SHIVEHATTERY
ARCHITECTURE + ENGINEERING

March 2, 2023

Clear Creek Amana Community School District
ATTN: Mr. Maury Gallagher
1486 Hwy 6 NW, P.O. Box 487
Oxford, IA 52322

RE: Amana Elementary School – Radon Testing

Dear Mr. Gallagher:

Per your request and authorization, Shive-Hattery, Inc. assembled a short-term radon testing plan and completed the testing for Amana Elementary School in Middle Amana, IA. The intent of the testing was to determine the level of radon within all ground contact, occupied areas of the building.

Methods and Procedures

The testing procedure for this project was performed by personnel trained and certified under the National Radon Proficiency Program (NRPP) and State of Iowa Department of Public Health. On May 24, 2022, House File 2412 was signed into law in the State of Iowa. This legislation calls for:

- Establish a radon testing plan.
- Preform short-term testing of all attendance centers by July 1, 2027.
- All buildings will have to be retested once every five years following.
- Radon plans and test results will need to be published to the district website.
- All new school construction must incorporate radon-resistant construction techniques.

The American Association of Radon Scientists and Technologists (AARST) Consortium on National Radon Standards (ANSI/AARST MALB 2014) “Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings” is the reference standard for this project, which is the recommended protocol in the State of Iowa for schools.

Available drawings were utilized to determine a testing strategy. Samples were collected from each defined testing area, including but not limited to classrooms, offices, gyms, libraries, cafeterias, and other areas of normal occupancy. Pertinent information such as location, date, time, thermostat settings, active mitigation systems, tamper controls, and weather conditions were recorded for each sample. The tests were started after a minimum of 12 hours of closed building conditions.

It is recommended that the testing period represent normal conditions when the building is significantly occupied during the active heating season. The operating condition for this building represents active heating with outdoor temperatures less than or equal to 35°F. Clear characterization of a radon hazard is most likely to be observed under this normal operating condition. Therefore, the test should reasonably characterize radon hazards.

There will be some uncertainty with any measurement result due to statistical variations and other factors such as daily and seasonal variations in radon concentrations. Variations may be due to changes in weather, operation of the building, or possible interference with the necessary test conditions.

Rad Elec E-PERM short-term measurement chambers and electrets were utilized in all tests. The electrets were analyzed for radon using an electron voltage reader (Serial #: E0747) by:

Analyst: Sam Becker
License: RNTST10096
Address: Shive-Hattery
2839 Northgate Drive
Iowa City, Iowa 52245
Phone: (319) 354-3040

Summary of Findings

Short-term testing was completed on February 27-March 1, 2023, in all ground contact, occupied areas of the building. Blank and duplicate samples were used as a means of quality control. All quality control devices were in normal ranges. Results from the initial testing show that no locations were found to be above 4.0 pCi/L. All results are located at the end of this report.

Recommendations

It is recommended that this building be retested in 5 years according to the CCACSD's radon testing program. Retesting is also recommended after a new addition or significant renovation occurs, additional ground floor rooms not previously tested are occupied, heating or cooling systems are significantly altered, natural disasters, or the installation of ground water control or radon mitigation systems.

Radon was found in most rooms tested to some degree. It is important to understand that no level of radon is safe and can cause lung cancer with long exposure. Radon is the second leading cause of lung cancer.

Please call our office if you should have any questions or comments.

Sincerely,

SHIVE-HATTERY, INC.



Samuel S. Becker
Residential Measurement Provider
IA License Number: RNTST10096
NRPP License Number: 108001 RT
Expiration Date: April 30, 2023

SSB/mas

Enc.

Shive-Hattery
2839 Northgate Drive
Iowa City IA 52445
319-354-3040 / 319-248-3405 / 319-530-2456 (cell)
http://www.shive-hattery.com/ / sbecker@shive-hattery.com

Radon Test Report

Batch #: 030123-1

Customer:
Clear Creek Amana Community School District
1486 Hwy 6 NW
Oxford IA 52322

Test Site:
Maury Gallagher
3023 220th Trail Bldg.- Amana Elementary
Middle Amana IA 52307

E-PERM® Electret Ion Chambers were used for short-term radon screening measurements that were conducted at the above referenced test site by: Shive-Hattery

The Results are as follows:

Serial No.	Type	Location	Test Start Date		Test End Date		Results (pCi/L)
SIE480	SST	124	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	<LLD
SKE872	SST	5	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
SKE940	SST	70 Gym	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	2.1
SKF030	SST	PE Office	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.6
SKF111	SST	106	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.7
SKF116	SST	83	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.2
SKF126	SST	Reception	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
SKF189	SST	107	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.6
SML439	SST	125	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.7
SML466	SST	Cafeteria	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.7
SML491	SST	70 Gym	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.9
SML509	SST	114	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.8
SML518	SST	87	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.6
SML530	SST	121	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.6
SML533	SST	15 Office	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	2.3
SML562	SST	126	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.7
SML578	SST	Stage	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.9
SML581	SST	Cafeteria	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.5
SML589	SST	63	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	<LLD
SML605	SST	Health	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.5
SMV392	SST	58	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.6
SNE769	SST	70 Gym	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	2.3
SNE858	SST	111	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.1
SNE890	SST	122	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	<LLD
SNE903	SST	103	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.1
SNF012	SST	Pool Office	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
SNK350	SST	15	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	2.9
SNK390	SST	82	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
SNK456	SST	101	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	2.0
SNK478	SST	Library	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.6
SNK538	SST	3	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.8
SNL313	SST	80	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.0
SNL334	SST	2	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	<LLD
SNL343	SST	56	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	<LLD
SNL369	SST	7	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	<LLD
SNL379	SST	89	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
SNL401	SST	Mechanical Room	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	2.8
SNL404	SST	85	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	2.3
SNL416	SST	84	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.0
SNL418	SST	50	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.5
SNL430	SST	70 Gym	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.5

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Serial No.	Type	Location	Test Start Date		Test End Date		Results (pCi/L)
SNL462	SST	54	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.1
SNL491	SST	1	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.8
SNL492	SST	118	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
SNL496	SST	6	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
SNL519	SST	Pool Director	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.0
SNL547	SST	52	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.5
SNL556	SST	7 back open storage	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.8
SNL560	SST	Library	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.0
SNL568	SST	10	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
SNL581	SST	Kitchen	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.8
SNL607	SST	36	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.0
SNL688	SST	116	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.8
SNL705	SST	120	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
SML513	SST	124	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.9
SNL744	SST	124	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	<LLD
Average Radon Concentration in:		**124**					**0.4 pCi/L**
SNE905	SST	Principal	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.4
SNK492	SST	Principal	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.9
Average Radon Concentration in:		**Principal**					**1.2 pCi/L**
SNE751	SST	90	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.6
SNL383	SST	90	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.8
Average Radon Concentration in:		**90**					**0.7 pCi/L**
SKF101	SST	Fitness Room	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.7
SML532	SST	Fitness Room	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.7
Average Radon Concentration in:		**Fitness Room**					**1.7 pCi/L**
SNK402	SST	61	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
SNK609	SST	61	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.3
Average Radon Concentration in:		**61**					**1.3 pCi/L**
SNL499	SST	9	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.8
SNL562	SST	9	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.8
Average Radon Concentration in:		**9**					**1.8 pCi/L**
SML544	SST	8	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.6
SMV420	SST	8	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	0.9
Average Radon Concentration in:		**8**					**0.7 pCi/L**

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Serial No.	Type	Location	Test Start Date		Test End Date		Results (pCi/L)
SNF009	SST	38	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.1
SNL320	SST	38	27-Feb-2023	6:45 AM	01-Mar-2023	6:45 AM	1.8

Average Radon Concentration in: 38 **1.4 pCi/L**

Deployed By: Sam Becker 108001 RT
Retrieved By: Sam Becker 108001 RT
Analyzed By: Sam Becker 108001 RT **Reader S/N:** E0747 **Reader Calibration Due:** 01-Nov-2023
Conditions: Requirements for Closed-Building Met
Weather: No Abnormal Weather Conditions
Vents: Open / Fan Auto
Mitigation: No System Installed
Note: <LLD = Less than the Lower Limit of Detection (LLD) of the Radon Detector.

Radon Health Risk Information

Radon is the second leading cause of lung cancer after smoking. The U.S. Environmental Protection Agency (EPA) and the Surgeon General strongly recommend that further action be taken when a home's radon test results are 4.0 pCi/L or greater. The national average indoor radon level is about 1.3 pCi/L. The higher the home's radon level, the greater the health risk to you and your family. Reducing your radon levels can be done easily, effectively and fairly inexpensively. Even homes with very high radon levels can be reduced below 4.0 pCi/L. Please refer to the EPA website at www.epa.gov/radon for further information to assist you in evaluating your test results or deciding if further action is needed.

Signature: _____ **Date:** _____