

# Natural Disasters: Lessons Learned During Emergency Response

## Gatekeeper Regulatory Roundup

March 2018



**ATC**  
ENVIRONMENTAL • GEOTECHNICAL  
BUILDING SCIENCES • MATERIALS TESTING

# Overview

- ATC's Primary Role
- Logistical Challenges
- Technical Challenges
- Deliverable Challenges



# Overview





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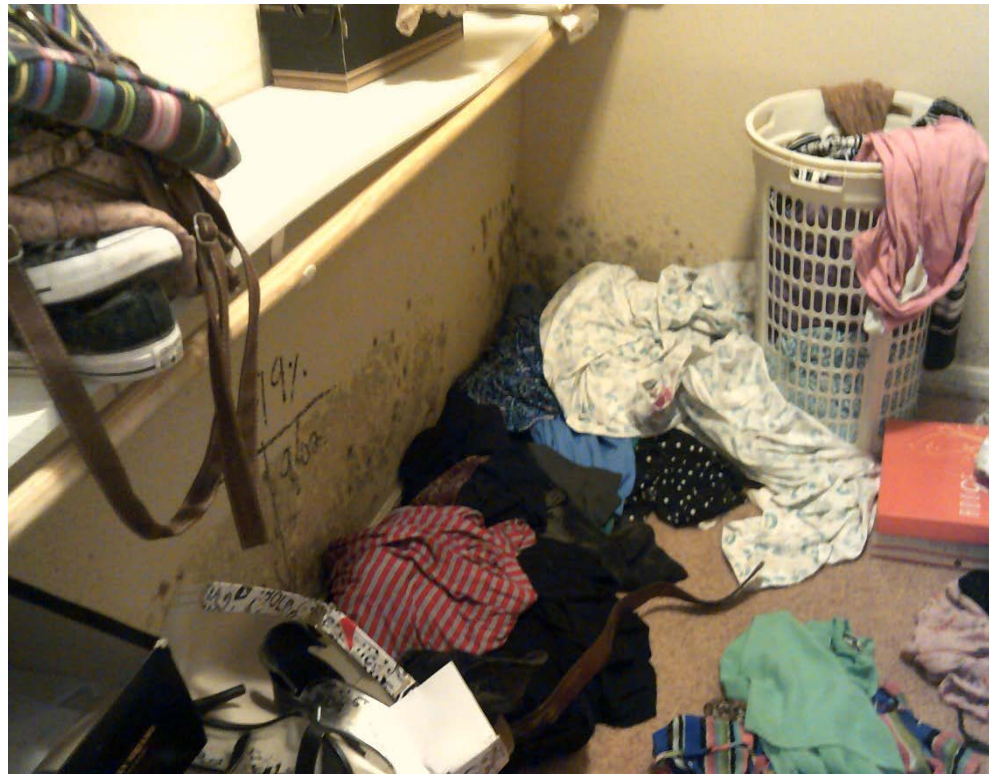




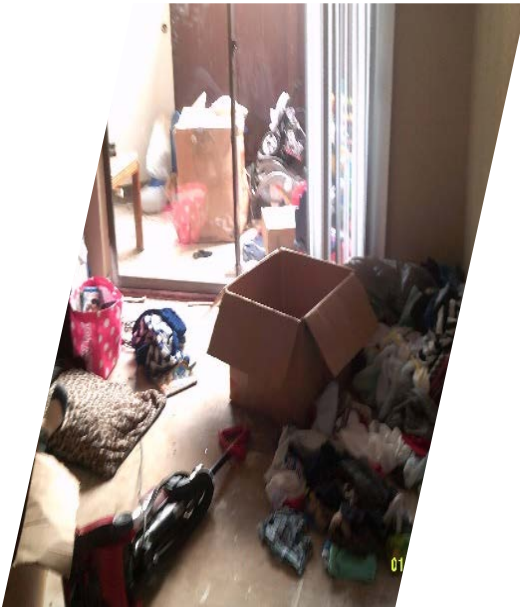
# Overview



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# Logistical Challenges





# Logistical Challenges

- Staffing
- Travel
- Lodging and Basic Necessities
- Health and Safety
- Equipment and PPE
- Communication and Field Support
- Project Prioritization
- State-Specific Licensure



# Logistical Challenges: Staffing

- Emergency Response Team comprised of ATC volunteer staff
  - Local person in charge
- Magnitude
  - Diversity of experience
  - Match responders' skills and experience to the project
    - Work in Teams
  - Adequate number of responders and support

# Logistical Challenges: Staffing

- Responder Availability
  - Commitment of 2 weeks or longer
  - Fatigue / Burnout
  - Health
  - Personal Protective Equipment (PPE)
- Long Term Projects
  - Require long term commitment or transition between team rotations





# Logistical Challenges: Travel

- Equipment
  - Mailing vs Flying
- Site Access
  - Checkpoints
  - IDs
  - Approved access list
- Availability of rental vehicles
  - Vehicles for rough terrain
  - Confirmation
  - Fuel
  - Roads













# Logistical Challenges: Lodging

- Lodging
  - Availability of clean, safe sleeping quarters
  - Ability to book in advance
    - Avoid travel booking sites
    - Cost
  - Consider proximity to site
  - Consider respondent needs
    - Medical needs
    - Food storage
  - Accommodations may have limited incidentals





# Logistical Challenges: Basic Necessities

- Power
  - Generators on site
  - Daylight constraints
- Access to drinking water/ water for hygiene
  - Ability to boil water
  - Bottled water
- Access to food
  - Cash only
  - Limited Restaurants / Cooking Ability



**Lack of Necessities = Reluctance to Volunteer**

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# Logistical Challenges: Health and Safety

- Safety Concerns:
  - Heat
  - Humidity
  - Debris
  - Category III (Black) Water
  - Mold



# Logistical Challenges: PPE/ Equipment

- PPE
    - Know what PPE is needed for each project
    - Humidity may change fit/effectiveness
  - Equipment
    - Enough equipment/ backup equipment for project
    - Standardized equipment for long term projects
    - Ability to communicate
      - Computers
      - Method for accessing internet
      - Cell phones
      - 2 way-radios
-



# Logistical Challenges: Field Support

- Analytical lab availability and proximity to jobsite
  - Courier
  - Delivery options
- Standardization
  - Survey procedures
  - Field Note Checklists
- Communication
  - Scope of work
  - Briefing/debriefing



# Logistical Challenges: State Specific

- Local or State specific requirements
  - Licensure and/or certification
    - Waivers
    - Work under supervision of state certified staff
    - Consultants / subcontractors
  - Limited surveys
    - Mold
    - Asbestos
    - Lead



# Logistical Challenges: Communication

- Inconsistencies and confusion regarding logistical details
    - Establish incident action plan for Natural Disaster Response
    - Establish chain of command early
    - Have one person in charge of each area
      - Logistics such as lodging, vehicles, etc.
      - Field Staff
        - Scope of Work
      - Support Staff
        - Reports
      - Client communication
-



# Logistical Challenges: Communication

- Multiple contractors onsite
  - Conference calls/emails involving all stakeholders
  - Health and Safety Plans
  - On-site communication
    - limited cell service
    - two-way radios
- Client-specific requests
  - One contact for Client
  - Communicate to all personnel



# Logistical Challenges: Communication

- Multiple project needs and opportunities
  - Highest needs of community served first
    - Nursing/assisted living
    - Schools
    - Commercial
    - Residential



# Technical Challenges





# Technical Challenges

- Environmental Conditions
- Site Conditions
- Equipment
- Field Notes



# Technical Challenges: Environmental Issues

- Heat and Humidity
    - Equipment failure
      - Confirm Thermal Imaging measurements
    - Inaccurate readings
      - Determine standard each day
    - Re-occurring mold
      - Ensure contractors keep doors and windows closed
      - Ensure blowers/dryers are kept running until completely dry
      - Conditions may change from day to day
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# Technical Challenges: Site Conditions

Coordinate removal and/or repair:

- Contents in place
- Debris
- Leaks











# Technical Challenges: Equipment

- Different brand instruments on long term projects
  - Assign instruments to project
  - Create standard/ baseline using both instruments
- Workers unfamiliar with equipment operation
  - Training prior to mobilization or on first day onsite



# Technical Challenges: Field Notes

- Transferring field notes and other data electronically
  - Location of files - Centralized server? Local?
  - Mi-Fi / Hot Spot
  - Courier to scan notes at office
  - Field Scanner or Mobile Scanner app
- Legible notes
  - Pencil fades
  - Ink smears
  - Handwriting





# Deliverable Challenges



# Deliverable Challenges

- Written Report
- Client Expectations

FINAL REPORT



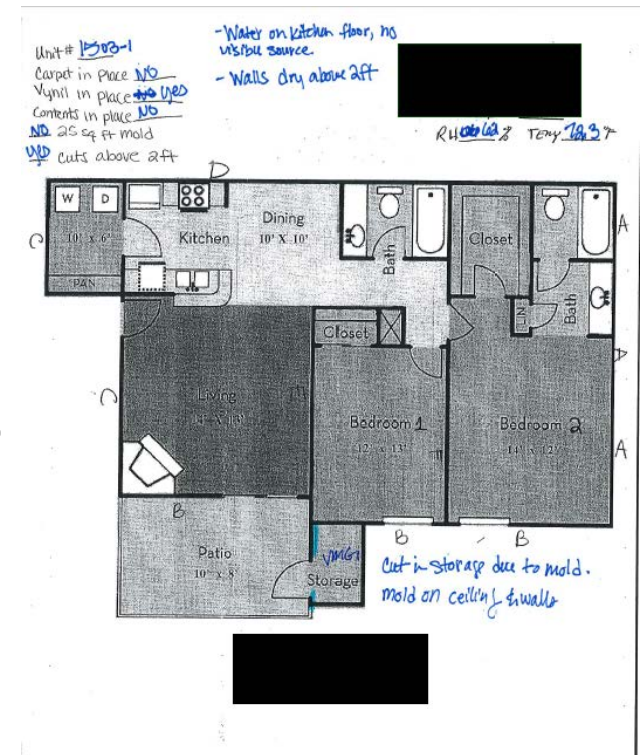
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# Deliverable Challenges: Written Report

- Field notes
  - Need to be legible and complete
  - Be precise
  - Consistency
  - Obtain floor plans
    - Hand sketches
    - Use HUD naming convention to describe impacted areas



# Deliverable Challenges: Written Report

- Pictures
  - Sample locations
  - General view of room
  - Suspect Visible Microbial Growth (SVMG)
  - Particular details to reference in report
    - Blowers/Dehumidifiers in place
    - Contents in place
    - Leaks
    - Room Number





# Deliverable Challenges: Written Report

- Lab Results
  - Timely submission of collected samples
  - Result turn around time
  - Inaccurate/incomplete Chain of Custody forms
  - Standardization of results
    - Sample types
    - Analytical reports



# Deliverable Challenges: Client Expectations

- Report Turnaround
  - Dependent upon lab turn around time and available personnel
    - Staff to write reports
    - Use of standardized templates as often as possible
- Report Content
  - Letter VS Short VS Detailed

# Deliverable Challenges: Client Expectations

- Constant Communication
  - Communicate progress with all stakeholders, ie waiting for lab, in review, etc
  - Give time tables with adequate cushion



***Communicate Client-Specific Needs to  
ALL Parties Involved***

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# Summary

- Plan before disaster strikes
  - Develop Standard Operating Procedures and Incident Command Structure
  - Establish Natural Disaster/ Emergency Response team and training
  - Plan to provide basic necessities for responders
    - Plan for limitations





# Summary

- Establishment of Response Team
  - Clearly define responsibilities
- Travel Considerations
- Account for limits specific to your equipment
- Communication between all stakeholders is key
- Accurate and complete notes/ Chain of Custody crucial to deliverable

# Before and After



# Before and After





# Before and After





# Before and After



# Before and After





# Before and After



Thank you!

Deanna McKendry  
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*With contributions from:*

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- Ms. Robyn Steiner has more than 20 years of professional problem-solving experience as a health, safety, and industrial hygiene professional providing comprehensive industrial hygiene and safety services to a wide variety of clients and industries. Ms. Steiner has investigated complex indoor air quality, mold, and industrial hygiene concerns for industrial, construction, commercial, and municipal clients in manufacturing, construction, office, and residential settings. She has developed and executed exposure monitoring programs to assure compliance with local, state, and federal regulations and guidelines governing exposure to chemicals such as lead, cadmium, hexavalent chromium, and ethylene oxide along with physical stressors such as head and noise. In addition, she has testified as an expert witness in Arizona on microbial and workers' compensation claims.
- Ms Steiner has a Master's Degree in Public Health, emphasis in Industrial Hygiene, from San Diego State University. She has been certified in the comprehensive practice of industrial hygiene since 1997 and in the comprehensive practice of safety since 2007.



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- Ms. Deanna McKendry holds a Bachelor of Science in Environmental Resource Management from Arizona State University, and is slated to earn her Master of Science degree in Environmental Resource Management from Arizona State University in December 2018. Ms. McKendry's areas of expertise include industrial hygiene and occupational health, indoor air quality management, hazardous materials assessments, and disaster response.
- Ms. McKendry recently, along with other ATC team members, completed emergency response moisture mapping, microbial assessments, and clearance testing in Houston, Texas after Hurricane Harvey made landfall in 2017. She will be presenting the technological and logistic challenges that were experienced when responding to areas affected by Hurricane Harvey along with lessons learned for future emergency response efforts. The presentation will also include input from other ATC team members regarding the response efforts in Florida and Puerto Rico for Hurricanes Irma and Maria in 2018.