MOLD & MOISTURE REMEDIATION PROTOCOL

FOR

DEPARTAMENTO DE LA FAMILIA
AVE. BARBOSA #306
SAN JUAN, PR 00917

ZEM-17266

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PART 1 - GENERAL

1.1 INTRODUCTION

1.1.1 Remediation should be conducted in accordance with industry standards for mold remediation, including 2008 Board of Standards Review (BSR)-Institute of Inspection Cleaning and Restoration Certification (IICRC) S520 Standard and Reference Guide for Professional Mold Remediation.

1.1.2 The intent of remediation is to leave the building in a clean and dry condition so that it can be fully restored for occupancy at a later date.

1.1.3 Approval of or acceptance by Departamento de la Familia of various construction activities or methods proposed by the Contractor does not constitute an assumption of liability by Departamento de la Familia for adequacy or adverse consequences of said activities or methods.

1.1.4 This protocol is intended to describe the approximated minimum scope of work and guidance needed to address known moisture-related impacts in the Departamento de la Familia office building in Barbosa Avenue in San Juan Puerto Rico, based on known and suspect conditions at the site at the time of the assessment. For areas where moisture-affected conditions are suspected, but not known, the work phasing may be adjusted to facilitate discovery.

1.1.5 This protocol is not intended to address every remediation task, method, or procedure needed to complete this project, nor to determine what products or methods the remediation contractor must use to address mold and moisture in the building. However, Zimmetry Environmental recommends that contractors avoid the use of ozone or thermal fogging processes or the application of odorants and masking agents, as they can result in odor complaints, health impacts, and damage to building materials.

1.1.6 This scope is also not intended to address structural issues or restoration procedures. In addition, this protocol does not discuss the requirement for inspections of electrical, mechanical, or life-safety equipment such as fire alarm systems, elevators, or electrical components. We expect these issues will be addressed by other members of the Project Team as applicable.

1.1.7 The Contractor is responsible to comply with all the strictest, updated regulations/standards and codes and any changes that may occur during the contracted performance period, in full accordance with this Remediation Protocol.

1.1.8 The Contractor agrees to comply with the following stipulations.

1.1.8.1 It is the intention of the, General Conditions and Remediation Protocol, all Parts and Drawings and any other part of the Contract Documents, to call for a finished remediation work, tested and ready to continue the

demolition/construction operations sequence. All products, equipment and analysis shall be of the first quality standards.

1.1.8.2 Any remediation work, construction work not shown on Drawings but described in this Remediation Protocol, or vice versa, or any incidental requirement, or minor details, not described or shown but necessary to make a complete remediation work perfect in all respects, and ready to continue the demolition/construction operations, shall be provided by the Contractor without additional expense to the Departamento de la Familia.

1.1.8.3 Prior to signing of the Contract, the Contractor shall give written notice to the Departamento de la Familia of any errors or omissions believed to be in violation of laws, regulations, and standards having jurisdiction on the Remediation Works to be executed. In the absence of such written notice, it is mutually agreed that the Contractor shall include the cost of providing all remediation works in compliance with all applicable regulations.

1.1.8.4 Any questions or disagreements arising as to the true intent of this Remediation Protocol or the kind and quality of Remediation Work required shall be decided by the Departamento de la Familia and/or its Consultant, whose interpretations thereof shall be final but subject to appeal as prescribed by the General Conditions.

1.1.8.5 These Remediation Protocol and other Contract Documents, are intended to be in agreement with each other, and to be mutually explanatory. In cases of disagreement between drawings, codes, standards or government approvals, or within any document itself, or between one trade, sub-section and another, the better quality, greater quantity, more costly and less environmentally hazardous remediation shall be Work included in the Contract price.

1.1.9 Presumably inaccessible walls or walls covered by files, shelving or furniture may exist throughout the facility. In addition, wet conditions may exist within concealed wall cavities that has yet to saturate to the surface. While these materials may have dried prior to the initial assessments, they likely did not dry quickly enough to prevent fungal growth. This condition may be present on walls and/or ceilings beyond those indicated on the floor plans. The continued documentation of conditions as they are discovered is necessary as is expected that this may result in an expansion of the removal scope.

1.1.10 The contractor should discuss deviations from this protocol with the owner representative before proceeding.

1.2 BUILDING DESCRIPTION

1.2.1 The concrete building was originally built in the 1970's and was a four-story building, later two additional levels were added. At the northeast side it has a multilevel parking. Floor slabs are composed of concrete.

1.2.2 The facility was impacted by hurricane Maria which made landfall on the island of San Juan on September 20, 2017.

1.2.3 The Departamento de la familia reported that that the active six-story 138,000 square foot office building was affected by a storm water leak through the windows to all the floors of the facility.

1.2.4 The interior divisor walls are comprised of metal stud and drywall wall board, ceilings are drywall or suspended ceiling panels on perimeter grid, floors are a mixture of concrete with vinyl tile, carpet, ceramic and wood. Two exterior stairwells, four elevators (one freight and three passenger), public and facility use men's and women's restrooms are located within the facility. Concrete columns supported the slabs in even intervals throughout the building.

1.2.5 Office areas are located through the first five floors and the sixth floor serves as a documents storage area. Office areas include an assortment of large and small individual offices, open work spaces and conference rooms. The facility includes kitchenettes, sinks, breakroom, dormitories and waiting rooms.

1.2.6 Interior finishes included:

1.2.6.1 Gypsum wallboard (GWB) walls and partial ceilings (e.g., drywall) insulation was not observed;
1.2.6.2 Vinyl cove base, wood doors, and associated wood decorative trim;
1.2.6.3 Suspended ceiling tiles;
1.2.6.4 Glue-down carpet or carpet tiles;
1.2.6.5 Wood flooring;
1.2.6.6 Ceramic flooring;
1.2.6.7 Vinyl floor tiles and vinyl floor sheeting;
1.2.6.8 Vinyl wallpaper;
1.2.6.9 Fiberglass and fabric acoustic wall panels and ceiling tiles;
1.2.6.10 Ceramic wall and floor tiles (restrooms); and
1.2.6.11 Various decorative wall panels and fabrics throughout the sales floor areas.

1.2.7 The primary source of conditioned air for the building was supplied by chilled water system 24 air handling units located in mechanical rooms distributed at each floor. Air supply ducting is routed from the units into rigid then flex tubes to supply diffuses scattered throughout each floor of the facility. The majority of the air handling units were in operation once power was restored.

1.2.8 The space above the suspended and hard ceilings served as a return air plenum. Ductwork is an assortment of flexible ductwork with fiberglass core material and uninsulated aluminum hard ducts.

1.2.9 The majority of carpeting throughout the facility were affected by the loss.

1.3 SCOPE SUMMARY

1.3.1 DF approved the following scope:

1.3.1.1 Remove all carpeting and all vinyl cove base from throughout the building;
1.3.1.2 Remove affected GWB walls, ceilings and associated finish materials and insulation in known moisture-affected areas (shown on floor plans);
1.3.1.3 Remove cabinets and shelving that fall within the footprint of the loss-affected building areas;
1.3.1.4 Remove delaminated vinyl non-asbestos floor coverings or floor tiles (See asbestos report for exact location of asbestos containing floor tiles and mastics);
1.3.1.5 Remove and dispose of damaged fabric furniture and display items;
1.3.1.6 Remove and clean salvageable building materials, display and furniture and store within an onsite clean room; and
1.3.1.7 Clean all air distribution ducts—with some additional scoping required to determine details about air return ducts and duct replacement requirements.

1.3.2 The scope of work will be discussed in detail in Part 2: Execution.

1.4 PROJECT MANAGEMENT

1.4.1 Project Phasing

1.4.2 Phasing will generally occur as follows:

- Hazardous materials testing (Good Faith Survey for asbestos and lead paint testing in work areas);
- Employee orientation and hazard communication;
- Work area preparation including covering or disarming fire alarms to protect them from dust during cleaning;
- Removal of moisture-affected wallboard and cabinets;
- General cleaning to remove gross dust and debris;
- ZEM re-assess exposed areas to determine if additional remediation is needed;
- Removal of any additional moisture-affected building materials, additional cleaning and removal of any additional carpet;
- Removal and/or cleaning of rigid duct and flex duct;
- Preliminary top-down cleaning to remove gross dust and debris;
- HVAC cleaning work;

- Final cleaning process (including HVAC exterior); and
- Post-remediation verification (PRV) by ZEM.

The Project Team will work together with specific phasing details. The Project Team must be notified in advance of changes to the general phasing order or scope.

1.5 CHANGES TO SCOPE OF WORK

This scope addresses conditions observed by ZEM during site assessments conducted during initial site drying. New or hidden areas of suspected visible mold growth (SVG), or excess moisture may be discovered during all phases of remediation.

Newly discovered conditions will need to be evaluated and documented on an ongoing basis by Zimmetry Environmental and the Project Team, and worst-case conditions should be assumed until proven otherwise. Zimmetry Environmental and the Project Team may develop a revised remediation protocol to address hidden conditions identified during the remediation process, if necessary or if requested by the client.

If, at any time, work impacts hazardous materials, such as lead or asbestos, state, local, and federal regulations with regard to all work practices will apply.

PART 2 – EXECUTION

2.1 ACCESS TO WORK AREA

2.1.1 Access to the remediation work area shall be restricted to contractor's workers and authorized visitors as defined in these remediation protocol.

2.1.2 Authorized visitors shall have access to the work site at all times following notification to the Departamento de la Familia or its Representative. Contractor shall supply protective clothing and equipment for visitors as necessary, except for respirators which are to be provided by the visitor.

2.1.3 All workers and authorized visitors shall enter the remediation work area only through the remediation worker/equipment decontamination enclosure.

2.1.4 All workers and authorized visitors, before entering the remediation work area, shall read and be familiar with all posted regulations, personal protection requirements, and emergency procedures and exit routes.

2.2 WORKER AND VISITOR PROTECTION AND TRAINING

2.2.1 No eating, drinking, smoking, or chewing gum is permitted within the remediation work area. The Contractor shall designate a "break area" where these activities are permitted.

2.2.2 Workers and Visitors shall be fully protected with respirators and protective clothing during any work which may disturb asbestos-containing materials and result in fiber release. Full protection is not required during pre-remediation inspections of the containment, while work is not being conducted.

2.2.3 Protective Clothing and Equipment: Provide workers and visitors with sufficient sets of protective full body clothing, to include full body coveralls with hood, boots (for workers) and footwear coverings (for workers and visitors), and gloves. Provide eye protection and hard hats as required by applicable safety regulations.

2.3 WORK AREA PREPARATION

2.3.1 The work area preparation guidance provided below is intended to protect building materials from work activities and to minimize the distribution of dusts and debris throughout the site.

2.3.2 Asbestos and Lead

a. Asbestos containing vinyl floor tiles and associated mastics were identified at the second, third and fourth floors.
b. Lead based paint was identified on concrete walls at the spaces 3-49, 3-50, 3-51. 3-52 & 3-54. Additionally, lead containing speed bumps were identified at the parking areas.

2.3.3 Contents

a. Non damaged and moveable contents will be moved from the work areas, cleaned, and stored in a clean, dry location. Shelves that require removal will be emptied. Cabinets, immovable contents, or fixtures that will remain in place in the work enclosure will be covered or otherwise sealed to protect them from dust and construction debris and to minimize the amount of cleaning needed.

2.3.4 Smoke and Fire Alarms

a. Cover smoke and fire alarms using appropriate covers to protect them from dusts during remediation. Ensure that the materials used to cover the materials do not inhibit the life safety functions of the equipment without prior approval from the Fire Marshall or equivalent agency.

2.3.5 Heating, Ventilation, and Air Conditioning

a. The HVAC system was operating during the loss and is currently operating. Any heating or ventilation equipment identified on site that supplies air to or exhausts air from work areas needs to be turned off prior to demolition, cleaning, and restoration inside the work area. All the HVAC systems will be included in the remediation process.

2.3.6 Openings in suspended ceiling tile areas in areas where no ceiling work is to take place should be protected if feasible. All air supply and return grilles for ductwork that will remain in place inside any work enclosure must be protected with a minimum of 4-mil thick polyethylene sheeting that is sealed in place with non-marring tape. Self-adhesive grille masking material may also be used provided it does not leave a residual adhesive film on the HVAC equipment.

2.3.7 Once gross removal of GWB and gross clean-up activities are completed, the HVAC system will be assessed by a mechanical contractor and the Project Team as needed to confirm the location of loss- affected components that will require subsequent removal or cleaning. The HVAC system will then be cleaned after all GWB and carpet removal activities are completed.

2.4 WORK ENCLOSURE

2.4.1 Contractor shall completely separate the remediation work area from other portions of the building by sealing all openings (windows, doorways, corridor entrances, drains, ducts, grill, diffusers, skylights, etc.) with barriers of 6 mil. polyethylene sheeting and tape, or by sealing cracks leading out of the remediation work area.

2.4.2 In addition to work enclosures, negative air machines (NAMs) equipped with HEPA filters will be used as air scrubbers to help control dusts in remediation work areas, particularly during initial cleaning efforts.

2.4.3 General Enclosure Guidelines

a. If work area enclosures are needed to isolate a work area from a clean area the contractor will use 6- mil polyethylene sheeting to construct floor-to-ceiling curtain

walls or wall-to-wall critical barriers and use Zip-Wall poles or other structural elements to support the curtain walls, as needed. All edges of the sheeting will be sealed to floors, walls, and ceilings using non-marring tape. It is only anticipated that office areas, not warehouse areas, may require work areas enclosures. Typical industry guidelines for office enclosures that prevent cross-contamination with adjacent areas should be followed.

b. Arrange for the remediation work area to be locked during non-work hours.
c. Doors and existing walls that will remain intact at the perimeter of the work area may serve as critical barriers during remediation. Doors at the perimeter of the work area that do not serve as access or egress should be closed or covered. Access doors between remediation areas and non-remediation areas may include zipper doors, or double-flap doors, or standard doors.
d. The contractor will inspect critical barriers before the work shift, after breaks, and at the end of the work shift to verify that they are intact. If the critical barrier fails, remediation work will be stopped, and the barrier will be repaired as soon as practicable. Any areas visibly soiled by construction dust during the period of critical barrier damage or repair will be cleaned as soon as practicable.
e. Filters and seals on NAMs will be replaced as required to maintain the efficiency of the HEPA exhaust system and prevent air leaks in accordance with the manufacturer's recommendations.
f. If used, critical barriers and air scrubbers should remain in place until remediation, remediation, and PRVs in the work area are completed. However, NAMs should be turned off approximately 24 to 48 hours prior to final cleaning so that dusts can settle out of the air.
g. The contractor will ensure that critical barriers and equipment do not block access to fire extinguishers or egress through hallways and exits without proper exit signage and prior notification to building occupants. In addition, the contractor will ensure that the critical barriers do not present a fire hazard or a slip, trip, and fall hazard.
h. In addition, the contractor will ensure that any critical barriers or NAMs installed to control dusts associated with mold remediation do not disrupt or otherwise impact the efficacy of containments that are installed to control asbestos and/or lead based paint remediation-related fiber releases.

2.5 LOAD-OUT AREAS AND BUILDING FINISHES

2.5.1 Waste that has been containerized shall be transported out of the remediation work area either through the personnel/equipment decontamination enclosure or through a separate waste load-out enclosure. If a separate enclosure is used, it shall be built with two airlocks, with curtained doorways: one to the abatement work area and one to an uncontaminated area outside the abatement work area.

2.5.2 Load-out doors should be chosen such that they are as close as possible to the work area. The pathway from the work area to the load-out opening should have the least possible impact on non- work areas.

2.5.3 If appropriate, salvageable doors, door and window frames, and contents in work areas and load-out areas, should be protected from construction dust, damage, and soil tracking using

appropriate coverings, such as 6-mil plastic, self-adhesive plastic, cardboard, or other durable materials.

2.5.4 Any porous or delicate floor finishes (e.g., intact vinyl floor sheeting or tile, stone floor tiles) that will remain in place in demolition work areas and load-out areas should be covered using 6-mil plastic sheeting using non-marring tape. If the plastic sheeting presents a slip, trip, or fall hazard, the contractor should consider installing cardboard, masonite, ram board, or other resilient surfaces over the plastic sheeting.

2.6 HEALTH AND SAFETY

2.6.1 The Contractor shall take the following minimum precautions regarding worker safety and health protection of all individuals involved in the remediation process. Worker screening, training, and safety guidelines are provided to ensure that site workers are adequately aware of site hazards and have the knowledge and protective equipment they need to stay safe.

2.6.2 Worker Education and Preparation

2.6.3 Workers conducting mold and moisture restoration should be trained in accordance with ANSI/IICRC mold and moisture remediation or similar guidelines. Workers conducting remediation at this site should also be trained in accordance with remediation standards and guidelines.

2.6.4 Non-voluntary employee use of respirators requires medical evaluation, fit testing, and a respiratory protection program. Workers who conduct mold, sewage, or fire remediation must have received hazard communication training regarding the health effects associated with exposures to mold, sewage, or fire residue. Copies of written respiratory protection programs, medical clearances, and fit test records must be kept on site.

2.6.5 Ventilation contractors who conduct decontamination of heating, ventilation, and air conditioning (HVAC) systems must be trained in accordance with applicable HVAC system cleaning standards such as the National Air Duct Cleaners Association (NADCA) “Assessment, Cleaning, and Restoration of HVAC Systems.”

2.7 WORKER PERSONAL PROTECTIVE EQUIPMENT, HYGIENE, AND RESPIRATORS

2.7.1 If, at any time, work impacts hazardous materials, such as lead or asbestos, state, local, and federal regulations with regard to all work practices will apply and take precedence over remediation of SVG.

2.7.2 All workers must be included in a respiratory protection program.

2.7.3 Workers conducting removal of building materials must follow the guideline below regarding personal protective equipment (PPE) and safe work practices:

a. Designate a clean area outside of the work area where workers can store clean clothing, supplies, food, and drinking water. A trash can and a high-efficiency

particulate air (HEPA) - filtered vacuum cleaner should be available at the edge of the work area for workers to use. Bathroom facilities may be used as hand wash stations. If functional plumbing is not available, provide hygiene facilities outside of the building near the clean area.

b. Wear boots with steel shank, steel toe, etc., as required by company or facility policy, that may be HEPA vacuumed before breaks and at the end of each work shift.
c. Use eye protection (goggles or full-face respirator) to protect eyes during demolition, cleaning, and remediation and to prevent construction dust, cleaning agents, fungal spores, and bacteria from entering the eyes.
d. Wear cotton or equivalent work gloves (to prevent cuts) over nitrile gloves (to prevent exposure to chemical or biological hazards) when conducting demolition and when cleaning building materials. Employees will discard damaged gloves immediately, wash their hands, and put on new, clean gloves before returning to work.
e. Wash hands, arms, and faces at break, lunch, and at the end of each work shift before eating, drinking, chewing gum or tobacco, smoking, or applying cosmetics. These activities should also be prohibited in the work area.

2.7.4 Where minimal levels of dust will be produced or where building materials are impacted by minimal levels of SVG (e.g., barely visible colonies less than 10 square feet in total concentration per 10 linear feet of wall), the following apply:

a. Regular work clothing is acceptable. Clothing should be cleaned when leaving the work area (and before removal of other PPE) by using HEPA-vacuums to remove non-adhered dust as part of decontamination procedures.
b. Workers must wear N-95 Dust masks. All workers must be included in a respiratory protection program.

2.7.5 When working with building materials affected by concentrated areas of SVG in quantities greater than 10 square feet of visible colonies per 10 linear feet of wall, ZEM recommends that workers wear:

a. Wear full-body coveralls (e.g., Tyvek, raingear, washable coveralls) over normal work clothing and shoes when working where skin could possibly come in contact with fiberglass, mold, or chemicals.
b. Use half-face or full-face, negative-pressure, air-purifying respirators as appropriate to protect workers from airborne particulates such as mold spores and construction debris. Negative pressure, air-purifying respirators may be equipped with P-100 cartridges or combination P-100 and acid gas/organic vapor filtered cartridges as appropriate to protect from airborne particulates, bleach solutions, and many other cleaning compounds.
c. Manufacturers of cleaning compounds should be consulted to verify whether other types of respiratory protection or respirator cartridges are required. It should be noted that full-face, negative-pressure, air-purifying respirators provide the wearer with eye and splash protection.
d. Coveralls should be cleaned before doffing using HEPA-vacuums to remove non-adhered dusts as part of decontamination procedures. Teach workers to properly remove coveralls, respirators, and gloves to prevent contact with dusts, fire residues, and mold.
e. Respirators are not required when working in clean, dry work areas or when

conducting final cleaning.

2.8 WORK PRACTICES

The Removal, Disposal, and Cleaning sections below are intended to address remediation of non-regulated building materials that will remain in place. Any regulated building materials will be abated or remediated by an appropriately certified remediation contractor.

A qualified, experienced restoration contractor will determine the order of operations and will select the most appropriate cleaning methods and compounds as appropriate to the intent of the work practices listed below.

2.8.1 Removal

a. The procedures described below are applicable to the remediation of non-regulated, non-salvageable building materials that are impacted by SVG or wet/damaged beyond repair. Any work that impacts structural components of the building (e.g., concrete columns, roof or floor slabs, framing, wall sheathing) should be assessed by qualified, experienced contractors (including a structural engineer) before commencing.
b. Porous, non-cleanable, moisture-affected building materials (e.g., insulation, GWB) affected by moisture and SVG should be removed and discarded before removing carpeting.
c. Carpeting may be used as a drop cloth during wall removal. Exposed mastics under the carpet are expected to be sticky and may collect dust and debris.
d. Waste generated during removal should be bagged or otherwise placed in a container and discarded promptly, as described in Section 5.2, to avoid tracking materials throughout the work area.
e. The contractor shall conduct removal in a manner that minimizes the production of dust. For example, where possible, non-mechanical hand tools should be used to cut or pull-down building materials, and dust and debris should be cleaned immediately using HEPA-filtered vacuum cleaners. If mechanical hand tools are used, they should be attached to dust-collection devices, such as HEPA-filtered vacuum cleaners, and dusts generated by demolition must be cleaned up as soon as practicable.
f. Whenever feasible, materials should be cut into pieces small enough to transfer directly into waste bags or covered containers without breakage. Avoid walking on debris to prevent it from becoming pulverized and ground into walking to the extent feasible.

2.8.2 Vinyl Cove Base

a. Manually remove vinyl cove base from affected areas throughout the building and discard it.

2.8.3 Wallboard

a. In areas where full wall or ceiling wallboard removal is not required, use a HEPA-filtered vacuum cleaner with a brush attachment to vacuum visible SVG and remove non-adhered material. For well- established, dark colonies of SVG greater than 1 square foot in one location, consider applying a spray adhesive after HEPA vacuuming the surface. Cut the GWB beyond the visible perimeter of the colony and pull the screws out of framing and attempt to remove the GWB intact (e.g., without cutting or

breaking the GWB).

b. Reduce the cut wallboard into smaller pieces by scoring one side with a razor knife, folding/snapping the piece along the score line, and then cutting the remaining intact paper at the break using the razor knife. Place the removed material directly into a bag or cart.

2.8.4 Carpets

a. Carpet that is glue-down and should be left in place until after all wall removal is completed. Once wall and ceiling removal is complete, carpet should be removed. Carpet removal will not proceed in full until test removal of representative carpet locations determines whether carpet mastics are sticky or not. If carpet mastics are sticky, carpets will remain in place. If carpet mastics are not sticky, then carpets will be removed. Carpets shall be removed without disturbing the asbestos containing vinyl floor tiles and mastics at the 2nd 3rd and 4th floors.

b. Carpeting must be removed by hand:
   i. Do a light wand extraction to remove as much loose dust and dirt as possible prior to cutting and pulling carpeting.
   ii. Cut carpet into manageable pieces and pull it off of the floor, rolling it into pieces so that the top of the carpet is rolled inward on itself.
   iii. Work from one corner of a room or area toward the doorway to avoid having to walk on the exposed residual mastic after the carpet is removed.
   iv. If visible dust releases are observed, conduct additional cleaning or misting as needed to prevent dust releases.

2.8.5 Disposal

a. Wet or fungal-affected building debris can be discarded as construction debris in a landfill that accepts construction debris.

b. After removal, SVG-affected debris and used cleaning materials will be placed directly into heavy-duty plastic waste bags or sealable bulk waste containers. Workers should conduct disposal and load out in such a way as to minimize dust emissions.

c. Bags should be closed in a gooseneck fashion and sealed with tape. Torn bags should be sealed with tape or placed inside of a second, undamaged bag. Bags should not be thrown, dragged, or dropped when moving them inside the building (e.g., when moving them to the trash chute).

d. As an alternative to bagging, debris may be placed inside a covered waste container so that it may be moved through the lead-out area and transferred into a dumpster or other appropriate disposal container without releasing dust.

2.8.6 Cleaning

a. Cleaning includes the removal of SVG, settled dusts, soils, and cleaning residues from building materials and surfaces that will remain in the work area. Cleaning should generally be conducted working from the top down. In addition, work from the farthest point in a work area and work toward the door to avoid tracking soils back into the space.

b. Cleaning activities at this site will be conducted in two phases:
   i. Gross cleaning: The removal and disposal of construction debris and the preliminary removal of loose dusts from horizontal surfaces; and

ii. Final cleaning: A two-part process that includes:
   a. Conducting initial top-down cleaning to remove fine dusts from exposed surfaces while running air scrubbers; and
   b. burning off air scrubbers, allowing fine dusts to settle for 48 hours, and conducting a final detailed, top-down cleaning.
iii. Dry removal of dust and debris should be conducted in accordance with current remediation guidelines noted in Part 2: Execution other applicable standards using appropriate tools followed by dry- wiping or scrubbing and damp-wiping using the methods described below.

Note: Final cleaning does not require the removal of fixtures, outlet covers, light switch covers, etc.

2.8.7 Vacuum Cleaners

2.8.7.1 Only vacuum cleaners equipped with HEPA filters should be used to remove dust and debris from surfaces. Shop vacuums are not acceptable for mold, fire, or fiberglass remediation because they distribute particulates into the air.

2.8.7.2 Surfaces affected by visible settled dusts, or soils should be vacuumed before damp-wiping to minimize distribution of residues onto cleaned surfaces. Appropriate cleaning attachments, such as brushes and crevice wands, should be used when using vacuum cleaners.

2.8.7.3 An exception may be made for cleaning intact hard, smooth floor finishes (e.g., bare concrete, vinyl tile, or vinyl sheet products) in areas outside of the enclosed office areas. Outside of enclosed office areas, a commercial grade “wet vac” floor cleaning machine may be a more effective method of cleaning. If a wet vac machine is used, ensure that it is equipped with a cleaning solution that is effective for removing dust and soils.

2.8.8 Cleaning Protocol for Salvageable Materials Affected by SVG

2.8.8.1 SVG is assumed to be present on cabinets, wood framing, and wood trim. Salvageable cabinets, wood framing, and wood trim and non-porous building materials (glass, metal, plastic) affected by SVG and water staining may be cleaned and restored if it is cost-effective to do so.

2.8.8.2 Use a cleaning solution that is appropriate for removing mold from affected building materials, such as cleaning detergent solution or a 10% household bleach solution (1 part bleach to 9 parts clean water). Any cleaning agent that contains hazardous chemicals, or that may present a risk or irritant to occupants, workers, or building materials (e.g., corrosive, disagreeable fragrance), must be approved by the owners representative prior to first use.

2.8.8.3 All cleaning products must be mixed and used according to the manufacturer’s recommendations. **It is important to note that bleach can be corrosive to metal.** The goal of cleaning is to remove loose fungal growth and soils from surfaces. Sanitizers and other cleaning solutions are not intended to be used as a substitute for manual cleaning and wiping of surfaces.

2.8.8.4 Detergent solution should be applied lightly over the affected surface to dampen

the surface. Allow the solution to sit (dwell) for as long as is directed by the manufacturer prior to scrubbing the surface. After waiting, surfaces will be damp-scrubbed using hard wire or plastic brushes, abrasive scrubbing pads (doodlebugs), rags, or sponges as needed to remove residues, loose soils, and dirt. Scrubbing will be followed by damp-wiping surfaces using sponges, rags, or towels to remove SVG, surface moisture, and dusts so that no visible residues remain.

2.8.8.5 It is understood that some staining may remain after cleaning. Residual stains are acceptable, provided the staining cannot be removed or smeared using hand pressure and a wet rag or finger.

2.8.9 Cleaning Protocol for Materials with Settled Dust and Debris, but without SVG

2.8.9.1 In office areas and other potentially occupied building areas (restrooms, utility areas, etc.), building components, hard surfaces, floors, walls, shelves, contents, fixtures, and crevices affected by settled dust and debris but ***not*** affected by SVG in the work area may be cleaned using a sealed HEPA- filtered vacuum cleaner to remove settled dusts. After vacuuming, surfaces should be damp-wiped using static cloths or other appropriate cleaning cloths.

2.8.9.2 The use of detergent solution is not required for cleaning materials not affected by SVG. Materials that may be cleaned using this method include:

a. Walls;
b. Hard ceilings (if present); and
c. Ledges.

2.8.9.3 Hard materials such as sinks, toilets, fixtures, vinyl floor finishes, and marble may be cleaned using appropriate cleaners to remove dust and soils as needed.

2.8.9.4 In the mechanical rooms, cleaning will be limited.

2.9 SCOPE OF WORK

I. The remediation scope of work is described below for the remediation of all known building materials that were affected by SVG and moisture. The HVAC mechanical room and elevators are excluded from this scope.

II. Based on assessment findings and sample results Zimmetry Environmental understands that the approved scope of remediation work is as follows:

- Remove all carpeting and all vinyl cove base from affected areas throughout the building;

- Remove as needed GWB walls, ceilings and associated finish materials and insulation in known moisture-affected areas;
- Remove cabinets that fall within the footprint of the loss-affected building areas;

- Remove delaminated non-asbestos vinyl floor sheeting or floor tiles;
- Remove delaminated, bulging or blistered wood floors;
- Remove damaged furniture, merchandise supports/stands, display cases and building finishes from areas noted on plan; and
- Clean and/or discard air distribution ducts—with some additional scoping required to determine details about air return ducts and duct replacement requirements.

III If additional building materials areas are discovered during remediation that are affected by SVG or moisture shall be managed in accordance with Part 2 (Execution).

2.10 OFFICE AREAS

Office areas include hallways, kitchenettes, enclosed offices, non-utility closets, and cubicle areas.

2.10.1 Content

Move all contents as needed to facilitate the removal of building materials.

2.10.2 Cabinetry and Fixtures

Walls concealed by cabinetry may be found to be affected by SVG or moisture from the loss. Cabinets inside the loss-affected footprint (see floor plans) will be removed to facilitate access to GWB. Cabinets may be cleaned and refurbished if it is cost-effective to do so.

2.10.3 Decorative Trim

Remove all vinyl cove base throughout the damaged areas and discard it.

Detach or remove any wood decorative trim (e.g., door trim, wood cove base) from loss-affected areas noted on the floor plans in a manner sufficient to facilitate the inspection of the back side of the trim and to remove the GWB behind it.

If walls behind the decorative trim will remain intact, use removal methods that prevent damage to the decorative wall finishes above or adjacent to the decorative trim.

Assess wood door frame components and wood decorative trim for SVG or structural damage (e.g., delamination, rot, etc.). If the material is salvageable, place the trim in the room it was removed from so that it can be re-installed in its original location. If trim is damaged, it will also be placed in the room it came from.

Clean any SVG-affected, salvageable wood building materials.

2.10.4 Ceiling Grid

Remove and discard all water-stained ceiling tiles.

Remove the ceiling grid only as needed to facilitate the removal GWB from concrete masonry unit (CMU) walls that were affected by floor-to-ceiling moisture around the building core as marked.

2.10.5 GWB

Remove and discard GWB from both sides of walls (as applicable) in loss-affected building areas as marked at the site. GWB will be removed according to the findings of the Industrial Hygiene Assessment for Water Damage and Mold and/or to a minimum height of 4 feet above the floor unless the walls are marked otherwise on site.

2.10.6 Insulation, if present

Remove and discard insulation only to the edges of opened wall and ceiling cavities that are exposed by the removal of GWB. Insulation will be cut off at the edge of the opening and removed. Insulation above or beyond the opening will be left in place.

2.10.7 Metal Building Materials

Assess steel framing, electrical equipment, and related building materials for structural integrity and water-related damage. Remove and replace any metal building materials that are structurally compromised. Clean and repair all exposed, salvageable metal building materials in the work area.

2.10.8 Wood Building Materials

Assess wood framing for structural integrity and water-related damage. Remove and replace any wood building materials that are structurally compromised.

Clean and repair all exposed, salvageable wood building materials in the work area.

2.10.9 Carpeting

Remove and discard all carpeting.

2.10.10 Vinyl Floor Sheeting

Remove only delaminated areas of non-asbestos vinyl floor sheeting, if present. Clean remaining vinyl floor sheeting that was affected by the loss to remove loose dust, debris, and smear-able deposits.

2.10.11 Vinyl Floor Tiles

Remove delaminated or damaged non-asbestos floor tiles, if present. Clean remaining vinyl floor tiles that were affected by the loss to remove loose dust, debris, and smear-able deposits. Asbestos floor tiles and mastics were identified at the 2nd, 3rd and 4th floors.

2.10.12 Concrete and CMU

Clean accessible CMU walls and concrete floor slabs (if they are not sticky) in the remediation work areas to remove settled dusts and smearable soil deposits.

2.11 UTILITY AREAS

Utility areas include mop closets, electrical rooms, maintenance rooms, and stairwells located in the building core.

2.11.1 Contents

Move all contents as needed to facilitate the removal of building materials or as needed to clean the contents or the surfaces they conceal.

2.11.2 Fixtures

Remove all fixtures (e.g., plumbing fixtures, light fixtures, etc.) as needed to remove moisture-affected GWB. Fixtures will be salvaged, if it is cost effective to do so.

2.11.3 GWB

Remove and discard GWB from utility areas as marked.

2.11.4 Insulation, if present

Remove and discard insulation only to the edges of opened wall and ceiling cavities that are exposed by the removal of GWB. Insulation will be cut off at the edge of the opening and removed. Insulation above or beyond the opening will be left in place.

2.11.5 Metal Building Materials

Assess steel framing, electrical equipment, and related building materials for structural integrity and water-related damage. Remove and replace any metal building materials that are structurally compromised (e.g., no longer serve their original intended purpose).

Clean and repair all exposed, salvageable metal building materials in the work area.

2.11.6 Concrete and CMU

Clean accessible CMU walls and concrete floor slabs in the remediation work areas to remove settled dusts and smearable soil deposits.

2.12 ELEVATORS

Elevators appear to be unaffected by moisture from the loss. Elevators will be evaluated for mechanical and electrical functionality by a qualified, experienced, certified elevator company.

2.12.1 Carpet and Underlayment, if present

Remove carpet and underlayment from the affected areas.

2.12.2 Fixtures, doors, Interior components

Clean all salvageable, exposed elevator components to the extent feasible in accordance with the manufacturer’s and elevator company’s recommendations.

2.13 RESTROOMS

Restrooms appear to be unaffected by the loss and will be surface cleaned as needed.

2.13.1 Contents

Move all contents as needed to facilitate the removal of building materials.

2.13.2 Fixtures and Counter Tops

Remove all fixtures (e.g., plumbing fixtures, mirrors toilets, tissue dispensers, stall walls, light fixtures, etc.) and counter tops as needed to remove moisture-affected GWB. Fixtures will be salvaged, if it is cost effective to do so. We understand that mirrors may be damaged during removal.

2.13.3 Ceiling Grid

Remove and discard all ceiling tiles. Remove the ceiling grid only as needed to facilitate wall removal.

2.13.4 Ceramic Wall and Floor Tiles

Remove ceramic wall and floor tiles only as required to access wet or moldy building materials.

2.13.5 GWB

Remove and discard GWB as required based on plans or ongoing visual observations and findings.

2.13.6 Insulation, if present

Remove and discard insulation only to the edges of opened wall and ceiling cavities that are exposed by the removal of GWB. Insulation will be cut off at the edge of the opening and removed. Insulation above or beyond the opening will be left in place.

2.13.7 Metal Building Materials

Assess steel framing, electrical equipment, and related building materials for structural integrity and water-related damage. Remove and replace any metal building materials that are structurally compromised.

Clean and repair all exposed, salvageable metal building materials in the work area.

2.13.8 Concrete and CMU

Clean accessible CMU walls and concrete floor slabs in the remediation work areas to remove settled dusts and smearable soil deposits.

2.14 HVAC

Flexible ductwork, if present, is difficult to clean and will be removed and discarded.

Assess cleanable, salvageable HVAC components to determine if they can be cleaned without disturbing asbestos-containing building materials. Clean salvageable HVAC air distribution components.

Move contents and supplies from mechanical room floors. Sweep the floors in mechanical spaces using a dust-suppressive sweeping compound. Walls will be cleaned to remove dust deposits using

HEPA-filtered vacuum cleaners with brush attachments.

2.15 POST-REMEDIATION VERIFICATION (PRV)

Unless otherwise instructed, ZEM will conduct a final PRV in work areas following remediation and cleaning and prior to the installation of new building materials. ZEM expects to return to the site to assess the condition of wall cavities, walls, ceilings, and floors exposed by demolition and remediation to assess the cleanliness of surfaces.

The PRV will consist of a visual inspection and the collection of moisture measurements of affected building materials. If visible dust/debris or remaining soils are observed, or if excess moisture is detected, then additional removal, cleaning, or drying will be required, followed by a second PRV, if necessary.

ZEM will conduct PRV mold air sampling after the completion of remediation work, if requested by the client.

****END OF SECTION****

ATTACHMENT 1: INDUSTRIAL HYGIENE ASSESSMENT FOR WATER DAMAGE & MOLD REPORT

INDUSTRIAL HYGIENE ASSESSMENT FOR WATER DAMAGE & MOLD REPORT

FOR

DEPARTAMENTO DE LA FAMILIA

SAMPLING CONDUCTED AT
DEPARTAMENTO DE LA FAMILIA
AVE. BARBOSA #306
SAN JUAN, PR 00917

ZEM-17266

MARCH, 2018

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SECTION I: EXECUTIVE SUMMARY

1.1 INTRODUCTION

An Industrial Hygiene Assessment for Water Damage and Mold was undertaken at Representative Areas of the Departamento de Familia Building located in San Juan, PR. The assessment was conducted between January 31, 2018 and February 23, 2018 by Harry Peña Ruiz, MSc, CEI, ASCS, CMS, MRS, WRS, Industrial Hygiene & Environmental Building Expert; Mold & Water Damage Specialist. The purpose of sampling and monitoring was to aid in establishing, among other parameters, the following:

- Airborne concentrations and types of indoor suspended spores and fungal particulates;
- Mold contamination extent and types of indoor surface spores and fungal particulates present in representative substrates;
- Whether there is a probable inside source of potentially offensive airborne mold structures, and/or conditions potentially conducive to mold development in an area in which human exposure its likely to occur;
- Whether hygroscopic material's moisture content is appropriate for avoidance of microbial development.

Background

The Departamento de la Familia Building was reportedly impacted by Hurricane Maria, causing primary infiltration of hurricane driven water into various commercial spaces. As part of the building evaluation process, visual observations were documented to determine the building characteristics, determine the HVAC system characteristics, identify suspected mold growth and/or other potential contamination sources, recognize water/moisture damage, and distinguish water intrusion signs.

This basic investigation approach was derived and adapted primarily from investigation guidelines issued by the US Environmental Protection Agency (EPA) as contained in ***IAQ Building Education and Assessment Model (I-BEAM)***; as well as up-to-date industrial hygiene procedures for mold and water damage surveys, in order to address project's specific concerns.

Sampling was performed in selective areas of the aforementioned premises in order to characterize airborne and surface mold structures. Moisture content readings of suspected building components were performed at both reference and concern locations in order to determine the relative moisture content of the subject building materials.

Thermal comfort parameters of air temperature and relative humidity were evaluated given that mechanical ventilation systems were operational by the time the scope of work was established. Monitoring of suspended particulates, air temperature, relative humidity, carbon monoxide and carbon dioxide was conducted utilizing direct reading instrumentation. Absolute humidity levels (physical ratio of water vapor in air) and dew points were assessed using psychometrics calculations.

1.2 GENERAL FINDINGS

Visual Inspection

Air Sample collected from the first five floors at the Departamento de la Familia Building revealed conditions of significant airborne mold spores' concentrations typical of ***Chronic Indoor Mold Amplification Conditions***. Regarding the sixth floor no chronic conditions were reflected because it's an open area with most of the windows open, which also attributes to water intrusion. As result, it can be inferred that most surfaces present the presence of mold, even when there is no visible growth. Therefore, sanitation strategies will be necessary.

A vast area of "gypsum board" surfaces in the first three floors exhibited visible mold growth. At higher floors this condition is repeated more selectively. Water damage and/or suspicious mold growth was observed in acoustic roof panels throughout the first four floors, in the remaining upper floors the damage was minimal. The perimeter concrete walls of the building and some interior columns have mostly water damage and efflorescence.

The majority of the furniture made of cloth, leather or porous material has extensive mold growth and others have suffered water damage. Likewise, most if not all of the carpets have water damage. Other porous surfaces such as wood, cubicle and partitions present similar conditions.

As to the condition of the documents, we observed that the great majority are in conditions that can be sanitized. No mold growth and/or water damage was observed in many of the documents found in archives. Those documents that were not in archives got exposed to water and presented damages. In addition, sanitation measures must be taken to avoid transporting contaminated material to clean areas.

At the date of the inspection, surfaces made of "gypsum board" and carpets have been found wet. This is due to the environmental conditions in the building that has not allowed the water to evaporate, and the ongoing water intrusion to these areas. Most of the mechanical air conditioning rooms have water leakage due to failures in the mechanical system lines causing flooding, which in some cases overflows into the office areas.

This result obviously correlates with evidently exposed mold development over ample selective gypsum board wall sections with extreme water damage at the said area. Comparison with exterior reference sample also confirmed the interior assessed areas as potential mold sources.

Airborne Spores Characterization

The interior ***airborne spore's characterization samples*** results indicate atypical prevalence of indoor airborne spores through the areas assessed, prevailing the following mold genre:

- ***Penicillium/Aspergillus***

The ***Penicillium/Aspergillus*** like spores has a ubiquitous and cosmopolitan environmental distribution. Growth of these fungi in indoor environments has come to be widespread and commonly found in indoor dust. The Penicillium/Aspergillus like spores has a ubiquitous and cosmopolitan environmental distribution. Growth of these fungi in indoor environments has come to be widespread and commonly found in indoor dust. This fungus grows in water damaged buildings on wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint.

Physical & Chemical Air Parameters

Dew point and ***absolute humidity*** averaged levels were found to be ***in accordance with recommended parameters*** through all the assessed areas. Even so, some specific areas showed compliant but still atypical high values of absolute humidity and dew point temperature.

Relative humidity percentages were ***consistently above the recommended upper threshold limit through mostly all the assessed areas***. This finding is mostly expected outcome accounting for the occurrence of a recent severe water intrusion event. Another finding that can be related to elevated relative humidity is a heavy water leakage in the cooling tower causing inefficiency in the system. As a result the cooling tower does not reach the desired temperature; therefore, it is not properly dehumidifying the air.

This finding might be ***mostly related to generalize atypical low temperatures found at the facilities potentially associated to a suspected overcooling condition*** due to malfunction of the air conditioning system.

The ***average temperature*** measured among ***the representative interior inspected areas*** of the building was ***66.2^{o}F*** and the ***relative humidity 67.5%.***

The following table summarizes averaged ***environmental thermal comfort parameters*** monitored & calculated per interior area assessed per floor:

1st Floor Office Area	[0,1]**Temperature** (ºF)	[0,1]**Relative Humidity** (%)	[2]**Absolute Humidity** (gr/lb)	[2]**Dew Point** (ºF)
1ST FLOOR | AREA 1-1	64.6	66.3	60	53.2
1ST FLOOR | AREA 1-10	63.5	66.8	58	52.3
1ST FLOOR | AREA 1-35	66.9	65.2	64	54.9
1ST FLOOR | AREA 1-48	66.9	59.2	58	52.3
1ST FLOOR | AREA 1-66	66.8	59.1	58	52.2
OFFICE AREAS AVERAGES	65.74	63.32	59.6	52.98
RECOMMENDED LEVELS PER ASHRAE STANDARD 55-2013	**67.0 to 82.0 (74 to 78 for cooling season)**	**≤ 65**	**≤ 84.0**	**≤ 62.2**
2nd Floor Office Area	[0,1]**Temperature** (ºF)	[0,1]**Relative Humidity** (%)	[2]**Absolute Humidity** (gr/lb)	[2]**Dew Point** (ºF)
2ND FLOOR | AREA 2-3	63	65	56	51.1
2ND FLOOR | AREA 2-17	62.1	67.2	56	51.1
2ND FLOOR | AREA 2-35	69.6	60.1	65	55.2
2ND FLOOR | AREA 2-26	70.8	56.7	64	54.8
2ND FLOOR | AREA 2-44	62.4	62.7	53	49.6
OFFICE AREAS AVERAGES	65.58	62.34	58.8	52.36
RECOMMENDED LEVELS PER ASHRAE STANDARD 55-2013	**67.0 to 82.0 (74 to 78 for cooling season)**	**≤ 65**	**≤ 84.0**	**≤ 62.2**
3rd Floor Office Area	[0,1]**Temperature** (ºF)	[0,1]**Relative Humidity** (%)	[2]**Absolute Humidity** (gr/lb)	[2]**Dew Point** (ºF)
3RD FLOOR | AREA 3-7	65.1	65.9	61	53.5
3RD FLOOR | AREA 3-14	69.6	75.8	82	61.7
3RD FLOOR | AREA 3-30	65.1	69.3	64	54.9
3RD FLOOR | AREA 3-38	62.1	72.1	60	53
3RD FLOOR | AREA 3-54	61.5	68.5	56	51.1
3RD FLOOR | AREA 3-63	75.4	72.7	96	66
OFFICE AREAS AVERAGES	66.5	70.7	69.8	56.7
RECOMMENDED LEVELS PER ASHRAE STANDARD 55-2013	**67.0 to 82.0 (74 to 78 for cooling season)**	**≤ 65**	**≤ 84.0**	**≤ 62.2**

4th Floor Office Area	[0,1]**Temperature** (ºF)	[0,1]**Relative Humidity** (%)	[2]**Absolute Humidity** (gr/lb)	[2]**Dew Point** (ºF)
4TH FLOOR | AREA 4-7	60.9	68.3	54	50.5
4TH FLOOR | AREA 4-19	62	74.3	62	53.9
4TH FLOOR | AREA 4-41	65.4	65.8	61	53.8
4TH FLOOR | AREA 4-62	74.1	52.3	66	55.6
OFFICE AREAS AVERAGES	65.6	65.2	60.8	53.5
RECOMMENDED LEVELS PER ASHRAE STANDARD 55-2013	**67.0 to 82.0 (74 to 78 for cooling season)**	**≤ 65**	**≤ 84.0**	**≤ 62.2**
5th Floor Office Area	[0,1]**Temperature** (ºF)	[0,1]**Relative Humidity** (%)	[2]**Absolute Humidity** (gr/lb)	[2]**Dew Point** (ºF)
5TH FLOOR | AREA 5-11	61.4	74	60	53
5TH FLOOR | AREA 5-23	63.5	69.5	61	53.4
5TH FLOOR | AREA 5-35	67.1	78.4	78	60.2
5TH FLOOR | AREA 5-47	68.3	82.2	85	62.8
5TH FLOOR | AREA 5-53	73.3	71	87	63.3
5TH FLOOR | AREA 5-75	71.4	63.7	73	58.5
OFFICE AREAS AVERAGES	67.5	73.1	74.0	58.5
RECOMMENDED LEVELS PER ASHRAE STANDARD 55-2013	**67.0 to 82.0 (74 to 78 for cooling season)**	**≤ 65**	**≤ 84.0**	**≤ 62.2**
6th Floor Office Area	[0,1]**Temperature** (ºF)	[0,1]**Relative Humidity** (%)	[2]**Absolute Humidity** (gr/lb)	[2]**Dew Point** (ºF)
6TH FLOOR | AREA 6-17	66.4	70.1	68	56.4
RECOMMENDED LEVELS PER ASHRAE STANDARD 55-2013	**67.0 to 82.0 (74 to 78 for cooling season)**	**≤ 65**	**≤ 84.0**	**≤ 62.2**

Notes:

- [0]Value shown per area is an average of 3 stabilized readings or more logged at that area during fieldwork
- [1]Monitored parameter using direct reading instrumentation
- [2]Calculated parameter using Psychrometrics. For absolute humidity values: 1 lb = 7,000 grain; 1 grain = 0.06479891 grams
- [3]Parameter not in accordance with recommended thresholds or atypical

Materials' Moisture Content

Representative moisture readings taken at most gypsum board and wooden substrates evaluated revealed wood moisture content percentages (%MC), wood moisture equivalent percentages (%WME) and relative moisture levels (REL) ranging among the "wet to borderline conditions" threshold. These levels are suggestive of mostly atypical conditions for the materials investigated the day of the assessment. These are mostly expected outcomes accounting for the occurrence of a recent severe water intrusion event, the hygroscopic building materials installed and the existent building roof damage which is enabling ongoing water seepage. Most representative substrates evaluated on the day of the survey were found with atypical elevated moisture content level.

SECTION II: INDUSTRIAL HYGIENE ASSESSMENT FOR WATER DAMAGE & MOLD REPORT

2.1 OVERVIEW OF THE ASSESSMENT

This Industrial Hygiene Assessment for Water Damage and Mold included a limited visual inspection of relevant areas and conditions for mold growth and water damage. Air sampling was also performed in order to identify airborne fungal structures. In addition, moisture content of suspected substrates was also evaluated.

Air sampling consisted of twenty seven (27) indoor air spore trap samples in addition to three (3) exterior air spore trap sample taken for reference. All samples were carefully packed and sent for analysis to CIH Environmental Solutions Laboratory in Miami, FL (EMPAT #169743). The samples were analyzed for Fungal ID (Direct Exam), which includes total spores and mold structures counts in air, by Optical Microscopy technique. Direct reading instrumentation analysis was conducted for temperature (ºF) and relative humidity (%). Absolute humidity and dew point levels were assessed using psychometrics calculations.

2.2 SAMPLING, MONITORING & ESTIMATIONS PROCEDURES

Spore Trap Air Filter

Air samples were carefully collected placed in plastic containers and sent to CIH Environmental Solutions, Inc. in Miami, Florida for Fungal Identification by Optical Microscopy techniques. The spore and dust trap technique consists of trapping suspended particles in a medium to be analyzed under the microscope by ***Method: ASTM D7391-17- "Standard Test Method for Categorization and Quantification of Airborne Fungal Structures in an Inertial Impaction Sample by Optical Microscopy".*** *This technique permits the observation and quantification of viable and non-viable spores and fungal structures present.* Utilizing a conversion factor, the amount of fungal structures per cubic meter of air can be calculated.

Sampling Materials:

- High Volume Air Pump
- Flexible Tubing
- Rotameter
- Air-O-Cell Cassette

Sampling Procedures:

- The sampling pump flow rate was set in a rate of 15 liters per minute.
- The sampling Air-O-Cell cassette was connected to the sampling pump with flexible tubing.
- The tape seal covering the inlet of the cassette was removed.

- The sampling pump was turn on for five minutes for the interior samples following the laboratory guidelines. The tape seal was replaced at the end of the sampling

Temperature & Relative Humidity (%RH)

These parameters were analyzed utilizing a direct reading instrument manufactured by TSI, model TSI-8520, IAQ-Calc, serial number 54040459. The recommended manufacturer calibration was performed before the sample collection was conducted.

Air temperatures and ***relative humidity*** are measured to assess thermal comfort and the possibility of mold growth.

Absolute Humidity (gr/lb)

Absolute humidity and dew point are assessed through psychrometric calculations using a psychrometric's chart. Psychrometrics is the field of engineering concerned with the determination of physical and thermodynamic properties of gas-vapor mixtures. Although the principles of psychrometrics apply to any physical system consisting of gas-vapor mixtures, the most common system of interest is the mixture of water vapor and air, because of its application in heating, ventilating and air-conditioning.

Even thou ***Absolute Humidity*** is the *ratio of the mass of the moisture present in the sample to the total volume of the sample*, in chemical engineering the concept may refer to *mass of water vapor per unit mass of dry air, also known as the mass mixing ratio or specific humidity* (ASHRAE 2009 Handbook, Ch1,1.2, (9a) defines specific humidity as "the ratio of the mass of water vapor to total mass of the moist air sample"), which is better suited for heat and mass balance calculations. This ration *allows comparing* ***quantity*** *of water present in air among different areas* as another means to estimate potential for mold development or occupants' discomfort due to excessive moisture conditions.

Materials' Moisture Content

This parameter was analyzed utilizing a direct reading protimeter. The Protimeter features a color display which is a collection of 60 LEDs divided into color-coded zones signify moisture readings of the material under investigation. The green, yellow, and red color-coded zones provide different indications.

Depending upon the moisture reading, one of the LEDs will light up to allow the surveyor to read the moisture reading. The scale runs from 6% to 90% WMC (wood moisture content). The WME value is the theoretical moisture level that would be attained by wood that is in moisture equilibrium with the material being tested.

The LEDs are subdivided into three color zones, green, yellow, and red indicating the severity of the moisture reading. In most cases it is quicker and easier to determine the reading using the color.

- In the green zone, moisture levels are in a safe air-dry condition
- In the yellow zone, moisture levels are higher than normal but not critical; further investigation is recommended
- In the red zone, moisture levels are excessive and too high. If sustained, high moisture levels will lead to decay

2.3 STANDARDS, GUIDELINES & REFERENCES

Standards and guidelines are often used as a reference point to assess safety. For airborne contaminants, concentrations measured are compared with federal or state regulatory standards and/or professionally recommended values.

Non-industrial Environments Guidelines
For contaminants where non-industrial standards or guides have not been established, the industrial hygiene profession and ASHRAE have customarily recommended, as a guideline, airborne concentrations of one-tenth the ACGIH Threshold Limit Values (TLV). This guide was adopted by ASHRAE in 1989. It is widely believed that at this reduced limit of concentration, substances will not produce complaints in non-industrial populations such as residences, offices, schools, and similar environments.

Airborne Spores Sampling Interpretation References
There are currently no standards and guidelines regarding results of fungal samples. Airborne fungi may change according to spatial and temporal variations. Without standards and guidelines, current approach to *the interpretation of results of fungal air samples relies on comparison of indoor vs. outdoor results and/or complaint vs. non-complaint area results*. Indoor results should be less than outdoor results and have the same relative population distributions. Results of *non-complaint areas should consistently be lower than that of complaint areas.* The indoor versus outdoor comparisons is not focused on the (absolute) concentrations, but the (relative) percentages of spores when doing indoor versus outdoor comparisons. *The purpose is to test the hypothesis of whether you have an indoor source of airborne spores or not*.

We take into consideration the indoor versus outdoor fungal count ratio, the presence or absence of certain fungi indoors versus outdoors, the genus and/or species of predominant fungi indoors versus outdoors. *There should be no pathogens such as Stachybotris chartarum or Aspergillus fumigatus in the indoor environment, nor should there be molds common on wetted building products.* In addition, it must be taken into account that according to the University of Puerto

Rico Aeroallergen's Monitoring Station, 80% of exterior airborne spores in Puerto Rico pertain to the ascomicetes and basidiomicetes group.

A high variability in outdoor mold spore concentrations and distribution could exists on a daily to hourly basis dependent on local vegetation and micro-climate, the time of year, local weather patterns, and diurnal variation. As a result, caution must be used when simultaneously comparing limited data sets of inside and outside concentrations or over generalizing any set of data. It also must be taken into account that the 50% cut-size of a standard spore trap cassette (Allergenco-D), when run at the recommended flow rate, is about 2.6 microns (um). This means that half of the particles with an aerodynamic diameter of 2.6 um will impact the collection media in the sampler, and half of them will pass right by. For example, the aerodynamic diameter for *Penicillium* and *Aspergillus* spores is generally in the 1 to 3 um range, so if sampling is being conducted in an environment which has been contaminated by these types of mold, then probabilities are that more than half of the spores that are actually present while collecting the sample are likely being missed.

Information given below can serve as an additional recommended reference guide to evaluating the relative degree of indoor airborne mold spore amplification according to the laboratory testing firm Environmental Analysis Associates Inc. and Mr. Daniel Baxter, designer of the Air-O-Cell bio aerosol sampler.

These guidelines are best used to help visualize the potential for problems, but <u>not necessarily to predict health effects</u>.

TYPICAL INDOOR MOLD SPORE CONCENTRATION RANGES		
Description	***Spores (cts/m³)***	***Predominant Types***
"Clean" building	less than 2,000	Total for all spore types
	less than 700	Penicillium, Aspergillus
Possible Indoor Amplification	1,000 - 5,000	Penicillium, Aspergillus, Cladosporium
Indoor Amplification likely present	5,000 - 10,000	Penicillium, Aspergillus, Cladosporium
Chronic Indoor Amplification	10,000 - 500,000	Penicillium, Aspergillus, Cladosporium
Inadequate flood cleanup or active indoor demolition of contaminated surfaces	50,000 - 10,000,000	Penicillium, Aspergillus, Stachybotrys, Cladosporium, Chaetomium, Basiomycetes, Tricoderma, Ulocladium, etc.

**These guidelines cannot be used to determine human exposure or health related problems of the occupants of these facilities. The data should be used as a complementary tool to assess the predominant difference between typical and atypical indoor spores' conditions and not as criteria for declaring an environment "safe" or "unsafe".

IAQ Visual Assessment Guidelines

Guidelines and recommendations related to indoor environmental visual inspections for air quality issues are referenced from the Air Conditioning Contractors of America (ACCA), National Air Duct Cleaners Association (NADCA), US Environmental Protection Agency (EPA), and the American Society of Heating, Ventilation and Air Conditioning Engineers (ASHRAE).

Visual inspection must help estimate and document suspected contaminants, if any, such as dust and particulate accumulation inside the ventilation system, as well as stagnant water, corrosion, microbial development and other common causes of potential indoor air quality issues related to air conditioning equipment.

Likewise, a limited visual assessment of relevant areas, selective wall surfaces and building components, among others, is performed to: determine the building characteristics, determine the HVAC system characteristics, identify suspected mold growth and/or other potential indoor and outdoor contamination sources, recognize water/moisture damage, and distinguish water intrusion signs and significant dust accumulation, if any.

Thermal Environmental Conditions Standard

ANSI/ASHRAE standard 55-2013, "Thermal Environmental Conditions for Human Occupancy", sets an upper limit to *absolute humidity level* of 0.012 humidity ratio (0.012 x 7000 = *84 grains moisture/lb dry air*) also equivalent to a *dew point* (DP) of *62.2°F* (16.8°C), above which most occupants become uncomfortable. For thermal comfort purposes, the same standard proposes that *temperatures* in air could range from *between approximately 67 and 82°F (74 to 78°F for cooling season).* A more specific range can be determined from the standard but depends on relative humidity, season, clothing worn, activity levels, and other factors.

ANSI/ASHRAE Standard 62.1-2013, "Ventilation for Acceptable Indoor Air Quality", plus ASHRAE BOD approved addenda requires that *relative humidity levels* be designed to be limited to *65% or less* for mechanical systems with dehumidification capability.

Materials Moisture Content

Dampness levels in materials are measured in wood moisture equivalent (WME) percentages. A normal range is 8-13% WME, with fungal growth beginning at the 16% threshold. A 20% WME is enough to promote wood rot. It logically follows that the more time a part of a wall system exceeds one of these thresholds the greater chance of damage from fungal growth or rot.

When used in ***Search*** mode the Surveymaster is a moisture detector. Search mode readings give, in relative terms, the moisture condition beneath the surface of materials. This mode of operation is ideal for making rapid surveys on a comparative basis of solid walls and floors and to pinpoint areas of concern that may justify a more extensive investigation.

The Search mode may also be used as an alternative to Measure mode when it is impractical or undesirable to push electrode pins into surfaces.

Measure mode readings are precise and specific to the area of contact between the electrode tips. Actual percent moisture content (%MC) values are measured in wood products, whereas Wood Moisture Equivalent (WME) values are measured in materials other than wood. The WME measurement is the theoretical (%MC) value that would be attained by a piece of wood in moisture equilibrium with the material under investigation at the point of measurement. As the critical %MC levels of wood are known, WME values may be used directly to establish if the material is in a dry, borderline, or damp condition as indicated by the color coded LED scale.

2.4 DISCUSSION

The CIH Environmental laboratory analytical reports number: REL08066A, REL18071A and REL08072A are presented in the appendixes section of the report.

The results from this sampling should be used as a tool to distinguish the difference between typical and atypical indoor conditions and not as criteria for declaring an environment "safe" or "unsafe". It only identifies the presence of fungal matter and particulates in sampled air; however, it can help to prepare a specific plan for the abatement or avoidance of the potential hazards related to mold and/or particulate.

2.4.1 Spore Trap Air Sampling

Airborne Spores Samples- CIH Environmental Laboratory Report number: REL08066A, REL18071A and REL08072A: Fungal ID

Air sample collected from floors 1 through 5 at the Departamento de la Familia Building revealed conditions of significant airborne mold spores' concentrations typical of ***Chronic Indoor Mold Amplification Conditions***. Mold spores concentrations and genre revealed in this area are distinctive indicators of ***Indoor Mold Amplification conditions,*** according to reference guidelines, with ***>41,600 counts/m^3*** of the ***Penicillium/Aspergillus spore type*** at the said area. This result obviously correlates with evidently exposed mold development over ample selective gypsum board wall sections with extreme water damage at the said area. Comparison with exterior reference sample also confirmed the interior assessed areas as potential mold sources.

Suspected mold sources at the mentioned office areas were found mostly in unoccupied storage locations and partially hidden substrates. Comparison with exterior reference sample evidently confirms indoor areas as a source for the revealed airborne mold spores given that exterior airborne mold genre distribution doesn't correlate with indoor findings.

Penicillium/Aspergillus spore type

The spores of Penicillium and Aspergillus (and other fungi such as Acremonium and Paecilomyces), are very similar, small and round, colorless or slightly pigmented and therefore cannot be differentiated due to these similarities. The *Penicillium/Aspergillus* like spores has a ubiquitous and cosmopolitan environmental distribution. Growth of these fungi in indoor environments has come to be widespread and commonly found in house dust. This fungus grows in water damaged buildings on wallpaper, wallpaper glue, decaying fabrics, moist chipboards, and behind paint.

Species of ***Penicillium*** are ubiquitous soil fungi preferring cool and moderate climates, commonly present wherever organic material is available. Penicillium species are present in the air and dust of indoor environments, such as homes and public buildings. The fungus can be readily transported from the outdoors, and grow indoors using building material or accumulated soil to obtain nutrients for growth. Penicillium growth can still occur indoors even if the relative humidity is low, as long as there is sufficient moisture available on a given surface. Some Penicillium species cause damage to machinery and the combustible materials and lubricants used to run and maintain them.

The genus ***Aspergillus*** is a diverse group of common molds and the approximately 175 species are inhabitants of virtually all terrestrial environments. When conditions in indoor situations are favorable for fungal growth, Aspergillus species are one of the primary colonizers of man-made substrata. Most species have relatively low moisture requirements and some are extremely xerophilic (dry tolerant) (Klich 2002, Pitt and Hocking 1999), allowing them to colonize areas that cannot support other fungi and where only minimal or intermittent moisture is available.
A few species are common opportunistic human pathogens, including *A. fumigatus*, the most common agent of aspergillosis, and *A. niger*, a common agent of otomycosis (ear infection).

2.4.2 Materials Moisture Content

Moisture readings taken at selective gypsum board and wooden substrates evaluated revealed wood moisture content percentages (%MC), wood moisture equivalent percentages (%WME) and relative moisture levels (REL) ranging among the “wet to borderline conditions” threshold. These levels are suggestive of mostly concern conditions for the materials investigated the day of the assessment. These are mostly expected outcomes accounting for the occurrence of a recent severe water intrusion event, the hygroscopic building materials installed and the existent building roof damage which is enabling ongoing water seepage.

Even thou the intense water intrusion event affecting the subject facilities occurred approximately five (5) months ago, the adequate mechanical ventilation has enable gradual

moisture content migration from the evaluated substrates still found under atypical wet conditions.

A number was assigned to identify each functional space of the structure included in the scope of work. Each wall surface was named with letters beginning with wall A the wall facing the main street. The wall at your left will be wall B, the wall at front wall C and the wall at you right will be Wall D.

2.4.3 Visual Inspection

TABLE 2.4.3.1: VISUAL FINDINGS PER FLOOR AREA

BUILDING AREAS	OBSERVATIONS
1st thru 5th Floor	• Generalized and extensive mold contamination over most building surfaces and content. • Generalized and extensive water damage over most building surfaces. • Acoustic ceiling tiles with water damage. • Water damaged floor carpets and flooring and vinyl cove base. • Suspected mold growth on wood doors, frames, cove bases and other wood surfaces. • Efflorescence over concrete perimeter walls; paint blistering on concrete walls. • Cardboard boxes and other contents stacked with dust accumulations and suspected mold contamination • Extensive suspected mold growth on office furniture • Most of the documents located at the file cabinets are in good condition with dust accumulation. Suspected mold growth was observed in selective documents and files due to water damage • Wet gypsum board surfaces and carpets were identified during the inspection. • Water intrusion at some of the subject areas was ongoing during the assessment thru the building mechanical rooms and open windows.
6th Floor	• Cardboard boxes and other contents stacked with dust accumulations and suspected mold contamination • Visible signs of water intrusion from the windows. • Water accumulation and intrusion from the mechanical rooms. • Water damage and mold contamination over wet gypsum board panel walls and ceiling tiles. • Water damage on light fixtures • Concrete walls also showing water and moisture damage signs

TABLE 2.4.3.1: VISUAL FINDINGS PER FLOOR AREA	
BUILDING AREAS	**OBSERVATIONS**
Mechanical System	• Excessive corrode particulate deposit. Corroded piping and deterioration on thermal insulation. • Saturated air filters and pre-filters. • Dusty cooling coil. • Ongoing water intrusion thru concrete ceiling and pipelines. Water accumulation on floors. • Condensation on pipelines. • Air handling units inspected were not operational during the assessment.

Notes:

- **Efflorescence** is a crystalline deposit of salts often seen on the surface of concrete, brick, stucco, or natural stone surfaces. It occurs when water is present on or in the masonry surface. The essential process involves the dissolving of an internally held salt in water, or occasionally in another solvent. The water, with the salt now held in solution, migrates to the surface, and then evaporates, leaving a coating of the salt.

2.5 CONCLUSIONS

Spore Trap Air Sampling & Mold Surface Sampling

Air samples were collected at locations reasonably representative of the diverse environmental conditions related to water damage and mold development found through the subject facilities. These conditions include areas of severe generalized water damage and aggressively dynamic mold development, as well as areas with minimal concerns.

Air sampling results approximately correlate with the variable described environmental conditions with elevated concentrations of airborne fungal structures revealed at unoccupied areas with extensive contamination and lesser airborne fungal structures concentrations typical of low concern conditions ("possible" indoor mold amplification) at office locations with few evident concerns. Air sampling results suggesting low but existent potential for indoor mold amplification at occupied office areas might be related to suspected historical water damage conditions affecting the facilities as well as possible migration from nearby contaminated areas.

Materials Moisture Content

Findings revealed generalized "wet to border" conditions on representative gypsum board wall surfaces and representative wooden surfaces mostly through the office areas. These levels are suggestive of mostly atypical conditions for the materials investigated the day of the assessment.

Finding building materials with elevated moisture content at the subject facilities are mostly expected outcomes accounting for the occurrence of a recent severe water intrusion event and the hygroscopic building materials installed which is enabling ongoing water seepage in some areas of the structure. In addition, it can be assumed that the lack of adequate mechanical ventilation hasn't enable reasonable control of relative humidity levels in air thus delaying gradual moisture content migration from the evaluated substrates still found under atypical wet conditions.

Visual Findings

Most critical and major loss conditions of generalized and extensive mold contamination and water damage were found over most building surfaces and content. The existent dynamic indoor environmental conditions found can be reasonably assumed to be progressively worsening due to all microbial development supporting elements present of mold structures, moisture and degradable substrates available at the said areas which are also currently without any ventilation provision.

Most of the water damage noticed over concrete substrates was caused by water intrusion thru the window openings, Wood and gypsum board wall substrates found with elevated moisture content at lower sections were identified during the inspection dates. Ventilation air handling units serving the assessed subject Office Areas appeared with notable dust and suspected biofilm contamination over its internal components which will require proper sanitization. Corroded surfaces were also found mostly at the cooling coil lower casing section of the units.

2.6 RECOMMENDATIONS

- All water intrusion sources must be properly rectified before attempting any mold remediation procedures.

- Mold contaminated miscellaneous contents, as well as damage, porous and contaminated wooden and gypsum board substrates identified with extensive mold development and/or elevated moisture content levels, shall be removed and discarded under controlled conditions. Porous items that are organic and readily absorb water are highly susceptible to mold growth.

- Adequate and strategic location of air scrubbing machines equipped with High Efficiency Particulate Arresting (HEPA) filters through the contaminated areas might be necessary to reduce airborne mold structures and spores during and after the mitigation efforts.

- Deep cleaning of all surfaces and materials that cannot be removed or replaced at the facilities must be accomplished as part of the mitigation efforts.

- Sanitization of mechanical ventilation system must also be included among the contamination mitigation procedures. Proper air handling unit's efficient air filters installation procedures, as well as routine preventive inspection protocol must be implemented or improved.

- Once all recovery efforts have been fulfilled, an industrial hygiene assessment should be conducted by a professional industrial hygiene firm to document and verify that all procedures were conducted successfully and that former contaminated areas are under typical conditions.

- Properly remove efflorescence depositions from water damaged concrete substrates. Efflorescing salts are water-soluble, which means efflorescence may disappear on its own due to normal weathering. Some of the best ways to remove efflorescence include:

    - 1) Pressurized Water: Applying pressurized water may dissolve efflorescence quickly. If you use water, dry off the water from the building material after application. If you fail to remove the water, crystals may remain that can cause efflorescence to reappear.

    - 2) Diluted Vinegar: If you're in a pinch, using household diluted white vinegar can be used on efflorescence. It's less harmful than industrial chemicals and you most likely already have vinegar in your kitchen.

    - 3) Brushing: With a strong brush, you can remove efflorescence with ease.

    - 4) Clear water repellents, silicone and acrylic coatings may help efflorescence remediation. The coating will absorb water across a masonry surface and prevent efflorescence from recurring. Plus, the combination of warm water and white wine vinegar has been shown to eliminate efflorescence.

2.7 CONDITIONS AND LIMITATIONS—DISCLAIMER

Zimmetry Environmental Management Corp. has performed this Industrial Hygiene Assessment for Water Damage and Mold in a thorough and professional manner consistent with commonly accepted industry standards. The Preparer cannot guarantee and does not warrant that this evaluation has identified all adverse environmental factors and/or conditions affecting this property on the date of the evaluation.

Currently, there are no federal standards or recommendations for acceptable exposures to airborne concentrations of mold or mold spores. Research on the health effects of mold exposure

is ongoing. According to the Occupational Safety and Health Administration (OSHA), most typical indoor air exposures to mold do not present a risk of adverse health effects. Molds can cause adverse effects by producing allergens (substances that can cause allergic reactions). For those people who are sensitive to molds, exposure can cause symptoms such as nasal stuffiness, eye irritation, wheezing, or skin irritation. Potential health concerns are important reasons to prevent mold growth and to remediate existing problem areas. The advice of a medical professional should always be sought if there are any emerging health issues.

The findings in this report are based upon industry-accepted general practices, guidance documents published by the US Environmental Protection Agency, the New York City Department of Health and Mental Hygiene, and peer-reviewed journals and texts among other references. For this project, the industrial hygienist has conducted the scope of work with the standard of care exercised by similarly-experienced professionals under similar circumstances.

The results reported and conclusions reached by the Preparer are solely for the benefit of the Owner. The results and opinions in this report, based solely on the conditions found at the property on the date of the evaluation, are valid only on that date. The Preparer assumes no obligation to advise the client of any changes in any real or potential indoor hazards at the facility beyond the date of the property evaluation.

2.8 ENVIRONMENTAL ASSESSMENT REPORT CERTIFICATION

Zimmetry Environmental Management Corp. has performed this Industrial Hygiene Assessment for Water Damage and Mold in a thorough and professional manner consistent with commonly accepted industry standards. The survey was conducted between January 31, 2018 and February 23, 2018 by Harry Peña Ruiz, MSc, CEI, ASCS, CMS, MRS, WRS, Industrial Hygiene & Environmental Building Expert, Mold & Water Damage Specialist; and Onell González, PhD(c), MSc, CIEC, LEED AP O+M, Professional Industrial Hygienist and Sustainability Expert & Trainer; both qualified by experience, education and training in the anticipation, recognition, evaluation, prevention, and control of those environmental factors or stresses which may cause sickness, impaired health and well-being, or significant discomfort among workers or among citizens of the community.



Harry Peña Ruiz, MSEM
Professional Industrial Hygienist |

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SECTION III: APPENDICES

Appendix A: Samples Analytical Results & Chains of Custody

Appendix B: Mold & Water Damage Mapping

Appendix C: Project Photographs

Appendix D: Credentials

APPENDIX A: SAMPLES ANALYTICAL RESULTS & CHAINS OF CUSTODY

cih ENVIRONMENTAL SOLUTIONS

EMPAT #169743

Client	Zimmetry Environmental.	Date of Sampling:	January 31, 2018
Project Address:	Departamento de la Familia, Hato Rey, PR	Date of Receipt:	February 6, 2018
Client Project ID:	ZEM-18005	Date of Analysis:	February 6, 2018
REL Report No.:	REL18066A		

Lab Sample ID Client sample ID Location	Air vol. (m3)	Fungal ID	Counts of Structures	Counts/m3	Percentage
REL18066A -01	0.075	ascospores	1	13	8%
01		Cladosporium	2	26	15%
Area 1-1		Curvularia	1	13	8%
		Penicillium/Aspergillus[e]	9	117	69%
		TOTAL FUNGAL SPORES	**13**	**169**	**100%**
REL18066A -02	0.075	hyphal fragments	2	26	NA
02					
Area 1-10		Cladosporium	9	117	41%
		Penicillium/Aspergillus[e]	13	169	59%
		TOTAL FUNGAL SPORES	**22**	**286**	**100%**
REL18066A -03	0.075	hyphal fragments	2	26	NA
03					
Area 1-35		Cladosporium	31	403	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,231**	**>42,003**	**NA**
REL18066A -04	0.075	hyphal fragments	4	52	NA
04					
Area 1-48		Cladosporium	260	3,380	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,460**	**>44,980**	**NA**
REL18066A -05	0.075	hyphal fragments	3	39	NA
05					
Area 1-66		ascospores	2	26	NA
		Cladosporium	80	1,040	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,282**	**>42,666**	**NA**
REL18066A -06	0.075	hyphal fragments	5	65	NA
06					
Area 2-3		Cladosporium	21	273	NA
		Curvularia	1	13	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,222**	**>41,886**	**NA**
REL18066A -07	0.075	hyphal fragments	2	26	NA
07					
Area 2- 16/17		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,200**	**>41,600**	**NA**
REL18066A -08	0.075	hyphal fragments	2	26	NA
08					
Area 2-35		ascospores	3	39	NA
		Cladosporium	14	182	NA
		Curvularia	1	13	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,218**	**>41,834**	**NA**

Client	Zimmetry Environmental.	Date of Sampling:	January 31, 2018
Project Address:	Departamento de la Familia, Hato Rey, PR	Date of Receipt:	February 6, 2018
Client Project ID:	ZEM-18005	Date of Analysis:	February 6, 2018
REL Report No.:	REL18066A		

Lab Sample ID Client sample ID Location	Air vol. (m3)	Fungal ID	Counts of Structures	Counts/m3	Percentage
REL18066A -09	0.075	hyphal fragments	3	39	NA
09					
Area 2-26		ascospores	3	39	NA
		basidiospores	1	13	NA
		Ganoderma	1	13	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,205**	**>41,665**	**NA**
REL18066A -10	0.075	hyphal fragments	1	13	NA
10					
Area 2-44		ascospores	1	13	17%
		Penicillium/Aspergillus[e]	5	65	83%
		TOTAL FUNGAL SPORES	**6**	**78**	**100%**
REL18066A -11	0.075	hyphal fragments	3	39	NA
11					
Exterior		ascospores	6	78	21%
		Cercospora	5	65	18%
		Cladosporium	8	104	29%
		Curvularia	1	13	4%
		Ganoderma	2	26	7%
		Myxomycetes/Periconia/Rusts/Smuts	1	13	4%
		Penicillium/Aspergillus[e]	4	52	14%
		Pithomyces	1	13	4%
		TOTAL FUNGAL SPORES	**28**	**364**	**100%**

Method: ASTM D7391-17- "Standard Test Method for Categorization and Quantification of Airborne Fungal Structures in an Inertial Impaction Sample by Optical Microscopy"

100% of trace counted - Concentration percentage is rounded to two significant figures

[a] Samples overloaded with particles (skin flakes, dust, manmade vitreous fibers, synthetic fibers, or any unidentifiable matter). Probability that fungal structures may be misidentified or overlooked.

[b] Counts of structures based on >50 in at least one traverse (passes) section.

[c] Counts of structures based on >100 counts in the entire traceable area observed.

[d] Clumps of conidia with a distinctive green pigment typical of Trichoderma.

[e] The spores of Penicillium/Aspergillus (and others such as Acremonium, Paecilomyces) are very similar, small and round, colorless or slightly pigmented and therefore cannot be differentiated due to these similarities.

Approved by: _____

Ruth Otero
Laboratory Director

Client	Zimmetry Environmental.	Date of Sampling:	February 6, 2018
Project Address:	Departamento de la Familia, Hato Rey, PR	Date of Receipt:	February 12, 2018
Client Project ID:	ZEM-18005	Date of Analysis:	February 12, 2018
REL Report No.:	REL18071A		

Lab Sample ID Client sample ID Location	Air vol. (m3)	Fungal ID	Counts of Structures	Counts/m3	Percentage
REL18071A -01	0.075	hyphal fragments	2	26	NA
11					
Area 3-7		Cladosporium	1	13	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,201**	**>41,613**	**NA**
REL18071A -02	0.075	hyphal fragments	2	26	NA
12					
Area 3-14		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,200**	**>41,600**	**NA**
REL18071A -03	0.075	hyphal fragments	1	13	NA
13					
Area 3-30		ascospores	2	26	NA
		basidiospores	1	13	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,203**	**>41,639**	**NA**
REL18071A -04	0.075	hyphal fragments	2	26	NA
14					
Area 3-38		ascospores	1	13	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,201**	**>41,613**	**NA**
REL18071A -05	0.075	hyphal fragments	1	13	NA
15					
Area 3-54		ascospores	1	13	NA
		basidiospores	1	13	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		Torula	1	13	NA
		TOTAL FUNGAL SPORES	**>3,203**	**>41,639**	**NA**
REL18071A -06	0.075	hyphal fragments	4	52	NA
16					
Area 3-63		ascospores	5	65	NA
		basidiospores	5	65	NA
		Chaetomium	2	26	NA
		Ganoderma	1	13	NA
		Myxomycetes/Periconia/Rusts/Smuts	1	13	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,214**	**>41,782**	**NA**
REL18071A -07	0.075	hyphal fragments	1	13	NA
17					
Area 4-7		ascospores	2	26	NA
		basidiospores	1	13	NA
		Chaetomium	1	13	NA
		Curvularia	2	26	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,206**	**>41,678**	**NA**

Client	Zimmetry Environmental.	Date of Sampling:	February 6, 2018
Project Address:	Departamento de la Familia, Hato Rey, PR	Date of Receipt:	February 12, 2018
Client Project ID:	ZEM-18005	Date of Analysis:	February 12, 2018
REL Report No.:	REL18071A		

Lab Sample ID Client sample ID Location	Air vol. (m3)	Fungal ID	Counts of Structures	Counts/m3	Percentage
REL18071A -08	0.075	hyphal fragments	2	26	NA
18					
Area 4-19		ascospores	2	26	NA
		basidiospores	4	52	NA
		Chaetomium	1	13	NA
		Myxomycetes/Periconia/Rusts/Smuts	1	13	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,208**	**>41,704**	**NA**
REL18071A -09	0.075	hyphal fragments	2	26	NA
19					
Area 4-41		Curvularia	1	13	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,201**	**>41,613**	**NA**
REL18071A -10	0.075	hyphal fragments	1	13	NA
20					
Area 4-62		Curvularia	2	26	NA
		Penicillium/Aspergillus[ce]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,202**	**>41,626**	**NA**
REL18071A -11	0.075	hyphal fragments	2	26	NA
21					
Outside Air		ascospores	7	91	18%
		basidiospores	3	39	8%
		Cercospora	1	13	3%
		Cladosporium	15	195	38%
		Curvularia	1	13	3%
		Penicillium/Aspergillus[e]	12	156	31%
		TOTAL FUNGAL SPORES	**39**	**507**	**100%**

Method: ASTM D7391-17- "Standard Test Method for Categorization and Quantification of Airborne Fungal Structures in an Inertial Impaction Sample by Optical Microscopy"

100% of trace counted - Concentration percentage is rounded to two significant figures

[a] Samples overloaded with particles (skin flakes, dust, manmade vitreous fibers, synthetic fibers, or any unidentifiable matter). Probability that fungal structures may be misidentified or overlooked.

[b] Counts of structures based on >50 in at least one traverse (passes) section.

[c] Counts of structures based on >100 counts in the entire traceable area observed.

[d] Clumps of conidia with a distinctive green pigment typical of Trichoderma.

[e] The spores of Penicillium/Aspergillus (and others such as Acremonium, Paecilomyces) are very similar, small and round, colorless or slightly pigmented and therefore cannot be differentiated due to these similarities.

Approved by: _____

Ruth Otero
Laboratory Director

Client	Zimmetry Environmental.	Date of Sampling:	February 8, 2018
Project Address:	Departamento de la Familia, Hato Rey, PR	Date of Receipt:	February 12, 2018
Client Project ID:	ZEM-18005	Date of Analysis:	February 12, 2018
REL Report No.:	REL18072A		

Lab Sample ID Client sample ID Location	Air vol. (m3)	Fungal ID	Counts of Structures	Counts/m3	Percentage
REL18072A -01	0.075	hyphal fragments	2	26	NA
22					
Area 5-11		ascospores	1	13	NA
		basidiospores	2	26	NA
		Curvularia	1	13	NA
		Ganoderma	2	26	NA
		Myxomycetes/Periconia/Rusts/Smuts	1	13	NA
		Nigrospora	1	13	NA
		Penicillium/Aspergillus[e]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,208**	**>41,704**	**NA**
REL18072A -02	0.075	hyphal fragments	2	26	NA
23					
Area 5-23		basidiospores	2	26	NA
		Myxomycetes/Periconia/Rusts/Smuts	2	26	NA
		Penicillium/Aspergillus[e]	123	1,599	NA
		TOTAL FUNGAL SPORES	**127**	**1,651**	**NA**
REL18072A -03	0.075	hyphal fragments	2	26	NA
24					
Area 5-35		ascospores	3	39	3%
		basidiospores	1	13	1%
		Cladosporium	1	13	1%
		Ganoderma	1	13	1%
		Nigrospora	1	13	1%
		Penicillium/Aspergillus[e]	98	1,274	93%
		TOTAL FUNGAL SPORES	**105**	**1,365**	**100%**
REL18072A -04	0.075	hyphal fragments	1	13	NA
25					
Area 5-47		ascospores	2	26	1%
		Cercospora	1	13	1%
		Myxomycetes/Periconia/Rusts/Smuts	1	13	1%
		Penicillium/Aspergillus[e]	138	1,794	97%
		TOTAL FUNGAL SPORES	**142**	**1,846**	**100%**
REL18072A -05	0.075	hyphal fragments	2	26	NA
26					
Area 5-53		ascospores	1	13	NA
		Ganoderma	1	13	NA
		Myxomycetes/Periconia/Rusts/Smuts	2	26	NA
		Penicillium/Aspergillus[e]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,204**	**>41,652**	**NA**
REL18072A -06	0.075	hyphal fragments	3	39	NA
27					
Area 5-75		Penicillium/Aspergillus[e]	>3,200	>41,600	NA
		TOTAL FUNGAL SPORES	**>3,200**	**>41,600**	**NA**
REL18072A -07	0.075	Cladosporium	2	26	14%
28		Curvularia	1	13	7%
Area 6-17		Ganoderma	2	26	14%
		Penicillium/Aspergillus[e]	9	117	64%
		TOTAL FUNGAL SPORES	**14**	**182**	**100%**

Client	Zimmetry Environmental.	Date of Sampling:	February 8, 2018
Project Address:	Departamento de la Familia, Hato Rey, PR	Date of Receipt:	February 12, 2018
Client Project ID:	ZEM-18005	Date of Analysis:	February 12, 2018
REL Report No.:	REL18072A		

Lab Sample ID / Client sample ID / Location	Air vol. (m3)	Fungal ID	Counts of Structures	Counts/m3	Percentage
REL18072A -0829	0.075	hyphal fragments	2	26	NA
Outside Air		ascospores	3	39	30%
		basidiospores	1	13	10%
		Cladosporium	2	26	20%
		Ganoderma	1	13	10%
		Myxomycetes/Periconia/Rusts/Smuts	1	13	10%
		Penicillium/Aspergillus[e]	2	26	20%
		TOTAL FUNGAL SPORES	**10**	**130**	**100%**

Method: ASTM D7391-17- "Standard Test Method for Categorization and Quantification of Airborne Fungal Structures in an Inertial Impaction Sample by Optical Microscopy"

100% of trace counted - Concentration percentage is rounded to two significant figures

[a] Samples overloaded with particles (skin flakes, dust, manmade vitreous fibers, synthetic fibers, or any unidentifiable matter). Probability that fungal structures may be misidentified or overlooked.

[b] Counts of structures based on >50 in at least one traverse (passes) section.

[c] Counts of structures based on >100 counts in the entire traceable area observed.

[d] Clumps of conidia with a distinctive green pigment typical of Trichoderma.

[e] The spores of Penicillium/Aspergillus (and others such as Acremonium, Paecilomyces) are very similar, small and round, colorless or slightly pigmented and therefore cannot be differentiated due to these similarities.

Approved by: _____

Ruth Otero
Laboratory Director

CIH Environmental Laboratory Inc.
425 SW 17 Avenue Miami, Fl 33135
EMPAT #169743
Tel: (305) 541-9959/Fax: (305) 541-9965

CHAIN OF CUSTODY

Company: Zimmetry Environmental Mgt.	Contact: Harry Peña	Phone: 787-995-0005
Address: PO Box 3545 Bayamón		Fax Results? Y / ~~N~~
PR 00958		Fax:
		Email Results? ~~Y~~ / N
Project: Departamento de la Familia, Hato Rey, PR	Date Collected: 1/31/18	Email: hpena@zimmetry.com
Project ID: ZEM-18005	Date Sent: 2/2/18	RAMS Reference # REL 18 066

Sample #	Sample Type (1)	Air Volume (L)	Sample Location	Analysis Requested (2)	Turnaround Time (3)	Comments
01	A	75	Area 1-1	REL-01	STD	#2302098
02	A	75	Area 1-10	REL-01	STD	#2518640
03	A	75	Area 1-35	REL-01	STD	#2518663
04	A	75	Area 1-48	REL-01	STD	#2518635
05	A	75	Area 1-66	REL-01	STD	#2518641
06	A	75	Area 2-3	REL-01	STD	#2518646
07	A	75	Area 2-16/17	REL-01	STD	#2302170
08	A	75	Area 2-35	REL-01	STD	#2302078
09	A	75	Area 2-26	REL-01	STD	#2302082
10	A	75	Area 2-44	REL-01	STD	#2302077
11	A	75	Exterior	REL-01	STD	#2518681

(1) Sample Type	(2) Analysis Requested	(3) Turnaround Time
A = Air (Air-O-Cell) ACF = Air Culture Fungi ASB = Asbestos BW / BS / BB = Bacterial (Water/ Swab/ Bulk) D = Dust Mite K = Bulk PC = Particle Characterization (Tape/Bulk) S = Swab T = Tape	REL-01 Total Fungal Spore Count REL-02 Fungi, Direct Exam REL-03 Culturable Fungi REL-04 Culturable Fungi with group speciation (For PT only) REL-05 Total coliforms and *E. coli* (presence/absence) REL-06 Particle dust characterization REL-07 Dust mite Rapid Test REL-08 Asbestos REL-08 Legionella	(SD) Same Day Rush = 3-5 hours (ND) Next Day Rush = 24 hours (STD) Standard = 48-72 hours

Relinquished by (signature)	Date: 2/2/2018 Time: 400pm	Received by (signature)	Date 2/6/18 Time 17:05	Notes/Comments/Special Instructions

08/16/05

CIH Environmental Laboratory Inc.
425 SW 17 Avenue Miami, Fl 33135
EMPAT #169743
Tel: (305) 541-9959/Fax: (305) 541-9965

CHAIN OF CUSTODY

Company: Zimmetry Environmental Mgt.	Contact: Harry Peña	Phone: 787-995-0005
Address: PO Box 3545 Bayamón		Fax Results? Y / ~~N~~
PR 00958		Fax:
		Email Results? ~~Y~~ / N
Project: Departamento de la Familia, Hato Rey, PR	Date Collected: 2/6/18	Email: hpena@zimmetry.com
Project ID: ZEM-18005	Date Sent: 2/7/18	RAMS Reference # RE18071

Sample #	Sample Type (1)	Air Volume (L)	Sample Location	Analysis Requested (2)	Turnaround Time (3)	Comments
11	A	75	Area 3-7	REL-01	STD	#2518661
12	A	75	Area 3-14	REL-01	STD	#2302097
13	A	75	Area 3-30	REL-01	STD	#2518673
14	A	75	Area 3-38	REL-01	STD	#2518662
15	A	75	Area 3-54	REL-01	STD	#2518680
16	A	75	Area 3-63	REL-01	STD	#2518675
17	A	75	Area 4-7	REL-01	STD	#2302088
18	A	75	Area 4-19	REL-01	STD	#2518682
19	A	75	Area 4-41	REL-01	STD	#2518667
20	A	75	Area 4-62	REL-01	STD	#2518676
21	A	75	Outside Air	REL-01	STD	#2518659

(1) Sample Type	(2) Analysis Requested	(3) Turnaround Time
A = Air (Air-O-Cell) ACF = Air Culture Fungi ASB = Asbestos BW / BS / BB = Bacterial (Water/ Swab/ Bulk) D = Dust Mite K = Bulk PC = Particle Characterization (Tape/Bulk) S = Swab T = Tape	REL-01 Total Fungal Spore Count REL-02 Fungi, Direct Exam REL-03 Culturable Fungi REL-04 Culturable Fungi with group speciation (For PT only) REL-05 Total coliforms and *E. coli* (presence/absence) REL-06 Particle dust characterization REL-07 Dust mite Rapid Test REL-08 Asbestos REL-08 Legionella	(SD) Same Day Rush = 3-5 hours (ND) Next Day Rush = 24 hours (STD) Standard = 48-72 hours

Relinquished by (signature)	Date: 2/7/2018 Time: 400pm	Received by (signature)	Date 2/10/18 Time 15:30	Notes/Comments/Special Instructions

08/16/05

CIH Environmental Laboratory Inc.
425 SW 17 Avenue Miami, Fl 33135
EMPAT #169743
Tel: (305) 541-9959/Fax: (305) 541-9965

CHAIN OF CUSTODY

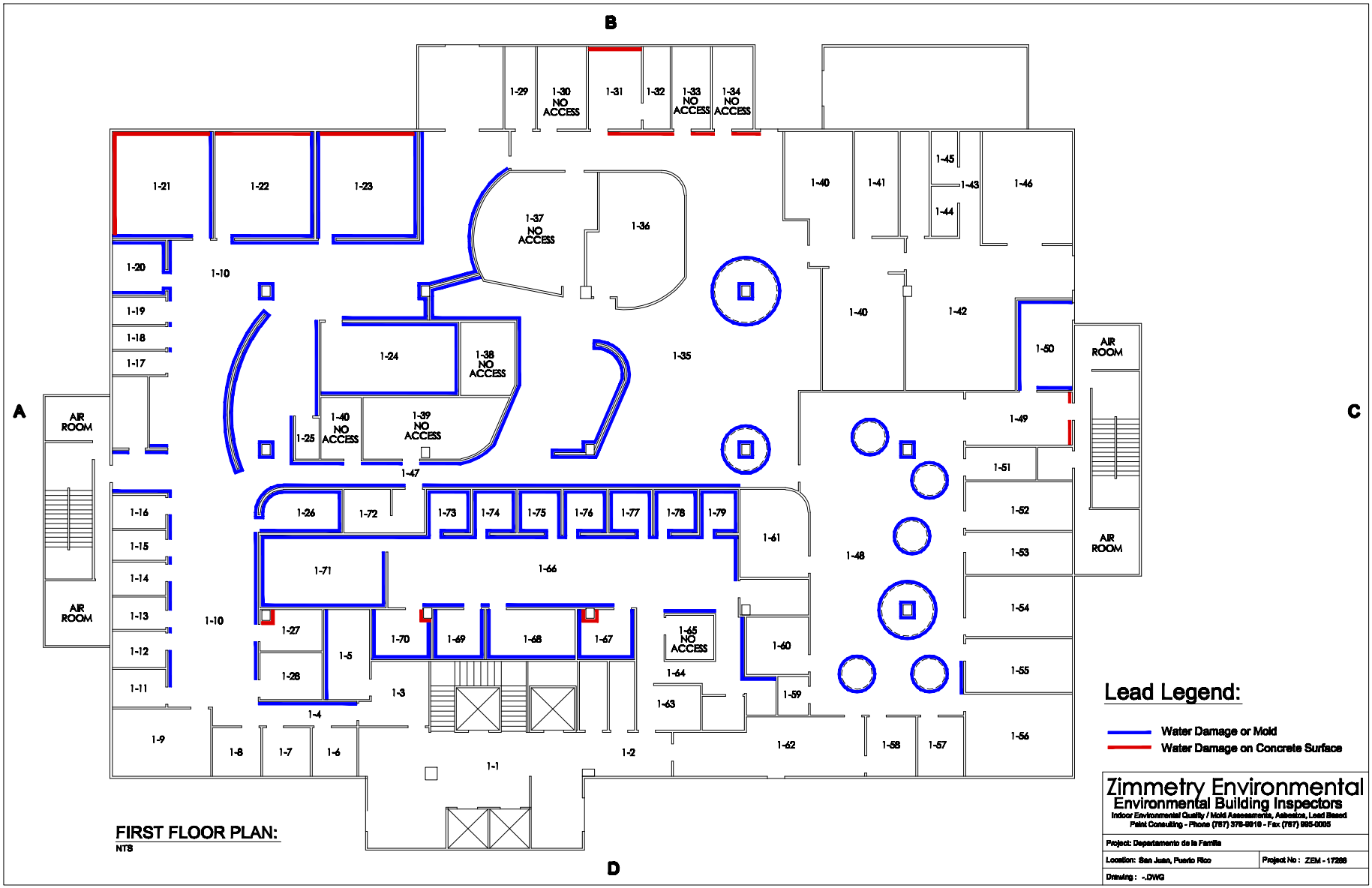
Company: Zimmetry Environmental Mgt.	Contact: Harry Peña	Phone: 787-995-0005
Address: PO Box 3545 Bayamón		Fax Results? Y / ~~N~~
PR 00958		Fax:
		Email Results? ~~Y~~ / N
Project: Departamento de la Familia, Hato Rey, PR	Date Collected: 2/8/18	Email: hpena@zimmetry.com
Project ID: ZEM-18005	Date Sent: 2/9/18	RAMS Reference # RE118072

Sample #	Sample Type (1)	Air Volume (L)	Sample Location	Analysis Requested (2)	Turnaround Time (3)	Comments
22	A	75	Area 5-11	REL-01	STD	#2518683
23	A	75	Area 5-23	REL-01	STD	#2518664
24	A	75	Area 5-35	REL-01	STD	#2518678
25	A	75	Area 5-47	REL-01	STD	#2302093
26	A	75	Area 5-53	REL-01	STD	#2518677
27	A	75	Area 5-75	REL-01	STD	#2518672
28	A	75	Area 6-17	REL-01	STD	#2518670
29	A	75	Outside Air	REL-01	STD	#2518665

(1) Sample Type	(2) Analysis Requested	(3) Turnaround Time
A = Air (Air-O-Cell) ACF = Air Culture Fungi ASB = Asbestos BW / BS / BB = Bacterial (Water/ Swab/ Bulk) D = Dust Mite K = Bulk PC = Particle Characterization (Tape/Bulk) S = Swab T = Tape	REL-01 Total Fungal Spore Count REL-02 Fungi, Direct Exam REL-03 Culturable Fungi REL-04 Culturable Fungi with group speciation (For PT only) REL-05 Total coliforms and *E. coli* (presence/absence) REL-06 Particle dust characterization REL-07 Dust mite Rapid Test REL-08 Asbestos REL-08 Legionella	(SD) Same Day Rush = 3-5 hours (ND) Next Day Rush = 24 hours (STD) Standard = 48-72 hours

Relinquished by (signature)	Date: 2/9/2018 Time: 400pm	Received by (signature)	Date 2/12/18 Time 15:31	Notes/Comments/Special Instructions

APPENDIX B: MOLD & WATER DAMAGE MAPPING


B
A
C
D
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1-31
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1-20
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1-18
1-17
1-24
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1-42
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AIR ROOM
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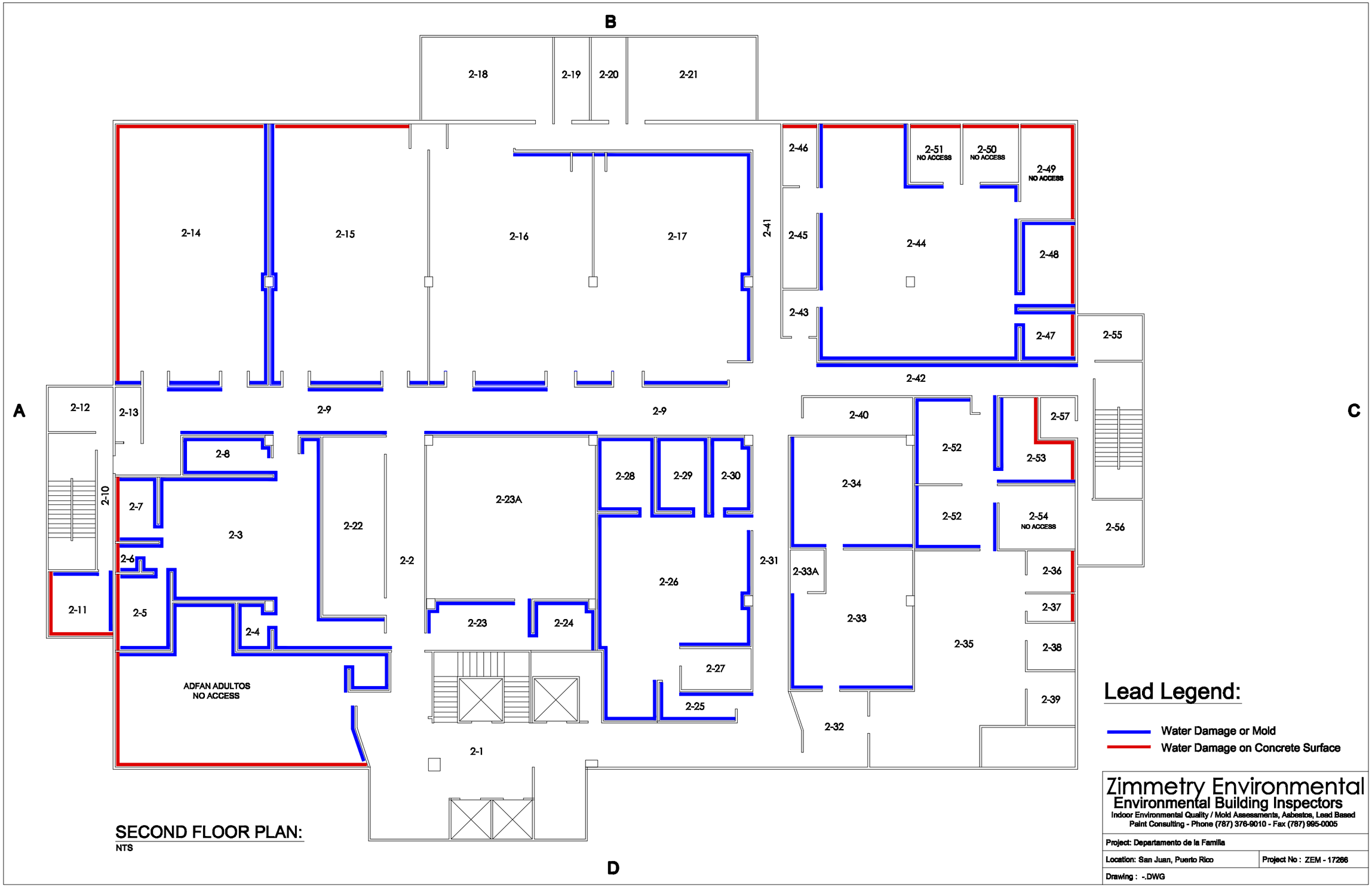
1-47
1-49
1-51
1-16
1-26
1-72
1-73
1-74
1-75
1-76
1-77
1-78
1-79
1-61
1-52
1-15
1-71
1-66
1-48
1-53
AIR ROOM
1-14
AIR ROOM
1-13
1-10
1-27
1-70
1-69
1-68
1-67
1-65 NO ACCESS
1-54
1-12
1-5
1-60
1-28
1-64
1-55
1-11
1-3
1-59
1-63
1-4
1-9
1-8
1-7
1-6
1-2
1-62
1-58
1-57
1-56
1-1
FIRST FLOOR PLAN:
NTS
Lead Legend:
Water Damage or Mold
Water Damage on Concrete Surface
Zimmetry Environmental
Environmental Building Inspectors
Indoor Environmental Quality / Mold Assessments, Asbestos, Lead Based Paint Consulting - Phone (787) 376-5919 - Fax (787) 995-0095
Project: Departamento de la Familia
Location: San Juan, Puerto Rico
Project No : ZEM - 17288
Drawing : -.DWG



SECOND FLOOR PLAN:
NTS

Zimmetry Environmental
Environmental Building Inspectors
Indoor Environmental Quality / Mold Assessments, Asbestos, Lead Based Paint Consulting - Phone (787) 376-9010 - Fax (787) 995-0005

Project: Departamento de la Familia

Location: San Juan, Puerto Rico | Project No : ZEM - 17266

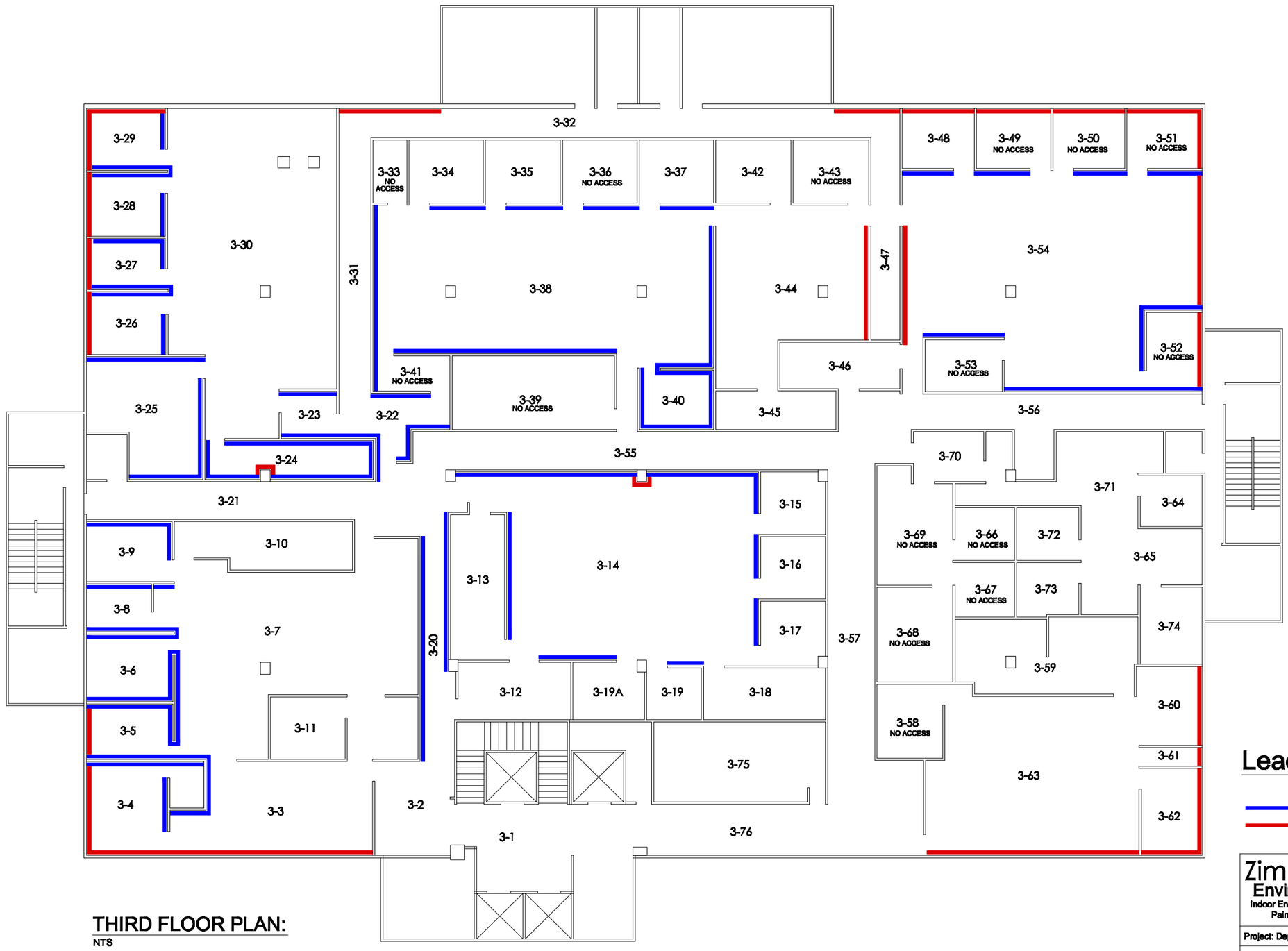
Drawing : -.DWG

B

A

C

D



THIRD FLOOR PLAN:

NTS

Lead Legend:

- Water Damage or Mold
- Water Damage on Concrete Surface

Zimmetry Environmental
Environmental Building Inspectors
Indoor Environmental Quality / Mold Assessments, Asbestos, Lead Based Paint Consulting - Phone (787) 376-9010 - Fax (787) 995-0005

Project: Departamento de la Familia	
Location: San Juan, Puerto Rico	Project No : ZEM - 17266
Drawing : -.DWG	

B

A

C

D

4-40
4-14
4-11B
4-12B
4-15
4-13
4-16
4-10B
4-39
4-19
4-17
4-9B
4-18
4-20
4-36
4-35
4-34A
4-34
4-42
4-43
4-44
4-45
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4-47
4-48
4-41
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4-31
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4-51
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4-26
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4-37
4-53
4-54
4-50
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AIR ROOM
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4-33
4-55
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NO ACCESS
4-8B
4-58
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4-6
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4-74
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NO ACCESS
4-60
4-59
4-57
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4-65
4-71
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4-3
4-2
4-68
4-67
4-66
4-1
4-69

FOURTH FLOOR PLAN:

NTS

Lead Legend:

- Water Damage or Mold
- Water Damage on Concrete Surface

Zimmetry Environmental
Environmental Building Inspectors
Indoor Environmental Quality / Mold Assessments, Asbestos, Lead Based Paint Consulting - Phone (787) 376-9010 - Fax (787) 995-0005

Project: Departamento de la Familia	
Location: San Juan, Puerto Rico	Project No : ZEM - 17266
Drawing : -.DWG	

B

A

C

D

5-38

5-20 5-23 5-24 5-22 5-21 5-25 5-27 5-19 5-18 5-16 5-17

5-29 5-34 5-35 5-28 5-33 5-32 5-37 5-30 5-31 5-51

5-36 5-41 5-42 5-43 5-44 5-45 5-46 5-40 5-47 5-39

5-50 5-49 5-48 5-52

AIR ROOM

5-15 5-26

5-54 5-58 5-55 5-59 5-53 5-60 5-56 5-61 5-57 5-63 5-62 5-66 5-65 5-68 5-67 5-64

5-10 5-77 5-14 5-11 5-80 5-78 5-76 5-9 5-13 5-12 5-8 5-81 5-79 5-74 5-75 5-7 5-6 5-73 5-72 5-71 5-5 5-4 5-3 5-2 5-1 5-70

AIR ROOM

FIFTH FLOOR PLAN:

NTS

Lead Legend:

- Water Damage or Mold
- Water Damage on Concrete Surface

Zimmetry Environmental
Environmental Building Inspectors
Indoor Environmental Quality / Mold Assessments, Asbestos, Lead Based Paint Consulting - Phone (787) 376-9010 - Fax (787) 995-0005

Project: Departamento de la Familia	
Location: San Juan, Puerto Rico	Project No : ZEM - 17266
Drawing : -.DWG	

B

A

C

D

6-10

6-9

6-11

6-8

6-12

AIR ROOM

6-13

6-19

6-7

6-6

6-14

AIR ROOM

6-17

6-5

6-15

6-18

6-2

6-3

6-4

6-16

6-1

SIXTH FLOOR PLAN:

NTS

Lead Legend:

Water Damage or Mold

Water Damage on Concrete Surface

Zimmetry Environmental

Environmental Building Inspectors

Indoor Environmental Quality / Mold Assessments, Asbestos, Lead Based Paint Consulting - Phone (787) 376-9010 - Fax (787) 995-0005

Project: Departamento de la Familia	
Location: San Juan, Puerto Rico	Project No : ZEM - 17266
Drawing : -.DWG	

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-5
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-28
Suspected mold growth and dust accumulation over stored items.



Area 1-28
Suspected mold growth and dust accumulation over stored items.



Area 1-28
Suspected mold growth and dust accumulation on wooden pallets.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-6
Suspected mold growth on office chair.



Area 1-6
Suspected mold growth on office chair.



Area 1-7
Suspected mold growth on office chair.



Area 1-7
Water intrusion and wet conditions found on building's perimeter concrete wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-8
Suspected mold growth on office chair.



Area 1-9
Suspected mold growth on wooden furniture.



Area 1-10
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-10
Water intrusion form mechanical rooms.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-20
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-21
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-21
Suspected mold growth on water damaged ceiling fascia with elevated moisture level.



Area 1-22
Suspected mold growth on water damaged drywall panel with elevated moisture content.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-23
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 1-23
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-23
Suspected mold growth on office chairs.



Area 1-35
Suspected mold growth on wooden door and frame.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-10
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-10
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-10
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-10
Suspected mold growth on water damaged drywall panel with elevated moisture content.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-10
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-10
Suspected mold growth on office chair.



Area 1-10
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-10
Suspected mold growth on water damaged drywall panel with elevated moisture content.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-10
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-10
Suspected mold growth on documents.



Area 1-10
Water damaged partition.



Area 1-10
Suspected mold growth on water damaged gypsum board ceiling.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-26
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-26
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-24
Suspected mold growth on table surface.



Area 1-24
Suspected mold growth on office chair.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-31
Water damage on concrete wall.



Area 1-35
Water damage on concrete wall.



Area 1-35
Suspected mold growth on cot.



Area 1-35
Suspected mold growth on gypsum board column.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-35
Water damage on gypsum board ceiling.



Area 1-35
Suspected mold growth on wooden furniture.



Area 1-35
Suspected mold growth on wooden furniture.



Area 1-35
Suspected mold growth on wooden furniture.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-35
Suspected mold growth on wooden furniture.



Area 1-35
Suspected mold growth on gypsum board fascia.



Area 1-35
Suspected mold growth on wooden furniture.



Area 1-35
Suspected mold growth on wooden furniture.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-35
Suspected mold growth on wooden furniture.



Area 1-35
Suspected mold growth on wooden furniture.



Area 1-35
Suspected mold growth on drywall panel with elevated moisture level.



Area 1-35

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-47
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-47
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-47
Suspected mold growth on wooden door and frame.



Area 1-36
Suspected mold growth on furniture.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-36
Suspected mold growth underneath wooden furniture.



Area 1-36
Suspected mold growth on wood shelves.



Area 1-48
Suspected mold growth on wood toys.



Area 1-48
Dust accumulation on carpet.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-48
Water damage on flooring.



Area 1-48
Suspected mold growth on gypsum board.



Area 1-48
Water damaged ceiling tile.



Area 1-48
Suspected mold growth on gypsum board fascia.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-48
Suspected mold growth on drywall.



Area 1-51
Water damaged ceiling tiles.



Area 1-52
Water damaged ceiling tiles.



Area 1-53
Water damaged ceiling tiles.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-48
Suspected mold growth on wood door and frame.



Area 1-58
Suspected mold growth on office chairs.

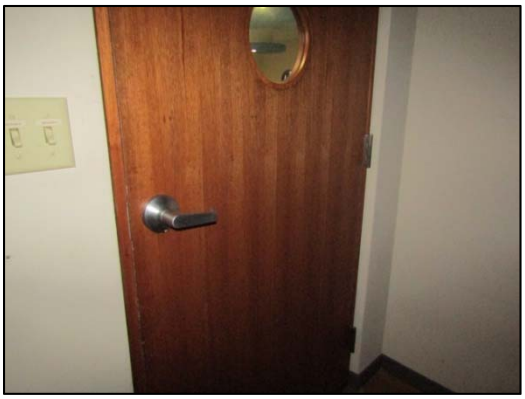


Area 1-60
Suspected mold growth on particle board.



Area 1-60
Suspected mold growth on wooden furniture.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-60
Suspected mold growth on wooden door.



Area 1-63
Suspected mold growth on office chairs.

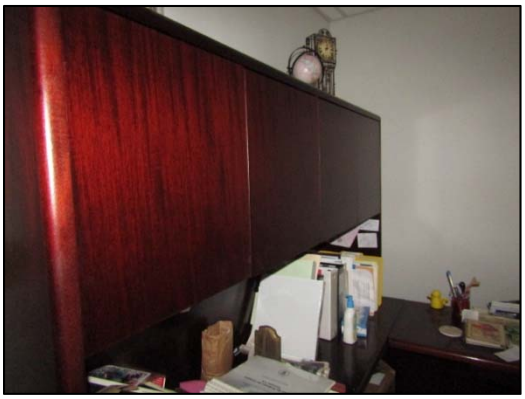


Area 1-64
Suspected mold growth on office chair.



Area 1-67
Suspected mold growth on wooden furniture.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-67
Suspected mold growth on office furniture.



Area 1-67
Suspected mold growth on office chair.



Area 1-68
Suspected mold growth on office furniture.



Area 1-68
Suspected mold growth on office chairs.

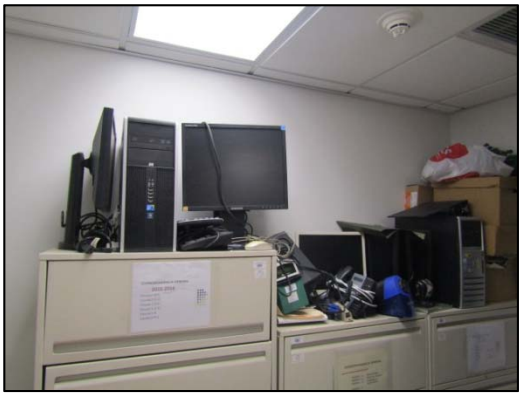
APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-68
Suspected mold growth on wooden furniture.



Area 1-69
Suspected mold growth on office furniture.



Area 1-70
Suspected mold growth on stored equipment.



Area 1-70
Suspected mold growth on stored equipment and documents.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-66
Suspected mold growth on office chairs.



Area 1-66
Suspected mold growth on office chairs.



Area 1-66
Suspected mold growth on office chairs.



Area 1-66
Suspected mold growth on office chair.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-66
Suspected mold growth on office chair.



Area 1-71
Water damaged carpet and termite infestation.



Area 1-71
Suspected mold growth on water damaged drywall panel with elevated moisture content and water damaged carpet.



Area 1-71
Suspected mold growth on water damaged drywall panel with elevated moisture content.

APPENDIX C: PROJECT PHOTOGRAPHS



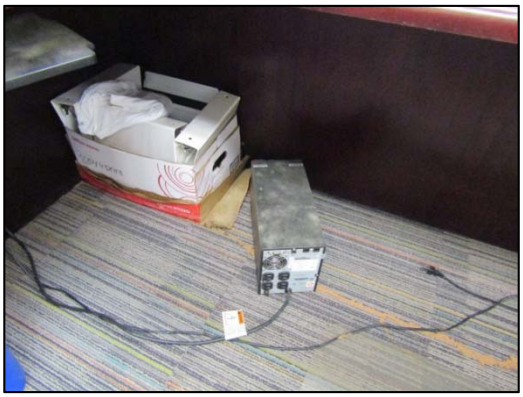
Area 1-71
Suspected mold growth on water damaged drywall panel with elevated moisture content.



Area 1-71
Suspected mold growth on office chair.



Area 1-71
Suspected mold growth on portfolios.



Area 1-71
Suspected mold growth on dust over electric equipment.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-71
Visible dust accumulation on documents.



Area 1-73
Suspected mold growth on office chair.



Area 1-74
Suspected mold growth on wooden furniture.



Area 1-74
Suspected mold growth on wooden door.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 1-7
Suspected mold growth on table and office furniture.



Area 1-66A
Suspected mold growth on stored portfolios.



Area 2-5
Suspected mold growth on office chairs.



Area 2-5
Water damaged ceiling tile and water intrusion.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-7
Suspected mold growth on office chair.



Area 2-7
Suspected mold growth on drywall panel with elevated moisture content.

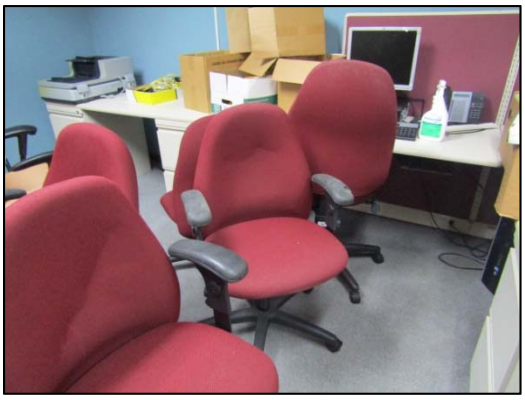


Area 2-3
Water damaged carpet.



Area 2-3
Suspected mold growth on office chairs.

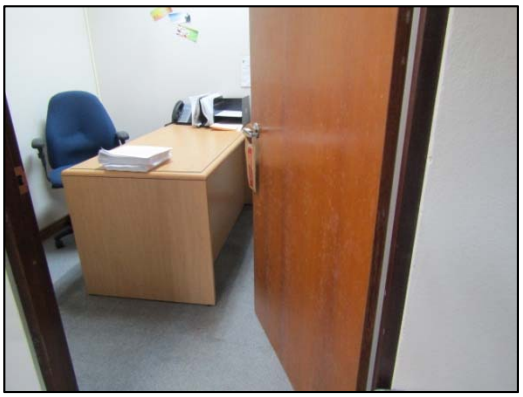
APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-3
Suspected mold growth on office chairs.



Area 2-3
Water damaged carpet.



Area 2-4
Suspected mold growth on wood door and frame.



Area 2-8
Suspected mold growth.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-14
Debris from ceiling tiles.



Area 2-14
Ceiling tiles with water damage.



Area 2-14
Damage on ceiling tiles due to water intrusion.



Area 2-14
Water intrusion and debris.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-14
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 2-14
Water damaged wood cove base.



Area 2-14
Water intrusion markings on concrete wall.



Area 2-14
Water intrusion and dust accumulation on floor.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-15
Water damaged carpet.



Area 2-15
Water damaged carpet.



Area 2-15
Water intrusion on concrete wall.



Area 2-15
Water damaged ceiling tiles.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-15
Suspected mold growth on stored chairs.



Area 2-15
Water damaged carpet.



Area 2-16/17
Water damaged ceiling tiles.



Area 2-16/17
Water damaged carpet.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-16/17
Water damaged ceiling tile.



Area 2-16/17
Water intrusion through concrete column and water damaged ceiling tiles.



Area 2-16/17
Water intrusion through concrete column and water damaged ceiling tiles.



Area 2-16/17
Water intrusion through concrete column and water damaged ceiling tiles.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-16/17
Water intrusion through concrete column and water damaged ceiling tiles.



Area 2-16/17
Water damaged carpet.



Area 2-16/17
Suspected mold growth on office chairs.



Area 2-44
Water damaged carpet.

APPENDIX C: PROJECT PHOTOGRAPHS



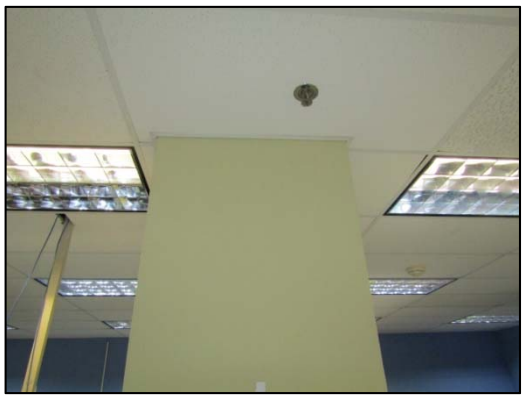
Area 2-44
Water intrusion on building's perimeter concrete wall.



Area 2-44
Suspected mold growth on office chairs.



Area 2-44
Water damaged carpet.



Area 2-44
Water intrusion through concrete column and water damaged ceiling tiles.

APPENDIX C: PROJECT PHOTOGRAPHS



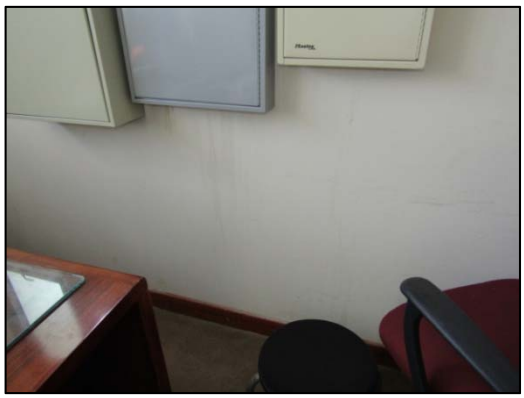
Area 2-44
Water damaged carpet and wood cove base.



Area 2-45
Suspected mold growth on gypsum board wall.



Area 2-51
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 2-49
Water intrusion markings on wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-47
Suspected mold growth on stored equipment.



Area 2-47
Suspected mold growth on stored equipment.



Area 2-52
Water damaged carpet.



Area 2-40
Water damaged wood cove base.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-26
Water damaged carpet.



Area 2-26
Suspected mold growth on office chairs.



Area 2-26
Suspected mold growth on office chair.

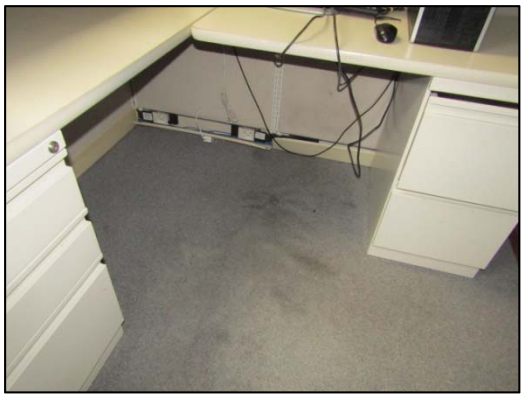


Area 2-26
Suspected mold growth on office chair.

APPENDIX C: PROJECT PHOTOGRAPHS



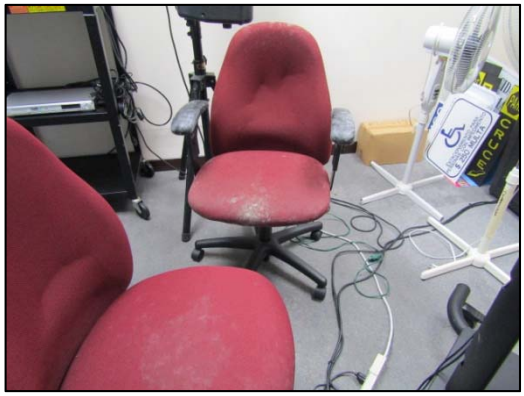
Area 2-26
Water intrusion through concrete column.



Area 2-26
Water damaged carpet**.**



Area 2-29
Suspected mold growth on gypsum board wall.



Area 2-33
Suspected mold growth on office chairs.

APPENDIX C: PROJECT PHOTOGRAPHS



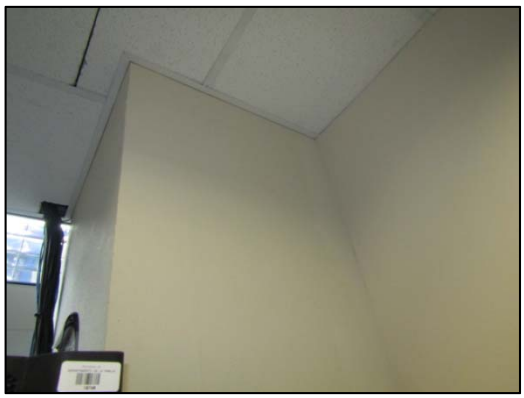
Area 2-33
Suspected mold growth on office furniture.



Area 2-33
Suspected mold growth on office chairs.



Area 2-33
Water damaged carpet.



Area 2-33
Water intrusion through concrete column.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-34
Water damaged wood cove base.



Area 2-34
Suspected mold growth on office chair.



Area 2-35
Water damaged carpet.



Area 2-36
Water intrusion on wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 2-37
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area ADFAN Adultos
Water damaged carpet.



Area ADFAN Adultos
Water intrusion on building's perimeter concrete wall.



Area ADFAN Adultos
Suspected mold growth on wooden door.

APPENDIX C: PROJECT PHOTOGRAPHS



Area ADFAN Adultos
Suspected mold growth on wood partition.



Area ADFAN Adultos
Suspected mold growth on wood partition.



Area ADFAN Adultos
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area ADFAN Adultos
Suspected mold growth on office chairs.

APPENDIX C: PROJECT PHOTOGRAPHS



Area ADFAN Adultos
Suspected mold growth on wooden door and frame.



Area ADFAN Adultos
Water damaged carpet and suspected mold growth underneath the carpet.



Area 3-4
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 3-3
Water damaged carpet.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-7
Water damaged carpet.



Area 3-7
Suspected mold growth on office chairs.



Area 3-7
Water intrusion through concrete column and water damaged ceiling tiles.



Area 3-7
Suspected mold growth on office chair.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-7
Water damaged carpet.



Area 3-6
Suspected mold growth on office chairs.



Area 3-30
Water damaged carpet.



Area 3-30
Suspected mold growth on office chair.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-30
Water intrusion through concrete column and water damaged ceiling tiles.



Area 3-30
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 3-30
Water intrusion through concrete column and water damaged ceiling tiles.



Area 3-30
Water intrusion and wet conditions found on building's perimeter concrete wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-30
Water damaged carpet.



Area 3-24
Water intrusion through concrete column and water damaged ceiling tiles.



Area 3-26
Water intrusion and water damaged ceiling tile.



Area 3-26
Water damaged carpet and ceiling tile.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-26
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 3-27
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 3-27
Water intrusion through concrete column and water damaged ceiling tiles.



Area 3-27
Water damaged ceiling tiles.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-28
Water intrusion and water damaged ceiling tile. Wet conditions found on building's perimeter concrete wall.



Area 3-28
Water intrusion and water damaged ceiling tile. Wet conditions found on building's perimeter concrete wall.



Area 3-29
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 3-29
Water intrusion and wet conditions found on building's perimeter concrete wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-31
Water damaged carpet.



Area 3-32
Water intrusion and damage on concrete wall.



Area 3-32
Water damage on building's perimeter concrete wall.



Area 3-32
Water damage on carpet and ceiling tile debris.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-32
Water damaged ceiling tile.



Area 3-32
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 3-38
Suspected mold growth on office chair.



Area 3-38
Water damaged ceiling tile.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-38
Water intrusion through concrete column and water damaged ceiling tiles.



Area 3-38
Water intrusion through concrete column and water damaged ceiling tiles.



Area 3-38
Suspected mold growth on office chair.



Area 3-54
Water damaged carpet.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-54
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 3-54
Water damage on carpet and wood cove base.



Area 3-54
Water intrusion through concrete column and water damaged ceiling tiles.



Area 3-54
Suspected mold growth on office chair.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-71
Water damaged carpet.



Area 3-71
Water damaged carpet and dust accumulation on documents.



Area 3-63
Water damaged carpet.



Area 3-63
Suspected mold growth on office chair.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-12
Suspected mold growth on office chair.



Area 3-14
Water damaged carpet.



Area 3-14
Water intrusion through concrete column and water damaged ceiling tiles.



Area 3-14
Water damaged carpet.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 3-14
Suspected mold growth on office chair.



Area 4-3
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 4-3
Water damaged ceiling tile and damaged ceiling joist.

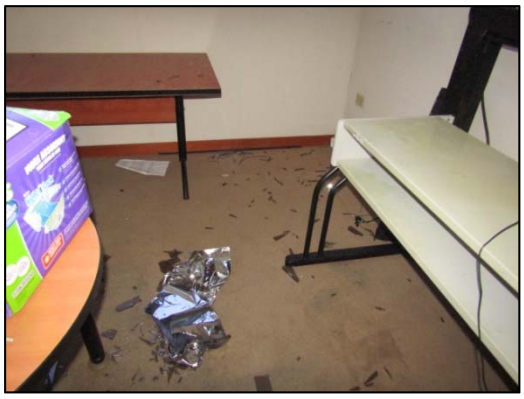


Area 4-3
Debris on water damaged flooring.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 4-4
Debris on water damaged carpet.



Area 4-4
Debris on water damaged carpet.



Area 4-4
Water damaged ceiling tile and damaged ceiling joist.



Area 4-4
Water damaged wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 4-4
Water intrusion on building's perimeter concrete wall.



Area 4-7A
Water damaged carpet.



Area 4-7A
Water damaged carpet.

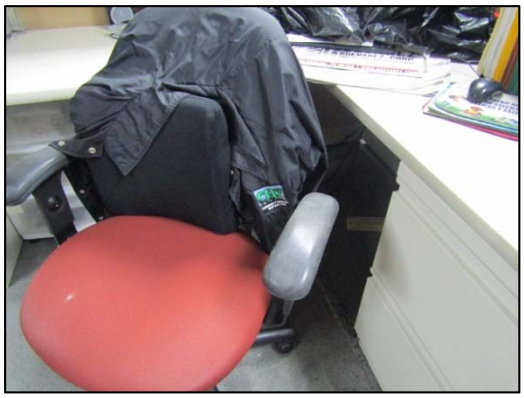


Area 4-7A
Water damaged ceiling tile and damaged ceiling joist.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 4-7A
Water intrusion through concrete column and water damaged ceiling tiles.



Area 4-7A
Suspected mold growth on office chair.



Area 4-9B
Suspected mold growth on wood surface.



Area 4-12B
Water damage on wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 4-19B
Water damaged carpet.



Area 4-9B
Debris from ceiling tiles on carpet.



Area 4-9B
Suspected mold growth on ceiling tiles.



Area 4-9B
Water intrusion and wet conditions found on building's perimeter concrete wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 4-10B
Water damaged ceiling tile.



Area 4-10B
Water intrusion and damage on building's perimeter concrete wall.



Area 4-11B
Water damaged ceiling tile.



Area 4-12B
Water intrusion and damage on building's perimeter concrete wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 4-12B
Suspected mold growth on gypsum board wall.



Area 4-12B
Water intrusion on building's perimeter concrete wall.



Area 4-12B
Wet condition found on carpet.



Area 4-14
Water damage on building's perimeter concrete wall and dust accumulation on boxes.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 4-14
Water damaged ceiling tile.



Area 4-28
Water condensation on metal door and frame.



Area 4-28
Water damage on carpet due to condensation on metal door.



Area 4-41
Suspected mold growth on stored card board boxes.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 4-62
Water damaged carpet.



Area 4-66
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 5-2
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 5-5
Water intrusion and wet conditions found on building's perimeter concrete wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 5-11
Water damaged ceiling tile.



Area 5-11
Water damaged carpet.



Area 5-14
Water damage on gypsum board wall.



Area 5-16
Suspected mold growth on office furniture.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 5-16
Suspected mold growth on gypsum board ceiling.



Area 5-18
Water damage on building's perimeter concrete wall.



Area 5-18
Water intrusion and water damaged ceiling tiles. Wet conditions found on building's perimeter concrete wall.



Area 5-18
Dust accumulation and suspected mold growth on office items.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 5-19
Water damage on concrete wall and ceiling tiles.



Area 5-20
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 5-20
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 5-20
Water damaged carpet.

APPENDIX C: PROJECT PHOTOGRAPHS



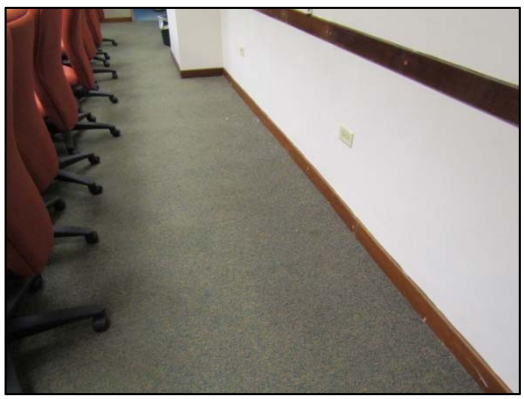
Area 5-20
Water intrusion and damage on gypsum board ceiling.



Area 5-23
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 5-23
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 5-23
Suspected mold growth on drywall panel with elevated moisture level and water damaged carpet.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 5-23
Water damaged ceiling tile.



Area 5-21
Water damaged ceiling tile.



Area 5-24
Suspected mold growth on office chair.

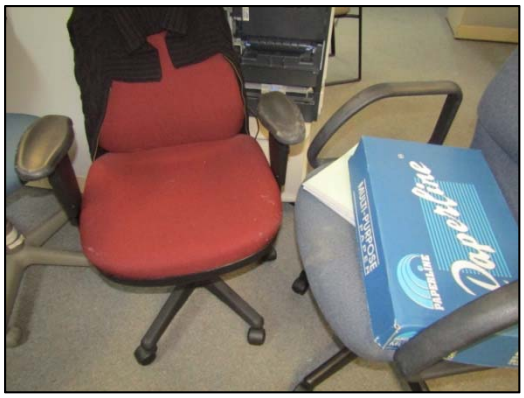


Area 5-27
Water damaged carpet.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 5-27
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 5-35
Suspected mold growth on office chair.



Area 5-46
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 5-46
Suspected mold growth on office furniture.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 5-47
Suspected mold growth on office chairs.



Area 5-47
Water damaged ceiling tile.



Area 5-47
Water damaged ceiling tile.



Area 5-47
Water intrusion and wet conditions found on building's perimeter concrete wall.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 5-43
Water damaged ceiling tile.



Area 5-44
Water damaged ceiling tile.



Area 5-44
Water damage on concrete column and wood cove base.



Area 5-53
Suspected mold growth on wood door and frame.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 5-56
Water damaged ceiling tile.



Area 5-64
Water damaged ceiling tile.



Area 5-66
Suspected mold growth on office chair.



Area 5-66
Suspected mold growth on office chair.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 5-75
Suspected mold growth on office furniture.



Area 6-9
Water damage and wet conditions found on building's perimeter concrete wall.



Area 6-9
Water damage and wet conditions found on building's perimeter concrete wall.



Area 6-9
Suspected mold growth on office furniture.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 6-9
Suspected mold growth on office furniture.



Area 6-11
Water intrusion and wet conditions found on building's perimeter concrete wall.



Area 6-11
Stored materials with significant dust accumulation and damage.



Area 6-11
Water damage on ceiling tiles.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 6-11
Water damage on ceiling tiles.



Area 6-11
Water damage on ceiling tiles and light fixture.



Area 6-11
Water damage on drywall and ceiling tiles.



Area 6-14
Water intrusion to the floor thru the air handling unit's mechanical rooms.

APPENDIX C: PROJECT PHOTOGRAPHS



Area 6-13
Signs of water intrusion.



Area 6-17
Suspected mold growth on water damaged drywall panel.



Area 6-19
Stored card boxes with significant dust accumulation



1st Floor Air Handling Unit 10 Mechanical Room
Excessive corroded particles accumulations on room floor

APPENDIX C: PROJECT PHOTOGRAPHS



1st Floor Air Handling Unit 10 Mechanical Room
Excessive corroded particles accumulations over unit's housing



1st Floor Air Handling Unit 10 Mechanical Room
Excessive corrosion over metal piping



1st Floor Air Handling Unit 10 Mechanical Room
Severe suspected visible mold growth over dirty ceiling



1st Floor Air Handling Unit 10 Mechanical Room
Severe suspected visible mold growth over dirty ceiling

APPENDIX C: PROJECT PHOTOGRAPHS



1st Floor Air Handling Unit 10
Mechanical Room
Water damage over concrete wall section as efflorescence



1st Floor Air Handling Unit 10
Dust accumulations and corrosion over cooling coil and frame

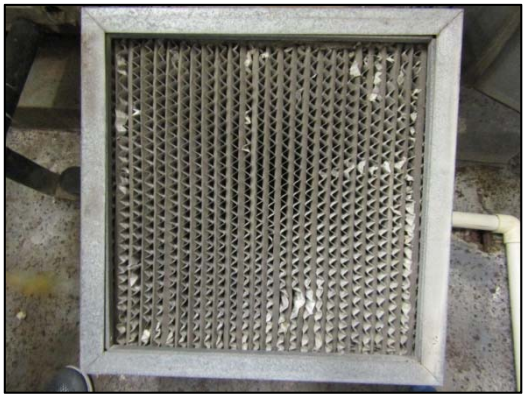


1st Floor Air Handling Unit 10
Corrosion deterioration on ventilation unit's housing floor



1st Floor Air Handling Unit 10
Dust saturation over medium efficiency pleated pre-filter

APPENDIX C: PROJECT PHOTOGRAPHS



1st Floor Air Handling Unit 10
Dust saturation over high efficiency extended filter



1st Floor Air Handling Unit 10
Dust accumulations and corrosion over cooling coil and frame



1st Floor Air Handling Unit 10
Acceptable conditions of unit's fan housing and chamber without excessive evident contamination



1st Floor Air Handling Unit 09 Mechanical Room
Water and dirt accumulation on floor

APPENDIX C: PROJECT PHOTOGRAPHS



1st Floor Air Handling Unit 09 Mechanical Room
Suspected visible mold growth over piping thermal system insulation



1st Floor Air Handling Unit 09 Mechanical Room
Ongoing water intrusion thru concrete ceiling



1st Floor Air Handling Unit 09 Mechanical Room
Excessive dust accumulations over unit's housing



1st Floor Air Handling Unit 09 Mechanical Room
Excessive dust accumulations over unit's housing

APPENDIX C: PROJECT PHOTOGRAPHS



1st Floor Air Handling Unit 09
Suspected visible mold growth over vibration damper (housing interior)



1st Floor Air Handling Unit 09 Mechanical Room
Water damage over concrete floor section as efflorescence and evident dirt accumulations



1st Floor Air Handling Unit 09
Dust accumulations and fouling over cooling coil and frame



1st Floor Air Handling Unit 09
Dust saturation over high efficiency extended filter

APPENDIX C: PROJECT PHOTOGRAPHS



1st Floor Air Handling Unit 09
Dust accumulation over unit's access door suggestive of significant air bypass thru failed door seal



1st Floor Air Handling Unit 12
Suspected visible mold growth over vibration damper (ductwork interior)



1st Floor Air Handling Unit 12 Mechanical Room
Suspected visible mold growth over ductwork's thermal system insulation



1st Floor Air Handling Unit 12 Mechanical Room
Suspected visible mold growth over piping thermal system insulation

APPENDIX C: PROJECT PHOTOGRAPHS



1st Floor Air Handling Unit 12 Mechanical Room
Suspected visible mold growth over ductwork's thermal system insulation



1st Floor Air Handling Unit 12 Mechanical Room
Excessive corroded particles accumulations on room floor



1st Floor Air Handling Unit 12 Mechanical Room
Excessive corroded particles accumulations over unit's housing

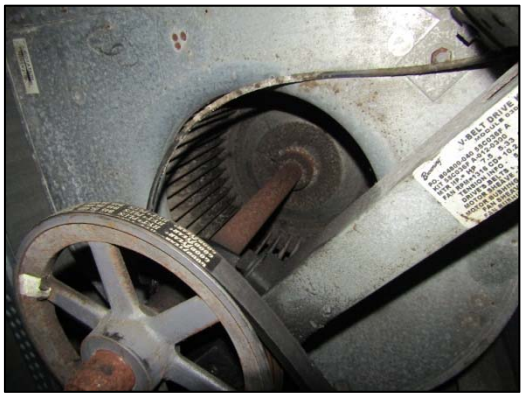


1st Floor Air Handling Unit 12 Mechanical Room
Fresh air intake partially destroyed by excessive corrosion

APPENDIX C: PROJECT PHOTOGRAPHS



1st Floor Air Handling Unit 12
Suspected visible mold growth over vibration damper (housing interior)



1st Floor Air Handling Unit 12
Acceptable conditions of unit's fan housing and chamber without excessive evident contamination



1st Floor Air Handling Unit 12
Dust accumulations and corrosion over cooling coil and frame



1st Floor Air Handling Unit 12
Dust accumulation over unit's access door suggestive of significant air bypass thru failed door seal

APPENDIX C: PROJECT PHOTOGRAPHS



1st Floor Air Handling Unit 12
Dust saturation over medium efficiency pleated pre-filter



2nd Floor Area 2-15 Plenum
Slight suspected visible mold growth over dusty metal air diffuser above side



2nd Floor Area 2-15 Plenum
Slight suspected visible mold growth over dusty metal air diffuser above side



2nd Floor Air Handling Unit 14 Mechanical Room
Dirt accumulation on room floor

APPENDIX C: PROJECT PHOTOGRAPHS



2nd Floor Air Handling Unit 14 Mechanical Room
Water damage over concrete ceiling as paint peeling and efflorescence



2nd Floor Air Handling Unit 14 Mechanical Room
Damaged piping thermal system insulation



2nd Floor Air Handling Unit 14
Suspected visible mold growth over unit's fan motor



2nd Floor Air Handling Unit 14
Acceptable conditions of unit's fan housing and chamber without excessive evident contamination

APPENDIX C: PROJECT PHOTOGRAPHS



2nd Floor Air Handling Unit 14
Dust accumulations over cooling coil



2nd Floor Air Handling Unit 13 Mechanical Room
Excessive corroded particles accumulations on room floor



2nd Floor Air Handling Unit 13 Mechanical Room
Excessive corroded particles accumulations over unit's housing



2nd Floor Air Handling Unit 13 Mechanical Room
Water damage over concrete ceiling as paint peeling and efflorescence

APPENDIX C: PROJECT PHOTOGRAPHS



2nd Floor Air Handling Unit 13
Suspected visible mold growth over vibration damper (ductwork interior)



2nd Floor Air Handling Unit 13
Suspected visible mold growth over vibration damper (ductwork interior)



2nd Floor Air Handling Unit 13
Dust accumulations over cooling coil



2nd Floor Air Handling Unit 13
Dust saturation over medium efficiency pleated pre-filter

APPENDIX C: PROJECT PHOTOGRAPHS



2nd Floor Air Handling Unit 13
Dust saturation over high efficiency extended filter



3rd Floor Area 3-47 Plenum
Slight suspected visible mold growth over dusty metal air diffuser above side

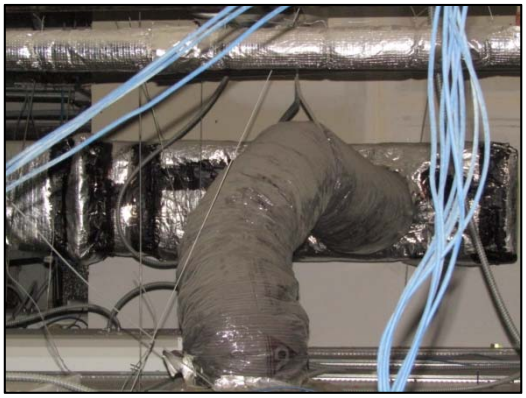


3rd Floor Area 3-63 Plenum
Fine dust accumulations over plenum surfaces



3rd Floor Area 3-63 Plenum
Fine dust accumulations over plenum surfaces

APPENDIX C: PROJECT PHOTOGRAPHS



3rd Floor Area 3-63 Plenum
Fine dust accumulations over plenum surfaces



3rd Floor Air Handling Unit 01 Mechanical Room
Dirt and debris accumulation on room floor and damaged piping thermal system insulation



3rd Floor Air Handling Unit 01 Mechanical Room
Corrosion of metal surfaces as sign of elevated humidity levels



3rd Floor Air Handling Unit 01 Mechanical Room
Excessive corroded particles accumulations over unit's housing

APPENDIX C: PROJECT PHOTOGRAPHS



3rd Floor Air Handling Unit 01 Mechanical Room
Suspected visible mold growth over ductwork's thermal system insulation



3rd Floor Air Handling Unit 01 Mechanical Room
Excessive corroded particles accumulations on room floor



3rd Floor Air Handling Unit 01 Mechanical Room
Fresh air intake partially destroyed by excessive corrosion



3rd Floor Air Handling Unit 01 Mechanical Room
Water damage over concrete ceiling as paint peeling and efflorescence; and suspected visible mold growth

APPENDIX D: CREDENTIALS

Harry Peña Ruiz founded Zimmetry Environmental Management Corp. in January 2002 soon after he conclude working as a consultant for one of the Industrial Hygiene firms working at the World Trade Center Site after the collapse of the towers in 2001. Due to his experience in sampling for air contaminants in demolitions, such as asbestos, lead, particulates and silica, he was invited to participate in the World Trade Center environmental emergency response after the terrorist attacks of 2001. Additionally, he provided trainings and assisted in the evaluation of suspected anthrax threats. Mr. Peña formerly worked as Operations Manager for a local environmental firm from 1995 to 2001.

Since its inception, Zimmetry has provided its clients with the tools they need to achieve healthier indoor environments. With direct experience in environmental building inspections, indoor air quality consulting and environmental site assessments of residential, commercial, industrial and governmental properties, the Zimmetry's team is supported by the latest technology, analytical services, and comprehensive training.

Mr. Peña holds a Master of Science Degree in Environmental Planning from the Metropolitan University in San Juan, Puerto Rico. Currently, Mr. Peña also teaches at the Atlantic OSHA Training Center and is a faculty member of the School of Environmental Affairs of the UMET Environmental Management Master's Degree Program. Since 2005 Mr. Peña is an approved instructor for the ASTM Phase I & Phase II Environmental Site Assessment Training Courses. He is an EPA / PR Environmental Quality Board accredited Lead-based Paint Inspector & Risk Assessor; EPA / PR Environmental Quality Board accredited Asbestos Inspector; Certified Environmental Inspector (CEI) and Certified Mold Specialist (CMS) by the Environmental Assessment Association; in addition he has been certified as Mold Remediation Specialist (MRS) and Water Restoration Specialist (WRS) by the International Restoration Institute, among numerous others certifications.

Mr. Peña is a member of the International Society of Indoor Air Quality and Climate (ISIAQ); member of the Indoor Air Quality Association (IAQA); and member of the US Green Building Council's Puerto Rico Chapter.

Given his vast experience and professional background, Mr. Peña has served as a plaintiff and defense expert witness in several legal cases.

In 2011, Mr. Peña was selected as one of the Ana G. Méndez University System's Distinguish Ex-alumni for his professional achievements and community services.

PARTIAL LISTING OF ACCREDITATIONS

Certified Environmental Inspector
Environmental Assessment Association

Mold Remediation Specialist (MRS) #18389
International Restoration Institute

Water Restoration Specialist (WRS) #19764
International Restoration Institute

Disaster Estimation Specialist (DES) #21510
International Restoration Institute

Disaster Recovery Specialist (DRS) #62166
International Restoration Institute

Fire Restoration Specialist (FRS) #62166
International Restoration Institute

Restorative Drying 101
Restoration Sciences Academy

Fire Restoration 151
Restoration Sciences Academy

Odor Control 111
Restoration Sciences Academy

Hazardous Waste Operations Train-the-Trainer
New Jersey & New York Hazardous Materials Worker Training Center / Supported by National Institute of Environmental Health Sciences / Conducted by the Office of Public Health Practice at the Metropolitan University of Puerto Rico in Bayamon

Air Systems Cleaning Specialist (ASCS)
National Air Duct Cleaners Association

ASTM Phase I & Phase II Environmental Site Assessment Processes Train-the-Trainer
ASTM International Technical & Professional Training / School of Environmental Affairs of the Metropolitan University of Puerto Rico in Bayamon

Comprehensive Indoor Air Quality and Mold Contamination, Assessment, Remediation and Control
Atlantic OSHA Training Center / Environmental Education Institute in San Juan PR & Ambient Environmental Inc. in Miami Florida

Hazardous Materials Incident Response Operations (165.5)
US Environmental Protection Agency Office of Emergency and Remedial Response

PARTIAL LISTING OF ACCREDITATIONS

Indoor Air Quality: Practical and Applied
The Environmental Institute

Environmental Awareness & Inspection
Environmental Assessment Association

Puerto Rico Asbestos Inspector
USEPA / PR Environmental Quality Board

Puerto Rico Lead-based Paint Inspector
USEPA / PR Environmental Quality Board

Puerto Rico Lead-based Paint Risk Assessor
USEPA / PR Environmental Quality Board

Lead Based Paint Visual Assessment
US Department of Housing and Urban Development