Water Incursion & Moisture Management Plan
For
[Entity Name]

Introduction
Applying appropriate restoration procedures within the first few hours of a water loss can save thousands of dollars in secondary damage and minimize mold growth and indoor air quality (IAQ) impact. Water damage mitigation has evolved into a science and now offers a substantial return on investment when appropriately applied in a timely fashion.

If a water incursion event is not aggressively addressed within 24 - 48 hours, mold and other microbes can begin to grow on porous building materials including and in carpeting. Mold growth often begins, and is often most prevalent, in hidden areas such as within wall cavities. Significant mold growth can occur without being visible. While there may be a faint musty smell or a small patch of mold on the outside of a wall surface, the absence of such signs or their minor nature frequently belies a much more significant hidden mold growth.

This plan is intended to be shared, in advance of any water or moisture events, with our landlord(s), facilities manager(s), and contractors working at existing or constructing new [entity name] buildings. Landlords and contractors thereby put on notice in writing that the [entity name] expects the principles and procedures outlined in this document to be followed for the protection of our employees, and to minimize business/operations interruption and downstream costs. An effective response requires collaboration between us, building management, and contractors, and for all parties to properly discharge responsibilities under their control as-outlined in this plan in a timely fashion. If a landlord or contractors do not properly discharge their responsibilities, we reserve the right to take needed actions and recover associated expenses in an appropriate fashion.

General Definitions

*Water Incursion* – Any entry of water into a building in a way that affects building materials or contents. Incursions can be sudden and obvious (e.g., a rain induced flood) or slow and hidden at first (e.g., leakage around a window due to improper flashing). Examples include the following:

- Plumbing and chiller system leaks and malfunctions, overflows of sinks, toilets, etc.
- Roof leaks, ice dams.
- Rising groundwater due to rain, snow melt, creek or stream overflow.
- Fire suppression sprinkler discharge.
- Water vapor migration though a concrete floor in contact with earth.
• Improperly designed or installed exterior wall vapor barriers. “Water incursion” in this document includes any moisture source within a building and also includes moisture accumulation as a result of inadequate relative humidity (RH) control, condensation as a result of inadequate vapor barriers or insulation, improperly designed or inadequate ventilation, and other “building sciences” related moisture sources. Often moisture from such sources is not associated with observable (liquid) water.

**Remediation** – Removal of building materials or contents potentially containing mold, following protocols that will:
- Thoroughly remove the mold,
- Protect the health of those doing the removal, and
- Prevent release of mold into building areas not being remediated.

To accomplish this, remediation projects must follow generally accepted practices such as the New York City Department of Health *Guidelines on Assessment and Remediation of Fungi in Indoor Environments*, the EPA’s *Mold Remediation in Schools and Commercial Buildings*, or the IICRC S520 standard, *Standard and Guide for Professional Mold Remediation*.

*Category 1 (“Clean”) Water* - originates from a source that does contain significant microbial content and does not pose substantial harm to humans. This water can become contaminated over time and upon contact with objects, such as dirt trapped in carpeting. *Category 1* examples include broken potable water supply lines, tub or sink overflows with no contaminants, appliance malfunctions involving water supply lines, falling rain, broken toilet tanks and toilet bowls that do not contain contaminants or additives.

*Category 2 (“Gray”) Water* - when released this water contains a significant level of contamination and has the potential to cause discomfort or sickness if consumed by or exposed to humans. *Category 2* (Gray) water carries microorganisms and nutrients for microorganisms. Examples may include broken aquariums, overflows from washing machines and dishwashers. Time, temperature, and contact with objects can cause Gray water to become more contaminated.

*Category 3 (“Black”) Water* - contains pathogenic agents and when released or upon entry into the structure could cause serious illness or death. Black water includes sewage, surface ground water, and flood waters.

*Classes of Water Events* – Water damaged environments can be characterized by the amount of water present, size and location of wetted materials, and the level of difficulty associated with prompt drying of the materials. Characterizing water events by their class helps determine the drying resources that needs to be utilized in
the initial response. Each discrete area or room should be separately characterized.

Class 1 – Minor quantity of water present. Only a part of a room affected, or larger areas that absorbed a minimal amount of water. Minimal carpet involvement or no carpet pad is present.

Class 2 – Significant amount of water present, such as the carpeting in an entire room or more. Water may have wicked up walls but to a height of <24”. Moisture in structural materials such as concrete slab, plywood subfloor, or structural wood.

Class 3 – Greatest amount of water present, may have come from overhead. Most surfaces in the entire space saturated, including walls, carpet, carpet pad, subfloor, ceiling, insulation, etc.

Class 4 – Specialty drying situations. Impacted materials difficult to dry (low permeability and porosity). Includes plaster, hardwood, stone, concrete block. Often the moisture is deep within these materials and require special drying techniques and/or equipment.

Drying Principles

Four general principles used in drying water-damaged structures and materials.

1. Excess Water Removal
   Excess water should be removed at the beginning of the restoration procedures. Typical equipment used for this are pumps and wet/dry shop vacuums.

2. Evaporation
   Excess water is removed; remaining water must be changed from a liquid to a vapor by using air-moving equipment. Fans or other air moving devices accomplish this by moving air over all the surfaces that have been wetted.

3. Dehumidification
   As moisture is evaporated from the building materials and contents it must be removed from the air. Failure to do this may result in substantial secondary damage and present a significant health hazard. High capacity dehumidifiers that remove a significant percentage of water from the air (low grain refrigerant, or LGR units) are frequently required to remove this moisture from the air, but in cold, dry winter conditions exchanging air with the outside in conjunction with heating of air within the space can be effective as well.

4. Temperature Control
   Both evaporation and dehumidification can be greatly enhanced by controlling temperature in the environment being dried. Thus, temperature modification and control is an important basic principle to safe, effective drying. The building HVAC system or auxiliary heaters can be used for temperature control. The following temperature control related precautions must be taken:
• Follow proper safety practices if auxiliary heaters are used, including those associated with electrical power supplies and venting.
• Do not cause an excessive temperature increase (e.g., >80°F) as this may accelerate mold growth.

Water and Moisture Damage Response Process

The following describes how the State of New Hampshire [entity name] responds to moisture and water incursion events:

1. **Water or moisture must be promptly reported.** Our employees, as well as those of our landlord(s) and contractors, must be instructed to promptly report any observation which causes them to believe that porous building materials have become wet or are at imminent risk of being wetted. Each of our offices will designate an individual that this information is to be reported to – this will be the IAQ contact person unless otherwise indicated. Water incursion observations made by [entity name] employees will be reported to our primary facilities, landlord, and/or contractor contacts. When landlord, facilities management, or contractor employees make a water incursion observation, our local contact must also be informed of the following:
   
   a. Moisture source.
   
   b. Day and time of the start of the water event.
   
   c. Daily status of the areas impacted and response actions.

When the initial water incursion observation is made by us, we will provide the information contained in a. and b., above, as well as any response actions that we have taken, to the landlord, facilities management, or contractor, as appropriate.

2. **Any source of water must be stopped.** It is essential that the cause of the water incursion be identified and corrected before another incursion can occur.

3. **Characterize the event with regard to the Category of water and Class of event.** Inventory all water damaged areas, building materials and furnishings. Special attention should be given to identify carpet under cabinets, furnishings, etc. A visual inspection is the most important initial step in identifying a possible contamination problem. **Use moisture meter** to identify the extent of water damage to drywall, carpeting and other potentially affected materials. Any drywall with a moisture content above 18% should be dried.

4. **Document what is wet and what is not through a moisture map.** This puts into writing the results of the above investigation and measurements. The mapping should include areas adjacent those known to have been wetted to document which materials are, or are not at risk, for microbial growth in the event that

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drying can not be performed in a timely fashion. The maximum length of time that a porous building material may have been wetted upon arrival at the scene should be documented as well. This map must be redrawn daily to track the drying process. An example map format is provided at the end of this plan.

5. **Determine if drying should be attempted (see below) and if it can be accomplished in-house.** It would be unusual for an event greater in size or complexity than Class 1 to be able to be successfully responded to in-house. Water mitigation has evolved into a science as well as an art, and a response that dries materials quickly enough to prevent significant microbial growth or damage to affected materials usually requires more expertise and equipment than can be found at most facilities.

6. **Specify minimum qualifications of mitigation responders.** — It is critical that the responder have a sufficient staff of trained water damage technicians that can be dedicated/committed to your project even if the entire region has suffered widespread water losses due to a large storm or other event. In-house, landlord, or water mitigation contractor personnel must have the following certification, or the equivalent, when responding to class 2 or higher water events

   a. *Water Damage Restoration Technician (WRT)*— According to the Institute of Inspection, Cleaning, and Restoration Certification (IICRC), this 3 day course “is designed to teach restoration personnel that perform remediation work to give them a better concept of water damage, it’s effects and techniques for drying of structures. This course will give residential and commercial maintenance personnel the background to understand the procedures necessary to deal with water losses, sewer backflows, and contamination such as mold.”

   In addition, the water response team must have an individual in a supervisory role who has the following certification, or the equivalent, when responding to class 2 or higher water events

   b. *Applied Structural Drying (ADS) Certification* — the IICRC description of this course is that it “covers the effective, efficient and timely drying of water-damaged structures and contents, using comprehensive classroom and hands-on training, in order to facilitate appropriate decision-making within a restorative drying environment. Students will experience live hands on use of instruments, extraction systems, drying equipment, and chemistry use in an actual flooded building situation.”

   These programs, or their equivalent, provide the water damage technician with the classroom and at least limited hands on training necessary to perform moisture
mapping, maintain drying logs, and dry building components as quickly as possible.

These should be considered the minimum required qualifications. It is highly desirable that water response workers be designated as “Journeyman Water Restorers” and at least one individual on the team in a supervisory role, have “Master Water Restorer” status as defined by the IICRC. These designations involve a combination of multiple, appropriate certifications and minimum experience levels.

7. Calculate the capacity of air movers and water removal (dehumidification) equipment needed based on the specifics of the water event. This includes not only the amount of water present, how many areas or surfaces that were affected, but also considers the amount and placement of obstacles which would block air flow. Some water mitigation contractors have spreadsheets or other means to uniformly perform this calculation. As the drying process proceeds the equipment needed should be recalculated daily and the equipment utilized reduced as appropriate based on the water removal remaining to be done.

8. Establish a drying goal. For each type of material (e.g., gypsum wall board, carpeting, wood, etc.) set a goal which, when achieved, will control the risk for microbial growth and signal the end of the drying process for that specific material.

9. Maintain drying logs. Show the temperature and relative humidity (RH) outside, in each affected room, and in each dehumidification unit (DU) discharge airstream. Calculate for each measurement the water content in the air, such as in grains per pound, and the grain depression achieved by each DU. Use this data to help manage the drying process. Attached is an example drying log.

10. Obtain service level agreement from water mitigation contractors, if used. Beside the above criteria, this document, signed by an officer of the water mitigation company, should include and maximum acceptable time of response, annually providing evidence of insurance coverage, and a requirement to immediately report the presence of mold discovered during the response process.

Guidelines For Typical Materials

1. Ceiling Tiles Remove and dispose of all wet ceiling tiles within 24-48 hours of water damage. Clean any debris generated by wet wiping of non-porous surfaces and HEPA vacuuming porous surfaces.

2. Sheet Rock
   a. If water incursion is detected within 24 hours and no previous water damage has occurred, and the moisture content of the wall is greater than 16%:
      - Determine if a surface treatment or covering, such as enamel vinyl wallpaper will retard evaporation. If so, remove it. If the vapor barrier
can not be removed, an alternative drying approach must be used, if available. This might include cutting holes in the top and bottom of each wall cavity and blowing air through the cavity.

- Maintain low relative humidity (RH) in the room and a high velocity of airflow across the surface of the wall.

b. If drying does not start for 48 hours after the water incursion, or if there was previous water damage that was not dried using these guidelines, removal or abatement of the affected area must be done under controlled conditions. An assessment should be preformed to determine if careful removal is possible, or if mold abatement protocols should be followed.

c. When to remove sheet rock (Decide within 24-48 hours)
   a. When there is visible mold growth (maybe preexisting) – Requires remediation protocols to be followed.
   b. When the sheetrock is sewage contaminated (S500-94 Standard) – Requires remediation protocols to be followed.
   c. When the drywall is swollen especially around seams and nail heads.
   d. Rusty nails are an indication of the need to remove the sheetrock

Careful removal without following full remediation protocols can be used if removal takes place within 2 weeks of the incursion and there is no history of a prior incursion.

3. Hard Surfaces

All affected hard surfaces such as block walls, etc. should be scrubbed with a mild detergent solution. Note the following caution on the use of biocides form the NYC Remediation Guidelines:

The use of gaseous, vapor-phase, or aerosolized biocides for remedial purposes is not recommended. The use of biocides in this manner can pose health concerns for people in occupied spaces of the building and for people returning to the treated space if used improperly. Furthermore, the effectiveness of these treatments is unproven and does not address the possible health concerns from the presence of the remaining non-viable mold.

After work is competed dry the materials through the use of air movement (e.g., fans blowing air across the surface) coupled with dehumidification to keep room air below 50% RH.

4. Electrical
Have checked by an electrician. Turn power off and discard electrical circuit
breakers, GFCIs, fuses, and switches, outlets, electrical motors, light fixtures can be
opened and inspected for visible moisture and re-used. If in doubt, throw it out.

5. Furniture

Upholstered furniture wetted by steam or drinking water: air dry, HEPA Vacuum
and/or steam clean (and promptly dry) and monitor. If damaged by other water
types: discard.

6. Hardwood or Intact Laminate

Hardwood furniture or laminate furniture whose laminate is intact should be air
dried and cleaned with a wood floor cleaner.

7. Particleboard/Pressed Wafer board

If the water source was clean water: air dry and monitor, other water damages:
discard.

8. Files/Papers

Remove and dispose of non-essential wet files, paperwork books, etc. The exception
would be if the moisture was due to steam leaks or high humidity; items wetted from
these sources can be dried, but damage often occurs within 4-8 hours so prompt
removal from the environment is critical. Essential wet paper from water damage
area should be moved to a location where it can be dried, photocopied and then
discarded. Where the original documents must be retained, contact a specialty drying
firm. Sublimation (vacuum freeze-drying) can be effective in saving such documents.
Essential paper based items must be identified in advance and be local business
continuity plan is to include specific protocols to follow if any of these items are
water damaged.

9. Carpet Wet less than 48 Hours

a. For “clean water”

- If the carpet is more than one year old and more than a minor amount of
  water is in the carpet (>5 gallons), carefully remove and replace it before
  any drying occurs.
- Otherwise, remove all materials (furniture, file cabinets etc.) from the
carpet.
• Extract as much water as possible from carpet using wet vacuums.
• Dry the carpet with within 24 hours of water incursion. After work is completed, increase the room temperature, and use commercial dehumidifiers, floor fans or exhaust fans to aid in drying the carpet.

b. For “gray water”
• Same as above.

c. For “black water”
• Any carpet that has been contaminated with black water should be discarded under controlled conditions.

10. Carpet Wet more that 48 Hours

a. For “clean water”
• If the carpet is more than one year old and more than a minor amount of water is in the carpet (>5 gallons), carefully remove and replace it before any drying occurs.
• Any carpet that is not glued to the floor should be pulled up and dried with air movers and dehumidifiers, following the drying guidelines outlined above.
• Following drying have the carpet tested for the following to determine if removal, remediation, or additional cleaning is needed:
  o Total fungi (spores)
  o Mycelial fragments
  o Viable fungi
  o Viable bacteria (optional, depending on the nature of the situation)

b. For “gray water”
• Disposal of gray water damaged carpets is recommended.

c. For “black water”
• Any carpet that has been contaminated with black water should be discarded under controlled conditions.

. Standards such as IICRC S500, Standard and Reference Guide for Water Damage Restoration should form the basis of a mitigation effort.
Section I: Loss Information

Claim Number: Vendor: Date of loss:
Customer/Insured: Loss Location:

Category of Water Damage I II III Class of Water Damage I II III IV
Linear Feet Wet Wall(s) in Affected Area Cubic Feet in Affected Area Floor Surface Wall Surface

Section II: Equipment

DH Manufacturer: Model: Style: Unit Per Day Capacity =
(Other) Manufacturer: Model: Style: Specifications:
# Fans Required =
Show Calculation:
# DH Units Required =
Show Calculation:

Section III: Psychometric Readings

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Daily Notes (Grain Deposition Comments and equipment justification or removal):

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### Section I: Loss Information

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**Daily Notes (Grain Depression Comments and equipment justification or removal):**

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Water Incursion & Moisture Management Plan Contacts
For

[Entity Name]
[Office name]
[Office Address]

[Entity Name] Primary Contact:

Name
Address
Business #
Cell #

[Entity Name] Secondary Contact (when primary contact is not reachable)

Name
Address
Business #
Cell #

Facilities Management Primary Contact:

Name
Company/Employer Name
Address
Business #
Cell #

Landlord Primary Contact:

Name
Company/Employer Name
Address
Business #
Cell #

Contractor Primary Contact:

Identified and posted with this list prior to work commencing.