MEC[X]
8864 Interchange Dr., Houston, TX 77054-2512
Phone (713) 585-7000 • Fax (713) 585-7049

21 November 2017

Mr. Elkin Arce
Ethan's Glenn
100-192 Litchfield Lane
Houston, Texas 77024
elkin@NWBContracting.com

Re: Post-Flood Mitigation Moisture Inspection
100-192 Litchfield Lane, Houston, Texas 77024
Building 12, Unit 233

Dear Mr. Arce:

Mr. Garrett Bowes, a MEC[X], Inc. (MEC[X]) Texas Department of Licensing and Regulation (TDLR) licensed Mold Assessment Technician (MAT), performed a moisture assessment of the first floor living space of Building 12 Unit 233 (Site) at Ethan's Glenn 100-192 Litchfield Lane, Houston, Texas 77024 on 21 November 2017. The purpose of the moisture assessment was to determine the extent of remaining affected building materials affected by flood waters resulting from Hurricane Harvey which caused flooding at the Site on or about 27 August 2017.

FLOOD WATER QUALITY

According to the United States (U.S.) Environmental Protection Agency (EPA), flood waters resulting from hurricanes, tropical storms, rising rivers or tsunamis may be significantly more affected than flood waters from clean sources (i.e., potable water or rainwater that leaks into buildings). Flood water can be classified as gray water or black water. Descriptions of gray water and black water are as follows:

- Gray water contains a significant level of contamination and has the potential to cause discomfort or sickness if consumed by or exposed to humans. Gray water carries microorganisms and nutrients for microorganisms. Examples of gray water may include: sump pump failures, seepage due to hydrostatic pressure or floodwater, broken aquariums or overflows from washing machines and dishwashers.
- Black water contains sewage and other contaminated water sources entering or afflicting the indoor environment. Such water sources carry silt and organic matter into structures and create black water conditions. Toilet backflows that originate from beyond the toilet trap and contaminated floodwaters are often considered black water, regardless of the physical content or color of the water. Black water contains pathogenic agents and is grossly unsanitary.

Given the widespread nature of the flood resulting from Hurricane Harvey and the associated sewer backflows/surcharge, MEC[X] considers these flood waters as black water.

INSTITUTE OF INSPECTION, CLEANING AND RESTORATION CERTIFICATION

The Institute of Inspection, Cleaning and Restoration Certification (IICRC) has established recommendations for mitigation of structures affected by flood waters. Some insurance providers/adjusters follow the IICRC recommendations when evaluating mitigation and/or restoration of flood-affected structures. IICRC Standard S500 (Standard for Professional Water Damage Restoration, Fourth Edition, November 2015) provides general recommendations for mitigating the effects of flood

waters on structures. According to Table 1 (Summary of Materials, Assemblies and Restoration Procedures) in *Descriptions of Restoration Procedures* of this specification provides recommendations for mitigating the effects of flood waters on certain building materials, including gypsum (i.e., sheetrock) and engineered wood (i.e., oriented strand board/OSB, medium density fiberboard/MDF).

According to the IICRC, gypsum board affected by Class III (i.e., black water) water has a restorability classification of "D", which means that the IICRC considers this material un-restorable or irreparable because, among other possible factors, of the quick-developing adverse effects of moisture on the gypsum and/or the inability to adequately disinfect the gypsum.

The IICRC also states that OSB affected by a Class III (Black Water) water has a restorability classification of "B", which means that it is generally restorable. However, drying of OSB and other building elements covered by the OSB may dry slower than other building materials.

SURVEY FINDINGS

A summary of findings and observations from MEC^X's assessment is provided below. Pictures taken by MEC^X during this assessment are attached.

Physical Reconnaissance

MEC^X observed sheetrock had been removed up to 4 feet high in the affected areas, which is above the reported flood level.

Blowers and dehumidifiers were used to reduce moisture.

MEC^X did not observe elevated moisture levels in wood materials left in place.

MEC^X did not observe visible evidence of suspect mold growth at the time of the reconnaissance.

Moisture Measurements

MEC^X measured moisture in building materials at multiple locations at the Site using a Protimeter® Digital Mini moisture meter with dual-pin probes. This meter measures moisture content up to ½-inch into the surveyed material (i.e., wood, drywall). This meter can measure moisture contents from 7.9% to 99.9%. According to the manufacturer of this probe, moisture content of up to 16.9% is considered "dry", 17% to 19.9% is "at risk" and moisture above 20% is considered "wet".

According to Cleaning Flooded Buildings, (Federal Emergency Management Agency/FEMA, May 2013), moisture content of up to 15% is considered "dry", 15% to 20% is "partially dry" and moisture above 20% is considered "wet". A summary of the moisture measurements collected is presented below.

Location	Moisture Content (%)
Entry Point: Sill Plate/Stud	12.3/9.9
Kitchen: Sill Plate/Stud	12/12.3
Bathroom: Sill Plate/Stud	13.1/11.5
Closet: Sill Plate/Stud	11.3/12.1
Stairs: Riser	10.6
Laundry Room: Sill Plate/Stud	10/8.5

Note: **bolded** data indicates partially dry materials; **bolded and shaded** data indicates wet materials.

Humidity Measurements

Microbiologists generally agree that 70% or more relative humidity can induce adverse biological activity within buildings. Where a relative humidity above 70% occurs at surfaces, mold growth, dust mite growth, decay, corrosion, etc. can occur. Therefore, conditions should be maintained within a building such that the critical 70% (or higher) percent relative humidity at a building envelope surface does not occur. A summary of humidity measurements collected by MEC^X at the Site is presented below.

MEC^X measured humidity levels using a TSI Q-Calc™ Model 8762 to simultaneously measure indoor air quality conditions including relative humidity. MEC^X also collected two air samples for analysis of fungal spores. A summary of humidity measurements collected by MEC^X at the Site is presented below.

Location	Temperature (°F)	Relative Humidity (%)
Kitchen	64	**74.3**
Livingroom	63.8	**73.8**
Outside	64.5	71.4

ASSESSMENT CONCLUSIONS / RECOMMENDATIONS

MEC^X conclusions and recommendations are presented below.

- Ambient air conditions at the Site were above 70% humidity. Elevated humidity levels promote growth and amplification of mold spores.
- Moisture levels in building materials were acceptable.
- On the date of the inspection described herein, MEC^X did not observe visible mold and/or mold damage at the Site.
  - ***Recommendation 1***: MEC^X recommends that the heating, ventilating and air conditioning (HVAC) condenser coils and air distribution ducts be professionally cleaned.
  - ***Recommendation 2:*** Where practical, MEC^X recommends applying U.S. EPA-approved biocide (i.e., fosters 40-80) to the exposed studs and building materials and encapsulating the exposed wood studs and wall cavities (i.e., using fosters 40-20) prior to build back.

MEC^X is pleased to present the attached Certificate of Mold Damage Remediation for this Site based on this inspection.

Please call me at 281.846.8163 (mobile) or 713.585.7000 ext. 7011 (office) if you have any questions or need further information.

Sincerely,

Matthew Haak
Licensed Mold Consultant
TDSHS MAC # 0218

Photo No.:	Date:
1	11/21/17

Build back observed throughout the residence.

Photo No.:	Date:
2	11/21/17

Build back observed throughout the residence.

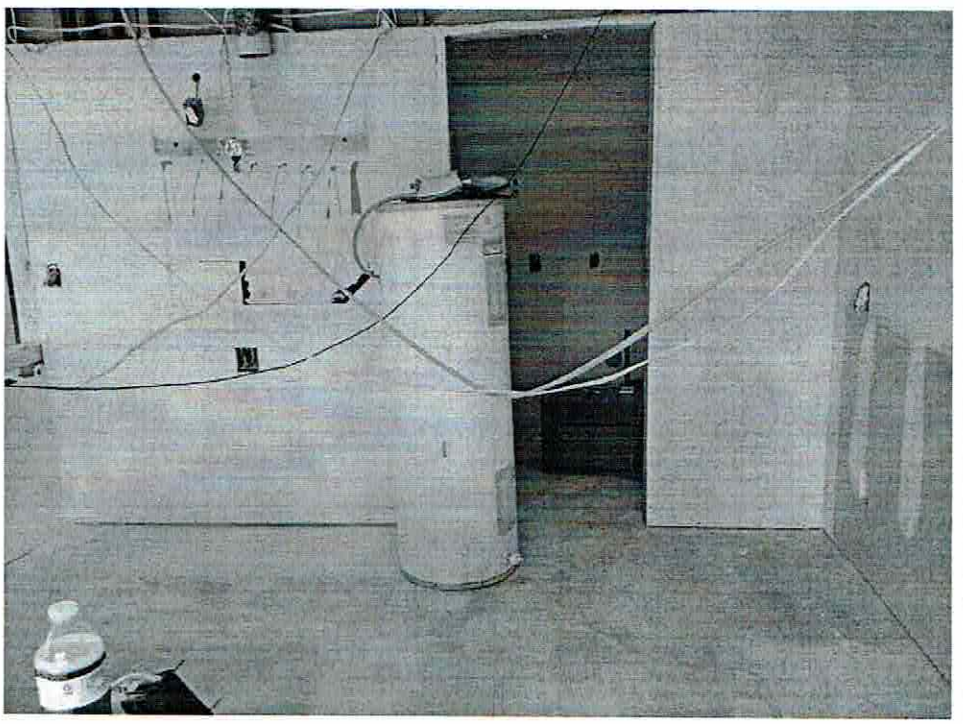


Photo No.:	Date:
3	11/21/17

Humidity levels at the time of the inspection.

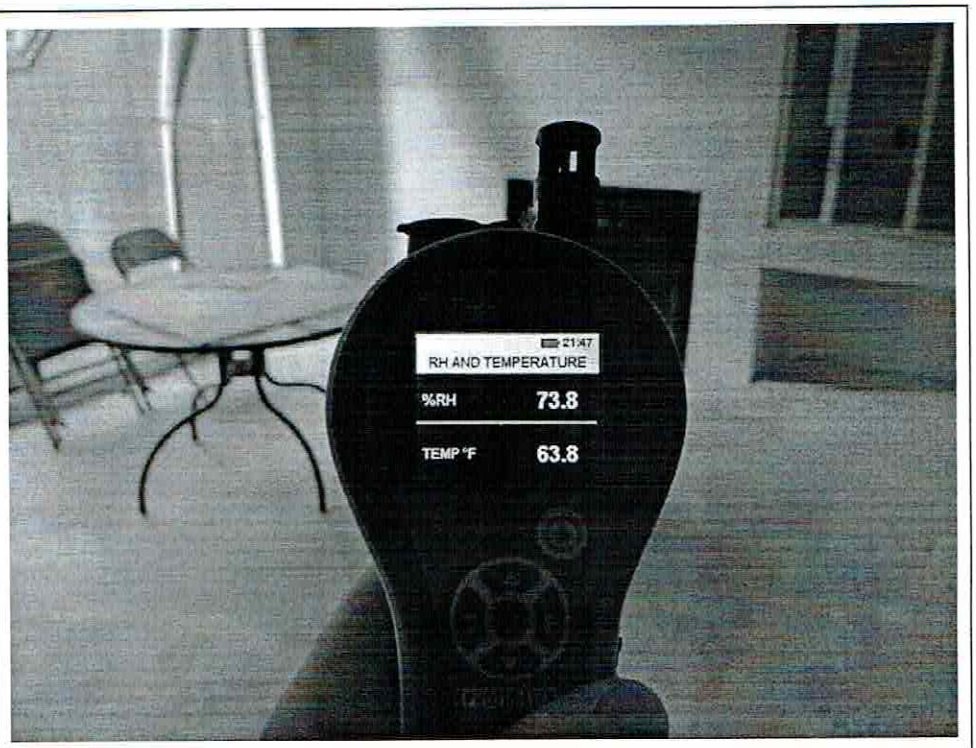


Photo No.:	Date:
4	11/21/17

Moisture Reading:

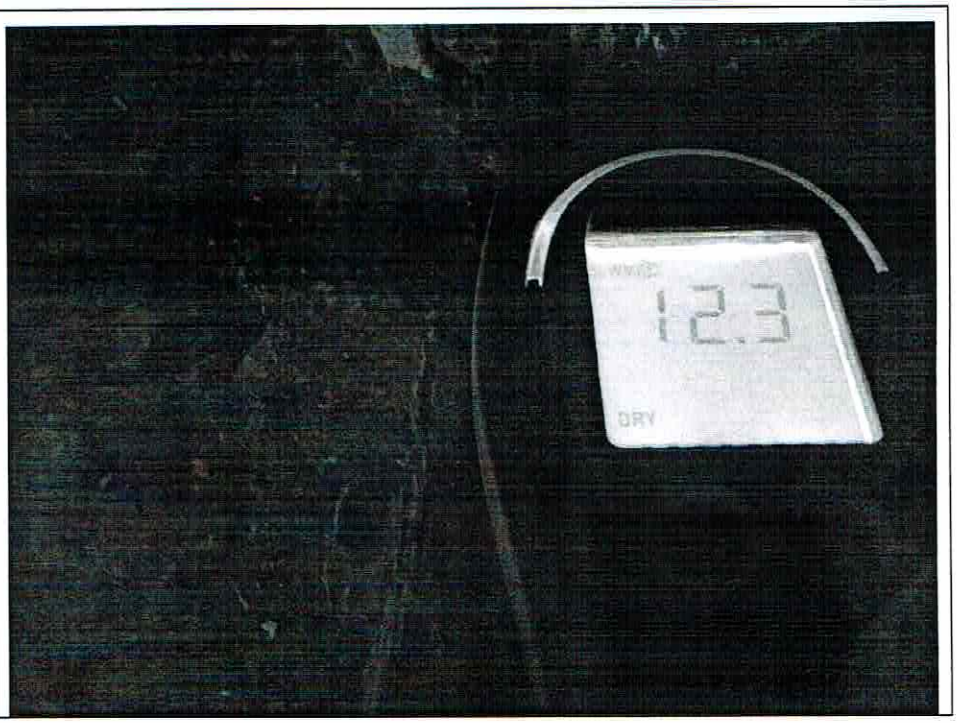


Photo No.:	Date:
5	11/21/17

Moisture Reading:

Photo No.:	Date:
6	11/21/17

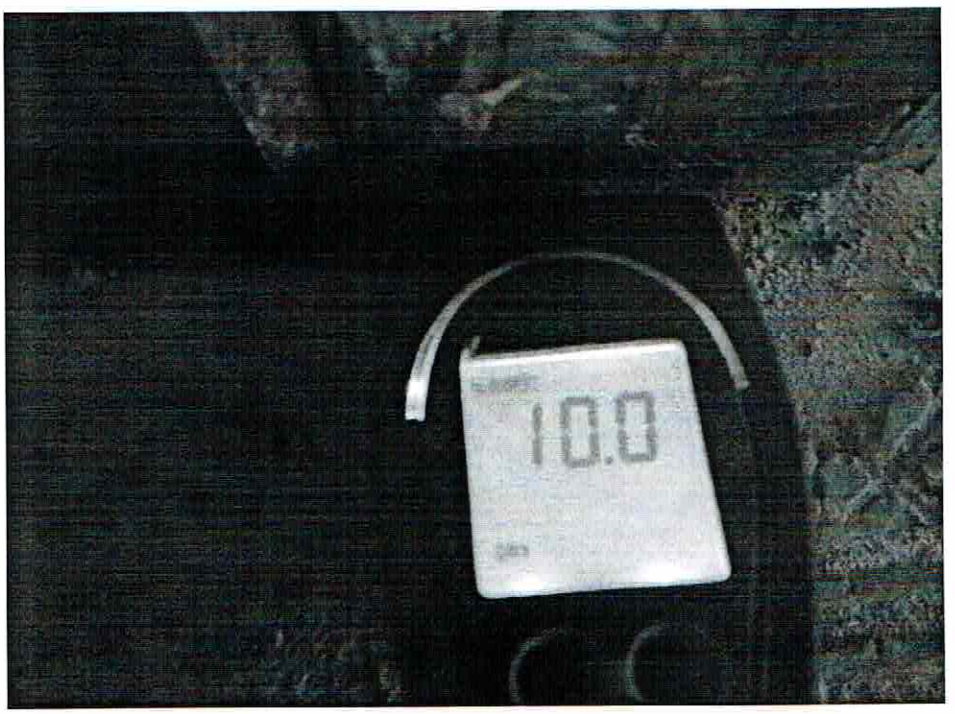
Moisture Reading:

Photo No.:	Date:
7	11/21/17

Moisture Reading:

Photo No.:	Date:
8	11/21/17

Moisture Reading:



TEXAS DEPARTMENT OF STATE HEALTH SERVICES

Be it known that

MECX INC

is licensed to perform as a

Mold Assessment Company

in the State of Texas and is hereby governed by the rights, privileges, and responsibilities set forth in Title 25, Texas Administrative Code, Chapter 295, relating to Texas Mold Assessment and Remediation Rules, as long as this license is not suspended or revoked.

Kirk Cole, Interim
Commissioner of Health

License Number: ACO1080

Expiration Date: 10/9/2017

Control Number: 6809

(Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE