MERIDIAN
CONSULTING GROUP
16620 61st Avenue North
Plymouth, MN 55446 • (612) 834-4406

Radon Testing Report – Hillside Elementary

8177 Hillside Trail S, Cottage Grove, MN 55016
March 21, 2025

Introduction

Radon is a colorless and odorless gas that comes from the soil. Exposure to radon over time can cause lung cancer. The U.S. Environmental Protection Agency (EPA) has set a target level of 4 pCi/L and to consider action at 2 pCi/L. Testing was conducted to determine if occupants are exposed to elevated levels of radon.

Testing

Meridian Consulting conducted short-term radon testing for Hillside Elementary from 03/10/2025 to 03/12/2025 using Air Chek Pro Chek charcoal radon test kits from Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC 28759, NRPP Certified Lab # 101138 AL. Radon testing was done according to ANSI/AARST MA-MFLB 2023.

Testing was conducted by the following Minnesota Department of Health (MDH) licensed radon measurement professionals:

Name	MDH License #	Signature
Wendy German	RMEA-00447	

All ground-contact rooms that are occupied or intended to be occupied were tested. In addition, tests were conducted in all rooms above ground-contact rooms that were not tested. On second floors, ten percent of rooms were tested with at least one test conducted on each story.

Test Results

Hillside Elementary Radon Results Summary			
	0.0 – 1.9 pCi/L	2.0 – 3.9 pCi/L	4.0 and higher
Number of Tests	56	0	0

Test Conditions

Radon levels in a building can be influenced by many factors including weather, season, and occupancy patterns. Temporary conditions observed during the testing period may cause the test to not reflect the occupant's risk from radon. Test Conditions can be found in Appendix C.

There was no unusual weather, occupancy patterns, mechanical system operations, or other situations present that would likely affect measured radon levels.

Missing or Invalid Test Results

Location	Missing/Invalid/Not Tested	Explanation
n/a	n/a	No Missing Tests

Quality Assurance and Quality Control

Quality control measurements were conducted in compliance with ANSI/AARST MA-MFLB 2023. This includes blanks, duplicates, and spike measurements. See Appendix E for this data.

Recommendations

No radon concentrations at or above 2 pCi/L were measured. Therefore, the building should continue to be tested every five years.

When to Retest:

- Retest every 5 years if no mitigation system is installed.
- Retest in conjunction with the sale of any new or existing building.
- Be certain to test again when any of the following circumstances occur:
    - A new addition is constructed or alterations for building rehab or reconfiguration occur;
    - A ground contact area not previously tested is occupied, or a building is newly occupied;
    - Heating and cooling systems are significantly altered, resulting in changes to air pressure or pressure relationships;
    - Ventilation is significantly altered by extensive weatherization, changes to mechanical systems or comparable procedures;
    - Significant openings to the soil occur due to:
        - Groundwater or slab surface water control systems that are altered or added (ex. sumps, perimeter drain tile, shower/tub retrofits) or,
        - Natural settlement causing major cracks to develop.
    - Earthquakes, construction blasting, or formation of sink holes nearby; or
    - A radon mitigation system is altered, modified, or repaired.

Radon Information

Additional information on radon can be found on the Minnesota Department of Health's website at mn.gov/radon or by contacting them at 651-201-4601 or health.indoorair@state.mn.us.

If you have any questions, please contact us at 320-224-1908 or wendy@meridianconsult.net

Appendix A: Analytical Results

Sample ID	Location	Start Date	Start Time	End Date	End Time	Duplicate	Result
11957603	102	2025-03-10	1:00 pm	2025-03-12	1:00 pm	< 0.3	< 0.3
11957604	102	2025-03-10	1:00 pm	2025-03-12	1:00 pm	< 0.3	
11957605	104	2025-03-10	1:00 pm	2025-03-12	1:00 pm		0.9
11957606	106	2025-03-10	1:00 pm	2025-03-12	1:00 pm		1.4
11957607	108	2025-03-10	1:00 pm	2025-03-12	1:00 pm		1.3
11957608	112	2025-03-10	2:00 pm	2025-03-12	1:00 pm		0.8
11957609	114	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957610	113	2025-03-10	2:00 pm	2025-03-12	1:00 pm		1.1
11957611	110	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957612	111	2025-03-10	2:00 pm	2025-03-12	1:00 pm	1	0.8
11957613	111	2025-03-10	2:00 pm	2025-03-12	1:00 pm	0.5	
11957614	109	2025-03-10	2:00 pm	2025-03-12	1:00 pm		1
11957615	107	2025-03-10	2:00 pm	2025-03-12	1:00 pm		0.7
11957616	105	2025-03-10	2:00 pm	2025-03-12	1:00 pm		0.6
11957617	103	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957618	101	2025-03-10	2:00 pm	2025-03-12	1:00 pm		0.8
11957619	MC OFFICE	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957620	MC 1	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957621	MC 2	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957622	MC OFFICE 2	2025-03-10	2:00 pm	2025-03-12	1:00 pm	< 0.3	< 0.3
11957623	MC OFFICE 2	2025-03-10	2:00 pm	2025-03-12	1:00 pm	< 0.3	
11957624	COMP LAB	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957626	CUSTODIANS	2025-03-10	2:00 pm	2025-03-12	2:00 pm		< 0.3
11957627	200	2025-03-10	2:00 pm	2025-03-12	1:00 pm	< 0.3	< 0.3
11957628	200	2025-03-10	2:00 pm	2025-03-12	1:00 pm	< 0.3	
11957629	202	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957631	210	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957632	212	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957633	204	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957634	206	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957635	208	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957636	214	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957637	216	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957638	217	2025-03-10	2:00 pm	2025-03-12	1:00 pm		0.8
11957639	215	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957640	211	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957641	209	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957643	213	2025-03-10	2:00 pm	2025-03-12	1:00 pm		0.7
11957644	207	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957645	205	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957646	203	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957647	STAFF DINING	2025-03-10	2:00 pm	2025-03-12	1:00 pm	< 0.3	0.5
11957648	STAFF DINING	2025-03-10	2:00 pm	2025-03-12	1:00 pm	0.6	
11957649	PSYCH	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957650	ACC SUCC	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3

11957651	GYM 1	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957652	GYM 2	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957653	GYM 3	2025-03-10	2:00 pm	2025-03-12	1:00 pm		< 0.3
11957654	CAF 1	2025-03-10	2:00 pm	2025-03-12	2:00 pm		< 0.3
11957655	CAF 2	2025-03-10	2:00 pm	2025-03-12	2:00 pm		< 0.3
11957656	KITCHEN OFFICE	2025-03-10	2:00 pm	2025-03-12	2:00 pm		< 0.3
11957657	CAF OFFICE	2025-03-10	2:00 pm	2025-03-12	2:00 pm		< 0.3
11957788	PRINCIPAL	2025-03-10	1:00 pm	2025-03-12	1:00 pm		< 0.3
11957790	COUNSELER	2025-03-10	1:00 pm	2025-03-12	1:00 pm		0.7
11957792	NURSE	2025-03-10	1:00 pm	2025-03-12	1:00 pm		< 0.3
11957794	CONF	2025-03-10	1:00 pm	2025-03-12	1:00 pm		< 0.3
11957795	100A	2025-03-10	1:00 pm	2025-03-12	1:00 pm		< 0.3
11957796	100	2025-03-10	1:00 pm	2025-03-12	1:00 pm		< 0.3
11957797	100B	2025-03-10	1:00 pm	2025-03-12	1:00 pm		< 0.3
11957798	100B OFFICE	2025-03-10	1:00 pm	2025-03-12	1:00 pm		< 0.3
11957799	OFFICE	2025-03-10	1:00 pm	2025-03-12	1:00 pm	< 0.3	0.5
11957800	OFFICE	2025-03-10	1:00 pm	2025-03-12	1:00 pm	0.6	

Appendix C: Test Conditions

- The minimum outdoor temperature that existed 12 hours prior to and during the test period was 26°F. The maximum outdoor temperature was 64°F. The average outdoor temperature was 41°F.
- Weather was mild. Very little snow coverage on ground.

		Annual	During the Test
Outdoor Temperatures	Avg. °F	45°	41°
Operating Conditions	Heating (% year)	75%	100%
Operating Conditions	Cooling (% year)	0	0
Operating Conditions	Mixed (% year)	25%	0
Prevailing Operating Condition	Heating/Cooling/Mixed	Heating	Heating

Appendix D: Test Notifications

DEPARTMENT OF HEALTH

Notice of Inspection for Building Occupants

A radon test is scheduled for:

Building: **Hillside Elementary**

Test Start Date: **3/10/25** Test End Date: **3/12/25**

An important step is being taken to ensure a safe and healthy building. Testing for radon is recommended for all homes and schools.

Radon is a naturally occurring radioactive gas that can be present in some buildings at concentrations greater than recommended. In the United States, radon exposure is the second leading cause of lung cancer, and it is the leading cause of lung cancer in nonsmokers.

Please help to maintain the required test conditions throughout the building.

1. All windows and exterior doors must be kept closed (aside from momentary entry or exit) for 12 hours before and during the test.
2. Heating and cooling systems must be set to normal occupied operating temperatures.
3. Test devices are not to be disturbed.

The test devices are not dangerous in any way, if a test gets incidentally moved, please put it back where it was originally placed. If you think a test has been heavily tampered with (smashed, ripped, moved) please leave me a note so that I can research its validity.

More information about radon in Minnesota can be found online at mn.gov/radon.

If you have any questions or concerns, please contact:

Wendy German

South Washington County Schools

Facilities – Health and Safety

wgerman@sowashco.org

651-425-6277

DEPARTMENT OF HEALTH
Radon Measurement Professional
License Number: RMEA-00447 Approved On: 12/21/2023
Wendy German
16620 61st Ave N
Plymouth, MN 55446
License valid from 02/8/2024 to 02/8/2025

DEPARTMENT OF HEALTH
Radon Measurement Professional
License Number: RMEA-00447 Approved On: 01/13/2025
Wendy German
16620 61st Ave N
Plymouth, MN 55446
License valid from 02/8/2025 to 02/8/2026

DEPARTMENT OF HEALTH

Client Commitment to Compliance

Management Commitment:

To the extent reasonably possible, I, on behalf of **Hillside Elementary,** commit to helping ensure that building conditions required to achieve reliable radon tests are met, as portrayed herein.

To the extent reasonably possible, I commit to helping ensure that building conditions required to achieve reliable radon tests are met, as portrayed herein, by accepting the following responsibilities:

1. **Building Preparation:** I accept responsibility that, no later than 12 hours prior to testing, each building scheduled for testing will be reviewed for compliance with closed-building requirements.

2. **Compliance Verification**: I accept responsibility for taking actions that could include adjustments to HVAC units and repairs where completion is required no later than 12 hours prior to testing.

Client/Authorized Agent: **Kyle Uecker**

Signature: Kyle Uecker Date: 2/4/25

Building On-Site Supervisor Commitment:

To the extent reasonably possible, I commit to helping ensure that building conditions required to achieve reliable radon tests are met, as portrayed herein, by accepting the following responsibilities:

1. **Prior Notifications**: Notices will be distributed to all tested and non-tested dwellings and posted in publicly accessible areas in a timely manner.

2. **Access**: Access will be provided to each location being tested within a building with intent to access all locations on the same day for both the event of placing testing devices and a second event for retrieving test devices.

On-Site Supervisor: **Erin Shadick**

Signature: Confirmed on testing days Date: 3/10/25

Minnesota Department of Health, Indoor Air Unit, PO Box 64975, St. Paul, MN 55164 651-201-4601, health.indoorair@state.mn.us, mn.gov/radon

DEPARTMENT OF HEALTH

Client Authorizations & Communications

Client and Facilitating Staff Member Contact Information

Client/Authorized Agent Kyle Uecker phone (651) 425-6299

Onsite Supervisor Principals at each building phone _____

Building/Dwelling Access Wendy has full access phone _____

HVAC Operations Kyle Uecker phone _____

Other Contact/Title _____ phone _____

Radon Testing Professional Contact Information

Scheduling/Logistics Wendy German phone (651) 425-6277

Onsite Supervisor same phone _____

Field Technician same phone _____

Field Technician _____ phone _____

Staff authorized for responding to occupant and public inquiries:

Name/Title Kyle Uecker phone _____

Name/Title _____ phone _____

Person(s) authorized to receive report data and incremental reports:

Name/Title Kyle Uecker phone _____

Name/Title _____ phone _____

Frequency of Reports

☐ prior to testing ☐ after each phase of testing ☑ when testing is complete

Minnesota Department of Health | Indoor Air Unit | PO Box 64975 | St. Paul, MN 55164 | 651-201-4601
health.indoorair@state.mn.us | www.health.state.mn.us | mngov/radon

08/17/2023 | To obtain this information in a different format, call: 651-201-4601.

DEPARTMENT OF HEALTH

Client Advisories Prior to Testing

Testing will be conducted in compliance with ANSI/AARST MA-MFLB 2023 and the Minnesota Radon Licensing Act.

- Tests will be done in 100% ground contact residential units and non-residential rooms that are occupied or intended to be occupied.
- In addition, 10% of residential units and non-residential rooms will be tested on each upper floor, with a minimum of one test per floor.
- Quality control measurements will be done at 10% duplicates (extended testing option), 5% blanks, and 3% spikes.
- Closed-building conditions must be maintained at least 12-hours prior to and during the test.

There are two test options that comply with the standards:

Time-Sensitive Testing	Extended Testing
Tests at each location are tested using two short-term test devices or a continuous radon monitor	Tests at each location are conducted using a single short-term test device
	All locations that meet or exceed the action level (4.0 pCi/L) are retested
Decisions to mitigate are based on the results of the average of the two short-term test devices or the average from a continuous radon monitor	Decisions to mitigate are based on the results of the average of the two rounds of testing

Failure to reasonably maintain test conditions can lead to unnecessary expense, disruptions, and unreliable data. Disturbing test devices can also cause reliable and invalid test results.

To aid in proper test conditions, the measurement professional will:

- Inform the person responsible for building operations of the required test conditions,
- Ensure "Radon Test in Progress" signs are posted in prominent locations,
- Attempt to obtain a signed statement from onsite supervisors or facilitating staff members that they will aid in the quality control of closed-building conditions, and
- Conduct a visual inspection upon detector placement and retrieval to ensure all closed-building conditions are met.

Please provide, in writing, a list of who is authorized to receive test data and at which junctures data should be provided.

Instructions for Notifying Individual of Test Conditions

Proper notification is essential to get compliance with required testing conditions.

Enclosed are notification forms for facilitating staff such as authorized building supervisors, maintenance staff, teachers, or office managers. Facilitating staff should ensure closed-building conditions are met in non-residential spaces at least 12-hours prior to the test and maintained during the test period.

In addition, notifications must be distributed to all occupants of tested and not-tested units and contain:

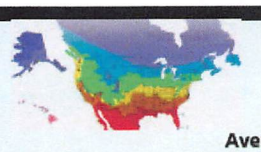
- Scheduled dates and times for test device placement and retrieval,
- Essential closed-building requirements portrayed in Table 4-A of the ANSI/AARST standard and that these conditions are required no later than 12 hours prior to the test and throughout the test period,
- Information on how to obtain federal or state radon health guidance, and
- Local contact information for inquiries, such as the authorized building supervisor.

Enclosed are notification forms for occupants. Please distribute notifications to occupants at least 24 hours prior to testing. Notifications also need to be posted in prominent areas such as entry doors and community bulletins.

Normal Occupied Building Conditions

Minnesota is in Temperature Zones 6 and 7. Across the state, the prevailing HVAC condition is heating. Radon testing is recommended during the heating season.

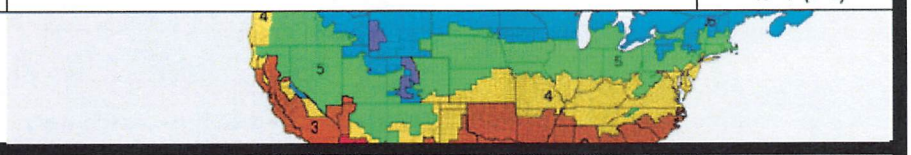
TEMPERATURE ZONES
as designated in ASHRAE standards 90.1 and 90.2
(The American Society of Heating, Refrigerating and Air-Conditioning Engineers) https://www.ashrae.org



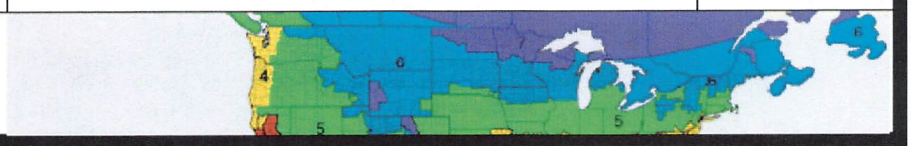
Climate Zone	Example North American States or Cities	Average Annual Temperature
1 Very Hot	Southern Florida and Hawaii	Miami 76˚ F (24 C)
2 Hot	Florida, New Orleans, Houston, Mexico	New Orleans 68˚ F (20 C)

3 Warm	North Carolina to Southern California	Atlanta 61˚ F (16 C)

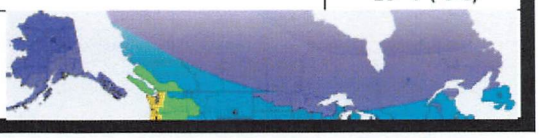
4 Mixed	NYC, PA, NJ, VA, KT, TN KS, MO, Seattle WA, and Portland OR.	Kansas City 54˚ F (12 C)
5 Cool	MA, NY, OH, MI, IN, IL, IA, NE, CO, UT and NV.	Chicago 49˚ F (9 C)



6 Cold	ME, NH, VT, WI, MN, ND, WY, SD and ND.	Montreal 43˚ F (6 C)



7 Very Cold	Minot, ND; Anchorage, AK; Winnipeg, Canada	Winnipeg 36˚ F (2 C)
8 Subarctic	Fairbanks Alaska; Cambridge Bay, Canada	Fairbanks 26 ˚ F (-3 C)



Very Cold

Climate Zone 7

Includes many Canadian provinces, mountain tops, and utmost northern locations in the United States

This data is based on Minot, ND

24 Hour Averages

For dwellings and other 24 hour occupancies

24 Hour		Annual Avg	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
7-Very cold	Minot, ND	39	56	45	26	14	6	11	21	41	53	61	68	67

		Prevailing Annually
Operating Condition	*Heating Conditions*	*83%*
	Cooling Conditions	-
	Mixed Conditions	*16%*

Normal Operating Condition	• Heating conditions • No variance in outdoor air ventilation
Condition less likely to inhibit characterization of a radon hazard	• Heating and air distribution systems active

Daytime Averages

For non-residential occupancies

Daytime		Annual Avg	School Avg	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
7-Very cold	Minot, ND	45	36	63	51	31	19	11	16	26	47	59	67	75	74

		Prevailing Annually	School (prevailing across 9 months)
Operating Condition	*Heating Conditions*	*75%*	*100%*
	Cooling Conditions	-	-
	Mixed Conditions	*25%*	-

Normal Operating Condition	• Heating conditions • No variance in outdoor air ventilation
Condition less likely to inhibit characterization of a radon hazard	• Heating and air distribution systems active

Some Cities in This Climate Zone

Note—Exact percentages will vary slightly depending upon location

Caribou ME
Quebec, CA
Marquette MI
Duluth MN
Winnipeg, CA
Grand Forks, ND
Anchorage, AK
Breckenridge, CO
Aspen, CO

Cold

Climate Zone 6

Includes portions of ME, NH, VT, WI, MN, ND, WY, SD, ND and Canada.

This data is based on Minneapolis, MN

24 Hour Averages

For dwellings and other 24 hour occupancies

24 Hour		Annual Avg	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
6 Cold	Minneapolis, MN	45	61	50	33	19	13	18	31	46	59	68	73	71

		Prevailing Annually
Operating Condition	*Heating Conditions*	*75%*
	Cooling Conditions	*-*
	Mixed Conditions	*25%*

Normal Operating Condition	• Heating conditions • No variance in outdoor air ventilation
Condition less likely to inhibit characterization of a radon hazard	• Heating and air distribution systems active

Daytime Averages

For non-residential ocupancies

Daytime		Annual Avg	School Avg	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
6 Cold	Minneapolis, MN	50	41	66	55	37	23	17	23	35	51	64	73	78	76

		Prevailing Annually	School (prevailing across 9 months)
Operating Condition	*Heating Conditions*	*66%*	*88%*
	Cooling Conditions	*16%*	*11%*
	Mixed Conditions	*16%*	*-*

Normal Operating Condition	• Heating conditions • No variance in outdoor air ventilation
Condition less likely to inhibit characterization of a radon hazard	• Heating and air distribution systems active

Some Cities in This Climate Zone

Note—Exact percentages will vary slightly depending upon location

Portland, ME
Buffalo, NY
Burlington, NH
Milwaukee, WI
Minneapolis, MN
Bismarck, ND
Pierre, SD
Cheyenne, WY
Billings, MT
Helena, MT

RADON TEST IN PROGRESS

from

_____ to _____

Start Date End Date

Required closed-building conditions (12 hours prior to the test and during the test)	
Keep closed	**Windows & Exterior doors** *(except for momentary use)*
Set to normal	**Heating & Cooling systems** *keep between about 65˚ - 80˚ F)*
Set to lowest outdoor ventilation	**Systems that temporarily ventilate with outdoor air for seasonal comfort or energy savings**
Avoid excessive operation	**Clothes dryers, range hoods and bathroom fans**
Do not operate	**Whole-house and window fans**
	Fireplaces that burn solid, liquid or gas fuels, unless they are the primary sources of heat for the building

RADON TEST IN PROGRESS

from

_____ to _____

Start Date End Date

Required closed-building conditions (12 hours prior to the test and during the test)	
Keep closed	**Windows & Exterior doors** *(except for momentary use)*
Set to normal	**Heating & Cooling systems** *keep between about 65˚ - 80˚ F)*
Set to lowest outdoor ventilation	**Systems that temporarily ventilate with outdoor air for seasonal comfort or energy savings**
Avoid excessive operation	**Clothes dryers, range hoods and bathroom fans**
Do not operate	**Whole-house and window fans**
	Fireplaces that burn solid, liquid or gas fuels, unless they are the primary sources of heat for the building

DEPARTMENT OF HEALTH

Notice of Inspection for Facilitating Staff

A radon test is scheduled for:

Building: Hillside Elementary

Test Start Date: 03/10/2025 Test End Date: 03/12/2025

Please help to maintain the required test conditions throughout the building:

1. All windows and exterior doors must be kept closed (aside for momentary entry or exit) for 12 hours before and during the test.
2. Heating and cooling systems must be set to normal occupied operating temperatures.
3. Test devices are not to be disturbed.

Further guidance on required building conditions are found on the next page.

Test kits are not dangerous in any way. The type of devices used for this testing may include:

- **Short-term test kits**: It's important these devices are fully open and not covered. They will be analyzed by a laboratory.
- **Continuous radon monitors**: These are electronic monitors that record hourly radon readings.
- **Long-term test kits**: It is important that these devices are not covered. They will be analyzed by a laboratory.

Declaration of Observed Compliance:

Failure to reasonably maintain test conditions can lead to unnecessary expense, disruptions, and unreliable data. Disturbing test devices can also cause unreliable or invalid test results.

- Please report in a timely manner if required test conditions are not maintained.
- Please sign and return this form once the test is complete.

To the best of my knowledge, the required conditions were maintained during the test.

Yes ◉ No ○

Name: Kyle Uecker

Signature: Kyle Uecker Date: 03/12/2025

Required Closed Building Conditions for Radon Testing

Building Component	Action Required
Windows	Keep Closed, Seal broken windows closed
External doors (except for normal entry or exit)	Keep Closed
Heating & Cooling Systems	Set to normal operating conditions
Bathroom fans	Operate normally
Fireplaces (including gas)	Do not operate
Auxiliary or temporary systems that bring air into the building	Do not operate, unless an integral part of HVAC or supplies make-up air for combustion appliances
Exhaust systems (ex. from shops, laundries, kitchens)	Avoid excessive operation
Interior doors, Stairwells, Fire Doors	Operate Normally
Garage doors	Operate normally
Ceiling Fans, Portable Fans	Do not blow directly on the test device
Window AC Units	Operate in recirculation mode only
Window Fans	Do not operate. Seal shut or remove.
Humidifiers, Dehumidifiers, Portable Air Cleaners	Operate Normally
Central Vacuum Cleaner Systems	Operate Normally
Passive crawl space vents	Operate normally
Crawlspace exhaust systems for humidity control	Operate normally
Passive Vents for Combustion Make-Up Air	Leave Open

Building Component	Action Required
Combustion Appliance Vents	Operate Normally
Passive Solar Systems	Operate Normally
Attic Vent Fans	Operate Normally
Evaporative Cooling Systems	Do not operate

Radon Test Device Placement Requirements

Place detectors within the general breathing zone. Locate detectors no less than:

- 3 feet from exterior doors, windows, other openings to outdoors,
- 20 inches above the floor,
- 4 inches from other test devices and objects, and
- 1 foot from ceilings.

Place detectors where they are not easily disturbed.

Place detectors where they are not influenced by other factors:

- Do not place in closets, crawlspaces, cupboards, sumps, or nooks within building foundation,
- Do not place devices in areas with high air movement (ex. mechanical areas, furnace closets),
- Do not place devices in areas with high humidity (ex. kitchens, bathrooms, laundry rooms),
- Do not place devices near drafts from HVAC systems or fans,
- Do not place test devices near heat sources (ex. appliances, radiators, fireplaces, direct sun), and
- Do not place detectors on devices that produce radiation (ex. natural stone counters, pool tables, rock collections)

For more information regarding on-site activities, contact:

Licensed measurement professional: Wendy German, RMEA-00447

Minnesota Department of Health, Indoor Air Unit, PO Box 64975, St. Paul, MN 55164
651-201-4601, health.indoorair@state.mn.us, mn.gov/radon

8/17/2023, To obtain this information in a different format, call: 651-201-4601.

Appendix E: Quality Control Measurements

Duplicates: Two devices are placed next to each other for the results to be compared. This measures the accuracy and consistency of the lab, and the quality and reproducibility of the testing kits.

Sample ID	Result	Average	Pass/Fail
19957603	< 0.3	< 0.3	Pass
11957604	< 0.3		
11957612	1	0.8	Pass
11957613	0.5		
11957622	< 0.3	< 0.3	Pass
11957623	< 0.3		
11957627	< 0.3	< 0.3	Pass
11957628	< 0.3		
11957647	< 0.3	0.5	Pass
11957648	0.6		
11957799	< 0.3	0.5	Pass
11957800	0.6		

Blanks: Devices that are sealed immediately and not exposed to air at different times during the testing process. Transit blanks are sent to the lab immediately after receiving the test kits to verify that no radon has been accumulated through transit. Office blanks are sealed on test day to verify that no radon has been accumulated during storage. Field blanks are sealed and placed throughout the buildings being tested.

Type	Sample ID	Result	Pass/Fail
Transit	11957301	< 0.3	Pass
Transit	11957501	< 0.3	Pass
Transit	7518052	< 0.3	Pass
Office	11957401	0.9	Pass
Office	11957701	0.9	Pass
Office	11957601	< 0.3	Pass
Field – Comp Lab	11957625	< 0.3	Pass
Field – Room 202	11957630	< 0.3	Pass
Field – Nurse	11957793	< 0.3	Pass

Spikes: devices that are sent to a third-party lab, where it is exposed to a known concentration of radon. The device is then sent to the lab to compare results. This measures the accuracy of the test kits.

Sample ID	Exposed	Result	Pass/Fail
7518053	7.1	7.3	Pass
11957302	7.1	7.8	Pass
11957403	7.1	7.8	Pass
11957702	7.1	8.9	Pass
11957502	7.1	6.9	Pass
11957602	7.1	7.8	Pass