Moisture and Mold Management Program (M3P)

Veterans Health Administration

Modified with support from the Water Intrusion and Mold Management (WIMM) Program developed by the California Kaiser Safety Program

Moisture Control Pre-lease Checklist

Control of Moisture Entry, Accumulation and Removal

Moisture Entry

- Rain and Groundwater
- Capillary Suction
- Air Movement
- Vapor Diffusion

Surroundings/Environment

- Grading for drainage away from building (5%)
  - Lack of roof overhangs
- Drainage conduits
  - Extended downspouts/ free-draining backfill
- Flooding potential
  - Site selection
- Water table
  - Underground trenching/sump pump

Foundation

- Evidence of moisture damage
- Bare soil crawl spaces
- Waterproofing w/ below grade barrier
- Heating climates – Strategies for below grade basements
  - Rigid insulation of exterior foundation wall
  - Rigid insulation between foundation and room wall
  - Rigid insulation beneath slab
  - Insulation of wall cavities
  - Capillary shield on footing
- Cooling Climates – Strategies for Crawl spaces and slabs
  - Vapor barrier on crawl space floor
  - Insulation of crawl space floor joists
  - Rigid insulation on external or internal wall
  - Rigid insulation of slab perimeter or wall/floor joint

Envelope

- Exterior walls
  - Cladding permeability, leakage & overlap
    - Veneer w/ weep-holes
  - Weatherproofing w/ above grade barrier, drain screens & air spaces
    - Stuccos, papers, tyvek, caulks
    - Air spaces for brick veneers
    - Flashed bases to drain rainwater out
    - Cladding with 2-stage joint

- Foundation drip edges
- Interior vs. Exterior Air Barriers (Poly barriers, wall cavity cellulose)
  - Exterior barriers: Control wind washing & trap condensation
  - Interior barriers: Control heat-forced moisture
- Drainage tile and granular backfill

Exterior room corners

- Poor insulation
- Low air movement
  - Furniture blockage
- Siding wind-washing
  - Capping siding space (Most climates)
  - Open siding space (High moisture climates)

Roof

- Materials appropriate (aging/intact)
- Flashing applied properly
- Penetrations sealed without evidence of leakage inside
- Non-permeable barrier for low slope roof
- Strategies to control temperature condensation and moisture transfer
  - Vapor barrier above gypsum ceiling
  - Rigid wall insulation notched around roof rafters
  - Rigid insulation between rafter insulation and vapor barrier

Wall-Roof intersections

- Soffit wind baffles

Windows/doors

- No evidence of leakage
- Moisture trapping
- Energy rated to reduce condensation

Rooms

- Closed doors and air movement (increase humidity)
- Gradual non-occupant temperature reduction (controls humidity)
- Control overcooling (summer) and over heating (winter)
- Control cold airflow against surfaces

Systems

- Mechanical
  - Motor intact, without knocking
  - Belts, etc. wear
  - Fan blades intact
  - Cooling and heating coils intact
  - Drainage pans clean

Condensate lines correct
Plenum without biological growth
Duct liners clean
Electrical
Plumbing
Insulation

Furnishings
Ceiling tiles clean
Carpeting discoloration

Moisture and Mold Management Program (M3P)

Veterans Health Administration
(Facility)

Moisture and Mold Management Program

Section I: Program and Policies

Section II: Water Intrusion Specific Procedures

Section III: Mold Management Specific Procedures

Attachments
Region Specific amended procedures

Review and Approval

The Responsible Persons for implementing Network and facility Program :

Director :
Facility Director :
Environmental Health and Safety:
Infection Control Professional:
Environmental Services:
Facility Services Manager:

Date:

National Program on Water Intrusion and Mold Management (WIMM)

1.0 Introduction

Fungi occur naturally in our environment and are an essential part of our ecosystem. Fungi live in the soil, on plants, and on decaying matter. Fungi represent their own kingdom, and, unlike plants, they lack chlorophyll and must survive by digesting plant materials, using plant and other organic materials for food. Without fungi, our environment would be overwhelmed with large amounts of dead plant matter. Indoors, fungi grow when moisture from sources, such as pipe leaks, roof leaks, or condensation, encounters potential nutrients. Fungal growth inside a building may cause a broad range of reactions, differing in part on the susceptibility of the affected person, in part on the fungal species, and in part on the dose. VHA patients and visitors with compromised immune systems are at greater risk.

Fungi produce allergens, irritants, and toxins. Exposure to fungi can cause a variety of disorders. Minor symptoms such as rhinitis, sneezing, nasal congestion, and conjunctivitis can result from allergies or irritation. Skin rashes and itching (dermatitis) are described. Asthma,

hypersensitivity pneumonitis, sarcoidosis, and interstitial pneumonitis are associated with heavy prolonged exposure to fungi. Microbial volatile organic compounds (mVOCs) are produced during fungal metabolism and responsible for moldy or unpleasant odors. The existence or identification of fungi indoors does not imply that building occupants have been exposed to mycotoxins or even that such agents are present, as molds often do not produce them. "Mold" represents a colloquial term for fungal growth generally on surfaces and in materials.

[VHA Facility] is committed to providing a safe environment for our patients, visitors and employees. Water intrusion incidents or visible mold growth may occur in our facility. [VHA Facility] has established this *Water Intrusion and Mold Management Program (WIMM)* to maintain appropriate patient care services, to provide a safe and healthy work environment, and to prevent damage to facility components. WIMM provides guidelines for the assessment and response planning to water intrusion incidents and visible mold growth. Although mold growth may represent a health hazard under certain conditions, there are no specific regulatory requirements that dictate how to manage or remediate identified mold growth. WIMM was initially developed by Kaiser Permanente using U.S. Environmental Protection Agency guidelines, the New York City Bioaerosols Remediation Guidelines, and other current industry consensus standards. Specific references are listed in *Section I. Appendix IV: WIMM Program References.*

1.1 Discovery and Reporting

Although there currently are no governing, licensing or regulatory requirements regarding mold management, water intrusion and accumulation should be mitigated prior to the start of mold growth. Prompt recognition, reporting and elimination of water intrusion will reduce potential health risks, building systems damage and operational expense.

[Choose Option A or B below]

[A] Possible signs of water intrusion or mold growth should be reported to the facility WIMM Program Manager. The following are examples of events that warrant a reporting process.

- Visible water/ moisture intrusion in locations not intended for moisture, such as carpets, wall surfaces, ceiling surfaces, standing water in building interiors, furniture, equipment drip pans, etc.;
- Water intrusion directly into building interiors in locations not intended for water to enter;
- Signs of building damage potentially caused by water/ moisture intrusion, such as warping, staining, buckling, sagging, etc.;
- Suspected or known visible mold growth;
- Odd, or unusual odors, including musty, moldy, or mildew odors;
- Other conditions that could reasonably indicate water/ moisture intrusion, either hidden or visible.

[B] Employees should immediately report incidents of suspected moisture intrusion or suspected mold growth to their immediate supervisors. Upon confirmation, supervisors shall notify the Safety Office and Facilities Management Office for appropriate action based on the report.

Infection Control will be notified for events occurring in patient care areas. The Contracting Officers representative (COTR) shall be notified for events associated with site construction. The following are examples of events that warrant a reporting process.

- Visible water/ moisture intrusion in locations not intended for moisture, such as carpets, wall surfaces, ceiling surfaces, standing water in building interiors, furniture, equipment drip pans, etc.;
- Water intrusion directly into building interiors in locations not intended for water to enter;
- Signs of building damage potentially caused by water/ moisture intrusion, such as warping, staining, buckling, sagging, etc.;
- Suspected or known visible mold growth;
- Odd, or unusual odors, including musty, moldy, or mildew odors;
- Other conditions that could reasonably indicate water/ moisture intrusion, either hidden or visible.

2.0 Implementation of the Program:

This WIMM Program (WIMMP) is comprised of three sections:

Section I: Roles and Responsibilities. Describes the WIMM Program roles in detail and provides a backdrop for how the various roles work in concert with each other. Additional resources are provided in the Section I Appendices.

Section II: Water Intrusion Events. The step-by-step process provides guidelines for assessment of water intrusion, determination of patient risk groups, and the corresponding response procedures. In addition, several tools and documentation forms are provided in the Section II Appendices to assist in assessment, response, and record-keeping.

Section III: Mold Management. The step-by-step process provides guidelines for assessment of mold growth, determination of patient risk groups, and corresponding response procedures. In addition, several tools, documentation forms and basic mold information are provided in the Section III Appendices to assist in assessment, response, and record-keeping.

INSERT TAB HERE FOR SECTION I:

General Policies for Water Intrusion and Mold Management Program

Section I: General Policies

3.0 Roles and Responsibilities

3.1 Intent

The WIMM Program provides response actions that are effective in protecting the health of patients and employees while minimizing damage to facility components. Additionally, WIMM is intended to ensure responses are efficient and consist of appropriate actions that are neither too minimal, nor too extensive, based on current industry standards. As mold requires water to proliferate and grow, it is important to properly manage water intrusion incidents. For that reason, the Program includes guidelines for responding to leaks or other sources of water to prevent potential mold growth.

WIMM team notification and response mobilization are triggered when building system failure is verified by facilities maintenance and inspection processes. It is the responsibility of [Safety Office/Facilities Management] to ensure timely and proper notification of the WIMM Program team.

3.2 WIMM Program Management

A flow chart that outlines the process for the management of mold and water intrusion incidents is located in Section III, Appendix VII. The [Safety Office/Facilities Management] is responsible for implementation and management of the WIMM Program, including the following:

a. Disseminating information and implementing appropriate training to WIMM Program members;
b. Developing or modifying and implementing a facility wide reporting process, so that potential WIMM Program incidents will quickly and efficiently be reported through the appropriate staff members designated below:
    - Department Supervisor
    - Facility Services Manager or Building Engineer;
    - Environmental Services (housekeeping) Manager
    - Health and Safety (EH&S) Professional;
    - Infection Control (IC) Professional; and
    - VHA Network Office for assistance or notification
c. Designating a WIMM Project Lead for communication, coordination and implementation of the WIMM response actions based on the location and extent of response plan;
d. Implementing a system to insure that necessary equipment is readily available and meets current industry standards;
e. Ensuring resources for response for after hour shifts in a 24/7 operation are available

f. Developing and implementing processes for:

- Resolution of impasses within the WIMM Program Management Team;
- Record keeping and documentation for any contracts, purchases and incidents; and
- Assigning alternates or modifying roles and responsibilities for WIMM Program Procedures.

3.3 Suggested WIMM Program Team Members

The core WIMM Program Team consists of the following members:

- Facility Service Manager or Building Engineer- Responsible for notification of incident to WIMM Program [Choose one: Lead or Team]; manages project task to mitigate water infiltration and accumulation and protect facility components and utilities, including but not limited to HVAC, domestic water, sewage, electrical, alarm, fire / life safety systems;
- Environmental Health and Safety Professional- Responsible for notification of incident to WIMM Program [Choose one: Lead or Team], manages project task and conducts safety and health risk assessment; determines proper course of action to minimize/eliminate mold growth risk;
- Environmental Services (housekeeping)- Responsible for communication of incident response actions to WIMM Program Lead, and for housekeeping duties as they relate to implementation of the WIMM Program guidelines;
- Infection Control Professional- Responsible for communication to WIMM Program Lead, authority for development of patient risk assessment and related decisions of the WIMM Program guidelines, and communication with patient care staff .

When deemed appropriate:

- An Environmental Health and Safety professional who is certified in Industrial Hygiene (ABIH) with experience in Mold Risk Assessment and abatement.
- A Licensed Engineer/Contractor (PE) having sufficient experience in Water Intrusion and Ventilation; ***See Section I. Appendix II: Guidelines for Selecting Outsource Consultants and Contractors;***
- Leased-space administrator/ manager (tenant representative) for the area effected by the WIMM incident;
- Specialized consultant or Physician as may be necessary for successful completion of WIMM program related work; ***See Section I. Appendix II: Guidelines for Selecting Outsource Consultants and Contractors;***
- A Public Affairs or Media Relations specialist for any WIMM incidents that have the potential for being "newsworthy" based on size, location, patient exposures, etc.
- A representative of Labor/ Management- liaison with staff for communication;
- Other members designated by the WIMM Program management team as may be necessary for successful completion of WIMM Program related work.

3.4 WIMM Program Team Responsibilities

The WIMM Program Team, as a whole, should be responsible for:

A. Familiarity with and understanding of the WIMM Program Procedures and support individual roles and responsibilities;

B. Selection of a project members to facilitate implementation of the WIMM Program Procedures, recordkeeping, coordinate staff and consultant tasks, ensure regulatory compliance and communication of progress with team members and facility staff;

C. Ensuring that all WIMM Program incident response personnel understand and are able to conduct an initial WIMM assessment and notification procedures for appropriate response actions. (***See Section I. Appendix III Assessment Guidelines and Checklist***);

D. Ensuring that all WIMM Program incident response personnel are properly trained in the respective safety protocols and procedures. All personnel requiring personal protection equipment shall comply with regulatory training, fitting and medical examination;

E. Identifying professional guidelines, publications and standards as approved methods. (***See Section I. Appendix IV WIMM Program References***); and,

F. Determining the WIMM patient risk category, and proper implementation of the corresponding work practices. Review work periodically, and adjust the risk category as is appropriate during the WIMM Program related work. Use the Infection Control Risk Assessment Form (ICRA) for documentation purposed **(*See Section II Appendix I: ICRA and Section III. Appendix I Infection Control Risk Assessment Form).***

Section I. Appendix I – WIMM Program Definition of Terms

Acceptable level of moisture - the level of moisture in a material**,** or in a contained area that is normally present, and that would not promote mold growth.
Air Movers - mechanical enhancement of water evaporation in material drying process.
Air Sampling - the collection and analysis to identify airborne contaminates and bioaerosols.
Bioaerosol - airborne fungi or bacteria, including associated compounds.
Biocide - a chemical that can kill living organisms.
Boroscope - a long and thin rod-like optical device used to visually inspect normally inaccessible areas such as spaces within walls and inside duct.
Bulk Sampling - collection of a representative amount of a material with subsequent analysis to determine the presence or quantity of mold or bacteria.
Dehumidification - the process of reducing the moisture (water) content of air.
Engineering Controls - methods of controlling exposures by modifying the source or reducing the quantity released into the work area.
Evaporation – the process whereby liquid is changed to a vapor or gas.
HEPA - High Efficiency Particulate Arrestor. Filter that is 99.97% efficient for the collection of 0.3 micron particles.
Humidity - weight of water vapor per unit weight of dry air.
Intrusion - entry of a material or substance into an area in which the substance or material was not previously present.
Microbial growth – proliferation of mold that is visible.
Moisture Meter - instrument used to provide direct reading of moisture levels in building materials.
Mold - are a group of organisms that belong to the kingdom Fungi. For the purposes of this document, the terms fungi and mold can be used interchangeably. There are over 20,000 species of mold.
Negative air pressure differential - air pressure in an area that is less than that of an adjacent area, resulting in air being drawn from the high to low pressure area.
Organic Matter - compounds or materials that contain carbon and support the growth of mold (paper, dust, soil, wood, cellulose, etc.).
Patient Risk Group - a group of patients with specific diagnosis or immune state that predispose them to potentially increased risks due to specific mold or water intrusion hazards.
Readily available – obtainable without much difficulty so that immediate response can be performed.
Remediation – correct or repair so that a safe and healthy environment is present.
Respirator - a device to prevent the inhalation of harmful contaminants.
Response - evaluation and remediation activities implemented to protect people and property when water intrusion or mold growth incidents occur.
Response Equipment - machinery, instruments, supplies used to support engineering control measures.
Restoration - return to original or usable and functioning condition.
Salvageable - can be sufficiently cleaned and re-used.
Sealed bag - an airtight and water proof bag typically sealed with duct tape.
Wipe Sampling - use of adhesive, swab or other appropriate means to collect a sample from the surface of a building material or object to identify mold or fungus.

Section I. Appendix II - Guidelines for Selecting Outsource Consultants and Contractors

[NOTE: Most facility-based operations have adequate capacity and staff to address typical water intrusion and mold management projects. However, the decision to utilize local resources is based on site specific factors such as staff capabilities and availability of equipment and other resources. In specific instances where facility management have made the determination to outsource water intrusion and mold management services these guidelines describe the types of providers that should be considered. The list of providers has been categorized into areas of service and expertise. In such instances where outsource service providers are limited or not available geographically, this guideline has included qualifications and/or certifications that are recommended.]

When retaining the services of any professional or contractor, ensure that they have adequate experience and the appropriate certifications and licensure. Ask for and check references regarding type and size of completed jobs.

Consultants should have both Professional Liability and Errors and Omission coverage with limits no less than One Million Dollars ($1,000,000.00). Contractors should have: (a) Worker's Compensation at levels required by applicable state law for all employees working on the Project and employer's liability insurance with limits of not less than Five Hundred Thousand Dollars ($500,000.00) per occurrence; (b) Commercial General Liability insurance with an occurrence limit of not less than One Million Dollars ($1,000,000), which includes the following types of coverage: underground hazards, personal injury liability and independent contractors; and (c) Commercial automobile liability insurance (bodily injury and property damage) for all owned, hired and non-owned vehicles and equipment of not less than Five Hundred Thousand Dollars ($500,000.00) combined single limit.

Preferred consultants and/or contractors that are retained should have enough experience to express proficient knowledge and provide the services of qualified staff that are licensed and/or certified with one or more of the following credentials:

Consultants

There is no single designation, license, or certification that qualifies an individual to provide water restoration or mold/microbial assessment services. The term commonly used in the industry of someone able to serve in the capacity of providing these types of consulting services is an Indoor Environmental Professional (IEP). Few societies have the legal authority to withdraw a license when a member behaves in an unprofessional or unjustified fashion. Therefore all such licenses, designations, and certifications must all be viewed cautiously.

The IEP is an individual who is qualified by knowledge, skill, education, training and/or experience to perform assessment of microbial ecology of property systems, create a sampling strategy, sample indoor environment, interpret laboratory data and establishing a scope of work to restore areas to pre-event condition. Many IEPs possess technical degrees or professional

credentials in industrial hygiene (CIH), medical and health sciences, biology, microbiology, mycology, public health, environmental science, toxicology, building science, or engineering. It is highly recommended that individuals with advanced degrees and certifications also have additional education in industry-related subjects including but not limited to:

- Indoor environmental quality (IEQ);
- water damage restoration;
- occupational health and safety;
- environmental monitoring and assessment;
- construction basics;
- construction failure;
- building science;
- mechanical systems operation and maintenance;
- mechanical systems testing and remediation; and,
- mold remediation.

Contractors

- ***Water Intrusion Response/Damage Restoration*** – Rapid response to water intrusion and restoration of structures and contents should be performed by a qualified (certified) restoration specialist. This type of certification is offered by the IICRC and includes completing educational competencies for the cleaning and restoration of water damaged structures and articles. It is recommended that the contractor be a member with the Association of Specialists in Cleaning and Restoration (ASCR), which is a non-profit affiliation of restoration and cleaning professional(s) who set and promote industry standards for water cleanup and restoration.

- ***Mold Growth Assessment and Remediation*** – Several Organizations have begun offering certifications for supervisors and/or workers involved in mold remediation. These certifications are generally related specifically to mold or microbial remediation. They do not always satisfy legal requirements for worker training under OSHA Hazard Communication Standard 29 CFR 1910.1200 or Cal/OSHA CCR Title 8 Section 5194.

  The following organizations offer certifications pertaining directly with mold remediation. All contractors should work in conjunction with an Indoor Environmental Professional (i.e. CIH, QEP, etc.). The information provided below is a summary and does not represent a complete listing of requirements for the various certifications. The organizations should be contacted directly for a complete list of requirements to support their certifications.

  American Indoor Air Quality Council (AmIAQ): www.iaqcouncil.org

The American IAQ Council offers the Certified Mold Remediation Supervisor (CMRS) Certification. In order to qualify, the applicant must demonstrate experience, attend class, and pass a written examination.

Indoor Air Quality Association (IAQA): www.iaqa.org

The IAQA offers the Certified Mold Remediator (CMR) certification. CMR is a supervisor or manager level certification. In order to qualify, the applicant must demonstrate experience, attend a three-day class, and pass a written examination. The IAQA also offers a two-day Mold Remediation Worker training class that does not include certification testing.

Institute of Inspection, Cleaning and Restoration Certification (IICRC): www.iicrc.org

The IICRC offers the Applied Microbial Remediation Technician (AMRT) as a basic certification and the Applied Microbial Remediation Specialist (AMRS) as an advanced certification. The AMRT certification requires no work experience, but does require the applicant to have attended class, pass an exam, and successfully complete the IICRC Water Restoration Technician (WRT) certification. The AMRS certification requires the applicant be an AMRT for a period of one year, demonstrate experience in mold remediation and have their Health and Safety Technician (HST) certification, or other approved forms of health and safety training.

National Air Duct Cleaners Association (NADCA): www.nadca.org

The National Air Duct Cleaners Association (NADCA) began a program to certify professionals in the air duct cleaning field in November of 1995. Since then, more than 1000 contractors have passed the NADCA exam and have been certified as "Air System Cleaning Specialists". Certification is obtained by passing a NADCA certification examination.

Analytical Services

The AIHA Environmental Microbiology Laboratory Accreditation Program (EMLAP) is specifically for labs identifying microorganisms commonly detected in air, fluids, and bulk samples during indoor air quality studies. The EMLAP is designed specifically for laboratories involved in analyzing microbiological samples to evaluate exposures in a variety of workplaces. Participation assists the laboratory in maintaining high quality standards. When a laboratory enters EMLAP, it is required to participate in the AIHA Environmental Microbiology Laboratory Proficiency Analytical Testing (EMPAT). Laboratories must achieve and maintain a proficient rating in EMPAT. Any laboratory providing mold or microbiological analytical services should be accredited by the American Industrial Hygiene Association (AIHA). A listing of laboratories participating in the AIHA Program can be found at www.aiha.org/LaboratoryServices/html/lists/htm .

Section I. Appendix III - Assessment Guidelines and Checklist

A thorough assessment of water intrusion and potential mold growth is important in ensuring that a safe workplace and environment of care are maintained, and in determining appropriate response actions and remedial strategies. A visual inspection is the most important initial step in identifying a possible mold problem. This should include determining the source of any moisture intrusion, identifying visible mold, determining the extent of mold growth and the level of risk. Generally, identifying the moisture source is the key to solving a mold problem. Any water intrusion represents the potential for mold growth.

An assessment is typically performed:

- ✓ In response to employee indoor air quality concerns potentially related to the presence of mold;
- ✓ In response to reports of moldy, musty odors;
- ✓ In response to reports of visible mold;
- ✓ In response to known or suspected water intrusion events; and,
- ✓ As part of proactive inspections to identify mold contamination.

Site Assessment

When conducting a visual inspection and site assessment the following should be included, when applicable:

- ✓ A visual inspection for visible mold and/or moisture intrusion. The amount or area impacted or affected by mold or water intrusion occurrence. Ceiling tiles, gypsum wallboard (sheetrock), cardboard, paper, and other cellulosic surfaces should be thoroughly inspected. Items with mold growth or damaged by water should be cleaned or disposed of in accordance with guidelines in the Response Section.
- ✓ An evaluation of potential sources of moisture intrusion (roof leaks, leaks around windows, pipe leaks, sewage leaks) Actions to stop water intrusion should be implemented as soon as feasible. Water intrusion from sewer leaks and backups require special cleanup procedures.
- ✓ A visual inspection for moisture associated with condensation.
- ✓ An evaluation of the potential for hidden mold - see Hidden Mold
- ✓ If mold is identified, determine the extent of mold present (i.e. less than 10 square feet, 10-100 square feet, more than 100 square feet). The extent of mold growth is a key factor in determining remediation engineering control and PPE requirements.
- ✓ If moisture intrusion is identified, determine how long materials have been wet (48 to 72 hours is a frequent cut-off criterion). Materials wet without attempts to dry them for longer than 48 or 72 hours should generally be treated as if mold growth is present. In colder climates this time duration may be relaxed.
- ✓ Determining if water damaged items are salvageable and the level of cleaning required.

- ✓ Predetermination of steps and resources needed for restoration of sensitive or irreplaceable items (e.g. outsourced restoration/drying services).
- ✓ Site ventilation systems should also be visually checked for water accumulation, wetted filters, damp room conditions and equipment cleanliness. The condensation drain pans should also be inspected to ensure proper drainage. Inspect coils, drain pans and associated duct for stagnant water and visible slime/mold. Since mold growth in an air stream can be a potentially significant problem any mold growth in an HVAC system, particularly the supply ductwork, must be addressed promptly.
- ✓ Measure of relative humidity levels to determine if it could be a contributing factor. Relative humidity levels should be less than 60% in an indoor environment. High relative humidity may be present at condensation sites where the surface temperature is significantly lower than the area air temperature (window sills, poorly insulated walls, utility chases, etc).
- ✓ Determine if building occupants have reported musty or moldy odors. Odors can be a key indicator of mold growth, but it is important to remember that perceptions can differ from person to person.
- ✓ Determine if building occupants have reported health problems. Coordinate with the occupational health clinic. See Medical Consultation
- ✓ Investigate if the site has been recently remodeled or new processes implemented. Renovation may have disturbed previously hidden mold, or resulted in accidental water intrusion.
- ✓ Determination the capacity for facility operations staff (housekeeping/maintenance) to mitigate the site.

Tools for Conducting Assessments

The use of equipment such as a boroscope to view spaces in ductwork or behind walls, or a moisture meter to detect moisture in building materials, may be helpful in identifying hidden sources of fungal growth and the extent of water damage.

Moisture meters may be helpful for measuring the moisture content in a variety of building materials following water damage. They can also be used to monitor the process of drying damaged materials. Moisture meters can be used on materials such as carpet, wallboard, wood, brick, and concrete.

If a moisture meter is used, it should allow the user to determine percent moisture content. Instrument measurements of impacted materials should be evaluated by comparing moisture measurements from similar materials from non-impacted areas. This type of evaluation will take in account variations in climatic and building interior conditions. There are two types of instruments used in determining material moisture content; intrusive and non-intrusive. Intrusive meters require the user to penetrate the material with a 2-pronged probe which will yield the moisture content by percent but leaves markings that may require patching. Moisture gradients (differential moisture) with depth can be obtained based on probe length, which may be beneficial when inspecting wall systems. Non-intrusive instruments can provide moisture

content on most materials but are usually limited to a penetration depth of a few inches. However, there are more expensive (high-end) non-intrusive meters emerging on the market that will obtain greater depths.

Assessment – Consider the Potential for Hidden Mold

In some cases, indoor mold growth may not be obvious, and therefore it is important to consider the potential for hidden mold when conducting inspections. It is possible that mold may be growing on hidden surfaces, such as the back side of dry wall, wallpaper, or paneling, the top of ceiling tiles, the underside of carpets and pads, etc.

Possible locations of hidden mold can include pipe chases and utility tunnels (with leaking or condensing pipes), walls behind furniture (where condensation forms), condensate drain pans inside air handling units, porous thermal or acoustic liners inside ductwork, or roof materials above ceiling tiles (due to roof leaks or insufficient insulation). Some building materials, such as dry wall with vinyl wallpaper over it or wood paneling, may act as vapor barriers, trapping moisture underneath their surfaces and thereby providing a moist environment where mold can grow.

You may suspect hidden mold if a building smells moldy, but you cannot see the source, or if you know there has been water damage and building occupants are reporting health problems. Investigating hidden mold problems may be difficult and will require caution when the investigation involves disturbing potential sites of mold growth—make sure to use PPE. For example, removal of wallpaper can lead to a release of spores from mold growing on the underside of the paper. Once hidden mold is discovered, efforts should be made to control the release of mold spores during the investigation phase and revise your remediation plan to account for the total area affected by mold growth.

Assessment – Hazardous Materials

If asbestos-containing materials (ACM) or lead-based paint (LBP) have been impacted by water intrusion or mold growth additional requirements for removal and disposal are necessary. If ACM/LBP is known or suspected to have been impacted, the Asbestos Program Manager should be included as a WIMM team member. The clean-up, repair, removal, and disposal of ACM/LBP must be performed by a qualified asbestos abatement contractor in accordance with the VHA Policy, Federal, State, and local asbestos abatement regulations. Employees must be properly trained and licensed for the inspection and removal of ACM/LBP.

Section I. Appendix IV: WIMM Program References

Rules and Regulations:

Respiratory Protection Program, 29 CFR 1910.134, Occupational Safety and Health Standards for General Industry, U.S. Department of Labor

Personal Protective Equipment, 29 CFR 1910.132 Occupational Safety and Health Standards for General Industry, U.S. Department of Labor

Hazard Communication, 29 CFR 1910.1200, Occupational Safety and Health Standards for General Industry, U.S. Department of Labor

Hazard Communication, California Code of Regulations (CCR) Title 8 Section 5194, California General Industry Safety Orders, California Department of Industrial Relations.

Publications:

A Guide for Mold Remediation in Schools and Commercial Buildings, U.S. Environmental Protection Agency, 2001.

Bioaerosols: Assessment and Control, American Conference of Governmental Industrial Hygienists, 1999.

Field Guide for Determination of Biological Contaminants in Environmental Samples, American Industrial Hygiene Association, 1996.

Guidelines on Assessment and Remediation of Fungi in Indoor Environments, New York City Department of Health, 1993.

Mold: A Guide for Clinicians. Storey E, Dangman K, Schenck P, Yang C, Hodgson M. University of Connecticut **http://www.oehc.uchc.edu/clinser/MOLD%20GUIDE.pdf** (November 2004).

Report of Microbial Growth Task Force, American Industrial Hygiene Association Press, May 2001.

Standard and Reference Guide for Professional Water Damage Restoration, International Institute of Inspection, Cleaning and Restoration Certification (S500) Second Edition, 1999.

Standard for Professional Mold Remediation, International Institute of Cleaning and Restoration Certification (S520), First Edition 2003.

INSERT TAB HERE FOR SECTION II:

Water Intrusion Procedures

SECTION II: Water Intrusion

1.0 Water Intrusion Specific Procedures Overview

The procedures in this section provide a step-by-step process for responding to water intrusion incidents. The process is broken down into 8 essential steps:

1. Report of water intrusion incidents to a member of the WIMM Program Management Team
2. Assessment of specific reported or identified water intrusion incident(s)
3. Determination of Patient Risk Group from 4 potential risk categories
4. Determination of Class of Response and corresponding Work Practices
5. Implementation and Completion of Response Actions
6. Post initial response assessment
7. Follow-up investigation
8. Close-out documentation

1.1 Step One – Water Intrusion Reporting

Whenever visible water intrusion is identified or other conditions (e.g. warped flooring, tile or drywall) indicate that a potential water intrusion exists, it should be reported to a member of the WIMM Program Management Team ***(See Section I paragraph 3.3)***. Additionally, the following water intrusion incidents should be reported:

- Sewage release inside building;
- Any gray water or clean water release that cannot be easily managed or that complete clean up and drying cannot be completed within 1 hour of when the incident initially occurred; and,
- Any reoccurring water intrusion incident associated with damaged pipes, roofing material, or other exterior building barriers.

Proper reporting will enable the Program Lead to ensure appropriate steps can be taken to assess and respond to incidents. The Program Lead should ensure that staff who typically receive reports of identifiable water intrusion are aware of the reporting requirements. This should include the Safety Manager, Maintenance Manager, Engineer, Infection Control, and COTR.

Special Considerations for Water Intrusion Incidents:

The WIMM Program Management Team should establish a communication network that allows facility occupant to promptly report water intrusion occurrences. The WIMM Program Management Team must have the ability to determine the water intrusion work practice activity level using the appropriate risk assessment and work practice matrix. The WIMM Program Response Team must be provided with enough information to prepare and have the ability to respond within one hour of the notification call. The initial response team must have the proper training, equipment, Personal Protective Equipment (PPE) and supplies available to address all types of water intrusion occurrences.

NOTE: - Prompt reporting is essential to assure a rapid response and response time is crucial. Each shift should have an immediate response team that is capable of selecting and providing the appropriate initial response methods.

1.2 Step Two: Water Intrusion Assessment

There are three categories of potential water intrusion: Category I "Clean" water, Category II "Gray" water, and Category III "Black" water. Each water type requires different responses and levels of protection for response team members. Water intrusion associated with barriers (walls or ceilings) exceeding 48 hours must include full assessment for visible mold growth for the enclosed spaces (e.g., hidden wall cavity) that will be exposed upon barrier removal. Moldy odor (mVOCs) with no visible mold should be considered indicative of mold growth, requiring a determination for additional precaution measures from the M1-M2 category based on the patient risk group. Precautions should be implemented to prevent the transfer of mold odor to adjacent areas during clean up and drying of the work site. Following worksite drying, HEPA vacuuming should be conducted when mold odor occurs without visible mold growth.

Category I: "Clean" Water Intrusion

Clean water intrusion sources result from drinking (potable) water supply line leaks, or sink, shower, water closet and bath overflows, rainwater entering the building through roof, ceiling, window, or door sealant leaks, HVAC system condensate, fire sprinklers or any other uncontaminated source of water.

Category II: "Gray" Water Intrusion

Gray water sources are derived from equipment process water, sink/bath/or shower drain leaks, dishwashers, and steam sterilizers. Any source of water that has not been contaminated by excrement (fecal matter) can be also be considered gray water.

Category III: "Black" Water Intrusion

Black water sources contain or have been contaminated with fecal matter (sewage) and are derived from toilet or sewer drainpipes.

1.3 Step Three: Patient Risk Assessment:

Patient Risk Group

Use the table below as a general guideline to identify the patient population(s) potentially impacted by the water intrusion. Service units providing patient care support may also be considered a risk group. The intent of determining the patient risk groups is to protect immune deficient patients that are occupying the affected area and any adjacent area(s) where the response action is planned.

Additional factors to consider when determining the patients' risk include: the immune status of the patient(s), the degree of invasive procedures being conducted with the patient and/or the

potential length of exposure time in or adjacent to the affected area (for example the comparatively greater exposure time in the hospital setting vs. outpatient care setting).

If more than one risk group may be affected, select the higher risk group.

Low Risk	Medium Risk	High Risk	Highest Risk
• Office Areas • Admin or MD offices • Conference/Education Rooms	• Cardiology • Echo-cardiography • Endoscopy • Nuclear Medicine • Physical Therapy • Radiology / MRI • Minor Outpatient Procedure Rooms • Ob-Gyn • Outpatient Pharmacy • Primary Care • Medical and Surgical sub-specialties	• CCU • Emergency Room • Labor & Delivery • Laboratories (specimen) • Newborn Nursery • Outpatient Surgery • Pediatrics (In and Out) • Pharmacies that do compounding/mixing • Post Anesthesia Care Unit • Surgical Units (inpatient) • Respiratory Therapy	• Areas providing care to immuno-compromised patients (inpatient) • Burn Unit • Cardiac Cath Lab • Central Sterile Supply • Intensive Care Units (newborn, pediatric and adult) • Medical Unit (inpatient) • Negative Pressure Isolation Rooms (inpatient) • Oncology (in and out patient) • Operating Rooms, including C-Section Rooms • Infusion/dialysis clinics

The patient risk assessment and the water intrusion assessment should be completed initially when the water intrusion incident occurs and reviewed periodically during the remediation phase. Adjust the risk category, as is appropriate, during the WIMM Program related work. Use the Infection Control Risk Assessment Form (ICRA) to document the patient risk group and corresponding work practices selected for remediation. **(*See Section II Appendix I: ICRA)***.

1.4 Step Four: Determine the Class of Response:

Based upon the Water Intrusion Assessment performed (Step Two) and the Patient Risk Assessment (Step Three), determine the class of response (W 1-3) that will be utilized to respond to the water intrusion incident. Use the matrix below to identified the responses for water intrusion (See *Paragraph 1.4.1)*

NOTE: VHA employees and contractors performing water intrusion responses must receive training that includes:

- the health hazards of contaminant being remediated (i.e. mold, biological hazards, medical waste);
- additional hazards and contaminants present at the site (electrical, asbestos, lead, confined space, etc.)
- proper use of personnel protective equipment; and,
- remediation methods, and methods and means to minimize exposure.

In addition, if respiratory protection is assigned, training that satisfies the requirement of OSHA Respiratory Protection Standards (29CFR1910.134) must be provided.

1.4.1 Step Five: Water Intrusion Response Procedures:

There are 3 classes of response procedures that can be used to manage water intrusion. The selection of the procedure is based on the type of water intrusion (Category I, Category II and Category III) and the patient risk group(s). The intent of the water intrusion response activities is to recover water and promote drying of the worksite to maintain the health and safety of facility staff and patients minimize the mold growth and damage to building components.
To determine the appropriate WIMM Response Procedures, match the water intrusion type (Category I, Category II, and Category III) with the Patient Risk Group (Low, Medium, High, or Highest). Use the *Response Procedures for Water Type Matrix* below to determine the Class of Procedures to follow. The WIMM Response Procedures are predicated on the length of time the water intrusion has existed and the absence of visible mold growth or odor (< 48 hrs. or > 48 hrs without mold growth). The specific procedures for each water type are found in ***Section II. Appendix II through IV.***

	Response Procedures For Water Type Matrix		
Patient Risk Group	Category I (Clean Water)	Category II (Gray Water)	Category III (Black Water)
Low Risk	W-1	W-2	W-3
Medium Risk	W-1	W-2	W-3
High Risk	W-1	W-3	W-3
Highest Risk	W-2	W-3	W-3

2.0 Step Six: Close-out Investigation

After completion of restoration activity, a follow-up investigation should be conducted to assure effective restoration and identify any additional WIMM activities that may need to occur. It is important to fully document all corrective measures that were completed. To closeout each incident, the WIMM Program Leader should ensure the following are documented:
The close out investigation should include:

- Review completion of risk assessment and response procedures on the ICRA form;
- Visual inspection and restoration of the worksite and building components;
- Interview of occupants (health symptoms) or patient care (IC);
- Perceptions of odors and air quality; and,
- Additional updates to staff as necessary.

3.0 Step Seven: Process Evaluation

A process evaluation should be conducted following project close out for WIMMS program improvement.

- Methods to reduce impact on patient or staff operations as a result of the response;
- Recommendations for additional WIMMS response staff training; and,
- Recommendations for WIMMS process flow and worksite coordination.

All close-out documentation should be retained for no longer than 7 years, unless legal or regulatory requirements mandate a longer retention period.

Section II. Appendix I - Infection Control Risk Assessment Form

Type of ICRA: **Water Intrusion and Mold**					Permit No:
Location of Water Intrusion or Mold:					Project Start Date:
Project Coordinator:					Estimated Duration:
Response Team Performing Work:					Permit Expiration Date:
Site supervisor:					Telephone:
YES	**NO**	**WATER INTRUSION: < 48 hours or > 48 without mold**	**YES**	**NO**	**INFECTION CONTROL RISK GROUP**
		CATEGORY I: Clean Water			GROUP 1: Low Risk
		CATEGORY II: Gray Water			GROUP 2: Medium Risk
		CATERGORY III: Black Water			GROUP 3: High Risk
					GROUP 4: Highest Risk
YES	**NO**	**AMOUNT OF MOLD IDENTIFIED**	**YES**	**NO**	**INFECTION CONTROL RISK GROUP**
		Less than 10 square feet:			GROUP 1: Low Risk
		10 - 30 square feet:			GROUP 2: Medium Risk
		30-100 square feet:			GROUP 3: High Risk
		Greater than 100 square feet			GROUP 4: Highest Risk
		HVAC System			

W- 1 **Date** **Initial**	1. Control site access; Identify and remove source of water intrusion 2. Contain water to limited area. 3. Protect components, furnishings, etc from direct contact with water. 4. Extract water from all locations impacted by water intrusion.	5. Determine actions to remediate and restore damaged materials. 6. Discard all unsalvageable contents and furnishings promptly.
W-2 **Date** **Initial**	1. Control site access; Evacuate high-highest risk patients 2. Identify and remove source of water intrusion 3. Contain water to limited area. 4. Seal supply and return air vents. 5. Redirect and restrict access to affected areas to minimize cross contamination from affected areas. 6. Protect or remove contents in the area from direct contact with water.	7. Remove solid matter and extract standing water. 8. Discard or bag for cleaning saturated materials without cross-contaminating unaffected areas. 9. Decontaminate hard surface materials with EPA-approved disinfectant. 10. Determine actions needed to remediate and restore damaged and/or contaminated materials. Use fans for drying; if necessary.
W-3 **Date** **Initial**	1. Control site access, Evacuate Medium-Highest risk patients 2. Identify and remove source of water intrusion 3. Contain water to limited area. 4. Seal supply and return air vents. 5. Redirect and restrict access to affected areas to minimize cross contamination from affected areas. 6. Protect and remove contents in the area from direct contact with water.	7. Remove solid matter and extract water from all impacted locations. 8. Discard all absorbent, saturated materials promptly. 9. Decontaminate sewage-damaged hard surface materials with EPA-approved disinfectant. 10. Use fans for drying and HEPA vacuum. Determine actions needed to complete remediation.

Additional Requirements:

ATTENDEE SIGNATURES _____ _____ _____ _____	**ATTENDEE SIGNATURES** _____ _____ _____ _____
Date:	Exceptions/Additions to this permit are noted by attached memoranda. Date:

M - 1	1. Identify and remove any source of water intrusion 2. Remediation must be performed by appropriately trained staff using respiratory protection and PPE. 3. Restrict access to control work site entry. 4. Use work practices that minimize mold disturbance.	5. Remove contaminated materials from building in sealed plastic bags. 6. Dispose of moldy materials in exterior dumpster. Bag sharps objects in a manner that prevents puncture. 7. Remedial worker egress should be thoroughly cleaned and left dry and visibly free from contamination.
M - 2	1. Identify and remove any source of water intrusion 2. Remediation must be performed by appropriately trained staff using respiratory protection and PPE. 3. Restrict access to and keep work area unoccupied, seal unused doors with plastic. Place tacky mats at exit to prevent transporting mold and debris outside the area. 4. Use work practices that minimize mold disturbance. 5. Use HEPA vacuum to capture airborne dust, if generated.	6. Remove contaminated materials from building in sealed plastic bags. 7. Dispose of moldy materials in exterior dumpster. Bag sharps objects in a manner that prevents puncture. 8. Remedial worker egress should be HEPA vacuumed, cleaned with detergent and left dry and visibly free from contamination
M-3 **Date** **Initial**	Identify and remove any source of water intrusion Remediation must be performed by appropriately trained staff using respiratory protection and PPE. Restrict access to and keep work area unoccupied, seal unused doors with plastic. Place tacky mats at exit to prevent transporting mold and debris outside the area. Clean, wet wipe, HEPA vacuum and remove all movable objects from work area. Clean supply and return air grills with HEPA vacuum Seal ventilation ducts/grills with plastic and duct tape.	8. Use HEPA vacuum to capture airborne dust, if generated. 9. Remove contaminated materials in sealed plastic bags and clean outside of bags with HEPA vacuum and wet wiping 10. Dispose of moldy items promptly in exterior dumpster 11. Work area barriers and egress should be HEPA vacuumed, cleaned with detergent and left dry and visibly free from contamination 12. Remove barrier materials carefully to minimize spreading of dirt and debris associated with mold removal.
M 4 **Date** **Initial**	1. Identify and remove any source of water intrusion 2. Remediation must be performed by appropriately trained staff using full-face respiratory protection and PPE. 3. Restrict access to and keep work area unoccupied, completely seal work area with plastic sheeting and duct tape. 4. Use exhaust fan with HEPA filter to create negative pressure, maintain airlocks and decontamination room. 5. Place tacky mats at exit to prevent transporting mold and debris outside the area. 6. Clean, wet wipe, HEPA vacuum and remove all movable objects from work area. 7. Use HEPA vacuum to capture airborne dust, if generated.	8. Remove contaminated materials in sealed plastic bags and clean outside of bags with HEPA vacuum. Wet wipe bags in the decontamination chamber prior to transport area outside building. 9. Contained area and decontamination room should be HEPA vacuumed and cleaned with damp cloth prior to removal of isolation barriers. 10. Maintain containment and negative pressure until adequate cleaning is validated and all visible dust is removed. 11. Remove barrier materials carefully to minimize spreading of dirt and debris associated with mold removal.
M 5 **Date** **Initial**	Remediation should be conducted by qualified contractor or fully trained staff using full respiratory protection and PPE. Securely seal (isolate) affected HVAC section to ensure no air movement in the affected area. Cover work area with plastic and seal with duct tape. Use dust suppression methods during remediation. Remove all mold growth supporting materials that cannot be cleaned. Seal in plastic bags and dispose promptly in exterior dumpster. Transport debris during hours of least activity and along the most direct, least congested route.	7. Clean work area and surrounding area with HEPA vacuum, damp cloth and/or mop and detergent solution. 8. Area should be left dry and visibly free from contamination. For areas > 30 feet, in addition,: 1. Use plastic sheeting to completely isolate work area HVAC, 2. Use HEPA filter exhaust fan to create negative pressure. 3. Strongly consider dismantling and disposal of all duct work with significant growth.

Additional Requirements:

ATTENDEE SIGNATURES _____ _____ _____ _____	**ATTENDEE SIGNATURES** _____ _____ _____ _____
Date:	Exceptions/Additions to this permit are noted by attached memoranda. Date:

Section II. Appendix II: Water Intrusion Work Practice Level W-1

Initial Water Removal:
Contain the extent of water intrusion to the smallest area possible and strive to dry the area within 48 hours of the occurrence.

1. Identify and remove source of water intrusion.
2. Contain water to limited area
3. Redirect and restrict access to the affected area(s) to prevent slip/falls and prevent tracking to unaffected areas.
4. Protect structural components (e.g. electrical, furnishings, other area contents, etc.) from direct contact by floor berms, plastic sheeting or relocation. Take measures to relocate items from the water source or remove items from the area.
5. Extract water from all building systems or components, including HVAC systems, wall cavities, flooring, plumbing and electrical chases.
6. Extracted water can be disposed down the sanitary drain.
7. Asbestos-containing materials (ACM) or lead-based paint (LBP) impacted by water intrusion require removal, disposal, and/or repair. The Asbestos Program Manager must be contacted to further evaluate conditions and determine appropriate response actions. The clean-up, repair, removal, and/or disposal of ACM must be performed by a qualified asbestos abatement staff or contractor.

Post Initial Response Assessment Procedures:
1. Determine actions to remediate and restore damaged materials
2. Discard all unsalvageable contents and furnishings promptly.
3. Communicate results of response actions back to the WIMM Program Team.

Restoration:
Throughout the restoration process, anticipate secondary damage and attend to structural components that may require drying, demolition and/or replacement. These components include, but are not limited to:

- ceiling (tiles);
- flooring (carpet & tile)
- walls (gypsum board);
- built-in furnishings and fixtures;
- insulation; and,
- wood.

Following demolition, debris removal, and site drying, building components shall be surveyed for acceptable moisture content prior to structural repairs and enclosure. Any item not achieving acceptable moisture content within 48-hours of site drying, must be re-evaluated for further drying and potential development of mold growth.

Restoration processes can be applied to the following:

1. **Non-Porous Surfaces and Hard Surfaces and Floors:**
   - remove water as indicated above and mop with floor cleaner.

2. **Overhead fixtures and equipment with trapped water:**
   - open to air, wipe down and dehumidify.

3. **Porous Surfaces:**

Carpet / Textiles / Fibrous Coverings

- determine salvageable status;
- if possible, disengage carpet and remove pad;
- secure carpet to original tack strips and/or elevate without pad and apply drying procedures (i.e. fans/dehumidification);
- check floor and carpet moisture content and re-install carpet when dried; and,
- complete final carpet cleaning to limit microbial growth and development of odors.

Wallboard / Hard-line Ceilings: IMPORTANT ensure all electrical and supply conveyance systems are de-energized, and then perform the following:

- if insulation is present remove affected area;
- remove and replace insulation and wallboard after applying drying procedures to cavity;
- in the absence of insulation, open areas (ports) per stud spacing to ventilate;
- if flooded, remove all sheetrock to 6 inches above the high water mark;
- apply drying procedures; and,
- patch/paint over wall ports.

Pipe Insulation (overhead):

- open the area to ventilate space;
- remove pipe insulation;
- apply drying procedures to space;
- replace pipe insulation with new material; and,
- replace coverings.

Drop Ceilings:

- replace wet ceiling tiles.

Paper / Files:

- To be determined based on scenario i.e. amount of water, importance of files. ***See Section I. Appendix III***

Furniture and Accessories

- To be determined based on scenario i.e. amount of water, value of item, etc.

Close-out Investigation

Complete Follow-up Investigation per ***Section II paragraph 2.0*.**

Process Evaluation

Complete Close-out documentation per ***Sections II paragraph 3.0***

Appendix III: Water Intrusion Work Practices Level W-2

Areas contaminated with gray water pose a potential threat to human health. The severity of health risk depends on the extent, content, and degree of water contamination penetration. Technicians performing Category II response to water intrusions must be trained in the following areas:

- OSHA Hazard Communication (OSHA 29CFR 1910.1200) (CCR Title 8 Section 5194);
- Bloodborne Pathogens prevention and use of personal protective equipment (PPE) in accordance with 29 CFR 1910.132 and 134 if applicable;
- Use of disinfectants; and,
- Use of response equipment.

All persons working in and around Category II (Gray) water during the initial stages of response and prior to completion of cleaning and restoration should be equipped with PPE including but not limited to the following:

- industrial-grade rubber gloves;
- full eye/splash protection (goggles);
- protective suit;
- rubber boots; and,
- hard hat if overhead hazards exist.

Initial Water Removal:

1. Identify and remove source of water intrusion.
2. Contain water to limited area.
3. Redirect and restrict access to affected areas to minimize cross contamination from affected areas.
4. Block off and seal supply and return air vents.
5. Evacuate high or highest risk patients from area.
6. Protect structural components (e.g. furnishings, other area contents, etc.) from direct contact with water. Take measures as quickly and as safely as possible to remove all removable items from the area.
7. Remove solid matter and extract water from all locations that have been impacted. Vacuums must be equipped with HEPA filters.
8. Decontaminate damaged hard surface materials with EPA-approved disinfectant to reduce microbial load.
9. Excess water and organic matter must be physically removed.
10. Extract water from all locations that have been impacted by water intrusion including building systems or components including, but not necessarily limited to: HVAC and other air handling systems, wall cavities, flooring systems and plumbing and electrical chases.
11. Discard all highly absorbent, saturated materials promptly without cross-contaminating unaffected areas.

12. Extracted wastewater can be discharged into a sanitary sewer.

13. Asbestos-containing materials (ACM) or lead-based paint (LBP) impacted by water intrusion require removal, disposal, and/or repair. The Asbestos Program Manager must be contacted to further evaluate conditions and determine appropriate response actions. The clean-up, repair, removal, and/or disposal of ACM must be performed by a qualified asbestos abatement staff or contractor.

Post Initial Response Assessment Procedures:

1. Determine actions needed to remediate and restore damaged and/or contaminated materials.
2. Before handling, decontaminate sewage-damaged materials spray or immerse in an EPA-approved disinfectant to reduce microorganisms.
3. Communicate results of response actions back to the WIMM Program Management Team.

Restoration:

Anticipate secondary damage and attend to structural components that may require drying, demolition and /or replacement. These components may include, but are not limited to:

- ceiling (tiles);
- flooring (carpet & tile)
- walls (gypsum board);
- built-in furnishings and fixtures;
- insulation; and,
- wood.

All staff handling contaminated components must wear the appropriate PPE. Following demolition, debris removal, and site drying, building components shall be surveyed for acceptable moisture content prior to structural repairs and enclosure. Any item not achieving acceptable moisture content within 48-hours of site drying, must be re-evaluated for further drying and potential development of mold growth. Use a licensed contractor to remove, transport and properly dispose of unsalvageable materials (i.e. carpet, cushion, drywall, and structural wood) otherwise special arrangements that comply with all applicable laws may be required. Hazardous materials, such as asbestos and lead, will require special handling and disposal procedures.

Restoration processes can be applied to the following:

1. Non-Porous Surfaces, Hard Surfaces and Floors:

- remove water as indicated above;
- remove and dispose if penetration is observed (buckling, warping, or bubbling),;
- clean and disinfect sub-floor with EPA-approved disinfectant; and,
- flush clean cracks if floor is intact, (pressure wash) with EPA-approved disinfectant and recover with HEPA filtered extraction unit (use caution and adequate controls to minimize the distribution of bioaerosols and fluid contaminants).

Overhead Fixtures (trapped water):

- open to air and wipe down with EPA-approved disinfectant and dehumidify.

Porous Surfaces: IMPORTANT ensure all electrical and supply conveyance systems are de-energized

Carpet / Textiles / Fibrous Coverings:

- determine salvageable status;
- clear the area to expose wet surfaces (inspect and clean items; prevent cross contamination);
- disengage carpet, remove and dispose of pad;
- re-engage carpet without pad, and/or elevate and apply drying procedures (i.e. fans/dehumidification);
- check floor and carpet moisture content and re-install carpet when dried;
- thoroughly clean carpet to limit microbial growth and development of odors; and,
- if needed, replace with in kind flooring.

Wallboard/Hard- Ceilings:

- remove to nearest seam past affected area if insulation is present;
- remove and replace insulation and wallboard after applying drying procedures;
- in the absence of ventilation, open areas (ports) per stud spacing to ventilate (assess for asbestos content);
- if flooded, remove all sheetrock to 6 inches above the high water mark;
- apply EPA-approved disinfectant to exposed surfaces;
- apply drying procedures;
- patch/paint over wall ports; and,
- install new drywall as needed.

Suspended Ceilings

- remove and replace all wet ceiling tiles; and,
- wipe supports with EPA-approved disinfectant.

Pipe Insulation

- assess condition (integrity and ACM);
- open to ventilate space;
- remove contaminated pipe insulation;
- wipe structure with EPA-approved disinfectant;
- apply drying procedures;
- replace pipe insulation with new material; and,
- replace coverings.

Paper / Files

- Dispose of all highly absorbent saturated materials.

Follow-up Investigation
Complete Follow-up Investigation per ***Section II paragraph 2.0*.**

Final Response Close-out and Process Evaluation:

Complete Close-out documentation per ***Sections II paragraph 3.0 through 3.2***

Appendix IV: Water Intrusion Work Practices Level W-3

Areas contaminated with Category III (Black) water pose a potential threat to human health. The severity of health risk depends on the extent, content, and degree of water contamination penetration. Technicians performing Category III response to water intrusions must be trained in the following areas:

- OSHA Hazard Communication (OSHA 29CFR 1910.1200) (CCR Title 8 Section 5194)
- Bloodborne Pathogens prevention and use of personal protective equipment (PPE) in accordance with 29 CFR 1910.132 and 134 if applicable;
- Use of disinfectants; and,
- Use of response equipment.

All persons working in and around Category III (Black) water during the initial stages of response and prior to completion of cleaning and restoration should have current immunizations for Hepatitis B and must be equipped with PPE including, but not necessarily limited to the following:

- industrial-grade rubber gloves;
- full eye/splash protection (goggles);
- protective suit;
- rubber boots; and,
- hard hat if overhead hazards exist.

Initial Water Removal:

1. Identify and remove source of water intrusion.
2. Contain water to limited area.
3. Redirect and restrict access to affected areas to minimize cross contamination from affected areas.
4. Block off and seal supply and return air vents.
5. Evacuate low to highest risk patients from area.
6. Protect structural components (e.g. furnishings, other area contents, etc.) from direct contact with water. Take measures as quickly and as safely as possible to remove all removable items from the area.
7. Remove solid matter and extract water from all locations that have been impacted by water intrusion including building systems or components including, but not necessarily limited to: HVAC and other air handling systems, wall cavities, flooring systems, crawlspaces, plumbing and electrical chases. Vacuums must be equipped with HEPA filters.
8. Decontaminate hard surface materials with EPA-approved disinfectant to reduce microbial load.
9. Decontaminate materials before handling. Spray or immerse in an EPA-approved disinfectant to reduce microorganisms.
10. Discard all contaminated (saturated) materials promptly without cross-contaminating unaffected areas.

11. Discharge extracted wastewater into a sanitary sewer.

12. Asbestos-containing materials (ACM) or lead-based paint (LBP) impacted by water intrusion require removal, disposal, and/or repair. The Asbestos Program Manager must be contacted to further evaluate conditions and determine appropriate response actions. The clean-up, repair, removal, and/or disposal of ACM must be performed by a qualified asbestos abatement staff or contractor.

Post Initial Response Assessment Procedures:

1. Determine actions needed to remediate and restore damaged and/or contaminated materials.
2. Communicate results of response actions back to the WIMM Program Team.

Restoration:

Throughout the restoration process, anticipate secondary damage and attend to other structural components that may require drying, demolition and/or replacement. These components may include, but are not limited to:

- flooring (carpet & tile);
- walls (gypsum board);
- built-in furnishings and fixtures;
- insulation; and,
- wood.

All personnel involved with restoration must wear the appropriate PPE. After demolition, debris removal, and assuring thorough drying, qualified and properly licensed persons should perform authorized and necessary structural repairs, reconstruction or cleaning.

Use a licensed contractor to remove, transport and properly dispose of unsalvageable materials (i.e. carpet, cushion, drywall, and structural wood) otherwise special arrangements that comply with all applicable laws may be required. All staff handling contaminated components must wear the appropriate PPE. Following demolition, debris removal, and site drying, building components shall be surveyed for acceptable moisture content prior to structural repairs and enclosure. Any item not achieving acceptable moisture content within 48-hours of site drying, must be re-evaluated for further drying and potential development of mold growth.

The restoration process can be applied to the following materials:

1. Non-Porous Surfaces and Hard Surfaces and Floors:

- remove water as indicated above;
- remove and dispose if penetration is observed (buckling, warping, or bubbling);
- clean and disinfect subfloor with EPA-approved disinfectant; and,
- flush clean cracks if floor is intact, (pressure wash) with EPA-approved disinfectant and recover with HEPA filtered extraction unit (use caution and adequate controls to minimize the distribution of bioaerosols and fluid contaminants).

2. Overhead Fixtures (trapped water):

- open to air and wipe down with EPA-approved disinfectant/ dehumidify.

3. Porous Surfaces: IMPORTANT ensure all electrical and supply conveyance systems are de-energized

- carpet / textiles / fibrous coverings;
- clear the area to expose wet surfaces (treat moved items and prevent cross contamination);
- disengage and remove carpet and pad and dispose; and,
- replace with in kind floor covering.

Wallboard / Hard Ceilings:

- remove and dispose all material (including insulation) to nearest seam past affected area;
- apply EPA-approved disinfectant to exposed surfaces (studs and plates);
- if flooded, remove all sheetrock to 6 inches above the high water mark;
- apply drying procedures; and,
- install new drywall.

Pipe Insulation

- assess condition (integrity and ACM);
- open to ventilate space;
- remove pipe insulation;
- disinfect pipe by wiping down with EPA-approved disinfectant;
- apply drying procedures;
- replace pipe insulation with new material; and,
- replace coverings.

Suspended Ceilings

- remove and replace all wet ceiling tiles; and,
- disinfect supports by wiping with EPA-disinfectants.

Paper / Files

- dispose of all highly absorbent saturated materials.

Close-out Investigation

Complete Follow-up Investigation per ***Section II paragraph 2.0.***

Process Evaluation:

Complete Close-out documentation per ***Sections II paragraph 3.0***

INSERT TAB HERE FOR SECTION III:
Mold Growth Procedures

1.0 Mold Growth Procedures Overview

The procedures in this section provide a step-by-step process for responding to mold growth concerns. The process is broken down into 8 essential steps:

1. Report of mold growth concern to a member of the WIMM Program Team;
2. Assessment of visible mold growth;
3. Determination of Patient Risk Group from 4 potential risk groups;
4. Determination of Class of Response and corresponding Work Practices;
5. Implementation and Completion of Response Action;
6. Post initial response assessment;
7. Close-out investigation; and,
8. Final documentation.

1.1 Step One – Mold Growth Reporting

Whenever visible mold is identified, or other chronically wet conditions (e.g. musty odors, warped flooring) are noted that may indicate that potential mold growth exists, it should be reported to a member of the WIMM Program Team (See ***Section I paragraph 3.2***).

Proper reporting will enable the WIMM Program Lead to ensure appropriate steps can be taken to assess and respond to incidents. The WIMM Program Lead should ensure that staff who typically receive reports or identify mold growth are aware of the reporting requirement. This should include regional/local EH&S professionals, Facility Engineers, Infection Control Professionals, Capital Projects/ Construction Managers, and Facility Administrators.

1.2 Step Two – Mold Growth Assessment

The WIMM Program Team Lead or designee should assess the mold growth to determine the team members that need to be involved and the appropriate response actions that need to be implemented. When the presence of mold growth is reported to the WIMM Program Team, the WIMM Program Lead should ensure that a proper assessment is performed. Additional information to assist in conducting inspections and assessing the presence of mold is presented in ***Section I. Appendix III: Assessment Guidelines and Checklist.***

The WIMM Program Lead is encouraged to involve the Infection Control professional for all incidents. Ensure that approval is obtained for all incidents requiring a Mold Class of response Level M-3, M-4, or M-5 Response Procedures.

The assessment should determine:

- the source of any water intrusion and when the intrusion occurred;
- the presence and extent of mold growth;
- the area of the facility and patient population(s) that are potentially impacted;
- the presence of mold growth in the HVAC system; and,

- the types of materials impacted by mold growth or water intrusion.

NOTE: It is important to determine if water intrusion incidents can be remediated within 48 hours of when the water intrusion first occurred. Water intrusion incidents that can be remediated within 48 hours should be mitigated in accordance with the water intrusion procedures. Water intrusion incidents that cannot be cleaned up within 48 hours of occurrence should be assessed to determine if mold growth is a concern. If mold growth is determined to be associated with the water intrusion, then it should be responded to in accordance with WIMM Program mold remediation procedures.

Sampling
Air, bulk, and wipe sampling for fungi are not recommended to be part of a routine visual assessment and M-1 level mitigation for low and medium risk patient environments. Identification of visual mold species is required for M2-4 level mitigation through surface/wipe/swab sampling.

The assessment of staff (or patient) health symptoms and the need for sampling should be made in concert with an occupational physician. Decisions about appropriate remediation and response strategies can usually be made on the basis of a visual inspection. In general, sampling strategies to address health symptoms in rooms and units adjacent to the M1-5 worksite should include outdoor air and non-complaint (control) areas. Sampling without a specific purpose greatly increases the chances of generating useless data and is generally to be avoided. Some issues to consider when developing a sampling strategy to address health symptom complaints include:

- The success of species culture is determined by the media type, incubation temperature and viability. Only those viable species that can successfully compete in the collected environmental sample will be identified by plate culture. In contrast, direct ID by tape or bulk sample will identify viable and non-viable genera, but not species. Direct ID samples are highly variable from surface to surface and are not related to airborne exposure.
- An incubation temperature of 18 to 25C is most often used for culture. More complex sampling strategies would include duplicate plates incubated at 35 to 40 degrees.
- Plate culture growth should be between 10 cfu/plate, the lower detection limit, and 1 cfu per square centimeter, the upper detection limit. Overloading the sample plate will decrease competition for slower growing species. For a 78 square centimeter plate, run the sampler at 30 to 60 seconds, for highly contaminated rooms, and about 5 minutes for control samples.
- Only a laboratory with American Industrial Hygiene Association EMLAP accreditation must be used for sample analysis. ***See Section I. Appendix II: Guidelines for Selecting Outsource Consultants and Contractors.***

1.3 Step Three: Patient Risk Assessment

Patient Risk Groups

Use the table below as a general guideline to evaluate the risk to the patient population potentially impacted by mold growth. The intent of determining the patient risk groups is to protect immune deficient patients, visitors and employees that are occupying the affected area and the adjacent area(s) where the response action is planned.

Identify the Patient Risk Group that will be affected. Factors to consider when determining the patients' risk include: the immune status of the patient(s), the degree of invasive procedures being conducted with the patient and/or the potential length of exposure time in or adjacent to the affected area (for example the comparatively greater exposure time in the hospital setting vs. outpatient care setting).

If more than one risk category will be affected, select the higher risk group.

Low Risk	Medium Risk	High Risk	Highest Risk
• Office Areas • Admin or MD offices • Conference/Education Rooms	• Cardiology • Echo-cardiography • Endoscopy • Nuclear Medicine • Physical Therapy • Radiology / MRI • Minor Outpatient Procedure Rooms • Ob-Gyn • Outpatient Pharmacy • Primary Care • Medical and Surgical sub-specialties	• CCU • Emergency Room • Labor & Delivery • Laboratories (specimen) • Newborn Nursery • Outpatient Surgery • Pediatrics (In and Out) • Pharmacies that do compounding/mixing • Post Anesthesia Care Unit • Surgical Units (inpatient) • Respiratory Therapy	• Areas providing care to immuno-compromised patients (inpatient) • Burn Unit • Cardiac Cath Lab • Central Sterile Supply • Intensive Care Units (newborn, pediatric and adult) • Medical Unit (inpatient) • Negative Pressure Isolation Rooms (inpatient) • Oncology (in and out patient) • Operating Rooms, including C-Section Rooms • Infusion/dialysis clinics

Determine the WIMM risk category, and proper implementation of the corresponding work practices. Review work periodically, and adjust the risk category as is appropriate during the WIMM Program related work. Use the Infection Control Risk Assessment Form (ICRA) for documentation purposed (*See Section III Appendix I: ICRA***).**

1.4 Step Four: Determine Class of Response

Based upon the assessment performed in Step Two and the Patient Risk Assessment performed in Step Three, the class of response can be determined. To identify the appropriate class of responses use the Mold Response Matrix below in Paragraph 1.4.1.

[VHA facility] staff and contractors performing mold responses must receive training that includes:

- the health hazards of contaminant being remediated (i.e. mold, biological hazards, medical waste);
- additional hazards and contaminants present at the site (electrical, asbestos, lead, confined space, etc.);
- appropriate use of personnel protective equipment;
- remediation methods and practices to minimize exposure; and,
- OSHA hazard communication, asbestos and lead based standards.

In addition, if respiratory protection is assigned, training that satisfies the requirement of the OSHA Respiratory Protection Standards must be provided.

1.4.1 Step Five: Mold Response Work Practices

There are 5 classes of work practices that can be used to remediate mold growth. The Classes are based on the square footage of mold growth (M1-4) or the presence of mold in an HVAC system (M5). Remediation of mold has the potential for uncontrolled airborne release with transfer to adjacent areas. Initial inspections should be conducted cautiously to avoid disturbing contaminated building structures.

A survey of room pressurization (smoke tubes) must be conducted prior to any actions. All response work practices must be conducted in a negative air pressure environment relative to the adjacent work areas. Initially, supply and return vents should be sealed to prevent HVAC contamination. Exhaust vents (100% exhaust to outdoors) may be used upon approval of the WIMM project team. Any non-filtered exhaust effluent should be reviewed for possible re-entry into the building through open windows or intakes. Room pressurization should be monitored during work procedures, and work halted for any event that may cause a disruption of pressure differentials (circuit breaker trip).

Response work practices conducted on multiple room worksites should be sequenced to prevent cross-contamination by air flow or work procedures. Rooms should be prioritized by the distance from worksite entry, direction of air flow or the level of contamination. Once cleaned, rooms may be sealed with plastic on doorways. The specific work practices are presented in Section III. Appendix II through VI.

To determine the appropriate response procedures to implement for identified mold growth, match the square footage amount of mold that has been identified with the Patient Risk Group Chart (Low, Medium, High, or Highest). Use the following Mold Response Matrix**. Note**: All molds in the HVAC system should be remediated using Class M-5.

If asbestos-containing materials (ACM) or lead-based paint (LBP) have been impacted by mold growth additional requirements for removal and disposal may be necessary are necessary. If ACM/LBP is known or suspected to have been impacted, the Asbestos Program Manager should be included as a WIMM team member. The clean-up, repair, removal, and disposal of ACM/LBP must be performed by a qualified asbestos abatement contractor in accordance with the VHA Policy, Federal, State, and local asbestos abatement regulations. Employees must be properly trained and licensed for the inspection and removal of ACM/LBP.

	Mold Response Matrix				
Patient Risk Group	Less than 10 square feet	10 to 30 square feet	30 to 100 square feet	Greater than 100 square feet	HVAC System
Low Risk	M-1	M-2	M-3	M-4	M-5
Medium Risk	M-1	M-2	M-3	M-4	M-5
High Risk	M-3	M-3	M-4	M-4	M-5

Highest Risk	M-3	M-4	M-4	M-4	M-5

1.4.2 Cleaning Mold Affected Items

Non-porous (e.g., metals, glass, and hard plastics) and semi-porous materials that are sound and visibly moldy may be cleaned and reused. Mold-contaminated surfaces should be sprayed with a soap solution. The visible mold contamination may then be removed by repeated wet wiping. The surface should be sprayed with EPA-approved disinfectant prior to the final wiping. Building structural items, such as wood, concrete, and steel must be evaluated before removal.

Porous materials such as ceiling tile, insulation, and wallboards with more than a small area of contamination should be removed and discarded. Porous materials (e.g., wallboard and fabrics) that can be effectively cleaned may be reused, but should be discarded if possible. Materials should be sprayed with a soap solution to reduce the release of contamination during handling. A professional restoration consultant should be contacted when restoring porous materials of significant value (e.g. art work) with more than a small area of fungal contamination. All materials to be reused should be dry and visibly free from mold. Routine inspections should be conducted to confirm the effectiveness of remediation work.

2.0 Step Six: Close-out Investigation

After completion of restoration activity, a follow-up investigation of any mold growth should be conducted to assure effective restoration and identify any additional WIMM activities that may need to occur. The WIMM Program Team should assure that a final inspection, as prescribed in the response procedures as specific work practices (M-1, M-2, M-3, M-4, M-5) is completed and documented. The inspection should verify that all elements of the project have been completed as intended, the final clean up of the area has been accomplished, the area is fully restored, and ready for use. It is important to fully document all corrective measures that were completed. The follow-up investigation should include:

- Review completion of risk assessment and response procedures on the ICRA form;
- Visual inspection of the previously affected area(s);
- Interview of occupants (health symptoms) or patient care (IC);
- Perceptions of odors and indoor air quality; and,
- Additional updates to staff as necessary.

3.0 Steps Seven: Process Evaluation

The WIMM Program Team should review and verify the effectiveness of the process that was used for establishing the ICRA and Mold Growth Response Measures. The WIMM Program Team should identify and document any key findings that were achieved during the project that could be used to improve the outcomes or processes in future projects. A process evaluation should be conducted following project close out for WIMMS program improvement.

- Methods to reduce impact on patient or staff operations as a result of the response;
- Recommendations for additional WIMMS response staff training; and

- Recommendations for WIMMS process flow and worksite coordination.

All close-out documentation should be retained for no longer than 7 years, unless legal or regulatory requirements mandate a longer retention period.

Section III. Appendix I - Infection Control Risk Assessment Form

Type of ICRA: **Water and Mold**					Permit No:
Location of Water Intrusion or Mold:					Project Start Date:
Project Coordinator:					Estimated Duration:
Response Team Performing Work					Permit Expiration Date:
Supervisor:					Telephone:
YES	**NO**	**WATER INTRUSION: < 48 hours or > 48 without mold**	**YES**	**NO**	**INFECTION CONTROL RISK GROUP**
		CATEGORY I: Clean Water			GROUP 1: Low Risk
		CATEGORY II: Gray Water			GROUP 2: Medium Risk
		CATERGORY III: Black Water			GROUP 3: High Risk
					GROUP 4: Highest Risk
YES	**NO**	**AMOUNT OF MOLD IDENTIFIED**	**YES**	**NO**	**INFECTION CONTROL RISK GROUP**
		Less than 10 square feet:			GROUP 1: Low Risk
		10 to 30 square feet:			GROUP 2: Medium Risk
		30-100 square feet:			GROUP 3: High Risk
		Greater than 100 square feet			GROUP 4: Highest Risk
		HVAC System			

W- 1 **Date** **Initial**	1. Identify and remove source of water intrusion 2. Contain water to limited area. 3. Protect components, furnishings, etc from direct contact with water. 4. Extract water from all locations impacted by water intrusion.	5. Determine actions to remediate and restore damaged materials. 6. Discard all unsalvageable contents and furnishings promptly.
W-2 **Date** **Initial**	1. Identify and remove source of water intrusion 2. Contain water to limited area. 3. Block off and seal supply and return air vents. 4. Redirect and restrict access to affected areas to minimize cross contamination from affected areas. 5. Evacuate high or highest risk patients from area. 6. Protect or remove contents in the area from direct contact with water.	7. Remove solid matter and extract water from all impacted locations. Vacuums must be equipped with HEPA filters. 8. Decontaminate damaged hard surface materials with approved disinfectant to reduce microbial load. 9. Discard all highly absorbent, saturated materials promptly without cross-contaminating unaffected areas. 10. Determine actions needed to remediate and restore damaged and/or contaminated materials.
W-3 **Date** **Initial**	1. Identify and remove source of water intrusion 2. Contain water to limited area. 3. Block off and seal supply and return air vents. 4. Redirect and restrict access to affected areas to minimize cross contamination from affected areas 5. Evacuate high or highest risk patients from area. 6. Protect and remove contents in the area from direct contact with water.	7. Remove solid matter and extract water from all locations that have been impacted. Vacuums must be equipped with HEPA filters. 8. Discard all absorbent, saturated materials promptly. 9. Decontaminate sewage-damaged hard surface materials with approved disinfectant to reduce microbial load. 10. Remove all damaged porous materials. 11. Determine actions needed to complete remediation.

Additional Requirements:

ATTENDEE SIGNATURES	**ATTENDEE SIGNATURES**
_____ _____ _____ _____	_____ _____ _____ _____
Date:	Exceptions/Additions to this permit are noted by attached memoranda. Date:

M - 1	1. Identify and remove any source of water intrusion 2. Remediation must be performed by appropriately trained staff using respiratory protection and PPE. 3. Restrict access to and keep work area unoccupied. 4. Use work practices that minimize mold disturbance.	5. Remove contaminated materials from building in sealed plastic bags. 6. Dispose of moldy materials in exterior dumpster. Bag sharps objects in a manner that prevents puncture. 7. Remedial worker egress should be thoroughly cleaned and left dry and visibly free from contamination.
M - 2	1. Identify and remove any source of water intrusion 2. Remediation must be performed by appropriately trained staff using respiratory protection and PPE. 3. Restrict access to and keep work area unoccupied, seal unused doors with plastic. Place tacky mats at exit to prevent transporting mold and debris outside the area. 4. Use work practices that minimize mold disturbance. 5. Use HEPA vacuum to capture airborne dust, if generated.	6. Remove contaminated materials from building in sealed plastic bags. 7. Dispose of moldy materials in exterior dumpster. Bag sharps objects in a manner that prevents puncture. 8. Remedial worker egress should be HEPA vacuumed, cleaned with detergent and left dry and visibly free from contamination
M-3 **Date** **Initial**	1. Identify and remove any source of water intrusion 2. Remediation must be performed by appropriately trained staff using respiratory protectio n and PPE. 3. Restrict access to and keep work area unoccupied, seal unused doors with plastic. Place tacky mats at exit to prevent transporting mold and debris outside the area. 4. Clean, wet wipe, HEPA vacuum and remove all movable objects from work area. 5. Clean supply and return air grills with HEPA vacuum 6. Seal ventilation ducts/grills with plastic and duct tape.	7. Use HEPA vacuum to capture airborne dust, if generated. 8. Remove contaminated materials in sealed plastic bags and clean outside of bags with HEPA vacuum and wet wiping 9. Dispose of moldy items promptly in exterior dumpster 10. Work area barriers and egress should be HEPA vacuumed, cleaned with detergent and left dry and visibly free from contamination 11. Remove barrier materials carefully to minimize spreading of dirt and debris associated with mold removal.
M 4 **Date** **Initial**	1. Identify and remove any source of water intrusion 2. Remediation must be performed by appropriately trained staff using full-face respiratory protection and PPE. 3. Restrict access to and keep work area unoccupied, completely seal work area with plastic sheeting and duct tape. 4. Use exhaust fan with HEPA filter to create negative pressure, maintain airlocks and decontamination room. 5. Place tacky mats at exit to prevent transporting mold and debris outside the area. 6. Clean, wet wipe, HEPA vacuum and remove all movable objects from work area. 7. Use HEPA vacuum to capture airborne dust, if generated.	8. Remove contaminated materials in sealed plastic bags and clean outside of bags with HEPA vacuum. Wet wipe bags in the decontamination chamber prior to transport area outside building. 9. Contained area and decontamination room should be HEPA vacuumed and cleaned with damp cloth prior to removal of isolation barriers. 10. Maintain containment and negative pressure until adequate cleaning is validated and all visible dust is removed. 11. Remove barrier materials carefully to minimize spreading of dirt and debris associated with mold removal.
M 5 **Date** **Initial**	1. Remediation should be conducted by qualified contractor or fully trained KP staff using full respiratory protection and PPE. 2. Securely seal (isolate) affected HVAC section to ensure no air movement in the affected area. 3. Cover work area with plastic and seal with duct tape. 4. Use dust suppression methods during remediation. 5. Remove all mold growth supporting materials that cannot be cleaned. Seal in plastic bags and dispose promptly in exterior dumpster. 6. Transport debris during hours of least activity and along the most direct, least congested route.	7. Clean work area and surrounding area with HEPA vacuum, damp cloth and/or mop and detergent solution. 8. Area should be left dry and visibly free from contamination. For areas > 30 feet, in addition,: 9. Use plastic sheeting to completely isolate work area HVAC, 10. Use HEPA filter exhaust fan to create negative pressure. 11. Strongly consider dismantling and disposal of all duct work with significant growth.

Additional Requirements:

ATTENDEE SIGNATURES _____ _____ _____ _____	**ATTENDEE SIGNATURES** _____ _____ _____ _____
Date:	Exceptions/Additions to this permit are noted by attached memoranda. Date:

Section III. Appendix II: Mold Management Work Practice Level M-1

[VHA facility] staff performing remediation should receive training on proper clean up methods, personal protection, and potential health hazards. This training can be performed as part of a program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Respiratory protection (N95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134) is recommended. Gloves and eye protection should be worn. Assignment of respiratory protection requires a written respiratory protection program, medical evaluations, and annual training.

a. Identify and remove any source of water intrusion.

b. Restrict access (i.e. close doors) to immediate work area. The immediate work area should be unoccupied

c. Full containment of the work area is not necessary. Work practices should be used that minimize the disturbance of mold so that it does not migrate outside the immediate work area.

d. Work practices to minimize dust generation should be used. Dust suppression methods, such as using wet wiping methods can be effective if small amounts of dust could potentially be generated. However, it is important to minimize water use so that materials are not excessive moist. Also, using a HEPA vacuum when necessary to capture airborne dust at the generation source can be effective.

e. Contaminated materials that cannot be cleaned should be removed from the building in a sealed plastic bag.

f. Moldy materials should be sealed in a plastic bag using duct tape and disposed of in regular trash in exterior dumpster. Sharp objects should be bagged in a manner to prevent puncture, such as using double bags. Try whenever possible to transport debris during the hours of least activity in the building and along the most direct, but least congested route.

g. The work area and areas used by remedial workers for egress should be cleaned with a damp cloth and/or mop and a detergent solution.

h. Visually inspect work area to ensure that it has been left dry and visibly free from contamination and debris. Ensure source of water intrusion has been repaired or eliminated.

i. Complete Follow-up Investigation and Closeout documentation per Sections 6.0 through 7.2 of main document.

Section III. Appendix III: Mold Management Work Practice Level M-2:

Remediation can be conducted by regular building maintenance staff. Such persons should receive training on proper clean up methods, personal protection, and potential health hazards. This training can be performed as part of a program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) and Cal OSHA CCR Title 8 Section 5194.

Respiratory protection (e.g., N95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134) is recommended. Gloves and eye protection should be worn. Assignment of respiratory protection requires a written respiratory protection program, annual fit testing, medical evaluations, and annual training.

a. Identify and remove source of water intrusion.

b. Restrict access (i.e. close doors) to immediate work area. Seal unused doors with plastic and/or duct tape. Keep immediate work area unoccupied. Place tacky mats at the exit to prevent transporting mold and debris outside the immediate work area.

c. Cover the work area with a plastic sheet(s) and seal with duct tape before remediation, to contain dust/debris. Seal return air ducts with plastic and duct tape.

d. Use work practices to minimize dust generation. Dust suppression methods, such as using wet wiping methods can be effective if small amounts of dust could potentially be generated. However, it is important to minimize water use so that materials are not excessive moist.

e. Use a HEPA vacuum when necessary to capture airborne dust at the generation source can be effective.

f. Contaminated materials that cannot be cleaned should be removed from the building in sealed plastic bags. Moldy materials should be sealed in a plastic bag using duct tape and disposed of in regular trash in exterior dumpster. Try whenever possible to transport debris during the hours of least activity in the building and along the most direct, but least congested route.

g. The work area and areas used by remedial workers for egress should be HEPA vacuumed (a vacuum equipped with a High-Efficiency Particulate Air filter) and hard flooring cleaned with a damp cloth and/or mop with a detergent solution.

h. Visually inspect work area to ensure that it has been left dry and visibly free from contamination and debris. Ensure source of water intrusion has been repaired or eliminated.

i. Complete Follow-up Investigation and Closeout documentation per Sections 6.0 through 7.2 of main document

Section III. Appendix IV: Mold Management Work Practice Level M-3:

A qualified contractor or experienced qualified Kaiser Permanente staff should perform the work. Such persons should receive training on proper clean up methods, personal protection, and potential health hazards. This training can be performed as part of a program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200) and Cal OSHA CCR Title 8 Section 5194.

Respiratory protection (e.g., N95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134) is recommended. Gloves and eye protection should be worn. Assignment of respiratory protection requires a written respiratory protection program, annual fit testing, medical evaluations, and annual training.

a. Consult a health and safety professional with experience performing microbial investigations prior to remediation activities to provide oversight for the project.
b. If abatement procedures are expected to generate a lot of dust (e.g., abrasive cleaning of contaminated surfaces, demolition of plaster walls) or the visible concentration of the fungi is heavy (blanket coverage as opposed to patchy), then remediation procedures for Level IV must be followed.
c. Identify and remove source of water intrusion.
d. Clean, wet wipe, HEPA vacuum and remove all objects from the work area if visible mold is in the room. Remove all removable objects prior to beginning remediation of mold.
e. The work area and areas directly adjacent should be covered with a plastic sheet(s) and taped before remediation, to contain dust/debris.
f. Clean supply and return air grills with HEPA vacuum or other methods to remove visible dust.
g. Seal ventilation ducts/grills in the work area and areas directly adjacent with plastic sheeting.
h. The work area and areas directly adjacent should be unoccupied. Further vacating of people from spaces near the work area is recommended for high and highest risk areas.
i. Dust suppression methods, such as using wet wiping methods can be effective if small amounts of dust could potentially be generated. However, it is important to minimize water use so that materials are not excessive moist. Also, using a HEPA vacuum when necessary to capture airborne dust at the generation source can be effective.
j. Contaminated materials that cannot be cleaned should be removed from the building in sealed plastic bags.
k. Moldy items should be sealed in a plastic bag and disposed of in regular trash in exterior dumpster. Debris should be promptly bagged. The outside of bags should be cleaned using a HEPA vacuum and wet wiping before transport outside the work area. Try whenever possible to transport debris during the hours of least activity in the building and along the most direct, but least congested route.
l. Bags should not be allowed to accumulate, and carried outside the building for disposal at least daily.

m. The work area, including the temporary barriers, egress surfaces, and surrounding areas should be HEPA vacuumed and cleaned with a damp cloth and/or mop and a detergent solution. All areas should be left dry and visibly free from contamination and debris.

n. Following the removal of barriers, visually inspect work area to ensure that it has been left dry and visibly free from contamination and debris. Ensure source of water intrusion has been repaired or eliminated.

o. Complete Follow-up Investigation and Closeout documentation per Section 6.0 through 7.2 of main document.

Section III. Appendix V: Mold Management Work Practice Level M-4:

A health and safety professional with experience performing microbial investigations should be consulted prior to remediation activities to provide oversight for the project. The following procedures are recommended:

a. Identify and remove any source of water intrusion.
b. For amounts greater than 100 square feet, personnel trained in the handling of hazardous materials equipped with:
    i. Minimum N95 respirators for amounts less than 100 square feet with minimal dust generation.
    ii. Full-face respirators, P-100 for amounts greater than 100 square feet or when dust will be generated.
    iii. Disposable protective clothing covering both head and shoes
    iv. Gloves
c. Containment of the affected area:
    i. Complete isolation of work area from occupied spaces using plastic sheeting sealed with duct tape (including ventilation ducts/grills, fixtures, and any other openings)
    ii. The use of an exhaust fan with a HEPA filter to generate negative differential inside the contained work area in relation to surrounding area.
    iii. Airlocks and decontamination room
d. Vacate people from spaces immediately adjacent to the work area for highest risk categories.
e. Use dust suppression methods, such as using wet wiping methods can be effective if small amounts of dust could potentially be generated. However, it is important to minimize water use so that materials are not excessive moist. Also, using a HEPA vacuum when necessary to capture airborne dust at the generation source can be effective.
f. Remove contaminated materials that cannot be cleaned from the building in sealed plastic bags.
g. Clean the outside of the bags with a damp cloth and a detergent solution or HEPA vacuumed in the decontamination chamber prior to their transport to uncontaminated areas of the building.
h. Seal moldy materials in a plastic bag with duct tape and dispose of in regular trash in an exterior dumpster. Try whenever possible to transport debris during the hours of least activity in the building and along the most direct, but least congested route.

i. The contained area and decontamination room should be HEPA vacuumed and cleaned with a damp cloth and/or mop and be visibly clean prior to the removal of isolation barriers.

j. The containment and negative pressure should be maintained until a visual inspection is conducted that determines an adequate level of cleanliness, with no visible dust has been achieved. The inspection should be performed by ---using "white glove" methods to wipe surfaces to determine if visible dust is present on surfaces.

k. However, if it is determined that air sampling is to be performed, samples should be collected both prior to the commencement of work and following an acceptable visual inspection. The criteria for acceptable airborne concentrations of fungi is a post visual inspection sample that measures airborne concentrations of fungi below concentrations measured prior to the commencement of work.

l. Following satisfactory inspection, the containment can be dismantled

m. Following the removal of containment barriers, visually inspect work area to ensure that it has been left dry and visibly free from contamination and debris. Ensure source of moisture has been repaired or eliminated.

n. Air monitoring should only be conducted prior to occupancy if baseline air sampling was conducted and results are available.

o. Complete Follow-up Investigation and Closeout documentation per Sections 6.0 through 7.2 of main document

Section III. Appendix VI: Mold Management Work Practice Level M-5:

A Small Isolated Area of Contamination (<10 square feet) in the HVAC System

Remediation should be conducted by a qualified contractor or qualified KP staff that has received training on proper clean up methods, personal protection, and potential health hazards. This training can be performed as part of a program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200 and Cal OSHA CCR Title 8 Section 5194...

a. Respiratory protection (e.g., N95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134), is recommended. Gloves and eye protection should be worn.

b. The affected section of the HVAC system should be isolated and sealed to prevent airflow to areas outside the affected work area. Shut down HVAC system as necessary to prevent airflow if affected area cannot be isolated.

c. The work area should be covered with a plastic sheet(s) and sealed with tape before remediation, to contain dust/debris.

d. Dust suppression methods, such as misting (not soaking) surfaces prior to remediation, are recommended.

e. Growth supporting materials that are contaminated, such as the paper on the insulation of interior lined ducts and filters, should be removed. Other contaminated materials that cannot be cleaned should be removed in sealed plastic bags. Moldy materials should be sealed in a plastic bag with duct tape and disposed of in regular trash in exterior dumpster. Try whenever possible to transport debris during the hours of least activity in the building and along the most direct, but least congested route.

f. The work area and areas immediately surrounding the work area should be HEPA vacuumed and cleaned with a damp cloth and/or mop and a detergent solution.

g. All areas should be left dry and visibly free from contamination and debris.

h. A variety of biocides are recommended by HVAC manufacturers for use with HVAC components, such as, cooling coils and condensation pans. HVAC manufacturers should be consulted for the products they recommend for use in their systems.

i. Complete Follow-up Investigation and Closeout documentation per Sections 6.0 through 7.2 of main document.

Level M-5 – *Mold Management Work Practices:*

Areas of Contamination (>10 square feet) in the HVAC System

A health and safety professional with experience performing microbial investigations should be consulted prior to remediation activities to provide oversight for remediation projects involving more than a small isolated area in an HVAC system. Work procedures should follow NAIMA recommendations. The following procedures are recommended:
http://www.aiha.org/aihce04/handouts/po131morse.pdf

In general, respiratory protection using P-100 devices is necessary:

a. A qualified contractor using personnel trained in the handling of hazardous materials equipped with: Respiratory protection (e.g., N95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134), is recommended. Use gloves and eye protection and Full-face respirators with HEPA cartridges and disposable protective clothing covering both head and shoes should be worn if contamination is greater than 30 square feet.

b. The affected section of the HVAC system should be isolated and sealed to prevent airflow to areas outside the affected work area. Shut down HVAC system as necessary to prevent airflow if affected area cannot be isolated.

c. Contain affected area.

d. Complete isolation of work area from the other areas of the HVAC system using plastic sheeting sealed with duct tape.

e. The use of an exhaust fan with a HEPA filter to generate negative differential inside the contained work area in relation to surrounding area.

f. Airlocks and decontamination room if contamination is greater than 30 square feet.

g. It is strongly recommended that HVAC systems and duct work with significant growth be dismantled and disposed of and not cleaned

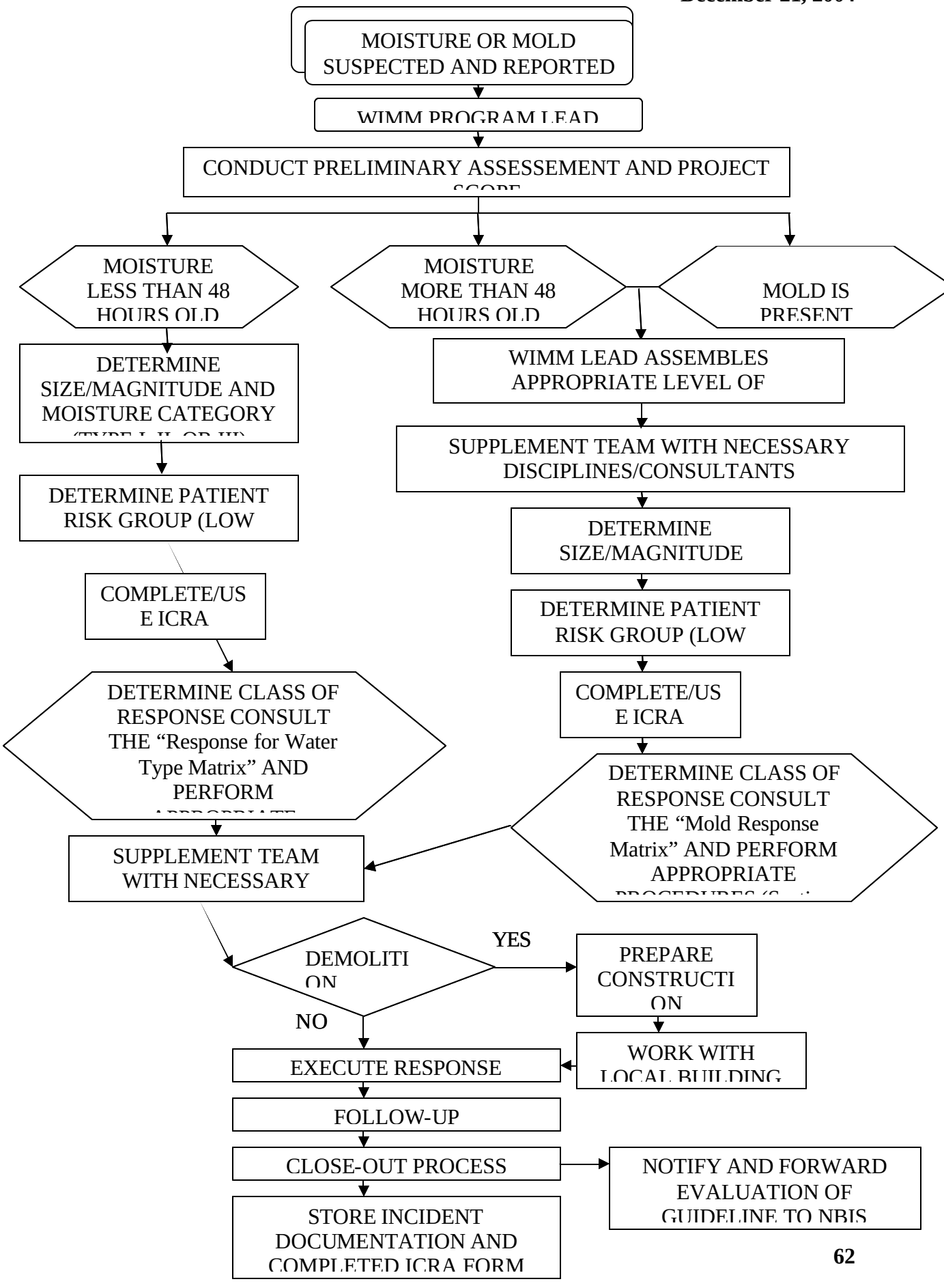
h. Contaminated materials that cannot are not cleaned should be removed in sealed plastic bags. When a decontamination chamber is present, the outside of the bags should be cleaned with a damp cloth and a detergent solution or HEPA vacuumed prior to their transport to uncontaminated areas of the building.

i. Moldy materials should be sealed in a plastic bag with duct tape and disposed of in regular trash in exterior Dumpster. Try whenever possible to transport debris during the hours of least activity in the building and along the most direct, but least congested route.

j. The contained area and decontamination room should be HEPA vacuumed and cleaned with a damp cloth and/or mop and a detergent solution prior to the removal of isolation barriers.

k. The containment should be maintained until a visual inspection is conducted that determines an adequate level of cleanliness with no visible mold or moisture is present in the containment area. A boroscope should be used to visually inspect areas of the system that cannot be accessed.

l. Complete Follow-up Investigation and Closeout documentation per Section 6.0 and 7.0 of main document.


MOISTURE OR MOLD SUSPECTED AND REPORTED
WIMM PROGRAM LEAD
CONDUCT PRELIMINARY ASSESSEMENT AND PROJECT
MOISTURE LESS THAN 48 HOURS OLD
MOISTURE MORE THAN 48 HOURS OLD
MOLD IS PRESENT
DETERMINE SIZE/MAGNITUDE AND MOISTURE CATEGORY
DETERMINE PATIENT RISK GROUP (LOW
COMPLETE/US E ICRA
DETERMINE CLASS OF RESPONSE CONSULT THE "Response for Water Type Matrix" AND PERFORM
SUPPLEMENT TEAM WITH NECESSARY
WIMM LEAD ASSEMBLES APPROPRIATE LEVEL OF
SUPPLEMENT TEAM WITH NECESSARY DISCIPLINES/CONSULTANTS
DETERMINE SIZE/MAGNITUDE
DETERMINE PATIENT RISK GROUP (LOW
COMPLETE/US E ICRA
DETERMINE CLASS OF RESPONSE CONSULT THE "Mold Response Matrix" AND PERFORM APPROPRIATE
DEMOLITI ON
YES
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NO
WORK WITH LOCAL BUILDING
EXECUTE RESPONSE
FOLLOW-UP
CLOSE-OUT PROCESS
NOTIFY AND FORWARD EVALUATION OF GUIDELINE TO NBIS
STORE INCIDENT DOCUMENTATION AND COMPLETED ICRA FORM