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

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.

Meridian Consulting Group conducted short-term radon testing for Colvill Family Center at 269 E Fifth St, Red Wing, MN 55066. Testing was conducted to determine if occupants are exposed to elevated levels of radon. Radon testing was done according to ANSI/AARST MA-MFLB 2023.

Testing

Testing was conducted from 02/21/2024 to 02/23/2024 using Pro Chek test kits from Air Chek, 1936 Butler Bridge Rd, Mills River, NC 28759, NRPP Certified Lab # 101138 AL.

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.

Test Results

Colvill Family Center Radon Testing Results Summary				
	0.0 – 1.9 pCi/L	2.0 – 2.9 pCi/L	3.0 – 3.9 pCi/L	4.0 or higher
Number of Tests	9	2	2	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.

The radon levels stated for this period had the following situations present:

No situations were present.

Missing or Invalid Test Results

Location	Missing/Invalid/Not Tested	Explanation
n/a	n/a	No missing or invalid tests

The number of missing valid tests is less than what is allowed in the standard so no additional action was taken.

Quality Assurance and Quality Control

Quality control measurements were conducted in compliance with ANSI/AARST MA-MFLB 2023.

Recommendations

Test result is 4.0 pCi/L or greater:

- Fix the building if test results indicate occupants may be exposed to radon concentrations that meet or exceed the EPA action level of 4.0 pCi/L.
- Efforts to reduce radon concentrations are not complete until a retest provides evidence of effectiveness.
- The initial retest should be conducted within 30 days after mitigation efforts and system installations.
- Post-mitigation clearance testing to confirm each building is fixed requires testing all buildings that demonstrated elevated radon concentrations:
    1. in all ground-contact rooms and dwellings,
    2. in not less than 10% of non-residential rooms and dwellings on each upper floor.
- Should testing indicate that concentrations meet or exceed the action level, conduct evaluations, corrections, and further testing under radon concentrations have been mitigated to below the action level.
- Retest every 2 years to ensure the system remains effective.

Test results between 2.0 and 4.0 pCi/L:

- Consider fixing the building if the test results indicate radon levels greater than half of the EPA action level.
- Tests conducted when heating systems are active both day and night are more likely to provide a clear characterization of potential radon hazards.

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

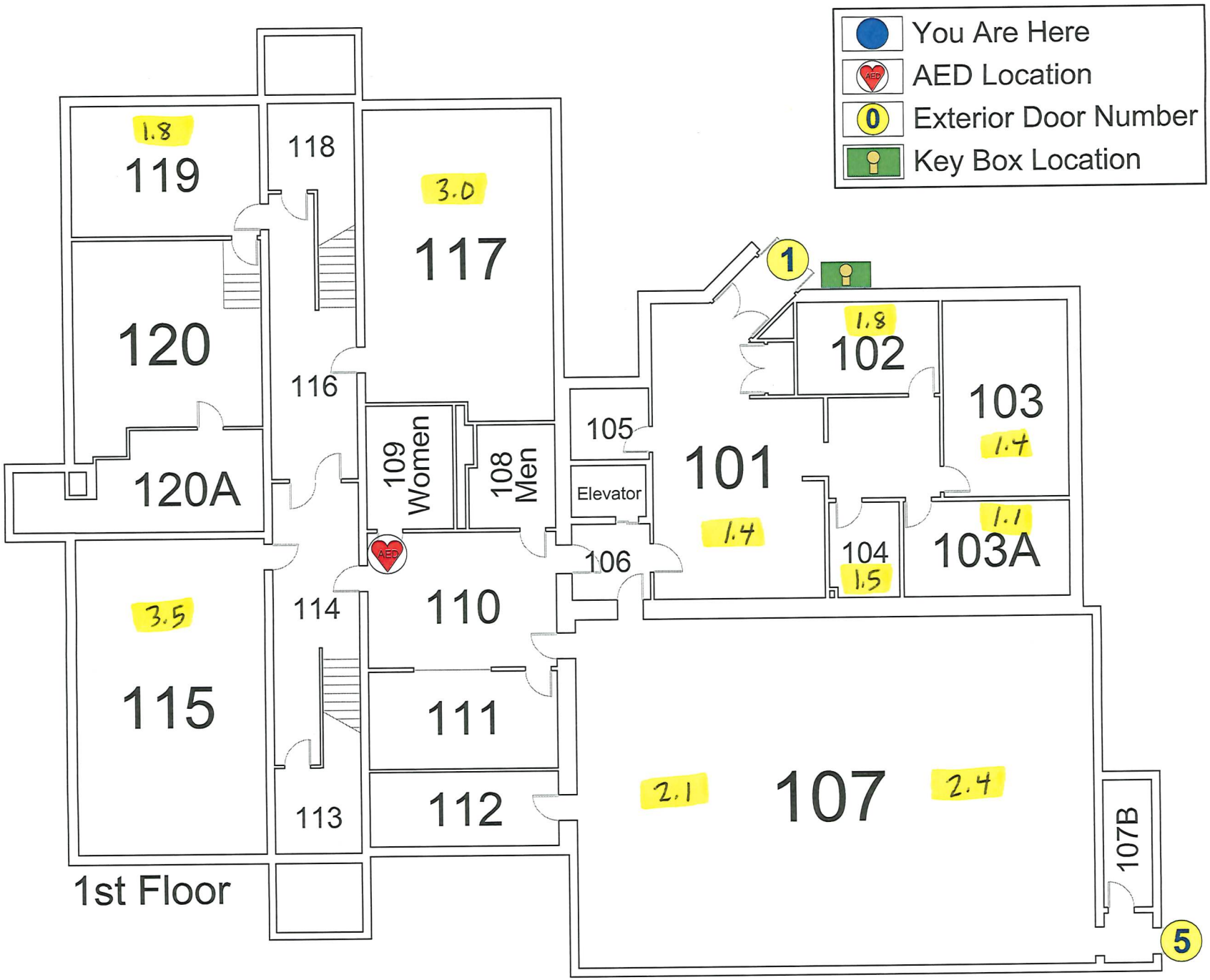
Additional information on radon can be found on the Minnesota Department of Health's website at mn.gov/radon or by contacting them at 651-201-4601 or health.indoorair@state.mn.us.

If you have any questions call us at 612-834-4406 or wendy@meridianconsult.net

Appendix A: Analytical Results

Sample ID	Location	Start Date/Time	End Date/Time	Duplicates	Results
11726974	102	2/21/2024 9:00	2/23/2024 8:00		1.8
11726973	103A	2/21/2024 9:00	2/23/2024 8:00		1.4
11726970	104	2/21/2024 9:00	2/23/2024 8:00		1.5
1726971	104A	2/21/2024 9:00	2/23/2024 8:00	0.8	1.1
11726972	104A	2/21/2024 9:00	2/23/2024 8:00	1.4	
11726980	115	2/21/2024 9:00	2/23/2024 8:00		3.5
11726981	117	2/21/2024 9:00	2/23/2024 8:00		3.0
11726987	218	2/21/2024 9:00	2/23/2024 8:00		0.9
11726977	308	2/21/2024 9:00	2/23/2024 8:00		1.0
11726975	Gym 1	2/21/2024 9:00	2/23/2024 8:00		2.1
11726976	Gym 2	2/21/2024 9:00	2/23/2024 8:00		2.4
11726963	Main Office	2/21/2024 9:00	2/23/2024 8:00	1.2	1.4
11726964	Main Office	2/21/2024 9:00	2/23/2024 8:00	1.6	
11726982	Staff Dining	2/21/2024 9:00	2/23/2024 8:00		1.8

Appendix B: Floor Plan Diagram



Red Wing Public Schools ISD # 256	Colvill Family Center	Date 3/4/2018	N
	Building Floor Plan		

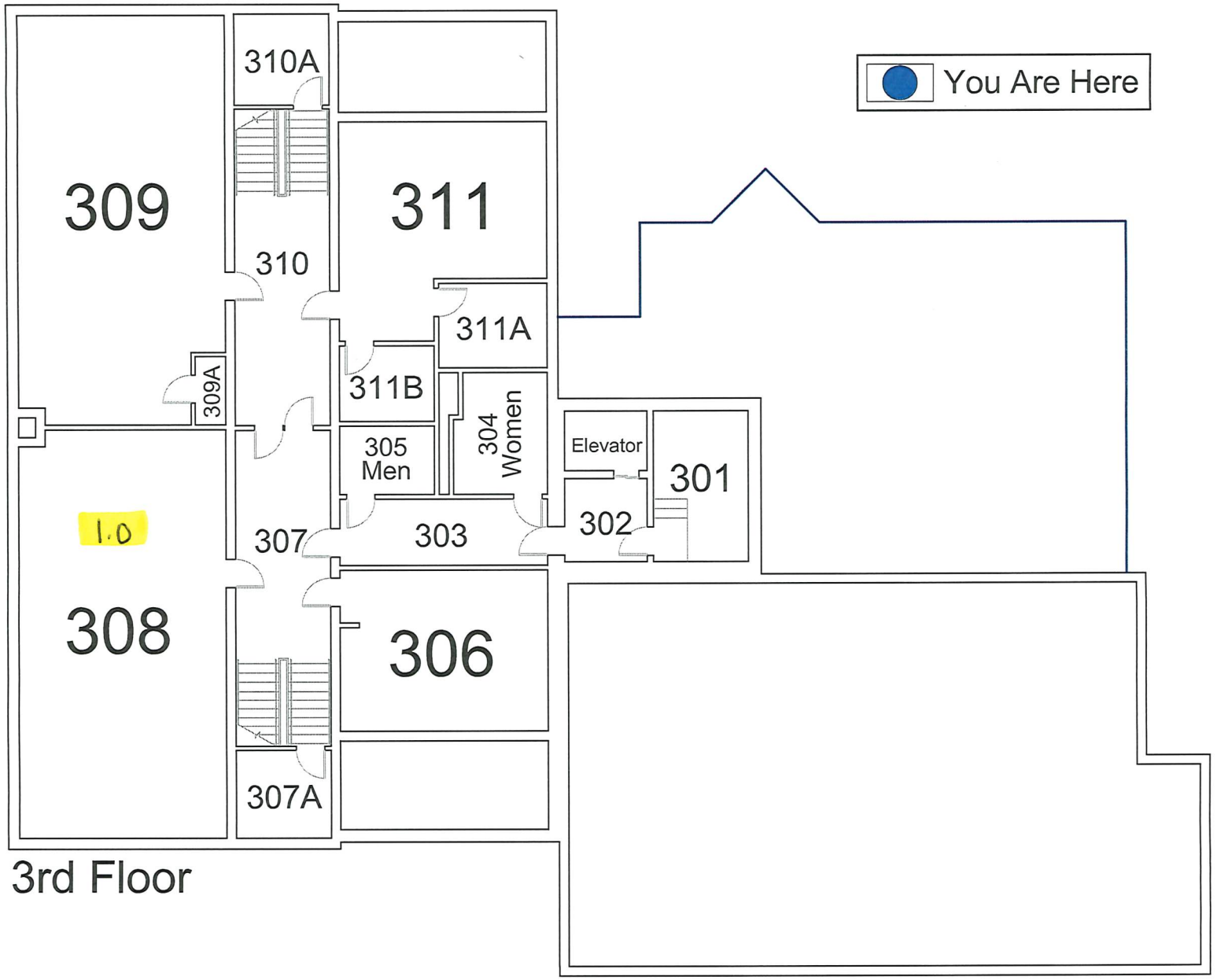
Red Wing Public Schools ISD # 256

Colvill Family Center

Building Floor Plan

Date
3/4/2018

N



Red Wing Public Schools ISD # 256

Colvill Family Center

Buidling Floor Plan

Date 3/4/2018

Appendix C: Test Conditions

- The minimum outdoor temperature that existed 12 hours prior to and during the test period was 22°F, the maximum was 52°F, the average was
- Weather was mild with no precipitation or snow coverage on the ground

		Annual	During the Test
Outdoor Temperatures	Avg. °F	45°	35.8°
Operating Conditions	Heating (% year)	75%	100%
Operating Conditions	Cooling (% year)	25%	0
Operating Conditions	Mixed (% year)	0	0
Prevailing Operating Condition	Heating/Cooling/Mixed	Heating	Heating

Appendix D: Test Notifications

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.

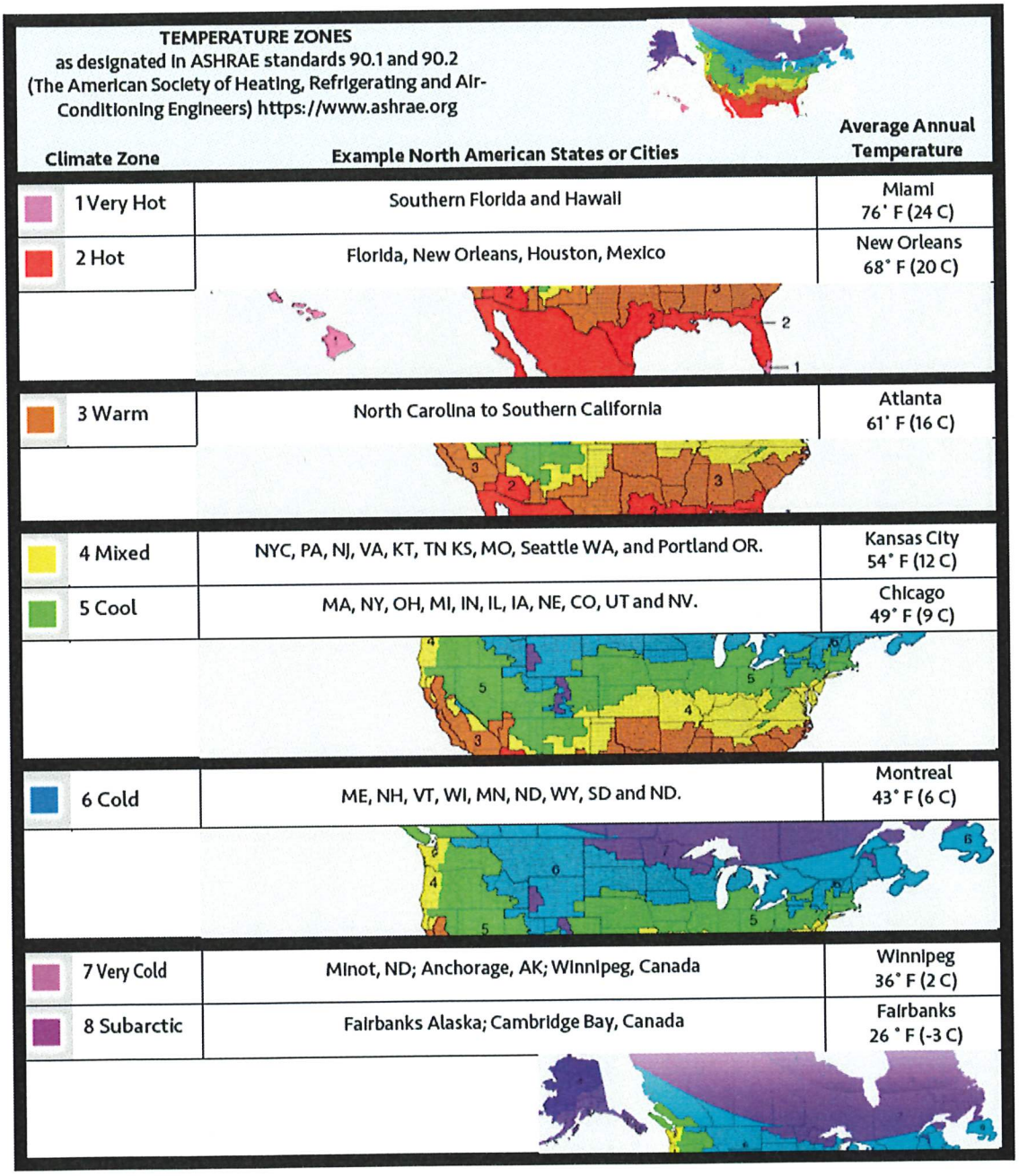
In addition, notifications must be distributed to all occupants of tested and not-tested units and contain:

- 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.



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

DEPARTMENT OF HEALTH

Client Authorizations & Communications

Client and Facilitating Staff Member Contact Information

Client/Authorized Agent Alan Gaylor phone (651) 385-4524

Onsite Supervisor principals in each building phone _____

Building/Dwelling Access Wendy has access to all phone _____

HVAC Operations Alan Gaylor phone _____

Other Contact/Title _____ phone _____

Radon Testing Professional Contact Information

Scheduling/Logistics Wendy German phone (651) 385-4507

Onsite Supervisor same phone _____

Field Technician same phone _____

Field Technician _____ phone _____

Staff authorized for responding to occupant and public inquiries:

Name/Title Alan Gaylor phone _____

Name/Title _____ phone _____

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

Name/Title Alan Gaylor 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

Notice of Inspection for Building Occupants

A radon test is scheduled for:

Building: **Colvil Family Center**

Test Start Date: **2/21/2024** Test End Date: **2/23/2024**

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

Red Wing Public Schools

Health and Safety Consultant

wjgerman@rwps.org
651-385-4507

DEPARTMENT OF HEALTH
Radon Measurement Professional
License Number: RMEA-00447
Approved On: 01/9/2023
Wendy German
16620 61st Ave N
Plymouth, MN 55446
License valid from 02/8/2023 to 02/8/2024

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

Client Commitment to Compliance

Management/Building Operations Commitment:

To the extent reasonably possible, I, on behalf of **Colvill Family Center**, 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/HVAC Supervisor: **Alan Gaylor**

Signature: Alan Gaylor Date: 1-24-24

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 staff within the building and posted in publicly accessible areas in a timely manner.
2. **External Doors:** External doors will not be propped open and will only be used for the regular entering and exiting of students and staff, no later than 12 hours prior to testing and throughout testing.

On-Site Supervisor/Principal : Brittni Kuehl

Signature: Verified on testing day Date: _____

Any questions, please reach out to:
Wendy German
wjgerman@rwps.org
651-385-4507

DEPARTMENT OF HEALTH

Radon Measurement Professional

License Number:	Approved On:
RMEA-00447	12/21/2023

Wendy German
16620 61st Ave N
Plymouth, MN 55446
License valid from 02/8/2024 to 02/8/2025

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

Appendix E: Quality Control Measurements

Duplicates: Two devices are placed next to each other and the results are 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
11726971	0.8	1.1	Pass
11726972	1.4		
11726963	1.2	1.4	Pass
11726964	1.6		

Blanks: A device which is 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 tests 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 buildings during testing.

Sample ID	Type	Result	Pass/Fail
11726803	Transit Blank	< 0.3	Pass
11726802	Transit Blank	< 0.3	Pass
11726801	Transit Blank	< 0.3	Pass
7408069	Office Blank	< 0.3	Pass
7408067	Office Blank	< 0.3	Pass
7408070	Office Blank	< 0.3	Pass
11726979	Field Blank	< 0.3	Pass

Spikes: A device which is sent to a third-party lab, where it is exposed to a known concentration of radon. The device is then returned and sent to the lab to measure the accuracy of the measurements

Sample ID	Exposed	Result	Pass/Fail
11726672	10.5	12.2	Pass
11726673	10.5	11.6	Pass

11726674	10.5	12.2	Pass
11726675	10.5	12.4	Pass
11726679	10.5	12.1	Pass
11726680	10.5	10.9	Pass

Spike: A device which is send to a third-part lab, where it is exposed to a known concentration of radon. The device is then returned and sent to the lab to measure the accuracy of the measurements.