0.3 | 2015-12-16 |

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December 23, 2015

# ** LABORATORY ANALYSIS REPORT **

Spike Sample Laboratory Results

Radon test result report for:

**MCPS**

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---|---|---|---|---|---|
| 7706380 | 101 | 2015-12-18 @ 9:00 am | 2015-12-21 @ 9:00 am | 25.2 | 2015-12-23 |
| 7706381 | 102 | 2015-12-18 @ 9:00 am | 2015-12-21 @ 9:00 am | 26.5 | 2015-12-23 |
| 7706208 | 103 | 2015-12-18 @ 9:00 am | 2015-12-21 @ 9:00 am | 27.7 | 2015-12-23 |
| 7705132 | 104 | 2015-12-18 @ 9:00 am | 2015-12-21 @ 9:00 am | 28.6 | 2015-12-23 |
| 7706366 | 105 | 2015-12-18 @ 9:00 am | 2015-12-21 @ 9:00 am | 26.5 | 2015-12-23 |
| 7706211 | 106 | 2015-12-18 @ 9:00 am | 2015-12-21 @ 9:00 am | 26.1 | 2015-12-23 |

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**Note: Spike samples are test canisters that are deliberately exposed to a controlled high level of radon in a laboratory. They provide a quality control measure in the testing process and do NOT reflect radon levels in the building being tested.**

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies Inc. Job Number 173224

NOMINAL Conditions: Radon Conc 26.9 pCi/L Rel. Hum 49.6 % Temp. 69.9 F

| | |
|---|---|
| Date Start: 12/18/15 Date Stop: 12/21/15 | Date Start: _____ Date Stop: _____ |
| Time Start: 0929 Time Stop: 0929 | Time Start: _____ Time Stop: _____ |
| Device No.'s: 7705132, 7706208, 7706211, 7706366, 7706380, 7706381 F3 Left | Device No.'s: _____ |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |
| Date Start: _____ Date Stop: _____ | Date Start: _____ Date Stop: _____ |
| Time Start: _____ Time Stop: _____ | Time Start: _____ Time Stop: _____ |
| Device No.'s: _____ | Device No.'s: _____ |

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)**
**Background = 7 µR/h Elevation = 820 ft**

KCI TECHNOLOGIES

ENGINEERS • PLANNERS • SCIENTISTS • CONSTRUCTION MANAGERS

Corporate Office: 936 Ridgebrook road • Sparks , Maryland 21152 • 410-316-7800 • (Fax) 410-316-7935

# Chain of Custody

Project Name: MCPS Radon Phase II

School Names:

1. Bannonckburn ES
2. Walt Whitman HS
3. Walter Johnson HS
4. North Chevy Chase ES
5. Piney Branch ES
6. Forest Knolls ES
7. Newport Mill MS
8. Broad Acres ES
9. Briggs Chaney MS
10. Blair G. Ewing Center
11. Sherwood HS
12. Hadley Farms
13. S. Christa McAuliffe ES
14. Ronald A. McNair ES
15. MLK MS
16. Ashburton ES
17. Bradley Hills ES
18. Flora M. Singer ES
19. Woodlin ES
20. Montgomery Knolls ES
21. Fairland ES
22. Cannon Road ES
23. Richard Montgomery HS
24. Brooke Grove ES
25. Belmont ES
26. Emory Grove
27. Clarksburg HS
28. Clarksburg ES
29. John T. Baker MS

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| | Date | Initials |
|---|---|---|
| Radon Test Kits Deployed | 12/21/2015 | |
| Radon Test Kits Collected | 12/24/2015 | |
| Radon Test Kits Shipped to Lab* | 12/24/2015 | |
| Radon Test Kits Received by Lab* | 12/28/2015 | |

*All samples sent to Air Check, Inc., 1936 Butler Bridge Road, Mills River, NC 28758