



**Date:** 12/7/21

**Performed by:** Andrew Tinklenberg

**Location:** Keewaydin School – 5209 30<sup>th</sup> Avenue South, Minneapolis, MN 55417

**RE:** Radon Testing

## INTRODUCTION

From November 30 – December 2, 2021, radon testing was performed within Keewaydin School located at 5209 30<sup>th</sup> Avenue South in Minneapolis, MN. The testing was performed to ensure that radon gas concentrations within the building are below the established regulatory limits. Testing was conducted under normal occupied building conditions in frequently-occupied ground contact rooms and other areas in accordance with ANSI/AARST Protocols for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings 2014 with 1/21 Revisions and Minnesota Department of Health (MDH) guidelines.

## SUMMARY OF FINDINGS

All of the areas that were tested were found to have radon gas levels below 4.0 picocuries per liter of air (pCi/L), which is the EPA and MDH action level. (Note: Spike sampling is performed in conjunction with this testing. Duplicate (side-by-side) sampling was conducted in select areas at a rate of 10% of areas tested, and Rooms “A” & “B” were the blank samples.)

## REMARKS

The radon test kits were submitted to and analyzed by AirChek, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759 (MN License #RL-00003). Please refer to the attached AirChek radon testing report and sample diagrams for further information concerning the radon testing, areas that were tested, and the radon levels that were found to be present. Per MDH requirements, this information will be shared with the local regulatory agency (MDH - [health.indoorair@state.mn.us](mailto:health.indoorair@state.mn.us), Phone # 651-201-4601) and incorporated in an MPS’ board meeting. The information will also be posted on the EH&S webpage available through the main MPS website and maintained on file by EH&S.

Every effort was made to maintain closed building conditions and HVAC systems are monitored and controlled remotely by MPS Direct Digital Control (DDC) personnel. Any deviation in building conditions or sampling protocol which could have an impact on the testing and test results is described in the summary above. If any unoccupied areas that were not tested are planned for future occupancy, contact EH&S so that the areas can be tested. Unless specified, all QA/QC measurements were within the required limits. Radon testing is to be performed in MPS District buildings every 5 years or any time major renovation activities take place which have the potential to impact the building’s foundation or HVAC systems. Refer to the attached test condition summary and ANSI/AARST advisories for additional information concerning the radon testing.

If you have any questions regarding this information, please feel free to contact me. Thank you,



Andrew Tinklenberg  
MDH RMEA-00426  
NRPP ID# 111389 RT



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612-668-0306 Phone  
612-668-0310 EH & S General Office  
612-668-0275 Fax



### **Attachments**

Radon Testing Results  
Floor Plans with Sample Locations  
Notification Documents  
Test Condition Summary  
ANSI/AARST Advisory Statements

**I5554 / ANDREW TINKLENBERG / MINNEAPOLIS PUBLIC SCHOOLS**

Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11035022	2021-11-30	7:00 am	2021-12-02	3:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CUSTODIAN OFFICE	KEEWAYDIN	0	1.3
11035023	2021-11-30	7:00 am	2021-12-02	3:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CUSTODIAN OFFICE	KEEWAYDIN	0	1.3
11035024	2021-11-30	7:00 am	2021-12-02	3:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	MUSIC 010	KEEWAYDIN	0	< 0.3
11035025	2021-11-30	7:00 am	2021-12-02	3:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	OFFICE 013	KEEWAYDIN	0	0.6
11035026	2021-11-30	7:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 011	KEEWAYDIN	0	< 0.3
11035027	2021-11-30	7:00 am	2021-12-02	3:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	MEDIA 015	KEEWAYDIN	0	< 0.3
11035028	2021-11-30	7:00 am	2021-12-02	3:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	OFFICE 016	KEEWAYDIN	0	< 0.3
11035029	2021-11-30	7:00 am	2021-12-02	3:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 114	KEEWAYDIN	1	0.8
11035030	2021-11-30	7:00 am	2021-12-02	3:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	MEDIA CENTER	KEEWAYDIN	1	< 0.3
11035031	2021-11-30	7:00 am	2021-12-02	3:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	TECH. OFFICE	KEEWAYDIN	1	0.7
11035032	2021-11-30	7:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 110	KEEWAYDIN	1	0.6
11035033	2021-11-30	7:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 108	KEEWAYDIN	1	< 0.3
11035034	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 109	KEEWAYDIN	1	< 0.3
11035035	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 108	KEEWAYDIN	1	< 0.3
11035036	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 106	KEEWAYDIN	1	< 0.3
11035037	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 107	KEEWAYDIN	1	0.5
11035038	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	OFFICE 106B	KEEWAYDIN	1	< 0.3
11035039	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 106A	KEEWAYDIN	1	< 0.3
11035040	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	MAIN OFFICE 121	KEEWAYDIN	1	< 0.3
11035041	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	OFFICE 123	KEEWAYDIN	1	0.6
11035042	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	OFFICE 124	KEEWAYDIN	1	0.8
11035043	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	OFFICE 125	KEEWAYDIN	1	0.7
11035044	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	OFFICE 126	KEEWAYDIN	1	0.6
11035045	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	HEALTH OFFICE	KEEWAYDIN	1	< 0.3
11035046	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 102	KEEWAYDIN	1	0.5
11035047	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 100	KEEWAYDIN	1	0.7
11035048	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	STAFF LOUNGE	KEEWAYDIN	1	< 0.3
11035049	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CAFETERIA	KEEWAYDIN	1	0.6
11035050	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	KITCHEN OFFICE	KEEWAYDIN	1	< 0.3
11035051	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	AUDITORIUM	KEEWAYDIN	1	< 0.3
11035052	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	AUDITORIUM	KEEWAYDIN	1	0.7
11035053	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	GYM OFFICE 158	KEEWAYDIN	1	0.6
11035054	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	GYM A	KEEWAYDIN	1	0.6
11035055	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	GYM B	KEEWAYDIN	1	< 0.3
11035056	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	OFFICE 161	KEEWAYDIN	1	1.1

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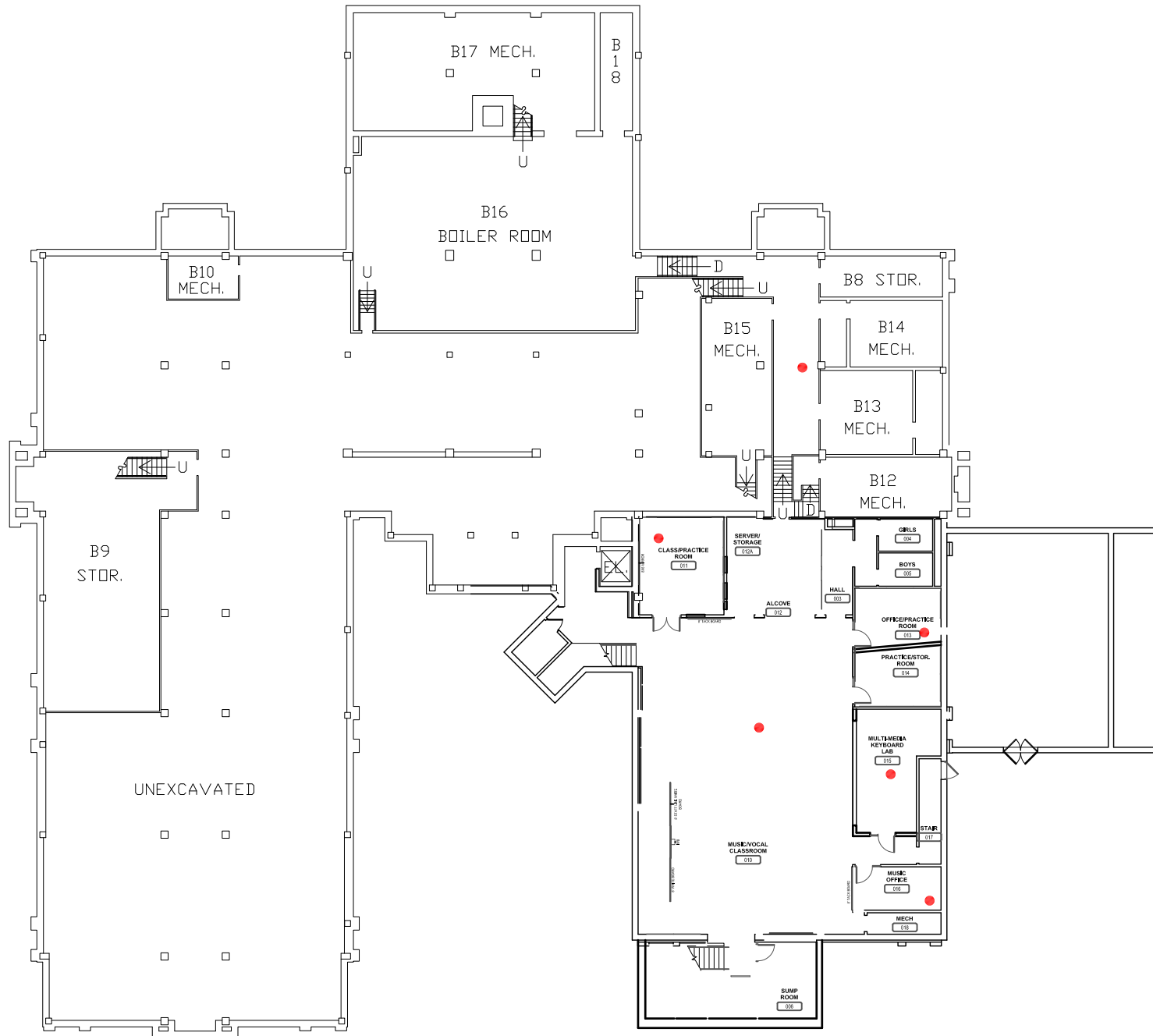
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<b>Kit Number</b>	<b>Start Date</b>	<b>Start Time</b>	<b>End Date</b>	<b>End Time</b>	<b>Temp.</b>	<b>Facility</b>	<b>Building</b>	<b>Room</b>	<b>Project ID</b>	<b>Floor</b>	<b>Result</b>
11035057	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 202	KEEWAYDIN	2	< 0.3
11035058	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	CLASS 213	KEEWAYDIN	2	< 0.3
11035059	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	ROOM A	KEEWAYDIN	2	< 0.3
11035060	2021-11-30	8:00 am	2021-12-02	4:00 pm	70	MPS KEEWAYDIN	KEEWAYDIN	ROOM B	KEEWAYDIN	2	< 0.3

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

# DIAGRAM #1 - RADON SAMPLE LOCATIONS



## GROUND FLOOR PLAN

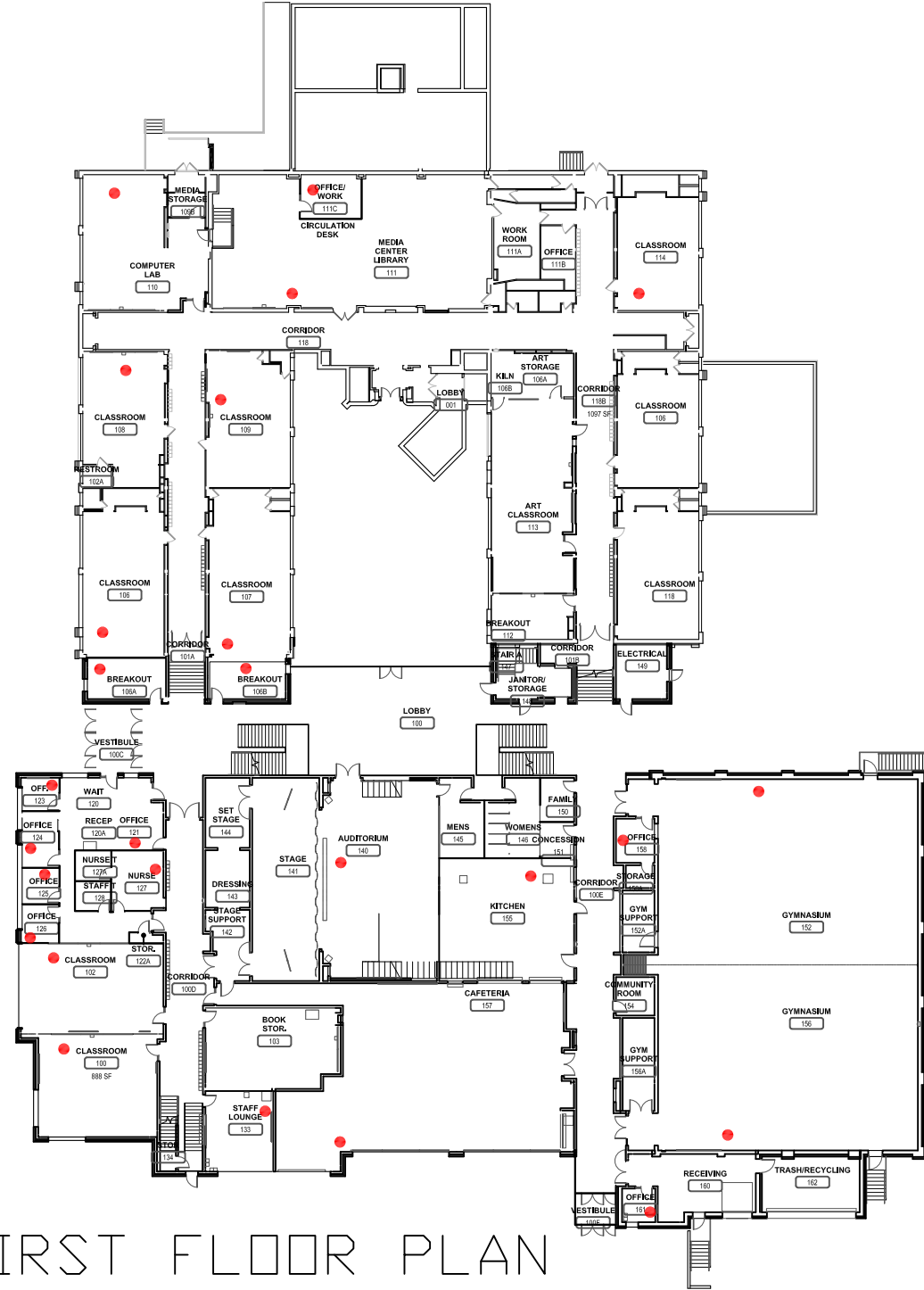
PREPARED ON: 12/2/21  
 BY: ANDREW TINKLENBERG  
 EH&S SAFETY SPECIALIST

KEEWAYDIN SCHOOL  
 5209 30TH AVE. S.  
 MINNEAPOLIS, MN 55417

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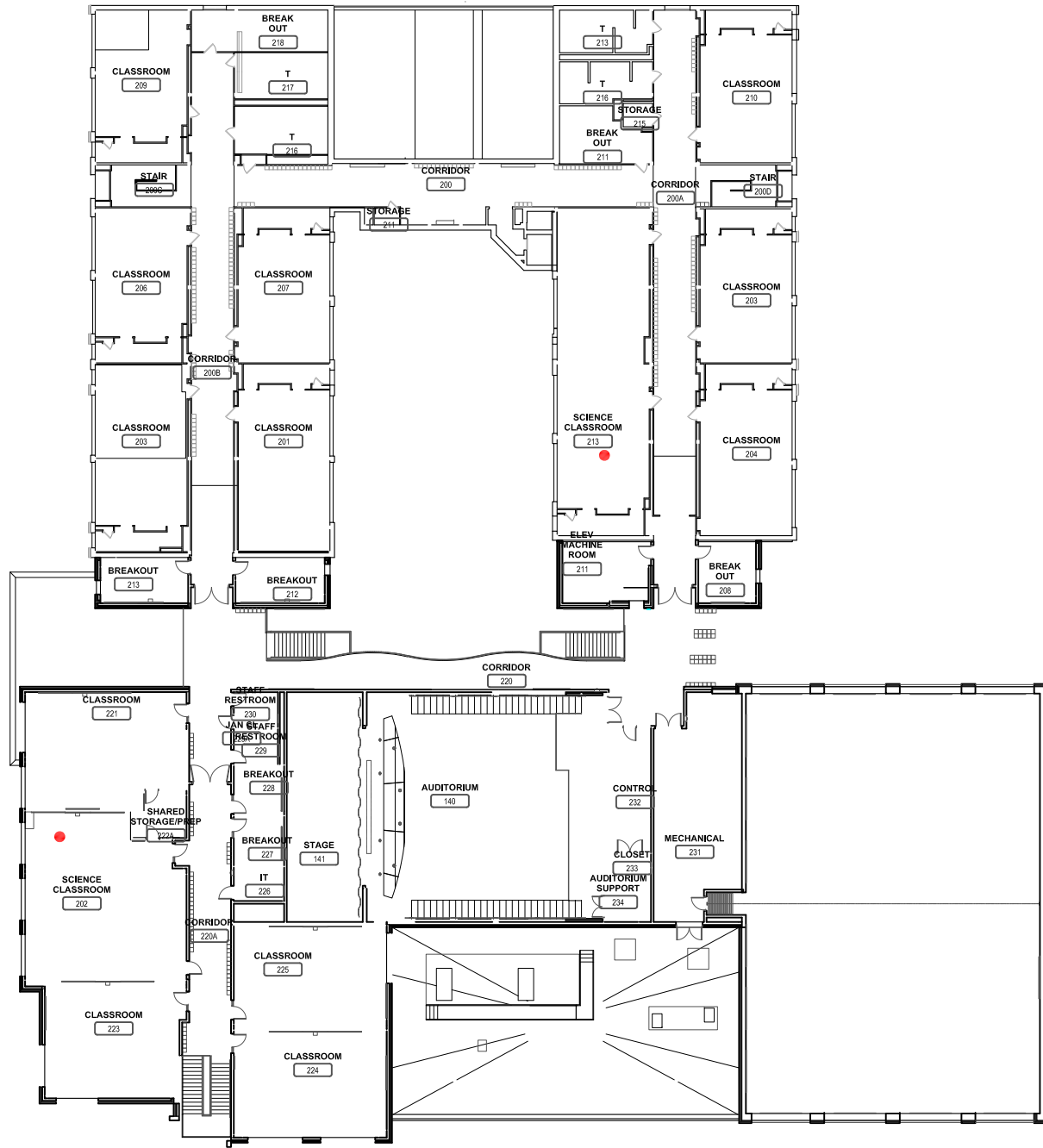
# DIAGRAM #2 - RADON SAMPLE LOCATIONS



FIRST FLOOR PLAN



# DIAGRAM #3 - RADON SAMPLE LOCATIONS



SECOND FLOOR PLAN



PREPARED ON: 12/2/21  
 BY: ANDREW TINKLENBERG  
 EH&S SAFETY SPECIALIST

KEEWAYDIN SCHOOL  
 5209 30TH AVE. S.  
 MINNEAPOLIS, MN 55417

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**Environmental Health & Safety**

Office: (612) 668-0310

Direct: (612) 668-0306

**Andrew Tinklenberg**

**Safety Specialist**

**Environmental Health & Safety**

**RADON TESTING NOTIFICATION (2021)**

**Keewaydin School**

The District will be conducting short-term radon testing at Keewaydin School. Radon is a naturally occurring radioactive gas that is created from the breakdown of Radium that is naturally present in soil. Radon can enter buildings from the soil through gaps, cracks and holes in the foundation. Radon testing is performed periodically and is being performed based on Minnesota Department of Health recommendations and protocols. As per the recommendations, frequently occupied, ground level or ground contact areas will be the focus of the testing. Sampling locations will be selected that provide the best representation of these areas.

If your room is selected for testing, please do your part by ensuring that the devices are not removed or tampered with in any way. The devices are small, rectangular envelopes, approximately 4 by 6 inches and will typically be hung from the ceiling or an interior wall. The short-term radon detectors are planned to be placed and collected November 30 – December 2, 2021. When available, sample results will be shared with your principal and placed on the EH&S webpage available through the main MPS website.

An example of the detector is pictured below:



Thank you very much for your cooperation. If you have questions, please contact me at 612-668-0306 or [andrew.tinklenberg@mpls.k12.mn.us](mailto:andrew.tinklenberg@mpls.k12.mn.us)



## Notice of Inspection - Radon Survey in Progress

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.

### Radon testing is scheduled for:

Building(s): Keewaydin

Building Area(s): Throughout

Test Start Date: 11/30/21

Test End Date: 12/2/21

Access into your unit/room is:       required     not required

PLEASE START THE FOLLOWING BY:

#### Please help to maintain the following required test conditions:

- **Windows and Doors** need to be kept closed (aside from momentary entry and exit) on all levels of the building including areas not being tested,
- **Heating and cooling systems** need to set to normal temperatures (65-80°F),
- **Bathroom fans** should operate normally,
- Do not operate wood-burning or natural gas **fireplaces**,
- **Energy recovery ventilators (ERV) or heat recovery ventilators (HRV)** should be set to the lowest level they are used at through the year, and
- Avoid excessive operation of **exhaust systems** that draw air from laundries, workshops, community kitchens.

### For inquiries or reporting concerns:

Contact Person: Andrew Tinklenberg

Phone: 612-668-0306

Visit [mn.gov/radon](https://mn.gov/radon) for more information about radon

## Authorizations and Lines of Communications

Please complete the following to help us clarify lines of communication and responsibilities.

### Staff authorized to respond to occupant and public inquiries:

Title/Name: Lee Setter Phone: 612-668-0310 Email: lee.setter@mpls.k12.mn.us

Title/Name: Phone: Email:

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

Title/Name: Lee Setter Phone: 612-668-0310 Email: lee.setter@mpls.k12.mn.us

Title/Name: Andrew Tinklenberg Phone: 612-668-0306 Email: andrew.tinklenberg@mpls.k12.mn.us

**Frequency of reports:** Prior to testing After each phase of testing When testing is complete

### Client & Facilitating Staff Contact Information

Client/Authorized Agent: Lee Setter Phone: 612-668-0310 Email: lee.setter@mpls.k12.mn.us

Onsite Supervisor: Andrew Tinklenberg Phone: 612-668-0306 Email: andrew.tinklenberg@mpls.k12.mn.us

Building Access: Andrew Tinklenberg Phone: 612-668-0306 Email: andrew.tinklenberg@mpls.k12.mn.us

HVAC Operations: Jason Kohlen Phone: 612-668-0338 Email: Jason.kohlen@mpls.k12.mn.us

Other Contacts (Title/Name): Phone: Email:

### Radon Testing Professional Contact Information:

Scheduling/Logistics: Andrew Tinklenberg Phone: 612-668-0306 Email: andrew.tinklenberg@mpls.k12.mn.us

On-site Professional: Andrew Tinklenberg Phone: 612-668-0306 Email: [andrew.tinklenberg@mpls.k12.mn.us](mailto:andrew.tinklenberg@mpls.k12.mn.us)

Licensed Field Technician: Andrew Tinklenberg Phone: 612-668-0306 Email: [andrew.tinklenberg@mpls.k12.mn.us](mailto:andrew.tinklenberg@mpls.k12.mn.us)

Licensed Field Technician: Phone: Email:

# Client Commitment to Compliance

By signing below, I am committing to help ensure that building conditions required to achieve reliable radon tests are met.

## Management

Help Onsite Supervisors and Building Operations Staff maintain closed-building conditions and meet the requirements list above.

Name: Andrew Tinklenberg@mpls.k12.mn.us


Signature: 

Date: 11/30/21

## Onsite Supervisor

To help ensure reliable radon tests, the onsite supervisor will:

- **Prior Notification:** distribute notices to all building occupants no later than the day before testing. Notices must be given to all occupants regardless if their unit/room is being tested and posted in publicly accessible areas such as corridors, elevators, and offices.
- **Access:** provide access to each test location within the building on the same day for the event of placing test devices and a second event for retrieving test devices.
- Name: Andrew Tinklenberg@mpls.k12.mn.us


Signature: 

Date: 11/30/21

## Building Operations Staff

To help ensure reliable radon tests, Building Operations Staff will:

- **Building Preparation:** no later than 12 hours prior to the start of the test, review each building scheduled for testing for compliance with closed-building requirements.
- **Compliance Verification:** verify closed-building conditions and ensure that any repairs or adjustments that impact these conditions are completed 12 hours prior to the start of the test. Initial when verified.
- Name: Andrew Tinklenberg@mpls.k12.mn.us

Signature: 

Date: 11/30/21

Building Address: Keewaydin - 5209 30<sup>th</sup> Ave. S., Mpls., MN

Date Completed: 11/30/21 Initials: AJT

CLIENT COMMITMENT TO COMPLIANCE

<b>Actions Required at Least 12 hour prior to test and throughout</b>	
<b>Windows</b>	Close or seal on all levels of the building, including areas not being tested  Exception: <b>Do not</b> close openings to outside to outside air designed to provide air needed for combustion appliances.
<b>External doors</b> (except for normal entry or exit)	
<b>Other openings to the exterior</b> (as a result of disrepair, incomplete construction or structural defect)	
<b>Heating &amp; Cooling Systems</b>	Set to normal occupied temperatures: 65° - 80°F (Maintenance inspection of systems are recommended prior to testing)
<b>Variable Outdoor Air Ventilation Systems</b> (if applicable)  Systems such as manually operated dampers, energy economizer systems, energy recovery ventilators (ERV), or heat recovery ventilators (HRV) that seasonally vary outdoor air ventilation for energy savings or comfort	Close outside air inlet dampers or set to minimum outdoor air intake settings that apply at all times of the year when a building is significantly occupied
<b>Window Air Conditioners</b>	Dampers to outside air shall be closed
<b>Variable Air Volume (VAV) Systems</b> (if applicable)  Systems that temper room temperature using thermostats to vary the volume of heated or cooled air coming into rooms	Set all thermostats to between 65° - 80°F in all rooms that are served by the system
<b>Return-Air Ducts laid in Soil</b> (if applicable)  Return-air ductwork is located under a slab, or otherwise laid in soil.	<b>All testing company immediately</b>
<b>Heating, ventilation, and air conditioning (HVAC) setback in non-residential locations</b>  If non-residential rooms are operating with HVAC setback temperatures during nights or weekends that are outside of normal occupied temperatures of 65° - 80°F	Alter to retain temperatures within range of 65° - 80°F  <b>Or contact the testing company</b>



## Test Condition Summary

November 30 – December 2, 2021 – Minneapolis, MN (Climate Zone 6)

	Annually	During Testing
<b>Outdoor Temperatures</b>	Average = 46° F	Max. = 52° F Min. = 32° F Average = 42° F
<b>Operating Conditions (Heating/Cooling)</b>	Heating – 50% Cooling – 25% Mixed – 25%	Heating – 100% Cooling – 0% Mixed – 0%
<b>Air Distribution Systems</b>	Intermittent during summer	Active

\* - Note: No rain or snow fall was recorded during the testing period and winds were moderate.

### Informative Advisories

1. Fluctuations in radon concentrations are usually caused by either:
  - changes in the strength of indoor air pressures that draw soil gas into a building; or
  - changes in the volume of outside air entering a building.
2. Clear characterization of a radon hazard is more likely to occur when:
  - Outdoor temperatures extend below 65°F (18°C), at least intermittently, which causes natural indoor air pressures that draw radon laden soil gas into a building; and
  - Heating or cooling distribution fans are at least intermittently active during a test.
3. Measurements more likely to reflect an occupant’s exposure to radon are measurements conducted under conditions that most closely align to the building operating conditions that prevail during the greatest amount of time each year.

\* - Above advisory information is taken from page 31 of the ANSI/AARST Standard, “Protocols for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings, 2014 with 1/21.” Additional advisory notes/information will be added when necessary.

## ANSI/AARST ADVISORY STATEMENTS

### 8-A Reporting Low Radon Concentrations

Consider fixing the building if test results indicate radon concentrations greater than half the action level, (e.g., between 2 and 4 pCi/L). Responsible care requires repeating initial testing procedures for all building(s) at least every 5 years and in conjunction with any sale of a building. Radon testing should also be conducted when any of the following circumstances occur:

- a new addition is constructed or alterations for building reconfiguration or rehabilitation occur;
- a ground contact area not previously tested is occupied, or a building is newly occupied;
- heating or cooling systems are significantly altered, resulting in changes to air pressures or pressure relationships;
- ventilation is significantly altered by extensive weatherization, changes to mechanical systems or comparable procedures;
- significant openings to soil occur due to:
  - groundwater or slab surface water control systems that are altered or added (e.g., sumps, perimeter drain tile, shower/tub retrofits, etc.) or,
  - natural settlement causing major cracks to develop;
- earthquakes or construction blasting, fracking or formation of sink holes nearby; or
- a mitigation system is altered, modified or repaired.

Should testing indicate concentrations that meet or exceed the action level, conduct evaluations, corrections and further testing until radon concentrations have been mitigated to below the action level.

### Table 8-B Reporting Elevated Radon Concentrations

Fix the building. Test results indicate occupants may be exposed to radon concentrations that meet or exceed the action level. Efforts to reduce radon concentrations are not complete until retests provide 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 concentrations that meet or exceed the action level, conduct evaluations, corrections and further testing until radon concentrations have been mitigated to below the action level.

\* - Above advisory information is taken from page 28-29 of the ANSI/AARST Standard, "Protocols for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings, 2014 with 1/21 Revisions." Additional advisory notes/information will be added when necessary.