



Environmental Science and Engineering Inc.

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**Mold and Indoor Air Quality
Assessment**
Of
**MARK TWAIN NATIONAL FOREST
Roby Ranger Station
Roby, MO**



MARCH 20 2015

Prepared
for

Amy Crews/Janet Fraley

And

Mark Twain National Forest

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APPENDICES

- APPENDIX A Inspection Logs/Analytical Results
- APPENDIX B Professional Qualifications
- APPENDIX C Thermal Imagery Analysis
- APPENDIX D Remediation Protocol
- APPENDIX E Mold Moisture and Your Home, A Brief Guide, (EPA)

1.0 INTRODUCTION

On MARCH 20th 2015 Triangle Environmental Science and Engineering was authorized **Janet Fraley, (MTNF)** to perform a professional mold and indoor air quality assessment at:

Roby Ranger Station, MO

A one story, wood constructed on finished basement, residential/office structure was inspected. The professional mold assessment was performed at the structure on March 20th 2015 by John W. Cable. Mr. Cable is a certified Mold inspector/Remediation Specialist (Appendix B). The inspection was limited to and conducted within the limitations of customary mold assessment procedures on the date of the inspection. Triangle Environmental Science and Engineering Inc is not responsible for materials that were not evident from visual observations such as those hidden or beneath layers not readily identifiable.

2.0 EXECUTIVE SUMMARY

The professional Mold Assessment noted the following area/materials to contain mold:

MOLD ASSESSMENT		DATE	3/20/2015
MTNF- ROBY MO		INSPECTOR	JOHN CABLE
ROOM	LOCATION	DEGREE	
EXTERIOR			
NORTH	TRIM/WALL-DRYROTT	1,2	
SOUTH	TRIM/WALL-DRYROTT	1,2	
EAST	TRIM/WALL-DRYROTT	1,2	
WEST	TRIM/WALL-DRYROTT	1,2	
INTERIOR			
LIVING RM	WINDOW	1,2	
	WALLS	1,2,3	
	FLOOR	1,2,3	
KITCHEN	WINDOW	1	
	WALLS	1,2,3	
	FLOOR	1,2	
	CABINETS	1,2,3	
BEDROOM	WINDOWS	1	
	WALLS	1,2,3	
	FLOOR	1	
BEDROOM	WINDOWS	1	
	WALLS	1,2,3	
	FLOOR	1	
BEDROOM	WINDOWS	1	
	WALLS	1,2,3	
	FLOOR	1	
BATHRM	WINDOWS	1	
	WALLS	1	
	FLOOR		
	CABINETS	1,2,3	
BASEMENT	WALLS	1,2,3	
	FLOOR	1,2	
	SUBFLOOR/JOIST	1,2,3	

Degree of Suspect Mold Growth

1 Minor

Less than 10 ft², surficial mold only, and/or can be remediated by cleaning with a weak soap/bleach, borax or fungicide solution (Note Appendices).

2 Major

Surficial mold, Minor structure damage and/or more than 10 ft², surficial mold can be remediated by cleaning with a weak soap/bleach, borax or fungicide solution. (Note Appendices)

3 Severe

More than 10 ft², surficial mold, hidden mold, structural damage, and/or needs professional renovation and mold abatement.

Exterior relative humidity and temperature reading on time of assessment:

(35-40% 60-65⁰ F)

An extremely heavy mold odor was noted and appropriate respirator was worn during the assessment.

Evaluation of the building's exterior noted site drainage is not sufficient. Splash blocks at downspouts are missing and or damaged. Storm water is draining towards building. Gutters are full of debris. Storm water is not being directed away from structure and infiltrating the basement.

Evaluation of the main floor noted cool temperature and elevated humidity levels throughout. Elevated drywall humidity levels were noted in the living room. A roof leak is contributing to water/mold damaged walls and flooring.. No leaking pipes were noted. Severe water damage and mold growth (historical leaks) were noted under the kitchen sink and bathroom sinks and on wall material throughout the structure. Mold growth was noted at all window sashes indicating poor indoor air quality. Excessive amounts of rodent dropping and extreme amounts of dead insects were noted. Histoplasmosis and HANTA virus is a major concern.

Evaluation of the basement noted cool temperatures and elevated humidity levels throughout. Historical Leaking pipes from upstairs bathroom has caused water/mold damage to subflooring and joists. Stormwater is infiltrating through foundation cracks. Standing water was noted on the floor. Severe mold growth was noted on all wall material

Thermal imagery analysis (TiS300 Camera) noted water infiltration areas to be associated with the basement.

Two (2) swab samples was taken from interior living room wall and kitchen cabinets. Analysis confirms growth of Aspergillus/Penicillium, Basidiospores, Chaetomium, Cladosporium, Myxomycetes, Ulocladium Nigrospora and Pithomyces mold growth on noted surfaces.

Three (3) Air O Cell Cassettes were obtained to evaluate indoor air quality. The Air O Cell Cassette samples were obtained in the Living Room, Basement and Outdoor (Control). Analysis of indoor total mold spore count indicates (**A-1 Living: 62,655**) and (**A-2 Basement: 384,960**) to be **extreme** when compared to outdoor (**A-3 Outdoor: 5180**).

(indoor total mold spore count, on an average should be 10% of outdoor total mold spore count)

Extreme levels of Aspergillus/Penicillium mold spores were noted. Stachybotrys (BLACK MOLD) was noted.

Workers must wear approved High Efficient Particulate Air (HEPA) masks or respirators during all renovations. All personnel working within the structure must use proper Personal Protection Equipment (PPE) at level C consisting of an Air Purifying Respirator (APR) and non-encapsulated chemical-resistant clothing, gloves, eye protection, and boots.

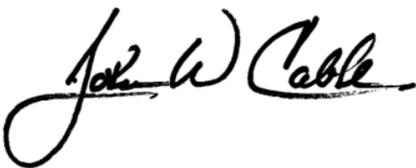
Recommendations

- Correct Site Drainage, clean gutters, and install splashblocks
- Install dehumidifiers in basement
- Remediate all mold contaminated surfaces

Future preventative measures should include:

- Routinely use vacuum, with HEPA filter, on all carpeting and flooring material.
- Routinely change HVAC Filters
- Install quality HEPA filters in all HVAC systems
- Clean and dry wet spots promptly
- Fix leaking plumbing as soon as possible
- Watch for condensation and wet spots
- Prevent condensation by increasing temperature or reducing air moisture level
- Keep all heating, ventilation, and air conditioning drip pans clean, flowing properly and unobstructed
- Keep a low indoor humidity; below 50% relative humidity
- Make sure foundations stay dry by providing drainage which slopes away from the structure

It has been a pleasure serving you. It is highly recommended to have a professional mold abatement contractor remediate any identified major/severe mold growth. Triangle Environmental Science and Engineering Inc appreciates the opportunity to provide you with professional environmental services. If you have any questions, please contact us anytime at 573-364-1864



John W. Cable
President RG, IEP