# Radon Measurement Assessment Report

Prepared for:
**Ann Arbor Housing Commission**
**2000 South Industrial**
**Ann Arbor, MI 48104**

Project location:
**Park View**
**3 Parkview Place**
**Ann Arbor, MI 48103**

PE Project Number:
**MI22-1034**

Prepared by:
**Protect Environmental**
**9822 Bluegrass Parkway**
**Louisville, KY 40299**
**Phone: 502-410-5000**
**ProtectEnvironmental.com**

Report Date:
**December 23, 2022**

Prepared by:

Keith Hoylman
Protect Environmental

Preparation Date: December 23, 2022

This assessment report was developed specifically for the radon measurement conducted at Park View, 3 Parkview Place, Ann Arbor, MI 48103. The measurement was conducted in accordance with the document *Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings (ANSI/AARST MAMF 2017)* by Jimmy Rogers, a radon measurement professional credentialed by the National Radon Proficiency Program (NRPP).

Please direct inquiries regarding this report to Jennifer Sims at 502-272-2662 or Jennifer@ProtectEnv.com.

Keith Hoylman
Radon Professional
NRPP Certification Number: RMT-109309

## Contents



## Appendices

# Section 1.0 – Introduction and Summary

## 1.1 Purpose

Radon is a colorless, odorless, radioactive gas formed through the decay of uranium. Trace amounts of uranium is present in all soil, and radon is found all over the planet. Most of this gas remains underground, but a small percentage migrates to the surface. Most radon is diluted in the atmosphere to very low concentrations but can build up to high concentrations in buildings. The amount of radon intruding into a building depends on the strength of the source, preferential pathways into the building, and a driving force (usually the thermal stack effect of the building). While two buildings may be identical, each site is unique. The only way to know what the radon levels are inside a building is through measurement. Two structures side-by-side can have totally different radon levels.

Radon is the second leading cause of lung cancer in the general population and the leading cause of lung cancer among non-smokers. Radon exposure is the cause of approximately 21,000 U.S. lung cancer deaths each year. This risk is largely preventable through testing and mitigation.

For more information on radon, please contact:

- The Michigan Department of Environment, Great Lakes, and Energy, Materials Management Division at **517-284-6551** or visit their website at **https://www.michigan.gov/egle/0,9429,7-135-3312_4120_4196---,00.html**
- The US Environmental Protection Agency at **1-800-767-7236** or visit their website at **https://www.epa.gov/radon**.

## 1.2 Property Information

Protect Environmental was engaged to conduct a radon measurement and assessment at the subject property located at Park View, 3 Parkview Place, Ann Arbor, MI 48103. Prior to the measurement, the client or designated representative did not indicate that active mitigation systems were currently in operation at the property.

The property is located within an EPA Zone 1 county.

EPA Zones:

- Zone 1- Average radon levels at or above 4.0 pCi/L
- Zone 2- Average radon levels between 2.0 and 3.9 pCi/L
- Zone 3- Average radon levels at or below 1.9 pCi/L

The EPA Radon Zone designation should not be used to determine if a property should be tested. All buildings should be tested for radon, regardless of location or EPA Radon Zone designation.

### 1.3 Measurement Summary

The measurement was conducted between December 19 and 21, 2022, and was requested as part of a due diligence project being conducted by the client. A total of 3 measurement devices to be deployed in 3 residential locations in 1 building were included in the measurement and quality assurance project plan. The measurement included 1 vacant location. For quality assurance purposes, 2 duplicate and 2 field blank measurement devices were deployed. All devices were sent under appropriate chain of custody to a qualified analytical laboratory for analysis.

Findings and recommendations regarding the analytical lab results and corresponding assessment are provided in Section 6.1 of this report.

## Section 2.0 – Scope of Work

The assessment includes the following scope of work components:

1. Conducting an initial planning meeting with the client to review the project scope, information necessary to build the measurement and quality assurance project plan, required conditions and on-site logistics.

2. Preparing and implementing a measurement and quality assurance project plan for the assessment, in accordance with the required measurement protocol.

3. Placing and retrieving the measurement devices, preparation of chain of custody documentation and shipping of the devices to a qualified analytical laboratory for analysis, and interpretation of the analytical laboratory data.

4. Providing the client with a written report of the measurement findings and recommendations.

## Section 3.0 – Measurement Protocol and Quality Assurance

The measurement was conducted in accordance with the document *Protocol for Conducting Radon and Radon Decay Product Measurements in Multifamily Buildings (ANSI/AARST MAMF 2017)* by Jimmy Rogers, a radon measurement professional credentialed by the NRPP. Field Professional certification documentation is attached as Appendix E to this report.

Quality assurance measures were conducted in accordance with ANSI/AARST MAMF 2017. Details regarding the QA procedures implemented for this project are included in Appendix C of this report.

## Section 4.0 – Measurement Devices

Liquid scintillation devices manufactured by RAdata, LLC were utilized for the measurements. All devices were forwarded under appropriate chain of custody for analysis by RAdata, LLC, an analytical laboratory credentialed by the NRPP. Each device was deployed in accordance with the instructions provided by the manufacturer. The chain of custody for measurement devices is available on request.

RAdata, LLC
27 Ironia Road, Unit 2
Flanders, NJ 07836
NRPP License Number: 101196AL

## Section 5.0 – Measurement Conditions

The occupant of each location at the property was notified of the required measurement conditions to be maintained during the testing event prior to device placement. The field professional also delivered notification of the required measurement conditions applicable to the testing event at the time of device placement. In addition, the responsible party for the overall testing event was notified of the required measurement conditions to be maintained during the testing event prior to device placement. Notifications are attached as Appendix G to this report.

Compliance with the measurement conditions and non-interference controls contained within the measurement protocol was verified by the field professional placing and retrieving the measurement devices. At the time of the measurement, violations of the required measurement conditions or evidence of device tampering were not observed by the field professional, unless noted within this report. Modifications to the measurement and quality assurance project plan were not made by the field professional, unless noted within this report. Weather conditions that existed during the measurement event are attached as Appendix D to this report.

## Section 6.0 – Findings, Recommendations and Required Advisories

The sole purpose of this assessment is to provide the client with information regarding the indoor radon concentrations at the property at the time of the measurement. An uncertainty with any test result due to statistical variations and other factors, such as daily and seasonal variations in indoor radon concentrations, does exist. Variations may occur due to changes in weather conditions, building usage or possible unobserved interference with the required measurement conditions. Locations not occupied, able to be occupied or inaccessible at the time of the measurement were not tested. Any location not occupied, able to be occupied or inaccessible at the time of the measurement should be tested to ensure radon levels are below the EPA action level prior to future occupancy or upon accessibility, as applicable. The findings and recommendations contained within this report are derived

from information obtained from the client and their designated representative, the on-site activities and analytical services provided under the scope of work performed. No representation is made in this report regarding the operational status or proper operation of any mitigation system(s) that may be installed at the property. This measurement assessment report was prepared solely for the use of the client. Use of this report by any party other than is prohibited without prior written consent from Protect Environmental.

### 6.1 Findings and Recommendations

Based upon the analytical lab results, the locations contain indoor radon concentrations below the EPA action level of 4.0 pCi/L. The measurement result for quality assurance purposes in 1 location was invalid. The quality assurance plan for the project was in control. No additional action is recommended.

### 6.2 Required Advisories

When a location is indicated to have radon levels below the EPA action level of 4.0 pCi/L:

1. If the location is indicated to have radon levels below the EPA action level of 4.0 pCi/L but at or above 2.0 pCi/L, consider mitigation of the building.

2. When the initial measurement is conducted under non-heating season conditions, follow-up measurement of all buildings under heating season at the earliest opportunity, and no later than 5 years after the initial measurement is recommended.

3. Consideration is recommended to alternate future measurements to obtain results under a different season that represents a significant portion of the yearlong operating condition for the building.

4. A follow-up measurement is recommended at least every 5 years and in conjunction with the sale of a building(s); a new addition is constructed or significant alterations occur; a ground-contact location not previously tested is occupied; HVAC systems are altered with resulting changes to air distribution or pressure relationship; ventilation is altered by extensive weatherization or changes to mechanical systems; sizeable openings due to ground water or slab surface water control systems are added or altered; natural settlement causing major cracks develops; earthquakes or construction blasting occur nearby; a mitigation system is altered, repaired or modified.

# Appendix A

Analytical Laboratory Report

RAdata, LLC.
27 Ironia Road, Unit 2, Flanders, NJ 07836
973-927-7303 Phone 973-927-4980 Fax
Email: lab@radata.com

Original Report Date: December 23, 2022

Protect Environmental
Winnie Cheuvront
9822 Bluegrass Pkwy
Louisville, KY 40299

## Radon Test Results/Information:

FileNum: MI22-1034

**Name:** Park View,

**Test Location:** 3 Parkview Place, Ann Arbor MI 48103

| Test # | Test Date | Test Device | Location | Avg. Radon Concentration | Date Analyzed |
|---|---|---|---|---|---|
| **Room #: 3** | | | | | |
| 1456128-1485943 | 12/19/2022,12:00-12/21/2022,12:00 | Liquid Scintillation | First Floor | **< 0.2 pCi/L** | 12/23/2022,00:56 Analyzed by: David Rojas |
| **Room #: 2** | | | | | |
| 1456301-1486116 | 12/19/2022,12:00-12/21/2022,12:00 | Liquid Scintillation | First Floor | **0.5 pCi/L** +/- 0.36 | 12/23/2022,00:23 Analyzed by: David Rojas |
| **Room #: 2** | | | | | |
| 1457525-1487437 | 12/19/2022,12:00-12/21/2022,12:00 | Liquid Scintillation | First Floor | **0.3 pCi/L** +/- 0.35 | 12/23/2022,00:12 Analyzed by: David Rojas |
| **Room #: 2** | | | | | |
| 1457557-1487469 | 12/19/2022,12:00-12/21/2022,12:00 | Liquid Scintillation | First Floor | **< 0.2 pCi/L** | 12/23/2022,00:34 Analyzed by: David Rojas |
| **Room #: 1** | | | | | |
| 1458004-1487985 | 12/19/2022,12:00-12/21/2022,12:00 | Liquid Scintillation | First Floor | **0.7 pCi/L** +/- 0.38 | 12/22/2022,23:50 Analyzed by: David Rojas |
| **Room #: 3** | | | | | |
| 1494021-1489936 | 12/19/2022,12:00-12/21/2022,12:00 | Liquid Scintillation | First Floor | **2.2 pCi/L** +/- 0.50 | 12/23/2022,00:45 Analyzed by: David Rojas |
| **Room #: 1** | | | | | |
| 1494031-1489946 | 12/19/2022,12:00-12/21/2022,12:00 | Liquid Scintillation | First Floor | **0.5 pCi/L** +/- 0.38 | 12/23/2022,00:01 Analyzed by: David Rojas |

The results of this measurement provide an idea of the average concentration in the area of the structure tested during this testing period. The actual risk depends upon the amount of time you are exposed to this concentration. The US EPA and the Center of Disease Control have used a continuous exposure level of 4.0 pCi/L as a guidance level at which remedial action is indicated. If you would like additional information on radon, we recommend that you contact either your state agency or the US EPA.

The accuracy of the radon levels determined at the time of sampling are dictated by proper deployment and conditions in the field. Since deployment in the field is not completed by Radata, Inc. laboratory personnel, the radon results indicated represent the levels found in the test device as received at our lab.

Charcoal Canister samples are analyzed by Method [EPA-402-R-92-004 July 92]
Liquid Scintillation samples are analyzed by Method [EPA-402-R-92-004 July 92]
(+/- = 2 sigma (95% confidence level) counting uncertainty reported in pCi/L.)

**LIMITATIONS OF DATA AND PRODUCT LIABILITY**

This product is designed to detect radon levels in a specific location. It can not guarantee the overall level of radon present in a home or building, or that people will not be exposed to potentially harmful levels of radon. The cost of this product is based solely on the value of the monitoring, and is unrelated to the value of any customers' property or health. RAdata, Inc. EXPRESSLY DISCLAIMS ALL LIABILITY FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO DAMAGES RESULTING FROM THE IMPROPER USE OF THE PRODUCT OR THE IMPROPER INTERPRETATION OF THE DATA GENERATED BY THE PRODUCT. RAdata's AND ITS AGENT'S SOLE AND EXCLUSIVE LIABILITY AND THE CUSTOMER'S SOLE LIABILITY AND EXCLUSIVE REMEDY WILL NOT EXCEED THE LESSER OF THE COST OF REPAIR OR REPLACEMENT OF THE PRODUCT. Neither RAdata, Inc. nor its agents accepts any liability for improper deployment of any device and shall not be responsible for the consequences of the results derived from same.



Jennifer Fusco, Laboratory Director

# Appendix B

Device Placement Log

# Device Placement Log

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Facility: | Park View | | | RES Devices: | 3 | Placement Arrival: | 12:00 PM |
| Address: | 3 Parkview Place, Ann Arbor, MI 48103 | | | NR Devices: | 0 | Placement Departure: | 12:00 PM |
| Contact: | Tim Olivier: | | | Duplicate Devices: | 2 | Retrieval Arrival: | 10:00 AM |
| Placement Day/Type/Pro: | 12/19/2022 | ST | Jimmy Rogers | Blank Devices: | 2 | Retrieval Departure: | 10:00 AM |
| Retrieval Day/Type/Pro: | 12/21/2022 | ST | Jimmy Rogers | Total Devices: | 7 | Ship Info: | FedEx: 1-Day |
| Standard: | MAMF 2017 | Project Type: | HUD, Initial 100% | Shipped Devices: | 7 | Ship Date: | 12/21/2022 |

| Kit Number | Start Date | Start Time | End Date | End Time | Temp | Building | Room | Floor | Vacant | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| 1458004 | 12/19/2022 | 12:00 PM | 12/21/2022 | 10:00 AM | 75 | | 1 | 1 | | |
| 1494031 | 12/19/2022 | 12:00 PM | 12/21/2022 | 10:00 AM | 75 | | 1<br>DUPLICATE | 1 | | MCV: Tampered |
| 1457525 | 12/19/2022 | 12:00 PM | 12/21/2022 | 10:00 AM | 75 | | 2 | 1 | | |
| 1456301 | 12/19/2022 | 12:00 PM | 12/21/2022 | 10:00 AM | 75 | | 2<br>DUPLICATE | 1 | | |
| 1457557 | 12/19/2022 | 12:00 PM | 12/21/2022 | 10:00 AM | 75 | | 2<br>FIELD BLANK | 1 | | |
| 1494021 | 12/19/2022 | 12:00 PM | 12/21/2022 | 10:00 AM | 75 | | 3 | 2 | | |
| 1456128 | 12/19/2022 | 12:00 PM | 12/21/2022 | 10:00 AM | 75 | | 3<br>FIELD BLANK | 2 | | |

# Appendix C

Quality Assurance Documentation

## Project Quality Assurance

Quality Assurance measures were conducted in accordance with ANSI/AARST MAMF 2017, and included:

•*Duplicate* (co-located) measurement devices deployed at a rate of 10% of the measurement locations.
- Results may not be twice or more than the co-located sample.

•*Blank* measurement devices, not exposed to indoor air, deployed at a rate of 5% of measurement locations.
- Results may not be above the calculated lower limit of detection.
- At a minimum of 50 test devices deployed, the number of blanks will be increased to 9, to include 3 laboratory blanks, 3 office blanks and 3 field blanks.
- If more than 180 test devices are deployed, the blanks will be deployed at a standard rate of 5% blanks of the measurement locations.

•*Spike* measurement devices conducted at a rate of no less than 3% of sampling locations.
- At a minimum of 100 units tested, the number of spikes increased to include 3 spiked devices from the sampling program batch to be tested and results received prior to beginning the sample deployment.

| Device Location | Event Dates | Device Number | Result (pCi/L) | | RPD | Device Type |
|---|---|---|---|---|---|---|
| Unit 1 | 12/19/2022<br>to<br>12/21/2022 | 1458004<br><br>1494031 | 0.7<br><br>0.5 | 0.6 | NA | Duplicate |
| Unit 2 | 12/19/2022<br>to<br>12/21/2022 | 1456301<br><br>1457525 | 0.5<br><br>0.3 | 0.4 | NA | Duplicate |

| | | | | | |
|---|---|---|---|---|---|
| Unit 2 | 12/19/2022<br>to<br>12/21/2022 | 1457557 | < 0.2 | NA | Field Blank |
| Unit 3 | 12/19/2022<br>to<br>12/21/2022 | 1456128 | < 0.2 | NA | Field Blank |

PROTECT™
ENVIRONMENTAL

PE Job Number: 22.22
Lot Number USUH007203
Device Range: 1456113-1458112

| Chamber Info | | Storage Info | |
|---|---|---|---|
| Job Number: | 207561 | Radon Levels | - |
| Start Date: | 10/21/2022 | Device Numbers: | - |
| Stop Date: | 10/24/2022 | Start/Stop Date: | - |
| Temperature: | 79.7° F | Temperature: | 70–75° F |
| Rel. Hum: | 42.50% | Rel. Hum: | 30-45% |

**Spikes**

| Device | Type | Manufacture | Range | Chamber | MV | TV | IRE |
|---|---|---|---|---|---|---|---|
| 1456287 | LS | RaData | 1456113-1458112 | Bowser-Morner | 23.6 | 26.4 | -10.6% |
| 1456479 | LS | RaData | 1456113-1458112 | Bowser-Morner | 24.0 | 26.4 | -9.1% |
| 1456555 | LS | RaData | 1456113-1458112 | Bowser-Morner | 23.0 | 26.4 | -12.9% |
| 1456716 | LS | RaData | 1456113-1458112 | Bowser-Morner | 23.7 | 26.4 | -10.2% |
| 1456970 | LS | RaData | 1456113-1458112 | Bowser-Morner | 24.0 | 26.4 | -9.1% |
| 1457039 | LS | RaData | 1456113-1458112 | Bowser-Morner | 24.0 | 26.4 | -9.1% |
| 1457312 | LS | RaData | 1456113-1458112 | Bowser-Morner | 22.5 | 26.4 | -14.8% |
| 1457478 | LS | RaData | 1456113-1458112 | Bowser-Morner | 22.8 | 26.4 | -13.6% |
| 1457527 | LS | RaData | 1456113-1458112 | Bowser-Morner | 21.4 | 26.4 | -18.9% |
| 1457681 | LS | RaData | 1456113-1458112 | Bowser-Morner | 23.4 | 26.4 | -11.4% |
| 1457808 | LS | RaData | 1456113-1458112 | Bowser-Morner | 23.8 | 26.4 | -9.8% |
| 1458005 | LS | RaData | 1456113-1458112 | Bowser-Morner | 22.4 | 26.4 | -15.2% |

IRE = Individual Relative Error; MV = Measurable Value (from lab); TV = Target Value (from chamber)

**Office/Lab Transit Blanks**

| Device | Type | Manufacture | Range | Chamber | MV | TV | In Control |
|---|---|---|---|---|---|---|---|
| 1457740 | LS | RaData | 1456113-1458112 | Bowser-Morner | < 0.2 | < 0.2 | YES |
| 1456473 | LS | RaData | 1456113-1458112 | Bowser-Morner | < 0.2 | < 0.2 | YES |
| 1456563 | LS | RaData | 1456113-1458112 | Bowser-Morner | < 0.2 | < 0.2 | YES |
| 1456817 | LS | RaData | 1456113-1458112 | Bowser-Morner | < 0.2 | < 0.2 | YES |
| 1457399 | LS | RaData | 1456113-1458112 | Bowser-Morner | < 0.2 | < 0.2 | YES |
| 1457905 | LS | RaData | 1456113-1458112 | Bowser-Morner | < 0.2 | < 0.2 | YES |

Winnie Cheuvront
QA Coordinator

Kyle Hoylman
QA Manager

PE Job Number: 22.23

Lot Number USUH007203

Device Range: 1493300-1495300

| Chamber Info | | Storage Info | |
|---|---|---|---|
| Job Number: | 207650 | Radon Levels | - |
| Start Date: | 10/29/2022 | Device Numbers: | - |
| Stop Date: | 10/31/2022 | Start/Stop Date: | - |
| Temperature: | 70.2° F | Temperature: | 70–75° F |
| Rel. Hum: | 50.00% | Rel. Hum: | 30-45% |

**Spikes**

| Device | Type | Manufacture | Range | Chamber | MV | TV | IRE |
|---|---|---|---|---|---|---|---|
| 1493407 | LS | RaData | 1493300-1493799 | Bowser-Morner | 28.0 | 26.1 | 7.3% |
| 1493653 | LS | RaData | 1493300-1493799 | Bowser-Morner | 27.1 | 26.1 | 3.8% |
| 1493736 | LS | RaData | 1493300-1493800 | Bowser-Morner | 28.5 | 26.1 | 9.2% |
| 1493974 | LS | RaData | 1493300-1493801 | Bowser-Morner | 27.1 | 26.1 | 3.8% |
| 1494013 | LS | RaData | 1493300-1493802 | Bowser-Morner | 25.6 | 26.1 | -1.9% |
| 1494155 | LS | RaData | 1493300-1493803 | Bowser-Morner | 28.3 | 26.1 | 8.4% |
| 1494534 | LS | RaData | 1493300-1493804 | Bowser-Morner | 25.6 | 26.1 | -1.9% |
| 1494696 | LS | RaData | 1493300-1493805 | Bowser-Morner | 26.9 | 26.1 | 3.1% |
| 1494715 | LS | RaData | 1493300-1493806 | Bowser-Morner | 29.3 | 26.1 | 12.3% |
| 1494958 | LS | RaData | 1493300-1493807 | Bowser-Morner | 27.3 | 26.1 | 4.6% |
| 1495165 | LS | RaData | 1493300-1493808 | Bowser-Morner | 26.6 | 26.1 | 1.9% |
| 1495255 | LS | RaData | 1493300-1493809 | Bowser-Morner | 26.5 | 26.1 | 1.5% |

IRE = Individual Relative Error; MV = Measurable Value (from lab); TV = Target Value (from chamber)

**Office/Lab Transit Blanks**

| Device | Type | Manufacture | Range | Chamber | MV | TV | In Control |
|---|---|---|---|---|---|---|---|
| 1494077 | LS | RaData | 1493300-1493806 | Bowser-Morner | < 0.2 | < 0.2 | YES |
| 1493563 | LS | RaData | 1493300-1493806 | Bowser-Morner | < 0.2 | < 0.2 | YES |
| 1494207 | LS | RaData | 1493300-1493806 | Bowser-Morner | < 0.2 | < 0.2 | YES |
| 1494424 | LS | RaData | 1493300-1493806 | Bowser-Morner | < 0.2 | < 0.2 | YES |
| 1494524 | LS | RaData | 1493300-1493806 | Bowser-Morner | < 0.2 | < 0.2 | YES |
| 1495095 | LS | RaData | 1493300-1493806 | Bowser-Morner | < 0.2 | < 0.2 | YES |

Winnie Cheuvront

Manager, QA/AC - Measurement

# Appendix D

Measurement Event Weather Conditions

# Weather Summary

Facility: Park View
Address: 3 Parkview Place, Ann Arbor, MI 48103
Placement Day: 12/19/2022
Retrieval Day: 12/21/2022

| Date | Temperature (°F) Min | Temperature (°F) Max | Temperature (°F) Avg | Precipitation (Inches) Min | Precipitation (Inches) Max | Precipitation (Inches) Avg | Ground Cover (Snow/Ice inches) Min | Ground Cover (Snow/Ice inches) Max | Ground Cover (Snow/Ice inches) AVG | Wind (Speed in mph) Min | Wind (Speed in mph) Max | Wind (Speed in mph) Avg | Humidity (%) Min | Humidity (%) Max | Humidity (%) Avg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 12/18/2022 | 23 | 328 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 21 | 16 | 72 | 81 | 76 |
| 12/19/2022 | 24 | 30 | 27 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 9 | 66 | 77 | 72 |
| 12/20/2022 | 25 | 34 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 6 | 54 | 78 | 70 |
| 12/21/2022 | 23 | 32 | 28 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 4 | 61 | 85 | 75 |
| Overall Avg. | 24 | 106 | 27 | 0 | 0.00 | 0 | 0 | 0 | 0 | 3 | 8 | 4 | 63 | 80 | 73 |

# Appendix E

Professional Certification Documentation

# Keith Hoylman
# Protect Environmental, LLC

### Certified for Radon Measurement

- Certified by the National Radon Proficiency Program **(NRPP)**
- NRPP Certification **#109193-RT**
- Certified since: May 10, 2017
- Certification Expires: August 31, 2023

### Certified for Radon Mitigation

- Certified by the National Radon Proficiency Program **(NRPP)**
- NRPP Certification **#109309-RMT**
- Certified since: August 2, 2017
- Certification Expires: August 31, 2023

### Total NRPP Training/Education Credits: 103

- Multi-Family Measurement Certificate **(MFM)**
- Multi-Family Mitigation Certificate **(MFMT)**
- Radon Resistant New Construction Certificate **(RRNC)**

### American Association of Radon Scientists and Technologists (AARST)

- AARST Member ID: A5682
- Member since: May 10, 2017
- AARST Advanced Radon Measurement/Mitigation Professional **(ARP)**

### Business Links

- Protect Environmental, LLC Website

*Kentucky*

*State Radon Office Contact*

Clay Hardwick

Clay.hardwick@ky.gov

(502) 564-4856

Radon Office Website

Interested in becoming a Member of AARST?

Interested in becoming NRPP certified ?

Radon Levels in your state

Last updated on: August 13, 2021

# Jimmy Rogers
# Protect Environmental

### Certified for Radon Measurement

- Certified by the National Radon Proficiency Program **(NRPP)**
- NRPP Certification **#111911-RT**
- Certified since: March 1, 2021
- Certification Expires: March 31, 2023

### Total NRPP Training/Education Credits: 16

### Business Links

- Protect Environmental Website

*Kentucky*

*State Radon Office Contact*

Clay Hardwick

Clay.hardwick@ky.gov

(502) 564-4856

Radon Office Website

Interested in becoming a Member of AARST?

Interested in becoming NRPP certified ?

## Appendix F

EPA Radon Zone Map

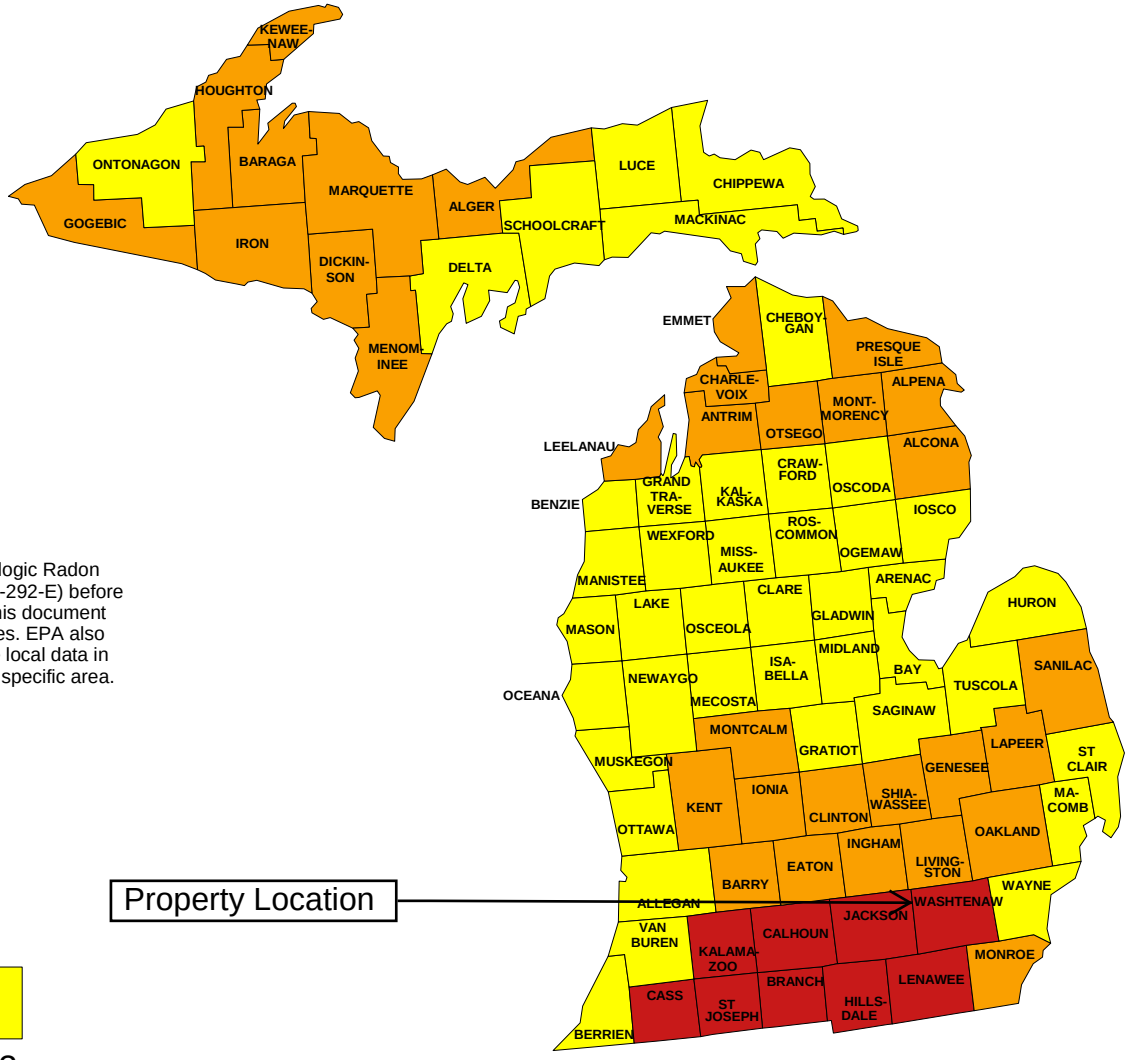
# MICHIGAN - EPA Map of Radon Zones

http://www.epa.gov/radon/zonemap.html

The purpose of this map is to assist National, State and local organizations to target their resources and to implement radon-resistant building codes.

This map is not intended to determine if a home in a given zone should be tested for radon. Homes with elevated levels of radon have been found in all three zones.

***All homes should be tested, regardless of zone designation.***




**IMPORTANT:** Consult the publication entitled "Preliminary Geologic Radon Potential Assessment of Michigan" (USGS Open-file Report 93-292-E) before using this map. http://energy.cr.usgs.gov/radon/grpinfo.html This document contains information on radon potential variations within counties. EPA also recommends that this map be supplemented with any available local data in order to further understand and predict the radon potential of a specific area.

Zone 1 Zone 2 Zone 3

# Appendix G

Notification Documentation

**Radon Measurement – Resident Notification (ST)**

We will be conducting a radon assessment in your community. Your residence may be selected for placement of a measurement device. Access to your residence for purposes of placing and retrieving the measurement device may be necessary on the following dates:

Device Placement: **12/19/2022**

Device Retrieval: **12/21/2022**

During the measurement period, regardless of whether a measurement device is placed in your residence, you are required to maintain the following conditions to ensure a valid measurement:

- All windows must be kept closed. All exterior doors must be kept closed, except for normal entry and exit. **Windows and doors must be kept closed for a period of 12 hours prior to the device placement date and remain closed effect until the devices are retrieved.**

- Whole house fans must not be operated. Window air conditioning units may only be operated in recirculation mode. Portable window fans must be removed from the window or sealed in place.

- Fireplaces or combustion appliances, other than water heaters and cooking appliances, must not be operated unless they are your primary heat source.

- Ceiling fans, portable air filters, portable de-humidifiers, portable humidifiers or window air conditioning units operating in recirculation mode must not be operated within 20' of the measurement device.

- If a device is placed in your unit, the measurement device must not be touched, tampered with, covered, removed, or altered, and the location of the device must not be changed. Your HVAC system must be operated in the normal range – your thermostat should not be adjusted drastically, and your fan should be set in normal mode.

The technician placing and retrieving the devices is required to report any failure to maintain closed-building conditions. Failure to maintain these conditions could result in an invalid measurement and require the measurement to be repeated.

Your assistance in helping to ensure a valid measurement in greatly appreciated! Contact your management office with questions regarding this notification.

Thank you.

**Radon Measurement – Responsible Party Notification (ST)**

Date: December 12, 2022
Measurement Location: Park View 3 Parkview Place, Ann Arbor, MI
Measurement Period: 12/19/2022 through 12/21/2022

During the measurement period, the following conditions must be maintained in each residence (regardless of whether or not the unit contains a measurement device) and all common areas in the building to ensure a valid measurement:

- All windows must be kept closed. All exterior doors must be kept closed, except for normal entry and exit. **Windows and doors must be kept closed for a minimum period of 12 hours prior to device placement and remain closed until device retrieval.**
- Whole house fans must not be operated. Window air conditioning units may only be operated in recirculation mode. Portable window fans must be removed from the window or sealed in place.
- Fireplaces or combustion appliances, other than water heaters and cooking appliances, must not be operated unless they are the primary heat source.
- Ceiling fans, portable air filters, portable de-humidifiers, portable humidifiers or window air conditioning units operating in recirculation mode must not be operated within 20' measurement devices.
- The measurement device must not be touched, tampered with, covered, removed or altered, and the location of the device must not be changed. HVAC systems must be operated in the normal range – thermostats should not be adjusted drastically and air handlers should be set in normal mode.
- Unusual occurrences that could affect the measurement, such as power outages or extreme weather conditions, must be reported to Protect Environmental.

The technician placing and retrieving the devices is required to report any failure to maintain measurement conditions. Failure to maintain measurement conditions may result in an invalid measurement and require the measurement to be repeated.

As the responsible party for the measurement location listed above, I hereby acknowledge receipt of this Measurement Conditions Notification and agree to make reasonable efforts to ensure the conditions outlined herein are maintained throughout the measurement period.

Beth Garoch
Responsible Party